



# **Programmatic Environmental Assessment**

**For the WIFIA Program**

**April 2018**



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## ACRONYMS AND ABBREVIATIONS

ACHP	Advisory Council on Historic Preservation
AFO	Animal Feeding Operation
AHPA	Archeological and Historic Preservation Act
APE	Areas of Potential Effect
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BMP	Best Management Practice
CAA	Clean Air Act
CATEX	Categorical Exclusion
CBI	Confidential Business Information
CBRA	Coastal Barrier Resources Act
CBRS	Coastal Barrier Resources System
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CH <sub>4</sub>	Methane
CO <sub>2</sub>	carbon dioxide
CO	carbon monoxide
CSO	Combined Sewer Overflow
CSS	Combined Sewer System
CWA	Clean Water Act
CWNS	Clean Watersheds Needs Survey
CWSRF	Clean Water State Revolving Fund
CZMA	Coastal Zone Management Act
dBA	A-weighted decibels
DOI	United States Department of Interior

DWSRF	Drinking Water State Revolving Fund
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EJ	Environmental Justice
EO	Executive Order
EPA	US Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ESA	Endangered Species Act
FHWA	Federal Highway Administration
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FMC	Fishery Management Council
FONSI	Finding of No Significant Impact
GHG	Greenhouse Gas
GIS	Geographic Information System
HAPs	Hazardous Air Pollutants
I/I	Infiltration and Inflow
LOS	Level of Service
MACT	Maximum Achievable Controlled-Technology
MBTA	Migratory Bird Treaty Act
MMPA	Marine Mammal Protection Act
MOA	Memorandum of Agreement
MSA	Magnuson-Stevens Fishery Conservation and Management Act of 1976
MSDS	Material Safety Data Sheet
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NCP	National Contingency Plan

NEPA	National Environmental Policy Act
NESHAP	National Admission Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act
NLCD	National Land Cover Database
NMFS	National Marine Fisheries Service
N <sub>2</sub> O	Nitrous oxide
NOAA	National Oceanic and Atmospheric Administration
NOFA	Notice of Funding Availability
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
O&M	Operation and maintenance
OSHA	Occupational Health and Safety Act
Pb	Lead
PEA	Programmatic Environmental Assessment
PM	particulate matter
ppm	parts per million
POTW	Publicly Owned Treatment Work
RCRA	Resource Conservation and Recovery Act
RO	Reverse Osmosis
ROG	reactive organic gases
RPA	Reasonable and Prudent Alternative
RTE species	rare, threatened or endangered species
SARA	Superfund Amendments and Reauthorization Act of 1986
SDWA	Safe Drinking Water Act

SERP	State Environmental Review Process
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO <sub>2</sub>	Sulfur Dioxide
SOP	Standard Operating Procedure
SRF	State Revolving Fund
SSA	Sole Source Aquifer
SSO	Sanitary Sewer Overflow
SWDA	Solid Waste Disposal Act
THPO	Tribal Historic Preservation Officer
TMDL	Total Maximum Daily Load
TSCA	Toxic Substances Control Act
UIC	Underground Injection Control
USACE	United States Army Corps of Engineers
U.S.C.	U.S. Code
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground Storage Tank
WIFIA	Water Infrastructure Finance and Innovation Act
WWSRF	Wastewater State Revolving Fund

## EXECUTIVE SUMMARY

The U.S. Environmental Protection Agency (EPA) is preparing this Programmatic Environmental Assessment (PEA) to evaluate the environmental impacts of water infrastructure projects receiving credit assistance through the Water Infrastructure Finance and Innovation Act (WIFIA) program.

This PEA has been prepared consistent with the National Environmental Policy Act (NEPA) (42 U.S. Code [U.S.C.] Section [§] 4321 et seq.), the Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), and EPA's NEPA regulations (40 CFR Part 6). In general, the CEQ regulations require that prior to implementing any major federal action with potentially significant impacts, a federal agency must evaluate the proposal's potential environmental effect.

In this PEA, EPA analyzes the potential adverse and beneficial environmental impacts of water infrastructure projects eligible for WIFIA credit assistance. The PEA presents nationwide information on existing conditions and discusses potential impacts and mitigation measures that might typically occur during construction and operation of broad project types. This PEA provides mechanisms to evaluate site specific conditions and impacts for individual projects and to determine if projects impacts fall within the scope of the PEA.

### WIFIA Overview

WIFIA of 2014 established the WIFIA program and authorized EPA to provide credit assistance (also referred to as direct loans or loan guarantees) for a range of drinking water and wastewater projects. The WIFIA program is designed to accelerate investment in drinking water and wastewater infrastructure by providing long-term, low-cost credit assistance to creditworthy prospective borrowers for up to 49 percent of eligible project costs. Eligible WIFIA prospective borrowers are: corporations; partnerships; joint ventures; trusts; federal, state, or local government entity, agency, or instrumentality; tribal governments or consortium of tribal governments; and state infrastructure financing authorities.

### Purpose and Need

The proposed federal action under consideration in this PEA is the issuance of credit assistance for the design, construction, operation, and maintenance of eligible WIFIA drinking water and wastewater infrastructure projects.

The purpose of the proposed action is to support the WIFIA program's mission to accelerate investment in our nation's water and wastewater infrastructure by providing long-term, low-cost supplemental credit assistance under customized terms to creditworthy water and wastewater projects of national and regional significance. The WIFIA program works separately from, but in some instances in coordination with, the State Revolving Fund (SRF) Loan Programs to provide subsidized financing for large dollar-value water infrastructure projects.

The proposed action is needed to:

- Assist communities facing challenges in providing adequate and reliable water infrastructure services essential to protecting public health and the environment by financing capital improvements;
- Provide a financing mechanism that allows long-term debt to be spread out over the useful life of projects while retaining affordability of user rates; and
- Provide credit assistance benefits not readily available in capital markets.

## Alternatives

The PEA analyzes two basic alternatives: the No Action Alternative, that is not providing credit assistance; and the Proposed Action Alternative, which is providing credit assistance to selected individual prospective borrowers. There are many project types that can receive credit assistance as part of the Proposed Action Alternative.

Projects can be grouped into linear, vertical or other project types, as explained further in Section 3.2. All project types can occur on previously developed or undeveloped sites.

## Environmental Consequences

The PEA presents information on the anticipated impacts associated with providing WIFIA credit assistance to eligible water infrastructure projects. The terms “effect” and “impact” are used interchangeably in this document. This PEA defines “effect” as a noticeable change caused by a project that may receive WIFIA credit assistance to a resource from the existing environmental baseline conditions. Such change can be negative, neutral, or beneficial. The degree of change is estimated by measuring the difference between the baseline conditions and the conditions that result from the construction or operation of a project following the assessed action. As stated in 40 CFR § 1508.8, effects include direct effects and indirect effects. The PEA: (1) describes the baseline and changing environmental conditions of the proposed projects (the “affected environment”); (2) analyzes potential environmental consequences resulting from the alternatives; (3) identifies and characterizes cumulative impacts resulting from the Proposed Action Alternative when added to other past, present and reasonably foreseeable actions.

Projects receiving WIFIA credit assistance must also comply with applicable federal laws and regulations and are guided by relevant statutes (and their implementing regulations) and Executive Orders (EO) that establish standards and provide guidance on environmental compliance, including natural and cultural resources management and planning.

No significant impacts are anticipated for NEPA purposes as a result of the No Action Alternative or the Proposed Action Alternative of providing assistance to eligible projects. For each resource area analyzed, Table ES-1 provides a summary of potential environmental consequences resulting from the implementation of eligible project types. Illustrative practicable project-level mitigation measures are also described in Table ES-1.

TABLE ES-1. SUMMARY OF POTENTIAL IMPACTS

RESOURCE AREA	NO ACTION ALTERNATIVE IMPACTS	PROPOSED ACTION ALTERNATIVE IMPACTS	PRACTICABLE MITIGATION MEASURES
Land Use	No impact	No significant impact. Effects might include changes in land use cover and designations, alterations to land use patterns, and preclusion of other land uses within or adjacent to project footprints.	<ul style="list-style-type: none"> <li>• Ensure compatibility with state, tribal, and local land use plans, programs and policies</li> <li>• Mitigation measures implemented as a result of stakeholder coordination/consultation</li> </ul>
Air Quality	No impact to no significant impact	No significant impact. Effects might include generation of construction dust and emissions, and generation of operational emissions, including criteria air pollutants and ozone precursors due to treatment processes, power generation, and increased vehicular traffic.	<ul style="list-style-type: none"> <li>• Odor minimizing facility design</li> <li>• Use of energy efficient designs and technologies</li> <li>• Use of dust suppression techniques</li> <li>• On-site or grid renewable or low-carbon energy</li> </ul>
Noise	No impact to no significant impact	No significant impact. Effects might include generation of construction and operational noise and vibration.	<ul style="list-style-type: none"> <li>• Compliance with local ordinances and designations.</li> <li>• Use of general noise reduction measures</li> </ul>
Geological and Soils	No impact	No significant impact. Effects could include vegetation removal, grubbing, grading, and trenching.	<ul style="list-style-type: none"> <li>• Use of erosion control and site stabilization best management practices (BMPs)</li> <li>• Use of effective site design and site selection.</li> </ul>
Water	No significant impact	No significant impact. Effects could include ground and soil-disturbing activities, direct impacts to surface water or wetlands, new or expanded outfalls and discharges of effluent to water resources.	<ul style="list-style-type: none"> <li>• Use of erosion and sediment control measures and BMPs</li> <li>• Compliance with permit requirements</li> </ul>

			<ul style="list-style-type: none"> <li>• Effective site selection and design</li> <li>• Consistency with EO 11990 and the 404(b)(1) guidelines</li> <li>• Water efficiency</li> <li>• Coordination with Regional utilities</li> <li>• Planning for extreme weather</li> </ul>
<b>Biological</b>	No impact	No significant impact. Effects could include reduced vegetative cover, soil compaction, erosion or sedimentation, habitat fragmentation, introduction of invasive species, changes in water availability, and disturbance from construction noise and dust.	<ul style="list-style-type: none"> <li>• Implementation of avoidance and minimization measures, and BMPs</li> <li>• Implementation of recommendations from relevant governmental wildlife agencies</li> <li>• Prevention of spills and leaks from vehicles and equipment</li> <li>• Implementation of measures to minimize soil compaction and the transportation of noxious, invasive and pest species</li> </ul>
<b>Cultural</b>	No impact	No significant impact. Effects could include encroachment, displacement or destroying or diminishing the historic integrity of NRHP listed or eligible properties.	<ul style="list-style-type: none"> <li>• Implementation of effective site selection and design</li> <li>• Consultation with State Historic Preservation Officers (SHPO) and/or Tribal Historic Preservation Officers (THPO) and minimization of adverse effects</li> <li>• Conduct surveys prior to construction</li> <li>• Development of an unanticipated discoveries plan</li> </ul>

<b>Socioeconomics /Environmental Justice</b>	No significant impact	No significant impact. Effects could include local economic benefits from construction and operation, and disruption to communities from construction.	<ul style="list-style-type: none"> <li>• Implementation of construction mitigation measures, such as those described for air and noise</li> <li>• Measures implemented as a result of conducting meaningful public engagement to environmental justice communities</li> </ul>
<b>Transport and Traffic</b>	No impact	No significant impact. Effects could include street closures, lane closures, detours, traffic and parking restrictions, and reduced traffic speeds.	<ul style="list-style-type: none"> <li>• Coordination with local transportation agencies</li> <li>• Use of warning signage, flag persons</li> <li>• Use of lane closures and detours as necessary</li> </ul>
<b>Utilities and Community Services</b>	No impact to no significant impact	No significant impact. Effects could include utility relocations and service interruptions.	<ul style="list-style-type: none"> <li>• Identification and avoidance of buried utilities during land disturbing activities</li> <li>• Coordination with service providers and planning for minimization of service interruption</li> <li>• Coordination with park and recreational resource managers/agencies for minimization of impacts to community resources</li> </ul>
<b>Hazardous/Toxic materials &amp; waste</b>	No impact	No significant impact. Effects could include accidental spills or releases of materials.	<ul style="list-style-type: none"> <li>• Compliance with applicable hazardous and toxic materials laws and regulations</li> <li>• Implementation of environmental protection measures, BMPs, and SOPs</li> </ul>

			<ul style="list-style-type: none"> <li>• Development of Emergency Plan/Emergency Response Plan (or similar)</li> </ul>
<b>Health &amp; Safety</b>	No impact to no significant impact	No significant impact. Effects could include generation of fugitive dust, and construction related risks such as falls and other injuries and accidental spills and leaks from construction equipment.	<ul style="list-style-type: none"> <li>• Implementation of a health and safety plan</li> <li>• Limiting site access to authorized personnel only</li> <li>• Implementation of air and noise minimization measures</li> </ul>

# SECTION 1

## 1.0 INTRODUCTION

### 1.1 BACKGROUND

EPA is preparing this PEA to evaluate the issuance of credit assistance (loans and loan guarantees) under the Water Infrastructure Finance and Innovation Act (WIFIA) program. The proposed action being evaluated is the issuance of credit assistance for the design, construction, operation, and maintenance of eligible water and wastewater infrastructure projects defined in 33 U.S.C. § 3905.

The National Environmental Policy Act (NEPA) mandates that Federal agencies consider the effects of major Federal actions on the quality of the human environment. The CEQ implementing regulations at 40 CFR 1500 *et seq.* detail procedures for meeting NEPA's requirements, and each Federal agency has developed its own implementing procedures. EPA's procedures are found at 40 CFR Part 6. This PEA has been prepared using these implementing procedures.

Congress enacted the WIFIA as part of the Water Resources Reform and Development Act of 2014, as amended by sec. 1445 of Public Law 114-94 and codified at 33 U.S.C. 3901-3914. WIFIA establishes a federal credit program for water infrastructure projects to be administered by EPA. WIFIA's implementing regulations are codified at 40 CFR § 35.10000. 40 CFR 35.10010(e) of the WIFIA regulations provides that EPA will not obligate credit assistance for a project unless it has received a categorical exclusion, finding of no significant impact, or record of decision under NEPA.

### 1.2 PEA SCOPE AND CONTENT

The CEQ regulations encourage federal agencies to consider evaluating impacts of common actions and project elements in a programmatic manner to gain efficiencies. They also encourage the development of program-level NEPA environmental documents when projects are similar to each other and have similar impacts. The agencies can then "tier" to the program-level analysis for subsequent project-level analysis, thus avoiding duplication and delay. EPA has developed this PEA in accordance with the CEQ regulations and CEQ guidance on programmatic reviews.

The PEA is nationwide in scope. It evaluates potential direct, indirect, and cumulative effects of construction and operation and maintenance (O&M) of water and wastewater infrastructure, as well as, the No Action Alternative. The PEA also considers mitigation to reduce any adverse environmental impacts. Potential impacts are evaluated programmatically, and consider conditions that could be encountered at various sites. The intrinsically beneficial nature of drinking water and wastewater infrastructure has been kept in mind throughout for important context. Projects eligible for WIFIA assistance ensure the availability and reliability of safe drinking water supplies, effective wastewater treatment and enhancement of water quality, and stormwater management. This infrastructure is essential not only for environmental protection, but for public health, safety, quality of life, and prosperity.

The PEA also discusses the compliance requirements of other potentially applicable environmental and cultural resource requirements. EPA coordinates and integrates to the maximum extent possible the review and compliance process required under similar requirements such as the Section 106 of the National Historic Preservation Act (NHPA), Section 7 of the Endangered Species Act (ESA), Executive Order 11988 Floodplain Management and Executive Order 11990 Protection of Wetlands, and others included in Section 1.7 Regulatory Framework.

## 1.3 PROGRAMMATIC ENVIRONMENTAL ASSESSMENT METHODOLOGY

This PEA provides the public and the Responsible Official with the information to understand and evaluate the potential environmental consequences of the proposed action and alternatives. The Responsible Official will consider technical, economic, environmental, and social issues, as well as the ability of each alternative to meet the purpose and need prior to determining whether to issue a FONSI or a notice of intent to prepare an EIS.

Each credit assistance application requires an appropriate level of environmental analysis and documentation when determining coverage under the PEA. The PEA includes a framework in Appendices A and B to help prospective borrowers and EPA determine whether the environmental impacts from a project are covered in the PEA or if additional site specific documentation or analysis is required. EPA will document when projects and their associated impacts are determined to be eligible for coverage under this PEA. The PEA can be used to assess future credit assistance applications from prospective borrowers, and cannot be used for WIFIA applications considered by EPA in advance of the finalization of the PEA. For project types described within the PEA that require additional site-specific analysis, EPA will conduct an additional focused environmental analysis in accordance with 40 CFR § 1508.28 and 1502.21.

## 1.4 WIFIA PROGRAM OVERVIEW

WIFIA of 2014 established the WIFIA program and authorized EPA to provide credit assistance (direct loans or loan guarantees) for a range of drinking water and wastewater projects. The WIFIA program is designed to accelerate investment in drinking water and wastewater infrastructure by providing long-term, low-cost credit assistance to creditworthy prospective borrowers for up to 49 percent of eligible project costs. Eligible WIFIA prospective borrowers are: corporations; partnerships; joint ventures; trusts; federal, state, or local government entity, agency, or instrumentality; tribal governments or consortium of tribal governments; and state infrastructure financing authorities.

### 1.4.1 ELIGIBILITY REQUIREMENTS

For a project to be eligible for WIFIA credit assistance, the project's eligible costs must be reasonably anticipated to be at least \$20 million. This threshold is lower for projects serving small communities. Small community projects must be reasonably anticipated to total at least \$5 million. Projects in small communities are defined as State Revolving Fund (SRF)-eligible drinking and wastewater projects that serve a population of 25,000 or less.

The total amount of federal assistance (i.e., WIFIA and other sources) may not exceed 80 percent of a project's cost. Projects carried out by private entities must be publicly sponsored. To meet this

requirement, the prospective borrower must demonstrate to EPA that the affected state, tribal, or local government supports the project.

The WIFIA program can provide credit assistance to development and implementation activities for eligible projects:

1. Wastewater projects that are eligible for the Clean Water SRF as described under section 603 of the Federal Water Pollution Control Act,<sup>11</sup> notwithstanding the public ownership requirement under paragraph (1) of that subsection. The Clean Water State Revolving Fund website provides additional eligibility information for this project type.
2. Drinking water projects that are eligible for the Drinking Water SRF as described in section 1452(a)(2) of the Safe Drinking Water Act.<sup>12</sup> The Drinking Water State Revolving Fund website provides additional eligibility information for this project type.
3. Projects that enhance energy efficiency in the operation of a public water system or a publicly owned treatment works.
4. Projects for repair, rehabilitation, or replacement of a treatment works, community water system, or aging water distribution or waste collection facility (including a facility that serves a population or community of an Indian reservation).
5. A brackish or sea water desalination project, including chloride control, a managed aquifer recharge project, a water recycling project, or a project to provide alternative water supplies to reduce aquifer depletion.
6. A project to prevent, reduce, or mitigate the effects of drought, including projects that enhance the resilience of drought-stricken watersheds.
7. The acquisition of real property or an interest in real property. The acquisition must either be integral to an eligible project described above, or would mitigate the environmental impacts of water resources infrastructure projects otherwise eligible for WIFIA assistance, as determined by the Administrator.
8. A combination of eligible wastewater or drinking water projects, as defined in the first and second bullet above, for which a SRF program submits a single application.
9. A combination of eligible projects, described in paragraphs 1-7 above, secured by a common security pledge, for which a single eligible entity, or a combination of eligible entities, submits a single application.

Eligible development and implementation activities are:

- Development phase activities, including planning, preliminary engineering, design, environmental review, revenue forecasting, and other pre-construction activities.
- Construction, reconstruction, rehabilitation, and replacement activities.
- Acquisition of real property or an interest in real property, environmental mitigation, construction contingencies, and acquisition of equipment.
- Capitalized interest necessary to meet market requirements, reasonably required reserve funds, capital issuance expenses and other carrying costs during construction.

### 1.4.2 APPLICATION PROCESS OVERVIEW

To receive WIFIA credit assistance, a prospective borrower must submit a letter of interest that demonstrates to EPA its project's eligibility, financial creditworthiness, engineering feasibility, and alignment with EPA's mission and policy priorities. EPA will evaluate all the letters of interest it receives and select projects following the process outlined in the Notice of Funding Availability (NOFA)<sup>1</sup> for the selection round. For selected projects, prospective borrowers will be invited to submit an application to EPA. The purpose of the application is to provide EPA with materials necessary to underwrite the proposed WIFIA assistance; to develop, through negotiation, individual credit agreements between the prospective borrower and EPA; and to allow for a technical and environmental compliance evaluation of the project. The Administrator demonstrates project approval by executing the project's term sheet. Based on the term sheet, the WIFIA program finalizes the terms of credit assistance to a prospective borrower. At closing, the Administrator and the prospective borrower execute the credit agreement, which is the binding legal document that allows the prospective borrower to receive WIFIA credit assistance.

### 1.4.3 WIFIA SELECTION CRITERIA

To evaluate the project's alignment with EPA's policy priorities and mission, the WIFIA program is required by statute to evaluate projects using selection criteria. The statute, at 33 U.S.C. § 3907(b)(2), establishes eleven criteria.

1. The extent to which the project is nationally or regionally significant, with respect to the generation of economic and public benefits, such as (1) the reduction of flood risk; (2) the improvement of water quality and quantity, including aquifer recharge; (3) the protection of drinking water, including source water protection; and (4) the support of international commerce.
2. The likelihood that assistance under this subtitle would enable the project to proceed at an earlier date than the project would otherwise be able to proceed;
3. The extent to which the project uses new or innovative approaches.
4. The extent to which the project (1) protects against extreme weather events, such as floods or hurricanes; or (2) helps maintain or protect the environment.
5. The extent to which a project serves regions with significant energy exploration, development, or production areas.
6. The extent to which a project serves regions with significant water resource challenges, including the need to address (1) water quality concerns in areas of regional, national, or international significance; (2) water quantity concerns related to groundwater, surface water, or other water sources; (3) significant flood risk; (4) water resource challenges identified in existing regional, State, or multistate agreements; and (5) water resources with exceptional recreational value or ecological importance.

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<sup>1</sup>In the first selection round, EPA made available \$17 million of budget authority appropriated for the WIFIA program to provide credit assistance. This \$17 million in Federal funding can help finance total project costs of more than \$2 billion. (82 FR 2933). On April 4, 2018 EPA announced availability of funding that could provide as much as \$5.5 billion in loans, which could leverage over \$11 billion in water infrastructure projects through the WIFIA program.

7. The extent to which the project addresses identified municipal, State, or regional priorities.
8. The readiness of the project to proceed toward development, including a demonstration by the obligor [prospective borrower] that there is a reasonable expectation that the contracting process for construction of the project can commence by not later than 90 days after the date on which a Federal credit instrument is obligated for the project under this subtitle.
9. The extent to which the project financing plan includes public or private financing in addition to assistance under this subtitle.
10. The extent to which assistance under this subtitle reduces the contribution of Federal assistance to the project.
11. The amount of budget authority required to fund the Federal credit instrument made available under [WIFIA].

EPA, via regulation, added two additional criteria.

1. The extent to which the project addresses needs for repair, rehabilitation or replacement of a treatment works, community water system, or aging water distribution or wastewater collection system; and
2. The extent to which the project serves economically stressed communities, or pockets of economically stressed rate payers within otherwise non-economically stressed communities.<sup>2</sup>

EPA may add additional criterion in its NOFA.

## 1.5 COMPLIANCE REQUIREMENTS FOR WIFIA

EPA must ensure that projects receiving WIFIA credit assistance comply with all applicable federal laws and regulations, including the National Historic Preservation Act, Endangered Species Act, and Clean Water Act section 404 permitting requirements. EPA is also guided by Executive Orders (EOs), including floodplain avoidance and mitigation directives. Many of these authorities are addressed in various sections throughout this PEA when relevant to particular environmental or cultural resources and conditions. The WIFIA program and this PEA intend to utilize documents developed and consultations undertaken to comply with these requirements and consider them in the NEPA environmental review process for WIFIA credit assistance.

Table 1-1 below lists environmental and cultural resource compliance requirements potentially applicable to WIFIA credit assistance projects in addition to NEPA. This list is not intended to be comprehensive and does not include all cross-cutting federal laws (“cross-cutters”) that might be applicable to a specific project, but represents commonly encountered cross-cutters.<sup>3</sup>

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<sup>2</sup> 40 CFR § 35.10055(a).

<sup>3</sup> Executive Orders potentially relevant to the project analysis are available on CEQ’s website at [https://ceq.doe.gov/laws-regulations/executive\\_orders.html](https://ceq.doe.gov/laws-regulations/executive_orders.html). The full text of many of these laws, regulations, and Executive Orders is available in various online locations, including at <https://www.gpo.gov/fdsys/>.

TABLE 1-1 POSSIBLE COMPLIANCE REQUIREMENTS AND ADDITIONAL INFORMATION

POSSIBLE COMPLIANCE REQUIREMENTS	ADDITIONAL INFORMATION
Archeological and Historic Preservation Act, 16 U.S.C. 469-469c	<a href="https://www.nps.gov/archeology/tools/laws/ahpa.htm">https://www.nps.gov/archeology/tools/laws/ahpa.htm</a>
Native American Graves Protection and Repatriation Act, 25 U.S.C. § 3001 et seq.	<a href="https://www.nps.gov/nagpra/">https://www.nps.gov/nagpra/</a>
National Historic Preservation Act, 16 U.S.C. 470 et seq.	<a href="https://www.nps.gov/archeology/tools/laws/NHPA.htm">https://www.nps.gov/archeology/tools/laws/NHPA.htm</a>
Executive Order 11988, Floodplain Management, 42 FR 26951	<a href="https://www.archives.gov/federal-register/codification/executive-order/11988.html">https://www.archives.gov/federal-register/codification/executive-order/11988.html</a>
Clean Air Act, 42 U.S.C. 7401 et seq.,	<a href="https://www.epa.gov/clean-air-act-overview">https://www.epa.gov/clean-air-act-overview</a>
Clean Water Act, 33 U.S.C. 1251 et seq.	<a href="https://www.epa.gov/laws-regulations/summary-clean-water-act">https://www.epa.gov/laws-regulations/summary-clean-water-act</a>
Rivers and Harbors Act, 33 U.S.C. 403	<a href="http://www.sam.usace.army.mil/Missions/Regulatory/RegulatoryFAQ/RiversandHarborsAppropriationActof1899.aspx">http://www.sam.usace.army.mil/Missions/Regulatory/RegulatoryFAQ/RiversandHarborsAppropriationActof1899.aspx</a>
Coastal Barrier Resources Act, 16 U.S.C. 3501 et seq.	<a href="https://www.fws.gov/ecological-services/habitat-conservation/cbra/Act/index.html">https://www.fws.gov/ecological-services/habitat-conservation/cbra/Act/index.html</a>
Coastal Zone Management Act, 16 U.S.C. 1451 et seq.	<a href="https://coast.noaa.gov/czm/about">https://coast.noaa.gov/czm/about</a>
Executive Order 11990, Protection of Wetlands, 42 FR 26961, as amended by Executive Order 12608, 52 FR 34617	<a href="https://www.epa.gov/cwa-404;">https://www.epa.gov/cwa-404;</a>
Bald and Golden Eagle Protection Act, 16 U.S.C. §§ 668-668c	<a href="http://www.fws.gov/midwest/midwestbird/EaglePermits/bagepa.html">www.fws.gov/midwest/midwestbird/EaglePermits/bagepa.html</a>
Endangered Species Act, 16 U.S.C. 1531 et seq.	<a href="https://www.fws.gov/endangered/">https://www.fws.gov/endangered/</a>
Fish and Wildlife Coordination Act, 16 U.S.C. 661-666c, as amended	<a href="https://www.fws.gov/laws/lawsdigest/fwcoord.html">https://www.fws.gov/laws/lawsdigest/fwcoord.html</a>
Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. 1801 et seq.	<a href="http://www.nmfs.noaa.gov/sfa/laws_policies/msa/">http://www.nmfs.noaa.gov/sfa/laws_policies/msa/</a>
Marine Mammal Protection Act, 16 U.S.C. §§ 1361-1407	<a href="http://www.nmfs.noaa.gov/pr/laws/mmpa/">http://www.nmfs.noaa.gov/pr/laws/mmpa/</a>
Migratory Bird Treaty Act, 16 U.S.C. §§ 703-712	<a href="https://www.fws.gov/birds/policies-and-regulations/laws-legislations/migratory-bird-treaty-act.php">https://www.fws.gov/birds/policies-and-regulations/laws-legislations/migratory-bird-treaty-act.php</a>
Safe Drinking Water Act, 42 U.S.C. 300f et seq.	<a href="https://www.epa.gov/ground-water-and-drinking-water">https://www.epa.gov/ground-water-and-drinking-water</a>
Farmland Protection Policy Act, 7 U.S.C. 4201 et seq.	<a href="https://www.nrcs.usda.gov/wps/portal/nrcs/detail/?cid=nrcs143_008275">https://www.nrcs.usda.gov/wps/portal/nrcs/detail/?cid=nrcs143_008275</a>
Wild and Scenic Rivers Act, 16 U.S.C. 1271 et seq.	<a href="https://rivers.gov/">https://rivers.gov/</a>
Wilderness Act, 16 U.S.C. § 1131 et seq.	<a href="https://wilderness.nps.gov/faqnew.cfm">https://wilderness.nps.gov/faqnew.cfm</a>
EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 59 FR 7629	<a href="https://www.archives.gov/files/federal-register/executive-orders/pdf/12898.pdf">https://www.archives.gov/files/federal-register/executive-orders/pdf/12898.pdf</a>

EO 13045, Protection of Children from  
Environmental Health Risks and Safety Risks, 62 FR  
19885

<https://www.epa.gov/children>

## 1.6 PUBLIC INVOLVEMENT

EPA published a Notice of Intent to prepare this PEA for the WIFIA program on September 20, 2017 (82 FR 43964) and solicited comments for 30 days. The notice initiated the scoping process by inviting comments from federal, state, and local agencies, Indian tribes, and the public to help identify the environmental issues and reasonable alternatives to be examined in the PEA. Three public comments were received; comments included no substantive recommendations.

EPA invites public, agency, and Tribal participation in the NEPA process. Consideration of the views and information of all interested persons promotes open communication and enables better decision-making. All agencies, organizations, and members of the public having a potential interest in the proposed action are urged to provide input on the PEA and future project-specific NEPA processes.

This PEA and preliminary FONSI are available for a 30-day public review and comment period starting on the day the associated Notice of Availability is published in the Federal Register. Comments submitted within the 30-day public comment period will be made part of the Administrative Record. EPA will consider and respond to any substantive comments received before finalizing the PEA and preliminary FONSI. An electronic copy of this document is available for download from EPA's NEPA Compliance Database at <https://cdxnodengn.epa.gov/cdx-enepa-public/action/nepa/search> and the WIFIA program website at <https://www.epa.gov/wifia>.

Comments can be submitted, identified by Docket ID No. EPA–HQ–OW–2018–0079, to the Federal eRulemaking Portal: <https://www.regulations.gov/>. Please follow the online instructions for submitting comments. For additional submission methods, the full EPA public comment policy, information about Confidential Business Information or multimedia submissions, and general guidance on making effective comments, please visit <https://www.epa.gov/dockets/commenting-epa-dockets>. Additionally, questions on this EA can be directed to Mr. Alejandro Escobar by email at [wifia@epa.gov](mailto:wifia@epa.gov).

# SECTION 2

## 2.0 PROPOSED ACTION

### 2.1 PROPOSED FEDERAL ACTION

The proposed federal action under consideration in this PEA is approving or denying WIFIA applications by either issuing or not issuing WIFIA credit assistance. Therefore, EPA's proposed action evaluated in this PEA is the issuance of credit assistance under the WIFIA program, not the actual projects for which the credit assistance applications are submitted. However, in the process of evaluating the environmental impacts of the proposed action, EPA considers the impacts likely to result from the issuance of credit assistance, including the reasonably foreseeable impacts of providing credit assistance to water infrastructure projects. The proposed action supports activities associated with the planning, design, construction, operation, and maintenance of one or several types of eligible water and wastewater infrastructure projects defined in 33 U.S.C. § 3905.

The proposed action supports providing credit assistance for a wide range of water and wastewater infrastructure projects which are eligible for WIFIA credit assistance. 33 U.S.C. § 3905 defines projects eligible for assistance. Examples of eligible projects are presented in Section 3.2.3. To be eligible, a project must fall under one of the following categories:

- **Wastewater Projects that are eligible for the CWSRF** as described under section 603(c) of the Federal Water Pollution Control Act (33 U.S.C. 1383(c)) notwithstanding the public ownership requirement under paragraph (1) of that subsection. The CWSRF website (<https://www.epa.gov/cwsrf>) provides additional eligibility information for this project type.
- **Drinking water projects that are eligible for the DWSRF** as described in section 1452(a)(2) of the Safe Drinking Water Act (42 U.S.C. 300j-12(a)(2)). The DWSRF website (<https://www.epa.gov/drinkingwatersrf>) provides additional eligibility information for this project type.
- **Projects that enhance energy efficiency** in the operation of a public water system or a publicly owned treatment works.
- **Projects for repair, rehabilitation, or replacement** of a treatment works, community water system, or aging water distribution or waste collection facility (including a facility that serves a population or community of an Indian reservation).
- **Brackish or sea water desalination projects**, including chloride control, a managed aquifer recharge project, a water recycling project, or a project to provide alternative water supplies to reduce aquifer depletion.
- **A project to prevent, reduce, or mitigate the effects of drought**, including projects that enhance the resilience of drought-stricken watersheds.
- **The acquisition of real property or an interest in real property**. The acquisition must either be integral to an eligible project described above, or would mitigate the environmental impacts of water resources infrastructure projects otherwise eligible for WIFIA assistance, as determined by the Administrator.

- **A combination of eligible wastewater or drinking water projects**, as defined in the first and second bullet above, for which a state infrastructure financing authority submits a single application.
- **A combination of eligible projects**, described in the first seven bullets above, secured by a common security pledge, for which a single eligible entity, or a combination of eligible entities, submits a single application.

WIFIA credit assistance projects qualify for coverage under this PEA when:

- The impacts from their projects are within the scope of those considered in Section 4 of this PEA,
- Proper supporting documentation is provided, and
- A memorandum to the record is developed by EPA using the PEA Questionnaire for WIFIA Credit Assistance Projects in Appendix A or Questionnaire for WIFIA Credit Assistance SRF Programs in Appendix B.

## 2.2 PURPOSE AND NEED

The purpose of the of the proposed action is to support the WIFIA program's mission to accelerate investment in our nation's water and wastewater infrastructure by providing long-term, low-cost supplemental credit assistance under customized terms to creditworthy water and wastewater projects of national and regional significance. WIFIA works separately from, but in some instances in coordination with, the State Revolving Fund (SRF Loan Programs to provide subsidized financing for large dollar-value projects).

The proposed action is needed to:

- Assist communities facing challenges in providing adequate and reliable water infrastructure services by financing capital improvements;
- Provide a financing mechanism that allows long-term debt to be spread out over the useful life of projects while retaining affordability of user rates; and
- Provide credit assistance benefits not readily available in capital markets.

### **Assist Communities by Financing Capital Improvements**

The proposed action is needed to assist the financing of capital improvements to water infrastructure, which EPA estimates will total approximately \$743 billion over the next 20 years. In many cases, meeting these needs will require significant increases in capital investment.

EPA's 2012 Clean Watersheds Needs Survey (CWNS) estimated that the total capital wastewater and stormwater treatment and collection needs for the nation are \$271 billion as of January 2012 (U.S. Environmental Protection Agency 2016). The CWNS does not represent all needs for the 20-year period from January 2012 through December 2031. Because states often do not have documentation that demonstrates needs that far into the future, nearly all needs included in the CWNS are for projects that will be completed within 5 years (i.e., 2012-2017) and are documented in capital improvement plans and other short-term planning documents. For these and other reasons, actual 20 year needs are likely to be significantly higher.

EPA's 2015 Drinking Water Infrastructure Needs Survey estimates a total capital drinking water infrastructure need of \$472.6 billion for the 20-year period from January 2015 through December 2034 (U.S Environmental Protection Agency 2018). This estimate includes needs for American Indian and Alaska Native Village systems.

### **Provide Financing Mechanism to Spread Out Long-term Debt**

The proposed action is needed to provide a financing mechanism to assist prospective borrowers in financing capital projects by allowing long-term debt to spread the cost of such projects over the useful life of the new assets while retaining the affordability of user rates. Eligible water infrastructure capital projects have typically been funded with pay-as-you-go cash funds, debt financed through the municipal bond market, or supported through the CWSRF and DWSRF programs and/or a combination of these sources of capital. In the United States, localities are primarily responsible for providing water infrastructure services and funding these services through user fees. A highly efficient capital structure that minimizes the financial impact on system users can result from the combined use of several financing tools and techniques. WIFIA will assist in delivering on these needs in the water sector. EPA is also in a position to promote the use of public-private partnerships in this area by reducing the cost of private participation.

### **Provide Credit Assistance**

The proposed action is needed to provide credit assistance benefits that are not readily available in the capital markets. The WIFIA program acts as a patient investor and offers credit assistance with extended maturities due to the federal government's long-term investment horizon. Additionally, prospective borrowers may develop customized terms, including sculpted repayment terms to match the specific needs of a project. Finally, the WIFIA program lends at a low, fixed interest rate equal to the Treasury rate for a comparable maturity.

EPA recognizes the importance of capital markets in advancing the development and improvement of water and wastewater infrastructure throughout the nation. The WIFIA program is intended to complement existing funding resources rather than supplant them. Therefore, all projects that receive WIFIA credit assistance must be co-financed with other sources of funding, including tax-exempt or taxable bonds, loans, grants, and equity.

# SECTION 3

## 3.0 ALTERNATIVES

This section describes the alternatives to address the project purpose and need. As part of the NEPA process, the No Action Alternative and reasonable action alternatives to the proposed action must be considered. Reasonable alternatives include those that are practical or feasible from a technical and economic standpoint and support the underlying purpose and need for the proposed action. EPA identified two alternatives to evaluate—do not provide financing (the No Action Alternative in section 3.1 below) and provide financing to individual selected perspective borrowers (the Proposed Action Alternative in section 3.2 below). It is important to note that beyond these two alternatives, prior to inviting prospective borrowers to apply for WIFIA credit assistance, prospective borrowers were selected by applying the WIFIA screening criteria discussed in Section 1.4.3. These criteria largely ensure the positive environmental and human health benefits of the selected projects.

### 3.1 NO ACTION ALTERNATIVE

EPA has included a No Action Alternative to evaluate the potential impacts of not providing credit assistance to eligible projects and to provide a benchmark against which the proposed action is evaluated. Under the No Action Alternative, EPA would not provide financing for eligible projects.

The selection of the No Action Alternative does not prevent prospective borrowers from obtaining other financing sources. However, for purposes of this analysis, it is assumed that the proposed project would not be implemented by the state, territory, local, Tribal government, or private entity in the absence of WIFIA credit assistance. Under the No Action Alternative analysis, there would be no changes to existing conditions. For purposes of the analysis, it is assumed that for existing facilities, operations would continue as they were; for new facilities, construction would not move forward.

### 3.2 PROPOSED ACTION ALTERNATIVE

There is only one alternative to the No Action Alternative, which is referred to as the Proposed Action Alternative. Under the Proposed Action Alternative, EPA would provide credit assistance to water infrastructure projects, after a review and evaluation of each credit assistance application, and all other required documents. To be considered a viable project carried forward for analysis in this PEA, the project must have been invited to apply for WIFIA credit assistance. An individual credit assistance application could include one, all, or a combination of the project types. Individual project types are not competing alternatives but, instead, are possible methods to implement the proposed action.

Water infrastructure project types have been grouped based on similar project characteristics when evaluating the environmental consequences for this alternative. Project types have been grouped by linear assets, vertical assets, and other projects. All project types can occur on a previously developed site, including within an existing facility footprint or on a developed site outside of an existing facility, or on a previously undeveloped site. Work can occur on existing linear and vertical assets as well as to new, expanded, or relocated assets. Example projects can be found in Section 3.3.

**Linear Project Types:** include wastewater collection, drinking water transmission and distribution, valves, meters, fire hydrants, manholes, catch basins, outfalls, etc.

**Vertical Project Types:** include centralized wastewater and drinking water treatment plants, wet-weather treatment facilities (e.g., combined sewer overflow (CSO) treatment), desalination and reverse osmosis (RO) plants, pump stations, wells, and other above ground facilities.

**Other Eligible Project Types:** include, but are not limited to, watershed-wide improvements, estuary programs, nonpoint source reduction projects, implementation of centralized wastewater treatment, or other projects that might be implemented over a wider project geography. Other projects also include financing of area-wide (e.g., city, state) programs that develop or on-lend to individual projects that would individually qualify for consideration in any of the project types.

### 3.3 EXAMPLE PROJECT DESCRIPTIONS

This section of the PEA includes examples and descriptions for typical projects the WIFIA program expects to finance. These are provided for illustrative purposes only to allow the public to better understand the scope of project types that would be considered under the PEA. These examples are not meant to be exhaustive of all types of WIFIA eligible projects. The below examples can be generally, albeit not exclusively, categorized as linear (L) or vertical (V) assets as indicated next to the example name in parenthesis.

**Wastewater Treatment (V):** The treatment of domestic sewage and wastewater is vital to public health and clean water. It is among the most important factors responsible for the general level of good health enjoyed in the United States. Sewers collect sewage and wastewater from homes, businesses, and industries and deliver it to wastewater treatment facilities before it is discharged to water bodies or land, or reused. Projects could include construction of new facilities or portions of facilities, or upgrades, rehabilitation or replacement of facilities or portions of facilities, including headworks, screening systems, grit chambers, clarifiers, biological treatment systems, biosolids dewatering and residuals handling equipment, nutrient removal processes, filtration systems, disinfection processes, reverse osmosis, ozone treatment, UV treatment, and other components.

There are many situations that require projects within wastewater treatment plants. In many cases, they are part of regular asset management and replacement plans. However, it is most common to see these projects in response to the need to increase the capacity or level of treatment of the plant, increase efficiency, meet more stringent permit requirements and Total Maximum Daily Loads (TMDLs), or replace existing assets that are beyond their useful life (U.S. Environmental Protection Agency 2016).

**Water Treatment (V):** The United States enjoys one of the world's most reliable and safest supplies of drinking water. Drinking water sources are subject to contamination and require appropriate treatment to remove contaminants and disease-causing agents. Public drinking water systems use various methods of water treatment to provide safe drinking water for their communities. Water could be treated differently in different communities depending on the quality of the water that enters the treatment plant. Typically, surface water requires more treatment and filtration than ground water because lakes, rivers, and streams contain more sediment and pollutants and are more likely to be contaminated than ground water.

Based on the most common steps in water treatment used by community water systems, the projects can include construction of new facilities or portions of facilities, or upgrades, rehabilitation or replacement of facilities or portions of facilities, including surface water intake structures, wells, mixers, flocculation/sedimentation structures, filters, chemical addition systems and equipment, disinfection, filter backwash recycling, residuals handling, on-site generation of disinfectants.

**Wastewater Collection (L):** Historically, municipalities have used two major types of sewer systems: Combined Sewer Systems (CSS) and Separate Sanitary Sewers. Combined sewers are designed to collect both sanitary sewage and stormwater runoff in a single-pipe system. These systems were designed to convey sewage and wastewater to a treatment plant during dry weather. Under wet weather conditions, these combined sewer systems would overflow during wet weather conditions when large amounts of stormwater would enter the system. State and local authorities generally have not allowed the construction of new combined sewers since the first half of the 20th century.

The other major type of domestic sewer design is sanitary sewers (also known as separate sanitary sewers). Sanitary sewers are installed to collect wastewater only and do not provide widespread drainage for the large amounts of runoff from precipitation events. Sanitary sewers are typically built with some allowance for higher flows that occur when excess water enters the collection system during storm events. Sanitary sewers that are not watertight due to cracks, faulty seals, and/or improper connections can receive large amounts of infiltration and inflow (I/I) during wet weather. Large volumes of I/I can cause sanitary sewer overflows and/or operational problems at the wastewater treatment facility serving the collection system. In addition, sewage overflows can be caused by other problems such as blockages, equipment failures, broken pipes, or vandalism.

WIFIA projects related to wastewater collection system could include the installation, construction or extension, or the rehabilitation or replacement of sanitary and combined collection and conveyance systems. These projects generally include pipes, pump stations, force mains, and associated appurtenances.

**Water Transmission and Distribution (L):** Although the least visible component of a public water system, the buried pipes of a transmission and distribution network generally account for most of a system's capital value. Even small rural systems could have several hundred miles of pipe.

Projects to install, construct or extend new water transmission and distribution infrastructure are typically driven by a need to serve existing residents not served by a safe supply and to provide potable water while preventing contamination of the water prior to delivery. Other projects in the transmission and distribution system are: installing new pipe to loop dead end mains to avoid stagnant water, installing water mains in areas where existing homes do not have a safe and adequate water supply, and installing or rehabilitating pumping stations to maintain adequate pressure. WIFIA credit assistance might include projects to address the replacement of appurtenances, such as valves that are essential for controlling flows and isolating problem areas during repairs, hydrants to flush the distribution system to maintain water quality, backflow-prevention devices to avoid contamination, and meters to record flow and water consumption.

**CSO Correction and Control (L, V):** A CSS collects rainwater runoff, domestic sewage, and industrial wastewater into one pipe. Under normal conditions, it transports all of the wastewater it collects to a sewage treatment plant for treatment, then discharges to a water body. The volume of wastewater can

sometimes exceed the capacity of the CSS or treatment plant (e.g., during heavy rainfall events or snowmelt). When this occurs, untreated stormwater and wastewater, discharges directly to nearby streams, rivers, and other water bodies. CSOs contain untreated or partially treated human and industrial waste, toxic materials, and debris as well as stormwater. They are a priority water pollution concern for the nearly 860 municipalities across the United States. that have CSSs.

Many communities that have CSSs are undertaking projects to correct and control CSOs, such as the installation of separate sanitary and storm sewers (e.g., sewer separation); downspout disconnection, or wet weather treatment stations. In most cases, the projects are included in the community's Long Term Control Plan, which describes the development and selection of a plan for controlling combined sewer overflows and is developed taking into consideration regulatory agency comments, public comments, and water quality standard, TMDL requirements, and other regulatory requirements. In addition, many CSO projects requiring financing are mandated by compliance orders, permit compliance schedules, consent decrees, or other enforcement mechanisms.

**Resilience for Water and Wastewater Infrastructure (V):** The increased incidence of extreme weather can threaten the integrity of critical water and wastewater infrastructure. EPA recognizes that today's infrastructure challenges include not only repair, upgrades, and replacement, but ensuring that infrastructure assets are resilient to extreme weather. WIFIA can provide credit assistance to a wide range of activities that can make water and wastewater assets more resilient to extreme weather. Some examples are relocation/elevation of certain assets or an entire facility above current/projected flood stage; installation of flood attenuation, diversion, or retention infrastructure within or beyond the footprint of a treatment works that protects the treatment works including floodwater channels/culverts, green infrastructure, low impact development (LID) and natural systems capable of mitigating a storm surge (e.g., barrier beach and dune systems, tidal wetlands, and living shorelines); saltwater resistant equipment/components; backup generators and fuel transport and storage tanks; floodwater pumping systems; elevated walls/caps for treatment tanks; and overflow tanks/tunnels.

**Security for Treatment Works (V):** Water and wastewater systems take actions to increase security and reduce threats and guard against unplanned physical intrusion. These can include fencing, security cameras, security lighting, motion detectors.

**Water Conservation (L, V):** Water conservation projects are those that reduce the demand for Publicly Owned Treatment Works (POTW) capacity through reduced water consumption (e.g., water efficiency). Water efficiency projects include work related to water meters, plumbing fixture retrofits or replacement, water efficient appliances, and water efficient irrigation equipment (e.g., moisture and rain sensing equipment).

Water reuse and precipitation harvesting are also water conservation projects eligible for credit assistance. These projects, could include collection and treatment systems (e.g., wastewater, stormwater, and subsurface drainage water collection and treatment); distribution lines to support water reuse (purple pipes) and the use of harvested precipitation; transmission lines, injection wells, and green infrastructure, including LID, infiltration systems for groundwater recharge; equipment to reuse reclaimed water; and direct potable reuse projects.

**Stormwater (L, V):** Stormwater runoff is generated from rain and snowmelt events that flow over land or impervious surfaces, such as paved streets, parking lots, and building rooftops, and does not soak into

the ground. The runoff picks up pollutants like trash, chemicals, oils, and dirt/sediment that can harm our rivers, streams, lakes, and coastal waters. To protect these resources, communities, construction companies, industries, and others, use stormwater controls, known as best management practices (BMPs) and gray and green infrastructure. These BMPs filter out pollutants and/or prevent pollution by controlling it at its source.

Gray Infrastructure projects include traditional pipe, storage, and treatment systems; real-time control systems for CSO management; sediment controls including: Filter fences, Storm drain inlet protection. Green Infrastructure and LID projects include green roofs, green streets, and green walls; rainwater harvesting collection, storage, management, and distribution systems; real-time control systems for harvested rainwater; infiltration basins; constructed wetlands, including surface flow and subsurface flow (e.g., gravel) wetlands; bioretention/bioswales (e.g., rain gardens, tree boxes); permeable pavement; wetland/riparian/shoreline creation, protection, and restoration; establishment/restoration of urban tree canopy; and replacement of gray infrastructure with green infrastructure including purchase and demolition costs.

**Decentralized Wastewater Treatment (L):** Decentralized wastewater treatment is an onsite or clustered system used to collect, treat, and disperse or reclaim wastewater from a small community or service area (e.g., septic systems, cluster systems, lagoons). Eligible decentralized wastewater treatment projects include the upgrade (e.g., nutrient removal), repair, or replacement of existing systems; construction/installation of new systems.

**Desalination and Reverse Osmosis (V):** Desalination and RO projects include advance systems to treat wastewater and ocean and brackish water for a variety of uses, including augmentation water supply and aquifer recharge. There are two categories of widely used desalination plant intake source water collection: open intakes and subsurface intakes (wells and infiltration galleries). Open intakes collect seawater directly from the ocean via on-shore or off-shore inlet structure and pipeline interconnecting this structure to the desalination plant. Subsurface intakes, such as vertical beach wells, horizontal wells, slant wells and infiltration galleries, tap into the saline or brackish coastal aquifer and/or the off-shore aquifer under the ocean floor (WaterReuse Association 2011) . These advanced treatment plants might require treatment, disposal, and reinjection of brine and brackish water.

**Groundwater Protection and Restoration (V):** Groundwater projects include those that protect and restore aquifers. This includes pump and treat projects, aquifer recharge projects, and projects that decrease aquifer withdrawals through rainwater harvesting, water conservation, or water reuse. Other projects that protect groundwater include leachate control and septic system replacement.

**Green Infrastructure and Low Impact Development (L, V):** Green infrastructure and LID is a cost-effective, resilient approach to managing wet weather impacts that provides many community benefits. While single-purpose gray stormwater infrastructure—conventional piped drainage and water treatment systems—is designed to move urban stormwater away from the built environment, green infrastructure reduces and treats stormwater at its source while delivering environmental, social, and economic benefits. Green infrastructure uses vegetation, soils, and other elements and practices to restore some of the natural processes required to manage water and create healthier urban environments. Some examples of the practices that are considered green infrastructure are: rain gardens, planter boxes, bioswales, permeable pavements, green streets and alleys, green parking, and green roofs.

**Habitat Protection and Restoration (L, V):** Eligible habitat protection and restoration projects include shoreline activities, instream activities, and capital costs associated with the control of invasive vegetative and aquatic species. The purchase of water rights to support fish and aquatic life habitat is also eligible.

**Agricultural Best Management Practices (L, V):** Eligible agricultural BMPs address runoff and erosion from agricultural cropland and animal feeding operations (AFOs). Cropland activities include BMPs such as water efficient irrigation equipment, windbreaks, sediment control basins, buffer and filter strips, rip-rapping, streambank stabilization, and chemical use reduction. AFO BMPs examples include well sealing and water diversions to avoid feedlots and fencing/alternative water supply for animals to keep them out of water bodies.

**On-Lending Programs (L, V):** The WIFIA program is authorized to provide credit assistance to state financing authorities (e.g., SRFs) that on-lend to eligible projects such as the ones described above.

# SECTION 4

## 4.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter of the PEA evaluates the potential environmental effects of the alternatives being considered and incorporates provisions for project-level reviews to determine if any site-specific issues warrant further consideration or analyses. This chapter presents nationwide information on existing environmental conditions and discusses potential impacts and mitigation measures that may be available and relevant to construction and operation of projects. This PEA defines “effect” as a noticeable change caused by a project that may receive WIFIA credit assistance to a resource from the existing environmental baseline conditions. Such change can be negative, neutral, or beneficial. The degree of change is estimated by measuring the difference between the baseline conditions and the conditions that result from the construction or operation of a project following the assessed action. As stated in 40 CFR § 1508.8, effects include direct effects and indirect effects. The terms “effect” and “impact” are used interchangeably in this document.

Indirect effects are defined as “effects which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects might include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems” (40 CFR 1508.8(b)).

Once an effect is identified, a determination is made whether an impact is significant. “Significance” under NEPA involves consideration of both the context and intensity of the impact evaluated (40 CFR § 1508.27). Context varies with the setting of the proposed project, and can include consideration of effects across both time (short vs. long-term effects) and space (local vs. regional scale). Under CEQ and EPA regulations, the purpose of an EA is to determine whether a proposed action has potentially significant impacts, thus triggering preparation of a detailed EIS. Accordingly, this section describes the intensity of an impact as no impact, no significant impact (also referred to as less than significant impact), or significant impact.

This chapter presents nationwide information on existing conditions and discusses potential impacts and mitigation measures that may be practicable and appropriate for project siting, design, construction, or operation. It is important to note that the implementation of the proposed action of issuing WIFIA credit assistance to prospective borrowers has no direct environmental effects at the time and place of credit assistance issuance. The impacts described in this chapter can be considered indirect effects of the proposed action, but the chapter also describes project level direct effects associated with the implementation of individual projects which are eligible for WIFIA credit assistance but implemented by the prospective borrower. The WIFIA Program will use the frameworks in Appendices A and B to evaluate issues specific to individual projects and site-specific impacts. That evaluation will utilize information from prospective borrowers, additional existing reports and environmental analysis not limited to EPA tools like NEPAAssist or EJScreen, and input from relevant agencies and experts, and other

relevant sources. Additionally, the terms and conditions for WIFIA assistance will require compliance with applicable laws, permits, and ordinances.

## 4.1 LAND USE

### 4.1.1 DEFINITION OF THE RESOURCE

Land use is the way in which, and the purposes for which, people utilize the land and its resources. General land use patterns characterize the types of uses within a particular area and can include agricultural, residential, commercial, industrial, scenic, natural, and recreational. Land ownership is a categorization of land according to type of owner. There can be various owners of land in the U.S. including federal, tribal, state, or local governments, private organizations or individuals.

Land use planning varies depending on land ownership and jurisdictional boundaries. Land use is generally guided by comprehensive plans that specify the allowable types and locations of present and future land use. In most cases, that comprehensive plan is developed through a public participation process and approved by publicly-elected officials to capture local values and attitudes toward planning and future development. Zoning ordinances and regulations vary throughout the U.S. and are primarily set at the state, regional, tribal, city, county, or local level.

Some WIFIA-credit assistance projects might occur on federally-managed land, such as Bureau of Land Management (BLM) or U.S. Forest Service land. Land use planning in these federally-managed lands does not undergo the same type of planning process as land under the ownership of private and municipal entities. Most Federal land planning activities are under the discretion of the managing agency, which has its own criteria for use, development procedures, and public involvement.

### 4.1.2 POTENTIALLY APPLICABLE STATUTES AND REGULATIONS

#### 4.1.2.1 Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) of 1972 (16 U.S.C. § 1451 et seq.) is administered by the Department of Commerce's Office of Ocean and Coastal Resource Management within the National Oceanic and Atmospheric Administration (NOAA). CZMA is addressed in Section 4.5.

#### 4.1.2.2 Coastal Barrier Resources Act

The Coastal Barrier Resources Act (CBRA) of 1982 (16 U.S.C. § 3501 et seq.), administered by the U.S. Fish and Wildlife Service (USFWS), was enacted to protect sensitive and vulnerable barrier islands found along the U.S. Atlantic, Gulf, and Great Lakes coastlines. The CBRA established the Coastal Barrier Resources System (CBRS), which is composed of undeveloped coastal barrier islands, including those in the Great Lakes. With limited exceptions, areas contained within a CBRS are ineligible for direct or indirect Federal funds that might support or promote coastal development, thereby discouraging development on coastal barrier islands.

#### 4.1.2.3 Farmland Protection Policy Act

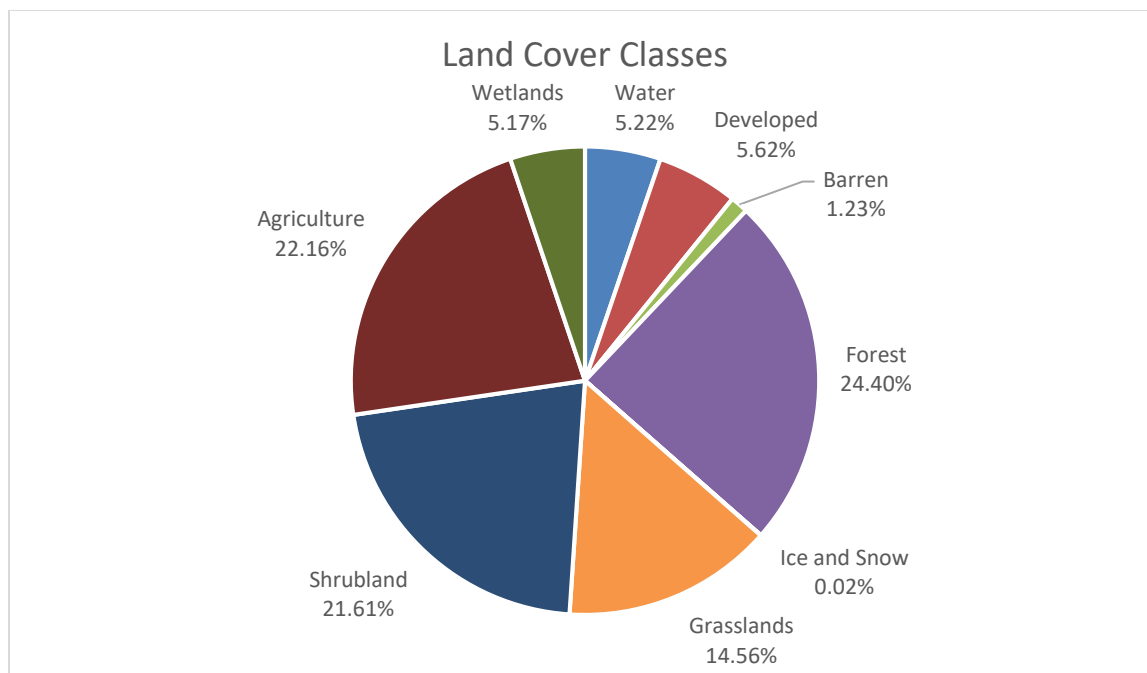
Prime and unique farmlands and farmlands of state and local importance are protected under the Farmland Protection Policy Act of 1981 (7 U.S.C. § 4201 et seq.). Prime farmland is characterized as land with the best physical and chemical characteristics for the production of food, feed, forage, fiber and

oilseed crops. Prime farmland is either used for food or fiber crops or is available for those crops; it is not urban, built-up land, or water areas. Unique farmland is defined as land that is used for the production of certain high-value crops, such as citrus, tree nuts, olives, and fruits. This Act requires federal agencies to examine the potentially adverse effects to these resources before approving any action that irreversibly convert farmland to non-agricultural uses. This examination is done in consultation with the U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS), who uses a land evaluation and site assessment system to complete a Farmland Conversion Impact Rating Form (Form AD-1006). Federal regulations at 7 CFR 658 describe the process for this analysis.

#### 4.1.3 EXISTING CONDITIONS

National Land Cover Database (NLCD) 2011 (MRLC 2011) is the most recent national land cover product created by the Multi-Resolution Land Characteristics Consortium (also referred to as Consortium). The Consortium is a group of federal agencies who coordinate and generate consistent and relevant land cover information at the national scale for a wide variety of environmental, land management, and modeling applications. The creation of this consortium has resulted in the mapping of the lower 48 United States, Hawaii, Alaska and Puerto Rico into a comprehensive land cover product termed from decadal Landsat satellite imagery and other supplementary datasets. Land cover types from the NLCD are summarized in Figure 4-1 and provides the primary basis for analysis of land use (MRLC 2011).

FIGURE 4-1 SUMMARY OF THE MAIN NLCD 2011 LAND COVER CLASSES FOR THE CONTERMINOUS UNITED STATES



The following sub-sections describe essential characteristics of each land cover type in the NLCD, as well as typical land uses, if applicable. Similar land cover types are grouped where appropriate to streamline the discussion.

**Water.** There are two classes associated with water: open water, and perennial ice/snow. In open water, less than 25 percent of land cover is vegetation or soil. This land class is used for fishing, aquaculture, and other water-dependent commercial practices. In perennial ice/snow, ice and snow is generally 25 percent or more of total cover (MRLC 2011). More information about water resources is included in Section 4.5.

**Developed Land.** There are four classes of developed land in the NLCD, each with unique characteristics and associated uses. These four land cover classes are open space; low intensity; medium intensity; and high intensity. The open space land covers areas with a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20 percent of total cover. These areas most commonly include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes. The low Intensity land covers with a mixture of constructed materials and vegetation. Impervious surfaces account for 20 to 49 percent of total cover. These areas most commonly include single-family housing units. The medium intensity land covers areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50 to 79 percent of the total cover. These areas most commonly include single-family housing units. The high intensity land area covers highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses and commercial/industrial. Impervious surfaces account for 80 to 100 percent of the total cover (MRLC 2011).

**Barren Land (Rock/Sand/Clay).** Bare rock/sand/clay is characterized as areas of bedrock, desert pavement, scarps, talus, slides, volcanic material, glacial debris, sand dunes, strip mines, gravel pits, and other accumulations of earthen material. Generally, vegetation accounts for no more than 15 percent of total land cover (MRLC 2011). Land uses vary widely, from recreational areas to industrial mining/extraction operations.

**Forestland.** There are three classes of forestland in the NLCD: deciduous, evergreen, and mixed. Overall characteristics of forestlands are areas dominated by trees generally greater than 5 meters tall, which constitute more than 20 percent of total vegetation cover. For a forest to be classified as deciduous, more than 75 percent of its trees must shed foliage in response to seasonal change, whereas evergreen forests contain 75 percent or more of trees that maintain foliage year-round. In a mixed forest, neither deciduous nor evergreen species constitute more than 75 percent of total tree cover (MRLC 2011). Of the roughly 751 million acres of forest area in the nation, deciduous forests cover 290 million acres (39 percent), evergreen forests cover 409 million acres (54 percent), and mixed forests cover 50 million acres (7 percent) (U.S. Forest Service 2011). Land uses in forests include logging and agroforestry operations, recreation, and open space. These lands can also be federally owned as parks, national forests, forest preserves, research stations, and other uses.

**Shrubland.** There are two classes of shrubland in the NLCD: dwarf scrub and scrub/shrub. Dwarf scrub is found only in Alaska and is dominated by shrubs less than 20 centimeters tall; the shrub canopy is greater than 20 percent of total vegetation. Grasses, sedges, herbs, and non-vascular vegetation often occur in this classification. Scrub/shrub is dominated by shrubs less than five meters tall and young trees; the shrub canopy is greater than 20 percent of total vegetation (MRLC 2011). These lands typically remain as open space, although they may be developed for a wide variety of uses; there are no land uses associated with these land cover types (U.S. Forest Service 2011).

**Herbaceous.** There are four classes of herbaceous land cover, which are defined by non-woody vegetation. Grasslands/herbaceous typically contain 80 percent or more of grasses or other herbaceous vegetation; they are not subject to intensive management practices such as tilling, but can be used for grazing. The remaining three classes, sedge/herbaceous, lichens, and moss, are types of tundra plant communities, found only in Alaska (MRLC 2011). These lands typically remain as open space; there are no land uses associated with these land cover types.

**Planted/Cultivated.** There are two classes of planted/cultivated land cover, both agricultural in nature. Pasture/hay is composed of grasses, legumes, or mixtures of the two planted for the purpose of grazing livestock, or raising seed or feed crops. Vegetation associated with this use accounts for more than 20 percent of total vegetation. Cultivated cropland cover is used for the production of annual crops such as corn, soybeans, wheat, vegetables, and cotton, and also includes perennial woody agriculture, such as orchards and vineyards, and all land that is actively being tilled. Crop vegetation must account for more than 20 percent of the total vegetation (MRLC 2011). These land classes are used for producing food crops or raising livestock. The USDA defines prime farmland as the land best suited to food, feed, forage, fiber, and oilseed crops. Prime farmland produces the highest yields with minimal inputs of energy and economic resources, and farming it results in the least damage to the environment. There are approximately 264 million acres (Farmland Information Center 2017) of prime agricultural land in the country. Estimates of the agricultural land converted annually to non-agricultural uses vary between 800,000 acres to more than 3 million nationwide. More important than the exact rate of conversion is the location of rapidly changing land use. Much of the land being lost is prime or unique farmland, disproportionately located near cities (Carver and Yahner ND).

**Wetlands.** There are two wetland classes: woody wetlands and emergent herbaceous wetlands. Woody wetlands are areas that contain 20 percent or more forest or shrubland vegetation, and where the soil is periodically saturated or inundated with water. Emergent herbaceous wetlands are those areas where perennial herbaceous vegetation accounts for 80 percent or more of vegetative cover and the soil is periodically saturated or inundated with water. There are no land uses associated with wetlands (MRLC 2011). More information about wetland resources is included in Section 4.5.

#### 4.1.4 ENVIRONMENTAL CONSEQUENCES

An evaluation of land use impacts involves a comparison of current and future proposed land uses and a determination of the extent to which the alternatives are incompatible with these uses. There is the potential for a land use impact to occur when an activity directly or indirectly alters existing or planned land use.

##### 4.1.4.1 No Action Alternative

There will be no change to existing land use as a result of the No Action Alternative; therefore, no new impacts will occur.

##### 4.1.4.2 Proposed Action Alternative

#### Typical Environmental Consequences of Projects on Undeveloped Sites

Existing land covers for an undeveloped site might include forest, shrubland, herbaceous, planted/cultivated and wetlands. Some projects might entail in-water work. Land uses in these land

covers might include scenic, natural, recreational, rural, urban, suburban, and agricultural areas (e.g., forestland, pastureland, cropland). Water and wastewater projects financed by the WIFIA program might require changes in land use covers and designations, alter land use patterns, and might preclude other land uses within the projects footprints and adjacent to them. In general, distribution and collection lines are designed and constructed, to the maximum extent practicable, following existing rights of way and utility corridors. Land use changes from linear projects are generally anticipated to be temporary but some permanent changes are possible.

New water and wastewater projects on undeveloped sites might impact land designated as prime farmland, unique farmland, and land of statewide or local importance. The construction of the projects might cause permanent impacts by marginally reducing the agricultural production potential of the area. However, areas required for water and wastewater projects are limited in size when compared to the approximately 264 million acres (Farmland Information Center 2017) of prime agricultural land in the country. Projects completed by a federal agency or with assistance from a federal agency, including WIFIA financed projects, are subject to the Farmland Protection Policy Act if they have the potential to irreversibly convert farmland (directly or indirectly) to nonagricultural use. WIFIA-credit assistance projects will generally avoid construction on prime and unique farmlands when other alternatives are available. Compliance with the Act ensures that WIFIA-credit assistance projects, to the extent possible, will be compatible with state, local units of government, and private programs and policies to protect farmland. Therefore, the impact of potentially changing agricultural land to a water or wastewater project is expected to be less than significant.

The potential impacts of WIFIA credit assistance projects will also be reduced where projected changes in environmental conditions are considered as part of siting, design, and O&M planning. These changes might include increased sea level rise, storm surge, precipitation extremes, wildfires, and stress on terrestrial ecosystems as discussed in the Fourth National Climate Assessment (U.S. Global Change Research Program 2017). In addition, stakeholder coordination/consultation and/or consolidation of infrastructure during the scoping and design of the project might aid in the avoidance or minimization of land use conflicts. In summary, impacts to land use are anticipated to be less than significant given the limited footprint of water and wastewater projects and the compliance requirements in place for WIFIA credit assistance projects.

### **Typical Environmental Consequences of Linear and Vertical Projects on Developed Sites**

Most of the projects considered for WIFIA credit assistance are expected to be in urban/built-up lands (neighborhoods, towns, and cities with streets, residences, commercial building, park lands, etc.). Consequences similar to undeveloped sites are anticipated for developed sites except that, with these alternatives, the sites had previously been developed and/or disturbed. The sites disturbed during construction shall be carefully designed to ensure compatibility with any regulatory requirements. Like undeveloped sites, short-term or long-term and permanent land use impacts are anticipated but will be less than significant given the limited footprint of water and wastewater projects. There will be no effects to land use from rehabilitation, renovation, modification, and retrofitting of existing facilities because land use will not change.

## Typical Environmental Consequences of Other Eligible Project Types

Other eligible project types are expected to have similar impacts as described above for other linear and vertical project types depending on whether it is being undertaken on a developed or undeveloped project site.

## 4.2 AIR QUALITY RESOURCES

### 4.2.1 DEFINITION OF THE RESOURCE

In accordance with the Federal requirements of the Clean Air Act (CAA) of 1970 (42 U.S.C. §§ 7401-7671q), the air quality in a specific region or area is measured by the concentration of various pollutants in the atmosphere. The air quality in a region is a result not only of the types and quantities of atmospheric pollutants and pollutant sources in an area, but also surface topography, the size of the topological "air basin," and the prevailing meteorological conditions.

### 4.2.2 POTENTIALLY APPLICABLE STATUTES AND REGULATIONS

#### 4.2.2.1 Clean Air Act

The CAA is the primary Federal law designed to protect human health and the environment from the effects of air pollution. The law is administered by EPA, in coordination with State, local, and Tribal governments, and the implementing regulations are codified at 40 C.F.R. Subchapter C, Parts 50-97. To protect public health and public welfare and to regulate emissions of hazardous air pollutants, the CAA requires EPA to establish NAAQS for six "criteria pollutants" that threaten human health and welfare: ozone (O<sub>3</sub>), carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), particulate matter (PM<sub>2.5</sub> and PM<sub>10</sub>), and lead (Pb).

The CAA directed EPA to develop, implement, and enforce strong environmental regulations to ensure clean and healthy ambient air quality. To protect public health and welfare, EPA developed numerical concentration-based standards, or National Ambient Air Quality Standards (NAAQS), for pollutants that have been determined to affect human health and the environment. Primary NAAQS are ambient air quality standards that are required to protect public health with an adequate margin of safety, including protecting the health of sensitive populations such as asthmatics, children, and the elderly. Secondary NAAQS specify levels of air quality that are required to protect public welfare, including vegetation, crops, wildlife, economic values, and visibility.

Primary and secondary NAAQS are currently established for six criteria air pollutants: O<sub>3</sub>, CO, NO<sub>2</sub>, SO<sub>2</sub>, PM<sub>2.5</sub> and PM<sub>10</sub>, and Pb. The NAAQS established various standards for each pollutant with varying averaging times. Standards with short averaging times (e.g., 1-hour, 8-hour, and 24-hour) were developed to prevent the acute health effects from short-term exposure at high concentrations. Longer averaging periods (e.g., 3 months or annual) are intended to prevent chronic health effects from long-term exposure. The CAA requires States to designate any area that does not meet the national primary or secondary NAAQS for a criteria pollutant as a "nonattainment area" (42 U.S.C. §§ 7401-7671q). WIFIA financed projects can be located in both attainment and non-attainment areas.

In 1990, the CAA was amended to include the regulation of 187 hazardous air pollutants (HAPs) that were associated with cancer or other serious health effects. As with the NAAQS, HAPs originate from

fixed sources (e.g., power plants, manufacturing facilities), mobile sources (e.g., cars, trucks, buses, construction vehicles), or indoor sources (e.g., building materials and cleaning processes). HAPs are federally regulated under the CAA via the National Emission Standards for Hazardous Air Pollutants (NESHAPs). EPA developed the NESHAPs for sources and source categories emitting HAPs that pose a risk to human health. EPA regulates emissions of listed HAPs using source categories that must meet maximum achievable control technology (MACT) standards to demonstrate compliance.

According to EPA's General Conformity Rule (40 C.F.R. Part 51, Subpart W), any proposed federal action that has the potential to cause violations in a NAAQS nonattainment or maintenance area must undergo a conformity analysis. If net annual emissions from a proposed project remain below applicable local thresholds for Conformity, a CAA Conformity Determination is not required. If a CAA Conformity Determination is required, a Record of Non-Applicability (RONA) must be prepared. If management action or project emissions of one or more of the criteria pollutants were to exceed applicable local thresholds for Conformity, a CAA Conformity Determination is required to determine if emissions conform to the approved State Implementation Plan (SIP).

The thresholds are referred to as de minimis criteria, and vary depending upon the pollutant. For these purposes, the term de minimis refers to, among other things, emissions that are "so small as to be negligible or insignificant." If an action is below the de minimis emission threshold, then a conformity determination is not required under the general conformity rule. The thresholds established under the general conformity rule for nonattainment and maintenance areas are 100 tons per year or less for each pollutant in order to qualify for de minimis. If the de minimis criteria are exceeded, then a conformity determination must be made pursuant to the requirements of the general conformity rule.

Certain national parks and wilderness areas across the country are given special protection under the CAA. Today there are 163 protected areas designated as mandatory Federal "Class I" areas in the visibility protection program, some of which have the potential to be in the vicinity of WIFIA projects (National Park Service 2011). EPA's visibility protection program notes that special analyses are required where a proposed new emission source has the potential to impact Federally-designated Class I areas and areas designated as Class I by states and Tribes.

#### 4.2.3 EXISTING CONDITIONS

Air quality in a geographic area is determined by the type and amount of pollutants emitted into the atmosphere, the size, and topography of the area, and the prevailing weather and climate conditions. The levels of pollutants and pollutant concentrations in the atmosphere are typically expressed in units of parts per million (ppm) or micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) determined over various periods of time (averaging time). EPA designates areas within the United States as attainment, nonattainment, maintenance, or unclassifiable for six criteria pollutants. When evaluating an area's air quality against regulatory thresholds, maintenance areas are often combined with nonattainment, while unclassifiable areas are combined with attainment areas. Table 4-1 below, presents U.S. Counties in nonattainment and maintenance areas, as of June 17, 2016. The year(s) listed in the table for each pollutant indicate when EPA promulgated the standard for that pollutant; note that for  $\text{PM}_{2.5}$  and  $\text{SO}_2$ , these standards listed are in effect. Approximately 57 million people nationwide lived in counties with pollution levels above the primary NAAQS in 2014 (U.S. Environmental Protection Agency 2017).

TABLE 4-1 U.S. COUNTIES IN NONATTAINMENT AND MAINTENANCE AREAS BY POLLUTANT STANDARD

NUMBER OF COUNTIES	POLLUTANT AND YEAR EPA IMPLEMENTED STANDARD									
	CO	LEAD		NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>			O <sub>3</sub>	SO <sub>2</sub>
	1971	1978	2008	1971	1987	1997	2006	2012	2008	1971 2010
Nonattainment	0	2	23	0	32	33	46	20	216	9 37
Maintenance	131	10	1	4	65	176	76	0	11	48 1
Total	131	12	24	4	88	208	121	20	227	58 39

Source: (U.S. Environmental Protection Agency 2017)

*Note: County subtotals and grand totals might not equal sum of the counties. Partial counties are only counted one time within groupings. Multi-State nonattainment (split) areas are not considered maintenance areas until all States in the area have been redesignated. Total maintenance counts do not include split areas.*

EPA creates air quality trends using measurements from monitors located across the country. Based on concentrations of the common pollutants, air quality has improved nationally since 1980. Emissions of the common air pollutants and their precursors have also reduced substantially since 1980. Emissions information is developed with input from State and local air agencies, tribes, and industry, from actual monitored readings or estimates of the amounts and types of pollutants emitted from various pollution sources (e.g., vehicles and factories). (U.S. Environmental Protection Agency 2017)

The total emissions of the six principal air pollutants dropped by 63 percent between 1980 and 2014. Nationally, air pollution was lower in 2014 than in 1980: CO by 69 percent, Pb by 99 percent, N<sub>2</sub>O by 55 percent, direct PM<sub>10</sub> by 58 percent, and SO<sub>2</sub> by 81 percent. Between 1980 and 2013, CO<sub>2</sub> emissions increased by 17 percent (U.S. Environmental Protection Agency 2017).

Greenhouse gases (GHGs) are chemical compounds in the Earth's atmosphere that allow incoming short-wave solar radiation but absorb long-wave infrared radiation re-emitted from the Earth's surface, trapping heat in the atmosphere. Gases exhibiting greenhouse properties come from both natural and human sources. Water vapor, carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O) are examples of GHGs that have both natural and manmade sources, while other GHGs such as chlorofluorocarbons are exclusively manmade. In the U.S., most GHG emissions are attributed to energy use. Such emissions result from combustion of fossil fuels used for electricity generation, transportation, industry, heating, and other needs. The principal GHGs that enter the atmosphere due to human activities are carbon dioxide, methane, nitrous oxide, and Fluorinated Gases.

In 2016, U.S. greenhouse gas emissions totaled 6,546.2 million metric tons of carbon dioxide equivalents. Emissions decreased from 2015 to 2016 by 2.0 percent. Emissions from wastewater treatment in 2016 is estimated to be 19.8 million metric tons of carbon dioxide equivalents, or approximately 0.3 percent of the total U.S. greenhouse gas emissions (U.S. Environmental Protection Agency 2018). GHG emissions have global scale, long-lasting impacts (U.S. Global Change Research Program 2017).

#### 4.2.4 ENVIRONMENTAL CONSEQUENCES

An evaluation of air quality impacts involves a comparison of proposed activities to the existing air quality. Adverse air quality impacts will occur if an alternative increases ambient air pollution

concentration above any NAAQS; contributes to an existing violation of any NAAQS; interferes with or delays timely attainment of NAAQS; is a major source of HAPs; or impairs visibility within any federally-mandated Class I area.

#### 4.2.4.1 No Action Alternative

Under the No Action Alternative, facility emissions, traffic volumes, and air quality will not occur for new projects or facilities and would continue at current levels for existing projects or facilities. No localized or regional changes to air quality are expected. However, some projects that are anticipated to request WIFIA credit assistance are for improvements in the efficiency of operations at water and wastewater facilities and implementing, the No Action Alternative might prevent the realization of air quality benefits from these projects. Consequently, impacts to air quality as a result of the No Action Alternative are anticipated to range from none to less than significant.

#### 4.2.4.2 Proposed Action Alternative

##### Typical Environmental Consequences for Linear and Vertical Projects at Undeveloped Sites

Most of the water and wastewater projects to be financed by the WIFIA program will involve site preparation and clearing, excavation, paving, and construction. Disturbance of land generates dust and particulate matter (PM) (including PM<sub>2.5</sub>, PM<sub>10</sub><sup>4</sup>) primarily from “fugitive” sources (i.e., emissions released through means other than through a stack or tailpipe) and lesser amounts of criteria air pollutants and GHGs primarily from operation of heavy equipment construction machinery (mostly diesel operated) and construction worker commute trips. Construction activities also generate evaporative emissions of reactive organic gases (ROG) from asphalt paving and the use of architectural coatings on structures. PM<sub>10</sub> and PM<sub>2.5</sub> emissions from construction can vary greatly from day to day depending on the level of activity, the equipment being operated, silt content of the soil, and the prevailing weather. Larger-diameter dust particles (i.e., greater than 30 microns) generally fall out of the atmosphere within several hundred feet of construction sites, and represent more of a soiling nuisance than a health hazard. Smaller-diameter particles (e.g., PM<sub>10</sub> and PM<sub>2.5</sub>) are associated with adverse health effects and generally remain airborne until removed from the atmosphere by moisture. WIFIA credit assistance recipients shall implement appropriate mitigation measures to reduce the impacts, such as using water for dust suppression, reducing vehicle speeds, cover truck loads during transit, rumble strips, truck washing stations during clearing, excavation, demolition, grading and other construction related activities at each site, sweeping paved roads adjacent to construction sites exits, use wind erosion control techniques, etc.

Criteria pollutant emissions of ROG, NO<sub>x</sub>, and CO from construction equipment and construction worker vehicle trips incrementally add to regional atmospheric loading of ozone precursors during the construction period. With regards to emissions of hydrogen sulfide and lead, projects are not anticipated to emit these pollutants during construction. Hydrogen sulfide is a colorless, flammable gas that is often produced by the breakdown of waste material, while lead is a metal that is generated predominantly today by industrial processes that are primarily associated with metals processing, such as smelters. The equipment used for construction of the proposed projects will not release these

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<sup>4</sup> PM<sub>2.5</sub> refers to fine inhalable particles that are generally 2.5 micrometers or smaller; PM<sub>10</sub> refers to inhalable particles that are generally 10 micrometers and smaller.

pollutants into the atmosphere. Construction related GHG emissions will also result from the temporary use of construction equipment and vehicle trips. Therefore, with implementation of appropriate mitigation, impacts to air quality from criteria pollutants during construction will be localized and generally short-term but less than significant. Minor incremental GHG emissions associated with construction will have incremental long-term impacts, including incremental contributions to cumulative impacts.

For the construction phase of a project, prospective borrowers ensure that all applicable state, local, and tribal regulations are followed, including local anti-idling requirements, when available. It is unlikely that construction emissions will be greater than de minimis levels and are therefore very likely to be minimal impacts to air quality. Localized air quality impacts might result from any open burning of cleared vegetation or other construction debris, but open burning is expected to be limited, if any, and shall be done in compliance with any local regulations. Overall, air quality impacts during construction will be localized and generally short-term but less than significant with the implementation of practicable mitigation measures. Practicable mitigation measures, which have co-benefits of GHG reductions, include energy efficient technologies including high efficiency engines, and anti-idling measures.

Operation of water and wastewater projects will result in long-term regional emissions of criteria air pollutants, GHGs and ozone precursors primarily associated with treatment processes, power generators, and increased vehicular traffic. However, based on studies done at multiple facilities that are representative of WIFIA eligible projects, the project emissions of criteria air pollutants and ozone precursors will result in long-term regional emissions that are below applicable regional thresholds and will not result in considerable increases or substantially contribute to emissions concentrations (ESA 2017), (Orange County Water District 2011) (San Francisco Planning Department 2017) (EPA 2014). Wastewater treatment processes can directly produce GHG emissions. The operation of a drinking water and wastewater facility can indirectly result in the emissions of GHGs associated with electricity use for lighting, heating and cooling, and facility operations. Direct use of natural gas and petroleum products for heating can also occur (U.S. Environmental Protection Agency 2018). Some projects that are anticipated to request WIFIA credit assistance are for improvements of outdated water and wastewater facilities that would result in reduced emissions, including GHG emissions, through the use of more modern and efficient equipment and technologies.

Mitigation measures for facility operation can include energy efficient building design technologies, power and load management of facilities to reduce excess power consumption and fuel use, and the use of on-site or grid renewable or low-carbon energy. Moreover, according to EPA's General Conformity Rule (40 C.F.R. Part 51, Subpart W), any proposed federal action that has the potential to cause violations in a NAAQS nonattainment or maintenance area must undergo a conformity analysis. Therefore, air quality impacts during operation are expected to be less than significant.

Many of the projects receiving credit assistance from the WIFIA program will convey and treat wastewater, creating a potential for odorous pollutant emissions, such as hydrogen sulfide ( $H_2S$ ), to emanate from the water/sludge, conveyance, storage and treatment processes. Facilities can be designed to minimize such odors, or such that additional emission control devices (e.g., covers) can be added if any open-air processes are found to cause odors that migrate off-site. If required, dispersion modeling can be done to confirm any potential odor impacts the facility created beyond the fence line,

allowing for validation of the mitigation measures included in the design. Projects financed by the WIFIA program undertaken with the primary or secondary objective to alleviate odor problems in neighboring communities will have a beneficial impact on such odors.

#### **Typical Environmental Consequences for Linear and Vertical Project Types at Developed Sites**

Consequences similar to undeveloped sites are anticipated for developed sites except that, with these eligible project types, the sites had previously been developed and/or disturbed and lesser levels of site-preparation and clearing might be required; therefore, projects are likely to result in fewer emissions than eligible project types occurring on developed sites.

#### **Typical Environmental Consequences from Other Project Types**

Other eligible project types are expected to have similar impacts as described above depending on whether it is being undertaken on a developed or undeveloped project site.

### **4.3 NOISE AND VIBRATION**

#### **4.3.1 DEFINITION OF THE RESOURCE**

Sound is a physical phenomenon consisting of vibrations that travel through a medium, such as air, and are sensed by the human ear. Ground-borne vibration is the oscillatory motion of the ground about an equilibrium position that can be described in terms of displacement, velocity or acceleration. Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise intrusive. Noise might also impact wildlife species and their activities, especially those that rely on vocalizations for communications. Human and wildlife response to noise varies depending on the type and characteristics of the noise, distance between the noise source and the receptor, receptor sensitivity, and time of day. Although exposure to high noise levels has been demonstrated to cause hearing loss, the principal human responses to environmental noise and vibration are annoyance and stress. Sensitive receptors include, but are not limited to, hospitals, schools, daycare facilities, elderly housing and convalescent facilities. Ground-borne vibration is also evaluated for its potential to cause structural damage to buildings.

#### **4.3.2 POTENTIALLY APPLICABLE STATUTES AND REGULATIONS**

State and local governments have primary responsibility for controlling the use of noise and vibration sources and regulating outdoor noise levels in the environment.

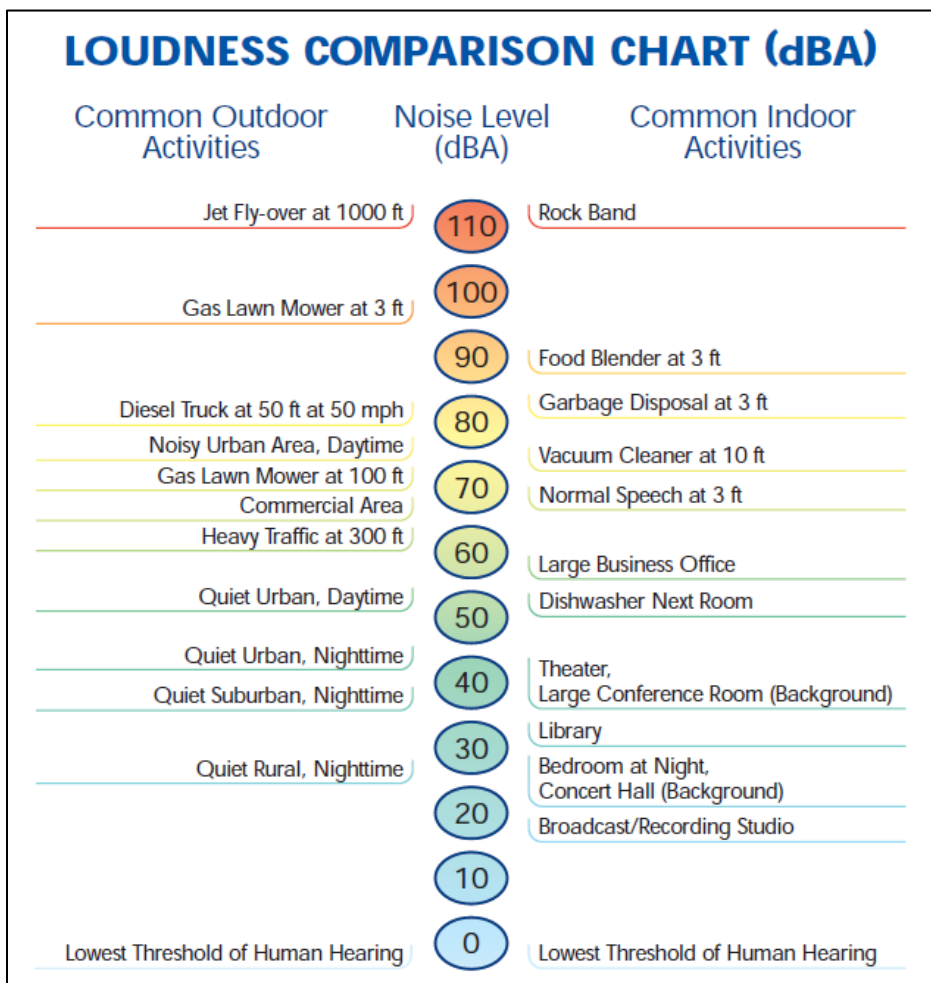
##### **4.3.2.1 Noise Control Act**

The Noise Control Act of 1972 (42 U.S.C. § 4901 et seq.), along with its subsequent amendments (e.g., Quiet Communities Act of 1978), delegates to the states the authority to regulate environmental noise and directs government agencies to comply with local community noise statutes and regulations. Most states have no quantitative noise-limit regulations. Many local governments, however, have enacted noise ordinances to manage community noise levels. The noise limits specified in such ordinances are typically applied to define noise sources and specify a maximum permissible noise level. State, local, and tribal regulations will be likely to govern noise levels for normal, day-to-day construction activities and operations.

### 4.3.3 EXISTING CONDITIONS

Sources and levels of noise at water and wastewater project sites are representative of cities and towns across the nation. Existing sources of noise that can be heard around sites include road traffic, rail traffic, aircraft overflights, construction equipment, air cooling and heating systems, back-up generators, manufacturing, home activities and natural sounds such as bird vocalizations, running water, and wind. On a daily basis, urban areas are more likely to exhibit higher noise levels resulting from highway traffic (70 to 90 A-weighted decibels (dBA)), construction noise (90 to 120 dBA), and outdoor conversations (e.g., small/large groups of people) (60 to 90 dBA). As shown on Figure 4-2 rural and suburban environments have lower noise levels.

FIGURE 4-2 : SOUND LEVELS OF TYPICAL SOUNDS (CALTRANS 2017)



#### 4.3.4 ENVIRONMENTAL CONSEQUENCES

##### 4.3.4.1 No Action Alternative

Under the No Action Alternative noise levels will continue at current levels. No localized or regional changes to noise are expected. However, some projects that are anticipated to request WIFIA credit assistance are for improvements of outdated water and wastewater facilities and implementing the No Action Alternative will prevent the realization of some noise reduction benefits from these projects, assuming that other means were not employed to reduce noise from plant operations. Consequently, impacts to noise as a result of the No Action Alternative are anticipated to range from none to less than significant.

##### 4.3.4.2 Proposed Action Alternative

###### Typical Environmental Consequences to All Project Types

Project construction will generate noise. Typical construction noises are created from engine-powered construction equipment such as dump trucks, excavators, concrete mixers, and flatbed trucks. Other noise sources can include impact tools such as hoe-rams (concrete breakers mounted on heavy equipment), jackhammers, and impact piles drivers. Some projects might require blasting, although this technique is generally only utilized if other techniques prove to be ineffective.

Construction noise is generally loud enough to cause annoyance within 800 feet from the construction site. If another source of loud construction noise is within 1,600 feet of the construction site, the two noise sources can overlap. For projects in a sparsely populated area construction noise is not expected to disturb residents and other sensitive noise receptors. For projects in urban settings, additional noise impacts are expected to be less than significant because of the urban nature of the project area with continuous road traffic (AMBAG 2014).

Noise will likely be associated with construction projects, however noise ceases at the end of the work day and upon completion of construction. The environmental effects are likely to be temporary, short term and minor in duration but negatively impact nearby sensitive receptors. EPA encourages engagement with neighboring communities in an effort to avoid and minimize impacts to sensitive receptors. Prospective borrowers may identify and implement mechanisms, such as noise blankets and temporary noise walls, to avoid or minimize impacts from construction. WIFIA credit assistance recipients will be required to comply with any local, state, territory, or tribal noise control requirements and with these measures the activity will not result in significant noise impacts.

Generally, noise generating construction activity typically occurs between 7 a.m. and 7 p.m. In order to minimize impacts to traffic along roadways and for particular construction activities (e.g., large continuous concrete pours), nighttime construction might be required. Nighttime construction will occur during the shortest possible period in order to minimize both noise and traffic impacts. A noise variance might need to be obtained for nighttime construction. Hours of nighttime construction will be determined by any limitations imposed under local noise ordinances and variances.

Construction activities that generate vibration have the potential to increase the risk of structural damage to nearby buildings. Under Section 106 of the National Historic Preservation Act of 1966, any project receiving federal funding must be evaluated for its potential effects to historic and archeological

resources. A Section 106 review considers the impact of vibration to potentially cause structural damage to those listed in or eligible for listing in the National Register of Historic Places. See Section 4.7 for additional information.

The operation of water and wastewater facilities produces minor levels of noise localized to the project site. During operation, noise generated by the projects shall comply with local ordinances and shall be in accordance with the land use designations. If required, some general mitigation measures shall be implemented such as placing intakes and exhausts facing away from sensitive receivers, housing equipment in buildings, attenuation of fan noise and pump and motor noise. Noise from vehicular traffic created by O&M of the projects, in most cases, will be incidental in relation to the existing traffic use of surrounding roadways. Some projects that are anticipated to request WIFIA credit assistance might include improvements to outdated water and wastewater facilities resulting in some noise reduction benefits associated with the use of more modern or efficient equipment. With the implementation of proper mitigation measures in compliance with local ordinances the potential operation noise impacts will be less than significant.

#### **Differences in Environmental Consequences between Implementation on Developed and Undeveloped Sites**

Construction noise generated at developed sites for all project types might have slightly less construction noise generated than for project types at undeveloped sites, as previously undeveloped sites are assumed to require more clearing and site preparation than construction on a previously disturbed site or a site within an existing facility footprint. Construction noise generated from linear and vertical project types can occur with existing facility operational noise occurring as part of background conditions. Operational noise generated from linear and vertical project types at previously developed sites will be in addition to existing operational noise generated, and might incrementally increase ambient noise at some facilities. Other than discussed above, all construction and operational noise is expected to be similar among all of the project types within the Proposed Action Alternative.

#### **Typical Environmental Consequences from Other Project Types**

Other eligible project types are expected to have similar impacts as described above depending on whether it is being undertaken on a developed or undeveloped project site.

## **4.4 GEOLOGICAL AND SOIL RESOURCES**

### **4.4.1 DEFINITION OF THE RESOURCE**

Geological resources are defined as the topography, geology, and geological hazards of a given area. Topography is typically described with respect to the elevation, slope, aspect, and surface features found within a given area. The topography of a proposed project site can be determined with topographic maps published by the U.S. Geological Survey (USGS), the Bureau of Land Management (BLM), or through Geographic Information System (GIS) datasets available online. The topography and soils at a project site will be characterized prior to construction to assess suitability for construction and potential for erosion. The geology of an area might include bedrock materials, mineral deposits, soils, paleontological resources, and unique geological features. The principal geologic hazards include landslides and seismic activity, such as earthquakes. The stability of structures financed by the WIFIA

program might be influenced by steep slopes, soil stability, and karst topography and EPA recommends these factors be considered during design and construction. Potential geologic hazards will be identified in a geotechnical study of any proposed project.

Soil resources are the superficial unconsolidated and usually weathered part of the earth's crust, consisting of weathered bedrock fragments and decomposed organic matter from plants, bacteria, fungi, and other living things. The value of soil as a geologic resource lies in its potential to support plant growth, especially agriculture. Soil information, to include soil surveys and soil classification, is available through the NRCS. The degree of soil erodibility is determined by physical factors such as drainage, permeability, texture, structure, and percent slope. The rate of erodibility is based on the amount of vegetative cover, climate, precipitation, proximity to water bodies, and land use. Disruptive surface activities can accelerate the natural erosion process by exposing erodible soils to precipitation and surface runoff. Highly erodible land is defined by the Sodbuster, Conservation Reserve, and Conservation Compliance parts of the Food Security Act of 1985 and the Food, Agriculture, Conservation, and Trade Act of 1990. Erodibility is one of several soil classification characteristics identified by the NRCS.

Hydric Soils are soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (NRCS 2015). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation (NRCS 2015). Hydric soils are one of the three indicators of a wetland. Wetlands are discussed in Sections 4.5 (Water Resources) and 4.6 (Biological Resources).

#### 4.4.2 POTENTIALLY APPLICABLE STATUTES AND REGULATIONS

There are no nationwide geology or soil laws or regulations that are directly applicable to the WIFIA program. Many states have soil conservation or stormwater regulation programs to limit erosion and its impact to receiving waters.

#### 4.4.3 EXISTING CONDITIONS

Existing geological resources of potential water infrastructure sites are representative of geological resources across the U.S. Soil series range from sandy to clay, depending on the geographic setting, with some locations including highly erodible soils. Because of the expected nature of selected projects, WIFIA projects might be more likely to be located on soils typical of fluvial outwash, floodplain soils, or coastal soils. Geologic formations vary by location and include sandstones, shales, karst formations, and glacial features such as tills, moraines, and outwash plains. Similarly, geologic hazards also vary by location, ranging from areas with little to no hazards to areas subject to seismic activity due to their proximity to geologic fault lines.

Projects located within the contiguous United States can be located in various physiographic provinces. These provinces are divided according to their physical features and processes of landforms, and their relation to geologic structures. The climate, underlying geology, and the geologic history of an area affect the modern topography. Some areas have been scraped flat by glaciers, others are dominated by towering mountains, and still others are subject to changing sea levels and coastal processes (National

Park Service 2017). There are 25 physiographic provinces within the contiguous United States, displayed in Figure 4-3.

FIGURE 4-3 PHYSIOGRAPHIC PROVINCES OF THE CONTIGUOUS UNITED STATES



Physiographic Map Reference: Fenneman, Nevin M., 1946, *Physical Divisions of the United States*: U.S. Geological Survey, scale 1:7,000,000

#### 4.4.4 ENVIRONMENTAL CONSEQUENCES

Factors considered when determining whether an alternative will have a significant effect on geological resources were evaluated and distinguished by the degree to which the effect impairs supported functions, and conflicts with existing federal, state, or local statutes or regulations. In general, the impacts are usually localized and restricted to the project footprint and its immediate surroundings.

#### **4.4.4.1 No Action Alternative**

There will be no change to geological and soil resources and no disturbance to soils as there will be no construction activity under the No Action Alternative.

#### **4.4.4.2 Proposed Action Alternative**

##### **Typical Environmental Consequences for Linear and Vertical Project Types at Undeveloped sites**

Water and wastewater projects financed by the WIFIA program on undeveloped sites typically involve soil-disturbing activities, including vegetation removal, grubbing, and grading necessary to establish a level surfaces for construction, followed by the construction of the infrastructure, including any necessary fencing, shelters, access roads, and utilities. The extent of ground disturbance will vary based on project type. Additional soil disturbing activities include excavation or ground penetration (e.g., vertical projects requiring poured concrete footers, driven poles, some groundwater recharge systems) and trenching for some linear projects. Bedrock depth might be a factor in determining drilling needs. Soil disturbance and steep topography can increase the potential for soil erosion to occur. Soil erosion has the potential to indirectly impact water resources and air quality. Project types constructed on undeveloped sites are likely to result in new erosion sources, and it is assumed that construction on an undeveloped site can cause an incrementally greater amount of erosion.

##### **Typical Environmental Consequences for Linear and Vertical Project Types at Developed sites**

Water and wastewater projects financed by the WIFIA program on developed sites might involve soil-disturbing activities. Soil disturbing activities like those discussed above for undeveloped sites might also occur during construction activities associated with projects at developed sites. The extent of ground disturbance will vary based on project type, and specific project details. In general, distribution and collection lines are designed and constructed, to the maximum extent practicable, following existing rights of way and utility corridors. Environmental consequences, generally like those occurring on undeveloped sites, are anticipated for developed sites. Impacts to geologic and soil resources as a result of constructing infrastructure on developed sites will most likely be less than those on undeveloped sites because previously developed sites are on already disturbed areas. Alternately, if the proposed site lacks established ground cover, construction activities has the potential to worsen or accelerate existing soil erosion. Soil erosion has the potential to indirectly impact water resources and air quality.

##### **Typical Environmental Consequences for Other Project Types**

Other eligible project types are expected to have similar impacts as described above depending on whether it is being undertaken on a developed or undeveloped project site.

##### **Typical Minimization Measures for all Project Types**

Soils and topography at a project site will be characterized prior to construction to assess suitability for construction and potential for erosion. Soil stability is an important factor to consider preventing soil erosion. Soil erosion will be controlled using appropriate erosion and sediment control measures and BMPs. Erosion control BMPs include the use or installation of sandbags, silt fences, earthen berms, fiber rolls, sediment traps, erosion control blankets, check dams in medium-sized channels, or straw bale dikes in a smaller drain channels. Other BMPs can also be specified in a selected project's stormwater pollution prevention plan and fugitive dust control plan. Additional soil erosion environmental

protection measures might be identified as requirements within the associated state-issued construction permit (e.g., the National Pollutant Discharge Elimination System [NPDES] permit) or other local permits. In addition, soil conservation and stormwater management regulations require that appropriate BMPs be used to minimize/eliminate site-specific erosion concerns. BMPs also assist in minimizing soil compaction issues related to construction activities. Effective site design can reduce grading requirements, thereby reducing impacts to soils. For ground-disturbing activities impacting bedrock, paleontological resources might be impacted. Erosion occurring after construction prior to site stabilization might require the implementation of BMPs such as seeding or planting stabilizing vegetation after disturbance, and silt fencing.

EPA recommends that the use of sites with known significant paleontological resources be avoided. If significant paleontological resources are discovered during construction, the site unanticipated discovery plan will be followed, if applicable, construction work will stop and the project's environmental management office will be notified. Geotechnical surveys can enable improved site design for linear project type, to include potential trenching needs, and will be conducted as required and in accordance with the relevant laws and regulations. Where possible, prospective borrowers shall minimize ground disturbance by placing linear infrastructure along existing road disturbance limits and within existing utilities easements.

Projects receiving WIFIA credit assistance shall be designed to comply, at a minimum, with state building codes or model codes (e.g., Uniform Building Code). Designing the infrastructure in compliance with all applicable standards and technical specifications required by the seismic safety codes minimize impacts due to seismic ground shaking. Impacts resulting from seismic activities will be less than significant.

The stability of structures financed by the WIFIA program might be influenced by steep slopes, soil stability, and karst topography and EPA recommends these factors be considered during design and construction. Potential geologic hazards will be identified in a geotechnical study of any proposed project. Site selection for all project types might consider sites with geological features of low topographic relief, the absence of unique geological features, and soil characteristics with minimal construction issues. Soil survey data from NRCS can be used to take select soil information into account when developing infrastructure plans. A site-specific analysis might be prepared for sites with varied topography requiring considerable grading to ensure the appropriate and sufficient application of environmental protection measures. To the extent feasible, site design shall attempt to use all excavated soil from higher areas as fill for nearby lower areas to reduce or eliminate a need to either import or export earthen material.

Planning, consultation and/or consolidation of infrastructure during the scoping and design of the project can effectively avoid or minimize significant impacts to geologic and soil resources. Site conditions will be reviewed to determine if economically viable mineral deposits, scientifically significant paleontological resources, or unique geological features are present or expected. For proposed project sites located on previous development, the potential for the occurrence of such mineral deposits, paleontological resources, and geological features might be known from previous activities. Additional sources of information about paleontological resources in a region can be found at a state repository of fossil finds. The geotechnical study provides design and construction recommendations that address potential geological hazards and seismic activity at a site.

Short-term and long-term impacts to geologic and soil resources are anticipated to be to less than significant given the limited footprint of water and wastewater projects, compliance requirements, consideration of resources during site selection, and implementation of BMPs.

## 4.5 WATER RESOURCES

### 4.5.1 DEFINITION OF THE RESOURCE

Water resources include surface water, groundwater and drinking water, wetlands, and floodplains. Evaluation of water resources examines the quantity and quality of the resource and its demand for various purposes.

#### Surface Water

Surface water resources consist of lakes, rivers, streams, wetlands, estuaries, and the coastal waters. Surface water is important for its contributions to the economic, ecological, recreational, and human health of a community or locale. Year-round presence of water in surface water features varies, falling into the categories of perennial, intermittent, and ephemeral. Stormwater is an important contributor to surface water systems, and is a potential source of sediments and other contaminants that might degrade downstream waters.

*Estuaries.* Critical coastal habitats, such as estuaries, provide spawning grounds, nurseries, shelter, and food for finfish, shellfish, birds, and other wildlife. Estuaries (including bays and tidal rivers) are bodies of water that provide transition zones between fresh river water and saline ocean water. This interaction produces an environment suited to unique wildlife and fisheries and contributes substantially to the U.S. economy. Estuaries are typically classified by their geomorphological features or by water circulation patterns and can be referred to by many different names, such as bays, harbors, lagoons, inlets, or sounds, although some of these water bodies do not strictly meet the above definition of an estuary and are fully saline. The banks of many estuaries are amongst the most heavily populated areas of the world, with about 60 percent of the world's population living along estuaries and the coast (U.S. Environmental Protection Agency 2017).

*Coastal Watersheds.* Ocean shorelines provide habitat for fish, shellfish, and other animals, and support recreational activities. The coastal watershed starts up at the beginning headwaters of the streams and rivers that ultimately drain down to the coastal areas. As the streams and rivers flow to coastal waters, they are influenced by many land and water uses. They pass through upland areas used for a variety of purposes such as farming, housing, businesses, recreation, and conservation. Upon reaching the coastal areas, the rivers empty into estuaries, which provide a unique habitat for a diverse group of organisms. Among other habitat functions, rivers and estuaries provide breeding and feeding grounds for a variety of aquatic and terrestrial animals. Nearshore waters, the areas directly offshore from the beach, are part of the coastal watershed because they are influenced by the activities going on along the shoreline and by pollutants coming from the land. Farther offshore are coral reefs (in tropical areas) and other offshore habitats that are part of the coastal watershed as well (U.S. Environmental Protection Agency 2017).

*Freshwater Lakes and Reservoirs.* Lakes are bodies of relatively still water, which can be formed from many processes, including glaciation, tectonic movements, volcanic activity, and rivers. Reservoirs are

ivers that have been dammed for human uses (e.g., water supply, power generation, recreation). The water in lakes can be supplied by streams and rivers, groundwater, or melting glaciers (U.S. Environmental Protection Agency 2009).

### Groundwater

Groundwater consists of subsurface hydrologic resources. It is an essential resource often used for potable water consumption, agricultural irrigation, and industrial applications. Groundwater typically can be described in terms of its depth from the surface, aquifer or well capacity, water quality, surrounding geologic composition, and recharge rate. Hydrogeology extends the study of the subsurface to surface water-bearing features. Hydrogeological information helps in the assessment of groundwater quality and quantity and its movement.

*Aquifers.* An aquifer is the geologic layer that transmits groundwater, such as a layer of gravel or sand, a layer of sandstone or cavernous limestone, a rubble top or base of lava flows, or even a large body of massive rock, such as fractured granite, that has sizable openings. Aquifers can be unconfined (no layer to restrict the vertical movement of groundwater) or confined (bounded by clays or nonporous bedrock). They can be further discussed in terms of origin, thickness, or hydraulic conductivity (the rate at which water can transmit through an aquifer). These characteristics are inherently dependent on regional and local geology (U.S. Geological Survey 2017).

### Wetlands

Wetlands are areas where water covers the soil, or is present either at or near the surface of the soil all year or for varying periods of time during the year, including during the growing season. Water saturation (hydrology) largely determines how the soil develops and the types of plant and animal communities living in and on the soil. Wetlands support both aquatic and terrestrial species. The prolonged presence of water creates conditions that favor the growth of specially adapted plants (hydrophytes) and promote the development of characteristic wetland (hydric) soils. Wetlands vary widely because of regional and local differences in soils, topography, climate, hydrology, water chemistry, vegetation and other factors, including human disturbance.

Wetlands found in the United States fall into four general categories—marshes, swamps, bogs, and fens. Marshes are wetlands dominated by soft-stemmed vegetation, while swamps have mostly woody plants. Bogs are freshwater wetlands, often formed in old glacial lakes, characterized by spongy peat deposits, evergreen trees and shrubs, and a floor covered by a thick carpet of sphagnum moss. Fens are freshwater peat-forming wetlands covered mostly by grasses, sedges, reeds, and wildflowers.

There are several methods or classification systems that can be used to identify wetland types and characteristics. The Cowardin system is one common approach, which categorizes landscape position (tidal, riverine, lacustrine, and palustrine), by cover type, including open water, submerged aquatic bed, emergent vegetation, shrub wetlands, and forested wetlands, and by hydrologic regime (ranging from saturated or temporarily-flooded to permanently flooded). This analysis will focus on cover types. The U.S. Fish and Wildlife Service has developed the National Wetland Inventory (NWI) which maps some but not all portions of wetlands mapped from aerial photography. NWI data provides a valuable geospatial resource for high level analysis of on the ground resources, and provides the wetland quantities discussed below.

## **Floodplains**

Floodplains are the lowland and relatively flat areas adjoining inland and coastal waters and other flood prone areas such as offshore islands. Floodplains are closely integrated with the function and utility of all water resources due to their effect on water moving toward the coast (from upland precipitation and snowmelt) and floodwaters moving landward (from upstream and offshore storms).

### **4.5.2 POTENTIALLY APPLICABLE STATUTES AND REGULATIONS**

Descriptions of applicable laws and regulations for Water Resources are provided below.

#### **4.5.2.1 Clean Water Act**

The CWA, passed in 1972, establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. Through a variety of regulatory and non-regulatory initiatives, the CWA is designed to restore and maintain the chemical, physical, and biological integrity of the nation's waters, including wetlands.

#### **Section 404**

Section 404 of CWA establishes a program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. "Fill material" includes not only soil or dredge material, but also bridge footings, pier pilings, and other man-made materials. A Section 404 permit must be obtained from the U.S. Army Corps of Engineers (USACE) for any activity that includes the discharge of dredged or fill material into waters of the United States, including wetlands. Section 404 permits are either individual or general. General permits are granted by the USACE on a nationwide, statewide, or regional basis for activities that produce minimally adverse effects, such as minor culvert or road crossings over streams. Individual permits are required for activities that are not covered by General permits, including the construction of dams, levees, and highways along a waterway. Thus, the USACE has a direct authority to regulate waters of the United States, including wetlands, and Section 404 permitting is one regulatory mechanism that affects development within riverine and coastal floodplains.

EPA jointly administers the CWA Section 404 program. EPA's responsibility under Section 404 includes developing and publishing policy, guidance, environmental criteria used in evaluating permit applications. The CWA required EPA to develop criteria used in 404 permitting decisions; commonly referred to as the 404(b)(1) guidelines. The guidelines require that aquatic resources be (1) avoided if a less environmentally damaging practicable alternative exists, (2) minimized when there are unavoidable impacts, and (3) mitigated, in that sequence.

#### **Section 401**

The Section 401 water quality certification process, which is required for issuance of a Section 404 permit, is delegated to State and Tribal regulatory agencies. The main function of Section 401 is to allow State and Tribal jurisdictions to review and approve, condition, or deny all Federal permits or licenses that produce discharge within the jurisdiction's waterway. Applicants for a Federal license or permit must demonstrate that either the State in which the proposed discharge will originate or the interstate water pollution control agency with jurisdiction over the navigable waters in question has approved the

proposed development. As a result, all Federal permits, including those issued by USACE, must also meet all applicable State (or interstate) water management provisions. Throughout the Section 404/401 process, the USFWS, NOAA Fisheries, and State resource agencies all play an advisory role for USACE and EPA.

## **Section 402**

Section 402 of the CWA established the NPDES program. NPDES is a comprehensive program to address water pollution by regulating point sources that discharge pollutants to waters of the United States. The CWA prohibits discharging "pollutants" through a "point source" into a "water of the United States" unless authorized by an NPDES permit. Permits contain limits on what can be discharged monitoring and reporting requirements, and other provisions to ensure that the discharge does not hurt water quality or people's health. In essence, the permit translates general requirements of the Clean Water Act into specific provisions tailored to the operations of each discharging entity. Examples of activities regulated under the NPDES program include municipal wastewater, biosolids, industrial wastewater, and stormwater (including mandatory permits for any earth moving or ground clearing for areas larger than one acre). Implementation of the NPDES program provides a higher degree of state and federal review and corresponding measures to protect aquatic resources.

## **Section 303(c) and 303(d)**

The Water Quality Standards Regulation (40 CFR 131) establishes the requirements for states and tribes to review, revise and adopt water quality standards. It also establishes the procedures for EPA to review, approve, disapprove and promulgate water quality standards pursuant to section 303(c) of the CWA. Under section 303(d) of the CWA, states, territories and authorized tribes, collectively referred to in the act as "states," are required to develop lists of impaired waters. These are waters for which technology-based regulations and other required controls are not stringent enough to meet the water quality standards set by states. The law requires that states establish priority rankings for waters on the lists and develop Total Maximum Daily Loads (TMDLs) for these waters. A TMDL includes a calculation of the maximum amount of a pollutant that can be present in a waterbody and still meet water quality standards.

## **Section 304(a)(1)**

Section 304(a)(1) of the CWA directs EPA to develop criteria for determining when water has become unsafe for people and wildlife. These criteria are recommendations. EPA has developed aquatic life criteria, biological criteria, human health criteria, microbial/recreational criteria, and suspended and bedded sediment criteria.

### **4.5.2.2 Safe Drinking Water Act**

The Safe Drinking Water Act (SDWA) was established to protect the quality of drinking water in the U.S. This law focuses on all waters actually or potentially designed for drinking use, whether from above ground or underground sources. The Act authorizes EPA to establish minimum standards to protect tap water and requires all owners or operators of public water systems to comply with these primary (health-related) standards. The 1996 amendments to SDWA require that EPA consider a detailed risk and cost assessment, and best available peer-reviewed science, when developing these standards. State

governments, which can be approved to implement these rules for EPA, also encourage attainment of secondary standards (nuisance-related).

SDWA also sets a framework for the Underground Injection Control (UIC) program to control the injection of wastes into ground water. EPA and states implement the UIC program, which sets standards for safe waste injection practices and bans certain types of injection altogether. Injection wells are overseen by either a state or tribal agency or one of EPA's regional offices. States and tribes can apply for primary enforcement responsibility to implement the UIC program. This is called primacy. In general, state and tribal programs must meet minimum federal UIC requirements to gain primacy. If a state or tribe does not obtain primacy, EPA implements the program directly through one of its regional offices. EPA has delegated primacy for all well classes to 33 states and three territories. EPA shares responsibility in seven states. EPA implements a program for all well classes in 10 states, two territories, and the District of Columbia, and for most tribes.

Under Section 1424(e) of the SDWA, the Sole Source Aquifer (SSA) program was authorized. The SSA program enables EPA to designate an aquifer as a sole source of drinking water and establish a review area. EPA then reviews proposed project that will both be located within the review area and receive federal funding. The review area includes the area overlying the SSA. SSAs can include the source areas of streams that flow into the SSA's recharge zone. Projects receiving federal financial assistance within the project review area of a designated SSA which has the potential to contaminate the aquifer are subject to EPA review. These areas have no alternative drinking water source(s) that can physically, legally and economically supply all those who depend on the aquifer for drinking water.

#### **4.5.2.3 Coastal Zone Management Act (CZMA)**

The CZMA of 1972 (16 U.S.C. § 1451 et seq.) is administered by the Department of Commerce's Office of Coastal Resource Management and NOAA and applies to all coastal states and to all States that border the Great Lakes. The CZMA was established to help prevent additional loss of living marine resources, wildlife, and nutrient-enriched areas; alterations in ecological systems; and decreases in undeveloped areas available for public use. The CZMA calls for the "effective management, beneficial use, protection, and development" of the nation's coastal zone and promotes active State involvement in achieving these goals. The CZMA requires participating coastal States to develop coastal zone management programs to effectively manage coastal zones within State boundaries. Each State CZM program must include provisions protecting coastal natural resources, fish, and wildlife; managing development along coastal shorelines; providing public access to the coast for recreational purposes; and incorporating public and local coordination for coastal decision-making. Upon Federal approval of a State's coastal zone management program, the State becomes eligible for Federal coastal zone grants. Development projects within the coastal zone must demonstrate compatibility with the State's coastal zone program and apply for a coastal zone permit. Additionally, review by other regulatory agencies, such as the USFWS and NOAA Fisheries is typically part of a coastal zone permit review.

The Federal Consistency provision, contained in Section 307 of the CZMA, allows affected states to review federal activities to ensure that they are consistent with the State's CZM program. This provision also applies to non-Federal programs and activities that use Federal funding and that require Federal authorization. Any activities that might have an effect on any land or water use or on any natural resources in the coastal zone must conform to the enforceable policies of the approved state CZM

program. NOAA's regulations in 15 CFR 930 provide the procedures for arriving or obtaining a consistency determination.

This voluntary Federal-State partnership addresses coastal development, water quality, shoreline erosion, public access, protection of natural resources, energy facility siting, and coastal hazards. Areas bordering the Atlantic, Pacific, and Arctic Oceans, Gulf of Mexico, Long Island Sound, and Great Lakes are affected by additional requirements under the CZMA, which is concerned with the degradation of coastal waters, to include degradation from nonpoint source pollution. Under the CZMA, federal agency actions within or outside the coastal zone that affect any land or water use or natural resource of the coastal zone shall be carried out in a manner that is consistent to the maximum extent practicable with the enforceable policies of a state's approved coastal management program. Currently, 34 coastal states participate; Alaska withdrew in 2011 (NOAA, 2014).

#### **4.5.2.4 Wild and Scenic Rivers Act**

The Wild and Scenic Rivers Act, passed in 1968, preserves certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. The Act safeguards the special character of these rivers, while also recognizing the potential for their appropriate use and development. Rivers are designated by Congress or, if certain requirements are met, the Secretary of Interior. Rivers can be classified as wild, scenic or recreational, with the goal of protecting and enhancing the values that caused the river to be designated.

#### **4.5.2.5 EO 11988 (Floodplain Management)**

Issued in 1977, EO 11988, *Floodplain Management*, requires all Federal agencies to avoid to the extent possible the long and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development whenever there is a practicable alternative. The EO affects actions including the acquisition, management, and disposal of Federal facilities and land; federally undertaken, financed, or assisted construction and improvements; and Federal programs and activities affecting land use (42 FR 26951). Prior to any Federal action, the agency must conduct an 8-step process to determine whether the proposed action will occur in the floodplain; identify and evaluate practicable alternatives "to avoid adverse effects and incompatible development in the floodplains;" identify the impacts of the proposed action; develop measures to minimize potential harm to people, property, and floodplains; and provide an opportunity for public review and comment.

#### **4.5.2.6 EO 11990 (Protection of Wetlands)**

EO 11990, *Protection of Wetlands*, requires Federal agencies to minimize the destruction, loss, or degradation of wetlands, including waters of the United States, and to preserve and enhance the natural and beneficial values of wetlands. Before implementing an action that is located in a wetland, this EO requires Federal agencies to demonstrate that there is no practical alternative and the proposed action includes all practical measures to minimize harm to the wetlands. The Federal agency must also provide an opportunity for early public review by those who may be affected and include findings in its environmental or other appropriate decision documents.

### 4.5.3 EXISTING CONDITIONS

#### 4.5.3.1 Surface Water

**Freshwater Streams and Rivers.** The United States has more than 250,000 rivers, comprising more than 3.5 million miles, covering an enormous and diverse landscape. The condition of streams and rivers varies widely. Stream and river can be modified in response to natural occurrences that alter the landscape (e.g., landslides, tropical typhoons, earthquakes). Stream channels have been and continue to be frequently modified to accommodate development of land, protect existing infrastructure, or supply potable water. Cities and towns, farmlands, mines, factories, sewage treatment facilities, dams, and many other human activities impact water quality and effect the condition of streams. Across the U.S. there are 42,675 impaired waters identified on the 303(d) list. There are many potential causes of impairment to streams, including, but not limited to, pathogens, nutrients, metals, organic enrichment/oxygen depletion, polychlorinated biphenyls, and sediment. Nationally the cumulative number of TMDLs completed has been 73,947 TMDLs. In 2017, 3,348 TMDLs were prepared/completed.

As of December 2014, the National Wild and Scenic River System protects 12,734 miles of 208 rivers in 40 states and the Commonwealth of Puerto Rico; this is less than one-quarter of one percent of the nation's rivers.

**Estuaries and Coastal Resources.** There are 95,439 miles of shoreline in the United States. The amount and condition of coastal resources varies across the United States. There are currently 28 designated as estuaries of national significance located along the Atlantic, Gulf, and Pacific coasts and in Puerto Rico. The National Estuaries Programs has restored or protected just over 2 million acres since 2000. The integrity of estuarine ecosystems is threatened by the increasing concentration of people in coastal counties, which are estimated to be growing three times faster than counties elsewhere in the nation.

**Freshwater Lakes and Reservoirs.** Comprising 39.9 million acres, lakes and reservoirs are a major water resource in this country. Freshwater inland lakes and reservoirs provide our nation with 70 percent of its drinking water and supply water for industry, irrigation, and hydropower. Lake ecosystems support complex and important food web interactions and provide habitat needed to support numerous threatened and endangered species. Lakes are also the cornerstone of our nation's 19-billion-dollar freshwater fishing industry, form the backbone of numerous state tourism industries, and provide countless recreational opportunities.

#### 4.5.3.2 Groundwater and Drinking Water

Groundwater is the subsurface water that fully saturates pores or cracks in soils and rock. It replenishes streams, rivers, and habitats and provides fresh water for irrigation, industry, and potable water consumption. Groundwater is replenished by precipitation and, depending on the local climate and geology, is unevenly distributed in both quantity and quality. (U.S. Geological Survey 2017).

In terms of storage at any one instant in time, groundwater is the largest single supply of fresh water available for use by humans. An estimated one million cubic miles of the world's groundwater is stored within one-half mile of the land surface. Only a fraction of this reservoir of groundwater, however, can be practicably tapped and made available on a perennial basis through wells and springs. The amount of groundwater in storage is more than 30 times greater than the nearly 30,000 cubic-miles volume in all

the freshwater lakes and more than the 300 cubic miles of water in all the world's streams at any given time (U.S. Geological Survey 2017).

Many communities obtain their drinking water from aquifers. Water suppliers drill wells through soil and rock into aquifers to reach the ground and supply the public with drinking water. Many homes also have their own private wells drilled on their property to tap this supply. Unfortunately, the groundwater can become contaminated by human activity. These chemicals can enter the soil and rock, polluting the aquifer and eventually the well (U.S. Environmental Protection Agency 2012). There are 77 designated sole source aquifers in the United States and U.S. territories (U.S. Environmental Protection Agency 2017).

#### 4.5.3.3 Wetlands

There were an estimated 110.1 million acres (44.6 million ha) of wetlands in the conterminous United States in 2009. An estimated 95 percent of all wetlands were freshwater and 5 percent were in the marine or estuarine (saltwater) systems. In 2009, there were an estimated 104.3 million acres (42.2 million ha) of freshwater wetland and 5.8 million acres (2.4 million ha) of intertidal (saltwater) wetlands in the conterminous United States. The distribution of wetlands by type, estimated area and change has been summarized and presented in Table 4-22. (Dahl 2011)

TABLE 4-2 DISTRIBUTION OF U.S. WETLANDS BY TYPE

WETLAND/DEEPWATER CATEGORY	ESTIMATED AREA, 2009 (THOUSANDS OF ACRES)
Marine Intertidal	227.8
Estuarine Intertidal Non-Vegetated	1,017.7
Estuarine Intertidal Vegetated	4,539.7
All Intertidal Wetlands	5,785.2
Freshwater Ponds	6,709.3
Freshwater Vegetated 2	97,565.3
Freshwater Emergent	27,430.5
Freshwater Shrub	18,511.5
Freshwater Forested	51,623.3
All Freshwater Wetlands	104,274.6
All Wetlands	110,059.8
Lacustrine	16,859.6
Riverine	7,510.5
Estuarine Subtidal	18,776.5
All Deepwater Habitats	43,146.6
All Wetlands and Deepwater Habitats	153,206.4

#### 4.5.3.4 Floodplains

Floodplains account for seven percent of the nation's land, but they now include fifteen percent of our urban areas. Floodplains are the home to some 9.6 million households. In an average year, floods cause deaths to 150 people and over \$3 billion in property damage (FEMA 2017). Most wetlands are located in floodplains (103 million acres of wetlands), comprising about five percent of the nation's land area. There are approximately 17,000 to 18,000 flood-prone communities. Fifteen percent of urban areas are subject to flooding. Over half of urban floodplains have been already developed. Floodplains contain approximately 10 million households and \$800 to \$900 billion in property subject to flood risk (FEMA 2017).

### 4.5.4 ENVIRONMENTAL CONSEQUENCES

#### 4.5.4.1 No Action Alternative

Under the No Action Alternative, no new impacts will occur to current surface water, groundwater, wetlands and floodplains from WIFIA credit assistance projects. The No Action Alternative assumes that proposed projects are not implemented, and therefore potential long-term water quality improvements, as discussed below, will not be realized. For example, potential benefits realized from CSO separation projects include decreased nutrient discharges and prevention of further significant degradation of receiving waters. We conclude that the No Action Alternative will not result in significant impacts to water resources.

#### 4.5.4.2 Proposed Action Alternative - Environmental Consequences

##### Typical Environmental Consequences for All Project Types

The construction of water and wastewater projects financed by the WIFIA program on undeveloped and previously developed sites might result in impacts to surface water, groundwater and wetlands through soil-disturbing activities, including vegetation removal, grubbing, and grading necessary to establish a level surface for construction, and by the construction of the infrastructure, including any necessary fencing, shelters, access roads, and utilities. The extent of ground disturbance will vary based on project type. Soil disturbance increases the potential for soil erosion to occur; eroded soil and stormwater runoff and discharges might flow into water resources increasing turbidity and degrading the quality.

Construction of linear and vertical project types can result in direct impacts to surface water or wetlands from activities like the placement of access roads, bridge placement or widening of existing bridges, placement of intake or outfall structures, maintenance of existing structures, placement of buildings or other project components, or in water work might be required, etc. If it was determined that possible encroachment might occur and cannot be avoided, the projects must obtain appropriate permits prior to conducting work. Additional discussion of avoidance and minimization for direct impacts to surface water and wetlands is discussed below.

Water and wastewater projects financed through WIFIA credit assistance might include new or expanded outfalls and discharges of effluent to water resources, such as storm sewer outfalls or waste water treatment plants. The stormwater conveyed into water resources would carry pollutants picked up from surfaces such as parking lots and may contain solids, oxygen-demanding substances, nitrogen, phosphorus, pathogens, hydrocarbons, and metals. These pollutants degrade water quality in receiving

waters near urban areas, and often contribute to the impairment of use and exceedances of criteria included in State water quality standards. The quantity of these pollutants per unit area delivered to receiving waters tends to increase with the degree of development in urban areas.

Projects might impact floodplains through encroachment into the floodplain during construction. These impacts would be minimized during site design and mitigated for appropriately. WIFIA projects located in whole or in part within a floodplain must undergo the process outlined in EO 11988. With the use of effective site design and appropriate mitigation, impacts to floodplains are anticipated to be less than significant.

Projects that support or promote coastal development in undeveloped coastal barrier islands, including those in the Great Lakes, are generally ineligible for direct or indirect access to federal funds. Therefore, no impacts to these areas are anticipated from water and wastewater projects financed by the WIFIA program.

Projects might occur in coastal zones and might impact coastal marine resources, wildlife, and nutrient-enriched areas; alter ecological systems; and decrease undeveloped areas available for public use in coastal zones. Under the Federal Consistency provision of the CZMA, projects that have an effect on any land or water use or on any natural resources in the coastal zone must conform to the enforceable policies of the approved state coastal zone management program. Therefore, no impacts to coastal resources are anticipated.

#### **Typical Environmental Consequences for Linear and Vertical Project Types at Developed Sites**

*Surface Water.* Construction might have short-term effects on the quality of surface water resources. It is likely that projects occurring on disturbed sites result in fewer impacts to surface water, as less clearing, grading, and other site preparation activities are likely to occur, than on an undisturbed site. Construction at a previously disturbed site have a higher likelihood of mobilizing previously existing contaminants into surface or ground waters. There might be existing stormwater discharges within existing site footprints. Expansions or work within the existing site footprint is expected to utilize existing stormwater management.

*Groundwater.* Once construction is completed, further risk of work-related contamination of surface waters will be minimal. Projects located in previously disturbed sites are not expected to impact hydrologic characteristics of coastal zones, wetlands, or floodplains. As a result, impacts on the quality of either surface or groundwater resources are not significant.

*Wetlands.* Project specific impacts to wetlands occurring on developed sites is currently unknown. It is assumed that projects occurring on developed sites result in fewer impacts to wetlands, as less clearing, grading, and other site preparation activities are likely to occur, than on an undisturbed site. It is also assumed that project types occurring on developed sites result in fewer direct impacts to wetlands, as existing access roads can be used and existing open areas can be utilized for construction yards and equipment. Discussion on wetland avoidance, minimization and mitigation is discussed below.

#### **Typical Environmental Consequences for Linear and Vertical Project Types at Undeveloped Sites**

*Surface Water.* It is assumed that the construction of projects occurring on undisturbed sites will result in greater impacts to surface water, due to greater amounts of clearing, grading, and other site

preparation activities that might occur, than might occur on a disturbed site. During construction of WIFIA projects on a previously undeveloped site, it is possible for sediment to reach nearby surface waters and wetlands as the ground is disturbed by excavation, grading and construction traffic. The construction of project types that occur on undisturbed sites are likely to result in new erosion and stormwater sources, and it is assumed that construction on an undeveloped site might cause an incrementally greater amount of erosion and stormwater than on a developed site. Construction at a previously undisturbed site has a higher likelihood directly effecting a greater acreage of wetland or linear footage of streams. Projects constructed in a location anticipated to affect a coastal zone, coastal waters might potentially be impacted if degraded surface water reached coastal zones. WIFIA projects undertaken in previously undeveloped sites are expected to have the same benefits to water quality surface and ground water resources as the projects in previously disturbed sites.

*Groundwater and Drinking Water.* Construction at an undeveloped site might require removal of a substantial amount of vegetation, altering drainage patterns, producing runoff and sedimentation. If removal of a substantial amount of vegetation substantially alters the volume and rate of water being absorbed into the ground, site hydrology, including recharge of aquifers, might be affected. For WIFIA projects constructed in aquifer recharge zones, groundwater might be impacted if degraded surface water rapidly reached aquifer zones.

*Wetlands.* Project specific impacts to wetlands occurring on undeveloped sites is currently unknown. Prospective borrowers will complete the check list in Appendices A or B to evaluate impacts to wetlands. It is assumed that projects occurring on undeveloped sites result in incrementally greater impacts to wetlands than on a developed site, as more clearing, grading, and other site preparation activities are likely to occur. Discussion on wetland avoidance, minimization and mitigation is discussed below.

### **Typical Environmental Consequences from Other Project Types**

Other project types might have similar impacts as described above, depending on whether it is being undertaken on a developed or undeveloped project site.

#### **4.5.4.3 Proposed Action Alternative - Beneficial Effects to Water Resources**

##### **Beneficial Effects to Water Resources from Linear Project Types**

EPA expects water quality benefits to occur from linear project types, such as wastewater collection, drinking water transmission and distribution, valves, meters, fire hydrants, manholes, catch basins, outfalls, etc. Examples of beneficial impacts are given for some project types.

Linear projects involving improvements to wastewater collection systems, might result in reduced flow to combined sewers, which collect both sanitary sewage and stormwater runoff in a single-pipe system, and result in reduced overflows during wet weather conditions. Reduced or eliminated sewage and stormwater runoff overflows into receiving surface waters can improve water quality at discharge points and in downstream waters. Reduced overflows can help receiving waters achieve TMDL goals and ultimately reduce impairments on some streams.

Linear projects also include the installation, construction or extension of new water transmission and distribution infrastructure. Water transmission and distribution infrastructure benefits existing residents not served by a safe supply, provides potable water while preventing contamination of the water prior

to delivery, avoids stagnant water and reduce microbiological problems, reduces system leakage, and maintains adequate pressure.

### **Beneficial Effects to Water Resources from Vertical Project Types**

The implementation of vertical project types can improve water resources, including surface waters, groundwater and drinking water, and wetlands. As previously discussed, projects can include centralized wastewater and drinking water treatment plants, wet-weather treatment facilities (e.g., CSO treatment), desalination and reverse osmosis plants, pump stations, wells, and other above ground facilities. Examples of beneficial impacts are given for some project types.

Projects that include operation, expansion, upgrade, rehabilitation or replacement of wastewater treatment facilities result in improved water quality of waters discharged to waterbodies, land or reused. Higher quality discharge waters can result in the improvement of downstream waters and aquatic habitats. The operation, expansion or upgrade to drinking water treatment plants improves drinking water sources by treating and reducing contamination, removing contaminants and disease-causing agents. The implementation of projects associated with drinking water treatment provides safe drinking water to communities. Projects can aim to improve the quality of the water that enters the treatment plant.

### **Beneficial Effects from Other Project Types**

The creation of wetlands can occur from WIFIA credit assistance projects, such as from non-point source pollution prevention projects. Wetlands provide many beneficial functions and values as described above.

#### **4.5.4.4 Proposed Action Alternative - Typical Minimization Measures for all Project Types**

Soil erosion and stormwater will be controlled through the use of appropriate erosion and sediment control measures and BMPs. Erosion control BMPs might be utilized, such as the use or installation of sandbags, silt fences, earthen berms, fiber rolls, sediment traps, erosion control blankets, check dams in medium-sized channels, or straw bale dikes in a smaller drain channels. Other BMPs can also be specified in a selected project's stormwater pollution prevention plan and fugitive dust control plan, or identified as requirements within the associated state-issued construction permit (e.g., NPDES permit) or other local permits. In addition, soil conservation and stormwater management regulations require that appropriate BMPs be used to minimize/eliminate site-specific erosion concerns. BMPs also assist in minimizing soil compaction issues related to construction activities. Effective site design might reduce grading requirements, thereby reducing impacts to soils. The implementation of BMPs can also address erosion occurring after construction but prior to site restoration, such as seeding or planting stabilizing vegetation after disturbance, or installation of silt fencing,

It is the goal and intent of EPA, consistent with EO 11990 and the 404(b)(1) guidelines, to avoid adverse impacts on wetlands and to proactively manage for wetlands during the environmental planning process to mitigate potential impacts through avoidance. If it was determined that possible encroachment might occur and cannot be avoided, the projects must contact the USACE and applicable state agencies to determine if jurisdictional wetlands are impacted, and to establish appropriate permitting and mitigation to minimize adverse impacts.

Impacts are anticipated to be less than significant by designing the site to avoid water resources to the maximum extent practical, designing the site to minimize the size of disturbed areas, implementing federal, state and local regulations which require the prospective to implement BMPs to reduce or eliminate sedimentation and manage stormwater, keeping vehicles and construction equipment in good working condition (e.g., to prevent spills or leaks), keeping the construction staging area in a clean and orderly condition, and adhering to all permit requirements (e.g., applicable CWA permits). Completion of a CZMA consistency evaluation, if required, is also anticipated to result in site design and construction parameters that avoid or minimize impacts. Impacts resulting from construction activity are anticipated to be short-term and not significant.

WIFIA credit assistance projects may be impacted by future projected environmental changes such as sea-level rise, increased storm surge, and increasing precipitation, runoff and drought events. These future impacts to water resources, over the life-span of the project, should be considered during the design stage to ensure resilience.

Discharges and outfalls are regulated by the CWA and SDWA through the NPDES, 404, or UIC programs by EPA directly or the states and tribes through delegation of EPA's authority. WIFIA credit assistance projects must comply with all relevant federal and state discharge laws and regulations and must have a valid NPDES or UIC permit before beginning of operations.

## 4.6 BIOLOGICAL RESOURCES

### 4.6.1 DEFINITION OF THE RESOURCE

Biological resources refer to the living landscape – the plants, animals, microorganisms, and other aspects of nature – and are a component of every ecosystem. Biological resources fall into two broad groupings: flora (plants) and fauna (mammals, birds, reptiles, amphibians, fish, and invertebrates), including their behaviors, assemblages, habitat, and interactions within the overall ecosystems within which they are found. The structure and function of an ecosystem is largely determined by energy, moisture, nutrient, and disturbance regimes, which in turn are influenced by a variety of biological and non-biological factors, including climate, geology, flora, fire, hydrology, and wind (USFWS 2015).

### 4.6.2 POTENTIALLY APPLICABLE STATUTES AND REGULATIONS

A discussion of the applicable laws and regulations for biological resources are provided below.

#### 4.6.2.1 Bald and Golden Eagle Protection Act of 1940.

The BGEPA of 1940 and amended in 1962 was passed to protect both avian species. The bald eagle was officially adopted as the Nation's symbol in 1782. From that time until 1940, population numbers rapidly declined due to hunting, insecticide use, and habitat loss. To prevent the extinction of the bald eagle, Congress passed the Bald Eagle Act (16 U.S.C. §668-668d) in 1940 to prohibit the take, possession, sale, purchase, barter, or offer to sell, purchase, or barter, export, or import any part of a bald eagle, with a few limited exceptions (e.g., for Native American religious purposes). In 1962, Congress amended the Bald Eagle Act to include golden eagles, recognizing that the population of the golden eagle had declined at such an alarming rate that it was threatened with extinction. The bald eagle continues to be protected by the Bald and Golden Eagle Protection Act even though it has been delisted under the ESA.

Under the Bald and Golden Eagle Protection Act “take, includes pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb. Thus, any actions that are likely to cause injury to an eagle, decrease its productivity, or cause nest abandonment are also prohibited. Under the Act, both active and inactive eagle nests must be protected from disturbance, unless a USFWS permit is obtained. Otherwise, inactive nests cannot be removed and active nests must be protected using avoidance zones of appropriate size to ensure eagles are not disturbed. Using USFWS guidance, such as the National Bald Eagle Management Guidelines (USFWS 2007), and consulting with the USFWS will result in identifying appropriate nest avoidance zones for nests protected under the Bald and Golden Eagle Protection Act.

#### **4.6.2.2 Endangered Species Act of 1973**

The ESA (16 U.S.C. §1531 et seq.) provides a program for the protection of imperiled species and the ecosystems upon which threatened and endangered species of fish, wildlife, and plants depend. Collectively referred to in this PEA as the Services, USFWS administers the ESA for terrestrial and freshwater organisms, while NOAA Fisheries administers the ESA primarily for marine wildlife and anadromous fish. Section 7(a)(2) of the ESA requires all Federal agencies to consult with the Services to ensure that any action they fund, authorize, or carry out does not jeopardize the continued survival of any endangered or threatened species or adversely modify designated critical habitat. Section 7(a)(2) generally requires a Federal agency to conduct a biological assessment to identify any endangered or threatened species that are likely to be affected by the agency's action, and assess potential risks.

Biological assessments result in a determination whether the action is likely to adversely affect the species or critical habitat. If the Services concur with an agency's finding that an action is not likely to adversely affect the species, then the consultation is complete. However, if the Services do not concur with such a finding, or if the agency finds that the action is likely to adversely affect the species or critical habitat, then consultation is required. The Services then develop a Biological Opinion that further analyzes the action's impact to determine if jeopardy or adverse modification will occur. If jeopardy to the species or adverse modification of critical habitat is found, the Services will suggest reasonable and prudent alternatives (RPAs) to the proposed action that will allow the Federal agency to proceed without posing such risks (USFWS & NOAA Fisheries 1998).

However, even if no jeopardy or adverse modification is found, or an RPA is implemented, the take of individual listed species still might result. Section 9 of the ESA prohibits the taking of listed animal species. If take is anticipated, the Services will develop an incidental take statement that specifies measures to minimize the take that, if implemented, exempt such take from the prohibitions of Section 9.<sup>5</sup>

#### **4.6.2.3 Magnuson-Stevens Fishery Conservation and Management Act of 1976**

The Magnuson-Stevens Fishery Conservation and Management Act of 1976 (MSA) (16 U.S.C. §§1801-1882) was enacted to conserve and manage fishery resources along the United States coastlines. Under

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<sup>5</sup> The take prohibitions of Section 9 of the ESA also apply to non-Federal parties. Section 10(a)(1)(B) of the ESA allows non-Federal parties to apply for an incidental take permit for activities that might result in the incidental taking of ESA-listed species. The permit application must include a habitat conservation plan that lays out the proposed actions, determines the effects of those actions on ESA species and their habitats, and defines measures to minimize and mitigate adverse effects (USFWS & NOAA Fisheries 1998).

the MSA, Congress mandated the identification of habitats essential to managed species and measures to conserve and enhance these habitats. Essential Fish Habitat (EFH) is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity... 'Waters' includes aquatic areas and their associated physical, chemical, and biological properties that are used by fish, and may include areas historically used by fish where appropriate; 'substrate' includes sediment, hard bottom, structures underlying the waters, and associated biological communities; 'necessary' means the habitat required to support a sustainable fishery and a healthy ecosystem; and 'spawning, breeding, feeding, or growth to maturity' covers a species' full life cycle." (NOAA Fisheries 2004). The MSA requires cooperation among NOAA Fisheries, the eight regional Fishery Management Councils (FMCs), and Federal and State agencies to protect, conserve, and enhance EFH.

Pursuant to Section 303(a)(7) of the MSA (NOAA Fisheries 2007) regional FMCs must prepare Fishery Management Plans (FMPs) which include the identification of EFH used by all life history stages of each managed species. NOAA Fisheries and the FMCs, under the authority of the Secretary of Commerce, are mandated to describe and identify EFH in each FMP; minimize to the extent practicable the adverse effects of commercial fishing on EFH; and identify other actions to encourage the conservation and enhancement of EFH (50 C.F.R. § 600.805-930). NOAA Fisheries and the regional FMCs also identify Habitat Areas of Particular Concern (NOAA Fisheries 2017).

Section 305(b)(2) of the MSA requires a Federal agency to consult with NOAA Fisheries on all activities, or proposed activities, authorized, funded, or undertaken that might adversely affect EFH. As part of the EFH consultation process, Federal agencies must prepare a written EFH Assessment describing the effects of that action on EFH. NOAA Fisheries recommends consolidated EFH consultations with interagency coordination procedures required by other statutes such as NEPA, Section 7 of the ESA, or the Fish and Wildlife Coordination Act. NOAA Fisheries must provide the Federal agency with EFH consultation recommendations for any action that may adversely affect EFH (50 C.F.R. § 600.805-930).

#### **4.6.2.4 Marine Mammal Protection Act of 1972**

The Marine Mammal Protection Act of 1972 (MMPA) (16 U.S.C. §§1361-1407) protects all marine mammals, including whales, dolphins, and porpoises (cetaceans); seals, sea lions, and walruses (pinnipeds); manatees and dugongs (sirenians); sea otters; and polar bears within United States waters. The MMPA makes it illegal to "take" marine mammals without a permit. As with the Bald and Golden Eagle Protection Act, there are a few limited exceptions (e.g., select Alaska Native practices) under this law, which is regulated by the National Marine Fisheries Service (NMFS). Under the MMPA, a "take" includes harass, feed, hunt, capture, collect, or kill any marine mammal or part of a marine mammal. NOAA Fisheries manages all cetaceans, seals, and sea lions; USFWS manages walruses, manatees, dugongs, otters, and polar bears. Both USFWS and NOAA Fisheries are the lead Federal agencies implementing the MMPA, and coordination with these agencies is required for actions with the potential to result in a take of a marine mammal within United States waters.

#### **4.6.2.5 Migratory Bird Treaty Act of 1918**

Under the Migratory Bird Treaty Act of 1918 (MBTA) (16 U.S.C. §§703-712, as amended), it is unlawful to pursue, hunt, take, capture, kill, possess, sell, purchase, barter, import, export, or transport any migratory bird, or any part, nest, or egg or any such bird, unless authorized under a permit issued by the Secretary of the Interior. Some regulatory exceptions apply. "Take" is defined in the MBTA regulations as

"pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect" (16 U.S.C § 1532). The MBTA protects more than 1,000 species of birds that are found in the United States (USFWS 2016). USFWS policy interprets MBTA "take" to include nests occupied by eggs or nestlings, or are otherwise still essential to the survival of the juvenile birds (USFWS 2003). The migratory bird species protected by the Act are listed in 50 C.F.R. § 10.13. In addition to the MBTA requirements, federal agencies also are directed under EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, to conserve migratory birds and to assess the effects of their actions on migratory bird populations.

#### **4.6.2.6 EO 11990 (Protection of Wetlands)**

Wetlands are among the most productive of all ecosystems, therefore wetland protection measures, governed under the CWA (33 U.S.C. § 1251 et seq.), protect the species that directly or indirectly depend on wetlands for all or part of their life cycle. See Section 4.5.2.6 for further information.

#### **4.6.2.7 EO 13112 (Safeguarding the Nation from the Impacts of Invasive Species)**

EO 13112, Safeguarding the Nation from the Impacts of Invasive Species, requires Federal agencies to actively prevent the introduction and spread of invasive species. This EO also created the Invasive Species Council to implement and oversee proactive planning and develop tangible steps to prevent, eradicate, and control invasive species (National Invasive Species Information Center 2017).

### **4.6.3 EXISTING CONDITIONS**

Stretching from the arctic of Alaska to the Florida Keys, and the coast of Maine to Hawaii's volcanic islands, the United States supports an extraordinary diversity of life. Encompassing more than 3.5 million square miles of land and with 12,000 miles of coastline, the nation spans 120 degrees of longitude—nearly a third of the globe (Benton 2008). The resulting range of climates has given rise to a wide array of ecosystems, from tundra and subarctic taiga to deserts, prairie, boreal forest, deciduous forests, temperate rain forests, and even tropical rain forests. The United States is home to approximately 22,000 species of native plants and animals. Nearly three thousand are animals (mammals, birds, reptiles, amphibians and fish), and more than 18,000 are plant species (NatureServe 2017).

The current USFWS list of threatened and endangered species includes 711 animal species and 942 plant species in the United States. and 2,328 plant and animal species both foreign and domestic (USFWS 2017). NMFS is responsible for the stewardship of the nation's living marine resources, anadromous fish, and their habitat. Of these species, approximately 1,653 are found in part or entirely in the United States. or its waters. There are approximately 127 marine mammal species worldwide managed under the MMPA. Of those 127, eight species are under the jurisdiction of the USFWS (walrus, polar bear, sea otter, marine otter, West African manatee, Amazonian manatee, West Indian manatee, and dugong) (NOAA 2017).

Candidate species are plants and animals for which the USFWS has sufficient information on their biological status and threats to propose them as endangered or threatened under the ESA, but for which development of a proposed listing regulation is precluded by other higher priority listing activities. As of August 30, 2017, there are 30 Species on the USFWS Candidate Species list (USFWS 2017). NMFS

maintains a similar list, using the term “species of concern.” There are 35 species of concern as of September 29, 2017 (NOAA 2017).

Existing biological resources of projects considered for WIFIA financing are representative of biological resources across the U.S., with facilities and properties located throughout the country, and occupying a number of different ecoregions<sup>6</sup>. Therefore, factors affecting probable responses to disturbance varies. Species of birds, mammals, reptiles, amphibians, fish, and microorganisms – and their supporting habitat – present on project sites will vary considerably from site to site. Additionally, some wildlife species are present year-round on sites whereas others are present only temporarily (e.g., migration route or nesting). Projects expected to receive WIFIA credit assistance will have planning level surveys for many of the biological resources on their site, with more detailed surveys completed as needed for particular species or sites. However, most of the projects considered for WIFIA credit assistance are in urban/built-up lands (neighborhoods, towns, and cities with streets, residences, commercial building, park lands, etc.) which typically do not support dynamic and substantial biological communities. Developed areas and urban landscaping provide little ecological benefit to most plant and animal species, although some species can adapt to sparse natural resources associated within urban environments. Generally, wildlife and vegetative communities in urban/built-up lands tend to support a lower density and diversity of species and a reduction of quality and quantity of ecological resources (Lowry 2013).

#### 4.6.4 ENVIRONMENTAL CONSEQUENCES

An evaluation of impacts to biological resources involves a comparison of current and future proposed conditions and a projection of the extent to which the alternatives might alter the current flora and fauna, migratory birds, threatened and endangered species and designated critical habitat, EFH, and wetlands.

##### 4.6.4.1 No Action Alternative

Under the No Action Alternative, no new impacts will occur to vegetation/flora, wildlife/fauna and rare, threatened and/or endangered species. The No Action Alternative will not result in any construction-related habitat disturbances that are discussed below (Section 4.6.4.2). The No Action Alternative assumes that proposed projects are not implemented, and therefore potential benefits to vegetation/flora, wildlife/fauna and rare, threatened and/or endangered species will not occur, such as benefits resulting from improved quality of receiving waters. Consequently, there will be no new impacts to biological resources as a result of the No Action Alternative.

##### 4.6.4.2 Proposed Action Alternative

#### Typical Environmental Consequences Associated with All Project Types

*Vegetation/Flora.* Construction activities associated with all project types might involve ground-disturbing activities, including but not limited to vegetation removal, grubbing, grading, digging, and blasting. Ground-disturbing activities have the potential to affect vegetative resources by reducing the extent of vegetative cover, compacting soils, and causing erosion or sedimentation that degrade the

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<sup>6</sup> Ecoregions are areas where ecosystems (and the type, quality, and quantity of environmental resources) are generally similar. More information at: <https://www.epa.gov/eco-research/ecoregions>

ability of land to support vegetation. Reduced vegetation and shading can allow a greater amount of sunlight to reach the soil or stream if riparian vegetation is reduced. Reduced shading can increase soil temperatures further inhibiting successful vegetation, or incrementally increase surface water temperatures. Ground-disturbing activities can also increase the potential for establishment of noxious, invasive, or pest plants. Construction vehicles and the transport of equipment provide the potential to bring in noxious, invasive or pest pioneer species (with pioneer species defined as the first vegetative species which get established in disturbed soils). Minimization efforts and techniques are discussed in detail below.

During construction activities, it is expected that some vegetation cover will be lost due to direct impacts via clearing and incidental damage from trucks backing into them, root systems damaged through trenching, excavation, and soil compaction, and general activity on the site. The amount of temporarily disturbed area depends on the size and configuration of the project, and given the small footprint of most water and wastewater projects, will not likely cause disturbance to vegetation beyond site boundaries.

*Wildlife/Fauna.* Locally-present wildlife species might be impacted by loss or disturbance of habitat (including breeding areas and migratory stop-over locations), habitat fragmentation (which in turn might affect movement and migration), loss of food and prey species, introduction of new species, and changes in water availability. Construction activities are likely to generate noise and dust. Noise from generated during construction has the potential to startle nearby wildlife who might temporarily flee the area. Noise related effects are limited to the construction period and will cease at the completion of construction. Fugitive dust generated during construction might locally degrade air quality at construction sites, but it is expected that wildlife will not be present on the site during active construction. Dust is not generated continuously, ceasing daily during non-work hours and at the end of project construction.

Minor, short-term effects on mobile wildlife that use the site are anticipated as they might be deterred by the construction activities, vehicles, and equipment. Minor, long-term effects on some wildlife are anticipated due to displacement. Less mobile wildlife species might not be able to relocate outside of the construction area. The number of species displaced will vary, dependent in part on the degree of difference between pre-development habitat (e.g., open field, forested area) and post-development habitat. Additionally, the installation of perimeter fencing is anticipated to have long-term, but less than significant impacts, on wildlife in the site area.

O&M of water and wastewater projects can result in impacts to biological resources from run-off related to the increase in impervious areas and run-off causing erosion or sedimentation that degrade the ability of land to support vegetation. The amount of existing imperviousness will vary between project sites. Impacts to aquatic habitats and aquatic species resulting from water intake and wastewater discharges might occur.

*Rare, Threatened and Endangered Species.* Rare, threatened and endangered (RTE) species or critical habitat can potentially be located on WIFIA project sites. Impacts can occur through the loss or disturbance of habitat (including breeding areas and migratory stop-over locations), habitat fragmentation (which in turn might affect movement and migration), loss of food and prey species, introduction of new species, and changes in water availability.

Through the WIFIA program, EPA provides credit assistance to projects and therefore Section 7 is applicable to the proposed action in this PEA. However, many of the projects financed by WIFIA are also required to conduct consultations as part of other federal procedures (e.g., USACE 404 permits, State Environmental Review processes) and it is EPA's intention to utilize these consultation processes to the extent that they ensure that prospective borrowers have assessed, and appropriately addressed, any adverse effects of projects on ESA-listed species and designated critical habitats. Like ESA consultations, it is EPA's intention to accept MSA consultation processes to the extent that they ensure that prospective borrowers have assessed, and appropriately addressed, any adverse effects of projects on EFH.

### **Typical Environmental Consequences for Linear and Vertical Project Types at Undeveloped Sites**

It is assumed that the construction of water and wastewater projects on undeveloped sites result in greater impacts to biological resources, including flora, fauna and RTE species, than on a disturbed site. Construction activities at undeveloped sites might result in greater ground disturbance, erosion, vegetation clearing, and habitat fragmentation than might occur at a developed site. For some undeveloped sites, pre-construction surveys, discussed in greater detail below, will be important to minimize impacts to biological resources. Wildlife in the vicinity of undeveloped sites might be more likely to startle from construction or operational noise than at a previously developed site where wildlife is habituated to operational noise. Impacts associated with increased impervious runoff might occur at an undeveloped site.

### **Typical Environmental Consequences for Linear and Vertical Project Types at Developed Sites**

Impacts to biological resources, including flora, fauna and RTE species, as a result of construction of projects on previously developed sites are generally anticipated to be less than those of the undeveloped sites alternatives. Projects occurring on developed sites are assumed to have few to limited wildlife/fauna inhabiting the project site. Wildlife in the vicinity of developed sites might be less likely to startle from construction or operational noise as wildlife might be habituated to operational noise. Construction activities at developed sites might result in less ground disturbance, erosion, vegetation clearing, and habitat fragmentation than would occur at an undeveloped site, as the site has previously been disturbed and therefore have less established vegetation or habitat. Impacts associated with increased impervious runoff might occur at a developed site.

Projects occurring on developed sites are assumed to have less contiguous habitat and less sensitive plant species. It is also assumed that developed sites have a higher percentage of non-native or invasive vegetation than an undeveloped site. Potential impacts are anticipated to be mitigated through site selection, site design, timing of construction activities, and implementation of BMPs and standard operating procedures (SOPs), which are discussed in greater detail below. Due to these reasons, impacts to biological resources resulting from these project types are anticipated to be less than significant.

### **Typical Environmental Consequences for Other Project Types**

Other project types are expected to have similar impacts as described above, depending on whether it is being undertaken on a developed or undeveloped project site.

## Typical Mitigation Measures for All Project types

Careful site selection can minimize impacts to biological resources by avoiding sensitive or important biological areas. Geospatial data (e.g., GIS data) and planning level surveys will be used to identify biological resources necessary to maintain compliance with applicable laws, regulations, and EOs and meeting appropriate EPA stewardship responsibilities. Ideally, sites selected for the project will have no sensitive or important biological areas. Resource avoidance for specific projects will occur for resources such as suitable habitat for threatened or endangered species, special habitat management units, sensitive species areas, wetland areas, special natural areas, rare plant sites, and important breeding, roosting or foraging areas. Examples of items that can be identified to help inform the site selection process are biological surveys, set-back requirements, buffer distances, nesting grounds of migratory birds, nest locations of bald and golden eagles, any additional ESA-related mitigation requirements (e.g., translocation; or acquisition and protection of compensatory habitat), and state-listed species. Biological surveys typically address protected species. Set-back requirements might exist for sensitive habitats, to include habitats of protected species regulated by USFWS and NMFS, with setbacks specified in a facility's Biological Assessment and EFH Assessment or in an applicable Biological Opinion issued under ESA. Buffer distances are typically established through consultation with the regulatory agency to avoid an 'incidental take' by disturbance or harassment of protected species, such as those protected under ESA, MMPA, and BGEPA. New collection and distribution system projects will be placed along existing road disturbance limits and within existing utilities easements, to the greatest extent possible, to minimize impacts to biological resources. Similarly, careful site design minimizes anticipated impacts to biological resources during construction, and O&M of a project. Site design factors include minimizing land disturbance, controlling soil erosion, controlling surface water runoff, and identifying set-back requirements and buffers for sensitive biological resources.

During construction of water and wastewater projects, placing time of year restrictions, when appropriate, on construction activities will help ensure that anticipated impacts to biological resources are less than significant. Such restrictions are intended to avoid harm to protected species during their nesting and minimize impacts to vegetation due to seasonal conditions (e.g., construction equipment in very wet or windy conditions might cause greater impacts to vegetation). The timing of pre-construction surveys will depend on the species. In general, the site will be surveyed by a qualified biologist to identify nests, burrows, and other wildlife shelters of concern and determine the most appropriate action to comply with species protection requirements. The need, timing and scope of pre-construction surveys will be determined by the services during the consultation processes required by federal law.

Minimizing the probability of noxious, invasive, or pest pioneer species can be assisted by ensuring construction vehicles and equipment do not introduce or spread propagules (e.g., seeds and spores) from these types of non-native species by cleaning of construction equipment off-site prior to bringing them on-site. Additionally, managed re-vegetation can support a native plant community that can reduce or compete with non-natives. Practicable mitigation includes planting native species.

All WIFIA credit assistance projects must comply with federal, state, and local requirements and implement the environmental protection measures mandated by them. Impacts from the construction of water and wastewater projects to biological resources are anticipated to be less than significant through the implementation of environmental protection measures, to include avoidance, BMPs, and compliance with the recommendations of the services and state and local environmental authorities.

BMPs minimize anticipated impacts by controlling sedimentation and surface water runoff, minimizing soil compaction issues; minimizing air pollution; avoiding accidental spills of hazardous material (e.g., fuel spills from vehicles and equipment); avoiding transportation of noxious, invasive and pest species.

## 4.7 CULTURAL RESOURCES AND HISTORIC PROPERTIES

### 4.7.1 DEFINITION OF THE RESOURCE

Cultural resources are evidence of human development in the physical environment. Such resources can be of national significance or important only to local communities. Cultural resources include archeological sites, historic buildings, traditional communities, and cultural institutions. Cultural resources can also include landscape features, geographic expanses and materials significant to ethnic or cultural groups, such as Native Americans, Alaskan Natives, Native Hawaiians, and Pacific Islanders.

### 4.7.2 POTENTIALLY APPLICABLE STATUTES AND REGULATIONS

#### 4.7.2.1 National Historic Preservation Act of 1966, as amended

The National Historic Preservation Act (NHPA) embodies a long-standing national policy to preserve historic sites, buildings, structures, districts and objects of national, state, tribal, local, and regional significance and, among other things, to protect such historic properties from adverse impacts caused by activities undertaken or funded by federal agencies. NHPA expanded the scope of the 1935 Historic Sites Act, Pub. L. No. 74-292 by establishing the National Register of Historic Places (NRHP), a listing of historical and cultural resources maintained by the U.S. Department of the Interior (DOI).

The fundamental responsibilities of federal agencies, expressed in Section 106 of the Act, is to take into account the effect of any undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register prior to taking the action.

The NHPA is administered by the DOI/National Park Service and the Advisory Council on Historic Preservation (ACHP). The ACHP implements Section 106 of the NHPA and has promulgated regulations for consultation regarding how to determine the effects of federal agency undertakings on historic properties. (See 36 C.F.R. Part 800.) Although under certain circumstances the ACHP may become directly involved in such consultations, the procedures generally call for consultation between the federal agency and relevant state or tribal historic preservation officers (SHPOs and THPOs) and other interested parties.

Pursuant to 36 C.F.R. § 800.16(l)(1), historic property means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria.

Pursuant to 36 C.F.R. § 800.16(m), Indian tribe means an Indian tribe, band, nation, or other organized group or community, including a native village, regional corporation or village corporation, as those terms are defined in Section 3 of the Alaska Native Claims Settlement Act (43 U.S.C. 1602), which is

recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians.

Pursuant to 36 C.F.R. § 800.16(d), Area of Potential Effects (APE) means 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.

#### **4.7.2.2 Archeological and Historic Preservation Act (16 U.S.C. §469a-1)**

The intent of the Archeological and Historic Preservation Act (AHPA) is to limit the loss of important historical data that results from federal, or federally authorized, construction activities. Unlike Section 106 of the NHPA, which principally addresses adverse effects to historic properties identified within a project area prior to project initiation, the requirements of the AHPA are typically invoked when historic properties are discovered after the project has begun and potential adverse effects may occur. (The NHPA regulations do have a provision that addresses late discoveries of historic properties).

The AHPA requires federal agencies to identify relics, specimens, and other forms of scientific, prehistorical, historical, or archaeological data that may be lost during the construction of federally sponsored projects and to nominate for the register resources under the agency's control, to ensure that these resources are not inadvertently transferred, sold, demolished or substantially altered, or allowed to deteriorate significantly. If such items are discovered, the DOI must be notified to recover the data or recommend measures to mitigate potential losses. The Department's standards and guidelines (48 Fed. Reg. 44716 (Sept. 9, 1983)) detail accepted archeological preservation activities and methods.

#### **4.7.2.3 Native American Graves Protection and Repatriation Act, 25 U.S.C 3001 et seq**

The Native American Graves Protection and Repatriation Act (NAGPRA) is a Federal law passed in 1990. NAGPRA provides a process for museums and Federal agencies to return certain Native American cultural items -- human remains, funerary objects, sacred objects, or objects of cultural patrimony -- to lineal descendants, and culturally affiliated Indian tribes and Native Hawaiian organizations. NAGPRA includes provisions for unclaimed and culturally unidentifiable Native American cultural items, intentional and inadvertent discovery of Native American cultural items on Federal and tribal lands, and penalties for noncompliance and illegal trafficking.

#### **4.7.2.4 Antiquities Act of 1906, (16 U.S.C. 431-433)**

The American Antiquities Act of 1906 (16 U.S.C. 431-433) first codified the federal authority to protect cultural resources as well as natural resources. This Act found strong support in the east where there was intense interest in protection of properties linked to the colonial era and the revolutionary war. It was further bolstered by support from the west, where concern for protection of natural and scenic resources had led naturally to a desire to protect above ground archaeological sites and ruins. It prohibited disturbance of archaeological resources and objects of antiquity on federal lands without a permit. It also gave the President authority to designate national monuments.

### 4.7.3 EXISTING CONDITIONS

**Archeology.** Archeological resources consist of prehistoric and historical archeological deposits and features. Prehistoric archeological resources include village sites, temporary camps, lithic scatters, roasting pits/hearths, milling features, petroglyphs, rock features, and burials. Historical archeological resources may include deposits, features or structural ruins indicative of human activities during the historic periods. Examples include townsites, privy pits or trash dumps at homesteads, agricultural or ranching features, mining-related features, refuse concentrations, and features or artifacts associated with historic-period military or industrial land uses.

**National Register of Historic Places.** The NRHP is the United States federal government's official list of districts, sites, buildings, structures, and objects deemed worthy of preservation. A property listed in the National Register, or located within a National Register Historic District, may qualify for tax incentives derived from the total value of expenses incurred preserving the property. The NRHP documents the appearance and importance of districts, sites, buildings, structures, and objects significant in our prehistory and history. These properties represent the major patterns of our shared local, state, and national experience. Currently, there are over 90,000 properties listed in the NRHP. (National Park Service 2017). National Register properties are located in every state and territory of the United States.

The criteria used to evaluate a property to be listed on the NRHP from 36 CFR 60.4 is “the quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- A. That are associated with events that have made a significant contribution to the broad patterns of our history; or
- B. That are associated with the lives of significant persons in our past; or
- C. That 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 and distinguishable entity whose components may lack individual distinction; or
- D. That have yielded or may be likely to yield, information important in history or prehistory”.

For a property to qualify for the National Register it must meet one of criteria above, being associated with an important historic context, and retaining historic integrity of those features necessary to convey its significance.

Pursuant to 54 U.S.C. §302706 [formerly Section 101(d)(6) of NHPA], resources of traditional religious and cultural importance to federally recognized Indian tribes or Native Hawaiian organizations may be determined to be eligible for listing in the NRHP under amendments to NHPA in 1992.

Ordinarily cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past fifty years shall not be considered eligible for the National Register. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories (36 CFR Part 60):

- A. a religious property deriving primary significance from architectural or artistic distinction or historical importance; or
- B. a building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or
- C. a birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building directly associated with his or her productive life; or
- D. a cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, from association with historic events; or
- E. a reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or
- F. a property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or,
- G. a property achieving significance within the past 50 years if it is of exceptional importance.

#### 4.7.4 ENVIRONMENTAL CONSEQUENCES

##### 4.7.4.1 No Action Alternative

Under the No Action Alternative, no new impacts will occur to cultural resources from activities associated with WIFIA credit assistance projects. The No Action Alternative will not result in any construction activities. Without credit assistance, it is assumed that an undertaking will not occur and therefore there is no potential to cause impacts to cultural resources, including historic properties.

##### 4.7.4.2 Proposed Action Alternative

##### Typical Environmental Consequences for All Project Types

*NRHP.* Construction has the potential to directly impact NRHP listed or eligible properties, through encroachment, displacement or destroying or diminishing the historic integrity. Construction activities have the potential to introduce temporary visual and noise impacts to cultural resources located within or in proximity to the project site. It is anticipated that impacts will be minor in severity due to their temporary nature. Construction impacts to NRHP listed or eligible properties will vary on the proposed project location and the cultural resources located at or near the project location.

Avoidance of cultural resources is preferred. In cases where site location has the potential to impact cultural resources or affect the traditional use of sacred or ceremonial sites or resources, careful site design in close consultation with the SHPO and/or THPO can minimize adverse effects. If a project has the potential to result in an adverse effect to a historic property or other cultural resource, the NHPA requires a memorandum of agreement (MOA) with the SHPO/THPO, and possibly with the ACHP. The MOA documents agreed-upon measures to resolve adverse effects to minimize the impact to a level below significant.

*Archeology.* Projects sites potentially contain known and unknown archeological resources. The construction of underground assets, excavation, trenching, grading and other ground disturbing activities has the potential disturb, damage or destroy archaeological resources. Known archeological

resources shall be considered during site selection and identified prior to construction. Careful site selection (including conducting pre-disturbance cultural resource field surveys), design, and construction practices that minimizes land disturbance and controls surface water runoff will help avoid and minimize impacts to archaeological resources. Proposed projects requiring ground disturbance in areas that have not yet been surveyed for cultural resources might require surveys prior to construction. Ground disturbing activities can result in long-term adverse impacts to archaeological resources, if present. These impacts, however, are generally mitigated through a MOA with the SHPO/THPO, and possibly with the ACHP, to resolve adverse effects.

As with any construction project, there remains a potential for post-review or inadvertent discoveries (also known as unanticipated discoveries). WIFIA credit assistance projects will require an unanticipated discoveries plan during ground-disturbing activities occurring in known culturally sensitive locations. During construction, if any human remains or cultural resources are found, construction work shall stop, the cultural resource manager will be notified, and the applicable legal and regulatory requirements governing such a finding will be followed. These steps, or others as appropriate, might be required to be outlined within an Inadvertent Discoveries Plan or Unanticipated Discoveries Plan.

*Cemeteries.* For projects constructed near a cemetery, site design shall ensure that substantive direct impacts to the cemetery are avoided and the cemetery shall be designated off-limits to project construction and maintenance workers. For cemeteries immediately adjacent to the project, an appropriate buffer around the cemetery will be established prior to project construction. Additionally, to avoid impact, pre-construction access to the cemetery for visitation and maintenance will be maintained during the construction period, to the extent practicable, and after the project is operational.

#### **Typical Environmental Consequences for Linear and Vertical Project Types at Developed Sites**

It is assumed that construction occurring on previously developed sites has a low likelihood of a NRHP listed or eligible properties being located on the site, as well as a low likelihood that known or unknown archaeological resources being present on the site. It is unlikely that listed or eligible properties will be present when construction is occurring within an existing operational footprint of a facility. Impacts to cultural resources resulting from these project types are anticipated to be less than significant. No impacts are anticipated when a project site does not contain cultural resources. Mitigation measures will be implemented to avoid and minimize impacts to less than significant on cultural resources that are present on or near the site.

#### **Typical Environmental Consequences for Linear and Vertical Project Types at Undeveloped Sites**

It is assumed that construction occurring on an undeveloped site has a slightly higher likelihood of a NRHP listed or eligible properties being located within or on a portion of the site. There is an incrementally greater likelihood that known or unknown archaeological resources are present on an undeveloped site. Negligible impacts are anticipated when a project site does not contain cultural resources. Mitigation measures will be implemented to avoid and minimize impacts to less than significant on cultural resources that are present on or near the site. Impacts to cultural resources resulting from these project types are anticipated to be less than significant.

## 4.8 SOCIOECONOMIC AND ENVIRONMENTAL JUSTICE

### 4.8.1 DEFINITION OF THE RESOURCE

Socioeconomic considerations include the basic attributes and resources associated with the human environment, including demographic, economic, and social assets of a community. Demographics focus on population trends and age distribution. Economic metrics provide information on income and employment trends and industries. Social assets include housing and public services. Housing can be an indicator of economic health and activity, due to its link to employment in the construction industry and other indirect effects. It can also serve as an indicator of cost of living and affordability in an area. Examples of public services include fire protection, law enforcement, emergency medical services, schools, and parks.

For this PEA, EPA defines Environmental Justice as:

"The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic group should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies." (EPA 2017)

The goal of this "fair treatment" is not to shift risks among populations, but to identify potential disproportionately high and adverse effects and identify alternatives that may mitigate these impacts (EPA 1998).

### 4.8.2 POTENTIALLY APPLICABLE STATUTES AND REGULATIONS

#### 4.8.2.1 EO 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations)

Executive Order 12898 and its accompanying memorandum have the primary purpose of ensuring that "each Federal agency shall make achieving environmental justice [EJ] part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations ..." The Executive Order also explicitly called for the application of equal consideration for Native American programs. To meet these goals, the Order specified that each agency develop an agency-wide environmental justice strategy. (EPA 1998)

### 4.8.3 EXISTING CONDITIONS

**Demographics.** The United States population was 316,515,021 million people, in the 2011-2015 American Community Survey 5-Year Estimates. The nation's annual population growth rate in the 2000 to 2010 period was 0.91 percent and the rate during the 2010 to 2015 period was 0.78 percent (Federal Emergency Management Agency 2017). The U.S. population growth rate was 0.7% annual change in 2016.

**Economics.** In 2014, the average per capita income in the United States was \$46,049, the annual average unemployment rate was 6.2% and the poverty rate was 15.8%. Table 4-3 shows snapshots of per capita income, the average unemployment rate, and the poverty rate during different years between 2000 and 2014. In 2014 across all industries, there were more than 150 million jobs. Employment data is broken down by industry sector during the years 2004-2024 is shown in Table 4-4 below.

TABLE 4-3 ECONOMIC INDICATORS IN THE UNITED STATES, 2000 – 2014

	VALUE IN 2000	VALUE IN 2010	VALUE IN 2014
Per Capita Income	\$30,602	\$40,277	\$46,049
Annual Average Unemployment	4%	9.6%	6.2%
Poverty Rate (Percentage of Individuals Below the Poverty Level)	12.9%	15.7%	15.8%

Source: (Federal Emergency Management Agency 2017)

TABLE 4-4 EMPLOYMENT BY INDUSTRY SECTOR FOR THE UNITED STATES, 2004 TO 2024

	2004	2014	2024
Total Jobs, All Industries	144,047,000	150,539,000	160,328,000
INDUSTRY SECTOR	PERCENT DISTRIBUTION		
Non-agriculture wage and salary	92.0	92.9	93.0
Goods-producing, excluding agriculture	15.1	12.7	12.0
Mining	0.4	0.6	0.6
Construction	4.8	4.1	4.3
Manufacturing	9.9	8.1	7.1
Services-providing	76.8	80.1	81.0
Utilities	0.4	0.4	0.3
Wholesale trade	3.9	3.9	3.8
Retail trade	10.5	10.2	10.1
Transportation and warehousing	2.9	3.1	3.0
Information	2.2	1.8	1.7
Financial activities	5.6	5.3	5.3
Professional and business services	11.4	12.7	13.1
Educational services; private	1.9	2.3	2.3

Health care and social assistance	10.0	12.0	13.6
Leisure and hospitality	8.7	9.8	9.8
Other services	4.3	4.2	4.2
Federal government	1.9	1.8	1.5
State and local government	13.1	12.7	12.4
Agriculture, forestry, fishing, and hunting	1.5	1.4	1.3
Agricultural wage and salary	0.8	0.9	0.8
Agricultural self-employed workers	0.7	0.5	0.4
Nonagricultural self-employed workers	6.6	5.7	5.7

Source: (Bureau of Labor Statistics 2017)

**Social Assets.** The housing market can be an indicator of economic health and activity, due to its link to employment in the construction industry and other indirect effects. It can also serve as an indicator of cost of living and affordability in an area. Relevant factors when analyzing the housing market include total housing units, median home value, percentage of housing units that are occupied (the "occupancy rate"), and percentage of owner-occupied units (the "home ownership rate"). These factors are indicators of growth of the housing stock, affordability, housing availability, and neighborhood stability. Total housing units, median home value, percentage of housing units that are occupied, and percentage of owner-occupied units vary across the country and within states. Table 4-5 shows these indicators for the United States from 2000 to 2014.

TABLE 4-5 HOUSING UNITS, PERCENTAGE OF OWNER-OCCUPIED UNITS, AND MEDIAN HOME VALUE IN THE UNITED STATES, 2000 – 2014

	2000	2010	2014	PERCENT CHANGE 2000 – 2014
Total Housing Units	117,323,117	133,341,676	135,534,245	15.5%
Median Home Value	\$130,432	\$189,817	\$228,549	75.2%
Housing Units Occupied (%)	91.0%	88.6%	87.4%	-3.6%
Owner- Occupied Housing Units	66.3%	65.2%	63.2%	-3.1%

Source: (Federal Emergency Management Agency 2017)

Public services are provided by various professionals and volunteers. Law enforcement agencies and hospitals are staffed primarily by professionals. Fire departments are often staffed by volunteers, and sometimes have completely volunteer forces. Also, the distribution of public health and safety services and access for individual communities vary significantly throughout the country, with greater concentrations of services typically available in more densely populated areas. (Federal Emergency Management Agency 2017)

**Environmental Justice.** The concept of Environmental Justice is one that is location-based because it deals with potentially disproportionately high and adverse impacts to low-income and minority communities. Guidance from the CEQ states that “minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent, or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis” (CEQ 1997). “Minority” is defined as individuals who are Black or African American; Asian; American Indian or Alaskan Native; Native Hawaiian or Pacific Islander; or Hispanic. The CEQ guidance also states that the low-income populations should be identified based on poverty thresholds as reported by the U.S. Census Bureau.

The *Promising Practices for EJ Methodologies in NEPA Reviews*, developed by the Federal Interagency Working Group on Environmental Justice and NEPA Committee in March 2016, identify the following thresholds in order to define and identify environmental justice communities:

- communities where minorities comprise more than 50 percent of the population within a given census tract or census block group;
- communities where the percentage of minorities within a given census tract or census block group exceeds the comparative county or state level by 10 percent or more; or
- communities where the percentage of persons below the poverty level within a given census tract or census block group exceeds the comparative county or state level by 10 percent or more.

Table 4-6 presents the Percentage of the Population Below the Poverty Level and the Minority Percentage of Population. Environmental justice communities might be located across the US in any state or county.

**TABLE 4-6 PERCENTAGE OF THE POPULATION BELOW THE POVERTY LEVEL AND THE MINORITY PERCENTAGE OF POPULATION**

GEOGRAPHY	BELOW POVERTY LEVEL (%)	MINORITY (%)	GEOGRAPHY	BELOW POVERTY LEVEL (%)	MINORITY (%)
United States	15.5	26	Missouri	15.6	17.4
Alabama	18.8	31.2	Montana	15.2	10.8
Alaska	10.2	34.0	Nebraska	12.7	11.9
Arizona	18.2	21.6	Nevada	15.5	31.0
Arkansas	19.3	22.0	New Hampshire	8.9	6.3
California	16.3	38.2	New Jersey	10.8	31.7
Colorado	12.7	15.8	New Mexico	21	26.8
Connecticut	10.5	22.7	New York	15.7	35.4
Delaware	12	30.6	North Carolina	17.4	30.5
District of Columbia	18	59.8	North Dakota	11.5	11.3
Florida	16.5	24.0	Ohio	15.8	17.6
Georgia	18.4	39.8	Oklahoma	16.7	26.9

Hawaii	11.2	74.6	Oregon	16.5	14.9
Idaho	15.5	8.3	Pennsylvania	13.5	18.4
Illinois	14.3	27.7	Rhode Island	14.2	18.9
Indiana	15.4	15.8	South Carolina	17.9	32.8
Iowa	12.5	8.8	South Dakota	14.1	15.0
Kansas	13.6	14.8	Tennessee	17.6	22.2
Kentucky	18.9	12.4	Texas	17.3	25.1
Louisiana	19.8	37.2	Utah	12.3	12.4
Maine	13.9	5.0	Vermont	11.5	5.1
Maryland	10	42.4	Virginia	11.5	31.0
Massachusetts	11.6	20.4	Washington	13.3	22.2
Michigan	16.7	21.0	West Virginia	18	6.4
Minnesota	11.3	15.2	Wisconsin	13	13.5
Mississippi	22.5	40.8	Wyoming	11.5	9.0

Source: 2011-2015 American Community Survey 5-Year Estimates (U.S. Census Bureau 2016)

#### 4.8.4 ENVIRONMENTAL CONSEQUENCES

##### 4.8.4.1 No Action Alternative

Under the No Action Alternative, no new impacts to socioeconomic conditions would occur from WIFIA credit assistance projects, including demographics, economics, social assets and EJ. The No Action Alternative assumes that construction or operation of WIFIA eligible projects will not occur. WIFIA projects are generally anticipated to improve water infrastructure, which has a direct beneficial impact on many socioeconomic resources (as discussed below). Not financing WIFIA projects would mean that communities will have less access to clean and reliable drinking water or that water resources near the project remain at current pollution levels or become more polluted over time. Potential benefits to housing prices due to access to waters with improved quality and adequate drinking water will not be realized. Public services such as schools, hospitals, police and fire departments might not be able to reliably operate without adequate drinking water. The No Action Alternative assumes that construction of WIFIA eligible projects will not occur and therefore no additional impacts to environmental justice populations will occur; however, WIFIA eligible projects might be undertaken to alleviate historical effects on environmental justice population that may not be realized.

##### 4.8.4.2 Proposed Action Alternative

##### Typical Environmental Consequences for All Project Types

*Demographics.* The Proposed Action Alternative is not expected to have a national impact on the total population or effect projected population growth. At the local project level, access to improved water quality and adequate drinking water that will result from WIFIA eligible projects might induce some localized population growth. Projects with the primary purpose to enable community growth are not considered to be eligible as stated by WIFIA statute and regulations. The WIFIA selection process weighs project purpose and potential benefits, therefore we assume that projects which encourage growth as

the primary purpose might have a difficult time being selected. Therefore, only limited direct growth is expected to occur from eligible projects and no significant impacts are expected to occur.

*Economics.* WIFIA projects are not expected to result in national changes to per capita income, the average unemployment rate, and the poverty rate. Some local economies might see beneficial effects resulting from the construction and operation of WIFIA projects. A project can indirectly induce growth by establishing new permanent employment opportunities (e.g., commercial, industrial or governmental enterprises), although indirect growth induced from employment is expected to be less than significant. Any non-local construction workers are likely to patronize surrounding businesses, potentially creating minor, temporary economic benefits.

WIFIA projects are generally anticipated to improve water infrastructure and consequently drinking water resources and improve the environmental health conditions of surface and ground waters, resulting in some localized beneficial impacts for fish and other aquatic species, indirectly reducing health risks associated with seafood consumption. These improvements have potential to benefit ecologically based businesses, like commercial or recreational fishing. Ultimately, the projects result in improved local water for the communities, which has a direct positive impact on economics. However, the impact is expected to be less than significant on economic resources.

*Social Assets.* A project can have direct and/or indirect impacts on social assets such as housing or public services. Indirect effects to housing resources have the potential to occur from a short-term workforce temporarily relocating from outside the project area, which might reduce the amount of locally available unoccupied housing. However, any indirect effects to housings are considered to be unlikely, as it is assumed that construction workforce will be comprised of largely drawn from surrounding communities. It is assumed that there is sufficient unoccupied housing to accommodate a temporary non-local workforce if necessary, although specific housing characteristics will vary between project areas. As temporary increases in population are not expected, no significant impacts to public services are expected.

*Environmental Justice.* An environmental justice analysis will be conducted for WIFIA projects to ensure there is no disproportionately high and adverse impacts on environmental justice populations. Environmental justice communities might be present in WIFIA project areas. *Promising Practices for EJ Methodologies in NEPA Reviews* provide established thresholds, described above in Section 4.8.3, for identifying populations of concern. Most of the adverse effects associated with projects occur during construction and will be temporary, such as construction noise, air emissions from construction vehicles, erosion from disturbed surfaces and construction vehicle traffic or traffic detours. Impacts to communities from construction are not expected to be disproportionate to any identified environmental justice populations with the implementation of identified BMPs and as required by Executive Order 12898. EJ populations are likely to receive improved water and wastewater services and improved local water quality as a result of WIFIA projects. Improved water quality might result in healthier and more robust local fisheries which benefits any EJ populations in WIFIA project areas that are dependent on subsistence fishing. Prospective borrowers will conduct meaningful public engagement and outreach to environmental justice communities, including outreach to local community groups, churches or other specific local entities. Prospective borrowers will consider implementing mitigation measures resulting from public engagement and outreach. Public outreach will be addressed in the PEA framework and the questionnaires in Appendices A and B.

## 4.9 TRANSPORTATION AND TRAFFIC

### 4.9.1 DEFINITION OF THE RESOURCE

Transportation is the movement of people and goods from one location to another. It is accomplished by a variety of modes, such as road, rail, air, water, and in some cases pipeline, and there are different systems within those modes. Examples of principal transportation systems include vehicular systems (e.g., highways and streets); aviation system (e.g., commercial air carriers), waterway and maritime systems, and rail systems (e.g., railroads). The focus of this analysis is to surface transportation and roadway traffic.

Traffic is related to the congestion and the system being able to handle traffic flow during peak volumes. Vehicular roadway traffic is rated on level of service (LOS), a qualitative measure graded on a letter scale from A to F, with A being the highest LOS and F being the lowest. At LOS F, traffic flow is forced, the traffic volume has exceeded the capacity of the roadway to handle it, and there are no passing opportunities. See Table 4-7 for a description of LOS.

TABLE 4-7 LEVEL OF SERVICE CRITERIA FOR ROADS

LEVEL OF SERVICE (LOS)	DESCRIPTION
A	Free-flow conditions with unimpeded maneuverability. Stopped delay at signalized intersection is minimal.
B	Reasonably unimpeded operations with slightly restricted maneuverability. Stopped delays are not bothersome.
C	Stable operations with somewhat more restrictions in making mid-block lane changes than LOS B. Motorists will experience appreciable tension while driving.
D	Approaching unstable operations where small increases in volume produce substantial increases in delay and decreases in speed.
E	Operations with significant intersection approach delays and low average speeds.
F	Operations with extremely low speeds caused by intersection congestion, high delay, and adverse signal progression.

### 4.9.2 POTENTIALLY APPLICABLE STATUTES AND REGULATIONS

State Departments of Transportation are generally responsible for the design, construction, and maintenance of their state highway systems, as well as the portion of the federal highways and interstates within their boundaries. Arterials, connectors, rural roads, and local roads are constructed and maintained by county or city governments and the regulation of traffic and transportation is, mostly, a local matter.

### 4.9.3 EXISTING CONDITIONS

Eligible project sites addressed by this PEA can be located in any type of area: urban, suburban, rural, or remote. The transportation facilities that serve these different types of locations can vary widely. Urban areas are generally characterized by a complex and extensive system of roads, including major interstate freeways and surface streets. Urban roads typically support high levels of traffic, which often result in

roadway segment and intersection congestion. Rural environments can be characterized by fewer roads and roads that can be graveled instead of paved. Generally, traffic levels on rural roads are relatively low (i.e., little or no congestion). Federal Highway Administration (FHWA) estimates that there are over 164,000 miles of highways in the National Highway System and 4-million-miles in the public road network. Approximately one percent of all public roads are part of the Interstate Highway System. Of these 47,000 miles of Interstates, 65 percent are in rural areas and 35 percent are in urban areas. 74 percent of the remaining public roads are located in rural areas, with 26 percent in urban areas (FHWA 2010).

#### 4.9.4 ENVIRONMENTAL CONSEQUENCES

Environmental consequences might include potential impacts from project-related traffic introduced onto roads not previously experiencing its associated volumes. Whether a facility is being upgraded or newly constructed, the traffic generated from the construction and operation might impact the local road network. However, the level of impact will differ depending on the intensity and location of the construction activities, the human capital to operate the facilities, the inflows and outflows of goods, and the roads surrounding the location.

##### 4.9.4.1 No Action Alternative

Under the No Action Alternative no new development or improvements will occur. The No Action Alternative will not result in any transportation or traffic-related impacts from WIFIA credit assistance projects.

##### 4.9.4.2 Proposed Action Alternative

#### Typical Environmental Consequences from All Project Types

The primary impacts from the movement of construction trucks include short-term and intermittent lessening of roadway capacities due to slower movements and larger turning radii of the trucks compared to passenger vehicles. Traffic-generating construction activities include arrival and departure of construction workers, trucks hauling equipment and materials to the construction site, the hauling of excavated soils, and importing of new fill. Construction equipment used for the work includes, for example, concrete trucks, back-hoes, front-end loader, trenchers, paving equipment, and periodic delivery of pipes and materials. Construction might include the transportation of oversize loads, such as trucks carrying pipe. Prospective borrowers are responsible for coordinating with the appropriate local agency(ies) to ensure adequate measures are implemented during construction, including warning signage, limitation of public right-of-ways for staging, use of flag persons, lane closures, and detours. With the appropriate coordination with local entities and the implementation of their mitigation recommendation(s), the potential impacts of these activities on traffic will be less than significant.

#### Typical Environmental Consequences from Linear Project Types

Most water and wastewater liner assets parallel existing roads, are within rights-of-way or in existing utility rights-of-way. Traffic impacts associated with construction of new and upgrades to existing linear assets and supporting facilities are limited to the construction phase. Traffic impacts specific to linear project types will occur during construction within or adjacent to the roadway right of way, potentially resulting in physical right of way restrictions, such as street closures, lane closures, detours, traffic and

parking restrictions, and restricted access to homes and businesses. Physical roadway restrictions have the potential to slow traffic increasing congestion and travel times. Impacts are temporary and will cease at the end of construction.

Once construction activities have been completed, traffic levels and flow will return to original levels. Once operational, linear assets are unlikely to generate daily permanent additional traffic from employees due to the passive nature of the assets. Potential impacts of these activities on traffic are less than significant. Projects that improve, enhance, or upgrade water and wastewater distribution and collection networks will result in less maintenance and unscheduled repairs requiring frequent or unplanned road closures or detours, and thus providing a long-term benefit.

### **Typical Environmental Consequences from Vertical Project Types**

Traffic impacts associated with building, relocating and expanding water and wastewater vertical assets (e.g., treatment plants) include impacts during the construction and operating phases. Similar to linear assets, traffic impacts during construction mainly result from the additional vehicles carrying workers and materials (including supplies and equipment) to the project area. However, the physical restriction imposed on right of way during construction are expected to be less than in linear assets, as construction for vertical assets are unlikely to be entirely within or adjacent to existing roadways.

Once construction activities have been completed, traffic levels and flow can be impacted by the additional vehicles carrying workers and materials in and out of the facility during regular operation of the facility. Construction of new facilities might result in long-term changes in traffic flow in the area near the site due to the ingress and egress of workers, regardless of whether the site was previously developed. However, these changes are not considered a significant impact if traffic flow patterns are completed according to FHWA and local (e.g., state, county, city) Department of Transportation protocols. Prospective borrowers are responsible for coordinating with the appropriate local agency(ies) to ensure adequate planning, compliance, and measures are implemented during operation. With the appropriate coordination with local entities and the implementation of mitigation recommendations, the potential impacts of these activities on traffic will be less than significant. The operational differences from permanent employee ingress and egress are likely to be negligible at existing facilities undergoing expansion.

### **Typical Environmental Consequences from Other Project Types**

Other project types will have similar impacts as described above depending on whether it is being undertaken on a developed or undeveloped project site.

## **4.10 UTILITIES AND COMMUNITY SERVICES**

### **4.10.1 DEFINITION OF THE RESOURCE**

Utilities and community services furnish an everyday necessity to the public at large and include provisions of electricity, natural gas, water, telecommunication service, wastewater management services, solid waste management service (non-hazardous), parks and recreation, and other essentials and non- essentials.

#### 4.10.2 POTENTIALLY APPLICABLE STATUTES AND REGULATIONS

Utility operators are governed by statutory and regulatory requirements for design and operation dictated at the federal, state, or local level. There are no nationwide utilities or community services laws or regulations that are directly applicable to the WIFIA program.

#### 4.10.3 EXISTING CONDITIONS

The most common energy source for households is electricity. Most electric power in the United States is transmitted through overhead power lines. Underground power transmission is primarily limited to urban areas or sensitive locations due to the significantly higher cost and limited access for maintenance. However, buried cable does have many advantages, including less right-of-way than overhead power lines, lower visibility, and less impacts from bad weather. Households also receive energy supply from natural gas and there are over 2 million miles of natural gas distribution pipeline in the country (Furchtgott-Roth 2013).

Water infrastructure within the United States provides Americans with safe, clean, and reliable drinking water, wastewater services, and stormwater management within their communities. This network serves over 75 percent of our nation's communities and, according to the American Society of Civil Engineers, includes over 800,000 miles of water pipe and 600,000 miles of sewer lines. Approximately 160,000 publicly owned water systems provide drinking water to communities nationwide. There are an estimated 15,000 publicly owned treatment works (POTW) facilities in the United States that provide wastewater collection, treatment, and disposal services to citizens across the country

The telecommunication system consists of radio, telephone, cellular, television, and internet services. Telecommunication services utilize fiber conduit, utility poles, and telecommunication towers and rely on our nation's expansive satellite network to extend service to consumers. Telephone, cable, and broadband fiber cables are typically installed underground within existing utility or road right-of-ways, or aerially on new or existing utility poles.

Community services such as open space and recreational and cultural facilities are ubiquitous components of the built environment. These facilities can be operated by government, such as public parks and libraries, or they can be owned and operated by private entities. Recreation and open space resources include active recreation such as ballfields, passive recreation such as nature trails, and gardens. Cultural facilities include art galleries, libraries, dance facilities, museums, theatres, community centers and other facilities for artistic and cultural purposes.

#### 4.10.4 ENVIRONMENTAL CONSEQUENCES

##### 4.10.4.1 No Action Alternative

Under the No Action Alternative no new development or improvements will occur from WIFIA credit assistance projects and no changes to electric, natural gas or telecommunications services will occur. The No Action Alternative will not result in any impacts associated with water, wastewater, stormwater, or solid waste since no new facilities will be constructed or operated. However, the No Action Alternative might delay, or all together forgo, the construction of water and wastewater projects required for increased reliability that might trigger unplanned interruptions to utility services as a result

of backups, breaks, and unscheduled emergency work. Consequently, impacts to utilities and community services as a result of the No Action Alternative are anticipated to range from no impact to less than significant.

#### 4.10.4.2 Proposed Action Alternative

##### Typical Environmental Consequences from All Project types

Construction of most WIFIA financed water and wastewater projects will require work on existing water and sewer systems or in proximity to a full range of community services and underlying utilities including electrical, cable, natural gas, sewer, storm water, and water. During project design, it is common practice to identify existing utilities and to avoid to the extent possible impacts to utilities. Previously unidentified or mapped utility lines might be encountered during construction. However, it is likely construction might require some utility relocations requiring close coordination with service providers to minimize interruptions in service during construction. Notification procedures of the applicable entity will be followed for known service interruptions to the extent practicable. There might be temporary effects on utilities and services during the construction phase, although no significant long-term impacts will occur if proper utility notification and construction practices are observed.

Recreational resources can be located near or in the vicinity of project areas. Construction at previously developed sites are not likely to include recreation areas and parks. Construction on previously undeveloped sites are more likely to occur on recreational areas and parks. Trails in recreational areas can be impacted by construction activities with vehicles passing through the site or using the trail for access. Recreation and park users may be affected by noise or temporary closures or detours. The quality of user experience may temporarily decrease during construction. Close coordination with park and recreational resource managers/agencies will occur to minimize interruptions, display appropriate signage, and other measures. Operation of projects is not likely impact recreational and park resources.

## 4.11 HAZARDOUS AND TOXIC MATERIALS AND WASTE

### 4.11.1 DEFINITION OF THE RESOURCE

Hazardous substances are defined as any solid, liquid, contained gaseous or semisolid waste, or any combination of wastes that pose a substantial present or potential hazard to human health and the environment. Improper management and disposal of hazardous substances can lead to contamination of groundwater and surface water, including drinking water supplies, and soils.

An Underground Storage Tank (UST) is defined as a tank and associated piping with ten percent or more of its volume below the ground which has stored or is storing a regulated substance. Regulated substances include petroleum based substances (motor fuels, motor oil, home heating fuels, solvents, etc.) and any other substance which, if released into the environment, present substantial danger to public health, welfare, or the environment.

Sewage sludge (also called biosolids) is a solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes scum or solids removed in primary, secondary, or advanced wastewater treatment processes and any material derived from sewage sludge (e.g., a blended sewage sludge/fertilizer product) but does not include grit and screenings or ash generated by the firing of sewage sludge in an incinerator.

## **4.11.2 POTENTIALLY APPLICABLE STATUTES AND REGULATIONS**

### **4.11.2.1 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 (42 U.S.C. § 9601 et seq.),**

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, was enacted by Congress on December 11, 1980. This law created a tax on the chemical and petroleum industries and provided broad federal authority to respond directly to releases or threatened releases of hazardous substances that endanger public health or the environment. Over five years, \$1.6 billion was collected and the tax went to a trust fund for cleaning up abandoned or uncontrolled hazardous waste sites. CERCLA established prohibitions and requirements concerning closed and abandoned hazardous waste sites; provided for liability of persons responsible for releases of hazardous waste at these sites; and established a trust fund to provide for cleanup when no responsible party could be identified.

The law authorizes two kinds of response actions. First, short-term removals, where actions address releases or threatened releases requiring prompt response. Second, long-term remedial response actions, that permanently and significantly reduce the dangers associated with releases or threats of releases of hazardous substances that are serious, but not immediately life threatening. These actions can be conducted only at sites listed on EPA's National Priorities List (NPL).

CERCLA also enabled the revision of the National Contingency Plan (NCP). The NCP provided the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, or contaminants. The NCP also established the National Priorities List.

CERCLA was amended by the Superfund Amendments and Reauthorization Act (SARA) on October 17, 1986. SARA reflected EPA's experience in administering the complex Superfund program during its first six years and made several important changes and additions to the program. SARA stressed the importance of permanent remedies and innovative treatment technologies in cleaning up hazardous waste sites; required Superfund actions to consider the standards and requirements found in other state and federal environmental laws and regulations; provided new enforcement authorities and settlement tools; increased state involvement in every phase of the Superfund program; increased the focus on human health problems posed by hazardous waste sites; encouraged greater citizen participation in making decisions on how sites are cleaned up; and increased the size of the trust fund to \$8.5 billion.

### **4.11.2.2 Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA; 7 U.S.C. § 136 et seq.);**

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) provides for federal regulation of pesticide distribution, sale, and use. All pesticides distributed or sold in the United States must be registered (licensed) by EPA. Before EPA registers a pesticide under FIFRA, the applicant must show, among other things, that using the pesticide according to specifications "will not generally cause unreasonable adverse effects on the environment."

FIFRA defines the term "unreasonable adverse effects on the environment" to mean: "(1) any unreasonable risk to man or the environment, taking into account the economic, social, and environmental costs and benefits of the use of any pesticide, or (2) a human dietary risk from residues that result from a use of a pesticide in or on any food inconsistent with the standard under Section 408 of the Federal Food, Drug, and Cosmetic Act."

#### **4.11.2.3 Resource Conservation and Recovery Act (RCRA) of 1976 (42 U.S.C. § 6901 et seq.)**

The Resource Conservation and Recovery Act (RCRA) gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that result from underground tanks storing petroleum and other hazardous substances.

The Federal Hazardous and Solid Waste Amendments are the 1984 amendments to RCRA that focus on waste minimization and phasing out land disposal of hazardous waste as well as corrective action for releases. Some of the other mandates of this law include increased enforcement authority for EPA, more stringent hazardous waste management standards, and a comprehensive underground storage tank program.

#### **4.11.2.4 Solid Waste Disposal Act (42 U.S.C. § 82) as amended by RCRA**

Congress passed the Solid Waste Disposal Act (SWDA) in 1965 as part of the amendments to the Clean Air Act. This was the first federal law that required environmentally sound methods for disposal of household, municipal, commercial, and industrial waste. Subsequent amendments to the SWDA, such as the RCRA, have substantially increased the federal government's involvement in solid waste management.

#### **4.11.2.5 Toxic Substances Control Act (15 U.S.C. § 2601 et seq.)**

The Toxic Substances Control Act of 1976 (TSCA) provides EPA with authority to require reporting, record-keeping and testing requirements, and restrictions relating to chemical substances and/or mixtures. Certain substances are generally excluded from TSCA, including, among others, food, drugs, cosmetics and pesticides.

#### **4.11.2.6 Emergency Planning and Community Right-to-Know Act of 1986 (42 U.S.C. § 11001 et seq.)**

The Emergency Planning and Community Right-to-Know Act (EPCRA) establishes requirements for Federal, State, and local governments, Indian Tribes, and industry regarding emergency planning and "community right-to-know" reporting on hazardous and toxic chemicals. States and communities, working with facilities, can use the information to improve chemical safety and protect public health and the environment. Under EPCRA, local governments are required to prepare chemical emergency response plans, and to review plans at least annually. State governments are required to oversee and coordinate local planning efforts. Facilities that maintain Extremely Hazardous Substances on site in quantities greater than corresponding Threshold Planning Quantities must cooperate in emergency plan preparation.

Additionally, facilities must immediately report accidental releases of extremely hazardous substance chemicals and "hazardous substances" in quantities greater than corresponding Reportable Quantities defined in CERCLA to state and local officials. This information must be made available to the public. Facilities manufacturing, processing, or storing designated hazardous chemicals must make Material Safety Data Sheets (MSDSs) describing the properties and health effects of these chemicals available to state and local officials and local fire departments. Facilities must also report, to state and local officials and local fire departments, inventories of all onsite chemicals for which MSDSs exist. This information

must be made available to the public. Facilities must complete and submit a Toxic Chemical Release Inventory Form annually for each of the more than 600 Toxic Release Inventory chemicals that are manufactured or otherwise used above the applicable threshold quantities.

#### **4.11.2.7 Standards for the Use or Disposal of Sewage Sludge (40 CFR Part 503)**

40 CFR Part 503 establishes standards, which consist of general requirements, pollutant limits, management practices, and operational standards, for the final use or disposal of sewage sludge generated during the treatment of domestic sewage in a treatment works. Standards are included for sewage sludge applied to the land, placed on a surface disposal site, or fired in a sewage sludge incinerator. Also included are pathogen and alternative vector attraction reduction requirements for sewage sludge applied to the land or placed on a surface disposal site.

### **4.11.3 EXISTING CONDITIONS**

Water and wastewater treatment projects use hazardous and toxic substances to support their processes. Some of the substances that might be used include, but are not limited, to sodium hypochlorite, chlorine dioxide, caustic soda (sodium hydroxide), calcium carbonate, aluminum sulfate, aluminum chloride, sodium aluminate, ferric sulfate, ferrous sulfate, ferric chloride, ferric chloride sulfate, bioxide, polymers, defoamers. Small amounts of fuels and other similar materials might also be used and stored at the project sites. With any hazardous materials on site, there is some risk for accidental releases to occur.

Hazardous materials exist across the United States, and sites listed on the NPL can occur in every state with potential to be located near water and wastewater treatment projects. There are 1,341 NPL and 55 proposed sites in the country (EPA 2018)<sup>7</sup>.

Approximately 555,000 USTs nationwide store petroleum or hazardous substances (EPA 2018). The greatest potential threat from a leaking UST is contamination of groundwater, the source of drinking water for nearly half of all Americans. EPA, states, and tribes work in partnership with industry to protect the environment and human health from potential releases.

### **4.11.4 ENVIRONMENTAL CONSEQUENCES**

#### **4.11.4.1 No Action Alternative**

There will be no new impacts to hazardous material usage or the generation of hazardous waste from WIFIA credit assistance projects under the No Action Alternative. There will be no impact to existing hazardous waste sites or remediation efforts at sites.

#### **4.11.4.2 Proposed Action Alternative**

##### **Typical Environmental Consequences from All Project Types**

Construction of WIFIA credit assistance projects might require equipment that utilizes hazardous materials such as petroleum fuels and oil. During construction activities, such hazardous materials might accidentally be spilled or otherwise released into the environment exposing construction workers, the

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<sup>7</sup> This information is current as of March 22, 2018.

public and/or the environment to potentially hazardous conditions. Prospective borrowers are responsible for properly maintaining construction vehicles and equipment, along with any hazardous and toxic materials used in their operation, in compliance with applicable laws and regulations. The contractor is also responsible for the appropriate disposal of all hazardous waste generated during construction in compliance with applicable laws and regulations. All hazardous and regulated materials or substances shall be handled according to safety data sheet instructions. Implementation of environmental protection measures, including BMPs and SOPs (e.g., spill kits), for preventing and responding to potential contamination will result in less than significant impacts.

Contaminated soils, groundwater, and sediments might be encountered during excavation work required to construct WIFIA credit assistance projects. The construction contractors will be required, when appropriate, to prepare and implement hazardous materials and Contaminated Media Management Plans that establish specific approaches to addressing anticipated and unanticipated contaminated soil, groundwater, and surface water during construction. This plan might be part of the Health and Safety Plans. Areas or sites with known contamination shall be addressed during site selection. Construction on CERCLA NPL sites or other sites with remedial actions occurring shall be avoided and minimized if possible during site selection. Construction on NPL sites or other remedial action sites might interfere with remediation efforts, potentially exposing construction workers or the general public to contamination, or exacerbate or cause migration of hazardous materials or plumes on site. Coordination with appropriate entities shall take place; however, with site avoidance no impacts to remedial sites is expected to occur.

Water and wastewater credit assistance projects might employ the types of substances listed Section 4.11.3. For these projects, the system operator is responsible for the proper storage, handling, transportation, and disposal hazardous materials and waste generated in accordance local, state and federal laws and regulations. When necessary, facilities will prepare an Emergency Plan/Emergency Response Plan (or similar) to address the risks of storage of hazardous materials and the emergency response procedures, including preparedness for extreme weather. Most states require the inclusion of an Emergency Response Plan in every O&M manual for wastewater treatment facilities and pump stations. Title IV of the Public Health Security and Bioterrorism Preparedness and Response Act, Public Law 107-188, requires drinking water facilities serving populations of more than 3,300 to perform vulnerability assessments and to prepare an Emergency Response Plan that incorporates the results of the vulnerability assessment.

USTs represent one of the more common environmental problems encountered during site preparation. USTs have been (or are currently) used to store almost any kind of viscous material including petroleum products, chemicals, and discarded wastes (some of which might be classified as hazardous). EPA recognizes that, because of the large size and great diversity of the regulated community, state and local governments are in the best position to oversee USTs. Prospective borrowers shall follow state procedures for removing underground tanks.

Some WIFIA credit assistance projects will increase or generate new sources of sewage sludge. The sludge is processed according to the most appropriate method (for example, belt filter press dewatering, Class B lime stabilization) and disposed in compliance with the standards for the Use or Disposal of Sewage Sludge developed by EPA. In many cases, the dewatered sludge cake is hauled for agricultural land application, avoiding the amount disposed in landfills.

Overall, adverse impacts from hazardous and toxic materials as a result of the construction, O&M of WIFIA financed projects or to hazardous sites are anticipated to be less than significant given implementation of environmental protection measures, including BMPs and SOPs discussed above, to address the storage, handling, transportation, and disposal of hazardous and toxic materials.

## 4.12 HUMAN HEALTH AND SAFETY

### 4.12.1 DEFINITION OF THE RESOURCE

The statutory purpose of NEPA includes promoting the “health and welfare of man” (42 U.S.C. § 4321 et seq.) and analysis of the impacts to which the proposed action affects public health and safety is woven throughout Section 4.0, though might be more evident in some sections than others, such as the hazardous and toxic materials and waste section. This section is included to further assist the public and decision maker in gaining an understanding of the potential impacts the proposed action has on human health and safety. Health and safety includes occupational hazards to workers as well as the exposure of the general public to conditions creating the risk of immediate injury or long-term health hazards.

### 4.12.2 POTENTIALLY APPLICABLE STATUTES AND REGULATIONS

#### 4.12.2.1 Occupational Safety and Health Standards (29 U.S.C. § 651 et seq.)

Congress passed the Occupational and Safety Health Act to ensure worker and workplace safety. Their goal was to make sure employers provide their workers a place of employment free from recognized hazards to safety and health, such as exposure to toxic chemicals, excessive noise levels, mechanical dangers, heat or cold stress, or unsanitary conditions.

In order to establish standards for workplace health and safety, the Act also created the National Institute for Occupational Safety and Health as the research institution for the Occupational Safety and Health Administration (OSHA). OSHA is a division of the U.S. Department of Labor that oversees the administration of the Act and enforces standards in all 50 states.

#### 4.12.2.2 Executive Order 13045 - Protection of Children from Environmental Health Risks and Safety Risks

Executive Order 13045 was issued in 1997 by President William Clinton. EO 13045 requires that each Federal agency: "(a) shall make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children; and (b) shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks."

Environmental health risks or safety risks refer to risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest (such as the air we breathe, the food we eat, the water we drink or use for recreation, the soil we live on, and the products we use or are exposed to). Children are more vulnerable to environmental exposures than adults because their bodily systems are still developing; they eat more, drink more, and breathe more in proportion to their body size; and their behavior can expose them more to chemicals and organisms.

#### 4.12.3 EXISTING CONDITIONS

Conditions that affect human occupational health and safety at water and wastewater facilities and projects are representative of those across the United States. These facilities include adult populations that work in a wide range of occupations, including managerial and administrative, technical, laboratory support, construction, facilities and equipment repair, and related occupations. The workplaces for these occupations are subject to OSHA regulations and oversight.

In 2016, children under 18 made up 22.8 percent of the total United States population, children under five made up 6.2 percent of the population. The 2010 Census recorded more than 74 million children under 18 in the United States, with more than 20 million under age five (U.S. Census Bureau 2017). Children are likely to be located in the vicinity of WIFIA eligible project areas. Children are likely to be present at facilities, such as schools, daycares, residences and parks/playgrounds. In 2015, the estimated percentage of children ages 0-17 served by community water systems that did not meet all applicable health-based drinking water standards was seven percent (EPA 2017). The estimated percentage of children served by community drinking water systems that did not meet surface water treatment standards was 0.7 percent in 2015. The estimated percentage of children served by community drinking water systems that did not meet the health-based standard for total coliforms was about 3 percent in 2015. Total coliforms indicate the potential presence of harmful bacteria associated with infectious illnesses (EPA 2017).

Asthma is a common chronic disease among children in the United States. In 2006, 9.9 million children under 18 years of age were reported to have ever been diagnosed with asthma; 6.8 million children had an asthmatic episode in the last 12 months. The hospitalization rate for asthma remained at 27 per 10,000 children from 2002-2004. Asthma is the third ranking cause of non-injury related hospitalization among children less than 15 years of age (EPA n.d.).

Lead exposure is another environmental health issue that is important to children. Lead exposure in young children can result in lowered intelligence, reading and learning disabilities, impaired hearing, reduced attention span, hyperactivity, delayed puberty, and reduced postnatal growth. Currently, no level of lead in blood has been identified as safe for children. The U.S. Centers for Disease Control and Prevention recommend public health actions be initiated for children with a reference level of 5 micrograms of lead per deciliter of blood. Today, elevated blood lead levels in children are due mostly to ingestion of contaminated dust, paint and soil. Other sources of lead exposure include ceramics, drinking water pipes and plumbing fixtures, consumer products, batteries, gasoline, solder, ammunition, imported toys, and cosmetics.

#### 4.12.4 ENVIRONMENTAL CONSEQUENCES

Impacts to human health and safety may be considered significant if direct human exposure to a health hazard or safety risk substantially increases for humans. Impacts may be considered significant if implementation of an alternative resulted in the violation of laws and regulations governing human health and safety. The area of interest for this resource area is the project or facility and the immediate surrounding communities.

#### **4.12.4.1 No Action Alternative**

Under the No Action Alternative, no construction occurs, therefore no construction-related human health and safety impacts will occur from WIFIA credit assistance projects. Implementing the No Action Alternative results in a minimal adverse impact on human health because of the continued operation of outdated water and wastewater facilities that might be beyond their useful life. Potential benefits to children's health will not occur as the operation of outdated water and wastewater facilities beyond their useful life will continue. Existing factors or exposures effecting children's health, such as air quality and use of lead-based pipes will not change. Consequently, impacts to human health and safety as a result of the No Action Alternative are anticipated to range from no impact to less than significant.

#### **4.12.4.2 Proposed Action Alternative**

##### **Typical Environmental Consequences from All Project Types**

Construction of water and wastewater projects might have an effect on occupational human health and safety to personnel involved in the construction activity. Project construction has the potential risks inherent to any construction site, including risks of falls and other injuries and risks associated with accidental spills and leaks from construction equipment. For construction activities taking place in a hot climate or during substantially cold climatic conditions, workers might be at risk of heat stroke or frostbite, respectively. Construction-related risks are minimized through implementation of a comprehensive construction health and safety plan which addresses site-specific health and safety issues (e.g., working with contaminated sediment, soil, and water, and the demolition/removal of hazardous materials), including specific emergency response services and procedures and evacuation measures. Construction-related risks are also minimized by limiting site access to personnel involved in the construction activity (e.g., authorized personnel).

Access to chemicals stored and used at treatment facilities during operation must be controlled to ensure safety. Appropriate secondary containment for treatment chemicals must be provided as required by the National Fire Protection Association standards and local requirements and standards of practice.

Overall, adverse impacts to human health and safety as a result of the construction and O&M of WIFIA financed projects are anticipated to be less than significant given the implementation of best management practices and SOP's to minimize impacts to health and safety in the workplace. This includes, but is not limited to having appropriately trained personnel and following health and safety plans and ensuring proper maintenance of safety equipment.

Efforts to reduce fugitive construction generated dust will take place, discussed in greater detail in the Air Quality Section 4.2, will reduce potential risks to surrounding communities, including children. Parks, schools, daycares and other locations with high concentrations of children will be identified prior to construction in order to identify if existing construction measures adequately protect children's health and identify if any additional measures are necessary.

##### **Beneficial Effects from All Project Types**

EPA expects the operation of WIFIA eligible projects to make improvements to outdated water and wastewater facilities that have been operating beyond their useful life. Improvements to these systems

are likely to result in improved drinking water in user communities. Safe, reliable sources of drinking water can also be extended to new communities, reducing the number of children that do not have access to community drinking water systems that meet health standards.

# SECTION 5

## 5.0 CUMULATIVE IMPACTS

### 5.1 DEFINITIONS

The Council on Environmental Quality (CEQ) defines cumulative effects as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions” (40 CFR 1508.7). Cumulative effects can result from individually minor, but collectively significant actions taking place over a period of time. Taken individually, environmental damage is incremental, occurring one action at a time; however, determining the significance of the collective actions requires an understanding of their effect on the larger environment in its context.

### 5.2 METHODOLOGY AND SCOPE OF CUMULATIVE IMPACTS ANALYSIS

This cumulative impact analysis is prepared at a level of detail that is reasonable and appropriate to support an informed decision by EPA and takes into consideration the programmatic nature of this programmatic environmental assessment.

#### 5.2.1 GEOGRAPHIC AND TEMPORAL BOUNDARIES

The cumulative effects analysis begins with defining the geographic scope and time frame of the study, which is generally broader than the study area of the project because it encompasses resources that are affected by multiple actions. The geographic boundary of the analysis in this PEA is broad as the WIFIA eligible projects can be located anywhere across the United States. Any necessary subsequent tiered project studies will define more specific geographic boundaries based on the resources identified specific to that analysis. Cumulative effect study area boundaries can be defined to appropriately assess key resources of interest, such as municipal boundaries or watershed boundaries. Cumulative effects are included as a component in the environmental questionnaire included in Appendices A and B.

The timeframes for relevant past actions will vary. The future timeframe for the cumulative effects analysis is roughly 35 years, which is the maximum final maturity date from substantial completion and is a reasonable estimate of the useful life of water and wastewater infrastructure projects.

#### 5.2.2 PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE ACTIONS

Specific past, present, and reasonably foreseeable future actions will vary for individual WIFIA eligible projects. This analysis will qualitatively consider representative impacts from this list of representative action types. Representative types of actions might include nearby commercial and residential real

estate development, public/private infrastructure, and transportation, such as transit, rail, highways, or freight.

### 5.2.3 KEY RESOURCES OF INTEREST

Implementation of the Proposed Action Alternative has the potential to contribute both positively and negatively to cumulative effects. Key resources in this analysis based on information presented in Chapter 4 have been identified in Table 5-1 to analyze in detail in this cumulative effects analysis. Key resources are those that have the greatest potential to be cumulatively affected by the Proposed Action Alternative. The greatest potential for the Proposed Action Alternative to contribute to adverse cumulative effects is where project types are proposed on previously undeveloped land.

TABLE 5-1 KEY RESOURCES AND POTENTIAL CUMULATIVE EFFECTS INCLUDED IN THIS ANALYSIS

RESOURCES EVALUATED IN CHAPTER 4	POTENTIAL CUMULATIVE EFFECT	KEY RESOURCE IN THIS CUMULATIVE EFFECTS ANALYSIS?
Land Use	Conversion of land from undeveloped to developed	Yes
Air Quality	Changes in emissions of criteria pollutants	No
Noise and Vibration	Changes in noise or vibration	No
Geology and Soil	Degradation of quality, increase in erosion and sedimentation	Yes
Water Resources	Degradation of quality, fragmentation, direct loss	Yes
Biological Resources	Degradation of quality, fragmentation, direct loss, effects on RTE species	Yes
Cultural Resources	Changes in historic context and loss of cultural resources	Yes
Socioeconomic	Changes in demographic, economic, and social assets of a community	No
Environmental Justice	Potential for disproportionate and adverse effects on minority and low-income populations	Yes
Transportation & Traffic	Changes in the transportation network	No
Utilities and Services	Changes to utility services	No
Hazardous and Toxic Materials and Waste	Changes in the generation or remediation of hazardous wastes or materials	No
Human Health and Safety	Changes in hazards or exposure	No

### 5.2.4 POTENTIAL CUMULATIVE EFFECTS BY RESOURCE

#### Land Use

Although many WIFIA credit assistance projects will be improvements to existing facilities, some projects are likely to include new construction which can preclude other land uses within the project footprint and can alter the character of the immediate footprint. EPA expects that the site selection process will ensure that no conflicts with federal, regional, state, or local land use plans, policies or controls will occur. Implementation of selected projects will comply with existing federal and other applicable statutes and regulations. Other past, present, and reasonably foreseeable future actions also have the potential to preclude other land uses within specific project footprints as well as have the potential to induce growth resulting in secondary effects to land use. Changes to land use plans, policies, and controls as a result of the Proposed Action Alternative are expected to contribute negligible adverse impacts to cumulative impacts in combination with impacts associated with other past, present, and reasonably foreseeable future actions.

Coastal regions will be impacted by future projected changes in environmental conditions including sea level rise, storm surge, and habitat loss which may alter the current land use. While long-term patterns are clear, there is considerable variability in these effects regionally and locally because oceanographic conditions are not uniform and are strongly influenced by natural climate fluctuations (Doney 2014).

### **Geology and Soil**

Water and wastewater projects financed by the WIFIA program and other past, present and reasonably foreseeable actions might involve soil-disturbing activities including vegetation removal, grubbing, grading, excavation, and ground penetration. The extent of ground disturbance will vary based on project type, and specific project details. Construction might result in new or expanded erosion sources. As discussed in Chapter 4, soil erosion will be controlled through the use of appropriate erosion and sediment control measures and BMPs; EPA assumes similar measures to address soil erosion have been or will be utilized for other past, present or reasonably foreseeable actions as identified in project specific state-issued construction permits or other local permits. Changes to geology and soils as a result of the Proposed Action Alternative are expected to have negligible contributions to adverse cumulative impacts in combination with impacts associated with other past, present, and reasonably foreseeable future actions.

### **Water Resources**

Past, present and reasonably foreseeable actions also have the potential to adversely affect water resources. It is assumed that construction of the Proposed Action Alternative will result in similar types of short-term adverse impacts to water resources as other past, present and reasonably foreseeable actions, however the extent and degree of these impacts will vary depending on the specific action or project.

Potential impacts on water resources including wetlands are governed by federal, state, and local laws and regulations, which are intended to prevent or minimize degradation or loss of natural resources. These federal, state and local laws and regulations apply to equally to WIFIA projects and other past, present or reasonably foreseeable actions, which EPA expects to be effective at preventing or minimizing the degradation or loss of resources.

As considered in Chapter 4, projects that receive WIFIA credit assistance are expected to have beneficial effects on water quality and/or quantity. Construction-related adverse effects are expected to be

confined to immediate project areas or respective bodies of water, and are expected to be temporary in nature as they are limited to the construction timeframe. Beneficial effects can occur to waterbodies in the immediate project area, and contribute to watershed or basin-wide improvements downstream, especially when aggregated with other beneficial effects occurring from other projects within the same watershed or basin. While it is likely that WIFIA projects will occur within the same watershed or affect the same water resource as other past, present and reasonably foreseeable actions, significant adverse cumulative impacts are unlikely. Changes to water resources as a result of the Proposed Action Alternative are expected to have negligible contributions to adverse cumulative impacts in combination with impacts associated with other past, present, and reasonably foreseeable future actions.

Future projected environmental changes will impact water resources. Annual precipitation and river flow increases are observed now in the Midwest and the Northeast regions. Very heavy precipitation events have increased nationally, intensifying flooding, and are projected to increase in all regions. The length of dry spells is projected to increase in most areas, especially the southern and northwestern portions of the contiguous United States. Water demand, groundwater withdrawals, and aquifer recharge will be impacted, reducing groundwater availability in some areas. Sea level rise, storms and storm surges, and changes in surface and groundwater use patterns are expected to compromise the sustainability of coastal freshwater aquifers and wetlands. Increasing air and water temperatures, more intense precipitation and runoff, and intensifying droughts can decrease river and lake water quality in many ways, including increases in sediment, nitrogen, and other pollutant loads (U.S. Global Change Research Program 2017) .

### Biological Resources

Past, present and reasonably foreseeable actions that involve ground-disturbing activities have the potential to affect vegetative resources by reducing the extent of vegetative cover, compacting soils, causing erosion or sedimentation, and increase the potential for establishment of noxious, invasive, or pest plants. Projects occurring on developed sites are assumed to have less contiguous habitat and less sensitive plant species. It is also assumed that developed sites might have a relatively high percentage of non-native or invasive vegetation than undeveloped sites. It is assumed that the Proposed Action Alternative will result in similar types of impacts to vegetation as other past, present and reasonably foreseeable actions, however the extent and degree of these impacts will vary depending on the specific action or project.

Past, present and reasonably foreseeable actions can impact locally-present wildlife species through the loss or disturbance of habitat (including breeding areas and migratory stop-over locations), habitat fragmentation (which in turn can affect movement and migration), loss of food and prey species, introduction of new species, and changes in water availability. Similar impacts can occur from the Proposed Action Alternative; however, the extent and degree of these impacts will vary depending on the specific action or project. As discussed in Chapter 4, potential impacts are anticipated to be mitigated through site selection, site design, timing of construction activities, and implementation of BMPs and SOPs. We anticipate that other past, present and reasonably foreseeable actions will also utilize similar mitigation efforts.

Future projected environmental changes, combined with other stressors, challenges the capacity of ecosystems to buffer the impacts from extreme events like fires, floods, and storms which changes landscapes and their associated species and habitats (U.S. Global Change Research Program 2017). For

example, the combination of sea level rise and land subsidence is forecast to result in various changes in the distribution and abundance of coastal wetlands and mangroves, which might damage habitat functions for many important fish and shellfish populations (BOEM, 2016). While some unavoidable impacts to biological resources might occur from the Proposed Action Alternative in combination with other past, present and reasonably foreseeable future actions, impacts are expected to have a limited extent and degree to individual resources within specific project footprints and will not result in cumulative impacts to biological resources at the national level. Adverse cumulative impacts to individual resources are expected to be negligible.

### **Cultural Resources**

Chapter 4 discussed the potential direct impact archaeological sites, historic buildings, traditional communities, and cultural institutions through construction-related encroachment, damage, displacement, destruction, or diminishing historic integrity. Construction activities have the potential to introduce temporary visual and audible impacts to cultural resources located within or in proximity to the project site. Other past, present and reasonably foreseeable future projects have the potential to cumulatively effect the same cultural resources that might be present within the Areas of Potential Effect (APE) for specific WIFIA projects. It is assumed that these projects will undergo similar consultations with appropriate State Historic Preservation Officers (SHPOs) and conduct avoidance and minimization efforts to reduce impacts to cultural resources. While some unavoidable impacts to cultural resources might occur from the Proposed Action Alternative in combination with other past, present and reasonably foreseeable future actions, impacts are expected to be limited to individual resources and will not cumulatively affect cultural resources at the national level. Adverse cumulative impacts to individual resources are expected to be negligible.

### **Environmental Justice**

Past, present and reasonably foreseeable projects considered individually or cumulatively, can have benefits and/or impacts on all Project study area populations. It is expected that none of the benefits or impacts of the Proposed Action Alternative will be predominantly borne by a minority and/or low-income population, and none of the potential impacts on environmental justice (EJ) populations will be more severe or greater in magnitude than the potential impacts on non-EJ populations. As population demographics will vary across project areas, no direct or cumulative impacts to environmental justice populations will be expected to occur if it is determined that none are present within specific project areas. Although other past, present and reasonably foreseeable future projects have the potential to have or have had cumulative impacts on environmental justice communities, we anticipate that the Proposed Action Alternative will have negligible contributions to additional adverse impacts.

## **5.2.5 OTHER CONSIDERATIONS**

### **Irreversible and Irretrievable Commitments of Resources**

NEPA requires that environmental analyses include identification of any irreversible and irretrievable commitments of resources that will be involved if the Proposed Action Alternative is implemented. Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects this use can have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a

reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the Proposed Action Alternative (e.g., extinction of a special-status species or the disturbance of a cultural resource).

Construction of approved WIFIA projects will include the consumption or conversion of resources that will not subsequently be able to be retrieved. This includes, for example, the use of fuel, oil, and lubricants consumed by construction and maintenance vehicles and equipment; concrete, metals (i.e., steel), and wood used for the facility; and the consumption of food products by construction and maintenance workers. Additionally, land might be used for development which will, for the life span of the facility, remove the potential for other uses including commercial development, agriculture, grazing, or timber harvesting on that land.

#### **Unavoidable Adverse Environmental Effects**

NEPA requires a description of any potentially significant impacts resulting from implementation of a proposed action, including those that can be mitigated to a less than significant level. Avoidance, minimization, or mitigation of adverse impacts will be included for specific WIFIA projects. There are no significant adverse environmental effects that normally cannot be avoided or minimized as a result of the construction, and O&M of the proposed water infrastructure projects, as analyzed within this.

#### **5.2.6 CONCLUSION**

The WIFIA program is implemented nationally, and the geographic diversity of investments is a goal of the program in the long term. While projects are selected individually, it is unlikely that the selected projects will have significant contribution to cumulative effects on human health or the environment at a programmatic level. However, WIFIA projects may incrementally contribute to cumulative impacts depending on the baseline conditions of the affected resource; other past present or reasonably foreseeable actions; or context including the geographic area where the project will occur.

Projects covered under this PEA will avoid, minimize and mitigate for individual project impacts, including agency consultation, to reduce an individual project's contribution to cumulative impacts to less than significant levels.

# SECTION 6

## 6.0 SUMMARY OF THE POTENTIAL EFFECTS OF THE EVALUATED ALTERNATIVES

No significant impacts are anticipated as a result of the No Action Alternative or the Proposed Action Alternative in this PEA. For each resource area analyzed, Table 6-1 provides a summary of anticipated impacts using the categorization noted in Section 4.0. Impacts are largely anticipated to be minimized through avoidance and through the implementation of BMPs and SOPs, as summarized in Table 6-1.

As noted in Section 4, projects receiving WIFIA credit assistance must comply with all relevant federal laws and regulations and are guided by relevant statutes (and their implementing regulations) and EOs that establish standards and provide guidance on environmental compliance, including natural and cultural resources management and planning. As discussed in Section 1.0, in considering the implementation of a specific project, prospective borrowers and EPA would use the framework in Appendices A and B of this PEA to determine whether the proposed project and its associated impacts are covered under the PEA, or whether additional NEPA analysis is needed. If the analysis concludes that additional NEPA analysis is necessary, it is required to be prepared before any irreversible and irretrievable commitments of resources occurs as a result of the project.

TABLE 6-1 TYPICAL ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES

RESOURCE AREA	NO ACTION ALTERNATIVE IMPACTS	PROPOSED ACTION ALTERNATIVE IMPACTS	MITIGATION MEASURES FOR THE PROPOSED ACTION ALTERNATIVE
Land Use	No impact	No significant impact. Effects might include changes in land use covers and designations, alter land use patterns, and might preclude other land uses within the projects footprints and adjacent to them.	<ul style="list-style-type: none"> <li>• Ensure compatibility with state, local units of government, and private programs and policies</li> <li>• Mitigation measures implemented as a result of stakeholder coordination/consultation</li> </ul>
Air Quality	No impact to no significant impact	No significant impact. Effects might include construction dust and emissions and operational emissions of criteria air pollutants and ozone precursors from treatment processes, power generators, and increased vehicular traffic.	<ul style="list-style-type: none"> <li>• Odor minimizing facility design or emission control devices</li> <li>• Use of energy efficient technologies, such as anti-idling measures for construction vehicles</li> <li>• Use of dust suppression techniques, such as water for dust suppression, reducing vehicle speeds, cover truck loads during transit, rumble strips, truck washing stations during construction</li> </ul>
Noise	No impact to no significant impact	No significant impact. Effects might include construction noise and vibration, and operational noise and vibration.	<ul style="list-style-type: none"> <li>• Compliance with local ordinances and land use designations</li> <li>• Placing intakes and exhausts facing away from sensitive receivers</li> <li>• Attenuation of fan noise and pump and motor noise</li> <li>• Use of general noise reduction measures</li> </ul>
Geological and Soils	No impact	No significant impact. Effects could include vegetation removal, grubbing, grading, and trenching.	<ul style="list-style-type: none"> <li>• Use of erosion control and site stabilization BMPs</li> <li>• Implementation of a stormwater pollution prevention plan and fugitive dust control plan</li> <li>• Implementation of effective site selection and design</li> </ul>
Water	No significant impact	No significant impact. Effects could include ground and soil-disturbing activities, direct impacts to surface water or wetlands, new or	<ul style="list-style-type: none"> <li>• Use of appropriate erosion and sediment control measures, BMPs, and site stabilization</li> <li>• Implementation of effective site selection and design</li> </ul>

		expanded outfalls and discharges of effluent to water resources.	<ul style="list-style-type: none"> <li>• Compliance with federal, state and local regulations and permit requirements</li> <li>• Prevention of spills and leaks from vehicles and equipment</li> </ul>
<b>Biological</b>	No impact	No significant impact. Effects could include reduced vegetative cover, soil compaction, erosion or sedimentation, habitat fragmentation, introduction of invasive species, changes in water availability, construction noise and dust.	<ul style="list-style-type: none"> <li>• Implementation of avoidance and minimization measures, and BMPs</li> <li>• Compliance with the recommendations of the Services and state and local environmental authorities</li> <li>• Prevention of spills and leaks from vehicles and equipment</li> <li>• Implementation of measures to minimize soil compaction and the transportation of noxious, invasive and pest species</li> <li>• Prevention of spills and leaks from vehicles and equipment</li> <li>• Implementation of measures to minimize soil compaction and the transportation of noxious, invasive and pest species</li> </ul>
<b>Cultural</b>	No impact	No significant impact. Effects could include potential to directly impact NRHP listed or eligible properties, through encroachment, displacement or destroying or diminishing the historic integrity.	<ul style="list-style-type: none"> <li>• Implementation of effective site selection and design</li> <li>• Consultation with SHPO and/or THPO and minimization adverse effects</li> <li>• Conduct surveys prior to construction</li> <li>• Development of an unanticipated discoveries plan</li> </ul>
<b>Socio/EJ</b>	No significant impact	No significant impact. Effects could include local economic benefits from construction and operation. disruption to communities from construction.	<ul style="list-style-type: none"> <li>• Implementation of construction mitigation measures</li> <li>• Measures implemented as a result of conducting meaningful public engagement to environmental justice communities</li> </ul>
<b>Transport and Traffic</b>	No impact	No significant impact. Effects could include street closures, lane closures, detours, traffic and parking restrictions, and reduced traffic speeds.	<ul style="list-style-type: none"> <li>• Coordination with local agencies</li> <li>• Use of warning signage, flag persons</li> <li>• Use of lane closures and detours as necessary</li> </ul>
<b>Utilities</b>	No impact to no significant impact	No significant impact. Effects could include utility relocations and service interruptions.	<ul style="list-style-type: none"> <li>• Identification and avoidance of utilities</li> <li>• Coordination with service providers and minimization of service interruption</li> </ul>

			<ul style="list-style-type: none"> <li>• Coordination with park and recreational resource managers/agencies</li> </ul>
<b>Hazardous/Toxic Materials &amp; Waste</b>	No impact	No significant impact. Effects could include accidental spills or releases of materials.	<ul style="list-style-type: none"> <li>• Compliance with applicable hazardous and toxic materials laws and regulations</li> <li>• Implementation of environmental protection measures, BMPs, and SOPs</li> <li>• Development of Emergency Plan/Emergency Response Plan (or similar)</li> </ul>
<b>Health &amp; Safety</b>	No impact to no significant impact	No significant impact. Effects could include generation of fugitive dust, and construction related risks such as falls and other injuries and accidental spills and leaks from construction equipment.	<ul style="list-style-type: none"> <li>• Implementation of a health and safety plan</li> <li>• Limiting site access to authorized personnel only</li> <li>• Implementation of fugitive dust minimization measures</li> </ul>

# SECTION 7

## 7.0 REFERENCES

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# SECTION 8

## 8.0 LIST OF PREPARERS

### **Danusha Chandy, PE**

WIFIA Program Senior Engineer, Environmental Protection Agency, Water Infrastructure Division, Office of Wastewater Management, Washington, D.C.

### **Jordan Dorfman**

WIFIA Senior Attorney-Advisor, Environmental Protection Agency, Water Infrastructure Division, Office of Wastewater Management, Washington, D.C.

### **Alejandro Escobar**

WIFIA Program Environmental Engineer, Environmental Protection Agency, Water Infrastructure Division, Office of Wastewater Management, Washington, D.C.

### **Karen Fligger**

WIFIA Senior Project Manager, Environmental Protection Agency, Water Infrastructure Division, Office of Wastewater Management, Washington, D.C.

### **Allison Hoppe**

Attorney Adviser, Environmental Protection Agency, Office of General Counsel, Cross-Cutting Issues Law Office, Washington, D.C.

### **Howard Kahan**

Environmental Scientist, Environmental Protection Agency, Water Infrastructure Division, Office of Wastewater Management, San Francisco, CA

### **Kelly Knight**

Director NEPA Compliance, Environmental Protection Agency, Office of Federal Activities, NEPA Compliance Division, Washington, D.C.

### **Alaina McCurdy**

Physical Scientist, Environmental Protection Agency, Water Infrastructure Division, Office of Wastewater Management, Philadelphia, PA

**Kevin McDonald**

WIFIA Program Underwriter, Environmental Protection Agency, Water Infrastructure Division, Office of Wastewater Management, Washington, D.C.

**Matthew Nowakowski**

Federal Agency Liaison for EPA NHPA Compliance, Environmental Protection Agency, Office of Federal Activities, NEPA Compliance Division, Washington, D.C.

**Marthea Roundtree**

Federal Agency Liaison for EPA NEPA Compliance, Environmental Protection Agency, Office of Federal Activities, NEPA Compliance Division, Washington, D.C.

**Elaine Suriano**

Federal Agency Liaison for EPA NEPA Compliance, Environmental Protection Agency, Office of Federal Activities, NEPA Compliance Division, Washington, D.C.

**Jessica Trice**

Federal Agency Liaison for EPA NEPA Compliance, Environmental Protection Agency, Office of Federal Activities, NEPA Compliance Division, Washington, D.C.

**Justin Wright**

Federal Agency Liaison for EPA NEPA Compliance, Environmental Protection Agency, Office of Federal Activities, NEPA Compliance Division, Washington, D.C.

# Appendix A

## APPENDIX A: ENVIRONMENTAL QUESTIONNAIRE FOR WIFIA CREDIT ASSISTANCE PROJECTS

This questionnaire will be used for most projects receiving WIFIA credit assistance and supports the Programmatic Environmental Assessment (PEA) “tiering” framework, the PEA’s associated preliminary Finding of No Significant Impact (FONSI), and project-specific NEPA documentation for the WIFIA program. WIFIA credit assistance to SRF programs should use the questionnaire in Appendix B.

1. Project title:
2. Prospective Borrower:
3. Project description:
4. Project location (briefly describe the surroundings and environment around the project location and attach map, as necessary):
5. Project type: (Check all that apply):

<input type="checkbox"/>	Wastewater Projects
<input type="checkbox"/>	Drinking Water Projects
<input type="checkbox"/>	Energy Efficiency Enhancement Projects
<input type="checkbox"/>	Repair, Rehabilitation, and Replacement Projects

<input type="checkbox"/>	Brackish or Seawater Desalination Projects
<input type="checkbox"/>	Drought Prevention, Reduction, or Mitigation Projects
<input type="checkbox"/>	Acquisition of Real Property Projects
<input type="checkbox"/>	A combination of Wastewater or Drinking Water Projects
<input type="checkbox"/>	Other [Please explain]

6. Describe any environmental permits needed for the project (e.g., federal, state, local) and the status of any permit:

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A. LAND USE:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Conversions of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), to non-agricultural use as defined under the Farmland Protection Act 7 U.S.C. 4201 et seq.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Conflicts with any applicable land use plan, policy, act, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, habitat conservation plan, specific plan, local plan, or zoning ordinance).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please provide mitigation measures related to land use, including those that reduce a significant impact to less than significant. Please provide references and supporting documents.

B. AIR QUALITY:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Conflicts with or delays in implementation of any applicable federal, state, or local air quality plan.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Violations of any air quality standards or contributions to an existing or projected air quality violation (including protected areas designated as mandatory Federal "Class I").	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Increases in any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Releases of objectionable odors, such as hydrogen sulfide.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please provide mitigation measures related to air quality, including those that reduce a significant impact to less than significant. Please provide references and supporting documents.

C. NOISE AND VIBRATION:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Permanent increases in ambient noise levels in the project vicinity above levels existing without the project.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Temporary or periodic increases in ambient noise levels in the project vicinity above levels existing without the project.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Generation of vibration that could increase the risk of structural damage.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please provide mitigation measures related to noise and vibration, including those that reduce a significant impact to less than significant. Please provide references and supporting documents:

D. GEOLOGY AND SOILS:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Exposure of people or structures to hazards from unstable soils, landslide, lateral spreading, subsidence, liquefaction or collapse.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Increase in soil erosion or loss of topsoil.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Loss of economic viable mineral deposits, scientifically significant paleontological resources, or unique geological features.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please provide mitigation measures related to geology and soils, including those that reduce a significant impact to less than significant. Please provide references and supporting documents.

E. WATER RESOURCES:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Violations of any water quality standards or waste discharge requirements, including degradation of water quality.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Depletion or contamination of groundwater supplies (including sole-source aquifers) or negatively interfere with groundwater recharge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Alteration of the drainage pattern of a water resource that would result in an increase in erosion or flooding on- or off-site.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Soil erosion or stormwater runoff that increases sediment, pollutants, or contaminates into streams, rivers, or other water resources.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Floodplain modification, development within, or redirection, as defined by executive order 11988.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Increase in flood risk affecting loss on human safety, health, and welfare.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Loss, degradation, or destruction of wetlands and waterbodies through direct removal, filling, hydrological interruption, or other means.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Alteration of wild and scenic rivers as defined by the Wild and Scenic River Act 16 U.S.C. 1271 et seq.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Conflicts with the Rivers and Harbors Act, 33 U.S.C. 403.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Conflicts with the Coastal Barrier Resources Act, 16 U.S.C. 3501 et seq.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Conflicts with the Coastal Zone Management Act, 16 U.S.C. 1451 et seq.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please provide mitigation measures related to water resources, including those that reduce a significant impact to less than significant. Please provide references and supporting documents.

F. BIOLOGICAL RESOURCES:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Jeopardizing the continued existence of any threatened or endangered species identified in local or regional plans, policies, or regulations, or by the U.S. Fish and Wildlife Service or National Marines Fisheries Service.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Modification, fragmentation, or degradation of critical habitat identified in local or regional plans, policies, or regulations, or by the U.S. Fish and Wildlife Service or National Marines Fisheries Service.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Harm to fauna, including mammals, birds, reptiles, amphibians, fish, and invertebrates.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Changes in vegetation type (native to the region), particularly if the vegetation type in the region is already highly fragmented because of human activity.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Modification, fragmentation, or degradation of biological sensitive areas other than those mentioned above.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Disturbances to marine mammals protected by the Marine Mammal Protection Act as defined under 16 U.S.C 1361-1407.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Disturbances to Bald or Golden Eagles as defined under 16 U.S.C. 668 et seq.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Disturbances to migratory birds as defined under 16 U.S.C. 703-712 as amended.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Conflicts with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, state, or federal habitat conservation plan.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Introduction or spread of invasive species as identified under Executive Order 13112.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please provide mitigation measures related to biological resources, including those that reduce a significant impact to less than significant. Please provide references and supporting documents.

G. CULTURAL RESOURCES:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Changes to historical resources, including archaeological and cultural resources as defined in 36 CFR part 800.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Modification of unique paleontological resources or site or unique geologic features.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Disturbance of human remains, including those interred outside of formal cemeteries.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please provide mitigation measures related to cultural resources, including those that reduce a significant impact to less than significant. Please provide references and supporting documents.

H. SOCIOECONOMIC AND ENVIRONMENTAL JUSTICE:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Changes to the demographics around project location, such as population growth.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Modifications to economic factors such as per capita income, unemployment rate, or poverty.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Alterations to social assets, such as housing or public services.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Disproportionate high and adverse human health environmental effects on minority population and low-income populations as defined under Executive Order 12898.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please provide mitigation measures related to socioeconomic resources and environmental justice, including those that reduce a significant impact to less than significant. Please provide references and supporting documents.

I. TRANSPORTATION AND TRAFFIC:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Changes to traffic patterns around the project area including, but not limited to, the arrival and departure of construction workers, vehicles hauling equipment and materials to the site, road closures or detours, and slower movement and larger turning radii of truck going to project site.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please provide mitigation measures related to transportation and traffic, including those that reduce a significant impact to less than significant. Please provide references and supporting documents.

J. UTILITIES AND COMMUNITY SERVICES:		IMPACT ANTICIPATED		
		NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1.	Changes to electric, cable, gas, sewer, water, stormwater, and other existing utility services.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	Changes to community services, such as open space, recreational and cultural facilities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please provide mitigation measures related to utilities and communication, including those that reduce a significant impact to less than significant. Please provide references and supporting documents.

K. HAZARDOUS AND TOXIC MATERIALS AND WASTE:	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Accidental releases, spills, or improper storage and disposal of hazardous materials.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Conflicts with Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Resource Conservation and Recovery Act (RCRA), Solid Waste Disposal Act, Toxic Substances Control Act, and Emergency Planning and Community Right-to-Know Act.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Generation or increase in the amount of sewage sludge that is not in compliance with EPA standards for the use or disposal of sewage sludge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please provide mitigation measures related to transportation and traffic including those that reduce a significant impact to less than significant. Please provide references and supporting documents.

L.	HUMAN HEALTH AND SAFETY:	IMPACT ANTICIPATED		
		NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1.	Creating occupational health hazards for workers during construction or operation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	Creating or contributing to environmental health risks and safety risks that may disproportionately affect children.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	Creating or contributing to public health risk of immediate injury or long-term health hazards.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please provide mitigation measures related to human health and safety, including those that reduce a significant impact to less than significant. Please provide references and supporting documents.

M. CUMULATIVE IMPACTS	IMPACT ANTICIPATED		
	NO IMPACT	LESS THAN SIGNIFICANT IMPACT	POTENTIALLY SIGNIFICANT IMPACT
1. Land Use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Air Quality.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Noise and Vibration.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Geology and Soils.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Water Resources.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Cultural Resources.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Socioeconomic and Environmental Justice.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Transportation and Traffic.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Utilities and Community Services.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Hazardous and Toxic Materials and Waste.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Human Health and Safety.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please provide all mitigation measures not identified previously in the document that will be included in the project. Identify any mitigation measures that reduce a significant impact to less than significant. Identify all past, present, and reasonably foreseeable actions within the project area. Please provide references and supporting documents:

# Appendix B

## APPENDIX B: ENVIRONMENTAL QUESTIONNAIRE FOR WIFIA CREDIT ASSISTANCE TO SRF PROGRAMS

This questionnaire, which will be distributed to prospective borrowers, supports the Programmatic Environmental Assessment (PEA) “tiering” framework, the PEA’s associated preliminary Finding of No Significant Impact (FONSI), and project-specific NEPA documentation for the WIFIA program.

### A. LAND USE

1. Will significant impacts occur to land use resources? Describe any significant impacts that are anticipated.
2. What procedures, methodology or tools are used by the prospective borrower to assess and determine the impacts of projects to land use within the state environmental review process? Please describe these and any alternatives considered or mitigation measures that will be taken to ensure that adverse impacts to land use are less than significant. Please describe any state or local laws or plans that were considered.
3. Using Section O, Impact Summary Table, identify individual projects with potential significant impacts for land use.

### B. AIR QUALITY

1. Will significant impacts from construction occur to air quality or will the action result in changes in attainment status? Describe any significant impacts that are anticipated.
2. Will significant impacts from operation occur to air quality or will the action result in changes in attainment status? Describe any significant impacts that are anticipated.
3. What procedures, methodologies, or tools are used by the prospective borrower to assess and determine the impacts of projects to air quality using the state environmental review process? Please describe these and any alternatives considered or mitigation measures that will be taken to ensure that impacts or changes to air quality are less than significant. Please provide any state or local laws or plans that were considered.
4. Using Section O, Impact Summary Table, identify individual projects with potential significant impacts for air quality.

### C. NOISE AND VIBRATION

1. Will significant impacts from noise and vibration occur to sensitive noise receptors, or result in the violation of noise laws, permits, ordinances, etc. from construction or operation with appropriate mitigation? Describe any significant impacts that are anticipated.

2. What procedures, methodologies, or tools does the prospective borrower use to assess and determine the impacts of projects to noise and vibration using the state environmental review process? Please describe any these and alternatives considered or mitigation measures that will be taken to ensure that impacts or changes to noise and vibration are less than significant. Please provide any state or local laws or ordinances that were considered.
3. Using Section O, Impact Summary Table, identify individual projects with potential significant impacts for noise and vibration.

## D. GEOLOGICAL AND SOIL RESOURCES

1. Will significant impacts occur to:
  - Geological resources, including topography, geology, and geological hazards with appropriate mitigation? Describe any significant impacts that are anticipated.
  - Soils, including soil erosion, with appropriate mitigation? Describe any significant impacts that are anticipated.Describe any significant impacts that are anticipated.
2. Will significant impacts from geohazards occur either during construction or operation? Describe any significant impacts that are anticipated.
3. What procedures, methodologies, or tools are used by the prospective borrower to assess and determine the impacts of projects to geological and soil resources using the state environmental review process? Please describe these and any alternatives considered or mitigation measures that will be taken to ensure that impacts or changes to geological and soil resources are less than significant. Please provide any state or local laws or ordinances that were considered.
4. Using Section O, Impact Summary Table, identify the individual projects with potential significant impacts to geological and soil resources.

## E. WATER RESOURCES

1. Will significant impacts occur to:
  - a. Surface water resources, including streams, rivers, estuaries, coastal resources, lake, and reservoirs?
  - b. Groundwater resources and drinking water, including sole source aquifers, source water protection zones?
  - c. Wetlands resources?
  - d. Floodplains?
  - e. Coastal zones regulated by the Coastal Zone Management Act (CZMA)?Describe any impacts that are anticipated.
2. What procedures, methodologies, or tools does the prospective borrower use to assess and determine the impacts of projects to water resources using the state environmental review process, including consultation processes? Please describe these and any alternatives considered or mitigation measures that will be taken to ensure that impacts or changes to water resources are less than significant. Please provide any state or local laws or regulations that were considered.
3. Using Section O, Impact Summary Table, identify the individual projects with potential significant impacts to water resources.

## F. BIOLOGICAL RESOURCES

1. Will significant impacts occur to:
  - Vegetation/flora?
  - Fauna, including mammals, birds, reptiles, amphibians, fish, and invertebrates?
  - Protected species, under the Endangered Species Act, Migratory Bird Treaty Act, Marine Mammal Protection Act, Bald and Golden Eagle Protection Act, or state protections?Describe any impacts that are anticipated.
2. What procedures, methodologies, or tools are used by the prospective borrower to assess and determine the impacts of projects to biological resources using the state environmental review process, including consultation processes? Please describe these and any alternatives considered or mitigation measures that will be taken to ensure that impacts or changes to biological resources are less than significant. Please provide any state or local laws or regulations that were considered.
3. Using Section O, Impact Summary Table, identify the individual projects with potential significant impacts to biological resources.

## G. CULTURAL RESOURCES

1. Will significant impacts to cultural resources, including archaeological sites, historic buildings, traditional communities, and cultural institutions, occur? Describe any impacts that are anticipated.
2. What procedures, methodologies, or tools are used by the prospective borrower to assess and determine the impacts of projects to cultural resources using the state environmental review process, including consultation processes? Please describe these and any alternatives considered or mitigation measures that will be taken to ensure that impacts or changes to cultural resources are less than significant.
3. Provide a discussion of the affected environment for cultural resources or an overview of existing conditions specific to the state, as well as any state or local laws or protections that were considered.
4. Using Section O, Impact Summary Table, identify the individual projects with potential significant impacts to cultural resources.

## H. SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

1. Will significant impacts occur to socioeconomic resources, including demographic, economic, and social assets of a community? Describe any impacts that are anticipated.
2. Will the project result in disproportionately high and adverse human health or environmental effects on minority populations or low-income populations? Describe any impacts that are anticipated. Describe public outreach to communities of concern that has occurred.
3. What procedures, methodologies, or tools are used by the prospective borrower to assess and determine the impacts of projects to socioeconomic and environmental justice using the state environmental review process? Please describe these and any alternatives considered or mitigation measures that will be taken to ensure that impacts or changes to socioeconomic and

environmental justice are less than significant. Please provide any state or local laws or protections that were considered.

4. Using Section O, Impact Summary Table, identify the individual projects with potential significant impacts to socioeconomics and environmental justice.

## I. TRANSPORTATION AND TRAFFIC

1. Will significant impacts to transportation and traffic occur? Describe any impacts that are anticipated.
2. What procedures, methodologies, and tools are used by the prospective borrower to assess and determine the impacts of projects to transportation and traffic using the state environmental review process? Please describe these and any alternatives considered or mitigation measures that will be taken to ensure that impacts or changes to transportation and traffic are less than significant. Please provide any state or local laws or regulations that were considered.
3. Using Section O, Impact Summary Table, identify the individual projects with potential significant impacts to transportation and traffic.

## J. UTILITIES AND COMMUNITY SERVICES

1. Will significant impacts to utilities and community services occur, including impacts to electricity, natural gas, water, telecommunication service, wastewater management services, solid waste management service, and other essentials? Describe any impacts that are anticipated.
2. What procedures, methodologies, or tools are used by the prospective borrower to assess and determine the impacts of projects to utilities and community services using the state environmental review process? Please describe these and any alternatives considered or mitigation measures that will be taken to ensure that impacts or changes to utilities and community services are less than significant. Please provide any state or local laws or regulations that were considered.
3. Using Section O, Impact Summary Table, identify the individual projects with potential significant impacts to utilities and community services.

## K. HAZARDOUS AND TOXIC MATERIALS AND WASTE

1. Will significant impacts, such as surface water or groundwater contamination, from hazardous and toxic materials and waste occur, either through construction or operations? Describe any impacts that are anticipated.
2. What procedures, methodologies, or tools are used by the prospective borrower to assess and determine the impacts of projects to hazardous and toxic materials and waste using the state environmental review process? Please describe these and any alternatives considered or mitigation measures that will be taken to ensure that impacts or changes to hazardous and toxic materials and waste are less than significant. Please provide any state or local laws or protections that were considered.
3. Using Section O, Impact Summary Table, identify the individual with potential significant impacts related to hazardous and toxic materials and waste.

## L. HUMAN HEALTH AND SAFETY

1. Will significant impacts occur from construction or operation of the proposed project to human health and safety, including occupational safety? Describe any impacts that are anticipated.
2. Will environmental health risks and safety risks disproportionately affect children? Describe any impacts that are anticipated.
3. What procedures, methodologies, or tools are used by the prospective borrower to assess and determine the impacts of projects to human health and safety using the state environmental review process? Please describe these and any alternatives considered or mitigation measures that will be taken to ensure that impacts or changes to human health and safety are less than significant. Provide any state or local laws or regulations that were considered.
4. Using Section O, Impact Summary Table, identify the individual projects with potential significant impacts to human health and safety.

## M. OTHER CONSIDERATIONS

1. Will the projects comply with and address state-level NEPA-like requirements?
2. Will any irreversible and irretrievable commitments of resources occur?
3. How have these determinations been made?

## N. CUMULATIVE EFFECTS

1. Will significant cumulative effects occur from the incremental impacts of the proposed action when added to other past, present and reasonably foreseeable actions in the action area? Describe any impacts that are anticipated.
2. What procedures, methodologies, or tools does the prospective borrower use to assess and determine the cumulative effects of projects in the state environmental review process? Please describe these and any alternatives considered or mitigation measures that will be taken to ensure that indirect and cumulative impacts are less than significant.
3. Using Section O, Impact Summary Table, identify the individual projects with potential significant impacts on indirect and cumulative effects.

## O. IMPACT SUMMARY TABLE

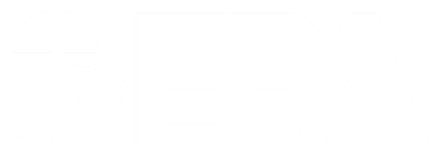
This table will provide an overview of the determinations made in Sections A through N. For each SRF borrower please identify each project name and indicate in the table below if there are significant impacts to each of the resource topics discussed above. The Impact Summary Table is to be filled out by the prospective borrower and will be reviewed and verified by EPA. Projects with significant impacts will be marked with an (S); adverse impacts that are less than significant will be marked with an “LS”.

SRF Borrower <sup>1</sup>	Project Name	“LS” indicates adverse impacts that are less than significant to a resource, “S” indicates significant impacts to a resource.												Mitigation Measures	SRF Impact Determination
		Land Use	Air Quality	Noise/Vibration	Geological/Soil Resources	Water Resources	Biological Resources	Cultural Resources	Socioeconomics/ EJ	Traffic/ Transportation	Utilities / Community	Hazardous and Toxic Materials and Waste	Human Health and Safety	Cumulative and Indirect Impacts	


<sup>1</sup> Individual projects listed in Table O of Appendix A, Environmental Questionnaire, can be replaced with different eligible projects by an SRF prospective borrower after the credit agreement has been closed, with EPA review and approval.

Note- LS indicates adverse impacts that are less than significant; S indicates significant impacts.







**Office of Wastewater Management  
Water Infrastructure Division  
Washington, DC 20460**

**[www.epa.gov/wifia](http://www.epa.gov/wifia)**