

VA



U.S. Department
of Veterans Affairs
Veterans Benefits Administration

Draft Programmatic Environmental Impact Statement for Veterans Affairs Housing Loan Program



Published for Public Comment
July 2021

INTENTIONALLY LEFT BLANK.

United States Department of Veterans Affairs Draft Programmatic Environmental Impact Statement

for the

Veterans Affairs Housing Loan Program



Published for Public Comment

July 2021

INTENTIONALLY LEFT BLANK.

COVER SHEET

United States Department of Veterans Affairs (VA)

Title: Draft Programmatic Environmental Impact Statement of the Department of Veterans Affairs Housing Loan Program

Location: Nationwide

Contact:

For further information about this Draft Programmatic Environmental Impact Statement, contact:

Elysium Drumm
VAHLPNEPA.VBAVACO@va.gov
VA Housing Loan Program
U.S. Department of Veterans Affairs
810 Vermont Ave. NW, Room 1063B
Washington, DC 20420

Abstract: This Draft Programmatic Environmental Impact Statement (PEIS) evaluates the potential direct, indirect, and cumulative environmental consequences of continued administration and operation of the United States Department of Veterans Affairs (VA) Housing Loan Program (HLP). VA's HLP includes federal assistance administered by the Veterans Benefits Administration (VBA), in the form of loans made, insured, or guaranteed by VA. It also includes housing benefits that can be used in conjunction with the HLP (e.g., the Specially Adapted Housing [SAH] and the Native American Direct Loan [NADL] programs). Under the HLP, VBA is also responsible for the management, marketing, and disposition of real estate owned (REO) properties that VA acquires following the foreclosure of certain VA-guaranteed loans and loans held in VA's portfolio.

VA has prepared this Draft PEIS pursuant to the National Environmental Policy Act (NEPA) and in accordance with the Council on Environmental Quality (CEQ) implementing regulations for NEPA.^{1,2} This PEIS evaluates the potential environmental impacts of the Proposed Action of continued administration and operation of VA's HLP. Under the Proposed Action, VA would continue to operate and actively manage the HLP. The number of VA-guaranteed loans would continue to fluctuate from year to year based upon housing market conditions; VA's REO program would continue to maintain, manage, market, and sell existing homes through a private-sector contractor; the NADL program would continue to make VA direct loans available to Native American Veterans living on trust, tribal, or communally owned lands; and VA would continue to provide SAH program grants to accommodate the needs of Veterans with certain severe, service-connected disabilities. VA would continue to adhere to

¹ 40 Code of Federal Regulations (CFR) 1500–1508 (1978, as amended).

² CEQ issued a final rule to update its NEPA implementing regulations on July 16, 2020 with an effective date of September 14, 2020. This PEIS was begun prior to these dates and was completed pursuant to CEQ's 1978 NEPA-implementing regulations.

statutory requirements, Executive Branch mandates, and judicial rulings; evaluate the housing needs of Veterans; monitor market conditions (and other unforeseen factors); and perpetually tailor the HLP to ensure VA continues to effectively serve Veterans. To do so, VA may issue new regulations or policies or revise existing ones.

This PEIS also analyzes the No Action Alternative, which presumes VA would continue to operate the HLP in a manner consistent with current practices and procedures, with no future changes or improvements to the program. The No Action Alternative, also called the “reference scenario,” is being presented as a snapshot in time to provide a baseline for comparison.

Comment Period: VA encourages public participation in the NEPA process. Comments received or postmarked within 45 days after publication of the Notice of Availability in the *Federal Register* will be considered in preparing the Final PEIS.

TABLE OF CONTENTS

CHAPTER 1 INTRODUCTION	1-1
1.1 History and Framework.....	1-1
1.2 Purpose of and Need for Action	1-2
1.3 Scope of this PEIS.....	1-3
1.4 Overview of Current Housing Loan Program.....	1-3
1.4.1 VA-Guaranteed Loans.....	1-5
1.4.2 Real Estate Owned (REO) Property Management and Financing	1-14
1.4.3 Native American Direct Loans (NADL)	1-15
1.4.4 Specially Adapted Housing (SAH) Program	1-17
1.5 Property Restrictions Related to VA-Guaranteed Loans	1-19
1.5.1 Occupancy, Location, and Type	1-19
1.5.2 Property Requirements	1-20
1.6 Legislative History and Framework of the HLP	1-21
1.7 Historical Trends of VA Loans Guaranteed	1-22
1.8 Applicable Environmental Laws and Regulations.....	1-23
1.9 Public Involvement.....	1-23
1.9.1 Interagency Coordination	1-24
1.9.2 Tribal Government Coordination	1-25
 CHAPTER 2 PROPOSED ACTION AND ALTERNATIVES.....	 2-1
2.1 Introduction.....	2-1
2.2 Proposed Action	2-1
2.3 No Action Alternative	2-2
2.4 Scenarios Considered for Analysis in this PEIS	2-2
2.4.1 VA-Guaranteed Home Loans	2-3
2.4.2 Real Estate Owned Property Management and Financing	2-4
2.4.3 Native American Direct Loans	2-5
2.4.4 Specially Adapted Housing Program	2-6
2.5 Alternatives Dismissed from Further Consideration	2-8
2.6 The Housing Loan Program Under the Proposed Action	2-8
2.6.1 Managing and Incorporating Changes to the Housing Loan Program.....	2-8
2.6.2 Housing Loan Program Volume	2-10
 CHAPTER 3 AFFECTED ENVIRONMENT	 3.0-1
3.0 Introduction.....	3.0-1
3.0.1 Units of Analysis.....	3.0-2
3.1 Aesthetic Resources.....	3.1-1
3.1.1 Description of the Resource	3.1-1
3.1.2 Applicable Statutes, Regulations, and Terminology.....	3.1-1
3.1.3 Existing Conditions.....	3.1-3
3.1.3.1 Appalachian Highlands	3.1-3
3.1.3.2 Atlantic Plain	3.1-4
3.1.3.3 Interior Highlands.....	3.1-4
3.1.3.4 Interior Plains	3.1-5

	3.1.3.5	Intermontane Plateaus	3.1-5
	3.1.3.6	Laurentian Upland.....	3.1-5
	3.1.3.7	Pacific Mountain System.....	3.1-6
	3.1.3.8	Rocky Mountain System	3.1-6
	3.1.3.9	Alaska and Hawaii	3.1-6
	3.1.3.10	United States Territories	3.1-7
3.1.4		Existing Conditions – Notable Scenic Resources in the United States .	3.1-8
	3.1.4.1	National Parks and Forests	3.1-9
	3.1.4.2	Wild and Scenic Rivers	3.1-11
	3.1.4.3	Wilderness Areas.....	3.1-11
	3.1.4.4	National Scenic Byways.....	3.1-11
3.2		Air Quality.....	3.2-1
	3.2.1	Description of the Resource	3.2-1
		3.2.1.1 Air Quality	3.2-1
		3.2.1.2 Greenhouse Gases.....	3.2-1
	3.2.2	Applicable Statutes, Regulations, and Terminology.....	3.2-2
		3.2.2.1 Air Quality	3.2-2
		3.2.2.2 Greenhouse Gases.....	3.2-4
	3.2.3	Existing Conditions.....	3.2-5
		3.2.3.1 Air Quality	3.2-5
		3.2.3.2 Greenhouse Gases.....	3.2-10
3.3		Biological Resources	3.3-1
	3.3.1	Description of the Resource	3.3-1
	3.3.2	Applicable Statutes, Regulations, and Terminology.....	3.3-1
	3.3.3	Existing Conditions Nationwide	3.3-3
		3.3.3.1 Ecoregions of Hawaii and Territories.....	3.3-8
	3.3.4	Nationwide Representative Threats to Biological Resources.....	3.3-11
		3.3.4.1 Human Activities	3.3-12
		3.3.4.2 Invasive Species.....	3.3-13
		3.3.4.3 Parasites and Diseases	3.3-14
		3.3.4.4 Predation	3.3-14
		3.3.4.5 Hunting, Fishing, and Overexploitation.....	3.3-15
	3.3.5	Migratory Birds.....	3.3-15
		3.3.5.1 Flyways.....	3.3-16
		3.3.5.2 Oceanic Migrations	3.3-17
	3.3.6	Threatened and Endangered Species	3.3-18
		3.3.6.1 Critical Habitats and the Endangered Species Act	3.3-20
	3.3.7	Wetlands.....	3.3-21
3.4		Cultural Resources	3.4-1
	3.4.1	Description of the Resource	3.4-1
	3.4.2	Applicable Statutes, Regulations, and Terminology.....	3.4-2
	3.4.3	Cultural Resources Overview	3.4-3
		3.4.3.1 Federally Recognized Tribes.....	3.4-5
	3.4.4	Existing Conditions.....	3.4-5
		3.4.4.1 Atlanta Regional Loan Center	3.4-5
		3.4.4.2 Cleveland Regional Loan Center	3.4-6

	3.4.4.3	Denver Regional Loan Center.....	3.4-7
	3.4.4.4	Houston Regional Loan Center.....	3.4-7
	3.4.4.5	Phoenix Regional Loan Center.....	3.4-8
	3.4.4.6	Roanoke Regional Loan Center.....	3.4-8
	3.4.4.7	St. Paul Regional Loan Center.....	3.4-9
	3.4.4.8	St. Petersburg Regional Loan Center.....	3.4-10
3.5		Floodplains, Wetlands, and Coastal Zones.....	3.5-1
	3.5.1	Description of the Resource.....	3.5-1
		3.5.1.1 Floodplains.....	3.5-1
		3.5.1.2 Wetlands.....	3.5-2
		3.5.1.3 Coastal Zones.....	3.5-3
	3.5.2	Applicable Statutes, Regulations.....	3.5-3
	3.5.3	Existing Conditions.....	3.5-5
		3.5.3.1 Floodplains.....	3.5-6
		3.5.3.2 Wetlands.....	3.5-8
		3.5.3.3 Coastal Zones.....	3.5-13
		3.5.3.4 Resource Information by HUC-2 Watershed.....	3.5-15
3.6		Geology and Soils.....	3.6-1
	3.6.1	Description of the Resource.....	3.6-1
	3.6.2	Applicable Statutes, Regulations, and Terminology.....	3.6-1
	3.6.3	Existing Conditions.....	3.6-3
		3.6.3.1 Geologic Hazards.....	3.6-3
		3.6.3.2 Soils.....	3.6-4
		3.6.3.3 USGS Physiographic Regions.....	3.6-6
3.7		Hydrology and Water Quality.....	3.7-1
	3.7.1	Description of the Resource.....	3.7-1
		3.7.1.1 Surface Water.....	3.7-1
		3.7.1.2 Groundwater.....	3.7-1
	3.7.2	Applicable Statutes, Regulations, and Terminology.....	3.7-2
	3.7.3	Existing Conditions – HUC-2 Watersheds.....	3.7-3
		3.7.3.1 New England Watershed (01).....	3.7-3
		3.7.3.2 Mid-Atlantic Watershed (02).....	3.7-4
		3.7.3.3 South Atlantic-Gulf Watershed (03).....	3.7-6
		3.7.3.4 Great Lakes Watershed (04).....	3.7-8
		3.7.3.5 Ohio Watershed (05).....	3.7-9
		3.7.3.6 Tennessee Watershed (06).....	3.7-11
		3.7.3.7 Upper Mississippi Watershed (07).....	3.7-12
		3.7.3.8 Lower Mississippi Watershed (08).....	3.7-14
		3.7.3.9 Souris-Red-Rainy Watershed (09).....	3.7-15
		3.7.3.10 Missouri Watershed (10).....	3.7-16
		3.7.3.11 Arkansas-White-Red Watershed (11).....	3.7-18
		3.7.3.12 Texas-Gulf Watershed (12).....	3.7-19
		3.7.3.13 Rio Grande Watershed (13).....	3.7-20
		3.7.3.14 Upper Colorado Watershed (14).....	3.7-21
		3.7.3.15 Lower Colorado Watershed (15).....	3.7-23
		3.7.3.16 Great Basin Watershed (16).....	3.7-24

	3.7.3.17	Pacific Northwest Watershed (17).....	3.7-25
	3.7.3.18	California Watershed (18)	3.7-27
	3.7.3.19	Alaska Watershed (19).....	3.7-29
	3.7.3.20	Hawaii Watershed (20).....	3.7-30
	3.7.3.21	Caribbean Watershed (21).....	3.7-31
	3.7.3.22	American Samoa, Guam, and the Northern Mariana Islands	3.7-32
3.8		Infrastructure and Community Services	3.8-1
	3.8.1	Description of the Resource	3.8-1
	3.8.2	Applicable Statutes, Regulations, and Terminology.....	3.8-1
	3.8.3	Existing Conditions.....	3.8-3
	3.8.3.1	Transportation.....	3.8-3
	3.8.3.2	Utilities	3.8-5
	3.8.3.3	Public Safety.....	3.8-12
	3.8.3.4	Education	3.8-13
3.9		Land Use and Planning	3.9-1
	3.9.1	Description of the Resource	3.9-1
	3.9.2	Applicable Statutes, Regulations, and Terminology.....	3.9-1
	3.9.3	Existing Conditions.....	3.9-3
	3.9.3.1	Water	3.9-8
	3.9.3.2	Developed Land.....	3.9-8
	3.9.3.3	Bare Rock/Sand/Clay.....	3.9-8
	3.9.3.4	Forest Land.....	3.9-8
	3.9.3.5	Shrubland	3.9-9
	3.9.3.6	Herbaceous	3.9-9
	3.9.3.7	Planted/Cultivated.....	3.9-9
	3.9.3.8	Wetlands.....	3.9-9
	3.9.4	Land Use and Land Cover Existing Conditions— Nationwide Summary	3.9-10
	3.9.4.1	Atlanta Regional Loan Center	3.9-10
	3.9.4.2	Cleveland Regional Loan Center	3.9-10
	3.9.4.3	Denver Regional Loan Center.....	3.9-11
	3.9.4.4	Houston Regional Loan Center	3.9-12
	3.9.4.5	Phoenix Regional Loan Center	3.9-12
	3.9.4.6	Roanoke Regional Loan Center	3.9-13
	3.9.4.7	St. Paul Regional Loan Center.....	3.9-13
	3.9.4.8	St. Petersburg Regional Loan Center.....	3.9-14
3.10		Noise	3.10-1
	3.10.1	Description of the Resource	3.10-1
	3.10.2	Applicable Statutes, Regulations, and Terminology.....	3.10-3
	3.10.3	Existing Conditions.....	3.10-3
3.11		Socioeconomics and Environmental Justice	3.11-1
	3.11.1	Description of the Resource	3.11-1
	3.11.2	Applicable Statutes, Regulations, and Terminology.....	3.11-1
	3.11.3	Existing Conditions.....	3.11-2
	3.11.3.1	Nationwide Demography.....	3.11-2

3.11.3.2 Regional Demography 3.11-3
 3.11.3.3 Nationwide Economic and Employment Characteristics.... 3.11-7
 3.11.3.4 Regional Economy and Employment 3.11-9
 3.11.3.5 Nationwide Housing Characteristics..... 3.11-13
 3.11.3.6 Regional Housing Characteristics 3.11-14

CHAPTER 4 ENVIRONMENTAL CONSEQUENCES 4.0-1

4.0 Introduction.....4.0-1
 4.0.1 Methods of Analysis 4.0-1
 4.0.2 Characterization of Impacts..... 4.0-5
 4.0.3 Comparison of Environmental Effects of Alternatives 4.0-6
 4.1 Aesthetic Resources.....4.1-1
 4.1.1 Significance Criteria 4.1-1
 4.1.2 Proposed Action..... 4.1-1
 4.1.2.1 Sources of Visual Impacts..... 4.1-2
 4.1.2.2 Potential Impacts to Aesthetics Resources 4.1-2
 4.1.3 No Action Alternative..... 4.1-8
 4.2 Air Quality.....4.2-1
 4.2.1 Significance Criteria 4.2-1
 4.2.2 Proposed Action..... 4.2-1
 4.2.2.1 Sources of Impacts to Air Quality 4.2-2
 4.2.2.2 Potential Impacts to Air Quality 4.2-5
 4.2.3 No Action Alternative..... 4.2-12
 4.3 Biological Resources 4.3-1
 4.3.1 Significance Criteria 4.3-1
 4.3.2 Proposed Action..... 4.3-1
 4.3.2.1 Sources of Impacts to Biological Resources 4.3-1
 4.3.2.2 Potential Impacts to Biological Resources..... 4.3-5
 4.3.3 No Action Alternative..... 4.3-11
 4.4 Cultural Resources 4.4-1
 4.4.1 Significance Criteria 4.4-1
 4.4.2 Proposed Action..... 4.4-2
 4.4.2.1 Sources of Impacts to Cultural Resources 4.4-2
 4.4.2.2 Potential of Impacts to Cultural Resources..... 4.4-3
 4.4.3 No Action Alternative..... 4.4-8
 4.5 Floodplains, Wetlands, and Coastal Zones 4.5-1
 4.5.1 Significance Criteria 4.5-1
 4.5.2 Proposed Action..... 4.5-2
 4.5.2.1 Sources of Impacts on Floodplains, Wetlands, and Coastal Zones..... 4.5-2
 4.5.2.2 Potential Impacts to Floodplains, Wetlands, and Coastal Zones..... 4.5-3
 4.5.3 No Action Alternative..... 4.5-17
 4.6 Geology and Soils.....4.6-1
 4.6.1 Significance Criteria 4.6-1
 4.6.2 Proposed Action..... 4.6-1

	4.6.2.1	Sources of Impacts to Geology and Soils.....	4.6-2
	4.6.2.2	Potential Impacts to Geology and Soils.....	4.6-2
	4.6.3	No Action Alternative.....	4.6-8
4.7		Hydrology and Water Quality	4.7-1
	4.7.1	Significance Criteria	4.7-1
	4.7.2	Proposed Action.....	4.7-1
	4.7.2.1	Sources of Impacts to Hydrology and Water Quality	4.7-2
	4.7.2.2	Potential Impacts to Hydrology and Water Quality	4.7-2
	4.7.3	No Action Alternative.....	4.7-11
4.8		Infrastructure and Community Services	4.8-1
	4.8.1	Significance Criteria	4.8-1
	4.8.2	Proposed Action.....	4.8-1
	4.8.2.1	Sources of Impacts to Infrastructure and Community Services	4.8-1
	4.8.2.2	Potential Impacts to Infrastructure and Community Services	4.8-2
	4.8.3	No Action Alternative.....	4.8-8
4.9		Land Use and Planning	4.9-1
	4.9.1	Significance Criteria	4.9-1
	4.9.2	Proposed Action.....	4.9-1
	4.9.2.1	Sources of Impacts to Land Use and Planning.....	4.9-1
	4.9.2.2	Potential Impacts to Land Use and Planning.....	4.9-2
	4.9.3	No Action Alternative.....	4.9-6
4.10		Noise	4.10-1
	4.10.1	Significance Criteria	4.10-1
	4.10.2	Proposed Action.....	4.10-1
	4.10.2.1	Sources of Impacts to Noise	4.10-2
	4.10.2.2	Potential Impacts to Noise	4.10-2
	4.10.3	No Action Alternative.....	4.10-6
4.11		Socioeconomics and Environmental Justice	4.11-1
	4.11.1	Significance Criteria	4.11-1
	4.11.2	Proposed Action.....	4.11-1
	4.11.2.1	Sources of Socioeconomic and Environmental Justice Impacts	4.11-2
	4.11.2.2	Potential Impacts to Socioeconomics and Environmental Justice	4.11-10
	4.11.3	No Action Alternative.....	4.11-22
CHAPTER 5 CUMULATIVE IMPACTS			5-1
5.1		Introduction.....	5-1
5.2		Past, Present, and Reasonably Foreseeable Future Actions	5-1
	5.2.1	Major Housing Loan Financing Programs Considered in Cumulative Impact Analysis	5-2
	5.2.1.1	New Home Construction Financing Data	5-4
	5.2.1.2	Where Veterans Live	5-8
	5.2.1.3	Territories of the United States.....	5-10

5.2.2	Minor Federal Housing Loan Programs Considered in Cumulative Impacts Analysis.....	5-11
5.2.3	Other Major Federal Programs Considered in Cumulative Impact Analysis.....	5-17
5.3	Evaluation of Cumulative Impacts.....	5-18
5.3.1	Methodology and Assumptions.....	5-18
5.3.2	Resource Specific Cumulative Impacts.....	5-20
5.3.2.1	Aesthetic Resources.....	5-26
5.3.2.2	Air Quality.....	5-27
5.3.2.3	Biological Resources.....	5-28
5.3.2.4	Cultural Resources.....	5-29
5.3.2.5	Floodplains, Wetlands, and Coastal Zones.....	5-30
5.3.2.6	Geology and Soils.....	5-33
5.3.2.7	Hydrology and Water Quality.....	5-34
5.3.2.8	Infrastructure and Community Services.....	5-34
5.3.2.9	Land Use and Planning.....	5-35
5.3.2.10	Noise.....	5-36
5.3.2.11	Socioeconomics and Environmental Justice.....	5-37
CHAPTER 6 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS.....		6-1
CHAPTER 7 RELATIONSHIP BETWEEN SHORT-TERM USES OF THE ENVIRONMENT AND LONG-TERM PRODUCTIVITY.....		7-1
CHAPTER 8 LIST OF PREPARERS.....		8-1
CHAPTER 9 REFERENCES.....		9-1
APPENDIX A PUBLIC SCOPING.....		A-1
APPENDIX B LIST OF NATIVE AMERICAN TRIBES THAT HAVE MEMORANDA OF UNDERSTANDING WITH DEPARTMENT OF VETERANS AFFAIRS.....		B-1
APPENDIX C KEY LEGISLATIVE MILESTONES.....		C-1
APPENDIX D SOCIOECONOMIC DATA BY REGIONAL LOAN CENTERS.....		D-1

LIST OF TABLES

Table 1-1.	Primary Responsibilities of the Housing Loan Program	1-4
Table 1-2.	VA-Guaranteed Loans in FY 2017 by Period of Service or Entitlement.....	1-7
Table 1-3.	Types and Characteristics of VA-Guaranteed Loans during FY 2017	1-8
Table 1-4.	Metropolitan Statistical Areas with VA-Guaranteed Loans for Newly Constructed Homes (FY 2013 – FY 2017).....	1-12
Table 1-5.	Amounts for Specially Adapted Housing Program Grants (FY 2017).....	1-18
Table 1-6.	Examples of Geographical Restrictions Affecting VA-Guaranteed Loans	1-20
Table 3.0-1.	Resource Topics – Units of Analysis	3.0-1
Table 3.1-1.	Aesthetics Statutes, Regulations, and Terminology.....	3.1-2
Table 3.1-2.	Notable Scenic Resources by State and Territory	3.1-9
Table 3.2-1.	Air Quality Statutes, Regulations, and Terminology.....	3.2-3
Table 3.2-2.	Greenhouse Gases and Climate Change Statutes, Regulations, and Terminology.....	3.2-4
Table 3.2-3.	Number of U.S. Counties Designated Nonattainment for NAAQS.....	3.2-5
Table 3.2-4.	Percent Reduction in Average Criteria Pollutant Concentrations Nationwide	3.2-7
Table 3.2-5.	Air Quality Index Descriptor Categories and Health Effects	3.2-9
Table 3.3-1.	Biological Resource Statutes, Regulations, and Terminology.....	3.3-1
Table 3.3-2.	Level I Ecoregions of the United States.....	3.3-4
Table 3.3-3.	Summary of Listed Species Populations and Recovery Plans	3.3-19
Table 3.4-1.	Cultural Resources Statutes, Regulations, and Terminology.....	3.4-2
Table 3.4-2.	Historic Properties within States Served by the Atlanta Regional Loan Center	3.4-6
Table 3.4-3.	Historic Properties within States Served by the Cleveland Regional Loan Center	3.4-6
Table 3.4-4.	Historic Properties within States Served by the Denver Regional Loan Center	3.4-7
Table 3.4-5.	Historic Properties within States Served by the Houston Regional Loan Center	3.4-7
Table 3.4-6.	Historic Properties within States/Territories Served by the Phoenix Regional Loan Center.....	3.4-8
Table 3.4-7.	Historic Properties within States Served by the Roanoke Regional Loan Center	3.4-9
Table 3.4-8.	Historic Properties within States Served by the St. Paul Regional Loan Center	3.4-9
Table 3.4-9.	Historic Properties within States/Territories Served by the St. Petersburg Regional Loan Center.....	3.4-10

Table 3.5-1.	Floodplain Definitions	3.5-1
Table 3.5-2.	Floodplains, Wetlands, and Coastal Zones Statutes and Regulations	3.5-3
Table 3.5-3.	Definitions of Major Freshwater Wetland Types.....	3.5-10
Table 3.5-4.	Wetland Types and Acreage in Conterminous United States.....	3.5-11
Table 3.5-5.	States with the Highest Wetland Acreage Totals	3.5-13
Table 3.5-6.	Floodplains, Coastal Zone, and Wetlands Descriptions by HUC-2 Watershed.....	3.5-16
Table 3.6-1.	Geology and Soils Statutes, Regulations, and Terminology.....	3.6-2
Table 3.7-1.	Hydrology and Water Quality Statutes, Regulations, and Terminology	3.7-2
Table 3.8-1.	Infrastructure and Community Services Statutes, Regulations, and Terminology.....	3.8-1
Table 3.8-2.	U.S. Urbanized Areas with Highest Daily Total Vehicle Miles Traveled (August 2018).....	3.8-3
Table 3.8-3.	Average Retail Price of Electricity to Residential Sector, April 2019	3.8-7
Table 3.8-4.	Median Rates of Career and Volunteer Firefighters per 1,000 People by Region and Population Protected (2017)	3.8-12
Table 3.8-5.	National and Regional Enrollment in Public Schools.....	3.8-13
Table 3.8-6.	Student/Teacher Ratios in Public Schools (Fall 2016)	3.8-14
Table 3.9-1.	Land Use Statutes, Regulations, and Terminology	3.9-1
Table 3.9-2.	Summary of Land Cover Classes for the Conterminous United States	3.9-4
Table 3.9-3.	Summary of Land Cover Classes for Alaska.....	3.9-4
Table 3.9-4.	Summary of Land Cover Classes for Hawaii.....	3.9-5
Table 3.9-5.	Summary of Land Cover Classes for American Samoa	3.9-5
Table 3.9-6.	Summary of Land Cover Classes for Guam	3.9-6
Table 3.9-7.	Summary of Land Cover Classes for the Northern Mariana Islands.....	3.9-6
Table 3.9-8.	Summary of Land Cover Classes for Puerto Rico.....	3.9-7
Table 3.9-9.	Summary of Land Cover Classes for the U.S. Virgin Islands	3.9-7
Table 3.10-1.	Examples of Common Sound Levels.....	3.10-1
Table 3.10-2.	Perceived Change in Decibel Level	3.10-2
Table 3.10-3.	Noise Statutes, Regulations, and Terminology	3.10-3
Table 3.11-1.	Nationwide Population and Demography.....	3.11-2
Table 3.11-2.	Nationwide Economy and Employment (2016)	3.11-8
Table 3.11-3.	Nationwide Housing Characteristics (2016)	3.11-14
Table 4.0-1.	Comparison of Environmental Effects of Alternatives	4.0-7
Table 4.1-1.	Summary of Aesthetics Impacts by USGS Physiographic Region	4.1-3
Table 4.2-1.	Air Emissions Associated with Fuel Use in an Average U.S. Home	4.2-3
Table 4.2-2.	Air Emissions Associated with Electricity Used by an Average U.S. Home ...	4.2-3

Table 4.2-3.	Air Emissions Associated with Light-Duty Vehicle Use	4.2-4
Table 4.2-4.	Summary of Air Quality Impacts by VA Regional Loan Center.....	4.2-6
Table 4.3-1.	Summary of Biological Resource Impacts by USEPA Ecoregion.....	4.3-6
Table 4.4-1.	Summary of Cultural Resources Impacts by VA Regional Loan Center	4.4-4
Table 4.5-1.	Summary of Floodplain, Wetland, and Coastal Zone Area Impacts by HUC-2 Region	4.5-4
Table 4.6-1.	Summary of Geologic and Soils Impacts by USGS Physiographic Region ...	4.6-3
Table 4.7-1.	Summary of Hydrology and Water Quality Impacts by HUC-2 Region	4.7-3
Table 4.8-1.	Summary of Infrastructure and Community Service Impacts by VA Regional Loan Center	4.8-3
Table 4.9-1.	Summary of Land Use Impacts by VA Regional Loan Center	4.9-3
Table 4.10-1.	Noise Levels Associated with Outdoor Construction.....	4.10-2
Table 4.10-2.	Summary of Noise Impacts by VA Regional Loan Center	4.10-3
Table 4.10-3.	Noise Levels at Associated Distances from Construction Area	4.10-5
Table 4.10-4.	Typical L ₉₀ Sound Levels in Residential Communities	4.10-6
Table 4.11-1.	Income/Employment Impacts of Residential Construction in a Local Area (One Year Impact).....	4.11-4
Table 4.11-2.	Impacts on Government Revenue	4.11-5
Table 4.11-3.	Summary of Socioeconomic and Environmental Justice Impacts by VA Regional Loan Center	4.11-15
Table 5-1.	Major Housing Loan Financing Programs Considered in Cumulative Impact Analysis	5-3
Table 5-2.	Type of Financing for New Single-Family Houses: United States	5-5
Table 5-3.	Top 10 Metropolitan Areas with Highest Percentage of Veterans	5-10
Table 5-4.	Federal Housing Loan Programs for Real Estate Owned Properties in Cumulative Impact Analysis.....	5-12
Table 5-5.	Federal Housing Loan Programs for Native Americans Considered in Cumulative Impact Analysis.....	5-13
Table 5-6.	Federal Housing Loan Programs for Rehabilitation Considered in Cumulative Impact Analysis.....	5-14
Table 5-7.	Other Federal and Public/Private Housing Assistance Programs Considered in Cumulative Impact Analysis	5-15
Table 5-8.	Other Major Federal Programs Considered in Cumulative Impact Analysis ...	5-18
Table 5-9.	Cumulative Impact Summary.....	5-22
Table 5-10.	Occupied Housing Units within Floodplains by State	5-31

LIST OF FIGURES

Figure 1-1.	Nationwide Locations and Jurisdictions of VA Regional Loan Centers	1-5
Figure 1-2.	Total VA-Guaranteed Loans, Home Purchases, and Refinances per Fiscal Year	1-8
Figure 1-3.	VA-Guaranteed Loans for Existing and Newly Constructed Home Purchases	1-9
Figure 1-4.	Geographical Distribution of Total VA-Guaranteed Loans (FY 1996 – FY 2017)	1-10
Figure 1-5.	Geographical Distribution of VA-Guaranteed Loans for Newly Constructed Homes (FY 2013 – FY 2017).....	1-11
Figure 1-6.	Native American Direct Loan Originations by Location	1-16
Figure 1-7.	Geographical Distribution of Native American Direct Loans (FY 2013 – FY 2017)	1-16
Figure 1-8.	Types of Specially Adapted Housing Program Grants	1-18
Figure 1-9.	Geographical Distribution of Specially Adapted Housing Program Grants (FY 2013 – FY 2017).....	1-19
Figure 1-10.	NEPA Process and Milestones	1-24
Figure 2-1.	Loan Guaranty Scenarios Analyzed in this PEIS	2-4
Figure 2-2.	Real Estate Owned Scenarios Analyzed in this PEIS	2-5
Figure 2-3.	Native American Direct Loans Scenarios Analyzed in this PEIS.....	2-6
Figure 2-4.	Specially Adapted Housing Program Scenarios Analyzed in this PEIS.....	2-7
Figure 2-5.	Pathways for Changes to the Housing Loan Program	2-9
Figure 3.0-1.	USGS Physiographic Regions	3.0-3
Figure 3.0-2.	USEPA Ecoregions of North America	3.0-4
Figure 3.0-3.	Hydrologic Unit Code-2 Watershed Regions.....	3.0-5
Figure 3.2-1.	The Greenhouse Effect	3.2-2
Figure 3.2-2.	Counties Designated “Nonattainment” or “Maintenance” for NAAQS	3.2-6
Figure 3.2-3.	Comparison of Growth Areas and Emissions, 1980–2016	3.2-8
Figure 3.2-4.	Global Greenhouse Gas Emissions by Economic Sector.....	3.2-10
Figure 3.2-5.	Trends in U.S. Greenhouse Gas Emissions, 1990 to 2017	3.2-11
Figure 3.2-6.	U.S. Greenhouse Gas Emissions in 2017 by Fuel and End-Use Sector	3.2-12
Figure 3.3-1.	Migratory Bird Flyways in North America	3.3-17
Figure 3.3-2.	Critical Habitats of the United States and Its Territories	3.3-21
Figure 3.4-1.	Number of Historic Properties in the United States and Its Territories	3.4-4
Figure 3.5-1.	Frequency of Flood Events by County (1996–2013).....	3.5-7
Figure 3.5-2.	Wetland Density of the Conterminous United States	3.5-9
Figure 3.5-3.	Coastal States and Territories and Coastal Barrier Resource System Areas.....	3.5-14
Figure 3.6-1.	Simplified Seismic Hazard Map based on Peak Acceleration with a 2 Percent Chance of Exceedance in 50 Years.....	3.6-4

Figure 3.6-2.	Distribution of Prime Farmland in the United States.....	3.6-5
Figure 3.6-3.	Acreage of Prime Farmland Soils in the United States from 1982–2015.....	3.6-6
Figure 3.8-1.	Highway Passenger Travel (seasonally adjusted) (January 2000 – September 2018).....	3.8-3
Figure 3.8-2.	Top 10 Metropolitan Area Congestion Rankings: 2017	3.8-4
Figure 3.8-3.	Public Transit Ridership over Time	3.8-5
Figure 3.8-4.	Total Energy Consumed per Capita (2017)	3.8-6
Figure 3.8-5.	Domestic Water Use in Gallons per Day per Person and Percent Population Growth from 2000 to 2015	3.8-8
Figure 3.8-6.	Municipal Solid Waste Management by USEPA Region in 2010	3.8-10
Figure 3.8-7.	Municipal Solid Waste Composition in 2015	3.8-10
Figure 3.10-1.	Existing Noise Conditions in the United States	3.10-4
Figure 4.0-1.	VA-Guaranteed Loans for Newly Constructed Homes versus All New Home Construction.....	4.0-4
Figure 4.2-1.	Typical Air Emissions Sources Associated with the Construction and Occupancy of New Homes	4.2-2
Figure 4.2-2.	Sources of Greenhouse Gas Emissions Associated with New Homes.....	4.2-5
Figure 4.2-3.	Comparison of 2019 NAAQS Nonattainment Areas with Number of VA-Guaranteed Loans for Newly Constructed Homes	4.2-10
Figure 4.2-4.	Comparison of Change in NAAQS Attainment Status with Number of VA-Guaranteed Loans for Newly Constructed Homes	4.2-11
Figure 4.3-1.	Comparison of Critical Habitat with Number of VA-Guaranteed Loans for Newly Constructed Homes	4.3-4
Figure 4.4-1.	Comparison of Historic Properties with Number of VA-Guaranteed Loans for Newly Constructed Homes	4.4-6
Figure 4.6-1.	Comparison of Seismic Hazard with Number of VA-Guaranteed Loans for Newly Constructed Homes	4.6-6
Figure 4.6-2.	Comparison of Prime Farmland with Number of VA-Guaranteed Loans for Newly Constructed Homes	4.6-8
Figure 5-1.	Types of Financing for Newly Constructed Homes in Northeast Region	5-6
Figure 5-2.	Types of Financing for Newly Constructed Homes in Midwest Region.....	5-6
Figure 5-3.	Types of Financing for Newly Constructed Homes in South Region	5-7
Figure 5-4.	Types of Financing for Newly Constructed Homes in West Region	5-7

Acronyms

°C	degrees celsius
°F	degrees Fahrenheit
ACHP	Advisory Council on Historic Preservation
ACM	asbestos containing materials
APA	Administrative Procedure Act
AQI	Air Quality Index
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BRAC	Base Realignment and Closures
Btu	British thermal units
CBRS	Coastal Barrier Resources System
CEQ	Council on Environmental Quality
CFR	<i>Code of Federal Regulations</i>
CO ₂	carbon dioxide
CO ₂ -eq	carbon dioxide equivalent
CZM	Coastal Zone Management
CZMA	Coastal Zone Management Act
dB	decibel
dba	A-weighted decibel
Department	Department of Veterans Affairs
DoD	Department of Defense
FEMA	Federal Emergency Management Agency
FHA	Federal Housing Administration
FR	<i>Federal Register</i>
FY	fiscal year
HLP	VA's Housing Loan Program
HOA	Homeowners Association
HUC	Hydrologic Unit Code
HUD	Department of Housing and Urban Development
LBP	lead-based paint
L _{dn}	Day-Night Average Sound Level
MBTA	Migratory Bird Treaty Act
MOU	memorandum of understanding
NAAQS	National Ambient Air Quality Standards
NADL	Native American Direct Loan
NEPA	National Environmental Policy Act

NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NMBCA	Neotropical Migratory Bird Conservation Act
NMSZ	New Madrid Seismic Zone
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPS	U.S. National Park Service
NRHP	National Register of Historic Places
PCB	polychlorinated biphenyls
PEIS	Programmatic Environmental Impact Statement
ppb	parts per billion
ppm	parts per million
RCP	representative concentration pathways
REO	Real estate owned
RLC	Regional Loan Center
ROI	region of influence
SAH	Specially Adapted Housing
SFHA	Special flood hazard area
SGA	Smart Growth America
SIP	State Implementation Plan
SSA	sole source aquifer
TCP	traditional cultural properties
U.S.	United States
USACE	U.S. Army Corps of Engineers
USC	United States Code
USCB	U.S. Census Bureau
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VA	Department of Veterans Affairs
VBA	Veterans Benefits Administration

CHAPTER 1 INTRODUCTION

The United States (U.S.) Department of Veterans Affairs (VA or Department) has prepared this Programmatic Environmental Impact Statement (PEIS) to evaluate potential direct, indirect, and cumulative environmental consequences of the Proposed Action of continued administration and operation of VA's Housing Loan Program (HLP). The comprehensive HLP, which is managed by VA Veterans Benefits Administration (VBA), administers VA-guaranteed housing loan benefits and other housing-related benefits described in Section 1.4 that assist eligible Veterans, surviving spouses, active duty personnel, Selected Reservists, and National Guardsmen (collectively referred to as Veterans) in purchasing, constructing, repairing, adapting, or improving a home.

1.1 HISTORY AND FRAMEWORK

In 1944, Congress enacted the Servicemen's Readjustment Act, also known as the "G.I. Bill of Rights," which extended a wide variety of benefits to eligible Veterans, including VA-guaranteed loan benefits. Congress enacted the statute, in part, to allow Veterans the opportunity to establish credit and build a strong financial future to the same extent as their civilian counterparts. In readjusting to civilian life after World War II, many Veterans relied on the HLP to become home owners and establish such credit. Rather than giving Veterans a cash bonus to help with purchasing a home, Congress selected a loan guaranty backing as a more viable long-term solution. Throughout the HLP's 75-year history, Congress has expanded and modified VA's guaranteed loan benefit and created other housing-related benefits. Today, VA administers such benefits under the HLP. At present, the specific HLP statutory authorities are principally codified in chapters 21 and 37 of title 38, United States Code (USC). However, the program must also adhere to some broader statutes (e.g., the Federal Credit Reform Act of 1990), regulations, and Executive Branch directives and policies. Presently, the HLP remains a critical lifeline for many Veterans, some of whom would otherwise struggle to secure housing loans, lose their homes to foreclosure, or be unable to adapt their homes to accommodate service-connected disabilities. Section 1.4 describes the component parts of VA's HLP in more detail.

VA has prepared this PEIS in accordance with the National Environmental Policy Act of 1969 (NEPA);¹ the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA;^{2, 3} VA's NEPA Implementing Regulations titled "Environmental Effects of the Department of Veterans Affairs Actions";⁴ VA's "NEPA Interim Guidance for Projects" (VA 2010); and VA Directive 0067

¹ 42 USC 4321 et seq.

² 40 Code of Federal Regulations (CFR) 1500–1508 (1978, as amended).

³ CEQ issued a final rule to update its NEPA implementing regulations on July 16, 2020 with an effective date of September 14, 2020. This PEIS was begun prior to these dates and was completed pursuant to CEQ's 1978 NEPA-implementing regulations.

⁴ 38 CFR 26.

“VA NEPA Implementation” (VA 2013). Although the HLP enabling statutes predate NEPA and most other federal environmental authorities, new and ongoing VA actions are subject to NEPA.

When considered from a nationwide perspective, the HLP could have small, incremental, and/or cumulatively significant environmental impacts depending on location, development, population, and demographics. This PEIS will serve as a program-wide platform to identify, analyze, and document the potential physical, environmental, cultural, historic, and socioeconomic impacts associated with all programs within the HLP, thereby providing VA the necessary information for consideration in federal planning and decision making. The Proposed Action evaluated in this PEIS will support VA’s commitment to providing high-quality loan guaranty benefits to Veterans; ensure VA compliance with federal and state environmental requirements; and support VA environmental policies in the administration of the HLP.

1.2 PURPOSE OF AND NEED FOR ACTION

The Proposed Action is the continued administration and operation of the HLP that provides housing assistance to Veterans. The purpose of the Proposed Action is to allow VA to continue to carry out the HLP mission, i.e., helping Veterans obtain, retain, and adapt their homes. For 75 years, the HLP has served an important role in the lives of Veterans. Many Veterans could not afford to purchase a home if not for the no-down-payment, no-mortgage⁵-insurance feature of the guaranteed loan benefit program. Some Veterans would not be able to live independently without the disability housing modifications funded by Specially Adapted Housing (SAH) program grants. In addition, some Veterans might not be able to retain their homes during times of financial hardship without the loan servicing and loss mitigation assistance VA and private-sector loan servicers provide.

The Proposed Action is needed for VA to meet congressional mandates and other regulatory requirements and to fulfill its obligations to our Veterans. VA needs to actively manage the program and at times initiate changes to the program’s operations. In addition to internal policy changes, Congress and the Executive Branch periodically implement legislation and directives regarding components of the HLP to reflect the changing needs of the nation’s Veterans and conditions in housing/finance markets. To ensure continued and full functionality of the HLP, so that it can provide benefits to many additional generations of Veterans, VA will use this NEPA process to document a decision that considered a full evaluation of the potential environmental impacts of the HLP.

⁵ Generally, the term “mortgage” as used throughout this PEIS refers to housing loans, i.e., mortgages and deeds of trust.

1.3 SCOPE OF THIS PEIS

VA is using the NEPA process to evaluate the potential environmental consequences of the HLP, invite public participation, and assist with and inform future agency planning and decision making related to the HLP. This PEIS will evaluate the HLP to ensure that it appropriately considers direct and indirect effects specified by the CEQ^{6, 7} (including ecological, aesthetic, historic, cultural, economic, social, or health effects, whether direct, indirect, or cumulative) in carrying out the various elements and aspects of the program. To broaden the scope of concerns addressed in this PEIS, VA invited the general public, federal agencies, and Native American tribes to identify any issues relevant to this PEIS – a process known as public scoping. All public scoping materials and notifications are included in Appendix A, Public Scoping.

This PEIS is atypical in that it addresses an existing program, and VA has no specific or immediate need to change its operational structure or procedures. Furthermore, making loan guaranties, direct loans, and grants do not typically, in and of themselves, result in direct environmental impacts. The primary environmental impacts of concern for VA would be the potential indirect impacts resulting from newly constructed homes and the corresponding demand on resources through providing VA-guaranteed loan financing to those who would not otherwise be able to secure financing. This PEIS also evaluates the potential cumulative impacts of the HLP in conjunction with other national housing loan programs and other large-scale federal agency programs.

1.4 OVERVIEW OF CURRENT HOUSING LOAN PROGRAM

VA administers several benefits to assist Veterans in purchasing, constructing, repairing, adapting, or improving a home under the HLP. As presented in Table 1-1, these benefits include (1) guaranteeing a portion of home loans originated by private lenders, including refinancing loans, and assisting Veterans in avoiding foreclosure on their homes during times of financial hardship; (2) managing and selling, potentially with direct financing, REO properties that VA acquires following holders' conveyance of certain properties that formerly secured VA-guaranteed home loans; (3) providing direct loans to Native American Veterans to purchase homes on trust lands;⁸ and (4) extending grants to Veterans with service-connected disabilities through the SAH program benefit.

⁶ 40 CFR 1508.8 (1978, as amended).

⁷ CEQ issued a final rule to update its NEPA implementing regulations on July 16, 2020 with an effective date of September 14, 2020. This PEIS was begun prior to these dates and was completed pursuant to CEQ's 1978 NEPA-implementing regulations.

⁸ Trust land is any land that (i) is held in trust by the United States for Native Americans, (ii) is subject to restrictions on alienation imposed by the United States on Native American lands (including native Hawaiian homelands), (iii) is owned by a Regional Corporation or a Village Corporation as defined under the Alaska Native Claims Settlement Act, or (iv) is on any island in the Pacific Ocean if such land is, by cultural tradition, communally owned land, as determined by the Secretary of Veterans Affairs. (38 USC 3765[1]).

Table 1-1. Primary Responsibilities of the Housing Loan Program

Program Segment	Purpose	Populations Served
VA-Guaranteed Loans	Assist Veterans in becoming homeowners or refinancing their home loans.	Eligible Veterans, active duty personnel, Selected Reservists, National Guardsmen, and certain surviving spouses.
Real Estate Owned (REO) Property Management and VA Vendee Financing	Manage and sell properties acquired by VA and administer direct loans (also called “vendee”) for purchase of REO properties.	Veterans and non-Veterans may purchase VA REO properties and may receive vendee (direct loan) financing. ^a
Native American Direct Loan (NADL)	Provide direct home loans for Native American Veterans to purchase homes on trust lands.	Certain Native American Veterans and their spouses. ^b
Specially Adapted Housing (SAH) ^c	Grants to assist eligible Veterans with certain service-connected disabilities to construct or adapt their home to accommodate their needs.	Certain Veterans with severe service-connected disabilities.

^a. Proceeds from REO sales help offset the costs VA incurs resulting from foreclosed VA-guaranteed loans and help reduce credit costs associated with new VA-guaranteed loans for Veterans.

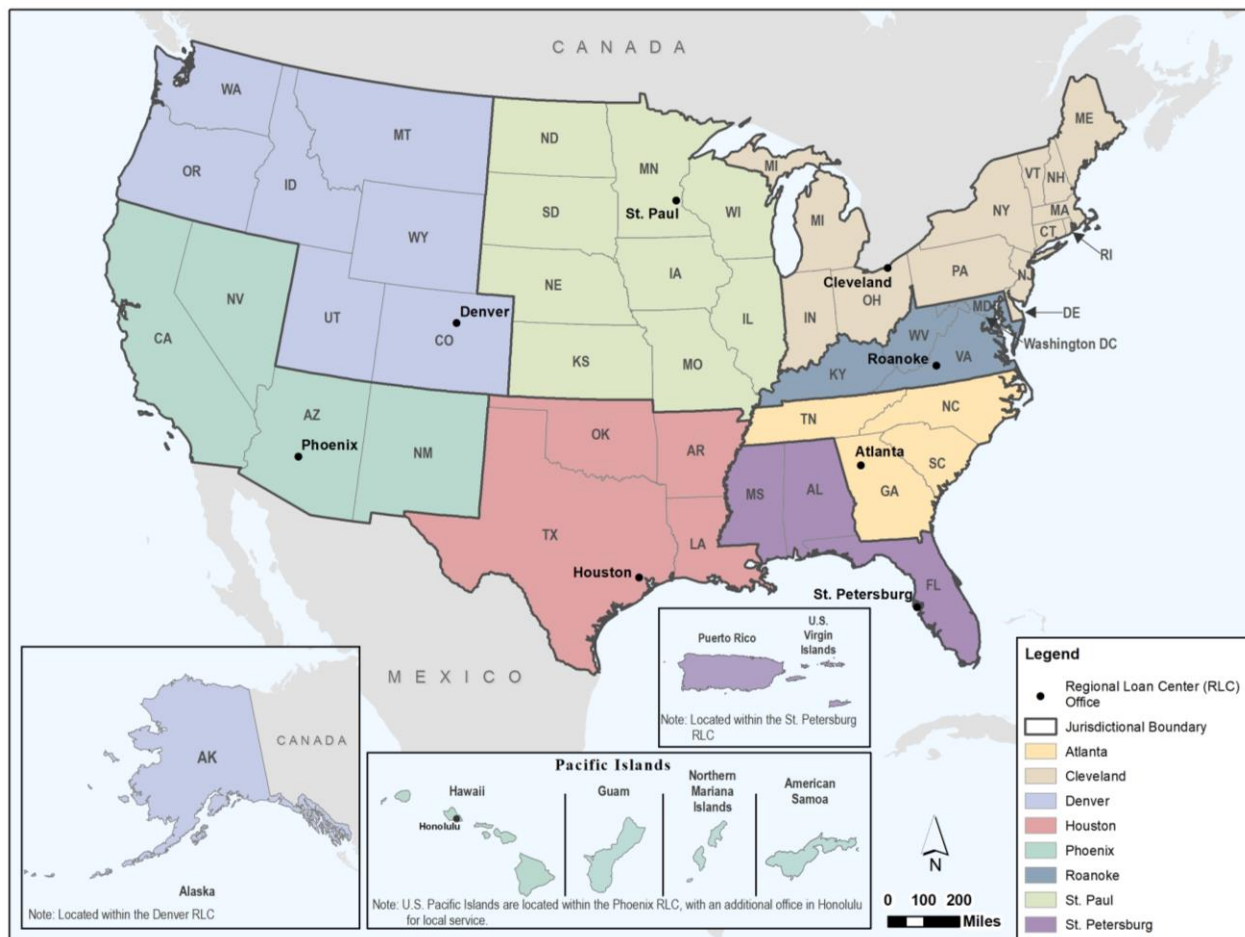
^b. A Non-Native American Veteran married to a Native American can also obtain a NADL for a home on trust land.

^c. These grants are authorized under chapter 21 of title 38 USC and include grants made under Section 2101(a), Section 2101(b) Special Home Adaptation grants, and grants made under Section 2102(a) Temporary Residence Adaptation grants, depending upon a Veteran’s eligibility.

NADL = Native American Direct Loan; REO = Real Estate Owned; SAH = Specially Adapted Housing; VA = Department of Veterans Affairs

VA employees, lenders, loan servicers, and builders nationwide work together to ensure all eligible Veterans have the ability to obtain, retain, and adapt homes, in recognition of their service to the nation. The HLP is administered by VA’s Loan Guaranty Service in Washington, DC, and eight Regional Loan Center (RLC) offices located in: Atlanta, Georgia; Cleveland, Ohio; Denver, Colorado; Houston, Texas; Phoenix, Arizona; Roanoke, Virginia; St. Paul, Minnesota; and St. Petersburg, Florida. An additional Loan Guaranty office is located in Honolulu to locally service Hawaii. Staff at the RLC offices perform oversight of lenders, servicers, appraisers, and contractors/service providers. Staff in the RLCs also provide direct-contact assistance to Veterans in the customer service, outreach, and program administration capacities. The RLCs are also responsible for conducting local outreach and training of program stakeholders. Figure 1-1 shows the locations of the eight RLCs and the states and territories within their jurisdictions.

VA conducts oversight of participating lenders in the HLP to ensure compliance with federal statutory and regulatory standards; however, VA does not control how state and local authorities regulate property development or enact building codes. Generally, VA’s role in the HLP is to assist eligible Veterans in obtaining VA-guaranteed loans, direct loans, and grants to purchase and improve homes. Local government and planning authorities are ultimately responsible for the number and size of homes, neighborhood density, and community infrastructure surrounding a neighborhood development.



Source: VA 2018a
 RLC = Regional Loan Center; U.S. = United States; VA = Department of Veterans Affairs

Figure 1-1. Nationwide Locations and Jurisdictions of VA Regional Loan Centers

1.4.1 VA-Guaranteed Loans

VA’s guaranteed loan benefit serves as the cornerstone of the HLP. VA-guaranteed loans essentially provide a form of insurance against loss for the lender, and the guaranty backing can allow eligible Veterans to finance their purchase of homes without a down payment. Currently, the benefit provides for a partial government guaranty of two general types of housing loans: purchase and refinance. A purchase loan can be used to purchase, construct, alter, improve, or repair a dwelling to be used as a Veteran’s residence. Veterans can obtain a refinance loan to reduce monthly loan payments (e.g., by reducing the loan’s interest rate), to reduce the term of the loan (e.g., to go from a 30-year loan to a 15-year loan), to switch from an adjustable-rate loan to a fixed-rate loan, to convert home equity into cash, or to switch to a VA-guaranteed loan from a non-VA loan (i.e., a conventional or Federal Housing Administration [FHA] loan). Such non-VA-to-VA refinances can save the borrower from having to pay mortgage insurance premiums, which are not required in VA’s program. Veterans may also obtain

VA-guaranteed housing loans that include a small financed amount for certain energy efficiency improvements.

When a Veteran obtains a VA-guaranteed loan, VA does not lend funds directly to the Veteran. Instead, VA provides a partial guaranty to protect a private lender against loss, i.e., if a borrower fails to repay the loan. Prior to January 1, 2020, in the case of certain loans exceeding \$144,000, the guaranty was capped at 25 percent of the Freddie Mac conforming loan limit for the county in which the property is situated.⁹ (Freddie Mac's limits are set based on a survey of average house prices at the county level.) Some Veterans obtaining VA-guaranteed loans were able to borrow up to the loan limit, without making a down payment. Other Veterans were able to obtain a VA-guaranteed loan that exceeded the loan limit; however, certain lenders would require a down payment, e.g., in an amount equal to the difference between the loan amount and the loan limit. Effective January 1, 2020, some Veterans became able to obtain VA-guaranteed loans, without a down payment, regardless of the Freddie Mac conforming loan limit.

Recent statutory, regulatory, and policy changes to VA's refinance loan programs and changes in the broader mortgage market have resulted in new, stricter underwriting criteria for some refinance loans. Such changes have placed limits on the loan-to-value ratios for VA-guaranteed refinance loans and whether lenders may pool such loans in secondary market investment vehicles. These restrictions appear to limit the volume of VA refinance loan activity, which is depicted in Figure 1-2. For instance, refinance loan volumes in fiscal year (FY) 2017 were only 1.9 percent greater than the previous fiscal year, compared to a 14.2 percent year-on-year increase in FY 2016.

In 2017, VA guaranteed:

- a total of 740,389 loans for a total loan amount of over \$188 billion;
- an average loan amount of \$254,866;
- a total guaranty amount of over \$46.9 billion; and
- an average guaranty amount of \$63,420.

In 2017, most of the loans guaranteed were purchase loans (380,437), followed by interest rate reduction refinance loans (190,914), and then cash out/other refinancing loans (169,038) (VA 2018b). Table 1-2 provides a summary of VA home loans and home loan guaranties provided during FY 2017 (October 1, 2016 – September 30, 2017) according to the Veteran's period of service or entitlement. Table 1-3 provides a summary of the types and characteristics of VA-guaranteed loans for FY 2017, including number of loans for first time or previous home buyers, with or without a down payment, and purchase loans or refinancing.

⁹ 38 USC 3703 (2018).

Table 1-2. VA-Guaranteed Loans in FY 2017 by Period of Service or Entitlement

Period of Veteran Service or Entitlement	Number of Loans	Percent of Total^a	Total Loan Amount^b	Average Loan Amount	Total Guaranty Amount	Average Guaranty Amount
World War II	421	0.06%	\$87,935,831	\$208,874	\$22,727,131	\$47,134
Post-World War II	148	0.02%	\$30,933,242	\$209,008	\$7,967,852	\$47,722
Korean Conflict	992	0.13%	\$203,800,364	\$205,444	\$52,462,043	\$46,696
Post-Korean Conflict	7,337	0.99%	\$1,518,567,145	\$206,974	\$392,158,121	\$49,003
Vietnam Era	38,829	5.24%	\$8,202,066,971	\$211,236	\$2,104,570,000	\$50,675
Post-Vietnam Era	42,461	5.73%	\$9,375,722,589	\$220,808	\$2,383,829,949	\$52,673
Gulf War Era	205,032	27.69%	\$50,319,431,909	\$245,422	\$12,576,132,149	\$56,543
Restored Entitlement ^c	335,427	45.30%	\$90,382,428,306	\$269,455	\$22,310,861,168	\$62,653
Service Personnel	90,804	12.26%	\$24,102,484,382	\$265,434	\$5,978,407,462	\$64,680
Reservists	14,749	1.99%	\$3,645,301,007	\$247,156	\$910,811,889	\$58,099
Un-remarried Surviving Spouse	4,189	0.57%	\$831,072,694	\$198,394	\$215,447,557	\$48,637
Total or Average	740,389	100%	\$188,699,744,440	\$226,200	\$46,955,375,319	\$63,420

Source: VA 2018b

^a. Percentages may not sum to Total due to rounding.^b. Includes purchase and refinance loans.^c. Veterans who previously used the home loan benefit, but the full entitlement was restored.

FY = fiscal year; VA = Department of Veterans Affairs

Table 1-3. Types and Characteristics of VA-Guaranteed Loans during FY 2017

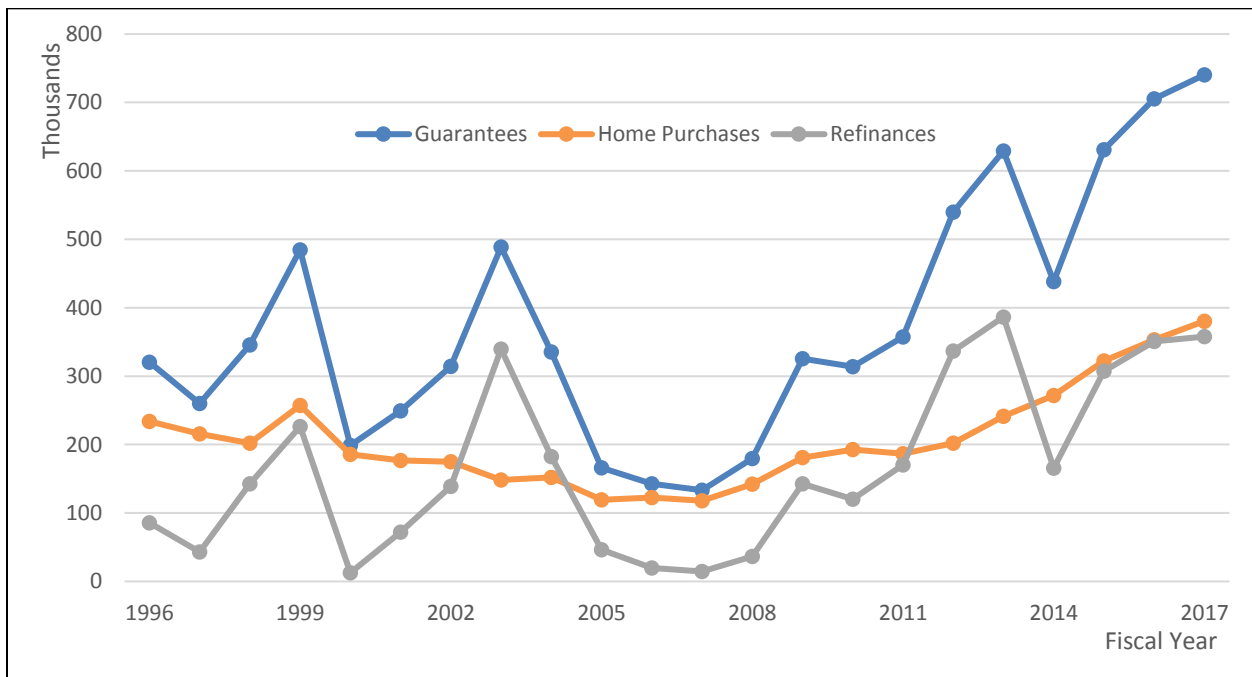
Type/Characteristic	Number of Loans	Total Loan Amount	Average Loan Amount	Total Guaranty Amount	Average Guaranty Amount
Purchase loans	380,437	\$99,397,683,781	\$261,272	\$24,489,700,915	\$64,373
First time home buyer ^a	155,620	\$36,292,202,424	\$233,210	\$9,220,222,033	\$59,248
Previous home buyer ^a	224,817	\$63,105,481,357	\$280,697	\$15,269,478,882	\$67,920
Without down payment ^a	302,815	\$73,203,005,275	\$241,742	\$18,526,267,160	\$61,180
With down payment ^a	77,622	\$26,194,678,506	\$337,465	\$5,963,433,756	\$76,827
Interest rate reduction	190,914	\$46,436,079,404	\$243,230	\$11,883,516,091	\$62,245
Cash out / other refinancing	169,038	\$42,865,981,255	\$253,588	\$10,582,158,314	\$62,602

Source: VA 2018b.

^a. Purchase loans only.

FY = fiscal year; VA = Department of Veterans Affairs

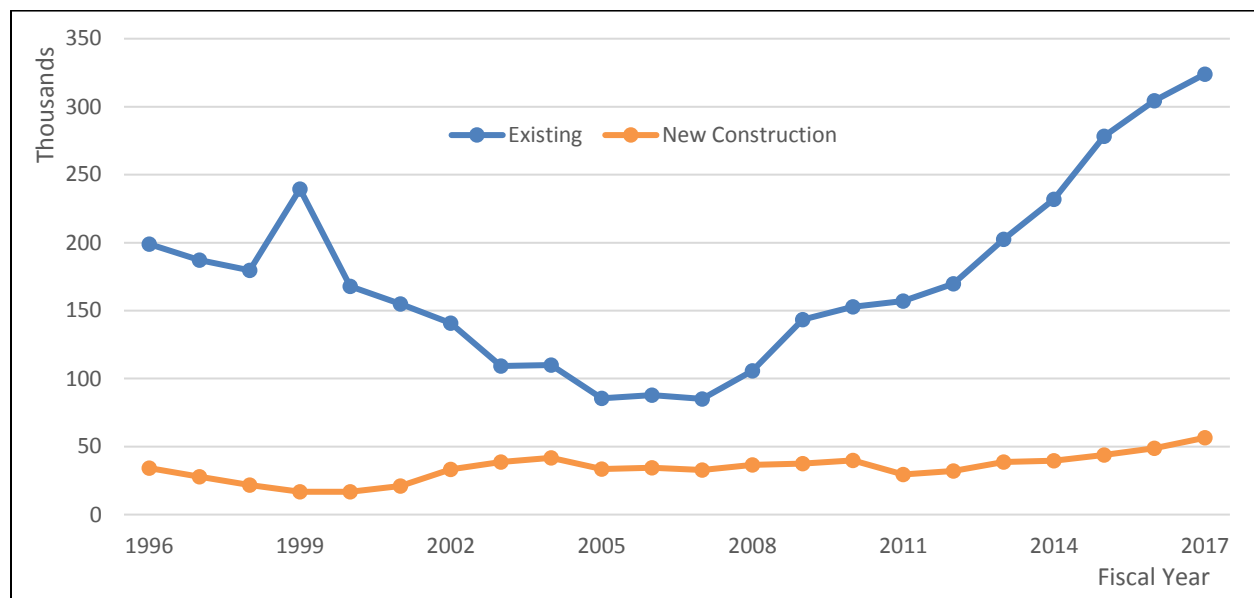
Figure 1-2 shows how the number of loans guaranteed under the HLP has fluctuated over the last two decades. The blue line shows the total of VA-guaranteed loans, while the other two lines show the breakdown of VA home purchases (orange) and VA refinances (gray) over the same period.



VA = Department of Veterans Affairs

Figure 1-2. Total VA-Guaranteed Loans, Home Purchases, and Refinances per Fiscal Year

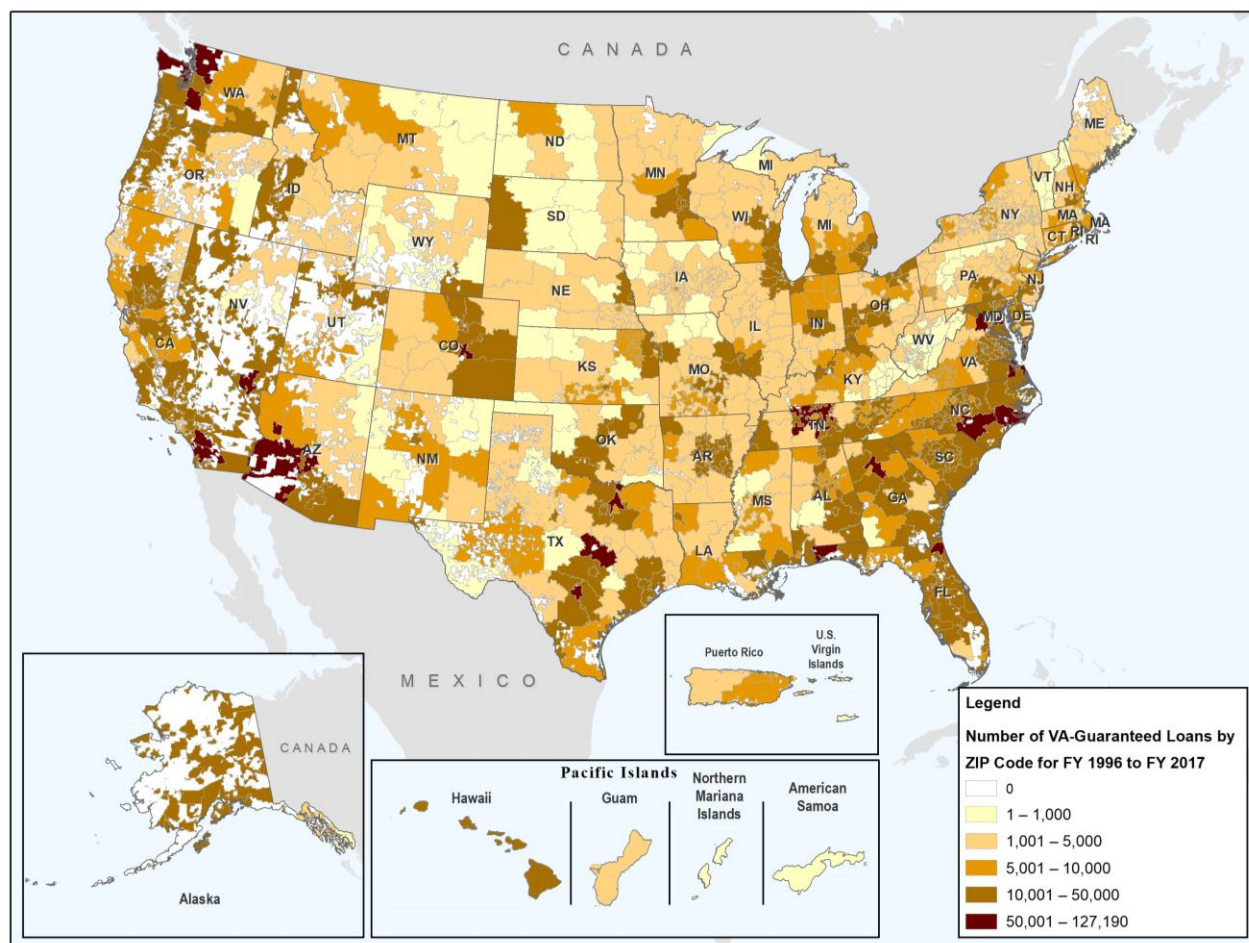
As shown in Figure 1-3, over the period FY 1996 through FY 2017, the vast majority (72 to 93 percent) of homes purchased with VA-guaranteed loans were existing homes that were previously constructed and owned. The number of VA-guaranteed loans Veterans used to finance newly constructed homes has ranged from approximately 7 percent to 28 percent of all purchase loans, with an annual average of 18 percent. In FY 2017, approximately 15 percent of VA loan guaranties were used to purchase newly constructed homes.



VA = Department of Veterans Affairs

Figure 1-3. VA-Guaranteed Loans for Existing and Newly Constructed Home Purchases

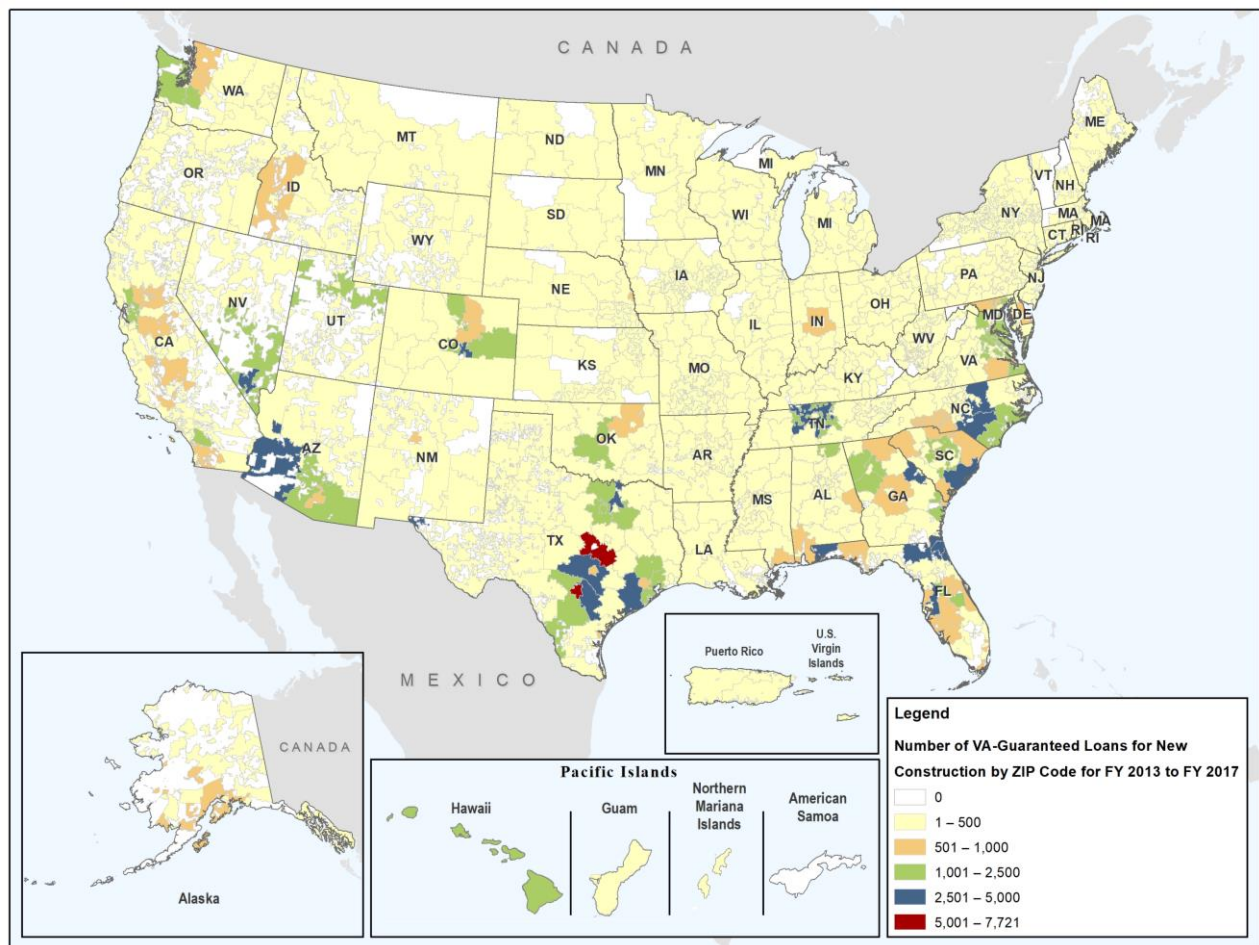
Figure 1-4 depicts the geographical distribution of VA-guaranteed loans over the period FY 1996 through FY 2017 throughout the United States and its Territories. As shown on Figure 1-4, the highest concentrations of such loans occurred in Arizona, Colorado, Tennessee, Texas, North Carolina, and Washington.



FY = fiscal year; U.S. = United States; VA = Department of Veterans Affairs

Figure 1-4. Geographical Distribution of Total VA-Guaranteed Loans (FY 1996 – FY 2017)

Environmental impacts from VA’s HLP, should they occur, would most likely result from new home construction. Figure 1-5 presents the geographical distribution of VA-guaranteed loans for newly constructed homes over the period FY 2013 through FY 2017. As would be expected, the highest concentrations of new home construction are predominantly located in the same areas that have the highest HLP usage, and these areas tend to cluster around military installations as shows in Figure 1-5. (Also see Figure 4.0-1 in Chapter 4, Environmental Consequences.) Between FY 2013 and FY 2017, states with the highest volume of VA-guaranteed loans for new construction were Arizona, Colorado, Florida, Maryland, North Carolina, Texas, and Virginia.



FY = fiscal year; U.S. = United States; VA = Department of Veterans Affairs

Figure 1-5. Geographical Distribution of VA-Guaranteed Loans for Newly Constructed Homes (FY 2013 – FY 2017)

Table 1-4 lists FY 2013 through FY 2017 new construction home loans in descending order by metropolitan statistical areas, as identified by the Office of Management and Budget. The areas have been grouped together for those above 5,000 VA-guaranteed loans for newly constructed homes; those between 2,500 and 5,000 such loans; and those between 1,000 and 2,500 such loans. By categorizing the data in this way, more detailed analysis and comparisons are possible among the metropolitan statistical areas throughout the United States. Metropolitan statistical areas consist of multiple cities and sometimes states that have at least one urbanized area with a population of at least 50,000, plus adjacent territory that has a high degree of social and economic integration with the core as measured by commuting ties (Office of Management and Budget 2018).

Table 1-4. Metropolitan Statistical Areas with VA-Guaranteed Loans for Newly Constructed Homes (FY 2013 – FY 2017)

Metropolitan Statistical Area ^a	States	Number of Loans ^b
> 5,000 VA Guaranteed Loans for Newly Constructed Homes		
San Antonio-New Braunfels	Texas	13,071
Dallas-Ft. Worth-Arlington	Texas	9,263
Washington-Arlington-Alexandria	District of Columbia, Virginia, Maryland, West Virginia	9,178
Houston-The Woodlands-Sugarland	Texas	7,820
Phoenix-Mesa-Chandler	Arizona	6,364
Jacksonville	Florida	6,306
Killeen-Temple	Texas	5,536
Virginia Beach-Norfolk-Newport News	Virginia-North Carolina	5,525
Tampa-St. Petersburg-Clearwater	Florida	5,448
Colorado Springs	Colorado	5,022
2,500 – 5,000 VA-Guaranteed Loans for Newly Constructed Homes		
Las Vegas-Henderson-Paradise	Nevada	4,824
Austin-Round Rock-Georgetown	Texas	4,715
Atlanta-Sandy Springs-Alpharetta	Georgia	4,669
Fayetteville	North Carolina	4,318
Seattle-Tacoma-Bellevue	Washington	4,271
Baltimore-Columbia-Towson	Maryland	4,183
Nashville-Davidson-Murfreesboro-Franklin	Tennessee	4,123
Orlando-Kissimmee-Sanford	Florida	3,805
Pensacola-Ferry Pass-Brent	Florida	3,730
Riverside-San Bernardino-Ontario	California	3,660
El Paso	Texas	3,652
Charleston-North Charleston	South Carolina	3,311
Augusta-Richmond County	Georgia-South Carolina	3,279
Charlotte-Concord-Gastonia	North Carolina-South Carolina	3,162
Raleigh-Cary	North Carolina	3,114
Savannah	Georgia	2,987
Denver-Aurora-Lakewood	Colorado	2,889
Columbia	South Carolina	2,674

Table 1-4. Metropolitan Statistical Areas with VA-Guaranteed Loans for Newly Constructed Homes (FY 2013 – FY 2017)

Metropolitan Statistical Area ^a	States	Number of Loans ^b
1,000 – 2,500 VA-Guaranteed Loans for Newly Constructed Homes		
Richmond	Virginia	2,315
Oklahoma City	Oklahoma	2,245
Hickory-Lenoir-Morganton	North Carolina	1,976
Tucson	Arizona	1,822
Sacramento-Roseville-Folsom	California	1,606
San Diego-Chula Vista-Carlsbad	California	1,569
Huntsville	Alabama	1,483
Salt Lake City	Utah	1,476
Honolulu	Hawaii	1,408
Indianapolis-Carmel-Anderson	Indiana	1,406
Wilmington	North Carolina	1,354
Miami-Fort Lauderdale-Pompano Beach	Florida	1,236
Boise City	Idaho	1,220
Bakersfield	California	1,213
Portland-Vancouver-Hillsboro	Oregon-Washington	1,169
Olympia-Lacey-Tumwater	Washington	1,128
Omaha-Council Bluffs	Nebraska-Iowa	1,083
San Francisco-Oakland-Berkeley	California	1,050
Albuquerque	New Mexico	1,039
Winston-Salem	North Carolina	1,115
Greeley	Colorado	1,012

Source: Office of Management and Budget 2018

^a Metropolitan statistical areas consist of multiple cities and sometimes states that have at least one urbanized area of 50,000 or more population, plus adjacent territory that has a high degree of social and economic integration with the core as measured by commuting ties.

^b VA-guaranteed loan data for newly constructed homes includes those that are new construction (appraised or plans and specifications), new existing (built less than 1 year and never occupied), and proposed. Data does not include records of fields missing new construction designations, which was 0.035 percent of dataset.

FY = fiscal year; VA = Department of Veterans Affairs

Delinquency Assistance to Avoid Foreclosures

If Veterans are unable to make payments on a VA-guaranteed loan, VA staff can sometimes offer assistance to help them retain their homes. Although private-sector loan servicers have the primary responsibility of servicing the loan to resolve the default, in cases where they are unable to assist the Veteran, VA HLP staff can take an active role by liaising with the servicer to explore all options aimed at avoiding foreclosure. These options may include:

- Repayment plan – an arrangement in which the Veteran makes the regular monthly payment, plus a portion of the missed installments in order to repay the delinquency.
- Special forbearance – the servicer allows time for the Veteran to repay the missed installments before initiating foreclosure.
- Loan modification – modification of the loan which adds the delinquent amounts to the total balance of the loan and establishes a new payment schedule.
- Additional time to arrange a private sale – the servicer will delay foreclosure to allow a private sale, as long as the sale proceeds would satisfy the outstanding indebtedness.
- Short sale – the servicer allows the Veteran to sell the home for a lesser amount than is currently required to repay the loan.
- Deed-in-lieu of foreclosure – Veteran deeds the property to the loan holder instead of being subjected to the foreclosure process.

With such efforts, VA and private-sector loan servicers worked to help save over 85 percent (96,139) of defaulted borrowers from foreclosure during FY 2017. Foreclosure avoidance efforts equated to a savings of over \$2.76 billion to the government and taxpayers in FY 2017 (VA 2018b).

In some cases when the loan holder is no longer willing to assist the Veteran in avoiding foreclosure, VA has authority to “refund” a VA-guaranteed loan. If VA determines that home retention is possible, VA may acquire the loan from the servicer, modify the loan terms such that the loan is affordable and place it into its Direct Loan portfolio. Beginning in 1997, VA hired a private contractor to perform servicing functions for loans held in the Direct Loan portfolio (e.g., Refunded loans, Vendee Direct Loans).

1.4.2 Real Estate Owned (REO) Property Management and Financing

After a foreclosure occurs on a property that secured a VA-guaranteed loan, the loan holder has the option to convey the property to VA. These properties are often occupied at the time of conveyance to VA (e.g., by the former borrower or tenants of the borrower). The properties would be considered REO property assets, which VA would maintain, manage, market, and sell. Proceeds from REO sales help offset the government’s costs of new VA-guaranteed loans for other Veterans. In 2003, VA began contracting with private-sector companies to handle the management, marketing, and sales of REO

properties.¹⁰ During FY 2017, VA obtained 13,234 properties from lenders and sold 14,037 properties to the general public. This is down from a recent high in FY 2014 when 16,889 properties were obtained and 18,095 sold.

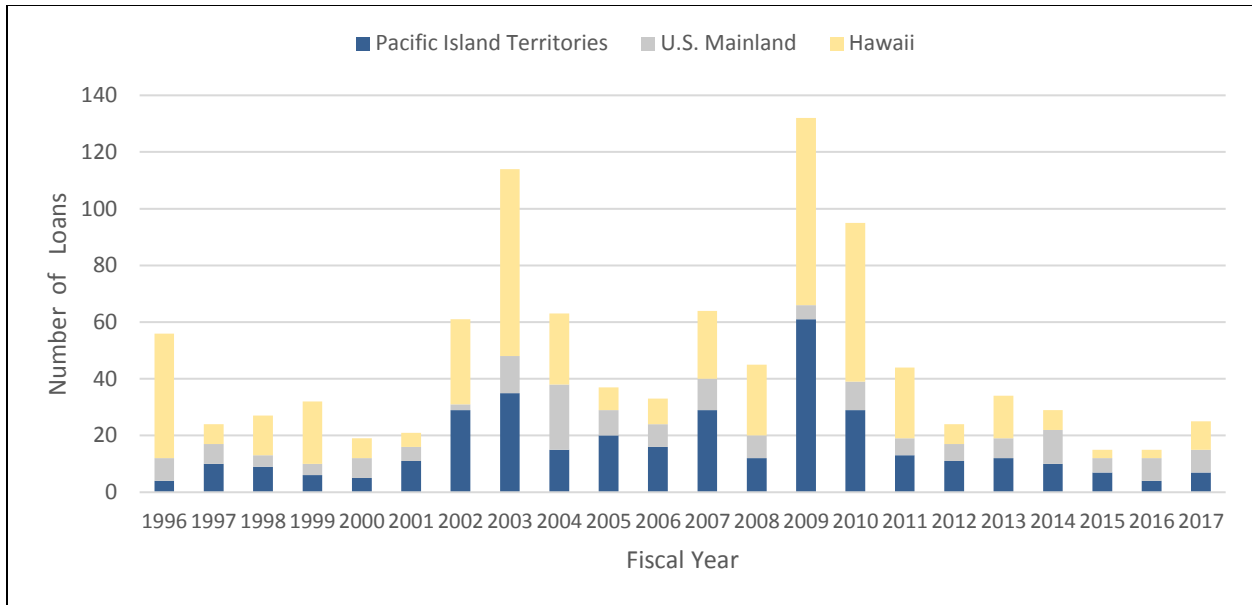
VA sells REO properties to Veterans and non-Veterans alike. In addition to accepting all-cash offers or offers using conventional or FHA financing, VA has authority to offer direct “vendee” loan financing to REO purchasers. In a direct “vendee” loan, VA serves as the direct lender. Less than 0.1 percent of the VA REO properties sold each fiscal year since FY 2013 have been “vendee” loans.

1.4.3 Native American Direct Loans (NADL)

While certain Native American Veterans may be eligible for VA-guaranteed loans, those living on trust, tribal, or communally owned lands often have difficulty obtaining housing loans from private lenders because the land cannot be freely transferred to the loan holder in the event of foreclosure. To assist these Veterans in financing the purchase of a home, Congress established the NADL program to provide direct loans to eligible Native American Veterans living on certain trust, tribal, and communally owned lands. NADLs can be obtained, for example, by certain Native Americans, Native Hawaiians, Alaska Natives, and those who are native to American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands. Additionally, a NADL can be used to refinance a prior NADL to reduce the applicable interest rate.

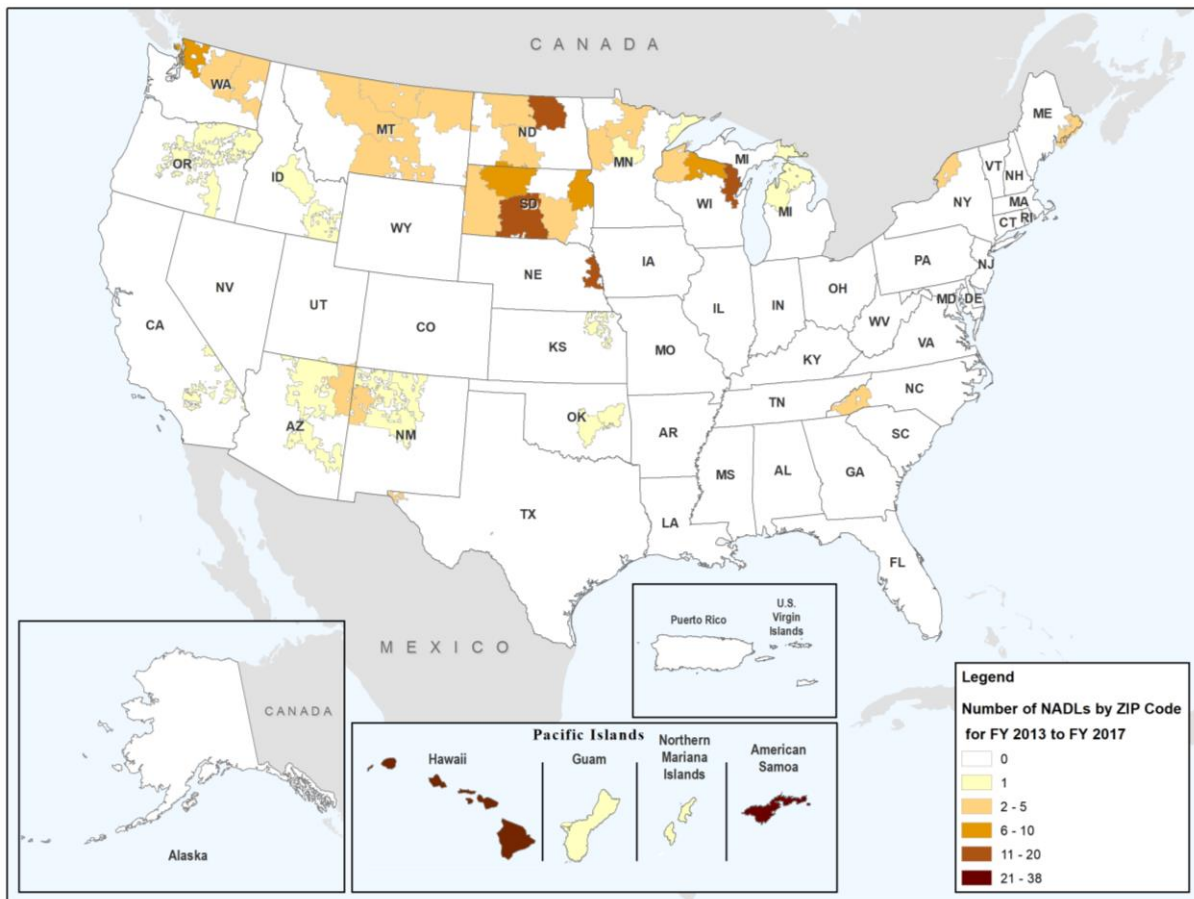
VA can only make a NADL if VA, or another department of the United States, has entered into a memorandum of understanding (MOU) with the relevant tribal organization. The MOU must set forth the conditions under which the NADL program will operate on the subject lands. VA currently has MOUs with 108 participating tribal organizations (see Appendix B, List of Tribes that have MOUs with VA). Historically, low numbers of NADLs are made each year. For instance, between FY 2013 and FY 2017 only 118 NADLs were made in total. In FY 2017, VA originated 24 direct loans to Native American Veterans for a total value of approximately \$5 million. Figure 1-6 shows the number of NADLs that have been originated annually during the period FY 1996 through FY 2017. The distribution is broken down by NADLs issued in the United States (U.S.) Mainland, Pacific Island Territories, and Hawaii. Over this period, the majority of NADLs (46 percent) were issued in Hawaii, followed by Pacific Island Territories (35 percent), and the U.S. Mainland (19 percent). Figure 1-7 presents the geographical distribution of NADLs throughout the United States and its Territories over the period FY 2013 through FY 2017.

¹⁰ Office of Management and Budget (OMB) Circular No. A-76 directed the use of private sector companies where commercial activities are involved.



NADL = Native American Direct Loans; U.S. = United States

Figure 1-6. Native American Direct Loan Originations by Location



FY = fiscal year; NADL = Native American Direct Loans; U.S. = United States

Figure 1-7. Geographical Distribution of Native American Direct Loans (FY 2013 – FY 2017)

1.4.4 Specially Adapted Housing (SAH) Program

The HLP administers grants to Veterans with certain severe service-connected disabilities. These grants help such Veterans acquire home adaptations made necessary by the nature of their disabilities. VA's authority provides grants that can be used in one of the following ways:

- Construct a specially adapted home on land to be acquired;
- Construct a specially adapted home on land already owned;
- Acquire a residence already adapted with special features;
- Remodel an existing home; or
- Offset the costs of an adapted home already acquired.

Available data from FY 2001 through FY 2017 show the majority of SAH program grants have been used to adapt an existing home; this portion of approved grants has ranged from approximately 50 percent in 2001 to 86 percent in 2011. In comparison, the percentage of grants used to construct new homes has generally decreased over this time frame; from approximately 35.3 percent in 2001 to only 2 percent in 2017. States with the most SAH program grants between FY 2013 and FY 2017 include coastal states such as Texas, Florida, California, North Carolina, Georgia, and Virginia and western states such as Colorado and Arizona.

SAH program grants can help provide a degree of independent living that Veterans might not otherwise enjoy. Housing adaptations can assist Veterans with mobility impairments, e.g., the loss of or loss of use of upper and lower extremities. Adaptations to meet the needs of such Veterans may include widening doorways or constructing ramps to make the home wheelchair-accessible, adding security items, or installing handrails and grab bars, among other measures. Housing adaptations can also assist Veterans who are blind or who have suffered certain severe burn injuries.

Since 2008, Veterans may use their SAH program benefit in foreign nations. Historically, grants have been made internationally in Philippines, Germany, Canada, and Mexico. However, the number of grants issued internationally has been very low with 36 total between FY 2016 and FY 2019. It should be noted that NEPA analysis is not required overseas in locations in which the United States does not have control (i.e., a foreign nation).

There are three types of VA grants to assist Veterans with service-connected disabilities, collectively referred to within this document as SAH program grants. These grants are authorized under chapter 21 of title 38 USC and include grants made under Section 2101(a); Section 2101(b) Special Home Adaptation grants; and grants made under Section 2102(a) Temporary Residence Adaptation, depending upon a Veteran's eligibility. Certain Veterans who are temporarily residing in homes owned by family members can obtain Temporary Residence Adaptation grants to help pay the costs of modifying a family member's home to meet a Veteran's needs. Table 1-5 presents the total number and associated value of SAH program grants approved in FY 2017. Figure 1-8 compares the number of grants, broken out by grant type (grant authority). As shown in this figure, the vast majority of grants provided between

FY 2000 and FY 2017 were SAH program grants. Figure 1-9 presents the geographical distribution of SAH program grants throughout the United States and its Territories over the period FY 2013 through FY 2017.

Table 1-5. Amounts for Specially Adapted Housing Program Grants (FY 2017)

Grant Authority ^a	Total Number of Grants	Total Grant Amount	Total Number of Grants for TRA	Total Amount of TRA
38 USC 2101(a) Specially Adapted Housing (SAH)	1,727	\$98,003,696	12	\$392,662
38 USC 2101(b) Special Home Adaptation (SHA)	191	\$2,291,872	0	0

Source: VA 2018b, 2017a

^a. SAH, SHA, and TRA grants are collectively referred to as SAH program grants within this document.

^b. TRA grants are authorized under 38 USC 2102(a).

FY = fiscal year; TRA = Temporary Residence Adaptation; USC = United States Code

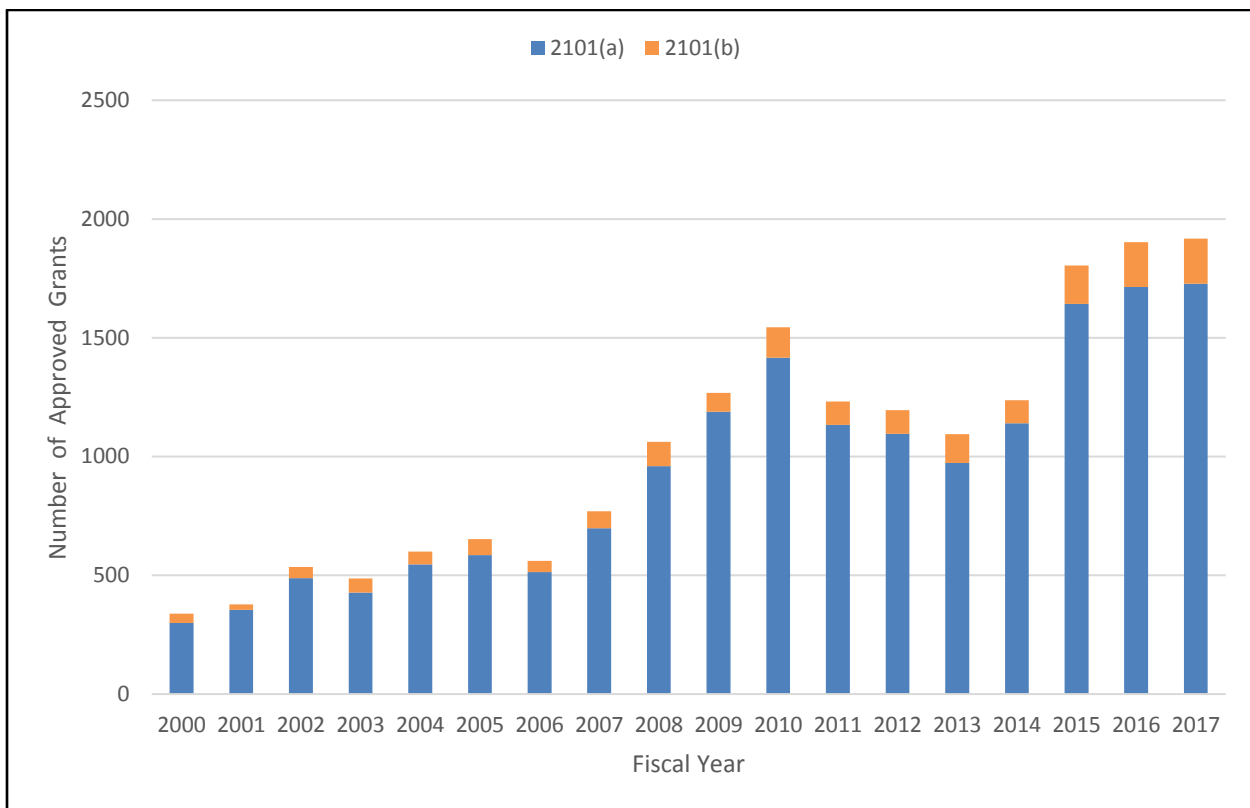
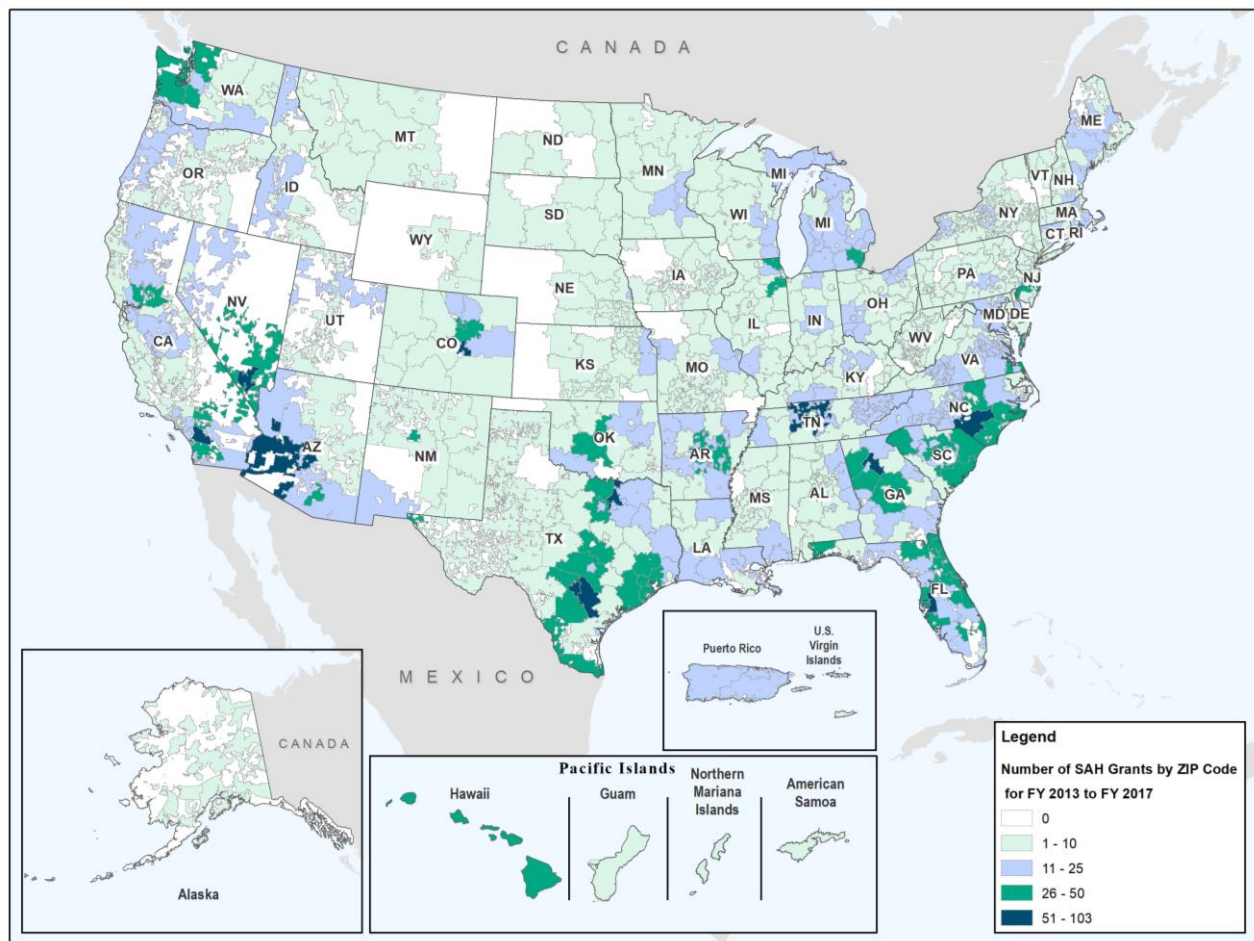


Figure 1-8. Types of Specially Adapted Housing Program Grants



FY = fiscal year; SAH = Specially Adapted Housing; U.S. = United States

Figure 1-9 Geographical Distribution of Specially Adapted Housing Program Grants (FY 2013 – FY 2017)

1.5 PROPERTY RESTRICTIONS RELATED TO VA-GUARANTEED LOANS

Properties that secure VA-guaranteed loans must meet certain statutory and regulatory criteria.

1.5.1 Occupancy, Location, and Type

In order to obtain a VA-guaranteed loan, a Veteran must certify he or she occupies or intends to occupy the subject property as a home. This occupancy requirement means that the Veteran actually lives in the property personally as the Veteran’s residence or actually intends to move into the property personally within a reasonable time and to utilize the property as his or her residence.¹¹ A Veteran’s spouse, or in some cases, a dependent child may also satisfy the occupancy requirement, in place of the Veteran.

¹¹ 38 USC 3704(c).

All property purchased, constructed, altered, improved, or repaired with the proceeds of a VA-guaranteed loan must be located in the United States or its Territories or possessions (e.g., American Samoa, Guam, the Commonwealth of the Northern Mariana Islands, the Commonwealth of Puerto Rico, and the U.S. Virgin Islands).¹² Several types of homes can secure VA-guaranteed loans, including single-family homes, manufactured homes affixed to permanent foundations, as well as VA-approved condominium units, and some farm residences.

1.5.2 Property Requirements

Properties securing VA-guaranteed loans must be suitable for dwelling purposes.¹³ Statute and implementing regulations also require that properties serving as security for VA-guaranteed loans must meet or exceed VA’s standards for planning, construction, and general acceptability.¹⁴ VA has explained through policy guidance that, generally, these statutory and regulatory standards can be satisfied if the subject properties are safe, sound, and sanitary.

Other authorities, not specific to VA’s statute, can affect whether a property’s particular location is legally acceptable for securing a VA-guaranteed loan. Examples of such geographical restrictions are provided in Table 1-6. These noted restrictions pertain to areas prone to flooding, Coastal Barrier Resources System (CBRS) Areas, and airport noise zones.

Table 1-6. Examples of Geographical Restrictions Affecting VA-Guaranteed Loans

Restriction Type	Description	References ^a
Properties Prone to Flooding	Properties located in a special flood hazard area as delineated on Federal Emergency Management Agency flood maps and either: <ul style="list-style-type: none"> It is proposed/under/new construction with elevation of the lowest floor below the 100-year flood level, or Flood insurance is not available Property is subject to regular flooding for any reason, whether or not it is in a special flood hazard area.	42 USC 4001 et seq.; 38 CFR 36.4701 et seq.; See also VA <i>Lender’s Handbook</i> M26-7, Section 11.12.
Properties in Coastal Barrier Resources System Areas	Properties located in a coastal barrier resources system area. Affected areas include portions of the Great Lakes, Gulf coast, Puerto Rico, U.S. Virgin Islands, and the Atlantic coast.	16 USC 3501 et seq.; See also VA <i>Lender’s Handbook</i> M26-7, Section 11.12.
Properties Near Airports ^a	Properties located in an airport Noise Zone 3, if proposed or under construction. Noise Zone 3 has a composite noise rating over 115 decibels and day/night average sound level over 75 decibels.	49 USC 47501 et seq.; see also VA <i>Lender’s Handbook</i> M26-7, Sections 10.06 and 11.12.

Source: VA 2017b

^a VA HLP *Lender’s Handbook* can be accessed online at https://www.benefits.va.gov/WARMS/pam26_7.asp.

^b See Section 11.12 of *Lenders Handbook* for information relating to properties affected by airport noise.

CFR = Code of Federal Regulations; HLP = Housing Loan Program; USC = United States Code; VA = Department of Veterans Affairs

¹² 38 CFR 36.4332.

¹³ 38 USC 3710(b)(4). If a lender made a loan in violation of VA requirements, VA cannot void the guaranty on the loan, but VA is able to assert defenses against paying the guaranty claim. See 38 USC 3721.

¹⁴ 38 USC 3704(a); 38 CFR 36.4351.

1.6 LEGISLATIVE HISTORY AND FRAMEWORK OF THE HLP

Advent of the Program

VA-guaranteed loans began as a simple housing assistance benefit, within a larger package of readjustment benefits, to help World War II Veterans quickly transition to civilian life following discharge from service. Congress wanted to avoid repetition of many problems World War I Veterans faced when there was a lack of cohesive assistance for Veterans following the war's end (VA 2004). Thus, in 1944, Congress enacted the Servicemen's Readjustment Act,¹⁵ also known as the "G.I. Bill of Rights," which extended a wide variety of benefits to eligible Veterans, including VA's guaranteed loan benefit. Congress enacted the statute, in part, to allow Veterans, to the same extent as their civilian counterparts, the opportunity to establish credit and build a strong financial future (Congressional Record 1944). Credit parity issues arose when Veterans, due to their service, missed opportunities to establish a credit rating that could have allowed for financing to purchase homes or farm residences. Proponents of the legislation believed that ready access to such credit would permit Veterans to house their families or begin a farming venture. Thus, they were providing opportunity for the "individual Veteran to help him help himself" (Congressional Record 1944).

The loan guaranty program also accomplished national economic objectives by providing an investment outlet for large amounts of savings that existed in the larger civilian economy at the end of World War II (VA 2004). During the war, normal investment outlets were restricted because of the shift from the production of civilian goods to war goods. The imposition of price and production controls on many items reduced the normal flow of consumer durable goods. Thus, civilians' individual savings reached record proportions, and large amounts of money became available for investment purposes. Expectations that there would be a normal postwar depression shortly after termination of the war made planning to stimulate the redirection of accumulated liquid capital into normal peacetime avenues important, and the loan guaranty program supported this goal by increasing housing demand (VA 2004).

Legislative Expansion and Modification

The natural progression of several housing cycles, a number of broader economic booms and downturns, dramatic technological advances, several wars, and generational and demographic changes to the Veteran population are but a few of the major influences on the nature and scope of the HLP. In response to these and other factors, Congress has, over the 75-year program history, expanded the scope of the program and eligibility for HLP benefits.

Examples of important changes are the establishment of the SAH program in 1948¹⁶ to provide grants to certain veterans, with service-connected disabilities, in acquiring housing adaptations. As the nation entered the second half of the 20th century, VA's guaranteed loan benefit grew in complexity and size to keep pace with new housing options, such as condominiums, and increased numbers of Veterans

¹⁵ Public Law 78-346.

¹⁶ Public Law 80-702.

seeking to utilize their earned benefits. Congress expanded eligibility to Veterans of conflicts including the Korean War, the Vietnam War, and the Persian Gulf War. Congress also expanded the definition of “Veteran” to include active-duty Servicemembers and, later, certain members of the Selected Reserve. In 1992, Congress provided VA authority¹⁷ to make direct housing loans to certain Native American Veterans living on trust lands.

Further, as the program matured and its costs increased, Congress established loan fees to assist in funding the program, offsetting future anticipated foreclosure losses, and addressing national deficit reduction goals. These, and other key program legislative milestones, are summarized in Appendix C, Key Legislative Housing Loan Program Milestones.

1.7 HISTORICAL TRENDS OF VA LOANS GUARANTEED

In the current market, VA-guaranteed loans make up a relatively small share of housing loans in the United States. According to the 2015 U.S. Census Bureau, *American Housing Survey*, VA loans accounted for approximately 5.2 percent of primary mortgages (CRS 2017). As mentioned previously, historically, the number and value of VA-guaranteed loans, REO properties, NADLs, and SAH program grants have fluctuated in response to numerous influential factors including changing market conditions, Veteran populations, and new legislation regarding eligibility for VA-guaranteed loans and SAH program grants. In general, during periods where interest rates are lower, the number of Interest Rate Reduction Refinance loans increases. Additionally, the number of VA-guaranteed purchase loans decreases when other loan products are booming. This may be due, in part, to the fact that certain Veterans need to pay a statutory loan fee in order to obtain a VA-guaranteed loan.

The new loan servicing policies, regulations, and technology implemented in 2008 enabled VA and private-sector loan servicers to achieve best-in-industry loss mitigation successes all throughout the housing market crash and Great Recession. From FY 2009 through FY 2017, over 683,000 borrowers were saved from foreclosure, allowing the government to save \$21.4 billion in foreclosure claims avoided. This, coupled with an overall housing market recovery, contributed to an overall decrease in the volume of REO properties. Over the past four fiscal years, the number of properties conveyed to VA’s REO decreased by over 21 percent. Additionally, the number and dollar amount of SAH program grants nearly doubled from FY 2007 to FY 2008 and have remained at a higher level, due largely to the number of severely injured Veterans returning from the wars in Iraq and Afghanistan.

¹⁷ Public Law 102-547.

1.8 APPLICABLE ENVIRONMENTAL LAWS AND REGULATIONS

This PEIS is conducted in accordance with the NEPA; the CEQ's regulations for implementing the procedural provisions of NEPA; VA's NEPA regulations titled "Environmental Effects of the Department of Veterans Affairs Actions";¹⁸ and VA's "NEPA Interim Guidance for Projects" (VA 2010). NEPA and these regulations require that VA, as a federal agency, must evaluate the potential environmental impacts of the Department's major actions significantly affecting the quality of the human environment. Chapter 3, Affected Environment, lists and discusses the applicable environmental laws, regulations, and Executive Orders pertaining to each resource section.

1.9 PUBLIC INVOLVEMENT

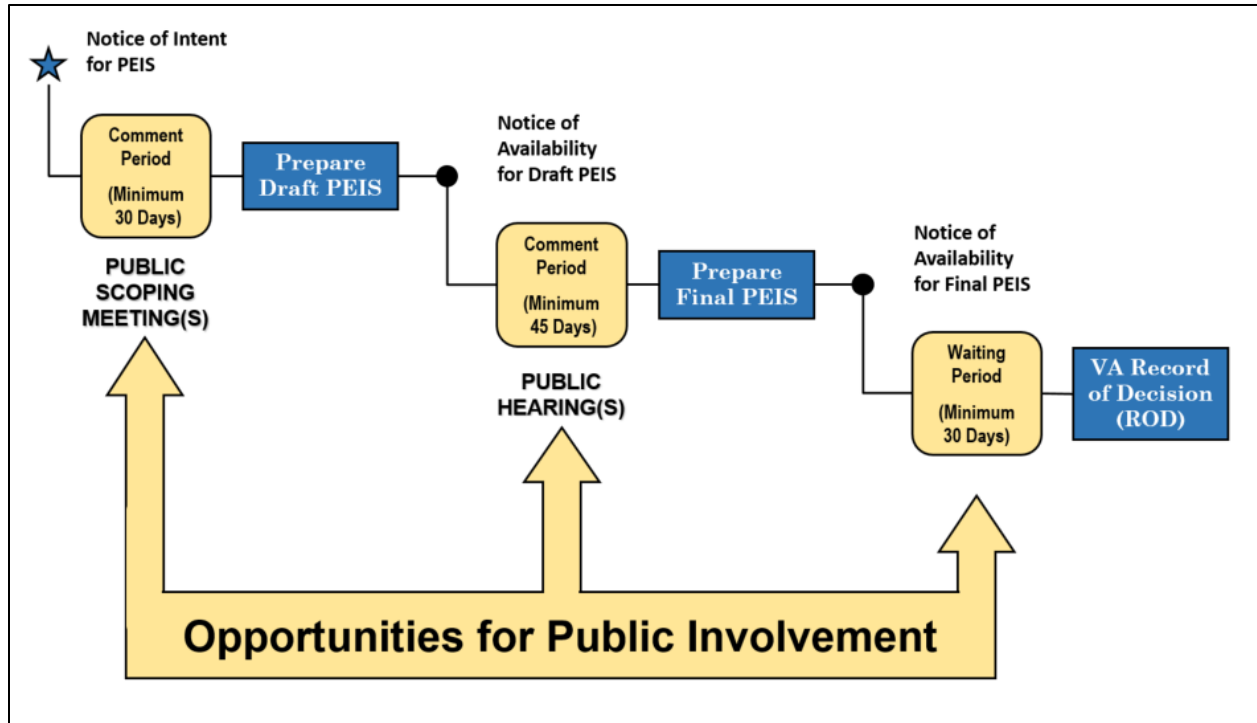
VA values public participation in its environmental review process. VA encourages government agencies, private-sector organizations, and the general public to provide input on any areas of environmental concern relevant to the HLP and suggestions regarding potential environmental impacts that should be evaluated. Figure 1-10 illustrates the steps involved in the NEPA process and indicates the opportunities for public involvement. In addition, VA developed a project website to disseminate information to the public; the project website is available at https://www.benefits.va.gov/homeloans/environmental_impact.asp.

The public scoping phase invites interested parties to identify potential issues, concerns, and reasonable alternatives that should be considered in the PEIS. To formally initiate the NEPA process for the HLP PEIS, VA published a Notice of Intent to prepare a PEIS in the *Federal Register* (FR) on July 16, 2018 (under Docket ID No. VA-2018-VACO-0001)¹⁹ and in the *Washington Post* on July 20 – 22, 2018. After issuing the Notice of Intent, VA conducted a public scoping meeting and consulted with various governmental agencies and stakeholders.

The public scoping meeting was held on August 2, 2018 at the Bethesda North Marriott Hotel and Conference Center in Rockville, Maryland. A few members of the general public attended the meeting, but no oral or written comments were received from the meeting. The scoping period closed on August 15, 2018 allowing one month during which the public and interested parties were encouraged to provide comments. VA received no comments during or after the scoping period ended. Further information pertaining to the scoping meeting and scoping period is included in Appendix A, Public Scoping.

¹⁸ 38 CFR 26.

¹⁹ 83 FR 32952.



NEPA = National Environmental Policy Act; PEIS = Programmatic Environmental Impact Statement; ROD = Record of Decision; VA = Department of Veterans Affairs

Figure 1-10. NEPA Process and Milestones

1.9.1 Interagency Coordination

VA consulted with federal agencies that could have expertise and insight relevant to the environmental review of the HLP. In particular, during development of this PEIS VA contacted:

- Advisory Council on Historic Preservation (ACHP);
- Bureau of Indian Affairs (BIA);
- Council on Environmental Quality (CEQ);
- Department of Homeland Security;
- Department of Housing and Urban Development (HUD);
- Farm Credit Administration;
- Federal Emergency Management Agency (FEMA);
- U.S. Army Corps of Engineers (USACE);
- U.S. Department of Agriculture (USDA) Rural Development;
- U.S. Environmental Protection Agency (USEPA); and
- U.S. Fish and Wildlife Service (USFWS).

VA mailed a letter to these agencies on July 20, 2018 seeking feedback on potential issues, concerns, or reasonable alternatives agencies deem important to address in this PEIS and to invite attendance at a public scoping meeting.

1.9.2 Tribal Government Coordination

VA also contacted tribal and Native American governments to ascertain any environmental concerns they have regarding the NADL program and the PEIS process. Appendix A, Public Scoping, includes a sample letter sent on July 20, 2018 to the tribal organizations that have MOUs with VA seeking feedback on potential issues, concerns, or reasonable alternatives regarding this PEIS and to invite attendance at a public scoping meeting. No comments or responses were received.

INTENTIONALLY LEFT BLANK.

CHAPTER 2 PROPOSED ACTION AND ALTERNATIVES

2.1 INTRODUCTION

NEPA, and regulations for implementing NEPA, as established by the CEQ, require federal agencies to rigorously explore and objectively evaluate reasonable alternatives to their proposed actions. This chapter describes the reasonable alternatives evaluated by VA for the HLP as part of this PEIS, including the Proposed Action and No Action Alternative.

As explained in Chapter 1, the HLP has been providing crucial benefits to Veterans since 1944 when Congress enacted the loan guaranty program to help Veterans purchase homes after returning from World War II. In subsequent years, the guaranty benefit has been expanded to address the changing Veteran population, federal housing policy structure, and mortgage market conditions. Additionally, new programs, such as those that provide SAH program grants to Veterans with certain severe service-connected disabilities to modify and live independently in their homes and that provide direct lending to Native American Veterans residing on trust, tribal, or communally owned land, have been added to the HLP. Throughout the HLP's history, VA periodically tailored the HLP to address new statutes and Executive Branch directives. VA has also drafted implementing regulations and established policies that serve the needs of the Veteran population. The HLP is continuously evolving to meet the home ownership and housing needs of the nation's Veterans and will continue to do so in the future. Although VA has some discretion in developing regulations and policy, Congress has explicitly mandated that the Department provide the various HLP benefits. Consequently, VA has a limited number of alternative courses of action that are analyzed under this PEIS.

While VA conducts oversight of participating lenders to ensure compliance with federal statutory and regulatory standards, VA does not control how state and local authorities regulate property development or enact building codes. Generally, VA's role is to assist eligible Veterans in obtaining VA-guaranteed loans to purchase homes. Local government and planning authorities are ultimately responsible for the number and size of homes, neighborhood density, and community infrastructure surrounding a neighborhood development.

2.2 PROPOSED ACTION

Under the Proposed Action, VA would continue to operate and actively manage the HLP. The number of VA-guaranteed loans would continue to fluctuate from year to year based upon housing market conditions; VA's REO program would continue to maintain, manage, market, and sell existing homes through a private-sector contractor; the NADL program would continue to make VA direct loans available to Native American Veterans living on trust, tribal, or communally owned lands; and VA would continue to provide SAH program grants to accommodate the needs of Veterans with certain severe, service-connected disabilities. VA would continue to adhere to statutory requirements, Executive Branch mandates, and Judicial rulings and evaluate the housing needs of Veterans, monitor market

conditions (and other unforeseen factors), and perpetually tailor the HLP to ensure VA continues to effectively serve Veterans. To do so, VA may issue new regulations or policies or revise existing ones.

Chapter 1, Introduction, presents an overview of the current HLP (Section 1.4), and Section 2.6, The Housing Loan Program Under the Proposed Action, explains how VA manages and incorporates changes to the program. By continuing to operate and actively manage all aspects of the HLP, VA would ensure or improve the value of the program's benefits to Veterans.

Since VA cannot predict future modifications to the HLP, nor how those changes would increase or decrease the number of VA-guaranteed loans nationwide, this PEIS analyzes potential environmental impacts within a range of VA-guaranteed loan volumes from low-intensity to high-intensity scenarios. See Section 2.4, Scenarios Considered for Analysis in this PEIS, and Section 4.0, Environmental Consequences, Introduction for further discussion regarding this methodology.

2.3 NO ACTION ALTERNATIVE

The No Action Alternative presumes VA would continue to operate the HLP in a manner consistent with its current practices and procedures, with no future changes or improvements to the program. The No Action Alternative, also called the "reference scenario," is being presented as a snapshot in time to provide a baseline for comparison. The No Action Alternative would essentially freeze the HLP components and policies in their current state, reflecting the program status in FY 2017 (October 1, 2016 through September 30, 2017) and assumes Veteran populations and market conditions would continue to follow general historical trends. Section 2.4 below and Section 4.0, Environmental Consequences, Introduction provide further discussion regarding the No Action Alternative.

2.4 SCENARIOS CONSIDERED FOR ANALYSIS IN THIS PEIS

Continued operation of the HLP (the Proposed Action) involves managing and incorporating prescribed or necessary regulatory or policy changes in response to new statutes, Executive Branch directives, and VA-identified needs to actively enhance benefits to Veterans. Changes to the program could influence the volume of VA-guaranteed loans, REO and NADL activity, and SAH program grants by, for example, making these guaranties, loans, and grants more accessible or attractive to Veterans. Other non-program factors could also influence these volumes, such as market conditions (e.g., interest rates), Veteran population demographics, and various other circumstances. However, VA cannot predict what specific changes would be made to the program in the future, nor how those changes would increase or decrease the number of loans, grants, and other HLP activity. Similarly, VA cannot predict other economic or demographic factors that may occur in the future, or how they would influence loan volumes. A combination of certain future circumstances could lead to a high demand for VA-guaranteed loans and other HLP products, while another combination of circumstances could reduce such demand. Numerous variables could push demand up or down in any given year.

For purposes of evaluating a full range of potential effects for the Proposed Action, VA developed low-intensity and high-intensity program activity scenarios for each of the four programs analyzed in this PEIS (the loan guaranty, REO, NADL, and SAH programs). To develop these scenarios, VA reviewed historical HLP data, using periods of historical upward and downward trends to establish rates for increasing and decreasing program activity. The respective rates of increasing and decreasing program activity were projected through FY 2030 to establish total and average annual loan and grant volumes over that period for the low-intensity and high-intensity scenarios. The Proposed Action scenarios are not intended to serve as a prediction of changes in the underlying factors discussed earlier and of actual future program activity but rather to provide reasonable lower and upper rates of program activity for the purpose of evaluating the range of potential impacts within this PEIS. The No Action Alternative is presented as the reference case for baseline comparison purposes and assumes static HLP activity (based on FY 2017) through FY 2030.

The following sections illustrate the Proposed Action low-intensity and high-intensity scenarios, and the No Action Alternative, for each program. Figures 2-1 through 2-4 present average annual program activity through FY 2030 and graphically depict each scenario and the reference case as horizontal lines (i.e., consistent levels of program activity each year). However, VA expects that HLP activity would fluctuate from year to year as observed in historical program data, although such annual fluctuations cannot be predicted. To illustrate that annual numbers are expected to fluctuate from year-to-year, hypothetical low-intensity and high-intensity growth cases are also included in each figure as dashed lines.

2.4.1 VA-Guaranteed Home Loans

The volume of VA-guaranteed home loans (purchase loans and refinance loans) can fluctuate depending on numerous variables, such as regulatory or policy changes to the program, mortgage interest rates, financial and labor macroeconomic conditions, and trends in private-sector conventional mortgage lending. The Proposed Action low-intensity scenario represents a combination of factors that results in a reduction in the demand for VA-guaranteed loans, leading to a decline in loan guaranty volume. Based on the referenced analog trend, this scenario provides for approximately 252,000 loan guaranties per year, or a cumulative total of approximately 3.3 million new loan guaranties from FY 2017 through FY 2030. The Proposed Action high-intensity scenario represents a combination of factors (similar to the low-intensity scenario) that results in higher demand and a corresponding increase in loan volume. This scenario provides for an increase in loan volume of approximately 60,000 more loans each year, resulting in an average of approximately 1.2 million new loan guaranties per year, or a cumulative total of approximately 15.1 million loans through FY 2030. The No Action reference case for the loan guaranty program assumes a consistent loan volume, based on FY 2017, of approximately 740,000 per year, or a cumulative total of approximately 9.6 million new loan guaranties through FY 2030. Figure 2-1 illustrates each of these three scenarios.



Figure 2-1. Loan Guaranty Scenarios Analyzed in this PEIS

Under the Proposed Action and No Action Alternative, the total volume of VA-guaranteed loans includes loans for the purchase of newly constructed homes, resale of existing homes, and refinancing of existing home loans. Generally, construction of new homes would be more likely to result in tangible environmental effects. Over the time period from FY 1996 to FY 2017, the percentage of newly constructed homes financed with VA-guaranteed loans has ranged from approximately 7 percent to 28 percent on an annual basis, with an annual average of 18 percent. As there are many external factors that could affect both the availability of newly constructed homes and buyers’ preference for new construction versus existing homes, VA is assuming that the historical average new home construction percentage of 18 percent would apply to all future scenarios. It should be noted that VA’s guarantee of a housing loan would not necessarily result in the construction of any new homes, as residential builders would continue to make decisions regarding development without necessarily having any knowledge of buyers’ loan financing choices. However, the HLP would continue to make the purchase of newly constructed homes possible for many Veteran buyers who might otherwise have difficulty securing loan financing.

2.4.2 Real Estate Owned Property Management and Financing

The number of properties conveyed into VA’s REO inventory is directly tied to the number of foreclosed VA-guaranteed home loans. The sale of those properties out of inventory —by VA Vendee loans or by

sale via other buyer-financed means — is impacted by the same set of factors noted for guaranteed loans (i.e., regulatory or policy changes, mortgage rates, financial and labor market economics, private-sector lending trends). The Proposed Action low-intensity scenario represents a combination of factors that results in lower volumes of homes entering the REO program. Based on the referenced analog trend, this scenario provides for an average of 5,000 properties entering the program each year, for a cumulative total of approximately 65,000 properties from FY 2017 through FY 2030. The high-intensity scenario represents a combination of factors that results in an increase in properties entering the program. Based on the referenced analog trend, this scenario provides for approximately 25,000 properties entering the program each year, or a cumulative total of approximately 325,000 properties through FY 2030. The No Action Alternative reference case for the REO program assumes a consistent volume, based on FY 2017, of approximately 13,200 properties for a cumulative total of 172,000 through FY 2030. Figure 2-2 illustrates each of these three scenarios.

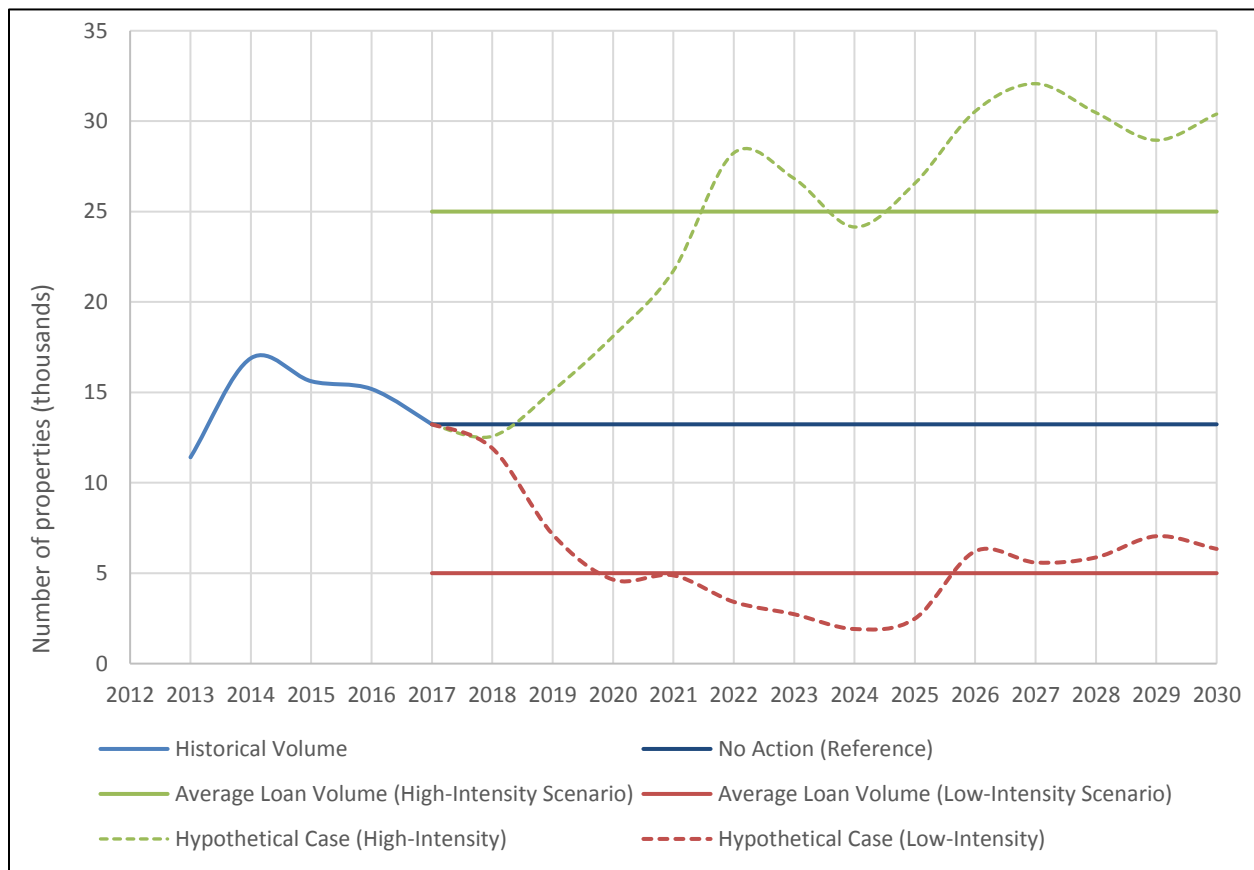


Figure 2-2. Real Estate Owned Scenarios Analyzed in this PEIS

2.4.3 Native American Direct Loans

The volume of NADLs can fluctuate depending on numerous variables, such as regulatory or policy changes to the program, financial and labor market macroeconomic conditions, VA’s efforts to raise awareness of benefits and eligibility for NADL assistance among Tribal governments and Native

American Veteran populations. The Proposed Action low-intensity scenario represents a combination of factors that results in reduced demand for the NADL program leading to a decline in loan volume. Based on the referenced analog trend, this scenario provides for an average of 20 direct loans per year, or a cumulative total of approximately 260 direct loans from FY 2017 through FY 2030. The high-intensity scenario represents a combination of factors that results in higher demand and an increase in loan volume. Based on the referenced analog trend, this scenario provides for approximately 150 direct loans per year, or a cumulative total of 1,950 direct loans through FY 2030. The No Action Alternative reference case for the NADL program assumes a consistent volume, based on FY 2017, of approximately 25 direct loans per year, or a cumulative total of approximately 325 direct loans through FY 2030. Figure 2-3 illustrates each of these three scenarios.

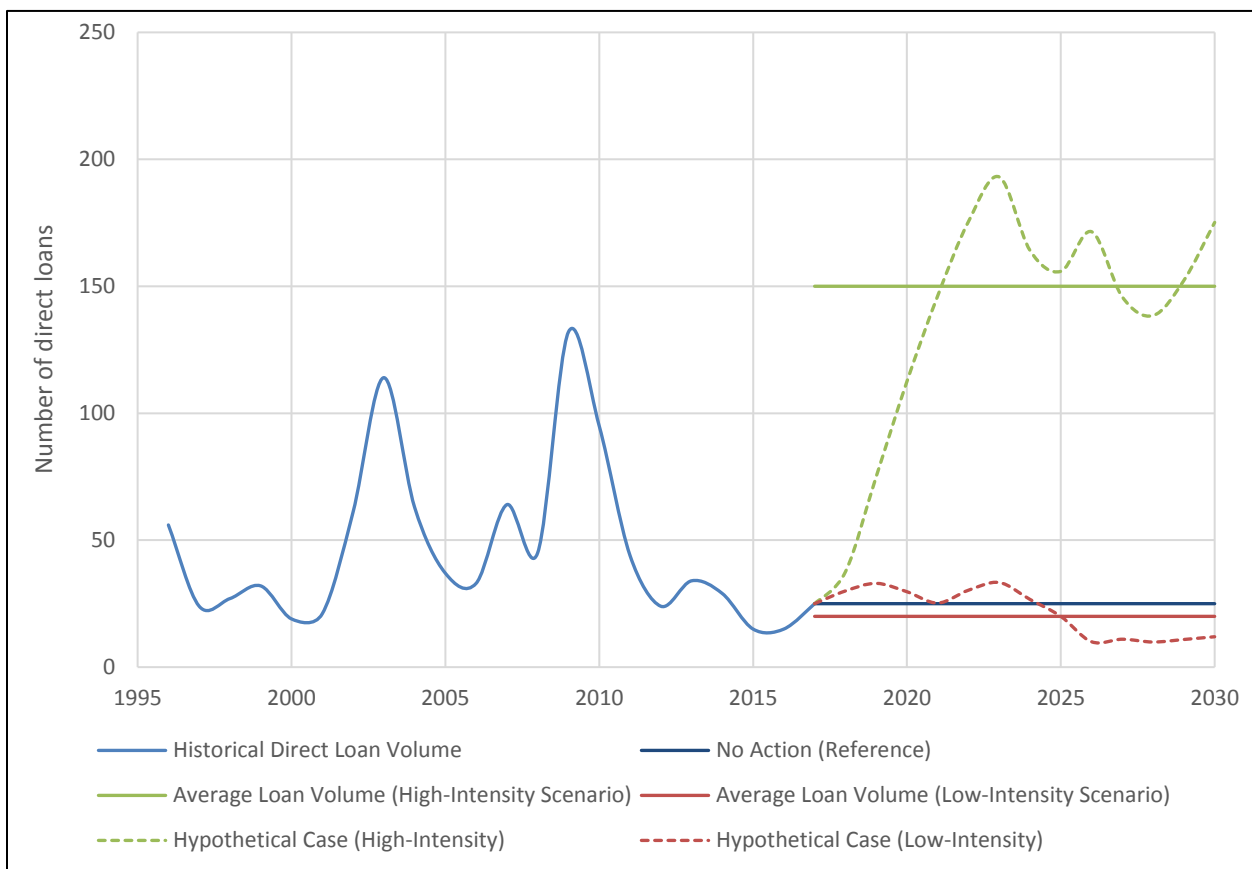


Figure 2-3. Native American Direct Loans Scenarios Analyzed in this PEIS

2.4.4 Specially Adapted Housing Program

The volume of SAH program grants can fluctuate depending on numerous variables, such as changes to the program’s statutory eligibility criteria, and factors that can influence the existence of fewer or more severely wounded Veterans, such as decreased or increased number of armed forces conflicts, changes in the nature of warfare, and improvements to forward-area medical care. The Proposed Action low-intensity case scenario represents a combination of factors that results in reduced demand for SAH

program grants leading to a decline in grant volume. Based on the referenced analog trend, this scenario provides for approximately 550 grants per year, or a cumulative total of approximately 7,100 grants from FY 2017 through FY 2030. The Proposed Action high-intensity scenario represents a combination of factors that results in higher demand and an increase in loan volume. Based on the referenced analog trend, this scenario provides for an increase in grant volumes of approximately 100 grants per year, resulting in an average of approximately 2,600 grants per year, or a cumulative total of approximately 34,000 grants through FY 2030. The No Action Alternative reference case for the SAH program grants assumes a consistent volume, based on FY 2017, of approximately 1,900 grants per year, or a cumulative total of approximately 25,000 grants through FY 2030. Figure 2-4 illustrates each of these three scenarios.

As discussed in Section 1.4.4 (Chapter 1, Introduction), SAH program grants may be used to adapt an existing home or to construct new homes. Construction of new homes would be more likely to result in tangible environmental effects, compared to the renovation of existing homes. Over the period FY 2001 through FY 2017, the majority of SAH program grants were used to adapt an existing home; this portion of approved grants has ranged from approximately 50 percent to 86 percent. The percentage of grants used to construct new homes has declined over this time frame, from approximately 35 percent in FY 2001 to only 2 percent in FY 2017.

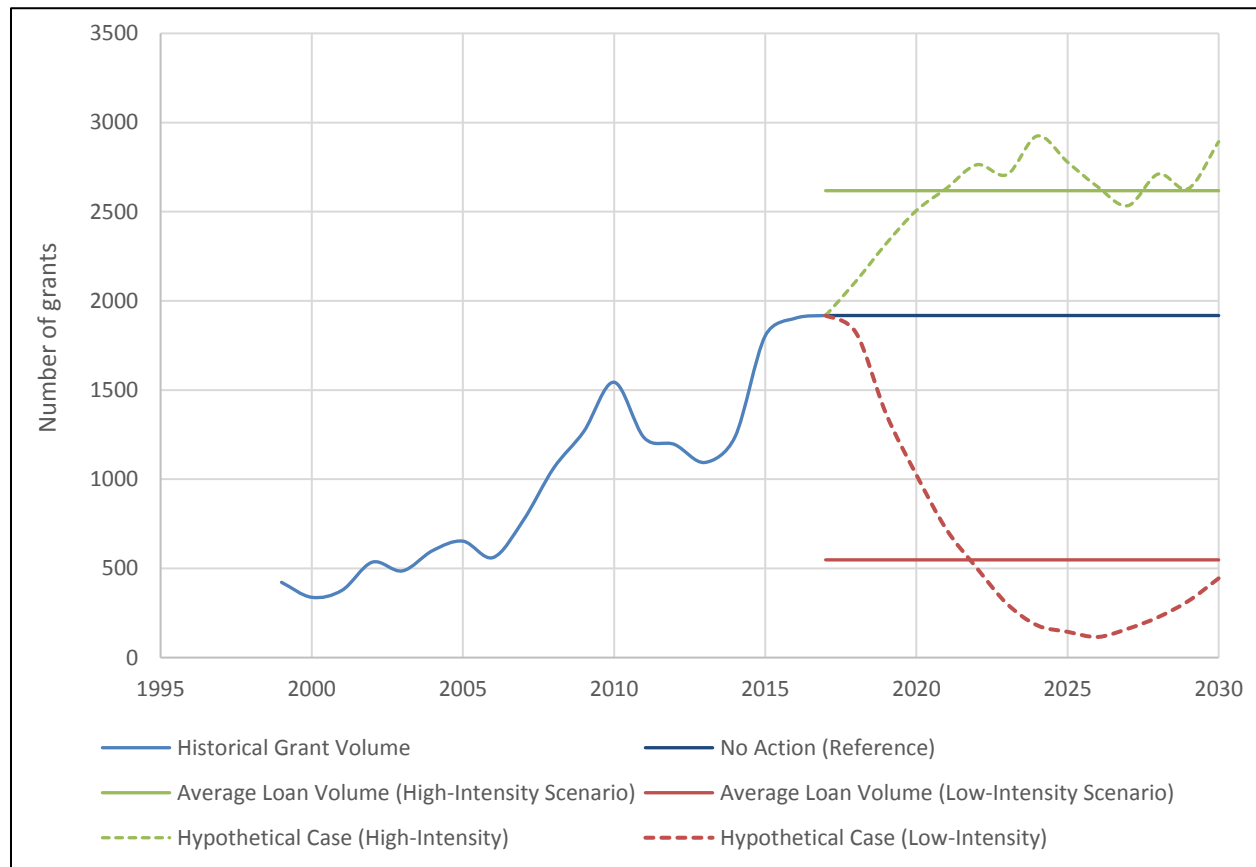


Figure 2-4. Specially Adapted Housing Program Scenarios Analyzed in this PEIS

2.5 ALTERNATIVES DISMISSED FROM FURTHER CONSIDERATION

As explained in this document, VA is mandated by congressional statutes, various regulations, and Executive Branch directives to provide HLP benefits to eligible Veterans. In meeting these obligations, VA's discretionary authority is limited to development of HLP regulations and policies. During the preparation of this PEIS, VA discussed analyzing alternatives under which VA pursued regulatory or policy actions, irrespective of statutory constraints. Realistically, however, substantive changes contemplated by VA for the HLP could conflict with statutory requirements and likely would not be implemented until legislative (statutory) changes were made to the program. Therefore, any alternatives that would involve substantial and subsequent statutory changes to the HLP, were dismissed from further consideration.

During preparation of this PEIS, VA discussed analyzing a No Program Alternative, which would presume the HLP (or large aspects of it) does not exist, to present a baseline scenario to which benefits of the current HLP could be compared. However, the HLP has operated for the past 75 years and has become an intrinsic part of the housing loan market. Ceasing program operations would negatively affect the nation's housing stock, mortgage markets, and socioeconomic conditions, not to mention the economic vitality and wellbeing of Veterans. Therefore, VA dismissed this No Program Alternative as unreasonable. Moreover, the No Program Alternative is outside the scope of VA's authority.

After careful consideration, VA determined that the only reasonable alternatives for analysis in this PEIS would be the Proposed Action (VA would continue to operate and actively manage the HLP) and the No Action Alternative (VA would continue to operate the HLP with no future changes or improvements).

2.6 THE HOUSING LOAN PROGRAM UNDER THE PROPOSED ACTION

2.6.1 Managing and Incorporating Changes to the Housing Loan Program

To effectively serve Veterans in recognition of their service to the nation, the HLP has evolved its administrative framework over the course of the past seven decades to incorporate the myriad of changes that have been prescribed or necessitated. In certain instances where statutes leave room for VA to create sensible and effective policies, VA must develop regulations. Since the program is subject to the Administrative Procedure Act (APA), the Regulatory Flexibility Act, the Paperwork Reduction Act, and other controlling statutes for VA rulemaking and public notice, the HLP's regulatory process requires a thorough evaluation of regulatory impacts, the provision of public notice, and the opportunity for members of the public to participate in the process and comment on the rules. The APA process also helps ensure VA regulations conform with and do not exceed statutory authority.

In addition to the statutory and regulatory framework, the HLP has, as necessary and appropriate, also developed and disseminated program guidance in the form of VA policies. In the HLP, those policies are most commonly framed in manuals or circulars. Program policies vary from procedural and operational guidance to private-sector stakeholders to clarification of program requirements. It is the program's

duty to ensure that statutory, regulatory, and policy authorities work together effectively, and without conflict, to meet the program’s charge of administering VA housing loan benefits.

As most statutory, regulatory, and policy-making processes ultimately result in program change, the HLP has developed a robust procedure for analyzing, managing, and incorporating change into the program’s framework. In the modern-day program, this process can be summarized in Figure 2-5.

The program has a centralized structure that triages incoming ideas, requests, or requirements for action and determines which work processes need to be employed to bring about the desired outcome. As illustrated in Figure 2-5, major process branches are legislation, regulation, policy, and project development. If it is determined that work required on an idea or requirement for action is “strategic” in nature (i.e., if the work is in support of an organizational strategic goal, if it crosses program business lines, requires funding, or shared-service support), then it is managed through a rigorous process for idea and project management development to ensure alignment of resources and overall success of the program’s broad portfolio of initiatives. This framework also provides for a robust oversight and risk management program that ensures the program is effectively managing portfolio and program risks.

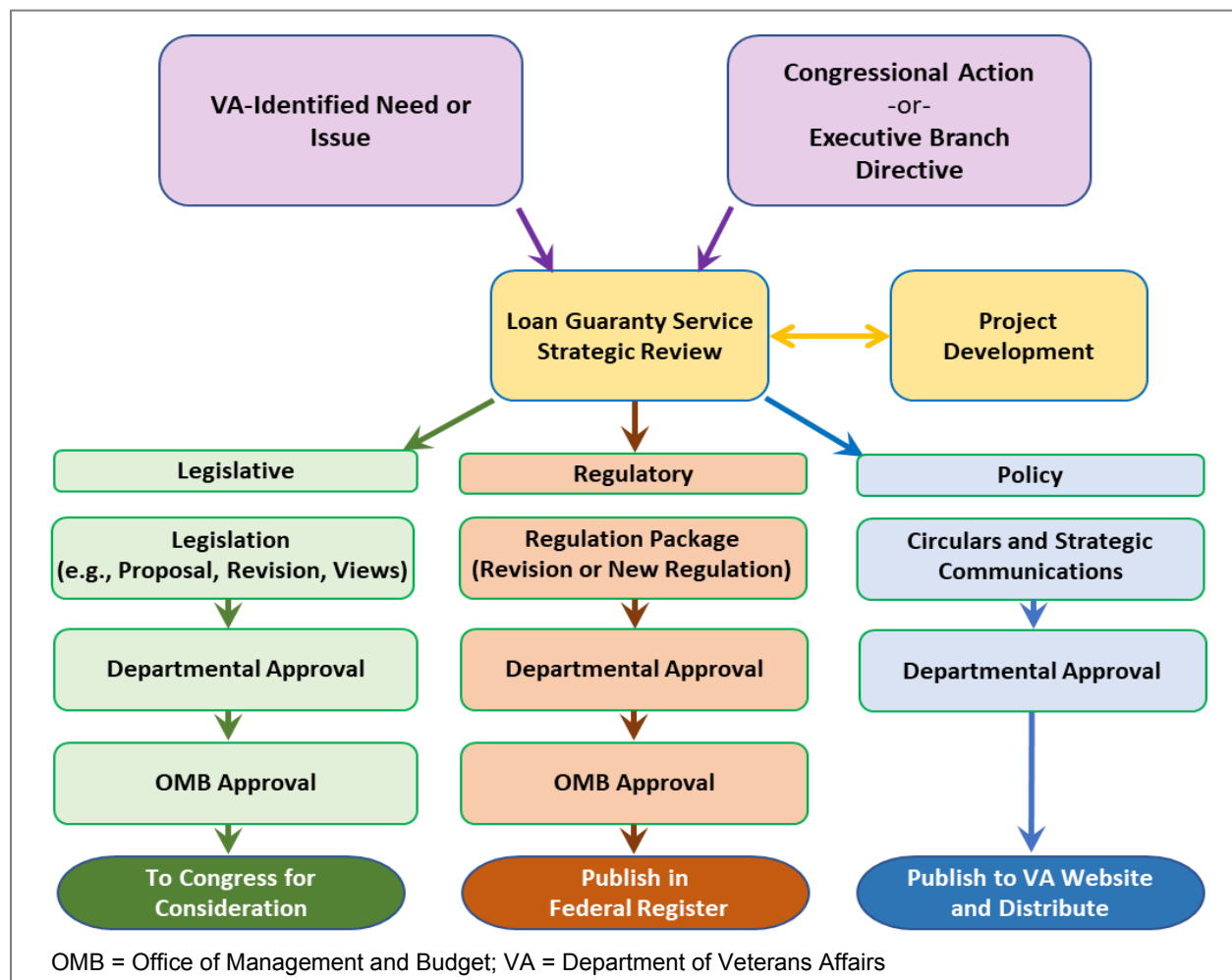


Figure 2-5. Pathways for Changes to the Housing Loan Program

2.6.2 Housing Loan Program Volume

In the context of potential environmental impacts, the change agents considered to be of chief importance are those that result in substantial effect on program loan, grant, or foreclosed property volume. A meaningful increase at the national level has the potential to result in cumulative environmental and socioeconomic impacts in the geographic areas where the program's loans and properties securing loans are concentrated. Likewise, an appreciable increase in loan volume in a particular geographic area (e.g., a county or metropolitan statistical area) could be considered meaningful if a large enough number of home loans, grants, or foreclosed properties were new to the location, or if their numbers increased dramatically during a period of comparative analysis.

From a theoretical perspective, any program changes that increase or decrease the ease-of-access to HLP benefits, create additional segments of Veterans eligible for those benefits, or enhance the program's competitiveness in the mortgage and credit markets would affect loan volume. Likewise, changes to SAH program grant criteria or amounts would result in changes in SAH program grant volume. For the NADL program, although the potential for impact would be essentially limited to federal trust lands on which the loans were made, an increase or decrease in loan volume could result from increased or decreased tribal participation in the program. With regard to foreclosed property volume, increases or decreases in overall foreclosures (either nationally or in specific geographic areas) would result in an increase or decrease in the inventory of REO properties. Further, local and national market conditions (house prices, interest rates, property conditions, and management costs) would all impact the length of time those REO properties were held by the HLP.

CHAPTER 3 AFFECTED ENVIRONMENT

3.0 INTRODUCTION

This chapter describes the existing environment that may be affected by the Proposed Action and No Action Alternative. Potential impacts from the Proposed Action and No Action Alternative are addressed in Chapter 4, Environmental Consequences. As a nationwide program, VA HLP's region of influence (ROI)

Region of Influence (ROI) – The ROI defines the extent of the areas where direct, indirect, and cumulative impacts could occur as a result of the Proposed Action and alternatives. The extent of the ROI is influenced by the nature and unique characteristics of each resource associated with each geographical region.

is the United States of America, here defined as the 50 states, its Territories, and the District of Columbia. There are five permanently inhabited U.S. Territories, which include American Samoa, Guam, the Commonwealth of the Northern Mariana Islands, the Commonwealth of Puerto Rico, and the U.S. Virgin Islands. Although the HLP could potentially extend to possessions (e.g., Midway and Palmyra) such locations are not covered here because they are not permanently inhabited. For this PEIS, the ROI for the Proposed Action is the same as the ROI for the No Action Alternative.

To most effectively characterize this wide spectrum of geographically, ecologically, culturally, and socioeconomically diverse areas, this PEIS presents the Affected Environment through 11 resource areas, with each resource area described using the most appropriate and meaningful "units of analysis." The units of analysis (further described

Resource – Physical, biological, cultural, social, or economic topics characterized and assessed for potential environmental impacts associated with the Proposed Action and No Action Alternative.

in Section 3.0.1) provide a reasonable way to divide up the country into regions to support this NEPA analysis. Table 3.0-1 presents the organization of the resource-specific topics and the corresponding units of analysis. Each of the sections in this chapter provide a description of the resource, explain the federal laws and regulations that govern the protection and management of the resource, and describe the existing conditions of the resource throughout the ROI.

Table 3.0-1. Resource Topics – Units of Analysis

Section	Resource Topic	Units of Analysis
3.1	Aesthetics and Visual Resources	USGS Physiographic Regions
3.2	Air Quality	VA Regional Loan Centers
3.3	Biological Resources	USEPA Ecoregions (Level 1)
3.4	Cultural Resources and Historic Properties	VA Regional Loan Centers
3.5	Floodplains, Wetlands, and Coastal Zones	USGS Hydrologic Unit Code (HUC-2)
3.6	Geology and Soils	USGS Physiographic Regions
3.7	Hydrology and Water Quality	USGS Hydrologic Unit Code (HUC-2)
3.8	Infrastructure and Community Services	VA Regional Loan Centers
3.9	Land Use and Planning	VA Regional Loan Centers
3.10	Noise	VA Regional Loan Centers
3.11	Socioeconomics and Environmental Justice	VA Regional Loan Centers

USEPA = U.S. Environmental Protection Agency; USGS = U.S. Geological Survey; VA = Department of Veterans Affairs

3.0.1 Units of Analysis

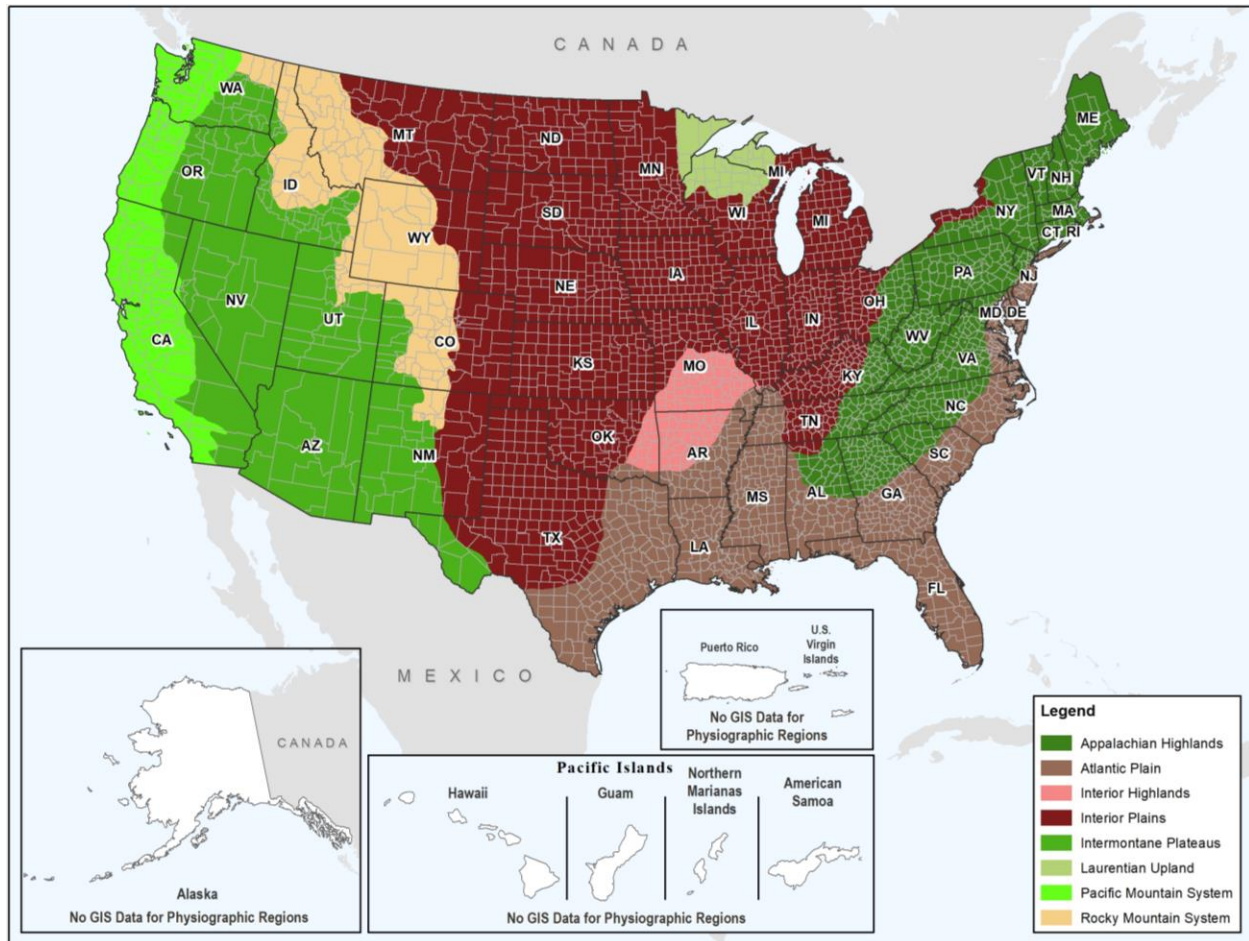
In order to best characterize potential impacts resulting from implementing the Proposed Action Alternative and the No Action Alternative, VA selected units of analysis suitable for each of the 11 resource areas analyzed in this PEIS. Selection criteria for the units of analysis include:

- Reasonably sized sub-units that share sufficient attributes and features within the resource area;
- Relevancy to other data and analyses likely to support subsequent impact analyses; and
- Precedence and support by other federal agency programs.

Table 3.0-1 summarizes the results of this selection process. Where appropriate, VA selected units utilized by other federal agencies with jurisdiction over specific resource areas (e.g., USEPA ecoregions for biological resources). However, some resource areas, such as noise and infrastructure and community services, are not easily discussed in terms of such units; VA selected the HLP RLCs in these cases. The RLCs present a way for VA to discuss regional variations in HLP activity across the country where resource-specific units or regions do not exist or are not suitable. The remainder of this section summarizes each of the units of analysis used in this PEIS.

USGS Physiographic Regions

United States Geological Survey (USGS) Physiographic Regions are areas with similar geologic structures, evolutionary history, and topography. The regions classify the various landscapes, landforms, rock types, and overall ruggedness of a terrain, and they can be used to categorize the types of seismic and ground hazards that may influence building in the region. The Bureau of Land Management (BLM) uses physiographic regions as a key component for the scenic quality evaluation process in their Visual Resource Management system (BLM 1986). This PEIS uses the USGS Physiographic Regions (shown in Figure 3.0-1) as the units of analysis for Aesthetics and Visual Resources as well as Geology and Soils.



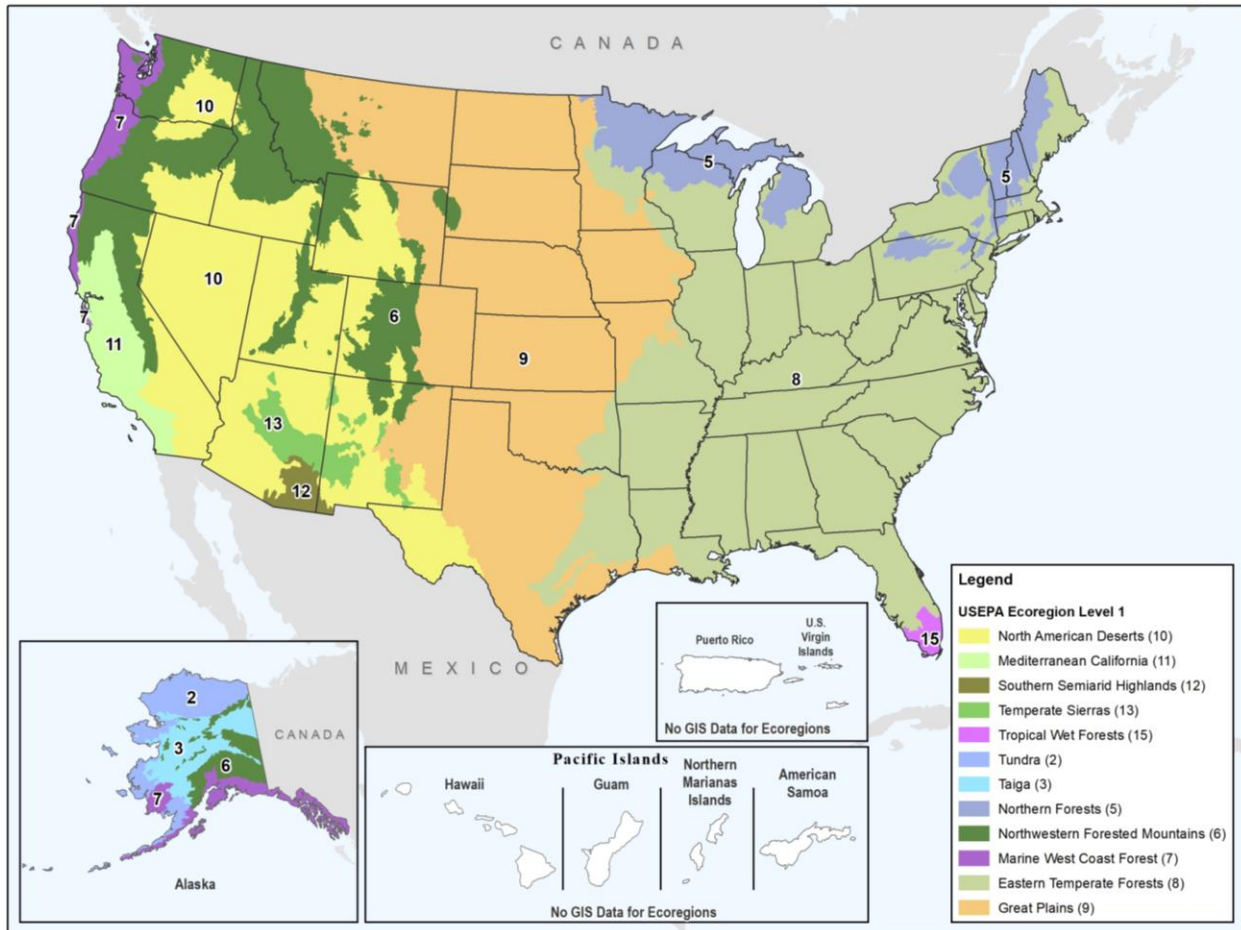
Source: USGS 2004a

GIS = Geographic Information System; USGS = U.S. Geological Survey

Figure 3.0-1. USGS Physiographic Regions

USEPA Ecoregion System

Ecoregions are areas where ecosystems and the type, quality, and quantity of environmental resources are generally similar. They are classified based upon similarities or differences between abiotic, biotic, terrestrial, and aquatic components, which include: geology, landforms, soils, vegetation, climate, land use, wildlife, and hydrology. The USEPA uses a Roman numeral classification system to describe the different levels of ecoregions, ranging from general regions to more detailed (USEPA 2018a). This PEIS uses the Level I USEPA ecoregions specific to the United States and Alaska (shown in Figure 3.0-2) as the units of analysis for Biological Resources.

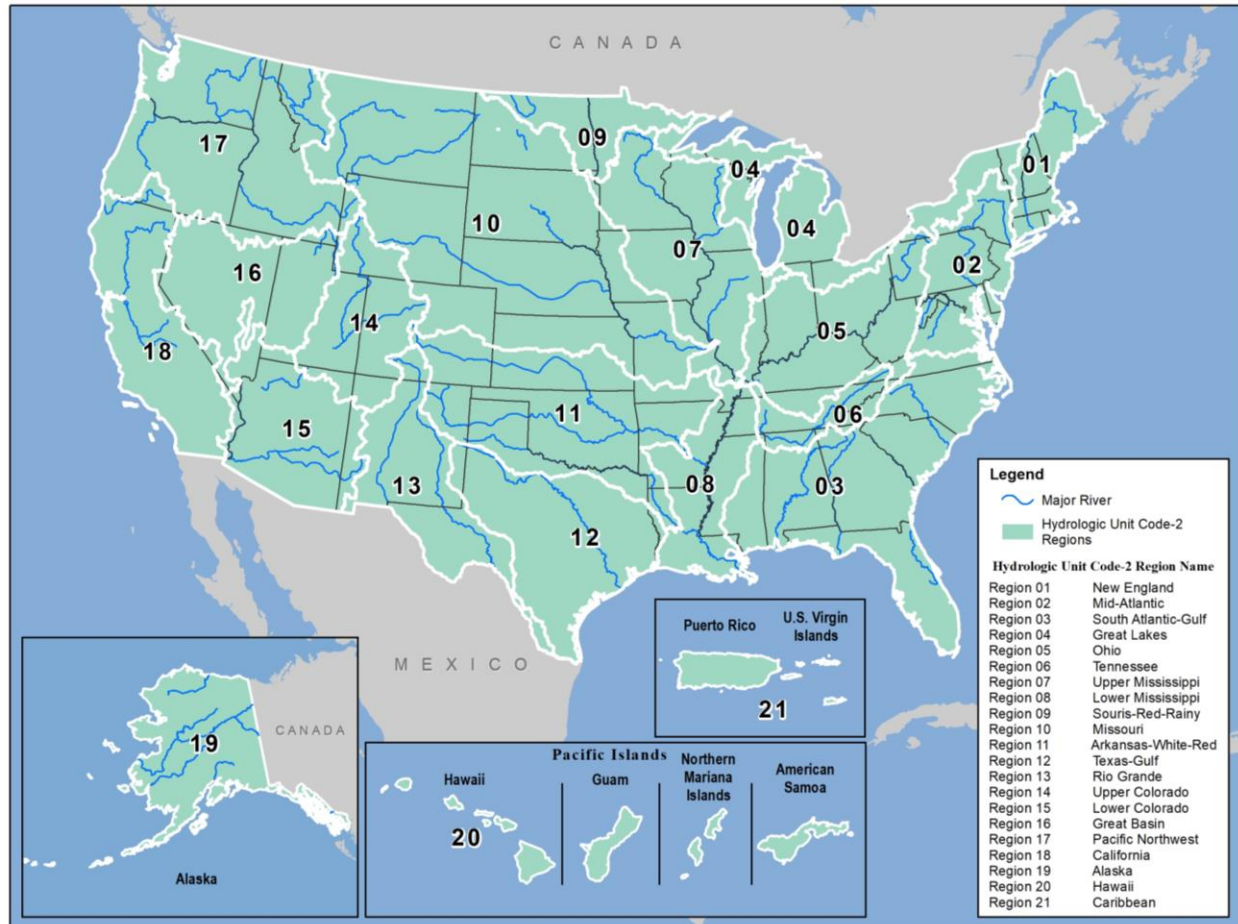


Source: USEPA 2010

Figure 3.0-2. USEPA Ecoregions of North America

USGS Hydrologic Unit Code (HUC-2) Watersheds

The USGS Hydrologic Unit Code (HUC) classification divides the United States into geographic regions that provide a framework for drainage boundaries of successively smaller watersheds. HUC-2 is the two-digit hydrologic unit system dividing the United States into 21 watershed regions that contain either the drainage area of a major river, such as the Missouri region, or the combined drainage areas of a series of rivers, such as the Texas-Gulf region, which includes a number of rivers draining into the Gulf of Mexico (USGS 2020a). This PEIS uses the USGS HUC-2 Watershed system (shown in Figure 3.0-3) as the units of analysis for Floodplains, Coastal Zones, and Wetlands as well as Hydrology and Water Quality.



Source: USGS 2019

Note: Hydrologic Unit Code-2 Watershed Regions are not designated for the Pacific Island Territories.

Figure 3.0-3. Hydrologic Unit Code-2 Watershed Regions

VA Regional Loan Centers – Operational Jurisdictions

VA has eight RLCs that administer the HLP and perform oversight of lenders, servicers, appraisers, and contractors/service providers within each region. The eight RLCs are located in: Atlanta, Georgia; Cleveland, Ohio; Denver, Colorado; Houston, Texas; Phoenix, Arizona; Roanoke, Virginia; St. Paul, Minnesota; and St. Petersburg, Florida. The operational jurisdictions of the RLCs serve an administrative function but fit well within the scope of this PEIS as a unit of analysis since data collection and oversight of some resource areas are predominantly by states and regions. Six resource areas utilize VA RLCs as the unit of analysis: Air Quality, Cultural Resources and Historic Properties, Infrastructure and Community Services, Land Use and Planning, Noise, and Socioeconomics and Environmental Justice. Figure 1-1 shows the location of the eight RLCs and the states and territories within their jurisdiction.

3.1 AESTHETIC RESOURCES

This section discusses the aesthetic resources of the United States and its Territories to include a description of the resource, applicable statutes and regulations, and the existing conditions of aesthetic and visual resources within the USGS Physiographic Regions depicted in Figure 3.0-1. VA-guaranteed loans relating to the historic preservation of an existing home or occurring in a historic district are addressed in Section 3.4, Cultural Resources.

3.1.1 Description of the Resource

The term *aesthetics* refers to the pleasurable characteristics of a physical environment as perceived through the five senses of sight, sound, smell, taste, and touch (BLM 2018). When evaluating aesthetic resources, aesthetics refers to the beauty or attractiveness of a scene as perceived through the visual sense only. Aesthetic resources include the visual character and quality of an area, consisting of both the landscape features and the social environment from which it is viewed.

Landscape features are observable physical elements of a landscape (e.g., landforms, waterforms, vegetative patterns, animals, and structures) and may be natural (e.g., mountain views) or man-made (e.g., a city skyline). Visual character is a description of the visual attributes of a landscape in terms of line, plane, form, color, texture, and scale. Attributes of a landscape include variations and combinations of natural, rural, and developed character.

Visual quality is a measure of the intrinsic beauty, visual appeal, or the relative worth of a landscape from a visual perception point of view. Visual quality is evaluated using criteria of vividness, intactness, and unity. Different viewers may evaluate visual quality differently based on viewer concern, exposure (i.e., proximity, number of viewers, duration of view), and visual sensitivity.

3.1.2 Applicable Statutes, Regulations, and Terminology

There are no federal laws or regulations that directly relate to aesthetic resources; however, resources may be protected under state or local regulations, plans, or ordinances. Several federal laws and programs designate scenic resources. Many of the most scenic areas in the country have been set aside for scenic resource protection in the form of scenic byways, national parks, national trails, national monuments, Wild and Scenic Rivers, Wilderness Areas, and coastal areas (e.g., National Seashores). Table 3.1-1 summarizes applicable statutes, regulations, and terminology for the protection of scenic areas.

Table 3.1-1. Aesthetics Statutes, Regulations, and Terminology

Statute/Regulation	Description/Requirements
National Historic Preservation Act (NHPA) Section 106 (54 USC 300101)	<p>Section 106 of the NHPA directs federal agencies to consider the effects of undertakings on historic and cultural resources. Federal agencies must follow a comprehensive decision making process that includes determining project (and alternative) effects on historic places, exploring measures to avoid or reduce harm, and reaching consensus of the State Historic Preservation Office (SHPO) regarding eligibility for the National Register of Historic Places and the potential for adverse effect. Examples of adverse effects to be evaluated under NHPA relating to visual resources include a change in the character of a historic and cultural resource's setting and introduction of an incompatible visual element.</p> <p>States, through the SHPO (or Tribal Historic Preservation Office) appointed by the Governor of each state, provide matching funds, a designated state office, and a statewide preservation program tailored to state and local needs and designed to support and promote state and local historic preservation interests and priorities.</p>
Coastal Zone Management Act (16 USC 1451 et seq)	<p>Establishes a national policy to preserve, protect, develop, and, where possible, restore or enhance the resources of the nation's coastal zone, including preservation of <i>aesthetic coastal features</i>.</p> <p>Creates a framework for planning and approving coastal projects between the federal, state, and local governments. Development projects in the coastal zone must, to the maximum extent possible, be consistent with a state's coastal zone management program.</p>
Wild and Scenic Rivers Act (16 USC 1271 et seq)	<p>Preserves certain rivers with outstanding remarkable values (e.g., scenic, recreational, natural, cultural, geologic, cultural), establishes a National Wild and Scenic Rivers System, and prescribes methods and standards through which additional rivers may be added to the system. River segments are classified as wild, scenic, or recreational depending on the level of development on the shoreline and the accessibility of the segment at the time of its designation. The segment's classification guides appropriate land uses and informs management actions to guarantee the river values are protected and enhanced.</p>
National Trails System Act of 1968 (16 USC 1241 et seq)	<p>Authorizes a national system of trails and defines four categories of national trails: national scenic trails, national historic trails, national recreation trails, and connecting or side trails. The system has now grown to include 20 national trails.</p>
Wilderness Act of 1968 (16 USC 1131 et seq)	<p>Created the National Wilderness Preservation System and defines and recognizes wilderness as areas to be protected and managed so as to preserve its natural conditions. Congress has now designated more than 106 million acres, totaling 762 Wilderness Areas, of federal public lands as wilderness. It includes wilderness on four types of lands managed by the U.S. Government: national forests (U.S. Forest Service), national parks (National Park Service), national wildlife refuges (U.S. Fish and Wildlife Service), and Bureau of Land Management (BLM) lands.^a</p>
Antiquities Act of 1906 (16 USC 431 et seq)	<p>Authorizes, among other things, the protection of landmarks, structures, and objects of historic or scientific interest by designating them as national monuments.</p>

^a. Wilderness Society 2018.

BLM = Bureau of Land Management; NHPA = National Historic Preservation Act; SHPO = State Historic Preservation Office; USC = United States Code; USFS = U.S. Forest Service

Visual resources are also protected and managed on federal resource lands, such as under U.S. Forest Service Land Management Plans (National Forest Plans) and through the BLM Visual Resource Management System which involves inventorying scenic values and establishing management objectives for those values through its resource management planning process (Resource Management Plans). Congress has designated several areas unique for their special characteristics and the opportunities they offer, including congressionally designated wilderness, Wild and Scenic Rivers, National Historic Landmarks, National Historic Scenic Areas, National Recreation Areas, National Scenic Areas, National Preserves, and National Monuments.

State and local regulations, policies, plans, and ordinances may include visual impact assessment requirements and/or protective measures for aesthetic resources, including restrictions on acceptable building materials and forms. Many restrictions are specific to a particular location. Scenic ridgelines, scenic roadways, and scenic vistas can be locally controlled. Also, there may be plans, ordinances, and policies that pertain to preserving native vegetation or other landscaping requirements (e.g., protection of trees, parks/open space and other recreational land uses, and water bodies) (FHWA 2015).

3.1.3 Existing Conditions

Due to the vast size and varied landscape of the United States, this section provides a broad overview of typical scenery along waterways and coasts. USGS physiographic regions were selected as the unit of analysis for aesthetic resources. Section 3.0, Affected Environment, Introduction, has a more detailed discussion on units of analysis and presents a figure of the USGS physiographic regions. The BLM uses USGS physiographic regions as a key component of the scenic quality evaluation process in their Visual Resource Management system (BLM 2005). General descriptions of the types of scenery within each physiographic region are presented in the following subsections. Of particular note is that a review of the existing VA home loan data shows the highest concentrations of VA-guaranteed loans for newly constructed homes, over the recent period FY 2013 through FY 2017, were for homes located in various metropolitan areas in the southeastern, southwestern, and northwestern United States (see Figure 1-5, Chapter 1 of this PEIS). These geographic areas correspond to portions of the Atlantic Plain, Intermontane, Rocky Mountain, and Pacific Mountain physiographic regions described below.

<p>Unit of Analysis USGS Physiographic Regions</p>

3.1.3.1 Appalachian Highlands

The Appalachian Highlands Region lies on the eastern side of the United States and includes the following 7 provinces: Piedmont, Blue Ridge, Valley and Ridge, St. Lawrence Valley, Appalachian Plateaus, New England, and Adirondack. A physiographic province is an area having a particular pattern of relief features or landforms that differ significantly from that of adjacent provinces. The Appalachian Highlands Region is divided into a series of mountains, following the long chain of ridges and valleys that make up the Appalachian Mountains, from northeastern Alabama all the way to Maine (USGS 2017a). The New England Province, in the northeastern United States, is a mountainous area of significant relief.

It includes the Taconic, Green, and White mountain ranges. It is also home to Acadia National Park. The Great Valley (within the Valley and Ridge Province) is a continuous basin spanning the eastern side of the Valley Ridge Province and includes the Shenandoah Valley in Virginia. Some of the most scenic features of the Valley Ridge Province occur where rivers and streams cut through ridges to form narrow water gaps, such as the Delaware and Susquehanna rivers, which are flanked by cliffs reaching 1,000 feet in places. Karst processes in the limestone beds have produced beautiful caves (e.g., Skyline, Luray, and Shenandoah caverns). The Blue Ridge Province contains some of the most impressive scenery in the eastern United States. It extends over 550 miles from southern Pennsylvania to northeastern Georgia and is composed of ridges, rolling hills, and mountains of the Appalachian Belt, including the highest peak east of the Mississippi River. It is home to several national parks, including Shenandoah National Park and Great Smoky Mountain National Park, which contains the most massive mountains in the eastern United States, rising more than 6,000 feet above sea level. Rivers, streams, and lakes are situated throughout the region. Much of the region is blanketed with deciduous forests that attract outdoor recreation and scenic tourism, especially in the fall when the leaves change colors (e.g., New England Adirondacks and the Blue Ridge Mountains); the region includes numerous national forests. Much of the area is rural, including wilderness, refuges, national parks, scenic byways, and other designations that preserve natural characteristics of the landscape (NPS 2018a).

3.1.3.2 Atlantic Plain

The Atlantic Plain Region consists of both the underwater Continental Shelf and the Coastal Plain Province, which includes the coastal regions of the eastern and southern parts of the United States (i.e., the coasts of the Atlantic Ocean and Gulf of Mexico). The coastal plain is the flattest of all the physiographic divisions and stretches over 2,200 miles in length from Cape Cod to the Mexican border. The relief at the land-sea interface is so low in parts that the boundary is indistinct (i.e., Louisiana bayous, Florida Everglades). The coastal plain gently slopes up from the ocean, westward toward the Appalachian Mountains along the eastern seaboard, running south from the coastal tip of New York, down through Florida and west through the Gulf States (USGS 2017a). The Atlantic Plain Region extends along the coastal plains and is generally very wet, including thick deciduous forests, and rivers, marshes, swamps, and wetlands. The central and southern Atlantic Coast features nearly continuous barriers interrupted by inlets, large embayments, drowned river valleys, and extensive marshes, swamps, and wetlands; it also includes deciduous forests and rivers. As one of the most densely populated portions of the United States, many large cities and small towns are situated throughout the region, many of which sit along the coast and along the waterways. The scenery includes many historic places, such as battlefields and historic buildings. The area also contains state and national parks, as well as many scenic byways (NPS 2018a).

3.1.3.3 Interior Highlands

This relatively small region is also part of the interior continental United States and consists of the Ozark Plateaus and the Ouachita Province in Missouri, Arkansas, and Oklahoma. These mountainous regions are the only notable highlands between the Rocky and Appalachian Mountains (USGS 2017a). These

mixed deciduous, forested mountains contain three national forests and numerous lakes and rivers. Hot Springs National Park, a collection of 47 springs, is in the Ouachita Province. The ruggedness of the area has limited the number of towns in the region, while the natural and wild beauty of the area has made it a popular place for recreation and scenic touring (NPS 2018a).

3.1.3.4 Interior Plains

The Interior Plains Region covers much of the central United States, spanning areas from eastern Montana, Wyoming, and Colorado, eastward to western portions of Ohio, Kentucky, and Tennessee. This region contains the Interior Low Plateaus, the Central Lowland, and the Great Plains (USGS 2017a). This physiographic region consists of relatively flat topography of gentle rolling hills and flatlands covered mostly with grasses and low shrubs. Several major rivers flow out of the Rocky and Appalachian Mountains, forming long, wide rivers such as the Mississippi and Missouri rivers, which meander through the grasslands toward the Gulf of Mexico. The largest population centers are based along these rivers. Within the Interior Low Plateaus, the topography becomes more diverse, including some steeper, rugged areas. This area contains fewer national parks and scenic byways than the other regions of the United States due to the lack of scenic diversity, although the Interior Low Plateaus is home to Mammoth Cave National Park. The Central Lowland is the largest physiographic province and includes the Great Lakes. The Great Plains Province is the second largest. The Great Basin includes the Nebraska Sand Hills, one of the largest expanses of sand dunes in North America. It also includes some isolated mountains such as the Black Hills and Badlands in South Dakota; Mount Rushmore is located in the Black Hills. Wind Cave National Park and Jewell Mountain National Monument are also noteworthy features in the Black Hills (NPS 2018a).

3.1.3.5 Intermontane Plateaus

The Intermontane Region consists of the Basin and Range, Colorado Plateau, and Columbia Plateau provinces, including portions of New Mexico, Arizona, California, Nevada, Utah, Idaho, Oregon, and Washington (USGS 2017a). The Intermontane Plateaus, situated between the Rocky and Pacific mountain systems, is the most topographically diverse of the eight physiographic regions. The region is a system of vast, flat deserts with sparse vegetation and salt flats; long, steep mountain ranges; massive cliffs and escarpments; and deep narrow canyons, ravines, gorges, arches, and slot canyons. It is the setting for the Grand Canyon, the Great Basin, and Death Valley. The processes of erosion showcase extensive geologic history in the strata of the Colorado Plateau. Ancient volcanic mountains, plateaus and buttes, deeply carved canyons, and amazing ranges in color are defining characteristics in the region. Many national parks, national recreation areas, scenic byways, and Wild and Scenic Rivers are protected within this region. Cities and towns can be found in many of the low-lying valleys and the more fertile areas (NPS 2018a).

3.1.3.6 Laurentian Upland

The Laurentian Upland of the Canadian Shield extends into Wisconsin and Minnesota in the Great Lakes region of the United States. The Superior Upland is the single province in this region that can be found

in the United States (USGS 2017a). This region consists of relatively flat upland plains, gentle rolling hills, and arboreal forests. Many streams and lakes meander through the mostly wooded terrain. Small cities and towns are found mostly along the waterways and larger lakes. The rural atmosphere of the region provides many natural vistas. A number of state parks, national parks, national forests, and designated wilderness areas are found within this region (NPS 2018a).

3.1.3.7 Pacific Mountain System

The Pacific Mountain System contains the Cascade-Sierra Mountains, Pacific Border, and the Lower California provinces. It features coastal mountain ranges and features in the west coast of the United States. The Cascade Range includes many active volcanoes. The Sierra Mountains are home to Yosemite National Park. The Pacific Border province can be divided into two types of topography: lowlands and mountains. The lowlands are in the form of a trough on the eastern side of the mountains. The Puget trough slopes to the north and eventually falls into Puget Sound. The California trough to the south is one of the world's most productive agricultural areas (San Joaquin Valley). The Pacific Border province is home to several national parks (e.g., Olympic, Redwood, and Channel Islands). The Cascade and Sierra mountain ranges extend through California, Oregon, and Washington, containing high peaks and active volcanoes. These jagged mountains descend thousands of feet into the Pacific Ocean. Many smaller mountains and coastal plains are found within the Pacific Border Province. The region showcases many unique land and vegetation features. The coast varies from steep, rocky terrain to sandy beaches. Scenic resources include many national parks, national recreation areas, scenic byways, and Wild and Scenic Rivers. These protected areas are home to some outstanding visual resources in the country, such as the world's largest and tallest trees (California redwoods), the deepest lake in North America (Crater Lake in Oregon), and others (USGS 2017a; NPS 2018a).

3.1.3.8 Rocky Mountain System

The Rocky Mountain System forms an impressive mountain system that stretches from Canada through central New Mexico. It is broken down into the Southern, Middle, and Northern Rocky Mountains and the Wyoming Basin Provinces and includes portions of Colorado, Wyoming, Utah, Idaho, and Montana (USGS 2017a). Although separated by Canada, the Rocky Mountain System Region continues north into Alaska. The Rocky Mountains include the tallest, youngest mountains in the country. Visual resources include many tall peaks and ridges, deep valleys and canyons, and a variety of other landforms, such as plateaus, mesas, and basins. Because of the topographic relief, vegetation in the region can vary from sparse desert landscapes to thick forests to grasslands and tundra. Much of the area is preserved as national parks, national forests, wilderness areas, and Wild and Scenic Rivers. Mountain resort towns, scenic roads, and other tourist attractions exist throughout the region (NPS 2018a).

3.1.3.9 Alaska and Hawaii

Alaska is a unique physiographic region consisting of 12 different provinces, including landforms such as coastal plains, rivers, peninsulas, valleys, foothills, mountains, glaciers and huge tracts of forested land. The Rocky Mountain System extends into much of the interior of the state, with Intermontane Plateaus

scattered between mountain ranges. Coastal plains exist along much of the northeastern parts of the state. Visual resources are striking and mostly natural, with few human settlements. Tall, jagged peaks, thick boreal forests, and vast grasslands contribute the bulk of the visual resources (World Atlas 2018a). Visual resources are protected and preserved by many national parks, state parks, Wild and Scenic Rivers, scenic roads, and preserves. Alaska has more national parks – eight – than any other state except California, which also has eight (National Parks Adventures 2018).

Hawaii is an archipelago of eight principal islands and numerous rocky islets, shoals and reefs in the North Pacific Ocean. All the islands were formed by volcanoes. The Hawaiian Islands include massive volcanic shields and cinderlands, tall sea cliffs, coral plains, ridges, and valleys. The tropical climate adds a thick canopy of vegetation to most of the low-lying areas. The islands are a well-known resort location, offering dramatic contrasts in landforms, from the tall, jagged volcanic mountains to fertile mountain valleys, rugged sea cliffs and tropical beaches (World Atlas 2018b). Visual resources are protected and preserved by many national parks, state parks, and preserves.

3.1.3.10 United States Territories

The Commonwealth of Puerto Rico has three main physiographic regions: the mountainous interior, the coastal lowlands, and the karst area. Mountains cover 60 percent of the island; other landscape forms include rain forest, deserts, beaches, caves, oceans, and rivers (Puerto Rico 2018). Local relief is considerable, and slopes are steep. The highest peak has an altitude of 4,389 feet. Some rainforest remains on the wet north slopes of mountains. Tropical dry forests are located along the south-central and southwestern coast of Puerto Rico and on adjacent islands and portions of each of the larger U.S. Virgin Islands. Mangrove swamps exist along much of the coast (USFS 2019).

The U.S. Virgin Islands consist of four larger islands – St. Croix (largest), St. John, St. Thomas, and Water Island – and 50 smaller islets and cays covering a total area of 134 square miles. The islands are the peaks of submerged mountains that rise from the ocean floor. Most of the islands rise to only a few hundred feet above sea level. The geography of the islands consists of seaside cliffs, mountains with lush forest, tiny streams, arid lands, and white sand beaches. Geographically, they are a part of what are known as Leeward Islands which help form the chain known as the Lesser Antilles, reaching Puerto Rico (the easternmost island), and southward in a semicircular sweep of 700 miles to the coast of South America. The island of St. John includes the Virgin Islands National Park, which comprises more than two thirds of the island. Other scenic resources on the U.S. Virgin Islands include two national monuments and an ecological preserve (Virgin Islands Now 2018).

The Commonwealth of Northern Mariana Islands is part of the Mariana Islands, a chain of volcanic mountain peaks and uplifted coral reefs. It is composed of 22 islands and islets in the western Pacific Ocean. The larger islands have tropical or scrub forests at higher elevations. Topography ranges from level or gently sloping areas to steep slopes of the volcanic islands (Encyclopedia Britannica 2018).

The Marianas chain also includes the politically separate island of Guam to the south. The island of Guam is the largest in size (214 square miles), the most populated, and the southernmost of the

Mariana Islands in the western Pacific Ocean. The scenic attractions on Guam include a combination of seascapes with coastal fringing reefs and varied topography – from coastal plains to mountains – which offer scenic ocean views (Geography of Guam 2014).

American Samoa is composed of seven main islands that include high volcanic islands and small coral atolls. Tutuila is the largest island, with the largest population; it has a steep north coast cut by long ridges and open bays. The entire eastern half is crowded with rugged jungle-clad mountains, continuing west as high broken plateau with scattered craters of extinct volcanoes. The only flat area is the wide southern plain (American Samoa Travel Guide 2018).

3.1.4 Existing Conditions – Notable Scenic Resources in the United States

Many of the most scenic areas in the country are identified in the form of scenic byways, national parks and forests, Wild and Scenic Rivers, and wilderness areas; and these are the focus of this section. They are described further in Sections 3.1.4.1 through 3.1.4.4, and Table 3.1-2 summarizes the specific data by state. These notable scenic resources are afforded special protection, since they are unique scenic locations, and therefore more sensitive to changes in landforms and scenery. Additionally, adjacent areas often are included as part of the viewshed (i.e., view of an area from a specific vantage point) of these areas. Therefore, changes in adjacent areas can also impact these scenic national treasures.

The greatest number of notable scenic resources with respect to protected lands and Wild and Scenic Rivers (e.g., national parks, forests, and wilderness areas) are found in the western states. Within the eastern continental United States, the largest number of notable scenic resources are found in the state of Florida. Interestingly, these areas are somewhat consistent with parts of the country that experienced the highest concentrations of VA-guaranteed loans for newly constructed homes between FY 2013 and FY 2017 (see Figure 1-5); this includes the states of Arizona, Nevada, New Mexico, California, and Colorado in the western United States as well as Florida in the southeastern United States. Close access to such notable scenic resources may be among the reasons that people, including Veterans, choose to live in these areas.

Finally, states, counties, cities, and nearly all local communities also designate parks and natural areas to be managed in part for their aesthetic qualities. The 50 United States collectively contain over 10,300 state parks encompassing nearly 18.6 million acres and receiving a combined annual visitation of more than 791 million people in 2016 (America's State Parks 2018). State parks are often set aside for visual resource values and, along with national parks, make up the park system of the United States. Other examples of state-protected areas that typically exhibit natural scenery include state forests, scenic rivers, nature reserves, and wildlife areas. Of the thousands of municipalities and townships across the country, most have some area or areas designated as public green space. These local and community parks typically exhibit natural scenery and man-made aesthetic resources such as a city skyline. Often, such parks are built alongside water features, such as coasts, lakes, rivers, creeks, and streams to provide natural settings and high-quality visual character and quality within the human environment.

3.1.4.1 National Parks and Forests

The National Park Service (NPS) within the Department of the Interior manages 417 park lands or areas covering more than 84 million acres in every state, American Samoa, Guam, Puerto Rico, and the Virgin Islands. These include 61 national parks (the most strictly protected units) identified in Table 3.1-2. Other areas managed by the NPS are also worth noting as they exhibit natural scenery, including: national historical parks or sites (129), national monuments (87), national preserves (19), national recreation areas (18), national seashores (10), national lakeshores (4), national parkways (4), and national reserves (2). The NPS also helps administer the National Register of Historic Places (NRHP), National Heritage Areas (49), National Wild and Scenic Rivers (see Section 3.1.4.2), National Historic Landmarks (just over 2,500), National Natural Landmarks (599), and National Trails. Within these areas, the NPS manages 18,000 miles of trails, over 85,000 miles of perennial rivers and streams, and over 43,000 miles of shoreline. Whether designated for cultural, social, or visual quality reasons, all these areas are highly sensitive to landscape change and visual resource contrast (NPS 2017).

Other nationally designated areas that typically exhibit natural scenery include 193 million acres of national forests (154) and grasslands (20) managed by the U.S. Forest Service in 43 states and Puerto Rico. National forest lands are found in 44 states and include 400,000 acres of lakes, 158,000 miles of trails, and 57,000 miles of streams (USFS 2013a). These are also identified in Table 3.1-2.

Table 3.1-2. Notable Scenic Resources by State and Territory

State	National Parks/ National Forests ^a	Wild and Scenic Rivers ^b (number / total miles)	Wilderness Areas (total acreage)	National Scenic Byways/ All-American Roads
Alabama	0 / 4	1 / 61.4	42,218	2 / 2
Alaska	8 / 2	25 / 3,210.0	57,432,650	3 / 2
American Samoa	1 / 0	0	0	0 / 0
Arizona	3 / 6	2 / 57.3	4,512,056	3 / 2
Arkansas	1 / 2	8 / 210.0	152,742	3 / 0
California	8 / 17	23 / 1,999.6	14,967,957	4 / 3
Colorado	4 / 13 ^a	1 / 76.0	3,735,240	9 / 2
Connecticut	0 / 0	2 / 39.3	0	2 / 0
Delaware	0 / 0	1 / 94.7	0	1 / 0
Florida	3 / 3	2 / 49.2	1,421,395	5 / 1
Georgia	0 / 1	1 / 49.2	488,403	1 / 0
Hawaii	2 / 0	0	155,509	0 / 0
Idaho	1 / 11 ^a	22 / 891.0	4,796,558	4 / 2
Illinois	0 / 2 ^a	1 / 17.1	32,172	5 / 2
Indiana	0 / 1	0	12,472	2 / 1
Iowa	0 / 0	0	0	2 / 0
Kansas	0 / 1 ^a	0	0	2 / 0
Kentucky	1 / 1	1 / 19.4	17,187	6 / 0
Louisiana	0 / 1	1 / 19.0	17,047	1 / 1
Maine	1 / 1	1 / 92.5	18,628	3 / 1

Table 3.1-2. Notable Scenic Resources by State and Territory

State	National Parks/ National Forests ^a	Wild and Scenic Rivers ^b (number / total miles)	Wilderness Areas (total acreage)	National Scenic Byways/ All-American Roads
Maryland	0 / 0	0	0	4 / 2
Massachusetts	0 / 0	5 / 147.1	3,244	1 / 0
Michigan	1 / 3	16 / 656.4	291,307	2 / 1
Minnesota	1 / 2	1 / 226.0	820,621	7 / 1
Mississippi	0 / 6	1 / 21.0	10,656	1 / 1
Missouri	0 / 1	1 / 44.4	71,914	2 / 0
Montana	2 / 10	2 / 368.0	3,501,410	0 / 1
Nebraska	0 / 3 ^a	2 / 197.0	12,437	0 / 0
Nevada	1 / 0	0	3,448,414	3 / 1
New Hampshire	0 / 1	2 / 38.0	138,407	3 / 0
New Jersey	0 / 0	5 / 262.9	10,341	2 / 0
New Mexico	1 / 9 ^a	4 / 124.3	1,698,604	7 / 1
New York	0 / 1	1 / 73.4	1,380	2 / 1
North Carolina	1 / 4	5 / 144.5	111,504	3 / 1
North Dakota	1 / 4	0	39,652	2 / 0
Ohio	1 / 1	4 / 212.9	77	4 / 1
Oklahoma	0 / 4 ^a	0	24,040	3 / 1
Oregon	1 / 12 ^a	60 / 1,916.7	2,475,323	6 / 4
Pennsylvania	0 / 1	6 / 409.3	9,005	2 / 1
Puerto Rico	0 / 1	3 / 8.9	10,254	0 / 0
Rhode Island	0 / 0	0	0	0 / 0
South Carolina	1 / 1	1 / 41.9	67,445	4 / 0
South Dakota	2 / 1	1 / 93.0	77,692	2 / 0
Tennessee	1 / 1	1 / 45.3	66,543	4 / 1
Texas	2 / 9 ^a	1 / 191.2	85,167	0 / 0
Utah	5 / 5	1 / 169.3	1,157,992	7 / 1
Vermont	0 / 1	2 / 46.1	100,874	1 / 0
Virgin Islands	1 / 0	0	0	0 / 0
Virginia	1 / 2	0	217,496	2 / 3
Washington	3 / 6	6 / 197.0	4,484,603	5 / 2
West Virginia	0 / 1	1 / 10.0	118,811	5 / 1
Wisconsin	0 / 1	2 / 276.0	79,967	1 / 0
Wyoming	2 / 5 ^a	2 / 408.0	3,067,696	0 / 1

Source: America's Scenic Byways 2018; FHWA 2018a; National Parks Adventure 2018; National Wild and Scenic Rivers System 2018; University of Montana 2017; USFS 2013b

^a. National Forest totals also include the tallgrass prairie in Illinois (1) and national grasslands in Kansas (1), Nebraska (1), Oklahoma (3), Texas (4), Colorado (2), Idaho (1), Oregon (1), Wyoming (1), and New Mexico (4). Also, National Scenic Areas are not included in the totals since there are so few above but they include the following: Columbia River Gorge (OR, WA); Mono Basin (CA); Beech Creek (OK); Indian Nations National Wildlife and Scenic Area (OK); Mount Pleasant, Seng Mountain and Bear Creek (VA), Coosa Bald (GA), and Saint Helena Island (MI).

^b. For federally administered wild and scenic rivers, the designated boundaries generally average one-quarter mile on either bank in the lower 48 states and one-half mile on rivers outside national parks in Alaska in order to protect river-related values.

3.1.4.2 Wild and Scenic Rivers

The National Wild and Scenic Rivers System was created by Congress in 1968²⁰ to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. Under this system, rivers can be designated as "wild," "scenic," or "recreational." "Scenic" rivers, in particular, are set aside for their aesthetic and scenic values, and have high quality and highly sensitive visual resource values. The National Wild and Scenic Rivers System protects 12,000 miles of more than 200 rivers (208) – including adjacent buffer zones – in 40 states, which are approximately 0.25 percent of the nation's rivers. By comparison, more than 75,000 large dams across the country have modified at least 600,000 miles, or approximately 17 percent, of American rivers. Areas designated as "wild" or "scenic" must remain free of such impoundments (National Wild and Scenic Rivers System 2018).

3.1.4.3 Wilderness Areas

Congress enacted the Wilderness Act of 1964²¹ to "... establish a National Wilderness Preservation System for the permanent good of the whole people, and for other purposes." Among those purposes, the Wilderness Act lists "scenic value." The National Wilderness Preservation System includes just over 110 million acres across the country, which is approximately 5 percent of the land area (University of Montana 2017). Because these areas are preserved in a natural state, without roads or buildings, many of these areas have intrinsic natural beauty, creating increased sensitivity toward landscape change on adjacent lands.

3.1.4.4 National Scenic Byways

America's Byway System consists of 150 distinct and diverse roads designated by the United States Secretary of Transportation. America's Byways include National Scenic Byways and All-American Roads (FHWA 2018). Many of these roads wind through coastal regions and along rivers containing some of the most scenic landscapes in the United States. To be designated a national scenic byway, a road must possess at least one of six intrinsic qualities (archaeological, cultural, historic, natural, recreational, or scenic features) (FHWA 2002) and be regionally significant. To receive an All-American Road designation, a road must possess multiple intrinsic qualities that are nationally significant and have one-of-a-kind features that do not exist elsewhere (FHWA 2002).

²⁰ Public Law 90-542; 16 USC 1271 et seq.

²¹ Public Law 88-577; 16 USC 1131-1136.

INTENTIONALLY LEFT BLANK.

3.2 AIR QUALITY

This section discusses the air quality conditions, greenhouse gas emissions, and the current understanding of climate change within the United States and its Territories, to include a description of the resource, applicable statutes and regulations, and the existing conditions of air quality on a nationwide scale.

3.2.1 Description of the Resource

3.2.1.1 Air Quality

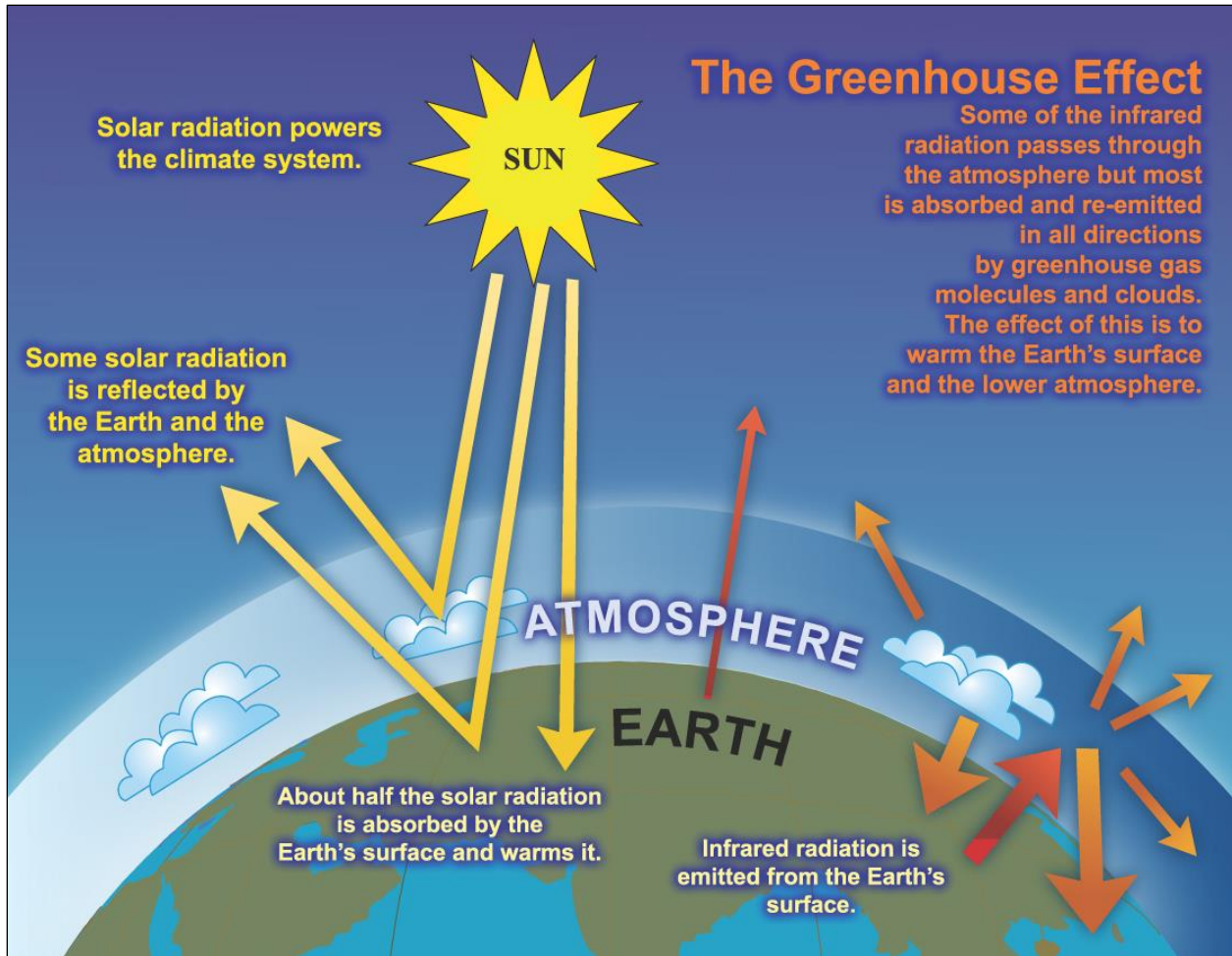
The term *air quality* refers to the relative concentrations of pollutants in the ambient air, generally expressed in units of micrograms per cubic meter. Multiple studies have demonstrated that ambient air quality has a direct effect on public health, public welfare, and the environment. Human exposure to air pollution can be linked to respiratory problems, hospitalization for heart or lung diseases, headaches, latent cancer, and premature death.

Air pollutants consists of gas and particle contaminants. Some pollutants are released directly into the atmosphere while other pollutants are formed in the air from chemical reactions. Air pollutants are emitted by vehicles, factories, power plants, natural events such as wildfires, and many other sources. Gaseous pollutants include sulfur dioxide, oxides of nitrogen, ozone, carbon monoxide, volatile organic compounds, toxic air pollutants and some gaseous forms of metals. Particle pollutants of concern are generally categorized by size as particulate matter PM₁₀ and PM_{2.5}, where PM₁₀ includes all airborne particles with diameters equal to or less than 10 micrometers, and PM_{2.5} includes the very fine particulate matter with diameters equal to or less than 2.5 micrometers. Particulate matter, especially fine particulate matter, contains microscopic solids or liquid droplets that are so small that they can penetrate deep into the lungs and cause serious health problems.

The air quality in an area is not only affected by the types and quantities of atmospheric pollutants and sources in the area, but also by the transport and dispersion of air pollutants, which is influenced by surface topography and the prevailing meteorological conditions.

3.2.1.2 Greenhouse Gases

Greenhouse gases in the earth's atmosphere help regulate the temperature of the planet by trapping solar heat (Intergovernmental Panel on Climate Change 2007). When solar radiation (sunlight) reaches the earth, part is reflected back into space, and about half is absorbed by the earth's surface and then re-emitted as infrared radiation. Figure 3.2-1 illustrates the greenhouse effect that occurs when gases in the earth's atmosphere absorb some of this emitted infrared radiation and cause the atmosphere's temperature to rise.



Source: Intergovernmental Panel on Climate Change 2007

Figure 3.2-1. The Greenhouse Effect

Carbon dioxide (CO₂) is the second most abundant greenhouse gas in the atmosphere after water vapor. It remains in the atmosphere for centuries and tends to mix quickly and evenly throughout the lower levels of the global atmosphere. Other greenhouse gases include methane, nitrous oxide, and industrial fluorinated gases.

3.2.2 Applicable Statutes, Regulations, and Terminology

3.2.2.1 Air Quality

Table 3.2-1 summarizes applicable statutes, regulations, and terminology governing air quality across the United States.

Table 3.2-1. Air Quality Statutes, Regulations, and Terminology

Statute, Regulation, or Term	Description
Ambient Air	The outdoor air in the surround environment. Regulators and scientist measure and report ambient air quality in terms of air pollutant concentration within a given volume of air, sometimes over a specified time period. The USEPA sets ambient air quality standards for pollutants considered harmful to public health and the environment and ensures that the states and tribes meet these standards.
Attainment Status	Air quality is generally reflected in what is called the region's attainment status. Federal regulations designate four categories for identifying compliance with the NAAQS: <ul style="list-style-type: none"> • Attainment: areas that meet the NAAQS for a criteria pollutant. • Nonattainment: areas in which a criteria pollutant concentration exceeds the NAAQS. • Unclassified: areas in which insufficient data exist to determine attainment status. • Maintenance: areas that were once designated as nonattainment areas but are not in attainment and are under a monitoring plan to maintain their attainment status.
Clean Air Act (42 USC 7401)	Federal law enacted in 1970 that authorizes the development and enforcement of comprehensive federal and state regulations to limit emissions from both stationary (industrial) sources and mobile sources. The principal framework for national, state, tribal, and local efforts to protect air quality. Individual states and tribes may set air quality standards that may be more stringent than the federal regulations, but states cannot enforce rules that are less stringent than the national standards.
Mandatory Class I Areas	For the purposes of PSD review, the federal government has identified mandatory Class I areas. As defined in the Clean Air Act, there are the following areas in existence as of August 7, 1977: national parks over 6,000 acres, national wilderness areas and national memorial parks over 5,000 acres, and international parks. State and tribal lands may be reclassified as Class I lands by applying for redesignation and meeting the requirements outlined in 40 CFR 52.21. In general, proposed projects that are located within 62 miles (100 kilometers) of Class I areas must evaluated impacts of the project on air quality related values such as visibility, flora/fauna, water quality, soils, and odor.
National Ambient Air Quality Standards (NAAQS) (40 CFR 50)	Set concentration thresholds for six common pollutants known to be harmful, called "criteria pollutants." Criteria pollutants are: sulfur dioxide, carbon monoxide, ozone, nitrogen dioxide, lead, and particulate matter. Air quality thresholds reflect concentrations measured during different timeframes (1-, 8-, and 24-hour and annual averages) in order to assess both short-term and long-term conditions that could affect human health. NAAQS include primary standards (set to protect public health) and secondary standards (set to protect public welfare).
National Emission Standards for Hazardous Air Pollutants (NESHAPS) (40 CFR 63)	Regulate 187 hazardous air pollutants, also known as toxic air pollutants.
Prevention of Significant Deterioration (PSD) (40 CFR 52.21)	These requirements, stipulated within the Clean Air Act, provide maximum allowable increases in concentration of pollutants for areas that are already in compliance with the NAAQS. The goal of the PSD program is to prevent the degradation of air quality in attainment or unclassified areas, while at the same time allowing for economic growth. The PSD program stipulates allowable increments of pollutant increases above baseline concentrations for Class I, II, and III areas. Because of their pristine environment, Class I areas have the smallest increments and thus allow only a small degree of air quality deterioration. Class II areas cover most of the United States and can accommodate normal well-managed industrial growth. Class III areas have the largest increments and thereby provide for a larger amount of development than either Class I or Class II areas; however, at this time, there are no Class III areas in the United States.
Sensitive Receptor	For the purposes of air quality, any area to which the general public has access. This includes residences, tribal lands, day care centers, educational and health facilities, places of worship, parks, and playgrounds.

CFR = Code of Federal Regulations; NAAQS = National Ambient Air Quality Standards; NESHAPS = National Emission Standards for Hazardous Air Pollutants; PSD = Prevention of Significant Deterioration; USC = United States Code; USEPA = U.S. Environmental Protection Agency

3.2.2.2 Greenhouse Gases

In 2007, the U.S. Supreme Court ruled in *Massachusetts v. EPA* that CO₂ and other greenhouse gases meet the definition of an air pollutant under the Clean Air Act. This ruling became the impetus for the federal government to initiate various actions to address greenhouse gas-related concerns. Federal regulation of GHGs primarily focuses on reporting and fuel efficiency standards. Table 3.2-2 summarizes recent relevant federal regulations and other actions and introduces relevant terminology used to characterize greenhouse gas and climate change impacts within this PEIS. In recent years, various states and regional organizations have also initiated actions to address greenhouse gas emissions. These include initiatives aimed at the power, transportation, and building sectors. Examples include the regional greenhouse gas cap-and-trade initiative in the Northeast and California’s low-carbon fuel standard.

Table 3.2-2. Greenhouse Gases and Climate Change Statutes, Regulations, and Terminology

Statute, Regulation, or Term	Description
Executive Order (EO) 13834, Efficient Federal Operations	EO 13834, signed on May 17, 2018 requires federal agencies to reduce building energy use and implement energy efficiency measures that reduce costs; meet statutory requirements relating to the consumption of renewable energy and electricity; reduce potable and non-potable water use, and ensure that new construction and major renovations conform to applicable building energy efficiency requirements and sustainable design principles; consider building efficiency when renewing or entering into leases; implement space utilization and optimization practices; and periodically report on energy management practices and performance, water savings, and greenhouse gas reductions.
Building Energy Codes	Building energy codes also affect energy usage in residential buildings, and therefore play an important role in mitigating greenhouse gas emissions (DOE 2018). The International Code Council develops the International Energy Conservation Code (IECC), with active participation from the U.S. Department of Energy. The United States does not have a national building energy code. Instead, building energy codes are typically incorporated into state and municipal laws and regulations; states and municipalities can choose to use the IECC, modify it, or develop their own building energy code. Building energy codes normally include requirements such as insulating building walls and ceilings, minimizing air leakage, and requiring energy-efficient doors and windows. Typically, new construction or significantly altered buildings must comply with the current version of the state or local code.
Greenhouse Gas	Gases in the Earth’s atmosphere that absorb radiated energy and cause the temperature of the atmosphere to rise. Greenhouse gases may be naturally occurring or manmade, and include water vapor, CO ₂ , ozone, methane, nitrous oxide, and several halogenated substances that contain fluorine, chlorine, or bromine (including chlorofluorocarbons, or CFCs). After water vapor, CO ₂ is the most abundant greenhouse gas and could remain in the atmosphere for centuries. Scientists believe rising concentrations of greenhouse gases are contributing to climate change.

Source: DOE 2018

CFC = chlorofluorocarbon; CO₂ = carbon dioxide; EO = Executive Order; IECC = International Energy Conservation Code

3.2.3 Existing Conditions

3.2.3.1 Air Quality

This section describes air quality throughout the United States in general terms and provides information on air quality trends. A nationwide approach was chosen as the unit of analysis for air quality.

Unit of Analysis VA Regional Loan Centers

Measuring and Managing Air Quality

States and municipalities assess the air quality within their jurisdiction by measuring pollutant levels within regional boundaries. These can be either political boundaries such as counties or municipal areas, or “air basin” boundaries such as those used in California that are determined by grouping together areas with similar geographical and meteorological features.

Air monitoring stations are strategically located throughout the United States to assess air quality. These stations contain instruments owned and operated by state agencies and cooperating local agencies, including tribes. The instruments measure air pollutant concentrations relevant to that regional area and often measure meteorological conditions like wind speed and temperature.

States and localities use the measured ambient air quality levels to determine major sources of criteria pollutants, track concentrations of air pollution over time, and determine compliance with National Ambient Air Quality Standards (NAAQS) and the state ambient air quality standards.

The Clean Air Act requires states with nonattainment areas submit to the USEPA a State Implementation Plan (SIP) for the attainment and maintenance of the NAAQS. Conformance with the SIP means conformity to the approved SIP’s purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards. The need to demonstrate conformity is applicable only to nonattainment and maintenance areas.²²

According to the USEPA, approximately 123 million people nationwide live in counties with at least one criteria pollutant above the primary NAAQS (USEPA 2018b). Table 3.2-3 presents the number of nonattainment areas in the United States, as of March 2018.

Table 3.2-3. Number of U.S. Counties Designated Nonattainment for NAAQS

	Pollutant and Year USEPA Implemented the Standard ^{a, b}								
	Ozone	PM _{2.5}			PM ₁₀	SO ₂		Lead	
	2008	2017	2006	1997	1987	2010	1971	2008	1978
Number of Counties in Nonattainment	176	20	41	23	40	46	9	17	2

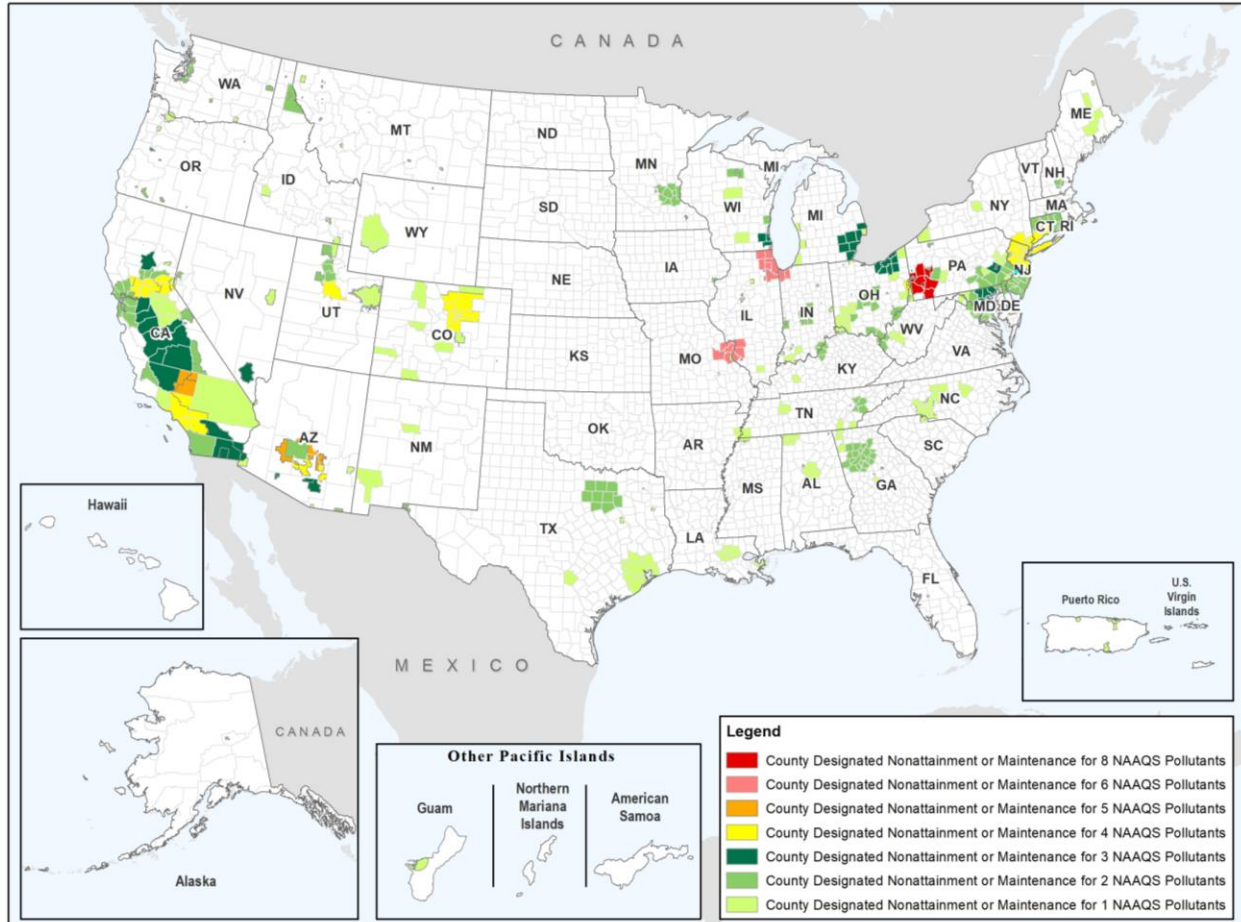
Source: USEPA 2018c

^a The NO₂ nonattainment area became a maintenance area on September 22, 1998. The 8-hour ozone (1997) standard was revoked on April 6, 2015, and the 1-hour ozone (1979) standard was revoked on June 15, 2005. All carbon monoxide areas were redesignated to maintenance areas as of September 27, 2010.

^b The year(s) listed in the table for each pollutant indicate when USEPA promulgated the standard for that pollutant. NAAQS = National Ambient Air Quality Standards; NO₂ = nitrogen dioxide; PM_{2.5} = particulate matter of diameter 2.5 microns or less; PM₁₀ = particulate matter of diameter 10 microns or less; SO₂ = sulfur dioxide; U.S. = United States; USEPA = U.S. Environmental Protection Agency

²² 40 CFR 51; 40 CFR 93.

Figure 3.2-2 graphically presents the counties in the United States designated nonattainment or maintenance for NAAQS. Included in the counts are counties designated for NAAQS and revised NAAQS pollutants; partial counties, those with part of the county designated nonattainment and part attainment, are shown as full counties on the map.



Note: Revoked 1-hour (1979) and 8-hour ozone (1997) are excluded. Also, Guam is not included in the figure, but Piti and Tanguisson counties are designated nonattainment for the sulfur dioxide NAAQS.
 NAAQS = National Ambient Air Quality Standards; U.S. = United States

Figure 3.2-2. Counties Designated “Nonattainment” or “Maintenance” for NAAQS

Nationwide Air Quality Trends

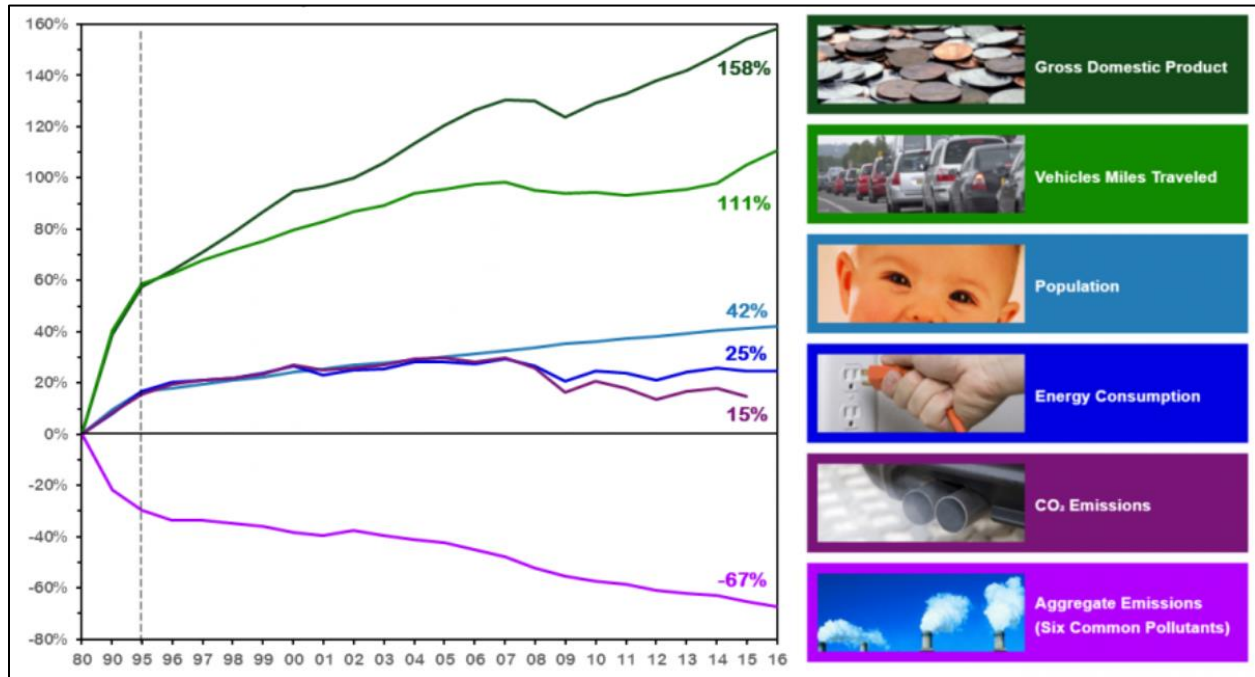
In 2016, about 78 million tons of pollution were emitted into the atmosphere in the United States. These emissions mostly contribute to the formation of ozone and particles, the deposition of acids, and visibility impairment. Overall though, air quality in the United States has greatly improved over the last few decades. Using measurements from air monitoring stations located across the country, the USEPA analyzes trends in ambient air pollutant concentrations. USEPA reports that nationally, concentrations of the criteria and hazardous air pollutants (as measured in 2016) have dropped significantly since 1990 and from 2010, as shown in Table 3.2-4. In addition, from 1990 to 2014 emissions of air toxics declined by 68 percent, largely driven by federal and state implementation of stationary (e.g., factories, power plants) and mobile (e.g., vehicles) source regulations.

Table 3.2-4. Percent Reduction in Average Criteria Pollutant Concentrations Nationwide

Pollutant	Percent Reduction, as of 2016	
	Compared to 1990	Compared to 2010
Carbon monoxide (8-hour)	77%	14%
Lead (3-month average)	99%	77%
Nitrogen dioxide (annual)	56%	20%
Nitrogen dioxide (1-hour)	50%	15%
Ozone (8-hour)	22%	5%
Particulate matter with a diameter of 10 microns or less (24-hour)	39%	9%
Particulate matter with a diameter of 2.5 microns or less (annual)	42%	22%
Particulate matter with a diameter of 2.5 microns or less (24-hour)	44%	23%
Sulfur dioxide (1-hour)	85%	56%

Source: USEPA 2018b

Figure 3.2-3 presents a comparison between national growth trends and air quality over time. The graphs show that between 1980 and 2016, gross domestic product increased 158 percent, vehicle miles traveled increased 111 percent, energy consumption increased 25 percent, and U.S. population grew by 42 percent. Yet, during the same time period, total emissions of the six principal air pollutants dropped by 67 percent. The graph also shows that between 1980 and 2015, CO₂ emissions increased by 15 percent.



Source: USEPA 2018b

CO₂ = carbon dioxide

Note: CO₂ emissions estimate through 2015.

Figure 3.2-3. Comparison of Growth Areas and Emissions, 1980–2016

Air Quality Index

Another measure of air quality used by the USEPA and many states is the Air Quality Index (AQI). The AQI is a human health-based measure of overall air quality that takes into account the criteria pollutants measured within an area (AirNow 2018). As shown in Table 3.2-5, an AQI value of 50 or less is considered “good” air quality; 51-100 is considered “moderate”; 101-150 is considered unhealthy for sensitive groups; and values of 151 or higher range from “unhealthy” to “hazardous.” Members of the public can learn real-time AQI levels across the United States at the AirNow.gov website, which was developed by the USEPA, National Oceanic and Atmospheric Administration (NOAA), NPS, and state, tribal, and local agencies. States issue air pollution health advisories when forecasted air quality conditions are expected to be approaching unhealthy AQI levels and issue air pollution health alerts when the air is expected to be unhealthy for sensitive groups or higher than the AQI. Elevated AQI levels are typically a result of high levels of fine particles or ozone. In areas without air pollution monitors, states estimate air quality conditions using the results from monitors in surrounding areas, if available.

Table 3.2-5. Air Quality Index Descriptor Categories and Health Effects

AQI Range	Descriptor Category	Health Effects	Cautionary Statements
0–50	Good	No health impacts are expected when air quality is in this range.	Air pollution poses little to no risk.
51–100	Moderate	Air quality is acceptable.	For some pollutants, there may be a moderate health concern for a small number of people. For example, people who are unusually sensitive to ozone may experience respiratory symptoms.
101–150	Unhealthy for Sensitive Groups	Increased likelihood of respiratory symptoms and breathing discomfort in sensitive groups.	Active children and adults, and people with respiratory diseases, such as asthma, should limit prolonged outdoor activity.
151–200	Unhealthy	Greater likelihood of respiratory symptoms and breathing difficulty in sensitive groups.	Active children and adults, and people with respiratory diseases, such as asthma, should avoid heavy outdoor exertion. Everyone else, especially children, should limit heavy outdoor exertion.
201–300	Very Unhealthy	Increasingly severe symptoms and impaired breathing likely in sensitive groups.	Active children and adults, and people with respiratory diseases, such as asthma, should avoid all outdoor exertion. Everyone else, especially children, should limit outdoor exertion.
301 and above	Hazardous	Severe respiratory effects and impaired breathing likely in sensitive groups.	Everyone should avoid all outdoor exertion.

Source: AirNow 2018
AQI = Air Quality Index

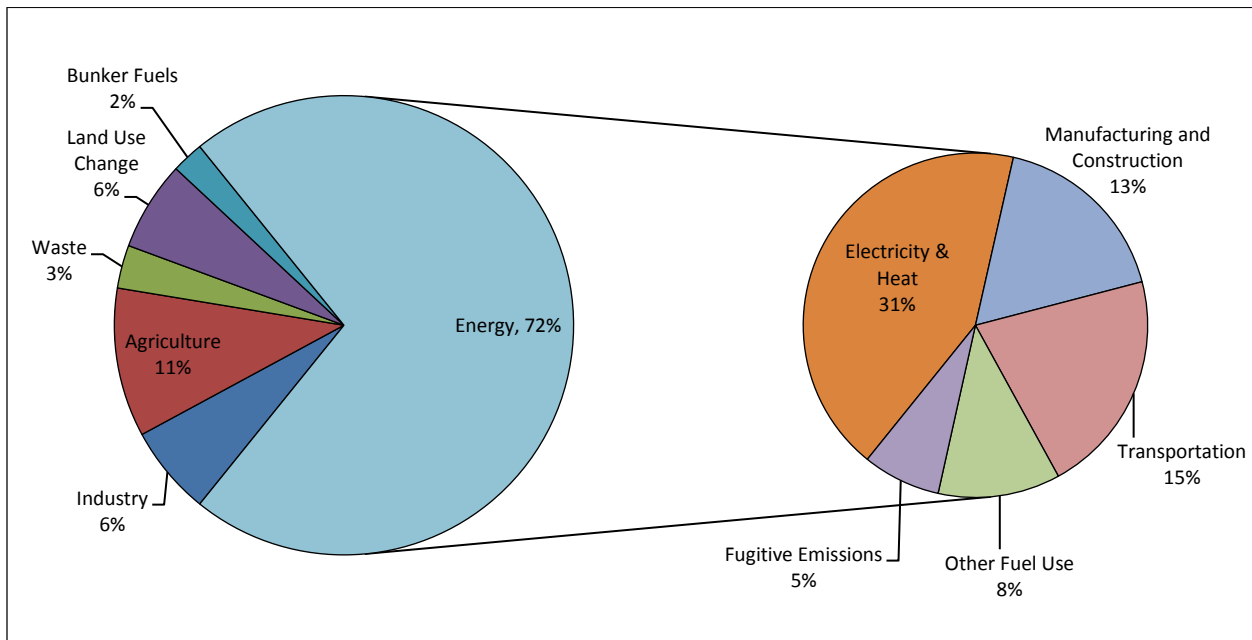
3.2.3.2 Greenhouse Gases

Global Greenhouse Gas Trends

Global greenhouse gas emissions have increased steadily since the onset of the Industrial Revolution around 250 years ago, with the rate of emissions accelerating rapidly in the 20th century. For example, approximately half of all CO₂ emissions from human activity have occurred in the decades since 1970 (Intergovernmental Panel on Climate Change 2014). Global greenhouse gas emissions equaled 48,892 million metric tons carbon dioxide equivalent (CO₂ eq) in 2014, up from 33,823 million metric tons CO₂-eq in 1990 and 22,341 million metric tons CO₂-eq in 1970 (European Commission 2018; World Resources Institute 2018).

Carbon Dioxide Equivalent (CO₂) – CO₂-eq is a measurement used to quantify greenhouse gases based on the collective global warming potential of all greenhouse gases present, using the global warming potential of CO₂ as the reference.

Human activities from all sectors of the economy emit greenhouse gases into the atmosphere. Notably, energy generation, transportation, and industrial and agricultural activities release CO₂, methane, nitrous oxide, ozone, and chlorofluorocarbons (Intergovernmental Panel on Climate Change 2014). Figure 3.2-4 shows the contribution to global emissions by economic sector.

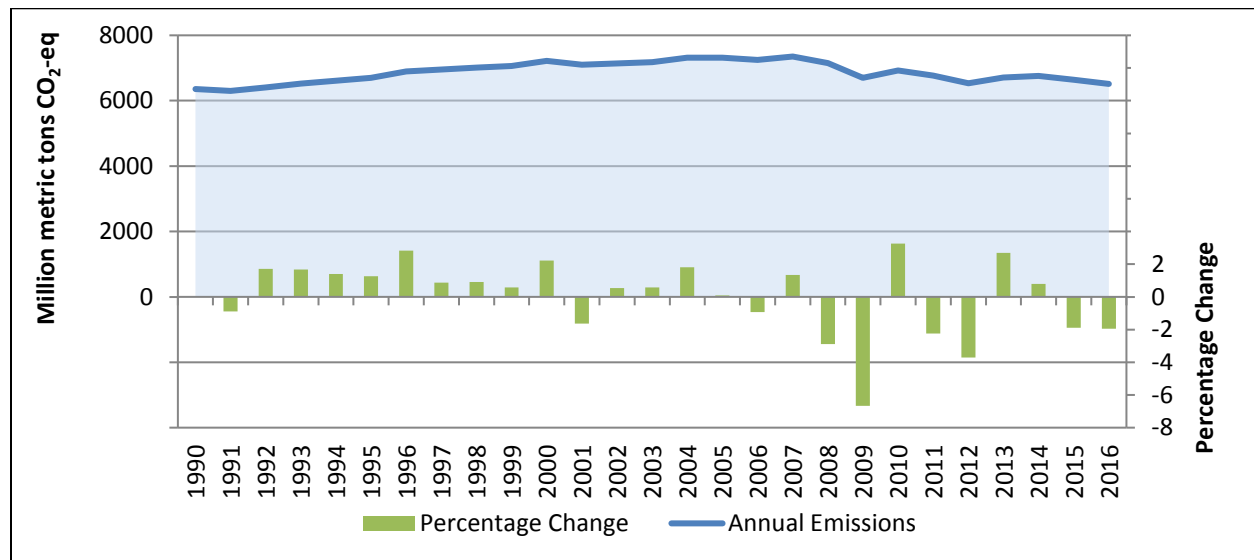


Source: World Resources Institute 2018, based on 2014 emissions data.
 Note: All ratios are expressed in terms of CO₂-eq. Energy sub-sector emissions, shown as percentage of total global emissions, add up to 72 percent.

Figure 3.2-4. Global Greenhouse Gas Emissions by Economic Sector

Trends in U.S. Emissions

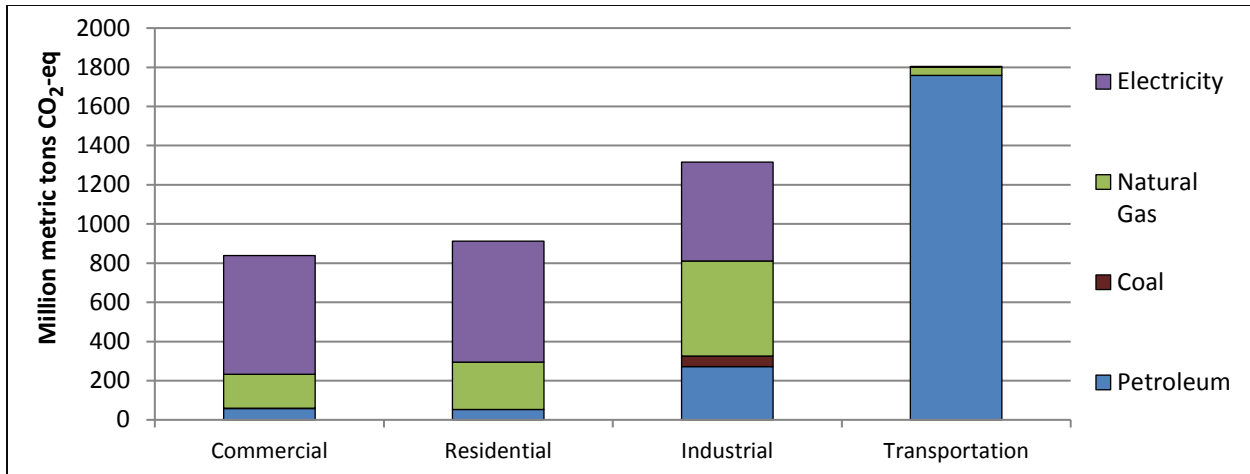
Within the United States, overall greenhouse gas emissions in 2017 totaled approximately 6,457 million metric tons CO₂-eq (USEPA 2019a). Annual greenhouse gas emissions in 2017 were 1.3 percent above 1990 levels. Figure 3.2-5 shows annual U.S. greenhouse gas emissions and annual percentage change in greenhouse gas emissions. The growth in U.S. greenhouse gas emissions was relatively continuous until 2007, with an average annual growth rate of 1 percent. Emissions decreased significantly following the economic crisis of 2008 and have since remained at approximately 10 percent below 2007 levels.



Source: USEPA 2019a
CO₂-eq = carbon dioxide equivalent; U.S. = United States

Figure 3.2-5. Trends in U.S. Greenhouse Gas Emissions, 1990 to 2017

Fossil fuel combustion is the predominant source of greenhouse gas emissions in the United States, accounting for nearly 80 percent of cumulative greenhouse gas emissions since 1990. Emissions of CO₂ from fossil fuel combustion equaled approximately 4,912 million metric tons in 2017, which equals 76 percent of total U.S. greenhouse gas emissions in 2017. Figure 3.2-6 shows the relative contribution of fossil fuels and sectors to total U.S. CO₂ emissions. Emissions from power generation have been attributed to the four “end use” sectors (commercial, residential, industrial, and transportation), based on each sector’s share of aggregate electricity consumption (USEPA 2019a).



Source: Developed from USEPA 2019a, Tables ES-3 and 3-5.

Note: Power generation emissions are attributed to coal (69 percent), natural gas (30 percent), and petroleum (1 percent). CO₂-eq = carbon dioxide equivalent; U.S. = United States

Figure 3.2-6. U.S. Greenhouse Gas Emissions in 2017 by Fuel and End-Use Sector

In 2017, the residential sector accounted for 912 million metric tons of CO₂ emissions from fossil fuel use, or approximately 15 percent of U.S. greenhouse gas emissions. In addition, the residential sector contributes to greenhouse gas emissions associated with waste management and wastewater treatment. In 2017, municipal solid waste landfills emitted approximately 103 million metric tons CO₂-eq of methane. Note that this also includes municipal solid waste from non-residential activities such as offices. The treatment of domestic wastewater emitted approximately 14 million metric tons CO₂-eq of methane and nitrous oxide in 2017 (USEPA 2019a).

Climate Change

Established by the World Meteorological Organization and the United Nations Environment Programme, the Intergovernmental Panel on Climate Change (IPCC) assesses scientific, technical, and socioeconomic information relevant to the understanding of climate change, potential impacts, and adaptation and mitigation options (Intergovernmental Panel on Climate Change 2014). The IPCC defines climate change as a measurable change, over time, in the state of the climate. Since the 1950s, scientists have observed warming temperatures in both the atmosphere and oceans. Average global surface temperatures increased 1.33°F from 1900 to 2000 (Intergovernmental Panel on Climate Change 2013). Varying scenarios predict an average global surface temperature increase of between 2°F and 11°F over the next 100 years (Intergovernmental Panel on Climate Change 2013). Resulting from the increased temperatures, snowfall and ice amounts have decreased and correspondingly, sea levels have risen. Causes of this change include both natural and human-caused GHG emissions (Intergovernmental Panel on Climate Change 2014).

3.3 BIOLOGICAL RESOURCES

This section describes biological resources of the United States and its Territories to include a description of the resource, applicable statutes and regulations, and the existing conditions of biological resources on a nationwide scale.

3.3.1 Description of the Resource

Biological resources include the flora (vegetation), fauna (mammals, birds, reptiles, amphibians, fish, insects, and invertebrates), and the habitats in which they exist. Species evaluation requires an analysis of their behaviors, groupings, and interactions within the overall habitat and, larger still, ecosystems within which they are found. Habitats can be simply defined as the environmental factors that provide food, water, cover, and space that living things need to survive and reproduce. Habitat protection is crucial to the preservation of biological resources. Habitat loss is the driving force behind today's decline in species and biodiversity (USFWS 2018a). Biodiversity refers to the number and variety of species within a habitat and is often used as a health indicator for an ecosystem. The condition of the current resident flora and fauna species as well as the habitat conditions are what constitute a baseline for the ecosystem being examined.

3.3.2 Applicable Statutes, Regulations, and Terminology

Table 3.3-1 summarizes applicable statutes, regulations, and relevant terminology for biological resources.

Table 3.3-1. Biological Resource Statutes, Regulations, and Terminology

Statute, Regulation, or Term	Description
Bald and Golden Eagle Protection Act of 1940 (16 USC 668 et seq.)	Affords bald and golden eagles certain protections: no taking of eagles allowed or disturbing their nests, including the establishment of buffers from construction activities during the nesting season.
Endangered Species Act (ESA) of 1973 (16 USC 1531 et seq.)	<p>Prohibits the unauthorized take of federally protected species. The ESA also protects the critical habitat of federally protected species.</p> <p>Section 7 of the ESA requires all federal agencies to ensure, to the best of their ability, that any action they authorize, fund, or implement would not jeopardize the continued existence of a federally protected species or adversely modify its designated critical habitat. Critical habitat refers to the geographic areas that contain features essential for the conservation of a threatened or endangered species.</p> <p>Before a species can receive the protection provided by the ESA, it must first be added to the federal lists of endangered and threatened wildlife and plants. The ESA recognizes four different designations for species:</p> <p><u>Endangered</u> – species, subspecies, or varieties in danger of extinction throughout all or a significant portion of their range.</p> <p><u>Threatened</u> – species, subspecies, or varieties likely to become endangered within the foreseeable future.</p> <p><u>Proposed</u> – a species for which a proposed regulation, but not a final rule, has been published in the FR. Proposed species are not protected by the ESA.</p> <p><u>Candidate</u> – a species under consideration for listing as endangered or threatened, but for which a proposed regulation has not yet appeared in the FR. Candidate species are not protected by the ESA.</p>

Table 3.3-1. Biological Resource Statutes, Regulations, and Terminology

Statute, Regulation, or Term	Description
Executive Order (EO) 11990 Protection of Wetlands	Federal agencies must provide leadership and take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. Each agency must avoid undertaking or assisting with new construction located in wetlands unless there is no practical alternative to such construction; the Proposed Action includes all practical measures to minimize harm to wetlands that may result from such use. Each agency must also provide opportunity for early public review of any plans or proposals for new construction in wetlands.
EO 13112, Invasive Species, and EO 13751, Safeguarding the Nation from Impacts of Invasive Species	EO 13112 required federal agencies to prevent introducing and spreading invasive species and to support efforts to seek control and elimination of invasive species. EO 13751 amends certain elements of EO 13112 while further strengthening coordinated, cost-efficient federal prevention and control efforts related to invasive species. Invasive species are non-native (or alien) to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health.
EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds	Directs federal agencies to work together to promote conservation of migratory bird populations.
Federal Noxious Weed Act of 1974 (7 USC 2801)	Mandates control of noxious weeds by limiting weed seed transport from infested areas to non-infested areas, which can occur with construction activities. Noxious weeds are non-native plants species that are more competitive than native species and have negative economic impacts upon agriculture and water availability.
Migratory Bird Treaty Act of 1918 (16 USC 703 et seq.)	Prohibits taking, possessing, importing, selling, or bartering any migratory native bird, eggs, feathers, or nests. Provides protection to native bird species that belong to a family or group of species present in the in the United States and its Territories as well as Canada Japan, Mexico, or Russia. This excludes game birds that may be hunted in season. Non-native species are not protected.
Marine Mammal Protection Act of 1972 (16 USC 1361 et seq.)	Protects marine mammals that rely on the ocean and other marine ecosystems for survival from human harassment, hunting, or killing. Example of marine mammals include dolphins, whales, manatees, sea otters, and polar bears. Protection falls under the USFWS and NOAA/NMFS.
Neotropical Migratory Bird Conservation Act (NMBCA) (16 USC 6101 et seq.)	Addresses migratory bird population needs on a continental scale and conserves birds throughout their life cycles. Provides matching grants to Neotropical migratory bird conservation projects in the Western Hemisphere, with at least 75 percent of funding going to projects outside the United States. These project grants support work in other countries to sustain healthy bird populations.
North American Wetlands Conservation Act (NAWCA) (16 USC 4401 et seq.)	Provides funding and administrative direction for implementation of the North American Waterfowl Management Plan. The goal of the NAWCA is to increase bird populations and wetland habitat, while supporting local economies and American traditions such as hunting, fishing, bird watching, family farming, and cattle ranching.
Take	The harassment, harm, pursuit, hunting, shooting, wounding, killing, trapping, capture, or collection of a protected species or the attempt to engage in any such conduct.

Source: USFWS 2018b

EO = Executive Order; ESA = Endangered Species Act; FR = *Federal Register*; NAWCA = North American Wetlands Conservation Act; NMBCA = Neotropical Migratory Bird Conservation Act; NMFS = National Marine Fishing Service; NOAA = National Oceanic and Atmospheric Administration; USC = United States Code; USFWS = United States Fish and Wildlife Service

3.3.3 Existing Conditions Nationwide

This section describes biological resources throughout the United States in general terms and provides additional details on migratory birds as well as threatened and endangered species. USEPA Ecoregions were selected as the unit of analysis for this resource area. Section 3.0, Affected Environment, Introduction, has a more detailed discussion on units of analysis and presents a figure of the USEPA Ecoregions.

Unit of Analysis USEPA Ecoregions (Level 1)

Ecoregions are areas where ecosystems and the type, quality, and quantity of environmental resources are generally similar. This broad ecoregion approach is appropriate given the nationwide extent of the Proposed Action and considering the varied ecological conditions present throughout the United States and its Territories.

Ecoregions are classified based upon similarities or differences between abiotic, biotic, terrestrial, and aquatic components, which include geology, landforms, soils, vegetation, climate, land use, wildlife, and hydrology. A Roman numeral classification system has been used to describe the different levels of ecoregions, ranging from general regions to more detailed (Omernik 1987), and the USEPA uses this system to describe ecoregions for classification and analysis. This PEIS will use the broad Level I category that identifies 12 ecoregions in the continental United States (depicted in Figure 3.0-2 in Section 3.0, Affected Environment, Introduction). Level I ecoregions are: Tundra, Taiga, Northern Forests, Northwestern Forested Mountains, Marine West Coast Forests, Eastern Temperate Forests, Great Plains, North American Deserts, Mediterranean California, Southern Semi-Arid Highlands, Temperate Sierras, and Tropical Wet Forests (USEPA 2018a). Table 3.3-2 describes the 12 ecoregions.

Ecoregions for the Hawaiian Islands, American Samoa, Guam, and the Commonwealth of Northern Marianas Islands in the Pacific Ocean as well as the Commonwealth of Puerto Rico and the U.S. Virgin Islands in the Atlantic Ocean are not described in this table or on the accompanying map. The unique flora, fauna, and overall ecosystem of each island necessitates they are categorized separately from the continental United States and from each other. See discussion of the ecoregions for these areas in Section 3.3.3.1, Ecoregions of Hawaii and Territories.

Table 3.3-2. Level I Ecoregions of the United States

Ecoregion Name	Description	Main Commercial Activity
Tundra	<p>This ecoregion covers the northern part of Alaska. The landscape is diverse, ranging from vast grassland-like plains to stark, bold mesas; from ice-covered lakes to snow-free uplands. The climate ranges from long, dark, cold winters to short, cool summers with long periods of daylight. It is characterized by dwarf shrubs that decrease in size moving north, with very low and flattened plants being most characteristic of the northern and central locales. Typical shrubs include dwarf birch, willows, and heath species mixed with various herbs and lichens. Wetlands are common in the low-lying areas, supporting sedge and moss covers.</p> <p>The region includes the major summer range and calving grounds for Canada's largest caribou herds, the barren ground caribou in the west and the woodland caribou in the east. Other mammals include grizzly bear, musk ox, Arctic fox, Arctic hare, polar bear, wolf, moose, Arctic ground squirrel, and lemming. The area is also a major breeding and nesting ground for a variety of migratory birds. Representative species include snow, Brant, and Canada geese; yellow-billed, Arctic, and red-throated loons; whistling swans; long-tailed ducks; gyrfalcons; willow and rock ptarmigan; red-necked phalarope; parasitic jaeger; snowy owls; hoary redpoll; and snow bunting. In the adjacent marine environment, typical species include walrus, seal, beluga whale, and narwhal. In the summer months, California gray whales migrate here to feed.</p>	Hunting, trapping, fishing, mining, petroleum, tourism, and construction
Taiga	<p>This ecoregion covers central Alaska. This ecoregion has innumerable lakes, bogs, other wetlands, and forests interwoven with open shrublands and sedge meadows more typical of the tundra. From south to north, forests become open and form woodlands with a characteristic groundcover of lichens, which merge into areas of tundra. Along the northern edge of this ecological region, the latitudinal limits of tree growth are reached. In the transition zone, dwarf birch, Labrador tea, willow, bearberry, mosses, and sedges are dominant. Mixed wood associations of white and black spruce, lodgepole pine, trembling aspen, balsam poplar, and white birch are found on well-drained and warm upland sites, as well as along rivers and streams.</p> <p>Characteristic mammals include moose, woodland caribou, wood bison, wolf, black bear, marten, lynx, snowshoe hare, Arctic fox, and Arctic ground squirrel. The abundance of water attracts hundreds of thousands of birds (e.g., ducks, geese, loons, and swans) which come to nest, or rest and feed on their way to Arctic breeding grounds. Common bird species include the common redpoll, gray jay, common raven, red-throated loon, northern shrike, sharptailed grouse, and fox sparrow. Fish-eating raptors include the bald eagle, peregrine falcon, and osprey. In the marine environment, representative species include walrus and seal.</p>	Hunting, trapping, fishing, mining, petroleum, forestry, and tourism
Northern Forest	<p>This ecoregion covers a small part of the north and northeastern section of the United States. It is distinguished by boreal forests and a high density of lakes. Over 80 percent forested, the region generally supports closed stands of conifers, such as white and black spruce, jack pine, balsam fir, and tamarack. Towards the south and the Maritimes, there is a wider distribution of white birch, trembling aspen, balsam poplar, white and red pine, sugar maple, beech, red spruce, and various species of oak. Areas of shallow soils and exposed bedrock are common and tend to be covered with a range of plant communities, dominated by lichens, shrubs, and forbs.</p> <p>Characteristic mammals include woodland caribou, white-tailed deer, moose, black bear, raccoon, marten, fisher, striped skunk, lynx, bobcat, and eastern chipmunk. Representative birds include boreal and great horned owl, blue jay, and evening grosbeak.</p>	Forestry, mining, and fishing

Table 3.3-2. Level I Ecoregions of the United States

Ecoregion Name	Description	Main Commercial Activity
Northwestern Forested Mountains	<p>This ecoregion covers parts of Northern California and Colorado mountains extending north into sections of Alaska. It contains the highest mountains of North America and some of the most diverse ecosystem types, ranging from alpine tundra to dense conifer forests to dry sagebrush and grasslands. These ecosystems were combined into one ecoregion because the topography of the same mountain chain traversing the entire length.</p> <p>Vegetative cover is extremely diverse: alpine environments contain various herb, lichen, and shrub associations; whereas the subalpine environment has tree species such as lodgepole pine, subalpine fir, silver fir, grand fir, and Engelmann spruce. With decreasing elevation, the vegetation of the mountainous slopes and rolling plains turns into forests characterized by ponderosa pine, interior Douglas fir, lodgepole pine, and trembling aspen in much of the southeast and central portions and western hemlock, western red cedar, Douglas fir, and western white pine in the west and southwest. White and black spruce dominate the plateaus of the north. Shrub vegetation found in the dry southern interior includes big sagebrush, rabbit brush, and antelope brush.</p> <p>Characteristic mammals include mule deer, elk, moose, mountain goat, California bighorn sheep, coyote, black and grizzly bear, hoary marmot, and Columbian ground squirrel. Typical bird species include blue grouse, Steller's jay, and black-billed magpie.</p>	Forestry, mining, and tourist areas for skiing, hiking, and other outdoor recreational pursuits
Marine West Coast Forests	<p>This ecoregion covers the mainland and offshore islands of the Pacific Coast from Alaska south to northern California. The wettest climates of North America occur in this ecoregion. It is characterized by mountainous topography bordered by coastal plains and contains most of the temperate rain forests found in North America. Variations in altitude create widely contrasting ecological zones within the region. They range from mild, humid coastal rain forest to cool boreal forests, and alpine conditions at higher elevations. The temperate coastal forests are composed of mixtures of western red cedar, yellow cedar, western hemlock, Douglas fir, Pacific silver (amabilis) fir, Sitka spruce, California redwood, and red alder. Many of these trees reach very large dimensions and live to great age, forming ancient or old growth forests. In the drier rain-shadow areas, Garry oak and Pacific madrone occur with Douglas fir. Sub-alpine forests are characterized by mountain hemlock and amabilis fir. Alpine tundra conditions are too severe for growth of most woody plants except in dwarf form. This zone is dominated by shrubs, herbs, mosses, and lichens.</p> <p>Characteristic mammals include the black-tailed deer, black and grizzly bear, elk, wolf, otter, and raccoon. Bird species unique to this area include California and mountain quail and chestnut-backed chickadee. Many seabirds are prevalent, including marbled murrelets, and several species of cormorants, gulls, mures, petrels, and puffins. Other representative birds are northern pygmy-owls, Steller's jays, and northwestern crows. Adjacent marine environments are typified by large numbers of whales (including the killer whale), sea lions, seals, and dolphins. Salmon, steelhead, and associated spawning streams are located throughout this area.</p>	Forestry, tourism, and fishing

Table 3.3-2. Level I Ecoregions of the United States

Ecoregion Name	Description	Main Commercial Activity
Eastern Temperate Forest	<p>This ecoregion extends from the Great Lakes in the north to the Gulf of Mexico in the south. From the Atlantic Coast, it extends westward approximately into eastern Texas, Oklahoma, Missouri, Iowa, and Minnesota. It is distinguished by its moderate to mildly humid climate, and its dense and diverse forest cover consisting mostly of tall broadleaf, deciduous trees, and needle-leaf conifers. Beech-maple and maple-basswood forest types occur widely especially in the eastern reaches of this region. Mixed oak-hickory associations are common in the Upper Midwest, changing into oak-hickory-pine mixed forests in the south and the Appalachians.</p> <p>These forests have a diversity of tree, shrub, vine, and herb layers. While various species of oaks, hickories, maples, and pines are common, other wide-ranging tree species include ashes, elms, black cherry, yellow poplar, sweet gum, basswood, hackberry, common persimmon, eastern red cedar, and flowering dogwood.</p> <p>Mammals of the region include the coyote, opossum, armadillo, white-footed mouse, gray squirrel, eastern chipmunk, raccoon, porcupine, gray fox, bobcat, white-tailed deer, and black bear. The region has extremely diverse populations of birds, fish, reptiles, and amphibians.</p>	<p>Urban and suburban industries, agriculture, and some forestry</p>
Great Plains	<p>This ecoregion covers a large area in the central part of the United States, extending from Canada south to Mexico. It is distinguished by relatively little topographic relief; grasslands, few forests, and subhumid to semiarid climate. Native prairie vegetation ranges from grama grass, wheatgrass, and bluestem prairie in the north to different shrub and grassland combinations (e.g., mesquite-acacia savanna and mesquite-live oak savanna) and grassland and forest combinations (e.g., juniper-oak savanna and mesquite-buffalo grass) in the south. There are also patches of blackland prairie, bluestem-scachuista, and southern cordgrass prairie in the southern United States. The eastern border of the region shows patterns of grassland and forest combinations mixed with oak-hickory forest. There are few native deciduous trees that occur, except in the eastern regions or in very sheltered locations along waterways or at upper elevations.</p> <p>Prairie wetlands provide major breeding, staging, and nesting habitat for migratory waterfowl using the central North American flyway. A disproportionately high number of rare, threatened, vulnerable, and endangered species are identified within this ecoregion because of the draining of wetlands and conversion of wildlife habitat for agriculture, industry, and urban development. Common mammals are prairie dogs, mice, gray squirrel, skunk, raccoon, armadillo, rabbit, gray fox, bobcat, white-tailed deer, and coyote. Common birds are songbirds, quail, pheasant, crow, vultures, owls, hawks, and falcons. Numerous species of reptiles are present.</p>	<p>Agriculture (farming and ranching), tourism</p>
North American Deserts	<p>This ecoregion covers eastern Washington south to southern California, extending east to New Mexico and north to sections of Wyoming. It is distinguished by its aridity, unique shrub and cactus vegetation with a lack of trees, dominated by low growing shrubs and grasses, and lower relief and elevations. Most of the northern grasslands have been converted to agriculture and, in some areas, the sagebrush steppe is being invaded by western juniper and cheatgrass. The Great Basin is characterized by sagebrush, with shadscale and greasewood on more alkaline soils. Creosote bush is common in the Mojave desert, which also contains the distinctive Joshua tree.</p>	<p>Agriculture (farming and ranching), mining, tourism, and recreation</p>

Table 3.3-2. Level I Ecoregions of the United States

Ecoregion Name	Description	Main Commercial Activity
North American Deserts (cont'd)	<p>The Sonoran desert has greater structural diversity in its vegetation than the other North American deserts that are dominated by low shrubs. Paloverde-cactus shrub vegetation includes various types of cacti, such as saguaro, cholla, and agave. Plants of the Chihuahuan desert scrub are often shorter with sparser foliage than similar plants of the Sonoran or Mojave deserts. Tarbush and creosote bush are dominant shrubs, and grasses are intermixed throughout much of the Chihuahuan desert. The bajadas and hills include ocotillo, Joshua tree, lechuguilla, and prickly pear.</p> <p>Larger mammals are not abundant but include mule deer, pronghorn antelope, coyotes, bobcats, and badgers. Feral burros and feral horses are also found. Jackrabbits, cottontail rabbits, ground squirrels, kangaroo rats, mice, and bats are the most common mammals. Birds include golden eagles, several western hawk species, ravens, roadrunners, mourning doves, and black-throated sparrows. Some birds are characteristic of the sagebrush communities, such as the sage thrasher, sage sparrow, and sage grouse, while others are restricted to the southern warmer deserts, e.g., Gambel's quail, scaled quail, Gila woodpecker, Costa's hummingbird, and curve-billed thrasher. Reptiles include the gopher snake, various species of rattlesnake, sagebrush lizard, horned lizard, geckos, Gila monster, and desert tortoise.</p>	
Mediterranean California	<p>This small ecoregion covers central and western California. It is distinguished by its warm and mild Mediterranean climate, shrubland vegetation of chaparral mixed with areas of grassland and open oak woodlands, and agriculturally productive valleys. Characterized by a mostly evergreen shrub vegetation called chaparral, this region has patches of oak woodland, grassland, and some coniferous forest on upper mountain slopes. The chaparral has a thickened, hardened foliage resistant to water loss, and forms a cover of closely spaced shrubs 3 to 12 feet tall. Common shrubs include chamise, buckbrush or ceanothus, and manzanita. Coastal sagebrush, summer-deciduous plants that tolerate more xeric conditions than the evergreen chaparral, are found at lower elevations. Approximately 80 percent of the pre-settlement coastal sage scrub in southern California has been displaced, primarily by residential development. To the north, the chaparral is less continuous, occurring in a mosaic with grassland, as well as broadleaf and coniferous forests. A blue oak-digger pine woodland community forms a ring around the Central Valley, which itself once had extensive grasslands and riparian forests. The southern oak woodland extends into the transverse and peninsular ranges and includes California walnut and Engelmann oak. Endemic tree species also include Monterey cypress, Monterey pine, and Torrey pine. Common mammals are kangaroo mice, rabbit, skunk, mule deer, and coyote. Common birds are shore and marine birds, owls, songbirds, woodpeckers, hawks, vultures, and eagles. Reptiles and amphibians include salamanders, snakes, turtles, and lizards.</p>	<p>Manufacturing, service industries (electronics, clothing, and computers), agriculture, aerospace and defense, television and motion picture, tourism, petroleum, automotive-related industries, health care, and finance</p>
Southern Semi-Arid Highlands	<p>This is a small ecoregion in the southeastern section of Arizona. The characteristic natural vegetation, which presently is very diminished or altered, consists of grasslands and combinations of grasslands with scrublands and forests in the transition zones. Certain species of grasses are dominant, particularly blue-stemmed, threeawn, galleta, and muhly grass. Among the shortgrasses, blue grama is an important species. Among the shrubs and trees, it is very common to see mesquite and acacia associated. Oak and western juniper are common at the foot of the sierras. On deep clay soils, mesquite groves are the most conspicuous plant community.</p> <p>Wildlife includes quail, pigeons, doves, hares, jackrabbits, coyote, gray fox, mule deer, white-tailed deer, and pronghorn antelope. Reptiles and amphibians include salamanders, snakes, turtles, and lizards.</p>	<p>Agriculture (farming and ranching)</p>

Table 3.3-2. Level I Ecoregions of the United States

Ecoregion Name	Description	Main Commercial Activity
Temperate Sierras	This ecoregion covers parts of central Arizona and New Mexico at higher elevations. Vegetation can be evergreen or deciduous, primarily being composed of conifers and oaks. They grow from 30 to 100 feet, sometimes reaching 164 feet. This vegetative cover may comprise from one to three tree layers, one or two shrub layers, and an herbaceous stratum. Mammals include coyote, cougar, bobcats, raccoons, squirrels, rats, and mice. Birds include hummingbirds and woodpeckers. Amphibians are numerous as are reptiles in some areas.	Tourism
Tropical Wet Forests	This ecoregion includes the southern tip of the Florida peninsula. Evergreen and semideciduous forests are the most characteristic plant communities of this region which, in terms of flora and fauna, is doubtless one of the richest zones in the world. Forest stands are typically of mixed ages with a great abundance of air plants (epiphytes): bromeliads, ferns, and orchids among others. The mature tree layer may attain heights of 100 to 131 feet or more. Typical species include paque, allspice tree, palms, sombrerete, breadnut, and copai-yé wood. Flooded marshes and swamps (both saltwater and freshwater) are widespread, with a very characteristic mangrove vegetation found in the Everglades. Common species include bats, armadillo, squirrel, marsh rabbits, raccoons, opossums, gray fox, otters, white-tailed deer, bobcat, and panther. Many species of wading birds are present as well as birds of prey. Amphibians and reptiles are abundant including toads, frogs, arboreal frogs, snakes, alligators, and crocodiles. Some introduced species such as pythons and caimans are increasingly common.	Tourism, fishing, and agriculture

Source: CEC 1997

3.3.3.1 Ecoregions of Hawaii and Territories

Hawaiian Islands

The Hawaiian High Islands Ecoregion lies in the north central Pacific Ocean. It is comprised of the ecological systems, natural communities, and species associated with the terrestrial portion of the main archipelago of the Hawaiian Islands (eight major islands and immediately surrounding islets). These ecosystems include fresh massive volcanic shields and cinderlands; eroded, faceted topographies on older islands; high sea cliffs; raised coral plains; and amphitheater-headed valley and ridge systems with alluvial-colluvial bottoms. Numerous freshwater stream systems are found primarily on the older, eroded islands, but also on the wet, windward slopes of even the youngest island, Hawai'i. The Hawaiian High Islands Ecoregion contains three major habitat types: Tropical Moist Broadleaf Forest, Tropical Dry Broadleaf Forest, and Tropical Grasslands, Savannas, and Shrublands. The boundaries of the Hawaiian High Islands Ecoregion correspond to the collective sea-level island boundaries of the main Hawaiian Islands and immediately surrounding islets. The general climate is tropical to subtropical, but with combinations of elevation and orographic (i.e., lifting of moist air over a mountain) rainfall patterns that yield extremely wet to extremely dry settings within a short distance of each other (less than 40 kilometers [25 miles]), topped by alpine deserts on the youngest and highest islands (Nature Conservancy 2018).

The Hawaiian High Islands Ecoregion boasts the highest overall species and ecosystem endemism of any ecoregion. Rare and endangered taxa, including endangered plants, forest birds, and land snails comprise over 25 percent of the flora and fauna. The Hawaiian High Islands Ecoregion includes more endangered species than any other state in the United States (USFWS 2011). Alien species, such as feral ungulates, rats, and housecats, are a prevailing threat to native ecosystems in Hawai'i (Nature Conservancy 2018).

Northern Mariana Islands and Guam

The Northern Mariana Islands extend approximately 550 miles north-south along the edge of the Mariana Trench in western Micronesia in a classic example of a volcanic island arc.

The islands can be divided into two distinct groups. The islands of the northern group are dominated by primary grasslands, and show little human disturbance; those in the southern group have been heavily disturbed and are now mostly covered with secondary forest. Throughout the islands, there is a low diversity of flora with probably no more than 500 species, including both native and naturalized plants (EoE 2019).

Because of recent volcanism, there is little forest on the nine main islands. Remnants of a mixed broadleaf forest exist on the four larger islands. Two key species in this forest type are the mapunyao (*Aglaiia mariannensis*), an understory tree endemic to the Mariana Islands, and the yonga (*Elaeocarpus joga*), which is endemic to Micronesia.

The endemic Mariana flying fox (*Pteropus mariannus*) and 25 bird species, including the Micronesian starling (*Aplonis opaca*), and the Micronesian honeyeater (*Myzomela rubrata*) are found on Asuncion (IUCN 1991). The most extensive forest type on this currently uninhabited island is a scrubby, mixed-broadleaf forest dominated by *Terminalia* spp. Other woody plants are found both in the forest and in adjacent ravines and coastal thickets.

The southern Mariana Islands, including Guam, consist of masses of older volcanic rock. The volcanic portions of Guam are characterized by many streams and complex drainage patterns. The soils are either highly weathered lateritic clays (oxisols or ultisols) or very young inceptisols.

Most of Guam, the largest and southernmost island of the Mariana chain, is covered by secondary growth forest. However, scattered patches of original forest still exist on the northern plateau and in less accessible areas. Alien species, such as feral ungulates, rats, and brown tree snakes, are a prevailing threat to native ecosystems (WWF 2019a).

American Samoa

American Samoa consists of 7 islands of a larger 14 volcanic island chain east of Fiji in the central Pacific Ocean. The islands support a rich diversity of endemic flora and fauna. The tropical climate has fairly constant trade winds throughout the year, and since the mountains lie east to west there is not a distinct rain shadow as found on other tropical islands.

At one time, tropical rain forest covered the islands completely. However, much of the main island of American Samoa has been developed compared with Western Samoa that comprises the rest of the island chain lying to the west. Today, lowland rain forest is the most extensive habitat type present.

Many genera of plants common in western Pacific forests reach the eastern limit of their distribution in the Samoa islands, which demonstrates the important contribution of this island chain. Of the 536 species of flowering plants, approximately 28 percent are endemic (WWF 2019b). There are 37 native land birds with 84 percent of them endemic species or subspecies, including a fruit-eating pigeon called the Samoan tooth-billed pigeon (*Didunculus strigirostris*). The Samoan flying fox (*Pteropus samoensis*) is an endangered species due to subsistence and commercial hunting. There are at least nine species of terrestrial reptiles including geckos and skinks and the Pacific keel-scaled boa (*Candoia bibroni*) (WWF 2019b).

United States Virgin Islands

Since the size of these islands is limited, this ecoregion has a high value of endemism for its areal extent. This ecoregion is found in various proportions on the Caribbean's Leeward Islands and is characterized by rugged, volcanic mountains covered in moist tropical forest.

The forests of this ecoregion, including the forested cores and their peripheral edges, have historically provided the downslope communities with a wide variety of useful goods and services such as building materials, fuelwood, natural medicines, wild fruits, and a habitat for game species and other wildlife. The forests provide a reliable source of domestic water for each component island. Except for the more remote, mountainous, inaccessible areas, many of the forests on different islands in this ecoregion suffer from human-related pressures, including agricultural encroachment, hunting, and limited enforcement of wildlife protection and environmental legislation.

Lying within the tradewind belt with a subtropical climate, islands with enough relief receive adequate rainfall, but those with a more subdued topography tend to be dry to semi-arid. The main hurricane track passes through these islands.

The Leeward Islands exhibit two geologically distinct belts. The inner belt or arc of islands is volcanic in origin and tends to have higher, more rugged topography. Andesitic flows, pyroclastic units, and volcanoclastics of recent to Eocene age dominate this belt. Formiferal or oolitic limestone underlies the remaining islands in the outer belt or arc of islands.

The Caribbean is an important biological region because of its rich vegetation and the large number of endemic plants. The West Indies have approximately 200 endemic genera; *Wallenia*, the largest genera, has 30 species while 6 other genera have 10 or more species. The larger genera (*Bontia*, *Spathelia*, *Lagetta*, and *Catesbaea*) are more or less widely distributed over the archipelago. The moist forests of this ecoregion can form a rain forest association. There is a lack of well-developed rain forest in some of these Leeward Islands, which may be attributed to periodic stand damage from passing hurricanes that cause breakage and subsequent forking of larger specimen trees. The resulting uneven forest canopy

allows additional light to penetrate and encourages growth in adventitious or second growth species that may not be part of the climax forest type. The effect of storms is undoubtedly an impact that continually molds the forest cover and maintains much of the forest in a pre-climax condition (EoE 2019).

Puerto Rico

Puerto Rico occupies a tropical oceanic position just south of the Tropic of Cancer. It is one of the easternmost peaks of a partly submerged mountain range. East-west trending ridges and peaks form the backbone of the island. Local relief is considerable, and slopes are steep. The highest peak has an altitude of 4,389 feet.

Puerto Rico has a tropical climate. The surrounding oceans and the persistent northeast trade winds maintain uniform climatic conditions throughout the year. There is seasonality in precipitation, with a maximum occurring during the summer period, and precipitation varies greatly with altitude and exposure (USFS 2019).

Precipitation is heaviest on the windward sides of the island; lee slopes are semiarid. Rainfall is considerable in the mountains, especially in the west. Annual rainfall on the north coast, at San Juan, averages 61 inches while on the south coast rainfall averages 35 inches per year. The island is in the hurricane belt. Hurricane winds may exceed 100 miles per hour and be accompanied by torrential rain.

Some rainforest remains on the wet north slopes of mountains. Forest trees include mahogany, ebony, mamey, tree ferns, sierra palm, mango, Spanish cedar, sandalwood, and rosewood. They are associated with orchids, jungle vines, and matojo grass. Semiarid southern slopes support a dry forest association of acacia, royal palm, yucca, cacti, and dry grasses. Tropical dry forests are located along the south-central and southwestern coast of Puerto Rico and on adjacent islands and portions of each of the larger U.S. Virgin Islands. The vegetation displays a range of adaptations to the several-month dry season and low annual rainfall including deciduous leaves, waxy coatings on leaves, trunks, and branches, and water storage structures. Mangrove swamps exist along much of the coast (USFS 2019).

Puerto Rico is not known to have had any large wild mammals, even in the past. Along with the intentionally introduced mongoose and the unintentionally introduced rat, native bats, and lizards probably constitute 90 percent of the island's vertebrates. The agouti and armadillo are practically extinct. The endangered Puerto Rican parrot occurs only here. The boa, giant turtle, and several lizards are practically extinct. The coqui is a distinctive frog. Offshore, there is considerable coral with associated invertebrates, and sport fishes abound in the coastal waters (USFS 2019).

3.3.4 Nationwide Representative Threats to Biological Resources

This section describes common threats to biological resources on a nationwide scale including: human development; invasive species; parasites and diseases; predation; and hunting, fishing, and overexploitation. Impacts are seen from these threats in varying degrees throughout all the ecoregions.

3.3.4.1 Human Activities

Human development can have significant effects on biological resources. The general effects of human activities include: habitat loss, fragmentation, degradation, and disturbance; degradation of water quality; changes to hydrology, erosion, and sediment transport; degradation or removal of movement and migration corridors; mining; oil and gas development; and agriculture (USFWS 2018a; McGarigal, Cushman, and Regan 2005). Furthermore, the evolution of human transportation increases the risk of importing invasive species, their adaption, and subsequent displacement of native species (USFS 2019).

Habitat loss, fragmentation, degradation, and disturbance are the chief causes for the current decline in biological resources and biodiversity nationwide. This can be caused directly by activities such as clearing of forests to grow crops or build homes, or indirectly, by the introduction of invasive species or increased pollution run-off from yards and fields (USFWS 2018a). Habitat fragmentation decreases the amount of core or interior habitats and increases the amount of edge habitat, which often lacks the transition zones found in natural habitat edges. This reduces overall habitat functionality and can increase predation and the risk of parasitism by other species (McGarigal, Cushman, and Regan 2005). For example, brood parasitism by brown-headed cowbirds (*Molothrus ater*) reduces reproductive success in many neotropical migrants that nest in fragmented habitats and ecological edges, where nest predation is also common (Arcese et al. 1996).

Human activities and development may also cause negative impacts upon hydrology with increased erosion and sediment transport. Water quality impacts from development may include increases in turbidity from erosion; increases in water temperature from removal of overhanging vegetation; and both non-point source pollution (contaminants from roadways, parking lots, and lawns) and point source pollution (wastewater treatment plants, industrial activities, etc.). Pollutants are generated from a variety of sources, including agriculture, mining, petroleum exploration, yard waste, and chemical manufacturing (Winter et al. 1998).

The destruction or removal of migration corridors may occur as a result of the habitat changes previously described. As habitat and vegetative cover are fragmented by development, movement becomes increasingly difficult and species are exposed to greater risks, such as vehicle collisions and predation (McGarigal, Cushman, and Regan 2005). Lack of habitat can affect nesting, breeding areas, burrowing, food gathering, and grazing for a multitude of species.

Fencing, retaining walls, and curbs may constitute barriers to some terrestrial animals. For aquatic animals, the installation of dams for flood control or water diversions may prevent the upstream movement of fish and other aquatic organisms. Plant populations may also be affected because intervening areas of unsuitable habitat may prevent populations from spreading or re-colonizing areas from which they have been eliminated (USFWS 2018a).

Mining, roadbuilding, and quarrying activities can destroy habitats. Leaching of exposed rocks during mining or roadway construction can contaminate soils, kill vegetation, and harm water sources. Mining for gold and uranium, especially using chemicals, has been proven to cause water quality impacts. Coal

and molybdenum mining may cause impacts to air and water quality (Colorado Department of Natural Resources 2015).

Oil and gas development involve the exploration and production of natural resources, which require infrastructure such as pipelines and roads. Conversion of habitat and habitat avoidance are concerns for terrestrial wildlife, as is noise from drilling and operations. Water used during drilling or released accidentally may contaminate nearby waters impacting fish, insects, shorebirds, amphibians, and other species (Colorado Department of Natural Resources 2015). Oil spills can be detrimental to wildlife, particularly aquatic wildlife. Oil itself is toxic to many aquatic species through ingestion, inhalation, or external exposure. In addition, oil on feathers and fur on birds and mammals may reduce body temperatures and can smother other small species, such as invertebrates or fish (NOAA 2016a). Caribou are often reluctant to cross roads, berms, pipelines, and other related obstacles. Being terrestrial migrators, caribou must deal with human development compared with birds that are able to fly over most human structures and continue their migratory habits. Researchers have found there are many factors which can influence caribou reactions to roads and other potential obstacles and thus their chances of crossing successfully. Caribou need to move freely over vast areas to forage, avoid predators, escape from harassing insects, and reach favorable summer and winter ranges (USFWS 2019a).

Agricultural impacts are dependent on the practices used and the location. Potential impacts from livestock farming and croplands can include chemical contamination, nutrient runoff, non-point source pollution, and pesticides. Livestock farming and ranching practices can change the characterization of an area with reduced native species or habitat suitability for plant and animals (Colorado Department of Natural Resources 2015).

However, human activities can have beneficial effects for some animals. For example, human feeding of backyard birds and other species may provide additional feeding and resting areas for migratory birds. Increased edge habitat from housing areas around forested tracts provides increased feeding opportunities for deer and turkey. No till farming, where agricultural debris is left in the fields after harvesting, provides shelter for small mammals, reduces soil erosion from wind and rain, and reduces water and fertilizer runoff from fields. In addition, fields managed using no-till for multiple years generally have a higher water holding capacity than conventionally tilled fields (Creech 2017).

3.3.4.2 Invasive Species

An invasive species is a species introduced to an ecosystem where it is not native and might be likely to cause harm to the environment, the economy, or to human health. Non-native species can be aggressive competitors with native plant and animal species, reducing or eliminating native species cover. Native plant communities have evolved over tens of thousands of years and typically comprise many different species. Native wildlife species have evolved with the native plant communities and are adapted to the habitats provided by the plants. Therefore, when native plant species are reduced or eliminated from the vegetative cover, there is not only a decline in plant diversity, but also a reduction in the number of wildlife species present.

The negative impacts from invasive species in new locations occur because the natural controls of their native ecosystems are no longer present. Invasive species are known to reduce crop yields and can also injure or poison livestock. Invasive species can disturb biological resources and ecosystems by changing the composition and quality of habitat; reducing stream flows; degrading water quality and changing water temperatures; displacing and/or causing major alterations of native plant communities; competing for food, water, cover, or breeding sites; disrupting the food chain; increasing soil erosion; increasing wildfire potential; and preying directly upon native species (USFWS 2018c). Invasive species can harm native species, leading to declines in native populations, and are often partly responsible for native species to be listed as threatened or endangered species. Competition with invasive species can be especially damaging to native wildlife if diet or cover requirements are similar, and the habitat is at carrying capacity (i.e., the maximum number of species that the present habitat can support with food, water, and shelter) (Hansen et al. 2011). In this situation, native populations may decline if they are unable to adapt to the stress of habitat depletion caused by the introduced species. For example, in response to a reduced food supply, invasive species may be able to shift to foods that are less preferred but more available. If native species cannot do the same, the native species will not compete well for available resources (Traweek and Welch 1992).

Thus, EO 13112, Invasive Species, requires federal agencies to prevent introducing and spreading invasive species, to provide control of invasive species, and minimize the economic and ecological impacts of invasive species. In addition, under various state laws, noxious weeds must be controlled.

3.3.4.3 Parasites and Diseases

Parasites and diseases are a constant pressure on, and can pose significant risks to, natural populations. Diseases, especially in small or fragmented populations, may compromise populations of flora and fauna by killing individuals more rapidly than they can reproduce, thus suppressing population growth rates (Pedersen et al. 2007). Introduced exotic species may carry harmful diseases or parasites to which native species may not have immunity (Traweek and Welch 1992). However, native wildlife also carries parasites that may adversely affect other native species.

3.3.4.4 Predation

Predation affects many native species and can have an especially grave impact on threatened and endangered species. In these populations, the loss of a few individuals may have a greater impact because threatened and endangered species are generally smaller populations. In addition to native predators, introduced predator species (e.g., exotic, domesticated, and feral species) often increase predation pressure on native species.

Exotic species may have larger reproduction rates than native species because they face fewer diseases, parasites, and predators. For example, in the Everglades area of Florida, exotic pythons have few to no predators, can produce more than 100 young each year, and will eat any animal that they can swallow. They have created a situation that has led to the extirpation of many native species such as nesting birds, rabbits, raccoons, and opossums in certain areas (USFWS 2019b).

3.3.4.5 Hunting, Fishing, and Overexploitation

Hunting, fishing, and overexploitation of species have occurred for centuries. Humans depend on flora and fauna for necessities, such as food, shelter, clothing, medicine, and other needs. Overexploitation occurs when humans hunt or fish to the extent that species population levels become unsustainable. Large mammal species are frequently hunted for their fur, food, sport, and for their antlers, horns, or tusks. Ginseng and native fungi are overharvested in some areas to fill a consumer demand.

The United States has enacted multiple laws and regulations to protect various species of plants and animals. Illegal or unregulated hunting for sport or to protect livestock continues to threaten large carnivores in certain areas (NPS 2018b). Humans hunted the passenger pigeon to extinction by the early 1900s; overhunting nearly caused the extinction of several whale species and the American bison until the enactment of protective legislation. In some countries, birds are collected or hunted for sport, food, and as pets (particularly parrots and songbirds). Reptiles are collected or harvested for their skins, shells, eggs, as food, and as pets. Reptile skins (e.g., python and crocodile) are prized and highly valued for trade. Commercial and recreational fishing can result in entrapment or entanglement of marine mammals and sea turtles in fishing gear. Overfishing for marine invertebrates can arise when market prices are sufficiently high to encourage illegal fishing or when harvest by the fishing industry is not easily monitored or controlled (Jamieson 1993).

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is an agreement between 175 countries to adhere to guidelines concerning international trade of certain wild animals and plants to not threaten their survival. A requirement derived from CITES is that countries that want to harvest protected organisms must illustrate annually that the harvest has “no detriment” to the population (CITES 2019).

For example, Louisiana Department of Wildlife and Fisheries (LDWF) is currently supervising the harvest of less than 2 percent of the wild alligator population annually. Two crucial instruments used annually to illustrate “no detriment” are aerial alligator nest surveys and harvest statistics. Each year biologists also use these surveys to set alligator harvest and alligator egg collection quotas statewide (LDWF 2019).

3.3.5 Migratory Birds

As seasons progress, many bird species routinely migrate from one region of low or decreasing resources, such as food or nesting locations, to another region with increasing or higher resource areas. Federally protected species exist across the United States, including in people’s backyards. A general list of common migratory birds under legal protection include: ducks, geese, songbirds, gulls, shorebirds, wading birds, and birds of prey (USFWS 2019c).

The migratory path or final location differs for each species but is often over long distances. Approximately 500 of the 800 species of North American breeding birds are migratory (USFWS 2019c; Cornell Lab of Ornithology 2007). Migratory birds that nest in North America tend to migrate northward in the spring to take advantage of seasonally abundant food and nesting locations; as winter approaches and the availability of food drops, the birds move south again. Researchers use the term “flyway” to

describe these migratory pathways, but flyways are spread out across the continent with routes overlapping considerably. Flyways are discussed in more detail in Section 3.3.5.1, Flyways. A list of all migratory birds protected under the Migratory Bird Treaty Act can be found at 50 CFR 10.13 and online via the USFWS migratory bird program list (USFWS 2018d).

In addition, the NMBCA of 2000 was designed to assist birds that breed in the continental United States or Canada and spend the winter in Mexico, Central America, or South America. The NMBCA program provides matching grants to Neotropical migratory bird conservation projects throughout the Western Hemisphere, with at least 75 percent of funding going to projects outside the United States. The competitive grant requests must be matched by partner contributions at no less than a 3-to-1 ratio (USFWS 2019c, 2018d).

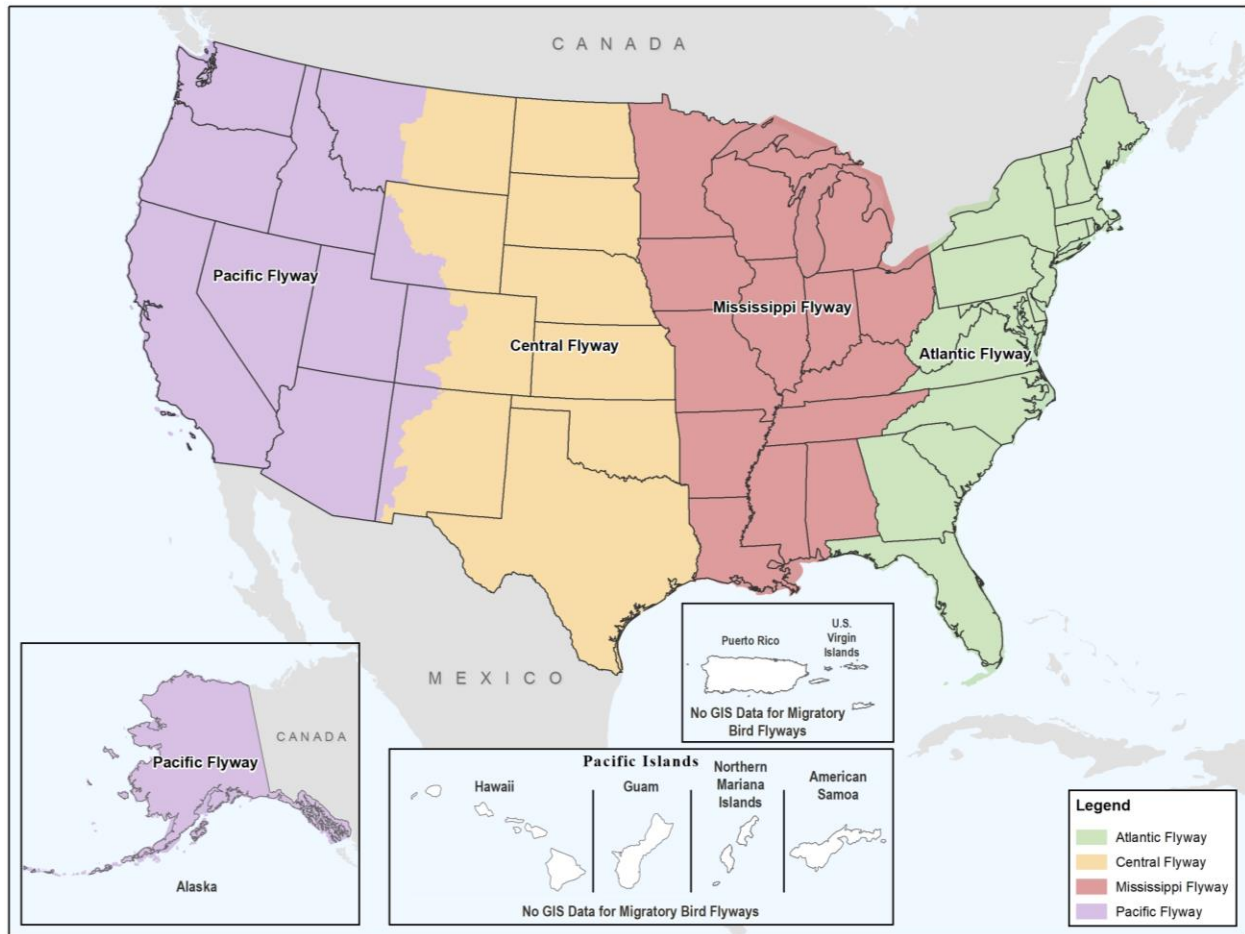
3.3.5.1 Flyways

A flyway is a flight path used by large numbers of birds while migrating between their breeding grounds and their overwintering quarters and the resting and feeding locations used while migrating. They can vary greatly in their complexity, reach, and breadth. Flyways generally span continents and often pass over oceans. The flyways can be thought of as wide arterial highways to which the migratory routes of different species are tributaries. These flyways are vital to the survival of many migratory bird species, serving as important travel corridors across a variety of habitats that may function as resting areas and as breeding grounds for many species.

Many species take southbound routes far to the east of their northbound routes, resulting in a clockwise migration loop that puts some of them out over the Atlantic Ocean on their way to their wintering grounds. By shifting routes, birds are taking advantage of stronger tailwinds in spring and less severe headwinds in fall. Tailwinds represent a huge advantage for birds heading back to their breeding grounds while finding weaker headwinds in fall allows southbound birds to make the best of a difficult circumstances. Many more land birds than previously realized follow different routes in spring and fall, particularly in the East, where many species cross the Gulf of Mexico in a single overnight flight (Cornell Lab of Ornithology 2014).

The USFWS and its partners manage migratory birds based largely on routes birds follow as they migrate between nesting and wintering areas. These flyways are used to manage hunting seasons related to these migratory species (primarily ducks, geese, and swans) to provide sustainable harvests. There are four major administrative flyways in North America: Atlantic, Mississippi, Central, and Pacific, based upon the routes that birds follow as they migrate from breeding to wintering grounds (see Figure 3.3-1). Each flyway has a Council, consisting of representatives from each state, provincial, and territorial agency within that flyway that are advised by technical committees consisting of biological staff. The technical committees evaluate population and habitat information and make recommendations to the Councils on matters of migratory bird conservation (USFWS 2018e).

These pathways are often related to important stopover locations that provide food supplies critical to the birds' survival. Many National Wildlife Refuges, National Parks, and National Monuments are included in the North American Flyways and provide critical feeding and resting areas for migratory birds (USFWS 2018e).



Source: USFWS 2018e
U.S. = United States

Figure 3.3-1. Migratory Bird Flyways in North America

3.3.5.2 Oceanic Migrations

The Hawaiian Islands, Guam, Puerto Rico, and the U.S. Virgin Islands support a variety of migratory shorebirds, seabirds, and waterfowl, as well as endemic species, which are species that are only found in limited areas.

Some birds that overwinter in the Caribbean utilize parts of the North American flyways. These birds may overwinter in Puerto Rico, the U.S. Virgin Islands, or on other islands in this area of the Caribbean Sea.

In the Pacific Island Territories, these birds do not utilize the North American flyways but do make migratory movements around the Pacific Ocean. Some of these sea birds make short distance migrations within island chains, while others spend the majority of time travelling the open ocean in

search of food, only returning to land to nest. Also included in this group are birds that migrate across the Pacific from Alaska to Japan, China, and Southeast Asia. The greatest threats to these birds are habitat loss and increased predation because of exotic species (Asia-Pacific Migratory Waterbird Conservation Committee 2001).

3.3.6 Threatened and Endangered Species

The Endangered Species Act (ESA) of 1973 protects species designated as threatened or endangered as well as the ecosystems upon which they depend. USFWS has jurisdiction over terrestrial and freshwater organisms, and NOAA Fisheries has jurisdiction over marine wildlife and anadromous fish. Under the ESA, an endangered species is defined as one which is in danger of extinction throughout all or a significant portion of its range. A threatened species is one which is likely to become endangered throughout all or a significant portion of its range within the foreseeable future. As of May 2020, there were 1,667 species (724 animals and 943 plants) in the United States listed as threatened or endangered according to the USFWS Environmental Conservation Online System website (USFWS 2019d). Table 3.3-3 provides a count of these species by general category.

The ESA requires that listing determinations be based solely on the best scientific and commercial information available; economic impacts are not considered in making species listing determinations and are prohibited under the ESA. Under the ESA, a species must be listed if it is threatened or endangered because of any of the following five factors:

- present or threatened destruction, modification, or curtailment of its habitat or range;
- over-utilization of the species for commercial, recreational, scientific, or educational purposes;
- disease or predation;
- inadequacy of existing regulatory mechanisms; and
- other natural or manmade factors affecting its continued existence.

Table 3.3-3. Summary of Listed Species Populations and Recovery Plans

Group	United States ^{a, b}		Total Listings	Listings with Active Recovery Plans ^c
	Endangered	Threatened		
Animals				
Amphibians	21	15	36	24
Annelid Worms	0	0	0	0
Arachnids	12	0	12	12
Birds	77	22	99	87
Clams	76	15	91	72
Corals	0	7	7	0
Crustaceans	24	4	28	19
Fishes	95	75	170	106
Flatworms and Roundworms	0	0	0	0
Hydroids	0	0	0	0
Insects	75	13	88	46
Mammals	67	29	96	56
Millipedes	0	0	0	0
Reptiles	16	29	45	40
Snails	40	12	52	33
Sponges	0	0	0	0
Animal Totals	503	221	724	495
Plants				
Conifers and Cycads	1	3	4	3
Ferns and Allies	36	2	38	26
Flowering Plants	733	166	899	723
Lichens	2	0	2	2
Plant Totals	772	171	943	723
Grand Totals	1274	387	1661	1168

Source: USFWS 2019d

^a. A listing has an E or a T in the "status" column of the tables in [50 CFR 17.11\(h\)](#) or [50 CFR 17.12\(h\)](#) (the "List of Endangered and Threatened Wildlife and Plants"). *Note: Listings with status "Similarity of Appearance" are not included in the totals.* Fourteen (14) animal species in the United States^a are counted more than once in the above table, primarily because these animals have distinct population segments (each with its own individual listing status).

^b. United States listings include those populations in which the United States shares jurisdiction with another nation.

^c. There is a total of 611 distinct active (Draft and Final) recovery plans. Some recovery plans cover more than one species, and a few species have separate plans covering different parts of their ranges. This count includes only plans generated by the USFWS (or jointly by the USFWS and NMFS) and only listed species that occur in the United States.

CFR = *Code of Federal Regulations*; NMFS = National Marine Fishing Service; USFWS = United States Fish and Wildlife Service

3.3.6.1 Critical Habitats and the Endangered Species Act

Habitat protection is crucial for recovery of threatened and endangered species. Under the ESA, habitats can be designated “critical habitat,” which is a specific geographic area where a species commonly occurs with features essential to the conservation or recovery of an ESA-listed species and may require special protection or management. Under the ESA, critical habitat designations are to be finalized at the time of the final listing rule for a species, unless a critical habitat designation is not prudent, or it is not yet determinable. In cases where critical habitat is not determinable at the time the species is listed, the deadline for designating critical habitat may be extended by one additional year (NOAA 2019a).

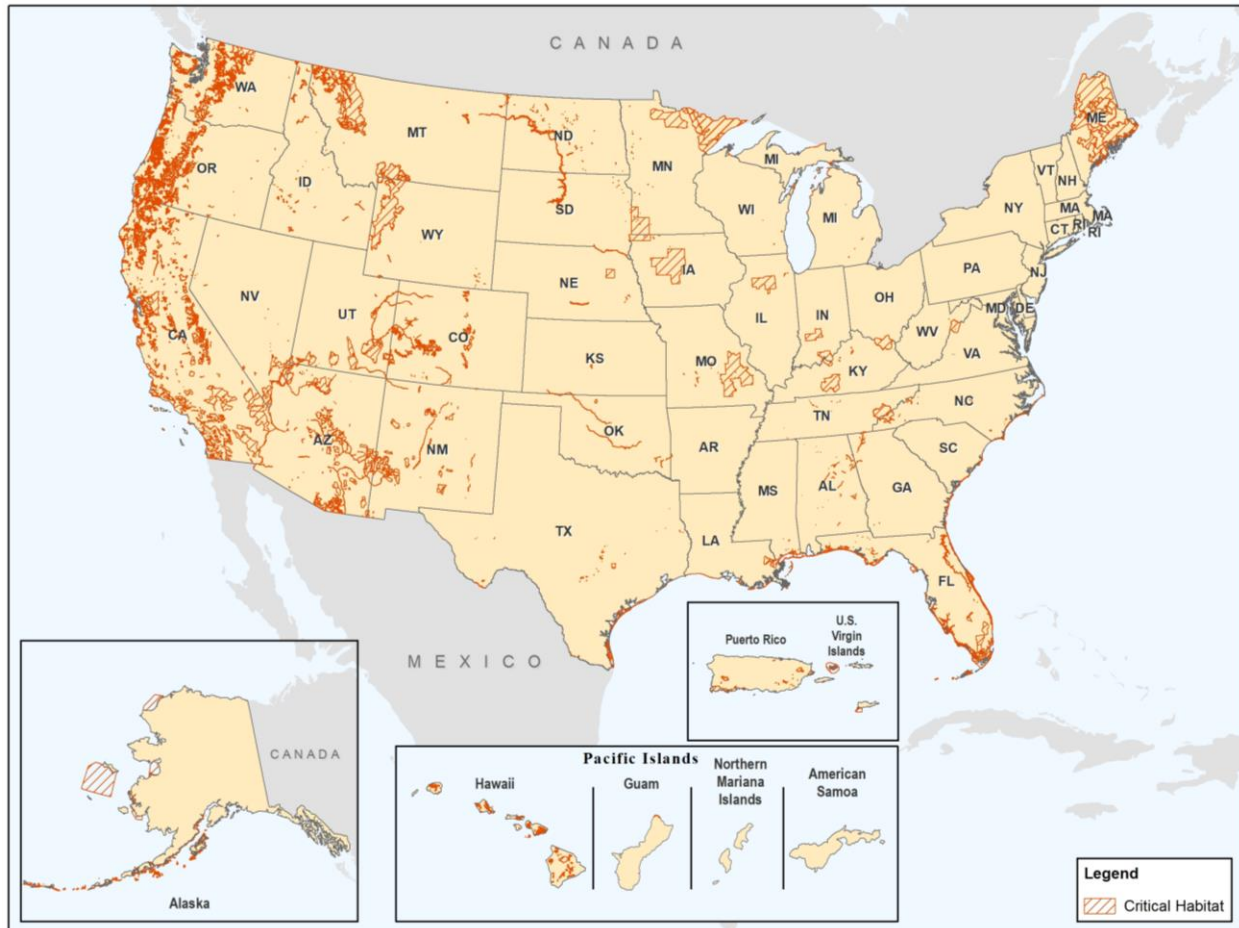
Critical habitat may include areas that are not currently occupied by an ESA-listed species but that will be needed for its recovery (USFWS 2018f). Critical habitat is designated based on the best available scientific data. The economic, national security, and other relevant impacts of specifying a particular area as critical habitat must be considered (NOAA 2019a). Figure 3.3-2 shows the locations of critical habitat present throughout the United States and its Territories (ESRI 2018). Critical habitat (active, proposed, and final) has been identified for a total of 852 threatened and endangered species (USFWS 2019e).

Different agencies may be responsible for species that inhabit similar ecosystems. For example, the USFWS is responsible for polar bears, walrus, sea otters, manatees, and dugongs. Species which are under the sole jurisdiction of National Marine Fisheries Service (NMFS) include animals such as whales, dolphins, porpoises, seals, and sea lions. Critical habitats for NMFS species are listed at the NOAA website (NOAA 2019a).

All federal agencies must ensure that any action authorized, funded, or carried out by them is not likely to result in the destruction or adverse modification of any endangered or threatened species or result in the destruction or adverse modification of critical habitat of such species.²³ Critical habitat management focuses on the biological or physical elements essential to the conservation of the species. Essential elements biologists consider in designating critical habitat include space for individual and population growth and for normal behavior, cover and shelter, food and water, sites for breeding and rearing young, protecting habitats protected from disturbance or representative of historical distribution of a species (USFWS 2018f).

The USFWS publishes proposals to designate critical habitat in the *Federal Register* as a rulemaking procedure. The information received during the public comment period may refine the final designation of critical habitat. Then, USFWS publishes a rule finalizing the critical habitat designation. The National Wildlife Refuge System conserves public lands for the benefit of wildlife and people. Specifically, these refuges provide critical feeding, breeding, nesting, and resting habitat for migratory birds. Millions of birders and nature-lovers follow these migrations from refuge to refuge, bringing vital ecotourism dollars to communities along the way (USFWS 2018f).

²³ 16 USC 1536(a)(2).



Source: ESRI 2018

Figure 3.3-2. Critical Habitats of the United States and Its Territories

Critical habitat requirements do not apply to citizens engaged in activities on private land that do not involve a federal agency; for example, a private landowner undertaking a project that involves no federal funding or permitting. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness reserve, preserve, or other special conservation area. Critical habitat designations also do not mandate government or public access to private lands. Critical habitat cannot be designated within foreign countries or in other areas outside of United States jurisdiction (NOAA 2019a).

3.3.7 Wetlands

Wetlands are transitional areas between land and water bodies, where water periodically floods land and saturates the soil. The term "wetlands" encompasses a variety of wet environments such as salt and brackish water marshes, forested swamps, estuaries, ponds, bogs, even wet meadows, and tundra (USEPA 2019c). Wetlands may be temporary, seasonal (e.g., vernal [spring-time] pools in California), isolated, permanent, or tidally influenced. Some ephemeral wetlands may be only a few feet across such as vernal pools for fairy shrimp in California, while others such as the Okefenokee Swamp in

southeastern Georgia covers 630 square miles and is part of the National Wildlife Refuge system (USFWS 2019g).

Many isolated wetlands are small and ephemeral, which means they might dry out during some parts of the year. These wetlands hold an important role especially for wildlife like waterfowl. Many isolated wetlands are located along the flyways discussed earlier and provide various needs for waterfowl throughout the year. In spring, when filled with water from rain and snowmelt, they provide waterfowl with high quality and nutritious invertebrates. These spring wetlands also give breeding pairs privacy, a prerequisite to successful reproduction. In summer, duck and goose families seek out small wetlands for foraging, as these wetlands often teem with protein-rich invertebrates with essential nutrients for growing ducklings and goslings. Isolated wetlands also provide refuge to waterfowl because they are often devoid of predators like mink that prefer larger and deeper water. In the fall, isolated wetlands provide critical refueling stopovers for migrating waterfowl.

Wetlands provide other valuable benefits such as flood control, reducing coastal erosion, improving water and air quality, and recharging groundwater. Wetlands can provide critical habitat for fish and wildlife, blunt the destructive forces of floods and storms, cleanse polluted waters, and provide for a variety of recreational activities such as fishing, hunting, photography, and wildlife observation. Wetlands are among the most productive natural areas on earth that can produce tons of organic food per year and are rich feeding and breeding grounds for a diverse wildlife community (Mancuso 2013).

Constructed wetlands are being used as treatment systems across the country. The USEPA has information on 17 systems that are providing significant water quality benefits while demonstrating additional benefits such as wildlife habitat. The projects described include systems involving both constructed and natural wetlands; habitat creation and restoration; and the improvement of municipal effluent, urban stormwater, and river water quality (USEPA 2019b).

More than one third of the United States' threatened and endangered species live only in wetlands and nearly half use wetlands at some point in their lives (USFWS 2019f; USEPA 2019b, 2019d). Wetland habitats are among the most productive ecosystems in the world and are also a crucial part of the life cycle for many species that are not on the threatened and endangered species list. The combination of shallow water, high level of nutrients, and primary productivity is ideal for supporting organisms that form the base of the food web and feed many species of fish, amphibians, shellfish, and insects. Wetlands provide important stopovers for birds heading south in the fall and back north in spring on treacherous annual migrations. More than 200 Refuge System units are clustered along the Northern Hemisphere's four major migratory bird flyways (USFWS 2019g).

For example, estuarine and marine fish and shellfish, various birds and certain mammals require coastal wetlands for survival. Most commercial and game fish breed and raise their young in coastal marshes and estuaries (e.g., flounder and sea trout); while shellfish such as shrimp, clams, crabs, and oysters need these wetlands for food, shelter, and breeding grounds. Some inland wetlands provide the only habitat where certain plants and animals can live (e.g., wood ducks, muskrat, and cattails); while others

provide important food, water or shelter, such as for striped bass, otter, black bear, raccoon, and deer. Many bird species feed, nest, and raise their young in wetlands, and migratory waterfowl use coastal and inland wetlands as resting, feeding, breeding, or nesting grounds at least part of the year. Coastal wetlands such as mangroves and the Florida Everglades provide buffers from storm damages caused by hurricanes. These areas provide valuable reproduction areas for reptiles like alligators and American Crocodiles, shore birds (including egrets, herons, and spoonbill), and mammals such as manatees and Eastern cougar (Mancuso 2013). Section 3.5, Floodplains, Wetlands, and Coastal Zones; includes additional detail on the extent and distribution of wetlands in the United States, as well as recent trends in wetland losses across the country.

INTENTIONALLY LEFT BLANK.

3.4 CULTURAL RESOURCES

This section examines the types and distribution of cultural resources throughout the United States and its Territories to include a description of the resource, applicable statutes and regulations, and the existing conditions of cultural resources on a nationwide scale.

3.4.1 Description of the Resource

VA Directive 7545, Cultural Resource Management, defines cultural resources as all aspects of the human environment that have historical, architectural, archaeological, or cultural significance, including, but not limited to, historic properties, archaeological resources and data, Native American ancestral remains and cultural items, religious places and practices, historical objects and artifacts, historical documents, and community identity (VA 2011). Likewise, the National Historic Preservation Act of 1966 (NHPA) defines the term “historic property” as any “prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on, the National Register of Historic Places (NRHP), including artifacts, records, and material remains related to such a property or resource”²⁴. Historic properties can also include traditional cultural properties (TCPs) and cultural landscapes. TCPs are physical properties or places – such as a district, site, building, structure, or object – that are associated with the cultural practices, traditions, beliefs, lifeways, arts, crafts, or social institutions of a living community (i.e., Native American tribes, secular groups, ethnic groups, communities, etc.).

To be considered eligible for listing on the NRHP, a cultural resource must meet at least one of the following significance criteria:

- It is associated with events that have made a significant contribution to the broad patterns of American history;
- It is associated with the lives of past significant persons;
- It embodies the distinctive characteristics of a type, period, or method of construction, represents the work of a master, possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual distinction; or
- It has yielded, or may be likely to yield, information important in history or prehistory.

In order to be eligible for listing in the NRHP, a property must also have integrity. To retain historic integrity a property will always possess several, and usually most, of the seven aspects of integrity. These seven aspects of integrity include: location, design, setting, materials, workmanship, feeling, and association.

It lies beyond the scope and the ability of this PEIS to list all of the specific cultural resources present within the United States and its Territories. However, this section summarizes the basic types of resources that may be found within the states served by each of VA’s RLCs.

²⁴ 54 USC 300308.

3.4.2 Applicable Statutes, Regulations, and Terminology

Table 3.4-1 summarizes applicable statutes, regulations, and relevant terminology pertaining to cultural resources.

Table 3.4-1. Cultural Resources Statutes, Regulations, and Terminology

Statute, Regulation, or Term	Description
Advisory Council of Historic Preservation (ACHP)	Established by the NHPA, the ACHP is an independent agency responsible for implementing Section 106 of the NHPA by developing procedures to protect historic properties included in, or eligible for inclusion in, the NRHP.
Archaeological Resources Protection Act (ARPA); 16 USC 470aa-470mm)	Enacted to protect archaeological resources and sites that are on public lands and Native American lands and to foster increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals. The ARPA describes the requirements that must be met before federal authorities can issue a permit to excavate or remove any archaeological resource on federal or Native American lands and the curation requirements of artifacts, other materials excavated or removed, and the records related to the artifacts and materials. This law could intersect with the HLP when NADLs are issued on tribal lands and a cultural resource is uncovered.
Area of Potential Effect	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 area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.” ^a
Cultural Landscape	Cultural landscapes are historic properties similar in some respects to TCPs. The National Park Service (NPS) defines a cultural landscape as “a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person, or exhibiting other cultural or aesthetic values.” There are four non-mutually exclusive types of cultural landscapes: Vernacular, Designed, Historic Site, and Ethnographic.
Cultural Resource	All aspects of the human environment that have historical, architectural, archaeological, or cultural significance, including, but not limited to, historic properties, archaeological resources and data, Native American ancestral remains and cultural items, religious places and practices, historical objects and artifacts, historical documents, and community identity.
National Historic Preservation Act of 1966 (NHPA) (54 USC 300101 et seq.)	<p>The federal government provides leadership in the preservation of the historic property of the United States and in the administration of the national preservation program as well as administering federally owned, administered, or controlled historic property in a spirit of stewardship for the inspiration and benefit of present and future generations.</p> <p>Section 106 of the NHPA requires the lead federal agency with jurisdiction over a federal undertaking to consider effects on historic properties before that undertaking occurs. By implementing Section 106, federal agencies take into account the effects of a proposed undertaking on any historic properties situated within the area of potential effects and consult with the Advisory Council on Historic Preservation, State Historic Preservation Officers (SHPOs), federally recognized Native American tribes, local governments, and any other interested parties.</p>

Table 3.4-1. Cultural Resources Statutes, Regulations, and Terminology

Statute, Regulation, or Term	Description
National Register of Historic Places (NRHP) (54 USC 302101-302108)	The United States' official list of significant historic properties administered by the NPS. To be eligible for listing on the NRHP, a property must meet at least one of the four significance criteria (see Section 3.4.1); be largely intact or undisturbed; possess historical, architectural, or engineering significance; and/or possess some value in terms of its potential for research. Most properties listed on or eligible for the NRHP are at least 50 years old. Resources may be listed individually or as part of a historic district.
Native American Graves Protection and Repatriation Act (25 USC 3001-3013)	The Native American Graves Protection and Repatriation Act describes the rights of Native American lineal descendants, Native American tribes, and Native Hawaiian organizations with respect to the treatment, repatriation, and disposition of Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony. This law provides greater protection for Native American burial sites and more careful control over the removal of Native American human remains, funerary objects, sacred objects, and items of cultural patrimony on federal and tribal lands. This includes consultation with Native American tribes whenever archaeological investigations encounter, or are expected to encounter, Native American cultural items or when projects unexpectedly discover such items on federal or tribal land, as could occur with a HLP loan under the NADL program.
Traditional Cultural Property (TCP)	A TCP is a property "that is eligible for inclusion in the National Register of Historic Places because of its association with cultural practices or beliefs of a living community that a) are rooted in that community's history, and b) are important in maintaining the continuing cultural identity of the community." TCPs often are kept confidential to respect the cultural practices of Native American tribes or communities. Identification of these resources can require specialized and local expertise. It is important to note that a TCP may or may not be eligible for the NRHP. To be eligible, such places must still meet one or more of the NRHP eligibility criteria. If a TCP is determined not to be eligible for the NRHP, it must still be addressed through the NEPA analysis, including cultural landscape assessments and government-to-government consultation.

^a. 36 CFR 800.16(d)

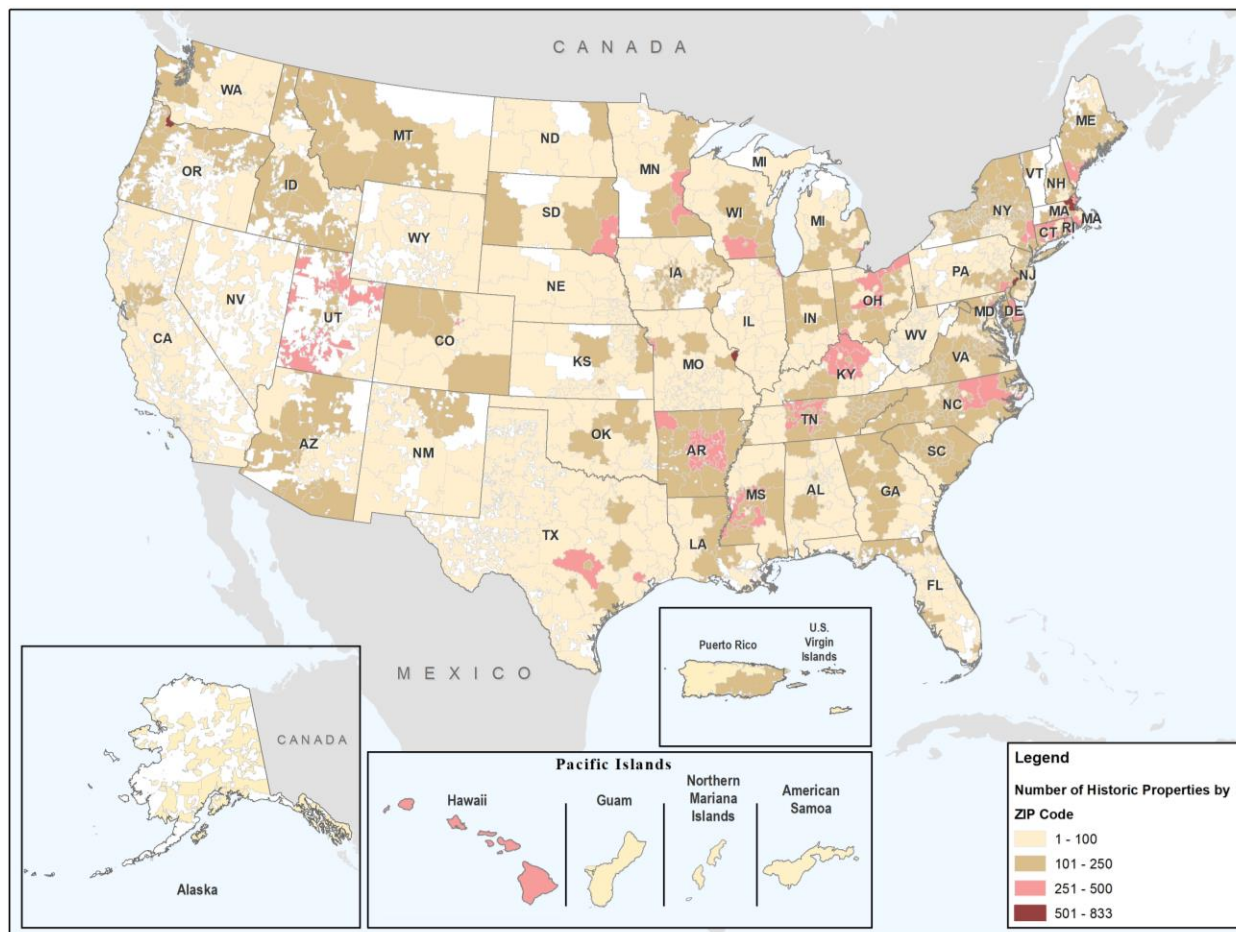
Source: NPS 2020a, 1992

ACHP = Advisory Council on Historic Properties; ARPA = Archaeological Resources Protection Act; CFR = *Code of Federal Regulations*; NEPA = National Environmental Policy Act; NHPA = National Historic Preservation Act; NPS = National Park Service; NRHP = National Register of Historic Places; SHPO = State Historic Preservation Office; TCP = Traditional Cultural Property; USC = United States Code

3.4.3 Cultural Resources Overview

For the purposes of the NHPA, historic properties are those properties that are listed or eligible for listing in the NRHP. They include properties of historical significance and those important to communities and cultural groups. Most properties listed in or eligible for the NRHP are at least 50 years old. The majority of properties listed in the NRHP are historic buildings. The significance of a historic building can be derived from its form, decorative style, architect, or its role in an important event. Houses, theaters, libraries, places of worship, hospitals, stores, warehouses, and offices are all examples of buildings that can be listed in the NRHP. Buildings may be listed individually or as parts of historic districts. Landscapes associated with historic events may be classified as historic. Battlefields, for example, are often designated as historic landscapes to better preserve and commemorate those sites. Landscapes can be considered elements of larger historic properties or districts, such as the gardens

surrounding George Washington's Virginia plantation, Mt. Vernon. The NRHP also includes structures such as bridges, canals, roads, and water towers. Fountains, monuments, and boundary markers are all examples of historic objects. Figure 3.4-1 shows the number of historic properties listed in the registry database throughout the United States and its Territories.



Source: NPS 2020b

Figure 3.4-1. Number of Historic Properties in the United States and Its Territories

Archaeological sites may also be included in the NRHP. Archaeological evidence can be combined with written records to give a fuller picture of the practices, possessions, and lifestyle of past people. TCPs are historic properties significant for their association with practices or beliefs of a living community that are both fundamental to that community's history and a piece of the community's cultural identity. Although TCPs are often associated with Native American traditions, such properties may also be important for their significance to other ethnic groups or communities, including Veterans. A TCP may be a place that a particular Native American tribe believes is sacred to its origins, or an urban neighborhood that is the traditional home of a particular ethnic group where the group's language, food, and celebrations are still extant. TCPs often are kept confidential to respect the cultural practices of tribes or communities. Identification of these resources can require specialized and local expertise.

3.4.3.1 Federally Recognized Tribes

Federally recognized tribes play an important role in the identification and protection of cultural resources. The Constitution of the United States recognizes a unique relationship between the federal government and sovereign native nations. Certain Native American tribes have been federally recognized and are afforded special rights and benefits by law. The United States has designated 574 communities as federally recognized tribes, thereby conferring on them recognition of tribal sovereignty and a guarantee to that nation of a government-to-government relationship with the United States (National Conference of State Legislatures 2019).

Not all federally recognized tribes administer reservations. The United States holds approximately 55 million acres of land nationwide in trust for various tribes (DOI, Indian Affairs 2019). The federal government also recognizes allotted lands, those remnants of past reservations divided by the government around the turn of the 20th century; restricted lands, those held by Native American individuals for tribes which require Secretary of the Interior approval to transfer or sell; and state Native American reservations (DOI, Indian Affairs 2019). Native Americans, Alaskan Natives, and Native Hawaiians may also own private property outside reservations.

The populations of the U.S. Territories include cultural and ethnic groups native to those islands. However, the official lists in the Federally Recognized Indian Tribes List Act of 1994²⁵ contains no tribal governments from the Pacific Islands Region, which includes the U.S. Territories of American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands.

3.4.4 Existing Conditions

This section provides a generalized description of the historic property types throughout the United States and its Territories. VA RLC zones were selected as the unit of analysis for cultural resources. Section 3.0, Affected Environment, Introduction, has a more detailed discussion of units of analysis and Figure 1-1 (in Chapter 1 of this PEIS) shows the locations of VA's RLC zones. The accompanying tables list the number of NRHP-listed properties, National Historic Landmarks, and National Historic Districts (both of which are also listed on the NRHP). In practice, Section 106 deals with far more NRHP-eligible properties than are actually listed in the NRHP, and many locations have not been fully surveyed to identify historic properties.

<p style="text-align: center;">Unit of Analysis VA Regional Loan Centers</p>

3.4.4.1 Atlanta Regional Loan Center

The area served by the Atlanta RLC is rich in historic architectural resources due to its colonial roots and Native American history. The types of prehistoric properties in this area include rock shelters, middens (i.e., prehistoric landfills), and burial sites. Typical historic archaeological sites include agricultural sites, battlefields and military-related sites, early industrial sites, and house sites. Typical aboveground historic property types found in these states range from urban historic districts in Charleston, South

²⁵ 25 USC 5131.

Carolina and Savannah, Georgia, to cemeteries, military forts, lighthouses, railroads, and plantations. Table 3.4-2 summarizes the number of listed historic properties identified in this region.

Table 3.4-2. Historic Properties within States Served by the Atlanta Regional Loan Center

	Properties Listed on the National Register	National Historic Districts	National Historic Landmarks
Georgia	1,683	448	52
North Carolina	2,480	475	41
South Carolina	1,362	193	78
Tennessee	1,850	270	31
Total	7,375	1,386	202

Source: NPS 2020a, 2017b

3.4.4.2 Cleveland Regional Loan Center

The area served by the Cleveland RLC is rich in historic architectural resources due to its early European settlement. This area also includes Nantucket Sound, one of the few publicly identified TCPs east of the Mississippi. The types of prehistoric properties in this area include rock shelters, mounds, and burial sites. Historic archaeological sites include shipwrecks, mills, military sites, and houses. A few of the aboveground historic property types found in these states include saltboxes, churches, commercial buildings, industrial structures, and railroads. Sites range from urban architecture of New York City, to Cape Cod cottages, to agricultural sites in Pennsylvania. Architectural styles reflect the influences of the people who settled here, including English, Dutch, and German colonists. Table 3.4-3 summarizes the number of listed historic properties identified in this region.

Table 3.4-3. Historic Properties within States Served by the Cleveland Regional Loan Center

	Properties Listed on the National Register	National Historic Districts	National Historic Landmarks
Connecticut	1,247	360	66
Delaware	633	64	14
Indiana	1,591	369	44
Maine	1,499	134	47
Massachusetts	3,676	654	189
Michigan	1,712	209	41
New Hampshire	718	76	23
New Jersey	1,501	227	56
New York	5,467	641	286
Ohio	3,650	367	76
Pennsylvania	2,979	449	170
Rhode Island	643	146	46
Vermont	672	163	19
Total	25,988	3,859	1,077

Source: NPS 2020a, 2017b

3.4.4.3 Denver Regional Loan Center

The area served by the Denver RLC is rich in diverse cultural resources due to its Native American history, Native Alaskan sites, frontier settlement, and Asian influences. The types of prehistoric properties in this area include buffalo traps, medicine wheels, lodges, petroglyphs, mounds, and rock shelters. Historic archaeological sites include trading posts, stagecoach stations, trails, ranches, railroad depots, battlefields, and military forts. A few of the aboveground historic property types found in these states include National Park lodges, grain elevators, oil derricks, farms, commercial blocks, and religious buildings. Table 3.4-4 summarizes the number of listed historic properties identified in this region.

Table 3.4-4. Historic Properties within States Served by the Denver Regional Loan Center

	Properties Listed on the National Register	National Historic Districts	National Historic Landmarks
Alaska	408	25	52
Colorado	1,489	72	24
Idaho	979	72	10
Montana	1,047	140	29
Oregon	1,944	101	19
Utah	1,778	76	14
Washington	1,485	110	26
Wyoming	495	63	30
Total	9,625	659	204

Source: NPS 2020a, 2017b

3.4.4.4 Houston Regional Loan Center

The area served by the Houston RLC encompasses a range of Native American sites, urban areas, and large ranges. The types of prehistoric properties in this area include rock shelters, mounds, petroglyphs, and hunting grounds. Historic archaeological sites include shipwrecks, battlefields, cemeteries, and forts. A few of the aboveground historic property types found in these states include cotton gins, water towers, plantations, ranches, cemeteries, streetcar lines, irrigation ditches, schools, churches, and missions. Sites range from Spanish missions in Texas to the French Quarter in Louisiana. Table 3.4-5 summarizes the number of listed historic properties identified in this region.

Table 3.4-5. Historic Properties within States Served by the Houston Regional Loan Center

	Properties Listed on the National Register	National Historic Districts	National Historic Landmarks
Arkansas	2,461	224	25
Louisiana	1,334	105	63
Oklahoma	1,250	89	22
Texas	3,068	286	46
Total	8,113	704	156

Source: NPS 2020a, 2017b

3.4.4.5 Phoenix Regional Loan Center

The area served by the Phoenix RLC is rich in prehistoric and historic resources due to the variety of native cultures that have inhabited the region and the settlement history of these states. The types of prehistoric properties in this area include petroglyphs and cliff dwellings. Historic archaeological sites include shipwrecks and missions. A few of the aboveground historic property types found in these states include post offices, railroads, commercial buildings, libraries, and dams. Sites range from Native American pueblos, such as Acoma – the oldest continually inhabited community in the country – and Spanish missions to military facilities and battlefields. Table 3.4-6 summarizes the number of listed historic properties identified in this region.

Table 3.4-6. Historic Properties within States/Territories Served by the Phoenix Regional Loan Center

	Properties Listed on the National Register	National Historic Districts	National Historic Landmarks
American Samoa	30	1	2
Arizona	1,275	174	46
California	2,681	174	148
Guam	127	1	0
Hawaii	345	14	34
Nevada	365	16	10
New Mexico	1,078	95	45
Northern Mariana Islands	36	2	2
Total	5,937	477	287

Source: NPS 2020a, 2017b

3.4.4.6 Roanoke Regional Loan Center

The area served by the Roanoke RLC features a mix of property types ranging from rural colonial examples to modernist urban structures and includes areas of early European settlement and the federal government-related historic properties in Washington, District of Columbia. Prehistoric archaeological sites include rock shelters, petroglyphs, and villages. Historic archaeological sites include shipwrecks, canals, plantations, forts, and battlefields. Aboveground historic properties in the region include religious buildings, railroads, gunpowder mills, planned urban and suburban communities, and parks built by the Civilian Conservation Corps. The range of historic properties in this region encompasses homes, farms, ports, and industrial complexes. The architectural styles seen in historic structures may reflect the cultural influence of the English, German, Swiss, and French people who settled in this region. Table 3.4-7 summarizes the number of listed historic properties identified in this region.

Table 3.4-7. Historic Properties within States Served by the Roanoke Regional Loan Center

	Properties Listed on the National Register	National Historic Districts	National Historic Landmarks
District of Columbia	586	45	72
Kentucky	3,139	273	32
Maryland	1,337	224	72
Virginia	2,603	509	129
West Virginia	887	158	19
Total	8,552	1,209	324

Source: NPS 2020a, 2017b

3.4.4.7 St. Paul Regional Loan Center

The region served by the St. Paul RLC encompasses a range of cultural resources from prehistoric sites to agricultural complexes to urban areas. The types of prehistoric properties in this area include rock shelters, mounds, lodges, bison kill sites, and petroglyphs. There is extensive prehistoric development throughout this region, including some of the largest known developments on the continent, such as Cahokia Mounds located in modern-day western Illinois. Historic archaeological sites include Civilian Conservation Corp camps, battlefields, kilns, trading pots, stagecoach stations, shipwrecks, and logging camps. A few of the aboveground historic property types found in these states include skyscrapers, bridges, canals, railroads, schools, libraries, commercial buildings, and industrial complexes. Table 3.4-8 summarizes the number of listed historic properties identified in this region.

Table 3.4-8. Historic Properties within States Served by the St. Paul Regional Loan Center

	Properties Listed on the National Register	National Historic Districts	National Historic Landmarks
Illinois	1,638	243	91
Iowa	2,104	272	27
Kansas	1,381	108	27
Minnesota	1,593	114	28
Missouri	1,968	356	39
Nebraska	1,043	74	21
North Dakota	425	23	7
South Dakota	1,299	49	15
Wisconsin	2,175	298	44
Total	13,626	1,537	299

Source: NPS 2020a, 2017b

3.4.4.8 St. Petersburg Regional Loan Center

The area served by the St. Petersburg RLC encompasses a wide range of historic resources ranging from plantations in Mississippi to the architectural influences of Spanish and Dutch colonialism in the Commonwealth of Puerto Rico and the U.S. Virgin Islands. The types of archaeological sites include prehistoric shelters and burial sites and historic shipwrecks. A few of the aboveground historic property types found in these states and territories include plantations, cemeteries, missions, churches, and forts, such as Castillo de San Marcos National Monument - the oldest fort in the country. In addition, the oldest cities are located in this region St. Augustine, Florida and San Juan, Puerto Rico. Table 3.4-9 summarizes the number of listed historic properties identified in this region.

Table 3.4-9. Historic Properties within States/Territories Served by the St. Petersburg Regional Loan Center

	Properties Listed on the National Register	National Historic Districts	National Historic Landmarks
Alabama	1,022	251	39
Florida	1,598	210	48
Mississippi	1,216	218	41
Puerto Rico	347	7	6
U.S. Virgin Islands	71	19	5
Total	4,254	705	139

Source: NPS 2020a, 2017b

3.5 FLOODPLAINS, WETLANDS, AND COASTAL ZONES

This section discusses the floodplain, coastal zone, and wetland resources within the United States and its Territories to include a description of the resources, applicable statutes and regulations, and the existing conditions of the resources on a nationwide scale. The three resource areas are discussed together given that their geographies overlap, and the concerns associated with their development are similar. Coastal zone areas include both floodplains and wetlands, and many wetlands are found in floodplains.

3.5.1 Description of the Resource

3.5.1.1 Floodplains

A floodplain is a land area adjacent to a river, stream, lake, estuary, or other waterbody that is subject to flooding. For most management purposes in the United States today, floodplains are defined as “the low lands adjoining the channel of a river, stream or watercourse, or adjoining the shore of an ocean, lake or other body of standing water, which have been or may be inundated by flood water” (FEMA 2018a). Rivers and streams are part of nature’s system for carrying water from high ground down to lakes and oceans. Flooding is a natural process, and floodplains are beneficial because they moderate floods and water quality, allow for groundwater recharge, and provide fish and wildlife habitat, open space, and recreation. Riverine flooding can develop from heavy rainfall and rapid snowmelt as well as from dam and levee failure. Most coastal floods are caused by coastal storms (e.g., hurricane). Individual storms are among the causes of lacustrine (lake) flooding.

Floodplains are further categorized by the frequency of flooding; flooding recurrence intervals, such as the 100-year or 500-year flood, define flooding potential. Relevant terminology used to characterize floodplain resources is summarized in Table 3.5-1.

Table 3.5-1. Floodplain Definitions

Terminology	Description	Relevance
100-year floodplain	The area adjoining a river, stream, or water course covered by water in the event of a 100-year flood (i.e., a flooding event that has a 1 percent chance of being equaled or exceeded in magnitude in any given year).	The 100-year floodplain is the national standard for floodplain management and the National Floodplain Insurance Program (NFIP). It is identified on NFIP maps as Special Flood Hazard Areas (SFHAs), which are areas where the NFIP floodplain management regulations must be enforced and where the purchase of floodplain insurance is mandatory for new development. Most new housing development activities are restricted within the 100-year floodplain.
500-year floodplain	The area adjoining a river, stream or watercourse covered by water in the event of a 500-year flood (i.e., a flooding event that has a 0.2 percent chance of being equaled or exceeded in magnitude in any given year).	Properties in the 500-year floodplain – between the base 100-year floodplain and the 500-year floodplain – are considered to be at moderate risk of flooding under the NFIP (moderate flood hazard areas). Flood insurance is not required for properties in this zone, and local floodplain zoning ordinances typically do not apply in these areas. No restrictions to housing development exist for the 500-year floodplain.

Table 3.5-1. Floodplain Definitions

Terminology	Description	Relevance
Flood Insurance Rate Map (FIRM)	A FIRM outlines flood risk zones within communities based on a flood insurance study that summarizes the analysis of flood hazards within the subject community.	A flood insurance study includes detailed engineering studies to map predicted flood elevations at specified flood recurrence intervals (e.g., generally concerned with 100- and 500-year storm events). Based on the results of the analyses, FEMA assigns flood risk zones for insurance purposes.
Flooding – Riverine Flooding	A flood event typically seen as water flowing over a stream’s banks.	The size and frequency of riverine flooding depends on the amount and nature of rainfall or snowmelt, vegetative cover, watershed topography, and other factors. This type of flooding is common in those parts of the country with relatively flat terrain and along streams and rivers with relatively shallow banks or natural levees.
Flooding – Sheet Flooding	A flood event that occurs when water flows along the surface without a channel.	This type of flooding is common in urban areas and other developed areas, resulting from the increase in impervious cover (e.g., building, road), which reduce infiltration and accelerate runoff. Sheet flooding can occur in areas outside of the 100-year floodplain from heavy rains and lack of infiltration.
Flooding – Flash Flooding	A sudden local flood, typically due to heavy rain.	The Sudden nature and fast-moving water of flash floods make them very dangerous. Common in arid plains of southwestern United States and urban areas lacking infiltration. Flash flooding can occur in areas outside of the 100-year floodplain.
Flooding – Coastal Flooding	Coastal flooding is caused primarily by coastal storms, usually hurricanes, northeasters, or tsunamis which drive water onshore through wave action and storm surge. Note that coastal communities, particularly counties, may also have riverine floodplains with designated floodways.	Coastal floodplains border an ocean or large lake and are affected by rising water. Human influence on the coastal environment, phase of the moon, and sea-level rise can exacerbate coastal flooding. A significant percentage of the U.S. population lives in coastal areas.
Floodway	Channel of a river, lake, or stream and the portion of the adjacent land area that are needed to safely store and convey the 100-year flood event without substantial increases in flood heights.	Floodways are generally associated with moving waters during a flood event. Typically, construction is prohibited in a floodway under local zoning ordinances.

FEMA = Federal Emergency Management Agency; FIRM = Flood Insurance Rate Map; NFIP = National Floodplain Insurance Program; SFHA = Special Flood Hazard Area

3.5.1.2 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. Water saturation (hydrology) largely determines how the soil develops and the types of plant and animal communities (aquatic and terrestrial) supported by the wetland. Wetlands provide food and habitat for a diverse array of plants and animals, act as buffers to flooding and erosion, and serve as key links in the global water cycle.

There are many different kinds of wetlands and methods by which to classify them. One common classification system, developed by Cowardin et al. (1979) and used by the USFWS for the National Wetlands Inventory, classifies wetlands by landscape position, vegetative cover, and hydrology regime. It includes the following five major wetland types: marine (open ocean), estuarine (estuary), riverine (river), lacustrine (lake), and palustrine (marsh). Marine and estuarine are tidal wetlands, riverine can be tidal or non-tidal, and lacustrine and palustrine are freshwater wetlands. The various wetland types are described further in Section 3.5.3.2, Wetlands.

3.5.1.3 Coastal Zones

A coastal zone is the area where land meets water. It is defined as the part of the land affected by its proximity to water (influence of either marine or freshwater processes), and the part of the water affected by its proximity to the land (influence of terrestrial processes). The coastal waters (including the lands therein and thereunder) and the adjacent shorelands (including the waters therein and thereunder) strongly influenced by each other and in proximity to the shorelines of several coastal states and includes islands, transitional and intertidal areas, salt marshes, wetlands (marine and estuarine), and beaches.²⁶ Within the United States, coastal zones are found along coastal states and territories as well as states that border the Great Lakes.

3.5.2 Applicable Statutes, Regulations

Table 3.5-2 summarizes applicable statutes, regulations, and terminology relevant to floodplains, wetlands, and coastal zones resource areas.

Table 3.5-2. Floodplains, Wetlands, and Coastal Zones Statutes and Regulations

Statute, Regulation, or Term	Description
Clean Water Act, Section 404 (33 USC 1251 et seq.)	<p>The Clean Water Act was enacted to “restore and maintain the chemical, physical, and biological integrity of the Nation’s water.” Section 404 gives the USACE permitting authority over activities that discharge dredge or fill materials into waters of the United States, including wetlands.</p> <p>Permits are required for placement of any structures within the mean high-water mark of navigable waterways and placement of dredged or fill material within the mean high-water mark (or highest tidal line in tidal areas) and adjacent wetlands and tributaries of all waters of the United States. While floodways typically fall entirely within the jurisdictional limit of Section 404 permitting, the full extent of the SFHA may not.</p>
Coastal Barrier Resources Act of 1982 (16 USC 3501 et seq.)	<p>Established the Coastal Barrier Resources System (CBRS) to protect sensitive and vulnerable, relatively undeveloped, coastal barrier islands found along the coastlines of the Atlantic Ocean, Gulf of Mexico, and the Great Lakes.</p> <p>The Coastal Barrier Improvement Act of 1990 expanded the CBRS to include undeveloped areas in Florida, Puerto Rico, U.S. Virgin Islands, and areas surrounding the Great Lakes. It also added a new category of lands called “otherwise protected areas (OPAs)”. OPAs are based on areas established under federal, state, or local law or held by a qualified organization, primarily for coastal wildlife refuge, sanctuary, recreational, or natural resource conservation purposes.</p>

²⁶ 16 USC 1453, Section 304.

Table 3.5-2. Floodplains, Wetlands, and Coastal Zones Statutes and Regulations

Statute, Regulation, or Term	Description
Coastal Barrier Resources Act of 1982 (Cont'd)	<p>Protects CBRS units from development by making them ineligible for most new federal expenditures and financial assistance, including federal flood insurance through the NFIP for new or substantially improved structures within the CBRS.</p> <p>VA has procedures in place intended to prevent loan guaranties in CBRS-protected locations. VA policy requires appraisers to ascertain and lenders to certify that a subject property is not in a CBRS-protected location.</p>
Coastal Zone Management Act (CZMA) (16 USC 1451 et seq.)	<p>The CZMA is intended to protect freshwater and marine coastal areas from continued growth in the coastal zone and from environmental degradation associated with this growth. It applies to all coastal states and to all states that border the Great Lakes. Two important components of the national program include: (1) the federal consistency component (see requirements column); and (2) the Coastal Zone Enhancement program, which provides incentives to states to enhance their state programs within nine key areas, including wetlands and coastal hazards.</p> <p>NOAA oversees implementation and provides technical assistance. States assume primary responsibility for program implementation.</p> <p>Federal agencies (in this instance, VA) must ensure that any federal action with reasonably foreseeable effects on coastal uses and resources must be consistent with enforceable policies of a state's approved coastal program.</p> <p>The CZMA promotes active state involvement in coastal zone protection. Development projects within the coastal zone must demonstrate compatibility with the state's program and apply for a coastal zone permit.</p>
Coastal Zone Management – Various state and local statutes and regulations	<p>States are responsible for developing their own CZM plans and have the authority to determine whether activities of governmental agencies are consistent with their federally approved CZM programs. With a federally approved CZM program, the state becomes eligible for federal coastal zone grants.</p> <p>Local governments also play a critical role in protecting the public interest along ocean and Great Lake shorefronts, and they often regulate land use beyond state minimum requirements. In addition, rigorous permitting requirements (e.g., performance standards), at both the state and local level, help to limit new development.</p> <p>Each state's CZM program must include provisions protecting coastal natural resources, fish and wildlife, managing development, providing public access to the coast for recreational purposes, and incorporating public and local coordination for coastal decision making.</p>
Executive Order 11988 Floodplain Management	<p>Issued in 1977, it requires 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 wherever there is a practicable alternative.</p> <p>Requires federal agencies (including VA) to evaluate the potential effects of an action in a floodplain and ensure planning programs and budget requests consider flood hazards and floodplain management.</p>
Executive Order 11990 Protection of Wetlands	<p>Issued in 1977, it requires each federal agency to take action to minimize the destruction, loss, or degradation of wetlands and preserve and enhance the values of wetlands in carrying out agency responsibilities.</p> <p>Before implementing an action that is in, or may affect, a wetland, all federal agencies (including VA) must demonstrate that there is no practicable alternative and the proposed action includes all practical measures to minimize harm to the wetland. The order does not apply to permits, licenses, or other activities involving wetlands on non-federal property.</p>

Table 3.5-2. Floodplains, Wetlands, and Coastal Zones Statutes and Regulations

Statute, Regulation, or Term	Description
Floodplain Management - Various state and local statutes and regulations	<p>Many states have adopted floodplain management statutes and regulations and have established and funded their own floodplain management programs.</p> <p>Local governments bear the responsibility of protecting residents from flood hazards, working to reduce flood damage and preserving floodplain functions and resources. Local regulation of development in flood-prone areas is most frequently conducted through floodplain zoning ordinances.</p>
National Flood Insurance Act of 1968 (42 USC 4001 et seq.)	<p>Established the NFIP with goals including: (1) providing flood insurance for structures and contents in communities that adopt and enforce an ordinance outlining minimal floodplain management standards; and (2) identifying and mapping areas of high and low flood hazard and establishing insurance rates for structures inside each flood hazard area.</p> <p>The Act was amended by the Flood Insurance Protection Act of 1973 which mandated that lenders require flood insurance on loans secured by properties located within high-risk flood areas (e.g., SFHAs).</p> <p>FEMA is responsible for enrolling communities in the NFIP, establishing the minimum floodplain management criteria, monitoring and oversight, technical assistance, and enforcing the program requirements on participating communities.</p> <p>The NFIP was designed so that floodplain management would be carried out at the state and local levels; it operates as a federal-state-local partnership that depends on state statutes and regulations authorizing local governments to regulate floodplain development under the state's powers.</p>
Wetlands – Various state and local statutes and regulations	<p>Many states and tribes have increased their roles in wetlands protection and management by adopting one or more wetlands programs or tools. Some states have assumed the Section 404 permitting authority and regulate those activities.</p> <p>Local governments are also involved in the protection of wetlands. Use of local zoning ordinances, similar to those used in floodplain management, and subdivision controls are the most commonly used wetland protection techniques among local governments. Wetland regulations have been adopted in at least 2,000 communities.</p> <p>All states indicate that their program is structured to provide (at a minimum), the basic regulatory services required for their state's regulatory compliance with the Clean Water Act (e.g., through a state dredge and fill permitting program). Some states also include wetlands buffer zone regulations which protect areas directly adjacent to waterways and wetlands, where the specified buffer zone width varies by state and slope of the land, etc.</p>

Source: FEMA 2018b; NOAA 2012

CBRS = Coastal Barrier Resources System; CZM = coastal zone management; CZMA = Coastal Zone Management Act; FEMA = Federal Emergency Management Agency; FIRM = Flood Insurance Rate Map ; HLP = Housing Loan Program; NFIP = National Flood Insurance Program; NOAA = National Oceanic and Atmospheric Administration; OPA = otherwise protected area; SFHA = Special Flood Hazard Area; USACE = U.S. Army Corps of Engineers; USC = United States Code; USFWS = U.S. Fish and Wildlife Service; VA = Department of Veterans Affairs

3.5.3 Existing Conditions

This section provides a national overview of floodplain (3.5.3.1), coastal zone (3.5.3.2), and wetland resources (3.5.3.3). USGS HUC-2 Watershed Regions were selected as the unit of analysis for these resource areas, and Section 3.0, Affected Environment, Introduction, has a discussion and figure of the HUC-2 Watershed Regions. A more detailed summary of existing conditions at the HUC-2 water resource regional level for each of these resource areas is provided in Section 3.5.3.4 (see Table 3.5-6).

Unit of Analysis
USGS Hydrologic Unit Code (HUC-2)

3.5.3.1 Floodplains

Rivers, streambeds, and adjacent floodplains are integral parts of every natural watercourse. Our nation has over 3.5 million miles of rivers and streams combined; floodplains account for approximately 7 percent of the nation's total land area and 15 percent of our urban areas, as over half of urban floodplains have been already developed. Approximately 175 million acres are subject to periodic flooding (FEMA 2018a).

Riverine floodplains vary with the terrain, ranging from narrow, confined channels in hilly and mountainous areas, to wide, flat areas (e.g., Midwest and many coastal areas, such as in the southeastern United States). Riverine flooding occurs along rivers, streams, ditches, and other waterways that are subject to bank flooding, flash floods, and urban drainage system flooding. Floodplain width is a function of the size of the stream, the rate of downcutting, the channel slope, and the hardness of the channel wall. Floodplains are uncommon in headwater channels where the streams are small, the shores and rate of downcutting are high, and the valley walls are often exposed bedrock. They are also subject to change; composed of unconsolidated sediments, they can be rapidly eroded during floods and high flows of water, or they may be the site on which new layers of mud, sand, and silt are deposited.

Typically, a stream uses some portion of its floodplain approximately once every 2 to 3 years. Less frequently, the stream may inundate its entire floodplain to considerable depth. Flooding occurs along major rivers and small streams, coastlines, and the margins of some lakes. Flooding problems can occur in lakes that are landlocked or have inadequate outlets under extreme high-water level conditions, (e.g., the Great Lakes). The flood potential differs greatly from one area or region to another. Historically, flooding has occurred in every region of the country and all 50 states (FEMA 2018a).

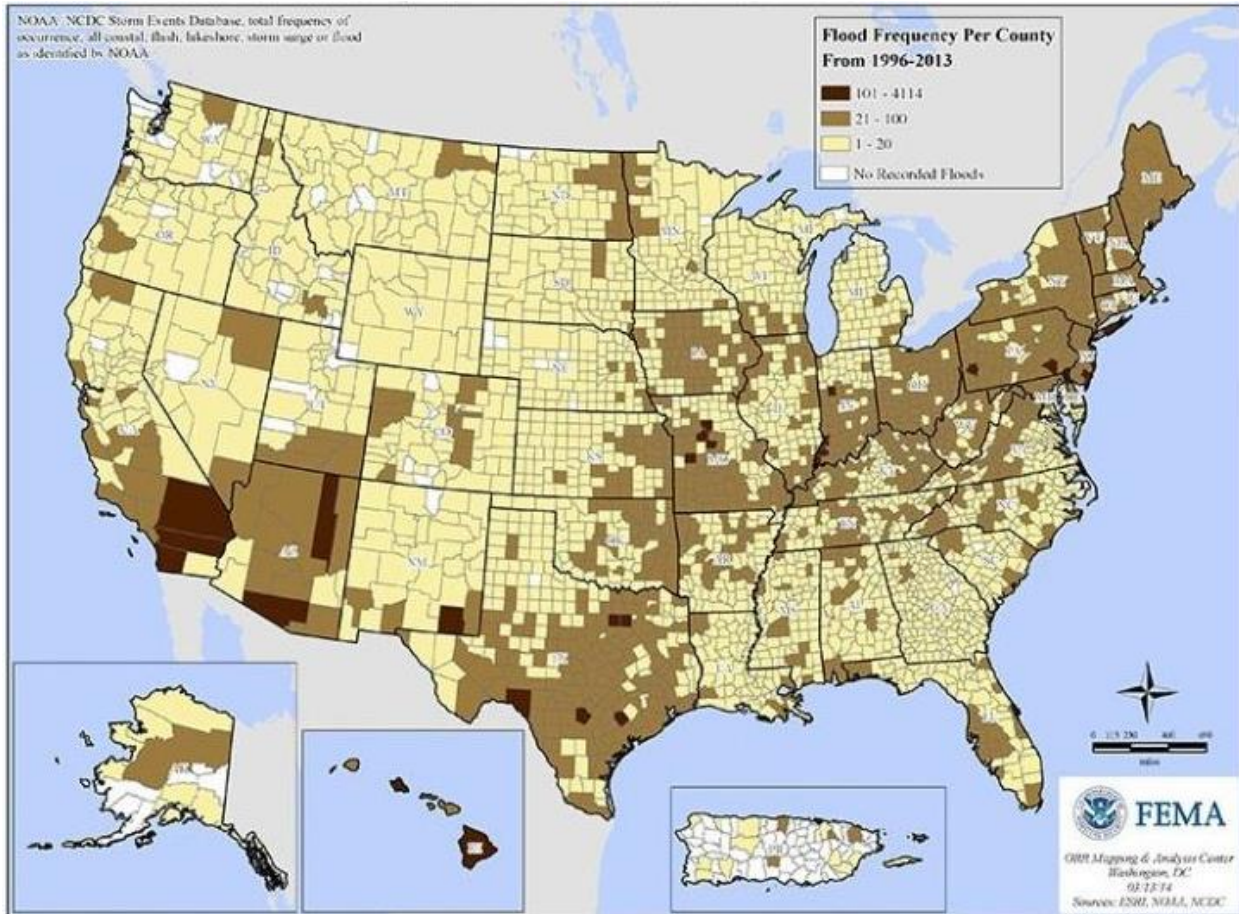
Rivers ultimately flow into a lake or estuary. Estuaries are typically found in coastal areas where rivers meet the sea and include areas below the low-water line. They are a non-enclosed system that extends inland from the sea, where fresh and salt waters can mix to create a brackish, aquatic system. They are also a type of wetland and overlap with floodplain areas. Chesapeake Bay is the largest estuary in North America.

Flooding Potential

Using flooding frequency as a surrogate for identifying potential flood prone areas, Figure 3.5-1 shows flood events, by county, for the period 1996-2013 based on NOAA's storm events database (including flash flooding to river flooding and storm surge inundation) (The Weather Channel 2016).

The two darkest (brown) shadings in the figure show those counties where flooding has been most frequent in the United States during this period. The map shows that some counties with large urban areas (e.g., Dallas/Fort Worth, Atlanta, Chicago) have had a higher number of flood events than rural areas; urban areas have a larger amount of pavement (impervious surface) than rural areas and are generally more prone to flooding. A relatively higher number of flood reports is also seen from the Northeast into the Midwest. In these regions, snowmelt combined with rainfall can lead to river

flooding in spring. Other areas where river flooding stands out are in counties near the Red River along the border between northwest Minnesota and eastern North Dakota, and in the Appalachian Mountains in the eastern United States, where the hilly terrain can increase flooding potential. Flash flooding is a concern from slow-moving thunderstorms in the Midwest in the summer. The Desert Southwest also experiences flash flooding, where rainfall runs off dry and hardened desert soils quickly filling the rivers, streams, and creeks. Another reason for the high concentration in the Southwest is the larger county size, which provides a sizable geographic footprint within which storms may occur, as compared to counties in the East (The Weather Channel 2016).



Source: The Weather Channel 2016

FEMA = Federal Emergency Management Agency; NCDC = National Climatic Data Center; NOAA = National Oceanic and Atmospheric Administration

Figure 3.5-1. Frequency of Flood Events by County (1996–2013)

For coastal areas, flooding can result from rainfall, water rise due to wave action, high tides, and/or storm surge. This is seen in coastal cities like the Tampa metropolitan area in Florida or Charleston, South Carolina where there is a higher number of flood events. Higher concentrations are also seen on Long Island, New York, and parts of New Jersey which could reflect the numerous flood events that occurred in those areas during Hurricane Sandy in 2012.

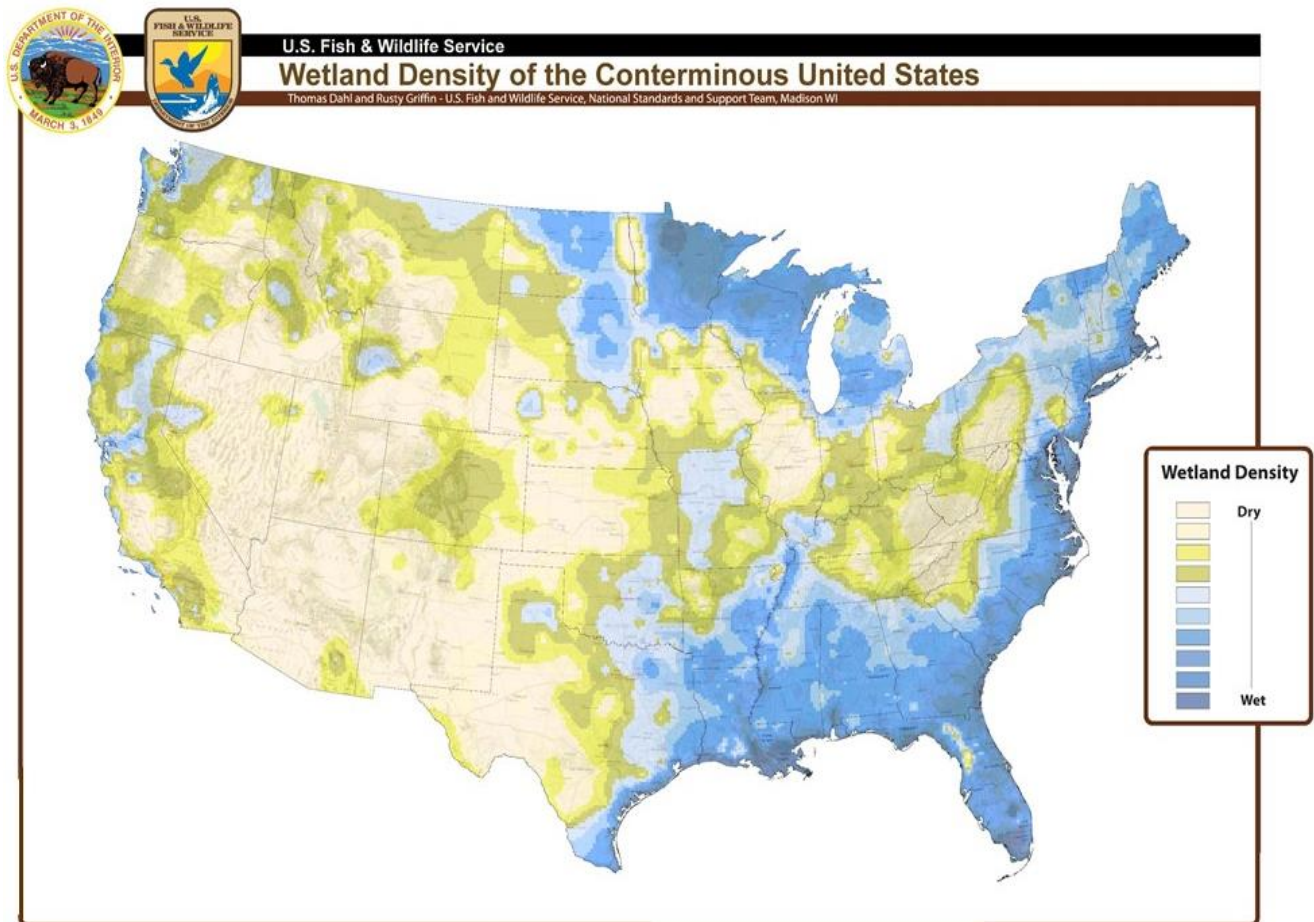
Floodplain Development

Floodplains are continuously shaped by flooding and the forces of water, which either erode them or build them up through the deposition of sediment. Because they are naturally flat and along navigable waterways, floodplains are often developed, affecting both the immediate floodplain and events downstream. Floodplains are the target of many different activities, including residential, infrastructure, commerce, and agriculture; as a result, a substantial portion of this country's development is now subject to flooding. According to FEMA, there are approximately 17,000 to 18,000 flood-prone communities, and approximately 10 million households are located in floodplains (FEMA 2018a).

Annual population growth in coastal and riverine floodplains is approximately double the national growth rate, and the population at large is increasingly at risk from the consequences of floods (FEMA 2018a). Some of the many problems resulting from floodplain development include alteration of the floodplain and flooding dynamics; harm to people and damage to buildings and infrastructure by periodic flooding; and destruction/damage to important ecological habitat.

3.5.3.2 Wetlands

Wetlands are typically associated with lakes, rivers, streams, and coastal areas; many of which are located in floodplains. They are found in all 50 states and physiographic regions in the country, and in every U.S. territory. Figure 3.5-2 illustrates the relative density of wetland occurrence in the conterminous United States. The information was gathered from over 5,000 sample plots used to monitor wetland extent and change in all physiographic regions of the conterminous United States. Deepwater lakes and rivers were used in the analysis (USFWS 2018h). Wetlands identified in this document are more inclusive than the statutory wetland definition applicable to permitting under Section 404 of the Clean Water Act.



Source: Dahl 2011; USFWS 2018h

Information about size, type, or jurisdictional status of wetlands should not be made from this figure.

Figure 3.5-2. Wetland Density of the Conterminous United States

Wetlands compose approximately 5 percent, by area, of the conterminous United States. An estimated 95 percent of these wetland types are freshwater; the rest are marine or estuarine (Dahl 2011). Table 3.5-3 provides definitions of major freshwater wetland types, and Table 3.5-4 provides a breakout of wetland acreage in the 48 lower states by the five wetland types identified in Section 3.5.1.3, based on 2009 wetlands data. Wetlands in Alaska, Hawaii, and the five U.S. Territories are addressed in the regional discussion in Section 3.5.3.4 (see Table 3.5-6).

Table 3.5-3. Definitions of Major Freshwater Wetland Types

Wetland Type	Definitions
Bogs	Characterized by spongy peat deposits, a growth of evergreen trees and shrubs, and a floor covered by a thick carpet of sphagnum moss. Their only water source is rainwater.
Forested and shrub swamps	Fed primarily by surface water inputs, dominated by trees and shrubs, and classified as forested or shrub. Characterized by very wet soils during the growing season and standing water during certain times of the year. Well-known swamps include Georgia's Okefenokee Swamp and Virginia's Great Dismal Swamp. Note: Mangrove swamps are a third type of swamp that include coastal wetlands characterized by salt-tolerant trees, shrubs, and other plants.
Freshwater marshes	Characterized by periodic or permanent shallow water and typically derive most of their water from surface waters, including floodwater and runoff, and also do receive groundwater inputs. Dominated by herbaceous (rather than woody) plant species.
Prairie potholes	Develop when snowmelt and rain fill the pockmarks left on the landscape by glaciers; groundwater input is also important.
Playas	Small basins that collect rainfall and runoff from the surrounding land.
Vernal pools	Include either bedrock or a hard clay layer in the soil that helps retain water in the pool. They are covered by shallow water for variable periods from winter to summer but may be completely dry for most of the summer and fall.
Wet meadows	Commonly occur in poorly drained areas such as lake basins, low-lying depressions, and the land between shallow and upland areas. Precipitation serves as the primary water supply, so they are often dry in the summer.
Wet prairies	Similar to wet meadows but remain saturated longer. They may receive water from intermittent streams as well as groundwater and precipitation.

Source: USEPA 2001

Table 3.5-4. Wetland Types and Acreage in Conterminous United States

Wetland Type	Description	Acreage (2009)
SALTWATER HABITAT		
Estuarine Intertidal/emergent vegetation	Salt marsh	3.86 million
Estuarine Intertidal forested/shrub	Mangroves or other estuarine shrubs	680,000
Estuarine Intertidal non-vegetated	Beaches, bars	1.018 million
Marine Intertidal	Near shore	227,800
TOTAL		5.78 million
FRESHWATER HABITAT		
Palustrine forested	Forested swamps	51.6 million
Palustrine emergent	Inland marshes, wet meadows	27.4 million
Palustrine shrub	Shrub-scrub wetlands	18.5 million
Palustrine unconsolidated bottom (ponds), including:		6.7 million (Total, as follows):
• Pond natural characteristics	Open water ponds/aquatic bed, Small bog lakes, vernal pools, kettles, beaver ponds	2.1 million
• Industrial	Flooded excavation sites, in-ground treatment ponds, lagoons	410,500
• Urban	Recreational ponds, golf course ponds, residential lakes, etc.	963,000
• Agriculture/aquaculture	Farm ponds, agricultural waste ponds, irrigation or drainage water retention ponds	2.98 million (agriculture)
	Ponds for aquaculture	266,000 (aquaculture)
TOTAL		104.2 million
DEEPWATER HABITAT		
Estuarine subtidal	Open water, bay bottoms	18.8 million
Lacustrine (lake) [does not include open water of Great Lakes]	Lakes and reservoirs	16.8 million
Riverine (may be tidal or non-tidal)	River systems (and associated wetlands)	7.5 million
TOTAL		43.1 million

Source: Dahl 2011

Table 3.5-5 shows estuarine emergent (salt marsh) wetland as the most prevalent type of estuarine and marine intertidal wetlands; and forested wetlands comprising the single largest category of wetlands in the freshwater system. The following discussion summarizes the general distribution by major freshwater wetland type. A great number of **freshwater wetlands** are located in the temperate climatic regions of the Northeast and Great Lakes. These wetlands are often found in association with extensive lake complexes. Freshwater wetlands are also common along rivers and streams (riparian wetlands), in isolated depressions surrounded by dry land, along the edges of lakes and ponds, and in other low-lying areas where the soil is sufficiently saturated by groundwater or precipitation. Forested swamps are found in the broad floodplains of the Northeast, Southeast, and South-Central United States and receive floodwater from nearby rivers and streams. Shrub swamps are often found adjacent to forested swamps. Major regions of the United States that support inland marshes include the Great Lakes coastal marshes, the prairie pothole region, and the Florida Everglades. Prairie potholes are most often found in the Upper Midwest, especially in Minnesota, North Dakota, South Dakota, and Wisconsin. Playas are found in the Southern High Plains area of the United States. Vernal pools occur on the west coast and provide some of the most ecologically important and distinctive habitat in California. Bogs are usually found in glaciated areas of the northern United States. Most boreal peatlands are found in the Great Lakes states (Michigan, Minnesota, and Wisconsin) and the Northeast. One type of bog, called a pocosin, is found only in the Southeastern Coastal Plain.

Estuarine wetlands are found scattered along the entire United States coastline and are associated with brackish tidal waters. They develop behind barrier islands and beaches or form along coastal rivers. Major types of estuarine wetlands include emergents (salt marsh), intertidal flats, and brackish vegetated shrubs (swamps). Tidal salt marshes are found along the coasts of the Atlantic Ocean, Pacific Ocean, and Gulf of Mexico, but they are most prevalent on the eastern coast from Maine to Florida and continuing to Louisiana and Texas along the Gulf of Mexico. Mangrove swamps, which include salt-loving shrubs or trees, are found in more tropical climates like southern Florida and the Commonwealth of Puerto Rico. **Marine wetlands** and deeper aquatic habitats generally occupy the oceanic side of the estuarine system and can be represented by reefs and shoals of kelp beds.

Estuary: An estuary is an area where a freshwater river or stream meets the ocean. When freshwater and seawater combine, the water becomes brackish, or slightly salty. Estuary ecosystems are among the most productive ecosystems in the world.

Finally, another important grouping of wetlands that includes both tidal/saltwater and non-tidal/freshwater wetlands are the **coastal wetlands**, which are located within coastal watersheds that drain into the Atlantic Ocean, Pacific Ocean, or Gulf of Mexico. Coastal wetlands make up approximately 40 percent (40 million acres) of all wetlands in the conterminous United States. They include tidal and non-tidal, fresh, saline, and brackish water wetlands such as (but not limited to) salt marshes, bottomland hardwood swamps, fresh marshes, seagrass beds, mangrove swamps, and the shrubby depressions (pocosins) found in the southeastern United States. They are of environmental and economic importance (e.g., flood protection, erosion control, wildlife habitat and food, commercial

fisheries, recreation). Eighty-one percent of coastal wetlands in the continental United States are located in the southeastern portion of the country (USEPA 2016a).

Highest Wetlands Acreages within the United States. The USGS has compiled wetlands data for nearly every state that includes estimated total state wetlands acreage. Those states in the lower 48 containing the largest wetland acreages (over 1 million acres) are identified in Table 3.5-5 (USGS 1997). Given that wetland loss has occurred in the United States over the years, current wetland acreages are likely lower than those identified by USGS in the 1997 report.

Table 3.5-5. States with the Highest Wetland Acreage Totals

State	Total Wetlands Acreage	State	Total Wetlands Acreage
Florida	11 million	North Carolina	4.6 million
Minnesota	9.5 million	Mississippi	3.9 million
Georgia	7.7 million	California	3.9 million
Texas	7.6 million	Louisiana	More than 3 million
South Carolina	5.7 million	Alabama	3 million
Michigan	5.4 million	Arkansas	2.6 million
Wisconsin	5 million	New York	2.4 million
North Dakota	4.9 million	South Dakota	1.8 million
Maine	4.9 million		

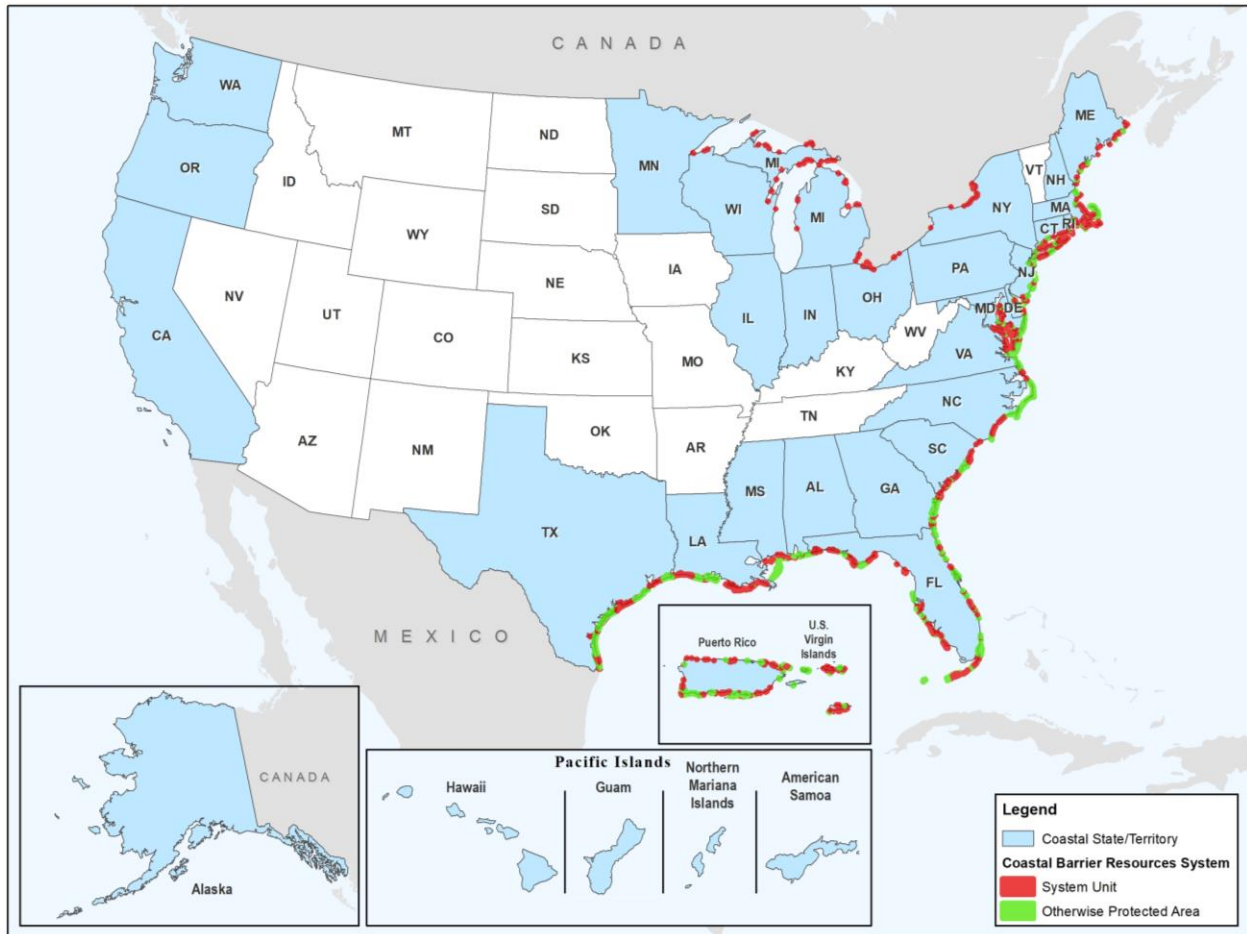
Source: California Water Board 2008; USGS 1997

Wetlands Quality

The National Wetland Condition Assessment (NWCA) is the first national scale evaluation of the ecological condition of United States wetlands, encompassing both tidal and non-tidal wetlands (USEPA 2011). The study found that nearly half of wetland area (48 percent) is in good condition; 32 percent is in poor condition, and the remaining 20 percent is in fair condition. Physical disturbances to wetlands and their habitat such as compacted soil (e.g., roads), ditching, and removal or loss of vegetation are the most widespread problems across the country. Non-native plants present high levels of stress to wetlands across the country, particularly in the interior plains and western United States.

3.5.3.3 Coastal Zones

The United States coastal zone includes the 35 United States coastal and Great Lakes states and territories shown on Figure 3.5-3. The specific coastal zone jurisdictions for each state and territory are defined in Section 3.5.3.4, Resource Information by HUC-2 Watershed.



U.S. = United States

Figure 3.5-3. Coastal States and Territories and Coastal Barrier Resource System Areas

The United States' extensive coastal resources include nearly 67,000 miles of coastal shoreline (including Alaska), more than 5,500 miles of Great Lakes shoreline, and approximately 90,500 square miles of tidal estuaries (USEPA 2000). The coastal zone supports ecologically important habitats (e.g., estuaries and wetlands) and natural resources. Coastal areas are also among the nation's most highly stressed natural systems. The most important factor in the decline of environmental conditions within the coastal zone has been the unprecedented increase in human population, particularly in the southeastern United States. In 2010, 123.3 million people, or 39 percent of the nation's population, lived in the 452 coastal counties directly on the shoreline, open ocean, major estuaries, and Great Lakes, which comprises less than 10 percent of the total United States, excluding Alaska. The population density of coastal shoreline counties is over six times greater than the corresponding inland counties (NOAA 2013a), and this population growth is expected to continue in the coming decades. This growth increasingly places heavy pressure on existing coastal habitat, including wetlands.

To meet protection goals of the Coastal Zone Management Act (CZMA), the National Coastal Zone Management Program takes a comprehensive approach managing coastal resources, balancing the often competing and conflicting demands of coastal resource use, economic development, and conservation. Key elements include protecting natural resources, managing development in high-hazard areas, giving development priority to coastal dependent uses, providing public access for recreation, prioritizing water-dependent uses, and coordinating state and federal actions. A wide range of issues are addressed through the program, including coastal development, water quality, public access, habitat protection, energy facility siting (including offshore development), ocean governance and planning, coastal hazards, and climate change.

All 35 coastal and Great Lakes states and territories have coastal development plans and participate in the National Coastal Zone Management (CZM) Program, with the exception of Alaska that withdrew from the voluntary program in July 2011 (NOAA 2016b). States prepare a CZM Program document that describes the state's coastal resources and how these resources are managed, including the regulation of shoreline development on dry land. State and/or local laws and regulations address siting, uses, design, construction methods and materials, density, etc. and range from recommendations to restrictions and prohibitions (see also Table 3.5-2). Any activities approved by communities participating in the National Flood Insurance Program (NFIP) that may have an effect on any land or water use or any natural resources in the coastal zone must conform to the enforceable policies of the approved state CZM Program.

States also identify CBRS Units and other coastal areas they wish to protect in their plans (e.g., National Marine Sanctuary Areas). Twenty-three of the states and territories in the coastal zone contain CBRS units (USFWS 2018g). See Figure 3.5-3 and Section 3.5.3.4, Resource Information by HUC-2 Watershed, for a listing of which states have CBRS units and which states do not. No coastal barriers were identified for protection along the Pacific Coast. While undeveloped eligible coastal barrier islands were mapped by the USFWS in California, Hawaii, Oregon, and Washington (Alaska was excluded), as required by the Coastal Barrier Improvement Act, none were recommended for inclusion in the System or as "otherwise protected areas." USFWS determined that protection of these areas under the existing law would produce limited benefits without consideration of the full range of Pacific coastal hazards, in light of the significant geological and climatic differences between the Pacific Coast and the Atlantic and Gulf coasts (USFWS 2000).

3.5.3.4 Resource Information by HUC-2 Watershed

A more detailed regional characterization of existing floodplain and wetland conditions and state-specific coastal zone designations is provided in Table 3.5-6 based on the 21 HUC-2 Water Resource Watershed Regions as described in Figure 3.0-3 in Section 3.0, Affected Environment, Introduction.

Table 3.5-6. Floodplains, Coastal Zone, and Wetlands Descriptions by HUC-2 Watershed

Floodplains and Wetlands	Coastal Zone
<p>New England Watershed (01) includes all of Maine, New Hampshire, and Rhode Island and parts of Connecticut, Massachusetts, Vermont, and New York. These states are all included in VA's Cleveland RLC. The watershed includes 114,760 miles of rivers and streams and an estimated 4,420 square miles of lakes, reservoirs, and ponds.</p>	
<p><u>Regional Floodplain Characteristics (time of year, causes of floods, geography, record events):</u></p> <p>Time of Year: Typically flooding occurs in the winter and spring but can occur year-round.</p> <p>Causes: Precipitation, snowmelt, and ice jams; however, flooding also occurs in older urban areas where floodplain development has removed floodwater storage capacity.</p> <p>Geography: Floodplains are relatively small throughout hilly or mountainous parts of the area due to steep topography, which can cause an increased chance of flash flooding.</p> <p>Record Events: The largest floods have generally been caused by two large storms with heavy precipitation falling in a 7-day period. Recent flooding events of note within the area occurred in association with Hurricanes Sandy (2012) and Irene (2011).</p> <p><u>Regional Wetland Characteristics:</u></p> <p>Wetlands are present and dominate this region; forested wetlands (e.g., red maple swamps) are the most abundant type, but non-forested salt marshes are common along the coastlines. Swamps and peatlands comprise most of New Hampshire as well as Maine's inland wetlands. The largest wetlands in Vermont and the portion of New York in this watershed are in the valleys of the northeast and river flood plains and deltas in the Lake Champlain Valley.</p> <p><u>Regional Estuary Characteristics (occurrence and geography):</u></p> <p>Occurrence: New England has 20 estuarine systems, encompassing over 2,046 square miles of water surface, including Narragansett Bay, the largest estuary in the watershed.</p> <p>Geography: New England estuaries usually are small, deep, and well flushed by tides, with relatively small watersheds. In the northern part of the watershed, the coastal shoreline consists mainly of drowned river valleys characterized by numerous small bays, rocky shorelines, wave-cut cliffs, and large, rocky islands. The southern part consists of drowned river valleys characterized by cobble, gravel, and sand beaches, and extensive tidal marshes.</p>	<p><u>Maine:</u></p> <p>Coastal zone area extends to the inland boundary of all towns bordering tidal waters and includes all coastal islands.</p> <p><u>Massachusetts:</u></p> <p>Coastal zone includes all land within 0.5 mile of coastal waters and salt marshes, as well as all islands.</p> <p><u>New Hampshire:</u></p> <p>Coastal zone covers areas next to the Atlantic Ocean and the lower Piscataqua River, along with the areas bordering the Great Bay and tidal rivers, and all 17 municipalities along tidal waters.</p> <p><u>Rhode Island:</u></p> <p>Coastal zone encompasses the entire state although the inland extent of the coastal management program's regulatory authority is generally within 200 feet inland from any coastal feature.</p> <p>CBRS units are found in every coastal state except New Hampshire.</p>

Table 3.5-6. Floodplains, Coastal Zone, and Wetlands Descriptions by HUC-2 Watershed

Floodplains and Wetlands	Coastal Zone
<p>Mid-Atlantic Watershed (02) includes all of Delaware, New Jersey, and Washington, District of Columbia, as well as parts of Connecticut, Maryland, Massachusetts, New York, Pennsylvania, Vermont, Virginia, and West Virginia. Part of VA's Cleveland (Connecticut, Delaware, Massachusetts, New Jersey, New York, Pennsylvania, and Vermont) and Roanoke (Maryland, Virginia, West Virginia, and Washington, District of Columbia) RLCs lie in this watershed. The watershed includes 230,840 miles of rivers and streams and an estimated 9,470 square miles (excluding Pennsylvania) of lakes, reservoirs, and ponds.</p>	
<p><u>Regional Floodplain Characteristics:</u></p> <p>The Mid-Atlantic watershed's floodplains (flat topographies) are shaped by topography and intensive human alteration. They predominantly receive floodwaters during winter and spring as result of precipitation and snowmelt. Along the coastal plain, floodplains are wide forested areas that may flood annually. The Susquehanna River Basin in New York, Pennsylvania, and Maryland is one of the most flood-prone areas in the nation. Recent flooding events of note within the Mid-Atlantic have occurred during Hurricane Sandy (2012), Hurricane Irene (2011), Tropical Storm Lee (2011), and Hurricane Ivan (2004). Other heavy rainfall events also have resulted in flooding events.</p> <p><u>Regional Wetland Characteristics:</u></p> <p>Wetlands are present and dominate this region. Salt marshes and tidal flats are most common in the coastal areas. Both shores of the Chesapeake Bay in Maryland have extensive estuarine wetlands. The Delmarva Peninsula has many wetlands in the bays and topographic depressions. Forested swamps are the most common freshwater wetlands, followed by open water, marshes, shrub wetlands, and others. Pennsylvania wetlands are most densely distributed in the glaciated northwestern and northeastern parts of the state.</p> <p><u>Regional Estuary Characteristics:</u></p> <p>There are eight major river systems in the Mid-Atlantic, which meander through flat topographies and empty into extensive estuary systems. The Mid-Atlantic includes two of the largest estuaries in the United States—Delaware Bay and Chesapeake Bay—and 20 minor estuaries, encompassing more than 8,996 square miles of water surface. Fed by 50 major rivers and streams, the Chesapeake Bay is 200 miles long, is the largest estuary in North America, and the 3rd largest in the world.</p>	<p><u>Connecticut:</u></p> <p>Coastal zone is two-tiered. The first tier, the “coastal boundary,” generally extends inland 1,000 feet from the shore. The second tier, the “coastal area,” includes all the state’s 36 coastal municipalities.</p> <p><u>Delaware:</u></p> <p>Entire state designated as a coastal zone due to its small size and is divided into two tiers: the “coastal strip” and the rest of the state. The coastal strip, averaging 4 miles in width, receives special zoning protection from industrial development, while the second tier only falls under general program provisions.</p> <p><u>Maryland:</u></p> <p>Coastal zone follows the inland boundary of the counties (and Baltimore City) bordering the Atlantic Ocean, Chesapeake Bay, and the Potomac River (as far as the municipal limits of Washington, District of Columbia).</p> <p><u>New Jersey:</u></p> <p>Coastal zone encompasses approximately 1,800 miles of tidal coastline and ranges in width from 100 feet to 24 miles inland.</p> <p><u>New York:</u></p> <p>Inland coastal zone boundary is variable but generally is 1,000 feet from the shoreline in non-urbanized areas. In urbanized areas and other developed locations along the coastline, the inland boundary is usually 500 feet or less from the shoreline, with the boundary possibly extending inland up to 10,000 feet to encompass significant coastal resources.</p>

Table 3.5-6. Floodplains, Coastal Zone, and Wetlands Descriptions by HUC-2 Watershed

Floodplains and Wetlands	Coastal Zone
	<p><u>Pennsylvania:</u> Coastal zone along Lake Erie varies from 900 feet in urban areas to over 3 miles in rural areas, and the Delaware River.</p> <p><u>Virginia:</u> Coastal zone includes the state's 29 coastal counties, 17 cities, and 42 incorporated towns. Note that the coastal management program for Pennsylvania comprises two widely separated coastal areas: the 63-mile Lake Erie shoreline (see also Great Lakes Region (04)) and the 57-mile stretch of coastline along the Delaware Estuary. The estuary boundary extends inland from 660 feet in urbanized areas to 3.5 miles in rural areas.</p>
<p>South Atlantic-Gulf Watershed (03) drains to the Atlantic Ocean within and between Virginia and Florida, and to the Gulf of Mexico within and between Florida and Louisiana. Part of VA's Atlanta (North Carolina, South Carolina, and Georgia) and St. Petersburg (Florida, Alabama, and Mississippi) RLCs lie within this watershed. The watershed includes 631,730 miles of rivers and streams and an estimated 32,360 square miles of lakes, reservoirs, and ponds.</p>	
<p><u>Regional Floodplain Characteristics:</u> Most of the South Atlantic-Gulf watershed is within the coastal plain, where floodplains are wide forested areas that may flood annually. Throughout hilly parts of the area, floodplains are relatively small due to steeper topography, which increases the chance of flash flooding. Floodplains predominantly receive floodwaters during the spring, summer, and fall seasons. Several large areas of development, such as Georgia's Atlanta metropolitan area and south Florida, experience urban drainage problems since there are little to no natural floodplains remaining. The South Atlantic-Gulf watershed is subject to tropical storms and hurricanes. More than 40 hurricanes, tropical storms, and heavy rainfall events have occurred within the South Atlantic-Gulf watershed since 1979, resulting in significant flooding. The most recent significant events include Hurricanes Irma (2017), Isaac (2012), and Sandy (2012).</p> <p><u>Regional Wetland Characteristics:</u> Extensive areas of wetlands are present in this region. Coastal areas include extensive salt marshes areas and estuarine tidal flats. Fresh waters in the region include rivers, streams, lakes, and estuaries. Freshwater wetlands typically include bottomland forests (found in alluvial floodplains), swamps, and freshwater marshes. The greatest acreages of wetlands are typically found in the coastal plain, where floodplain wetlands are most extensive and tidal freshwater swamps and estuarine marshes meet. The Roanoke River floodplain has one of the largest intact and least disturbed bottom-land hardwood forest in the region. Other wetland types include wet pine flatwoods, pocosins, Carolina bays, and beaver ponds. Georgia's wetlands include mountain seepage areas. The Okefenokee Swamp in Georgia, one</p>	<p><u>Alabama:</u> Coastal zone extends inland to the continuous 10-foot contour in Mobile and Baldwin counties.</p> <p><u>Florida:</u> Coastal zone includes the entire state but is divided into two tiers. Only coastal cities and counties that include or are contiguous to state water bodies are eligible to receive coastal management funds.</p> <p><u>Georgia:</u> Coastal zone includes the state's six coastal counties and five "inland tier" counties, which include Chatham, Effingham, Bryan, Liberty, McIntosh, Long, Glynn, Wayne, Brantley, Camden, and Charlton counties.</p>

Table 3.5-6. Floodplains, Coastal Zone, and Wetlands Descriptions by HUC-2 Watershed

Floodplains and Wetlands	Coastal Zone
<p>of the largest freshwater wetlands in the United States, is a combination of emergent marshes, aquatic beds, forested and scrub-shrub wetlands and forested uplands. Florida has the most wetlands of any state in the conterminous United States. Most of Florida's wetlands are forested freshwater habitats on stream floodplains, in small depressions and ponds, and covering wet flatwoods. Wetlands in the southern tip of Florida include mangrove swamps. The Everglades is a large freshwater marsh in southern Florida.</p> <p><u>Regional Estuary Characteristics:</u></p> <p>The area includes 40 estuary systems, encompassing more than 9,653 square miles of water surface. The South Atlantic-Gulf coast consists of five regions: (1) Virginia, North Carolina, and northern South Carolina shoreline—composed of long barrier and mainland beaches (including the Outer Banks and the South Carolina Grand Strand region); (2) region extending from Charleston, South Carolina, to the St. Johns River entrance at Jacksonville, Florida—a tide-dominated coast composed of numerous short barrier islands, separated by large tidal inlets and backed by wide expanses of tidal marsh; (3) the east coast of Florida—composed of barrier and mainland beaches backed by narrow bays and rivers; (4) the eastern Gulf coast from southwest Florida to the Mississippi River—composed of low-lying sandy barrier islands south of Tarpon Springs, Florida, and west of St. Marks, Florida, with a marsh-dominated coast in between in the Big Bend area of Florida; and (5) unrestricted open bays, semi-enclosed lagoons, tidal marshes, and delta complexes in the Gulf of Mexico.</p>	<p><u>Mississippi:</u></p> <p>Coastal zone includes the three coastal counties, as well as all adjacent coastal waters and the barrier islands of the coast.</p> <p><u>North Carolina:</u></p> <p>Coastal zone includes 20 coastal counties that in whole or in part are adjacent to, adjoining, intersected, or bounded by the Atlantic Ocean or any coastal sound.</p> <p><u>South Carolina:</u></p> <p>Coastal zone includes all lands and waters in the counties of the state that contain any one or more "critical areas," which are defined as coastal waters, tidelands, beaches, and primary oceanfront sand dunes.</p> <p>CBRS units are found in every coastal state.</p>
<p>Great Lakes Watershed (04) drains to the Great Lakes and St. Lawrence River. The area includes parts of Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin. Part of VA's Cleveland (New York, Pennsylvania, Ohio, Indiana, and Michigan) and St. Paul (Illinois, Minnesota and Wisconsin) RLCs lie within this watershed. The Great Lakes have approximately 10,000 miles of shoreline; the watershed includes 229,470 miles of rivers and streams and 64,370 square miles of lakes, reservoirs, and ponds.</p>	
<p><u>Regional Floodplain Characteristics:</u></p> <p>In the Great Lakes watershed, floodplains usually receive floodwaters during winter and spring. The natural communities of these floodplains are predominantly lowland hardwoods along large rivers. These floodplain systems are produced and maintained by channel meandering, sedimentation, and erosion caused by natural hydrological variation. Regrowth of the dominant species (cottonwood and willow) is dependent on flooding and movement of river channels, which creates bare, moist soil needed for seedling establishment. Flooding events of note have occurred in association with rain events that have caused high lake levels and subsequent flooding.</p> <p><u>Regional Wetland Characteristics:</u></p> <p>Wetlands dominate this region. Non-forested wetlands, or coastal and embayment marshes, are common near and along the Great Lakes' shores, including in northeastern Illinois, northwestern Pennsylvania, and south and east of Lake Ontario in New York. There is a large concentration of wetlands in northeastern Illinois and near the Indiana Dunes National Lakeshore in Indiana. Common wetlands in Wisconsin include swamps and marshes in southern Wisconsin and peatlands in northern</p>	<p><u>Illinois:</u></p> <p>Coastal zone includes a 63-mile stretch along Lake Michigan.</p> <p><u>Indiana:</u></p> <p>Coastal zone is based on watershed boundaries and varies from a little less than 2 miles to 17 miles from the shore.</p> <p><u>Michigan:</u></p> <p>Coastal zone generally extends a minimum of 1,000 feet inland from the ordinary high-water mark, and the boundary extending further inland in some locations to capture important coastal features.</p>

Table 3.5-6. Floodplains, Coastal Zone, and Wetlands Descriptions by HUC-2 Watershed

Floodplains and Wetlands	Coastal Zone
<p>Wisconsin. Wetlands are most numerous in the glaciated parts of the state. The unglaciated southwestern Wisconsin has few wetlands except in stream valleys. Other Ohio wetlands include swamps, wet prairies, peatlands, and wetlands along stream margins and backwaters. Most Michigan wetlands are vegetated by forest or shrubs, but fresh marsh is abundant in coastal and inland areas. Minnesota's wetlands range from extensive northern peatlands to small prairie potholes. Minnesota also has 150,000 to 200,000 acres of wild rice beds.</p> <p>The Great Lakes ecosystem features an extensive watershed with 5,000 tributaries; tens of thousands of smaller lakes also occur within the landscape.</p>	<p>Michigan claims the world's largest freshwater coastline.</p> <p><u>Minnesota:</u></p> <p>Coastal zone includes the area approximately 6 miles inland from Lake Superior, following the nearest township boundaries along the shore.</p> <p><u>Ohio:</u></p> <p>Coastal zone is varied and runs through the nine counties bordering Lake Erie and its tributaries. The boundary ranges in width from less than 0.5 mile to 15 miles depending on features such as coastal wetlands and bluffs.</p> <p><u>New York:</u></p> <p>Coastal zone boundary is variable but generally 1,000 feet from the shoreline in non-urbanized areas. In urban/developed locations along the coastline, the inland boundary is usually 500 feet or less from the shoreline but extends up to 10,000 feet inland to encompass significant cultural resources.</p> <p><u>Pennsylvania:</u></p> <p>Coastal zone in this region extends along the 63-mile Lake Erie shoreline, varying from 900 feet in urban areas to over 3 miles in rural areas. The Wisconsin coastal zone comprises 15 counties bordering Lake Superior, Lake Michigan, and Green Bay.</p> <p>CBRS units are found in every Great Lakes state except in Illinois, Indiana, and Pennsylvania.</p>

Table 3.5-6. Floodplains, Coastal Zone, and Wetlands Descriptions by HUC-2 Watershed

Floodplains and Wetlands	Coastal Zone
<p>Ohio Watershed (05) includes parts of Illinois, Indiana, Kentucky, Maryland, New York, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, and West Virginia. Parts of VA's Roanoke (Kentucky, Maryland, Virginia, and West Virginia), Atlanta (Tennessee and North Carolina), Cleveland (Indiana, New York, Ohio, and Pennsylvania) and St. Paul (Illinois) RLCs are within this watershed. The watershed includes 100,000 miles of rivers and streams and 1,094 square miles of lakes, reservoirs, and ponds. Surface waters in this region include more than 513,990 miles of rivers and streams and 3,460 square miles of lakes, reservoirs and ponds.</p>	
<p><u>Regional Floodplain Characteristics:</u></p> <p>There are 16 major river systems within the Ohio watershed. Lakes within the watershed are a mixture of natural and human-made lakes and reservoirs. Riverine flooding is the main type of flooding in the area, and the Ohio River and its tributaries have a long history of flooding. Floodplains within the Ohio watershed predominantly receive floodwaters during winter and spring. Precipitation and ice jams are the main causes of flooding. Dams built for flood control and navigation have altered the natural course of the Ohio River. Alluvial fans occur within mountain valleys of Kentucky, Tennessee, and West Virginia. Flooding events of note within the Ohio watershed have occurred in association with hurricanes (Katrina and Rita in 2005), tropical storms, and other heavy rainfall events.</p> <p><u>Regional Wetland Characteristics:</u></p> <p>Wetlands are present but not as dominant in this region as in regions 01, 02, and 03. Forested wetlands (swamps) are common in this region. West Virginia has peat bogs, marshes, wet meadows, and ponds. Bottom-land forests are common in the floodplains of rivers in western Tennessee, major rivers in Illinois and Kentucky. Northeastern Illinois has a large concentration of wetlands; most of the wetlands in Indiana are in the northeastern part of the state (including extensive wetlands in and near the Indiana Dunes National Lakeshore). Ohio wetlands also include wet prairies. Kentucky's wetlands mostly lie shoreward of rivers, lakes, and reservoirs and include cypress swamps, marshes, and ponds in addition to bottom-land hardwood forests as noted previously.</p>	<p>Not Applicable</p>
<p>Tennessee Watershed (06) encompasses the Tennessee River watershed and includes much of Tennessee as well as parts of Kentucky, Mississippi, Alabama, Georgia, North Carolina, and Virginia. Parts of Roanoke (Kentucky and Virginia), Atlanta (Georgia, Tennessee, and North Carolina) and St. Petersburg (Mississippi and Alabama) RLCs lie within this watershed. The Tennessee watershed is dominated by the Tennessee River and its numerous reservoirs. The watershed includes 129,680 miles of rivers and streams and 1,100 square miles of lakes, reservoirs, and ponds.</p>	
<p><u>Regional Floodplain Characteristics:</u></p> <p>Clear mountain streams are scattered through the southern Appalachian Mountains where the majority of land is publicly owned and protected. Floodplains within the area predominantly receive floodwaters during spring, summer, and fall. Dams with the primary intent of flood control have altered the Tennessee River. Alluvial fans occur within mountain valleys of Tennessee. Floodplain forests within the eastern part of the area have slight vegetation differences depending on the floodplain landforms. Flooding events of note within the Tennessee watershed have occurred in association with tropical storms, hurricanes (Katrina in 2005), and other heavy rainfall events.</p>	<p>Not Applicable</p>

Table 3.5-6. Floodplains, Coastal Zone, and Wetlands Descriptions by HUC-2 Watershed

Floodplains and Wetlands	Coastal Zone
<u>Regional Wetland Characteristics:</u>	
<p>Wetlands are present but are not dominant in the region. Narrow strands of wooded wetlands and riparian areas occur along freshwater mountain streams and rivers. Bottomland forests are the most common wetlands in the region, including in Tennessee which is the central part of this region. They are abundant in floodplains of rivers in the state.</p>	
<p>Upper Mississippi Watershed (07) includes the Mississippi River Basin above the confluence with the Ohio River, and includes parts of Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, South Dakota, and Wisconsin. Part of VA's Cleveland (Indiana and Michigan) and St. Paul (Illinois, Iowa, Minnesota, Missouri, South Dakota, and Wisconsin) RLCs lie in this watershed. The Upper Mississippi River is 800 miles long, and runs between Lake Itasca in northern Minnesota, to the Ohio River at the southern tip of Illinois. The watershed includes 365,620 miles of rivers and streams and 4,680 square miles of lakes, reservoirs, and ponds.</p>	
<u>Regional Floodplain Characteristics:</u>	
<p>The Upper Mississippi River watershed is a major sub-basin of the Mississippi River Basin, the largest floodplain river ecosystem in North America and the 3rd largest of 79 such river systems in the world. Floodplains within the area predominantly receive floodwaters during winter and spring. Agriculture has altered much of the floodplains along the Mississippi River and its tributaries. Two hundred years ago, forests occupied almost 75 percent of the floodplain; in 2010, forests occupied approximately 18 percent of the area. Construction of levees and locks and dams have separated the river from half its floodplain and transformed 655 miles of the Mississippi River and 323 miles of the Illinois River from free-flowing rivers to a series of pools. Flooding events of note within the area have occurred in association with heavy rainfall events.</p>	<p>Coastal zone in this region extends 495 miles along Lake Michigan and 325 miles along Lake Superior shorelines in Wisconsin.</p>
<u>Regional Wetland Characteristics:</u>	
<p>The largest acreage of wetlands in Illinois is in the bottomland forests and swamps along the state's major rivers. Iowa's diverse wetlands include prairie pothole marshes, swamps, bogs, fens, and ponds. Common wetlands in Wisconsin include swamps and marshes in southern Wisconsin, and peatlands in northern Wisconsin. Wetlands are most numerous in glaciated parts of the state. Minnesota's wetlands range from extensive northern peatlands to small prairie potholes; it also has extensive wild rice beds. Missouri wetlands include swamps and other forested wetlands, marshes, fens, and shrub swamps.</p>	<p>CBRS units are found in every Great Lakes state except in Illinois, Indiana, and Pennsylvania.</p>

Table 3.5-6. Floodplains, Coastal Zone, and Wetlands Descriptions by HUC-2 Watershed

Floodplains and Wetlands	Coastal Zone
<p>Lower Mississippi Watershed (08) is the Mississippi River Basin below the confluence with the Ohio River, and the coastal Pearl River Basin. The watershed includes parts of Arkansas, Kentucky, Louisiana, Mississippi, Missouri, and Tennessee that border the Mississippi River. Parts of VA's Roanoke (Kentucky), Atlanta (Tennessee), St. Petersburg (Mississippi), Houston (Arkansas and Louisiana), and St. Paul (Missouri) RLCs lie within this watershed. The watershed includes 293,990 miles of rivers and streams and an estimated 11,810 square miles of lakes reservoirs and ponds.</p>	
<p><u>Regional Floodplain Characteristics:</u></p> <p>Floodplains within the Lower Mississippi watershed predominantly receive floodwaters during late summer and fall. Much of the area has been cleared for agriculture, but swamps and bottomland hardwood forests cover large areas. This watershed is also characterized by levees and floodways directing floodwaters. The Lower Mississippi watershed drains to most of Louisiana's 15,000 miles of shoreline and 8,200 square miles of coastal zone. Within the watershed, coastal development pressure is intense, with major urban cities in need of new transportation and infrastructure following the devastation caused by Hurricane Katrina. The USACE has developed a series of projects under the Mississippi Coastal Improvement Program to build flood defenses along the coast to resist hurricane storm surge and waves and protect community residents. Farther inland of the coast, communities are seeing increased development as residents move inland to avoid damaging hurricanes, which places additional pressure on natural resources and in some cases decreases floodplain storage capacity. Some urbanized areas are constructing flood protection measures with dikes, floodwalls, and levees to mitigate potential flood damages from both river and coastal flooding. Flooding events of note within the watershed have occurred in association with hurricanes (Katrina and Rita in 2005), tropical storms, and other heavy rainfall events (2010 and 2011).</p>	<p>The coastal area includes the Louisiana coast. Louisiana's coastal zone varies from 16 to 32 miles inland from the Gulf Coast. It is a 10-million-acre area that includes 40 percent of the nation's coastal wetlands</p> <p>CBRS units are found in Louisiana.</p>
<p><u>Regional Wetland Characteristics:</u></p> <p>Wetlands are present and dominate this region, especially in Louisiana. Most of the wetlands in Louisiana are freshwater swamps but the area of coastal marsh is substantial. Wide, marshy areas and a low-lying coastal plain characterize the Lower Mississippi estuarine/coastal area. This coastal environment consists of shallow lagoonal estuaries, small bays, extensive tidal marshes, and drowned river valleys. Louisiana's coastal marshes represent as much as 40 percent of the coastal marshes in the United States. The most extensive wetland areas in Arkansas are forested wetlands (swamps and bottomland forests) along major rivers. Arkansas wetlands, especially those in the Mississippi River Valley, are a critical component of the Mississippi Flyway; and wetlands in the Cache-Lower White River System have been designated as one of nine "Wetlands of International Importance" in the United States. Missouri wetlands mostly include swamps and other forested wetlands, marshes, fens, and shrub swamps.</p>	
<p><u>Regional Estuary Characteristics:</u></p> <p>Wide, marshy areas and a low-lying coastal plain characterize the Lower Mississippi area. This coastal environment consists of shallow lagoons estuaries, small bays, extensive tidal marshes, and drowned river valleys. Farther inland are a wide variety of marsh types, including nearly 109 square miles of salt and brackish marshes and salt pannes (shallow depressions with high salt concentrations).</p>	

Table 3.5-6. Floodplains, Coastal Zone, and Wetlands Descriptions by HUC-2 Watershed

Floodplains and Wetlands	Coastal Zone
<p>Souris-Red-Rainy Watershed (09) sub-region includes the Lake of the Woods and Rainy, Red, and Souris river basins, which discharge into Lake Winnipeg and Hudson Bay and includes parts of Minnesota, North Dakota, and South Dakota. All three states lie within VA's St. Paul RLC. The watershed includes 33,430 miles of rivers and streams and an estimated 2,200 square miles of lakes, reservoirs, and ponds.</p>	
<p><u>Regional Floodplain Characteristics:</u></p> <p>The watershed receives floodwaters during winter and spring. Streambank overflow and localized excess water are two types of water problems within the area due to the flat topography. Many of the urban areas occur along the rivers within the floodplains of this watershed and flooding throughout this area has increased in recent years. Flooding events of note within the area have occurred in association with heavy rainfall and snowmelt events.</p> <p><u>Regional Wetland Characteristics:</u></p> <p>Wetlands are present throughout this region. The most common wetland type in this region is the prairie pothole (Minnesota and North Dakota) and small ponds resulting from receding glaciers; northern Minnesota also includes northern peatlands.</p>	<p>Not Applicable</p>
<p>Missouri Watershed (10) includes the Missouri River Basin, the Saskatchewan River Basin, and several small closed basins. The area includes all of Nebraska and parts of Colorado, Iowa, Kansas, Minnesota, Missouri, Montana, North Dakota, South Dakota, and Wyoming. Parts of VA's St. Paul (Iowa, Minnesota, Missouri, North Dakota, and South Dakota) and Denver (Colorado, Montana, and Wyoming) RLCs lie in this watershed. The watershed contains 626,000 miles of rivers and streams and an estimated 7,310 square miles of lakes, reservoirs, and ponds.</p>	
<p><u>Regional Floodplain Characteristics:</u></p> <p>Floodplains within the Missouri watershed predominantly receive floodwaters during winter, spring, and summer. The Missouri River system historically flooded into large floodplains of riparian forest. Many of the rivers in the system have been altered to control flooding which has altered the natural environment. These changes include levees, channelization, and bank stabilization. Several stretches of rivers throughout the Missouri watershed have remnant floodplains that have not been altered. These have a twisting river channel and a wide floodplain. Within these floodplains, oxbow lakes, sand dunes, and forested areas occur. In September 2013, Boulder, Colorado, located in the southeastern corner of the Missouri watershed, experienced a 1,000-year flood event, meaning that any single year has a 1-in-1,000 chance of experiencing such heavy precipitation. Situated at the mouth of a canyon and adjacent to an alluvial fan, with Boulder Creek (a tributary to the Platte River) flowing through the town's center, Boulder is one of Colorado's most flood-vulnerable communities. Historical flooding events of note within the Missouri area have occurred in association with heavy rainfall and snowmelt events.</p> <p><u>Regional Wetland Characteristics:</u></p> <p>Wetlands are present but do not dominate this region, which supports freshwater and riparian areas. Common wetlands in this watershed (which includes the Great Plains region) include non-forested wetlands, such as vernal pools, wet meadows, and prairie wetlands. Other wetland types include prairie potholes (Montana, North Dakota, and South Dakota), swamps, marshes, bogs, and fens (Iowa and</p>	<p>Not Applicable</p>

Table 3.5-6. Floodplains, Coastal Zone, and Wetlands Descriptions by HUC-2 Watershed

Floodplains and Wetlands	Coastal Zone
<p>Missouri). Nebraska has three wetland complexes recognized as being of international importance as migrational and breeding bird habitat; and Kansas' wetlands include sandhill pools along the Arkansas River, playa lakes in western Kansas, freshwater marshes and salt marshes.</p>	
<p>Arkansas-White-Red Watershed (11) includes the Arkansas, White, and Red river basins above the points of highest backwater effect of the Mississippi River. The Arkansas-White-Red watershed includes all of Oklahoma and parts of Arkansas, Colorado, Kansas, Louisiana, Missouri, New Mexico, and Texas. Parts of VA's Houston (Arkansas, Oklahoma, Louisiana, and Texas), St. Paul (Kansas and Missouri), Denver (Colorado), and Phoenix (New Mexico) RLCs lie within this watershed. The watershed has over 384,600 miles of rivers and streams and 3,090 square miles of lakes, reservoirs, and ponds.</p>	
<p><u>Regional Floodplain Characteristics:</u></p> <p>Floodplains within the Arkansas-White-Red watershed predominantly receive floodwaters during spring and summer. Floodplains within this drainage area share characteristics of the Missouri and Mississippi river drainage basins. Floodplains in the area have been altered by the creation of reservoirs and other flood control mechanisms as well as development along rivers and streambanks. Flooding events of note within the Arkansas-White-Red watershed have occurred in association with hurricanes and heavy rainfall events.</p> <p><u>Regional Wetland Characteristics:</u></p> <p>Wetlands are present but do not dominate this region. Wetland types include the playa lakes of the High Plains (Texas and Oklahoma), bottomland forests and swamps (Missouri, Oklahoma), marshes and wet meadows (Missouri, Oklahoma, Kansas, and Colorado), aquatic bed wetlands in ponds, lakes, rivers, and sloughs (Oklahoma). Most forested wetlands are in Missouri, eastern Oklahoma, and Kansas, where precipitation is highest and evaporation lowest. Riparian wetlands and playa lakes are more common in drier western Oklahoma and Kansas. Most of New Mexico's wetlands are in the eastern or northern areas of the state (found within this region). They include forested wetlands, bottomland shrublands, marshes, fens, alpine snow glades, wet and salt meadows, shallow ponds, and playa lakes.</p>	<p>Not Applicable</p>

Table 3.5-6. Floodplains, Coastal Zone, and Wetlands Descriptions by HUC-2 Watershed

Floodplains and Wetlands	Coastal Zone
<p>Texas-Gulf Watershed (12) includes the drainage area from the Sabine Pass to the Rio Grande Basin, and covers parts of Louisiana, New Mexico, and Texas. The Texas-Gulf watershed extends from the Gulf of Mexico northwest for approximately 650 miles into the southern Great Plains. Almost the entire region (94 percent) lies within the State of Texas, although small portions of Louisiana (1 percent) and New Mexico (5 percent) are included. Parts of VA's Houston (Louisiana and Texas) and Phoenix (New Mexico) RLCs lie within this watershed. The Texas Gulf watershed includes more than 351,670 miles of rivers and streams and estimated 4,590 square miles of lakes, reservoirs, and ponds</p>	
<p><u>Regional Floodplain Characteristics:</u></p> <p>The area receives floodwaters during spring, summer, and fall. Floodplains in the eastern part of the Texas-Gulf watershed are broad and flat forested areas with slow moving rivers and poor drainage and floods are generally slow and sustained. In the central and western parts of the Texas-Gulf area, precipitation and surface water are less common. The geologic environment and livestock grazing increase the risk of flash flooding. Coastal areas are subject to flooding from heavy rain and tidal surge. Inland areas often receive large amounts of rainfall as marine storms weaken over the watershed. Flooding events of note within the Texas-Gulf watershed have occurred in association with hurricanes, tropical storms, and heavy rainfall events. The region's most recent hurricane, Harvey (2017) was a 500-year flood event, the third one experienced by the City of Houston in 3 years (the other two being the Memorial Day floods in 2015 and 2016).</p> <p><u>Regional Wetland Characteristics:</u></p> <p>The most extensive wetlands are the bottom-land hardwood forests and swamps of East Texas and the marshes, swamps and tidal flats of the coast. Estuarine ecosystems cover more than 4,000 square miles along the Gulf Coast of Texas. Estuarine and coastal environments in this region are highly diverse, consisting of unrestricted open bays, semi-enclosed lagoons, tidal marshes, and delta complexes. Texas has seven major and five minor estuaries.</p>	<p>The Texas coastal zone is generally seaward of the Texas coastal facility designation line.</p> <p>CBRS units are found in Texas.</p>
<p>Rio Grande Watershed (13) includes the Rio Grande Basin and the San Luis Valley, North Plains, Plains of San Agustin, Mimbres River, Estancia, Jornada Del Muerto, Tularosa Valley, Salt Basin, and other closed basins. The Rio Grande area includes parts of Colorado, New Mexico, and Texas. Parts of VA's Denver (Colorado), Phoenix (New Mexico), and Houston (Texas) RLCs lie within this watershed. The watershed includes 237,650 miles of rivers and streams and an estimated 470 square miles of lakes, reservoirs, and ponds.</p>	
<p><u>Regional Floodplain Characteristics:</u></p> <p>Floodplains within the Rio Grande watershed predominantly receive floodwaters during early spring and summer. High precipitation causes floods and eventually droughts result in low surface water. The Middle Rio Grande Basin encompasses the floodplain of the Rio Grande and the surrounding terrain that slopes from surface-drainage divides toward the river. The eastern boundary of the basin is largely mountainous, with merging alluvial fans and stream terraces leading downslope to the Rio Grande. Floodplains in other sections of the drainage area are commonly wide sandbars adjacent to river channels, which are bordered by thin forested areas of willow or cottonwood. Flooding events of note within the Rio Grande watershed have occurred in association with hurricanes and heavy rainfall events.</p>	<p>Not Applicable</p>

Table 3.5-6. Floodplains, Coastal Zone, and Wetlands Descriptions by HUC-2 Watershed

Floodplains and Wetlands	Coastal Zone
<p><u>Regional Wetland Characteristics:</u></p> <p>Wetlands are rare in the arid west and southwest. The most common wetlands are riverine (riparian wetlands); these wetlands receive water from over bank or side-channel flow from nearby streams. Playas, fens, seeps, springs, and marshes are also present.</p>	
<p>Upper Colorado Watershed (14) includes drainages from the Colorado River Basin, above the Lee Ferry compact point, and the Great Divide closed basin. The Upper Colorado watershed includes parts of Arizona, Colorado, New Mexico, Utah, and Wyoming. Parts of the Phoenix (Arizona and New Mexico) and Denver (Colorado, Utah, and Wyoming) RLCs lie within this watershed. The Upper Colorado watershed includes 28,200 miles of rivers and streams and an estimated 940 square miles of lakes, reservoirs, and ponds.</p>	
<p><u>Regional Floodplain Characteristics:</u></p> <p>Three main features of floodplains within this drainage basin are depressions, terraces, and constructed gravel pits. Depressions and gravel pits are opposite the natural levee from the river channel. Flooding events of note occurred in association with heavy rainfall and snowmelt events.</p>	Not Applicable
<p><u>Regional Wetland Characteristics:</u></p> <p>Wetlands are rare in the arid west and southwest. The most common wetlands are riverine (riparian wetlands), but playas, fens, seeps, springs, and marshes are also present. Utah wetlands also include the shallows of small lakes, reservoirs, ponds, and streams; marshes and wet meadows; and mud and salt flats. The largest wetlands in the state surround the Great Salt Lake. Colorado wetlands extend from the high mountains to the arid plains and plateaus. Wetland types include forested wetlands, fens, marshes, alpine snowglades, and wet and salt meadows. Lake Powell is a large reservoir of the Colorado River north of the Grand Canyon.</p>	
<p>Lower Colorado Area Watershed (15) includes parts of Arizona, California, Nevada, New Mexico, and Utah. Parts of VA's Denver (Utah) and Phoenix (Arizona, California, and New Mexico) RLCs lie within this watershed. The watershed includes 39,400 miles of rivers and streams; and 820 square miles of lakes, reservoirs and ponds.</p>	
<p><u>Regional Floodplain Characteristics:</u></p> <p>Floodplains within the Lower Colorado watershed predominantly receive floodwaters during early spring and again in late summer and fall. The Lower Colorado River system is the main source of water and its floodplains are lowland vegetated communities along the rivers and streams. Highly erodible soil resulted in canyons and broad alluvial fans occur throughout the area. Flooding events of note within the Lower Colorado watershed occurred in association with heavy rainfall and snowmelt events.</p>	Not Applicable
<p><u>Regional Wetland Characteristics:</u></p> <p>Wetlands are rare in the arid west/southwest. The most common wetlands are riverine (riparian wetlands). Playas, fens, seeps, springs, and marshes are also present. Arizona comprises the majority of this region.</p>	

Table 3.5-6. Floodplains, Coastal Zone, and Wetlands Descriptions by HUC-2 Watershed

Floodplains and Wetlands	Coastal Zone
<p>Great Basin Watershed (16) includes the drainage of the Great Basin in Utah and Nevada, and parts of California, Idaho, Nevada, Oregon, Utah, and Wyoming. Parts of VA's Phoenix (Nevada and California) and Denver (Idaho, Oregon, Utah, and Wyoming) RLCs lie within this watershed. The watershed includes approximately 370,860 miles of rivers and streams and 5,240 square miles of lakes, reservoirs, and ponds.</p>	
<p><u>Regional Floodplain Characteristics:</u></p> <p>Floodplains within the Great Basin watershed predominantly receive floodwaters during late spring and summer. The unconsolidated alluvial fans represent a principle groundwater resource and land development hazard within the Great Basin watershed. Narrow floodplains occur within the mountainous areas and broad, flat floodplains dominate the high plateaus. Water diversion in this arid area has reduced the amount of surface water and associated riparian floodplain communities. Flooding events of note within the area occurred in association with heavy rainfall and snowmelt events.</p> <p><u>Regional Wetland Characteristics:</u></p> <p>Wetlands are rare in this region. The most common wetlands are riverine (riparian wetlands). Playas, fens, seeps, springs, and marshes are also present; mountain wetlands include fens and other wetlands that form in small glacial lakes.</p>	<p>Not Applicable</p>
<p>Pacific Northwest Watershed (17) includes all of Washington and parts of California, Idaho, Montana, Nevada, Oregon, and Utah. Parts of VA's Phoenix (California and Nevada) and Denver (Idaho, Montana, Oregon, Utah, Wyoming) RLCs are within this watershed. The Pacific Northwest watershed includes 94,750 miles of rivers and streams and an estimated 4,510 square miles of lakes, reservoirs, and ponds. The Columbia River Basin covers a significant portion of the watershed.</p>	
<p><u>Regional Floodplain Characteristics:</u></p> <p>Floodplains in the Pacific Northwest predominantly receive floodwaters during winter and early spring. Washington is one of the highest flood risks of the country. Specific characteristics of the Pacific Northwest floodplains include the braided channel complex of river and alluvial fans. Flooding events of note within the area occurred in association with heavy rainfall and snowmelt events.</p> <p><u>Regional Wetland Characteristics:</u></p> <p>Wetlands are present but not dominant in the Pacific Northwest. Wetlands, such as riparian forests, salt marshes, and bogs occur throughout the region. These wetlands are either forested or non-forested. Wetlands in Idaho are found in floodplains and riparian areas along streams and other water bodies. Approximately 75 percent of the wetlands in Oregon and Washington contain freshwater and include forested and shrub swamps, bogs, fens, marshes, wet prairies and meadows, vernal pools, and playas. Approximately 25 percent are estuarine or marine and include marshes, tidal flats, beaches, and rocky shores.</p>	<p>The coastal zone includes coastal areas of Oregon and Washington. The Oregon coastal zone includes the state's coastal watersheds and extends inland to the crest of the coast range, with a few small exceptions. The Washington coastal zone includes the state's 15 coastal counties that front saltwater.</p> <p>There are no designated CBRS units on the Pacific Coast.</p>

Table 3.5-6. Floodplains, Coastal Zone, and Wetlands Descriptions by HUC-2 Watershed

Floodplains and Wetlands	Coastal Zone
<p><u>Regional Estuary Characteristics:</u></p> <p>Fresh waters in this region include streams, lakes, rivers, and estuaries (along the coastline). Major estuaries in this watershed include Puget Sound estuary (Washington), the Lower Columbia River estuary (Oregon and Washington), and the Tillamook Bay estuary (Oregon). These estuaries are of National Significance. Puget Sound, the 2nd largest estuary in the United States, includes an arm of the Pacific Ocean and extends inland to meet 19 different river basins. The Columbia River estuary is one of the largest estuaries on the West Coast with over 125 square miles in Oregon alone. Additionally, the Tillamook Bay estuary encompasses an area between rugged mountains and the Pacific Ocean within Oregon.</p>	
<p>California Watershed (18) includes all California watersheds that drain toward the Pacific Ocean. Nevada and Oregon are also in this HUC. Parts of VA's Phoenix (California and Nevada) and Denver (Oregon) RLCs are within this watershed. There are approximately 439,160 miles of rivers and streams in the California watershed, and 1,060 square miles of lakes, reservoirs and ponds.</p>	
<p><u>Regional Floodplain Characteristics:</u></p> <p>Floodplains within the California watershed predominantly receive floodwaters during winter and early spring. However, the extreme southeast portion of the area floods during late summer and fall. Floodplain ecosystems within this watershed are an assortment of willow and cottonwood riparian forests, grasslands, and marshes. Floodplains vary with the area depending on water availability, topography, and development. Alluvial fans are common throughout Southern California; several are within Death Valley. Flooding is a problem for low-lying coastal areas, especially during El Niño storm conditions. A study by the Pacific Institute found that 260,000 people in California are currently living in areas that, without some type of protection, would be vulnerable to inundation from a 100-year flood event. Historic flooding events of note within the California watershed have occurred in association with tropical storms, heavy rainfall, snowmelt, and tsunami events.</p>	<p>The coastal zone includes the coast of California; it generally extends 1,000 yards inland from the mean high tide. The coastal zone for the San Francisco Bay Conservation and Development Commission includes the open water, marshes, and mudflats of the greater San Francisco Bay, and areas 100 feet inland from the highest tidal action.</p> <p>In Southern California, exposed sandy beaches make up over 75 percent of the shoreline and approximately 23 percent of the Channel Islands coastlines.</p>
<p><u>Regional Wetland Characteristics:</u></p> <p>Wetlands are present but not dominant in this region. Wetlands include marshes in playa lakes, non-vegetated playas, and riparian wetlands; mountain wetlands include fens and other wetlands that form in small glacial lakes. Vernal pools in California's San Joaquin and Central Valley provide habitat for some specialized and endemic plant species. Fresh waters in this region include streams, lakes, rivers, and estuaries (along the coastline).</p>	<p>There are no designated CBRS units on the Pacific Coast.</p>
<p><u>Regional Estuary Characteristics:</u></p> <p>The San Francisco Bay and the Sacramento-San Joaquin delta form the West Coast's largest estuary and drain approximately 40 percent of California's land. California also has numerous small, deep, and moderately well-flushed estuaries with moderately sized watersheds. This biologically diverse area encompasses coastal wetlands and estuaries.</p>	

Table 3.5-6. Floodplains, Coastal Zone, and Wetlands Descriptions by HUC-2 Watershed

Floodplains and Wetlands	Coastal Zone
<p>Alaska Watershed (19) includes all of Alaska. Alaska is within VA's Denver RLC. As the nation's only arctic state, Alaska's exclusive economic zone contains more than half of the nation's offshore waters, two-thirds of the nation's coastline (44,500 miles), 40 percent of the nation's surface water, 20 percent of the nation's land base, and 50 percent of the nation's wetlands. There are approximately 846,780 miles of rivers and streams in the Alaskan watershed, and 22,010 square miles of lakes, reservoirs and ponds.</p>	
<p><u>Regional Floodplain Characteristics</u></p> <p>Rivers and streams are heavily influenced by glaciers, which also contribute surface waters to rivers and streams. Rivers travel through major valleys within the numerous mountain ranges. Seasonal flooding of floodplains in Alaska is a result of snowmelt, precipitation, glacial outbursts, ice jams, and seismic activity. Alaska experiences a wide variety of flooding risks including heavy runoff, flash floods, and snowmelt. Ice jam flooding, from the breakup or formation of winter ice cover on rivers results in damming, damage, rapid inundation, and glacial outburst floods are region-specific floods. In Alaska, floods account for over 50 percent of the State disaster emergencies and the preponderance of disaster relief spending for Alaska. During 2000-2009, seven flood specific events in Alaska were declared State or Federal disasters. Flooding events of note within (FEMA, 2013e) (University of Southern California, Undated)</p> <p><u>Regional Wetland Characteristics:</u></p> <p>Alaska has more area covered by wetlands – approximately 170 million acres – than the other 49 states combined. Alaska contains 63 percent of the total wetland acreage in the United States. [1994 study] Over 88 percent (nearly 155 million acres) of Alaska's wetlands are under public management. Palustrine scrub-shrub wetlands cover the largest area, over 114 million acres or nearly two thirds of the state's wetlands. Freshwater wetlands include vernal pools, bogs, fens, tundra, marshes, meadows; brackish and saltwater wetlands include flats, beaches, rocky shores, and salt marshes. Wetlands are abundant in the valleys and basins associated with large river systems and on major river deltas. (FWS 1994)</p> <p><u>Regional Estuary Characteristics:</u></p> <p>Much of the southwestern and south-central Alaskan coast includes hundreds of bays, estuaries, coves, and other waterbodies. The surface area of coastal bays and estuaries in Alaska is almost three times the total estuarine area of the contiguous 48 states (Dasher & Lomax, 2011). Much of the southeast and south-central Alaskan coast includes hundreds of bays, estuaries, coves, fjords, and other waterbodies (Dasher & Lomax, 2011).</p>	<p>Alaska withdrew from the voluntary National Coastal Zone Management Program on July 1, 2011.</p> <p>Alaska has two-thirds of the nation's coastline (44,500 miles). Most of the coastline is inaccessible by road, making a statewide coastal monitoring program logistically challenging and expensive. The large size and geographic complexity of Alaska's shoreline make comprehensive assessments of its coastal resources difficult. Alaska's coastal resources are not subject to population and development pressures to the same extent as the rest of the United States coastline. This is because of the state's low population density, the distance between most of its coastline and major urban or industrial areas, the lack of road access to most coastal areas, and limited agriculture activities.</p> <p>There are non-designated CBRS units in Alaska.</p>

Table 3.5-6. Floodplains, Coastal Zone, and Wetlands Descriptions by HUC-2 Watershed

Floodplains and Wetlands	Coastal Zone
<p>Hawaii Watershed (20) covers the entire State of Hawaii. Hawaii lies within VA's Phoenix RLC. There are approximately 8,100 miles of rivers and streams in the Hawaiian watershed, and 30 square miles of lakes, reservoirs and ponds.</p>	
<p><u>Regional Flooding Characteristics:</u> Within Hawaii, topography defines floodplains. In the mountainous interior, floodplains are small areas along streams. Toward the coast, most areas flatten out and floodplains expand. Flooding is a statewide concern. Coastal flooding can result from two sources: storm surges from hurricanes or cyclones, and wave run-up from tsunamis. Flood risk in Hawaii includes flash floods, dam failure, storm surge, tsunami, riverine floods, coastal floods, and urban floods. In the Central North Pacific, which includes Hawaii, the official hurricane season runs from June through November. Flooding events of note within Hawaii have occurred in association with hurricanes, heavy rainfall and tsunamis. Heavy rainfall and tsunami events have occurred almost every year since 2000 (2005, 2006, 2008, 2009, 2011, and 2012).</p>	<p>The entire state of Hawaii lies within Hawaii's coastal zone boundary.</p>
<p><u>Regional Wetland Characteristics:</u> Less than 3 percent of the land area in Hawaii (over 120,000 acres) is covered by wetlands, which provide habitat for several species of birds and plants endemic to the Hawaiian Islands. Coastal wetland losses have been greatest on Oahu, where wetlands have been drained and filled for resort, industrial, and residential development.</p>	<p>There are no designated CBRS units in Hawaii.</p>
<p><u>Regional Estuary Characteristics:</u> Hawaii has 36 square miles of bay and estuaries. Most of Hawaii's estuaries are small, occupying less than 0.5 square mile. These coastal waters represent less than 1 percent of the coastal ocean area around the Hawaiian Islands.</p>	

Table 3.5-6. Floodplains, Coastal Zone, and Wetlands Descriptions by HUC-2 Watershed

Floodplains and Wetlands	Coastal Zone
<p>Caribbean Watershed (21) includes Puerto Rico and the U.S. Virgin Islands, both of which lie in VA's St. Petersburg RLC. There are approximately 7,120 miles of rivers and streams in the Caribbean watershed, and 40 square miles of lakes, reservoirs, and ponds.</p>	
<p><u>Regional Flooding Characteristics:</u> Coastal flooding is typically caused by hurricanes (no tsunami events have occurred in the Caribbean). Flooding events of note within the Caribbean area have occurred in association with numerous hurricanes and tropical storms within the last 15 years, including Hurricane Maria in 2017. Flooding is a frequent occurrence in Puerto Rico, often affecting highly developed and populated areas with resulting damage to private property and public infrastructure. In Puerto Rico, floods can be extremely destructive because of the island's steep, mountainous topography that condenses population centers. Approximately, one-third of the population on the island lives in flood prone areas, and the consequent potential for property damage and loss of life is very high.</p> <p><u>Regional Wetland and Estuarine Characteristics:</u> No acreage has been identified for the wetlands in Puerto Rico. The wetlands in Puerto Rico are very diverse, ranging from the interior montane wetlands of the rain forest to intertidal mangrove swamps along the coast. Nearly all the wetlands in Puerto Rico have been modified by man, historically for sugar cane and more recently for housing development, transportation, tourist facilities, and other development types. Wetlands occupy approximately 3 percent of the land surface in the U.S. Virgin Islands; freshwater is scarce and wetlands are mainly estuarine and marine types, such as mangrove forests, salt ponds, sea grass beds, and coral reefs.</p> <p>The San Juan Bay Estuary, located on the northern coast of Puerto Rico, is semi-enclosed by the surrounding mainland, mangroves and wetlands; it is linked to the Atlantic Ocean by an estuarine system of interconnected bays, channels and lagoons.</p>	<p>Puerto Rico's coastal zone generally extends 1,000 meters inland but extends further inland in places to include important coastal resources. Puerto Rico contains approximately 700 miles of coastline with several unique coastal ecosystems coral reefs and mangrove lagoons. The entire U.S. Virgin Islands territory is included within the coastal zone. The U.S. Virgin Island's coastal zone includes the islands and the waters extending seaward to the outer limits of the United States' territorial sea. The coastal zone incorporates open waters, tidal flats, bays, inlets, wetlands, lagoons, beaches, dunes, bluffs, and upland areas.</p> <p>CBRS units are found in the Caribbean Islands.</p>

Table 3.5-6. Floodplains, Coastal Zone, and Wetlands Descriptions by HUC-2 Watershed

Floodplains and Wetlands	Coastal Zone
Watershed Identified for the Pacific Island Territories.	
<p><u>Regional Flooding Characteristics:</u></p> <p>Approximately 260 miles of perennial streams flow across American Samoa. Wetlands and perennial streams only comprise less than 5 percent of the surface area of the Northern Mariana Islands. Within the Pacific Island Territories, topography defines floodplains. In the mountainous interior, floodplains are small areas along streams. Toward the coast, most areas flatten out and floodplains expand. Flooding is a concern in all the Pacific Island Territories. Coastal flooding can result from two sources: storm surges from hurricanes or typhoons, and wave run-up from tsunamis. Flood risk in the Pacific Island Territories includes flash floods, storm surge, tsunami, riverine floods, and coastal floods. Some of the islands have average elevations of only 2 meters above sea level and area exposed to waves as high as 5 to 7 meters most winters. Increasing sea level rise is also a concern.</p> <p><u>Regional Wetland Characteristics:</u></p> <p>No acreage has been identified for the wetlands in the Western Pacific Islands (American Samoa, Guam, and the Northern Mariana Islands). Most of the wetlands in the western Pacific are in coastal areas and include mangrove swamps, marshes, and coral reefs (marine subtidal). Wetlands are economically important on many islands because the staple food, taro, is grown in converted or constructed wetlands. Wetlands provide important wildlife habitat on the larger islands.</p>	<p>American Samoa’s coastal zone boundary includes seven islands totaling roughly 77 square miles, with a coastline of 126 miles. Because Guam is a small island, the entire land area is included within its coastal zone. Similarly, since the Northern Mariana Islands are small, the entire land and water area of the Commonwealth is included within the coastal zone.</p> <p>There are no CBRS units in the Western Pacific.</p>

Source: Bartolina & Cole 2002; Chesapeake Bay Foundation 2012; FEMA 2013, undated; Hapke et al. 2010; NOAA 2016a; USEPA 2013, 2012; USFWS 1994; USGS 2013, 2001, 1997; Water Resources Council 1978.

CBRS = Coastal Barrier Resources System; HUC = hydrologic unit code; RLC = Regional Loan Center; USACE = U.S. Army Corps of Engineers; VA = Department of Veterans Affairs

INTENTIONALLY LEFT BLANK.

3.6 GEOLOGY AND SOILS

This section discusses the geologic and soils resources of the United States and its Territories to include a description of the resources, applicable statutes and regulations, and the existing conditions of these resources within each of the USGS physiographic regions depicted in Figure 3.0-1, Section 3.0, Affected Environment, Introduction.

3.6.1 Description of the Resource

The Earth's surface, including the subsurface bedrock, groundwater presence, and surficial deposits, has been shaped by geologic processes including soil development, tectonic events, and erosion. The USGS has subdivided the continental United States into broad-scale subdivisions, known as physiographic regions, based on terrain texture, rock type, geologic structure, and tectonic history (Virgil 2000). The underlying geology of these physiographic regions dictate how the soils, sediments, floodplains, and landscape are formed over time and can influence zoning and development as well as dictate construction practices on a regional level, local building codes, and development.

This section covers those aspects of geology and soils that are the most relevant for operation of VA's HLP: general geologic hazards and soils, which are defined in Table 3.6-1. The discussion of existing conditions with respect to geologic hazards and soils includes a nationwide discussion as well as a regional discussion based on USGS Physiographic Regions; soils are also discussed in terms of land resource regions as defined in Table 3.6-1. The USGS Physiographic Regions are used to group areas with similar geology and soil resources into geographic areas to analyze how the Proposed Action and No Action Alternative could impact these resources. They are shown in Figure 3.0-1 in Section 3.0, Affected Environment, Introduction. These resources can also affect housing development and construction as noted above. For example, soil types and local physiography can influence housing constructability and local building codes. Local building codes also address the potential for local geologic hazards by including measures to help minimize public exposure to these hazards.

3.6.2 Applicable Statutes, Regulations, and Terminology

Table 3.6-1 summarizes the relevant statutes, regulations and terminology for geology and soils.

Table 3.6-1. Geology and Soils Statutes, Regulations, and Terminology

Statute, Regulation, or Term	Description
Earthquake Hazards Reduction Act (42 USC 7701)	<p>The Earthquake Hazards Reduction Act of 1977 established the National Earthquake Hazards Reduction Program (NEHRP). Since inception of the NEHRP, federal agencies, including the Federal Emergency Management Agency (FEMA), USGS, National Science Foundation, and National Institute of Standards and Technology (NIST), have coordinated efforts to reduce risks to life and property that result from earthquakes. The NEHRP's primary goals include:</p> <ul style="list-style-type: none"> • Develop effective practices and policies for earthquake loss reduction and accelerate their implementation; • Improve techniques for reducing earthquake vulnerabilities of facilities and systems; • Improve earthquake hazards identification and risk assessment methods, and their use; and • Improve the understanding of earthquakes and their effects.
Executive Order (EO) 13717, Establishing a Federal Earthquake Risk Management Standard	<p>Signed in February 2016, EO 13717, <i>Establishing a Federal Earthquake Risk Management Standard</i>, requires federal agencies to take measures that improve occupant safety within buildings that are owned, leased, financed, or regulated by the Federal Government. Within 90 days of enactment of the EO, federal agencies were required to ensure that all new buildings were compliant with the earthquake-resistant design provisions of the 2015 editions of the International Building Code (IBC) or the International Residential Code, nationally recognized building codes promulgated by the International Code Council, or equivalent codes. The EO instructed agencies to assess and 'consider implementing' the heightened standards within their programs. The VA assessed the impacts of implementing the heightened standards within the HLP, and determined that implemented these standards would have an adverse effect on the ability of Veterans to obtain housing assistance under the HLP. Therefore, the VA elected not to implement the EO's requirements within the program.</p>
Farmland Protection Policy Act (FPPA) (7 USC 4201)	<p>The FPPA is intended to minimize the impact Federal programs have on the irreversible conversion of farmland to nonagricultural uses. Projects are subject to FPPA requirements if they may irreversibly convert farmland (directly or indirectly) to nonagricultural use and are completed by a Federal agency or with assistance from a Federal agency. The FPPA requires that to the extent possible, federal programs and activities be compatible with state and local government policies and private programs to protect farmland. Federal agencies are required to review their policies and procedures to implement the FPPA every 2 years.</p>
Geologic Hazards	<p>Includes seismic activity, landslides, and subsidence.</p>
Geology	<p>The earth's physical structure and substance. Geologic processes formed the earth's crust and created the natural surface contours of the earth and the variety of parent rock materials, sediments, and deposits.</p>
Hydric Soils	<p>Form under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. If a hydric soil is drained for farming, or if the seasonally high water table is lowered for any reason, the soil will still exhibit signs of anaerobic conditions (hydric indicators) and will still be classified as a hydric soil (sometimes referred to as a relic hydric soil).</p>
Prime Farmland	<p>Land that has the best combination of physical and chemical characteristics to produce food, feed, forage, fiber, and oilseed crops, and that is available for these uses (NRCS 2019). Determination of prime farmland soil map units is based on guidelines provided by the National Soil Survey Center. The number of acres with this designation changes frequently, mostly caused by removal of farmland from agricultural production and conversion to other uses.</p>
Soil	<p>The unconsolidated mineral or organic parent material on the immediate surface of the earth formed by weathering and biological processes.</p>

EO = Executive Order; FEMA = Federal Emergency Management Agency; FPPA = Farmland Protection Policy Act; NEHRP = National Earthquake Hazards Reduction Act; NIST = National Institute of Standards and Technology; USGS = U.S. Geological Survey

3.6.3 Existing Conditions

This section presents the existing conditions of the geology and soils throughout the United States. USGS physiographic regions were selected as the unit of analysis for this resource area. Section 3.0, Affected Environment, Introduction, has a more detailed discussion on units of analysis and presents a figure of the USGS physiographic regions. Physiographic regions have not been created for Alaska, Hawaii or the Pacific Basin, or Caribbean Territories. Thus, information from the USDA Major Land Resource Areas will be used to describe those locations (USDA 2006).

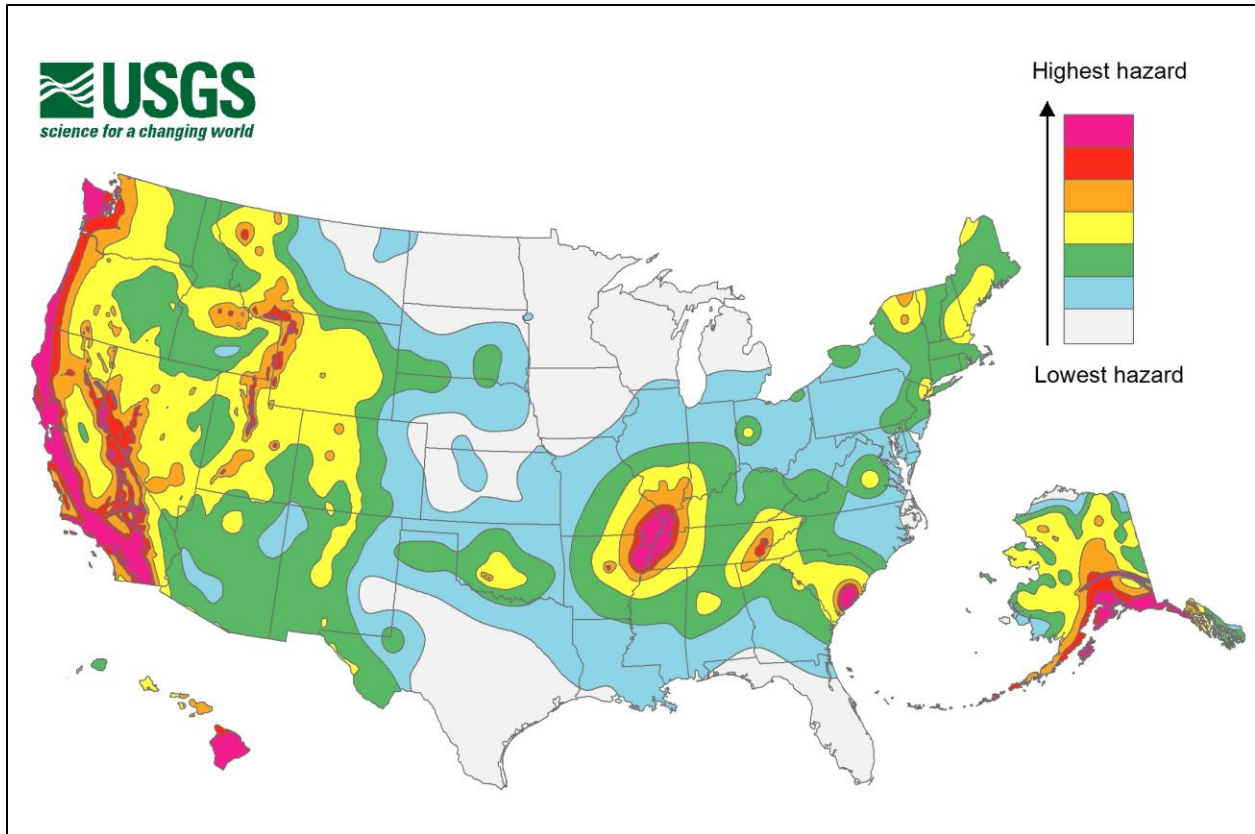
Unit of Analysis USGS Physiographic Regions

3.6.3.1 Geologic Hazards

The primary geologic hazards are based on the seismic stability of the underlying bedrock and the variability of the regional topography. Generally, the central and eastern portions of the United States are more seismically stable than the younger, tectonically active areas in the west. However, the older, colder, and denser bedrock along the eastern seaboard propagates seismic waves farther, so a smaller earthquake can be felt farther away (USGS 2018a). In 2011, a magnitude 5.8 earthquake in Mineral, Virginia was felt up to 600 miles from the epicenter, and building damage was recorded in Washington, District of Columbia, 80 miles from the epicenter.

Human-induced seismic activity has been identified in areas where fluid injection is largely practiced, such as Oklahoma and Kansas (USGS 2018b). Earthquakes with magnitudes of 3.0 grew more frequent between 2008 and 2015 but have decreased in frequency as the rate of fluid injection slowed.

Through the National Earthquake Hazard Reduction Program, the USGS has generated a database of geologic seismic hazard probabilities to estimate the potential for earthquakes in the United States. The database is built from known fault sequences and historical earthquake data. Models generated from the database show the probability of a damage-inducing earthquake for a given location. Figure 3.6-1 presents probabilistic ground motions with a 2 percent chance of exceedance in 50 years. This means that areas with the highest hazard are more likely to experience higher peak horizontal acceleration from a natural or human-induced earthquake. The boundary between blue and green in Figure 3.6-1 is equivalent to a peak horizontal acceleration of 10 percent of the gravity coefficient, which is considered capable of minor structural damage in normal buildings.



Source: USGS 2018b
USGS = U.S. Geological Survey

Figure 3.6-1. Simplified Seismic Hazard Map based on Peak Acceleration with a 2 Percent Chance of Exceedance in 50 Years

Other geologic hazards, such as landslides and surface instability from erosion, are a function of the topography and are mitigated by local zoning ordinances and building codes.

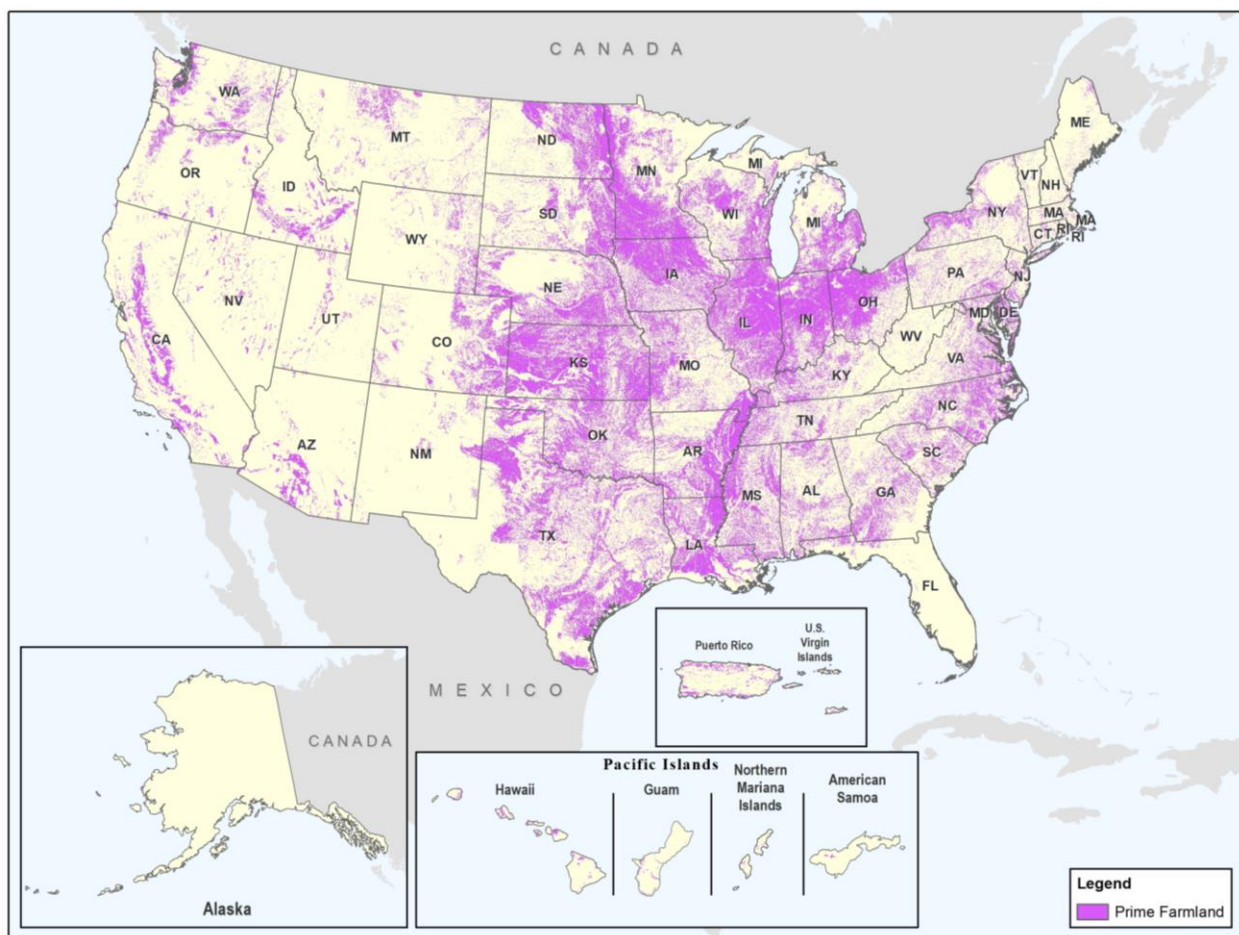
3.6.3.2 Soils

A single landscape can contain an immense variety of soils, based on the topography, parent material, organic matter, and vegetation. As discussed above, the USGS physiographic regions provide a broad classification of the terrain and geology within the United States. These regions are used as the unit of analysis for discussing potential impacts to geology and soils, and existing conditions within each physiographic region are described in greater detail below.

Prime farmland is an important category of soils that is especially suitable for agricultural production and is of major importance in meeting the nation's short- and long-range needs for food and fiber (NRCS 2019). Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing food and other crops and, importantly, is available for these uses. While cultivated land, pastureland, forestland, or other undeveloped land may be considered prime farmland, urban or built-up land or water areas are not included in this category. Prime farmland is characterized by suitable soil quality, growing season, and moisture supply. In general, prime farmland has an

adequate and dependable supply of moisture from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, an acceptable salt and sodium content, and few or no rocks. The water supply is dependable and of adequate quality. Prime farmland is permeable to water and air. It is not excessively erodible or saturated with water for long periods and is infrequently flooded during the growing season, if at all. Slope ranges mainly from 0 to 6 percent.

Prime farmland is typically associated with river valleys and floodplains. Much of the prime farmland within the United States is present in the Midwest and Southeast regions, with smaller amounts along the east coast and in the western United States. Figure 3.6-2 shows the distribution of prime farmland in the United States. Prime farmland acreage has been steadily decreasing over the past several decades, primarily as a result of increasing urban development. Figure 3.6-3 shows trends in nationwide prime farmland acreage between 1982 and 2015.



Source: NRCS 2001
% = percent; U.S. = United States

Figure 3.6-2. Distribution of Prime Farmland in the United States

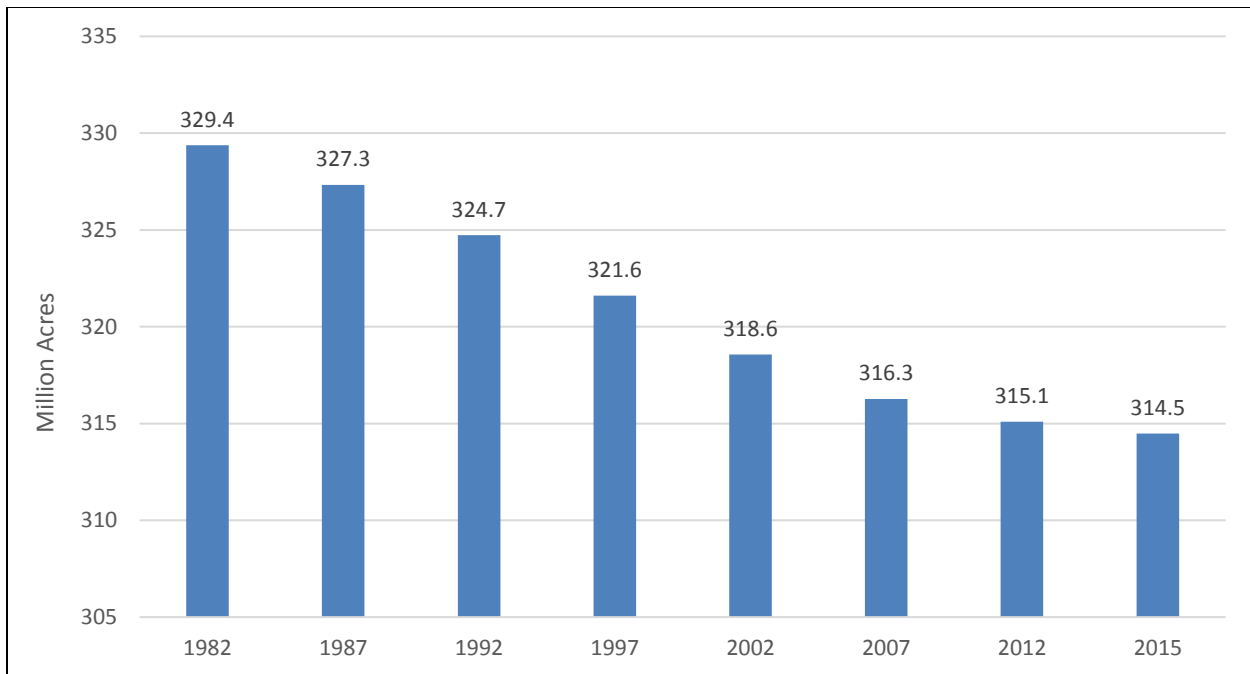


Figure 3.6-3. Acreage of Prime Farmland Soils in the United States from 1982–2015

3.6.3.3 USGS Physiographic Regions

This section discusses existing geology and soil conditions and seismic hazard for each of the major physiographic divisions within the United States. See Figure 3.0-1 in Section 3.0, Affected Environment, Introduction for a map of the USGS physiographic regions.

Appalachian Highlands

The Appalachian Highlands Region stretches from Quebec, Canada down to Alabama. The geology is primarily the folded and metamorphosed sedimentary rock of the Appalachian Mountains and the foothills. Uplift in the Cenozoic era has reactivated old streams and waterways, creating meandering rivers and canyons, depending on the hardness of the underlying bedrock.

Due to the diversity of topography and climate, there is a wide range of natural ecosystems in this region, but limited land is available for agriculture (USDA 2006). The topography ranges from undulating hills to steep, mountainous terrain. The Appalachian Plateau, stretching from central Pennsylvania to northern Georgia, grades from a dissected plateau to a rugged band of mainly forested mountains and high hills underlain by shale, sandstone, coal, and some limestone. The Valley and Ridge region features long, linear, forested ridges and cropland in the valleys. The bedrock geology is faulted and folded shale, sandstone, and limestone. The Blue Ridge makes up the eastern edge of the region. It consists mainly of rugged mountains formed from igneous and metamorphic rocks.

The Appalachian Highlands are mostly within the medium hazard zone of seismic activity, with a relatively low risk of significant earthquake activity. New England and the Kentucky-Tennessee-Alabama area have higher risks. The Eastern Tennessee seismic zone extends across Tennessee from

northwestern Georgia and northern Alabama. The largest known earthquake associated with this zone occurred in April 29, 2003, near Fort Payne, Alabama and was assigned a magnitude of 4.6 (USGS 2003a). Hundreds of earthquakes that are too small to be felt occur within this area every year but are not likely to cause damage (USGS 2018b).

Within Virginia's Appalachian Highlands, a magnitude 5.8 earthquake centered in the town of Mineral impacted much of the East Coast in August 2011 (USGS 2015a). The earthquake occurred in the Central Virginia Seismic Zone, which "extends east-west about 75 miles from the Fall Line to Blue Ridge and is about 62 miles wide in the north-south direction" (USGS 2015b). Rock falls attributed to the earthquake occurred more than 150 miles away.

Atlantic Plain

The Atlantic Plain incorporates much of the eastern seaboard and Gulf coasts, stretching from coastal Texas, through Florida to Long Island in New York. Sediments deposited during several successive ocean rises, and retreats have created a thick wedge of layered sedimentary and volcanic debris. The Atlantic Plain has the lowest topography variation in the conterminous United States, with thick sedimentary layers in the east and thinning westward as it approaches the Appalachian Mountain range.

The Atlantic Plain physiographic region includes a variety of sedimentary rocks and outwash deposits, and the areas tends to include mostly level, coastal and marshy soils. Crop production along the coast is limited because of a high-water table and frequent flooding. Inland from the coast, abundant moisture and a long growing season favor agricultural production from Virginia to Mississippi and parts of Louisiana and Texas. Artificial drainage may be needed to lower the water table in some areas.

The Atlantic Plain has variable amounts of seismic risk. Coastal South Carolina has the highest hazard potential, and in September 1886, a magnitude 7.3 earthquake shook Charleston, and was felt along the eastern seaboard. Most of the earthquakes in this area originate in the Middleton-Place Seismic Zone, a north-trending fault zone located over 12 miles north of Charleston (Rankin 1977). Florida and south Texas are within the lowest hazard zone (Figure 3.6-1).

Interior Highlands

The Interior Highlands Region includes lower Missouri, northwest Arkansas, and eastern Oklahoma. Bedrock consists of old metamorphosed sedimentary rocks that were more recently uplifted as a mountain range, then eroded during the Mesozoic era. The remnants of this mountain range are seen today in the Ouachita-Ozark Highlands (USGS 2018c).

The Ozarks are a slightly dissected to deeply dissected plateau typically underlain by limestone, sandstone, and shale bedrock. Igneous rocks are exposed in a small area in southeast Missouri. The soils in this physiographic region were formed in material weathered dominantly from limestone and cherty limestone, as well as shale and sandstone. Forestry is an important industry, but several crops including cotton, soybeans, corn, and wheat are also cultivated. Control of soil erosion in cultivated areas is a major concern.

The Interior Highlands contain the New Madrid Seismic Zone (NMSZ), one of the country's largest fault systems east of the Rocky Mountains. Over the past 4,500 years, several magnitude 7.0 to 8.0 earthquakes have occurred in this area, including the historic 1811–1812 series of 4 magnitude 7.0 to 8.0 earthquakes that occurred over a 4-month period. Widespread portions of the Midwest are at risk of damaging earthquakes due to their proximity to the NMSZ, which includes portions of Illinois, Missouri, Kentucky, Tennessee, and Arkansas. The USGS estimates that there is a 25 to 40 percent chance of a magnitude 6.0 earthquake occurring along the New Madrid Fault within the next 50 years. An earthquake of this magnitude would impact major cities such as Memphis, Tennessee; Little Rock, Arkansas; and St. Louis, Missouri (USGS 2009).

Interior Plains

The Interior Plains Region stretches from the Appalachian Highlands in the east to the Rocky Mountains in the west. Basal bedrock consists of continental metamorphic rocks, which are covered by many layers of sedimentary rocks from inland seas that existed here during the Mesozoic era. The topography is generally quite flat, as sediment filled the Central Basin from the Appalachians to the Rocky Mountains. Sedimentary rock includes sequences of sandstone, mudstone, and clay as the coastline of the inland sea changed positions over time.

The Interior Plains Region includes the Great Plains, the midwestern states, and much of the Great Lakes region. The northern Great Plains region is blanketed by undulating till and level to gently rolling sedimentary deposits. Fertile soils and dominantly smooth topography in this region favor agriculture, but relatively low precipitation and a short growing season limit the crops that can be grown. Grazing of cattle is the dominant land use in the western Great Plains region, which borders the foothills of the Rocky Mountains. The central Great Plains region is a nearly level to gently rolling plain in the northern part and an eroded plateau with entrenched streams in the southern part. The production of beef cattle is the dominant agricultural activity, but dry-farmed winter wheat and other small grains are also grown.

The Great Lakes region includes numerous lakes and wetlands. Slopes are nearly level to gently undulating in areas of glacial lake deposits, gently undulating to rolling on till plains and ground moraines, and steep on end moraines, on valley sidewalls, and on escarpments along the margins of lakes. Forestry is an important industry, along with grains and animal feed. Finally, the midwestern portion of the Interior Plains Region consists of a nearly level to gently sloping, dissected glaciated plain with abundant surface water supplies. The soils and climate in this region favor agriculture, and it produces most of the corn, soybeans, and feed grains produced in the United States.

Most of the region is extremely stable, although central Oklahoma and southern Kansas have seen an increase in induced seismicity as a result of fluid injection primarily for oil and gas extraction. The number of earthquakes over magnitude 3.0 in this region grew rapidly between 2008 and 2015 but has decreased over the past 3 years as fluid injection has decreased (USGS 2020b). The short-term hazard for damaging ground shaking is still elevated for this area, as numerous small earthquakes still occur every year. The hazard level of this area is on par with central California (USGS 2018b).

Most of the Interior Plains Region is at relatively low risk to significant earthquake activity. The largest recorded earthquake in Oklahoma occurred in 2011 and measured 5.7 on the Richter scale (USGS 2011a).

Intermontane Plateaus

Located west of the Rocky Mountain System and east of the Pacific Coast Ranges is the Intermontane Plateaus Region. The region comprises Colorado Plateau (covering portions of Colorado, Utah, Arizona, and New Mexico) and the Columbia Plateau (covering eastern Washington and parts of Oregon and Idaho), as well as the Basin and Range region that includes Nevada, parts of eastern California, western Utah, and southern Arizona and New Mexico. The Columbia Plateau province is enveloped by lava flows, and the topography is dominated by geologically young lava flows. The Colorado Plateau is composed primarily of relatively flat sedimentary rock that was uplifted during tectonic events, whereas the Columbia Plateau resulted from volcanic activity (USGS 2018c). The Basin and Range region consists of elongate mountain ranges alternating with flat, dry deserts.

The Columbia Plateau region is located on the lee side of the Cascade Mountains in Washington and Oregon and extends east into Idaho along the Snake River Plains. It is an area of smooth to deeply dissected plains and plateaus. Well-developed terraces are found along the Snake River. The region has a few isolated mountain ranges. This region is primarily a mixture of grazing land and cropland, with a few forested areas. Wheat grown by dry farming methods is the major crop in the region while grazing is the major land use in the drier parts of the region. The Basin and Range province and the Colorado Plateau are arid regions of plateaus, plains, basins, and isolated mountain ranges. Much of the land in the region is used for grazing. Irrigated crops are grown in areas where water is available and the soils are suitable, and include feed crops for livestock, cotton, and citrus fruits.

Nevada is in one of the most seismically active regions in the United States. Nevada ranks third (behind California and Alaska) nationwide in the number of large earthquakes over the last 150 years, with areas of greatest seismicity concentrated in the western portion of the state (University of Nevada, Reno 2010). The largest earthquake ever recorded in Nevada was a magnitude 7.1 quake that occurred in 1915 the eastern part of Pleasant Valley, in north-central part of Nevada. Damage occurred within 50-mile radius of the earthquake in Humboldt, Lander, and Pershing counties, and the earthquake was felt in parts of Oregon, California, and Utah (University of Nevada, Reno 2012).

Laurentian Upland

The Laurentian Upland Region includes portions of northern Michigan, Wisconsin, and Minnesota. The metamorphic bedrock comprises some of the oldest rock formations in the North American continent and have mostly been buried by sediments deposited from glaciers over 10,000 years ago (USGS 2018c).

The soils in the Laurentian Upland typically form in glacial deposits with numerous lakes and wetlands. The topography is nearly level to gently undulating and dependent on the glacial surface. Water erosion, especially on cropland, is a major concern for this region (USDA 2006).

The Laurentian Upland is located within the areas of the lowest hazard from seismic events (Figure 3.6-1). The older bedrock and location within the center of the continent provides a stable foundation with few occurrences of earthquakes.

Pacific Mountain System

This region is one of the most geologically young and tectonically active in North America. The generally rugged, mountainous landscape of this province provides evidence of ongoing mountain-building. The Pacific Mountain System straddles the boundaries between several tectonic plates, including the North America Plate, the Pacific Plate, and the Juan de Fuca Plate, and includes the active volcanoes of the Cascade Range and the young, steep mountains of the Pacific Coast Range and the Sierra Nevada. Bedrock in this region consists primarily of igneous rocks, from the Mesozoic granitic bedrock in the Sierra Mountains, to the more recent volcanic emissions in the Cascade Mountains. The Central Valley in California is a basin filled with alluvial fan sediments from the Sierra Nevada Mountains to the west and the Coast Ranges to the east.

Steep mountains and narrow to broad, gently sloping valleys and plains characterize the northern portion of this region. The Coast Range consists primarily of tilted, folded, and faulted sedimentary and metamorphic rocks. The Cascade Mountains, the other major mountain system in the region, consist primarily of volcanic crystalline rocks. The Willamette Valley separates the Coast Range from the higher Cascade Mountains inland. It is a rich agricultural area because of a mild coastal climate, high rainfall, and deep soils that formed in alluvium and glacial drift. The mountains in the Coast Range grade into gently sloping marine terraces along the Pacific Ocean coast. These terraces are cut by the many rivers draining this area.

The southern portion of this region is located entirely in California. This region of low mountains and broad valleys has a long, warm growing season and low precipitation. Floodplains and alluvial fans include some of the most important soils used for agricultural purposes in this region, with uplands and older terraces throughout the region also supporting productive uses. Many of the soils on floodplains and low terraces in the valley of the San Joaquin River are affected by salts. The agricultural drainage water in this valley commonly has a high salt load, and the salinity in receiving streams typically increases in a downstream direction. Control of the water erosion caused by rainfall and irrigation and maintenance of the content of organic matter in the soils are soil resource concerns throughout this agriculturally rich region. Wind erosion is a hazard in the valley of the San Joaquin River and in some of the coastal valleys. Salinity and the intrusion of saltwater into aquifers are management concerns in the coastal valleys.

The Pacific Mountain System includes the most seismically active region in the United States. Between 1974 and 2003, more than 87 percent of the magnitude 3.5 or greater earthquakes occurring in the United States originated in Alaska, Hawaii, and California (USGS 2012a). California is particularly vulnerable to earthquake activity due to the dozens of active faults and fault zones in the state. On average, the southern California area experiences approximately 10,000 earthquakes annually, but most

of these are not felt and only several hundred are greater than magnitude 3.0 on the Richter scale. Earthquakes with a magnitude of greater than 4.0 account for only 15 to 20 earthquakes (USGS 2014a). Areas of greatest seismicity in California are concentrated along the coast, particularly along the San Andreas Fault. Two of the most powerful earthquakes recorded to date are the 1857 Fort Tejon earthquake (magnitude 7.9) and the 1906 San Francisco earthquake (magnitude 7.8). The Fort Tejon earthquake uprooted trees and destroyed buildings up to 12 miles away (USGS 2014b). No earthquake with a magnitude 8.0 or greater has been officially recorded in the state. Within the next 30 years, there is a 20 percent chance that a magnitude 7.5 earthquake will hit the San Francisco area and a 31 percent chance that a magnitude 7.5 earthquake will hit southern California (USGS 2015c).

Rocky Mountain System

The Rocky Mountains constitute a line from the northern border with Canada south into central New Mexico. These mountains formed between 70 and 40 million years ago due to the collision of the Pacific Ocean oceanic crust with the North American continental crust (USGS 2018c).

The Rocky Mountain region is characterized mainly by rugged mountains, but it has some broad valleys and remnants of high plateaus. Some areas on the highest mountains are covered by glaciers. The ground is permanently frozen in these areas. The mountain slopes generally are forested, and the valleys are dominated by shrubs and grasses. Grazing is the leading land use in the valleys and mountains, but timber production is important on some of the forested mountain slopes. Recreation is also an important economic activity. Valleys in this region may be irrigated or dry farmed, with grains and livestock forage being the primary crops.

A relatively high-risk zone of potential seismic activity extends throughout portions of the Rocky Mountain System. Within Utah, areas of greatest seismicity are focused in the central portion of the state running from north to south. Weber, Davis, Salt Lake, Utah, and Juab counties are at the greatest risk of strong earthquakes within Utah, due to their proximity to the Wasatch Fault, a 240-mile long geologic feature that extends between Malad City, and Fayette, Utah (Utah Geological Survey 1996). On average, six magnitude 3.0 (or greater) earthquakes occur within Utah in a given year. Magnitude 6.0 (or greater) earthquakes occur in Utah, on average, once every 20 years (Utah Geological Survey 1996). Utah's largest recorded earthquake measured 6.6 on the Richter scale and occurred in Hansel Valley in northern Utah in 1934. The earthquake produced landslides and multiple ground fractures; in some locations, the terrain was displaced by more than 1 foot (USGS 1993).

In Wyoming, areas of greatest seismicity are concentrated in the northwest portions of the state; locations within Yellowstone National Park are at the greatest risk of experiencing a significant earthquake (Wyoming State Geological Survey 2019). On average, between 1,000 and 3,000 earthquakes occur annually within Yellowstone National Park, including several magnitude 3.0 to 4.0 earthquakes (USGS 2005). "The largest earthquake recorded to date in Wyoming occurred on August 18, 1959 in Yellowstone National Park. The earthquake registered as a magnitude 6.5 and is

considered to be an aftershock of the magnitude 7.5 Hebgen Lake earthquake in southwestern Montana" (Wyoming State Geological Survey 2020).

Alaska

Much of Alaska's bedrock is metamorphic rock that has been deformed under heat and pressure as it was buried under the Earth's surface. Most of Alaska's oldest rocks are approximately one billion years old, although Alaska's oldest known rock is about two billion years old. New earth materials are born from volcanoes, such as along the Aleutian Arc, recycled into sediments from weathering processes, and lithified from sediments into new rock. Metamorphosed rocks (mostly marine sedimentary rocks) are found in Alaska's Interior, between the Tintina and Denali fault systems. Metamorphosed marine and marginal sedimentary rocks, carbonate platform, oceanic igneous (ocean crust) rocks, and volcanic rocks comprise western and northern Alaska. These rocks came together during uplift and deformation, beginning about 150 million years ago. The variably metamorphosed arc-related volcanic, oceanic, sedimentary, and plutonic rocks of south-central and southeast Alaska have slipped up along the Denali and more southerly fault systems from the southeast over the last 120 million years.

Southern Alaska is characterized by rolling hills, glacial moraines, alluvial fans, and large outwash plains extending from the mountains to the commonly rugged coastline. Broad floodplains, terraces, and deltas flank the numerous glacial and freshwater drainages. Land uses in this region include forestry, agriculture, and livestock grazing. The Aleutian Chain is made up of volcanoes (many of which are active), lava flows, and tilted fault blocks of volcanic-derived sediments. Landforms include steep mountain slopes, rolling hills, and steep-walled fjords and sea cliffs. This region primarily supports subsistence hunting and gathering, with very little agriculture. The interior, Western, and Northern portions of Alaska include diverse geography and soils including floodplains, broad alluvial plains and terraces, hills, mountains, ridges, outwash plains, volcanic cinder cones, sand dunes, and extensive coastal plains and deltas. Land use in these portions of the state includes forestry, grazing, and subsistence hunting.

Earthquakes are common in southern Alaska, which is classified as a high seismic hazard area by the USGS (see Figure 3.6-1). Over the past century, 15 earthquakes of magnitude 6.0 or greater have occurred in this region. Two of these – a magnitude 6.6 earthquake in July 1983 and a magnitude 6.4 event in September 1983 – were at a shallow depth and caused damage in the region of Valdez. On November 30, 2018, a magnitude 7.0 earthquake near Anchorage, Alaska, occurred as the result of faulting at a depth of approximately 25 miles. At the location of this earthquake, the Pacific plate is moving towards the northwest with respect to the North America plate at approximately 2.2 inches per year, subducting beneath Alaska at the Alaska-Aleutians Trench, approximately 93 miles south-southeast of this event.

The great Alaska earthquake of March 1964 also occurred in this region. On March 27, 1964, an earthquake of magnitude 9.2 occurred in the Prince William Sound region of Alaska. The earthquake rupture started approximately 15 miles beneath the surface, with its epicenter approximately about 6

miles east of the mouth of College Fiord, 56 miles west of Valdez and 75 miles east of Anchorage. The earthquake lasted approximately 4.5 minutes and is the most powerful recorded earthquake in U.S. history. It is also the second largest earthquake ever recorded.

Hawaii

The Hawaiian Islands are volcanic islands in the Pacific Ocean, created by hot-spot activity below the Earth's surface. Although most of the volcanoes are extinct, activity continues at several volcanoes on the island of Hawaii, including Mt. Kilauea.

The Hawaiian Islands and consist of coastal plains, upland slopes, mountain ranges, plateaus, and summits (USDA 2006). The region also has a significant area of volcanic rock, which is classified as nonsoil. A variety of crops are grown in the region, including pineapples and coffee for export. Livestock grazing is also an important activity.

Hawaii is susceptible to regular earthquakes, and several events greater than magnitude 6.5 have occurred within the last 80 years. The earthquake hazard in the State of Hawaii is among the highest in the United States. The south side of the Island of Hawaii is under the greatest threat, as evidenced by the three largest earthquakes that occurred there since 1868. Earthquakes in Hawaii have destroyed buildings, roads, bridges, and utilities. Damage can be locally intensified by water-saturated soils that amplify earthquake ground motions. On steep slopes, intense shaking may cause such soils to fail, resulting in landslides and mudflows. Large offshore earthquakes can form tsunamis that can be far more damaging than direct seismic hazards.

Thousands of earthquakes occur every year in Hawaii, most on and around the Island of Hawaii. Many of these earthquakes are directly related to volcanic activity; these earthquakes are seldom large enough to cause widespread damage, but they may produce locally extensive ground fractures and subsidence. Earthquakes that generate the strongest and most damaging ground shaking originate in zones of structural weakness at the base of the volcanoes and in the underlying lithosphere (includes the oceanic crust and upper mantle). For example, the magnitude 7.7 Kalapana earthquake in 1975 occurred at the base of Kīlauea Volcano at a depth of about 5.3 miles, and the magnitude 6.7 Kiholo Bay earthquake in 2006 occurred in the lithosphere at a depth of 18 miles. These deeper earthquakes also occur beneath and near the other Hawaiian Islands.

Puerto Rico and the U.S. Virgin Islands

The Commonwealth of Puerto Rico and the U.S Virgin Islands, while distinct territories of the United States, are located in the Caribbean and share several geologic characteristics. Therefore, they are discussed together in this section. Puerto Rico and the U.S. Virgin Islands are located in the Caribbean Sea and are of volcanic origin, being composed of igneous rock overlain with more recent sedimentary deposits. This is a region of humid and semiarid mountains, valleys, and coastal plains. It has a long, warm growing season (USDA 2006).

Puerto Rico is surrounded by the Atlantic Ocean to the north and by the Caribbean Sea to the south. Approximately three-fourths of the island consists of mountain ranges. Cerro de Punta, the highest peak, is at an elevation of 4,389 feet, and El Yunque, in the rain forest, is at an elevation of 3,493 feet. Other prominent physical features are limestone karst in the northwestern part of the region and coastal plains of varying width along the northern and southern coasts. Much of the agricultural land is used for pasture, with the remainder used for food and cash crops (USDA 2006).

Puerto Rico and the U.S. Virgin Islands are located along the boundary between the northeastern Caribbean Sea and the Atlantic Ocean, at the intersection of the Greater and Lesser Antilles Island chains (USGS 2004b). These islands demarcate the boundary between the North American and Caribbean tectonic plates. The region has a long history of destructive earthquakes. Historical records show that major earthquakes have struck Puerto Rico and the U.S. Virgin Islands several times during the past 500 years, although the locations and sizes of events that have occurred more than a few decades ago are poorly known. Major earthquakes have damaged Puerto Rico in 1520, 1615, 1751, 1776, 1787 (magnitude 8.0), 1867 (magnitude 7.3), 1918 (magnitude 7.5), 1943 (magnitude 7.7), and 1946 (magnitude 8.0). The 1867 and 1918 earthquakes were accompanied by destructive tsunamis.

Guam and the Northern Mariana Islands

Guam and the Commonwealth of the Northern Mariana Islands, while distinct territories of the United States, share several geologic characteristics. Therefore, they are discussed together in this section. Guam and the Northern Mariana Islands are volcanic islands in the Pacific Ocean and are susceptible to significant seismic activity. Volcanic rock forms the geologic foundation of the islands, with sedimentary rock overlaying some portions.

Many of the volcanic areas in these islands are steep, some of them having slopes of more than 100 percent. Gently rolling terrain with steep escarpments is common on the coralline limestone islands (USDA 2006). Volcanic peaks reach elevations of more than 3,000 feet, and Guam has coralline limestone plateaus as high as 570 feet. The climate in this region is generally wet, hot, and humid. The soils in this region are derived from weathered or hard volcanic rock, coralline sand, or weathered ash over coralline limestone. Most of the agriculture in this region is at the subsistence level. Steep slopes, low soil fertility, stoniness, and high acidity reduce the variety of agriculture on most soils throughout the region. High humidity and rainfall also are important management concerns.

The Mariana Island arc, including Guam and the Northern Mariana Islands, formed in response to northwestward subduction of the Pacific plate beneath the Philippine Sea plate, and this process controls seismic activity in the region (USGS 2012b). Earthquakes of magnitude 7.5 and 7.9 occurred in 1902 and 1914 respectively, although not much is known about any resulting damage. On April 5, 1990, a magnitude 7.4 earthquake occurred just east of the Mariana trench. Although not destructive, it is noteworthy as the largest shallow earthquake ever recorded in the region. On August 8, 1993, a magnitude 7.8 earthquake occurred about 37 miles south-southeast of Agana, the capital city of Guam. The largest earthquake ever recorded in the region, it caused considerable damage. Large earthquakes

occurred on March 28, 2000 and September 28, 2007 (magnitude 7.6 and 7.5, respectively). Earthquakes less than magnitude 7.0 included the magnitude 6.4 earthquake of June 6, 1993 and the magnitude 6.5 earthquake of August 14, 2002.

American Samoa

The Samoan Archipelago consists of 14 volcanic islands in the South Pacific Ocean (USGS 2005). These islands are divided into the U.S. Territory of American Samoa and the independent country of Samoa. American Samoa contains the youngest volcanoes in the island chain, with Tutuila being the oldest island in American Samoa. Presently, a new volcano, Vailulu'u (still approximately 2,000 feet below the sea surface), is forming 28 miles to the east of Ta'u, the youngest subaerial volcano in the Samoan chain. The rocky, irregular coastline of American Samoa reflects the volcanic origin of these islands. The geology of the islands varies, but typically consists of steep volcanic cliffs and headlands with small embayments containing carbonate beaches, alluvium, and wetlands, with fringing coral reefs and carbonate beaches on some islands.

INTENTIONALLY LEFT BLANK.

3.7 HYDROLOGY AND WATER QUALITY

This section describes the hydrology and water quality of the United States and its Territories to include a description of the resource, applicable statutes and regulations, and the existing conditions of hydrology and water quality on a nationwide scale. Hydrology is the study of the interrelationship between water and its environment and involves the occurrence, distribution, movement, and properties of the waters of the earth and their relationship with the environment within each phase of the hydrologic (water) cycle. This analysis of hydrology evaluates surface water and groundwater and the quality of each.

3.7.1 Description of the Resource

3.7.1.1 Surface Water

Surface water resources, including lakes, streams, and rivers, are important for economic, ecological, recreational, human health, and spiritual and religious purposes. The United States primarily uses surface water for public water supply, agricultural irrigation, energy production, recreation, mining, and industrial purposes.

Surface water systems are typically defined in terms of watersheds. A watershed divides the landscape into hydrologically defined areas whose biotic and abiotic components function interactively. The watershed boundary generally follows the drainage divide or the highest ridgeline around the stream channels, which meet at the bottom or lowest point of the land where water flows out of the watershed, commonly referred to as the mouth of the waterway. Any activity that affects water quality, quantity, or rate of movement at one location within a watershed has the potential to affect the characteristics of locations downstream.

3.7.1.2 Groundwater

Groundwater is the water beneath the land surface that fills porous spaces in rock and sediment. It is stored in and moves slowly through geologic formations called aquifers. An aquifer is a geologic formation, a group of formations, or a part of a formation that contains sufficient saturated, permeable material to yield significant quantities of water to wells and springs. Aquifers are typically made up of gravel, sand, sandstone, or fractured rock, like limestone. Water can move through these materials because they have large connected spaces that make them permeable.

Groundwater supplies are replenished, or recharged, by rain and snow melt that seeps down into the cracks and crevices beneath the land's surface. Water in aquifers is brought to the surface naturally through a spring or can be discharged into lakes and streams. Groundwater can also be extracted through a well drilled into the aquifer. Communities use groundwater (e.g., aquifers) for potable water, irrigation, and industrial applications. Depending on the geographic location, groundwater is the primary source of drinking water for municipal populations and typically the only source of drinking water for rural populations.

A principal aquifer is a regionally expansive aquifer or aquifer system that has the potential to be used as a source of potable water. There are 62 principal aquifers within the United States.

A sole source aquifer (SSA) is one that supplies at least 50 percent of the drinking water for its service area and for which there are no reasonably available alternative drinking water sources should the aquifer become contaminated. Designating a groundwater resource as a SSA helps to protect the drinking water supply of that area and requires review of proposed projects that receive federal funding. There are 89 SSAs in the United States (USEPA 2018d).

3.7.2 Applicable Statutes, Regulations, and Terminology

Table 3.7-1 summarizes applicable statutes, regulations, and terminology governing hydrology and water quality.

Table 3.7-1. Hydrology and Water Quality Statutes, Regulations, and Terminology

Statute, Regulation, or Term	Description
Clean Water Act (33 USC 1251 et seq)	Establishes the basic structure for regulating discharges of pollutants into waters of the United States and regulating quality standards for surface waters. The Clean Water Act delegates authority and establishes water quality standards, including the designation of uses, establishment of water quality criteria to attain and sustain uses, and measures for protection and enhancement of fish and other aquatic life.
Executive Order (EO) 12962 Recreational Fisheries	The EO directs federal agencies to improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities nationwide.
Impaired Waterbody	Impaired waterbodies are those considered too polluted or otherwise degraded to meet the water quality standards or designated uses set by the state. Section 303(d) of the Clean Water Act requires states to identify and develop a list of impaired waterbodies. Section 305(b) of the Clean Water Act requires states to assess and report the quality of their waterbodies.
National Rivers Inventory	Includes a register of free-flowing river segments maintained by the National Park Service believed to possess one or more "outstandingly remarkable" natural or cultural values judged to be of more than local or regional significance. These "outstandingly remarkable" value categories include scenery, recreation, geology, fish, wildlife, prehistory, history, cultural, or other values.
Safe Drinking Water Act (42 USC 300f et seq.)	Requires that certain program activities, such as delineation, contaminant source inventory, contingency planning and source management, be incorporated into state Wellhead Protection Programs and that all states have USEPA-approved state Wellhead Protection Programs, although state programs vary greatly.
Wellhead Protection Area	The surface and subsurface area surrounding a water well or wellfield, supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water or wellfield.

EO = Executive Order; U.S. = United States; USC = United States Code; USEPA = U.S. Environmental Protection Agency

3.7.3 Existing Conditions – HUC-2 Watersheds

This analysis presents the existing conditions of hydrology and water quality in the United States and its Territories, and it also describes surface water and groundwater features and their qualities within each watershed. USGS HUC-2 Watershed Regions were selected as the unit of analysis for this resource area. Section 3.0, Affected Environment, Introduction has a more detailed discussion of the HUC-2 Watershed Regions, which are depicted in Figure 3.0-3. The HUC classification system divides the United States into geographic regions that create a framework for drainage boundaries of successively smaller watersheds, accounting for all land and surface areas. HUC-2 is the two-digit code dividing the United States into 21 watershed regions that contain either the drainage area of a major river, such as the Missouri region, or the combined drainage areas of a series of rivers, such as the Texas-Gulf region, which includes a number of rivers draining into the Gulf of Mexico (USGS NRCS 2018).

Unit of Analysis USGS Hydrologic Unit Code (HUC-2)
--

3.7.3.1 New England Watershed (01)

The HUC-2 New England (Region 01) watershed drains into: (a) the Bay of Fundy; (b) the Atlantic Ocean within and between the states of Maine and Connecticut; (c) Long Island Sound north of the New York-Connecticut state line; and (d) the Riviere St. Francois, a tributary of the St. Lawrence River. It includes all of Maine, New Hampshire, and Rhode Island and parts of Connecticut, Massachusetts, New York, and Vermont (USGS 2016a).

Surface Water

Major river systems in New England include St. John, Penobscot, Kennebec, Androscoggin, St. Croix, Merrimack, Connecticut, Pawcatuck, Byram, and St. Francois (USGS 2016a). Most of the rivers originate in mountainous forested areas, and their headwaters are often fast-flowing, cobble, and boulder bottom streams. Flow in these rivers is generally regulated by upstream lakes, reservoirs, flood-control dams, and/or power plants (Ayotte and Robinson 1997). New England has many natural lakes, many of which are enlarged and controlled by dams. The largest are the Moosehead Lake in Maine and Lake Winnepesaukee in New Hampshire. Cape Cod has no major streams but has more than 350 lakes and ponds (Ayotte and Robinson 1997).

Over 50 percent of the lakes in New England are human-made reservoirs (USEPA 2009). Many lakes in the region were originally created to power sawmills. During the 18th and early 19th centuries, lakes were affected by sedimentation caused by logging, farming, and damming of waterways. More recently, many large reservoirs constructed in the early 20th century were created for hydropower generation or flood control (USEPA 2009). The Narragansett Bay is located in the New England watershed. Refer to Section 3.6 for discussion of coastal resources.

Surface Water Quality

Approximately 6,880 miles (6 percent) of the 114,760 miles of streams in the New England watershed are designated as impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired surface

waters include aquatic life, fish and wildlife protection and propagation, and recreation (USEPA 2015b). The top three causes of impairment are pH, *Escherichia coli* (*E. coli*), and pathogens (e.g., fecal coliform). The top three probable sources for impairment are municipal point source discharges, urban stormwater, and nonpoint source pollution (USEPA 2015a).

Approximately 250 (5.6 percent) of the estimated 4,420 square miles of lakes, reservoirs, and ponds in the New England watershed are impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired lakes, reservoirs, and ponds include aquatic life, fish and wildlife protection and propagation, and recreation (USEPA 2015b). The top three causes of impairment are polychlorinated biphenyls (PCBs), dissolved oxygen, and mercury. The top three probable sources for impairment are toxic atmospheric deposition, combined sewer overflows, and urban stormwater (USEPA 2015a).

Groundwater

The New England watershed includes consolidated bedrock aquifers made up of carbonate rocks, sandstone, and crystalline rocks. There are 17 designated SSAs in New England (USEPA 2019e).

Where glacial deposits are thin or non-existent, the crystalline rocks are the primary source of water and are the sole source of water for up to 50 percent of the inhabitants in northern New England; they are increasingly being tapped for new water supplies in areas where existing water-supply systems are fully utilized (USGS 2014c). There are no areas of notable groundwater level decline in the New England watershed (Reilly, Dennehy, Alley, and Cunningham 2008).

Groundwater Quality

The USGS National Water-Quality Assessment Program evaluated the quality of water from crystalline rock aquifers in New England. The study determined that the high frequency of detections for a wide variety of human-made and naturally occurring contaminants in both domestic and public-supply wells shows the vulnerability of New England crystalline aquifers to contamination (USGS 2014c). The highly variable water quality and the association with specific lithologies of the crystalline bedrock underscores the importance of testing individual wells to determine if concentrations for the most commonly detected contaminants, such as arsenic, uranium, and other radionuclides, exceed human-health benchmarks (USGS 2014c).

Wild and Scenic Rivers

Within the New England watershed, there are 8 Wild and Scenic River designations totaling approximately 338 miles (1 in Maine, 2 in New Hampshire, 3 in Massachusetts, and 2 in Connecticut). There are 107 miles of river classified as wild, 131 miles classified as scenic, and 100 miles classified as recreational (USFS 2018).

3.7.3.2 Mid-Atlantic Watershed (02)

The HUC-2 Mid-Atlantic (Region 02) watershed drains into: (a) the Atlantic Ocean within and between the states of New York and Virginia; (b) Long Island Sound south of the New York-Connecticut state line; and (c) the Riviere Richelieu, a tributary of the St. Lawrence River. It includes all of Delaware, New

Jersey, the District of Columbia, and parts of Connecticut, Maryland, Massachusetts, New York, Pennsylvania, Vermont, Virginia, and West Virginia (USGS 2016a).

Surface Water

The major river systems in the Mid-Atlantic include the Riviere Richelieu, Hudson, Popolopen Brook, Delaware, Manasquan, Susquehanna, Pocomoke, and Potomac (USGS 2016a). Most of the lakes within the Mid-Atlantic are human-made; the topography of low hills coupled with large river systems enabled reservoir development. Along the coastal plain, several regional-specific lake types occur, including the New Jersey Pine Barren ponds (USEPA 2009). The Delaware Bay and Chesapeake Bay are located in the Mid-Atlantic watershed. The Chesapeake Bay and the Susquehanna, Potomac, and James rivers were formed by melting glaciers (Martin 2017).

Surface Water Quality

Approximately 23,450 miles (10 percent) of the 230,840 miles of streams in the Mid-Atlantic watershed are designated as impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired surface waters include fish and wildlife protection and propagation, recreation, and aquatic life (USEPA 2015b). The top three causes of impairment are nutrients, pH, and dissolved oxygen. The top three probable sources for impairment are urban runoff/storm sewers, agriculture, and toxic atmospheric deposition (USEPA 2015a).

Approximately 3,770 (40 percent) of the estimated 9,470 square miles of lakes, reservoirs, and ponds in the Mid-Atlantic watershed are impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired lakes, reservoirs, and ponds include fish and wildlife protection and propagation, recreation, and aquatic life (USEPA 2015b). The top three causes of impairment are PCBs, pathogens, and dissolved oxygen. The top three probable sources for impairment are residential districts, urban stormwater, and marina/boating sanitary on-vessel discharges (USEPA 2015a).

Groundwater

The Mid-Atlantic region is underlain by a wide variety of geologic formations that together control the storage, movement, and chemical quality of the groundwater. The rocks range from the unconsolidated clays, sands, and gravels of the coast, to older rocks that include consolidated sedimentary rocks and some ancient intrusive and volcanic rocks. Limestones, dolomites, sandstones, shales, and crystalline-rock aquifers also exist in the region (USGS 1978). There are currently 17 designated SSAs in the Mid-Atlantic watershed (USEPA 2019e).

USGS studies identified minor aquifer level depletion within the Mid-Atlantic watershed (Konikow 2013). The studies indicate a trend showing the total annual groundwater withdrawals generally increased during the more recent 25-year study period (Konikow 2013).

Groundwater Quality

Groundwater quality in the Mid-Atlantic region differs by location due to the hydrologic history of the water and the nature of the rock materials through which it flows. Most of the Mid-Atlantic region has

generally good quality groundwater (USGS 1978). However, nitrate and pesticide contamination of groundwater from agricultural applications has been documented by the USGS in several aquifers in the watershed (Debrewer, Ator, and Denver 2008).

Wild and Scenic Rivers

Within the Mid-Atlantic watershed, there are 7 Wild and Scenic River designations totaling approximately 617 miles in 4 states (1 in Delaware and Pennsylvania, 5 in New Jersey, and 1 in New York and Pennsylvania). None of the rivers are classified as wild, but there are 219 miles classified as scenic and 398 miles as recreational (USFS 2018).

3.7.3.3 South Atlantic-Gulf Watershed (03)

The HUC-2 South Atlantic-Gulf (Region 03) watershed drains into: (a) the Atlantic Ocean within and between the states of Virginia and Florida; (b) the Gulf of Mexico within and between the states of Florida and Louisiana; and (c) the associated waters. It includes all of Florida and South Carolina as well as parts of Alabama, Georgia, Louisiana, Mississippi, North Carolina, Tennessee, and Virginia (USGS 2016a).

Surface Water

The major river systems in the South Atlantic-Gulf watershed include the Roanoke, Neuse, Cape Fear, Santee, Savannah, Altamaha, St. John's, Caloosahatchee, Kissimmee, Peace, Withlacoochee, Suwannee, Aucilla, Ochlockonee, Apalachicola, Choctawhatchee, Escambia, Alabama, Mobile, Tombigbee, Pascagoula, and Pearl (USGS 2016a). Dams and channelization in this region have altered the natural courses of rivers throughout the area, which has both controlled and exacerbated flood events. Major lakes include Lake Marion in North Carolina and Lake Okeechobee in Florida. Notable regional lakes include southeastern blackwater lakes, coastal Carolina "bays," and clear limestone lakes of north Florida (USEPA 2009).

Surface Water Quality

Approximately 19,670 miles (3 percent) of the 631,730 miles of streams in the South Atlantic-Gulf watershed are designated as impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired surface waters include aquatic life, recreation, and fish and wildlife protection and propagation (USEPA 2015b). The top three causes of impairment are dissolved oxygen, benthic macroinvertebrates, and pathogens (e.g., fecal coliform). The top three probable sources for impairment are nonpoint source pollution, toxic atmospheric deposition, and urban stormwater (USEPA 2015a).

Approximately 1,970 (6 percent) of the estimated 32,360 square miles of lakes, reservoirs, and ponds in the South Atlantic-Gulf watershed are impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired lakes, reservoirs, and ponds include recreation, aquatic life, and agriculture (USEPA 2015b). The top three causes of impairment are nutrients, enterococcus bacteria, and iron. The top three probable sources for impairment are urban runoff/storm sewers, toxic atmospheric deposition, and onsite treatment systems (septic systems and similar decentralized systems) (USEPA 2015a).

Groundwater

Aquifers underlying the majority of the area comprising the South Atlantic-Gulf watershed are contained in limestone or unconsolidated sand and gravel geologic units. The remainder of the region is underlain by older consolidated rocks, with groundwater contained in fractures and solution cavities (Cederstrom et al. 1979). There are currently four designated SSAs in the South Atlantic-Gulf watershed (USEPA 2019e).

Two primary aquifers are located in this watershed: the Floridan aquifer system and the Southeastern Coastal Plain aquifer system. The Floridan aquifer system underlies approximately 100,000 square miles in Alabama, Georgia, Florida, and South Carolina. In Georgia and Florida, this aquifer supplies most of the freshwater used for agricultural irrigation, industrial, mining, commercial, and public supply, while it also supplies abundant water to southeastern Alabama and South Carolina (Williams and Kuniansky 2016). The abundant freshwater source of the Floridan aquifer system is being threatened by population growth. The increased population along the South Carolina and Georgia coasts have resulted in excessive groundwater withdrawals (Southern Company 2016); withdrawals have increased more than 500 percent since 1950 (Berndt et al. 2014).

The Southeastern Coastal Plain aquifer system underlies an area of over 120,000 square miles in Kentucky, Tennessee, Mississippi, Alabama, Georgia, Florida, and South Carolina. Land use overlying this aquifer includes approximately 74 percent undeveloped, 19 percent agricultural, and 7 percent urban (Barlow et al. 2016).

Groundwater Quality

In areas that have experienced dramatic population growth, the shallow Floridan aquifer system drawdown has allowed the intrusion of saltwater. Regulators have reduced existing groundwater permits and limited additional withdrawals in response (Southern Company 2016). The groundwater quality of the Upper Floridan aquifer is among the best in the country. Fewer than 5 percent of samples drawn from drinking water wells contained a contaminant at a level exceeding a human health benchmark, with radon being the contaminant that exceeded its respective benchmark most frequently (3 percent of drinking water wells) (Berndt et al. 2014).

Samples collected from the Southeastern Coastal Plain aquifer system found that at least one inorganic contaminant with an applicable human-health benchmarks occurred at high concentrations in 6 percent of the study area and at moderate concentrations in 13 percent of the study area. Organic contaminants were found at moderate levels in 3 percent of the study area.

Wild and Scenic Rivers

Within the South Atlantic-Gulf watershed, there are 8 Wild and Scenic River designations totaling approximately 310 miles in 6 states (1 in Alabama, 2 in Florida, 1 in Mississippi, 3 in North Carolina, and 1 that flows through North Carolina, South Carolina, and Georgia). There are 116 miles of river classified as wild, 91 miles classified as scenic, and 103 miles classified as recreational (USFS 2018).

3.7.3.4 Great Lakes Watershed (04)

The HUC-2 Great Lakes (Region 04) watershed drains into: (a) the Great Lakes system, including the lake surfaces, bays, and islands; and (b) the St. Lawrence River to the Riviere Richelieu drainage boundary. It includes parts of Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin (USGS 2016a).

Surface Water

The major river systems in the Great Lakes watershed include Montreal, Carp, Milwaukee, Manistique, St. Joseph, Grand, Au Sable, St. Clair, Detroit, Huron, Vermilion, Ashtabula, Niagara, Genesee, Stony Creek, St. Lawrence, and English (USGS 2016a).

The Great Lakes include Lake Superior, Lake Michigan, Lake Huron, Lake Erie, and Lake Ontario. The Great Lakes are a series of connected, freshwater lakes situated in the United States and Canada. The lakes comprise the largest system of fresh surface water on earth, spanning 750 miles from west to east and containing approximately 21 percent of the world's and 84 percent of North America's freshwater supply (USEPA 2017). The Great Lakes provide water for consumption, transportation, power, recreation, and a variety of other uses. The Great Lakes include a broad range of habitats and thousands of islands. The watershed includes tens of thousands of smaller lakes within the landscape.

Surface Water Quality

Approximately 62,990 miles (28 percent) of the 229,470 miles of streams in the Great Lakes watershed are designated as impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired surface waters include fish and wildlife protection and propagation, recreation, and aquatic life (USEPA 2015b). The top three causes of impairment are PCBs, PCB(s) in fish tissue, and nutrients. The top three probable sources for impairment are toxic atmospheric deposition, nonpoint source pollution, and combined sewer overflows (USEPA 2015a).

Approximately 36,400 (56 percent) of the estimated 64,370 square miles of lakes, reservoirs, and ponds in the Great Lakes watershed are impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired lakes, reservoirs, and ponds include fish and wildlife protection and propagation, aquatic life, and recreation (USEPA 2015b). The top three causes of impairment are PCBs in fish tissue, dioxin, and mercury in fish tissue. The top three probable sources for impairment are toxic atmospheric deposition, agriculture, and contaminated sediments (USEPA 2015a).

Groundwater

Groundwater serves a vitally important role in the Great Lakes region; direct and indirect groundwater discharges represent up to 2.7 percent and 42 percent, respectively, of the overall inflow into the Great Lakes (Annex 8 Subcommittee 2015). The Great Lakes watershed consists of aquifers of some combination of sandstone, carbonate, and shale geologic units. There are currently five designated SSAs in the Great Lakes watershed (USEPA 2019e).

More than 1,000 cubic miles of groundwater are stored within the Great Lakes basin, a volume approximately equal to that of Lake Michigan. This groundwater serves as the drinking water supply for approximately 8.2 million people, and groundwater use for household and manufacturing use will continue to increase as the suburban areas near the watershed boundary experience growth. As of 2000, groundwater withdrawal represented a small portion of the overall hydrologic budget, and only approximately 5 percent of the withdrawn water was consumed (i.e., not returned to the watershed) (Grannemann et al. 2000).

Groundwater Quality

While groundwater quality of the Great Lakes watershed is generally considered very good, that quality is threatened by contamination from sources such as failing septic systems, leaking underground storage tanks, landfills, hazardous waste sites, abandoned wells, leaking sanitary sewers, confined animal feeding operations, land application of septage and manure, agricultural practices, spills, urbanization, cemeteries, petroleum refineries, and injection wells (International Joint Commission Great Lakes Science Advisory Board 2010). Urban areas throughout the Great Lakes Basin commonly have groundwater contaminated by nutrients (i.e., nitrate), road salt, petroleum hydrocarbons, and synthetic chemicals (Annex 8 Subcommittee 2015). Additional contaminants found within the basin include pathogens, toxic chemicals (i.e., chlorinated solvents, pesticides, metals, radionuclides), household products, hormones, antibiotics, and pharmaceuticals (International Joint Commission Great Lakes Science Advisory Board 2010).

Wild and Scenic Rivers

Within the Great Lakes watershed, there are 18 Wild and Scenic River designations totaling approximately 729 miles in 3 states (15 in Michigan, 1 in Vermont, 1 in Wisconsin, and 1 that flows through Michigan and Wisconsin). There are 85 miles of river classified as wild, 295 miles classified as scenic, and 349 miles classified as recreational (USFS 2018).

3.7.3.5 Ohio Watershed (05)

The HUC-2 Ohio (Region 05) watershed includes the drainage of the Ohio River Basin excluding the Tennessee River Basin. It includes parts of Illinois, Indiana, Kentucky, Maryland, New York, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, and West Virginia (USGS 2016a).

Surface Water

The major river water systems in the Ohio watershed include the Allegheny, Monongahela, Kanawha, Muskingum, Scioto, Big Sandy, Guyandotte, Great Miami, Licking, Kentucky, Green, Wabash, Patoka, White, Cumberland, and Ohio (USGS 2016a). The rivers are utilized for transportation, power, industry, recreation, and a variety of other uses. Lakes in the Ohio watershed are a mixture of natural and human-made lakes and reservoirs (USEPA 2009).

Surface Water Quality

Approximately 57,820 miles (11 percent) of the 513,990 miles of streams in the Ohio watershed are designated as impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired surface

waters include fish and wildlife protection and propagation, recreation, and aquatic life (USEPA 2015b). The top three causes of impairment are pathogens, PCBs in fish tissue, and *E. coli*. The top three probable sources for impairment are agriculture, grazing in riparian or shoreline zones, and surface mining (USEPA 2015a).

Approximately 440 (13 percent) of the estimated 3,460 square miles of lakes, reservoirs, and ponds in the Ohio watershed are impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired lakes, reservoirs, and ponds include fish and wildlife protection and propagation, recreation, and public water supply (USEPA 2015b). The top three causes of impairment are PCBs in fish tissue, methylmercury, and mercury in fish tissue. The top three probable sources for impairment are toxic atmospheric deposition, industrial thermal discharges, and industrial point source discharges (USEPA 2015a).

Groundwater

Available potable groundwater resources in the Ohio watershed were, in 1974, estimated at 23,000 billion gallons in outwash and alluvial aquifers and an additional 85,000 billion gallons available in other aquifers. There are currently four designated SSAs in the Ohio watershed (USEPA 2019e). The most productive aquifers found in this region are located in alluvium (comprised of silt, sand, and gravel), outwash (comprised of sand and gravel), and glaciofluvial (i.e., a mixture of alluvium and outwash) deposits (Bloyd 1974). At the time of the Bloyd report (1974), it was estimated that the Ohio watershed had more than enough capacity to meet local groundwater needs and that groundwater from this region could be transported to areas of need. For example, the Wabash sub-basin was estimated to have enough groundwater to support an additional 22 million people. While the population and associated withdrawals have increased in this region, no areas of notable groundwater withdrawals are located within the Ohio watershed (Reilly et al. 2008).

Groundwater Quality

Groundwater quality is generally adequate for low-density rural residential use, but iron content and other issues in well water have necessitated public service districts to supply potable water to many rural areas of the basin. Threats to groundwater include contamination by wastewater treatment facilities, hazardous and toxic waste sites, mineral extraction processes, dewatering through excavation, leading underground storage tanks, acid mine drainage, pesticides and herbicides, landfills, injection wells, and impervious material, among others (USACE 2009).

Wild and Scenic Rivers

Within the Ohio watershed, there are 9 Wild and Scenic River designations totaling approximately 434 miles in 6 states (1 in Illinois, Kentucky, North Carolina, and West Virginia; 3 in Ohio; and 2 in Pennsylvania). There are 9 miles of river classified as wild, 212 miles classified as scenic, and 213 miles classified as recreational (USFS 2018).

3.7.3.6 Tennessee Watershed (06)

The HUC-2 Tennessee (Region 06) watershed encompasses the drainage of the Tennessee River Basin including parts of Alabama, Georgia, Kentucky, Mississippi, North Carolina, Tennessee, and Virginia (USGS 2016a).

Surface Water

The major river systems in the Tennessee watershed include French Broad, Holston, Sequatchie, Hiwassee, Elk, and Tennessee (USGS 2016a). The watershed is dominated by the Tennessee River and its numerous reservoirs. Other regional features include mountain streams through the Appalachian Mountains. A system of locks and dams on the Tennessee River created several large reservoirs including the Watts Bar, Chickamauga, Gunterville, Wheeler, Pickwick, and Kentucky lakes. The lakes provide flood control, recreation, public water supply, transportation, and power generation. The Tennessee River and its system of locks and dams provide a reliable source of water transportation with over 28,000 barges carrying 45 to 50 million tons of goods up and down the river annually (TVA 2018).

Surface Water Quality

Approximately 7,310 miles (6 percent) of the 129,680 miles of streams in the Tennessee watershed are designated as impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired surface waters include recreation, fish and wildlife protection and propagation, and agriculture (USEPA 2015b). The top three causes of impairment are *E. coli*, mercury, and alteration in streamside or littoral vegetative covers. The top three probable sources for impairment are grazing in riparian or shoreline zones, toxic atmospheric deposition, and Municipal Separate Storm Sewer System discharges (USEPA 2015a).

Approximately 150 (14 percent) of the estimated 1,100 square miles of lakes, reservoirs, and ponds in the Tennessee watershed are impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired lakes, reservoirs, and ponds include recreation, agriculture, and fish and wildlife protection and propagation (USEPA 2015b). The top three causes of impairment are mercury, PCBs, and total phosphorous. The top three probable sources for impairment are toxic atmospheric deposition, contaminated sediments, and agriculture (USEPA 2015a).

Groundwater

Groundwater withdrawals represented 1.7 percent of the total water withdrawals from the Tennessee River watershed in 2010. This withdrawal supplied the water for approximately 2.8 percent of the total water withdrawals for industrial use, 22.8 percent for public supply, and 20.6 percent for irrigation. While groundwater use fell between 1995 and 2005, there was an increase in groundwater withdrawals between 2005 and 2010 (Bohac and Bowen 2012).

There are three types of aquifers from which the groundwater is drawn in the Tennessee watershed: unconsolidated material with intergranular porosity, carbonate rocks with solution openings, and noncarbonate rocks with fractures (Zurawski 1978). These aquifers have not experienced notable declines in water levels (Reilly et al. 2008). There are currently no designated SSAs in the Tennessee watershed (USEPA 2019e).

Groundwater Quality

Groundwater quality in the Upper Tennessee River Basin generally meets federal and state drinking water standards, with the exception of nitrate and bacteria. However, nitrate concentrations in domestic wells and springs used for drinking water meet all applicable drinking water standards; exceedances were only found in monitoring wells. Pesticides and volatile organic compounds were also detected in wells and springs, but not at levels exceeding drinking water standards (Hampson et al. 2000). Likewise, groundwater quality in the Lower Tennessee River Basin generally meets federal and state drinking water standards, but the carbonate aquifers are vulnerable to contamination. While all were found at concentrations meeting drinking water standards, *E.coli*, nitrate, volatile organic compounds, and 35 different pesticides were all detected within groundwater (Woodside et al. 2004).

Wild and Scenic Rivers

Within the Tennessee watershed, there is 1 Wild and Scenic River designation totaling approximately 46 miles in Tennessee. There are 40 miles of river classified as wild, 6 miles classified as scenic, but none classified as recreational (USFS 2018).

3.7.3.7 Upper Mississippi Watershed (07)

The HUC-2 Upper Mississippi (Region 07) watershed includes the drainage of the Mississippi River Basin above the confluence with the Ohio River, excluding the Missouri River Basin, and includes parts of Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, South Dakota, and Wisconsin (USGS 2016a).

Surface Water

The major river systems in the Upper Mississippi watershed include the Minnesota, St. Croix, Root, La Crosse, Chippewa, Wisconsin, Iowa, Rock, Des Moines, Illinois, Fox, Kaskaskia, and Mississippi (USGS 2016a). The Upper Mississippi River extends approximately 1,300 miles from Lake Itasca in northern Minnesota to the confluence with the Ohio River at the southern tip of Illinois, over half of the length of the entire Mississippi River. Approximately 850 miles of the river are commercially navigable (UMRBA 2018). Over 200 years of land use and navigational use changes have transformed both the river and basin. Construction of levees, locks, and dams transformed the free-flowing river into a series of pools and separated it from its floodplain (USFS 2011). The Upper Mississippi River Basin drains approximately 189,000 square miles, including large parts of the states of Illinois, Iowa, Minnesota, Missouri, and Wisconsin (UMRBA 2018).

Surface Water Quality

Approximately 20,030 miles (6 percent) of the 365,620 miles of streams in the Upper Mississippi watershed are designated as impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired surface waters include fish and wildlife protection and propagation, recreation, and aquatic life (USEPA 2015b). The top three causes of impairment are turbidity, pathogens (e.g., fecal coliform), and indicator bacteria. The probable sources for impairment are toxic atmospheric deposition and pathogens (USEPA 2015a).

Approximately 910 (19 percent) of the estimated 4,680 square miles of lakes, reservoirs, and ponds in the Upper Mississippi watershed are impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired lakes, reservoirs, and ponds include fish and wildlife protection and propagation, aquatic life, and recreation (USEPA 2015b). The top three causes of impairment are a mercury fish consumption advisory, eutrophication, and dissolved oxygen. The probable sources for impairment are toxic atmospheric deposition, agriculture, and pH (USEPA 2015a).

Groundwater

Groundwater serves as the main source of drinking water in rural and suburban areas throughout the watershed (Stark et al. 2000). The most productive parts of the Upper Mississippi River basin's groundwater system occur within alluvium (i.e., silt, sand, and gravel) and outwash (sand and gravel) deposits. Three primary bedrock aquifers in this basin are located in sandstone, sandstone and dolomite, and limestone and dolomite formations (Bloyd 1975). Aquifers in Iowa have experienced notable declines in overall groundwater level (Reilly et al. 2008). There are currently three designated SSAs in the Upper Mississippi watershed (USEPA 2019e).

Groundwater Quality

Water samples collected between 1995 and 1998 detected differences in groundwater quality based on the depth at which the samples were collected. Groundwater sampled at less than 50 feet below ground often contained pesticides, nutrients, industrial chemicals, and volatile organic compounds. Water collected from deeper depths, the levels used for public supply, contained fewer pesticides and lower nitrate concentrations. Most of these detections at deeper depths met drinking water standards, with the exception of naturally occurring radon (Stark et al. 2000).

Wild and Scenic Rivers

Within the Upper Mississippi watershed, there is 1 Wild and Scenic River designation totaling approximately 256 miles in 2 states (1 in Minnesota and Wisconsin). No portion of the river is classified as wild, but 192 miles are classified as scenic and 64 miles as recreational (USFS 2018).

3.7.3.8 Lower Mississippi Watershed (08)

The HUC-2 Lower Mississippi (Region 08) watershed is a drainage of: (a) the Mississippi River below its confluence with the Ohio River, excluding the Arkansas, Red, and White river basins above the points of highest backwater effect of the Mississippi River in those basins; and (b) coastal streams that ultimately discharge into the Gulf of Mexico from the Pearl River Basin boundary to the Sabine River and Sabine Lake drainage boundary. It includes parts of Arkansas, Kentucky, Louisiana, Mississippi, Missouri, and Tennessee (USGS 2016a).

Surface Water

The major river systems in the Lower Mississippi watershed include the Hatchee, St. Francis, Yazoo, Ouachita, Boeuf, Tensas, Big Black, Homochitto, Lower Red, Atchafalaya, Lower Grand, Calcasieu, Pearl, and Mississippi (USGS 2016a). The Mississippi River is a prominent feature of the Lower Mississippi watershed. The topography is generally flat. Most of the river has been modified for commercial navigation and other human development (Mac et al. 1998). Many reservoirs occur within the Lower Mississippi watershed (USEPA 2009).

Surface Water Quality

Approximately 12,140 miles (4 percent) of the 293,990 miles of streams in the Lower Mississippi watershed are designated as impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired surface waters include fish and wildlife protection and propagation, recreation, and agriculture (USEPA 2015b). The top three causes of impairment are dissolved oxygen, physical substrate habitat alterations, and sedimentation/siltation. The top three probable sources for impairment are non-irrigated crop production, channelization, and agriculture (USEPA 2015a).

Approximately 630 (5 percent) of the estimated 11,810 square miles of lakes, reservoirs, and ponds in the Lower Mississippi watershed are impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired lakes, reservoirs, and ponds include fish and wildlife protection and propagation, recreation, and aquatic (USEPA 2015b). The top three causes of impairment are pathogens (e.g., fecal coliform), turbidity, and sulfates. The top probable sources for impairment are natural sources and sediment resuspension (clean sediment) (USEPA 2015a).

Groundwater

The Lower Mississippi River Basin contains one of the three most productive agricultural aquifers in the country and offers the second highest volume of groundwater withdrawn for agricultural irrigation. Primary crops grown in this region include soybeans, corn, cotton, and rice (USDA ARS 2013). Rice now accounts for half of the total groundwater withdrawals in the state of Arkansas (Reba et al. 2017). There are currently two designated SSAs in the Lower Mississippi watershed (USEPA 2019e).

Groundwater plays an increasingly important role in meeting the needs of the local population. Total groundwater supplied by wells increased by 75 percent in a 5-year period between 2002 and 2007. As a result of this dramatic rise in agricultural use of groundwater, Arkansas and Mississippi are experiencing quickly declining water levels in the aquifer, with Arkansas seeing a 100-foot reduction and must now

consider development of alternative groundwater sources (USDA ARS 2013). The rate of groundwater withdrawal from the Mississippi River Valley Alluvial Aquifer was approximately twice the sustainable yield rate in 2012 (Reba et al. 2017).

Groundwater Quality

The Mississippi River Valley alluvial aquifer, located within the Lower Mississippi River watershed, overlies the Mississippi embayment-Texas coastal uplands aquifer system. A groundwater study conducted in this region found the following:

- Contaminants from geologic sources were found at elevated concentrations more commonly than those from anthropogenic sources. For example, radon, manganese, and arsenic were detected at levels of potential human health concern in 30, 10, and 3 percent of samples drawn from aquifers supplying drinking water, respectively.
- The median concentration of dissolved phosphorus found in the Mississippi River Valley alluvial aquifer is more than 10 times the typical level found in groundwater.
- Nitrate was found infrequently and at low concentrations, despite the high use of agricultural fertilizers. This may be due to the aquifer's anoxic conditions that lead to denitrification.
- Pesticides were detected more commonly in shallow wells with shorter residence times (Kingsbury et al. 2014).

Wild and Scenic Rivers

Within the Lower Mississippi watershed, there is 1 Wild and Scenic River designation totaling approximately 16 miles in Arkansas. There are 4 miles of river classified as wild, 12 miles classified as scenic, and none classified as recreational (USFS 2018).

3.7.3.9 Souris-Red-Rainy Watershed (09)

The HUC-2 Souris-Red-Rainy (Region 09) watershed is a drainage of the Lake of the Woods and the Rainy, Red, and Souris river basins that ultimately discharges into Lake Winnipeg and Hudson Bay. It includes parts of Minnesota, North Dakota, and South Dakota (USGS 2016a).

Surface Water

The major river systems in the Souris-Red-Rainy watershed include the Souris, Red, Goose, Marsh, Sheyenne, and Rainy (USGS 2016a). The topography is predominately plains and low hills developed by glacial activity. Most of the lakes within this watershed are natural. Prairie potholes are found in this area and are small ponds resulting from receding glaciers. They are intrinsically shallow and defined as natural lakes where 80 percent or more of the lake is less than 15 feet deep. Major lakes in the forested areas include Lake of the Woods, Rainy Lake, and Red Lake in Minnesota (USEPA 2009).

Surface Water Quality

Approximately 4,570 miles (14 percent) of the 33,430 miles of streams in the Souris-Red-Rainy watershed are designated as impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired surface waters include fish and wildlife protection and propagation, recreation, and agriculture

(USEPA 2015b). The top three causes of impairment are sedimentation/siltation, *E. coli*, and turbidity. The top three probable sources for impairment are grazing in riparian or shoreline zones, animal feeding operations, and crop production (crop land or dry land) (USEPA 2015a).

Approximately 800 (36 percent) of the estimated 2,200 square miles of lakes, reservoirs, and ponds in the Souris-Red-Rainy watershed are impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired lakes, reservoirs, and ponds include fish and wildlife protection and propagation, aquatic life, and recreation (USEPA 2015b). The top three causes of impairment are eutrophication, mercury in fish tissue, and methylmercury. The top three probable sources for impairment are crop production (crop land or dry land), grazing in riparian or shoreline zones, and animal feeding operations (USEPA 2015a).

Groundwater

The most productive aquifers in the Souris-Red-Rainy Region occur in areas of ice age drift, such as drainage channel deposits, lake deltas, beach deposits, outwash deposits, and small bodies of sand and gravel interbedded with till. Other aquifers are of older geologic age. While pumping levels in 1978 were not enough to greatly alter groundwater levels, areas of significant decline were already noticed at that time, due to imbalances between groundwater recharge and discharge (Reeder 1978). Over a 20-year study period of 1988 through 2007, the Souris-Red-Rainy Region was one of only two watersheds observed to not have experienced a declining average groundwater level (Brutsaert 2009). However, areas have experienced local levels of groundwater decline, such as the aquifers in southeast North Dakota (Reilly et al. 2008). There are currently no designated SSAs in the Souris-Red-Rainy watershed (USEPA 2019e).

Groundwater Quality

Groundwater samples collected from the Red River of the North Basin, part of the Souris-Red-Rainy Region, contained concentrations of three herbicides, two volatile organic compounds, and nitrate above drinking water standards or guidelines (Stoner et al. 1998).

Wild and Scenic Rivers

Within the Souris-Red-Rainy watershed there are no Wild and Scenic River designations (USFS 2018).

3.7.3.10 Missouri Watershed (10)

The HUC-2 Missouri (Region 10) watershed is a drainage of: (a) the Missouri River Basin, (b) the Saskatchewan River Basin, and (c) several small closed basins. It includes all of Nebraska and parts of Colorado, Iowa, Kansas, Minnesota, Missouri, Montana, North Dakota, South Dakota, and Wyoming (USGS 2016a).

Surface Water

The major river systems in the Missouri watershed include the Saskatchewan, Gallatin, Jefferson, Madison, Marias, Musselshell, Milk, Poplar, Yellowstone, Bighorn, Powder, Tongue, Little Missouri, Cheyenne, White, Niobrara, Ponca Creek, James, Big Sioux, North Platte, South Platte, Platte, Loup, Elkhorn, Little Sioux, Nishnabotna, Kansas, Republican, Smoky Hill, Chariton, Grand, Little Chariton,

Gasconade, Osage, and Missouri (USGS 2016a). The topography is irregular plains interspersed with tablelands and low hills. Several major reservoirs are along the Missouri River mainstem, including Lake Oahe and Lake Sacajawea (USEPA 2009).

Surface Water Quality

Approximately 40,860 miles (6 percent) of the 626,000 miles of streams in the Missouri watershed are designated as impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired surface waters include recreation, agriculture, and fish and wildlife protection and propagation (USEPA 2015b). The top three causes of impairment are *E. coli*, total phosphorous, and selenium. The top three probable sources for impairment are grazing in riparian or shoreline zones, natural sources, and agriculture (USEPA 2015a).

Approximately 1,600 (22 percent) of the estimated 7,310 square miles of lakes, reservoirs, and ponds in the Missouri watershed are impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired lakes, reservoirs, and ponds include public water supply, recreation, and aquatic life (USEPA 2015b). The top three causes of impairment are methylmercury, mercury, and lead. The top three probable sources for impairment are impacts from inactive and abandoned mine lands, toxic atmospheric deposition, and historic bottom deposits (not sediment) (USEPA 2015a).

Groundwater

Groundwater aquifers of the Missouri Basin Region occur in alluvial deposits of sand and gravel, glacial deposits, dune-sand deposits, basin-fill deposits of sand and gravel, as well as in sandstone, siltstone, fractured sandy clay, limestone, and dolomite geological formations (Taylor 1978). Groundwater use accounted for 90 percent total water use within the Missouri River Basin watersheds in 2016, with surficial aquifers supplying 55 percent of this water, and buried sand and gravel aquifers supplying approximately 35 percent. Most of the withdrawn groundwater serves municipal purposes (Minnesota Department of Health 2018). There is currently one designated SSA in the Missouri watershed (USEPA 2019e).

Groundwater Quality

Nitrate, arsenic, radium, and pesticides have all been detected in groundwater samples drawn from the Missouri River Basin. Nitrate exceeded drinking water standards in 34 percent of sampled wells, and arsenic exceedances were found in 6 percent of sampled wells; observed levels of radium and pesticides did not exceed drinking water standards (Minnesota Department of Health 2018).

Wild and Scenic Rivers

Within the Missouri watershed, there are 4 Wild and Scenic River designations totaling approximately 456 miles in 5 states (1 in Colorado, 1 in Nebraska, 1 in Wyoming, and 1 that flows through Nebraska, South Dakota, and Montana). There are 123 miles of river classified as wild, 101 miles classified as scenic, and 232 miles classified as recreational (USFS 2018).

3.7.3.11 Arkansas-White-Red Watershed (11)

The HUC-2 Arkansas-White-Red (Region 11) watershed includes the drainage of the Arkansas, White, and Red River Basins above the points of highest backwater effect of the Mississippi River. It includes all of Oklahoma and parts of Arkansas, Colorado, Kansas, Louisiana, Missouri, New Mexico, and Texas (USGS 2016a).

Surface Water

The major river systems in the Arkansas-White-Red watershed include the White, Little Red, Arkansas, Walnut, Cimarron, Neosho, Verdigris, Canadian, North Fork Red, Prairie Dog Town Fork Red, Salt Fork Red, Washita, Sulphur, and Red (USGS 2016a). The basin drains approximately 280,000 square miles. Public and private development of the water resources of watershed has resulted in the addition of many features for flood control, navigation, irrigation, generation of hydroelectric power, recreation, improvement of fish and wildlife habitat, and municipal and industrial water supply (USBR 2016).

Surface Water Quality

Approximately 24,830 miles (7 percent) of the 384,600 miles of streams in the Arkansas-White-Red watershed are designated as impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired surface waters include recreation, fish and wildlife protection and propagation, and agriculture (USEPA 2015b). The top three causes of impairment are dissolved oxygen, *E. coli*, and selenium. The top three probable sources for impairment are municipal point source discharges, petroleum/natural gas activities, and onsite treatment systems (septic systems and similar decentralized systems) (USEPA 2015a).

Approximately 880 (28 percent) of the estimated 3,090 square miles of lakes, reservoirs, and ponds in the Arkansas-White-Red watershed are impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired lakes, reservoirs, and ponds include recreation, public water supply, and aquatic life (USEPA 2015b). Top causes of impairment are turbidity, and dissolved oxygen. The top three probable sources for impairment are toxic atmospheric deposition, natural sources, and rangeland grazing (USEPA 2015a).

Groundwater

The most productive groundwater aquifers within the Arkansas-White-Red Basin are alluvium, carbonate rocks, gypsum, and sandstone. Most of the withdrawn groundwater is used for irrigation purposes, but groundwater also serves municipal and rural water needs in the region (Bedinger and Sniegocki 1976). There are currently two designated SSAs in the Arkansas-White-Red watershed (USEPA 2019e).

Groundwater Quality

Water quality was found to vary across the states in the 1970s. Fresh water was generally found in shallow water aquifers, while more saline water was found in deeper aquifers (Bedinger and Sniegocki 1976). Water samples collected from the Central Oklahoma aquifer detected significantly higher concentrations of calcium, magnesium, bicarbonate, sulfate, chloride, and nitrate in shallow wells as compared to deep wells, while deep wells had significantly higher levels of arsenic, chromium, iron, and selenium (Becker 2006).

Wild and Scenic Rivers

Within the Arkansas-White-Red watershed, there are 9 Wild and Scenic River designations totaling approximately 261 miles in 3 states (7 in Arkansas, 1 in Louisiana, and 1 in Missouri). There are 17 miles of river classified as wild, 200 miles classified as scenic, and 44 miles classified as recreational (USFS 2018).

3.7.3.12 Texas-Gulf Watershed (12)

The HUC-2 Texas-Gulf (Region 12) watershed drains into the Gulf of Mexico from the Sabine Pass to the Rio Grande Basin boundary. It includes parts of Louisiana, New Mexico, and Texas (USGS 2016a).

Surface Water

The major river systems in the Texas-Gulf watershed include the Sabine, Neches, Trinity, Double Mountain Fork Brazos, Salt Fork Brazos, Brazos, Castleman Creek, Colorado, Oak Creek, Guadalupe, San Antonio, and Nueces (USGS 2016a). The watershed is mixed terrain with the eastern area that is relatively flat and the western area that has arid, dry plains (USEPA 2016b). Major lakes in the region include the Sam Rayburn and Toledo Bend (USEPA 2009).

Surface Water Quality

Approximately 7,410 miles (2 percent) of the 351,670 miles of streams in the Texas-Gulf watershed are designated as impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired surface waters include fish and wildlife protection and propagation, recreation, and aquatic life (USEPA 2015b). The top three causes of impairment are bacteria, dissolved oxygen, and mercury in fish tissue. The top three probable sources for impairment are nonpoint source pollution, municipal point source discharges, and toxic atmospheric deposition (USEPA 2015a).

Approximately 1,400 (31 percent) of the estimated 4,590 square miles of lakes, reservoirs, and ponds in the Texas-Gulf watershed are impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired lakes, reservoirs, and ponds include fish and wildlife protection and propagation, recreation, and aquatic life (USEPA 2015b). The top three causes of impairment are mercury in fish tissue, bacteria (oyster waters), and sulfates. The top three probable sources for impairment are toxic atmospheric deposition, nonpoint source pollution, and urban runoff/storm sewers (USEPA 2015a).

Groundwater

Aquifers of regional significance are found in a range of geologic materials, including sand, sandstone, limestone, dolomite, gravel, shale, clay, and alluvium. Taken altogether, and acknowledging that they overlap in locations, aquifers underlie approximately 80 percent of the Texas-Gulf region (Baker and Wall 1974). There are currently three designated SSAs in the Texas-Gulf watershed (USEPA 2019e). Aquifers in this region have experienced dramatic levels of decline and resulting land subsidence. Groundwater of the Gulf Coast Aquifer in particular has declined as much as 350 feet in some areas due to withdrawals for municipal, industrial, and irrigation uses (Texas Water Development Board 2018). Layers of this aquifer have collapsed, and the land in areas around Houston has sunk as much as 10 feet over the last century. As a result, some communities have reduced their dependency on groundwater and have sought out other sources of freshwater (Satija 2013).

Groundwater Quality

Groundwater of the Gulf Coast Aquifer is generally good in the central and northeastern portions but declines to the south as the concentration of total dissolved solids increases and where aquifer productivity decreases. High levels of naturally occurring radionuclides have been observed in wells in Harris County and southern Texas. Groundwater samples from other major aquifers in the region have been found to contain elevated levels of iron, manganese, fluoride, sulfate, and chloride, as well as increased salinity (Texas Water Development Board 2018).

Wild and Scenic Rivers

Within the Texas-Gulf watershed, there are no Wild and Scenic River designations (USFS 2018).

3.7.3.13 Rio Grande Watershed (13)

The HUC-2 Rio Grande (Region 13) watershed is a drainage of: (a) the Rio Grande Basin, and (b) the San Luis Valley, North Plains, Plains of San Agustin, Mimbres River, Estancia, Jornada Del Muerto, Tularosa Valley, Salt Basin, and other closed basins. It includes parts of Colorado, New Mexico, and Texas (USGS 2016a).

Surface Water

The major river systems in the Rio Grande watershed include the Pecos, Delaware, and Rio Grande (USGS 2016a) with the Rio Grande dominating the surface water of the watershed. The topography of the watershed includes several mountain ranges, arid plateaus, and flat land. The Rio Grande is the fifth longest river in the United States and forms the border between the state of Texas and Mexico. The human-made dams and diversions along the Rio Grande provide water storage or divert water for irrigation. The Amistad and Falcon reservoirs are two major human-made lakes along the Rio Grande (USEPA 2009).

Surface Water Quality

Approximately 2,500 miles (1 percent) of the 237,650 miles of streams in the Rio Grande watershed are designated as impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired surface waters include recreation, fish and wildlife protection and propagation, and agriculture (USEPA 2015b).

The top three causes of impairment are dissolved oxygen, water temperature, and PCBs in fish tissue. The top probable sources for impairment are rangeland grazing and toxic atmospheric deposition (USEPA 2015a).

Approximately 50 (11 percent) of the estimated 470 square miles of lakes, reservoirs, and ponds in the Rio Grande watershed are impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired lakes, reservoirs, and ponds include recreation, fish and wildlife protection and propagation, and public water supply (USEPA 2015b). The top three causes of impairment are mercury in fish tissue, PCBs in fish tissue, and dissolved oxygen. The top three probable sources for impairment are toxic atmospheric deposition, natural sources, and contaminated sediments (USEPA 2015a).

Groundwater

Aquifers of the Rio Grande Basin are bounded by various types of bedrock, including granite, quartzite, schist, gneiss, marine carbonate, volcanic rocks, and clastic sedimentary rocks. However, it is the basin fill material of gravel, sand, silt, and clay that comprise the water-bearing units (Robson and Banta 1995). There is currently one designated SSA in the Rio Grande watershed (USEPA 2019e). Closed basin aquifers in the region are being depleted at an estimated rate of 0.2 to 3.1 feet per year (New Mexico Office of the State Engineer 2017).

Groundwater Quality

Drought and groundwater depletion have increased salinity in aquifers of the Rio Grande Basin. This trend is likely to continue due to increasing population and cultivation of water-demanding crops such as alfalfa and pecans. While groundwater quality throughout the general region has been described as “excellent”, shallow domestic wells in the Mesilla and Rincon valleys have been rated as moderate to poor due to high concentrations of total dissolved solids and sulfate (New Mexico Office of the State Engineer 2017).

Wild and Scenic Rivers

Within the Rio Grande watershed, there are 4 Wild and Scenic River designations totaling approximately 321 miles (3 in New Mexico and 1 in both Texas and New Mexico). There are 165 miles of river classified as wild, 109 miles classified as scenic, and 47 miles classified as recreational (USFS 2018).

3.7.3.14 Upper Colorado Watershed (14)

The HUC-2 Upper Colorado (Region 14) watershed is a drainage of: (a) the Colorado River Basin above the Lee Ferry compact point, which is 1 mile below the mouth of the Paria River; and (b) the Great Divide closed basin. It includes parts of Arizona, Colorado, New Mexico, Utah, and Wyoming (USGS 2016a).

Surface Water

The major river systems in the Upper Colorado watershed include Gunnison, Bitter Creek, Green, Yampa, White, San Juan, and Colorado (USGS 2016a). The topography is mountainous mixed with high plateaus. The watershed includes surface water from snowmelt which becomes sparse in the southern

portion of the area. Lakes within the watershed are mostly human-made reservoirs for water supply. Lake Powell is a large reservoir of the Colorado River. Shifts in rainfall patterns can result in considerable reductions in water levels of Lake Powell (USEPA 2009).

Surface Water Quality

Approximately 120 miles (less than 1 percent) of the 28,220 miles of streams in the Upper Colorado watershed are designated as impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired surface waters include recreation, fish and wildlife protection and propagation, and agriculture (USEPA 2015b). The top three causes of impairment are selenium, benthic macroinvertebrates, and iron. The top probable sources for impairment are agriculture and habitat modification (other than hydromodification) (USEPA 2015a).

Approximately 60 (6 percent) of the estimated 940 square miles of lakes, reservoirs, and ponds in the Upper Colorado watershed are impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired lakes, reservoirs, and ponds include recreation, agriculture, and fish and wildlife protection and propagation (USEPA 2015b). The top three causes of impairment are mercury in fish tissue, water temperature, and dissolved oxygen. The top three probable sources for impairment are toxic atmospheric deposition, livestock grazing or feeding operations, and agriculture (USEPA 2015a).

Groundwater

The geology of the Upper Colorado Watershed is dominated by layers of consolidated and semi-consolidated sedimentary rock. However, igneous and metamorphic rocks may be found under portions of the mountains, and alluvial deposits underlie areas of major stream valleys. The sedimentary rocks, although having a low permeability and slow water yield, contain approximately 85 percent of the recoverable stored groundwater (Price and Arnow 1974). Groundwater levels have experienced significant levels of decline, with losses recorded at approximately 215 billion cubic feet per year between February 2010 and November 2013 (Castle et al. 2014). There are currently two designated SSAs in the Upper Colorado watershed (USEPA 2019e).

Groundwater Quality

Groundwater samples collected from urban areas found that portions of shallow groundwater aquifers have been affected by urban land use, as evidenced by increased concentrations of radon, nitrate, herbicides, volatile organic compounds, and bacteria, but these effects were not observed in the deeper aquifers used as drinking water sources. With the exception of radon, water quality generally met federal and state drinking water standards in these samples (Spahr et al. 2000).

Wild and Scenic Rivers

Within the Upper Colorado watershed, there are no Wild and Scenic River designations (USFS 2018).

3.7.3.15 Lower Colorado Watershed (15)

The HUC-2 Lower Colorado (Region 15) watershed is a drainage of: (a) the Colorado River Basin below the Lee Ferry compact point, which is 1 mile below the mouth of the Paria River; (b) streams that originate within the United States and ultimately discharge into the Gulf of California; and (c) the Animas Valley, Willcox Playa, and other smaller closed basins. It includes parts of Arizona, California, Nevada, New Mexico, and Utah (USGS 2016a).

Surface Water

The major river systems in the Lower Colorado watershed include Little Colorado, Gila, Salt, and Colorado (USGS 2016a). The topography of the watershed includes mountains, plateaus, and canyons. Reservoirs of the Colorado River in this watershed include Lake Mead and Lake Havasu (USEPA 2009). Other dams along the Colorado River in this watershed provide water storage, flood control, and recreational areas.

Surface Water Quality

Approximately 1,710 miles (4 percent) of the 39,400 miles of streams in the Lower Colorado watershed are designated as impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired surface waters include fish and wildlife protection and propagation, recreation, and agriculture (USEPA 2015b). The top three causes of impairment are water temperature, selenium, and *E. coli*. The top three probable sources for impairment are irrigated crop production, natural sources, and other recreational pollution sources (USEPA 2015a).

Approximately 50 (6 percent) of the estimated 820 square miles of lakes, reservoirs, and ponds in the Lower Colorado watershed are impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired lakes, reservoirs, and ponds include fish and wildlife protection and propagation, recreation, and agriculture (USEPA 2015b). The top three causes of impairment are mercury in fish tissue, selenium, and dissolved oxygen. The top three probable sources for impairment are impacts from inactive and abandoned mine lands, natural sources, and impacts from hydrostructure flow regulation/modification (USEPA 2015a).

Groundwater

Bedrock within the Lower Colorado Watershed consists of limestone and granitic, volcanic, and sedimentary rocks. The most developed sources of groundwater occur in more permeable sand and gravel beds; however, the deeper, underlying thick sediments store the largest volumes of groundwater. There are currently two designated SSAs in the Lower Colorado watershed (USEPA 2019e).

Groundwater depletion has been noted within aquifers of the Lower Colorado Watershed for decades (Davidson 1979). The majority of freshwater losses throughout the entire Colorado River basin are driven by losses in groundwater, most of which occur in the Lower Colorado Watershed. Groundwater losses between February 2010 and November 2013 were recorded at 204 billion cubic feet per year (Castle et al. 2014).

Groundwater Quality

The Lower Colorado Watershed mostly coincides with the state of Arizona. The Arizona Department of Environmental Quality sampled private domestic wells located in 39 of the state's 51 groundwater basins over a 20-year period between 1995 and 2015. The study found that approximately 35 percent of collected samples exceeded at least one health-based water quality standard, including arsenic (22 percent of sites), fluoride (11 percent), and nitrate (10 percent). Gross alpha and/or uranium was also detected in 16 percent of sites sampled for radionuclides. Aesthetic (secondary) standards were exceeded at 57 percent of sites. The study found no exceedances of volatile organic compounds or pesticides; approximately 38 percent of sites had no exceedances of any water quality standards (Towne and Jones 2016).

Wild and Scenic Rivers

Within the Lower Colorado watershed, there are 3 Wild and Scenic River designations totaling approximately 230 miles in 2 states (2 in Arizona and 1 in Utah). There are 172 miles of river classified as wild, 30 miles classified as scenic, and 28 miles classified as recreational (USFS 2018).

3.7.3.16 Great Basin Watershed (16)

The HUC-2 Great Basin (Region 16) watershed drains into states of Utah and Nevada, and includes parts of California, Idaho, Nevada, Oregon, Utah, and Wyoming (USGS 2016a).

Surface Water

The major river systems in the Great Basin watershed include Bear, Weber, Jordan, Humboldt, Carson, Truckee, and Walker (USGS 2016a). The topography of the watershed ranges from mountains to valleys of flat desert. The watershed is closed, meaning all water is retained and does not flow to external bodies of water such as rivers or oceans. Major lakes in the watershed include the Great Salt Lake and Lake Tahoe.

Surface Water Quality

Approximately 4,780 miles (1 percent) of the 370,860 miles of streams in the Great Basin watershed are designated as impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired surface waters include fish and wildlife protection and propagation, recreation, and agriculture (USEPA 2015b). The top three causes of impairment are water temperature, benthic macroinvertebrate, and total phosphorous. The top three probable sources for impairment are natural sources, agriculture, and channel erosion/incision from upstream hydromodifications (USEPA 2015a).

Approximately 500 (10 percent) of the estimated 5,240 square miles of lakes, reservoirs, and ponds in the Great Basin watershed are impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired lakes, reservoirs, and ponds include fish and wildlife protection and propagation, recreation, and agriculture (USEPA 2015b). The top three causes of impairment are total phosphorous, total dissolved solids, and PCBs in fish tissue. The top three probable sources for impairment are urban stormwater; highways, roads, bridges, and infrastructure (new construction); and natural sources (USEPA 2015a).

Groundwater

Consolidated-rock reservoirs in the Great Basin Watershed are comprised of carbonate and volcanic rocks (Eakin et al. 1976). The carbonate rock aquifer in the eastern Great Basin is mostly composed of limestone and dolomite (Schaefer et al. 2005). Carbonate rocks are highly permeable, while volcanic rocks transmit water through fractures and inter-flow openings. Alluvial deposits form valley groundwater reservoirs; these deposits contain sand and gravel aquifers (Eakin et al. 1976). There is currently one designated SSA in the Great Basin watershed (USEPA 2019e). Minor levels of groundwater depletion have been observed in portions of aquifers within the Great Basin Watershed (Konikow 2013).

Groundwater Quality

Geologic processes within the carbonate rock aquifers of the Great Basin Watershed result in increased sodium, sulfate, and chloride concentrations. Total dissolved solids, pesticides, and volatile organic compounds were detected in samples, and radon exceeded the USEPA's proposed maximum contaminant level in 75 percent of collected groundwater samples. Contaminants detected at levels exceeding drinking water standards included antimony, arsenic, thallium, chloride, fluoride, iron, manganese, sulfate, and total dissolved solids (Schaefer et al. 2005).

Wild and Scenic Rivers

Within the Great Basin watershed, there is 1 Wild and Scenic River designation totaling approximately 22 miles in California. There are 18 miles of river classified as wild, none classified as scenic, and 4 miles classified as recreational (USFS 2018).

3.7.3.17 Pacific Northwest Watershed (17)

The HUC-2 Pacific Northwest (Region 17) watershed is a drainage of: (a) the Straits of Georgia and of Juan De Fuca, and (b) the Pacific Ocean within the states of Oregon and Washington; and that part of the Great Basin whose discharge is into the state of Oregon. It includes all of Washington and parts of California, Idaho, Montana, Nevada, Oregon, Utah, and Wyoming (USGS 2016a).

Surface Water

The major river systems in the Pacific Northwest watershed include Kootenai, Pend Oreille, Spokane, Yakima, Snake, Clover Creek, Powder, Salmon, Clearwater, John Day, Deschutes, Columbia, Willamette, Umpqua, Smith, and Fraser (USGS 2016a). The topography of the watershed includes mountains, valleys, and plateaus that include many rivers, streams, and lakes. Surface water is primarily from rainfall and snowmelt. The Columbia River Basin drains most of the Pacific Northwest watershed and covers approximately 260,000 square miles. The Columbia River provides water for irrigation, drinking, and hydroelectricity. Between the United States and Canada, there are 19 hydroelectric dams on the Colorado River (American Rivers 2018). Lakes and ponds of the region range from large mainstem impoundments to high-mountain caldera and kettle lakes. The most famous among these mountain caldera lakes are Crater Lake and Yellowstone Lake (USEPA 2009).

Surface Water Quality

Approximately 26,860 miles (28 percent) of the 94,750 miles of streams in the Pacific Northwest watershed are designated as impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired surface waters include fish and wildlife protection and propagation, agriculture, and aesthetics (USEPA 2015b). The top three causes of impairment are temperature/water temperature, combined biota/habitat, and sedimentation/siltation. The top three probable sources for impairment are grazing in riparian or shoreline zones, rangeland grazing, and mill tailings (USEPA 2015a).

Approximately 720 (16 percent) of the estimated 4,510 square miles of lakes, reservoirs, and ponds in the Pacific Northwest watershed are impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired lakes, reservoirs, and ponds include fish and wildlife protection and propagation, recreation, and agriculture (USEPA 2015b). The top three causes of impairment are mercury, sedimentation/siltation, and PCBs. The top three probable sources for impairment are impacts from hydrostructure flow regulation/modification, nitrogen atmospheric deposition, and municipal point source discharges (USEPA 2015a).

Groundwater

Major aquifers in the Pacific Northwest Watershed can be classified as being composed of predominately sedimentary rocks, predominantly volcanic rocks, or a combination of sedimentary and volcanic rocks. Those composed of sedimentary rocks are more permeable and yield water at moderate to high rates through layers of sand and gravel. Those composed of less permeable sedimentary rocks, such as clay and silt, are more common and perform as long-term storage units for groundwater, draining slowly to the more permeable groundwater units. Aquifers in volcanic rocks yield water through permeable zones at or near the contacts between flow layers or due to the incomplete filling of openings at the top of one lava flow by a subsequent flow. Volcanic rocks can yield water at high rates, but generally yield a small volume of water than from permeable sedimentary rocks. There are currently 20 designated SSAs in the Pacific Northwest watershed (USEPA 2019e). Water level decline in aquifers of this watershed has been observed for decades (Foxworthy 1979).

The Columbia Plateau aquifer system, underlying portions of Washington, Oregon, and Idaho, serves as the primary source of groundwater in the region, and approximately 80 percent of aquifer withdrawals are for irrigation. While areas of the overburden aquifer have experienced water level increases, the deeper basalt portions have recorded notable declines. Of 470 groundwater wells studied between 1984 and 2009, water levels declined in 83 percent of wells, with deeper wells experiencing more dramatic declines (i.e., as much as 91 meters, or approximately 299 feet) (Konikow 2013).

Groundwater Quality

The state of Oregon designates groundwater management areas when the underlying groundwater has been determined to contain elevated contaminant concentrations resulting from nonpoint sources. Three such groundwater management areas have been designated for high levels of nitrate (Oregon Department of Environmental Quality 2018). In Idaho, the groundwater is generally safe for human

consumption, but contaminants have been detected above the USEPA's maximum contaminant levels in some areas. Southern Idaho has recorded more exceedances than the central or northern portions of the state. Contaminants with observed exceedances include nitrate, bacteria, arsenic, fluoride, gross alpha, radon, and uranium. Nitrate is the constituent with the most exceedances, which have only been observed in 5 percent of wells across the state (Idaho Department of Water Resources 2018).

Wild and Scenic Rivers

Within the Pacific Northwest watershed, there are 79 Wild and Scenic River designations totaling approximately 3,610 miles in 5 states (18 in Idaho, 1 in Montana, 49 in Oregon, 6 in Washington, 1 in Wyoming, and 4 that traverse through both Idaho and Oregon). There are 1,695 miles of river classified as wild, 659 miles classified as scenic, and 1,256 miles classified as recreational (USFS 2018).

3.7.3.18 California Watershed (18)

The HUC-2 California (Region 18) watershed is a drainage within the United States that ultimately discharges into the Pacific Ocean within the state of California; and those parts of the Great Basin (or other closed basins) that discharge into the state of California. It includes parts of California, Nevada, and Oregon (USGS 2016a).

Surface Water

The major river systems in the California watershed include Klamath, Smith, Stemple Creek, Sacramento, San Joaquin, Pescadero Creek, Rincon Creek, and San Gabriel (USGS 2016a). The topography of the watershed includes mountains, valley, and deserts. The eastern and southern portions of the watershed are arid deserts with salt lakes. The forested mountain ranges offer high lakes and streams, some of which flow to the Central Valley's numerous rivers. Lakes in the watershed include Shasta Lake, Big Bear Lake, and Mammoth Lake.

Surface Water Quality

Approximately 23,010 miles (5 percent) of the 439,160 miles of streams in the California watershed are designated as impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired surface waters include fish and wildlife protection and propagation, public water supply, and recreation (USEPA 2015b). The top three causes of impairment are water temperature, aluminum, and mercury. The top three probable sources for impairment are natural sources, post-development erosion and sedimentation, and agriculture (USEPA 2015a).

Approximately 1,070 (35 percent) of the estimated 3,060 square miles of lakes, reservoirs, and ponds in the California watershed are impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired lakes, reservoirs, and ponds include fish and wildlife protection and propagation, recreation, and public water supply (USEPA 2015b). The top three causes of impairment are arsenic, dichlorodiphenyltrichloroethane (DDT), and nutrients. The top probable sources for impairment are agriculture and industrial point source discharges (USEPA 2015a).

Groundwater

The Central Valley groundwater reservoir contains numerous aquifers comprised of gravel and sand deposited by streams flowing from the mountains. These aquifers are separated by layers of silt and clay. The Coast Ranges contain folded and faulted sedimentary and metamorphic rocks in layers generally oriented parallel to the coastline. The California region, located east of the Sierra Nevada and the Transverse ranges, is the most arid portion of this watershed, containing the Mojave and California deserts. However, the Modoc Plateau in the northeastern portion of the California Region consists of volcanic rocks, which form excellent aquifers (Thomas and Phoenix 1976). There are currently five designated SSAs in the California watershed (USEPA 2019e).

The State of California uses the most groundwater of any state in the country (California Department of Water Resources 2015). The groundwater of the California Watershed accounts for approximately 60 to 75 percent of the state's water supply, but the dependence on groundwater, over pumping, and the lack of regulation regarding withdrawals have resulted in dramatic declines in these important aquifers. While depletion (and resulting land subsidence) has been noted for decades, the rate of depletion has quickened so that the rate of the past decade is more than double the historic average. Some of the increased depletion could be attributed to the conversion of desert land in the Central Valley to irrigated farmland growing water-intensive crops that cannot be left fallow, such as nut trees and grapevines (Halverson 2015). Approximately 74 percent of California's total groundwater withdrawals occur within the Central Valley (California Department of Water Resources 2015).

Groundwater Quality

Groundwater used for drinking water in rural areas have become contaminated by nitrate from fertilizer and manure, while groundwater basins in urban areas have been contaminated by industrial chemicals. Salt accumulation and saltwater intrusion threaten inland and coastal basins, respectively (Chappelle et al. 2017). Across the state, the most prevalent groundwater contaminants affecting community water system wells are arsenic, nitrate, gross alpha, and perchlorate, while tetrachloroethylene, trichloroethylene, uranium, 1,2-dibromo-3-chloropropane, fluoride, and carbon tetrachloride round out the top 10 most commonly encountered constituents (California Department of Water Resources 2015).

Wild and Scenic Rivers

Within the California watershed, there are 25 Wild and Scenic River designations totaling approximately 2,202 miles in 2 states (20 in California and 5 in Oregon). There are 816 miles of river classified as wild, 301 miles classified as scenic, and 1,085 miles classified as recreational (USFS 2018).

3.7.3.19 Alaska Watershed (19)

The HUC-2 Alaska (Region 19) watershed is the drainage within the state of Alaska and includes all of Alaska (USGS 2016a).

Surface Water

The major river systems in the Alaska watershed include Colville, Kobuk, Yukon, Koyukuk, Kuskokwim, Nushagak, Susitna, and Copper (USGS 2016a). The topography of the Alaska watershed is primarily mountainous. Alaska has the greatest surface water resources of any state in the United States, although many of the surface water is frozen for half of the year (Alaska DNR 2018b). The Yukon, Kuskokwim, and Cooper rivers are large rivers in Alaska. Glaciers cover 5 percent of the state. There are over 3 million lakes in the watershed including Iliamna Lake, Becharof Lake, and Selawik Lake.

Surface Water Quality

Approximately 520 miles (less than 1 percent) of the 846,780 miles of streams in the Alaska watershed are designated as impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired surface waters include aquatic life, industrial, and recreation (USEPA 2015b). The top three causes of impairment are turbidity, petroleum hydrocarbons, and residues. The top three probable sources for impairment are placer mining, other spill-related impacts, and silviculture activities (USEPA 2015a).

Approximately 3 (less than 1 percent) of the estimated 22,010 square miles of lakes, reservoirs, and ponds in the Alaska watershed are impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired lakes, reservoirs, and ponds include agriculture, aquatic life, and industrial (USEPA 2015b). The top three causes of impairment are petroleum hydrocarbons, dissolved oxygen, and sedimentation/siltation. The top three probable sources for impairment are other recreational pollution sources, domestic waste, and highway/road/bridge runoff (non-construction related) (USEPA 2015a).

Groundwater

Within the Alaska watershed, groundwater typically occurs underneath the base of the permafrost layer, which may extend to depths of 2,000 feet, and above permafrost where local conditions lower the upper surface of permafrost below the depth of seasonal freezing. The four general geohydrologic environments recognized in Alaska include: 1) alluvium of river valleys (which contain the greatest volume of stored groundwater); 2) glacial and glaciolacustrine deposits of the inner valleys; 3) coastal-lowland deposits; and 4) bedrock of the uplands and mountains. Bedrock stores groundwater in the approximately 75 percent of the state where glacial and alluvial deposits are thin, poorly permeable, or absent. There are four general bedrock types in Alaska: carbonate rocks, sandstone, volcanic rocks, and metamorphic and intrusive igneous rocks (Zenone and Anderson 1978). The topography of the state limits the size of most aquifers and prevents large scale extraction of groundwater (Alaska DNR 2018a). As such, no substantial decline in groundwater levels has been observed in Alaska (Konikow 2013). There are currently no designated SSAs in the Alaska watershed (USEPA 2019e).

Groundwater Quality

Most groundwater within the Alaska watershed is suitable for use with minimal or moderate treatment. The most common treatment issues are related to naturally occurring iron, manganese, and arsenic, although activities such as fuel storage and spills, wastewater disposal, nonpoint pollution in urban areas, and natural resource extraction activities in remote areas have or could adversely affect groundwater quality (Alaska Department of Environmental Conservation 2008).

Wild and Scenic Rivers

Within the Alaska watershed, there are 25 Wild and Scenic River designations totaling approximately 3,419 miles in Alaska. There are 3,166 miles of river classified as wild, 227 miles classified as scenic, and 26 miles classified as recreational (USFS 2018).

3.7.3.20 Hawaii Watershed (20)

The HUC-2 Hawaii (Region 20) watershed is the drainage within the state of Hawaii and includes all of Hawaii (USGS 2016a).

Surface Water

The surface water in Hawaii is primarily from streams that originate in the mountain interiors and flow to the ocean. Streams are significant sculptors of the Hawaiian landscape because of the erosive power of water (USGS 2003b). These streams provide irrigation water, hydroelectric power, and in some cases drinking water.

Surface Water Quality

Approximately 1,380 miles (17 percent) of the 8,100 miles of streams in the Hawaii watershed are designated as impaired. The top three causes of impairment are turbidity, nutrients, and suspended solids (USEPA 2015a).

Approximately 1 (3 percent) of the estimated 30 square miles of lakes, reservoirs, and ponds in the Hawaii watershed are impaired. The top three causes of impairment are turbidity, chlorophyll-a, and trash (USEPA 2015a).

Groundwater

The groundwater reservoirs of the Hawaii watershed are comprised of highly permeable basaltic lava flows (Takasaki 1978). Groundwater resources remain limited due their isolation and limited capacity. Agriculture and increased tourism have resulted in groundwater depletion within the watershed (Takasaki 1978, Konikow 2013). There are currently two designated SSAs in the Hawaii watershed (USEPA 2019e).

Groundwater Quality

The Hawaii Department of Environmental Health Safe Drinking Water Branch developed a map of sampled wells in which contaminants were detected. Most of the detections were related to pesticides and industrial activities and included the following: 1,2,3-trichloropropane, 1,2-dibromo-3-chloropropane, 1,2-dichloropropane, atrazine, carbon tetrachloride, chlordane, dieldrine, ethylene

dibromide, heptachlor epoxide, methoxychlor, p-dichlorobenzene, tetrachloroethylene, and trichloroethylene (Hawaii Department of Environmental Health 2018).

Wild and Scenic Rivers

Within the Hawaii watershed, there are no Wild and Scenic River designations (USFS 2018).

3.7.3.21 Caribbean Watershed (21)

The HUC-2 Caribbean (Region 21) watershed is the drainage within (a) the Commonwealth of Puerto Rico; (b) the U.S. Virgin Islands; and (c) other U.S. Caribbean outlying areas. It includes land areas over which the United States has some degree of interest, jurisdiction, or sovereignty (USGS 2016a).

Surface Water

The surface water in the Caribbean watershed is primarily from streams that begin in the interior highlands and flow to the ocean. The topography of the Caribbean is mostly mountainous except in coastal regions. Puerto Rico has the most surface water compared to the other islands in the Caribbean. Rivers in Puerto Rico include the Rio de la Plata and Rio Camuy. Precipitation is the predominant source of surface water in the watershed.

Surface Water Quality

Approximately 6,660 miles (95 percent) of the 7,020 miles of streams in the Caribbean watershed are designated as impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired surface waters include fish and wildlife protection and propagation, agriculture, and aquatic life (USEPA 2015b). The top three causes of impairment are arsenic, pathogens (e.g., fecal coliform), and turbidity. The top three probable sources for impairment are onsite wastewater systems (septic tanks), urban runoff/storm sewers, and confined animal feeding operations (USEPA 2015a).

All of the estimated 40 square miles of lakes, reservoirs, and ponds in the Caribbean watershed are impaired (USEPA 2015a; USGS NRCS 2019). Designated uses of the impaired lakes, reservoirs, and ponds include fish and wildlife protection and propagation, recreation, and public water supply (USEPA 2015b). The top three causes of impairment are turbidity, dissolved oxygen, and pathogens (e.g., fecal coliform). The top three probable sources for impairment are onsite wastewater systems (septic tanks), urban runoff/storm sewers, and other marina/boating on-vessel discharges (USEPA 2015a).

Groundwater

The geology of the Caribbean Watershed consists of volcanic and sedimentary (especially limestone) rocks (Gomez-Gomez and Heisel 1980). While groundwater withdrawals for public water supply and for irrigation declined in recent years, it has not been sufficient to stop the overall declining trend in groundwater levels in coastal areas in the Puerto Rico. The North Coast and South Coast aquifers of the Puerto Rico primarily serve as public supply (approximately 81 percent and 63 percent, respectively) (Rodriguez 2014). There are currently no designated SSAs in the Caribbean watershed (USEPA 2019e).

Groundwater Quality

The North Coast and South Coast aquifers of the Puerto Rico have experienced increasing concentrations of total dissolved solids, primarily resulting from saltwater intrusion into the overdrawn aquifers. In some areas of these aquifers, concentrations of total dissolved solids and nitrate have exceeded USEPA's drinking water standards (Rodriguez 2014). In the Virgin Islands, the primary sources of groundwater contamination include bacterial contamination from failing septic systems, leaking municipal sewer lines, migration of contamination from injection wells and disposal practices, sewer bypasses, saltwater intrusion, volatile organic compounds, leaking underground storage tanks, and discharges of waste (Virgin Islands Department of Planning & Natural Resources 2016).

Wild and Scenic Rivers

Within the Caribbean watershed, there are 3 Wild and Scenic River designations totaling approximately 12 miles in the Puerto Rico. There are 2 miles of river classified as wild, 8 miles classified as scenic, and 2 miles classified as recreational (USFS 2018).

3.7.3.22 American Samoa, Guam, and the Northern Mariana Islands

While not part of any USGS HUC-2 regions, the hydrology and water quality of the U.S. Territories of American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands are part of the HLP's affected environment.

Surface Water

Approximately 260 miles of perennial streams flow across American Samoa (Vaouli et al. 2010). Wetlands and perennial streams only comprise less than 5 percent of the surface area of the Northern Mariana Islands (Bearden et al. 2008). On the island of Guam, streams only exist in the south where rain infiltration is slow enough to allow overland flow of water (Gingerich 2003).

Surface Water Quality

Designated uses for surface water on American Samoa include "potable water supplies, support of indigenous wildlife, and aesthetic and recreational enjoyment" (Vaouli et al. 2010). In the Northern Mariana Islands, approximately 86 percent of all monitored waterbodies are designated as impaired, primarily due to bacteria violation, biological data and historical nutrient data (Bearden et al. 2008).

Groundwater

In American Samoa, most of the groundwater wells are located in the Tafuna-Leone plain, which is underlain by permeable soils (Vaouli et al. 2010). Groundwater resources supply approximately 80 percent of Guam's drinking water (Gingerich 2003).

Groundwater Quality

The permeable soils on volcanic islands place groundwater resources at constant risk of exposure to contamination. In American Samoa, the greatest threats to groundwater quality are pesticide residues, pollutants from cars, and pathogen and nutrient pollutant from poorly constructed human and pig waste disposal systems (Vaouli et al. 2010). Groundwater quality in the Northern Mariana Islands is

threatened by saltwater intrusion resulting from over pumping aquifers and contaminated of well water from coliform bacteria (Bearden et al. 2008).

Wild and Scenic Rivers

There are no Wild and Scenic River designations (National Wild and Scenic Rivers System 2019).

INTENTIONALLY LEFT BLANK.

3.8 INFRASTRUCTURE AND COMMUNITY SERVICES

This section examines the status and availability of infrastructure and community services throughout the United States and its Territories to include a description of the resource, applicable statutes and regulations, and the existing conditions of infrastructure and community services on a nationwide scale. As used in this PEIS, infrastructure and community services include transportation, utilities, public safety, and education. While many of the assets encompassed by these resources are maintained at a more local level to serve a state, county, or community, the interconnection of these assets affects the travel of people across the country, national interests, the economy, or the availability of services in one region or another. Where possible to do so with the data available, this section also presents subsets of data at a regional scale and information from certain representative states.

3.8.1 Description of the Resource

Infrastructure and community services are the set of public and private physical assets that serve for the transportation, comfort, safety, education, and day-to-day life of the country's population. The specific assets described within this PEIS include:

- transportation (i.e., roads and highways, public transit),
- utilities (i.e., energy, domestic water use, and waste management),
- public safety (i.e., law enforcement, fire protection and emergency medical services, and health care facilities), and
- education (i.e., primary and secondary schools).

3.8.2 Applicable Statutes, Regulations, and Terminology

Table 3.8-1 summarizes applicable statutes, regulations, and relevant terminology governing infrastructure and community services.

Table 3.8-1. Infrastructure and Community Services Statutes, Regulations, and Terminology

Statute, Regulation, or Term	Description
Clean Water Act ^a (33 USC 1251 et seq)	The basic law, enforced by the USEPA, that regulates the discharge of pollutants to waterways and regulates surface water quality standards in the United States.
National Pollutant Discharge Elimination System (NPDES) Permit Program	The NPDES Permit Program authorizes the issuance of individual or general permits to control municipal and industrial discharges, including those from wastewater and stormwater. The federal government has full authority to issue NPDES permits but may delegate the permit program to the state.

Table 3.8-1. Infrastructure and Community Services Statutes, Regulations, and Terminology

Statute, Regulation, or Term	Description
National Primary Drinking Water Regulations	<p>The legally enforceable standards that apply to drinking water systems. Standards have been set for over 90 contaminants, including microorganisms, disinfectants, disinfection byproducts, inorganic chemicals, organic chemicals, and radionuclides.</p> <p>While the USEPA sets the national standards for drinking water, states may apply for primacy, or the right to implement the SDWA within their boundaries. All states, with the sole exception of Wyoming, have applied for primacy.</p> <p>The USEPA has established national health-based standards for contaminants potentially found in drinking water; these contaminants may include improperly disposed of chemicals, animal wastes, pesticides, wastes injected underground, and naturally occurring substances.</p>
National Secondary Drinking Water Regulations	<p>Those that may cause cosmetic or aesthetic effects (such as tooth discoloration, taste, or odor) but are not legally enforceable by the USEPA.</p> <p>States with primacy may choose to make these standards legally enforceable within their jurisdictions.</p>
Public water system	<p>A water system that serve at least 25 people.</p>
Resource Conservation and Recovery Act (RCRA) (42 USC 6901 et seq)	<p>RCRA establishes regulations to characterize the waste and requirements for transporting, storing, and disposing of it. RCRA places “cradle to grave” responsibility for hazardous waste on the generator of the waste.</p> <p>Subtitle C regulates hazardous solid waste. Subtitle D regulates non-hazardous solid waste.</p>
Safe Drinking Water Act (SDWA) (42 USC 300f et seq)	<p>USEPA is charged with enforcing this law that protects public drinking water supplies across the United States.</p>
Solid Waste	<p>Includes both non-hazardous solid waste and hazardous solid waste. Solid waste does not refer to the physical state of the wastes; liquids and gases may also be regulated as solid waste. Instead, the definition of solid waste includes discarded materials which are abandoned (i.e., disposed of, burned, or accumulated, stored, or treated), recycled, considered inherently waste-like (i.e., materials that pose such a threat to human health and the environment that they are always considered solid wastes), or a military munition</p>
Toxic Substances Control Act (15 USC 2601 et seq)	<p>Imposes restrictions to protect human health and environmental exposure to highly toxic substances, requires chemical testing, and regulates the release of these chemicals into the environment. Toxic substances present an unreasonable risk of injury to health or the environment. Related to this PEIS, the toxic substances of greatest concern are asbestos-containing materials (ACM), lead-based paint (LBP), and polychlorinated biphenyls (PCBs).</p>
Universal Waste	<p>Hazardous wastes that are more common and pose a lower risk to people and the environment than other hazardous wastes. All universal wastes are hazardous wastes, but they are managed under less-stringent standards than other hazardous wastes. Examples of common universal wastes that may be encountered during home demolition or remodeling include florescent light tubes that may contain mercury and PCBs potentially present in florescent light fixture ballasts.</p> <p>Federal and state regulations identify universal wastes and provide rules for handling, recycling, and disposing of them.</p>

Source: USEPA 2019f, 2018d, 2009b, 2004

ACM = asbestos-containing materials; LBP = lead-based paint; NPDES = National Pollutant Discharge Elimination System; PCBs = polychlorinated biphenyls; RCRA = Resource Conservation and Recovery Act; SDWA = Safe Drinking Water Act; USC = United States Code; USEPA = United States Environmental Protection Agency

^a Refer to Section 3.7, Hydrology and Water Quality, for additional discussion of Clean Water Act requirements.

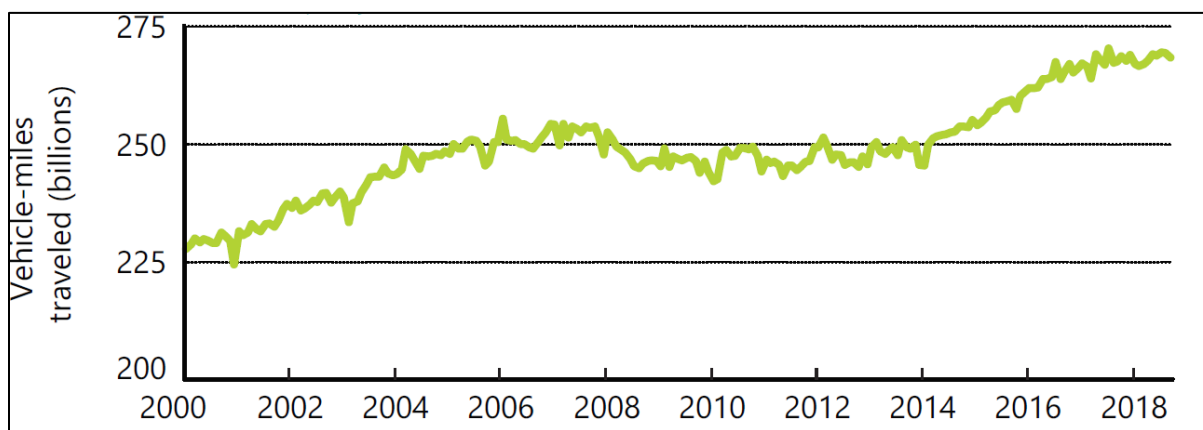
3.8.3 Existing Conditions

This section describes the existing conditions for infrastructure and community services throughout the United States and its Territories using a nationwide approach.

Unit of Analysis
VA Regional Loan Centers

3.8.3.1 Transportation Roads and Highways

Over 4.1 million miles of roadways served the United States in 2017, ranging from urban interstate highways to rural local roads (FHWA 2018b). During the same year, those roads allowed for the travel of over 3.2 trillion miles, a record high (ASCE 2017). Highways supported the vast majority of these vehicle miles; Figure 3.8-1 depicts the annual highway vehicle-miles traveled. Table 3.8-2 summarizes the 10 U.S. urbanized areas with the highest total daily vehicle-miles traveled.



Source: DOT Bureau of Transportation Statistics 2019

**Figure 3.8-1. Highway Passenger Travel (seasonally adjusted)
(January 2000 – September 2018)**

**Table 3.8-2. U.S. Urbanized Areas with Highest Daily Total Vehicle Miles Traveled
(August 2018)**

Urbanized Area	Census Population	Daily Total Vehicle Miles Traveled (thousands)	Total Roadway Mileage
New York-Newark, NY-NJ-CT	18,351,295	292,817	44,372
Los Angeles-Long Beach-Anaheim, CA	12,150,996	280,255	24,959
Chicago, IL-IN	8,608,208	185,131	31,631
Atlanta, GA	4,515,419	163,267	25,076
Dallas-Ft. Worth-Arlington, TX	5,121,892	145,151	23,065
Miami, FL	5,502,379	137,687	15,641
Houston, TX	4,944,332	133,014	19,492
Philadelphia, PA-NJ-DE-MD	5,441,567	109,322	21,005
Washington, DC-VA-MD	4,586,770	108,333	13,576
Boston, MA-NH-RI	4,181,019	106,940	17,763

Source: FHWA 2018c

U.S. = United States

This increased use of roads has led to increased traffic and congestion and an associated loss of fuel during traffic delays. Approximately 2 of every 5 miles of the nation’s urban interstates are congested, and 95 of the country’s 100 largest metropolitan areas experienced increased traffic congestion between 2013 and 2014 (ASCE 2017). Figure 3.8-2 summarizes the minutes of delay each car commuter experienced in the most congested urban areas in 2017. In addition, only 61 percent of the nation’s highways had pavement rated as in good condition in 2016. During the same year, 11 percent of highways had pavement in poor condition, an increase from 7 percent in 2010 (DOT Bureau of Transportation Statistics 2019).

Rank	Urban area	Minutes of delay
1	Los Angeles, CA	562
2	Portland, OR	460
3	Seattle, WA	436
4	San Francisco, CA	428
5	New York, NY	423
6	Washington, DC	414
7	Denver, CO	371
7	Miami, FL	368
9	Baltimore, MD	361
10	Houston, TX	350

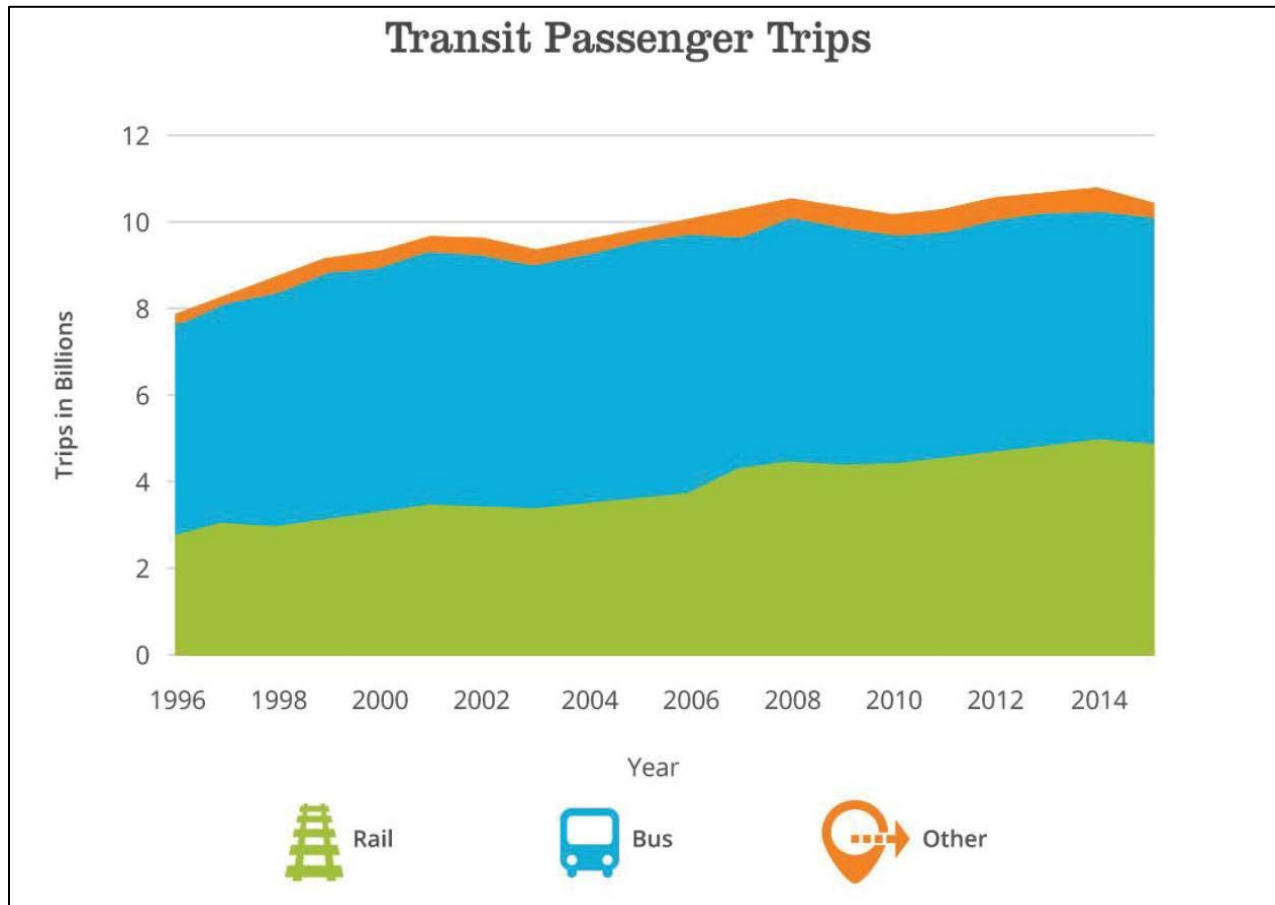
Source: DOT Bureau of Transportation Statistics 2019

Figure 3.8-2. Top 10 Metropolitan Area Congestion Rankings: 2017

Public Transit

Approximately 10.5 billion rides were taken aboard the various modes of available public transportation in 2015. While this number is down from 2014, 11 percent of American adults utilize public transportation options on a daily or weekly basis. Of the 10.5 billion rides taken in 2015, buses accounted for half of all passenger trips, and heavy rail (i.e., subway, metro) accounted for an additional third (ASCE 2017). Urban populations constitute most of the public transit ridership; however, rural transit systems also provide important paratransit, bus, commuter bus, and vanpool services (ASCE 2017). Seventeen rural transit agencies reported over 1 million unlinked passenger trips in 2017; 5 of these reported over 2 million trips (Federal Transit Administration 2019).

Use of public transit has increased over time (see Figure 3.8-3), but now many of these systems are experiencing a demand beyond that for which they were originally designed. Based on current data, 10 percent of the country’s urban bus fleet, 3 percent of the of the country’s rail fleet, 15 percent of maintenance facilities, 17 percent of power, signal, communications, and fare collecting systems, 35 percent of tracks, and 37 percent of stations are not in a “state of good repair” (ASCE 2017).



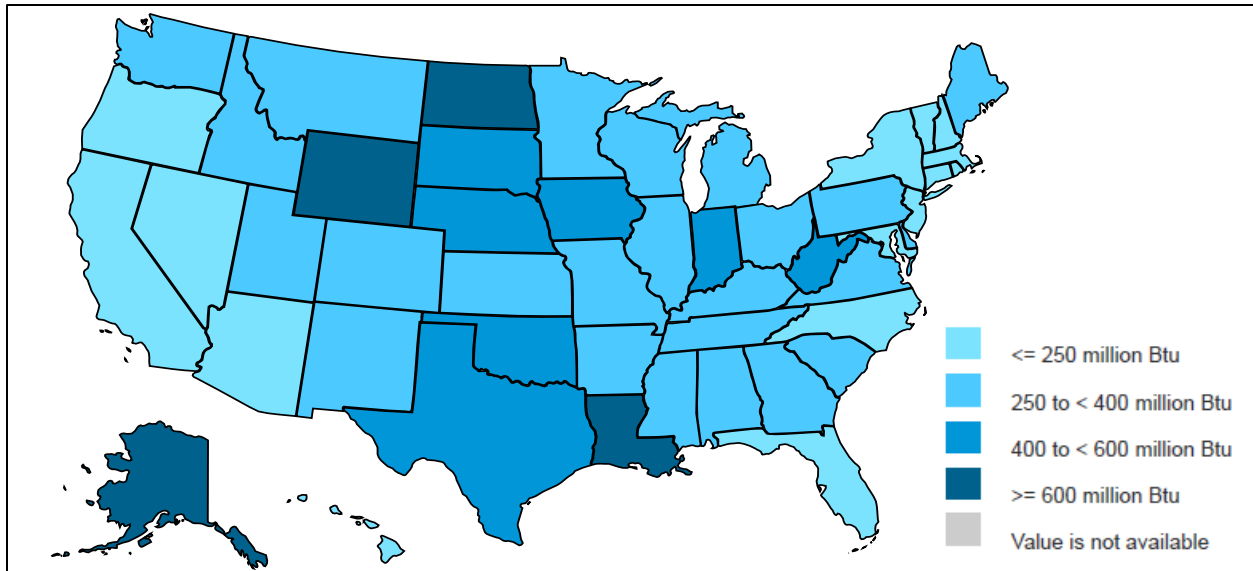
Source: ASCE 2017

Figure 3.8-3. Public Transit Ridership over Time

3.8.3.2 Utilities

Energy

Americans consumed approximately 97.7 quadrillion British thermal units (Btu) of energy in 2015 (ASCE 2017). In 2017, Louisiana residents consumed the greatest amount of energy per capita (960 million Btu), followed by Wyoming (885 million Btu), North Dakota (836 million Btu), Alaska (822 million Btu), and Iowa (472 million Btu). At the opposite end of the usage spectrum, Rhode Island residents only consumed 174 million Btu per capita, followed by New York (188 million Btu), Hawaii (199 million Btu), California (200 million Btu), and Florida (201 million Btu) (EIA 2019a). Figure 3.8-4 depicts per capita energy consumption across the country.



Source: EIA 2019a
Btu = British thermal unit

Figure 3.8-4. Total Energy Consumed per Capita (2017)

All 118.2 million American homes used electricity to fuel some household purpose in 2015. Nationwide, air conditioning was the most common end use for electricity (103.1 million homes), followed by cooking, space heating, and water heating (EIA 2017). The mainland U.S. electrical distribution system consists of over 640,000 miles of high-voltage transmission lines divided between three interconnected grids: the Eastern Interconnection, the Western Interconnection, and the Texas Interconnection. While the existing system is expected to be able to support the nation’s demand for electricity over the short-term, the majority of the transmission and distribution lines were constructed in the 1950s and 1960s and were intended to serve a 50-year lifespan. The existing mainland electrical system is currently functioning at full capacity, with many lines operating at capacities beyond those for which they were designed. This creates issues when performing maintenance, as taking a single line out of service could overload interconnected lines. The grids supporting Alaska and Hawaii are “similarly congested and physically islanded from the other states” (ASCE 2017).

Electricity rates vary across the country (Table 3.8-3). According to Alex Gilbert, writing for The Energy Collective (2016):

- 1) The northwest and the area around Tennessee have low rates due to low-cost hydrologic power.
- 2) California has high rates due, at least partially, to high-cost contracts signed during its electricity crisis.
- 3) New England has high rates due to high wholesale winter electricity costs.
- 4) The Rocky Mountain area has high rates due to higher transmission costs associated with the large geographic distances between population centers.

Table 3.8-3. Average Retail Price of Electricity to Residential Sector, April 2019

Highest Rates		Lowest Rates	
State	Price (cents/kWh)	State	Price (cents/kWh)
Hawaii	34.45	Louisiana	9.62
Connecticut	23.35	Washington	9.72
Alaska	22.93	Idaho	9.93
Massachusetts	22.61	Arkansas	10.01
Rhode Island	22.37	Utah	10.31
California	18.05	Missouri	10.53
Maine	17.92	North Dakota	10.63
New York	17.56	Kentucky	10.91
Vermont	17.19	Tennessee	11.01
New Jersey	16.42	Oregon	11.03

Source: EIA 2019b
kWh = Kilowatt-hour

As stated above, Louisiana residents consumed the greatest amount of energy per capita (EIA 2019a). This may be due to having the lowest per capita rate for electricity in the country (EIA 2019b).

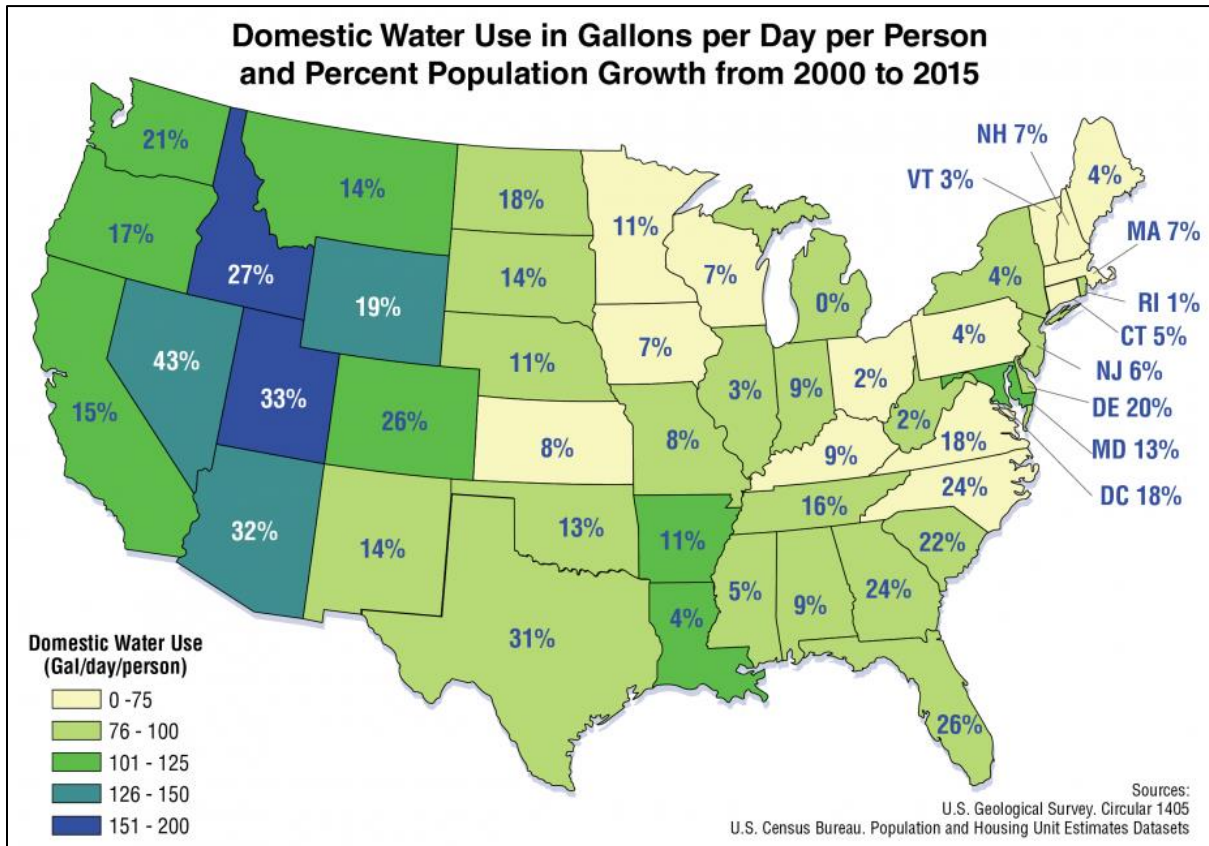
Each U.S. Territory has its own infrastructure for generating and distributing electricity. In general, per capita electricity consumption in the U.S. Territories is lower than the U.S. average; the exception is the U.S. Virgin Islands where per capita consumption is approximately seven times the U.S. average. While consumption is low, electricity rates in each of the U.S. Territories are up to three times the U.S. average, due in part to the surcharges placed on the imported fuel required to operate the power plants (EIA 2019c).

Renewable and alternative energy sources are comprising a greater proportion of the country's energy usage over time. In 2015, 40 percent of power generation came from natural gas and renewable systems, and consumption of natural gas has increased by over 24 percent between 2005 and 2015 (ASCE 2017). According to another source, energy from renewable sources accounted for approximately 9.9 percent of all energy consumed in the United States in 2015, of which 48 percent came from biomass sources (i.e., wood, waste, biofuels), 25 percent from hydropower, 19 percent from wind, 5 percent from solar, and 2 percent from geothermal sources (Institute for Energy Research 2018). Only 2 years later, renewable sources provided 16 percent of U.S. energy in 2017, with the percentage supplied by wind energy surpassing that of hydropower (Levin 2018).

While the use of renewable energy sources is increasing, oil and gas still play an important role in U.S. energy usage. There are currently approximately 2.6 million miles of oil and gas pipelines across the country, which has increased since 2013 with the discovery of new oil and natural gas sources (ASCE 2017). Approximately 27.11 trillion cubic feet of natural gas were consumed nationwide in 2017, with Texas (3.89 trillion cubic feet, approximately 14 percent of total U.S. natural gas consumption), California, Louisiana, Florida, and Pennsylvania representing the largest consumers (EIA 2018). Nationwide, space heating was the most common end use for natural gas (58.0 million of 118.2 million American homes), followed by water heating, cooking, and outdoor grilling (EIA 2017).

Domestic Water Use

The United States uses 42 billion gallons of drinking water per day, delivered via approximately 1 million miles of pipeline. Approximately 80 percent of this water comes from surficial sources (i.e., rivers, lakes, reservoirs, and oceans), while groundwater aquifers supply the remaining 20 percent. Groundwater wells may serve individuals, but there are 51,356 community water systems across the country, of which 8,674 (17 percent) serve 92 percent of the population. Even though the population continues to grow, the public demand for drinking water has remained relatively constant since 1985 due to water conservation efforts (ASCE 2017). Another source states that domestic water use declined by 7 percent from 2010 to an average of 83 gallons per person per day in 2015. However, per person water usage increased in Alaska, Colorado, Idaho, Louisiana, Utah, Virginia, Wisconsin, and Wyoming (Walton 2017). Figure 3.8-5 depicts population growth against domestic per person water usage. On a per-household basis, the average residence uses over 300 gallons of water per day. Approximately 24 percent of residential water is used in association with the toilet, 20 percent with the shower, and 19 percent with the faucet (USEPA 2018f).



Source: USEPA 2018f
 % = percent; Gal = gallon; U.S. = United States

Figure 3.8-5. Domestic Water Use in Gallons per Day per Person and Percent Population Growth from 2000 to 2015

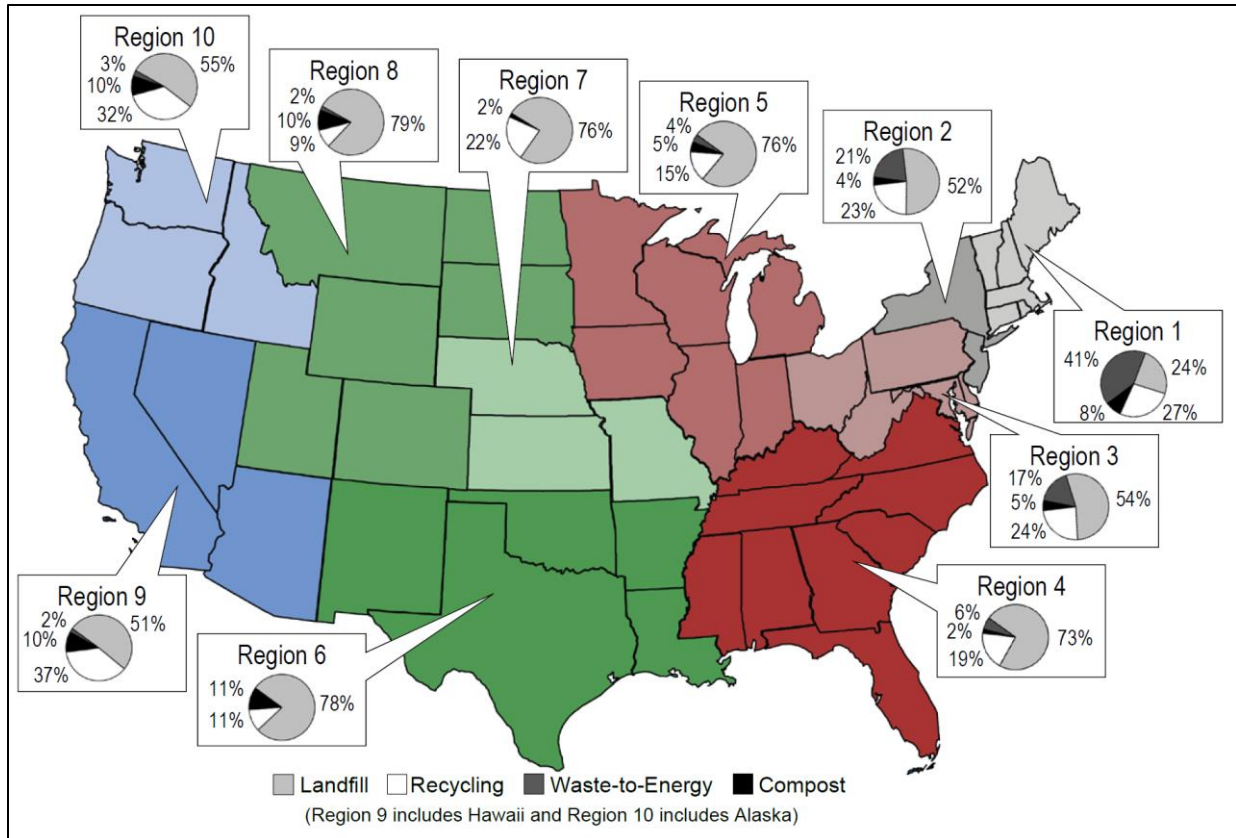
Municipal water usage has also declined over the last 10 years due to increased efficiencies and the retirement of coal-fired power plants (ASCE 2017). However, industrial and commercial water use represent the largest withdrawals of freshwater. In 2010, thermoelectric power represented 45 percent of freshwater withdrawals, followed by irrigation at 32 percent and public supply at 12 percent (USEPA 2018f). Total water withdrawals for public supply (i.e., household use and provided by utilities for commercial and industrial purposes) are currently at the lowest levels since 1995 (Walton 2017).

Wastewater, generally consisting of water conveyed by sewers or storm drains, is treated at the 14,748 treatment plants located across the country, which serve approximately 76 percent of Americans. These treatment plants ensure that publicly supplied water meets drinking water standards (ASCE 2017). Even with the standards set forth by the Safe Drinking Water Act (SDWA) in place, many communities still deal with contaminated drinking water. According to one report, the 10 states with the most contaminants found in drinking water are: California, Wisconsin, Arizona, Florida, North Carolina, Texas, New York, Nevada, Pennsylvania, and Illinois. Primary sources of this contamination include agriculture, industry, and runoff (West 2017).

Waste Management

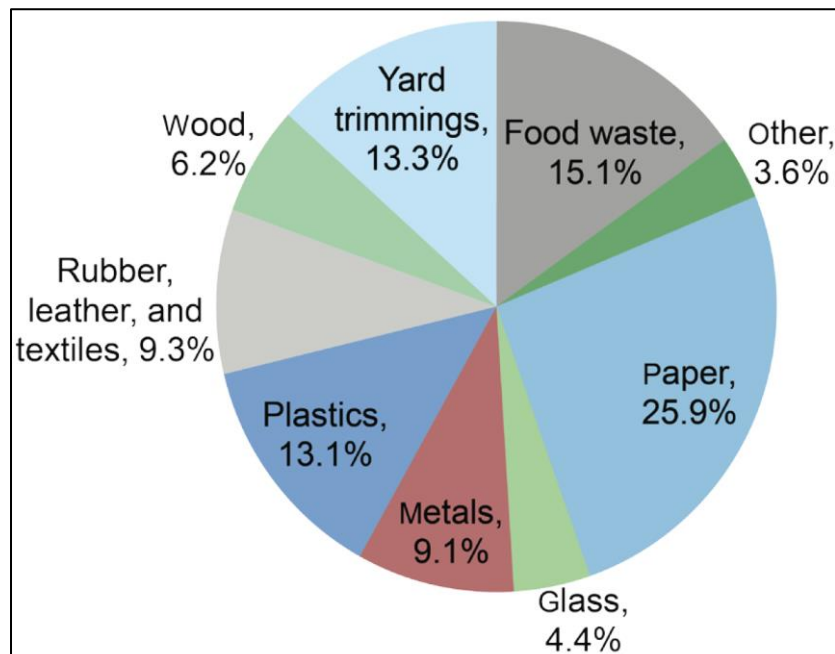
As discussed in Table 3.8-1, hazardous and non-hazardous solid wastes are regulated by the Resource Conservation and Recovery Act (RCRA), and chemicals are regulated by the Toxic Substances Control Act.

Non-hazardous solid waste, often referred to as municipal solid waste, trash, or garbage, includes the everyday items thrown away by an individual, household, business, etc. In 2014, Americans generated a total of approximately 258 million tons of municipal solid waste, or approximately 4.4 pounds per person per day. Approximately half of the discarded material is diverted for recycling (25.7 percent) or composting (8.9 percent) or burned for energy recovery (12.8 percent); however, most (52.6 percent) of this waste ends up in landfills. As of 2012, 1,908 landfills existed across the country, mostly located in the south (668 landfills, 35.0 percent) and west (718 landfills, 37.6 percent) (ASCE 2017). Figure 3.8-6 depicts municipal solid waste management across USEPA regions, while Figure 3.8-7 summarizes the material composition of the solid waste generated nationwide in 2015. Subtitle D of RCRA sets federal standards for the operating of municipal solid waste and industrial waste landfills, found in 40 CFR 258. Each state plays a lead role in ensuring that these federal standards are met and may institute more stringent criteria.



Source: University of Michigan Center for Sustainable Systems 2018
 % = percent; USEPA = U.S. Environmental Protection Agency

Figure 3.8-6. Municipal Solid Waste Management by USEPA Region in 2010



Source: University of Michigan Center for Sustainable Systems 2018
 % = percent

Figure 3.8-7. Municipal Solid Waste Composition in 2015

Hazardous substances may also be of concern in residential areas. In general, hazardous waste includes substances that, because of their quantity; concentration; or physical, chemical, or toxic characteristics, may present substantial danger to public health or welfare or the environment when released into the environment.

Numerous maintenance activities require the use, storage, and disposal of regulated and non-regulated hazardous materials. Residential households use a wide variety of hazardous chemicals, typically in small quantities, including paints, pesticides, herbicides, cleaning chemicals, and other cleaning solvents. Vehicles and small engine units, including small trucks, lawnmowers, and blowers that contain or require use of petroleum products. No estimates are available on the locations, volumes, extent, strength, persistence, or toxicity of materials used by households.

Special hazards regulated under federal law and potentially encountered during residential remodeling and demolition projects include ACM, lead-based paint (LBP), and PCBs.

- **Asbestos-Containing Materials.** Two categories are used to describe ACM. Friable ACM is defined as any material containing more than 1 percent asbestos (as determined by polarized light microscopy) that, when dry, can be crumbed, pulverized, or reduced to a powder by hand pressure. Nonfriable ACM is material that contains more than 1 percent asbestos and does not meet the criteria for friable ACM. ACM includes sprayed on or troweled on structural members, surfacing materials, vinyl floor tile and associated mastic, and wallboard/joint compound. Potential ACM includes cementitious siding and caulking materials. Although these materials are now known to be hazardous, they were widely used in the building products industry and for housing maintenance for many years. Their presence in and around the housing units does not constitute a health hazard under normal circumstances; ACM only becomes a health hazard when damaged or disturbed.
- **Lead-Based Paint.** Lead is a highly toxic metal that can cause a variety of health concerns, including damage to the brain, kidneys, nerves, and blood; behavioral problems and learning disabilities in children; seizures; and in some cases death (HUD 2018). However, LBP was also a common product used in homes built before consumer use of the product was banned in 1978. Older homes are more likely to contain LBP; the product was used in 87 percent of homes built prior to 1940, 69 percent of homes built between 1940 and 1959, and 24 percent of homes built between 1960 and 1977 (USEPA 2019g). Like ACM, LBP does not represent a health hazard until damaged or disturbed.
- **Polychlorinated Biphenyls.** PCBs are industrial compounds used in electrical equipment, primarily capacitors and transformers, because they do not conduct electricity and are stable at high temperatures. Because of their chemical stability, PCBs persist in the environment, bioaccumulate in organisms, and become concentrated in the food chain. The disposal of PCBs is regulated by the Toxic Substances Control Act, which regulates the removal and disposal of contaminated equipment containing PCBs at concentrations greater than 50 ppm.

During occupation of housing, lawn maintenance often includes the use of **pesticides and other regulated chemicals**. Per 42 USC 9603(e), application of a registered pesticide is exempt from spill reporting requirements. Therefore, when a pesticide is applied in accordance with its label, it is not

considered a hazardous material or a release of hazardous waste, even if it contains substances that would otherwise be considered hazardous.

3.8.3.3 Public Safety

In the context of this analysis, public safety encompasses emergency response and public resources, such as law enforcement services, fire protection and emergency medical services, and health care facilities.

Approximately 15,400 local law enforcement agencies exist across the country; if counting all college campus security departments, tribal land units, sheriff offices, and local, state, and federal police, this number increases to approximately 18,000 agencies (Greenberg 2016). While local law enforcement agencies range in size from 1 officer to over 30,000, the most common type of agency is the small town department with up to 10 officers (Banks et al. 2016).

In 2017, there were 29,819 fire departments comprised of 1,056,200 local firefighters in the United States. Approximately 35 percent of the firefighters were career firefighters, while 65 percent were volunteers. However, departments made up of all career or mostly career firefighters (17.1 percent of all departments) protected 69 percent of the U.S. population. All volunteer departments represented 64.8 percent of departments across the country. As these numbers suggest, most (72 percent) of career firefighters are in communities of larger populations (i.e., 25,000 or more people). On the other hand, 95 percent of volunteer firefighters serve communities of fewer than 25,000 individuals, and 47 percent of volunteer firefighters serve communities with populations of 2,500 or less. The majority of local fire departments (61 percent, 18,260 departments) also provide emergency medical services with basic or advanced life support capabilities (Evarts and Stein 2019). Table 3.8-4 summarizes the number of firefighters per 1,000 people in different regions of the United States.

Table 3.8-4. Median Rates of Career and Volunteer Firefighters per 1,000 People by Region and Population Protected (2017)

Population Protected	Northeast	Midwest	South	West
Career Firefighters				
250,000 to 499,999	1.18	1.38	1.23	0.92
100,000 to 249,999	2.09	1.42	1.59	0.98
50,000 to 99,999	1.71	1.23	1.59	1.09
25,000 to 49,999	1.72	0.91	1.73	1.07
Volunteer Firefighters				
10,000 to 24,999	1.38	1.23	0.61	1.19
5,000 to 9,999	4.47	3.25	2.50	3.11
2,500 to 4,999	7.78	6.29	5.67	6.67
Under 2,500	17.55	17.5	16.00	20.00

Source: Evarts and Stein 2019

Nationwide, there were a total of 6,210 hospitals registered with the American Hospital Association in 2017. Of these, 5,262 were community hospitals (i.e., non-federal, short-term general and other special hospitals, not including prison hospitals or college infirmaries). Approximately 64 percent of community hospitals are located in urban areas (American Hospital Association 2019). Texas supports the most hospitals, and 19 states each have more than 100 hospitals (Dyrda 2017). The overall number of available hospital beds has declined dramatically from approximately 1.5 million beds in 1975 to less than approximately 931,000 in 2017 (Statista 2019). However, current hospital capacity rates at these hospitals are more than sufficient to meet current demand, with urban and rural hospitals reporting a 64 percent and 43 percent occupancy rates in 2012, respectively (Becker's Hospital Review 2014).

3.8.3.4 Education

For the 2015-2016 school year, 13,584 public school districts, 98,277 total public schools, and 34,576 total private schools existed across the country. In public schools, 15.7 percent of enrolled students were located in the Northeast, 25.8 percent in the Midwest, 34.8 percent in the South, and 23.8 percent in the West (National Center for Education Statistics 2019). Table 3.8-5 summarizes actual national and regional public school enrollment in fall 2016 and projected enrollment for fall 2028. According to this table, public school enrollment is expected to continue to increase in the South and West but continue to decrease in the Northeast and Midwest regions of the United States. Table 3.8-6 presents the student/teacher ratio for public schools across the country, including U.S. Territories, as of fall 2016. For comparison, the overall student/teacher ratio for public schools throughout the United States was 16.0 for the 2016-2017 school year (National Center for Education Statistics 2019).

Table 3.8-5. National and Regional Enrollment in Public Schools

Region	Total Enrollment (Fall 2016)	Percent Change in Total Enrollment (2011-2016)	Projected Enrollment (Fall 2028)	Percent Change in Projected Enrollment (2016-2028)
United States	50,615,189	2.2	51,418,700	1.6
Northeast	7,959,762	0.1	7,663,700	-3.7
Midwest	10,538,947	-0.3	10,316,100	-2.1
South	19,641,472	4.2	20,815,500	5.4
West	12,307,230	2.7	12,623,400	2.1

Source: National Center for Education Statistics 2019

Table 3.8-6. Student/Teacher Ratios in Public Schools (Fall 2016)

State	Students per Teacher	State	Students per Teacher	State	Students per Teacher
Alabama	17.5	Kentucky	16.3	North Dakota	11.8
Alaska	17.0	Louisiana	14.8	Ohio	16.7
Arizona	23.3	Maine	12.2	Oklahoma	16.9
Arkansas	13.8	Maryland	14.8	Oregon	20.4
California	23.3	Massachusetts	13.3	Pennsylvania	14.1
Colorado	17.4	Michigan	18.3	Rhode Island	13.3
Connecticut	12.6	Minnesota	15.4	South Carolina	15.2
Delaware	14.8	Mississippi	15.1	South Dakota	13.9
District of Columbia	12.8	Missouri	13.5	Tennessee	15.6
Florida	15.1	Montana	13.9	Texas	15.2
Georgia	15.4	Nebraska	13.5	Utah	22.9
Hawaii	15.4	Nevada	20.0	Vermont	10.8
Idaho	18.3	New Hampshire	12.3	Virginia	14.0
Illinois	15.7	New Jersey	12.2	Washington	18.7
Indiana	17.4	New Mexico	15.8	West Virginia	14.1
Iowa	14.2	New York	13.1	Wisconsin	14.6
Kansas	13.7	North Carolina	15.5	Wyoming	12.5
Territory	Students per Teacher	Territory	Students per Teacher	Territory	Students per Teacher
American Samoa ^a	16.6 (Fall 2005)	Guam	13.4	Northern Mariana Islands ^a	25.5 (Fall 2013)
Puerto Rico	12.6	U.S. Virgin Islands	11.4		

Source: National Center for Education Statistics 2019

^a. Student/teacher ratios for American Samoa and the Northern Mariana Islands are not available for the Fall 2016 school year. The table presents the most recent year for which comparable data is available.

3.9 LAND USE AND PLANNING

This section describes land resources of the United States and its Territories to include a description of the resource, applicable statutes and regulations, and the existing conditions of land use and planning on a nationwide scale.

3.9.1 Description of the Resource

Land use can be described as the management and modification of natural resources and the environment into a built environment that may include settlements, residential areas, commercial and industrial areas, semi-natural habitats, and natural habitats. Land use often refers to real property classifications that indicate either natural conditions or the types of human activity that occur or are permitted on a parcel. There is no nationally recognized convention or uniform terminology for describing land use categories. As a result, the meanings of land use descriptions and definitions vary among jurisdictions.

3.9.2 Applicable Statutes, Regulations, and Terminology

Table 3.9-1 summarizes applicable statutes, regulations, and terminology related to land use and planning.

Table 3.9-1. Land Use Statutes, Regulations, and Terminology

Statute, Regulation, or Term	Description
Coastal Barrier Resources Act of 1982 (16 USC 3501 et seq)	<p>The Coastal Barrier Resources Act of 1982 established the Coastal Barrier Resources System (CBRS) to protect sensitive and vulnerable, relatively undeveloped, coastal barrier islands found along the Atlantic Ocean, Gulf of Mexico, and Great Lakes coastlines. The Coastal Barrier Improvement Act of 1990 expanded the CBRS to include undeveloped areas in Florida, Puerto Rico, U.S. Virgin Islands, and areas surrounding the Great Lakes. It also added a new category of lands called “otherwise protected areas.”</p> <p>CBRS units are protected from development because they are ineligible for most new federal expenditures and financial assistance. VA has procedures in place intended to prevent loan guaranties in CBRS-protected locations. VA policy requires appraisers to ascertain and lenders to certify that a subject property is not in a CBRS-protected location.</p>
Coastal Zone Management Act (CZMA) (16 USC 1451 et seq)	<p>The CZMA is intended to protect freshwater and marine coastal areas from continued growth in the coastal zone and from environmental degradation associated with this growth. It applies to all coastal states and to all states that border the Great Lakes.</p> <p>The National Oceanic and Atmospheric Administration (NOAA) oversees implementation and provides technical assistance. States assume primary responsibility for program implementation. However, federal agencies (in this instance, VA) must ensure that any federal action with reasonably foreseeable effects on coastal uses and resources must be consistent with enforceable policies of a state’s approved coastal program.</p>

Table 3.9-1. Land Use Statutes, Regulations, and Terminology

Statute, Regulation, or Term	Description
Executive Order 11988, <i>Floodplain Management</i>	<p>Issued in 1977, it requires 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 wherever there is a practicable alternative.</p> <p>Requires federal agencies (including VA) to evaluate the potential effects of an action in a floodplain and ensure planning programs and budget requests consider flood hazards and floodplain management.</p>
Executive Order 11990, <i>Protection of Wetlands</i>	<p>Issued in 1977, it requires each federal agency to take action to minimize the destruction, loss, or degradation of wetlands and preserve and enhance the values of wetlands in carrying out agency responsibilities.</p> <p>Before implementing an action that is in, or may affect, a wetland, all federal agencies (including VA) must demonstrate that there is no practicable alternative and the Proposed Action includes all practical measures to minimize harm to the wetland. The order does not apply to permits, licenses, or other activities involving wetlands on non-federal property.</p>
National Flood Insurance Act of 1968 (42 USC 4001 et seq)	<p>Established the National Flood Insurance Program (NFIP) whose goals include providing flood insurance for structures and contents in communities that adopt and enforce an ordinance outlining minimal floodplain management standards.</p> <p>The Federal Emergency Management Agency (FEMA) is responsible for enrolling communities in the NFIP, establishing the minimum floodplain management criteria, monitoring and oversight, technical assistance, and enforcing the program requirements on participating communities.</p> <p>The NFIP was designed so that floodplain management would be carried out at the state and local levels.</p>

Source: FEMA 2018b; NOAA 2019b

CBRS = Coastal Barrier Resource System; FEMA = Federal Emergency Management Agency; NFIP = National Flood Insurance Program; NOAA = National Oceanic and Atmospheric Administration; U.S. = United States; USC = United States Code; VA = Department of Veterans Affairs

Virtually every state has adopted legislation that passes at least some of the authority to adopt zoning ordinances to their counties, cities, towns, and other local governments. The federal government does not typically make zoning decisions for land parcels. Zoning ordinances are locally devised regulations and therefore differ greatly across the country with respect to their extent of regulation. The basic intent of “zoning” is to separate incompatible uses of land. Zoning ordinances characteristically provide for the following (FEMA 2018b):

- A system of dividing jurisdiction into zones with different regulations applying to different zones. Local units of government are typically divided into residential, commercial, industrial, and sometimes agricultural areas; they establish land use districts to separate these different kinds of land use so that property values can be maintained. As an example, after zoning is adopted, a new gas station is not permitted in an area zoned for single-family homes.
- A system for permitting certain land uses to be established within those districts, and for permitting other land uses or developments to be established only upon the issuance of a special or conditional use permit. Once a locality is divided into districts, there are some uses that do not fit into any district (e.g., churches, schools). Such uses need to be examined on an individual basis in relation to the impact on their surroundings and then located and designed specifically to minimize those impacts. These are “special” uses that require a permit to be built

or operated which typically includes conditions placed on these uses (e.g., hours of operation or site development).

- A system for treating existing development through the concept of non-conforming uses. Most zoning ordinances are adopted after localities have already been partially developed. It is important to make provisions for things that have been built or done that do not conform to the new zoning. Rules are written to determine how and when to allow modifications to these uses and structures (e.g., issuance of permits for modifications to nonconforming uses).

Once uses are separated, even if a permitted structure is built in a certain area, that structure can sometimes cause major problems for other existing structures, such as when an immense (e.g., multi-story) structure is built adjacent to a modest structure (e.g., single-family home). In this instance, the occupant of the modest structure might lose views, sunlight, and much of what was enjoyed about the structure (see Section 3.1, Aesthetics). In addition to the separation of uses, development standards are incorporated into zoning ordinances. Development standards are the measurable rules contained in zoning ordinances that specify height limitations, width, set-back distance from property line (i.e., where structures can be built), and even the percentage of property that can be covered by buildings, occupancy, and parking spaces, etc. After development standards are included in an ordinance, provisions are needed for adjusting the standards to accommodate properties with unusual shape or topography. In some cases, it might be reasonable to allow the development standards to be varied in a particular instance (i.e., a variance) (FEMA 2018b).

State and local plans and zoning ordinances specific to floodplains, wetlands, and coastal zones are discussed in Section 3.5, Floodplains, Wetlands, and Coastal Zones. Land use zoning decisions affect numerous other environmental resources including biological resources (see Section 3.3, Biological Resources); prime farmland (see Section 3.6, Geology and Soils); water quality (see Section 3.7, Hydrology and Water Quality); infrastructure needs (Section 3.8, Infrastructure and Community Services), and sociological and economic factors (see Section 3.11, Socioeconomics and Environmental Justice).

3.9.3 Existing Conditions

This section describes existing conditions for land use throughout the United States and its Territories.

VA uses the VA RLC areas of operational jurisdiction as the unit of analysis for land use. Section 3.0, Affected Environment, Introduction, has a more detailed discussion on units of analysis and Figure 1-1 (in Chapter 1 of this PEIS) shows the areas of operational jurisdiction for each VA RLC.

<p>Unit of Analysis VA Regional Loan Centers</p>

Tables 3.9-2 through 3.9-9 summarizes the major land cover types designated by the Anderson Land Use and Land Cover Classification System for the United States and its Territories (Anderson et al. 1976). The essential characteristics and typical land uses associated with each land use type are described below. The qualitative and quantitative land cover data is derived from USGS National Land Cover Database, which is developed through a partnership of federal agencies (Multi-Resolution Land Characteristics Consortium) for a nationally consistent land cover dataset for the United States (USGS 2016b). Similar land cover types are grouped where appropriate to streamline the discussion.

Table 3.9-2. Summary of Land Cover Classes for the Conterminous United States

Class Number	Land Cover Type ^a	Percentage
11	Open water	5.24
12	Perennial ice/snow	0.01
21	Developed, open space	2.87
22	Developed, low intensity	1.48
23	Developed, medium intensity	0.70
24	Developed, high intensity	0.25
31	Bare rock/sand/clay	1.03
41	Deciduous forest	9.37
42	Evergreen forest	11.43
43	Mixed forest	3.63
52	Scrub/shrub	21.78
71	Grasslands/herbaceous	13.84
81	Pasture/hay	6.28
82	Cultivated crops	16.25
90	Woody wetlands	4.37
95	Emergent herbaceous wetlands	1.47

Source: USGS 2011

^a. Excluding land cover types found only in Alaska, including classes 51, 72, 73, 74.

Table 3.9-3. Summary of Land Cover Classes for Alaska

Class Number	Land Cover Type	Percentage
11	Open water	14.16
12	Perennial ice/snow	4.12
21	Developed, open space	0.02
22	Developed, low intensity	0.05
23	Developed, medium intensity	0.01
24	Developed, high intensity	0.002
31	Bare rock/sand/clay	7.78
41	Deciduous forest	3.24
42	Evergreen forest	13.75
43	Mixed forest	3.27
51	Dwarf Shrub	17.10
52	Scrub/shrub	22.57
71	Grasslands/herbaceous	1.72
72	Sedge/herbaceous	5.71
74	Moss	0.03
81	Pasture/hay	0.002
82	Cultivated crops	0.02
90	Woody wetlands	3.48
95	Emergent herbaceous wetlands	2.98

Source: USGS 2016b

Table 3.9-4. Summary of Land Cover Classes for Hawaii

Class Number	Land Cover Type ^a	Percentage
11	Open water	1.15
12	Perennial ice/snow	0.00
21	Developed, open space	0.96
22, 23, 24	Developed ^b	1.17
31	Bare rock/sand/clay	24.39
41	Deciduous forest	0.00
42	Evergreen forest	29.01
43	Mixed forest	0.00
52	Scrub/shrub	18.45
71	Grasslands/herbaceous	7.41
81	Pasture/hay	14.66
82	Cultivated crops	1.46
90	Woody wetlands	1.26
95	Emergent herbaceous wetlands	0.09

Source: NOAA 2015a

^a. Data does not exist for all land cover classes.^b. Dataset combines developed, low intensity; developed, medium intensity; or developed, high intensity land cover into one land cover class.**Table 3.9-5. Summary of Land Cover Classes for American Samoa**

Class Number	Land Cover Type ^a	Percentage
11	Open water	17.85
12	Perennial ice/snow	0.00
21	Developed, open space	4.64
22, 23, 24	Developed ^b	5.19
31	Bare rock/sand/clay	1.10
41	Deciduous forest	0.00
42	Evergreen forest	64.95
43	Mixed forest	0.00
52	Scrub/shrub	2.39
71	Grasslands/herbaceous	1.00
81	Pasture/hay	0.13
82	Cultivated crops	2.30
90	Woody wetlands	0.35
95	Emergent herbaceous wetlands	0.10

Source: NOAA 2010

^a. Data does not exist for all land cover classes.^b. Dataset combines developed, low intensity; developed, medium intensity; or developed, high intensity land cover into one land cover class.

Table 3.9-6. Summary of Land Cover Classes for Guam

Class Number	Land Cover Type ^a	Percentage
11	Open water	8.87
12	Perennial ice/snow	0.00
21	Developed, open space	10.25
22, 23, 24	Developed ^b	9.17
31	Bare rock/sand/clay	2.28
41	Deciduous forest	0.00
42	Evergreen forest	40.63
43	Mixed forest	0.00
52	Scrub/shrub	8.03
71	Grasslands/herbaceous	17.55
81	Pasture/hay	0.02
82	Cultivated crops	0.37
90	Woody wetlands	2.08
95	Emergent herbaceous wetlands	0.67

Source: NOAA 2016c

^a. Data does not exist for all land cover classes.

^b. Dataset combines developed, low intensity; developed, medium intensity; or developed, high intensity land cover into one land cover class.

Table 3.9-7. Summary of Land Cover Classes for the Northern Mariana Islands

Class Number	Land Cover Type ^a	Percentage
11	Open water	3.38
12	Perennial ice/snow	0.00
21	Developed, open space	3.60
22, 23, 24	Developed ^b	2.52
31	Bare rock/sand/clay	1.89
41	Deciduous forest	0.00
42	Evergreen forest	59.70
43	Mixed forest	0.00
52	Scrub/shrub	6.41
71	Grasslands/herbaceous	18.48
81	Pasture/hay	2.46
82	Cultivated crops	1.56
90	Woody wetlands	0.00
95	Emergent herbaceous wetlands	0.00

Source: NOAA 2018

^a. Data does not exist for all land cover classes.

^b. Dataset combines developed, low intensity; developed, medium intensity; or developed, high intensity land cover into one land cover class.

Table 3.9-8. Summary of Land Cover Classes for Puerto Rico

Class Number	Land Cover Type ^a	Percentage
11	Open water	5.31
12	Perennial ice/snow	0.00
21	Developed, open space	3.03
22, 23, 24	Developed ^b	1.48
31	Bare rock/sand/clay	0.79
41, 42, 43	Forested ^c	56.08
52	Scrub/shrub	8.21
71	Grasslands/herbaceous	3.26
81	Pasture/hay	6.32
82	Cultivated crops	3.10
90	Woody wetlands	3.64
95	Emergent herbaceous wetlands	1.25

Source: NOAA 2017

^a. Data does not exist for all land cover classes.^b. Dataset combines developed, low intensity; developed, medium intensity; or developed, high intensity land cover into one land cover class.^c. Dataset combines deciduous, evergreen, and mixed forest types into one land cover class.**Table 3.9-9. Summary of Land Cover Classes for the U.S. Virgin Islands**

Class Number	Land Cover Type ^a	Percentage
11	Open water	10.53
12	Perennial ice/snow	0.00
21	Developed, open space	8.89
22, 23, 24	Developed ^b	11.41
31	Bare rock/sand/clay	2.02
41	Deciduous forest	28.55
42	Evergreen forest	5.12
43	Mixed forest	0.00
52	Scrub/shrub	25.61
71	Grasslands/herbaceous	2.08
81	Pasture/hay	3.36
82	Cultivated crops	0.37
90	Woody wetlands	1.63
95	Emergent herbaceous wetlands	0.70

Source: NOAA 2015b

^a. Data does not exist for all land cover classes.^b. Dataset combines developed, low intensity; developed, medium intensity; or developed, high intensity land cover into one land cover class.

3.9.3.1 Water

The two classes associated with water are open water and perennial ice/snow. To qualify as open water, more than 75 percent of the land cover is water (less than 25 percent is vegetation or soil). This land class may be used for fishing, aquaculture, and other water-dependent commercial practices. Water resources are addressed in detail in Section 3.7, Hydrology and Water Quality. To qualify as perennial ice/snow, ice and snow is generally 25 percent or more of total cover.

3.9.3.2 Developed Land

The four classes of developed land, discussed in Table 3.9-2, include developed, open space; developed, low intensity; developed, medium intensity (which includes commercial, industrial, and transportation land uses); and developed, high intensity. Each of these land cover types exhibits unique characteristics and associated uses.

- Developed, open space – composed of some constructed materials, but primarily vegetation in the form of lawn grasses or other landscaping. Associated land uses include large lot, low-density residential development, parks, golf courses, and either functional or aesthetic landscaping such as gardens, swales, erosion control plantings, or other recreational areas.
- Developed, low intensity - includes a higher ratio of constructed materials to vegetation. Associated land uses are typically moderate-density single-family residential development, with a range of 4 to 12 units per acre.
- Developed, medium intensity – includes commercial/industrial/transportation land uses that are a mixture of constructed materials and vegetation.
- Developed, high intensity – includes very highly developed and intensively used areas. Typical land uses include commercial and industrial properties and high-density residential development such as apartment complexes and row houses. This class also includes federally owned land such as office buildings, military installations, and other properties.

3.9.3.3 Bare Rock/Sand/Clay

The bare rock/sand/clay class is characterized as areas of bedrock, desert pavement, scarps, talus, slides, volcanic material, glacial debris, sand dunes, gravel pits, strip mines, and other accumulations of earthen material. To qualify as the bare rock/sand/clay land use class, vegetation generally accounts for no more than 15 percent of the total land cover. Associated land uses vary widely, from recreational areas to industrial mining/extraction operations.

3.9.3.4 Forest Land

Forest lands include three classes: deciduous, evergreen, and mixed. Common characteristics of forestlands include trees generally greater than 5 meters tall which constitute more than 20 percent of total vegetation cover.

- Deciduous – forests where more than 75 percent of its trees must shed foliage in response to seasonal change.
- Evergreen – forests where more than 75 percent of its trees maintain foliage year-round.

- Mixed forest – forests where neither deciduous nor evergreen species constitute more than 75 percent of total tree cover.

3.9.3.5 Shrubland

Shrubland consists of two classes: scrub/shrub and dwarf scrub. Scrub/shrub is dominated by shrubs less than 5 meters tall and may also include young trees. The shrub canopy is greater than 20 percent of total vegetation. Typically, these lands 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. Dwarf scrub is found only in Alaska and dominated by shrubs less than 20 centimeters tall; grasses, sedges, herbs, and non-vascular vegetation often occur in this class. The shrub canopy is greater than 20 percent of total vegetation.

3.9.3.6 Herbaceous

Of the four classes of herbaceous land cover, which are defined by non-woody vegetation, three are found only in Alaska: sedge/herbaceous, lichens, and moss. These are types of tundra plant communities. The fourth class is grasslands/herbaceous, defined as an area in which at least 80 percent of the ground cover is comprised of grasses or other herbaceous vegetation. These lands typically remain as open space, and there are no associated land uses.

3.9.3.7 Planted/Cultivated

The planted/cultivated land cover includes two classes, both agricultural in nature: pasture/hay and cultivated crops. These land classes are used for producing food crops or raising livestock.

- Pasture/hay – composed of grasses, legumes, or a mixture of the two planted for purposes 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 – used to produce annual crops such as corn, soybeans, wheat, vegetables, and cotton, as well as perennial woody agriculture (e.g., orchards and vineyards) and all land that is actively tilled. Crop vegetation must account for 20 percent of total vegetation to be included in this class.

3.9.3.8 Wetlands

There are two classes of wetlands: woody wetlands and emergent herbaceous wetlands, where the soil is periodically saturated or inundated with water. There are no land uses associated with wetlands.

- Woody wetlands contain 20 percent or more forest or shrubland vegetation.
- Emergent herbaceous wetlands include wetlands where perennial herbaceous vegetation accounts for 80 percent or more of vegetative cover.

3.9.4 Land Use and Land Cover Existing Conditions—Nationwide Summary

Much of the discussion in this section relates to the extent of urban sprawl found within a given state or region, as reported in studies entitled *Measuring Sprawl and Its Impact* (Ewing et al. 2002) and *Measuring Sprawl 2014* (Smart Growth America 2014). The Smart Growth America (SGA) study updates the 2002 study, focusing on sprawl using U.S. Census Bureau metropolitan statistical areas and county-level data. General summaries relating to other major land use types (e.g., forested lands, crop, etc., as described in Section 3.9.3) were taken from a report entitled *Major Uses of Land in the United States* (USDA, Economic Research Service 2012). In addition, Sections 3.1, Aesthetic Resources and Section 3.5, Floodplains, Wetlands, and Coastal Zones; address land uses related to federally protected lands (e.g., national parks) and wetlands, floodplains, and coastal areas respectively.

3.9.4.1 Atlanta Regional Loan Center

This area, which includes the four states of Georgia, North Carolina, South Carolina, and Tennessee is more rural in character than other regions, such as the Northeast; however, there are several major urban centers, including Atlanta, Georgia; Memphis, Tennessee; Columbia, South Carolina; and Charlotte, North Carolina. Of those cities that were analyzed in the 2014 SGA study, all were more sprawling than average, with locations such as Winston-Salem, North Carolina; Raleigh-Durham, North Carolina; and Atlanta, Georgia, ranking 2nd, 3rd, and 4th, respectively, in terms of sprawl of the 83 cities evaluated (Ewing et al. 2002). The 2014 study found that, in general, the places where housing is most spread out include several medium-sized metropolitan areas in the southeast (e.g., Knoxville, Tennessee; Raleigh-Durham, North Carolina; Columbia, South Carolina). These are places where growth has mostly occurred during the automobile era and with no topographic- or water-related constraints that would resist development. The area contains a range of land uses; there is little high-density development outside of the major cities, and most suburban development is low- and medium-density residential, with segregated commercial and industrial facilities and areas of agricultural use and forested lands. Forested lands comprise over half of the land use in the southeastern United States.

3.9.4.2 Cleveland Regional Loan Center

The operational jurisdiction of the Cleveland RLC encompasses many states along the northeastern and mid-Atlantic seaboard, as well as three states in the Midwestern region. Specifically, it includes the New England states of Maine, Vermont, New Hampshire, Massachusetts, Connecticut, and Rhode Island, which include the northern portion of the "northeast megalopolis," a highly urbanized area stretching from the northern suburbs of Boston south to the southern suburbs of Washington, District of Columbia. The region is home to several major metropolitan areas along the I-95 corridor, including Boston, Massachusetts; Providence, Rhode Island; Bridgeport, Connecticut; and the greater metropolitan area of New York City, which extends into Connecticut. These metropolitan areas are characterized by a densely developed urban core that disperses to a network of surrounding suburbs, villages, and hamlets that are developed at lower densities. In Connecticut, the Bridgeport, New Haven, and Norwich metropolitan areas are ranked among the least sprawling metropolitan areas in the country and have strong, established urban cores. On the other hand, Hartford, Connecticut and Providence, Rhode Island

are among the most sprawling areas in New England (Ewing et al. 2002; Smart Growth America 2014). Residential density is the most widely recognized indicator of sprawl. Spread-out suburban subdivisions are a hallmark of sprawl and can make it difficult to provide residents with adequate shopping or services or transportation alternatives. The northern portion of the New England region is more rural in character, with lower-density development and a higher percentage of forest cover and agricultural activities. Forested areas comprise the majority of land uses in Maine, New Hampshire, and Vermont, as well as significant portions of New York and Pennsylvania.

The Cleveland RLC also serves the states of New York, New Jersey, Pennsylvania, Delaware, Indiana, Michigan, and Ohio. New York and New Jersey contain a wide diversity of land use within their borders, including some of the most densely developed urban land in the country in and around New York City, New York, and Jersey City, New Jersey. The 2014 SGA study ranked these two cities as the two least sprawling cities. Elsewhere in the region, villages, towns, and other small communities give way to rural agricultural communities. Other urban centers such as Buffalo and Rochester, New York, have significant urbanization and development, although they are more isolated from other populous areas in the country. Buffalo is ranked as a less sprawling city, while Rochester is among the most sprawling (Smart Growth America 2014). Southern New Jersey and upstate New York have prevalent agricultural land uses and more rural, with upstate New York containing significant forest cover.

Pennsylvania also includes one major urban area within the southern portion of the northeast megalopolis, Philadelphia, and the older city is ranked among the least sprawling of the urban areas in the northeastern corridor (Smart Growth America 2014). The state is a mix of uses, with a strong agricultural presence and deciduous forest cover outside of the urban areas, in addition to lands used for mining and other extraction processes. Lancaster County, Pennsylvania is one of the few municipalities in the country that maintains a strict Urban Growth Boundary combined with strong agricultural zoning requirements (Greenbelt Alliance 2012). Forested areas also comprise a large percentage of land use.

There are several major cities in the midwestern portion of Cleveland's RLC operational jurisdiction, including Detroit, Michigan; Indianapolis, Indiana; and Columbus, Ohio. The area is known for both agriculture and manufacturing and has a wide range of land uses. Columbus and Indianapolis were both rated as sprawling while Detroit, which has undergone tremendous stress in recent years due to de-urbanization and the impacts of the economic crisis, rates as one of the most sprawling cities in the region (Smart Growth America 2014). There are large areas of crop agriculture observed in the lower portion of the region, as well as undisturbed areas containing wetlands and forests in the northern portion. Cropland is extensive in the Corn Belt, which includes Ohio and Indiana, and significant forested lands comprise the majority of land use in the rural areas of Michigan.

3.9.4.3 Denver Regional Loan Center

The operational jurisdiction of the Denver RLC includes Alaska, Colorado, Idaho, Montana, Oregon, Utah, Washington, and Wyoming. Although there are several major cities, including Seattle, Washington;

Portland, Oregon; Denver, Colorado; Boulder, Colorado; Salt Lake City, Utah; and Anchorage, Alaska, the region has a low population density overall and a corresponding low development density. While Portland is ranked among the least sprawling cities by the SGA study, Seattle was ranked at the median, and Anchorage was not part of the study (Ewing et al. 2002; Smart Growth America 2014). Denver and Boulder, Colorado; and Salt Lake City, Utah, are ranked as less sprawling cities according to the SGA study (Smart Growth America 2014). There are substantial public lands in several of these states, as well as extensive forest cover, primarily evergreen in Idaho, Oregon, Washington, and Alaska. There is a large presence of agricultural lands along the Columbia River, extending up into eastern Washington. Much of the area in Colorado, Montana, Utah, and Wyoming is agricultural, with grasslands, rangelands, and row crops. Mining and other extraction-based industrial land uses are prevalent, and the region is largely defined by the presence of the Rocky Mountains and extensive public lands in the form of national parks and recreation areas. The northern part of Alaska includes extensive tracts of undeveloped land concentrated in the northern part of the state, such as the National Petroleum Preserve (22.8 million acres), Arctic National Wildlife Refuge (9 million acres), and Gates of the Arctic National Park and Preserve (8.47 million acres) (Alaska Public Lands Information Centers 2016; NPS 2014b). The central and southern part of the state is characterized by very sparse development and large tracts of undeveloped land, such as the Denali National Park and Preserve (6 million acres), Koyukuk National Wildlife Refuge (15 million acres), Innoko National Wildlife Refuge (3.85 million acres), and Tongass National Forest (17 million acres) (Audubon Alaska 2016; NPS 2014b; USFWS 2015).

3.9.4.4 Houston Regional Loan Center

The operational jurisdiction of the Houston RLC includes Arkansas, Louisiana, Oklahoma, and Texas. Although the region contains several very large, major metropolitan areas, such as Houston, Dallas, and San Antonio, Texas; Tulsa, Oklahoma; New Orleans, Louisiana; and Little Rock, Arkansas, it is geographically diverse. The area is known for oil and gas development, cattle and agriculture, and tourism. The region includes dense development in New Orleans; sprawling development in Dallas, Fort Worth, Houston, and Tulsa; and less developed areas extending into the Gulf of Mexico and across west Texas. Forested lands, cropland, and/or grasslands/pasture/range are the major land uses in rural areas.

3.9.4.5 Phoenix Regional Loan Center

The operational jurisdiction of the Phoenix RLC includes Arizona, California, Hawaii, Nevada, New Mexico, and the Pacific Island Territories of American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands. This region is highly diverse, with several large urban centers such as Phoenix, Arizona; Honolulu, Hawaii; Los Angeles, San Diego, and San Francisco, California; Las Vegas, Nevada; and Albuquerque, New Mexico. Although most of these major cities ranked near the median in the 2002 study (Ewing et al. 2002), San Francisco was ranked as the second-least sprawling metropolitan area and Honolulu, Hawaii, was ranked as the 5th least sprawling metropolitan area in the 2014 study (Smart Growth America 2014). The continental portion of the region is punctuated by the Sierra Nevada mountain range, with large areas of public lands on either side; approximately 67 percent of Nevada's land base is owned by BLM (BLM 2013). New Mexico also has a large special land use policy used to

guide current and future distribution of land uses. As a result, large tracts of undeveloped land are prevalent throughout Nevada, Arizona, and California, with uses consisting of mineral extraction, habitat, and recreation. Central California is characterized primarily by agricultural land, with heavier forest cover toward the northern part of the state.

While there is a major concentration of developed urban land on Oahu, particularly in and around Honolulu, the Hawaiian Islands are not heavily developed overall. Agricultural land uses are prevalent on Kauai, Oahu, Maui, and Hawaii. Hawaii is focused heavily on tourism, so low- to moderate-density commercial development is found on all islands. The Pacific Island Territories of American Samoa, Guam, and the Northern Mariana Islands are primarily rural in character, with low-density residential and commercial development.

3.9.4.6 Roanoke Regional Loan Center

This region includes Kentucky, Maryland, Virginia, West Virginia, and the District of Columbia and includes the southernmost portion of the northeast megalopolis. This region also contains several major urban areas, including Washington, DC; Baltimore, Maryland; and Norfolk/Virginia Beach, Virginia. Washington, DC and Norfolk, Virginia are both somewhat more sprawling than the median in the SGA study. However, the older city of Baltimore was ranked among the least sprawling (Ewing et al. 2002; Smart Growth America 2014). The region is a mix of uses, with a strong agricultural presence and deciduous forest cover outside of the urban areas, in addition to lands used for mining and other extraction processes. Forested areas also comprise a large percentage of land use in Virginia and West Virginia.

3.9.4.7 St. Paul Regional Loan Center

This region covers the north central region of the United States, including the states of Illinois, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota, and Wisconsin. There are several major cities in the region, including Chicago, Illinois; Minneapolis-St. Paul, Minnesota; St. Louis, Missouri; Kansas City, Missouri; Wichita, Kansas; Lincoln, Nebraska; Omaha, Nebraska; and Milwaukee, Wisconsin. Chicago and Milwaukee are both relatively old, densely built cities with a strong urban core, whereas Minneapolis-St. Paul, St. Louis, Kansas City, and Wichita are slightly more sprawling than average. Omaha is ranked as the 6th least sprawling city in the 2002 SGA study, and the surrounding metropolitan area is less sprawling than average in the 2014 SGA study (Ewing et al. 2002; Smart Growth America 2014). The Omaha area is known for agriculture and has a wide range of land uses. Large areas of crop agriculture are observed in the lower portion of the region, as well as undisturbed areas containing wetlands and forests in the northern portion. Cropland is extensive in the Corn Belt, which includes Illinois and the Great Lake state of Minnesota. Much of North Dakota and South Dakota are grassland and rangeland. Forested lands are prevalent in Missouri and comprise the majority of land use in Minnesota and Wisconsin. Small, rural communities are prevalent, and population density is low overall in the operational jurisdiction of the St. Paul RLC.

3.9.4.8 St. Petersburg Regional Loan Center

The operational jurisdiction of the St. Petersburg RLC includes the states of Alabama, Florida, and Mississippi as well as the Commonwealth of Puerto Rico and the U.S. Virgin Islands. Similar to the area served by the Roanoke RLC, this region is more rural in character than the Northeast; however, there are several major urban centers, including Tampa (slightly below average for sprawl) and Miami (one of the most compact and connected cities) in Florida (Smart Growth America 2014). In general, the places where housing is most spread out include several medium-sized metropolitan areas in the southeast (e.g., Birmingham, Alabama). These are places where growth has mostly occurred during the automobile era and with no topographic- or water-related constraints that would resist development. The area contains a range of land uses. There is little high-density development outside of the major cities, and most suburban development is low- and medium-density residential. Other land uses include segregated commercial and industrial facilities and areas of agricultural use and forested lands; forested lands comprise over half of the land use in the southeastern United States (Ewing et al. 2002). No cities from Puerto Rico or the U.S. Virgin Islands were included in the SGA report on urban sprawl. Developed lands and urban centers within Puerto Rico and the U.S. Virgin Islands are primarily located along the coastal plains while the interior of the islands increases in topography and are primarily rural and forested (CIA 2019, Wang et al. 2016).

3.10 NOISE

This section describes noise conditions of the United States and its Territories to include a description of the resource, applicable statutes and regulations, and the existing condition of noise on a nationwide scale.

3.10.1 Description 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. Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise intrusive. Human response to noise varies depending on the type and characteristics of the noise, distance between noise source and receptor, receptor sensitivity, and time of day. Noise is often generated by activities essential to a community's quality of life, such as construction or vehicular traffic.

Table 3.10-1 presents examples of common sound pressure levels expressed in the A-weighted scale to account for how the human ear perceives sound. The threshold for humans perceiving a change in noise levels is approximately 3 decibels (dB). A change of 5 dB is considered to be clearly noticeable, and a change of 10 dB would be perceived as an approximate doubling (or halving) of the noise level (MPCA 1999). Table 3.10-2 provides additional information about human perceptions of changes in sound levels.

Table 3.10-1. Examples of Common Sound Levels

Outdoor	Sound Level (dBA)	Indoor
Motorcycle	100	Subway train
Tractor	90	Garbage disposal
Noisy restaurant	85	Blender
Downtown (large city)	80	Ringling telephone
Freeway traffic	70	TV audio
Normal conversation	60	Sewing machine
Rainfall	50	Refrigerator
Quiet residential area	40	Library

Source: Harris 1998
dBA = A-weighted decibel

Table 3.10-2. Perceived Change in Decibel Level

Change in Sound Level	Perceived Change to the Human Ear
± 1 dB	Not perceptible
± 3 dB	Threshold of perceptible change
± 5 dB	Clearly noticeable change
± 10 dB	Twice (or half) as loud
± 20 dB	Fourfold (4x) change

Source: MPCA 1999
 dB = decibel

Ambient or background noise is a combination of various sources heard simultaneously. Calculating noise levels for combinations of sounds does not involve simple addition, but instead uses the logarithmic scale (HUD 1985). As a result, the addition of two noises, such as a garbage truck (100 A-weighted decibel [dBA]) and a lawn mower (95 dBA), would result in a cumulative sound level of 101.2 dBA, not 195 dBA.

Noise levels decrease (attenuate) with distance from the source. The decrease in sound level from any single noise source normally follows the “inverse square law.” That is, the sound level change is inversely proportional to the square of the distance from the sound source. A generally accepted rule is that the sound level from a stationary source would drop approximately 6 dB each time the distance from the sound source is doubled. Sound level from a moving “line” source (e.g., a train or vehicle) would drop 3 dB each time the distance from the source is doubled (USDOT 2006).

Barriers, both manmade (e.g., sound walls) and natural (e.g., forested areas, hills) may reduce noise levels, as may other natural factors, such as temperature and climate. Additionally, standard buildings typically provide approximately 15 dB of noise reduction between exterior and interior noise levels (USEPA 1978). Noise generated by stationary and mobile sources has the potential to impact sensitive noise receptors, such as residences, hospitals, schools and churches. Persistent and escalating sources of sound can often be considered annoyances and can interfere with normal activities, such as sleeping or conversation, such that these sounds could disrupt or diminish quality of life. In 1974, the USEPA provided information suggesting that a 24-hour equivalent sound level (Leq(24)) of 70 dB is the level above which environmental noise could cause hearing loss if heard consistently over several years. A day-night average sound level (Ldn) of 55 dB outdoors and 45 dB indoors is the threshold above which noise could cause interference or annoyance (USEPA 1974).

3.10.2 Applicable Statutes, Regulations, and Terminology

Table 3.10-3 summaries applicable statutes, regulations, and terminology governing noise.

Table 3.10-3. Noise Statutes, Regulations, and Terminology

Statute, Regulation, or Term	Description
A-Weighted Decibel Scale (dBA)	Often used to describe the sound pressure levels that account for how the human ear responds to different frequencies and perceives sound.
Day-Night Average Sound Level (Ldn)	The Ldn is the 24-hour Leq, but with a 10-dB penalty added to nighttime (10 p.m. to 7 a.m.) noise levels to reflect the greater intrusiveness of noise experienced during this time.
Decibel (dB)	Sound pressure level measurement of intensity. The decibel is a logarithmic unit that expresses the ratio of a sound pressure level to a standard reference level.
Equivalent Sound Level (Leq)	The Leq represents the average sound energy over a given period, presented in decibels.
Hertz	Measurement of frequency or pitch in cycles per second. The typical human ear can hear frequencies ranging from approximately 20 hertz to 20,000 hertz. Typically, the human ear is most sensitive to sounds in the middle frequencies where speech is found and is less sensitive to sounds in the low and high frequencies.
Noise Control Act of 1972 (42 USC 4901 et seq)	Establishes a national policy to promote an environment for all Americans free from noise that jeopardizes their health and welfare. The Noise Control Act also serves to (1) establish a means for effective coordination of federal research and activities in noise control; (2) authorize the establishment of federal noise emission standards for products distributed in commerce; and (3) provide information to members of the public respecting the noise emission and noise reduction characteristics of such products. While primary responsibility for control of noise rests with state and local governments, federal action is essential to deal with major noise sources in commerce, control of which require national uniformity of treatment.
Sensitive Receptor	A location or land use associated with indoor or outdoor areas inhabited by humans or wildlife that may be subject to interference from noise (i.e., nearby residences, schools, hospitals, nursing home facilities, and recreational areas).

dB = decibel; dBA = A-weighted decibel; Ldn = day-night average sound level; Leq = equivalent sound level; USC = United States Code

3.10.3 Existing Conditions

This section describes the existing conditions for noise using a nationwide approach, to the extent practical. Many sources of noise are commonly encountered in daily life, including road and air traffic, construction activities and equipment, manufacturing processes, and household activities.

Unit of Analysis
VA Regional Loan Centers

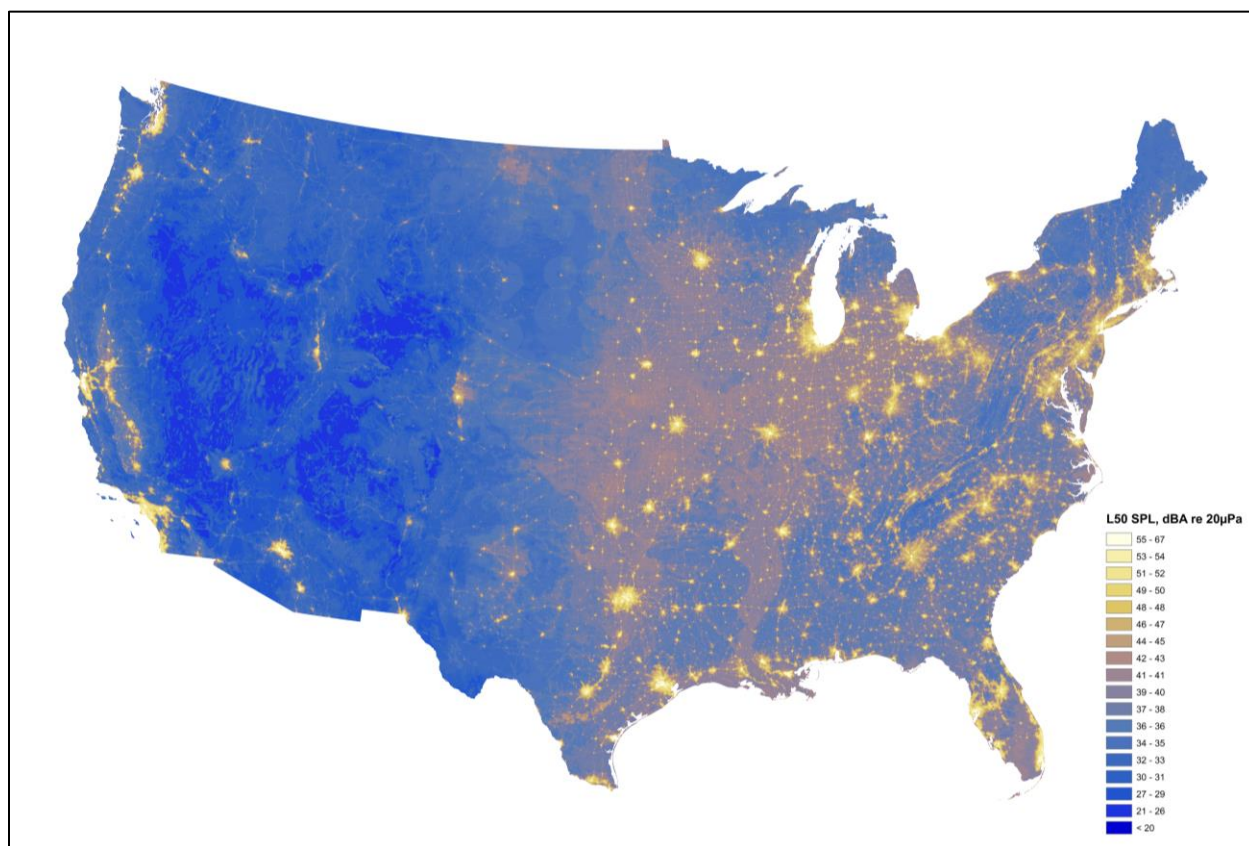
Noise can interfere with natural sounds and can negatively affect the health and well-being of both humans and wildlife.

The effects of noise can be immediate or latent as a result of long-term exposure. Response to noise can vary, depending on the type and characteristics of the noise, time of day, level of noise, distance between the receptor and noise source, and the receptor’s sensitivity. Noise-related concerns for

humans are typically hearing impairment or hearing loss, stress, high blood pressure, distraction and loss of productivity, and reduction in the quality of life (Noise Pollution Clearinghouse 2018).

For wildlife, noise can disrupt feeding and foraging, migration, and nesting. Animals depend on hearing natural sounds in the environment for a range of activities, including communication, establishing territories, finding habitat, courting and mating, raising families, finding food, avoiding predators, and protecting the young (NPS 2018c). Noise can be particularly harmful to animals that have sensitive ears, such as bats.

The NPS conducted a study of current sound levels in the United States. Scientists made long-term measurements of sounds at parks, urban areas, and rural areas across the country. A model was developed to understand relationships between measured sound levels and variables such as climate, topography, human activity, time of day, and day of year. The research resulted in a map of existing noise conditions across the United States (refer to Figure 3.10-1). All the yellow areas on the map, which indicate higher levels of noise, coincide with cities. It should not be surprising that cities with denser population and infrastructure are characterized by higher levels of noise than rural areas.



Source: NPS 2018d

dBA = A-weighted decibel; L50 SPL = median sound pressure level

Figure 3.10-1. Existing Noise Conditions in the United States

3.11 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

This section describes socioeconomic and environmental justice conditions for the United States and its Territories to include a description of the resource, applicable statutes and regulations, and the existing conditions of socioeconomic and environmental justice on a nationwide scale.

3.11.1 Description of the Resource

Socioeconomic conditions are the combination of social and economic factors that describe the human environment and define the society affected by VA's HLP. These factors generally include population, demography, housing, employment, and income characteristics. Socioeconomic indicators such as measures of racial diversity, minority populations, and populations below poverty level are also necessary to describe the community subject to HLP administration and provide context to understand the program's impact (either beneficial or adverse) on that community, including potential environmental justice impacts. Environmental justice pertains to the objective of identifying and addressing federal actions that may have a disproportionately high and adverse human health or environmental effect on minority or low-income populations.

3.11.2 Applicable Statutes, Regulations, and Terminology

There are no specific federal laws that direct the analysis of impacts on socioeconomic conditions from federal actions under NEPA. State laws and local building codes may specify building requirements related to local and regional hazards, such as the potential for flooding, earthquakes, mudslides, tornadoes, hurricanes, wildfires, and other geologic and weather-related conditions. These factors may limit the location of housing and mandate building standards that affect comparative housing costs within states, geographic regions, and throughout the country. Because of the scope and breadth of building codes nationwide, the analysis in this PEIS is limited to describing the kinds of hazards occurring regionally, the kinds of building codes implemented to address the hazards, and the general effects the building codes have on the regional costs of housing.

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," issued on February 16, 1994, focused attention on the environmental and human health effects of federal actions on those populations with the goal of achieving environmental protection for all communities. The Executive Order directs federal agencies to identify and address the disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations to the greatest extent practicable and permitted by law. The USEPA issued "Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses" in April 1998, which serves as the principal guidance for the analysis of environmental justice considerations in this PEIS.

3.11.3 Existing Conditions

This section describes the existing conditions for socioeconomics and environmental justice throughout the United States and its Territories.

VA RLC zones were selected as the unit of analysis, and Section 3.0.1 has a more detailed discussion and figure of VA’s RLC zones.

Unit of Analysis
VA Regional Loan Centers

3.11.3.1 Nationwide Demography

Table 3.11-1 summarizes key population and demographic data for the United States as a whole. Based on data from the USCB, the table lists the most recent population estimates, the average annual change in population from 2010 to 2017 and from 2000 to 2010, the median age of the population, distribution of males and females, and the percentage of Veterans in the total population aged 18 and older.

Table 3.11-1. Nationwide Population and Demography

Characteristic	United States
Total Population (July 2017)	325,719,178
Average Annual Change (2010–2017)	0.76%
Average Annual Change (2000–2010)	0.97%
Median Age (2016)	37.9
Veterans in Population Aged 18+ (2017)	8.1%
Distribution by Sex (2016)	
Male	49.2%
Female	50.8%
Racial Composition (2016) ^a	
White	72.6%
Black or African American	12.7%
American Indian or Native Alaskan	0.8%
Asian	5.4%
Native Hawaiian or Pacific Islander	0.2%
Other Race	5.1%
Two or More Races	3.2%
Hispanic or Latino, Any Race (2016)	17.8%
Percentage of Minorities (2016) ^b	38.9%
Percentage of Minorities (2010) ^b	36.3%

Source: USCB 2018a, 2018b, 2018c, 2018d, 2018e; VA 2019 (VA population data as of 9/30/17)

^a. Racial composition includes all individuals of Hispanic or Latino heritage.

^b. Minorities for purposes of environmental justice include all Hispanic or Latino individuals of any race and all non-Hispanic or Latino individuals of any race except white.

As summarized in the table, the U.S. population passed the 325 million mark in 2017, although the average annual growth rate has slowed to 0.76 percent since 2010 compared to nearly 1 percent annually between 2000 and 2010. As a consequence, the nationwide population has aged since the 2000 census, when the median age was 35.3 years. The distribution of sexes has remained relatively stable since the 2000 census at roughly 51 percent female to 49 percent male. The proportion of Veterans in the nationwide population aged 18 and older is currently 8.1 percent. This drop can be attributed to the deaths of many World War II Veterans since that time.

Nationwide, the proportion of minorities has increased to nearly 39 percent of the population compared to 36.3 percent in 2010 and nearly 31 percent in 2000. The Hispanic or Latino ethnic group now constitutes the largest proportion of the minority population compared to 2000, when the proportions of Blacks or African Americans and Hispanics or Latinos were closer.

3.11.3.2 Regional Demography

The following discussions along with the data presented in Tables D-1 through D-8 in Appendix D, Socioeconomic Data by RLC, provide a baseline for comparison with the states and territories overseen by the respective RLCs regarding the rates of population change, the relative population age, the distribution by sex, and the relative size of the Veteran population in the jurisdictions served by VA's HLP.

The tables also summarize the racial compositions and the proportions of Hispanic and Latino ethnic groups within each jurisdiction for purposes of establishing baseline conditions applicable to the assessment of environmental justice considerations. For the purposes of environmental justice, a minority population is defined by individuals within any of the principal racial categories recorded by the USCB as well as within the Hispanic and Latino ethnic group regardless of race. The tables therefore list the most recent proportion of all defined minorities within the respective jurisdictions and the proportions that existed at the 2010 census for comparison.

Atlanta Regional Loan Center Demography

Among the four states served by the Atlanta RLC, Georgia and North Carolina are the most populous and comparable in population size and growth characteristics. South Carolina and Tennessee are less populous and comparable in population size, but South Carolina is currently the fastest growing state in the region. All four states have experienced a slowing of average annual growth compared to the rates between 2000 and 2010, but they continue to grow faster than the national average. All four states also have higher proportions of Veterans in their populations than the United States as a whole, and the proportions of females in the populations are higher than the national distribution. Of the four, only Georgia has a median population age lower than the national median age.

All four states have higher proportions of Blacks or African Americans and lower proportions of Hispanics or Latinos in their populations than the national distributions. Among the four states, only Georgia has a minority population that is a higher proportion than the nationwide distribution. While

the minority populations have increased in proportion for all four states since 2010, the percentages in South Carolina remained the most stable. See Table D-1 in Appendix D, Socioeconomic Data by RLC, for population and demography data specific to the Atlanta RLC.

Cleveland Regional Loan Center Demography

The region served by the Cleveland RLC has the largest number of states and the highest total population by far. The 13 states range in population size from relatively sparse Vermont and Delaware to very populous New York. However, only Delaware has experienced growth rates exceeding the national averages from 2000 to 2010 and 2010 to 2017. Most of the other states have experienced very slow average annual growth in comparison to national rates, and both Vermont, since 2010, and Michigan, from 2000 to 2010, lost population on average. Also, aside from Indiana, all of the states in the region have older populations than the nation as a whole. Among the 13 states, Maine, New Hampshire, Delaware, and Ohio have higher percentages of Veterans than the national distribution, while New York, New Jersey, and Massachusetts have substantially lower percentages of Veterans than the national average.

The 13 states in the region display a wide variability in minority distributions. New York and New Jersey have the highest percentages of minorities in their populations at 44.5 percent each, which is substantially above the nationwide distribution. Aside from these two states, the others have proportions of minorities lower than the nationwide distribution, including very low percentages of minorities in Maine, Vermont, and New Hampshire. However, as in the case of the nationwide trend, all of the states in the region continue to experience increases in their minority distributions. See Table D-2 in Appendix D, Socioeconomic Data by RLC, for population and demography data specific to the Cleveland RLC.

Denver Regional Loan Center Demography

The eight states served by the Denver RLC are large geographically, including Alaska and Montana, but they range widely in population from Wyoming to Washington. Also, all of the states, except Alaska and Wyoming, have grown at higher average annual rates than the nation as a whole. The populations in Utah and Alaska are substantially younger than the national median age, while Montana and Oregon are older. The other states have median ages that are comparable to the United States. Also, the states in this region buck the national trend in distribution by sex. Five of the eight states have more males than females, and the other three have distributions that are more balanced than the national distribution. Led by Alaska, Wyoming, and Montana, the region also has higher proportions of Veterans than the national average, with the exception of Utah.

Aside from Alaska, the states in this region have lower percentages of minorities than the national distribution. As in the case of the national trend, the minority populations in all eight states continue to increase in percentage of total population. See Table D-3 in Appendix D, Socioeconomic Data by RLC, for population and demography data specific to the Denver RLC.

Houston Regional Loan Center Demography

Texas is both the largest and most populous of the four states in the region served by the Houston RLC. The other three states are more comparable in population. Texas is also the only state in the region growing at a faster rate than the national average since 2000, and that rate of growth is more than double the national rate. All four states have distributions of males and females that are comparable to the national average. Only Arkansas has a median age older than the national median, while Texas has a median age considerably younger than the national median. Oklahoma and Arkansas have proportions of civilian Veterans in the population that are greater than the national distribution.

Arkansas and Oklahoma have lower percentages of minority populations than the national distribution, while Texas and Louisiana have much higher percentages of minorities than the United States. In fact, Texas is now among several states that are considered “majority minority” states, in which the minority population exceeds 50 percent of the total. In Texas, the high percentage of minorities is driven by the Hispanic or Latino population; in Louisiana, the high percentage is driven by the Black or African American population. Consistent with the national trend, the minority distributions in all four states increased since 2010. See Table D-4 in Appendix D, Socioeconomic Data by RLC, for population and demography data specific to the Houston RLC.

Phoenix Regional Loan Center Demography

California dominates the region served by the Phoenix RLC in size and population. All of the states in this RLC’s jurisdiction are growing faster than the national rate, led by Nevada and Arizona, which currently have the highest rates of population growth in the nation. In comparison, populations in the Pacific Island Territories are very low in contrast to the states, and the Pacific Island Territories have either lost population since 2000 (American Samoa and the Commonwealth of the Northern Marianas) or grown at a very low rate (Guam). Note that the data for Hawaii and the three Pacific Island Territories served by the Phoenix office are limited to the 2010 census and estimates of growth are based on comparison between 2000 and 2010. All the states except California and Hawaii have median ages comparable to the national median, with Hawaii’s median age higher than the national median and California’s population and that of the Pacific Island Territories somewhat younger than the others. Aside from Nevada, Hawaii, and the Pacific Island Territories, which have a slight majority of males, the states have distributions of sexes comparable to the national distribution. Other than California, the states have higher proportions of Veterans in their populations than the national percentage. Hawaii’s Veterans population is substantially higher than the national percentage, and Guam has a percentage of Veterans comparable to the national average, while the other two Pacific Island Territories have lower percentages of Veterans.

All of the states in this region have percentages of minorities in their populations that are significantly higher than the national average and all except Arizona are now “majority minority” states. In four states, the minority populations are driven by the percentages of Hispanics or Latinos. Hawaii’s minority population is driven by its Asian and multiracial populations, and American Samoa’s minority population

is driven by its Pacific Islander population while the other two Pacific Island Territories have high Asian and Pacific Islander populations attributable to the regional heritage. As in the case of the national trend, the minority populations in all four states continue to grow. See Table D-5 in Appendix D, Socioeconomic Data by RLC, for population and demography data specific to the Phoenix RLC.

Roanoke Regional Loan Center Demography

The states in the region served by the Roanoke RLC have grown at rates generally below the national average. The District of Columbia has experienced a higher rate of growth since 2010 as a result of urban redevelopment projects; Virginia has grown at slightly faster rates than the national averages; but West Virginia has lost population since 2010. Led by West Virginia, the states are experiencing aging populations indicated by median ages higher than the national average; the District of Columbia is the youthful exception. The distributions by sex are comparable to the national distributions, although the percentage of females in the District of Columbia is among the highest in the country. Led by Virginia, and excluding the District of Columbia, the states have higher proportions of civilian Veterans than the national percentage.

The jurisdictions in this region have a wide range of minority distributions in their populations. West Virginia has the lowest percentage, which is among the lowest in the nation, and Kentucky has a minority distribution also lower than the national average. The District of Columbia has a “majority minority” population, while Maryland also has a percentage of minorities higher than the national average. Virginia’s minority percentage is comparable to the national distribution. In all cases, the percentages of minorities have increased since 2010. See Table D-6 in Appendix D, Socioeconomic Data by RLC, for population and demography data specific to the Roanoke RLC.

St. Paul Regional Loan Center Demography

With the exception of both Dakotas, all of the states within the region served by the St. Paul RLC have grown at slower rates than the national average, and Illinois has lost population since 2010. Both Dakotas also bucked the national trend with higher proportions of males than females, while the other states have distributions of sexes comparable to the national distribution. The states generally have median ages of the population comparable to the national median, although North Dakota has a younger population and Wisconsin an older population based on median age. The percentages of Veterans in the populations are generally comparable to the national percentage, but with South Dakota and Missouri showing markedly higher percentages and Illinois markedly lower.

With the exception of Illinois, which has a percentage of minorities comparable to the national distribution, all of the states in the region have percentages of minorities substantially below the national percentage. In all cases, the percentages of minorities have increased since 2010. See Table D-7 in Appendix D, Socioeconomic Data by RLC, for population and demography data specific to the St. Paul RLC.

St. Petersburg Regional Loan Center Demography

The St. Petersburg RLC serves three states and the Caribbean Territories of the Commonwealth of Puerto Rico and the U.S. Virgin Islands. The census data for the U.S. Virgin Islands is more limited than the data available for the states and Puerto Rico. Florida is the most populous state in the region and has also grown at average annual rates significantly higher than the national averages since 2000. Alabama and Mississippi have grown at slower rates than the national averages, while Puerto Rico and the U.S. Virgin Islands have lost population. Other than Mississippi, the jurisdictions in this region have populations with median ages older than the national median age. Florida's median population age reflects its status as a retirement destination. All of the jurisdictions, especially the two Caribbean Territories, have higher percentages of females in their populations than the national distribution. The three states also have higher percentages of Veterans in the population than the national average, while both Caribbean Territories have lower percentages.

Other than Alabama, all of the jurisdictions have percentages of minorities greater than the national percentage. In particular, because of its Spanish heritage, Puerto Rico has a minority percentage approaching 100 percent, and the U.S. Virgin Islands has a large population of African descendants. Florida's minority population is driven by its Hispanic or Latino population; Mississippi's is driven by its Black or African American population. In all cases, the percentages of minorities have increased since 2010. See Table D-8 in Appendix D, Socioeconomic Data by RLC, for population and demography data specific to the St. Petersburg RLC.

3.11.3.3 Nationwide Economic and Employment Characteristics

Table 3.11-2 summarizes data about economic and employment conditions for the United States as a whole. The table lists data that are most relevant to the analysis of VA HLP activities, including proportions of the population aged 16 and older in military service and civilian employment, the unemployment rate, median family and per capita incomes, poverty rates, and distributions of civilian employment by occupation type based on data from the latest (2016) USCB American Community Survey. These data provide a baseline for comparison with the states and territories overseen by the respective RLCs regarding employment and income characteristics in the jurisdictions served by VA's HLP.

The poverty data provide information about low-income populations for the assessment of environmental justice considerations. For the purposes of environmental justice, a low-income population is defined by families and individuals with incomes below USCB poverty levels established in accordance with the Office of Management and Budget's Statistical Policy Directive 14.

As summarized in Table 3.11-2, 0.4 percent of the U.S. population aged 16 and older was serving in the military in 2016, representing approximately 1,032,000 individuals. Of the remaining adult population, nearly 60 percent were employed in the civilian labor force, 37 percent were not in the labor force, and 3.6 percent were unemployed. The nationwide unemployment rate was 5.8 percent and has continued to decline since the Great Recession of 2007-2009.

The largest percentage of the civilian workforce (37.6 percent) was employed in management, business, science, and the arts. Sales and office occupations employed 23.3 percent of the civilian workforce, and service occupations employed 18.1 percent. Employment in natural resources, construction, and maintenance occupations was lowest (8.8 percent). Employment in production, transportation, and material moving was next lowest at 12.2 percent.

The U.S. median family income in 2016 was slightly above \$71,000, and the per capita income was approximately \$31,000. Income disparities resulted in 10 percent of families and 14 percent of individuals with incomes below poverty levels nationwide in 2016.

Table 3.11-2. Nationwide Economy and Employment (2016)

Characteristic	United States
Population 16 years and older	257,950,721
In Armed Forces	0.4%
Employed in civilian labor force	59.1%
Not in labor force	36.9%
Unemployed	3.6%
Unemployment rate	5.8%
Income	
Median family	\$71,062
Individual per capita	\$31,128
Poverty rates	
Families below poverty level	10.0%
Individuals below poverty level	14.0%
Civilian employment by occupation	
Management, business, science, and arts	37.6%
Service occupations	18.1%
Sales and office occupations	23.3%
Natural resources, construction, maintenance	8.8%
Production, transportation, material moving	12.2%

Source: USCB 2018b

3.11.3.4 Regional Economy and Employment

The following discussions along with the data presented in Tables D-9 through D-16 in Appendix D, Socioeconomic Data by RLC, summarize economic and employment characteristics of the states within each of the regions served by the RLCs.

Atlanta Regional Loan Center Economy and Employment

In general, all four states served by the Atlanta RLC showed employment characteristics comparable to the U.S. distributions. Georgia and the Carolinas had slightly higher unemployment rates and percentages of individuals active in the armed services than the national averages, while Tennessee had a comparable percentage of people in active military service and a lower unemployment rate than the United States.

Overall, the mix of occupations in the four states was comparable to the nation as a whole in 2016, with small variations in the percentages. Tennessee and South Carolina had the highest proportions of employees in production, transportation, and material moving in the region and the lowest proportions of employees in management, business, science, and arts occupations.

All four states had median family incomes and per capita incomes lower than the national values in 2016. Correspondingly, all four states had higher percentages of families and individuals with incomes below poverty levels than the national rates, with Georgia leading. See Table D-9 in Appendix D, Socioeconomic Data by RLC, for economy and employment data specific to the Atlanta RLC.

Cleveland Regional Loan Center Economy and Employment

The economic and employment characteristics of the 13 states served by the Cleveland RLC indicate considerable variability in conditions among the states, particularly with respect to the unemployment rates. Connecticut and Michigan recorded unemployment rates significantly higher than the national rate, while New Hampshire, Vermont, Maine, and Indiana recorded substantially lower rates. The other seven states experienced unemployment rates comparable to the national average. States in the region had lower percentages of the population aged 16 and older in the armed services than the national average except Rhode Island, which had a percentage in military service equal to the national average. Otherwise, labor force distributions in the region were generally comparable to the national distribution for individuals employed, unemployed, and not in the labor force.

Several of the northeastern states, led by Massachusetts, Connecticut, and New Jersey, had higher percentages of employees in management, business, science, and arts occupations than the national percentage, which reflects the large corporate presence in these states. Indiana, Ohio, and Michigan had higher percentages of employees in production, transportation, and material moving than the national percentage, reflecting the large manufacturing base in these states. Otherwise, distributions by occupation in the region were generally comparable to the national distribution in 2016.

The northeastern states in the region generally recorded higher median family and per capita incomes than the national averages. In particular, the median family incomes in Massachusetts, New Jersey, and

Connecticut were more than \$20,000 higher than the national median. In contrast, median family incomes in Indiana, Ohio, and Michigan were lower than the national median. The other states in the region had median family incomes closer to the national median. New York, Ohio, Michigan, and Indiana had poverty rates comparable to the national averages, while all other states in the region experienced lower poverty levels than the national averages in 2016. See Table D-10 in Appendix D, Socioeconomic Data by RLC, for economy and employment data specific to the Cleveland RLC.

Denver Regional Loan Center Economy and Employment

Half of the states served by the Denver RLC, led by Utah, experienced substantially lower unemployment rates than the national average in 2016. Only Alaska experienced a substantially higher unemployment rate than the nation. The other states (Oregon, Wyoming, and Washington) had unemployment rates comparable to the national rate. Also, Alaska had a much higher percentage of the population aged 16 and older in military service than the national percentage, Colorado and Washington had percentages in military service that were double the national percentage, while the remaining five states had percentages in military service near or below the national percentage. Alaska and Utah had percentages of the population not in the labor force considerably lower than the national percentage. Otherwise, labor force distributions in the region were generally comparable to the national distribution for employed, unemployed, and not in the labor force.

Among the eight states in the region, Colorado and Washington had percentages of the civilian work force employed in management, business, science, and arts occupations that were considerably higher than the national percentage, while Wyoming had a percentage in these occupations that was lower than the national average. Not surprisingly, most of these western states also had higher percentages of the civilian labor force employed in natural resources, construction, and maintenance occupations than the nation as a whole. Otherwise, distributions by occupation in the region were generally comparable to the national distribution in 2016.

Alaska, Washington, and Colorado recorded median family incomes about \$10,000 or more higher than the national median, while Idaho and Montana had median family incomes considerably below the national median. The other states recorded median family and per capita incomes more comparable to the national values. Aside from Idaho, which recorded poverty rates comparable to the national rates for families and individuals, the other states in the region experienced considerably lower poverty levels than the nation as a whole. See Table D-11 in Appendix D, Socioeconomic Data by RLC, for economy and employment data specific to the Denver RLC.

Houston Regional Loan Center Economy and Employment

Within the region served by the Houston RLC, Arkansas experienced an unemployment rate lower than the national rate in 2016; Louisiana experienced a higher rate; and Oklahoma and Texas experienced rates comparable to the national rate. Arkansas had a percentage of population in military service that was half the national percentage; the other three states had percentages comparable to the nation.

Arkansas, Louisiana, and Oklahoma also had larger percentages of the adult population not in the work force than the national average.

All four states had noticeably higher percentages of the civilian labor force employed in natural resources, construction, and maintenance occupations than the national percentage. All four states also had lower percentages of the civilian labor force in management, business, science, and arts occupations than the nation. Arkansas had a higher percentage of employees in production, transportation, and material moving occupations than the nation as a whole. Other distributions by occupation were more comparable to the national distribution.

Median family incomes in the four states were lower than the national value. Other than Texas, the states were lower by \$10,000 or more. Per capita incomes likewise were lower than the national value by \$5,000 or more, except in Texas. The states in the region recorded correspondingly higher poverty levels for families and individuals, led by Louisiana, which experienced rates 5 percentage points higher than the national rates. See Table D-12 in Appendix D, Socioeconomic Data by RLC, for economy and employment data specific to the Houston RLC.

Phoenix Regional Loan Center Economy and Employment

Four of the states and the three Pacific Island Territories in the region served by the Phoenix RLC, led by New Mexico, experienced higher unemployment rates than the national rate (U.S. Territory data based on 2010 data). The unemployment rate in Hawaii in 2016 was substantially lower than the national average. New Mexico and Arizona also recorded markedly higher percentages of their adult populations not in the work force compared to the national average. The four states recorded percentages of the adult population in the Armed Forces generally comparable to the nation as a whole.

California had the highest percentage of employees in management, business, science, and arts occupations among the states in the region; Nevada and the three Pacific Island Territories had the lowest percentage for these occupations in the region.

Nevada also had a substantially higher percentage of the civilian labor force employed in service occupations than the national average, more than 8 percentage points higher. New Mexico and the three Pacific Island Territories had the highest proportion of employees in natural resources, construction, and maintenance occupations. New Mexico also had the lowest proportion of employees in production, transportation, and material moving of the states in the region while American Samoa had the highest percentage of employment in this sector.

With the exception of California and Hawaii, median family incomes and per capita incomes in the states and the three Pacific Island Territories were markedly lower than the national values. New Mexico in particular recorded a median family income \$15,000 lower than the national value and a per capita income \$6,000 lower than the national value. Incomes in American Samoa and the Northern Mariana Islands were especially low, based on data from the 2010 census. Despite the generally lower incomes in three of the states, only New Mexico experienced poverty levels that were substantially higher than

the national levels, by 5 percentage points both for families and individuals. Poverty rates in the three Pacific Island Territories were extremely high in comparison to the national average rates for families and individuals. See Table D-13 in Appendix D, Socioeconomic Data by RLC, for economy and employment data specific to the Phoenix RLC.

Roanoke Regional Loan Center Economy and Employment

There is wide variation in economic and employment conditions among the five jurisdictions in the region served by the Roanoke RLC. Unemployment rates were highest in West Virginia and the District of Columbia—substantially higher than the nationwide rate in 2016. The unemployment rate in Virginia was markedly lower than the national rate; Maryland and Kentucky were comparable to the national rate. West Virginia and Kentucky also recorded markedly higher percentages of individuals not in the work force compared to the national average; the District of Columbia and Maryland had markedly lower percentages. Virginia had the highest percentage of individuals in the armed services (4 times the national percentage), while West Virginia had the lowest percentage (one quarter the national percentage) in the region.

The jurisdictions experienced wide variations in the distributions of employment by occupation. The District of Columbia, Maryland, and Virginia recorded substantially higher percentages of workers in management, business, science, and arts occupations than the national percentage, while West Virginia and Kentucky recorded much lower percentages. The District of Columbia, Maryland, and Virginia also had lower percentages of employees in production, transportation, and material moving occupations than the nation, while Kentucky had higher percentages.

Incomes also varied widely among the jurisdictions in this region. The District of Columbia and Maryland led the field with median family incomes generally \$25,000 higher than the nation as a whole. Conversely, West Virginia and Kentucky recorded median family incomes more than \$10,000 lower than the national value. However, regardless of its high median family and per capita incomes, the District of Columbia had poverty levels substantially higher than the national averages for families and individuals, along with Kentucky and West Virginia. See Table D-14 in Appendix D, Socioeconomic Data by RLC, for economy and employment data specific to the Roanoke RLC.

St. Paul Regional Loan Center Economy and Employment

All of the nine states served by the St. Paul RLC, aside from Illinois, were marked by lower unemployment rates than the nation in 2016. All of the states also had lower percentages of their populations not in the work force. North Dakota and Kansas had higher percentages of their working populations in the Armed Forces than the national average; the other states were comparable or lower than the national percentage.

The states in this region generally showed distributions of employment by occupations that were more similar than among states in other regions and more comparable to the nation as a whole with a few exceptions. Percentages in service occupations were consistently lower than the national percentage,

and percentages in production, transportation, and material moving occupations were consistently higher. The Dakotas also recorded markedly high percentages of workers employed in natural resources, construction, and maintenance occupations compared to the national average.

Incomes in the states of this region also displayed less variability than found among states in other regions. The highest family income (in Minnesota) and the lowest (in Missouri) differed by approximately \$18,000. Aside from Missouri, all the states in the region had median incomes comparable to or greater than the national median. Likewise, all of the states in this region recorded poverty rates below the national level, with Missouri and Illinois closest to the national rates. See Table D-15 in Appendix D, Socioeconomic Data by RLC, for economy and employment data specific to the St. Paul RLC.

St. Petersburg Regional Loan Center Economy and Employment

All five jurisdictions in this region served by the St. Petersburg RLC experienced unemployment rates higher than the national average, and all except the U.S. Virgin Islands had higher percentages of their populations not in the work force compared to the nation as a whole. Note that data for the U.S. Virgin Islands were available from the 2010 census only. Aside from Puerto Rico, the jurisdictions also had percentages of their populations in the Armed Forces comparable to the national average.

All of the regional jurisdictions had markedly lower percentages of the civilian work force employed in management, business, science, and arts occupations than the national percentage, and all had higher percentages employed in natural resources, construction, and maintenance occupations. Mississippi, Alabama, and Puerto Rico also had higher percentages of employment in production, transportation, and material moving than the national percentage.

Median family incomes in all five jurisdictions were at least \$10,000 lower than the national value, and per capita incomes were also substantially lower. Incomes in Puerto Rico, both median family and per capita, were extremely low in comparison to the national values. Aside from Florida, which recorded poverty rates for families and individuals comparable to national levels, the jurisdictions recorded much higher poverty levels for families and individuals than the nation. The poverty rate for families in Puerto Rico was nearly four times the national level in 2016. See Table D-16 in Appendix D, Socioeconomic Data by RLC, for economy and employment data specific to the St. Petersburg RLC.

3.11.3.5 Nationwide Housing Characteristics

Table 3.11-3 summarizes data on housing conditions for the United States as a whole. Housing conditions are important factors related to VA HLP activities. The table summarizes the number of occupied housing units, the distribution between owner-occupied and renter-occupied units, housing vacancy rates, the distribution of housing by year built, average household sizes, median housing value, median monthly owner costs with a mortgage, numbers of housing units with a mortgage, and percentage of units with a mortgage value greater than 30 percent of household income.

As summarized in Table 3.11-3, the United States had nearly 119 million occupied housing units in 2016 and a housing vacancy rate of 12.4 percent. Nearly two thirds of occupied housing units were owner-occupied. More than half of the homes in the United States were built in the final 40 years of the 20th century and more than a quarter were built before 1960. The average household size of owner-occupied housing was 2.72 persons, and the average household size for renter-occupied housing was lower, at 2.53 persons.

The median value of owner-occupied housing throughout the United States was \$205,000 in 2016. More than 47 million housing units had a mortgage, and the median monthly owner costs with a mortgage were \$1,486. Approximately two in seven units had mortgages that consumed 30 percent or more of household income.

Table 3.11-3. Nationwide Housing Characteristics (2016)

Characteristic	United States
Occupied housing units	118,860,065
Owner-occupied	63.1%
Renter-occupied	36.9%
Vacancy rate	12.4%
Distribution by year built	
2000 and later	18.5%
1960 to 1999	53.5%
Before 1960	27.9%
Average household size	
Owner-occupied	2.72
Renter-occupied	2.53
Median value of owner-occupied housing	\$205,000
Median monthly owner costs with mortgage	\$1,486
Housing units with a mortgage	47,047,616
Units with mortgage equal to 30% or more of household income	28.3%

Source: USCB 2018b

3.11.3.6 Regional Housing Characteristics

Atlanta Regional Loan Center Housing

Within the region served by the Atlanta RLC, North Carolina and Georgia had comparable numbers of occupied housing units in 2016; Tennessee and South Carolina had fewer occupied units. Vacancy rates in the Carolinas were higher than national rates. South Carolina had the largest percentage of owner-occupied units in the region. The other states had distributions of owner-occupied and renter-occupied housing comparable to the national average. All four states had higher percentages of housing built in

the 21st century than the national average, which is consistent with the higher rates of population growth generally recorded in these states. Average household sizes for owner-occupied units in North Carolina, South Carolina, and Tennessee were slightly smaller than the national average.

The median values of owner-occupied housing in the four states were generally comparable; values in Georgia and North Carolina were approximately \$10,000 higher than the other two states. The median values in all four states were at least \$38,000 lower than the national median. Median monthly owner costs with a mortgage were also lower in all four states than the national value. Also, smaller percentages of housing units in all four states had mortgages consuming 30 percent or more of household income than in the nation as a whole. See Table D-17 in Appendix D, Socioeconomic Data by RLC, for housing characteristics specific to the Atlanta RLC.

Cleveland Regional Loan Center Housing

Because the 13 states served by the Cleveland RLC extend from the Northeast and Mid-Atlantic to the Great Lakes, including densely and sparsely populated states, there is wide variability in the numbers of occupied units and their values. With more than 7 million occupied housing units, New York had 28 times the number of units in Vermont (about 250 thousand) in 2016. The highest owner-occupancy rates occurred in Maine, Michigan, and New Hampshire—over 70 percent; the highest renter-occupancy rates occurred in New York and Rhode Island—more than 40 percent. Vacancy rates ranged from less than 10 percent in Connecticut and Massachusetts to more than 20 percent in Maine and Vermont. On average the states in this region have larger proportions of older housing stock ranging from 75 percent of houses built before 2000 in Delaware to more than 92 percent in Rhode Island. Delaware is also the only state in the region with less than 30 percent of housing units built before 1960; more than half of housing units in New York were built before 1960.

Housing values and ownership costs also varied widely among the diverse states in this region. Median values ranged from less than \$135,000 in Indiana to nearly \$367,000 in Massachusetts. Median values about \$100,000 higher than the national median also occurred in New Jersey and New York. Only Indiana, Ohio, Michigan, Pennsylvania, and Maine had median housing values lower than the national median value. Median monthly owner costs with a mortgage ranged from less than \$1,100 in Indiana to more than \$2,300 in New Jersey. Eight of the states had median monthly owner costs with a mortgage higher than the national median. Although most of the states had percentages of units with mortgages consuming 30 percent or more of household income that were comparable or below the nationwide rate (28.3 percent), five states had more than 30 percent of units with these higher costs of ownership. See Table D-18 in Appendix D, Socioeconomic Data by RLC, for housing characteristics specific to the Cleveland RLC.

Denver Regional Loan Center Housing

The numbers of occupied housing units among the eight states served by the Denver RLC ranged from less than 224 thousand in Wyoming to nearly 2.8 million in Washington. The percentage of owner-occupied housing in the region was generally higher than the national average with rates of ownership

68 percent and above in Utah, Wyoming, Idaho, and Montana. Only Oregon had a higher percentage of renter-occupied housing than the national rate. Vacancy rates ranged from 8.5 percent in Washington to 20 percent in Alaska. Montana and Wyoming also had vacancy rates markedly higher than the national average. Six of the eight states had higher percentages of housing built in the 21st century than the nation as a whole.

Housing values and ownership costs varied within a moderate range in this region. The lowest median value was approximately \$189,000 in Idaho, and the highest was approximately \$314,000 in Colorado. Besides Colorado, median values in Washington, Oregon, Alaska, and Utah also exceeded the national median value by more than \$40,000. Wyoming and Montana had median housing values closest to the national median value. Median monthly owner costs with a mortgage ranged from nearly \$1,200 in Idaho to more than \$1,800 in Alaska. Half of the states (Alaska, Washington, Colorado, and Oregon) had median monthly owner costs with a mortgage higher than the national median. Only three states (Oregon, Montana, and Washington) had higher percentages of units with mortgages consuming 30 percent or more of household income than the nationwide rate (28.3 percent). See Table D-19 in Appendix D, Socioeconomic Data by RLC, for housing characteristics specific to the Denver RLC.

Houston Regional Loan Center Housing

Among the four states served by the Houston RLC, Texas by far has the highest number of owner-occupied units with more than 9.5 million compared to 1.1 - 1.7 million in each of the other three states. The distribution of owner-occupied and renter-occupied housing units in the region generally reflected the national distribution. Aside from Texas, vacancy rates were higher than the national average by at least 2 percentage points. On average the states in this region have higher percentages of housing built since 2000 and lower percentages built before 1960 than the national averages. Texas had substantially higher household sizes in both owner-occupied and renter-occupied units than the nation as a whole.

Housing values and ownership costs in this region were uniformly lower than the national values. Median values were at least \$40,000 lower than the national median. Texas had the highest median value and Arkansas the lowest. Median monthly owner costs with a mortgage ranged from \$1,017 in Arkansas to \$1,469 in Texas, which was closest to the national median. All of the states had lower percentages of units with mortgages consuming 30 percent or more of household income than the nationwide rate. See Table D-20 in Appendix D, Socioeconomic Data by RLC, for housing characteristics specific to the Houston RLC.

Phoenix Regional Loan Center Housing

California dominates the housing statistics for the region served by the Phoenix RLC with nearly 13 million occupied units. That number is more than 5 times the number in Arizona, nearly 17 times the number of units in New Mexico, and over 28 times the number in Hawaii. While Arizona and New Mexico had distributions of owner-occupied and renter-occupied housing units generally comparable to the national distribution, California, Nevada, Hawaii, and two of the Pacific Island Territories (Guam and the Northern Mariana Islands) had markedly higher proportions of renter-occupied housing. The

Northern Mariana Islands had a much higher proportion of renter-occupied units, nearly twice the national percentage. In contrast, American Samoa had a proportion of owner-occupied housing units that was 10 points higher than the national percentage. Aside from California, which had a vacancy rate more than 4 percentage points below the national average, all other states and two Pacific Island Territories (same as above) had vacancy rates higher than the national average. Nevada and Arizona had larger proportions of housing stock constructed since 2000, at least 11 percentage points higher than the national distribution. Nevada, New Mexico, Arizona, Hawaii, and all three Pacific Island Territories also had substantially higher percentages of housing constructed in the last 40 years of the 20th century than the national percentage. California is the only state in the region with a proportion of housing stock constructed before 1960 that approximates the national distribution. California had substantially higher household sizes in both owner-occupied and renter-occupied units than the nation as a whole.

Housing values and ownership costs varied widely in this region. The lowest median value was \$167,500 in New Mexico, and the highest values were \$477,500 in California and \$592,000 in Hawaii. The other two states had median values generally comparable to the national median. Aside from California and Hawaii, median monthly owner costs with a mortgage in these states were near or below the national value. California was \$600 higher than the national median, and Hawaii had the highest costs that were nearly \$800 more than the national median. American Samoa had the lowest monthly costs with a mortgage, which were \$500 less than the national median. All states had higher percentages of units with mortgages consuming 30 percent or more of household income than the nationwide rate, generally by small amounts, but Hawaii's proportion was 10 points higher and California's proportion was more than 10 percentage points above the national rate. See Table D-21 in Appendix D, Socioeconomic Data by RLC, for housing characteristics specific to the Phoenix RLC.

Roanoke Regional Loan Center Housing

Among the five jurisdictions served by the Roanoke RLC, the numbers of occupied housing units in 2016 ranged from 281 thousand in the District of Columbia to 3.1 million in Virginia. The distributions of owner-occupied and renter-occupied units in Virginia, Maryland, and Kentucky were closest to the national distribution. West Virginia had a higher proportion of owner-occupied units by 9 percentage points. Conversely, the District of Columbia was characterized by a majority renter-occupancy market, nearly the reverse of the national distribution, which reflects the periodic turnover of presidential administrations in the nation's capital. Vacancy rates were generally near or below the national average except in West Virginia, which had a vacancy rate 6 percentage points higher. The District of Columbia has a much older housing stock than the other jurisdictions in the region and the nation as a whole with 60 percent of units built before 1960. Household sizes in Maryland and Virginia were comparable to national averages, while household sizes in the District of Columbia and West Virginia were markedly lower than national averages in both owner-occupied and renter-occupied units.

Housing values and ownership costs in this region vary greatly. Median values in 2016 ranged from \$117,900 in West Virginia and \$135,600 in Kentucky to \$576,100 in the District of Columbia. Maryland and Virginia also had median values at least \$60,000 more than the national median. Median monthly owner costs with a mortgage ranged from less than \$1,000 in West Virginia and \$1,111 in Kentucky to \$2,422 in the District of Columbia. Both Maryland and Virginia also had higher median owner costs with a mortgage than the national median. Both West Virginia and Kentucky had significantly lower percentages of units with mortgages consuming 30 percent or more of household income. The other three jurisdictions were closer to the national average. See Table D-22 in Appendix D, Socioeconomic Data by RLC, for housing characteristics specific to the Roanoke RLC.

St. Paul Regional Loan Center Housing

Of the nine states served by the St. Paul RLC, Illinois, with 4.8 million occupied housing units, had 15 times the number of units than in North Dakota (about 315 thousand) in 2016. Other states ranged from 334 thousand to 2.3 million occupied units. The highest owner-occupancy rates occurred in Iowa and Minnesota—over 70 percent; most states had distributions of owner-occupied and renter-occupied housing comparable to the national distribution. Vacancy rates were generally lower than the national average, ranging from less than 10 percent in Illinois, Iowa, and Nebraska to around 14 percent in Missouri and North Dakota. Most of the states in this region have larger proportions of older housing stock than the national average, ranging from 81 percent of houses built before 2000 in Minnesota to more than 86 percent in Illinois. The Dakotas are the exceptions with more than 22 percent of housing units built since 2000. Household sizes in owner-occupied and renter-occupied housing among these states were generally lower than nationwide averages.

Median housing values in the region were almost uniformly lower than the national median value and ranged from \$142,300 in Iowa to \$186,500 in Illinois. Minnesota was the exception at \$211,800, about \$7,000 above the national median. Median monthly owner costs with a mortgage ranged from less than \$1,200 in Iowa to nearly \$1,600 in Illinois. Seven of the states had lower median monthly owner costs with a mortgage than the national median. Aside from Illinois, which equaled the national average, all of the states had percentages of units with mortgages consuming 30 percent or more of household income that were below the nationwide percentage. See Table D-23 in Appendix D, Socioeconomic Data by RLC, for housing characteristics specific to the St. Paul RLC.

St. Petersburg Regional Loan Center Housing

Of the five jurisdictions served by the St. Petersburg RLC, Florida dominates the region with more than 7.5 million occupied units. That number is 7 times the number of units in Mississippi and 176 times the number in the Caribbean Territory of the U.S. Virgin Islands. Aside from the U.S. Virgin Islands, the distributions of owner-occupied and renter-occupied housing units were generally comparable to the national distribution. Conversely, the U.S. Virgin Islands is a majority renter-occupancy housing market. Vacancy rates in the region were uniformly higher than the national average, with Puerto Rico and the U.S. Virgin Islands approximately 10 percentage points higher than the national rate. All three states in

the region had larger proportions of housing stock constructed since 1960 and smaller proportions of housing constructed before 1960 than the national percentages. The two Caribbean Territories had substantially higher percentages of housing constructed in the last 40 years of the 20th century than the national percentage. The U.S. Virgin Islands had the lowest household sizes in the region both for owner-occupied and renter-occupied units, which were also lower than the national averages. Note that data for the U.S. Virgin Islands was not available for 2016 and is instead taken from the 2010 census.

Housing values and ownership costs varied considerably in this region. The lowest median values of occupied units were \$111,900 in Puerto Rico and \$113,900 in Mississippi; the highest was \$254,296 in the U.S. Virgin Islands. Only Florida had a median value of owner-occupied housing comparable to the national median. Both Florida and the U.S. Virgin Islands had median monthly owner costs with a mortgage that were comparable to the national value. Alabama and Mississippi had median monthly owner costs with a mortgage that were \$300 less than the national median; Puerto Rico was the lowest at \$600 below the national median. Puerto Rico had the highest percentage of units with a mortgage consuming 30 percent or more of household income at 42.7 percent. See Table D-24 in Appendix D, Socioeconomic Data by RLC, for housing characteristics specific to the St. Petersburg RLC.

INTENTIONALLY LEFT BLANK.

CHAPTER 4 ENVIRONMENTAL CONSEQUENCES

4.0 INTRODUCTION

This chapter presents the potential direct and indirect impacts from the Proposed Action and the No Action Alternative as described in Chapter 2 of this PEIS, based on information presented within the affected environment discussions in Chapter 3, Affected Environment.

4.0.1 Methods of Analysis

As previously described in Section 2.4 of this PEIS, changes in congressional or Executive Branch actions regarding the HLP as well as changes in Veteran populations, market conditions, and other unforeseen factors would continue to drive the need for modifications to the HLP so that the program continues to effectively serve Veterans. For purposes of evaluating a full range of potential effects for the Proposed Action, VA developed low-intensity and high-intensity program activity scenarios for each of the four programs analyzed in this PEIS (i.e., loan guaranty, REO, NADL, and SAH programs).

The Proposed Action scenarios are not intended to serve as a prediction of changes in the underlying factors discussed earlier or of actual future loan volumes but rather to serve as reasonable lower and upper bounds of program activity for the purpose of evaluating the range of potential impacts within this PEIS. For analysis, VA assumes the Proposed Action high-intensity scenario for each program bounds the range of possible impacts to each resource area, including those associated with the low-intensity scenario. VA also analyzes the No Action Alternative reference case for each program as required by NEPA.

Section 2.4 of this PEIS explains the methodology VA used to develop the Proposed Action low- and high-intensity scenarios and the No Action Alternative for each of the four components of the HLP. In regard to the loan guaranty program, the Proposed Action low-intensity scenario represents a combination of factors that results in a reduction in the demand for VA-guaranteed loans, leading to a decline in loan guaranty volume. Based on the referenced analog trend, this scenario provides for approximately 252,000 loan guaranties per year, or a cumulative total of approximately 3.3 million new loan guaranties from FY 2017 through FY 2030. The Proposed Action high-intensity scenario provides for an increase in loan guaranties of approximately 60,000 more each year, resulting in an average of approximately 1.16 million loan guaranties per year, or a cumulative total of approximately 15.1 million new loan guaranties through FY 2030. The No Action Alternative reference case for the loan guaranty program assumes a consistent volume, based on FY 2017, of approximately 740,000 loan guaranties per year, or a cumulative total of approximately 9.6 million new loan guaranties through FY 2030. The total volume of loan guaranties includes loans for purchase of existing homes, refinancing existing home loans, and loans for new home construction. Generally, construction of new homes would be more likely to result in tangible environmental effects. Based on historical trends, approximately 18 percent of VA-guaranteed purchase loans were for new construction. VA is assuming this historical average of 18 percent would apply to future scenarios resulting in an estimate of approximately 2.7 million purchase loans for newly constructed homes through FY 2030.

Similar to the methodology used to develop scenario ranges for the loan guaranty program, VA developed Proposed Action scenarios and a No Action Alternative for the REO, NADL, and SAH programs. The high-intensity scenario for the REO program assumes approximately 25,000 properties entering the program each year, or a cumulative total of 325,000 properties through FY 2030, while the No Action Alternative reference case assumes a cumulative total of approximately 172,000 properties through FY 2030. The NADL high-intensity scenario assumes a cumulative total of 1,950 direct loans through FY 2030 while the No Action Alternative reference case assumes a cumulative total of approximately 325 direct loans through FY 2030. The high-intensity and No Action Alternative scenarios for the SAH program assume cumulative totals of 34,000 and 25,000 grants through FY 2030, respectively.

VA's guaranty of a home loan and direct loans and grants through the NADL and SAH programs occasionally are used to purchase a newly constructed home (or result in construction to modify an existing home). However, residential builders continue to make decisions regarding development without necessarily having any knowledge of buyers' loan financing choices. As previously stated, VA guarantees loans made by private lenders to qualified Veterans as well as makes direct loans and grants to qualified Veterans, but VA does not control how state and local authorities regulate property development or enact building codes. Ultimately, local government and planning authorities are responsible for the number and size of homes, neighborhood density, and community infrastructure surrounding a neighborhood development. The extent of any impact depends on local housing market conditions (e.g., supply and demand, demographics, economic conditions, geographic location), and local or regional planning and zoning laws, rules, or policies, in addition to the number of loan guaranties (or NADLs or SAH program grants) made by VA. The HLP would continue to make the purchase of new construction homes possible for many buyers who might otherwise have difficulty securing loan financing. The majority of effects from the HLP would be indirect and remote in nature, as continuation of the HLP could influence future growth-related effects but would not directly create them.

The Region of Influence (ROI) represents the geographic area where most of the direct and indirect effects of the Proposed Action are likely to occur. For this PEIS, the ROI is the United States of America, here defined as the 50 States, U.S. Territories, and the District of Columbia. There are five permanently inhabited U.S. Territories, which include American Samoa, Guam, the Commonwealth of the Northern Mariana Islands, the Commonwealth of Puerto Rico, and the U.S. Virgin Islands. Although the HLP could potentially extend to Possessions (e.g., Midway and Palmyra), such locations are not covered here because they are not permanently inhabited.

Figure 1-5 and Table 1-4 (See Chapter 1, Introduction, Section 1.4.1, of this PEIS) present locations of the largest concentrations of VA-guaranteed loans used to purchase newly constructed homes in recent years (FY 2013 through FY 2017). Specifically, the largest concentrations of VA-guaranteed loans for new home construction occurred in municipalities within Arizona, Colorado, Florida, Maryland, North Carolina, Texas, and Virginia. This geographic distribution of VA-guaranteed loans is generally consistent with the distribution of other new home sales during the same time period (Moody's Analytics 2020).

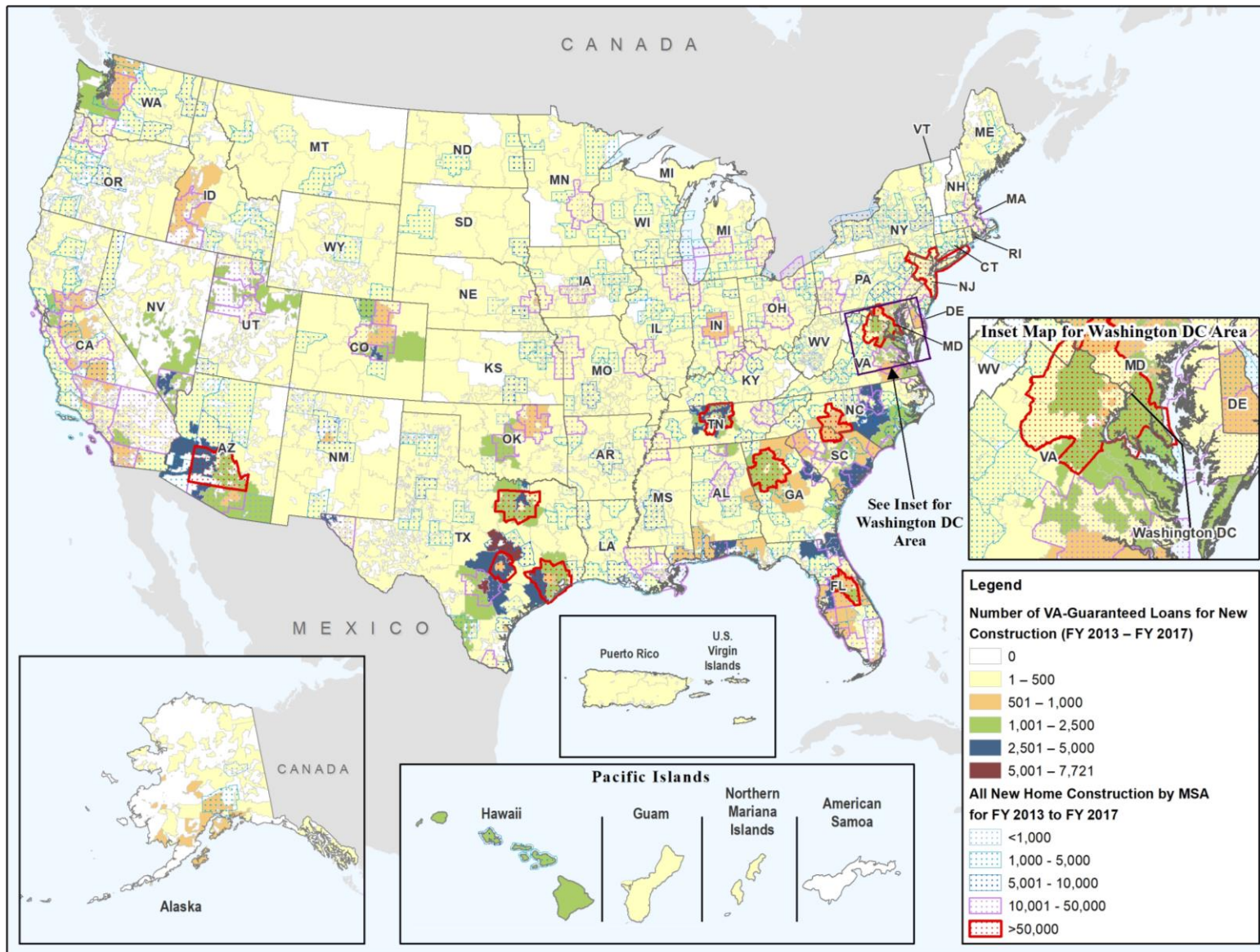
This suggests that distribution of VA-guaranteed loans has generally mirrored the growth or decline of regional housing markets, with some localized exception. Specifically, comparison of the top 10 metropolitan statistical areas with the largest volumes of VA-guaranteed loans for newly constructed homes (see Table 1-4) and the top metropolitan statistical areas with the highest volumes of all new construction nationwide reveal the following:

- Dallas-Fort Worth-Arlington and Houston-The Woodlands-Sugarland, Texas; Phoenix-Mesa-Chandler, Arizona; and Washington-Arlington-Alexandria, District of Columbia/Virginia/Maryland/West Virginia are in the top 10 of both new home construction data sets; and
- Jacksonville and Tampa-St. Petersburg-Clearwater, Florida are in the top 20 metropolitan statistical areas with the highest volume of new housing starts (#19 and #11, respectively).

Interestingly, the remaining four metropolitan statistical areas that have large volumes of VA-guaranteed loans for newly constructed homes (San Antonio-New Braunfels and Killeen-Temple, Texas; Virginia Beach-Norfolk-Newport News, Virginia; and Colorado Springs, Colorado) – all of which include large active military installations – are not included in the top 20 metropolitan statistical areas for all new housing starts nationwide. In addition, the metropolitan statistical areas of Atlanta-Sandy Springs-Alpharetta, Georgia; Austin-Round Rock-Georgetown, Texas; Charlotte-Concord-Gastonia, North Carolina-South Carolina; Nashville-Davidson-Murfreesboro-Franklin, Tennessee; and Orlando-Kissimmee-Sanford, Florida – which fall in the second grouping of VA-guaranteed loan volumes in Table 1-4 – are included in the top 10 metropolitan statistical areas for new housing starts nationwide. Figure 4.0-1 illustrates the geographic correlation between these two data sets.

When considering the future geographic distribution of VA-guaranteed loans, VA assumes they will generally align with predictions for regional housing market growth and declines, although the presence of high localized use of guaranties near areas such as active military installations may run counter to larger trends. A 2019 U.S. Census Bureau (USCB) report found that the South and West regions continue to have the fastest-growing cities in the United States, with 8 of the 15 cities with the largest population gains between 2017 and 2018 found in the South, six in the West, only one in the Midwest, and none in the Northeast (USCB 2019). A 2018 Freddie Mac report concluded that new housing construction has consistently lagged behind housing demand on a nationwide basis over the last several years with the disparity much greater in the high-growth areas in the South and West (Freddie Mac 2018). Freddie Mac concluded that new home construction rates will increase for the foreseeable future, particularly in current high-population areas and may take several years to catch up to housing demand.

While there are differing professional viewpoints on projections for long-term future real-estate trends, as well as inherent uncertainty in such estimates, this PEIS assumes that areas with high numbers of VA-guaranteed loans for newly constructed homes would remain high through FY 2030 with some temporary local fluctuations. This assumption is conservative in nature and would likely bound the magnitude of potential environmental effects. Environmental effects associated with new home construction would be more likely to occur in these specific metropolitan statistical areas, and the magnitude of those effects would tend to be higher than in other portions of the country.



Source: Moody's Analytics 2020

DC = District of Columbia; FY = fiscal year; MSA = Metropolitan Statistical Area; U.S. = United States; VA = Department of Veterans Affairs

Figure 4.0-1. VA-Guaranteed Loans for Newly Constructed Homes versus All New Home Construction

In addition to focusing analysis on those metropolitan statistical areas likely to contain a higher density of HLP loan guaranties for newly constructed homes, each environmental resource area in this PEIS also identifies distinct geographical (e.g., major hydrological regions) or functional (e.g., urban, suburban, or rural development settings) units that could be affected by a nationwide action in different ways. (See Section 3.0, Introduction to Chapter 3, Affected Environment, for descriptions of the units of analysis used in this PEIS.) By defining distinct environmental units of analysis and comparing them to projected areas with high volumes of VA-guaranteed loans for newly constructed homes, this PEIS identifies unique impacts that could occur in one or more dense distribution areas, as well as general impacts that could occur in any geographical area.

Because physical environmental impacts result primarily from construction activities and related land disturbance, the impact analyses presented within this chapter focus primarily on the VA-guaranteed loans for newly constructed homes, except for the socioeconomic impacts that result from the financial transactions (see Section 4.11, Socioeconomics and Environmental Justice). VA also analyzes the potential environmental effects of the REO, NADL, and SAH programs in this chapter. However, their impacts are likely to be much lower, primarily due to the nature of these programs, and the very small volume of loans and grants approved under these programs.

4.0.2 Characterization of Impacts

Due to the inherent future uncertainty in the application of the HLP, it is not possible to quantify the potential impacts of the Proposed Action and the No Action Alternative on a national level. Thus, the analyses presented in this chapter provide a qualitative assessment of the potential impacts using the following descriptors:

- **Beneficial** – Impacts would improve or enhance the resource.
- **Adverse** – impacts would degrade or diminish the resource. Adverse impacts are further characterized by intensity as follows:
 - **Negligible** – No apparent or measurable impacts are expected and may also be described as “none,” if appropriate.
 - **Minor** – The action would have a barely noticeable or measurable impact on the resource.
 - **Moderate** – The action would have a noticeable or measurable impact on the resource. This category could include potentially significant impacts that could be reduced by the implementation of mitigation measures.
 - **Significant** – The action would have obvious and extensive impacts that could result in potentially significant impacts on a resource despite mitigation measures.

Negligible, minor, and moderate impacts are characterized as “less than significant.”

Additionally, impacts may consist of direct or indirect impacts defined as follows:

- **Direct impacts** – Those caused by the HLP and occurring at the same time and place.
- **Indirect impacts** – Those caused by the HLP but occurring later in time or that are part of a chain of impacts, several increments removed from a direct action.

4.0.3 Comparison of Environmental Effects of Alternatives

Table 4.0-1 compares the environmental effects of both the Proposed Action and No Action Alternative for each of the 11 environmental resource sections analyzed in this PEIS. As shown in the table, impacts from the Proposed Action (bounded by low- to high-intensity scenarios) are anticipated to range from negligible to minor for VA-guaranteed loans for newly constructed homes in each resource area (except socioeconomics and environmental justice). Likewise, the No Action Alternative, which is the reference case, is also anticipated to have negligible to minor impacts for VA-guaranteed loans for newly constructed homes in each resource area. Negligible impacts are anticipated from existing/refinance home loan guaranties, REO activities, NADLs, and SAH program grants for both the Proposed Action and No Action Alternative. Beneficial impacts are expected for socioeconomics and environmental justice under both Alternatives for all programs of the HLP. The following sections in this chapter describe in detail the potential environmental effects of the Proposed Action and No Action Alternative for each of the resources.

Table 4.0-1. Comparison of Environmental Effects of Alternatives

Resource Section	Proposed Action ^a (Includes Full Range of Intensity Scenarios)					No Action Alternative (Reference Case)				
	Loan Guaranties for Newly Constructed Homes	Existing/Refinance Home Loan Guaranties	REO	NADL	SAH	Loan Guaranties for Newly Constructed Homes	Existing/Refinance Home Loan Guaranties	REO	NADL	SAH
Aesthetics	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	Negligible to Minor	Negligible	Negligible	Negligible	Negligible
Air Quality	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	Negligible to Minor	Negligible	Negligible	Negligible	Negligible
Biological	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	Negligible to Minor	Negligible	Negligible	Negligible	Negligible
Cultural	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	Negligible to Minor	Negligible	Negligible	Negligible	Negligible
Floodplains, Wetlands, and Coastal Zones	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	Negligible to Minor	Negligible	Negligible	Negligible	Negligible
Geology and Soils	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	Negligible to Minor	Negligible	Negligible	Negligible	Negligible
Hydrology and Water Quality	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	Negligible to Minor	Negligible	Negligible	Negligible	Negligible
Infrastructure and Community Services	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	Negligible to Minor	Negligible	Negligible	Negligible	Negligible

Table 4.0-1. Comparison of Environmental Effects of Alternatives

Resource Section	Proposed Action ^a (Includes Full Range of-Intensity Scenarios)					No Action Alternative (Reference Case)				
	Loans for Newly Constructed Homes	Existing/Refinance Home Loan Guaranties	REO	NADL	SAH	Loans for Newly Constructed Homes	Existing/Refinance Home Loan Guaranties	REO	NADL	SAH
Land Use and Planning	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	Negligible to Minor	Negligible	Negligible	Negligible	Negligible
Noise	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	Negligible to Minor	Negligible	Negligible	Negligible	Negligible
Socio-economics and Environmental Justice	Beneficial	Beneficial	Beneficial	Beneficial	Beneficial	Beneficial	Beneficial	Beneficial	Beneficial	Beneficial

^a. For purposes of analysis, the Proposed Action high-intensity scenario for each program is assumed to bound the range of possible impacts to each resource area, including those associated with the low-intensity scenario.

NADL = Native American Direct Loan; REO = Real Estate Owned; SAH = Specially Adapted Housing

4.1 AESTHETIC RESOURCES

This section describes the potential direct and indirect impacts to aesthetic resources from operation and management of VA's HLP, including potential impacts from construction and occupancy of new homes or modification of existing homes associated with the HLP.

4.1.1 Significance Criteria

To evaluate impacts to aesthetic resources, VA considered the potential for aesthetic resources to change within the Affected Environment (described in Section 3.1, Aesthetic Resources) as a result of the Proposed Action and No Action Alternative. A visual impact is the creation of an intrusion, obstruction, or noticeable contrast to aesthetic resources. The introduction of a visual element that is incompatible, out of scale, in great contrast, or out of character with the surrounding area can be an adverse visual impact. An action that eliminates open space can have an adverse effect on aesthetic appeal of the area. Together with viewer concern, exposure, and sensitivity, the extent of obstruction and the compatibility of introduced features within established views determine the subjective importance or intensity of the visual impact.

To evaluate impacts on aesthetic resources, VA reviewed the Proposed Action and No Action Alternative to determine whether any activities have the potential to cause any of the following:

- Substantially affect a scenic vista;
- Substantially damage scenic resources;
- Substantially degrade the existing visual character or quality of a site and/or its surroundings;
- Increase the likelihood of manmade structures being constructed on previously natural landscapes; or
- Create a new source of substantial light or glare that would adversely affect day or nighttime views in an area.

4.1.2 Proposed Action

Under the Proposed Action, VA would continue to operate and actively manage the HLP. The number of VA-guaranteed loans would fluctuate within the range bound by the low-intensity scenario to the high-intensity scenario, as described in Section 2.2 (Chapter 2, Proposed Action and Alternatives) and Section 4.0, Environmental Consequences, Introduction. VA's REO program would continue to maintain, manage, market, and sell existing homes through a private-sector company; the NADL program would continue to make VA direct loans available to Native American Veterans living on trust, tribal, or communally owned lands; and VA would continue to provide SAH program grants to accommodate the needs of Veterans with certain severe, service-connected disabilities.

Section 4.1.2.1 discusses potential sources and types of aesthetic impacts. Section 4.1.2.2 summarizes the overall potential impacts that could occur from the HLP and their anticipated geographical distribution across the United States and its Territories.

4.1.2.1 Sources of Visual Impacts

The HLP would not directly result in any impacts to visual impacts; however, the construction and occupancy of new homes, or modification of existing homes, facilitated through the HLP could result in indirect impacts. Home construction activities, particularly if they are part of a new, large-scale residential development project, could temporarily affect the visual quality of the immediate area from the use (and noise) of heavy equipment, machinery, ground-disturbing activities, and from the unfinished stages of site preparation and home construction. Visual effects from outdoor lighting are generally attributable to light pollution, light trespass and encroachment, and glare. Light pollution is generally associated with ground-reflected light, which results in the sky glow found in urban areas. Light trespass or encroachment and nuisance glare results from unwanted light affecting viewers at an adjacent property. Glare ranges in severity from unwanted brightness that creates a nuisance to levels causing physical discomfort or disability. The visual quality impacts from construction would be short-term in nature, changing over the course of construction (or phased construction), as each task is completed until it becomes negligible in the later stages, as landscaping is completed and work focuses on the interior of the completed structure.

Depending on the surrounding land uses or scenic vistas, each new home, once completed, could create a noticeable contrast to the landscape surrounding the site. An undeveloped site (e.g., selected for a new residential development) on the suburban edge of a community could intrude on the scenic quality of the surrounding landscape, whereas an infill development would not likely affect a scenic landscape.

4.1.2.2 Potential Impacts to Aesthetics Resources

An increase in indirect aesthetic impacts associated with new home construction and residential living could occur as a result of market effects influenced by VA's HLP. However, any impacts on visual resources associated with increased market demand for new home construction would likely be localized and minor. Construction activities related to home modifications made with SAH program grants issued under the HLP would most likely include interior work, or minor exterior work, and would not be expected to result in adverse visual impacts.

Indirect aesthetic impacts associated with construction and occupancy of new homes under the Proposed Action would likely include some regional variation. The impact analysis assumes that the volume of HLP activity through FY 2030 in each physiographic region, and the resulting effects from new home construction, would be consistent with past volumes as described in Section 1.4 in Chapter 1, Introduction. A summary of potential impacts is presented by USGS Physiographic Region in Table 4.1-1.

Table 4.1-1. Summary of Aesthetics Impacts by USGS Physiographic Region

USGS Physiographic Region ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
Appalachian Highlands	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA provided more than 5,000 loan guaranties for newly constructed homes in the Killeen-Temple, Texas MSA. VA provided 2,500 – 5,000 loan guaranties for newly constructed homes in six additional MSAs and 1,000 – 2,500 in another six MSAs. None of these metropolitan areas are located near any outstanding scenic resources found within this region.
Atlantic Plain	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA provided more than 5,000 loan guaranties for newly constructed homes in the Jacksonville, Florida; San Antonio-New Braunfels, Texas; and Killeen-Temple, Texas MSAs. VA provided 2,500 – 5,000 loan guaranties for newly constructed homes in 14 additional MSAs and 1,000 – 2,500 in another 11 MSAs. The two MSAs in Texas with the highest numbers of VA-guaranteed loans for newly constructed housing are located near large military bases. However, even these areas have already experienced notable urban sprawl in past decades and impacts in these areas are expected to be minor in comparison with other ongoing housing growth drivers. As such, potential impacts are not expected to shape development patterns, scale, or character of the existing visual environment; or further induce the expansive urban sprawl in these large metropolitan areas. Many large cities and small towns in the region are situated along the scenic Atlantic and Gulf coasts and inland waterways.
Interior Highlands	Negligible	Negligible	Negligible	Negligible	Negligible	MSAs in this physiographic region have seen less than 1,000 VA-guaranteed loans for newly constructed homes, even in larger population centers.

Table 4.1-1. Summary of Aesthetics Impacts by USGS Physiographic Region

USGS Physiographic Region ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
Interior Plains	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA provided more than 5,000 loan guaranties for newly constructed homes in the Colorado Springs, Colorado MSA and 2,500 – 5,000 in the Nashville-Davidson-Murfreesboro-Franklin, Tennessee MSA. VA provided 1,000 – 2,500 loan guaranties for newly constructed homes in five additional MSAs. The majority of the landscape in the region is rural in nature, and population centers have experienced moderate to low urban sprawl. There is less scenic diversity here than in other parts of country, although Denver lies against the backdrop of the Rocky Mountains. However, even a high number of projected loans is expected to be minor in comparison with other ongoing housing growth drivers and not expected to shape the development, patterns, scale, or character of the existing visual environment.
Intermontane Plateaus	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA provided more than 5,000 loan guaranties for newly constructed homes in the Phoenix-Mesa-Chandler, Arizona MSA and 2,500 – 5,000 in the El Paso, Texas; and Las Vegas-Henderson-Paradise, Nevada MSAs. VA provided 1,000 – 2,500 loan guaranties for newly constructed homes in six additional MSAs. These areas are also projected to see continued strong population and housing growth. Potential impacts are offset by the fact that large tracts of undeveloped land area remain available within or adjacent to current municipal boundaries. The numbers of loans in these areas are expected to be minor in comparison with other ongoing housing growth drivers and are not expected to shape development patterns, scale, or character of the existing visual environment. This region is the most topographically diverse of all the physiographic regions, including vast deserts, long steep mountain ranges, massive cliffs, deep canyons, ravines, gorges, and arches. It includes outstanding scenic resources, including the Grand Canyon, but these are preserved and protected within the boundaries of national parks, national recreation areas, scenic byways, etc. Cities and towns are found in many of the low-lying and fertile areas.

Table 4.1-1. Summary of Aesthetics Impacts by USGS Physiographic Region

USGS Physiographic Region ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
Laurentian Highlands [Great Lakes Region]	Negligible	Negligible	Negligible	Negligible	Negligible	MSAs in this physiographic region have seen less than 1,000 VA-guaranteed loans for newly constructed homes, even in large population centers.
Pacific Mountain System	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA provided 2,500 – 5,000 loan guaranties for newly constructed homes in only one MSA (Seattle-Tacoma-Bellevue, Washington). VA provided 1,000 – 2,500 loan guaranties for newly constructed homes in six additional MSAs. Many MSAs in this region are located along the scenic Pacific coast, where the landforms range between steep, rocky terrain and sandy beaches. Potential impacts from VA-guaranteed loans for newly constructed homes are expected to be minor in comparison with other ongoing housing growth drivers. Potential impacts are not expected to shape development patterns, scale, or character of the existing visual environment; or further induce expansive urban sprawl in these large metropolitan areas. In addition, while the region showcases many unique land and vegetation features and contains many outstanding scenic resources, most of these are located within boundaries protected and preserved by many national parks, state parks, wilderness areas, etc. The majority of the landscape in other parts of the region is rural in nature, and the population centers have experienced only moderate to low urban sprawl.
Rocky Mountain System	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA provided more than 5,000 loan guaranties for newly constructed homes in the Colorado Springs, Colorado MSA. VA provided 1,000 – 2,500 loan guaranties for newly constructed homes in the Greeley, Colorado; Boise City, Idaho; and Salt Lake City, Utah MSAs. This region includes extensive topographic relief, many types of scenic landforms (mountains, valleys, canyons, plateaus, mesas, basins) and notable scenic resources. However, visual resources are protected and preserved by many national parks, state parks, and reserves.

Table 4.1-1. Summary of Aesthetics Impacts by USGS Physiographic Region

USGS Physiographic Region ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
Alaska and Hawaii	Negligible	Negligible	Negligible	Negligible	Negligible	VA provided 1,000 – 2,500 loan guaranties for newly constructed homes in only one MSA of this region (Honolulu, Hawaii). The contrasting landforms of Hawaii – between the volcanic mountains and tropical beaches – provide outstanding scenic resources. However, visual resources are protected and preserved by many national parks, state parks, and reserves.
U.S. Territories	Negligible	Negligible	Negligible	Negligible	Negligible	MSAs in this expansive region of island territories and possessions have seen less than 1,000 VA-guaranteed loans for newly constructed homes, even in large population centers. Many large cities and small towns in this region are situated along scenic coastlines in the Caribbean and Pacific Ocean.

^a. See Figure 3.0-1 in Chapter 3, Affected Environment, for map of USGS Physiographic Regions.

^b. See Table 1-4 in Chapter 1, Introduction, for the numbers of VA-guaranteed loans for newly constructed homes by metropolitan statistical area, during the period FY 2013 through FY 2017. This PEIS assumes that loan guaranty and other HLP activity in a given metropolitan statistical area through FY 2030 would be consistent with past levels.

^c. Since Existing/Refinance home loan guaranties and REO transactions pertain to existing homes, impacts to the physical environment would be expected to be negligible. See Section 1.4.2 in Chapter 1, Introduction, for further discussion on the REO program.

^d. NADLs may be used for new home construction that could cause physical impacts to environmental resources; however, past volumes of total NADLs for both existing homes and new construction have been very low (118 collectively between FY 2013 and FY 2017), and spread out across multiple states and territories, such that overall impacts would typically be negligible. See Section 1.4.3 in Chapter 1, Introduction, for further discussion on NADLs.

^e. Because the number of overall SAH program grants in the United States and its Territories is very small (less than 2,000 per year), and only a small portion of those grants would involve exterior work or construction of new homes, impacts to the physical environment would be expected to be negligible. See Section 1.4.4 in Chapter 1, Introduction, for further discussion on SAH program grants.

^f. Past loan guaranty volumes shown here are for the period FY 2013 through FY 2017, as presented in Table 1-4 in Chapter 1, Introduction. One MSA may overlap more than one USGS physiographic region.

FY = fiscal year; MSA = metropolitan statistical area; NADL = Native American Direct Loan; PEIS = Programmatic Environmental Impact Statement; REO = Real Estate Owned; SAH = Specially Adapted Housing; U.S. = United States; USGS = United States Geological Survey; VA = Department of Veterans Affairs

Specifically, parts of the country that experience more rapid growth in housing demand, such as parts of the South, Southwest, and Northwest, could experience a greater increase in indirect visual impacts associated with the Proposed Action; these geographic areas correspond to portions of the Atlantic Plain, Intermontane Plateaus, Rocky Mountain System, and Pacific Mountain System Physiographic Regions described in Section 3.1, Aesthetic Resources. These areas are also consistent with the geographic locations that experienced the highest number of VA HLP loan guaranties issued for new homes between FY 2013 and FY 2017 (see Figure 1-5 and Table 1-4 in Chapter 1, Introduction). The metropolitan areas that may be more closely surrounded by notable scenic resources would likely include western U.S. cities, such as: Seattle and Tacoma, Washington; Phoenix, Arizona; and Colorado Springs, Colorado. However, important scenic resources (e.g., national parks, state parks, wilderness areas) would be preserved and protected from any encroaching residential development. In addition, even the regional areas projected to experience larger numbers of VA-guaranteed loans for newly constructed homes are expected to have negligible to minor impact in comparison to other ongoing housing growth drivers and not expected to shape development patterns, scale, or character of the existing visual environment; or further induce the expansive urban sprawl in these large metropolitan areas. Assuming similar future trends, more new home construction guaranties would be expected within metropolitan areas over rural areas. However, it is important to note that many metropolitan area designations, especially in the western United States, are so expansive that they could also include rural, undeveloped areas with open vistas or in a scenic setting. Regarding loans provided under the NADL program, some of these may be for new home construction. However, past volumes of total NADLs for both existing homes and new construction have been very low (just under 200 collectively between FY 2013 and FY 2017), and spread out across multiple states and territories, that overall impacts would be negligible. In the event multiple homes constructed using NADLs were constructed in the same area, there could be a local impact on an existing viewshed, such as in certain regions where the majority of NADLs have historically been issued (e.g., Hawaii, followed by the Pacific Island Territories, the American Southwest, and Alaska), but any impact would also be expected to be very small.

A final item of note is that more Americans are building homes in rural settings adjacent to public lands to get closer to nature and escape urban stressors; this development in the wildland urban interface is gaining importance due to increased wildfire risks, but it also affects the visual resources by changing the natural environment of the surrounding area. Therefore, some observers who live nearby could consider a new home or a new and larger residential development an adverse visual effect if it obstructs or detracts from what they consider a scenic view (e.g., mountains or water) or would be considered out of character or scale with the surrounding area. The western parts of the country showcase a variety of landforms, topographic relief, and unique land and vegetation features, including impressive mountain ranges and vistas, flat deserts, and desert canyons. The southeastern and northwestern portions include extensive scenic coastlines, inlets, embayments, mountains, and thick forests, as well as rivers, marshes, swamps, and wetlands.

The extent of the impact would depend on the visual or scenic quality of the site selected in each community and surrounding land uses, as well as with the presence and expectations of observers of the site. The extent of any impact would also depend on the compatibility of the home building design, such as style (e.g., single family, townhomes), lighting, material, number of floors, and density with existing or planned use and zoning of the selected sites.

With respect to the aesthetics of an individual home, local planning departments and Homeowners Associations (HOAs) also have input where they require pre-approval of plans for a dwelling prior to construction. Such plan reviews may include consideration of the overall design and appearance of a home(s) and its compatibility with the surrounding environment (e.g., physical, social, and economic conditions). It is not VA's responsibility or purview to define the aesthetics of any particular building/home for the HLP, although the REO program may get involved in activities affecting the exterior aesthetics of a home where home repair would be needed – particularly relating to any historic preservation requirements (also see Section 4.4, Cultural Resources), if there were special requirements for boarding-up a property (e.g., use of plexi-windows versus boards), or if other repairs were found necessary at the time VA took possession of the asset. In addition, SAH program grants would be involved in the approval of plans and specifications relating to exterior renovations to construct handicap accessibility ramps, lifts, etc. Regarding SAH program grants, the highest volumes have historically been issued in the operational jurisdictions of the Cleveland, Houston, Atlanta, Phoenix, and St. Petersburg RLCs. However, even in these regions, the overall SAH program grant numbers are so small, particularly those that could involve exterior work, that impacts would be expected to be negligible.

In conclusion, while the extent of the aesthetic impacts at a specific location could be adverse, depending on existing landscape and visual setting, surrounding land uses, and the individual observer(s), overall impacts would be expected to be local and limited to a small area (e.g., viewing area surrounding single home). Impacts would be avoided when homes are not sited near federal, state, or locally designated scenic resources. Impacts would be further minimized through compliance with applicable federal, state, and local regulations, plans, and standards. The necessary local ordinances and zoning regulations, building codes, and city or county permits may require inclusion of special features and landscaping to achieve neighborhood goals for attractiveness, etc., if and where required. Note that visual impacts on historic, archaeological, and tribal cultural resources are discussed in Section 4.4, Cultural Resources.

4.1.3 No Action Alternative

Under the No Action Alternative, VA-guaranteed loans and the percentage of new home construction would continue at levels consistent with those observed in FY 2017, as described in Section 2.3 (Chapter 2, Proposed Action and Alternatives), and Section 4.0, Environmental Consequences, Introduction. VA-guaranteed loans, REO transactions, NADLs, and SAH program grants would continue to represent a very small portion of the total home loan market, and nationwide housing supply and

demand trends would continue to evolve without any noticeable influence from the HLP. The regional environmental effects of housing construction and occupancy, and corresponding population shifts, would likely continue in a manner consistent with those seen in recent years. The HLP's contribution to such regional effects would continue to be minor in scale and consistent with FY 2017 conditions, and no unique types or localized focuses of effects on existing landscapes, settings, and scenic resources would be expected to reach the level of significance as defined under NEPA.

Indirect aesthetic impacts could occur as a result of the construction and occupancy of new homes, which would be consistent with recent historical levels. Further, as discussed in Section 4.0, while many Veterans rely on the HLP and might not be able to purchase a home except for the availability of VA-guaranteed loans with zero down payment, the majority of these new homes would have been constructed regardless of VA's financial support to Veterans under the HLP.

INTENTIONALLY LEFT BLANK.

4.2 AIR QUALITY

This section describes the potential direct and indirect impacts to air quality and greenhouse gases from operation and management of VA's HLP, including potential impacts from construction and occupancy of new homes or modification of existing homes associated with the HLP.

4.2.1 Significance Criteria

Air Quality

To evaluate impacts to air quality, VA considered the potential for air quality to change within the Affected Environment (described in Section 3.2, Air Quality) as a result of the Proposed Action and No Action Alternative. To evaluate impacts to air quality, VA reviewed the Proposed Action and No Action Alternative to determine whether any activities have the potential to cause any of the following:

- Emissions of criteria pollutants that could exceed relevant air quality or health standards;
- An adverse change in air quality attainment status related to the NAAQS or applicable state-specific standards;
- Effects on visibility and regional haze in Class I areas; and
- Conflicts with local or regional air quality management plans to attain or maintain compliance with federal or state air quality regulations.

Greenhouse Gases

To evaluate impacts on greenhouse gas emissions and climate change, VA considered the potential for greenhouse gas emissions to change within the Affected Environment (described in Section 3.2, Air Quality) as a result of the Proposed Action and No Action Alternative. To evaluate impacts regarding greenhouse gases, VA reviewed the Proposed Action and No Action Alternative to determine whether any activities have the potential to cause any of the following:

- An indirect increase in greenhouse gas emissions related to the construction of new homes;
- An indirect increase in greenhouse gas emissions associated with in-home energy use; and
- An indirect increase in greenhouse gas emissions associated with the offsite generation of electricity used to power new homes.

4.2.2 Proposed Action

Under the Proposed Action, VA would continue to operate and actively manage the HLP. The number of VA-guaranteed loans would fluctuate within the range bound by the low-intensity scenario to the high-intensity scenario, as described in Section 2.2 (Chapter 2, Proposed Action and Alternatives), and Section 4.0, Environmental Consequences, Introduction. VA's REO program would continue to maintain, manage, market, and sell existing homes through a private-sector company; the NADL program would continue to make VA direct loans available to Native American Veterans living on trust, tribal, or communally owned lands; and VA would continue to provide SAH program grants to accommodate the needs of Veterans with certain severe, service-connected disabilities.

Section 4.2.2.1 discusses potential sources and types of air quality and greenhouse gas impacts. Section 4.2.2.2 discuss potential impacts to air quality and greenhouse gases that could occur from the HLP and their anticipated geographical distribution across the United States and its Territories.

4.2.2.1 Sources of Impacts to Air Quality

Criteria Air Pollutants

The HLP would not directly result in any air emissions; however, the home construction and occupancy of new homes, or modification of existing homes, facilitated through the HLP could result in indirect impacts. Impacts associated with the construction (or modification) of new housing would include the generation of air emissions during land disturbance activities, as well as from the combustion of fuel to operate construction equipment. Figure 4.2-1 illustrates these sources of air emissions. Air emissions due to land disturbance would consist of particulate matter, while emissions from fuel combustion could include particulate matter and nitrogen oxides (NO_x), as well as other criteria and hazardous air pollutants (USEPA 2016c). Mortgages financed under the VA HLP could include a range of sizes and types of housing, from condominiums to detached single-family homes. Construction-related emissions would vary depending on the size and type of home, the construction equipment used, and the ambient conditions where construction is taking place (i.e., higher land disturbance-related particulate matter emissions would be likely in a dry environment). Air emissions could vary significantly depending on factors that are not within VA’s ability to control or influence. Overall, air emissions indirectly attributed to the HLP from the construction of new homes would be expected to be minor.

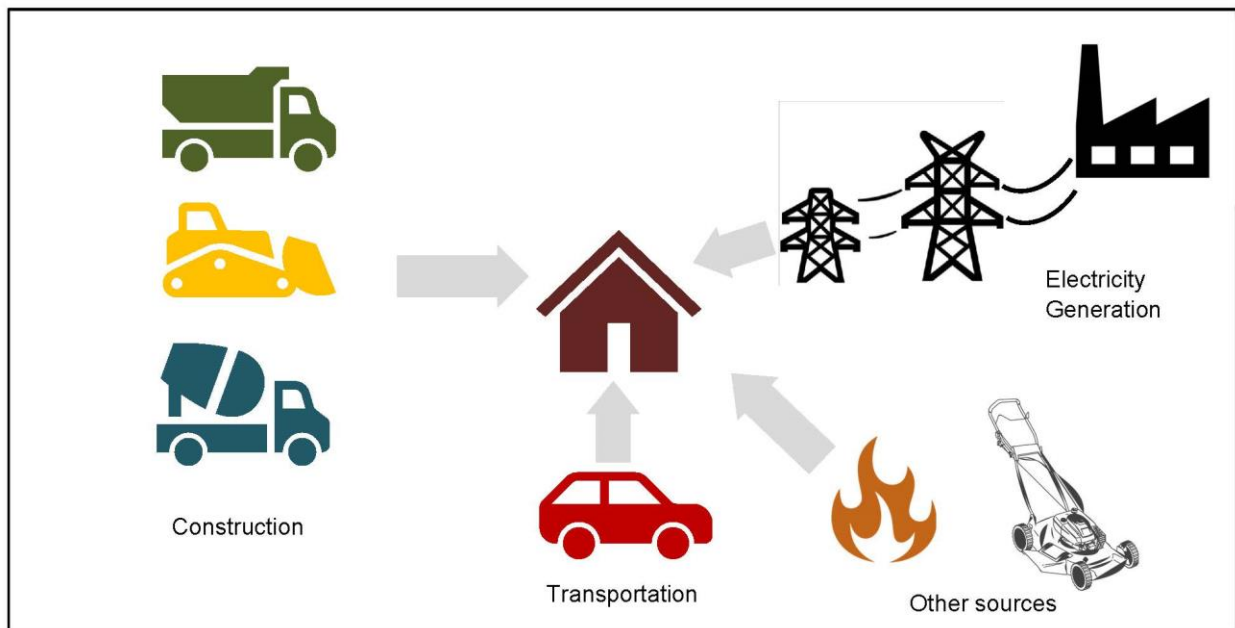


Figure 4.2-1. Typical Air Emissions Sources Associated with the Construction and Occupancy of New Homes

Once construction is completed, homes require energy for lighting, heating, cooling, and operating appliances. To the extent that this energy is produced by burning fossil fuels, it would entail additional air emissions that would continue to occur over the life of the home. These emissions would result from the combustion of fuels such as natural gas or fuel oil for heating and other domestic uses. Table 4.2-1 presents estimates of criteria air pollutants emitted due to the combustion of fuels (primarily for heating) in an average U.S. home over a year.

Table 4.2-1. Air Emissions Associated with Fuel Use in an Average U.S. Home

Fuel	Annual Consumption	Emissions (lbs/year) ^a			
		CO	NO _x	PM	SO ₂
Natural Gas	37,517 cubic feet	1.50	3.53	–	–
Propane	46 gallons	0.35	0.60	0.03	0.00
Heating Oil	29 gallons	0.15	0.52	0.06	0.21
Total		1.99	4.65	0.09	0.21

Source: USEPA 2019h, 2019i

^a. Total emissions calculated by converting multiplying electricity usage by pollutant-specific emissions factors, after converting electricity usage to MWh.

CO = carbon monoxide; lbs = pounds; MWh = megawatt-hours; NO_x = nitrogen oxide; PM = particulate matter; SO₂ = sulfur dioxide; U.S. = United States

Finally, landscaping and other ongoing activities could result in small amounts of air emissions over the life of the home. For example, one estimate suggests that nationwide air emissions from approximately 121 million pieces of gasoline-powered lawn and garden equipment equaled 26.7 million tons in 2011, resulted in 461,800 tons of volatile organic compounds; 5.8 million tons of carbon monoxide; 68,500 tons of nitrogen oxides; and 20,700 tons of particulate matter (Banks and McConnell 2015). Air emissions impacts associated with the VA HLP due to in-home fuel use (including landscaping) would likely be minor.

In addition, air emissions could also occur offsite at power plants that burn fossil fuels to generate electricity, which is then used to power homes and home equipment. This would likely be the most significant source of air emissions associated with the occupancy of homes. The USEPA estimates that an average home in the United States consumed 11,764 kWh of electricity in 2017 (USEPA 2019h). Estimated emissions of nitrogen oxides and sulfur dioxide associated with the generation of this electricity are shown in Table 4.2-2.

Table 4.2-2. Air Emissions Associated with Electricity Used by an Average U.S. Home

Pollutant	Emissions Factor (lbs/MWh)	Average Electricity Usage (kWh)	Total Emissions ^a (lbs)
NO _x	1.1	11,764	12.94
SO ₂	1.3	11,764	15.29

Source: USEPA 2019h, 2018g

^a. Total emissions calculated by multiplying electricity usage by pollutant-specific emissions factors, after converting electricity usage to MWh.

kWh = kilowatt-hours; lbs = pounds; MWh = megawatt-hours; NO_x = nitrogen oxide; SO₂ = sulfur dioxide; U.S. = United States

Finally, new home occupancy associated with the HLP, and the resulting increase in population, could lead to a localized increase in the use of personal vehicles for transportation. Demand for public transportation may also increase at the same time, but it is not expected that this increase would be sufficient to lead to an increase in the number of public transportation vehicles (such as buses and trains) in use. Air emissions from personal vehicles can vary depending on the type of vehicle and model year, and the total distance driven. Table 4.2-3 presents estimates of total air emissions nationwide from light-duty vehicles (i.e., passenger cars, light trucks, vans, and sport utility vehicles) in the United States in 2014. Nationwide, light-duty vehicles were driven a total of 2,710,555 million vehicle-miles in 2014 (FHWA 2018d).

Table 4.2-3. Air Emissions Associated with Light-Duty Vehicle Use

	Pollutant					
	CO	NO _x	Pb	PM ₁₀	PM _{2.5}	SO _x
Total emissions (tons)	22,996,333	2,681,902	2	173,422	69,493	24,431
Emissions per vehicle-mile (g/mile)	7.636	0.890	0.000	0.058	0.023	0.008

Source: FHWA 2018d; USEPA 2020

CO = carbon monoxide; g = grams; NO_x = nitrogen oxide; Pb = lead; PM_{2.5} = particulate matter 2.5 micrometers or less in diameter; PM₁₀ = particulate matter 10 micrometers or less in diameter; SO_x = sulfur oxide

Greenhouse Gases

The HLP would not directly result in any air emissions; however, the home construction and occupancy of new homes, or modification of existing homes, influenced by the HLP could result in indirect impacts. Greenhouse gases are emitted as a result of energy used during the construction, modification, and occupancy of homes. Construction of new homes entails greenhouse gas emissions from onsite activities that consume fuel, including the use of construction equipment for site preparation, material handling, and construction. Figure 4.2-2 illustrates common greenhouse gas emissions sources for new homes, for both construction and occupancy.

Home construction also uses a wide range of building materials and products. The production of these building materials requires energy to mine or harvest the raw materials, transport them to manufacturing facilities, and then process them into the final product. An increase in home construction would likely lead to an increase in demand for building materials, and therefore indirect (embodied) greenhouse gas emissions associated with the manufacture and transport of these materials would also increase.

Embodied Carbon – The use of energy over the lifecycle of a product results in greenhouse gas emissions, which are often described using the term “embodied carbon.” “Embodied energy” is a similar concept but described in terms of

Finally, the transportation of these materials to the construction site also requires the use of fuel and therefore results in greenhouse gas emissions. The quantity of transportation-related emissions would depend on the distance travelled and the mode of transport (i.e., road, rail, or ship).

Once construction is complete, normal use of homes requires energy for lighting, heating, cooling, and operating appliances. To the extent that this energy is produced by burning fossil fuels, it would entail additional greenhouse gas emissions that would continue to occur over the life of the home. These emissions could occur in-home due to the combustion of primary fuels such as natural gas or fuel oil, or they could occur offsite at power plants that burn fossil fuels to produce electricity.

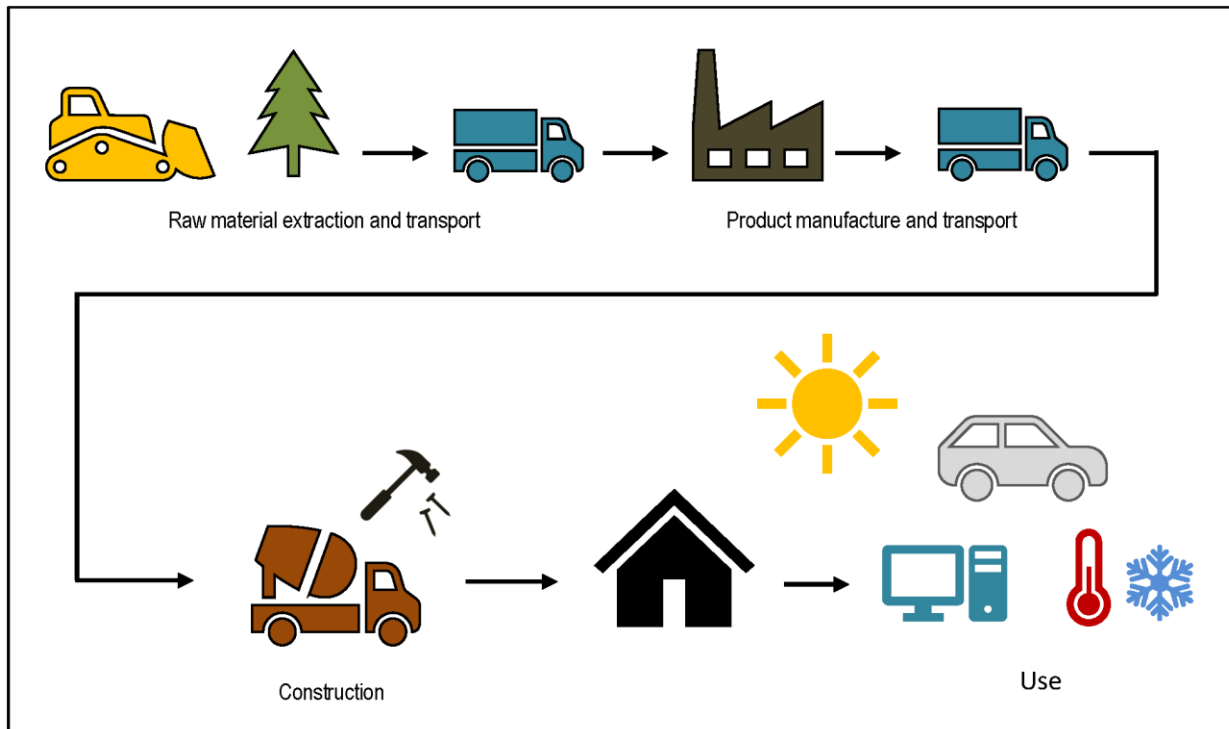


Figure 4.2-2. Sources of Greenhouse Gas Emissions Associated with New Homes

4.2.2.2 Potential Impacts to Air Quality

An increase in indirect impacts on air quality associated with new home construction and occupancy within, or renovation to, existing homes could occur as a result of market effects influenced by VA's HLP (e.g., new home loan guaranties, refinancing, SAH program grants). However, any impacts on air quality associated with increased market demand for new home construction would likely be minor. Table 4.2-4 summarizes potential impacts to air quality under the VA HLP, including criteria air pollutants and greenhouse gas emissions. The impact analysis assumes that the volume of HLP activity through FY 2030 in each RLC's operational area, and the resulting effects from new home construction, would be consistent with past volumes as described in Section 1.4, Overview of Current Housing Loan Program, in Chapter 1, Introduction. Impacts are described in greater detail in the sections that follow.

Table 4.2-4. Summary of Air Quality Impacts by VA Regional Loan Center

VA Regional Loan Center ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
Atlanta (GA, NC, SC, TN)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA provided 2,500 – 5,000 loan guaranties for newly constructed homes in each of nine MSAs served by this RLC. VA provided 1,000 – 2,000 loan guaranties for newly constructed homes in two additional MSAs. The Atlanta, Georgia metropolitan area is currently designated nonattainment for O ₃ .
Cleveland (CT, DE, IN, MA, ME, MI, NH, NJ, NY, OH, PA, RI, VT)	Negligible	Negligible	Negligible	Negligible	Negligible	VA provided 1,000 -2,500 loan guaranties for newly constructed homes in only one MSA (Indianapolis-Carmel-Anderson, Indiana).
Denver (AK, CO, ID, MT, OR, UT, WA, WY)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA provided more than 5,000 loan guaranties for newly constructed homes in the Colorado Springs, Colorado MSA. VA provided 2,500 – 5,000 loan guaranties for newly constructed homes in one MSA (Seattle-Tacoma-Bellevue, Washington) and 1,000 – 2,500 in six additional MSAs supported by this RLC.
Houston (AR, LA, OK, TX)	Minor	Negligible	Negligible	Negligible	Negligible	Several areas within the state of Texas are expected to gain the highest numbers of VA-guaranteed loans for newly constructed homes. Specifically, VA provided more than 5,000 loan guaranties for newly constructed homes in the San Antonio-New Braunfels, Dallas-Ft. Worth-Arlington, Houston-The Woodlands-Sugarland, and Killeen-Temple MSAs and 2,500-5,000 in the Austin-Round Rock-Georgetown. El Paso MSAs saw 2,500 – 5,000 loans for newly constructed homes. The following states include areas that are currently designated as nonattainment for one or more criteria air pollutants: Louisiana (SO ₂); Texas (O ₃ , PM ₁₀ , and SO ₂).

Table 4.2-4. Summary of Air Quality Impacts by VA Regional Loan Center

VA Regional Loan Center ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
Phoenix (AZ, CA, HI, NV, NM, Guam, Northern Mariana Islands, American Samoa)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA provided more than 5,000 loan guaranties for newly constructed homes in the Phoenix-Mesa-Chandler, Arizona MSA. VA provided 2,500 – 5,000 loan guaranties for newly constructed homes in the Riverside-San Bernardino-Ontario, California and Las Vegas-Henderson-Paradise, Nevada MSAs and 1,000 – 2,500 in seven additional MSAs. These metropolitan areas overlap with nonattainment areas in Arizona. The following states and territories include areas that are currently designated as nonattainment for one or more criteria air pollutants: Arizona (O ₃ , PM _{2.5} , PM ₁₀ , SO ₂ , and Pb); California (O ₃ , PM _{2.5} , PM ₁₀ , and Pb); Nevada (O ₃); New Mexico (O ₃ , and PM ₁₀); and Guam (SO ₂).
Roanoke (KY, MD, VA, WV, DC)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA provided more than 5,000 loan guaranties for newly constructed homes in the MSAs of Washington-Arlington-Alexandria, District of Columbia/Virginia/Maryland/West Virginia and Virginia Beach-Norfolk-Newport News, Virginia/North Carolina; 2,500 – 5,000 loan guaranties for newly constructed homes in the Baltimore-Columbia-Towson, Maryland MSA; and 1,000 – 2,500 loan guaranties for newly constructed homes in the Richmond, Virginia MSA. The following states include areas that are currently designated as nonattainment for one or more criteria air pollutants: Kentucky (O ₃ and SO ₂); Maryland (O ₃ and SO ₂); Virginia (O ₃ and SO ₂); West Virginia (SO ₂). In addition, the District of Columbia is designated as a nonattainment area for O ₃ .
St. Paul (IL, IA, KS, MN, MO, NE, ND, SD, WI)	Negligible	Negligible	Negligible	Negligible	Negligible	VA provided 1,000 – 2,500 loan guaranties for newly constructed homes in one MSA: Omaha-Council Bluffs, Nebraska. The following states include areas that are currently designated as nonattainment for one or more criteria air pollutants: Illinois (O ₃ , SO ₂ , and Pb); Iowa (SO ₂);

Table 4.2-4. Summary of Air Quality Impacts by VA Regional Loan Center

VA Regional Loan Center ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
						Kansas (Pb); Minnesota (Pb); Missouri (O ₃ , SO ₂ , and Pb); Wisconsin (O ₃ , and SO ₂).
St. Petersburg (AL, FL, MS, Puerto Rico, U.S. Virgin Islands)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA provided more than 5,000 loan guaranties for newly constructed homes in the Jacksonville and Tampa-St. Petersburg-Clearwater, Florida MSAs and 2,500 – 5,000 in the Orlando-Kissimmee-Sanford and Pensacola-Ferry Pass-Brent, Florida MSAs. VA provided 1,000 – 2,500 loan guaranties for newly constructed homes in one additional MSA: Huntsville, Alabama. The following states and territories include areas that are currently designated as nonattainment for one or more criteria air pollutants: Florida (SO ₂); Puerto Rico (SO ₂ and Pb).

^a. See Figure 1-1 in Chapter 1, Introduction, for map titled Nationwide Locations and Jurisdictions of VA Regional Loan Centers.

^b. See Table 1-4 in Chapter 1, Introduction, for numbers of VA-guaranteed loans for newly constructed homes by metropolitan statistical area, during the period FY 2013 through 2017. This PEIS assumes that loan guaranty and other HLP activity in a given metropolitan statistical area through 2030 would be consistent with past levels.

^c. Since Existing/Refinance home loan guaranties and REO transactions pertain to existing homes, impacts to the physical environment would be expected to be negligible. See Section 1.4.2 in Chapter 1, Introduction, for further discussion on the REO program.

^d. NADLs may be used for new home construction that could cause physical impacts to environmental resources; however, past volumes of total NADLs for both existing homes and new construction have been very low (118 collectively between FY 2013 and FY 2017), and spread out across multiple states and territories, such that overall impacts would typically be negligible. See Section 1.4.3 in Chapter 1, Introduction, for further discussion on NADLs.

^e. Because the number of overall SAH program grants in the United States and its Territories is very small (less than 2,000 per year), and only a small portion of those grants would involve exterior work, impacts to the physical environment would be expected to be negligible. See Section 1.4.4 in Chapter 1, Introduction, for further discussion on SAH program grants.

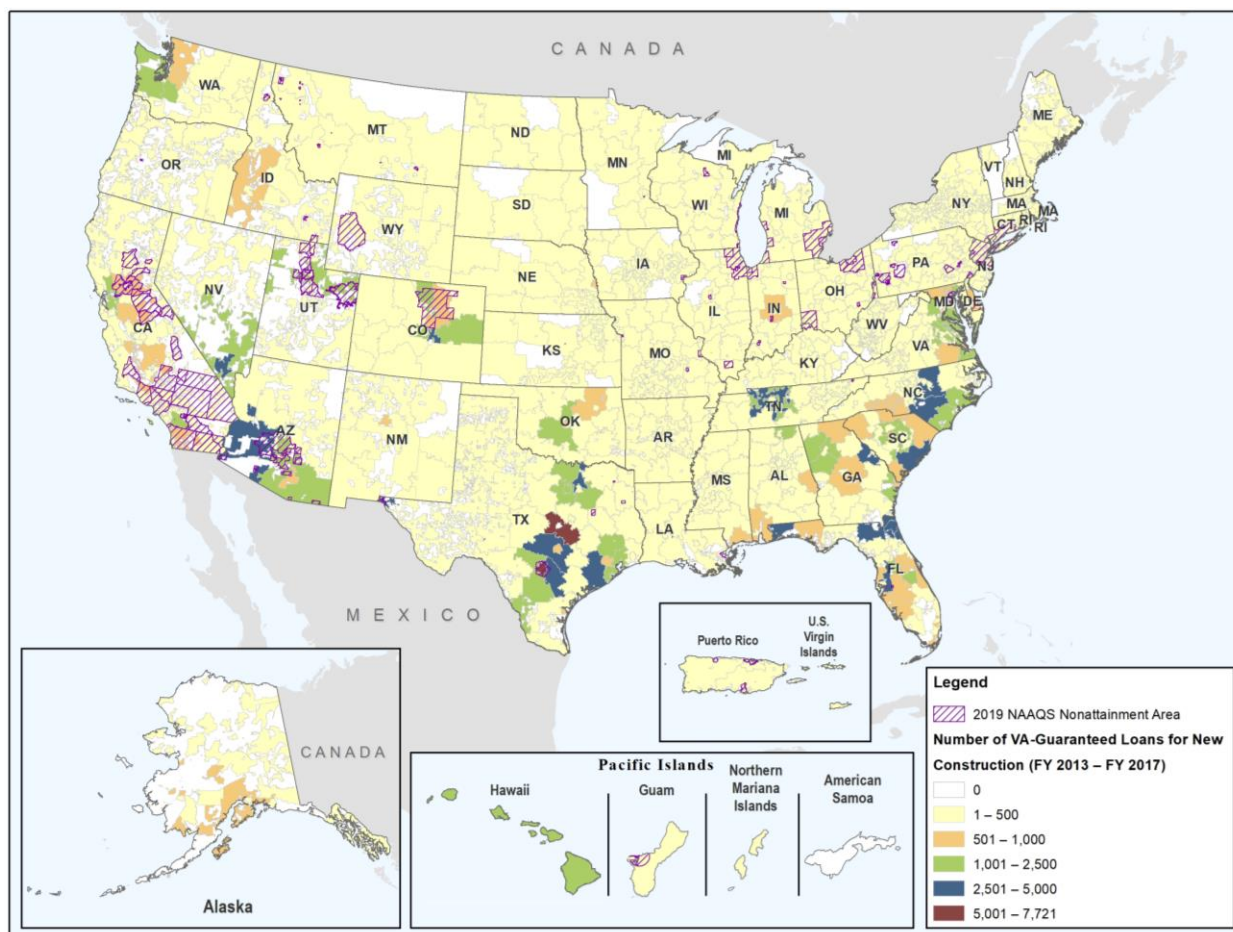
^f. Past loan guaranty volumes shown here are for the period FY 2013 through FY 2017, as presented in Table 1-4 in Chapter 1, Introduction. One MSA may overlap more than one Regional Loan Center.

FY = fiscal year; MSA = metropolitan statistical area; NADL = Native American Direct Loan; O₃ = ozone; Pb = lead; PM_{2.5} = particulate matter 2.5 micrometers or less in diameter; PM₁₀ = particulate matter 10 micrometers or less in diameter; REO = Real Estate Owned; SAH = Specially Adapted Housing; USGS = United States Geological Survey; VA = U.S. Department of Veterans Affairs; SO₂ = sulfur dioxide.

Criteria Air Pollutants

An increase in indirect air emissions associated with new home construction and occupancy could occur as a result of market effects influenced by VA-guaranteed loans. However, any increase in air pollutant emissions and the resultant air quality impacts associated with increased market demand for new home construction would likely be localized and minor. Similar impacts could occur, although on a much smaller scale, as a result of the NADL program. The REO program would not be expected to result in impacts to air quality. Construction activities related to home modifications made with SAH program grants could result in similar types of emissions as new home construction, but the amounts of such emissions (and their potential impact) would be very minor because home renovation activities would typically involve the use of smaller amounts of building materials and require much less fuel consumption on-site.

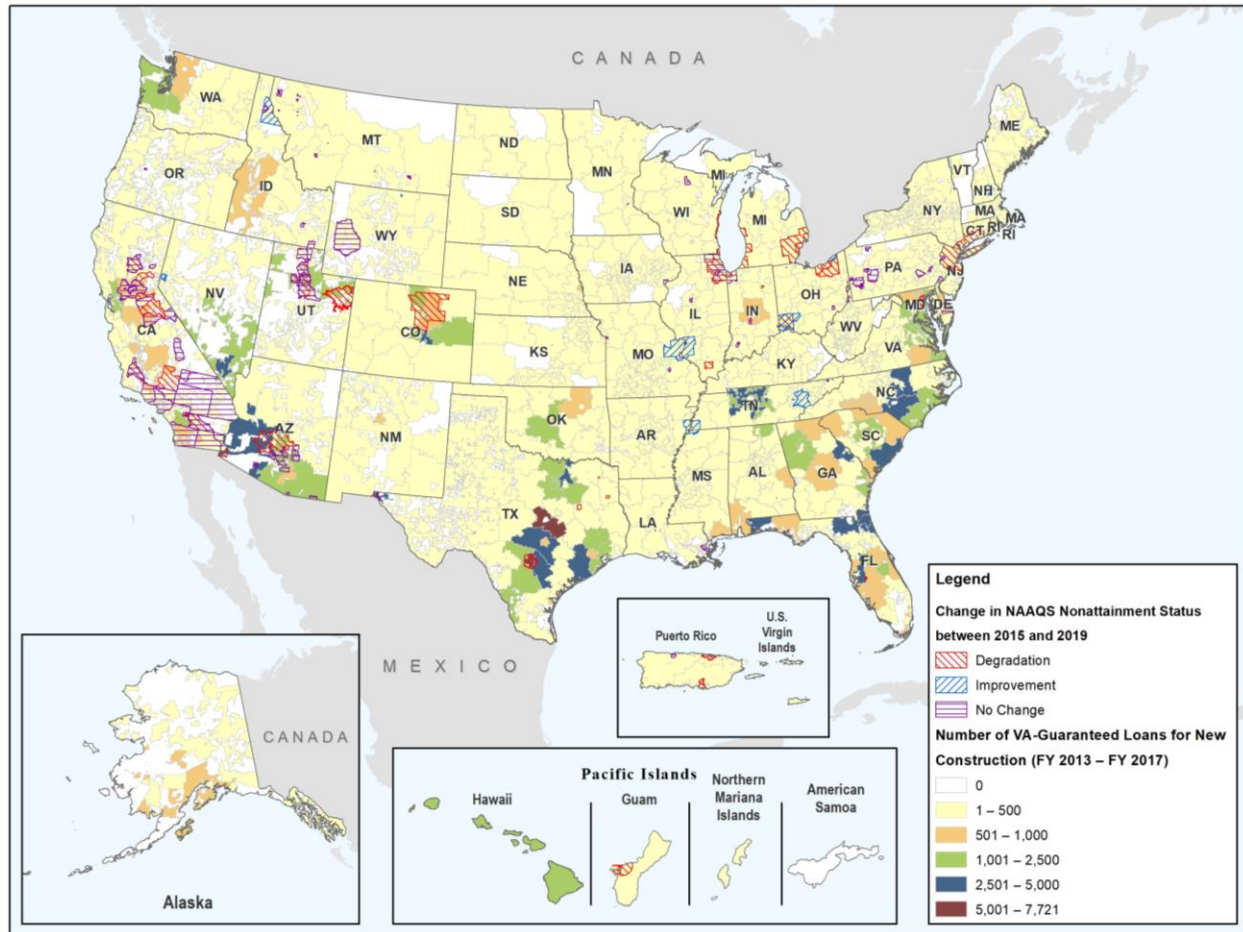
Indirect air quality impacts associated with the construction and occupancy of new homes under the Proposed Action would likely include some regional variation. Figure 4.2-3 shows areas of the United States and its Territories that are currently listed as being in nonattainment with one or more NAAQS, superimposed over areas that have experienced the highest number of VA HLP loan guaranties provided for newly constructed homes over the period FY 2013 to FY 2017. Parts of the country that experience more rapid growth in housing demand, such as parts of the South and Southwest, would likely experience a greater increase in indirect air quality impacts associated with the Proposed Action. As explained in Section 4.0, Environmental Consequences, Introduction, the HLP would likely have a negligible to minor effect on the number of new homes being constructed, and therefore have a negligible to minor indirect impact on air quality; however, it is possible that any additional increase in air emissions would add to the air quality burden in current nonattainment areas.



Source: USEPA 2019j
 FY = fiscal Year; NAAQS = National Ambient Air Quality Standards

Figure 4.2-3. Comparison of 2019 NAAQS Nonattainment Areas with Number of VA-Guaranteed Loans for Newly Constructed Homes

Figure 4.2-4 shows changes in nonattainment status by county between 2015 and 2019, superimposed over the number of HLP guaranties provided for newly constructed homes during the period FY 2013 to FY 2017. Most, but not all, areas that have an overlap between air quality nonattainment and a higher number of VA HLP guaranteed mortgages either showed no change in attainment status or had a negative change (i.e., lost attainment status for one or more criteria air pollutants). Areas with higher numbers of HLP guaranteed mortgages that also lost attainment status for one or more pollutants included parts of Arizona, Maryland, Texas, and Utah.



Source: USEPA 2019j

FY = fiscal Year; NAAQS = National Ambient Air Quality Standards

Figure 4.2-4. Comparison of Change in NAAQS Attainment Status with Number of VA-Guaranteed Loans for Newly Constructed Homes

Greenhouse Gases

An increase in indirect greenhouse gas emissions associated with new home construction and occupancy could occur as a result of market effects influenced by VA-guaranteed loans. However, any increase in greenhouse gas emissions associated with increased market demand for new home construction would likely be minor. Similar impacts could occur, although on a much smaller scale, as a result of the NADL program. The REO program would not be expected to result in impacts to air quality. Construction activities related to home modifications made with SAH program grants could result in similar types of emissions as new home construction, but the amounts of such emissions (and their potential impact) would be negligible to minor because home renovation activities would typically involve the use of smaller amounts of building materials and require much less fuel consumption onsite.

An increase in indirect greenhouse gas emissions associated with new home construction and occupancy could occur as a result of market effects influenced by loan guaranties provided under the VA HLP. However, any increase in greenhouse gas emissions associated with increased market demand for new home construction would likely be minor. Similar impacts could also occur, although on a much

smaller scale, as a result of the NADL program. The REO program would not be expected to result in an increase in greenhouse gas emissions. Construction activities related to home modification made with SAH program grants provided under the HLP could result in similar types of greenhouse gas emissions as new home construction, but the amounts of such gases emitted (and their potential impact) would be negligible to minor due to the small amount of outdoor construction that results from SAH program grants. Any increase in greenhouse gas emissions as result of the Proposed Action would likely include some regional variation. Parts of the country that experience more rapid growth in housing demand, such as parts of the South and Southwest, would likely experience a greater increase in greenhouse gas emissions associated with the Proposed Action. However, climate change is driven by aggregate emissions on the global scale, rather than local or regional emissions. Therefore, these regions would not necessarily experience greater climate change impacts relative to regions where emissions do not increase or increase by smaller amounts.

4.2.3 No Action Alternative

Under the No Action Alternative, VA-guaranteed loans and the percentage of new home construction would continue at levels consistent with those observed in FY 2017, as described in Section 2.3, Proposed Action and Alternatives, and Section 4.0, Environmental Consequences, Introduction. VA-guaranteed loans, REO transactions, NADLs, and SAH program grants would continue to represent a very small portion of the total home loan market, and nationwide housing supply and demand trends would continue to evolve without significant influence from the HLP. The regional environmental effects of housing construction and occupancy, and corresponding population shifts, would likely continue in a manner consistent with those seen in recent years. The HLP's contribution to such regional effects would continue to be minor in scale and consistent with FY 2017 conditions, and no unique types or localized focuses of effects on air quality or greenhouse gases would be expected to reach the level of significance as defined under NEPA.

Indirect air quality and greenhouse gas impacts could occur as a result of the construction and occupancy of new homes, which would be consistent with recent historical levels. Further, as discussed in Section 4.0, Environmental Consequences, Introduction, while many Veterans rely on the HLP and might not be able to purchase a home except for the availability of VA-guaranteed loans with zero down payment, the majority of these homes would have been constructed regardless of VA's financial support to Veterans under the HLP.

4.3 BIOLOGICAL RESOURCES

This section describes the potential direct and indirect impacts to biological resources from operation and management of VA's HLP, including potential impacts from construction and occupancy of new homes or modification of existing homes associated with the HLP.

4.3.1 Significance Criteria

To evaluate impacts to biological resources, VA considered the potential for biological resources to change within the Affected Environment (described in Section 3.3, Biological Resources) as a result of the Proposed Action and No Action Alternative. To evaluate impacts to biological resources, VA reviewed the Proposed Action and No Action Alternative to determine whether any activities have the potential to cause any of the following:

- Decreases in relevant biological resources or health standards;
- Impairment to critical habitat for specific protected species;
- Direct or indirect "taking" of specific protected species;
- Reduction in threatened or endangered species population or community; and
- Conflicts with local or regional biological resources management plans to attain or maintain compliance with federal or state biological resources regulations.

4.3.2 Proposed Action

Under the Proposed Action, VA would continue to operate and actively manage the HLP. The number of VA-guaranteed loans would fluctuate within the range bound by the low-intensity scenario to the high-intensity scenario, as described in Section 2.2 (Chapter 2, Proposed Action and Alternatives), and Section 4.0, Environmental Consequences, Introduction. VA's REO program would continue to maintain, manage, market, and sell existing homes through a private-sector company; the NADL program would continue to make VA direct loans available to Native American Veterans living on trust, tribal, or communally owned lands; and VA would continue to provide SAH program grants to accommodate the needs of Veterans with certain severe, service-connected disabilities.

Section 4.3.2.1 discusses potential sources and types of biological impacts. Section 4.3.2.2 summarizes the overall impacts that could occur from the HLP and their anticipated geographical distribution across the United States and its Territories.

4.3.2.1 Sources of Impacts to Biological Resources

Vegetation

The HLP would not directly result in any impacts to vegetation; however, the construction and occupancy of new homes, or modification of existing homes, facilitated through the HLP could result in indirect impacts. Home construction activities could both temporarily and permanently affect plant communities. Potential effects include loss of trees and shrubs during construction activities because of grading and excavation, soil erosion, removal of nutrient rich topsoil, and localized habitat loss for both

plants and organisms resulting from temporary disturbance to construction areas. There could also be potential disruption in seasonal reproductive cycles (e.g., burrowing animals and insects, and flowering or seed production) because in the more temperate to cold climate areas of the country, home construction occurs in the spring to fall seasons as construction companies attempt to avoid the worst inclement weather periods typical of winter.

Removing existing plant communities for clearing, grading, excavating, or constructing new homes could permanently or temporarily adversely affect vegetation. This is especially true for areas with native vegetation communities. Plant communities in previously developed areas are often considered to be lower environmental quality; however, construction could result in the loss of desirable forest or moderate tree cover, including deciduous, coniferous, and mixed forest communities. In addition, indirect permanent adverse impacts could result from the potential alteration of hydrology as well as nutrient and sediment deposition within existing plant communities, which may create conditions favorable to opportunistic, non-native species to inhabit an area previously occupied by native species. Non-native species can be aggressive competitors with native plant species, reducing or eliminating native species cover.

Native plant communities have evolved over tens of thousands of years and typically comprise many different species. Native wildlife species have evolved with the native plant communities and are adapted to the habitats the vegetation provides. Therefore, when native plant species are reduced or eliminated from the vegetative cover, there is not only a decline in plant diversity but also a reduction in the number of wildlife species present. For this reason, disturbed areas should be minimized and re-seeded with native species mixtures. Also, when homeowners plant native species beneficial to wildlife or choose other plant species that provide food or cover for wildlife, this lessens a negative impact upon native species and provides a beneficial change for species adapted to this kind of habitat.

Overall, because of the limited scope of changes in a given area, impacts related to the spread of non-native plant species would likely be minor and would not differ significantly from the current spread of non-native plant species within ecoregions.

Wildlife

The HLP would not directly result in any impacts to wildlife; however, the construction and occupancy of new homes (or the modification of existing homes) facilitated through the HLP could result in indirect impacts. Construction activities could have an impact on the diversity of wildlife habitat requirements (food, cover, water, and space). This could occur either when essential habitat requirements are removed or when disturbance activities cause the animals to abandon the site.

Wildlife species could be displaced during construction events. These displacements could be permanent or temporary. Some animals are more tolerant of, or more resistant to, disturbance. For example, songbirds are not tolerant of disturbances during the breeding season, especially near the nest site. However, they will visit disturbed areas to feed, dust (a form of preening and plumage maintenance [Mayntz 2019]) in soil disturbed by construction, and bathe in water from temporary

puddles. Accidental mortality could also increase in the short-term during construction but could also increase in the long-term with new development roads and increased population overall.

Despite the potential adverse impacts of new home construction, open green spaces are often created between new houses and new landscaping that offer respite. This additional green space, although different from the native/natural area disturbed, would provide opportunities and cover for wildlife movement. Additionally, feeding of animals, either intentionally (e.g., feeding of songbirds and wildlife such as squirrels and wild turkeys) or unintentionally (e.g., feeder pilfering by raccoons and bears), would provide easily obtainable food resources in developed areas. If dead trees are removed, some of the cover requirements they provided can be replaced by installing bird houses.

There could be minor, temporary or permanent losses of wildlife habitat expected with the Proposed Action. It is anticipated that most wildlife near a construction area would use adjacent similar habitats during construction. Many species would quickly recolonize the area of impact soon after construction completion provided that soil stabilization, vegetative cover, and food sources are available. The net effect is usually that most constructed sites accommodate fewer native species (lower native biological diversity) that are already declining in numbers such as ground nesting birds and offer conditions for species that are common in developed areas such as mockingbirds, gray squirrels, and raccoons, which might result in increased predation on the birds, applying additional pressure for nesting success (Schaefer 2018).

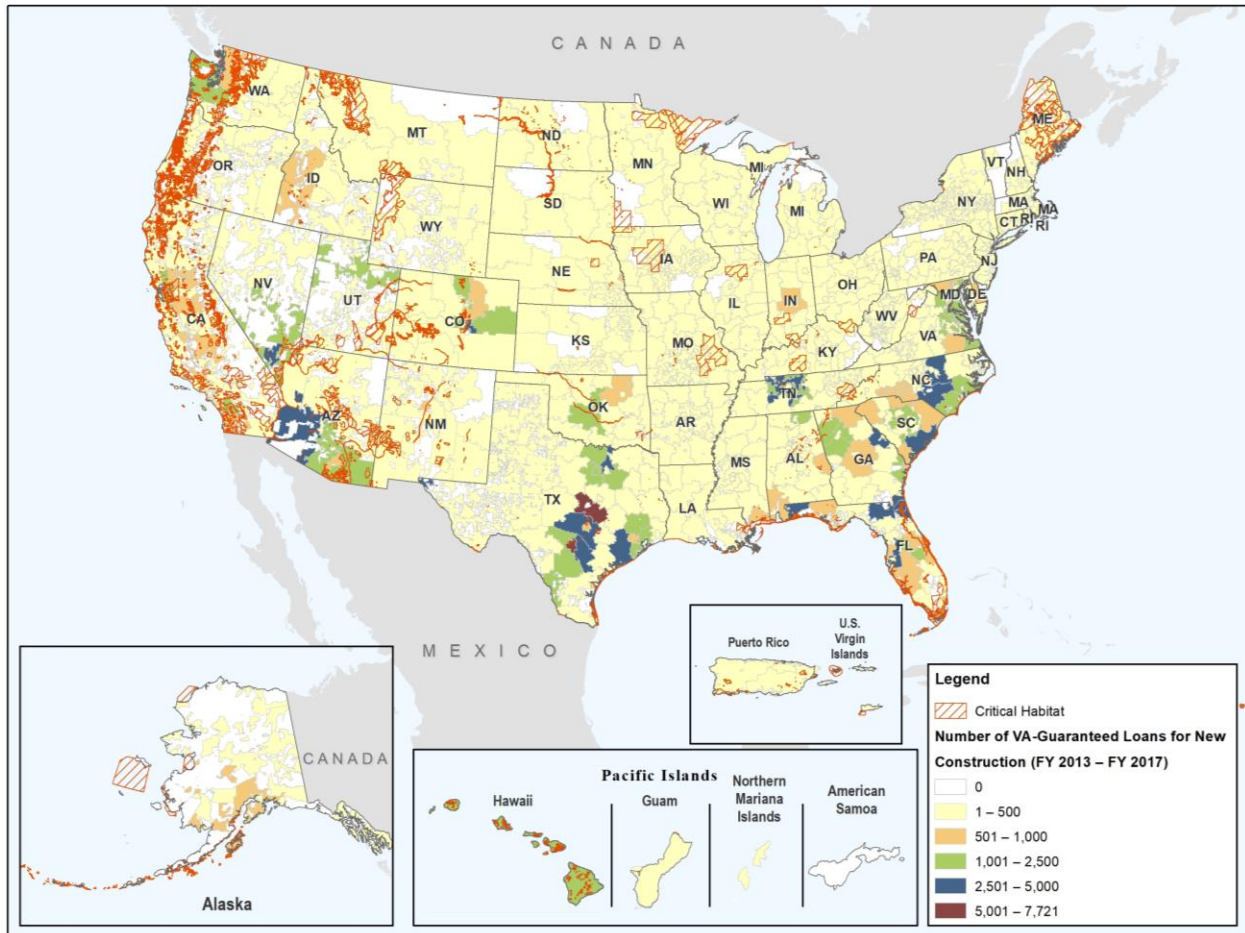
Migratory and Nesting Birds

The HLP would not directly result in any impacts to migratory and nesting birds; however, the construction and occupancy of new homes (or the modification of existing homes) facilitated through the HLP could result in indirect impacts. New home construction could affect use of trees, shrubs, or ground vegetation by roosting or nesting birds in the project area. In addition, resting and breeding locations on migratory birds' flyways could be negatively impacted as well. During construction, it is anticipated that nesting birds would temporarily avoid using preferred nest sites within active construction areas. Nesting birds often resume use of remaining nest sites once construction is completed. Hence, many states have regulations in place limiting or altering construction activities, (e.g., brush removal, tree trimming, or grading) during nesting season. To reduce the potential impact upon nesting birds, those construction activities should occur in months outside of the nesting season. Nesting season differs depending upon dates set by each state's natural resources department. Overall, there may be minor, temporary adverse effects on migratory birds resulting from construction-noise and possibly longer-term or permanent effects related to loss of nest habitat due to clearing.

Endangered and Threatened Species

The HLP would not directly result in any impacts to endangered and threatened species; however, the construction and occupancy of new homes (or the modification of existing homes) facilitated through the HLP could result in indirect impacts. Federal or state endangered or threatened species might be impacted by new home construction. However, Veterans apply for and receive loans for newly

constructed homes through the HLP based on their status as Veterans; VA has no authority over where new homes would be constructed. Local developers and city planners ultimately determine the number and size of homes, neighborhood density, and community infrastructure surrounding a neighborhood development. Federal, state, and local regulations would still apply, and any proposed construction would be subject to existing zoning, development, and conservation rules and associated planning processes. Fortunately, areas of the country that have had higher volumes of VA-guaranteed loans for the most part have not coincided with designated critical habitat areas as demonstrated by Figure 4.3-1.



Source: ESRI 2018

Figure 4.3-1. Comparison of Critical Habitat with Number of VA-Guaranteed Loans for Newly Constructed Homes

Most areas with endangered or threatened species would be adequately protected by state departments of natural resources and federal agencies in the direct construction area through permitting requirements for construction companies or for the proponents of infrastructure development. For example, proposed roadway changes go through a several-year process of siting meetings and permitting requirements if the proposed right-of-way was determined to have any impact on a habitat area associated with an endangered or threatened species. Preventative measures would

most likely be imposed on these actions by the state and federal agencies. These measures are designed to avoid any direct impacts to the critical habitat or species resulting in no detrimental effect to the species survival. For example, in areas where threatened or endangered bats hibernate in caves or mines during the winter months, roadway construction companies may be limited to clearing trees only in the winter months, because the bats use mature trees for roosting areas during the summer months. Therefore, tree cutting is limited to times when the bats are underground and not using the trees (Thurston 2017). Candidate species are species under consideration for listing as endangered or threatened, but for which a proposed regulation has not yet appeared in the FR. Thus, while provisions for candidate species may be encouraged, candidate species are not protected by the Endangered Species Act.

4.3.2.2 Potential Impacts to Biological Resources

Increases in indirect impacts to biological resources associated with new home construction and residential living could occur as a result of market effects influenced by VA's HLP. However, any impacts on biological resources associated with increased market demand for new home construction would likely be localized and minor for both the low-intensity and high-intensity cases. The impact analysis assumes that the volume of HLP activity through FY 2030 in each ecoregion, and the resulting effects from new home construction, would be consistent with past volumes as described in Section 1.4, Overview of Current Housing Loan Program. A summary of potential impacts by USEPA Level I Ecoregion is presented in Table 4.3-1.

Under the Proposed Action, VA-guaranteed loans for existing homes and refinancing of existing loans would have no direct or indirect effect on biological resources based on the fact that the homes already exist, and the biological resources around those homes would not be altered. Physical impacts would be expected through soil preparation, site alteration, and construction activities necessary for building a new single home or a new residential development.

Table 4.3-1. Summary of Biological Resource Impacts by USEPA Ecoregion

USEPA Ecoregion ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
Tundra (Northern portion of AK)	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided no or low numbers of loan guaranties for newly constructed homes in this ecoregion. The area is a rich biological resource for wildlife, birds, and flora in the summer months, and the extreme winter climate creates harsh living conditions.
Taiga (Central AK)	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided low numbers of loan guaranties for newly constructed homes in this ecoregion. It is a biologically rich largely undeveloped ecoregion providing suitable habitat for many wildlife, bird, and floral species.
Northern Forest (Northern part of MN, WI, MI, and NY; part of PA, NJ, CT, MA, NH, VT, and ME)	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided low numbers of loan guaranties for newly constructed homes in this ecoregion, even in large metropolitan population centers. This ecoregion remains a relative wilderness with 80 percent of the land area remaining forested.
Northwestern Forested Mountains (Central AK; parts of WA, OR, ID, MT, WY, SD, UT, CO; northern NM; and northern and central CA)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided 2,500 – 5,000 loan guaranties for newly constructed homes in the Seattle-Tacoma-Bellevue, Washington MSA and 1,000 – 2,500 loan guaranties for newly constructed homes in four additional MSAs. This ecoregion contains the highest mountains of North America and some of the most diverse ecosystem types, ranging from alpine tundra to dense conifer forests to dry sagebrush and grasslands. These ecosystems were combined into one ecoregion because the topography of the same mountain chain traversing the entire length.

Table 4.3-1. Summary of Biological Resource Impacts by USEPA Ecoregion

USEPA Ecoregion ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
Marine West Coast Forests (Southern areas of AK; west coast of WA, OR, and CA)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided 2,500 – 5,000 loan guaranties for newly constructed homes in the Seattle-Tacoma-Bellevue, Washington MSA and 1,000 – 2,500 loan guaranties for newly constructed homes in the Portland-Vancouver-Hillsboro and Olympia-Lacey-Tumwater MSAs in Oregon and Washington. The wettest climates of North America occur in this ecoregion. It is characterized by mountainous topography bordered by coastal plains and contains most of the temperate rain forests found in North America.
Eastern Temperate Forest (East TX, OK; parts of MN and MO; all of AR, LA, AL, MS, GA, FL, SC, NC, TN, KY, WV, VA, IL, WI, MI, IL, IN, OH, MD, PA, DE, NJ, NY, CT, RI, MA, VT, NH, and ME)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	This ecoregion covers most of the central and eastern United States. VA has provided more than 5,000 loan guaranties for newly constructed homes in the Jacksonville, Florida and San Antonio-New Braunfels and Killeen-Temple, Texas MSAs; 2,500 – 5,000 loan guaranties for newly constructed homes in 15 additional MSAs; and 1,000 – 2,500 loan guaranties for newly constructed homes in another 15 MSAs. This ecoregion is distinguished by its moderate to mildly humid climate, and its dense and diverse forest cover consisting mostly of tall broadleaf, deciduous trees, and needle-leaf conifers.
Great Plains (Eastern part of NM, CO, WY, MT; all of ND, SD, NE, and KS; central and western part of OK, TX, MO, and IA; western portion of MN and LA)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the Colorado Springs, Colorado MSA and the San Antonio-New Braunfels, Killeen-Temple, Houston-The Woodlands-Sugarland, and Dallas-Ft. Worth-Arlington MSAs in Texas. VA has also provided 2,500 – 5,000 loan guaranties for newly constructed homes in the Austin-Round Rock-Georgetown and El Paso, Texas MSAs and 1,000 – 2,500 loan guaranties for newly constructed homes in six additional MSAs. This area is distinguished by relatively little topographic relief; native prairie grasslands, few forests, and sub humid to semiarid climate. Habitat loss due to agriculture and development is a concern.

Table 4.3-1. Summary of Biological Resource Impacts by USEPA Ecoregion

USEPA Ecoregion ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
North American Deserts (Parts of WA, OR, ID, WY, CO, UT, AZ, NM, CA, and all of NV)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided 2,500 – 5,000 loan guaranties for newly constructed homes in the Las Vegas-Henderson-Paradise, Nevada and El Paso, Texas MSAs and 1,000 – 2,500 loan guaranties for newly constructed homes in three additional MSAs. This ecoregion is characterized by its aridity, unique shrub and cactus vegetation with a lack of trees, dominated by low growing shrubs and grasses, and lower relief and elevations.
Mediterranean California (Central and western CA)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided 2,500 – 5,000 loan guaranties for newly constructed homes in the Riverside-San Bernardino-Ontario, California MSA and 1,000 – 2,500 loan guaranties for newly constructed homes in the San Francisco-Oakland-Berkeley, Sacramento-Roseville-Folsom, and San Diego-Chula Vista-Carlsbad MSAs in California. This ecoregion is known for its warm and mild Mediterranean climate, shrubland vegetation of chaparral mixed with areas of grassland and open oak woodlands, and agriculturally productive valleys.
Southern Semi-Arid Highlands (Southeastern area of AZ)	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided 1,000 – 2,500 loan guaranties for newly constructed homes in the Tucson, Arizona MSA. The characteristic natural vegetation, which presently is very diminished or altered, consists of grasslands and combinations of grasslands with scrublands and forests in the transition zones.
Temperate Sierras (Central and eastern portions of AZ and NM)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided 2,500 – 5,000 loan guaranties for newly constructed homes in the Phoenix-Mesa-Chandler, Arizona MSA and 1,000 – 2,500 loan guaranties for newly constructed homes in the Albuquerque, New Mexico MSA. Vegetation at the higher elevations of this ecoregion can be evergreen or deciduous, primarily being composed of conifers and oaks.

Table 4.3-1. Summary of Biological Resource Impacts by USEPA Ecoregion

USEPA Ecoregion ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
Tropical Wet Forests (Southern tip of FL)	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided no or low numbers of loan guaranties for newly constructed homes in this ecoregion. Evergreen and semideciduous forests are the most characteristic plant communities of this region which, in terms of flora and fauna, is doubtless one of the richest zones in the world.
Hawaiian High Islands	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided 1,000 – 2,500 loan guaranties for newly constructed homes in the Honolulu, Hawaii MSA. This ecoregion boasts the highest overall species and ecosystem endemism of any ecoregion. Rare and endangered taxa, including endangered plants, forest birds, and land snails comprise over 25 percent of the flora and fauna.
Northern Mariana Islands	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided low numbers of loan guaranties for newly constructed homes in this ecoregion. These islands are a classic example of a volcanic island arc that is dominated by primary grasslands and show little human disturbance. A low diversity of flora with probably no more than 500 species exists, and due to recent volcanism, there is little forest.
Guam	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided low numbers of loan guaranties for newly constructed homes in this ecoregion. Most of Guam has been heavily disturbed and is covered by secondary growth forest. However, scattered patches of original forest still exist on the northern plateau and in less accessible areas.

Table 4.3-1. Summary of Biological Resource Impacts by USEPA Ecoregion

USEPA Ecoregion ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
American Samoa	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided no or low numbers of loan guaranties for newly constructed homes in this ecoregion. Tropical rain forest once covered all areas except for coastal and marshy areas. It occurs in three broad types in American Samoa: lowland forest is the most extensive, followed by montane forest, and cloud forest, with several other minor habitat types.
Puerto Rico	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided low numbers of loan guaranties for newly constructed homes in this ecoregion. It has a uniform tropical climate with limited rainforest on the northern mountain edge and semiarid dry forests on the southern mountain range.
U.S. Virgin Islands	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided low numbers of loan guaranties for newly constructed homes in this ecoregion. These islands have a high value of endemism and are characterized by rugged, volcanic mountains covered in moist tropical forest.

^a. See Figure 3.0-2 in Chapter 3 for map of USEPA Ecoregions.

^b. See Table 1-4 in Chapter 1, Introduction, for the numbers of VA-guaranteed loans for newly constructed homes by metropolitan statistical area, during the period FY 2013 through FY 2017. This PEIS assumes that loan guaranty and other HLP activity in a given metropolitan statistical area through FY 2030 would be consistent with past levels.

^c. Since Existing/Refinance home loan guaranties and REO transactions pertain to existing homes, impacts to the physical environment would be expected to be negligible. See Section 1.4.2 in Chapter 1, Introduction, for further discussion on the REO program.

^d. NADLs may be used for new home construction that could cause physical impacts to environmental resources; however, past volumes of total NADL loans for both existing homes and new construction have been very low (118 collectively between FY 2013 and FY 2017), and spread out across multiple states and territories, such that overall impacts would typically be negligible. See Section 1.4.3 in Chapter 1, Introduction, for further discussion on the NADL program.

^e. Because the number of overall SAH program grants in the United States and its Territories is very small (less than 2,000 per year), and only a small portion of those grants would involve exterior work, impacts to the physical environment would be expected to be negligible. See Section 1.4.4 in Chapter 1, Introduction, for further discussion on SAH program grants.

^f. Past loan guaranty volumes shown here are for the period FY 2013 through FY 2017, as presented in Table 1-4 in Chapter 1, Introduction. One MSA may overlap more than one USEPA Ecoregion.

FY = fiscal year; MSA = metropolitan statistical area; NADL = Native American Direct Loan; REO = Real Estate Owned; SAH = Specially Adapted Housing; USEPA = United States Environmental Protection Agency; VA = Department of Veterans Affairs

As shown in Table 4.3-1, while construction and occupancy of new homes could cause indirect impacts classified as “minor” or “negligible” in all ecoregions, there would be some regional and local variation. Parts of the country that experience more rapid growth in housing demand, such as parts of the South, Southwest, and Northwest, could experience a greater increase in indirect biological resource impacts associated with the Proposed Action. These areas are consistent with the geographic locations that experienced the highest number of VA HLP loan guaranties issued for new homes between FY 2013 and FY 2017 (see Figure 1-5 in Chapter 1). In particular, the highest concentrations of new construction guaranties occurred in southern and western metropolitan areas. The overall impact from the HLP would remain “minor” even in regions with moderate to high numbers of projected VA-guaranteed loans for newly constructed homes. Best management practices for construction companies to avoid disturbing nesting birds would lessen impact. Since endangered and threatened species protection is regulated by the individual state departments of natural resources and federal agencies, new construction proceeds through careful planning and permitting requirements for construction companies and for the proponents of infrastructure development. Preventative measures would most likely be imposed on these actions through the state and federal agencies. These measures are designed to avoid any impacts to the critical habitat or species of concern resulting in no detrimental effect to the species’ survival.

Construction activities related to home modifications made with SAH program grants issued under the HLP would most likely include interior work, or minor exterior work, and would not be expected to result in adverse biological resource impacts. Due to the nature of the REO program, no measurable impacts to biological resources would be anticipated under this aspect of the HLP.

4.3.3 No Action Alternative

Under the No Action Alternative, VA-guaranteed loans and the percentage of new home construction would continue at levels consistent with those observed in FY 2017, as described in Section 2.3 (Chapter 2, Proposed Action and Alternatives) and Section 4.0, Environmental Consequences, Introduction. VA-guaranteed loans, REO transactions, NADLs, and SAH program grants would continue to represent a very small portion of the total home loan market, and nationwide housing supply and demand trends would continue to evolve without any noticeable influence from the HLP. The regional environmental effects of housing construction and occupancy, and corresponding population shifts, would likely continue in a manner consistent with those seen in recent years. The HLP’s contribution to such regional effects would continue to be minor in scale and consistent with FY 2017 conditions, and no unique types or localized focuses of effects on biological resources would be expected to reach the level of significance as defined under NEPA.

Indirect biological resources impacts could occur as a result of the construction and occupancy of new homes, which would be consistent with recent historical levels. Further, as discussed in Section 4.0, while many Veterans rely on the HLP and might not be able to purchase a home except for the availability of VA-guaranteed loans with zero down payment, the majority of these homes would have been constructed regardless of VA’s financial support to Veterans under the HLP.

INTENTIONALLY LEFT BLANK.

4.4 CULTURAL RESOURCES

This section describes the potential direct and indirect impacts to cultural resources from operation and management of VA's HLP, including potential impacts from construction and occupancy of new homes or modification of existing homes associated with the HLP. An evaluation of potential impacts to cultural resources involves a comparison of current and future integrity of historic buildings and structures, or archaeological sites, and a determination of the extent to which the Alternatives might affect their integrity.

4.4.1 Significance Criteria

To evaluate impacts to cultural resources, VA considered the potential for cultural resources to be impacted within the Affected Environment (described in Section 3.4, Cultural Resources) as a result of the Proposed Action and No Action Alternative. There is the potential for impacts to occur to cultural resources when an activity does not maintain the integrity of a historic property or avoid an archeological site.

NEPA and Section 106 of the NHPA, which requires that federal agencies take into account the effects of their actions on historic properties, use different terms to qualify impacts or effects to cultural resources. Under NEPA, the significance of impact is determined based on context and intensity. Impacts are analyzed in several contexts such as society as a whole, the affected region, the affected interests, and the locality. Intensity refers to the severity of impact.

In terms of Section 106, impacts to historic properties are evaluated against the Criteria of Adverse Effect.²⁷ In accordance with the Criteria of Adverse Effect, an adverse effect is found when an undertaking alters, directly or indirectly, any of the characteristics of a historic property that qualify the property for listing in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Direct effects are generally defined as the physical destruction or modification of all or part of a resource. Indirect effects vary, but they are typically characterized as the introduction of audible, visual, and atmospheric elements that alter the qualities that make a property eligible for listing in the NRHP. When analyzing effects on historic properties, the combined impact of all effects, both direct and indirect, are considered. Adverse effects may also include reasonably foreseeable impacts caused by the undertaking that may occur later in time, be farther removed in distance, or may be cumulative.

To evaluate impacts on historic properties, VA reviewed the Proposed Action and No Action Alternative to determine whether any activities have the potential to do any of the following:

- Physically destroy, damage, or alter all or part of a historic property;

²⁷ 36 CFR 800.5(a)(1).

- Physically destroy, damage, alter, or remove items from archaeological contexts without a proper mitigation plan;
- Isolate a property from or alter the character of a historic property's setting when that character contributes to the property's qualification for the NRHP;
- Introduce visual, audible, or atmospheric elements that are out of character with a historic property or alters its setting; or
- Cause loss of maintenance of a historic property resulting in its deterioration or destruction; or transfer, lease, or selling of the property without a proper preservation plan.

4.4.2 Proposed Action

Under the Proposed Action, VA would continue to operate and actively manage the HLP. The number of VA-guaranteed loans would fluctuate within the range bound by the low-intensity scenario to the high-intensity scenario, as described in Section 2.2 (Chapter 2, Proposed Action and Alternatives) and Section 4.0, Environmental Consequences, Introduction. VA's REO program would continue to maintain, manage, market, and sell existing homes through a private-sector company; the NADL program would continue to make VA direct loans available to Native American Veterans living on trust, tribal, or communally owned lands; and VA would continue to provide SAH program grants to accommodate the needs of Veterans with certain severe, service-connected disabilities.

Section 4.4.2.1 discusses potential sources and types of cultural impacts. Section 4.4.2.2 summarizes the overall potential impacts that could occur from the HLP and their anticipated geographical distribution across the United States and its Territories.

4.4.2.1 Sources of Impacts to Cultural Resources

The HLP would not directly result in any impacts to cultural resources; however, the construction and occupancy of new homes, or modification of existing homes, facilitated through the HLP could result in indirect impacts as described below.

Archaeological Resources

Home construction activities could result in impacts to archaeological resources including destruction of archaeological sites from construction activities during grading and excavation as well as soil erosion. Impacts to archaeological resources are most likely to occur with new home construction as it is more likely that additions and remodeling of existing homes would occur on previously disturbed soils.

Architectural Resources

Impacts to architectural resources could occur from remodeling existing homes or modification of existing homes. Impacts could result from long-term and short-term visual impacts to adjacent historic properties or historic districts as well as audible impacts during construction.

Traditional Cultural Properties

Impacts to TCPs could result from new construction activities within and near TCPs. Effects could result from growth-related impacts of increased demand for newly constructed homes. TCPs can be located both on- and off- tribal lands and are not necessarily tribe-related.

Cultural Landscapes

Impacts to NRHP-eligible or listed cultural landscapes could result from construction activities within cultural landscapes. Impacts could result from visual and audible intrusions resulting from construction activities.

4.4.2.2 Potential Impacts to Cultural Resources

Although the specific nature of impacts on cultural resources must be determined on a site-specific basis, certain activities associated with newly constructed residential development are known to have the potential to affect cultural resources. As VA's involvement in housing-related activities is usually limited to financial transactions, potential impacts are indirect in nature unless specifically described otherwise. Table 4.4-1 provides a summary of the potential historic and cultural resource impacts by VA RLC. The impact analysis assumes that the volume of HLP activity through FY 2030 in each RLC's operational area, and the resulting effects from new home construction, would be consistent with past volumes as described in Section 1.4, Overview of Current Housing Loan Program, Chapter 1, Introduction.

Table 4.4-1. Summary of Cultural Resources Impacts by VA Regional Loan Center

VA Regional Loan Center ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
Atlanta (GA, NC, SC, TN)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided 2,500 – 5,000 loan guaranties for newly constructed homes in nine MSAs served by this RLC and 1,000 – 2,500 in two additional MSAs.
Cleveland (CT, DE, IN, MA, ME, MI, NH, NJ, NY, OH, PA, RI, VT)	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided 1,000 – 2,500 loan guaranties for newly constructed homes in the Indianapolis-Carmel-Anderson, Indiana MSA.
Denver (AK, CO, ID, MT, OR, UT, WA, WY)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the Colorado Springs, Colorado MSA; 2,500 – 5,000 in the Seattle-Tacoma-Bellevue, Washington MSA; and 1,000 – 2,500 in five additional MSAs supported by this RLC.
Houston (AR, LA, OK, TX)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	Several areas within the state of Texas have seen among the highest numbers of VA-guaranteed loans for newly constructed homes in the nation. Specifically, VA has provided more than 5,000 loan guaranties in the MSAs of San Antonio-New Braunfels, Killeen-Temple, Houston-The Woodlands-Sugarland, and Dallas-Ft. Worth-Arlington in Texas. VA has also provided 2,500 – 5,000 loan guaranties for newly constructed homes in the Austin-Round Rock-Georgetown and El Paso, Texas MSAs and 1,000 – 2,500 in the Oklahoma City, Oklahoma MSA.
Phoenix (AZ, CA, HI, NV, NM, Guam, the Northern Mariana Islands, American Samoa)	Negligible to Minor	Negligible	Negligible	Minor	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the Phoenix-Mesa-Chandler, Arizona MSA; 2,500 – 5,000 in the Las Vegas-Henderson-Paradise, Nevada and Riverside-San Bernardino-Ontario, California MSAs; and 1,000 – 2,500 in seven additional MSAs. Although the number of NADLs is very small overall, there could be minor localized impacts to tribal communities where the loans are concentrated, such as in Hawaii and American Samoa.

Table 4.4-1. Summary of Cultural Resources Impacts by VA Regional Loan Center

VA Regional Loan Center ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
Roanoke (KY, MD, VA, WV, DC)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the Washington-Arlington-Alexandria and Virginia Beach-Norfolk-Newport News MSAs; 2,500 – 5,000 in the Baltimore-Columbia-Towson, Maryland MSA; and 1,000 – 2,500 in Richmond, Virginia.
St. Paul (IL, IA, KS, MN, MO, NE, ND, SD, WI)	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided 1,000 – 2,500 loan guaranties for newly constructed homes in the Omaha-Council Bluffs MSA in Nebraska and Iowa.
St. Petersburg (AL, FL, MS, Puerto Rico, U.S. Virgin Islands)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the Jacksonville and Tampa-St. Petersburg-Clearwater MSAs in Florida; 2,500 – 5,000 in the Orlando-Kissimmee-Sanford and Pensacola-Ferry Pass-Brent MSAs in Florida; and 1,000 – 2,500 in the Miami-Fort Lauderdale-Pompano Beach, Florida and Huntsville, Alabama MSAs.

a. See Figure 1-1 in Chapter 1, Introduction, for map titled Nationwide Locations and Jurisdictions of VA Regional Loan Centers.

b. See Table 1-4 in Chapter 1, Introduction, for the numbers of VA-guaranteed loans for newly constructed homes by metropolitan statistical area, during the period FY 2013 through 2017. This PEIS assumes that loan guaranty and other HLP activity in a given metropolitan statistical area through FY 2030 would be consistent with past levels.

c. Since Existing/Refinance home loan guaranties and REO transactions pertain to existing homes, impacts to the physical environment would be expected to be negligible. Any lapses in individual property preservation and management by prior owner would be remedied to the extent possible by VA while under its temporary stewardship, and potential effects would still be negligible. See Section 1.4.2 in Chapter 1, Introduction, for further discussion on the REO program.

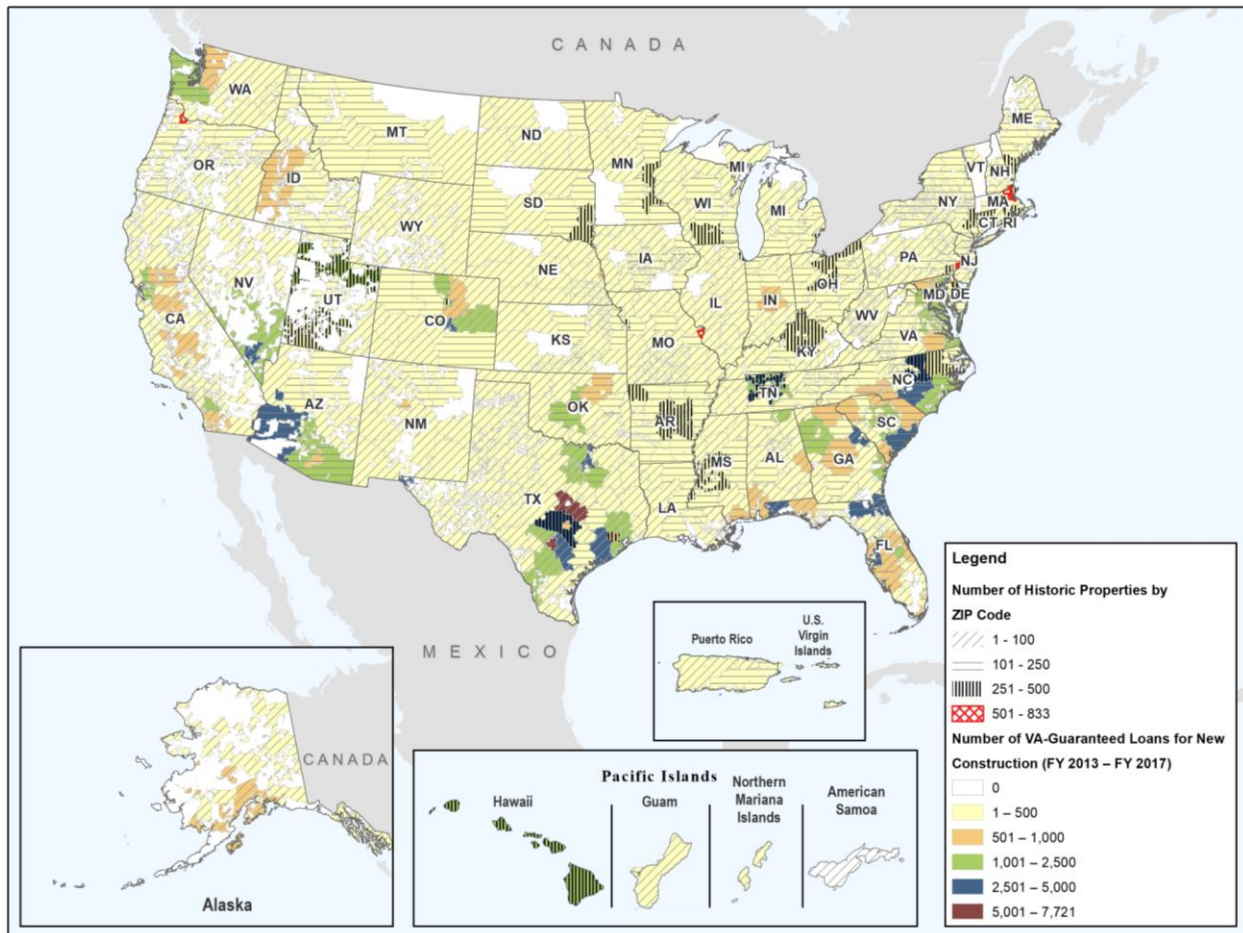
d. NADLs may be used for new home construction that could cause physical impacts to environmental resources; however, past volumes of total NADLs for both existing homes and new construction have been very low (118 collectively between FY 2013 and FY 2017), and spread out across multiple states and territories, such that overall impacts would typically be negligible. See Section 1.4.3 in Chapter 1, Introduction, for further discussion on NADLs.

e. Because the number of overall SAH program grants in the United States and its Territories is very small (less than 2,000 per year), and only a small portion of those grants would involve exterior work or construction of new homes, impacts to the physical environment would be expected to be negligible. See Section 1.4.4 in Chapter 1, Introduction, for further discussion on SAH program grants.

f. Past loan guaranty volumes shown here are for the period FY 2013 through FY 2017, as presented in Table 1-4 in Chapter 1, Introduction. One MSA may overlap more than one RLC.

FY = fiscal year; MSA = metropolitan statistical area; NADL = Native American Direct Loan; REO = Real Estate Owned; RLC = Regional Loan Center; SAH = Specially Adapted Housing; VA = Department of Veterans Affairs

New home construction has the greatest overall potential to impact cultural resources due to ground-disturbing activities and vegetation removal thereby increasing access to remote locations. In addition, pedestrian and vehicular traffic and indirect impacts of earthmoving activities, such as erosion, may also have an effect. Important cultural resources, such as cultural landscapes, TCPs, historic trails, or historic districts may also be impacted visually. However, potential impacts from new construction home loan guaranties would be low across all RLCs. VA-guaranteed loans would make up a small percentage of the total financing for all new home construction in the United States and its Territories. Residential development projects in all areas would continue to be subject to oversight by state and local agencies responsible for implementing cultural resource regulatory programs. Note that VA would not be responsible for conducting Section 106 reviews on any new home construction to which loan guaranties might be applied. Rather, responsibility for reviews would rest with the state or local agencies, as appropriate, that have decision authority or oversight of the particular project. Figure 4.4-1 shows the locations of historic properties within the United States and its Territories superimposed over areas that have experienced the highest number of VA HLP loan guaranties provided for newly constructed homes.



Source: NPS 2020b

Figure 4.4-1. Comparison of Historic Properties with Number of VA-Guaranteed Loans for Newly Constructed Homes

VA-guaranteed loans for the sale or refinance of existing homes would normally have negligible effects on cultural resources as these transactions would not usually entail or influence any physical alterations to real estate. Refinancing for home improvement purposes, such as energy efficiency improvements (e.g., replacing windows, adding solar panels, or wind turbines), would potentially have an adverse impact to a historic home. As with loan guaranties for new construction, VA would not be responsible for conducting Section 106 reviews for the sale or refinance of existing homes to which loan guaranties might be applied. Rather, responsibility for reviews would rest with the state or local agencies, as appropriate, that have decision authority or oversight of the particular project.

The NADL program involves the direct loan funding of a small number of new homes for eligible Veterans living on trust, tribal, or communally owned lands. For NADLs to be made, the relevant tribal or native organization must have entered into a MOU with the Secretary of VA that sets forth the conditions under which the program would operate on the relevant lands. Potential effects associated with the NADL program would be similar in nature to those resulting from other new home construction activities. Construction activities on trust, tribal, or communally owned lands fall under the regulatory oversight of tribal/native governments who have a self-interest in the preservation of their own cultural resources. Under this program, the applicable tribe or native organization would take the lead in tribal resource protection. The number of loans under the NADL program is very small overall (118 total loans between FY 2013 – FY 2017). However, the majority of NADLs are concentrated in Hawaii (38 loans between FY 2013 – FY 2017) and American Samoa (30 loans between FY 2013 – FY 2017). Therefore, potential effects could be more likely to occur in the jurisdiction of the Phoenix RLC over Hawaii and American Samoa.

Under the REO program, VA acquires title to foreclosed properties previously financed with VA-guaranteed loans and would seek to sell such properties promptly, either with or without VA financing. While it would be an unlikely event, it is possible that VA could acquire title to a historic property. In this rare event, VA would be responsible for the temporary maintenance of the property in compliance with Sections 110 and 106 of the NHPA. As REO transactions pertain to existing homes, impacts to the physical environment would be expected to be negligible. Any lapses in individual property preservation and management by the prior owner would be remedied to the extent possible by VA while under its temporary stewardship, and potential effects to any individual cultural resource would still be negligible.

The SAH program administers grants to Veterans with certain severe service-connected disabilities. These grants help such Veterans in acquiring home adaptations made necessary by the nature of their disabilities. As this program involves direct funding through cash grants, VA would be responsible for Section 106 compliance under this program. The potential impacts from this program could occur anywhere in the United States and its Territories. Impacts would likely be negligible since most of the grant money is spent on interior renovations of existing properties with minimal exterior alterations. In addition, local codes and reviews would apply and are overseen by the local jurisdiction, (i.e. if in a historic district, there would likely be historic review by the local preservation board).

4.4.3 No Action Alternative

Under the No Action Alternative, home loan guaranties and the percentage of new home construction would continue at levels consistent with those observed in FY 2017, as described in Section 2.3 (Chapter 2, Proposed Action and Alternatives) and Section 4.0, Environmental Consequences, Introduction. VA-guaranteed loans, REO transactions, NADLs, and SAH program grants would continue to represent a very small portion of the total home loan market, and nationwide housing supply and demand trends would continue to evolve without significant influence from the HLP. The regional environmental effects of housing construction and occupancy, and corresponding population shifts, would likely continue in a manner consistent with those seen in recent years. The HLP's contribution to such regional effects would continue to be minor in scale and consistent with FY 2017 conditions, and no unique types or localized focuses of effects on cultural resources would be expected to reach the level of significance as defined under NEPA.

Indirect impacts to cultural resources could occur as a result of the construction and occupancy of new homes, which would be consistent with recent historical levels. Further, as discussed in Section 4.0, while many Veterans rely on the HLP and might not be able to purchase a home except for the availability of VA-guaranteed loans with zero down payment, the majority of these homes would have been constructed regardless of VA's financial support to Veterans under the HLP.

4.5 FLOODPLAINS, WETLANDS, AND COASTAL ZONES

This section describes the potential direct and indirect impacts to floodplains, wetlands, and coastal zones from operation and management of VA's HLP, including potential impacts from construction and occupancy of new homes or modification of existing homes associated with the HLP. Note that there can be considerable overlap among these three resource areas.

4.5.1 Significance Criteria

To evaluate impacts to floodplains, wetlands, and coastal zones, VA considered the potential for these resources to change within the Affected Environment (described in Section 3.5, Floodplains, Wetlands, and Coastal Zones) as a result of the Proposed Action and No Action Alternative.

Floodplains

To evaluate impacts on floodplains, VA reviewed the Proposed Action and No Action Alternative to determine whether any activities have the potential to cause any of the following:

- Loss of natural and beneficial floodplain values; or
- Impediment or redirection of flood flows.

Wetlands

To evaluate impacts on wetlands, VA reviewed the Proposed Action and No Action Alternative to determine whether any activities have the potential to cause any of the following:

- A potential loss of wetland function and value; or
- The loss of a jurisdictional wetland cannot be avoided or if compensatory mitigation is not feasible, and the USACE does not authorize the activity that fills or disturbs the wetland.

Note that wetlands are a prominent and familiar component of floodplain resources and coastal zones. While wetlands represent only a portion of overall floodplain acreage, essentially all coastal wetlands and most inland wetlands occur within floodplains. As a result, the values ascribed to floodplains can be considered for most practical purposes as wetland values as well. Exceptions include wetlands along lakes and isolated wetlands, such as those in the Prairie Pothole region, playas in Texas, and vernal pools in California.

Coastal Zones

To evaluate impacts on coastal zones, VA reviewed the Proposed Action and No Action Alternative to determine whether any activities occurring within coastal communities have the potential to cause any of the following:

- Harmful effect on any land or water use or any natural resources in the coastal zone, including disturbance or destruction of sensitive marine ecosystem, reduced biodiversity, alteration of seabed, and destabilization of banks and beach erosion, such as from contaminated runoff, dumping, and dredging activities; or
- Nonconformance with the policies of the approved state Coastal Zone Management Plan.

Note that coastal zone areas include both floodplains and wetlands.

4.5.2 Proposed Action

Under the Proposed Action, VA would continue to operate and actively manage the HLP. The number of VA-guaranteed loans would fluctuate within the range bound by the low-intensity scenario to the high-intensity scenario, as described in Section 2.2 (Chapter 2, Proposed Action and Alternatives) and Section 4.0, Environmental Consequences, Introduction. VA's REO program would continue to maintain, manage, market, and sell existing homes through a private-sector company; the NADL program would continue to make VA direct loans available to Native American Veterans living on trust, tribal, or communally owned lands; and VA would continue to provide SAH program grants to accommodate the needs of Veterans with certain severe, service-connected disabilities.

Section 4.5.2.1 discusses potential sources and types of impacts on floodplains, wetlands, and coastal zones. Section 4.5.2.2 summarizes the overall impacts that could occur from the HLP and their anticipated geographical distribution across the United States and its Territories.

4.5.2.1 Sources of Impacts on Floodplains, Wetlands, and Coastal Zones

The HLP would not directly result in any impacts to floodplains, wetlands, and coastal zones; however, the construction and occupancy of new homes, or modification of existing homes, facilitated through the HLP could result in indirect impacts. Riverine and coastal floodplains, wetlands, and other coastal areas have enormous value. They typically provide natural flood and erosion control, help maintain good water quality, stormwater management, contribute to sustaining groundwater supplies for the nation's water resources, and provide recreational opportunities and aesthetic quality. In addition, wetlands and other unique riparian ecosystems are highly productive and biologically diverse ecosystems that provide a wide variety of fish and wildlife habitats frequently supporting large and diverse populations of plants and animals. Therefore, home construction activities in floodplain, wetland, and coastal areas, particularly if they are part of a new, large-scale residential development project, could modify and adversely affect the functions and quality of natural communities, including aquatic and marine ecosystems, and substantially alter the suitability or connectivity of floral/faunal habitats, including sensitive natural areas or other biologically important areas. In addition, widespread clearing and development (including construction of impervious surfaces) can alter drainage patterns and result in increased runoff; flooding and erosion; wetland modification or destruction, including important natural wildlife habitat; and the destruction of aesthetic and recreational attributes of floodplains and wetlands.

Development and modification of the floodplain can affect living resources and habitat in many different ways. Increased sedimentation can bury food sources and spawning areas, and pollution can poison living resources. Development activities can remove shelter and food sources resulting in barriers to fish and wildlife movement. Erosion of coastal wetlands and wetland filling for development purposes can eliminate large areas of productive habitat. Impacts on wetland function and quality can result from disturbances that occur within the wetland, including filling, grading, removal of vegetation, building construction, and changes in water levels and drainage patterns. This increased accumulation of sediment can alter the chemical and hydrologic regime of the wetlands in a relatively short time.

Riverine and coastal floodplains, which also includes wetlands, are, by definition, lands shaped by and continually subject to inundation. Inundation can be relatively slow or, in the case of flash flooding, devastatingly sudden. Coastal and riverine flooding and erosion can be accelerated by human development and poorly planned flood or beach protection measures. Other flood-prone areas include alluvial fans, such as in the southwestern United States, and urban areas where flooding is exacerbated by surface runoff and locally inadequate drainage. Another important consideration from increased development in flood-prone areas is the potential increase in risk from future flooding events on the homeowners and homes themselves that occupy these areas, whether it be in an existing home or in a recently constructed new home. The two main types of floodplain losses are loss of life and property. Flooding threatens the safety of residents, who may face immediate danger trying to escape rising waters or may be deprived of life-sustaining services following a flood. There are also serious financial risks that come with living in a floodplain. Residents of buildings that do not meet flood-resistant design standards risk destruction of their possessions and the potential loss of, or significant damage to, their housing unit. For owners of residential property, the cost of making buildings flood-proof can be quite high. Failure to retrofit properties for flooding may also affect flood insurance costs, as the federal government gradually phases in actuarially sound flood insurance premiums under the NFIP in these areas. Homeowners in coastal areas face similar potential risks and impacts from flooding. In particular, coastal flooding events are likely to increase significantly in future years as a result of more intense storms (e.g., hurricanes) and rising sea levels associated with climate change.

4.5.2.2 Potential Impacts to Floodplains, Wetlands, and Coastal Zones

An increase in indirect impacts on floodplains, wetlands, and coastal zone areas associated with new home construction and occupancy within, or renovation to, existing homes could occur as a result of market effects influenced by VA's HLP (e.g., new home loan guaranties, refinancing, SAH program grants). However, any impacts on these resources associated with increased market demand for new home construction would likely be localized and minor. Construction activities related to home modifications made with SAH program grants issued under the HLP would most likely include interior work, or minor exterior work, and would not be expected to result in adverse effects on floodplains, wetlands, or coastal zone areas. A summary of potential impacts is presented by HUC-2 Watershed Region in Table 4.5-1. The impact analysis assumes that the volume of HLP activity through FY 2030 in each HUC-2 Watershed Region, and the resulting effects from new home construction, would be consistent with past volumes as described in Section 1.4, Overview of Current Housing Loan Program.

Table 4.5-1. Summary of Floodplain, Wetland, and Coastal Zone Area Impacts by HUC-2 Region

HUC-2 Region ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
01 New England Watershed (CT, MA, ME, NH, NY, RI)	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided low numbers of loan guaranties for newly constructed homes in the region. The water resource region includes many wetland areas, urban areas, and coastal areas that may be at increased risk from future flooding events (e.g., hurricanes), particularly if storms become more intense. Any potential new construction (including under the NADL program) would not be expected to measurably degrade the region's floodplains, wetlands, or coastal zone areas.
02 Mid-Atlantic Watershed (CT, DC, DE, MA, MD, NJ, NY, PA, VA, VT, WV)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the MSAs of Washington-Arlington-Alexandria, District of Columbia/Virginia/ Maryland/West Virginia and Virginia Beach-Norfolk-Newport News, Virginia/North Carolina; 2,500 – 5,000 loan guaranties for newly constructed homes in the Baltimore-Columbia-Towson, Maryland MSA; and 1,000 – 2,500 loan guaranties for newly constructed homes in the Richmond, Virginia MSA. This region includes valuable wetland areas, many urban areas, and coastal areas that may be at increased risk from future flooding events (e.g., Hurricane Sandy in 2012), particularly if storms become more intense. Future loan guaranty numbers are expected to be a minor indirect contributor in comparison to other ongoing housing growth drivers and not expected to be a major contributor to adverse impacts to floodplains, wetlands, or coastal zone areas in these large metropolitan areas. In particular, the footprint for each loan action is very small and localized, and VA's HLP includes certain restrictions and requirements related to home occupancy in a floodplain. Construction activities undertaken through VA-guaranteed loans could result in minor impacts to wetland areas in the region, if construction occurs on or near wetland areas.

Table 4.5-1. Summary of Floodplain, Wetland, and Coastal Zone Area Impacts by HUC-2 Region

HUC-2 Region ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
03 South Atlantic-Gulf Watershed (AL, FL, GA, LA, MS, NC, SC, TN, VA)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the MSAs of Jacksonville and Tampa-St. Petersburg-Clearwater, Florida; 2,500 – 5,000 loan guaranties for newly constructed homes in 10 additional MSAs; and 1,000 – 2,500 loan guaranties for newly constructed homes in another 6 MSAs within this region. This region includes some of the highest concentrations of valuable wetland areas in the country, as well as many urban areas and extensive coastal areas along the Atlantic and Gulf of Mexico coasts that may be at increased risk from future flooding events (e.g., Hurricanes Irma and Matthew in Florida and Florence in North Carolina), particularly if storms become more intense. Future loan guaranties are expected to be a minor indirect contributor in comparison to other ongoing housing growth drivers and not expected to be a major contributor to adverse impacts to floodplains, wetlands, and coastal zone areas in these large metropolitan areas. In particular, the footprint for each loan action is very small and localized, and VA's HLP includes certain restrictions and requirements related to home occupancy in a floodplain. Construction activities undertaken through VA-guaranteed new home construction loans could result in minor impacts to wetland areas in the region, if construction occurs on or near wetland areas.
04 Great Lakes Watershed (IL, IN, MI, MN, NY, OH, PA, WI)	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided low numbers of loan guaranties for newly constructed homes in this HUC-2 region. This region includes many wetland areas and coastal areas along the Great Lakes, although the frequency of past flooding events appears to be low along much of the Great Lakes shoreline. Any potential new construction would not be expected to measurably degrade the region's floodplains, wetlands, or coastal zone areas.

Table 4.5-1. Summary of Floodplain, Wetland, and Coastal Zone Area Impacts by HUC-2 Region

HUC-2 Region ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
05 Ohio Watershed (IL, IN, KY, MD, NY, NC, OH, PA, TN, VA, WV)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided 2,500 – 5,000 loan guaranties for newly constructed homes in the Nashville-Davidson-Murfreesboro-Franklin, Tennessee MSA and 1,000 – 2,500 loan guaranties for newly constructed homes in the MSA of Indianapolis-Carmel-Anderson, Indiana. This water resource region supports fewer wetland areas than in other parts of the country and includes no coastal areas. Any potential new construction would not be expected to measurably degrade the region's floodplains or wetlands.
06 Tennessee Watershed (AL, GA, KY, MI, CN, TN, VA)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided 2,500 – 5,000 loan guaranties for newly constructed homes in the MSA of Nashville-Davidson-Murfreesboro-Franklin, Tennessee; and 1,000 – 2,500 loan guaranties for newly constructed homes in the Huntsville, Alabama MSA. Parts of Tennessee may be at potential higher risk of flooding, such as from flash flood events, but this region supports fewer wetland areas than in other parts of the country and includes no coastal areas. Future loan guaranty volumes are expected to be a minor indirect contributor in comparison to other ongoing housing growth drivers and not expected to be a major contributor to adverse impacts to floodplains or wetlands in the large metropolitan area, particularly given the small footprint of each loan action and VA's HLP restrictions relating to home occupancy within a floodplain.
07 Upper Mississippi Watershed (IA, IL, IN, MI, MN, MO, SD, WI)	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided low numbers of loan guaranties for newly constructed homes in this HUC-2 region. This water resource region supports fewer wetlands than in other parts of the country and includes no coastal areas. Any potential new construction would not be expected to measurably degrade the region's floodplains or wetlands.

Table 4.5-1. Summary of Floodplain, Wetland, and Coastal Zone Area Impacts by HUC-2 Region

HUC-2 Region ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
08 Lower Mississippi Watershed (AR, KY, LA, MI, MO, TN)	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided low numbers of loan guaranties for newly constructed homes in this HUC-2 region. This region includes Louisiana which includes both a large number of wetlands and coastal area along the Gulf of Mexico that may be at increased risk from future flooding events. Any potential new construction would not be expected to measurably degrade the region's floodplains, wetlands, and coastal areas.
09 Souris-Red-Rainy Watershed (MN, ND, SD)	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided low numbers of loan guaranties for newly constructed homes in this HUC-2 region. This water resource area supports fewer wetlands than in other parts of the country and includes no coastal areas. Any potential new construction would not be expected to measurably degrade the region's floodplains or wetlands.
10 Missouri Watershed (CO, IA, KS, MN, MO, MT, ND, SD, WY)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided 2,500 – 5,000 loan guaranties for newly constructed homes in the Denver-Aurora-Lakewood, Colorado MSA; and 1,000 – 2,500 loan guaranties for newly constructed homes in the MSAs of Omaha-Council Bluffs, Nebraska/Iowa and Greeley, Colorado. This water resource region supports fewer wetlands than in other parts of the country and includes no coastal areas. Future loan guaranty volumes are expected to be a minor indirect contributor in comparison to other ongoing housing growth drivers and not expected to be a major contributor to adverse impacts to floodplains or wetlands in this large metropolitan area. In particular, the footprint for each loan action is very small and localized, and VA's HLP includes certain restrictions related to home occupancy in a floodplain.

Table 4.5-1. Summary of Floodplain, Wetland, and Coastal Zone Area Impacts by HUC-2 Region

HUC-2 Region ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
11 Arkansas-White-Red Watershed (AR, CO, KS, LA, MO, NM, OK, TX)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the MSAs of Colorado Springs, Colorado and Dallas-Ft. Worth-Arlington, Texas and 1,000 – 2,500 loan guaranties for newly constructed homes in the MSA of Oklahoma City, Oklahoma. This region supports fewer wetlands than in other parts of the country and includes no coastal areas. Future loan guaranty volumes are expected to be a minor indirect contributor in comparison to other ongoing housing growth drivers and not expected to be a major contributor to adverse impacts to floodplains or wetlands in this metropolitan area. In particular, the footprint for each loan action is very small and localized, and VA's HLP includes certain restrictions and requirements related to home occupancy in a floodplain.
12 Texas-Gulf Watershed (LA, NM, TX)	Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the MSAs of San Antonio-New Braunfels, Houston-The Woodlands-Sugarland, and Killeen-Temple in Texas. VA has also provided 2,500 – 5,000 loan guaranties for newly constructed homes in the Austin-Round Rock-Georgetown, Texas MSA. The eastern and coastal portion of Texas supports many wetlands. This region also includes many urban areas and the Texas coastline along the Gulf of Mexico that may be at increased risk from future flooding events (e.g., like Hurricane Harvey in 2017), particularly if storms become more intense. Future loan guaranty numbers are expected to be a minor indirect contributor in comparison to other ongoing housing growth drivers and not expected to be a major contributor to adverse impacts to floodplains, wetlands, or coastal zones in these large metropolitan areas. In particular, the footprint for each loan action is very small and localized, and VA's HLP includes certain restrictions and requirements related to home occupancy within a floodplain. Construction activities undertaken through VA-guaranteed new home construction loans could result in minor impacts to wetland areas in the region, if construction occurs on or near wetland areas.

Table 4.5-1. Summary of Floodplain, Wetland, and Coastal Zone Area Impacts by HUC-2 Region

HUC-2 Region ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
13 Rio Grande Watershed (CO, NM, TX)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided 2,500 – 5,000 loan guaranties for newly constructed homes in the El Paso, Texas MSA and 1,000 – 2,500 loan guaranties for newly constructed homes in the Albuquerque, New Mexico MSA. This water resource region supports fewer wetlands than in other parts of the country and includes no coastal areas. Any potential new construction would not be expected to measurably degrade the region's floodplains or wetlands.
14 Upper Colorado Watershed (AZ, CO, NM, UT, WY)	Minor	Negligible	Negligible	Negligible	Negligible	VA has provided 2,500 – 5,000 loan guaranties for newly constructed homes in the Salt Lake City, Utah MSA. This water resource region supports few wetland areas and includes no coastal areas. Future loan guaranty volumes are expected to be a minor indirect contributor in comparison to other ongoing housing growth drivers and not expected to be a major contributor to adverse impacts to floodplains or wetlands. In particular, the footprint for each loan action is very small and localized, and VA's HLP includes certain restrictions and requirements related to home occupancy in a floodplain.
15 Lower Colorado Watershed (AZ, CA, NV, NM, UT)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the Phoenix-Mesa-Chandler, Arizona MSA; 2,500 – 5,000 loan guaranties for newly constructed homes in the Las Vegas-Henderson-Paradise, Nevada MSA; and 1,000 – 2,500 loan guaranties for newly constructed homes in the Tucson, Arizona MSA. The region supports few wetlands and includes no coastal areas. However, dry mountainous regions in Arizona, California, and Nevada are at potential higher risk of flash flood events; Arizona seems to have a particularly high frequency of past flash flooding events. Nonetheless, future loan guaranty volumes are expected to be a minor indirect contributor in comparison to other ongoing housing growth drivers and not expected to be a major contributor to adverse impacts to floodplains or wetlands. In particular, the footprint for each loan action is very small and localized, and VA's HLP includes certain restrictions and requirements related to home occupancy in a floodplain.

Table 4.5-1. Summary of Floodplain, Wetland, and Coastal Zone Area Impacts by HUC-2 Region

HUC-2 Region ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
16 Great Basin Watershed (CA, ID, NV, OR, UT, WY)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided 2,500 – 5,000 loan guaranties for newly constructed homes in the Las Vegas-Henderson-Paradise, Nevada MSA and 1,000 – 2,500 loan guaranties for newly constructed homes in the Salt Lake City, Utah MSA. Future loan guaranty volumes are expected to be a minor indirect contributor in comparison to other ongoing housing growth drivers and not expected to be a major contributor to adverse impacts to floodplains or wetlands. In particular, the footprint for each loan action is very small and localized, and VA's HLP includes certain restrictions and requirements related to home occupancy in a floodplain.
17 Pacific Northwest Watershed (CA, ID, MT, NV, OR, UT, WA, WY)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided 2,500 – 5,000 loan guaranties for newly constructed homes in the Seattle-Tacoma-Bellevue, Washington MSA and 1,000 – 2,500 loan guaranties for newly constructed homes in the MSAs of Boise City, Idaho; Portland-Vancouver-Hillsboro in Oregon and Washington; and Olympia-Lacey-Tumwater, Washington. This water resource region includes some valuable coastal wetlands, the Washington and Oregon coastline, and dry mountainous regions in California, Nevada, and Washington that may be at potential higher risk of flash flood events. Future loan guaranty volumes are expected to be a minor indirect contributor in comparison to other ongoing housing growth drivers and not expected to be a major contributor to adverse impacts to floodplains, wetlands, and coastal areas. In particular, the footprint for each loan action is very small and localized, and VA's HLP includes certain restrictions and requirements related to home occupancy within a floodplain. Construction activities undertaken through VA-guaranteed new home construction loans could result in minor impacts to wetland areas in the region, if construction occurs on or near wetland areas.

Table 4.5-1. Summary of Floodplain, Wetland, and Coastal Zone Area Impacts by HUC-2 Region

HUC-2 Region ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
18 California Watershed (CA, NV, OR)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided 2,500 – 5,000 loan guaranties for newly constructed homes in the Riverside-San Bernardino-Ontario, California MSA and 1,000 – 2,500 loan guaranties for newly constructed homes in the MSAs of San Francisco-Oakland-Berkeley, Sacramento-Roseville-Folsom, Bakersfield, and San Diego-Chula Vista-Carlsbad in California. Parts of California include valuable wetland habitat (e.g., vernal pools), and this region includes the entire California coastline along the Pacific Ocean as well as dry mountainous regions in California and Nevada that may be at a higher risk of flash flood events. Future loan volumes are expected to be a minor indirect contributor in comparison to other ongoing housing growth drivers and not expected to be a major contributor to adverse impacts to floodplains, wetlands, and coastal areas. Construction activities undertaken through VA-guaranteed new home construction loans could result in minor impacts to wetland areas in the region, if construction occurs on or near wetland areas.
19 Alaska Watershed (AK)	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided low numbers of loan guaranties for newly constructed homes in this region. This water resource region includes extensive wetland, floodplain, and coastline areas, but only a small percentage of Alaska is developed. The low population density, extreme climate, distance between coastline and major urban or industrial areas, and inaccessible natural areas all prevent future development pressure to the same extent as the rest of the United States.

Table 4.5-1. Summary of Floodplain, Wetland, and Coastal Zone Area Impacts by HUC-2 Region

HUC-2 Region ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
20 Hawaii Watershed (HI)	Minor	Negligible	Negligible	Negligible	Negligible	VA has provided 1,000 – 2,500 loan guaranties for newly constructed homes in Honolulu, Hawaii MSA. The region includes wetland areas and extensive coastlines scattered across multiple islands on the Pacific Ocean that could be at potentially higher risk from intense storm events (e.g., typhoons). Future loan guaranty volumes are expected to be a minor indirect contributor in comparison to other ongoing housing growth drivers and not expected to be a major contributor to adverse impacts to floodplains, wetlands, and coastal areas. Construction activities undertaken through VA-guaranteed new construction loans could result in minor impacts to wetland areas in the region, if construction occurs on or near wetland areas.
21 Caribbean Watershed (Puerto Rico and U.S. Virgin Islands)	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided low numbers of loan guaranties for newly constructed homes in the region. The Caribbean watershed region supports wetlands and floodplains and includes extensive coastal areas that may be at increased risk from future flooding events, especially if storms become more intense (e.g., Hurricane Maria in Puerto Rico). Future loan guaranty volumes would be an indirect contributor in Puerto Rico and the U.S. Virgin Islands given the small number of loans in comparison to other ongoing housing growth drivers. In addition, the footprint for each loan action is very small and localized, and VA's HLP includes certain restrictions and requirements related to home occupancy in a floodplain.

Table 4.5-1. Summary of Floodplain, Wetland, and Coastal Zone Area Impacts by HUC-2 Region

HUC-2 Region ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
American Samoa, Guam, and the Northern Mariana Islands	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided low numbers of loan guaranties for newly constructed homes in the region. These U.S. Territories support wetlands, floodplains, and extensive coastal areas along each island that could be at potential risk from future storm events (e.g., typhoons), particularly if they grow more intense. Future loan guaranty volumes and the resulting new construction would not be expected to measurably degrade the region's floodplains, wetlands, or coastal areas. In addition, the footprint for each loan action is very small and localized.

^a. See Figure 3.0-3 in Chapter 3 for map of Hydrologic Unit Code-2 Watersheds.

^b. See Table 1-4 in Chapter 1, Introduction, for the numbers of VA-guaranteed loans for newly constructed homes by metropolitan statistical area, during the period FY 2013 through FY 2017. This PEIS assumes that loan guaranty and other HLP activity in a given metropolitan statistical area through FY 2030 would be consistent with past levels.

^c. Since Existing/Refinance home loan guaranties and REO transactions pertain to existing homes, impacts to the physical environment would be expected to be negligible. See Section 1.4.2 in Chapter 1, Introduction, for further discussion on the REO program.

^d. NADLs may be used for new home construction that could cause physical impacts to environmental resources; however, past volumes of total NADLs for both existing homes and new construction have been very low (118 collectively between FY 2013 and FY 2017), and spread out across multiple states and territories, such that overall impacts would typically be negligible. See Section 1.4.3 in Chapter 1, Introduction, for further discussion on NADLs.

^e. Because the number of overall SAH program grants in the United States and its Territories is very small (less than 2,000 per year), and only a small portion of those grants would involve exterior work, impacts to the physical environment would be expected to be negligible. See Section 1.4.4 in Chapter 1, Introduction, for further discussion on SAH program grants.

^f. Past loan guaranty volumes shown here are for the period FY 2013 through FY 2017, as presented in Table 1-4 in Chapter 1, Introduction. One MSA may overlap more than one HUC-2 Region.

FY = fiscal year; HUC = Hydrologic Unit Code; MSA = metropolitan statistical area; NADL = Native American Direct Loan; REO = Real Estate Owned; SAH = Specially Adapted Housing; U.S. = United States; VA = U.S. Department of Veterans Affairs

Although indirect impacts associated with construction and occupancy of new homes are classified as “minor” or “negligible” in all HUC-2 regions, there would be some regional and local variation. Parts of the country that experience more rapid growth in housing demand, such as parts of the South, Southwest, and Northwest, could experience a greater increase in indirect impacts to floodplains, wetlands, and coastal areas associated with the Proposed Action. These areas are consistent with the geographic locations that experienced the highest number of VA HLP loan guaranties issued for new homes between FY 2013 and FY 2017 (see Figure 1-5 in Chapter 1). In particular, the highest concentrations of new construction guaranties occurred in southern and western metropolitan areas. The overall impact from the HLP would remain “minor” even in regions with moderate to high numbers of projected new home loan guaranties when compared to other ongoing housing growth drivers.

Assuming similar future trends, more new home construction guaranties would be expected within metropolitan areas over rural areas. However, it is important to note that many metropolitan areas, or portions at least, are located in floodplains and coastal areas or are themselves flood-prone areas because of the large extent of paved surface areas within their boundaries. Many metropolitan areas are also so expansive that they could include rural, undeveloped areas containing wetlands. Therefore, a new home or a new and larger residential development could occur on or in proximity to affect wetlands, floodplains, or coastal areas in both metropolitan and rural areas. In particular, a comparison of the geographical distribution of VA-guaranteed loans for newly constructed homes reveal that many overlapping “hot spot” (high) concentrations of new construction loans as well as total loans which include existing homes occur in possible floodplain and coastal areas in the mid-Atlantic, south/southeast and northwest United States, as well as in possible flood-prone areas (e.g., alluvial fans) in the southwestern United States. They also include many coastal cities (e.g., Charleston, South Carolina; Houston, Texas; and Jacksonville and Pensacola, Florida).

Residential development in floodplains could negatively impact natural and beneficial floodplain values; the level of potential impacts would relate directly to the extent to which floodplains or coastal zones are made available for residential development. VA’s restrictions on VA-guaranteed loans for housing within special flood hazard areas (or areas subject to regular flooding) would help prevent or discourage occupancy in these areas, although loans could be approved in some situations where NFIP insurance is secured. Some general safeguards in place to help minimize impacts from new residential development on floodplains, wetlands, and coastal areas and the valuable ecosystem services they provide, include the following.

- **Compliance with applicable federal, state, and/or local regulations relating to floodplains and coastal zones.** Executive Order 11988, Floodplain Management, directing federal agencies to minimize adverse impacts to floodplains should help prevent an increase in flood damage. Compliance would also be required with applicable state and local floodplain management regulations, and coastal communities identified as flood prone that participate in the NFIP must also meet minimum floodplain management requirements. Proposed new residential developments in a floodplain would require permits and assurances that potential flood damage

is minimized and would have to meet zoning regulations as well as applicable building and housing codes (e.g., design, construction materials, elevation requirements, floodproofing, and structure maintenance). Subdivision regulations may incorporate provisions for improvements to alleviate potential flood hazards (e.g., drainage facilities and placement of utilities and streets). Individual homeowners could also take additional measures to help prevent flooding as necessary. Coastal development would have to comply with the Coastal Zone Management Act and the Coastal Barrier Resources Act.

- **Wetlands.** The extent of any site-specific impact would depend on whether the wetland met the regulatory definition under Section 404 of the Clean Water Act, as well as the function, value, quality, and size of the wetland(s) that could be disturbed during construction. Executive Order 11990, *Protection of Wetlands*, directs federal agencies to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands, and Section 404 of the Clean Water Act, administered by the USACE and the USEPA, also applies to many waterfront (coastal and freshwater) construction activities, including wetlands alterations. Presumably every effort would be made to avoid jurisdictional wetlands. Large residential developments may have to take additional steps to develop a mitigation plan compensating for the lost function and value of the wetland. However, any such large developments would not be overseen or directed by the HLP.

Construction activities related to home modifications made with SAH program grants issued under the HLP would most likely include interior work or minor exterior work. Depending on the nature of these modifications, some ground disturbance or onsite presence of heavy construction machinery may be required and could result in negligible adverse impacts to wetlands. Due to the nature of the REO program, no measurable impacts to floodplains, wetlands, or coastal areas would be anticipated under this aspect of the HLP.

The NADL program would have a small but highly focused effect on eligible Veterans seeking new construction homes on recognized tribal lands. Potential impacts to floodplains, wetlands, and coastal areas would be similar to those discussed above for new construction, but those impacts would be concentrated in recognized sovereign tribal lands.

Another important consideration relating to residential development in floodplain and coastal areas is that, based on the historical high residential development levels in floodplains and coastal areas, it is very possible that home loans approved under the Proposed Action for both new construction and for the purchase of an existing home could result in Veterans living in a floodplain and/or coastal area and, as a result, be at increased risk from future flooding conditions. Fortunately, VA recognizes that floods are among the most common types of hazard in some areas and has included geographical restrictions on VA housing loans to help minimize potential flooding impacts on homeowners; these restrictions would apply to both new home construction loans and loans for purchase of an existing home in a floodplain. Specifically, VA housing loans would not be made for the following:

- Properties located in a special flood hazard area (SFHA) as delineated on FEMA flood maps and either: (1) it is proposed new construction properties with elevation of the lowest floor below the 100-year floodplain, or (2) where flood insurance is not available; or

- Property is subject to regular flooding for whatever reason, whether or not it is in a SFHA.

VA addresses flood insurance requirements for VA-guaranteed loans in 38 CFR § 36.4329. VA's *Lender's Handbook* M26-7, Chapter 9, also sets forth requirements for lenders to ensure that relevant homes are protected: "The lender is responsible for ensuring that flood insurance is obtained and maintained on any building or personal property that secures a VA loan if the property is located in a special flood hazard area (SFHA), as identified by the Federal Emergency Management Agency (FEMA)" (VA 2019b).

These flood insurance requirements are in effect for the lifetime of the loan, "and include insuring any secured property that becomes newly located in a SFHA due to FEMA remapping." Chapter 9 includes the following additional requirements regarding hazard insurance (VA 2019b):

"The lender is responsible for ensuring that hazard insurance is obtained prior to loan closing and maintained for the term of the loan. It must be of a type or types and in an amount sufficient to protect the property against risks or hazards to which it may be subjected in the locality. Generally, the type(s) and amount of insurance coverage customary in the locality will satisfy this requirement."

These loan restrictions and insurance requirements help ensure that any Veteran homeowner living within a floodplain (either in an existing home or a newly constructed home) is protected from flooding events, to the extent possible, with respect to property damage or loss. Individual homeowners could also take additional home protection measures to help prevent flooding when necessary.

Finally, while access to flood insurance and the implementation of community hazard plans and adaptive measures will help minimize impacts from flooding, they may not be sufficient to fully mitigate or avoid increased flooding conditions expected from increased (and more intense) storm events and/or rising sea levels associated with climate change, depending on the location and site specific conditions. Continued new housing construction and/or continued occupation of existing homes in floodplain areas or coastal communities, especially along the Atlantic and Gulf Coastlines, would put these homeowners at potentially greater risk in future years. This is discussed further in Chapter 5, Cumulative Impacts.

There would be no direct or indirect impacts on CBRS locations because VA has procedures in place intended to prevent loan guaranties in CBRS-protected locations. VA policy requires appraisers to ascertain and lenders to certify that a subject property is not in a CBRS-protected location. The barriers themselves are extremely vulnerable to flooding and erosion due to their seaward exposure, inherent instability, and relatively low-lying topography of these landforms. Rising sea level is also a factor in the long-term instability of coastal barriers. Despite these building challenges, increased residential and other types of development have occurred on coastal barriers in recent decades, and pressure for continued development is intense. Increased development on coastal barriers has resulted in large numbers of people and personal property being at risk to severe storms. VA's geographical restrictions on housing loan guaranties in these sensitive and protected areas are in accordance with 16 USC 3501 et seq. (see also VA *Lender's Handbook* M26-7, Chapters 11 and 12) and the Coastal Barrier Resources Act

of 1982, thus protecting portions of the Great Lakes, Gulf Coast, the Commonwealth of Puerto Rico, U.S. Virgin Islands, and the Atlantic Coast. There are no coastal barriers identified for protection along the Pacific coast or in other U.S. Territories.

4.5.3 No Action Alternative

Under the No Action Alternative, VA-guaranteed loans and the percentage of new home construction would continue at levels consistent with those observed in FY 2017, as described in Section 2.3 (Chapter 2, Proposed Action and Alternatives) and Section 4.0, Environmental Consequences, Introduction. VA-guaranteed loans, REO transactions, NADLs, and SAH program grants would continue to represent a very small portion of the total home loan market, and nationwide housing supply and demand trends would continue to evolve without any noticeable influence from the HLP. The regional environmental effects of housing construction and occupancy, and corresponding population shifts, would likely continue in a manner consistent with those seen in recent years. The HLP's contribution to such regional effects would continue to be minor in scale and consistent with FY 2017 conditions, and no unique types or localized focuses of effects on floodplains, wetlands, or coastal zones would be expected to reach the level of significance as defined under NEPA.

Indirect impacts to floodplains, wetlands, and coastal areas could occur as a result of the construction and occupancy of new homes, which would be consistent with recent historical levels. VA loan restrictions and insurance requirements on development in floodplains and CBRS areas would help ensure that any Veteran home owner living within a floodplain (either in an existing home or a newly constructed home) is protected from flooding events, to the extent possible, with respect to property damage or loss. Individual homeowners could also take additional home protection measures to help prevent flooding when necessary. Further, as discussed in Section 4.0, while many Veterans rely on the HLP and might not be able to purchase a home except for the availability of VA-guaranteed loans with zero down payment, the majority of these homes would have been constructed regardless of VA's financial support to Veterans under the HLP.

INTENTIONALLY LEFT BLANK.

4.6 GEOLOGY AND SOILS

This section describes the potential direct and indirect impacts to geology and soils from operation and management of VA's HLP, including potential impacts from construction and occupancy of new homes or modification of existing homes associated with the HLP.

4.6.1 Significance Criteria

To evaluate impacts to geology and soils, VA considered the potential for changes to these resources within the Affected Environment (described in Section 3.6, Geology and Soils) as a result of the Proposed Action and No Action Alternative. To evaluate impacts on geology, VA reviewed the Proposed Action and No Action Alternative to determine whether any activities have the potential to cause any of the following:

- Alter surficial geology or lithology;
- Alter the availability of mineral resources for current or future uses; or
- Increase the probability of geologic hazards (e.g., seismic activity, landslides, and subsidence).

To evaluate the impacts on soil resources, VA reviewed activities associated with the Proposed Action and No Action Alternative to determine whether any activities have the potential to cause any of the following:

- Affect the soil's ability to support plant growth (e.g., resulting from decreased soil porosity through compaction, or degraded soil structure consistency and integrity);
- Modify soils such that they no longer meet the criteria for prime farmland soils;
- Change the availability of other soil resources for current or future uses (this is also a potential land use concern); or
- Accelerate erosion of soil by wind or water resulting from loss of vegetative cover.

4.6.2 Proposed Action

Under the Proposed Action, VA would continue to operate and actively manage the HLP, and the number of VA-guaranteed loans would fluctuate within the range bound by the low-intensity scenario to the high-intensity scenario, as described in Section 2.2 (Chapter 2, Proposed Action and Alternatives) and Section 4.0, Environmental Consequences, Introduction. VA's REO program would continue to maintain, manage, market, and sell existing homes through a private-sector company; the NADL program would continue to make VA direct loans available to Native American Veterans living on trust, tribal, or communally owned lands; and VA would continue to provide SAH program grants to accommodate the needs of Veterans with certain severe, service-connected disabilities.

Section 4.6.2.1 discusses potential sources and types of impacts to geology and soils. Section 4.6.2.2 summarizes the overall potential impacts that could occur and their anticipated geographical distribution across the United States and its Territories.

4.6.2.1 Sources of Impacts to Geology and Soils

The HLP would not directly result in any impacts to geology and soils; however, construction and occupancy of new homes, or modification of existing homes, facilitated through the HLP could result in indirect impacts. The act of guaranteeing mortgages under the HLP and providing direct mortgages under NADL could contribute to an increase in demand for newly constructed housing, as compared with a market that has a fewer number of Veterans. In those areas with a higher concentration of VA-guaranteed mortgages, indirect impacts associated with the construction of housing in new developments would be expected to occur. As shown in Figure 1-5 (Chapter 1 of this PEIS), the areas around the following cities are likely to experience the highest growth in new home construction over the next several years: Raleigh-Durham, North Carolina; Charleston, South Carolina; Nashville, Tennessee; Jacksonville and Pensacola, Florida; Houston, Austin, and Dallas-Fort Worth, Texas; Colorado Springs, Colorado; Phoenix, Arizona; and Las Vegas, Nevada.

The primary impact related to geology would be the increased likelihood that new homes may be constructed in areas that are seismically active. As a result, those homes may be exposed to a higher risk of earthquakes and any resulting damage. The construction of new homes facilitated through the HLP could also result in indirect impacts to soils. Construction of new homes would involve land preparation, including clearing existing vegetation, excavation, and grading. Additionally, some soils may be converted from farmland and other uses to developed, impervious surfaces. These soils would no longer be available to support alternative uses. Finally, it is possible that some soils designated as prime farmland may be converted to developed land as a result of new home construction indirectly influenced through the VA loan guaranty or NADL programs.

4.6.2.2 Potential Impacts to Geology and Soils

Increases in indirect impacts to geology and soils associated with new home construction and residential living could occur as a result of market effects influenced by VA's HLP. However, any impacts to geology and soils associated with increased market demand for new home construction would likely be localized and minor for both the low-intensity and high-intensity cases. A summary of potential impacts by USGS Physiographic Region is presented in Table 4.6-1.

Table 4.6-1. Summary of Geologic and Soils Impacts by USGS Physiographic Region

USGS Physiographic Region ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
Appalachian Highlands	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the MSA of Washington-Arlington-Alexandria, District of Columbia/Virginia/Maryland/West Virginia; 2,500 – 5,000 loan guaranties for newly constructed homes in seven additional MSAs; and 1,000 – 2,500 loan guaranties for newly constructed homes in another four MSAs. This region includes small amounts of prime farmland and a few pockets of moderate to high seismic hazard.
Atlantic Plain	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the MSAs of San Antonio-New Braunfels, Dallas-Ft. Worth-Arlington, Houston-The Woodlands-Sugarland, and Killeen-Temple, Texas; Washington-Arlington-Alexandria, District of Columbia/Virginia/Maryland/West Virginia; Virginia Beach-Norfolk-Newport News, Virginia/North Carolina; Jacksonville, Florida; and Tampa-St. Petersburg-Clearwater, Florida. VA also provided 2,500 – 5,000 loan guaranties for newly constructed homes in 10 additional MSAs and 1,000 – 2,500 loan guaranties for newly constructed homes in another 3 MSAs. This region includes moderate amounts of prime farmland and pockets of moderate to high seismic hazard.
Interior Highlands	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided low numbers of loan guaranties for newly constructed homes in this region. This region includes small amounts of prime farmland and some areas with moderate to high seismic hazard.
Interior Plains	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the MSAs of San Antonio-New Braunfels, Dallas-Ft. Worth-Arlington, and Killeen-Temple, Texas and Colorado Springs, Colorado; 2,500 – 5,000 loan guaranties for newly constructed homes for the MSAs of Austin-Round Rock-Georgetown, Texas; Nashville-Davidson-Murfreesboro-Franklin, Tennessee; Denver-Aurora-Lakewood, Colorado. 1,000 – 2,500 loan guaranties for newly constructed homes were in six additional MSAs. This region includes significant amounts of prime farmland but very few areas of notable seismic hazard.

Table 4.6-1. Summary of Geologic and Soils Impacts by USGS Physiographic Region

USGS Physiographic Region ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
Intermontane Plateaus	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the Phoenix-Mesa-Chandler, Arizona MSA; 2,500 – 5,000 loan guaranties in Las Vegas-Henderson-Paradise, Nevada; Riverside-San Bernardino-Ontario, California; and El Paso, Texas MSAs; and 1,000 – 2,500 loan guaranties for newly constructed homes in five additional MSAs. This region includes some prime farmland and a few pockets of moderate to high seismic hazard.
Laurentian Upland	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided low numbers of loan guaranties for newly constructed homes in this region. This region includes moderate amounts of prime farmland; geologically stable bedrock poses very little seismic hazard.
Pacific Mountain System	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided 2,500 – 5,000 loan guaranties for newly constructed homes in the Seattle-Tacoma-Bellevue, Washington MSA and Riverside-San Bernardino-Ontario, California MSA; 1,000 – 2,500 loan guaranties for newly constructed homes in six additional MSAs. This region includes some prime farmland and areas of moderate to high seismic hazard.
Rocky Mountain System	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the Colorado Springs, Colorado MSA; 2,500 – 5,000 loan guaranties for newly constructed homes in Denver-Aurora-Lakewood, Colorado MSA; 1,000 – 2,500 loan guaranties for newly constructed homes in three additional MSAs. This region includes very little prime farmland and a few pockets of moderate to high seismic hazard.
Alaska	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided low numbers of loan guaranties for newly constructed homes in this region. This region includes very little farmland and areas of moderate to high seismic hazard.

Table 4.6-1. Summary of Geologic and Soils Impacts by USGS Physiographic Region

USGS Physiographic Region ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
Hawaii	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided 1,000 - 2,500 loan guaranties for newly constructed homes in the Honolulu, Hawaii MSA. This region includes some prime farmland and areas of moderate to high seismic hazard.
Puerto Rico, U.S. Virgin Islands	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided low numbers of loan guaranties for newly constructed homes in this region. This region includes some prime farmland and areas of moderate to high seismic hazard.
American Samoa, Guam, Northern Mariana Islands	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided low numbers of loan guaranties for newly constructed homes in this region. This region includes very little prime farmland and is located within an area of moderate to high seismic hazard.

^a. See Figure 3.0-1 in Chapter 3 for map of USGS Physiographic Regions.

^b. See Table 1-4 in Chapter 1, Introduction, for the numbers of VA-guaranteed loans for newly constructed homes by metropolitan statistical area, during the period FY 2013 through 2017. This PEIS assumes that loan guaranty and other HLP activity in a given metropolitan statistical area through FY 2030 would be consistent with past levels.

^c. Since Existing/Refinance home loan guaranties and REO transactions pertain to existing homes, impacts to the physical environment would be expected to be negligible. See Section 1.4.2 in Chapter 1, Introduction, for further discussion on the REO program.

^d. NADLs may be used for new home construction that could cause physical impacts to environmental resources; however, past volumes of total NADLs for both existing homes and new construction have been very low (118 collectively between FY 2013 and FY 2017), and spread out across multiple states and territories, such that overall impacts would typically be negligible. See Section 1.4.3 in Chapter 1, Introduction, for further discussion on NADLs.

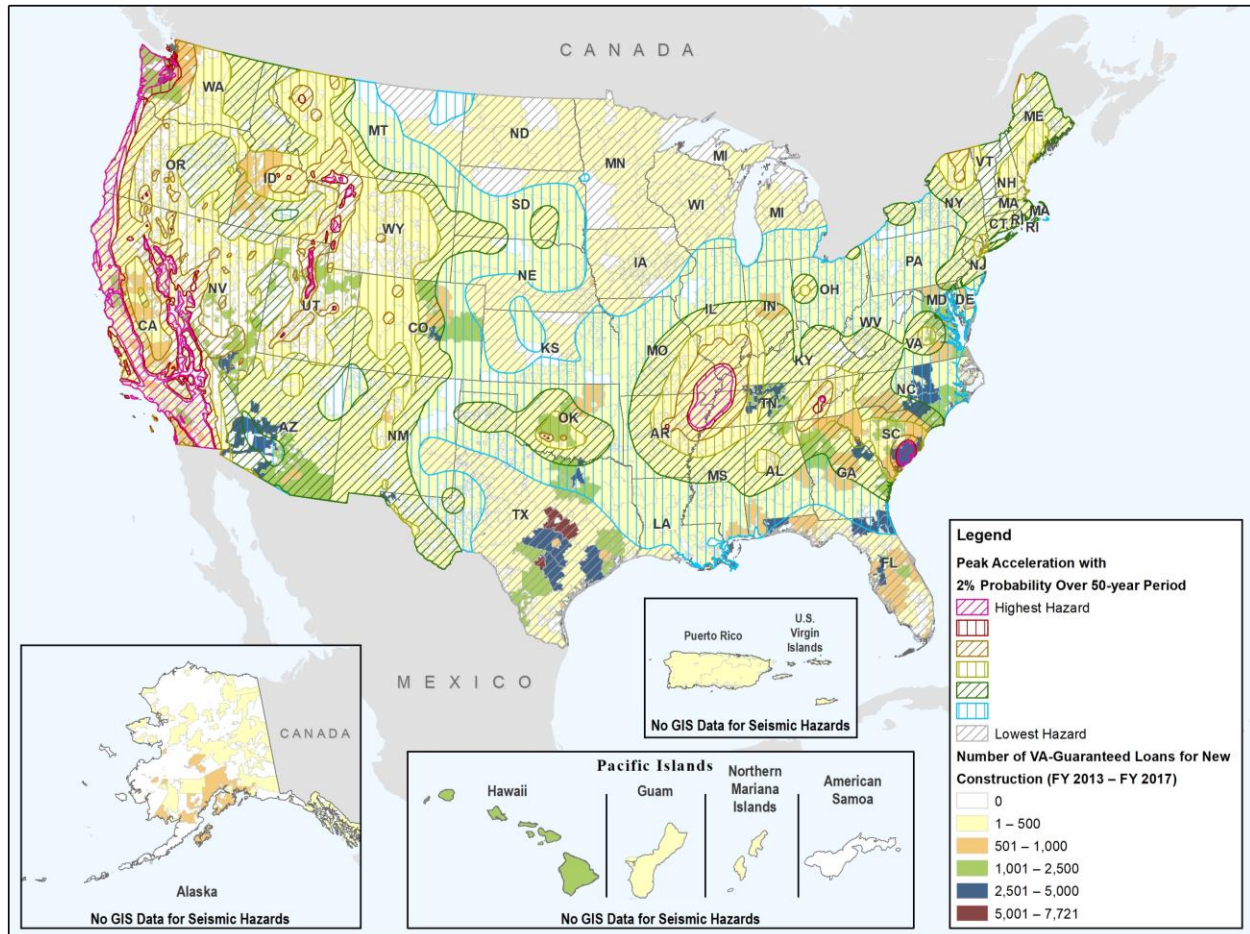
^e. Because the number of overall SAH program grants in the United States and its Territories is very small (less than 2,000 per year), and only a small portion of those grants would involve exterior work, impacts to the physical environment would be expected to be negligible. See Section 1.4.4 in Chapter 1, Introduction, for further discussion on SAH program grants.

^f. Past loan guaranty volumes shown here are for the period FY 2013 through FY 2017, as presented in Table 1-4, Introduction. One MSA may overlap more than one USGS physiographic region.

FY = fiscal year; MSA = metropolitan statistical area; NADL = Native American Direct Loan; REO = Real Estate Owned; SAH = Specially Adapted Housing; USGS = United States Geological Survey; VA = U.S. Department of Veterans Affairs

Geology

Figure 4.6-1 compares areas of high seismic hazard with areas that are likely to experience increased demand for new home construction associated with VA HLP. Charleston, South Carolina is located within a moderate risk zone for seismic activity, while Las Vegas, Nevada and Nashville, Tennessee are located in a low-to-moderate risk zone (USGS 2018b). Additionally, parts of Washington and California that are located in high seismic-risk zones may experience moderate demand for VA-guaranteed loans. Most other areas likely to experience strong demand for such loans (within the continental United States) are located in zones of low seismic risk.



Source: USGS 2018b

FY = fiscal year; HLP = Housing Loan Program; VA = Department of Veterans Affairs

Figure 4.6-1. Comparison of Seismic Hazard with Number of VA-Guaranteed Loans for Newly Constructed Homes

Guam, the Commonwealth of the Northern Mariana Islands, the Commonwealth of Puerto Rico, and the U.S. Virgin Islands have relatively low numbers of VA HLP loan guaranties. While Puerto Rico and the U.S. Virgin Islands are in a zone of low to moderate seismic activity, Guam is located in a tectonically active region with a relatively high seismic risk (USGS 2012b). However, due to the low number of VA

HLP guaranties and other types of home loan assistance in these regions, the overall impacts related to geologic hazards would be negligible to minor.

NADL program loans may indirectly influence new home construction on trust, tribal, or communally owned lands. However, given the overall low numbers of NADLs issued in recent years, the overall impact would be negligible to minor. Between FY 2013 and FY 2017, most NADLs were issued in Hawaii and American Samoa, and some in Alaska. New homes constructed in seismically active regions in these states and territories may be at risk of damage from earthquakes. As discussed in Section 3.6, parts of the state of Hawaii, including the island of Hawaii, are at high risk of seismic activity, while the remainder of the state is located a moderately seismically active zone. American Samoa consists of geologically active volcanic islands, while parts of Alaska, especially in the southern portion of the state, are also at moderate risk of seismic activity.

Homes constructed in areas at risk of seismic activity would be required to comply with all state and local building codes, which would likely mitigate any damage as a result of earthquakes. This includes homes constructed under VA HLP loan guaranties or the NADL program. Similar requirements would apply to homes modified with support from the SAH program, depending on the extent of home modification. However, VA would not impose additional seismic safety requirements on any homes constructed or modified under these programs.

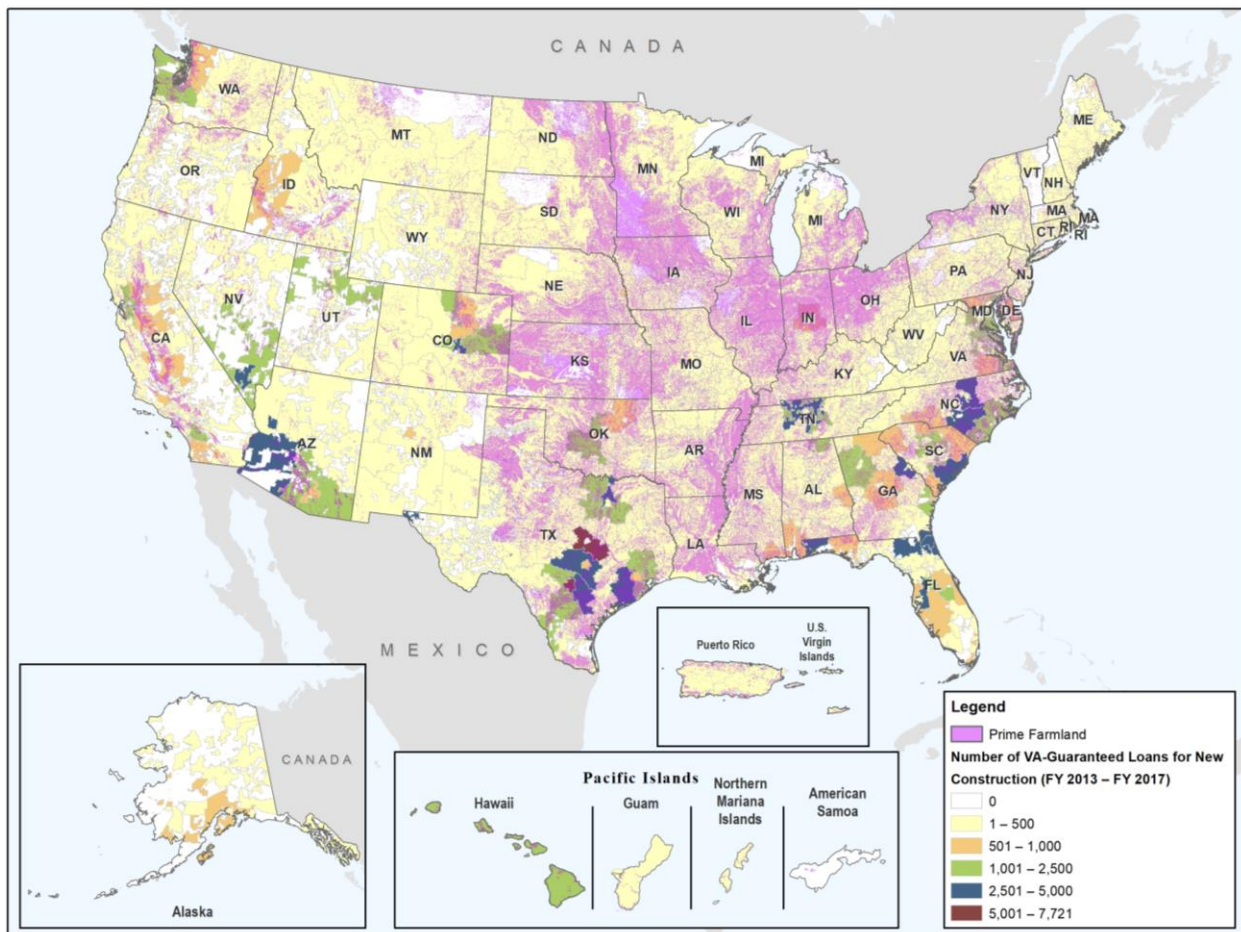
The construction of new homes or the modification of existing homes associated with VA HLP loan guaranty, NADL, and SAH programs would not be likely to increase seismic hazards, or result in impacts to bedrock and surficial geology and the accessibility of mineral resources.

Soils

Construction activities would likely result in localized, minor impacts to soils including erosion by wind and water, as well as removal of soils in some cases to facilitate construction. Erosion impacts may be mitigated by the use of erosion control practices required under state and local permit requirements. Any conversion of soils to non-productive use would likely be consistent with existing patterns of development. It is unlikely that VA HLP's loan guaranty program would cause or encourage development and home construction to take place in areas that would otherwise have remained undeveloped. The NADL program may facilitate construction of new homes on tribal lands held in trust, that would otherwise not have been developed; however, the number of such loans is generally low and would have negligible to minor impacts overall. Conversion of soils to non-productive use may be mitigated by local requirements that restrict development in certain designated areas.

Veterans may use their VA home loan benefit to purchase a farm, provided there is a dwelling on the land that the Veteran intends to use as their primary residence and that is appraised as such. VA-guaranteed loans for farm dwellings are appraised and generally underwritten in the same way as non-farm dwellings. VA has historically issued very few loan guaranties for dwellings on farmland; therefore, on a nationwide scale, VA-guaranteed loans for dwellings on farms would have a negligible impact on soils, including prime farmland.

Figure 4.6-2 compares the occurrence of prime farmland soils with areas that are likely to experience higher volumes of new home construction as a result of VA HLP’s loan guaranty and NADL programs. Areas in the vicinity of Raleigh-Durham, North Carolina; Charleston, South Carolina; Nashville, Tennessee; Houston, Austin, and Dallas-Fort Worth, Texas may experience conversion of prime farmland soils to developed land (NRCS 2001). As discussed above, any such conversion would likely be consistent with existing patterns of development and would likely not be caused or encouraged solely as a result of VA HLP’s loan guaranty or NADL programs. Overall, impacts associated with the conversion of prime farmland and other types of soil to developed land would be expected to be negligible to minor. The SAH and REO programs would not be likely to result in any impacts to soils.



Source: NRCS 2001

FY = fiscal year; HLP = Housing Loan Program; U.S. = United States; VA = Department of Veterans Affairs

Figure 4.6-2. Comparison of Prime Farmland with Number of VA-Guaranteed Loans for Newly Constructed Homes

4.6.3 No Action Alternative

Under the No Action Alternative, VA-guaranteed loans and the percentage of new home construction would continue at levels consistent with those observed in FY 2017, as described in Section 2.3 (Chapter 2, Proposed Action and Alternatives) and Section 4.0, Environmental Consequences,

Introduction. VA-guaranteed loans, REO transactions, NADLs, and SAH program grants would continue to represent a very small portion of the total home loan market, and nationwide housing supply and demand trends would continue to evolve without significant influence from the HLP. The regional environmental effects of housing construction and occupancy, and corresponding population shifts, would likely continue in a manner consistent with those seen in recent years. The HLP's contribution to such regional effects would continue to be minor in scale and consistent with FY 2017 conditions, and no unique types or localized focuses of effects to geology or soils would be expected to reach the level of significance as defined under NEPA.

Indirect impacts to geology and soils would be expected to occur as a result of the construction and occupancy of new homes, which would be consistent with recent historical levels. Further, as discussed in Section 4.0, while many Veterans rely on the HLP and might not be able to purchase a home except for the availability of VA-guaranteed loans with zero down payment, the majority of these homes would have been constructed regardless of VA's financial support to Veterans under the HLP.

INTENTIONALLY LEFT BLANK.

4.7 HYDROLOGY AND WATER QUALITY

This section describes the potential direct and indirect impacts to surface water and groundwater hydrology and water quality from operation and management of VA's HLP, including potential impacts from construction and occupancy of new homes or modification of existing homes associated with the HLP.

4.7.1 Significance Criteria

To evaluate impacts to hydrology and water quality, VA considered the potential for change to these resources within the Affected Environment (described in Section 3.7, Hydrology and Water Quality) as a result of the Proposed Action and No Action Alternative. To evaluate impacts to hydrology and water quality, VA reviewed the Proposed Action or No Action Alternative to determine whether any activities have the potential to cause any of the following:

- Alteration of stormwater discharges or infiltration rates, which could adversely affect drainage patterns, flooding, erosion, and sedimentation;
- Violation of any federal, state, or regional water quality standards or discharge limitations;
- Modification of surface waters such that water quality no longer meets water quality criteria or standards established in accordance with the Clean Water Act, state regulations, or permits (including downgrades of surface water use classification or listing on the Nationwide Rivers Inventory);
- Changes to the availability of surface water resources for current or future uses; or
- Change in stream channel morphology – slope and stability.

4.7.2 Proposed Action

Under the Proposed Action, VA would continue to operate and actively manage the HLP. The number of VA-guaranteed loans would fluctuate within the range bound by the low-intensity scenario to the high-intensity scenario, as described in Section 2.2 (Chapter 2, Proposed Action and Alternatives) and Section 4.0, Environmental Consequences, Introduction. VA's REO program would continue to maintain, manage, market, and sell existing homes through a private-sector company; the NADL program would continue to make VA direct loans available to Native American Veterans living on trust, tribal, or communally owned lands; and VA would continue to provide SAH program grants to accommodate the needs of Veterans with certain severe, service-connected disabilities.

Section 4.7.2.1 discusses potential sources and types of impacts to hydrology and water quality. Section 4.7.2.2 summarizes the overall potential impacts that could occur from the HLP and their anticipated geographical distribution across the United States and its Territories.

4.7.2.1 Sources of Impacts to Hydrology and Water Quality

The HLP would not directly result in any impacts hydrology and water quality; however, the construction and occupancy of new homes, or modification of existing homes, facilitated through the HLP could result in indirect impacts. Home construction activities, particularly if they are part of a new, large-scale residential development project, could result in short- or long-term adverse effects to local hydrology and water quality. Ground disturbance associated with construction and increased vehicle and human traffic could lead to increased sedimentation and result in decreased surface water quality. Clearing would remove the trees and plants that stabilize the soil, leading to increased erosion and sedimentation. The presence of heavy construction vehicles could result in the unintentional releases of petroleum, oil, or lubricants associated with the presence of construction vehicles leading to the potential contamination of surface water or groundwater. Finally, the construction of new homes and associated infrastructure would increase impervious surfaces, resulting in short and long term increases in runoff or potentially changing runoff or flow patterns. Over the long-term, occupancy of new homes would require use of water resources for domestic use. This use would divert surface water or draw down existing groundwater levels; in arid regions, these drawdowns could stress already limited resources.

Construction and stormwater permits, zoning, and community planning activities would be regulated at the local level. Any incompatibilities between home construction and potential water use or water quality would likely be addressed prior to construction and enforced by local policies.

4.7.2.2 Potential Impacts to Hydrology and Water Quality

Increases in indirect hydrology and water quality impacts associated with new home construction and residential living could occur as a result of market effects influenced by VA's HLP. However, any impacts on hydrology and water quality associated with increased market demand for new home construction would likely be localized and minor for both the low-intensity and high-intensity cases. The impact analysis assumes that the volume of HLP activity through FY 2030 in each HUC-2 region, and the resulting effects from new home construction, would be consistent with past volumes as described in Section 1.4, Overview of Current Housing Loan Program. A summary of potential impacts by HUC-2 region is presented in Table 4.7-1.

Table 4.7-1. Summary of Hydrology and Water Quality Impacts by HUC-2 Region

HUC-2 Region ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
01 New England Watershed (CT, MA, ME, NH, NY, RI)	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided low numbers of loan guaranties for newly constructed homes in the region. Future VA-guaranteed loans for new housing under the HLP would not be expected to measurably degrade the region's good water quality, nor affect the availability of groundwater.
02 Mid-Atlantic Watershed (CT, DC, DE, MA, MD, NJ, NY, PA, VA, VT, WV)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the MSAs of Washington-Arlington-Alexandria, District of Columbia/Virginia/Maryland/West Virginia and Virginia Beach-Norfolk-Newport News, Virginia/North Carolina; 2,500 – 5,000 loan guaranties for newly constructed homes in the Baltimore-Columbia-Towson, Maryland MSA; and 1,000 – 2,500 loan guaranties for newly constructed homes in the Richmond, Virginia MSA. Future VA-guaranteed loans for new housing under the HLP would be a minor, indirect contributor to overall housing growth in comparison with other ongoing housing growth drivers and not expected to be a major contributor to adverse impacts to hydrology or water quality in these large metropolitan areas.
03 South Atlantic-Gulf Watershed (AL, FL, GA, LA, MI, NM, SC, TN, VA)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the Jacksonville and Tampa-St. Petersburg-Clearwater, Florida MSAs as well as Virginia Beach-Norfolk-Newport News, Virginia/North Carolina; 2,500 – 5,000 loan guaranties for newly constructed homes in 10 additional MSAs; and 1,000 – 2,500 loan guaranties for newly constructed homes in another five MSAs within this region. Future VA-guaranteed loans for new housing under the HLP would be a minor, indirect contributor to overall housing growth in comparison with other ongoing housing growth drivers and not expected to be a major contributor to adverse impacts to hydrology or water quality in these large metropolitan areas.

Table 4.7-1. Summary of Hydrology and Water Quality Impacts by HUC-2 Region

HUC-2 Region ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
04 Great Lakes Watershed (IL, IN, MI, MN, NY, OH, PA, WI)	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided low numbers of loan guaranties for newly constructed homes in this HUC-2 region. Future VA-guaranteed loans for new housing under the HLP would not be expected to measurably degrade the region's good water quality, nor affect the availability of groundwater.
05 Ohio Watershed (IL, IN, KY, MD, NY, NC, OH, PA, TN, VA, WV)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided 2,500 – 5,000 loan guaranties for newly constructed homes in the MSA of Nashville-Davidson-Murfreesboro-Franklin, Tennessee and 1,000 – 2,500 loan guaranties for newly constructed homes in the Indianapolis-Carmel-Anderson, Indiana MSA. Future VA-guaranteed loans for new housing under the HLP would not be expected to measurably degrade the region's good water quality, nor affect the availability of groundwater.
06 Tennessee Watershed (AL, GA, KY, MI, CN, TN, VA)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided 2,500 – 5,000 loan guaranties for newly constructed homes in the MSA of Nashville-Davidson-Murfreesboro-Franklin, Tennessee and 1,000 – 2,500 loan guaranties for newly constructed homes in the Huntsville, Alabama MSA. Future VA-guaranteed loans for new housing under the HLP would be a minor, indirect contributor to overall housing growth in comparison with other ongoing housing growth drivers and not expected to be a major contributor to adverse impacts to hydrology or water quality in these areas.
07 Upper Mississippi Watershed (IA, IL, IN, MI, MN, MO, SD, WI)	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided low numbers of loan guaranties for newly constructed homes in this HUC-2 region. Future VA-guaranteed loans for new housing under the HLP would not be expected to measurably degrade the region's good water quality, nor affect the availability of groundwater.

Table 4.7-1. Summary of Hydrology and Water Quality Impacts by HUC-2 Region

HUC-2 Region ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
08 Lower Mississippi Watershed (AR, KY, LA, MI, MO, TN)	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided low numbers of loan guaranties for newly constructed homes in this HUC-2 region. Future VA-guaranteed loans for new housing under the HLP would not be expected to measurably degrade the region's good water quality, nor affect the availability of groundwater.
09 Souris-Red-Rainy Watershed (MN, ND, SD)	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided low numbers of loan guaranties for newly constructed homes in this HUC-2 region. Future VA-guaranteed loans for new housing under the HLP would not be expected to measurably degrade the region's good water quality, nor affect the availability of groundwater.
10 Missouri Watershed (CO, IA, KS, MN, MO, MT, ND, SD, WY)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided 2,500 – 5,000 loan guaranties for newly constructed homes in the MSAs of Denver-Aurora-Lakewood and Colorado Springs, Colorado; and 1,000 – 2,500 loan guaranties for newly constructed homes in the MSAs of Omaha-Council Bluffs, Nebraska/Iowa and Greeley, Colorado. Future VA-guaranteed loans for new housing under the HLP would be a minor, indirect contributor to overall housing growth in comparison to other ongoing housing growth drivers and not expected to be a major contributor to adverse impacts to hydrology or water quality in these large metropolitan areas.
11 Arkansas-White-Red Watershed (AR, CO, KS, LA, MO, NM, OK, TX)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the MSAs of Colorado Springs and Denver-Aurora-Lakewood, Colorado and Dallas-Ft. Worth-Arlington, Texas and 1,000 – 2,500 loan guaranties in the Oklahoma City, Oklahoma MSA. Future VA-guaranteed loans for newly constructed homes under the HLP would be a minor, indirect contributor to overall housing growth in comparison with other ongoing housing growth drivers and not expected to be a major contributor to adverse impacts to hydrology or water quality in these large metropolitan areas.

Table 4.7-1. Summary of Hydrology and Water Quality Impacts by HUC-2 Region

HUC-2 Region ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
12 Texas-Gulf Watershed (LA, NM, TX)	Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the MSAs of San Antonio-New Braunfels, Houston-The Woodlands-Sugarland, Dallas-Ft. Worth-Arlington, and Killeen-Temple, Texas; 2,500 – 5,000 loan guaranties for newly constructed homes in the Austin-Round Rock-Georgetown, Texas MSA. Future VA-guaranteed loans for newly constructed homes under the HLP would be a minor, indirect contributor to overall housing growth in comparison with other ongoing housing growth drivers. Groundwater levels have already declined in this region, and increased demand on these resources from new home construction could result in a minor contribution to stress on existing groundwater resources. Furthermore, over a quarter of the lakes, reservoirs, and ponds in this region are designated as impaired; construction activities undertaken through VA-guaranteed loans could result in a minor degradation of water quality in these large metropolitan areas.
13 Rio Grande Watershed (CO, NM, TX)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided 2,500 – 5,000 loan guaranties for newly constructed homes in the El Paso, Texas MSA and 1,000 – 2,500 loan guaranties for newly constructed homes in the Albuquerque, New Mexico MSA. This region has experienced aquifer depletion and increased groundwater salinity. Future VA-guaranteed loans for newly constructed homes under the HLP could result in a minor contribution to these ongoing groundwater issues.

Table 4.7-1. Summary of Hydrology and Water Quality Impacts by HUC-2 Region

HUC-2 Region ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
14 Upper Colorado Watershed (AZ, CO, NM, UT, WY)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided 2,500 – 5,000 loan guaranties for newly constructed homes in the Salt Lake City, Utah MSA and 1,000 – 2,500 loan guaranties for newly constructed homes in the Albuquerque, New Mexico MSA. Future VA-guaranteed loans for new housing under the HLP would be a minor, indirect contributor to overall housing growth in comparison with other ongoing housing growth drivers. However, groundwater in this region has experienced significant levels of decline. Construction activities undertaken through VA-guaranteed loans could result in a minor contribution to overall groundwater decline in this large metropolitan area.
15 Lower Colorado Watershed (AZ, CA, NV, NM, UT)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the Phoenix-Mesa-Chandler, Arizona MSA; 2,500 – 5,000 loan guaranties for newly constructed homes in the MSAs of Las Vegas-Henderson-Paradise, Nevada; Phoenix-Mesa-Chandler, Arizona; and Riverside-San Bernardino-Ontario, California. VA has also provided 1,000 – 2,500 loan guaranties for newly constructed homes in the Tucson, Arizona MSA. Future VA-guaranteed loans for newly constructed homes under the HLP would be a minor, indirect contributor to overall housing growth in comparison with other ongoing housing growth drivers. However, groundwater in this region has experienced significant levels of decline. Construction activities undertaken through VA-guaranteed loans could result in a minor contribution to overall groundwater decline in these large metropolitan areas.

Table 4.7-1. Summary of Hydrology and Water Quality Impacts by HUC-2 Region

HUC-2 Region ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
16 Great Basin Watershed (CA, ID, NV, OR, UT, WY)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided 2,500 – 5,000 loan guaranties for newly constructed homes in the MSA of Las Vegas-Henderson-Paradise, Nevada and Riverside-San Bernardino-Ontario, California; 1,000 – 2,500 loan guaranties for newly constructed homes in the Sacramento-Roseville-Folsom, California MSA and Salt Lake City, Utah MSA. Future VA-guaranteed loans for new housing under the HLP would be a minor, indirect contributor to overall housing growth in comparison to other ongoing housing growth drivers. However, groundwater in this region has experienced minor levels of decline, and several contaminants have been detected in groundwater at levels exceeding drinking water standards. Construction activities undertaken through VA-guaranteed loans could result in a minor contribution to overall groundwater decline in this region.
17 Pacific Northwest Watershed (CA, ID, MT, NV, OR, UT, WA, WY)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided 2,500 – 5,000 loan guaranties for newly constructed homes in the Seattle-Tacoma-Bellevue, Washington MSA and 1,000 – 2,500 loan guaranties for newly constructed homes in the MSAs of Boise City, Idaho; Portland-Vancouver-Hillsboro, Oregon/Washington; and Olympia-Lacey-Tumwater, Washington. Future VA-guaranteed loans for new housing under the HLP would be a minor, indirect contributor to overall housing growth in comparison with other ongoing housing growth drivers. However, groundwater in this region has experienced significant levels of decline. Construction activities undertaken through VA-guaranteed loans could result in a minor contribution to overall groundwater decline in these large metropolitan areas.

Table 4.7-1. Summary of Hydrology and Water Quality Impacts by HUC-2 Region

HUC-2 Region ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
18 California Watershed (CA, NV, OR)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided 2,500 – 5,000 loan guaranties for newly constructed homes in the Riverside-San Bernardino-Ontario, California MSA; 1,000 – 2,500 loan guaranties for newly constructed homes in the MSAs of San Francisco-Oakland-Berkeley, Sacramento-Roseville-Folsom, Bakersfield, and San Diego-Chula Vista-Carlsbad, California. Future VA-guaranteed loans for new housing under the HLP would be a minor, indirect contributor to overall housing growth in comparison with other ongoing housing growth drivers. However, groundwater in this region has experienced significant levels of decline, and approximately one third of lakes, reservoirs, and ponds are designated as impaired. Construction activities undertaken through VA-guaranteed loans could result in a minor contribution to overall groundwater and water quality decline in these large metropolitan areas.
19 Alaska Watershed (AK)	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided low numbers of loan guaranties for newly constructed homes in this HUC-2 region. Future VA-guaranteed loans for new housing under the HLP would not be expected to measurably degrade the region's good water quality, nor affect the availability of groundwater.
20 Hawaii Watershed (HI)	Minor	Negligible	Negligible	Negligible	Negligible	VA has provided 1,000 – 2,500 loan guaranties in the Honolulu, Hawaii MSA. Future VA-guaranteed loans for new housing under the HLP would be a minor, indirect contributor to overall housing growth in comparison with other ongoing housing growth drivers. However, groundwater in this region is limited and has experienced decline due to demand from tourism and agriculture. Construction activities influenced by VA-guaranteed loans could result in a minor contribution to overall groundwater and water quality decline in this region.

Table 4.7-1. Summary of Hydrology and Water Quality Impacts by HUC-2 Region

HUC-2 Region ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
21 Caribbean Watershed (Puerto Rico and U.S. Virgin Islands)	Minor	Negligible	Negligible	Negligible	Negligible	VA has provided low numbers of loan guaranties for newly constructed homes in the region. However, groundwater in this region has declined in coastal areas, and saltwater has intruded into the overdrawn aquifers. Practically all of the surface water resources in this region are designated as impaired. Future VA-guaranteed loans for new housing under the HLP could result in a minor contribution to overall groundwater and water quality decline in this region.
American Samoa, Guam, and the Northern Mariana Islands	Minor	Negligible	Negligible	Negligible	Negligible	VA has provided low numbers of loan guaranties for newly constructed homes in the region. However, porous rocks underlying these volcanic islands result in groundwater being easily susceptible to contamination. Surface water resources remain limited in areas due to topography and geology.

a. See Figure 3.0-3 in Chapter 3 for map of Hydrologic Unit Code-2 Watersheds.

b. See Table 1-4 in Chapter 1, Introduction, for the numbers of VA-guaranteed loans for newly constructed homes by metropolitan statistical area, during the period FY 2013 through 2017. This PEIS assumes that loan guaranty and other HLP activity in a given metropolitan statistical area through FY 2030 would be consistent with past levels.

c. Since Existing/Refinance home loan guaranties and REO transactions pertain to existing homes, impacts to the physical environment would be expected to be negligible. See Section 1.4.2 in Chapter 1, Introduction, for further discussion on the REO program.

d. NADLs may be used for new home construction that could cause physical impacts to environmental resources; however, past volumes of total NADLs for both existing homes and new construction have been very low (118 collectively between FY 2013 and FY 2017), and spread out across multiple states and territories, such that overall impacts would typically be negligible. See Section 1.4.3 in Chapter 1, Introduction, for further discussion on NADLs.

e. Because the number of overall SAH program grants in the United States and its Territories is very small (less than 2,000 per year), and only a small portion of those grants would involve exterior work, impacts to the physical environment would be expected to be negligible. See Section 1.4.4 in Chapter 1, Introduction, for further discussion on SAH program grants.

f. Past loan guaranty volumes shown here are for the period FY 2013 through FY 2017, as presented in Table 1-4, Introduction. One MSA may overlap more than one USGS physiographic region.

HUC-2 = Two-digit Hydrologic Unit Code; MSA = metropolitan statistical area; NADL = Native American Direct Loan; REO = Real Estate Owned; SAH = Specially Adapted Housing; VA = U.S. Department of Veterans Affairs

Although indirect impacts associated with construction and occupancy of new homes are classified as “minor” or “negligible” in all HUC-2 regions, there would be some regional and local variation. Parts of the country that experience more rapid growth in housing demand, such as parts of the South, Southwest, and Northwest, could experience a greater increase in indirect hydrology and water quality impacts associated with the Proposed Action. These areas are consistent with the geographic locations that experienced the highest number of VA-guaranteed loans for newly constructed homes between FY 2013 and FY 2017 (see Figure 1-5 in Chapter 1). In particular, the highest concentrations of VA-guaranteed loans for newly constructed homes occurred in southern and western metropolitan areas. The overall impact from the HLP would remain “minor” even in regions with moderate to high numbers of projected VA-guaranteed loans when compared to other ongoing housing growth drivers.

Assuming similar future trends, more VA-guaranteed loans for newly constructed homes would be expected within metropolitan areas over rural areas. However, it is important to note that many metropolitan areas, especially in the western United States, are so expansive that they could also include agriculture, rural, or undeveloped areas. Therefore, a new home or a new and larger residential development in a rural or undeveloped area may result in degraded water quality (e.g., from sedimentation and increased or contaminated stormwater runoff) or a decline in available water resources.

Construction activities related to home modifications made with SAH program grants issued under the HLP would most likely include interior work or minor exterior work. Depending on the nature of these modifications, some ground disturbance or onsite presence of heavy construction machinery may be required and could result in negligible adverse impacts to hydrology and water quality. Due to the nature of the REO program, no measurable impacts to hydrology and water quality would be anticipated under this aspect of the HLP.

The NADL program would have a small but highly focused effect on eligible Veterans seeking new construction homes on trust, tribal, and communally owned lands. Potential impacts to hydrology and water quality would be similar to those discussed above for new construction, but those impacts would be concentrated on the relevant lands. As such, any impacts that may occur would be limited in area across the country but may be experienced more intensely in specific areas.

4.7.3 No Action Alternative

Under the No Action Alternative, VA-guaranteed loans and the percentage of new home construction would continue at levels consistent with those observed in FY 2017, as described in Section 2.3 (Chapter 2, Proposed Action and Alternatives) and Section 4.0, Environmental Consequences, Introduction. VA-guaranteed loans, REO transactions, NADLs, and SAH program grants would continue to represent a very small portion of the total home loan market, and nationwide housing supply and demand trends would continue to evolve without any noticeable influence from the HLP. The regional environmental effects of housing construction and occupancy, and corresponding population shifts, would likely continue in a manner consistent with those seen in recent years. The HLP’s contribution to

such regional effects would continue to be minor in scale and consistent with FY 2017 conditions, and no unique types or localized focuses of effects on existing hydrology and water quality would be expected to reach the level of significance as defined under NEPA.

Indirect impacts to hydrology and water quality could occur as a result of the construction and occupancy of new homes, which would be consistent with recent historical levels. Further, as discussed in Section 4.0, while many Veterans rely on the HLP and might not be able to purchase a home except for the availability of VA-guaranteed loans with zero down payment, the majority of these homes would have been constructed regardless of VA's financial support to Veterans under the HLP.

4.8 INFRASTRUCTURE AND COMMUNITY SERVICES

This section describes the potential direct and indirect impacts to infrastructure and community services from operation and management of VA's HLP, including potential impacts from construction and occupancy of new homes or modification of existing homes associated with the HLP. For this PEIS, infrastructure and community services includes transportation (roads and highways, public transit), utilities (energy, domestic water use, waste management), public safety (law enforcement, fire and emergency services, health care facilities), and education (primary and secondary schools).

4.8.1 Significance Criteria

To evaluate impacts to infrastructure and community services, VA considered the potential for change to these resources within the Affected Environment (described in Section 3.8) as a result of the Proposed Action and No Action Alternative. To evaluate impacts to infrastructure and community services, VA reviewed the Proposed Action and No Action Alternative to determine whether any activities have the potential to cause any of the following:

- Traffic increase or impediment to the point where the existing rate of travel is reduced;
- Increase in utility demand past suppliers' functional capacity or otherwise affects effectiveness of existing utility infrastructure; or
- Increase in demand for emergency response services, fire protection, law enforcement, healthcare facilities, and school systems beyond available capacities or otherwise impedes effective access to such services.

4.8.2 Proposed Action

Under the Proposed Action, VA would continue to operate and actively manage the HLP. The number of VA-guaranteed loans would fluctuate within the range bounded by the low-intensity scenario to the high-intensity scenario, as described in Section 2.2 (Chapter 2, Proposed Action and Alternatives) and Section 4.0, Environmental Consequences, Introduction. VA's REO program would continue to maintain, manage, market, and sell existing homes through a private-sector company; the NADL program would continue to make VA direct loans available to Native American Veterans living on trust, tribal, or communally owned lands; and VA would continue to provide SAH program grants to accommodate the needs of Veterans with certain severe, service-connected disabilities.

Section 4.8.2.1 discusses potential sources and types of impacts to infrastructure and community services. Section 4.8.2.2 summarizes the overall impacts that could occur from the HLP and their anticipated geographical distribution across the United States and its Territories.

4.8.2.1 Sources of Impacts to Infrastructure and Community Services

The HLP would not directly result in any impacts to infrastructure or community services; however, the construction and occupancy of new homes, or modification of existing homes, facilitated through the HLP could result in indirect impacts as described below. Note that future expansion of infrastructure

and community services on Native American tribal, trust, or communally owned lands to accommodate new home construction associated with the NADL program are not within the scope of this PEIS and would be addressed by other NEPA analyses conducted by the Bureau of Indian Affairs (BIA) in consultation with the cognizant tribal government.

Transportation

Impacts to transportation are most likely to occur with new home construction as it could result in marginal increases to the existing population of a given area. New home construction may indirectly lead to potential impacts including increased traffic and associated wear and tear on existing roadways and increased use of public transit systems.

Utilities

Impacts to utilities could occur if the increased demand from new homes strains the existing utility infrastructure and associated resources. In some cases, the increased demand may exceed the existing capacity of utility service providers.

Public Safety

Impacts to law enforcement, fire protection services, and medical services depend on the current capacities of these service providers to meet the needs of increased populations and enlarged jurisdictions. New homes could marginally increase the number of people living within a given police or fire departments' jurisdiction or the local area surrounding a hospital.

Education

Impacts to education systems depend on the current capacities of existing schools to meet the needs of increased populations. New home occupancy could increase the number of school-aged children living within a given school district. This could, in turn, increase the student-to-teacher ratios.

4.8.2.2 Potential Impacts to Infrastructure and Community Services

Although the specific nature of impacts on infrastructure and community services must be determined on a site-specific basis, certain activities associated with new home residential development are known to have the potential to affect infrastructure and community services. As VA's involvement in housing-related activities is usually limited to financial transactions for eligible Veteran borrowers, potential impacts are indirect in nature unless specifically described otherwise. The impact analysis assumes that the volume of HLP activity through FY 2030 in each VA RLC's operational area, and the resulting effects from new home construction, would be consistent with past volumes as described in Section 1.4, Overview of Current Housing Loan Program. Table 4.8-1 provides a summary of the potential level of impacts to infrastructure and community services, presented by VA RLC.

Table 4.8-1. Summary of Infrastructure and Community Service Impacts by VA Regional Loan Center

VA Regional Loan Center ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
Atlanta (GA, NC, SC, TN)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the Virginia Beach-Norfolk-Newport News, Virginia/North Carolina MSA; 2,500 – 5,000 loan guaranties for newly constructed homes in nine MSAs served by this RLC; and 1,000 – 2,500 loan guaranties for newly constructed homes in three additional MSAs.
Cleveland (CT, DE, IN, MA, ME, MI, NH, NJ, NY, OH, PA, RI, VT)	Minor	Negligible	Negligible	Negligible	Negligible	VA has provided 2,500 – 5,000 loan guaranties for newly constructed homes in the Indianapolis-Carmel-Anderson, Indiana MSA.
Denver (AK, CO, ID, MT, OR, UT, WA, WY)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the Colorado Springs, Colorado MSA; 2,500 – 5,000 loan guaranties for newly constructed homes in the MSAs of Seattle-Tacoma-Bellevue, Washington and Denver-Aurora-Lakewood, Colorado; and 1,000 – 2,500 loan guaranties for newly constructed homes in five additional MSAs supported by this RLC.
Houston (AR, LA, OK, TX)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	Several areas within the state of Texas have seen among the highest numbers of VA-guaranteed loans for newly constructed homes. Specifically, VA has provided more than 5,000 loan guaranties for newly constructed homes in the MSAs of San Antonio-New Braunfels, Dallas-Ft. Worth-Arlington, Houston-The Woodlands-Sugarland, and Killeen-Temple, Texas. VA has also provided 2,500 – 5,000 loan guaranties for newly constructed homes in the MSAs of Austin-Round Rock-Georgetown and El Paso, Texas and 1,000 – 2,500 loan guaranties for newly constructed homes in the Oklahoma City, Oklahoma MSA.

Table 4.8-1. Summary of Infrastructure and Community Service Impacts by VA Regional Loan Center

VA Regional Loan Center ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
Phoenix (AZ, CA, HI, NV, NM, Guam, Northern Mariana Islands, American Samoa)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the Phoenix-Mesa-Chandler, Arizona MSA; 2,500 – 5,000 loan guaranties for newly constructed homes in the MSAs of Las Vegas-Henderson-Paradise, Nevada and Riverside-San Bernardino-Ontario, California; and 1,000 – 2,500 loan guaranties for newly constructed homes in seven additional MSAs.
Roanoke (KY, MD, VA, WV, DC)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the MSAs of Washington-Arlington-Alexandria, District of Columbia/Virginia/Maryland/West Virginia and Virginia Beach-Norfolk-Newport News, Virginia/North Carolina; 2,500 – 5,000 loan guaranties for newly constructed homes in the Baltimore-Columbia-Towson, Maryland MSA; and 1,000 – 2,500 loan guaranties for newly constructed homes in the Richmond, Virginia MSA.
St. Paul (IL, IA, KS, MN, MO, NE, ND, SD, WI)	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided 1,000 – 2,500 loan guaranties for newly constructed homes in the MSA of Omaha-Council Bluffs, Nebraska/Iowa.

Table 4.8-1. Summary of Infrastructure and Community Service Impacts by VA Regional Loan Center

VA Regional Loan Center ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
St. Petersburg (AL, FL, MS, PR, USVI)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the MSAs of Jacksonville and Tampa-St. Petersburg-Clearwater in Florida; 2,500 – 5,000 loan guaranties for newly constructed homes in the metropolitan areas of Orlando-Kissimmee-Sanford and Pensacola-Ferry Pass-Brent in Florida; and 1,000 – 2,500 loan guaranties for newly constructed homes in the MSAs of Huntsville, Alabama and Miami-Fort Lauderdale-Pompano, Florida.

- a. See Figure 1-1 in Chapter 1 for map titled Nationwide Locations and Jurisdictions of VA Regional Loan Centers.
- b. See Table 1-4 in Chapter 1, Introduction, for the numbers of VA-guaranteed loans for newly constructed homes by metropolitan statistical area, during the period FY 2013 through FY 2017. This PEIS assumes that loan guaranty and other HLP activity in a given metropolitan statistical area through FY 2030 would be consistent with past levels.
- c. Since Existing/Refinance home loan guaranties and REO transactions pertain to existing homes, impacts to the physical environment would be expected to be negligible. See Section 1.4.2 in Chapter 1, Introduction, for further discussion on the REO program.
- d. NADLs may be used for new home construction that could cause physical impacts to environmental resources; however, past volumes of total NADLs for both existing homes and new construction have been very low (118 collectively between FY 2013 and FY 2017), and spread out across multiple states and territories, such that overall impacts would typically be negligible. See Section 1.4.3 in Chapter 1, Introduction, for further discussion on NADLs.
- e. Because the number of overall SAH program grants in the United States and its Territories is very small (less than 2,000 per year), and only a small portion of those grants would involve exterior work, impacts to the physical environment would be expected to be negligible. See Section 1.4.4 in Chapter 1, Introduction, for further discussion on SAH program grants.
- f. Past loan guaranty volumes shown here are for the period FY 2013 through FY 2017, as presented in Table 1-4, Introduction. One MSA may overlap more than one USGS physiographic region.

FY = fiscal year; MSA = metropolitan statistical area; NADL = Native American Direct Loan; REO = Real Estate Owned; RLC = Regional Loan Center; SAH = Specially Adapted Housing; VA = Department of Veterans Affairs

Transportation

New home construction under the HLP's loan guaranty and NADL programs could result in marginal increases to the population of a given area and subsequently introduce additional vehicles to existing roadways or increase ridership on local public transit. As shown in Figure 1-5, new home construction is concentrated in select metropolitan areas across the country. Section 3.8.3 details urban areas with the highest daily total vehicle miles traveled (see Table 3.8-2) and the greatest traffic congestion (see Figure 3.8-2). Comparing these locations with Figure 1-5 shows that the areas around Dallas-Fort Worth, Texas and Houston, Texas could experience the most adverse impacts from new construction under the HLP, as the high degree of potential additional commuter and construction traffic aligns with areas already experiencing significant traffic issues. However, any location experiencing an influx of vehicles could experience adverse traffic impacts as road congestion increases. This increase in vehicle traffic could also lead to the need for additional road repairs due to increased wear and tear, which could in turn contribute to traffic problems. Likewise, higher populations could increase ridership on public transit systems, resulting in more demand on urban systems or straining those in more rural locations.

In general, urban cities have the transportation infrastructure in place to support large populations. While each new home would likely result in a negligible impact, the overall influx of people and vehicles resulting from a high degree of new construction in these areas could result in adverse effects to roads and public transit. The HLP would continue to represent a very small portion of the overall, nationwide housing market, even under the high-intensity scenario of the Proposed Action, and the indirect effects to transportation contributed by the HLP would remain minor in scale. See Chapter 5, Cumulative Impacts for further discussion.

The HLP's REO and SAH programs only pertain to existing homes and would not be expected to affect existing transportation infrastructure.

Utilities

Each new home constructed under the HLP's loan guaranty and NADL programs would increase the demand on local utility suppliers. This impact would remain negligible in communities with adequate capacity to meet the new need; however, minor adverse effects could result when the demand strains the existing utility infrastructure and associated resources.

The limited resource of greatest concern from a utility perspective is public water supply and quality. Figure 1-5 (See Section 1.4.1 of this PEIS) shows some areas that have experienced high numbers of recent new homes constructed under the HLP occur in arid regions, such as Phoenix, Arizona and Las Vegas, Nevada. Arizona and Nevada already consume some of the highest volumes of water per person (see Figure 3.8-5); population growth and the addition of new homes in these areas have the potential to strain already limited water resources. However, all planned housing developments should occur in accordance with applicable federal, state, and local regulations, plans, and permits, including zoning guidelines and rules relating to water rights. Part of this planning process should include ensuring the

availability of adequate utility services to meet the needs of the new homes and associated residents. Section 4.7, Hydrology and Water Quality, further discusses private water wells and water source issues.

Cities in the highlighted regions of Figure 1-5 (See Section 1.4.1 of this PEIS), including the Southwest, Northwest, and East Coast, have experienced high levels of new construction in recent years. This development could further strain existing resources. Plans for any future new home construction would be reviewed by state engineers and regional planners in regard to resource availability and feasibility in conjunction with other planned local and regional development projects. Appropriate planning regarding resource allocation, water rights, and utility service capabilities, and the fact that VA-guaranteed loans for newly constructed homes represent such a small proportion of the overall housing market, would create potential indirect adverse effects at minor levels of significance.

An additional utility service, landfills capable of receiving hazardous or toxic waste (including ACM and LBP), could become a concern in areas of limited capacity. Modifications to existing homes as a result of the HLP's SAH program grants could disturb ACM and LBP, if present. As long as potential ACM and LBP remain undamaged, these materials do not present a concern to human health or the environment. Homes with potential ACM and LBP should be surveyed prior to renovation. If a survey determines that the ACM or LBP has become damaged or otherwise presents a potential health hazard, the material should be removed or repaired (i.e., sealed, encapsulated, or enclosed) in accordance with all applicable federal, state, and local regulations. According to VA's Lender Manual, any defective paint condition (i.e., involving cracking, scaling, chipping, peeling, or loose paint) should be treated to prevent ingestion of paint. This may include either 1) removing the defective paint and covering with two coats of suitable paint, or 2) removing paint or covering the paint with covering with material such as gypsum wallboard, plywood, or plaster (VA 2001).

If hazardous or toxic waste removed from a home during renovation are managed appropriately and disposed properly in landfills capable of receiving such material, the resulting indirect effects from the Proposed Action would remain negligible. The estimate of negligible impacts is further supported by the small number of homes likely affected. The SAH program grants represent a small component of the HLP and of the overall housing market. As these building materials are no longer permissible in newly constructed homes, ACM and LBP may only have been used in homes of older construction (i.e., prior to 1980 for ACM and 1978 for LBP). Such homes likely represent a small percentage of those modified under the SAH program, although VA does not track data on the age of SAH grant project homes.

The REO program is one that manages, markets, and sells the homes that secure previously guaranteed (foreclosed) loans. No new or increased impacts to utilities would be transcribed to the REO program as a result of the transfer of the property to VA.

Public Safety

Impacts to law enforcement, fire protection services, and medical services would depend on the current capacities of these service providers to meet the needs of increased populations and enlarged jurisdictions. New homes constructed under the HLP's guaranty and NADL programs would increase the number of people living within a given police or fire departments' jurisdiction or the local area surrounding a hospital. In order to meet the needs of the higher population, emergency response times may increase, or additional personnel and resources may be required. However, the HLP's contribution to the overall, nationwide housing market would remain very small under even the Proposed Action's high-intensity scenario. Resulting indirect impacts to public safety would be expected to be negligible to minor in scale.

The HLP's REO and SAH programs only pertain to existing homes and would not be expected to affect existing public safety services.

Education

Indirect impacts to education would depend on the current capacities of existing schools to meet the needs of increased populations. New homes constructed under the HLP's guaranty and NADL programs could increase the number of school-aged children living within a given school district. This could, in turn, increase the student-to-teacher ratios. Table 3.8-5 predicts that student enrollment will decline by 2028 in states located in the Northeast and Midwest regions. Likewise, this same table also projects increased student enrollment in the West and notably the South by 2028. Table 3.8-6 summarizes general state-wide student-to-teacher ratios across the United States and its Territories. States in which the most new construction homes are being built also have some of the highest ratios, including Arizona (23.3 students per teacher) and Nevada (20.0 students per teacher). These are the states that are most likely to experience adverse impacts from increased populations related to new home construction. On the other hand, a high number of new homes have been constructed with VA-guaranteed loans in Florida, Georgia, North Carolina, South Carolina, Tennessee, and Texas, but these states have comparatively lower student/teacher ratios ranging from 15.1 to 15.5; as shown in Table 3.8-6, U.S. Virgin Islands has the lowest student/teacher ratio of 11.4. The HLP's contribution to the overall, nationwide housing market would remain very small, even under the Proposed Action's high-intensity scenario. Thus, indirect impacts to education attributable to the HLP would be expected to be negligible or minor in scale.

The HLP's REO and SAH programs only pertain to existing homes and would not be expected to affect existing education services.

4.8.3 No Action Alternative

Under the No Action Alternative, VA-guaranteed loans and the percentage of new home construction would continue at levels consistent with those observed in FY 2017, as described in Section 2.3 (Chapter 2, Proposed Action and Alternatives) and Section 4.0, Environmental Consequences, Introduction. VA-guaranteed loans, REO transactions, NADLs, and SAH program grants would continue

to represent a very small portion of the total home loan market, and nationwide housing supply and demand trends would continue to evolve without any noticeable influence from the HLP. The regional environmental effects of housing construction and occupancy, and corresponding population shifts, would likely continue in a manner consistent with those seen in recent years. The HLP's contribution to such regional effects would continue to be minor in scale and consistent with FY 2017 conditions, and no unique types or localized focuses of effects on existing landscapes, settings, and scenic resources would be expected to reach the level of significance as defined under NEPA.

Indirect impacts to infrastructure and community services could occur as a result of the construction and occupancy of new homes, which would be consistent with recent historical levels. Further, as discussed in Section 4.0, while many Veterans rely on the HLP and might not be able to purchase a home except for the availability of VA-guaranteed loans with zero down payment, the majority of these homes would have been constructed regardless of VA's financial support to Veterans under the HLP.

INTENTIONALLY LEFT BLANK.

4.9 LAND USE AND PLANNING

This section describes the potential direct and indirect impacts on land use and planning from operation and management of VA's HLP, including potential impacts from construction and occupancy of new homes or modification of existing homes associated with the HLP.

4.9.1 Significance Criteria

To evaluate impacts on land use and planning, VA considered the potential for change to these resources within the Affected Environment (described in Section 3.9, Land Use and Planning) as a result of the Proposed Action and No Action Alternative. To evaluate impacts on land use and planning, VA reviewed the Proposed Action and No Action Alternative to determine whether any activities have the potential to cause significant changes to or conflicts with existing or future land use plans or other community plans or policies.

4.9.2 Proposed Action

Under the Proposed Action, VA would continue to operate and actively manage the HLP. The number of VA-guaranteed loans would fluctuate within the range bound by the low-intensity scenario to the high-intensity scenario, as described in Section 2.2 (Chapter 2, Proposed Action and Alternatives) and Section 4.0, Environmental Consequences, Introduction. VA's REO program would continue to maintain, manage, market, and sell existing homes through a private-sector company; the NADL program would continue to make VA direct loans available to Native American Veterans living on trust, tribal, or communally owned lands; and VA would continue to provide SAH program grants to accommodate the needs of Veterans with certain severe, service-connected disabilities.

In the long term, it is possible that the volume of VA-guaranteed loans in a region could have indirect effects on land use and planning by marginally increasing the demand for newly constructed homes. However, the extent or specific location of changes to land use would depend on decisions made by local planning agencies regarding use of land within their jurisdictions. Section 4.9.2.1 discusses potential sources and types of land use and planning impacts. Section 4.9.2.2 summarizes the overall impacts that could occur and their anticipated geographical distribution across the United States and its Territories.

4.9.2.1 Sources of Impacts to Land Use and Planning

The HLP would not directly result in any impacts to land use and planning; however, the construction and occupancy of new homes, or modification of existing homes, facilitated through the HLP could result in indirect impacts. Home construction activities, particularly if they are part of a new, large-scale residential development project, would temporarily affect the land use quality of the immediate area from the use (and noise) of heavy equipment, machinery, ground-disturbing activities, and from the unfinished stages of site preparation and home/building construction but would not be incompatible in the long term. The land use impacts from construction would be short term in nature, changing over the course of construction (or phased construction), as each task is completed until it becomes

negligible in the later stages, as work focuses on the interior of the completed structure. Adjacent land uses would be regulated at the local level, and any incompatibilities between home construction activities and land uses adjacent to the site to be developed would likely be addressed prior to construction and enforced by local land use policies.

Depending on the surrounding land uses, the new homes, once completed, could result in more dense residential areas or increased sprawl depending on the existing connectivity of the new residential land use area with nearby natural or manmade resources.

4.9.2.2 Potential Impacts to Land Use and Planning

Increases in indirect land use and planning impacts associated with new home construction and residential living could occur as a result of market effects influenced by VA's HLP. However, any impacts on land use and planning associated with increased market demand for new home construction would likely be localized and minor for both the low-intensity and high-intensity scenarios. The impact analysis assumes that the volume of HLP activity through FY 2030 in each VA RLC's jurisdiction, and the resulting effects from new home construction, would be consistent with past volumes as described in Section 1.4, Overview of Current Housing Loan Program. A summary of potential impacts by VA RLC is presented in Table 4.9-1.

Although indirect impacts associated with construction and occupancy of new homes are classified as "minor" or "negligible" in all RLC jurisdictions, there would be some regional and local variation. Parts of the country that experience more rapid growth in housing demand, such as parts of the South, Southwest, and Northwest, could experience a greater increase in indirect land use and planning impacts associated with the Proposed Action. Outside of the overall housing market, higher numbers of VA-guaranteed loans would be used in certain other geographic areas uniquely preferable for Veteran homeowners, such as in close proximity to military installations. For instance, the metropolitan statistical area with the second highest number of VA-guaranteed loans for newly constructed homes is Killeen-Temple, Texas and located near Fort Hood. The areas around military installations are consistent with the geographic locations that experienced the highest number of VA-guaranteed loans for new homes between FY 2013 and FY 2017 (see Figure 1-5 in Chapter 1). In particular, the highest concentrations of VA-guaranteed loans for new construction occurred in southern and western metropolitan areas. The overall impact from the HLP would remain "minor" even in regions with moderate to high numbers of projected VA-guaranteed loans when compared to other ongoing housing growth drivers, and the HLP would not be expected to shape development patterns or further influence sprawl in these regions.

Table 4.9-1. Summary of Land Use Impacts by VA Regional Loan Center

VA Regional Loan Center ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
Atlanta (GA, NC, SC, TN)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the Virginia Beach-Norfolk-Newport News, Virginia/North Carolina MSA; 2,500 – 5,000 loan guaranties for newly constructed homes in nine MSAs served by this RLC; and 1,000 – 2,500 loan guaranties for newly constructed homes in three additional MSAs. Future loan guaranties for newly constructed homes under the HLP are expected to be minor in comparison with other ongoing housing growth drivers and not expected to shape development patterns or further induce sprawl in these large metropolitan areas.
Cleveland (CT, DE, IN, MA, ME, MI, NH, NJ, NY, OH, PA, RI, VT)	Minor	Negligible	Negligible	Negligible	Negligible	VA has provided 2,500 – 5,000 loan guaranties for newly constructed homes in the Indianapolis-Carmel-Anderson, Indiana MSA.
Denver (AK, CO, ID, MT, OR, UT, WA, WY)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the Colorado Springs, Colorado MSA; 2,500 – 5,000 loan guaranties for newly constructed homes in the MSAs of Seattle-Tacoma-Bellevue, Washington and Denver-Aurora-Lakewood in Colorado; and 1,000 – 2,500 loan guaranties for newly constructed homes in five additional MSAs supported by this RLC. The majority of the landscape in this RLC is rural in nature, and the population centers have experienced moderate to low urban sprawl.

Table 4.9-1. Summary of Land Use Impacts by VA Regional Loan Center

VA Regional Loan Center ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
Houston (AR, LA, OK, TX)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	Several areas within the state of Texas have seen among the highest numbers of VA-guaranteed loans for newly constructed homes in the nation. Specifically, VA has provided more than 5,000 loan guaranties for newly constructed homes in the MSAs of San Antonio-New Braunfels, Dallas-Ft. Worth-Arlington, Houston-The Woodlands-Sugarland, and Killeen-Temple, Texas; 2,500 – 5,000 loan guaranties for newly constructed homes in the MSAs of Austin-Round Rock-Georgetown and El Paso, Texas. In addition, VA has provided 1,000 – 2,500 loan guaranties for newly constructed homes in the Oklahoma City, Oklahoma MSA. These areas have already experienced notable urban sprawl in past decades. Future loan guaranties for newly constructed homes under the HLP are expected to be minor in comparison with other ongoing housing growth drivers and not expected to shape development patterns or further induce sprawl in these large metropolitan areas.
Phoenix (AZ, CA, HI, NV, NM, Guam, Northern Mariana Islands, American Samoa)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the Phoenix-Mesa-Chandler, Arizona MSA; 2,500 – 5,000 loan guaranties for newly constructed homes in the MSAs of Las Vegas-Henderson-Paradise, Nevada and Riverside-San Bernardino-Ontario, California; and 1,000 – 2,500 loan guaranties for newly constructed homes in seven additional MSAs. Potential impacts would be offset by large tracts of undeveloped land available within or adjacent to current municipal boundaries.
Roanoke (KY, MD, VA, WV, DC)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the MSAs of Washington-Arlington-Alexandria, District of Columbia/Virginia/Maryland/ West Virginia and Virginia Beach-Norfolk-Newport News, Virginia/North Carolina; 2,500 – 5,000 loan guaranties for newly constructed homes in the Baltimore-Columbia-Towson, Maryland MSA; and 1,000 – 2,500 loan guaranties for newly constructed homes in the Richmond, Virginia MSA.

Table 4.9-1. Summary of Land Use Impacts by VA Regional Loan Center

VA Regional Loan Center ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
St. Paul (IL, IA, KS, MN, MO, NE, ND, SD, WI)	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided 1,000 – 2,500 loan guaranties for newly constructed homes in the MSA of Omaha-Council Bluffs, Nebraska/Iowa.
St. Petersburg (AL, FL, MS, PR, USVI)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the MSAs of Jacksonville and Tampa-St. Petersburg-Clearwater, Florida; 2,500 – 5,000 loan guaranties for newly constructed homes in the MSAs of Orlando-Kissimmee-Sanford and Pensacola-Ferry Pass-Brent, Florida; and 1,000 – 2,500 loan guaranties for newly constructed homes in the MSAs of Huntsville, Alabama and Miami-Fort Lauderdale-Pompano Beach, Florida. While some urban sprawl has occurred in these areas, the density of projected new home loan guaranties is expected to be minor in comparison with other ongoing housing growth drivers and not expected to further induce sprawl or shape development patterns.

a. See Figure 1-1 in Chapter 1 for map titled Nationwide Locations and Jurisdictions of VA Regional Loan Centers.

b. See Table 1-4 in Chapter 1, Introduction, for the numbers of VA-guaranteed loans for newly constructed homes by metropolitan statistical area, during the period FY 2013 – FY 2017. This PEIS assumes that loan guaranty and other HLP activity in a given metropolitan statistical area through FY 2030 would be consistent with past levels.

c. Since Existing/Refinance home loan guaranties and REO transactions pertain to existing homes, impacts to the physical environment would be expected to be negligible. See Section 1.4.2 in Chapter 1, Introduction, for further discussion on the REO program.

d. NADLs may be used for new home construction that could cause physical impacts to environmental resources; however, past volumes of total NADLs for both existing homes and new construction have been very low (118 collectively between FY 2013 and FY 2017), and spread out across multiple states and territories, such that overall impacts would typically be negligible. See Section 1.4.3 in Chapter 1, Introduction, for further discussion on NADLs.

e. Because the number of overall SAH program grants in the United States and its Territories is very small (less than 2,000 per year), and only a small portion of those grants would involve exterior work, impacts to the physical environment would be expected to be negligible. See Section 1.4.4 in Chapter 1, Introduction, for further discussion on SAH program grants.

f. Past loan guaranty volumes shown here are for the period FY 2013 through FY 2017, as presented in Table 1-4. One MSA may overlap more than one USGS physiographic region.

FY = fiscal year; MSA = metropolitan statistical area; NADL = Native American Direct Loan; REO = Real Estate Owned; RLC = Regional Loan Center; SAH = Specially Adapted Housing; VA = Department of Veterans Affairs

Assuming similar future trends, more VA-guaranteed loans would be expected within metropolitan areas over rural areas. However, it is important to note that many metropolitan areas, especially in the western United States, are so expansive that they could also include agriculture, rural, or undeveloped areas. Therefore, a new home or a new and larger residential development in a rural or undeveloped area may result in adverse effect to land use if it would be considered out of character or incompatible with existing land use and planning regulations, which would dictate new development and may require variances for builders to change an existing or planned land use.

Construction activities related to home modifications made with SAH program grants issued under the HLP would most likely include interior work, or minor exterior work, and would not be expected to result in adverse land use impacts. Due to the nature of the REO program, no measurable impacts to land use and planning would be anticipated under this aspect of the HLP.

The NADL program would have a small but highly focused effect on eligible Veterans seeking new construction homes on trust, tribal, and communally owned lands. In some cases, this effect could be seen as a beneficial impact, as the NADL program could stimulate residential development in areas where new home construction has lagged behind demand due to decreased availability of loans to potential buyers. This development could serve as the impetus for better overall implementation of broader land development and use plans on the relevant lands.

4.9.3 No Action Alternative

Under the No Action Alternative, VA-guaranteed loans and the percentage of new home construction would continue at levels consistent with those observed in FY 2017, as described in Section 2.3 (Chapter 2, Proposed Action and Alternatives) and Section 4.0, Environmental Consequences, Introduction. VA-guaranteed loans, REO transactions, NADLs, and SAH program grants would continue to represent a very small portion of the total home loan market, and nationwide housing supply and demand trends would continue to evolve without any noticeable influence from the HLP. The regional environmental effects of housing construction and occupancy, and corresponding population shifts, would likely continue in a manner consistent with those seen in recent years. The HLP's contribution to such regional effects would continue to be minor in scale and consistent with FY 2017 conditions, and no unique types or localized focuses of effects on existing land uses and planning would be expected reach the level of significance as defined under NEPA.

Indirect land use impacts would be expected to occur as a result of the construction and occupancy of new homes, which would be consistent with recent historical levels. Since land use and planning is delegated by the individual state and is typically managed at the local level (e.g., county or municipality), new construction would likely be built within existing or planned residential settings in order to be compatible with existing land uses and comply with local land use and planning regulations. Further, as discussed in Section 4.0, while many Veterans rely on the HLP and might not be able to purchase a home except for the availability of VA-guaranteed loans with zero down payment, the majority of these homes would have been constructed regardless of VA's financial support to Veterans under the HLP.

4.10 NOISE

This section describes the potential direct and indirect impacts from noise from operation and management of VA's HLP, including potential impacts from construction and occupancy of new homes or modification of existing homes associated with the HLP.

4.10.1 Significance Criteria

To evaluate impacts from noise, VA considered the potential for noise levels to change within the Affected Environment (described in Section 3.10, Noise) as a result of the Proposed Action and No Action Alternative. To evaluate impacts from noise, VA reviewed the Proposed Action or No Action Alternative to determine whether any activities have the potential to cause any of the following:

- Addition of new mobile and stationary noise sources from activities associated with construction and occupancy of new homes;
- Conflict with any federal, state, or local noise ordinances; or
- Increase long-term perceptible ambient noise levels above regulatory thresholds at sensitive receptors.

Impacts would occur if noise from construction or occupancy were to cause harm or injury to adjacent communities or sensitive receptors (i.e., residences, schools, hospitals), or exceed applicable environmental noise limit guidelines. The analysis focuses on the impact of noise at nearby receptors from the construction of new homes, since the occupancy of a new or existing home does not typically result in increases to noise levels, beyond those addressed in cumulative impacts.

4.10.2 Proposed Action

Under the Proposed Action, VA would continue to operate and actively manage the HLP, and the number of VA-guaranteed loans would fluctuate within the range bound by the low-intensity scenario to the high-intensity scenario, as described in Section 2.2 (Chapter 2, Proposed Action and Alternatives) and Section 4.0, Environmental Consequences, Introduction. VA's REO program would continue to maintain, manage, market, and sell existing homes through a private-sector company; the NADL program would continue to make VA direct loans available to Native American Veterans living on trust, tribal, or communally owned lands; and VA would continue to provide SAH program grants to accommodate the needs of Veterans with certain severe, service-connected disabilities.

Section 4.10.2.1 discusses potential sources and types of noise impacts. Section 4.10.2.2 summarizes the overall potential impacts that could occur and their anticipated geographical distribution across the United States and its Territories.

4.10.2.1 Sources of Impacts to Noise

The HLP would not directly result in any impacts to noise levels; however, the construction and occupancy of new homes, or modification of existing homes, facilitated through the HLP could result in indirect impacts. Construction activities related to new home construction under the loan guaranty or NADL programs, or home modification efforts undertaken through the SAH program, would cause temporary increases in ambient noise levels in the immediate vicinity of the construction sites. Construction noise levels are rarely steady in nature but instead fluctuate depending on the number, type, and duration of heavy equipment used at any given time. There would be times when no large equipment is operating, and noise would be at or near ambient levels. In addition, construction-related sound levels would vary by the type of activity, distance to noise-sensitive uses, existing site conditions (e.g., vegetation to buffer sound), and ambient noise levels.

Construction activities could involve ground clearing, excavation, grading, leveling, and construction of foundations, structures, and parking areas. Construction noise could also include vehicular traffic due to workers’ vehicles, resulting in a temporary increase in vehicular noise. As expected, construction would comply with local ordinances regarding time of day and allowable noise levels. The maximum average noise levels generated during construction would typically range from 78 to 89 dBA at a distance of 50 feet (see Table 4.10-1).

Table 4.10-1. Noise Levels Associated with Outdoor Construction

Construction Phase	dBA Leq at 50 feet from Source
Ground Clearing	84
Excavation, Grading	89
Foundations	78
Structural	85
Finishing	89

Source: Bolt et al. 1971; USEPA 1974
 dBA = A-weighted decibels; L_{eq} = Equivalent Sound Level

4.10.2.2 Potential Impacts to Noise

Although the specific nature of impacts on noise must be determined on a site-specific basis, certain activities associated with new home residential development are known to have the potential to affect noise. As VA’s involvement in housing-related activities is usually limited to financial transactions for eligible Veteran borrowers, potential impacts are indirect in nature unless specifically described otherwise. The impact analysis assumes that the volume of HLP activity through FY 2030 in each VA RLC’s operational area, and the resulting effects from new home construction, would be consistent with past volumes as described in Section 1.4, Overview of Current Housing Loan Program. Table 4.10-2 provides a summary of the potential noise impacts by VA RLC.

Table 4.10-2. Summary of Noise Impacts by VA Regional Loan Center

VA Regional Loan Center ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
Atlanta (GA, NC, SC, TN)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided 2,500 – 5,000 loan guaranties for newly constructed homes in nine MSAs served by this RLC; and 1,000 – 2,500 in three additional MSAs.
Cleveland (CT, DE, IN, MA, ME, MI, NH, NJ, NY, OH, PA, RI, VT)	Minor	Negligible	Negligible	Negligible	Negligible	VA has provided 2,500 – 5,000 loan guaranties for newly constructed homes in the Indianapolis-Carmel-Anderson, Indiana MSA.
Denver (AK, CO, ID, MT, OR, UT, WA, WY)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the Colorado Springs, Colorado MSA; 2,500 – 5,000 in the MSAs of Seattle-Tacoma-Bellevue in Washington and Denver-Aurora-Lakewood, Colorado; and 1,000 – 2,500 in five additional MSAs supported by this RLC.
Houston (AR, LA, OK, TX)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	Several areas within the state of Texas have seen among the highest numbers of VA-guaranteed loans for newly constructed homes. Specifically, VA has provided more than 5,000 loan guaranties in the metropolitan areas of San Antonio-New Braunfels, Dallas-Ft. Worth-Arlington, Houston-The Woodlands-Sugarland, and Killeen-Temple; 2,500 – 5,000 in the MSAs of Austin-Round Rock-Georgetown and El Paso; and 1,000 – 2,500 loan guaranties for newly constructed homes in the Oklahoma City, Oklahoma MSA.
Phoenix (AZ, CA, HI, NV, NM, Guam, Northern Mariana Islands, American Samoa)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the Phoenix-Mesa-Chandler, Arizona MSA; 2,500 – 5,000 in the MSAs of Las Vegas-Henderson-Paradise in Nevada and Riverside-San Bernardino-Ontario in California; and 1,000 – 2,500 in seven additional MSAs.

Table 4.10-2. Summary of Noise Impacts by VA Regional Loan Center

VA Regional Loan Center ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^c	NADL ^d	SAH ^e	Notes ^f
Roanoke (KY, MD, VA, WV, DC)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the MSAs of Washington-Arlington-Alexandria and Virginia Beach-Norfolk-Newport News; 2,500 – 5,000 in the Baltimore-Columbia-Towson, Maryland MSA; and 1,000 – 2,500 in the Richmond, Virginia MSA.
St. Paul (IL, IA, KS, MN, MO, NE, ND, SD, WI)	Negligible	Negligible	Negligible	Negligible	Negligible	VA has provided 1,000 – 2,500 loan guaranties for newly constructed homes in the MSA of Omaha-Council Bluffs in Nebraska and Iowa.
St. Petersburg (AL, FL, MS, PR, USVI)	Negligible to Minor	Negligible	Negligible	Negligible	Negligible	VA has provided more than 5,000 loan guaranties for newly constructed homes in the MSAs of Jacksonville and Tampa-St. Petersburg-Clearwater in Florida; 2,500 – 5,000 in the metropolitan areas of Orlando-Kissimmee-Sanford and Pensacola-Ferry Pass-Brent in Florida; and 1,000 – 2,500 in the MSAs of Huntsville in Alabama and Miami-Fort Lauderdale-Pompano Beach in Florida.

^a. See Figure 1-1 in Chapter 1, Introduction, for map titled Nationwide Locations and Jurisdictions of VA Regional Loan Centers.

^b. See Table 1-4 in Chapter 1, Introduction, for the numbers of VA-guaranteed loans for newly constructed homes by metropolitan statistical area, during the period FY 2013 through FY 2017. This PEIS assumes that loan guaranty and other HLP activity in a given metropolitan statistical area through FY 2030 would be consistent with past levels.

^c. Since Existing/Refinance home loan guaranties and REO transactions pertain to existing homes, impacts to the physical environment would be expected to be negligible. See Section 1.4.2 in Chapter 1, Introduction, for further discussion on the REO program.

^d. NADLs may be used for new home construction that could cause physical impacts to environmental resources; however, past volumes of total NADLs for both existing homes and new construction have been very low (118 collectively between FY 2013 and FY 2017), and spread out across multiple states and territories, such that overall impacts would typically be negligible. See Section 1.4.3 in Chapter 1, Introduction, for further discussion on NADLs.

^e. Because the number of overall SAH program grants in the United States and its Territories is very small (less than 2,000 per year), and only a small portion of those grants would involve exterior work, impacts to the physical environment would be expected to be negligible. See Section 1.4.2 in Chapter 1, Introduction, for further discussion on SAH program grants.

^f. Past loan guaranty volumes shown here are for the period FY 2013 through FY 2017, as presented in Table 1-4. One MSA may overlap more than one RLC.

FY = fiscal year; MSA = metropolitan statistical area; NADL = Native American Direct Loan; REO = Real Estate Owned; RLC = Regional Loan Center; SAH = Specially Adapted Housing; VA = Department of Veterans Affairs

New home construction under the HLP's loan guaranty and NADL programs would result in short-term, negligible to minor noise impacts, with greater impacts occurring to sensitive receptors located closest to the construction area. Home modifications made with grants approved under the HLP's SAH program could also result in construction noise, although the resulting levels would be less than those caused by new home construction.

The closest noise-sensitive receptors could be located directly adjacent to the project site, such as existing residential homes. With multiple items of construction equipment operating concurrently, noise levels can be relatively high during daytime periods at locations within several hundred feet of the active construction site. Considering the combination of noise sources during construction, noise levels could be approximately 90 dBA at 50 feet (USDOT 2012). Standard buildings with windows and doors shut result in an approximately 15 dBA noise reduction. With windows and doors shut, the interior noise levels at receptors within 50 feet would reduce to 75 dBA, and within 100 feet would reduce to approximately 69 dBA (USEPA 1978), as noise from a point source generally decreases 6 dBA per doubling of distance (Lamancusa 2009). Considering that some residents do not have central air conditioning systems, some existing homes would have open windows to moderate indoor temperatures during certain weather conditions and would be exposed to up to 90 dBA at 50 feet. Table 4.10-3 summarizes likely noise levels at specific distances from a construction area.

Table 4.10-3. Noise Levels at Associated Distances from Construction Area

Distance from Project Boundary (feet)	dBA L_{eq} (windows open)	dBA L_{eq} (windows closed)
50	90	75
275	75	60
500	70	55
1,000	64	49
2,000	58	43

Source: USDOT 2012

dBA = A-weighted decibels; L_{eq} = Equivalent Sound Level

During some time periods, construction noise levels could exceed the USEPA threshold of 55 dBA (L_{dn}). Section 3.10.1 details the USEPA thresholds that state that noise levels above 55 dBA outdoors can cause interference or annoyance. The noise levels due to construction could occur at noise-sensitive areas located in the immediate vicinity of a construction area, but the construction noise would be short-term and would diminish as the construction activity is completed. Typically, there would not be nighttime construction.

Depending on the location of construction, noise impacts would vary depending on the existing environment. For example, an existing quiet rural area would experience construction noise differently than a noisy urban environment. As described in Section 3.10.1 and Table 3.10-2, the change in noise levels is perceptible at approximately 3 dB. As a result, it is likely that construction noise would be perceptible to nearby sensitive receptors in a variety of noise environments including both rural and urban areas. Although construction noise would temporarily change the noise environment for nearby sensitive receptors, it would be short-term and end at the completion of construction.

Once construction is complete and the homes are occupied, noise levels would be typical of the surrounding area (e.g., suburban residential, urban residential). Table 4.10-4 shows typical sound levels associated with residential communities. Noise sources would include vehicles, air conditioning systems, and normal daily activities of residents including lawn/yard care and outdoor living activities. Noise impacts from occupied homes would be negligible.

L₉₀ is the noise level exceeded for 90 percent of the time in a given environment. It is generally considered to represent the background or ambient level of a noise environment, since the noise level is above the L₉₀ level for 90 percent of the time.

Table 4.10-4. Typical L₉₀ Sound Levels in Residential Communities

Description	Typical Range, dBA	Average, dBA
Very Quiet Rural or Remote Area	26 to 30	28
Very Quiet Suburban or Rural Area	31 to 35	33
Quiet Suburban Residential	36 to 40	38
Normal Suburban Residential	41 to 45	43
Urban Residential	46 to 50	48
Noisy Urban Residential	51 to 55	53
Very Noisy Urban Residential	56 to 60	58

Source: USEPA 1974
 dBA = A-weighted decibel

4.10.3 No Action Alternative

Under the No Action Alternative, VA-guaranteed loans and the percentage of new home construction would continue at levels consistent with those observed in FY 2017, as described in Section 2.3 (Chapter 2, Proposed Action and Alternatives) and Section 4.0, Environmental Consequences, Introduction. VA-guaranteed loans, REO transactions, NADLs, and SAH program grants would continue to represent a very small portion of the total home loan market, and nationwide housing supply and demand trends would continue to evolve without significant influence from the HLP. The regional environmental effects of housing construction and occupancy, and corresponding population shifts, would likely continue in a manner consistent with those seen in recent years. The HLP’s contribution to such regional effects would continue to be minor in scale and consistent with FY 2017 conditions, and no unique types or localized focuses of effects would be expected to reach the level of significance as defined under NEPA.

Indirect noise impacts would be expected to occur as a result of the construction and occupancy of these new homes, which would be consistent with recent historical levels. Further, as discussed in Section 4.0, while many Veterans rely on the HLP and might not be able to purchase a home except for the availability of VA-guaranteed loans with zero down payment, the majority of these homes would have been constructed regardless of VA's financial support to Veterans under the HLP.

INTENTIONALLY LEFT BLANK.

4.11 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

This section describes the potential direct and indirect impacts to socioeconomic and environmental justice resources from operation and management of VA's HLP. Socioeconomic and environmental justice impacts are evaluated with respect to population, housing, income, employment, labor force, and community services. See also Chapter 5, Cumulative Impacts, for a discussion of the program's potential cumulative impacts in combination with other national home loan programs.

4.11.1 Significance Criteria

To evaluate impacts to socioeconomic and environmental justice resources, VA considered the potential for change to these resources within the Affected Environment (described in Section 3.11, Socioeconomics and Environmental Justice) as a result of the Proposed Action and No Action Alternative. To evaluate impacts to socioeconomic and environmental justice resources, VA reviewed the Proposed Action and No Action Alternative to determine whether any activities have the potential to cause any of the following:

- Alter local economies on a substantial basis without the capacity to absorb a decrease or increase;
- Change housing characteristics (types of units, occupancy, housing values, etc.) or residential development patterns in a substantial way;
- Alter population growth or demographic patterns in a way that changes the overall character of communities;
- Displace populations, residents, or businesses to accommodate construction;
- Require an amount of public or private resources (time and/or money) that substantially interferes with the performance of other local government functions or the viability of proposed projects;
- Result in significant or adverse human health or environmental (including economic) effects on a disproportionately high percentage of minority or low-income populations; or
- Influence growth without adequate supporting community services (e.g., education, public health and safety), including:
 - Change in the number of users of community services that exceed existing capacity;
 - Change in the demand for emergency and public protection services that would increase response times based on existing personnel resources and equipment; or
 - Change in the funding needed to sustain services or to increase access to services.

4.11.2 Proposed Action

Under the Proposed Action, VA would continue to operate and actively manage the HLP. The number of VA-guaranteed loans would fluctuate within the range bound between the low-intensity scenario and the high-intensity scenario, as described in Section 2.2 (Chapter 2, Proposed Action and Alternatives)

and Section 4.0, Introduction (Chapter 4, Environmental Consequences). VA's REO program would continue to maintain, manage, market, and sell existing homes through a private-sector company; the NADL program would continue to make VA direct loans available to Native American Veterans living on trust, tribal, or communally owned lands; and VA would continue to provide SAH program grants to accommodate the needs of Veterans with certain severe, service-connected disabilities.

Section 4.11.2.1 discusses potential sources and types of socioeconomic and environmental justice impacts. Section 4.11.2.2 summarizes the overall potential impacts that could occur from the HLP and their anticipated geographical distribution across the United States and its Territories.

4.11.2.1 Sources of Socioeconomic and Environmental Justice Impacts ***Population, Employment, and Income***

The HLP can indirectly lead to home construction activities, which could result in population growth and increased construction and other activities in a given area, particularly if the homes are part of a new, large-scale residential development project. The intensity of socioeconomic impacts can often be determined by analyzing fluctuations in employment. The most obvious impacts of new home construction would be employment for construction workers. The development of new housing creates jobs for those already living in the community and, in the case where the existing construction workforce is insufficient, encourages others to enter the community to fill the new demand in the construction-related professions. Any workforce (and their families) migrating to a given community would temporarily add to the population of that community.

At the national level, the impact would be broader based, as jobs are generated in the industries that produce lumber, concrete, lighting fixtures, heating equipment, and other products that go into a home or home remodeling project. Jobs are also generated in the process of transporting, storing, and selling these projects; still others are generated for professionals, engineers, real estate agents, lawyers, and accountants who provide services to home builders, home buyers, and remodelers. The U.S. Department of Agriculture's Rural Housing Service estimates that each single-family home financed under its Section 502 program (Guaranteed Rural Housing Loans for low-income populations) generates 1.75 jobs and \$50,201 in wages (Housing Assistance Council 2014).

Likewise, the National Association of Home Builders (NAHB) estimates the number of new jobs to build an average single-family home a little higher at 2.97 jobs (full time equivalent calculated on a national scale), but it is based on an average national value of \$323,000 for a single-family home (NAHB 2014). They also estimate the amount of taxes generated per single-family home at \$110,957²⁸ and expand these estimates to a \$100,000 remodel of an existing home (in comparison, the national median home value in 2016 was \$205,000). The remodel would generate 0.89 jobs and \$29,779 in taxes on an existing home. In the study, taxes refer to revenue paid to all levels of government, such as federal, state, local, municipal, school district, etc. (NAHB 2014).

²⁸ Revenues reflect wages and salaries of workers that directly or indirectly support the construction industry which are subject to federal, state, and sometimes local taxes; also subject to these taxes are the profits of businesses that support the construction industry. Beyond this, many states collect sales taxes on material sold to home builders, and local jurisdictions typically charge fees for approving building permits and extending utility services (see also Table 4.11-2).

More recent NAHB data (NAHB 2015) provides a similar picture of economic impacts with respect to jobs and income but at the local level (using a separate local economic impact analysis), as compared to the national economic impacts summarized above. NAHB clarifies that national estimates should not be used to estimate the economic impacts confined to a state or local level where housing is built. Three sets of data were developed for single-family houses, multi-family condominiums or apartments, and residential home remodels, as described below; they reflect other types of impacts (e.g., indirect and induced effects, typically calculated using multipliers) that an increase in jobs and potential wages can have on the local economy:

- Phase I – Direct and indirect effect of construction activity directly involved in building homes (local income and jobs by industry and local government general revenue by type): The jobs, wages, and local taxes (including permit, utility connection, and impact fees) generated by the actual development, construction, and sale of the home. These jobs include on-site and off-site construction work as well as jobs generated in retail and wholesale sales of components, transportation to the site, and the professional services required to build a home and deliver it to its final customer.
- Phase II – Induced (“ripple”) effect of spending income and tax revenue from Phase I: The wages and profits for local area residents earned during the construction period are spent on other locally produced goods and services. This generates additional income for local residents, which is spent on still more locally produced goods and services, etc. This continuing recycling of income back into the community is usually called a multiplier or ripple effect.
- Phase III – Ongoing annual effect that occurs because units are occupied: The local jobs, income, and taxes generated as a result of the home being occupied. A household moving into a new home generally spends approximately 60 percent of its income on goods and services sold in the local economy. A fraction of this will become income for local workers and local business proprietors. In a typical local area, the household will also pay 1.25 percent of its income to local governments in the form of taxes and user fees, and a fraction of this will become income for local government employees. This is the first step in another set of economic ripples that cause a permanent increase in the level of economic activity, jobs, wages, and local tax receipts.

Table 4.11-1 shows summary data for estimated local impacts (one-time effects) by phase and housing type for all industries affected (NAHB 2015). These effects represent income and jobs for residents of an average metropolitan area or nonmetropolitan county as well as other sources of revenue, including permit fees, for all local jurisdictions within the local area.

Construction workers generally live close to construction sites and spend much of their wages in the local community (Housing Assistance Council 2014). Area businesses would benefit from increased patronage, sale of building materials, etc. Overall, the largest share of local wages and salaries would typically be generated in the construction industry, followed by wholesale and retail trade (NAHB 2015).

**Table 4.11-1. Income/Employment Impacts of Residential Construction in a Local Area
 (One Year Impact)**

	Local Jobs Supported (Full Time Equivalent)	Local Wages and Salaries	Local Income	Local Business Owner's Income	Local Taxes ^a
Per New Single-family Home:					
Phase I: Direct and Indirect Effect	2.37	\$126,774	\$192,041	\$65,268	\$21,525
Construction	1.76	\$97,563	\$148,046	\$50,483	---
Wholesale and Retail Trade	0.34	\$11,969	\$15,355	\$3,386	
Business and Professional Services	0.14	\$9,343	\$12,175	\$2,833	
Finance and Insurance	0.02	\$2,665	\$2,769	\$104	
Real Estate	0.02	\$1,056	\$7,604	\$6,547	
Other	0.07	\$4,178	\$6,092	\$1,915	
Phase II: Induced Effect	1.57	\$73,873	\$94,667	\$20,794	\$12,061
Phase III: Ongoing Annual Effect	0.69	\$31,699	\$40,919	\$9,224	\$10,148
Per New Multi-Family Rental Unit^b:					
Phase I: Direct and Indirect Effect	0.9	\$46,527	\$74,033	\$27,505	\$16,996
Construction	0.68	\$37,543	\$61,008	\$23,465	---
Phase II: Induced Effect	0.71	\$34,196	\$42,897	\$8,700	\$5,116
Phase III: Ongoing Annual Effect	0.44	\$20,169	\$26,406	\$6,232	\$5,035
Per \$100,00 Spent on Remodeling:					
Phase I: Direct and Indirect Effect	0.07	\$3,824	\$5,772	\$1,945	\$360
Construction	0.05	\$2,952	\$4,479	\$1,527	--
Phase II: Induced Effect	0.04	\$2,031	\$2,636	\$603	\$347
Phase III: Ongoing Annual Effect		Not Applicable			\$112

Source: NAHB 2015

^a. Local taxes consists of local government revenue from all sources: taxes, fees, fines, revenue from government-owned enterprises, etc. Phase III local taxes reflect annual residential property taxes.

^b. Multi-family rental unit data are included because income and employment impact data would appear to be relevant to multi-family units such as townhouses and condos, that may be owned by homeowners.

Revenues

Housing construction and development projects can increase revenues of federal, state, and local governments, including an immediate increase in the government's income from building fees, taxes on workers' wages, and taxes on the sale and transport of building materials. Increased sales taxes can also be expected when workers spend their wages, and the residents purchase supplies and services for their new homes. In the long term, local governments can generate revenue from property taxes as well as mortgage and deed transfer taxes. These all combine so that even a small project can generate high government revenue (see Table 4.11-2).

Table 4.11-2. Impacts on Government Revenue

	Per New Single-family Home	Per New Multi-Family Rental Unit	Per \$100,000 Spent on Remodeling
Total government revenue generated	\$110,957	\$42,383	\$29,779
Federal Total	\$74,354	\$28,375	\$21,844^a
Income taxes	\$37,301	\$14,215	\$10,828
Government social insurance	\$35,333	\$13,526	\$10,512
Excise taxes and customs duties	\$1,720	\$634	\$503
State and Local Total	\$36,603	\$14,008^a	\$7,935
Income taxes	\$10,299	\$3,925	\$2,990
Permit, hook-up, impact, fees, etc.	\$13,672	\$5,427	\$1,250
Sales taxes	\$6,922	\$2,552	\$2,025
Other business taxes & license fees	\$5,710	\$2,105	\$1,670

Source: NAHB 2014

^a. Components may not equal totals due to rounding.

The economic impacts of new housing and housing developments extend beyond the construction stage to the years when the new home(s) are occupied by its owner. An increase in pride and responsibility that comes with home ownership often results in the consumption of goods and services to complement the new home (e.g., purchase of new appliances, furnishings, and moving services). Later, other improvements may be made to the home itself, including the addition of decks, new rooms, landscaping, and special improvements for disabled homeowners (e.g., accessible approaches and doorways). VA's SAH assistance program is available to eligible Veterans with certain service-connected disabilities. Finally, new construction is often accompanied by infrastructure improvements like paved roads, electrification, and water/sewer lines which encourage further housing development (see related discussion in Section 4.8, Infrastructure and Community Services). An abundance of new housing can lower the cost of living for a community, making it attractive to new residents and industries.

Community Services

The demand for and use of community services, including educational, medical, public safety and protection (police and fire), and recreational services typically depends on the population served and the capacity and availability of existing community services within a given community. An increase in the demand and use of such facilities, such as from an influx of new workers and their families seeking new employment, or area residents simply seeking newly constructed housing in a new residential development, could overly burden existing services if they are insufficient to accommodate the increase in population. However, at the same time, increases in local revenue, such as those described above, could be used to support or enhance existing public services, as needed, to benefit the local community (see Section 4.8, Infrastructure and Community Services, for a more detailed discussion).

Housing Demand and Property Values

Demand and pricing for new housing varies by region and is dependent on existing inventory, population (growth), changes in household size, and pent-up demand (based on number of vacant housing units). Forbes' national housing forecast for 2018-2019 revealed a decline in new demand due to declines in population growth and average household size, and a national housing (homeowner) vacancy rate of 1.5 percent. Typically, 1.4 percent vacancy is considered normal for most single-family homes, meaning that supply is sufficient to meet demand (Conerly 2017). Conerly concluded that developers were building too much, at least nationwide, although regional shortages may still exist in some areas.

An annual survey on the nation's housing by the Joint Center for Housing Studies of Harvard University indicates a continuing shortfall in supply of new homes exists where housing production has not kept up with recent household growth (2019). Completions and placements totaled only 1.2 million units in 2018, which was the lowest annual production going back to 1982. In particular, there is a lack of affordable housing. This shortfall in new homes is keeping pressure on housing prices and affordability, particularly for modest-income households in high-cost markets. A major report finding is that too few new homes are being built, including too few starter homes for sale. New housing supply lagged overall need by 260,000 homes in 2018, continuing an 8-year trend. Furthermore, most new single-family homes are larger and more expensive than in past years. Only 22 percent were modest-sized – less than 1,800 square feet – down from an average of 32 percent in the period between 1999 and 2011. The report offers the following reasons for the supply problems: low risk tolerance among builders, labor shortages, and local regulatory constraints that drive up land costs and hinder new construction. The study found that single-family land prices have risen 27 percent since 2012 (Joint Center for Housing Studies of Harvard University 2019).

The Federal Housing Financing Agency's All-transactions House Price Index serves as an indicator of house price trends at various geographic levels and shows a general slowdown in home price growth in nearly two-thirds of the nation's 120 largest metropolitan statistical areas at the end of 2018. However, it also reveals that even with the general slowdown in growth, home prices have continued to rise year-over-year for more than 80 consecutive months (Joint Center for Housing Studies of Harvard University 2019). With respect to the key metropolitan statistical areas identified as major centers of new home

construction in Table 1-4 and Figure 4.0-1, the following metropolitan areas are included in the Federal Housing Financing Agency's House Price Index top 30 that show the largest house price increases over the past year (4th quarter 2018 to 4th quarter 2019):

- Orlando-Kissimmee-Sanford, Tampa-St. Petersburg-Clearwater, and Jacksonville, Florida (10.1, 8.4, and 6.3 percent, respectively);
- Austin-Round Rock-Georgetown and San Antonio-New Braunfels, Texas (8.2 and 6.9 percent, respectively);
- Phoenix-Mesa-Chandler, Arizona (7.2 percent);
- Nashville-Davidson-Murfreesboro-Franklin, Tennessee (6.0 percent); and
- Atlanta-Sandy Springs-Alpharetta, Georgia (5.9 percent).

The other metropolitan statistical areas that had high loan volumes under both the HLP and nationwide include Houston-The Woodlands-Sugarland and Dallas-Ft. Worth-Arlington in Texas; Charlotte-Concord-Gastonia in North Carolina; and Washington-Arlington-Alexandria (including the District of Columbia, Virginia, Maryland and West Virginia). These areas generally saw an increase in the range of 3 to 5 percent (FHFA 2020).

New home construction can affect existing property values in a variety of ways, both positively and negatively, as well as have no effect at all in some cases. In the short-term, property values can increase as newer, more expensive construction is built while over the longer term, an increase in housing supply (from new construction) can reduce demand and cause prices to fall. It is a complicated dynamic, however, and the long-term outcome depends on the number of buyers and homes (supply and demand) in the local market, the quality of the subject property, and external factors such as interest rates and lenders' willingness to provide loans depending upon current market conditions.

An increase in housing prices as well as interest rates would clearly have an impact on housing affordability. NAHB's latest estimates show that nationally a \$1,000 increase in the cost of a median-priced new home would result in 127,560 households not being able to afford the new home. Based on their incomes and standard underwriting criteria, each of these households would be able to qualify for a mortgage to purchase the home before the price increase but not afterwards (NAHB 2014).

Perspective home buyers are also adversely affected when interest rates rise. NAHB's estimates show that depending on the starting rate, a 0.25 percent increase in the rate of a 30-year fixed rate mortgage can price over one million U.S. households out of the market for the median-priced new home (NAHB 2014).

Too many people are also now paying too much of their income on housing. The latest data show that nearly 38 million households nationwide – 31.5 percent of all households – are paying more than 30 percent of their income on housing. More than 18 million households (1 in 6) are paying more than 50 percent of their income on housing and are considered severely cost burdened – although the

majority of these are renters (Joint Center for Housing Studies of Harvard University 2019). A benefit of VA's HLP is that VA-guaranteed loans can make housing affordable (e.g., since a down payment is not required and lower interest rates are often possible) and available to Veterans who may otherwise not be able to own their own home. It relieves financial burden and improves living conditions for many who may be currently living in inadequate shelter.

Another concern relating to new home construction and housing prices is the potential, in some situations, for any population influx associated with a new development to displace existing residents living in the area. New construction can sometimes have an adverse effect on existing working-class or lower-income residents and businesses, either by directly displacing them as a result of construction activities, or by driving up property prices and rents so that they can no longer afford to remain in the neighborhood. The result is often more affluent residents moving in, along with higher-end businesses that serve a different socioeconomic class of customers. The displacement process typically includes three dimensions: displacement of lower-income residents; physical transformation of the neighborhood (e.g., upgrading of housing stock and commercial spaces); and changing cultural character of the neighborhood. In general, such displacement is likely to occur in places where the housing stock is more affordable than other places in the same city and where something has happened to positively change perceptions of the value of that location. For a new development to make a positive impact on nearby home values, both the developer and the neighborhood must communicate to address the current problems in the area that might affect existing home values. Specifically, they need to find ways to encourage more investment in a variety of neighborhoods and ensure people already living there also benefit from those investments.

Environmental Justice

An analysis of environmental justice determines whether a disproportionate share of adverse human health or environmental impacts from new home construction would be borne by minority or low-income populations. Specifically, Council on Environmental Quality guidance states agencies should consider both human health and environmental effects such as whether risks or rates of health effects are significant or may have an adverse impact on minority or low-income populations that appreciably exceeds, or is likely to exceed, those on the general population (CEQ 1997).

New residential construction could bring additional jobs and increase wages to the surrounding populations. This would be considered a positive impact. In addition, the program's ability to make both existing housing and new construction housing more affordable to Veterans, including minority Veterans and those living in poverty, would also be a potential benefit.

While positive impacts on the economy would be expected to result in generally beneficial impacts on minority and low-income populations, local impacts from construction activities – including increased air emissions, noise levels, traffic congestion, soil and water runoff, etc. – could exacerbate existing living conditions on those environmental justice populations living near the construction site (or along a major access route to the construction site) and result in potential adverse health effects. Longer-term

impacts also could disproportionately impact environmental justice populations if the new development results in their displacement from the neighborhood or reduces their housing options by making housing less affordable.

Loan Defaulting and Homeowner Displacement

Similar to any other housing loan, defaulting on a VA-guaranteed loan can result in foreclosure, meaning that a homeowner can lose the home. If a borrower is facing financial difficulty, then he or she is given a short grace period to repay their mortgage. Some loan holders will be more forgiving than others and offer deferment options. Eventually, however, a holder will begin foreclosure proceedings. After 61 days, a delinquent VA-guaranteed loan must be reported by the loan holder.²⁹ The foreclosure process can ultimately result in the homeowner and other occupants being evicted from the property. In addition, the homeowner might struggle to qualify, from a credit underwriting perspective, for future home loans due to the delinquency, default, and foreclosure, especially those living in the larger and more expensive metropolitan areas where the ratio of debt to income is high.

VA offers a number of protections and loss-mitigation options for borrowers who are facing delinquencies, defaults, and foreclosure. This is a key benefit associated with VA-guaranteed loans because VA strives to facilitate loss-mitigation options that can help keep Veterans in their homes. If a Veteran is unable to make payments on a VA-guaranteed loan, VA RLC staff can liaise with the servicer to explore all options to avoid foreclosure, including:

- Repayment plan – an arrangement in which the Veteran makes the regular monthly payment, plus a portion of the missed installments to repay the delinquency.
- Special forbearance – the servicer allows time for the Veteran to repay the missed installments before initiating foreclosure.
- Loan modification – modification of the loan which adds the delinquent amounts to the total balance of the loan and establishes a new payment schedule.
- Additional time to arrange a private sale – the servicer will delay foreclosure to allow a private sale, as long as the sale proceeds would satisfy the outstanding indebtedness.
- Short sale – the servicer allows the Veterans to sell the home for a lesser amount than is currently required to repay the loan.
- Deed-in-lieu of foreclosure – Veteran deeds the property to the loan holder instead of being subjected to the foreclosure process.

VA has achieved great success with such efforts, helping save over 85 percent (96,139) of defaulted borrowers from foreclosure during FY 2017. In addition, avoiding the potential guaranty claims associated with foreclosure equated to savings of over \$2.7 billion to the government and taxpayers in FY 2017 (VA 2018b).

²⁹ 38 CFR 36.4317(c)(7).

4.11.2.2 Potential Impacts to Socioeconomics and Environmental Justice

An increase in direct and indirect socioeconomic and environmental justice impacts associated with new home construction, residential living, affordable housing, and improved Veterans' personal financial situations could occur as a result of market effects influenced by VA's HLP, with the majority of these likely to be positive. New home construction, particularly as part of a new housing development, and home remodeling can have a direct positive impact on the local economy. Impacts to the local economy would vary by area and project size, the value of construction (per unit), land values, local incomes, and tax structure. In general, new housing construction (including the associated infrastructure) has the potential to benefit both those that occupy the new dwelling and the local economy. In addition, home ownership under VA's HLP, whether of an existing home or newly constructed home, would be considered a direct positive benefit to those Veterans who otherwise could not afford to purchase a home; in some cases, it would presumably help improve their current living conditions. For the majority of Veterans, the HLP offers an opportunity to quickly move into home ownership instead of renting thereby building equity sooner than they otherwise would have been able to afford thanks to HLP's no down payment and no private mortgage insurance (PMI). Housing becomes more affordable thereby improving the Veterans' overall financial portfolio.

In addition, construction activities related to home modifications made with SAH program grants issued under the HLP, which would most likely include interior or minor exterior work, also would be expected to result in beneficial impacts.

A summary of the general impacts, including both positive and possible negative impacts, is provided below. While most would be positive, all impacts would be considered local and small-scale in nature. The analysis of impacts was based on a comparison to national averages. A summary of national averages for relevant parameters, as pulled from Section 3.11, Socioeconomics and Environmental Justice, as well as a national profile of the Veteran population (VA 2019c, 2019d) are provided below for additional background information and support in the analysis.

Veteran Profile Information:

- Veterans made up 8.1 percent of the U.S. population in 2017 (approximately 20 million).
- Median age of male Veterans in 2017 was 65 (compared to median age of 42 for male non-Veterans) and median age of female Veterans was 51 (compared to 47 median age for female non-Veterans).
- Male Veterans are more likely to be White non-Hispanic, more likely to be married, less likely to be uninsured, less likely to live below poverty, and had higher personal incomes than male non-Veterans. Female Veterans are more likely to be non-White, non-Hispanic, more likely to be divorced or separated, less likely to be uninsured, less likely to live below poverty, and had higher personal incomes than female non-Veterans.
- Minority Veterans made up approximately 23 percent of the total Veteran population and approximately 35 percent of the female Veteran population.

- Minority populations as follows:
 - African American: 12.3 percent
 - Hispanic/Latino: 7.4 percent
 - Asian American: 1.6 percent
 - Hawaiian: 0.2 percent

Relevant National Socioeconomic and Environmental Justice Parameters:

Economy

- National unemployment rate: 5.8 percent

Housing

- National median value of owner-occupied housing: \$205,000
- Median monthly owner costs with mortgage: \$1,486
- National percentage of units with mortgage costs 30 percent or more of household income: 28 percent

Environmental Justice

- Poverty rate for family: 10 percent
- Poverty rate for individual: 14 percent
- Minority Population:
 - African American: 12.7 percent
 - American Indian: 0.8 percent
 - Asian American: 5.4 percent
 - Hispanic/Latino: 17.8 percent
 - Total/aggregate minorities: 38.9 percent

Summary of Impacts Common to All Regions:

- Employment and income: Increase in employment and income in local area, especially in the construction sector and service sectors that support the construction industry (e.g., lumber, concrete, transportation). States with higher unemployment rates and lower wages could benefit more from new home construction activities that result in an increase in job opportunities or improvements to the local economy.
- Housing supply and pricing: Demand and pricing for new housing would vary by region and be dependent on existing inventory (potential regional shortages), extent of population growth, vacancy rate, and other factors. New construction could result in rising property values. Affordability is dependent on housing prices and interest rates. In general, regions that show the highest concentrations of new construction guaranties would be expected to receive greater benefits than other parts of the country because of increased new home ownership levels and greater economic activity that could benefit the local economy. This assumes housing is also affordable and the mortgage debt-to-income ratio is not too high (higher ratios could lead to increased risk of defaulting in the future). In regions where the housing market prices are too

high, Veterans may not be able to purchase a home, existing or newly constructed, and be forced out of the market in these parts of the country.

- Revenue: Increase in revenues of federal, state, and local governments.
- Community services: Any increase or demand on community services from in-migrating populations, such as in the case of a new residential development, could have a negative impact if existing services are not sufficient to accommodate new residents. However, increases in local revenue generated by new construction activities could be used to support or enhance existing services as needed to benefit the local community (see Section 4.8, Infrastructure and Community Services, for a more detailed discussion).
- Environmental Justice: A major benefit of VA's HLP is that VA-guaranteed loans can make housing more affordable and available to Veterans who may otherwise not be able to own their own home, and it can help improve living conditions for many Veterans who may be currently living in inadequate shelter, including those Veterans who are also members of environmental justice populations. In addition, the potential increase in jobs and income that would result from new home construction could also benefit minority and low-income populations that currently work, or are looking for work, in the construction and related service industries. Therefore, in this instance, the Proposed Action would have the potential for net beneficial impacts on environmental justice populations, with the potential for greater benefit in those areas where environmental justice populations comprise a larger percentage of the total population.

The NADL program would have a small but highly focused effect on eligible Veterans seeking new construction or already built homes on trust, tribal, or communally owned lands. In some cases, this effect could be seen as a beneficial impact on environmental justice (Native American) populations, as the NADL program could provide Native American Veterans with better housing. It could also stimulate residential development in areas where new home construction has lagged behind demand due to the scarcity of conventional loans. This development could not only provide Native Americans with more adequate housing but also improve the overall economy of the local community.

To the extent foreclosure may affect a disproportionate percentage of low-income Veterans, VA's REO program also could have potential beneficial impacts for the surrounding community. After a foreclosure of a VA-guaranteed loan occurs, the loan holder has the statutory option to convey the property to VA. Such properties are considered REO property assets, which VA would maintain, manage, market, and sell. Proceeds from REO sales help offset the government's costs of new VA-guaranteed loans for other Veterans. VA sells REO properties to Veterans and non-Veterans alike. In addition to accepting all-cash offers or offers using conventional or FHA financing, VA has authority to offer direct "vendee" loan financing to REO purchasers. In a direct "vendee" loan, VA serves as the direct lender. This financing option provides VA with another way to reduce vacancies and the potential negative impact upon a neighborhood by moving REO homes from vacancy to new occupants, which is another positive impact for the surrounding community.

With respect to socioeconomic and environmental justice, even the volume of projected VA-guaranteed loans for newly constructed homes is not expected to result in adverse effects to the economy, socioeconomic issues, or environmental justice populations. Rather, the majority of impacts from the Proposed Action would be expected to be beneficial and result in a positive impact on both the local economy (e.g., increased jobs and wages) and individual homeowners (e.g., more financial savings as well as access to affordable and sometimes better housing), including Veterans who are part of the minority or low-income populations. Any adverse impacts on the local community would be on local community services (e.g., fire/police, schools) if existing services were not sufficient to meet increased demand from new homeowners, such as in a rapid growth area. Such impacts would be expected to be local and minor and are discussed further in Section 4.8, Infrastructure and Community Services.

There would also be some regional variation in socioeconomic and environmental justice impacts, depending on the level of loan activity found in a particular region, as well as the existing Veteran population, local housing shortages, home pricing and affordability constraints, and community service constraints within a given region. In addition, some variation within metropolitan versus rural areas would also be expected to occur. Specifically, parts of the country that experience more rapid growth in housing demand, such as parts of the South, Southwest, and Northwest, could experience a greater increase in socioeconomic and environmental justice impacts associated with the Proposed Action, although such impacts may be more positive in nature if they are associated with increased Veteran home ownership levels. These areas are, in fact, consistent with the geographic locations that experienced the highest number of VA-guaranteed loans for newly constructed homes between FY 2013 and FY 2017 (see Figure 1-5 in Chapter 1, Introduction). In particular, the highest concentrations of VA-guaranteed loans for newly constructed homes occurred in southern and western metropolitan areas.

Assuming similar future trends, more VA-guaranteed loans for newly constructed homes would be expected within metropolitan areas over rural areas. It is important to note that many metropolitan areas, especially in the western United States, are so expansive that they could also include some rural or undeveloped areas. However, for purposes of the socioeconomic impact analysis, it is assumed that housing prices would generally be higher in, or in proximity to, a metropolitan area than in rural areas; and that housing prices in some metropolitan areas may be so high as to price perspective homeowners out of the market. Another general assumption is that potential adverse impacts from new home construction would be expected to be less in a metropolitan area than a rural area because a larger city would be more likely to already have adequate infrastructure and community services in place to support new residents.

Table 4.11-3 summarizes the regional variations in potential impacts for those regions with the highest number of VA-guaranteed loans for newly constructed homes with respect to relevant socioeconomic and environmental justice parameters that could affect the degree of impact in a given region. The impact analysis assumes that the volume of HLP activity through FY 2030 in each VA RLC's operational area, and the resulting effects from new home construction, would be consistent with past volumes as described in Section 1.4, Overview of Current Housing Loan Program, Chapter 1, Introduction. Activity levels in the other regions are expected to be so low in comparison that any impacts on the local economy would be expected to be negligible, although beneficial impacts (in the form of a new home) would still occur to individual homeowners.

Relevant Regional Socioeconomic Data

As noted in Table 4.11-1, potential socioeconomic impacts, including beneficial impacts, would depend on existing socioeconomic conditions in areas supported by each of the RLCs. To help put these potential beneficial impacts in better perspective, relevant existing socioeconomic data for select regions, as pulled from the detailed data tables in Appendix F, are summarized below.

Atlanta RLC: All four states in the jurisdiction of this RLC have higher proportions of Veterans in their populations than the United States as a whole. The Carolinas and Georgia had slightly higher unemployment rates than the national average, and housing costs in North Carolina were approximately \$10,000 higher than other states in the region. The median values in all four states were at least \$38,000 lower than the national median. Also, smaller percentages of housing units in all four states had mortgages consuming 30 percent or more of household income than that seen for the nation as a whole.

Denver RLC: Led by Alaska, Wyoming, and Montana, the region has higher proportions of Veterans than the national average, with the exception of Utah. Only Alaska experienced a substantially higher unemployment rate than the nation as a whole.

Alaska, Washington, and Colorado recorded median family incomes about \$10,000 or more higher than the national median. Housing values and ownership costs varied within a moderate range in this region. The highest median value was approximately \$314,000 in Colorado. Besides Colorado, median values in Washington, Oregon, Alaska, and Utah also exceeded the national median value by more than \$40,000. Half of the states (Alaska, Washington, Colorado, and Oregon) had median monthly owner costs with a mortgage higher than the national median. Only three states (Oregon, Montana, and Washington) had higher percentages of units with mortgages consuming 30 percent or more of household income than the nationwide rate (28.3 percent).

Table 4.11-3. Summary of Socioeconomic and Environmental Justice Impacts by VA Regional Loan Center

VA Regional Loan Center ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^d	NADL ^e	SAH ^f	Notes ^g
Atlanta (GA, NC, SC, TN)	Beneficial	Beneficial	Beneficial	Beneficial	Beneficial	<p>VA has provided 2,500 – 5,000 loan guaranties for newly constructed homes in nine MSAs served by this RLC; and 1,000 – 2,500 in three additional MSAs. Similar loan guarantee volumes in the future could result in more positive socioeconomic and environmental justice impacts than other parts of the country. However, these expected positive impacts assume housing prices in these metropolitan areas are affordable and depend on existing socioeconomic conditions and the extent of minority and low-income population levels in the region.</p> <p>Overall impacts from the Proposed Action would be expected to be positive, particularly if new jobs were created in areas with higher unemployment rates and given the general affordability of homes in this region. Median housing prices, monthly mortgage costs, and mortgage debt-to-income ratios are all lower than the national median.</p> <p>The states in this region all have poverty rates slightly higher than the national average. The percentage of African Americans is higher than the national average for all four states, although the percentage of all minorities is less than the national average in three of the states. The total minority population in Georgia is nearly 10 percentage points higher than the national average. Impacts from the Proposed Action could be especially beneficial to these populations.</p>
Cleveland (CT, DE, IN, MA, ME, MI, NH, NJ, NY, OH, PA, RI, VT)	Beneficial	Negligible	Negligible	Negligible	Negligible	<p>VA has provided 2,500 – 5,000 loan guaranties for newly constructed homes in the Indianapolis-Carmel-Anderson, Indiana MSA. Negligible to beneficial impacts, as described above, would be expected.</p>

Table 4.11-3. Summary of Socioeconomic and Environmental Justice Impacts by VA Regional Loan Center

VA Regional Loan Center ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^d	NADL ^e	SAH ^f	Notes ^g
Denver (AK, CO, ID, MT, OR, UT, WA, WY)	Beneficial	Beneficial	Beneficial	Beneficial	Beneficial	<p>VA has provided more than 5,000 loan guaranties for newly constructed homes in the Colorado Springs, Colorado MSA; 2,500 – 5,000 in the metropolitan areas of Seattle-Tacoma-Bellevue in Washington and Denver-Aurora-Lakewood in Colorado; and 1,000 – 2,500 in five additional MSAs supported by this RLC.</p> <p>The majority of the landscape in this RLC is rural in nature but the areas with greater numbers of future loan guaranties could see more positive socioeconomic and environmental justice impacts than other parts of the country, assuming housing prices in these metropolitan areas are affordable. These positive impacts also depend on existing socioeconomic conditions and the extent of minority and low-income population levels in the region.</p> <p>Aside from Alaska, the states in this region have lower percentages of minorities than the national distribution. Aside from Idaho, which recorded poverty rates comparable to the national rates for families and individuals, the other states in the region experienced considerably lower poverty levels than the nation as a whole. Impacts from the Proposed Action could be especially beneficial to these populations.</p>
Houston (AR, LA, OK, TX)	Beneficial	Beneficial	Beneficial	Beneficial	Beneficial	<p>Multiple metropolitan areas in Texas within the Houston RLC, including the San Antonio-New Braunfels, Houston-The Woodlands-Sugarland, Austin-Round Rock-Georgetown, and Dallas-Fort Worth-Arlington have seen among the highest numbers of VA-guaranteed loans for newly constructed homes in the nation; all of these are areas that have already experienced notable urban expansion in past decades.</p>

Table 4.11-3. Summary of Socioeconomic and Environmental Justice Impacts by VA Regional Loan Center

VA Regional Loan Center ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^d	NADL ^e	SAH ^f	Notes ^g
Houston (AR, LA, OK, TX) (Cont'd)						<p>These loan areas could see more positive socioeconomic and environmental justice impacts than other parts of the country, assuming housing prices in these metropolitan areas are affordable. These positive impacts also depend on existing socioeconomic conditions and the extent of minority and low-income population levels in the region.</p> <p>Texas is now among several states that are considered “majority minority” states, in which the minority population exceeds 50 percent of the total. In Texas, the high percentage of minorities is driven by the Hispanic or Latino population. Poverty rates for both families and individuals in all four states are slightly higher than the national average. Impacts from the Proposed Action could be especially beneficial to minority and low-income populations.</p>
Phoenix (AZ, CA, HI, NV, NM, Guam, Northern Mariana Islands, American Samoa)	Beneficial	Beneficial	Beneficial	Beneficial	Beneficial	<p>VA has provided more than 5,000 loan guaranties for newly constructed homes in the Phoenix-Mesa-Chandler, Arizona MSA; 2,500 – 5,000 in the MSAs of Las Vegas-Henderson-Paradise in Nevada and Riverside-San Bernardino-Ontario in California; and 1,000 – 2,500 in seven additional MSAs.</p> <p>Areas with higher numbers of future loans could see more positive socioeconomic and environmental justice impacts than other parts of the country, assuming housing prices in these metropolitan areas are affordable. These positive impacts also depend on existing socioeconomic conditions and the extent of minority and low-income population levels in the region.</p> <p>California dominates this region in size and population. All of the states are growing faster than the national rate, led by Nevada and Arizona, which currently have the highest rates of population growth in the nation.</p>

Table 4.11-3. Summary of Socioeconomic and Environmental Justice Impacts by VA Regional Loan Center

VA Regional Loan Center ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^d	NADL ^e	SAH ^f	Notes ^g
Phoenix (AZ, CA, HI, NV, NM, Guam, Northern Mariana Islands, American Samoa) (Cont'd)						<p>All of the states in this region have percentages of minorities in their populations that are significantly higher than the national average; all except Arizona are now “majority minority” states. As in the case of the national trend, the minority populations in all five states and the U.S. Territories continue to grow. Despite the generally lower incomes in three of the states, New Mexico was the only state that experienced poverty levels that were substantially higher than the national levels – by 5 percentage points for both families and individuals.</p> <p>Arizona experienced slightly higher poverty levels than the national levels. Poverty rates in the three U.S. Territories were extremely high in comparison to the national average for families and individuals. Impacts from the Proposed Action could be especially beneficial to minority and low-income populations.</p>
Roanoke (KY, MD, VA, WV, DC)	Beneficial	Beneficial	Beneficial	Beneficial	Beneficial	<p>VA has provided more than 5,000 loan guaranties for newly constructed homes in the MSAs of Washington-Arlington-Alexandria and Virginia Beach-Norfolk-Newport News; 2,500 – 5,000 in the Baltimore-Columbia-Towson, Maryland MSA; and 1,000 – 2,500 in the Richmond, Virginia MSA. Areas with high numbers of future loans could see more positive socioeconomic and environmental justice impacts than other parts of the country, assuming housing prices in these metropolitan areas are affordable. These positive impacts also depend on existing socioeconomic conditions and the extent of minority and low-income population levels in the region.</p>

Table 4.11-3. Summary of Socioeconomic and Environmental Justice Impacts by VA Regional Loan Center

VA Regional Loan Center ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^d	NADL ^e	SAH ^f	Notes ^g
Roanoke (KY, MD, VA, WV, DC) (Cont'd)						The jurisdictions in this region have a wide range of minority distributions in their populations. Washington, District of Columbia has a “majority minority” population, while Maryland also has a percentage of minorities higher than the national average. Virginia’s minority percentage is comparable to the national distribution. Regardless of its high median family and per capita income, Washington, District of Columbia had poverty levels substantially higher than the national averages for families and individuals (along with Kentucky and West Virginia). Impacts from the Proposed Action could be especially beneficial to minority and low-income populations.
St. Paul (IL, IA, KS, MN, MO, NE, ND, SD, WI)	Beneficial	Negligible	Negligible	Negligible	Negligible	VA has provided 1,000 – 2,500 loan guaranties for newly constructed homes in the metropolitan area of Omaha, Nebraska. Negligible to beneficial impacts, as described above, would be expected.
St. Petersburg (AL, FL, MS, PR, USVI)	Beneficial	Beneficial	Beneficial	Beneficial	Beneficial	VA has provided more than 5,000 loan guaranties for newly constructed homes in the MSAs of Jacksonville and Tampa-St. Petersburg-Clearwater in Florida; 2,500 – 5,000 in the MSAs of Orlando-Kissimmee-Sanford and Pensacola-Ferry Pass-Brent in Florida; and 1,000 – 2,500 in the MSAs of Huntsville in Alabama and Miami-Fort Lauderdale-Pompano Beach in Florida. Areas with higher numbers of future loans could see more positive socioeconomic and environmental justice impacts than other parts of the country, assuming housing prices in these metropolitan areas are affordable. These positive impacts also depend on existing socioeconomic conditions and the extent of minority and low-income population levels in the region.

Table 4.11-3. Summary of Socioeconomic and Environmental Justice Impacts by VA Regional Loan Center

VA Regional Loan Center ^a	New Home Loan Guaranties ^b	Existing/Refinance Home Loan Guaranties ^c	REO ^d	NADL ^e	SAH ^f	Notes ^g
St. Petersburg (AL, FL, MS, PR, USVI) (Cont'd)						Other than Alabama, all of the jurisdictions have percentages of minorities greater than the national percentage. The Hispanic or Latino population approaches 100 percent of the racial composition of Puerto Rico because of its Spanish heritage, and the U.S. Virgin Islands has a large population of African descendants. Florida's minority population is driven by its Hispanic or Latino population; Mississippi's is driven by its Black or African American population. In all cases, the percentages of minorities have increased since 2010. Aside from Florida, which recorded poverty rates for families and individuals comparable to national levels, the jurisdictions recorded much higher poverty levels for families and individuals than the nation. The poverty rate for families in Puerto Rico was nearly four times the national level in 2016. Impacts from the Proposed Action could be especially beneficial to minority and low-income populations.

a. See Figure 1-1 in Chapter 1, Introduction, for map titled Nationwide Locations and Jurisdictions of VA Regional Loan Centers.

b. See Table 1-4 in Chapter 1, Introduction, for the numbers of VA-guaranteed loans for newly constructed homes by metropolitan statistical area, during the period FY 2013 through FY 2017. This PEIS assumes that loan guaranty and other HLP activity in a given metropolitan statistical area through FY 2030 would be consistent with past levels.

c. A benefit of VA's HLP is that VA-guaranteed loans can make housing affordable and available to Veterans who may otherwise not be able to own their own home. It relieves unnecessary financial burden and improves living conditions for many who may be currently living in inadequate shelter.

d. VA's REO program also could have potential beneficial impacts for the environmental justice community where foreclosures could occur. VA sells REO properties to Veterans and non-Veterans alike and has authority to offer direct "vendee" loan financing to REO purchasers, which reduces vacancies positively impacting the surrounding community.

e. NADL program could have a small but highly focused effect on eligible Veterans seeking new construction or already built homes on trust, tribal, or communally owned lands. In some cases, this effect could be seen as a beneficial impact on environmental justice (Native American) populations, as the NADL program could provide Native American Veterans with housing.

f. The number of SAH program grants are very small nationwide, however, construction activities related to home modifications made with SAH program grants could help create jobs to benefit the local economy and result in home improvements directly benefitting individual Veteran homeowners.

g. Past loan guaranty volumes shown here are for the period FY 2013 through FY 2017, as presented in Table 1-4 in Chapter 1, Introduction. One MSA may overlap more than one Regional Loan Center's operational area.

FY = Fiscal Year; HLP = Housing Loan Program; MSA = metropolitan statistical area; NADL = Native American Direct Loan; PEIS = Programmatic Environmental Impact Statement; REO = Real Estate Owned; RLC = Regional Loan Center SAH = Specially Adapted Housing; VA = Department of Veterans Affairs

Houston RLC: Texas is the only state in the region growing at a faster rate than the national average since 2000, and that rate of growth is more than double the national rate. Oklahoma and Arkansas have proportions of Veterans in the population that are greater than the national distribution. Median family incomes in the four states were lower than the national value. Other than Texas, the states were lower by \$10,000 or more. Per capita incomes likewise were lower than the national value by \$5,000 or more, except in Texas. Housing values and ownership costs in this region were uniformly lower than the national values. Median values were at least \$40,000 lower than the national median. Texas had the highest median value. Median monthly owner costs with a mortgage were lower than or close to the national median. All the states had lower percentages of units with mortgages consuming 30 percent or more of household income than the nationwide rate.

Phoenix RLC: California dominates this region in size and population. All of the states are growing faster than the national rate, led by Nevada and Arizona, which currently have the highest rates of population growth in the nation. Other than California, the other states have higher proportions of Veterans in their populations than the national percentage, with Hawaii's Veteran population being substantially higher than the national percentage. With respect to the western U.S. Territories, Guam's percentage of Veterans is comparable to the national average, while the Commonwealth of the Northern Mariana Islands and American Samoa have lower percentages of Veterans. With the exception of California and Hawaii, median family incomes and per capita incomes in the other states and U.S. Territories were markedly lower than the national values (with New Mexico, American Samoa, and the Northern Mariana Islands all having especially low values).

Housing values and ownership costs varied widely in this region. Hawaii and California were the highest at \$592,000 and \$477,500, respectively; the other states had median values lower than (New Mexico) or generally comparable to the national median. Aside from California and Hawaii, monthly owner costs with a mortgage were near or below the national value. All states had higher percentages of units with mortgages consuming 30 percent or more of household income than the nationwide rate, generally by small amounts. California and Hawaii were the exception, with their proportions being 10 or more percentage points above the national rate.

As noted in Table 4.11-1, the minority populations in four of the states are driven by the percentages of Hispanics or Latinos. Also, of note is that Hawaii's racial composition is driven by its Asian and multiracial populations, while American Samoa's racial composition is driven by its Pacific Islander population; the other two U.S. Territories have high Asian and Pacific Islander populations attributable to the national heritage.

Roanoke RLC: Virginia has grown at a slightly faster rate than the national average. Led by Virginia, and excluding the District of Columbia, the states have higher proportions of Veterans than the national percentage. The unemployment rate in Virginia was markedly lower than the national rate; Maryland and Kentucky were comparable to the national rate. Incomes also varied widely among the jurisdictions in this region. The District of Columbia and Maryland led the field with median family incomes generally

\$25,000 higher than the nation as a whole. Housing values and ownership costs in this region vary greatly. Maryland and Virginia had median values at least \$60,000 more than the national median. Median monthly owner costs were highest in the District of Columbia at \$2,422. Both Maryland and Virginia also had higher median owner costs with a mortgage than the national median. Maryland, Virginia, and the District of Columbia had percentages of units with mortgages consuming 30 percent or more of household income close to the national average.

St. Petersburg RLC: Florida is the most populous state in the region and has also grown at average annual rates significantly higher than the national averages since 2000. The three states also have higher percentages of Veterans in the population than the national average. Median family incomes in all three states (Alabama, Florida, and Mississippi) and two U.S. Territories (Puerto Rico and the U.S. Virgin Islands) were at least \$10,000 lower than the national value, and per capita incomes were also substantially lower. Incomes in the Commonwealth of Puerto Rico, both median family and per capita, were extremely low in comparison to the national values. Housing values and ownership costs varied considerably in this region. The highest (only one over the national average) was \$254,296 in the U.S. Virgin Islands. Only Florida had a median value of owner-occupied housing comparable to the national median. Both Florida and the U.S. Virgin Islands had median monthly owner costs with a mortgage that were comparable to the national value. Alabama and Mississippi had median monthly owner costs with a mortgage that were \$300 less than the national median; Puerto Rico was the lowest at \$600 below the national median. Puerto Rico had the highest percentage of units with a mortgage consuming 30 percent or more of household income at 42.7 percent.

4.11.3 No Action Alternative

Under the No Action Alternative, VA-guaranteed loans and the percentage of new home construction would continue at levels consistent with those observed in FY 2017, as described in Section 2.3 (Chapter 2, Proposed Action and Alternatives) and Section 4.0, Introduction (Chapter 4, Environmental Consequences). VA-guaranteed loans, REO transactions, NADLs, and SAH program grants would continue to represent a very small portion of the total home loan market, and nationwide housing supply and demand trends would continue to evolve without any noticeable influence from the HLP. The regional environmental effects of housing construction and occupancy, and corresponding population shifts, would likely continue in a manner consistent with those seen in recent years. The HLP's contribution to such regional effects would continue to be beneficial and minor in scale and consistent with FY 2017 conditions, and no unique types or localized focuses of effects on existing socioeconomic and environmental justice resources would be expected to reach the level of significance as defined under NEPA.

The direct and indirect socioeconomic and environmental justice impacts that could occur as a result of the construction and occupancy of new homes, consistent with recent historical levels, could be expected to be negligible to minor and beneficial, for reasons similar to those described for the Proposed Action. With or without the VA HLP, the construction of new homes in a given area would be expected to result in potential beneficial impacts on the local economy and environmental justice populations.

CHAPTER 5 CUMULATIVE IMPACTS

5.1 INTRODUCTION

This chapter describes the cumulative impacts that could occur from implementation of the Proposed Action in combination with other past, present, and reasonably foreseeable future actions that are related in terms of time and geographic proximity to the environmental resources under consideration.

Cumulative actions can result from individually minor but collectively significant actions taking place over time. The analysis of cumulative impacts follows the regulations in chapter V, title 40, CFR and processes recommended by the CEQ (CEQ 2005, 1997). During PEIS preparations, the cumulative impacts analysis typically considers concerns raised by state and federal agencies, Native American tribes, non-governmental organizations, and members of the public during the public scoping process for the PEIS. However, as stated in Section 1.9, Interagency and Public Involvement, no concerns were raised during the public scoping process for this PEIS from these groups or the general public. This chapter divides the cumulative impacts analysis into two topics: Past, Present, and Reasonably Foreseeable Future Actions (Section 5.2) and the Evaluation of Cumulative Impacts (Section 5.3).

The ROI for the cumulative impact analysis is the same environmental setting as described in Chapter 3, Affected Environment. It is defined as all the United States of America, here defined as the 50 states, 5 permanently inhabited U.S. Territories (e.g., American Samoa, Guam, the Commonwealth of the Northern Mariana Islands, the Commonwealth of Puerto Rico, and the U.S. Virgin Islands), and the District of Columbia. In addition, the distinct geographic or functional units identified for each resource area in Chapter 3, Affected Environment, and Chapter 4, Environmental Consequences, of this PEIS – that provide a way to meaningfully evaluate such a large ROI – are also carried forward in this cumulative impact analysis.

5.2 PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE ACTIONS

The primary focuses of this cumulative impact analysis are to 1) assess the potential combined long-term and/or permanent effects to resources, ecosystems, and human communities from the Proposed Action itself, which is national in scope and being evaluated through FY 2030, and 2) assess any connected actions and other past, present, and reasonably foreseeable future projects (federal and non-federal, such as conventional market loan products). CEQ guidance directs that the cumulative impacts should focus on important issues of national, regional, or local significance. Given the expansive geographic scope and programmatic nature of the Proposed Action, it is not possible to identify every possible past, present, and planned project within the United States that may interact in some fashion

Cumulative Impacts – As defined in 40 CFR 1508.7 (1978, as amended)³⁰, cumulative impacts are the incremental impacts on the environment resulting from the Proposed Action in combination with other past, present, and reasonably foreseeable future actions.

³⁰ CEQ issued a final rule to update its NEPA implementing regulations on July 16, 2020 with an effective date of September 14, 2020. This PEIS was begun prior to these dates and was completed pursuant to CEQ's 1978 NEPA-implementing regulations.

with VA's HLP. Therefore, the scope of potential cumulative actions focuses on actions most similar to HLP in terms of scope and geographic distribution. These include other national housing loan programs in the country and, in particular, new home construction projects funded through loan products other than VA, including both conventional/private lenders and other non-VA government-backed programs (see Section 5.2.1, Major Housing Loan Financing Programs Considered in Cumulative Impact Analysis; and Section 5.2.2, Minor Federal Housing Loan Financing Programs Considered in Cumulative Impact Analysis). Similar to the rationale for the direct and indirect impact analysis in Chapter 4, Environmental Consequences, the cumulative impact analysis focuses primarily on residential loans from all mortgage market loan products (e.g., conventional and federally backed loans with FHA and USDA) alongside VA for the purchase of newly constructed homes. In other words, the focus is on programs most likely to result in tangible physical environmental impacts. These other national housing loan actions include similar residential construction activities and are also distributed across the United States and its Territories like VA's HLP. The residential construction industry is part of the larger U.S. construction industry, a major contributor to the U.S. economy with respect to the number of jobs and income it provides for construction workers and related fields (e.g., suppliers of construction materials).

The continuation of the HLP and other national housing loan programs could influence construction of new large-scale residential developments or communities by developers who base their decisions on overall market conditions and demand for housing resulting in further growth-related effects. These related or connected actions have been recognized in Chapter 4 but would be on a larger scale when combined with all other housing loan programs and are examined in greater detail in the cumulative impact analysis.

This cumulative impact analysis also considers two other large-scale federal agency programs that could contribute to potential meaningful effects on the housing market at a regional or local level. These include BLM federal land sales and Department of Defense (DoD) military base realignment and closures (BRAC) (see Section 5.2.3, Other Major Federal Programs Considered in Cumulative Impact Analysis).

5.2.1 Major Housing Loan Financing Programs Considered in Cumulative Impact Analysis

Housing loans can be used to purchase existing or new homes, refinance an existing home, or make home improvements. The two major types of home financing available to perspective borrowers include conventional loans and government-insured housing loans. Conventional financing is a housing loan made entirely by the private sector and not insured or guaranteed by the federal government in any way. Conventional loans comprise the majority of all housing loans in the United States, including new home construction. The two largest government-backed loan programs include VA's HLP (the subject of this PEIS) and FHA, but together they encompass a minor segment of total housing loans as explained below.

From the mid-1990s to the early-2000s (calendar years), the share of conventional home-purchase mortgages (existing and new construction) comprised between 75 and 85 percent of total home

purchase loans. FHA and VA loans together comprise the remaining 15 to 25 percent of home purchase loans for this time period. From 2004-2007, conventional loans were close to 90 percent of the market. After the financial crisis of 2008, conventional loans dropped to approximately 45 percent of the market in 2009-2010 – replaced primarily by FHA loans. Since 2010, conventional loans have comprised approximately 55 to 65 percent of total home purchases, and FHA and VA loans have together comprised the remaining 35 to 45 percent. This includes a significant increase in the percentage of VA loans during this same time period, from a low of approximately 2 percent in 2005 to a high around 10 percent in 2009, which it held through 2016 (Federal Reserve Bulletin 2017). More recently, in the past year, the percentage of conventional loans has seen a steady rise, from 66 percent in April 2019 to 81 percent in April 2020. FHA and VA loans have experienced a general decline during this time, from 20 and 11 percent in April 2019, to 10 and 6 percent in April 2020, respectively. The biggest drop has occurred since March 2020 with FHA and VA loans falling from 16 and 8 percent, to 10 and 6 percent, respectively, and conventional loans rising from 74 to 81 percent in the same period (Ellie Mae 2020). Table 5-1 summarizes these loan products.

Table 5-1. Major Housing Loan Financing Programs Considered in Cumulative Impact Analysis

Loan	Eligibility	Summary and Relevance
Private Sector		
Conventional Loans	Anyone who qualifies in income and credit can obtain a loan. Borrowers are required to either provide a down payment of approximately 20 percent, or they are required to pay mortgage insurance until they have built equity of 20 percent of the loan.	Loans are not insured or guaranteed by the federal government. A conventional or conforming housing loan adheres to the guidelines set by Fannie Mae and Freddie Mac. It may have either a fixed or adjustable rate. Fixed-rate housing loans have a set interest rate for the entire length of the term, which can be between 10 and 30 years. An adjustable-rate housing loan has a term of 30 years with a low introductory rate for a fixed period followed by periodic adjustments according to a specific benchmark. As of April 2020, comprise approximately 80 percent of total home purchase loans.
Federal Housing Loan Programs		
VA-Guaranteed Loans	Offered to eligible Veterans, as defined by 38 USC 3701. VA may pay a guaranty claim to the private lender in cases of borrower default resulting in foreclosure.	Borrowers can receive up to 100 percent loan-to-value financing for the purchase of a home without having to make a down payment and without having to purchase private mortgage insurance. May have either fixed or adjustable rates. Flexible credit underwriting standards. As of April 2020, comprise approximately 6 percent of total home purchase loans.

Table 5-1. Major Housing Loan Financing Programs Considered in Cumulative Impact Analysis

Loan	Eligibility	Summary and Relevance
Federal Housing Administration (FHA) Loans Part of Department of Housing and Urban Development (HUD)	Available to all types of borrowers, but they must meet both FHA’s requirements and those of the lender. FHA will cover lender’s losses if the homeowner defaults on the loan resulting in foreclosure.	Housing loan insured by the FHA. Borrowers may apply for a FHA loan through a FHA-approved mortgage lender. Benefits include a small down payment and flexible guidelines for credit scores and debt-to-income ratios. Program allows down payments as low as 3.5 percent of the purchase price but requires mortgage insurance, which increases the size of the monthly payments. As of April 2020, comprise approximately 10 percent of total home purchase loans.

Source: Ellie Mae 2020; Federal Reserve Bulletin 2017; Home Buying Institute 2019; NFM Lending 2013
 FHA = Federal Housing Administration; USC = United States Code; VA = Department of Veterans Affairs

5.2.1.1 New Home Construction Financing Data

The USCB provides national and regional data on the number of new housing units authorized by building permits – broken out for single-family homes by different stages of construction (e.g., authorized but not started, started, under construction, and completed) and by type of financing for the housing loan programs that finance the majority of new home construction: conventional loans, FHA, VA, and cash. The data are for new, privately owned housing units, excluding “HUD-code” manufactured (mobile) homes (USCB 2019). Table 5-2 includes historical financing data (1999 – 2018), by loan type, for new single-family houses “completed.” Regional breakouts of these data are shown in bar graph format (Figures 5-1 through 5-4) for four regions in the United States: Northeast, Midwest, South, and West regions. Annual data was collected for each calendar year (January 1 through December 31). Note the Census data do not include a similar breakout for loan financing of new multi-family home construction, for example, and cannot be directly compared to VA’s HLP data (historical and projected) identified in Sections 1.4, Overview of the Current Housing Loan Program, and 4.0, Environmental Consequences, Introduction, of this PEIS. However, it does offer a useful comparison between financing types to see the general contributions of each to the total volume of loans for newly constructed homes in the United States and to support the cumulative impact analysis. Note that the data in Table 5-2 show similar contributions and trends over time for new construction as those described previously for all home purchase types (existing and new construction loans). As shown by the data, VA-guaranteed loans for newly constructed homes comprise a very small percentage of the total number of loans for newly constructed homes in the United States (generally under 10 percent). In addition, the regional breakout shows that there are higher numbers of loans for newly constructed homes (VA-guaranteed and total loans) in the South and West regions than in the Northeast and Midwest regions. The lowest volumes were in the Northeast region of the United States. Data was not provided for U.S. Territories.

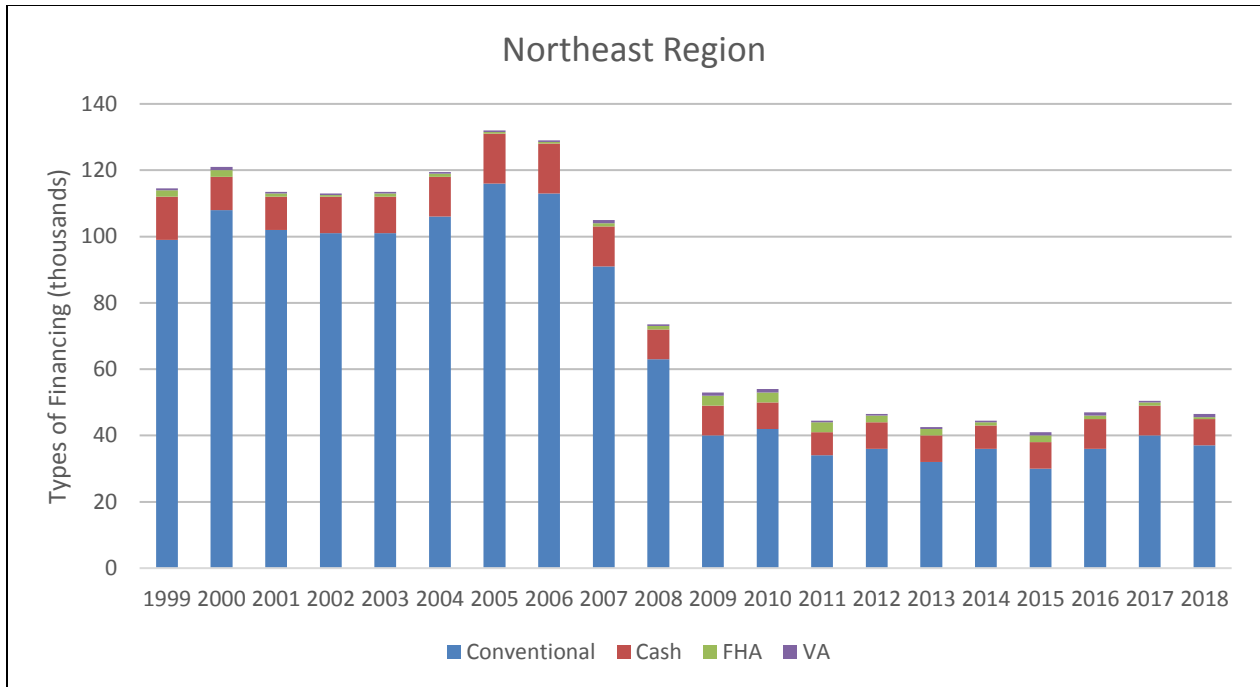
Table 5-2. Type of Financing for New Single-Family Houses: United States

Year	Type of Financing (in thousands) ^a					Percent Distribution ^a			
	Conventional	FHA	VA	Cash	TOTAL	Conventional	FHA	VA	Cash
1999	1,001	114	41	107	1,270	79	9	3	8
2000	983	116	32	104	1,242	79	9	3	8
2001	1,013	109	34	97	1,256	81	9	3	8
2002	1,066	117	39	99	1,325	80	9	3	8
2003	1,141	103	36	101	1,386	82	7	3	7
2004	1,299	90	34	103	1,532	85	6	2	7
2005	1,443	59	28	101	1,636	88	4	2	6
2006	1,458	49	29	116	1,654	88	3	2	7
2007	1,072	34	25	85	1,218	88	3	2	7
2008	639	82	30	68	819	78	10	4	8
2009	345	92	29	55	520	66	18	6	11
2010	312	99	38	47	496	63	20	8	9
2011	296	67	36	48	447	66	15	8	11
2012	318	75	37	53	483	66	15	8	11
2013	348	68	33	54	569	61	12	6	10
2014	392	54	35	65	620	63	9	6	10
2015	408	67	35	64	647	63	10	5	10
2016	472	86	43	59	738	64	12	6	8
2017	506	82	47	65	795	64	10	6	8
2018	546	74	43	72	840	65	9	5	9

Source: USCB 2019

^a. Financing type may not equal totals because of rounding. Percentages computed from unrounded figures.

FHA = Federal Housing Administration; VA = Department of Veterans Affairs

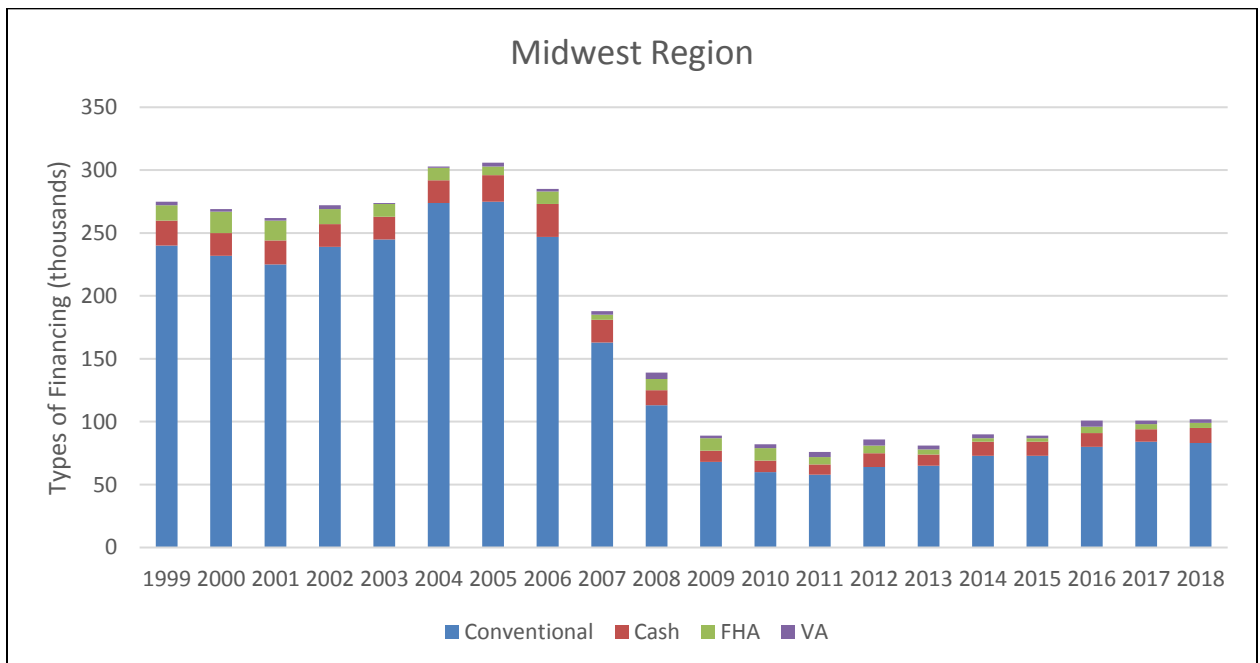


Source: USCB 2019

FHA = Federal Housing Administration; VA = Department of Veterans Affairs

Note: Northeast Region includes: Maine, Massachusetts, Rhode Island, Vermont, New Hampshire, Connecticut, New York, New Jersey, and Pennsylvania.

Figure 5-1. Types of Financing for Newly Constructed Homes in Northeast Region

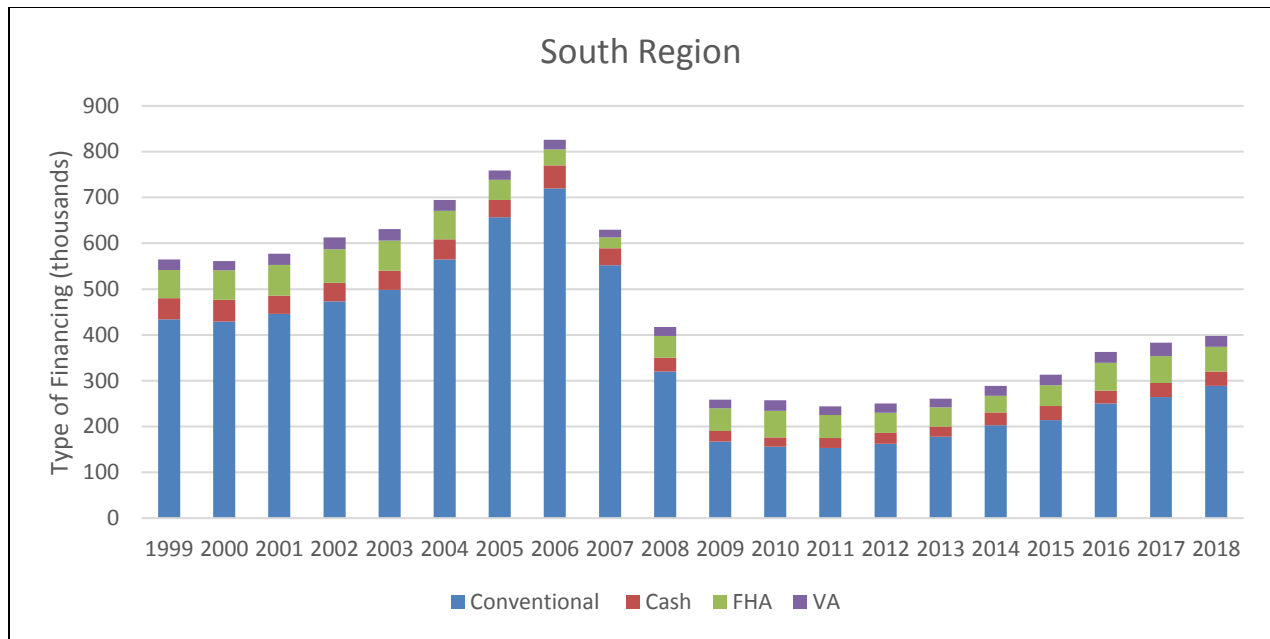


Source: USCB 2019

FHA = Federal Housing Administration; VA = Department of Veterans Affairs

Note: Midwest Region includes: Ohio, Indiana, Illinois, Wisconsin, Michigan, Minnesota, North Dakota, South Dakota, Iowa, Kansas, Missouri, and Nebraska.

Figure 5-2. Types of Financing for Newly Constructed Homes in Midwest Region

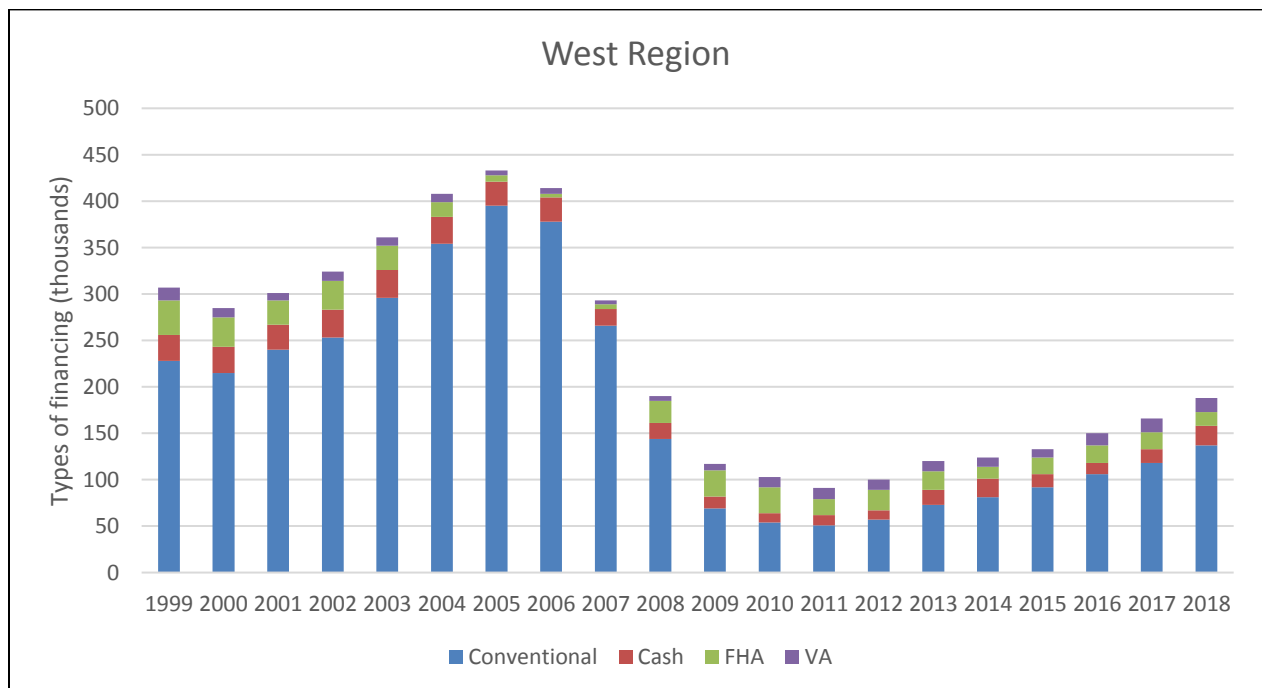


Source: USCB 2019

FHA = Federal Housing Administration; VA = Department of Veterans Affairs

Note: South Region includes: Delaware, Maryland, Virginia, District of Columbia, West Virginia, North Carolina, South Carolina, Florida, Georgia, Kentucky, Tennessee, Alabama, Mississippi, Louisiana, Alabama, Oklahoma, and Texas.

Figure 5-3. Types of Financing for Newly Constructed Homes in South Region



Source: USCB 2019

FHA = Federal Housing Administration; VA = Department of Veterans Affairs

Note: West Region includes: Montana, Wyoming, Idaho, Colorado, Utah, Nevada, Arizona, New Mexico, Alaska, Hawaii, Washington, Oregon, and California.

Figure 5-4. Types of Financing for Newly Constructed Homes in West Region

In addition to the regional information presented in Figures 5-1 through 5-4, VA made the following observations regarding national sales data for newly constructed homes:

- More housing loans are in the South than any other area over the 20-year period, followed by the West; similarly, VA-guaranteed loans are highest in the South and West.
- Very few FHA and VA-guaranteed loans occur in the Northeast Region.
- There have been many years in which more homes were purchased using cash than through FHA and VA-guaranteed loans combined, especially in the Northeast and Midwest.

The housing market has yet to fully recover from the financial crisis of 2008. However, recovery efforts since the recession are more evident in the South and West than in the Northeast or Midwest (Freddie Mac 2018). Trends shown by this data are supported by other studies, including a 2014 study by Trulia Research, also published in *Forbes* (Trulia Research 2014; *Forbes* 2014). In addition, there have been several studies published on where Veterans live that show large Veteran populations in southern and western states, although there are large pockets of Veterans in other parts of the country, too. Their findings, such as those from the National Conference of State Legislators (Schultz 2017) and U.S. News (Leins 2019), rely mostly on Census Bureau data; they are discussed further in Section 5.2.1.2. It should be noted that Census Veteran data do not include all military personnel eligible for all VA HLP loans. Specifically, Selected Reservists and National Guardsmen are not included as Veterans in the Census data if they have not been called to active duty, as defined by the U.S. Census Bureau.

5.2.1.2 Where Veterans Live

Veterans live in every state and community in the United States. Three states – California, Florida, and Texas – each have more than 1 million Veterans. Another 10 states each have more than 500,000 Veterans: Arizona, Georgia, Illinois, Michigan, New York, North Carolina, Ohio, Pennsylvania, Virginia, and Washington (Schultz 2017). States with the highest Veteran percentages of the total adult population in 2018 include Alaska, with the highest at 12.6 percent; Wyoming and Virginia, both at 10.3 percent; and Montana at 10.2 percent. Maine, Hawaii, Idaho, South Carolina, New Mexico, Arizona, Oklahoma, and Nevada were the next highest, between 9 and 9.7 percent, with Maine at 9.7 percent (Leins 2019). A breakout of the Veteran percentage of total adult population in 2017 is provided for every state in Appendix D of this PEIS, as compiled by the U.S. Census Bureau (2017) and grouped by VA RLC. These 2017 data show that four states had percentages at 11 percent or above and 12 states at 10 percent or above, as follows: Montana (11.4); Maine and Virginia (11.2); Wyoming (11); Washington (10.6); New Mexico (10.5); Hawaii and Nevada (10.4); Oklahoma and South Carolina (10.3); West Virginia (10.2); New Hampshire, Idaho, South Dakota, and Arizona (10.1); and Oregon (10). Data are from the U.S. Census Bureau, and while the Census Bureau's American Community Survey did not collect data for Guam (last Census data compiled in 2010), other sources report a sizable Veteran population, as high as 20 percent (Leins 2019). A Census Bureau special report on Veterans in rural America shows that about 4.8 million Veterans, out of about 20.1 million Americans, lived in areas designated as rural by the U.S. Census Bureau between 2011 and 2015 (Holder 2017).

The Trulia Research 2014 study included a more comprehensive analysis of data from the U.S. Census Bureau with respect to where Veterans live (Trulia Research 2014). While the Census Veteran data do not include all military personnel eligible for all VA HLP loans, as noted above, the study captures the distribution and profile of the existing Veteran population within the United States, including Veterans living in both new and existing homes of all types and as both owners and renters. The Trulia study provides additional perspective in the consideration of potential cumulative impacts that supplements the national housing loan data presented in Section 5.2.1.1, New Home Construction Financing Data. More specifically, the Trulia study found that Veterans tend to live outside the larger markets. Its findings include the following (Trulia Research 2014).

- Approximately 1 in 12 civilian adults in the United States are Veterans, but this national average varies by specific metropolitan area. In some smaller metropolitan areas that figure is as high as 1 in 5; in several large metropolitan areas it is just 1 in 20.
- Generally speaking, Veterans tend to live in affordable smaller metropolitan and rural areas, near military installations, and places with fewer immigrants.
- Among the largest metropolitan areas, Colorado Springs, Colorado and Virginia Beach, Virginia have the highest concentrations of Veterans, while Miami, Florida; New York City, New York; and Los Angeles, California have the lowest. It should be noted that none of the largest (top 100) metropolitan areas made the top 10 list of metropolitan areas with the highest Veteran share of the population.
- Veterans tend to be older, with a median age of 65 compared to the 45-year old median age of civilian adults who did not serve in the Armed Forces.
- Veterans are more likely to be homeowners than other adults; the 79 percent homeownership rate for households headed by Veterans is significantly higher than the 63 percent rate of households headed by civilian non-Veterans.

Even adjusting for the age difference, homeownership is still approximately 7 percentage points higher for Veterans, due in part to VA-guaranteed loans and other incentives.

The 10 metropolitan areas with the highest percentages of Veterans have one thing in common: affordability. Several also have large military installations nearby, including Camp Lejeune in Jacksonville, North Carolina; Fort Hood in Killeen, Texas; and Fort Sill in Lawton, Oklahoma. In 7 of the largest 500 metropolitan areas, Veterans represent more than 20 percent of the civilian adult population (Trulia Research 2014). The top 10 metropolitan areas with the highest Veteran percentage of the population (2014) are shown in Table 5-3.

Table 5-3. Top 10 Metropolitan Areas with Highest Percentage of Veterans

Number	U.S. Metropolitan Area	Percent of Veterans in Civilian Adult Population
1	Crestview-Fort Walton Beach-Destin, Florida	22.3
2	Oak Harbor, Washington	22.0
3	Jacksonville, North Carolina	21.4
4	Killeen-Temple-Fort Hood, Texas	21.2
5	The Villages, Florida	20.4
6	Sierra Vista-Douglas, Arizona	20.2
7	Fayetteville, North Carolina	20.0
8	Lawton, Oklahoma	19.6
9	Clarkesville, Tennessee/Kentucky	19.2
10	Bremerton-Silverdale, Washington	19.1

Source: Trulia Research 2014

Note: Among 500 largest U.S. metropolitan areas; Veteran percentage taken from Census data.

According to the Trulia study, Florida includes the metropolitan area with both the highest share of Veterans, Crestview-Fort Walton Beach-Destin, and the lowest, Miami. Texas has Killeen-Temple-Fort Hood, with a high proportion of Veterans, and border towns with low concentrations. Another important finding of the study is that where Veterans live depends on when they served. Gulf War Veterans live in different places than World War II Veterans, not least because they are, on average, more than 4 decades younger. The study concluded that Veterans are more likely to live:

- Near military installations and areas with active-duty residents. This is especially true for Gulf War Veterans.
- In more affordable, lower density areas. Vietnam-Era Veterans, in particular, are more likely than other Veterans or civilian non-Veterans to live in small towns and rural areas.
- In areas with a lower share of foreign-born residents. This is especially true of older Veterans.
- In retirement areas, especially if they are Korean War or World War II Veterans. In fact, the metropolitan areas with the highest shares of these older Veterans are in Florida.

5.2.1.3 Territories of the United States

With respect to the U.S. Territories, no comparable housing data (new or existing) relating to financing has been identified. The major federal housing loan programs – FHA and VA – are available to eligible borrowers in each of the U.S. Territories; however lender options may be more limited as not all federal lenders would necessarily be able to work outside of the continental United States, and borrowers would still need to meet all eligibility requirements. Those who qualify for VA-guaranteed loans can use the benefit in any of the U.S. Territories, while the FHA housing loan program has been found to be more popular in Puerto Rico and the U.S. Virgin Islands (FedHome Loan Center 2020). With the exception of Puerto Rico, loan volumes are expected to be very small compared to the entire ROI given the small population and number of occupied housing units in each territory (see Population and

Demography Tables D-5 and D-8, and Housing Characteristics Tables D-21 and D-24 for the Phoenix and St. Petersburg RLCs in Appendix D, Socioeconomic Data by Regional Loan Centers). Specifically, American Samoa and the Northern Mariana Islands had the lowest number of owner-occupied housing units at 7,101 (73.3 percent of total occupied housing units) and 4,538 (28.3 percent of total occupied housing units), respectively. These are followed by Guam at 21,139 owner-occupied housing units (50.3 percent of total occupied housing units) and U.S. Virgin Islands at 20,700 (47.9 percent of total occupied housing units). The population and number of housing units in Puerto Rico are much larger and more comparable to one of the States; there were 821,738 owner-occupied housing units in Puerto Rico in 2010 (60 percent of total occupied housing units). Among the five U.S. Territories, American Samoa and Puerto Rico appear to have the highest percentage of homeowners (versus renters) in their populations (73.3 and 60 percent), and the Northern Mariana Islands has the lowest (28.3 percent).

5.2.2 Minor Federal Housing Loan Programs Considered in Cumulative Impacts Analysis

There are several other federal housing loan programs available to special populations to help finance both existing homes and newly constructed homes, including a multi-family housing rental assistance and loan programs within USDA's Office of Rural Development. The multi-family rental property assistance and loan programs target developers and lenders to increase the supply of affordable rental housing for low- and moderate-income individuals and families and to provide payments for eligible renters who cannot pay their rent. They could involve new construction of multi-family properties. Quantitative data are not available for these small loan-volume programs. However, they are considered in the cumulative impact analysis because they also can impact the housing market in a localized or otherwise more focused way. They include programs within the Departments of Agriculture (Rural Development and Rural Housing Service), Interior (Bureau of Indian Affairs), Housing and Urban Development; and VA's own Home Improvements and Structural Alterations Loan Program, which is the only VA program not included in the HLP with potential overlapping activity or geography considered for inclusion in this cumulative impact analysis. These programs are identified in Tables 5-4, 5-5, and 5-6. The programs are broken out by type, including those with features similar to the REO, NADL, and SAH programs. Specifically, Tables 5-4, 5-5, and 5-6 include programs relating to Real Estate Owned, Native Americans, and home rehabilitation activities, respectively. Table 5-7 includes a variety of other types of home loan assistance programs – public and private – that help special groups (e.g., low-income populations) obtain affordable housing. These housing loan and assistance programs are all considered in the cumulative impact analysis.

Table 5-4. Federal Housing Loan Programs for Real Estate Owned Properties in Cumulative Impact Analysis

Loan	Eligibility	Summary and Relevance
HUD		
HUD's REO Program	<p>The property is first available only to owner occupants and then opened up to the general public, including investors, if no acceptable bids or offers are made. HUD offers special discounts to government workers and government entities; and the Good Neighbor Next Door Program, which offers some HUD Home properties at a 50 percent discount to law enforcement officers, firefighters, emergency medical technicians, and public school teachers as described in Table 5-6.</p>	<p>A HUD REO home is a one- to four-unit residential property acquired by HUD as a result of a foreclosure action on an FHA-insured mortgage. HUD pays off the remaining mortgage and then puts it up for bid to recover the loss on the foreclosure claim. A HUD-REO home (HUD Home) is sold by the government often well below market value.</p>
USDA Rural Development		
REO Property Management	<p>Anyone can buy a home for sale by the U.S. Government but is required to work with a real estate agent, broker, or servicing representative to submit an offer or bid. Whenever possible, preference will be given to selling program property to buyers eligible for Direct or Guaranteed single family home programs.</p> <p>REO properties may benefit people in need of housing who can be reached in cooperation with other programs or Federal agencies (e.g., multi-family housing, housing for the homeless) and may be sold under special provisions for the purpose of providing affordable housing to very low and low-income families.</p> <p>Agency can negotiate a "cash for keys" option with former borrower for maximum of up to \$2,500.</p>	<p>USDA/RD/Farm Services Agency maintains a website that lists their properties for sale; the website provides information on the status of the home/farm property and a buyer's eligibility for potential program benefits. Depending on buyer's circumstances and status of property lists, the method of bidding and ultimate purchase of the home may vary.</p> <p>When funds are available, the Agency may offer financing to buyers of REO property. When program credit is offered, the loan is processed following set loan origination procedures.</p> <p>Nonprogram credit terms may be offered to investors or when the buyer is not eligible for Section 502 assistance or the property does not qualify as a program property. Chapter 11 provides instructions for processing loans on nonprogram terms.</p>
VA		
REO Property Management and VA Vendee Financing	<p>Veterans and non-Veterans may purchase VA REO properties and receive vendee (direct loan) financing.</p>	<p>Manage and sell properties acquired by VA and administer direct loans (also called "vendee") for purchase of REO properties. Proceeds from REO sales help offset the costs VA incurs resulting from foreclosed VA-guaranteed loans and help reduce credit costs associated with new VA-guaranteed loans for Veterans.</p>

Source: Donofrio 2014; USDA 2020, 2019

FHA = Federal Housing Agency; HUD = U.S. Department of Housing and Urban Development; RD = Rural Development; REO = Real Estate Owned; USDA = U.S. Department of Agriculture; VA = U.S. Department of Veterans Affairs

Table 5-5. Federal Housing Loan Programs for Native Americans Considered in Cumulative Impact Analysis

Loan	Eligibility	Summary and Relevance
BIA Office of Indian Energy and Economic Development		
Loan Guaranty for Indian Home and Business Development	Open to federally recognized Native American tribes, Alaska Native groups, and individually enrolled members of such tribes, groups, or business organizations with no less than 51 percent ownership by Native Americans or Alaska Natives.	Over \$1 billion provided in loan guaranties; loans may be used for a variety of purposes, including refinance, construction, and renovation.
HUD		
184 and 185a Programs for Native Americans and Native Hawaiian Home Loans Program established in 1992 to facilitate homeownership and increase access to capital in Native American communities. Section 184 is synonymous with home ownership for many Native Americans.	Specifically designed for Native American and Alaska Native families or tribally designated housing entities. Loans limited to single family housing (1-4 units) and fixed-rate loans for 30 years or less. Loans must be made in an eligible area. Program grown to include eligible areas beyond tribal trust lands. Full or partial approval in all states except 11 states in eastern United States.	Loans can be used on and off native lands for new construction, rehabilitation, purchase of an existing home, or refinance. As of August 2019, 44,351 loan guaranties (total of \$7.5 billion) had been made with Section 184. Nearly half of all loans (20,268) provided to tribes in Oklahoma. Next largest set of loans provided to tribes in Alaska (4,741), California, Arizona, and Washington (between 2,200 and 2,700).
VA		
Native American Direct Loans	Native Americans, Native Hawaiians, Alaska Natives, and those who are native to America Samoa, Guam, and the Northern Mariana Islands.	Provide direct home loans for eligible Native American Veterans to purchase homes on trust, tribal, or communally owned lands. Can also be used to refinance a prior NADL to reduce the applicable interest rate.

Source: BIA 2019; HUD 2019a, 2019b

BIA = Bureau of Indian Affairs; HUD = U.S. Department of Housing and Urban Development; VA = U.S. Department of Veterans Affairs

Table 5-6. Federal Housing Loan Programs for Rehabilitation Considered in Cumulative Impact Analysis

Loan	Eligibility	Summary and Relevance
HUD		
203(k) Rehabilitation Mortgage Insurance Program	Insures mortgages covering the purchase or refinancing and rehabilitation of a home that is at least a year old. Many rules and restriction of 203(b) program relatively convenient for low-income borrowers also apply here. Extent of rehabilitation may range from relatively minor (but must exceed \$5,000 in cost) to virtual reconstruction. Section 203(k) financing includes certain types of improvements and properties must meet certain basic energy efficiency and structural standards.	Primary program for rehabilitation and repair of single-family properties. Important tool for community and neighborhood revitalization, as well as to expand homeownership opportunities. Enables homeowners and homebuyers to finance both the purchase (or refinancing) of a house and the cost of its rehabilitation through a single mortgage or to refinance the rehabilitation of their existing home.
USDA Rural Development		
502 Direct Home Loan Program	Rural borrowers who meet certain income requirements: "rural residents who have a steady, low or modest income, and yet are unable to obtain adequate housing through conventional financing." Income must be no higher than 115 percent of the adjusted family income, which varies by county. No down payment is typically required.	Loan funds can be used to build, repair, renovate, or relocate a home, or funds can be used to purchase and prepare a site, including providing water and sewage facilities. The program assists low-income applicants by providing payment assistance to increase the applicant's repayment ability; the amount of assistance is determined by the adjusted family income. Loans typically comprise the smallest percentage (less than 5 percent) of total home purchase loans in the United States.
VA		
Home Improvements and Structural Alterations	Lifetime benefit up to \$6,800 may be provided to Veterans and Servicemembers with service-connected condition and Veterans with non-service-related condition rated 50 percent or more service connected. Lifetime benefit up to \$2,000 may be provided to Veterans with non-service-connected condition.	Grant providing medically necessary improvements and structural alterations to Veterans/Servicemembers' primary residence for various purposes (e.g., allowing entrance to or exit from their homes, use of essential lavatory and sanitary facilities, allowing accessibility to kitchen and bathroom sinks and counters, improving plumbing and electrical systems to accommodate installation of home medical equipment).
Specially Adapted Housing (SAH)	Certain Veterans with permanent service-connected disabilities.	Grants to assist eligible Veterans with certain service-connected disabilities to construct or adapt their home to accommodate their needs.
Other Public Assistance Programs		
Homes for Our Troops publicly funded 501(c)(3) non-profit organization	Disabled Veterans	Organization builds and donates specially adapted custom homes nationwide for severely injured post-9/11 Veterans, to enable them to rebuild their lives. Since 2004, 290 specially adapted homes have been built nationwide.

Source: Homes for Our Troops 2020; HUD 2020a, 2019c, 2019d; USDA 2019a, 2019b, 2019c; VA 2020
HUD = U.S. Department of Housing and Urban Development; USDA = U.S. Department of Agriculture; VA = U.S. Department of Veterans Affairs

Table 5-7. Other Federal and Public/Private Housing Assistance Programs Considered in Cumulative Impact Analysis

Loan	Eligibility	Summary and Relevance
HUD		
<p>203(h) Home Loan Program for Disaster Victims</p> <p>The Section 203(h) program allows the FHA to ensure housing loans made by qualified lenders to victims of a major disaster who have lost their homes and are in the process of rebuilding or buying another home.</p>	<p>Individuals are eligible for this program if their homes are in a Presidentially declared disaster area and if their homes were destroyed or damaged to such an extent that repair or replacement is necessary.</p> <p>Through Section 203(h), the federal government helps disaster victims recover by making it easier for them to get housing loans and become homeowners or re-establish themselves as homeowners.</p>	<p>This program provides mortgage insurance to protect lenders against the risk of foreclosure on housing loans to qualified disaster victims.</p> <p>Insured housing loans may be used to finance the purchase or reconstruction of a single-family home that will be the principal residence of the homeowner. Like the basic FHA mortgage insurance program it resembles (Section 203[b] Mortgage Insurance for One to Four Family Homes), Section 203(h) offers features that make recovery from a disaster easier for homeowners.</p> <p>To make sure that its programs serve low- and moderate-income people, FHA sets limits on the dollar value of the housing loan that may be insured (higher limits also exist for two- to four-family properties).</p>
<p>Good Neighbor Home Purchase Discount Program</p> <p>Encourages special groups to become homeowners in revitalization areas to make American communities stronger and safer.</p>	<p>First time buyers of eligible professions. Allows eligible law enforcement, teachers, and firefighters/emergency responders to participate.</p> <p>Eligible single-family homes located in revitalization areas which are listed exclusively for sale through the Good Neighbor Next Door Sales Program. Properties are available for purchase through the program for 7 days.</p>	<p>Initiatives are a collection of FHA's home sales programs to help communities and promote home ownership. HUD provides substantial incentive in the form of 50 percent discount off-list price of eligible properties. When they purchase properties under the program they agree to own and live in the property for a 3-year period with the property as their sole residence.</p> <p>HUD requires signing a second housing loan and note for the discount amount. The number of properties available is limited, and the list of available properties changes weekly.</p>
<p>Section 8 Housing Program</p> <p>Housing Choice Voucher Program</p>	<p>Major program for assisting very low-income families, the elderly, and the disabled to afford decent, safe, and sanitary housing in the private market.</p>	<p>Vouchers are administered locally by public housing agencies that receive funding from HUD. Housing subsidy is paid to the landlord directly by the public housing agency on behalf of the participating family; the family then pays the difference in amount owed. Participants are able to find their own housing, including single-family homes, townhomes, and apartments.</p>
USDA Rural Development		
<p>Multi-family Housing Rental Assistance</p> <p>Provides payments to owners of USDA-financed Rural Rental Housing or Farm Labor Housing projects on behalf of low-income tenants unable to pay their full rent.</p>	<p>Low-income tenants unable to pay their full rent. Payments made to property owners.</p> <p>Works with private sector lenders to provide financing to borrowers (developers) to increase supply of affordable rental properties.</p>	<p>Properties with low- or very low-income tenants qualify to receive assistance. Properties with very low-income tenants receive priority.</p> <p>Payments are made on behalf of tenants and become part of the property's income, which pays operational expenses.</p>

Table 5-7. Other Federal and Public/Private Housing Assistance Programs Considered in Cumulative Impact Analysis

Loan	Eligibility	Summary and Relevance
Multi-family Rental Property Development Loan Guaranties	For low- to moderate-income families in eligible rural areas and towns (35,000 or fewer people; federally recognized tribal lands).	Funds may be used for construction, improvement, and purchase of multi-family rental housing consisting of at least five units. These may include detached, semi-detached, row houses, or multi-family structures.
Multi-family Rental Property Development Direct Loans Direct loans provide competitive financing for affordable multi-family rental housing for eligible participants.	Low-income, elderly (62 and older) or disabled individuals and families in eligible rural areas; and federally recognized tribes who may live in rental housing.	Funds may be used for construction, improvement, and purchase of multi-family rental housing for low-income families, the elderly, and disabled individuals.
Other Public and Private Assistance Programs		
Habitat for Humanity (global nonprofit housing organization working in all 50 states)	Eligibility varies by location, but selection based on level of need for affordable housing and ability to pay affordable mortgage; targets low-income families in general	Works in variety of ways to create decent, affordable housing – new home construction and existing home renovation – particularly in urban areas; helps homeowners repair and improve their own homes and neighborhoods and addresses housing needs after a natural disaster.
Housing Assistance Council (HAC), national organization	Local nonprofits and government entities developing affordable housing for low-income, rural residents.	Funds and expands capacity of rural nonprofits and communities to develop affordable housing in the United States. Makes short-term loans at below market interest rates to eligible participants that develop affordable housing for low-income, rural residents.
State Funded Housing Assistance Programs	Created by states to help meet the affordable housing needs of low-income individual with mental illness, or other disabilities, or who may be homeless or at risk of homelessness.	Often intended to be temporary, or a “bridge” to more permanent, federally subsidized rental assistance. Over time, states have developed two types of programs: Subsidy programs and Homelessness Prevention and Rapid Re-Housing Programs.

Source: Habitat for Humanity 2020; HAC 2020; HUD 2020b; 2019c, 2019d; Technical Assistance Collaborative 2014; USDA 2019a, 2019b, 2019c; VA 2020

FHA = Federal Housing Agency; HAC = Housing Assistance Council; HUD = U.S. Department of Housing and Urban Development; USDA = U.S. Department of Agriculture; VA = U.S. Department of Veterans Affairs

5.2.3 Other Major Federal Programs Considered in Cumulative Impact Analysis

The cumulative impact analysis in this PEIS considers two other large-scale federal agency programs that could influence the housing market at a regional or local level. These include the following:

- Bureau of Land Management (BLM) federal land sales; and
- Department of Defense (DoD) BRAC program.

BLM has extensive public land holdings, mostly in 11 western states (Alaska, Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, and Wyoming) although some scattered parcels are in the east. The BLM does not sell land very often or in large quantities because of its congressional mandate to generally retain these lands in public ownership. However, BLM does occasionally sell lands identified as excess to the federal government's needs or more suited to private ownership. BLM sells land through direct sales or competitive bidding – typically advertising them in local newspapers, the *Federal Register*, and on various state BLM websites. The law (Federal Land Policy and Management Act of 1976) states that BLM can select lands for sale if, through land use planning, they are found to meet one of three criteria: 1) they are scattered, isolated tracts that are difficult or uneconomic to manage; 2) they were acquired for a specific purpose and are no longer needed; and 3) disposal of the land will serve important public objectives such as community expansion and economic development (BLM 2019).

DoD's previous rounds of BRAC over the past 25 years, at hundreds of DoD locations, have affected local communities. While future BRAC actions have not been specifically identified, senior DoD officials have indicated that DoD continues to have excess infrastructure and additional BRAC rounds may be needed. Servicemember declines and force realignments are expected to continue, at least through 2020, exacerbating stress on local economic conditions and housing markets in some areas near military installations. The level of impacts would depend on several factors, such as the number of military personnel affected, on-base versus off-base housing, housing prices and availability, family size, and off-base employment of other family members. However, the following types of impacts, especially relating to the housing market, could occur (Air Force Times 2019; HUD 2015).

- The military housing privatization initiative has provided means for military branches to update existing housing stock and expand on-base housing supply, but it has also made on-base privatized housing part of the local competitive housing market. The resulting competition can affect the local rental market and estimates of housing demand.
- Large cuts in military personnel at a base can result in the expansion of on-base family housing to civilians, military retirees, and the general public. Large shifts of households to privatized housing might negatively affect community housing markets.

Similarly, expanded or new programs at a base could result in a large population influx that may require construction of new housing – on- and off-base – to support the population influx, if existing housing supply is not sufficient. For example, the Eielson Air Force Base (Alaska) Regional Growth Plan concluded that 532 new housing units around North Pole, Alaska (city closest to Eielson) would be needed by 2022 to accommodate normal growth and demand by incoming families associated with two incoming F-35 squadrons.

Table 5-8 summarizes these two programs and indicates their relevance to the cumulative impact analysis.

Table 5-8. Other Major Federal Programs Considered in Cumulative Impact Analysis

Agency	Program
Bureau of Land Management (BLM) Land Realty Actions (Select Land Sales)	<p>Summary: BLM can sell lands if disposal of the land will serve important public objectives such as community expansion and economic development. BLM land sales have, in fact, proven to be a big driver for urban expansion and residential development in the southwestern United States. Federal land boundaries also can serve as a boundary to city limits and preclude development in certain parts of the country.</p> <p>Relevance: Program’s potential influence on both restricting and promoting residential development.</p>
Department of Defense Military Housing Base Realignment and Closures (BRAC) (Section 5.2)	<p>Summary: Previous rounds have affected local communities and additional BRAC rounds may be needed. Servicemember declines and force realignments are expected to continue, at least through 2020, exacerbating stress on local economic conditions and housing markets in some areas near military installations.</p> <p>Relevance: Potential effects on housing market; level of impacts would depend on several factors, such as the number of military personnel affected, on-base versus off-base housing, housing prices and availability, family size, and off-base employment of other family members.</p>

Source: BLM 2019; HUD 2015

5.3 EVALUATION OF CUMULATIVE IMPACTS

5.3.1 Methodology and Assumptions

As previously stated in Section 1.3, Scope of this PEIS, making loan guaranties, direct loans, and grants do not typically, in and of themselves, result in direct environmental impacts. The majority of effects from the HLP and other housing loan programs would be indirect in nature, as continuation of these programs could influence future growth-related effects but would not directly create them. These indirect effects are the primary focus of the cumulative impact analysis. Specifically, potential cumulative actions of concern would relate primarily to the construction of new large-scale residential communities by developers who base their decisions on overall market conditions and demand for housing (independent of the ability of Veterans to secure financing under the HLP, for example), and with the potential to result in future growth-related effects.

The cumulative impact analysis assesses the potential combined long-term and/or permanent effects of new residential development on resources, ecosystems, and human communities from the Proposed Action itself, which is national in scope – and whose potential impacts are being evaluated through FY 2030 – as well as any connected actions and other past, present, and reasonably foreseeable future projects. With respect to the Proposed Action, this analysis considers not just the effects of VA-guaranteed loans relating to new construction, but also NADL and SAH programs, to the extent they

also include new construction, but with the understanding their effects would be on a much reduced scale. It also considers the REO property management and sales programs that is not necessarily tied to new home construction.

Given the wide (national) geographic scope of the analysis and the identification of only minor impacts associated with continued implementation of VA's HLP (see Chapter 4, Environmental Consequences), the evaluation of cumulative impacts is a high-level and qualitative analysis that identifies general trends. In addition, while the ROI includes the entire United States of America and its Territories, the analysis also targets several geographic locations in the broad ROI, similar to the analysis in Chapter 4, where VA has indicated impacts are more likely to occur. A review of recent national housing sales data confirms that the geographic distribution of VA-guaranteed loans (see Figure 1-5, Section 1.4, Overview of Housing Loan Program) is generally consistent with national trends for all home sales and new home construction (USCB 2019). The data also show new home construction rates will increase for the foreseeable future, particularly in current high-population areas and may take several years to catch up to housing demand (Freddie Mac 2018). Therefore, similar to the Chapter 4 impact analysis, this cumulative impact analysis assumes:

- it is reasonably foreseeable that areas with currently high levels of new VA-guaranteed construction loans would remain high through FY 2030 (with some temporary local fluctuations);
- environmental effects associated with new home construction (from all home sales and new home construction) would be more likely to occur in specific high-population metropolitan areas; and
- the magnitude of environmental effects in these high-population metropolitan areas would tend to be higher than in other portions of the country.

This is further supported by recent construction data that show much of the new home construction in 2019 remains in the South and Southwest, where land and construction labor is less expensive and there are fewer costly and time-consuming building regulations (Lambert 2019). Top 10 cities the NAHB identified as booming for the new home construction market are consistent with the findings of this PEIS and include: three in Texas (Dallas, Houston, and Austin); Atlanta, Georgia; Phoenix, Arizona; Orlando, Florida; Seattle, Washington; and Washington, District of Columbia (NAHB 2014). Texas, for example, is known for its building-friendly laws and regulations. One reason building permits have increased in Houston is due to the rebuilding effort after Hurricane Harvey, which affected the area in August 2017. Data also show more people are moving into Phoenix, Arizona than anywhere else in the nation.

Finally, the analysis considers regulatory controls, mitigation, and standard industry (construction) best management practices that are in place to reduce long-term adverse impacts.

In considering the overall cumulative impacts of all national loans for newly constructed homes, the findings reflect the level of impact the Proposed Action contributes to the overall impact for each resource. A determination of importance with respect to cumulative impacts includes an assessment of the following:

- The effectiveness of mitigation measures or other embedded controls;
- The geographic context of the activities (e.g., undisturbed land versus previously disturbed areas); and
- The degree to which effects on a local scale are additive to similar effects from other projects and activities considering the relative contribution of the Proposed Action.

A final caveat regarding the findings is that unforeseen changes in factors such as economics, housing supply and public demand, interest rates, and federal, state, and local laws and policies could result in different outcomes than those projected for this analysis; such market-related effects cannot be quantified in this analysis.

Other assumptions related to the cumulative impact analysis include:

- Residential loan programs tied to the purchase of an existing home or for renovations within the footprint of an existing home are assumed, for purposes of this analysis, to have no adverse impact on the existing environment associated with that existing home.
- If the alternative does not have direct or indirect effects for a particular resource, there can be no cumulative effects resulting from the project because there would be no impacts to add to past, present, or reasonably foreseeable future actions.

5.3.2 Resource Specific Cumulative Impacts

As described in Chapter 4, construction of a new residential development would include ground-disturbing activities and an influx of new homeowners that would typically affect the following resource areas: air quality, infrastructure services (e.g., transportation, roads, water supply), physical disturbance to soils, water resources, wetlands, biological resources, land use and planning, and cultural resources. In addition, while some community services could be temporarily affected, depending on the size of the population influx, potential net beneficial impacts would be expected on socioeconomics resources (including workforce, taxes, and economy) and environmental justice populations, which include many Veterans.

This chapter presents a summary of the overall cumulative impacts of all home loan programs and other potentially relevant programs identified in Section 5.2, Past, Present, and Reasonably Foreseeable Future Actions, and the level of impact the Proposed Action contributes to the overall cumulative impacts for each resource. Potential impacts of concern include those where resource recovery would take several years and where resource modification would be permanent. Potential cumulative impacts are summarized in Table 5-9, which also uses the same qualitative descriptors as used in Chapter 4, Environmental Consequences, to characterize impacts on the respective resources:

- **Beneficial** – Impacts would improve or enhance the resource.
- **Adverse** – impacts would degrade or diminish the resource. Adverse impacts are further characterized by intensity as follows:

- **Negligible** – No apparent or measurable impacts are expected and may also be described as “none,” if appropriate.
- **Minor** – The action would have a barely noticeable or measurable impact on the resource.
- **Moderate** – The action would have a noticeable or measurable adverse impact on the resource. This category could include potentially significant impacts that could be reduced by the implementation of mitigation measures.
- **Significant** – The action would have obvious and extensive adverse impacts that could result in potentially significant impacts on a resource despite mitigation measures.

Negligible, minor, and moderate adverse impacts are characterized as “less than significant.”

Additionally, impacts may consist of direct or indirect impacts defined as follows:

- **Direct impacts** – Those occurring at the same time and place.
- **Indirect impacts** – Those occurring later in time or that are part of a chain of impacts, several increments removed from a direct action.

In summary, the potential cumulative impacts would be on a larger scale than those identified for each resource area in Chapter 4, Environmental Consequences – now ranging from potentially minor to moderate cumulative impacts, unless otherwise noted – with the greatest impacts projected to occur in the South and West regions of the United States. These are the regions in which the highest concentrations of new homes have been constructed in the recent past and where such construction is expected to continue. However, adherence to industry-standard construction practices and applicable federal, state, and local regulations and planning processes would help reduce cumulative impacts, and the potential impact contribution of the Proposed Action is expected to be negligible to minor for each resource area.

VA’s HLP and the other federal programs that provide direct loans, loan guaranties, and grants to populations who otherwise might have difficulty obtaining home financing, would collectively increase the pool of qualified home buyers across the nation. This increase in qualified home buyers would generally increase demand for new home construction, with periodic fluctuations driven by numerous other market factors. Although the resulting new home construction could occur anywhere in the United States or its Territories, it would be most notable in the urban and suburban areas of those large metropolitan areas in the U.S. South and West that are currently experiencing strong growth. Any federal, state, or local actions that released public lands for private residential and mixed-use development would further spread and accelerate home construction in those same regions.

Although they represent a small portion of total housing loan and construction activity, specialty loan programs offered by VA and other federal agencies could influence focused home construction activity in areas including Native American, Native Hawaiian, and Native Alaskan trust lands, as well as agricultural hubs. Likewise, DoD actions that affect the numbers and stationing of U.S. military forces could result in a moderately sized but relatively rapid increase in the use of VA’s HLP near military installations and an accompanying increase for the resources necessary to support local housing. While these programs could result in adverse impacts, the overall contribution of these programs to the potential cumulative impacts is expected to be minor.

Table 5-9. Cumulative Impact Summary

Resource	Anticipated Impact Level	Cumulative Impact Concern	Description	Potential Proposed Action Impact Contribution
Aesthetic Resources	Minor to Moderate	Construction and occupation of new homes would alter existing character and landscape of area.	Potential impacts would depend on nearby land uses, landforms, topography, visual character, and scenic vistas and resources. Adherence to industry-standard construction practices and applicable federal, state, and local regulations and planning processes would help reduce adverse cumulative impacts on aesthetics. In addition, the necessary local ordinances and zoning regulations, building codes, and city or county permits may require inclusion of special features and landscaping to help minimize impacts.	Negligible to Minor
Air Quality	Minor to Moderate	Increased air emissions from construction equipment, vehicles, dust, and in-home energy use.	Adherence to industry-standard construction practices and applicable federal, state, and local regulations and planning processes would help reduce adverse cumulative impacts on air quality.	Negligible to Minor
Biological Resources	Minor to moderate	Removal of native vegetation, displacement of wildlife, and disturbance of migratory birds or special status species during construction. Some of these effects would be permanent.	Potential impacts to vegetation and wildlife during construction due to ground disturbance and noise. Adherence to industry-standard construction practices and applicable federal, state, and local regulations and planning processes would help reduce adverse cumulative effects on biological resources.	Negligible to Minor
Cultural Resources	Minor	Any land development could disturb subsurface human remains or historic and archaeological resources through excavation and ground disturbance.	Assumes standard mitigation measures as enforced by federal, state, local, and/or tribal governments. Development near historic sites and districts would be subject to appropriate building constraints. Potential for moderate impacts under NADL at some locations in the West (within Denver and Phoenix RLCs).	Negligible to Minor

Table 5-9. Cumulative Impact Summary

Resource	Anticipated Impact Level	Cumulative Impact Concern	Description	Potential Proposed Action Impact Contribution
Floodplains, Wetlands, and Coastal Areas	Minor to Moderate	<p>Permanent loss (filling in), conversion of wetlands and potential for increase in riverine and coastal flooding through altered land uses (modification of function and quality of floodplains and coastal areas). Potential for increased flooding of existing and new homes in flood-prone or coastal areas from heavy rain and future increases in extreme weather events and rising sea levels associated with climate change. Roads and buildings (and occupants) in flood-prone areas are exposed to increased flood hazards, including inundation and erosion as new development continues. Increase in flooding hazards can also cause adverse effects (damage/loss of property, injury/loss of life) on occupants of existing and new housing located in flood-prone areas.</p>	<p>There is the potential to impact wetlands, particularly in the South given the extensive area they cover in this part of the country. The level of potential impacts would relate to the extent to which floodplains or coastal areas are made available for future development. Overall adverse impacts on floodplains, wetlands, and coastal areas from future home construction activities would be offset by numerous regulations and safeguards that would limit or set conditions on future growth in these areas.</p> <p>In accordance with federal requirements, flood hazard insurance is required on VA-guaranteed loans for property located in flood hazard areas. VA requires that such insurance be obtained as part of the loan transaction, and that it remain in-place throughout the life of the loan and during disposition of properties VA obtains as part of the foreclosure and REO process.</p>	Negligible to Minor
Geology and Soils	Minor	<p>Seismic hazards, erosion and loss of topsoil, and conversion of productive soil types (including prime farmland) to developed land.</p>	<p>Adherence to industry-standard construction practices and applicable federal, state, and local regulations and planning processes would help reduce adverse cumulative effects.</p>	Minor

Table 5-9. Cumulative Impact Summary

Resource	Anticipated Impact Level	Cumulative Impact Concern	Description	Potential Proposed Action Impact Contribution
Hydrology and Water Quality	Minor to Moderate	Increased strain on drinking water supplies from any population increase associated with new development. Impacts on water quality could arise from construction activities (increased sedimentation from land clearing), increased vehicle traffic/emissions, stormwater runoff, and accidental release of oil or lubricants.	Increased demand on groundwater and surface water supplies from new developments in the more arid western regions of the country may result in adverse impacts in areas where water availability has become more limited. Adherence to industry-standard construction practices and applicable federal, state and local regulations and planning processes would help reduce adverse cumulative effects on groundwater and surface water resources.	Minor
Infrastructure and Community Services	Minor to Moderate	Long-term occupancy of new homes could place higher demand on existing infrastructure (increased traffic, wear and tear on existing roadways) and community services (utilities, police and fire protection). Could require expansion of existing roads and increased capacity of existing services.	Areas where existing resources are pushed beyond their capacity to support demand may experience impacts. Water utility services may have difficulty supporting any increase in demand in more arid western regions of the country where water availability has become more limited. Adherence to applicable federal, state, and local regulations, plans, and permits, including zoning guidelines and rules relating to water rights.	Minor
Land Use and Planning	Minor to Moderate	Home construction, if part of new large-scale residential development project, would temporarily affect land use quality of immediate area during construction. Potential incompatible land uses in parts of western states with large swaths of agricultural, rural, or undeveloped areas may require a change or variance to accommodate residential development.	Most impacts would be short term; impacts assumed to be compatible in the long-term since adjacent land use compatibility would be regulated at the state or local level and enforced by local land policies. New developments in portions of western states could affect large swaths of agricultural, rural, or undeveloped areas and be incompatible with existing zoning. May require change or variance for existing or planned land use prior to development.	Minor

Table 5-9. Cumulative Impact Summary

Resource	Anticipated Impact Level	Cumulative Impact Concern	Description	Potential Proposed Action Impact Contribution
Noise	Minor (short term)	Increase in noise levels from construction activities.	Although construction noise could be moderately loud, it would be short term and intermittent. No long-term cumulative impacts expected. In addition, construction activities would generally be limited to daylight hours in conformance with federal, state, and local codes and ordinances as well as manufacturer-prescribed safety procedures and industry practices.	Negligible
Socioeconomics	Beneficial	Beneficial impacts to employment (construction jobs), economy (increased spending and revenues), and housing supply.	Beneficial impacts include provision of more and better housing to accommodate additional households; additional spending and investment in local shops and services; and additional investment in local area from increased jobs, spending, and revenues.	Beneficial Minor
Environmental Justice	Beneficial	Beneficial impacts to minorities and low-income populations who would have access to housing they otherwise could not afford.	Home ownership under all national housing loan programs would be a direct benefit to environmental justice populations (i.e., minority and low-income populations) who otherwise could not afford to purchase a home and, in some cases, could help improve current living conditions. Many programs target special populations in addition to Veterans, including active military, Native Americans and other minorities, and rural, low-income populations that meet certain eligibility requirements.	Beneficial Minor

NADL = Native American Direct Loan; NFIP = National Flood Insurance Program; RLC = Regional Loan Center; VA = U.S. Department of Veterans Affairs

5.3.2.1 Aesthetic Resources

Past home construction and residential development activities have caused minor to moderate cumulative impacts on aesthetics resources across the United States and its Territories, as more rural, undeveloped lands (e.g., agricultural or forested lands and open space areas) are converted to residential development. The ongoing and planned construction of new homes resulting from all existing loan guaranty programs may adversely affect local aesthetic resources in areas where the construction and occupation of new homes and residential developments would alter the existing character and landscape of an area.

Section 4.1, Aesthetic Resources, of this PEIS discusses the potential negligible to minor impacts resulting from VA's HLP on aesthetic resources. Potential cumulative impacts associated with other nationwide housing loan programs would have similar effects to those presented in Section 4.1 but to a substantially larger degree given the increase in the number of loans for newly constructed homes across the nation. These cumulative impacts would be greatest in areas with the highest rates in new home construction (i.e., the South and the West based on existing and projected data), especially in areas where new home construction is part of a new and larger residential development. The western United States, in particular, includes many important scenic resources (e.g., national parks, state parks, wilderness areas), although presumably federal and state lands would be preserved and protected from any encroaching residential development. Any federal, state, or local actions that released public lands for private residential and mixed-use development would further spread and accelerate home construction in those same regions.

New home construction resulting from all of the national housing loan programs in combination with other housing growth drivers (e.g., release of public lands for residential development) could help shape development patterns, scale, or character of an existing environment in certain locations, and lead, for example, to expanding urban sprawl which could have adverse impacts on local visual resources, especially if the previous land use was undeveloped and/or located within a scenic viewshed. In addition, residential developments also include extensive outdoor lighting systems that can cause light pollution that further reduces the visual quality in a given area. Depending on the nearby land uses, landforms, topography, visual character, and scenic vistas and resources, these impacts could be minor to moderate. The level of impact would depend on the visual or scenic quality of the site selected in each community and the surrounding land uses and the extent to which a new home or residential development could create a noticeable contrast to the existing landscape or scenic viewshed, as well as the presence and expectations of observers of the site and surrounding viewshed. The extent of any impact would also depend on the number of new homes in a given area, compatibility of the home building design, such as style (e.g., single family, townhome), lighting, material, number of floors, and density with existing or planned use and zoning of the selected sites. However, loans guaranteed through VA's HLP correspond to a very small portion of the overall number of new homes constructed

across the United States, and VA's HLP contribution to cumulative impacts on aesthetics would be negligible to minor.

With respect to the aesthetics of an individual home, local planning departments and Homeowners Associations (HOAs) also have input where they require pre-approval of plans for a dwelling – prior to construction. Such plan reviews may include consideration of the overall design and appearance of a home(s) and its compatibility with the surrounding environment (e.g., physical, social, and economic conditions). It is not VA's responsibility or purview to define the aesthetics of any particular building/home for the HLP, although the REO program may get involved in activities affecting the exterior aesthetics of a home where home repair would be needed. This is particularly true regarding any historic preservation requirements (also see Section 4.4, Cultural Resources), if there were special requirements for boarding-up a property (e.g., use of plexi-windows versus boards). In addition, SAH program grants would be involved in the approval of plans and specifications relating to exterior renovations to construct handicap accessibility ramps, lifts, etc.

Impacts on visual resources also would be offset through compliance with applicable federal, state, and local regulations, plans, and standards. In addition, the necessary local ordinances and zoning regulations, building codes, and city or county permits may require inclusion of special features and landscaping to achieve neighborhood goals for attractiveness, etc., if and where required.

5.3.2.2 Air Quality

Past, present, and planned home construction and residential development activities have caused, and may cause, minor to moderate cumulative impacts to air quality across the United States and its Territories. These impacts can be understood in terms of the current ambient air quality across the nation. Areas that have impaired air quality (i.e., those that do not meet NAAQS for one or more criteria air pollutants) are designated as nonattainment by the USEPA. The continued construction of new homes using any of the nation's existing loan guaranty programs may affect local or regional air quality in areas where increased populations would result in higher air emissions associated with the construction and occupancy of new homes. VA's HLP could have a negligible to minor contribution to these impacts.

Construction activities associated with building new homes or significant modifications to existing residences could adversely affect air quality. Potential impacts would include increased air emissions from construction equipment and vehicles as well as dust (particulate) emissions from ground-disturbing activities. Air emissions would also occur during use of newly constructed homes from in-home energy use (e.g., heating and yard maintenance) and offsite electricity generation to power new homes. If new construction results in a surge of people moving into an area, the traffic growth could also result in increased air emissions from vehicles. Construction impacts would likely be short term, but impacts associated with home use would likely be long term and would continue for the duration of time that the home is occupied.

Section 4.2, Air Quality, discusses the potential negligible to minor impacts to air quality from VA's HLP. Cumulative impacts associated with other nationwide loan programs would have similar effects to those presented in Section 4.2 but to a substantially larger degree given the increase in new home construction loan volumes across the nation. These cumulative impacts would be greatest in areas with the highest concentrations of newly constructed homes, specifically the West and South. Any federal, state, or local actions that released public lands for private residential and mixed-use development would further spread and accelerate home construction in those same regions. Loans guaranteed through VA's HLP would correspond to a small portion of the overall number of new homes constructed across the United States. Adherence to industry-standard construction practices and applicable federal, state, and local regulations and planning processes would help reduce adverse cumulative impacts on air quality.

Greenhouse Gases

Section 4.2 discusses potential greenhouse gas emissions that could occur as a result of VA's HLP. These greenhouse gas emissions could contribute to climate change, which is inherently a cumulative effect on a global scale and has been described in Section 3.2, Air Quality. However, in accordance with draft guidance issued by the CEQ (CEQ 2019), a separate discussion of cumulative effects related to greenhouse gases has not been prepared.

5.3.2.3 Biological Resources

Past, present, and planned home construction and residential development activities generally have caused, and may cause, minor to moderate cumulative impacts to biological resources across the United States and its Territories. However, the contribution to these impacts by VA's HLP would be negligible to minor.

Biological resources include vegetation; wildlife; migratory birds; special status species, such as those listed as threatened or endangered and protected by the federal Endangered Species Act; and the various habitats in which they are found. Grading and clearing activities associated with continued construction of new homes using any of the nation's existing loan guarantee programs would remove existing vegetation. This disruption of the native plant community could allow for the introduction of non-native species or reduce the availability of habitat for wildlife or migratory birds. The presence of machinery and personnel could result in accidental mortality of some wildlife. Noise due to construction activities could disturb wildlife, resulting in temporary or permanent displacement; such effects would be especially notable during the breeding or nesting season.

Some displaced wildlife are more tolerant of disturbance and may return to the area following the conclusion of construction activities; however, some displacement would be permanent and continue into the occupation phase of the home. Likewise, some species may utilize vegetation associated with landscaping and residential areas, but other species require native communities. The construction of new homes, and to a lesser degree the modification of existing structures, would likely result in minor to moderate, temporary to permanent impacts. If protected species were affected, the impact could be

greater due to the more limited population or availability of suitable habitat. However, state and federal agencies offer protections to threatened and endangered species through careful consultation efforts, permits, and planning processes with construction and infrastructure companies. Adherence to such measures would mitigate effects to species of concern, and impacts to protected species would be expected to remain less than significant.

Section 4.3, Biological Resources, discusses the potential negligible to minor impacts resulting from VA's HLP. Cumulative impacts associated with other nationwide loan programs would have similar effects to those presented in Section 4.3 but to a substantially larger degree given the increase in new home construction loan volumes across the nation. These cumulative impacts would be greatest in areas with the highest concentrations of newly constructed homes, specifically the West and South. Any federal, state, or local actions that released public lands for private residential and mixed-use development would further spread and accelerate home construction in those same regions. Loans guaranteed through VA's HLP would correspond to a small portion of the overall number of new homes constructed across the United States. Adherence to industry-standard construction practices and all applicable federal, state, and local regulations and planning processes would minimize adverse cumulative impacts on biological resources.

5.3.2.4 Cultural Resources

Past, present, and planned home construction and residential development activities have caused, and may cause, minor cumulative impacts to cultural resources across the United States and its Territories. However, the contribution to these impacts by VA's HLP would be negligible to minor. Although impacts to cultural resources are primarily site-specific in nature, a cumulative impact analysis of cultural resources across a broad area determines whether the impacts of the Proposed Action and related actions in a region, when taken as a whole, would substantially diminish the number of resources within the same or similar context or property type. Specifically, cumulative impacts could occur if VA's HLP and related activities affect local resources with the same level or type of designation or evaluation, affect other structures located within the same historic district, or involve resources that are significant within the same context.

As discussed in Section 4.4, Cultural Resources, of this PEIS, any land development activity could disturb subsurface human remains or historic and archaeological resources through excavation and ground disturbance. However, potential impacts from any new home construction, regardless of the precise location or programs affecting financing, would be appropriately mitigated by standard mitigation measures (including recordation, avoidance, and relocation), enforced by federal, state, local, and/or tribal governments. Likewise, residential development near known historic sites and districts would be subject to appropriate building constraints to avoid significant impacts. Therefore, cumulative effects to cultural resources would be minor.

5.3.2.5 Floodplains, Wetlands, and Coastal Zones

Past, present, and planned home construction and residential development activities have caused and may cause minor to moderate cumulative impacts on floodplains, wetlands, and coastal areas across the United States and its Territories. The cumulative impacts analysis for these special resource areas considers trends in wetland acreage or function, including permanent loss, conversion of forested wetlands, and the potential for increase in riverine and coastal flooding through altered land uses. It is important to remember in the analysis that the geographic boundaries of floodplains, wetlands, and coastal areas can overlap significantly in places such that impacts on one of these special resource areas may also affect the others at the same time.

Urban development has encroached upon floodplains, wetlands, and coastal areas throughout our history. Almost all major U.S. cities and many smaller communities are located on or near floodplains. A 1991 study by the Federal Emergency Management Agency that examined all mapped flood-prone communities estimated that there were nearly 22,000 flood-prone communities encompassing 93.6 million acres. This land includes areas next to rivers; streams; and the shores of oceans, lakes, and other bodies of water (i.e., coastal areas).

A more recent housing study identified the number of occupied units located within the 100-year and combined 100- and 500-year floodplains for the period 2011 to 2015. The study found that 5 percent of all occupied housing units in the United States were located in the 100-year floodplain and 10 percent were located in combined floodplains (NYU Furman Center 2017). Most of these housing units (64 percent) were single-family homes. Within the 100-year floodplain, 22 percent of occupied units were built prior to 1960 and 19 percent were built since 2000. Within the combined floodplains (100- and 500-year), 18 percent of occupied units were built since 2000. Table 5-10 presents state-specific data for those states in the South and West where most of the new construction has been occurring in recent years, as well as for those states in the North (Northeast and Midwest regions) that rank in the top 20 with respect to the number of occupied housing units that lie within the 100-year floodplain, or combined 100- and 500-year floodplain. Any federal, state, or local actions that released public lands for private residential and mixed-use development would further spread and accelerate home construction in those same regions. These states contain at least 6 out of the top 10 ranked states for the most occupied housing units in floodplains, including Florida which ranks at number one.

With respect to wetlands specific data, studies have shown that of the approximately 220 million acres of wetlands found in the lower 48 contiguous pre-settlement United States, approximately 53 percent were lost between the 1780s and 1980s, primarily from draining and filling activities associated with crop production. Since the mid-1970s, the rate of loss has decreased dramatically, primarily through the implementation and enforcement of wetland protection measures, public outreach/education, and restoration projects (USDA 2013). However, some losses continue to occur, including from urban development. Regionally, wetland loss in the Midwest and West has been primarily due to agriculture, including livestock grazing; in the East and South wetland loss has been largely due to development. In

the Southeast, where the greatest wetland acreages occur, wetlands continue to decline in quality because of nutrient loading, altered hydrology, and urban encroachment. Similarly, significant loss and degradation of Gulf Coast estuaries have occurred because of saltwater intrusion from canal construction and developmental pressures along the coastal regions (NRCS 1995).

Table 5-10. Occupied Housing Units within Floodplains by State

State	Occupied Housing Units within 100-year Floodplains	Rank ^a	Occupied Housing Units within 100- and 500-year Floodplains	Rank ^b
South/Southeast				
Florida	1,893,920	1	2,611,010	1
Texas	611,937	2	986,202	4
Louisiana	247,341	5	337,611	6
Georgia	231,038	6	298,567	8
North Carolina	225,079	8	281,882	9
Virginia	153,168	12	216,450	12
Mississippi	145,578	13	179,403	15
Alabama	128,846	15	158,299	18
Tennessee	92,805	20	121,718	23
South Carolina	NA	51	6,550	51
West (Northwest and Southwest)				
California	338,325	3	1,964,142	2
Arizona	99,388	19	1,774,600	3
Nevada	31,772	38	131,706	22
Oregon	59,125	27	107,332	26
Colorado	43,615	32	72,818	31
Washington	29,863	39	40,217	42
North (Northeast and Great Lakes)				
New York	269,165	4	426,338	5
New Jersey	230,313	7	302,674	7
Massachusetts	181,393	8	253,606	10
Pennsylvania	160,839	10	229,281	11
Ohio	159,918	11	209,247	13
Michigan	140,620	14	186,653	14
Indiana	121,354	16	166,822	17
Illinois	118,485	17	169,816	16
Wisconsin	112,100	18	139,529	19

Source: NYC Furman Center 2017
NA = Not Available

Section 4.5, Floodplains, Wetlands, and Coastal Zones, of this PEIS, discusses the potential negligible to minor impacts resulting from VA's HLP on floodplains, wetlands, and coastal areas. Potential cumulative impacts associated with other nationwide housing loan programs would have similar effects to those presented in Section 4.5 but to a substantially larger degree given the increase in new home construction from all national loan financing types, along with other home growth drivers across the nation, assuming past development trends in these resource areas continue, even at a lower rate. These cumulative impacts would expect to be greatest in areas with the highest rates in new home construction (i.e., the South and the West based on existing and projected data) and potentially greater in the South/Southeast with respect to wetlands since this part of the country contains the largest concentration of wetlands, particularly coastal wetlands. Any federal, state, or local actions that released public lands for private residential and mixed-use development would further spread and accelerate home construction in those same regions.

Home construction activities in floodplain, wetland, and coastal areas, particularly if they are part of a new, large-scale residential development project, could modify and adversely affect the functions and quality of natural areas and important ecosystems. In addition, widespread clearing of soil and vegetation as well as development can alter drainage patterns and result in increased runoff; flooding, and erosion. Changes to stream channels and coastal areas during urban development can limit their capacity to convey floodwaters. Roads and buildings constructed in flood-prone areas are exposed to increased flood hazards, including inundation and erosion, as new development continues. The level of potential impacts would relate directly to the extent to which floodplains or coastal zones are made available for future residential development.

Another important consideration from increased development in flood-prone areas is the potential increase in risk from future flooding events on the homeowners and homes themselves that occupy these areas. Flooding threatens the safety of residents and poses serious financial risks. Homeowners in coastal areas face similar potential risks and impacts from flooding. Coastal flooding events are likely to increase significantly in future years as a result of more intense storms (e.g., hurricanes) and rising sea levels associated with climate change. Even if future growth in floodplains and coastal areas slows, past development has altered the current drainage patterns such that future flooding risks likely remain to many homeowners in these areas.

In general, however, loans guaranteed through VA's HLP would correspond to a very small portion of the overall number of new homes constructed across the United States and its Territories, and the VA HLP's contribution to cumulative impacts on floodplains, wetlands, and coastal areas would be negligible to minor.

Overall adverse impacts on floodplains, wetlands, and coastal areas from future home construction activities would be offset by numerous regulations and safeguards that would limit or set conditions on future growth in these areas. These include VA's own restrictions on VA-guaranteed loans for housing within special flood hazard areas (or areas subject to regular flooding), which would help prevent or discourage occupancy in these areas; although loans could be approved in some situations where NFIP

insurance is secured. In addition, regulatory oversight under the Clean Water Act Section 404 permitting and required mitigation would help address adverse impacts on wetlands. Generally, if the construction or development plan disturbs or impacts less than 0.5 acre of wetlands, the development would be permitted. Otherwise, to obtain a permit, a wetland master plan must be drawn up, including every impact the development would have on wetlands and an application to the U.S. Army Corps of Engineers must be submitted. If saltwater wetlands are impacted, a permit from the state agency would likely be required as well. Mitigation is mandatory as compensation for any wetlands impacts, typically at a ratio of 2 acres of compensation for each acre impacted. Any impact on saltwater wetlands must be offset by improvements to saltwater impacts and the same with freshwater wetlands (Multi-Housing News 2017). Regulatory oversight and development restrictions under the NFIP and Executive Order 11988 would help address adverse impacts on floodplains. Finally, impacts to all three special resource areas would be further offset by compliance with other applicable federal (Coastal Zone Management Act and Coastal Barriers Resources Act), state, and local regulations, including zoning regulations and applicable building and housing codes, etc.

5.3.2.6 Geology and Soils

Human activities over time have resulted in cumulative impacts to geology and soils including exposure to seismic hazards, erosion and loss of topsoil, and conversion of productive soil types to developed land. Several parts of the country have experienced significant loss of prime farmland as a result of conversion to developments and other uses. The continued construction of new homes using any of the nation's existing loan guaranty programs may impact geology and soils in areas where increased populations would result in the construction and occupancy of new homes. VA's HLP could have a minor contribution to these impacts.

Construction activities associated with building new homes or significant modifications to existing residences would not be expected to have a significant impact on geologic resources. However, to the extent that VA's HLP results in new home construction in areas prone to seismic hazards, a greater number of homes and their residents could be exposed to such hazards. New home construction could have minor adverse impacts on soils, including erosion, removal of topsoil, and the potential for conversion of prime farmland and other types of productive soils to developed land. These impacts would likely be long term or permanent in nature. Occupancy and use of new homes would not be expected to result in adverse impacts to geology and soils.

Section 4.6, Geology and Soils, discusses the potential negligible to minor impact to geology and soils from VA's HLP. Cumulative impacts associated with other nationwide loan programs would have similar effects to those presented in Section 4.6 but to a substantially larger degree given the increase in new home construction loan volumes across the nation. These cumulative impacts would be greatest in areas with the highest concentrations of newly constructed homes, specifically the West and South. Any federal, state, or local actions that released public lands for private residential and mixed-use development would further spread and accelerate home construction in those same regions. Loans guaranteed through VA's HLP would correspond to a small portion of the overall number of new homes

constructed across the United States. Adherence to industry-standard construction practices and applicable federal, state, and local regulations and planning processes would help reduce adverse cumulative impacts.

5.3.2.7 Hydrology and Water Quality

Past, present, and planned home construction and residential development activities generally have caused, and may cause, minor to moderate cumulative impacts to hydrology and water quality across the United States and its Territories. However, the contribution to these impacts by VA's HLP would be minor.

Groundwater provides drinking water and water for industrial and irrigational uses from aquifers. The continued construction of new homes using any of the nation's existing loan guaranty programs may affect the availability or quality of groundwater in areas where increased populations would place long-term strain on such resources during occupancy of the new homes.

Construction activities associated with building new homes or modifying existing residences could adversely affect surface waters. Potential impacts would include increased sedimentation from clearing activities, ground disturbance, and increased vehicle and human traffic. Increased vehicle use near surface waters during construction and occupancy phases of a home building project could also decrease water quality through accidental releases of petroleum, oil, lubricants, or stormwater runoff introducing such contaminants to water resources. Long-term and permanent cumulative impacts from construction could include the placement of fill in surface waters or wetlands; impacts during occupancy could include effects to drinking water drawn from surface waters.

Section 4.7, Hydrology and Water Quality, discusses the potential negligible to minor impacts resulting from VA's HLP. Cumulative impacts associated with other nationwide loan programs would have similar effects to those presented in Section 4.7 but to a substantially larger degree given the increase in new home construction loan volumes across the nation. These cumulative impacts would be greatest in areas with the highest concentrations of newly constructed homes, specifically the West and South. Any federal, state, or local actions that released public lands for private residential and mixed-use development would further spread and accelerate home construction in those same regions. Loans guaranteed through VA's HLP would correspond to a small portion of the overall number of new homes constructed across the United States. Adherence to industry-standard construction practices and all applicable federal, state, and local regulations and planning processes would minimize adverse cumulative impacts on groundwater and surface water resources.

5.3.2.8 Infrastructure and Community Services

The cumulative impacts analysis of infrastructure and community services considers the potential long-term changes in transportation, utilities, public safety, and education. Short-term potential transportation impacts would be associated with the construction phase of each home building or modification project due to the presence of construction equipment and the influx of workers. Any

modifications to local transportation systems required to meet the increased need would be localized and performed in accordance with all applicable local plans, permits, and regulations.

The long-term occupancy of new homes would increase local populations, thus placing a higher demand on the existing infrastructure and community services. Potential transportation impacts include the need for expanded road systems to accommodate more residents, more drivers or riders on local transportation systems, and increased wear and tear on existing roadways requiring additional maintenance. In addition, each new home constructed under one of the nation's loan guaranty programs would place additional demand on utilities (e.g., water, electricity, and landfills), public services (e.g., law enforcement, fire protection, and medical services), and education.

Section 4.8, Infrastructure and Community Services, discusses the potential negligible to minor impacts resulting from VA's HLP. Cumulative impacts associated with other nationwide loan programs would have similar effects to those presented in Section 4.8 but to a substantially larger degree given the significant increase in new home construction loan volumes across the nation. These cumulative impacts would be greatest in areas with the highest concentrations of newly constructed homes, specifically the West and South. Any federal, state, or local actions that released public lands for private residential and mixed-use development would further spread and accelerate home construction in those same regions. Loans guaranteed through VA's HLP would correspond to a small portion of the overall number of new homes constructed across the United States.

The overall cumulative impact to nationwide infrastructure and community services would remain minimal, except in areas where existing resources are pushed beyond their capacity to support the demand. One such resource with potentially limited ability to keep pace with a substantial increase in local population is water utility services. The geographic areas with the most loans for new home construction are the West and South, which also are the more arid regions of the country in which water availability has become more limited. Additional new construction and increased populations in the West and South could result in minor to moderate cumulative effects to infrastructure and community services. However, all planned housing developments should occur in accordance with applicable federal, state, and local regulations, plans, and permits, including zoning guidelines and rules relating to water rights. Part of this planning process should include ensuring the availability of adequate utility services to meet the needs of the new homes and associated residents.

5.3.2.9 Land Use and Planning

Past, present, and planned home construction and residential development activities generally have caused, and may cause, minor to moderate cumulative impacts to land use and planning resources associated with increased market demand for new home construction across the United States and its Territories. However, the contribution to these impacts by VA's HLP would be minor when compared to other ongoing housing growth drivers.

The growth-related indirect effects could lead to land use and planning impacts depending on the local housing market conditions. Metropolitan areas within the South and West have the highest concentrations of VA-guaranteed loans. However, it should be noted that due to the expansive size of the western United States, development in these metropolitan regions may include large swaths of agriculture, rural, or undeveloped areas and new home construction (or a new larger residential development) and may be incompatible with existing land use and planning regulations requiring a change or variance for an existing or planned land use prior to site development.

Impacts related to home construction activities – particularly if part of a new, large-scale residential development project – would temporarily, or for the short term, affect the land use quality of the immediate area during construction but would not be incompatible in the long-term since adjacent land use compatibility would be regulated at the state or local level and enforced by local land use policies. Depending on the surrounding land uses, the completed homes could result in more dense residential areas or increased sprawl depending on the existing connectivity of the new residential land use area with nearby natural or manmade resources; however, construction under the HLP would not be expected to shape development patterns or further influence sprawl.

Section 4.9, Land Use and Planning, discusses the potential negligible to minor impacts resulting from VA's HLP. Cumulative impacts associated with other nationwide loan programs would have similar effects to those presented in Section 4.9 but to a substantially larger degree given the increase in new home construction loan volumes across the nation. These cumulative impacts would be greatest in areas with the highest concentrations of newly constructed homes, specifically the West and South. Any federal, state, or local actions that released public lands for private residential and mixed-use development would further spread and accelerate home construction in those same regions. Loans guaranteed through VA's HLP would correspond to a small portion of the overall number of new homes constructed across the United States. The overall cumulative impact to land use and planning resources would be minor to moderate due to local or regional regulations, zoning, and enforcement of local land use policies.

5.3.2.10 Noise

The cumulative impacts analysis of noise considers the long-term perceptible increases in ambient noise levels to persons or property. Most of the potential impacts from noise are short term and associated with the construction phase of each home building or modification project. Although construction noise could be moderately loud from activities, no long-term cumulative impacts would be expected in any specific location given the temporary and intermittent nature of the construction activities and the nationwide scale of the considered actions. Additionally, construction activities would generally be limited to daylight hours in conformance with federal, state, and local codes and ordinances as well as manufacturer-prescribed safety procedures and industry practices.

As discussed in Section 4.10, Noise, noise impacts related to home construction activities would result in short-term negligible to minor noise impacts, with greater impacts occurring to sensitive receptors

located closest to the construction area. Noise could result from the operation of construction equipment and from increased vehicular traffic due to the influx of workers. Cumulative impacts would be similar to those discussed in Section 4.10, but such impacts would be proportionally larger based on increases in regional new home construction activities. These cumulative impacts would be greatest in areas with the highest concentrations of newly constructed homes, specifically the West and South. Any federal, state, or local actions that released public lands for private residential and mixed-use development would further spread and accelerate home construction in those same regions. Loans guaranteed through VA's HLP would correspond to a small portion of the overall number of new homes constructed across the United States.

5.3.2.11 Socioeconomics and Environmental Justice

Past, present, and planned home construction and residential developments have resulted and may result in cumulative impacts on socioeconomic resources and environmental justice populations across the United States and its Territories. While the continued and planned construction of new homes resulting from all existing loan guaranty programs and other home growth drivers may affect socioeconomic resources (e.g., labor force, housing, and economy) and minority and low-income populations, the impacts are expected to be largely beneficial at local and regional levels. In addition, the contribution to any adverse impacts by VA's HLP would be negligible; however, VA's HLP would contribute to the overall beneficial impacts associated with home ownership that would result from nationwide housing loan programs, including new home construction loans. This would be especially true in those parts of the United States where the largest share of Veterans lives, such as in Florida, North Carolina, Texas, and Arizona. In general, Veterans tend to live near military bases and areas with active-duty residents, in more affordable, lower-density areas (small towns and rural areas), and in retirement areas (given the older age of many Veterans) (see Section 5.2).

Section 4.11, Socioeconomics and Environmental Justice, discusses the potential impacts resulting from VA's HLP on socioeconomic and environmental justice populations. Potential cumulative impacts associated with other nationwide housing loan programs would have similar effects to those presented in Section 4.11 but to a substantially larger degree given the increase in new home construction loan volumes across the nation. These cumulative impacts would be greatest in areas with the highest rates of new home construction (i.e., the South and the West based on existing and projected data) especially in areas where new home construction is part of a new and larger residential development. Any federal, state, or local actions that released public lands for private residential and mixed-use development would further spread and accelerate home construction in those same regions.

An increase in socioeconomic and environmental justice impacts associated with new home construction on a nationwide scale could result in positive impacts such as improvements in overall residential living conditions, including that of various minority and low-income populations, and (depending on the local market structure and situation and the price point being built) more affordable housing. New home construction, particularly as part of a new housing development, and home

remodeling can also have a direct positive impact on the local or even regional economy in parts of the country where there are a significant number of new home projects. Beneficial impacts to the economy could include an increase in employment and income, especially in the construction sector and sectors that support or are related to the construction industry; increased revenues to federal, state, and local governments; and an increase in the existing housing supply. States with higher unemployment rates and lower wages could benefit more from new home construction activities that result in increased job opportunities or improvements to the local economy. Potential impacts from an increase in new home construction would be expected to be positive if it resulted in more affordable and presumably better-quality housing. In general, however, demand and pricing for new housing would vary by region and be dependent on existing inventory (potential regional shortages), market/price segment of the housing being built, the extent of population growth, owner/renter mix, vacancy rates, and other factors. New construction could result in rising property values. Affordability would also be dependent on mortgage interest rates. Regions that show the highest concentrations of VA-guaranteed loans for newly constructed homes generally would be expected to receive greater benefits than other parts of the country because of increased new home ownership levels and greater economic activity that could benefit the local economy. This assumes housing is also affordable and the housing loan debt-to-income ratio is not too high (higher ratios could lead to increased risk of defaulting in the future). In regions where the housing market prices are too high, some residents (including Veterans or minority and low-income populations) may not be able to purchase a home, existing or newly constructed, and be forced out of the market.

Overall economic impacts to the community or region would be positive but the level of impact would vary by area and project size, the value of construction (per unit), land values, local employment rates and incomes, and tax structure. New housing construction (including the associated infrastructure) also has the potential to directly benefit those that occupy the new dwelling. In particular, home ownership under all of the national housing loan programs, whether of an existing home or newly constructed home, would be considered a direct positive benefit to those occupants who otherwise could not afford to purchase a home; in some cases, it would presumably help improve their current living conditions. Many of the nationwide housing loan programs target special populations – in addition to VA’s HLP for Veterans – to help them buy a home they otherwise could not afford. These populations include active military personnel, Native Americans, and rural and/or low-income populations that meet certain eligibility requirements. The specialty loan programs offered by VA and other federal agencies could influence focused home construction activity in areas including Native American, Native Hawaiian, and Native Alaskan trust or Corporation lands, as well as agricultural hubs. These programs offer the opportunity to afford better housing (e.g., multi-family rental programs) or home ownership instead of renting thereby building equity sooner than they otherwise would have been able to afford. Housing becomes more affordable thereby improving the overall financial portfolio of these special populations. The potential increase in jobs and income that would result from new home construction could also

benefit minority and low-income populations in need of work in the construction and related service industries.

Potential regional variations identified in Section 4.11, Socioeconomics and Environmental Justice, would also apply to potential cumulative impacts and thus be dependent on the level of loan activity found in a particular region, as well as the existing Veteran population, environmental justice populations, local housing shortages, home pricing and affordability constraints, and community service constraints within a given region. In addition, some variation within metropolitan versus rural areas would also be expected to occur. Specifically, parts of the country that experience more rapid growth in housing demand, such as parts of the South, Southwest, and Northwest, could experience a greater increase in socioeconomic and environmental justice impacts associated with the Proposed Action; although such impacts may be more positive in nature if they are associated with increased Veteran, minority, and low-income population home ownership levels.

Finally, because the potential for the largest cumulative impacts, both positive and negative, would appear to be associated with those of a new residential development at the local level – given that the new homes to be purchased would be mostly (if not wholly) supported by the various nationwide (new construction) housing loan programs currently in place, including both conventional and government-backed loan programs - these are highlighted more fully below. Note that the potential impacts would be on both the new residents seeking to buy a newly constructed home and established homeowners already living in the local area.

The initial response of many people to the possibility of a new residential development nearby is that it will reduce their well-being, such as access to local community services (quality of existing services may be reduced) and their own immediate environment (e.g., affected view, increased traffic, and road safety concerns) because of an increase in population in the area; this relates back to the ability of existing community services and infrastructure to meet increased population demands. At the same time, there are direct costs to the community from development, notably with respect to the disruption experienced by the surrounding area during the development/construction process (e.g., increase in dust/air pollution, noise, heavy machinery/trucks and traffic). Economically, residents may be worried about whether the market might respond to development by reducing prices of existing dwellings as a result of increased supply, or whether demand might decrease as a result of the degradation of local services; additional supply or loss of amenities could reduce property values.

A summary of the potential beneficial community impacts described previously include the provision of more and better housing to accommodate additional households; the possibility of increased property values if new development is well designed and complements or improves upon the existing housing mix or character; the possibility that development brings new infrastructure (e.g., transportation and community services); longer term improvement in affordability across the housing market; additional spending and investment in local shops and services; and additional investment in local area from increased jobs, spending, and revenues. Many of the potential adverse impacts – at least in the short -

term – would typically be borne directly by the already established households. The benefits of new home construction would be first realized by the new residents assuming ownership of those units (e.g., social and financial benefits of home ownership; and new, presumably good quality housing stock) and later would be spread more generally over the whole area (local economy).

Certainly, potential impacts to the local community from a nearby, newly constructed, residential development are not always clear cut, but rather constitute a gray area, as they can be both positive and negative. While a multiple array of factors usually come into play, in general, the effects would be dependent on the structural components, such as the design, layout, and physical properties of the new development and the neighborhood component, including offsite attributes where the new development is constructed. These attributes could relate to demographics, social factors, location – including surrounding land uses – and economics. The resulting impacts could be seen as desirable or undesirable depending on whether they affect the existing population in a positive or negative way.

One study conducted by the London School of Economics sought to address some of these issues by looking at a small number of sites to identify the factors that determine whether development will have a positive, negative, or neutral effect on the locality and therefore on home prices. Important in the short term is the extent of disruption generated by the development, and important in the long term is the impact it might have on the environment and community, in addition to home prices (London School of Economics 2015). Study findings are summarized below.

At a high level, the actual impact of new development on local housing prices depends heavily on supply and demand and the interdependence of local, neighboring, and regional markets. Over time, an increase in supply would reduce demand and could cause housing prices in an area to fall, at least in the short term, as a result of new development. The extent of such an effect depends on the scale of the project in relation to the local market, both by adding to supply and by the interest it generates among potential buyers. However, the effect is expected to be diffused across similar areas and likely be small. Pricing does not always decline as a result of development and where it has, such as during the construction phase, it has also tended to recover quickly. “In reality, there are many factors that would affect acceptability as well as the process of development, including the scale of the development, past use, and ownership of the land, the quality and nature of the design and the extent to which planners/developers mitigate adverse impacts” (London School of Economics 2015). Furthermore, as noted above, the direct benefits of home ownership to a new homeowner that the national home programs would offer, are also noteworthy. Many of the programs provide housing to those environmental justice populations (e.g., minority and low-income populations) that they otherwise could not afford and help to improve their existing living conditions.

CHAPTER 6 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS

As stated in 40 CFR 1502.6, NEPA requires a discussion of any irreversible and irretrievable commitment of resources. Irreversible resource commitments represent a loss of future options relating to potential other uses of the resources. It applies primarily to the use (or destruction) of nonrenewable resources, such as fossil fuels or cultural resources, and resources that are renewable only over long-time spans (e.g., soil). An irretrievable commitment of resources represents opportunities that are foregone for the period of the Proposed Action. It relates to the use of renewable resources, such as timber or human labor, as well as other opportunities that are foregone in favor of the Proposed Action.

This chapter discusses the effects of the HLP with regard to the irreversible and irretrievable commitment of resources. As noted previously, making loan guaranties, direct loans, and grants do not typically, in and of themselves, result in direct environmental impacts; the majority of impacts from implementation of the HLP would be indirect in nature, to the extent that continuation of the HLP could influence future growth-related effects. In addition, the number of new home construction loan guaranties approved under the HLP is very small compared to the total new home construction loans approved in the United States and would be expected to result in negligible to minor impacts. Nonetheless, implementation of the HLP could result in various short-term impacts associated primarily with new home construction and occupation of new residential housing that would, in turn, require the commitment of natural and man-made resources.

Below are some examples of questions to consider in determining the irreversible or irretrievable commitments of resources that would result from a potential action.

- Would natural or human-made resources be expended during project implementation? For instance, would fossil fuels, electricity, or similar resources be used as a result of the Proposed Action?
- Would natural resources (e.g., metals, raw building materials, water, or other materials) be needed in order to construct any structure included in the Proposed Action?
- Would biological resources (e.g., wetlands, wildlife habitats, or soils) or cultural resources (e.g., archaeological or historic properties) be physically altered or destroyed because of the Proposed Action?

The primary commitment of resources would be during the construction phase, but there would be some commitment of resources during occupation of the new home as well. These irreversible and irretrievable commitments would include the use of construction materials, energy, water, and impacts to land use, aesthetics, and cultural and biological resources. Human labor would also be committed to the construction of the new home construction and renovation. This commitment of time and available labor in the construction of new homes would represent an irretrievable commitment of resources.

Construction/Building Materials and Solid Waste. Construction of new homes would require the use of resources that may be considered non-renewable or not quickly replenished. These resources would include building materials such as lumber and other forest products, aggregate materials used in concrete and asphalt (e.g., sand, gravel, and stone), metals (e.g., steel, copper, and lead), and petrochemical construction materials (e.g., plastics). The use of sustainable design features and/or the use of environmentally friendly materials would help reduce the consumption of non-renewable building materials such as lumber, aggregate materials, and plastics.

Land Use and Aesthetics. Construction of new residential developments could lead to permanent alterations in land use and topography, including the permanent conversion of wetlands and changes to aesthetic and scenic values.

Water. Construction of new homes as part of a new residential development would require the use of water for activities such as dust control. It is anticipated that the temporary and intermittent demand for water during construction of new homes could be met by existing (local) available public water supplies throughout the period of construction. Residents living in newly constructed homes using VA-guaranteed loans would increase long-term demand for water. However, the demand would be minor compared to the anticipated demand from all new homes constructed, and local public works agencies would provide water to meet the long-term water needs of residents. The use of groundwater to satisfy these demands could be considered an irretrievable commitment of resources, depending on local aquifer conditions and recharge rates.

Energy Consumption. During new home construction, non-renewable fossil fuels would represent the primary energy source, and thus the existing finite supplies of these resources would be incrementally reduced. Fossil fuels, such as diesel, gasoline, and oil, would also be consumed in the use of construction vehicles and equipment. Fossil fuel demand could also increase as a result of new home occupancy. Any increase in fossil fuel use during home construction and occupancy would represent an incremental, irreversible use of these resources.

Biological Resources. The areas that would be occupied by new residential development would be irreversibly removed from natural habitat for the life of the development. In addition, the disturbance of areas for temporary construction activity could result in changes that would be irreversible over the long-term. The permanent conversion of vegetation resources and wildlife habitat, including wetlands and riparian areas, could represent an irreversible commitment of biological resources for the life of the proposed project and beyond if areas were not restored following abandonment, or if former vegetation cover and composition did not recover. Losses of wildlife during project construction would represent an irretrievable commitment of biological resources.

Cultural Resources. Cultural resources are nonrenewable resources, and any loss or damage to these resources would be irreversible. Residential development projects near known historic sites and districts would be subject to appropriate building constraints to avoid significant impacts, and state and local agencies would be responsible for implementing other cultural resource regulatory programs.

CHAPTER 7 RELATIONSHIP BETWEEN SHORT-TERM USES OF THE ENVIRONMENT AND LONG-TERM PRODUCTIVITY

CEQ's NEPA regulations (40 CFR 1502.16) require consideration of the relationship and potential trade-offs between the short-term uses of the environment and the maintenance and enhancement of long-term productivity. This involves considering whether the HLP, including any new home construction and renovation that could occur as a result of the program, would trade a resource value that might benefit the environment in the long-term for some short-term value to the government or the public. "Long-term" refers to the period over which VA would continue to implement the HLP, which is effectively an indefinite period for purposes of this analysis. For purposes of this analysis, "short-term" refers to a time span corresponding to the potential construction and homeowner occupation of a new residence, which would typically range from a few years to decades.

Implementation of the HLP would result in various short-term impacts associated primarily with new home construction, although the majority of effects from the HLP would be indirect and remote in nature as the HLP could influence future growth-related effects but would not directly create them. Making loan guaranties, direct loans, and grants do not typically, in and of themselves, result in direct environmental impacts.

The intensity of the impacts in a given location would vary throughout the construction period and would depend on the intensity of construction activity at a given location. The primary construction impacts would include noise, traffic congestion, and air quality, including fugitive dust and exhaust emissions from construction equipment and vehicles. Construction would also cause community disruption and may have adverse impacts on land use (e.g., if development occurs in previously undeveloped area), community services, transportation, cultural resources, aesthetics, and biological resources. Construction impacts are examined in detail in Chapter 4 and identified as negligible to minor based on the relatively small number of loan guaranties for newly constructed homes provided nationwide. The program also includes geographical restrictions whereby a property would not be eligible for program benefits if it was located in a sensitive area (e.g., floodplains, coastal barrier resources system areas, airport noise zones, utility easements, or areas of geological or soil instability). Positive impacts also result from the HLP, as described in Chapter 4 (Section 4.11, Socioeconomics and Environmental Justice), including favorable short-term effects on the local economy and communities who would benefit from increased income generated by direct jobs and workers in support of industries in vicinity of the new home.

Short-term uses are generally those that determine the present quality of life for the public, including Veterans. As described in Section 1.4, Overview of the Current Housing Loan Program, Chapter 1, Introduction, VA administers several programs under the HLP that assist Veterans in purchasing, rehabilitating, and maintaining homes. Continued implementation of VA's existing HLP – over both the short-term and long-term – would enable VA to provide housing loan guaranty benefits and other housing-related programs to help Veterans buy, build, repair, retain, or adapt a home for their personal occupancy.

INTENTIONALLY LEFT BLANK.

CHAPTER 8 LIST OF PREPARERS

U.S. Department of Veterans Affairs

Elysium Drumm
Supervisory Management Analyst
Housing Loan Program

Glenn Elliott
Director, Environmental Program Office
Construction & Facilities Management

Christine Modovsky
Environmental Engineer
Construction & Facilities Management

Glenn Wittman
Central Region Environmental Engineer (Retired)
Construction & Facilities Management

Gryphon Environmental

Robert Ford – Principal in Charge/Environmental Scientist
B.S., Environmental Science

Theresa Bosma – Project Manager
Ph.D., Natural Resources and Agricultural Sciences
M.S., Environmental Science
B.S., Biology

Joseph Grieshaber – Senior Environmental Scientist
M.B.A., Finance
M.S., Biology
B.S., Biology

Pamela Lawson – Document Production

Susan Smillie – Environmental Scientist
M.En., Environmental Science
B.S., Biology

Amanda Tyrell – Environmental Scientist
M.S., Environmental Sciences and Policy
B.S., Integrated Science and Technology

Fonda Wicker – Biologist
B.S., Wildlife and Fisheries Science

Potomac-Hudson Engineering, Inc.

Frederick Carey, P.E. – Principal in Charge/Senior Environmental Engineer
M.S., Environmental Engineering
B.S., Civil Engineering

Andrea Wilkes – Document Manager/Senior Environmental Engineer
M.A., Science Writing
B.S., Civil and Environmental Engineering
B.S., English Literature

David Berg – Senior Historic Preservation Specialist
M.A., U.S. History
M.A., Certificate of Historic Preservation
B.S., History and Archaeology

Gregory Jackson – Environmental Scientist
B.S., Environmental Earth Science

Erin Kouvosis – Environmental Scientist
M.S., Ecology
B.S., Conservation

Jamie Martin-McNaughton – Data Analyst/Environmental Scientist
B.S., Geology-Biology

Robert Naumann – Senior Environmental Scientist
M.S., Environmental Science
B.S., Natural Resources

Samir Qadir – Environmental Scientist
M.S., Environmental Policy
B.S., Electronics and Telecommunications Engineering

Melissa Secor – Environmental Scientist
B.S., Meteorology
B.S., Business Management

Deborah Shinkle – GIS Analyst
B.A., Environmental Studies

Mike West, P.E. – Senior Environmental Engineer
M.S., Environmental Engineering
B.S., Environmental Engineering

Brian Whipple, P.E. – Data Manager/Senior Environmental Engineer
M.S., Information Systems
B.S., Environmental Engineering

CHAPTER 9 REFERENCES

- 36 CFR (*Code of Federal Regulations*) 800.5(a)(1). Assessment of Adverse Effects. Accessed on February 1, 2021 at <https://www.law.cornell.edu/cfr/text/36/800.5>.
- 36 CFR 800.16(d). Protection of Historic Properties. Accessed on May 4, 2020 at <https://www.achp.gov/sites/default/files/regulations/2017-02/regs-rev04.pdf>.
- 38 CFR 26. Environmental Effects of the Department of Veterans Affairs (VA) Actions. Accessed on April 30, 2020 at <https://www.govinfo.gov/content/pkg/CFR-1998-title38-vol2/pdf/CFR-1998-title38-vol2-part26.pdf>.
- 38 CFR 36.4317(c)(7). Servicer Reporting Requirements. Accessed on April 30, 2020 at <https://www.law.cornell.edu/cfr/text/38/36.4317>.
- 38 CFR 36.4332. Geographical Limits. Accessed on April 30, 2020 at <https://www.law.cornell.edu/cfr/text/38/36.4332>.
- 38 CFR 36.4351. Minimum property and construction requirements. Accessed on April 30, 2020 at <https://www.law.cornell.edu/cfr/text/38/36.4351>.
- 40 CFR 50. National Primary and Secondary Ambient Air Quality Standards. Accessed on May 11, 2020 at <https://www.govinfo.gov/content/pkg/CFR-2016-title40-vol2/pdf/CFR-2016-title40-vol2-part50.pdf>.
- 40 CFR 51. Requirements for Preparation, Adoption, and Submittal of Implementation Plans. Accessed on June 5, 2020 at <https://www.law.cornell.edu/cfr/text/40/part-51>.
- 40 CFR 52.21. Prevention of Significant Deterioration of Air Quality. Accessed on May 11, 2020 at <https://www.govinfo.gov/content/pkg/CFR-2011-title40-vol3/pdf/CFR-2011-title40-vol3-sec52-21.pdf>.
- 40 CFR 63. National Emission Standards for Hazardous Air Pollutants for Source Categories. Accessed on May 11, 2020 at <https://www.govinfo.gov/content/pkg/CFR-1998-title40-vol8/pdf/CFR-1998-title40-vol8-part63.pdf>.
- 40 CFR 93. Determining Conformity of Federal Actions to State or Federal Implementation Plans. Accessed on May 11, 2020 at <https://www.govinfo.gov/content/pkg/CFR-2010-title40-vol20/pdf/CFR-2010-title40-vol20-part93.pdf>.
- 40 CFR 258. Criteria for Municipal Solid Waste Landfills. Accessed on April 30, 2020 at <https://www.govinfo.gov/content/pkg/CFR-2011-title40-vol25/pdf/CFR-2011-title40-vol25-part258.pdf>.

- 40 CFR 1500-1508. Regulations for Implementing the Procedural Provisions of NEPA. 2005. Accessed on April 30, 2020 at https://www.energy.gov/sites/prod/files/NEPA-40CFR1500_1508.pdf.
- 83 FR (*Federal Register*) 32952. "Notice of Intent to Prepare a Programmatic Environmental Impact Statement of the Department of Veterans Affairs Housing Loan Program." Department of Veterans Affairs, *Federal Register* [Volume 83, Number 136]. July 16, 2018.
- 7 USC (*United States Code*) 2801. Noxious Weeds. Repealed on June 20, 2000. Accessed on April 30, 2020 at <https://uscode.house.gov/view.xhtml?path=/prelim@title7/chapter61&edition=prelim>.
- 7 USC 4201. Agriculture - General Provisions. Accessed on April 29, 2020 at <https://codes.findlaw.com/us/title-7-agriculture/7-usc-sect-4201.html>.
- 15 USC 2601 et seq. Toxic Substances Control Act. Accessed on April 30, 2020 at http://www.khlaw.com/Files/26324_TSCA_15_U.S.C._2601_-_2697.pdf.
- 16 USC 470aa-470mm. National Historic Preservation Act. Accessed on April 29, 2020 at <https://www.nps.gov/history/local-law/nhpa1966.htm>.
- 16 USC 668 et seq. Bald and Golden Eagle Protection Act. April 30, 2004. Accessed on April 30, 2020 at <https://www.fws.gov/le/USStatutes/BEPA.pdf>.
- 16 USC 703 et seq. Migratory Bird Treaty Act. April 30, 2004. Accessed on April 30, 2020 at <https://www.fws.gov/le/USStatutes/MBTA.pdf>.
- 16 USC 1131-1136. Wilderness Act. September 3, 1964. Accessed on April 30, 2020 at <https://parkplanning.nps.gov/showFile.cfm?projectID=29224&MIMEType=application%252Fpdf&filename=WildernessActText%2Epdf&sfid=152506>.
- 16 USC 1241. National Trails System. Accessed on May 10, 2020 at [https://uscode.house.gov/view.xhtml?req=\(title:16%20section:1241%20edition:prelim\)](https://uscode.house.gov/view.xhtml?req=(title:16%20section:1241%20edition:prelim)).
- 16 USC 1271. Wild and Scenic Rivers. October 2, 1968. Accessed on May 10, 2020 at <https://www.law.cornell.edu/uscode/text/16/1271>.
- 16 USC 1361 et seq. Marine Mammal Protection Act. April 30, 2004. Accessed on April 30, 2020 at <https://www.fws.gov/le/USStatutes/MMPA.pdf>.
- 16 USC 1451 et seq. Coastal Zone Management - Congressional Findings. Accessed on April 30, 2020 at <https://www.govinfo.gov/content/pkg/USCODE-2012-title16/html/USCODE-2012-title16-chap33-sec1451.htm>.
- 16 USC 1453, Section 304. Coastal Zone Management Act of 1972. Accessed on June 5, 2020 at https://www.aphis.usda.gov/aphis/resources/lawsandregs/environmental_protection/coastal_zone/ct_coastal_zone_sec_304.

- 16 USC 1531 et seq. Endangered Species – Congressional Findings and Declaration of Purposes and Policy. Accessed on April 30, 2020 at <https://www.govinfo.gov/content/pkg/USCODE-2012-title16/html/USCODE-2012-title16-chap35-sec1531.htm>.
- 16 USC 3501. Costal Barrier Resources – Congressional Statement of Findings and Purpose. Accessed on April 29, 2020 at <https://uscode.house.gov/view.xhtml?path=/prelim@title16/chapter55&edition=prelim>.
- 16 USC 4401 et seq. North American Wetlands Conservation – Findings and Statement of Purpose. Accessed on April 30, 2020 at <https://www.gpo.gov/fdsys/pkg/USCODE-2010-title16/pdf/USCODE-2010-title16-chap64-toc.pdf>.
- 16 USC 6101 et seq. Age Discrimination in Federally Assisted Programs – Statement of Purpose. Accessed on April 30, 2020 at <https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title42-section6101&num=0&edition=prelim>.
- 25 USC 3001-3013. Native American Graves Protection and Repatriation Act. Accessed on April 29, 2020 at <https://uscode.house.gov/view.xhtml?path=/prelim@title25/chapter32&edition=prelim>.
- 25 USC 5131. Publication of Lists of Recognized Tribes. Accessed on June 5, 2020 at <https://uscode.house.gov/view.xhtml?hl=false&edition=prelim&req=granuleid%3AUSC-prelim-title25-section5131&f=treesort&num=0&saved=%7CCKHRpdGxIOjI1IHNIY3Rpb246NTEzMCBIZGI0aW9uOnByZWxpbSkGT1lgKGdyYW51bGVpZDpVU0MtcHJlbGltLXRpdGxIMjUtc2VjdGlvbjUxMzAp%7CdHJlZXNvcnQ%3D%7C%7C0%7Cfalse%7Cprelim>.
- 33 USC 1251 et seq. Navigation and Navigable Waters – Congressional Declaration of Goals and Policy. Accessed on April 29, 2020 at <https://codes.findlaw.com/us/title-33-navigation-and-navigable-waters/33-usc-sect-1251.html>.
- 38 USC 2101(a) and (b). Acquisition and Adaptation of Housing: Eligible Veterans. Accessed on April 30, 2020 at <https://www.law.cornell.edu/uscode/text/38/2101>.
- 38 USC 2102(a). Limitations on assistance furnished. Accessed on February 1, 2021 at <https://www.law.cornell.edu/uscode/text/38/2102>.
- 38 USC 3703. Basic Provisions Relating to Loan Guaranty and Insurance. Accessed on April 30, 2020 at <https://www.law.cornell.edu/uscode/text/38/3703>.
- 38 USC 3704(a). Restrictions on Loans. Accessed on April 30, 2020 at <https://www.law.cornell.edu/uscode/text/38/3704>.
- 38 USC 3704(c). Restrictions on Loans. Accessed on April 30, 2020 at <https://www.law.cornell.edu/uscode/text/38/3704>.

- 38 USC 3710. Purchase or Construction of Homes. Accessed on April, 30, 2020 at <https://www.law.cornell.edu/uscode/text/38/3710>.
- 38 USC 3721. Veterans Benefits – Incontestability. Accessed on May 8, 2020 at <https://www.govinfo.gov/content/pkg/USCODE-1999-title38/pdf/USCODE-1999-title38-partIII-chap37-subchapIII-sec3721.pdf>.
- 38 USC 3765(1). Veterans Benefits – Definitions. Accessed on February 2, 2021 at <https://www.law.cornell.edu/uscode/text/38/3765>.
- 42 USC 300f et seq. Safety of Public Water Systems. Accessed on April 30, 2020 at <https://www.gpo.gov/fdsys/pkg/USCODE-2011-title42/pdf/USCODE-2011-title42-chap6A-subchapXII.pdf>.
- 42 USC 4001 et seq. Flood Disaster Protection Act. August 1997. Accessed on April 30, 2020 at https://www.fema.gov/media-library-data/20130726-1752-25045-9854/frm_acts.pdf.
- 42 USC 4321 et. seq. Congressional Declaration of Purpose. Accessed on April 30, 2020 at <https://www.law.cornell.edu/uscode/text/42/4321>.
- 42 USC 4901 et seq. Noise Control Act of 1972. Amended August 23, 1988. Accessed on April 30, 2020 at https://www.gsa.gov/cdnstatic/Noise_Control_Act_of_1972.pdf.
- 42 USC 6901 et seq. The Public Health and Welfare – Congressional Findings. Accessed on April 30, 2020 at <https://codes.findlaw.com/us/title-42-the-public-health-and-welfare/42-usc-sect-6901.html>.
- 42 USC 7401. The Public Health and Welfare. Accessed on May 11, 2020 at <https://codes.findlaw.com/us/title-42-the-public-health-and-welfare/42-usc-sect-7401.html>.
- 42 USC 7701. Earthquake Hazards Reduction – Congressional Findings. Accessed on April 29, 2020 at <https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title42-section7701&num=0&edition=prelim>.
- 42 USC 9603(e). Notification Requirements Respecting Released Substances. Accessed on May 1, 2020 at <https://www.law.cornell.edu/uscode/text/42/9603>.
- 54 USC 300101 et seq. National Preservation Programs, Policy. Accessed on April 29, 2020 at <https://www.govinfo.gov/content/pkg/USCODE-2014-title54/html/USCODE-2014-title54-subtitleIII.htm>.
- 54 USC 300308. Historic Property. Accessed on May 1, 2020 at <https://www.law.cornell.edu/uscode/text/54/300308>.

- 54 USC 302101–302108. National Register of Historic Places. Accessed on June 5, 2020 at [https://uscode.house.gov/view.xhtml?req=\(title:54%20section:302101%20edition:prelim\)](https://uscode.house.gov/view.xhtml?req=(title:54%20section:302101%20edition:prelim)).
- Air Force Times. 2019. Alaska Communities Prepare for Incoming F-35 Squadrons at Eielson Air Force Base. June 2, 2019. Accessed December 2019 at <https://www.airforcetimes.com/news/your-air-force/2019/06/02/alaska-communities-prepare-for-incoming-f-35-squadrons-at-eielson-air-force-base/>.
- AirNow. 2018. Air Quality Index (AQI) Basics. Accessed April 13, 2018 at <https://www.airnow.gov/index.cfm?action=aqibasics.aqi>.
- Alaska Department of Environmental Conservation. 2008. Groundwater in Alaska. October 2008. Accessed May 2, 2018 at <http://dec.alaska.gov/eh/pdf/dw/dwp-groundwater-fact-sheet-2008.pdf>.
- Alaska DNR (Alaska Department of Natural Resources). 2018a. Well Surveying and Groundwater Facts. Accessed May 2, 2018 at <http://dnr.alaska.gov/mlw/water/hydro/components/groundwater.cfm>.
- Alaska DNR. 2018b. Surface Water. Accessed May 3, 2018 at <http://dnr.alaska.gov/mlw/water/hydro/components/surface-water.cfm>.
- Alaska Public Lands Information Centers. 2016. *Maps of Northern Alaska*. Accessed online May 7, 2018 at <http://www.alaskacenters.gov/index.cfm>.
- America’s Scenic Byways. 2018. Includes listing of America’s Scenic Byways and All-American Roads. Last accessed May 3, 2018. Available at: <https://scenicbyways.info/>.
- America’s State Parks. 2018. State Park Facts. Last Accessed May 3, 2018. Available at: <https://www.stateparks.org/about-us/state-park-facts/>. State-specific park information available at: <https://www.stateparks.com/usa.html>.
- American Hospital Association. 2019. Fast Facts on U.S. Hospitals, 2019. Last updated January 2019. Accessed August 3, 2019 at <https://www.aha.org/statistics/fast-facts-us-hospitals>.
- American Rivers. 2018. Columbia River. Accessed May 3, 2018 at <https://www.americanrivers.org/river/columbia-river/>.
- American Samoa Travel Guide. 2018. Geography. Last accessed May 3, 2018. Available at: <http://americansamoa.southpacific.org/americansamoa/geography.html>.
- Anderson, J.R., E.E. Hardy, J.T. Roach, and R. Witmer. 1976. *A Land Use and Land Cover Classification System for Use with Remote Sensor Data*. U.S. Department of the Interior, Geological Survey. Washington, DC: United States Government Printing Office.

- Annex 8 Subcommittee. 2015. Groundwater science relevant to the Great Lakes Water Quality Agreement: A status report. Executive Summary. October 2015. Accessed April 25, 2018 at https://binational.net/wp-content/uploads/2015/12/gw_2015_summary_en_final.pdf.
- Arcese, P., J.N. Smith, and M.I. Hatch. 1996. Nest Predation by Cowbirds and Its Consequences for Passerine Demography". The Proceedings of the National Academy of Sciences. Accessed November 11, 2019 at <https://www.pnas.org/content/93/10/4608>.
- ASCE (American Society of Civil Engineers). 2017. 2017 Infrastructure Report Card. *A Comprehensive Assessment of America's Infrastructure*. Accessed March 27, 2018 at <https://www.infrastructurereportcard.org/wp-content/uploads/2017/10/Full-2017-Report-Card-FINAL.pdf>.
- Asia-Pacific Migratory Waterbird Conservation Committee. 2001. *Asia-Pacific Migratory Waterbird Conservation Strategy: 2001 – 2005*. Accessed on May 17, 2018 at <http://www.jawgp.org/anet/p2001e.htm>.
- Audubon Alaska. 2016. *Tongass National Forest*. Accessed online May 7, 2018 at <https://ak.audubon.org/conservation/tongass-national-forest>.
- Ayotte, J., and K. Robinson. 1997. *National water quality assessment program: New England Coastal Basins: U.S. Geological Survey Fact Sheet FS-060-97*. Accessed April 18, 2018 at <http://pubs.usgs.gov/fs/fs-060-97/>.
- Baker, E.T. Jr., and James R. Wall. 1974. Summary Appraisals of the Nation's Ground-Water Resources—Texas-Gulf Region. December 1974. Accessed April 29, 2018 at http://www.twdb.texas.gov/publications/reports/other_reports/doc/misc_groundwater%20resources.pdf?d=27243.49999986589.
- Banks, Duren, Joshua Hendrix, Matthew Hickman, and Tracey Kyckelhahn. 2016. National Sources of Law Enforcement Employment Data. April 2016. Revised October 4, 2016. Accessed April 17, 2018 at <https://www.bjs.gov/content/pub/pdf/nsleed.pdf>.
- Banks, J.L. and R. McConnell. 2015. National Emissions from Lawn and Garden Equipment. Accessed October 21, 2019 at <https://www.epa.gov/sites/production/files/2015-09/documents/banks.pdf>.
- Barlow, Jeannie, Bruce Lindsey, and Kenneth Belitz. 2016. Groundwater Quality in the Southeastern Coastal Plain Aquifer System, Southeastern United States. Fact Sheet 2016-3076. September 2016. Accessed April 24, 2018 at <https://pubs.usgs.gov/fs/2016/3076/fs20163076.pdf>.
- Bartolino, J.R. and J.C. Cole. 2002. Groundwater Resources of the Middle Rio Grande Basin, Water Resources Circular 1222. U.S. Geological Survey. Accessed March 2018 at <http://pubs.usgs.gov/circ/2002/circ1222/pdf/chap9.pdf>.

- Bearden, Brian, Frances Castro, Peter Houk, Derek Chambers, and Clarissa Bearden. 2008. Commonwealth of the Northern Mariana Islands Integrated 305(b) and 303(d) Water Quality Assessment Report. Revised October 2008. Accessed November 21, 2019 at http://www.deq.gov.mp/resources/files/branches/WQS/305b_2008_Final.pdf.
- Becker, Carol J. 2006. Comparison of Ground-Water Quality in Samples From Selected Shallow and Deep Wells in the Central Oklahoma Aquifer, 2003 – 2005. Scientific Investigations Report 2006-5084. 2006. Accessed May 4, 2018 at <https://pubs.usgs.gov/sir/2006/5084/pdf/sir2006-5084.pdf>.
- Becker's Hospital Review. 2014. 8 Statistics on Hospital Capacity. March 17, 2014. Accessed April 17, 2018 at <https://www.beckershospitalreview.com/patient-flow/8-statistics-on-hospital-capacity.html>.
- Bedinger, M.S. and R.T. Sniegocki. 1976. Summary Appraisals of the Nation's Ground-Water Resources—Arkansas-White-Red Region. Geological Survey Professional Paper 813-H. 1976. Accessed April 29, 2018 at <https://pubs.usgs.gov/pp/0813h/report.pdf>.
- Berndt, Marian P., Brian G. Katz, James A. Kingsbury, and Christy A. Crandall. 2014. Water Quality in the Upper Floridan Aquifer and Overlying Surficial Aquifers, Southeastern United States, 1993-2010. Circular 1355. 2014. Accessed April 24, 2018 at <https://pubs.usgs.gov/circ/1355/pdf/circ1355.pdf>.
- BLM (Bureau of Land Management). 2019. FAQs [Frequently Asked Questions] about Federal Land Sales. U.S. Department of the Interior. Accessed December 2019 at <https://www.blm.gov/sites/blm.gov/files/FAQs%20about%20Federal%20Land%20Sales.pdf>.
- BLM. 2018. U.S. Department of Interior. Bureau of Land Management Visual Resources. Visual Resources Glossary. Last accessed June 2018. Available at: <http://blmwyomingvisual.anl.gov/glossary/index.cfm>.
- BLM. 2013. *Bureau of Land Management - Nevada*. U.S. Bureau of Land Management. Accessed online May 8, 2018 at <https://www.blm.gov/nevada>.
- BLM. 1986. BLM-H-8410-1 Visual Resource Inventory. Accessed May 21, 2020 at https://www.blm.gov/sites/blm.gov/files/program_recreation_visual%20resource%20management_quick%20link_%20BLM%20Handbook%20H-8410-1%20C%20Visual%20Resource%20Inventory.pdf.
- Bloyd, R.M. Jr. 1975. Summary Appraisals of the Nation's Ground-Water Resources—Upper Mississippi Region. Geological Survey Professional paper 813-B. Accessed April 26, 2018 at <https://pubs.usgs.gov/pp/0813b/report.pdf>.

- Blloyd, Richard M., Jr. 1974. Summary Appraisals of the Nation's Ground-Water Resources – Ohio Region. Geological Survey Professional Paper 813-A. 1974. Accessed April 25, 2018 at <https://pubs.usgs.gov/pp/0813a/report.pdf>.
- Bohac, Charles E. and Amanda K. Bowen. 2012. Water Use in the Tennessee Valley for 2010 and Projected Use in 2035. July 2012. Accessed April 25, 2018 at https://www.tva.gov/file_source/TVA/Site%20Content/Environment/Environmental%20Stewardship/Water%20Quality/water_usereport.pdf.
- Bolt, Beranek, and Newman. 1971. *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances*. Prepared for the U.S. Environmental Protection Agency, Office of Noise Abatement and Control, Washington, D.C. December 31, 1971.
- Brutsaert, Wilfried. 2009. *Annual drought flow and groundwater storage trends in the eastern half of the United States during the past two-third century*. Theoretical and Applied Climatology. 100(1):93-103. March 2009. Accessed April 29, 2018 at <https://www.researchgate.net/publication/227243199>.
- Bureau of Indian Affairs. 2019. Loan Guaranty, Insurance, and Interest Subsidy Program. Loan Guarantee Brochure. Division of Capital Investment: Helping Guarantee the Future of Indian Country. Office of Indian Energy and Economic Development (IEED). Accessed December 2019 at <https://www.bia.gov/as-ia/ieed/loan-guaranty-insurance-and-interest-subsidy-program> and https://www.bia.gov/sites/bia.gov/files/assets/as-ia/ieed/pdf/DCI-WhoWeAre-2019-broch_R3web%20%281%29.pdf.
- California Department of Water Resources. 2015. California's Groundwater Update 2013. A Compilation of Enhanced Content for California Water Plan Update 2013. April 2015. Accessed May 2, 2018 at <https://www.water.ca.gov/-/media/DWR-Website/Web-Pages/Water-Basics/GroundWater/Files/Resources-And-Reports/Californias--Groundwater-Update-2013.pdf>.
- California Water Board. 2008. Fact Sheet: Status of Perennial Estuarine Wetlands in the State of California. Surface Water Ambient Monitoring Program. Accessed September 2018 at https://www.waterboards.ca.gov/water_issues/programs/swamp/docs/wetlands/ew_factsheet.pdf. Full report available at: https://www.waterboards.ca.gov/water_issues/programs/swamp/docs/wetlands/estuarine_wetlands.pdf.
- Castle, Stephanie L., Brian F. Thomas, John T. Reager, Matthew Rodell, Sean C. Swenson, and James S. Famiglietti. 2014. Groundwater depletion during drought threatens future water security of the Colorado River Basin. *Geophysical Research Letters*. Research Letter 10.1002/2014GL061055. August 29, 2014. Accessed May 1, 2018 at <https://agupubs.onlinelibrary.wiley.com/doi/epdf/10.1002/2014GL061055>.

- CEC. (Commission for Environmental Cooperation). 1997. Ecological Regions of North America: Towards a Common Perspective. Commission for Environmental Cooperation, Montreal, Quebec, Canada. Revised 2006. Accessed April 26, 2018 at <http://www3.cec.org/islandora/en/item/1701-ecological-regions-north-america-toward-common-perspective-en.pdf>.
- Cederstrom, D.J., E.H. Boswell, and G.R. Tarver. 1979. *Summary Appraisals of the Nation's Ground-Water Resources—South Atlantic-Gulf Region*. Geological Survey Professional Paper 813-O. 1979. Accessed April 24, 2018 at <https://pubs.usgs.gov/pp/0813o/report.pdf>.
- CIA (Central Intelligence Agency). 2019. *The World Factbook – Virgin Islands*. Accessed online November 11, 2019 at https://www.cia.gov/library/publications/the-world-factbook/geos/print_vq.html.
- CEQ (Council on Environmental Quality). 2019. Draft National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions. *Federal Register* [Volume 84, Number 123]. June 26, 2019. Accessed December 17, 2019 at <https://www.govinfo.gov/app/details/FR-2019-07-24/2019-15697/summary>.
- CEQ. 2005. Guidance on the Consideration of Past Actions in Cumulative Effects Analysis. Interagency Memorandum from Connaughton, J.L. June 24, 2005.
- CEQ. 1997. CEQ Environmental Justice Guidance Under the National Environmental Policy Act. December 10, 1997. Accessed November 2, 2019 at https://www.epa.gov/sites/production/files/201502/documents/ej_guidance_nepa_ceq1297.pdf.
- Chappelle, Caitrin, Ellen Hanak, and Thomas Harter. 2017. Just the Facts: Groundwater in California. Public Policy Institute of California Water Policy Center. May 2017. Accessed May 2, 2018 at http://www.ppic.org/wp-content/uploads/JTF_GroundwaterJTF.pdf.
- Chesapeake Bay Foundation. 2020. Geography and Facts – Chesapeake Bay. Accessed January 2020. <https://www.cbf.org/about-the-bay/chesapeake-bay-watershed-geography-and-facts.html>.
- CITES (The Convention on International Trade in Endangered Species of Wild Fauna and Flora). 2019. Discover Cites/What is CITES. Accessed November 11, 2019 at <https://www.cites.org/eng/disc/what.php>.
- Colorado Department of Natural Resources. 2015. Colorado 2015 State Wildlife Action Plan. Retrieved from Chapter 4: Threats and Conservation Actions Overview. Accessed on May 10, 2018 at: http://cpw.state.co.us/Documents/WildlifeSpecies/SWAP/CO_SWAP_Chapter4.pdf.
- Conerly, Bill. 2017. Housing Forecast 2018-2019: Declining New Demand. *Forbes*. September 20. Accessed November 2, 2019 at <https://www.forbes.com/sites/billconerly/2017/09/20/housing-forecast-2018-2019-declining-new-demand/#582d48cb58c6>.

- Congressional Record. 1944. Volume 90 Part 9. Appendix. March 23, 1944 to December 19, 1944. Page A1560. Accessed November 5, 2019 at <https://www.govinfo.gov/app/details/GPO-CRECB-1944-pt9/context>.
- Cornell Lab of Ornithology. 2014. Flyways for Flyweights: Small Birds Capitalize on Weather Patterns During Epic Migrations. Accessed on November 11, 2019 at <https://www.allaboutbirds.org/flyways-for-flyweights-small-birds-capitalize-on-weather-patterns-during-epic-migrations/>.
- Cornell Lab of Ornithology. 2007. The Basics of Bird Migration: How, Why, and Where. Accessed on May 15, 2018 at <https://www.allaboutbirds.org/the-basics-how-why-and-where-of-bird-migration/>.
- Cowardin, Lewis M., et al. 1979. Classification of Wetlands and Deepwater Habitats of the United States. FWS/OBS -79/31. December 1979. Accessed March 2018 at <https://www.fws.gov/wetlands/Documents/Classification-of-Wetlands-and-Deepwater-abitats-of-the-United-States.pdf>.
- Creech, E. 2017. "Saving Money, Time, and Soil: The Economics of No-Till Farming". Natural Resources Conservation Service. U.S. Department of Agriculture. Accessed November 11, 2019 at <https://www.usda.gov/media/blog/2017/11/30/saving-money-time-and-soil-economics-no-till-farming>.
- CRS (Congressional Research Service). 2017. VA Housing: Guaranteed Loans, Direct Loans, and Specially Adapted Housing Grants. May 26, 2017. Accessed January 25, 2018 at <https://fas.org/sgp/crs/misc/R42504.pdf>.
- Dahl, T. E. 2011. U.S. Fish and Wildlife Report. Status and Trends of Wetlands in the Conterminous United States. 2004-2009. Report to Congress. Accessed September 2018 at <https://www.fws.gov/wetlands/status-and-trends/Status-and-Trends-2004-2009.html>.
- Davidson, E.S. 1979. Summary Appraisals of the Nation's Ground-water Resources—lower Colorado region. Geological Survey Professional Paper 813-R. 1979. Accessed May 1, 2018 at <https://pubs.usgs.gov/pp/0813r/report.pdf>.
- Debrewer, L., Ator, S., & Denver, J. 2008. Temporal Trends in Nitrate and Selected Pesticides in Mid-Atlantic Ground Water. Accessed April 18, 2018 at https://www.agronomy.org/publications/jeq/abstracts/37/5_Supplement/S-296.
- DOE (Department of Energy). 2018. Building Energy Codes Program. Accessed May 7th, 2018 at <https://www.energy.gov/eere/buildings/building-energy-codes-program>.
- DOI (Department of the Interior), Indian Affairs. 2019. *What We Do*. Accessed November 2019 at <http://www.bia.gov/WhatWeDo/index.htm>.

- DOT (Department of Transportation) Bureau of Transportation Statistics. 2019. Pocket Guide to Transportation 2019. January 2019. Accessed August 15, 2019 at <https://www.bts.gov/sites/bts.dot.gov/files/docs/browse-statistical-products-and-data/pocket-guide-transportation/224731/pocket-guide-2019.pdf>.
- Donofrio, Craig. 2014. What is a HUD REO? July 23. Available at <https://www.realtor.com/advice/buy/hud-reo/>.
- Dyrda, Laura. 2017. How many hospitals does each state have? February 2, 2017. Accessed April 17, 2018 at <https://www.beckershospitalreview.com/hospital-transactions-and-valuation/how-many-hospitals-does-each-state-have.html>.
- Eakin, Thomas E., Don Price, and J.R. Harrill. 1976. Summary Appraisals of the Nation's Ground-Water Resources-Great Basin Region. Geological Survey Professional Paper 813-G. 1976. Accessed May 1, 2018 at <https://pubs.usgs.gov/pp/0813g/report.pdf>.
- EIA (U.S. Energy Information Administration). 2019a. Rankings: Total Energy Consumed per Capita, 2017 (million Btu). Accessed August 3, 2019 at <https://www.eia.gov/state/rankings/?sid=US>.
- EIA. 2019b. Rankings: Average Retail Price of Electricity to Residential Sector, April 2019 (cents/kWh). Accessed August 3, 2019 at <https://www.eia.gov/state/rankings/?sid=US#/series/31>.
- EIA. 2019c. U.S. States State Profiles and Energy Estimates. Accessed October 10, 2019 at <https://www.eia.gov/state/>.
- EIA. 2018. Frequently Asked Questions: Which states consume and produce the most natural gas? Last updated October 3, 2018. Accessed August 15, 2019 at <https://www.eia.gov/tools/faqs/faq.php?id=46&t=8>.
- EIA. 2017. Residential Energy Consumption Survey. Table HC1.7 Fuels used and end uses of homes in the Northeast and Midwest regions, 2015 and Table HC1.8 Fuels and end uses of homes in the South and West regions, 2015. Released February 2017. Accessed April 16, 2018 at <https://www.eia.gov/consumption/residential/data/2015/index.php?view=characteristics>.
- Ellie Mae. 2020. "April Ellie Mae Origination Insight Report Data Shows Continued Refinance Market Growth as Interest Rates Maintain Steady Decline." Press Release. May 20, 2020. Available at <https://www.elliemae.com/about/news-reports/press-releases/april-ellie-mae-origination-insight-report-data-shows-continued-refinance-market-growth-as-interest-rates-maintain-steady-decline>.
- EoE (Encyclopedia of Earth). 2019. Ecoregions of US Virgin islands. Accessed on November 11, 2019 at https://editors.eol.org/eoearth/wiki/Ecoregions_of_US_Virgin_islands.

- ESRI. 2018. USFWS Critical Habitat for Threatened and Endangered Species. Accessed on May 4, 2018 at <https://fws.maps.arcgis.com/home/webmap/viewer.html?webmap=9d8de5e265ad4fe09893cf75b8dbfb77>.
- European Commission. 2018. EDGAR – Emissions Database for Global Atmospheric Research. European Commission – Joint Research Center. Confirmed per Samir 3.2 review. Accessed May 8, 2018 at <http://edgar.jrc.ec.europa.eu/overview.php?v=CO2andGHG1970-2016>.
- Evarts, Ben and Gary P. Stein. 2019. U.S. Fire Department Profile – 2017. March 2019. Accessed August 2019 at <https://www.nfpa.org/-/media/Files/News-and-Research/Fire-statistics-and-reports/Emergency-responders/osfdprofile.pdf>.
- Ewing, R., R. Pendall, and D. Chen. 2002. *Measuring Sprawl and Its Impact*. Accessed online May 8, 2018 at <https://www.smartgrowthamerica.org/app/legacy/documents/MeasuringSprawlTechnical.pdf>.
- Executive Order (EO) 11988. Floodplain Management. May 24, 1977. Accessed on April 30, 2020 at <https://www.archives.gov/federal-register/codification/executive-order/11988.html>.
- EO 11990. Protection of Wetlands. May 24, 1977. Accessed on April 30, 2020 at <https://www.archives.gov/federal-register/codification/executive-order/11990.html>.
- EO 12898. Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. February 11, 1994. Accessed on April 30, 2020 at <https://www.archives.gov/files/federal-register/executive-orders/pdf/12898.pdf>.
- EO 12962. Recreational Fisheries. June 9, 1995. Accessed on April 29, 2020 at <http://www.gpo.gov/fdsys/pkg/FR-1995-06-09/pdf/95-14407.pdf>.
- EO 13112. Invasive Species. February 8, 1999. Accessed on April 29, 2020 at <https://www.federalregister.gov/documents/1999/02/08/99-3184/invasive-species>.
- EO 13717. Establishing a Federal Earthquake Risk Management Standard. February 2, 2016. Accessed on April 29, 2020 at <https://obamawhitehouse.archives.gov/the-press-office/2016/02/02/executive-order-establishing-federal-earthquake-risk-management-standard>.
- EO 13834. Efficient Federal Operations. May 17, 2018. *Federal Register* [Volume 83, Number 99]. May 22, 2018. Accessed on February 2, 2021 at <https://federalregister.gov/documents/2018/05/22/2018-11101/efficient-federal-operations>.
- Federal Reserve Bulletin 2017. Residential Mortgages Lending in 2016: Evidence from the Home Mortgage Disclosure Act Data. Vol 103. No. 6. November. Available at https://www.federalreserve.gov/publications/files/2016_hmda.pdf.

- Federal Transit Administration. 2019. 2017 Annual Database Service. Accessed August 3, 2019 at <https://www.transit.dot.gov/ntd/data-product/2017-annual-database-service>.
- FedHome Loan Center. 2020. Expatriates and Federal Home Loans. Accessed January 2, 2020 at <https://www.fedhomeloan.org/expatriates-and-federal-home-loans/>.
- FEMA. (Federal Emergency Management Agency). 2019. National Flood Insurance Program Flood Insurance Manual. Appendix L Definitions. Effective October 1, 2019.
- FEMA. 2018a. FEMA Training. Chapter 1. Floods and Floodplains. Accessed May 10, 2018 at <https://training.fema.gov/hiedu/docs/fmc/chapter%201%20-%20floods%20and%20floodplains.pdf>.
- FEMA. 2018b. FEMA Training. Chapter 15. Commonly Applied Floodplain Management Measures. Accessed May 10, 2018 at <https://training.fema.gov/hiedu/docs/fmc/chapter%2015%20-%20commonly%20applied%20floodplain%20mgmt%20measures.pdf>.
- FEMA. 2017. National Flood Insurance Program Final Nationwide Programmatic Environmental Impact Statement. September. Available at <https://www.fema.gov/media-library/assets/documents/147613>.
- FEMA. 2013. Significant Flood Events. Accessed March 2018 at <http://www.fema.gov/significant-flood-events>.
- FEMA. Undated. Chapter 2: Types of Floods and Floodplains. Accessed March 2018 at <http://training.fema.gov/EMIWeb/edu/docs/fmc/Chapter%202%20-%20Types%20of%20Floods%20and%20Floodplains.pdf>.
- FHFA (Federal Housing Financing Agency). 2020. House Price Index Fact Sheets. Top 10 and Bottom 10 of Top 100 MSAs in United States. Accessed April 2020 at <https://www.fhfa.gov/DataTools/Downloads/Documents/HPI/Fact-Sheets/MSAs/2019Q4/TopCombined-2019Q4.pdf>.
- FHWA (Federal Highway Administration). 2018a. U.S. Department of Transportation. America's Byways. Last accessed May 3, 2018. Available at <https://www.fhwa.dot.gov/byways>.
- FHWA. 2018b. Table HM-12. Public Road Length – 2017. Miles By Type of Surface And Ownership/Functional System National Summary. November 27, 2018. Accessed August 3, 2019 at <https://www.fhwa.dot.gov/policyinformation/statistics/2017/hm12.cfm>.
- FHWA. 2018c. Table HM-71. Miles and Daily Vehicle-Miles Traveled. August 23, 2018. Accessed August 3, 2019 at <https://www.fhwa.dot.gov/policyinformation/statistics/2017/hm71.cfm>.

- FHWA. 2018d. Highway Statistics 2014 - Annual Vehicle Distance Traveled in Miles and Related Data. Revised May, 2018. Accessed February 27, 2020 at <https://www.fhwa.dot.gov/policyinformation/statistics/2014/vm1.cfm>.
- FHWA. 2015. U.S. Department of Transportation. Guidelines for the Visual Impact Assessment of Federal Highway Projects. Document No. FHWA-HEP-15-029. January. Available at: https://www.environment.fhwa.dot.gov/env_topics/other_topics/VIA_Guidelines_for_Highway_Projects.aspx#chap23.
- FHWA. 2002. U.S. Department of Transportation. 36 New National Scenic Byways and All American Roads. National Press Release. June 13, 2002. Available at <https://www.fhwa.dot.gov/pressroom/fhwa0227.cfm>.
- Forbes. 2014. Where Veterans Live. Trulia Contributor. November 10, 2014. Accessed December 1, 2019 at <https://www.forbes.com/sites/trulia/2014/11/10/where-veterans-live/#3a32486e7484>.
- Foxworthy, Bruce L. 1979. Summary Appraisals of the Nation's Ground-Water Resources—Pacific Northwest Region. Geological Survey Professional Paper 813-S. 1979. Accessed May 2, 2018 at <https://pubs.usgs.gov/pp/0813s/report.pdf>.
- Freddie Mac. 2018. The Major Challenge of Inadequate U.S. Housing Supply. Accessed December 2019 at http://www.freddiemac.com/research/insight/20181205_major_challenge_to_u.s._housing_supply_page?.
- Geography of Guam 2014. Guampedia. Last modified July 6, 2014. Available at <http://www.guampedia.com/geography-of-guam/>.
- Gilbert, Alex. 2016. The U.S. Electricity System in 15 Maps. January 10, 2016. Accessed April 9, 2018 at <http://www.theenergycollective.com/aggilbert/2322195/us-electricity-system-15-maps>.
- Gingerich, Stephen B. 2003. Water-Resources Investigation Report 03-4126. Accessed November 21, 2019 at <https://pubs.usgs.gov/wri/wri034126/htdocs/wrir03-4126.html>.
- Gomez-Gomez, Fernando and James E. Heisel. 1980. Summary Appraisals of the Nation's Ground-Water Resources – Caribbean Region. Geological Survey Professional Paper 813-U. 1980. Accessed May 2, 2018 at <https://pubs.usgs.gov/pp/0813u/report.pdf>.
- Grannemann, N.G., R.J. Hunt, J.R. Nicholas, T.E. Reilly, and T.C. Winter. 2000. The Importance of Ground Water in the Great Lakes Region. Water-Resources Investigations Report 00-4008. 2000. Accessed April 24, 2018 at <https://water.usgs.gov/ogw/pubs/WRI004008/WRI00-4008.pdf>.
- Greenbelt Alliance. 2012. *Urban Growth Boundaries*. Accessed online May 9, 2018 at <https://www.greenbelt.org/urban-growth-boundaries/>.

- Greenberg, Jon. 2016. How many police departments are in the United States? July 10, 2016. Accessed April 17, 2018 at <http://www.politifact.com/punditfact/statements/2016/jul/10/charles-ramsey/how-many-police-departments-are-us/>.
- Habitat for Humanity. 2020. About Habitat for Humanity. Accessed March 2020 at <https://www.habitat.org/about>.
- Halverson, Nathan. 2015. 9 sobering facts about California’s groundwater problem. June 25, 2015. Accessed May 2, 2018 at <https://www.revealnews.org/article/9-sobering-facts-about-californias-groundwater-problem/>.
- Hampson, P.E., M.W. Treece, Jr., G.C. Johnson, S.A. Ahlstedt, and J.F. Connell. 2000. *Water Quality in the Upper Tennessee River Basin, Tennessee, North Carolina, Virginia, and Georgia. Summary of Major Findings*. 2000. Accessed April 25, 2018 at <https://pubs.usgs.gov/circ/circ1205/summary.htm>.
- Hansen, A.J., L.B. Phillips, C.H. Flather, and J. Robison-Cox. 2011. “Carrying capacity for species richness as a context for conservation: a case study of North American breeding birds”. *Global Ecology and Biogeography* 20, 817–831. Accessed on November 11, 2019 at https://www.fws.gov/southwest/es/documents/R2ES/LitCited/LPC_2012/Hansen_et_al_2011.pdf.
- Hapke, C., E. Himmelstoss, M. Kratzmann, J. List, and E. Thieler. 2010. National Assessment of Shoreline Change: Historical Shoreline Change Along the New England and Mid-Atlantic Coasts. U.S. Geological Survey Open-File Report 2010-1118. Accessed March 2018 at http://pubs.usgs.gov/of/2010/1118/pdf/ofr2010-1118_report_508_rev042312.pdf.
- Harris, C.M. 1998. *Handbook of Acoustical Measurement and Noise Control*. Reprint of Third Edition. Acoustical Society of America. Woodbury, Pennsylvania.
- Hawaii Department of Environmental Health. 2018. Safe Drinking Water Branch System. Viewer. Accessed May 2, 2018 at <https://eha-cloud.doh.hawaii.gov/sdwb#!/viewer>.
- Holder, Kelly Ann. 2017. Veterans in Rural America: 2011 – 2015. Report No. ACS-36. U.S. Census Bureau. January 25. Accessed May 1, 2020 at <https://www.census.gov/library/publications/2017/acs/acs-36.html>.
- Home Buying Institute. 2019. Different Types of Mortgage Loans in 2019, Explained. Accessed December 2019 at <http://www.homebuyinginstitute.com/mortgagetypes.php>.
- Homes for Our Troops. 2020. Homes for Our Troops: Our Mission, About Us. Accessed March 2020 at <https://www.hfotusa.org/mission/>.
- Housing Assistance Council. 2020. About HAC-What is HAC? Accessed March 2020 at <http://ruralhome.org/about-hac-sect>.

- Housing Assistance Council. 2014. Effects of Housing Development on a Rural Community's Economy. Accessed November 2, 2019 at <http://www.ruralhome.org/sct-information/mn-hac-research/mn-rrg/94-the-effects-of-housing-development-on-a-rural-communitys-economy?mo=8&yr=2018>.
- HUD (U.S. Department of Housing and Urban Development). 2020a. 203(K) Rehabilitation Mortgage Insurance. Accessed March 2020 at https://www.hud.gov/program_offices/housing/sfh/203k.
- HUD. 2020b. Housing Choice Vouchers Fact Sheet. Accessed April 2020 at https://www.hud.gov/topics/housing_choice_voucher_program_section_8.
- HUD . 2019a. Section 184 Indian Home Loan Guarantee Program. Accessed December 2019 at https://www.hud.gov/program_offices/public_indian_housing/ih/homeownership/184.
- HUD. 2019b. Guarantees for Native Hawaiian Housing (Section 184A). Accessed December 2019 at https://www.hud.gov/program_offices/public_indian_housing/ih/codetalk/onap/program184a.
- HUD. 2019c. Mortgage Insurance for Disaster Victims Section 203(H). Accessed December 2019 at https://www.hud.gov/program_offices/housing/sfh/ins/203h-dft.
- HUD. 2019d. Good Neighbor Next Door Eligible Participants. Accessed December 2019 at https://www.hud.gov/program_offices/housing/sfh/reo/goodn/particip.
- HUD. 2018. About Lead-Based Paint. Accessed April 16, 2018 at https://www.hud.gov/program_offices/healthy_homes/healthyhomes/lead.
- HUD. 2015. Community Housing Impacts of the Military Housing Privatization Initiative. Insights into Housing and Community Development Policy. Office of Policy and Development Research. Accessed October 2019 at https://www.huduser.gov/portal/sites/default/files/pdf/insight_3.pdf.
- HUD. 1985. The Noise Guidebook. Office of Environment and Energy. HUD-953-CPD. March 1985.
- Idaho Department of Water Resources. 2018. Statewide Groundwater Quality Monitoring (GWQM) Results. Accessed May 2, 2018 at <https://www.idwr.idaho.gov/water-data/groundwater-quality/results.html>.
- Institute for Energy Research. 2018. Renewable Energy. Accessed April 9, 2018 at <https://instituteforenergyresearch.org/topics/encyclopedia/renewable-energy/>.
- Intergovernmental Panel on Climate Change. 2018. Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. October 2018. Geneva, Switzerland.

- Intergovernmental Panel on Climate Change. 2014. Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Geneva, Switzerland.
- Intergovernmental Panel on Climate Change. 2013. *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1535 pp.
- Intergovernmental Panel on Climate Change. 2007. Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Geneva, Switzerland.
- International Joint Commission Great Lakes Science Advisory Board. 2010. Groundwater in the Great Lakes Basin. February 2010. Accessed April 25, 2018 at <http://www.ijc.org/php/publications/pdf/ID1637.pdf>.
- IUCN (International Union for Conservation of Nature and Natural Resources). 1991. Directory of protected areas in Oceania. Accessed on November 11, 2019 at <https://www.iucn.org/régions>.
- Jamieson, G.S. 1993. Marine Invertebrate Conservation: Evaluation of Fisheries Overexploitation Concerns. Accessed May 9, 2018 at <http://az.oxfordjournals.org/content/33/6/551>.
- Joint Center for Housing Studies of Harvard University (Harvard Graduate School of Design, Harvard Kennedy School). 2019. The State of the Nation's Housing 2019. Accessed March 7, 2020 at <https://www.jchs.harvard.edu/state-nations-housing-2019>.
- Kingsbury, James A., Jeannie R.B. Barlow, Brian G. Katz, Heather L. Welch, Roland W. Tollett, and Lynne S. Fahlquist. 2014. Water Quality in the Mississippi Embayment-Texas Coastal Uplands Aquifer System and Mississippi River Valley Alluvial Aquifer, South-Central United States, 1994-2008. USGS Circular 1356. 2014. Accessed April 29, 2018 at <https://pubs.usgs.gov/circ/1356/pdf/circ1356.pdf>.
- Konikow, L.F. 2013. Groundwater depletion in the United States (1900–2008): U.S. Geological Survey Scientific Investigations Report 2013–5079. Accessed April 18, 2018 at <http://pubs.usgs.gov/sir/2013/5079>.
- Lamancusa, J. 2009. "Noise Control – Outdoor Sound Propagation." Pennsylvania State University. July 20, 2009.
- Lambert, Lance. 2019. *These 10 Cities Will Dominate Home Construction in 2019*. Realtor.com. April 1, 2019. Accessed December 2019 at <https://www.realtor.com/news/trends/in-2019-these-10-cities-will-dominate-home-construction/>.

- LDWF (Louisiana Department Of Wildlife And Fisheries). 2019. Alligator. Accessed on November 11, 2019 at <https://www.wlf.louisiana.gov/species/detail/46>.
- Levin, Amanda. 2018. A State-by-State View of U.S. Renewable Energy in 2017. March 1, 2018. Accessed April 9, 2018 at <https://solarindustrymag.com/state-state-view-u-s-renewable-energy-2017>.
- Liens, Casey. 2019. These States Have the Highest Percentage of Veterans. U.S. News. November 10. Accessed May 1, 2020 at <https://www.usnews.com/news/best-states/slideshows/where-veterans-live>.
- London School of Economics London. 2015. Understanding the Local Impact of New Residential Development: A Pilot Study. Final Report. April. Accessed January 2020 at file:///C:/Users/susans/OneDrive%20-%20PHE/My%20Documents/VA%20PEIS/Barratt-Final-Report_17.4%20IsleLondon%20%20.pdf.
- Mac, M. J., P.A. Opler, C.E. Haecker, and P.D. Doran. 1998. *Status and Trends of the Nation's Biological Resources: Regional Trends of Biological Resources -- Mississippi River*. Accessed May 3, 2018 at <http://www.nwrc.usgs.gov/sandt/Misisipi.pdf>.
- Mancuso, P. 2013. "Why Are Wetlands So Important to Preserve?" Scientific American. Accessed November 11, 2019 at <https://www.scientificamerican.com/article/why-are-wetlands-so-important-to-preserve/>.
- Martin, Pat. 2017. What are the Three Landform Regions of the Middle Atlantic States? Dated April 25, 2017. Accessed April 18, 2018 at <https://sciencing.com/three-regions-middle-atlantic-states-8250156.html>.
- Mayntz, Melissa. 2019. How and Why Birds Take Dust Baths. Accessed 11 November 2019 at <https://www.thespruce.com/how-and-why-birds-take-dust-baths-386438>.
- McGarigal, K., S. Cushman, and C. Regan. 2005. Quantifying Terrestrial Habitat Loss and Fragmentation: A Protocol. Amherst, MA: University of Massachusetts. Accessed May 1, 2018 at http://www.umass.edu/landeco/teaching/landscape_ecology/labs/fragprotocol.pdf.
- Minnesota Department of Health. 2018. Missouri River Basin Watersheds of Minnesota Groundwater Restoration and Protection Strategies Report. January 2018. Accessed April 29, 2018 at http://www.health.state.mn.us/divs/eh/water/dwp_cwl/localimplem/grapsmrb.pdf.
- Moody's Analytics. 2020. Housing starts: Single-family privately owned (SAAR), MSA Level. 18 March 2020. Accessed March 2020 using VA's economic data subscription for Buffet Tool at <https://www.economy.com/products/tools/data-buffet>.

- MPCA (Minnesota Pollution Control Agency). 1999. A Guide to Noise Control in Minnesota. Acoustical Properties, Measurement, Analysis, Regulation. Minnesota Pollution Control Agency, Noise Program. Saint Paul, Minnesota. March 1999.
- Multi-Housing News. 2017. Building on Wetlands. Kevin O’Neill. March 29. Accessed December 2010 at <https://www.multihousingnews.com/post/building-on-wetlands/>.
- NAHB (National Association of Home Builders). 2015. The Economic Impact of Home Building in a Typical Local Area – Income, Jobs, and Taxes Generated. Housing Policy Department. April. Accessed March 24, 2020 at <https://www.nahb.org/-/media/NAHB/news-and-economics/docs/economics/economic-impact/economic-impact-local-area-2015.pdf>.
- NAHB. 2014. Impact of Home Building and Remodeling on the US Economy. May 1. [author Paul Emrath, Economics and Housing Policy, Housing Economics.com and NAHB.] Accessed November 2, 2019 at <https://www.nahb.org/research/housing-economics/housings-economic-impact/impact-of-home-building-and-remodeling-on-us-economy.aspx>.
- National Center for Education Statistics. 2019. Digest of Education Statistics, Most Current Digest Tables. Accessed August 15, 2019 at https://nces.ed.gov/programs/digest/current_tables.asp.
- National Conference of State Legislatures. 2019. Federal and State Recognized Tribes. Updated October 2019. Accessed October 31, 2019 at <http://www.ncsl.org/research/state-tribal-institute/list-of-federal-and-state-recognized-tribes.aspx#federal>.
- National Parks Adventures. 2018. United States National Parks List. Last accessed May 3, 2018. Available at <https://www.nationalpark-adventures.com/united-states-national-parks.html>.
- National Wild and Scenic Rivers System. 2019. Explore Designated Rivers. Accessed November 21, 2019 at <https://www.rivers.gov/map.php>.
- National Wild and Scenic Rivers System. 2018. National System. Last accessed May 3, 2018. River information by state (total river miles and total wild and scenic river miles, and map showing wild and scenic river location(s)). Available at <https://www.rivers.gov/national-system.php>.
- Nature Conservancy. 2018. Hawaiian High Islands Ecoregion. Accessed November 11, 2019 at <http://hawaiiecoregionplan.info/ecoregion.html>.
- New Mexico Office of the State Engineer. 2017. Lower Rio Grande Regional Water Plan. March 2017. Accessed May 1, 2018 at http://www.ose.state.nm.us/Planning/RWP/documents/Reg11_LowerRioGrande_RegionalWaterPlan2017.pdf.
- NFM Lending. 2013. What is a Conventional Home Loan? March 5, 2013. Accessed December 2019 at <https://nfmlending.com/what-is-a-conventional-home-loan/>.

- NOAA (National Oceanic Atmospheric Administration). 2019a. NMFS Critical Habitat Website. Accessed November 11, 2019 at <https://www.fisheries.noaa.gov/national/endangered-species-conservation/critical-habitat>.
- NOAA. 2019b. *Coastal Zone Management Act*. Accessed online at <https://coast.noaa.gov/czm/act/>.
- NOAA. 2018. *C-CAP Land Cover, Commonwealth of the Northern Mariana Islands, 2014 (remote sensing image)*. National Oceanic and Atmospheric Administration, Office for Coastal Management. Accessed on November 14, 2019 at <https://coast.noaa.gov/ccapftp/#/>.
- NOAA. 2017. *C-CAP Land Cover, Puerto Rico, 2010 (remote sensing image)*. National Oceanic and Atmospheric Administration, Office for Coastal Management. Accessed on November 14, 2019 at <https://coast.noaa.gov/ccapftp/#/>.
- NOAA. 2016a. How Oil Harms Animals and Plants in Marine Environments. Office of Response and Restoration. Accessed May 2018 at <http://response.restoration.noaa.gov/oil-and-chemicalspills/oil-spills/how-oil-harms-animals-and-plants-marine-environments.html>.
- NOAA. 2016b. Office for Coastal Management. Coastal Zone Management Programs (by state). Accessed March 2018 at <https://coast.noaa.gov/czm/mystate/>.
- NOAA. 2016c. *C-CAP Land Cover, Guam, 2016 (remote sensing image)*. National Oceanic and Atmospheric Administration, Office for Coastal Management. Accessed on November 14, 2019 at <https://coast.noaa.gov/ccapftp/#/>.
- NOAA. 2015a. *C-CAP Land Cover, Hawaii, 2010 (remote sensing image)*. National Oceanic and Atmospheric Administration, Office for Coastal Management. Accessed on November 14, 2019 at <https://coast.noaa.gov/ccapftp/#/>.
- NOAA. 2015b. *C-CAP Land Cover, U.S. Virgin Islands, 2012 (remote sensing image)*. National Oceanic and Atmospheric Administration, Office for Coastal Management. Accessed on November 14, 2019 at <https://coast.noaa.gov/ccapftp/#/>.
- NOAA. 2013. National Coastal Population Report. Population Trends from 1970 to 2020. Accessed March 2018 at <https://aamboceanservice.blob.core.windows.net/oceanservice-prod/facts/coastal-population-report.pdf> [can get to link from: <https://coast.noaa.gov/digitalcoast/training/population-report.html>].
- NOAA. 2012. Protecting the Public Interest through the National Coastal Zone Management Program: How Coastal States and Territories Use No-Build Areas along Ocean and Great Lakes Shorefronts. May (updated July) 2012. Accessed May 2018 at <https://coast.noaa.gov/czm/media/nobuildareas.pdf>.

- NOAA. 2010. *C-CAP Land Cover, American Samoa, 2010 (remote sensing image)*. National Oceanic and Atmospheric Administration, Office for Coastal Management. Accessed on November 14, 2019 at <https://coast.noaa.gov/ccapftp/#/>.
- Noise Pollution Clearinghouse. 2018. About Noise, Noise Pollution, and the Clearinghouse. Accessed April 6, 2018 at <http://www.nonoise.org/aboutno.htm>.
- National Park Service (NPS). 2020a. Understand Cultural Landscapes. Accessed May 6, 2020 at <https://www.nps.gov/subjects/culturallandscapes/understand-cl.htm>.
- NPS. 2020b. National Register of Historic Places. Accessed on May 13, 2020 at <https://www.nps.gov/subjects/nationalregister/data-downloads.htm>.
- NPS. 2018a. Series: Physiographic Province: Appalachian Plateaus, Basin and Range, Blue Ridge, Cascade-Sierra Mountains, Central Lowland, Coastal Plain, Colorado Plateaus, Columbia Plateau, Great Plains, Interior Low Plateaus, New England Ouachita and Ozark Plateaus, Pacific Border, Piedmont, Rocky Mountain System, Superior Upland, Valley and Ridge. Last accessed May 3, 2018. Available at: <https://www.nps.gov/articles/series.htm?id=12C422BC-1DD8-B71B-0B1552CA902E5909> [links to each of the individual provinces].
- NPS. 2018b. Yellowstone National Park Wolves. Accessed May 8, 2018 at <https://www.nps.gov/yell/learn/nature/wolves.htm>.
- NPS. 2018c. Why Sounds Matter. Accessed April 6, 2018 at <https://www.nps.gov/subjects/sound/soundsmatter.htm>.
- NPS. 2018d. Mapping Sound. Accessed April 6, 2018 at <https://www.nps.gov/subjects/sound/soundmap.htm>.
- NPS. 2017a. National Park Service Overview. Last updated January 13, 2017. Available at: <https://www.nps.gov/aboutus/news/upload/NPS-Overview-12-05-17.pdf>
- NPS. 2017b. Spreadsheet of National Historic Landmarks. Updated through December 2017. Accessed May 7, 2020 at <https://www.nps.gov/subjects/nationalregister/upload/national-historic-landmarks-20181017.xlsx>.
- NPS. 2014. *Alaska Parks*. Accessed May 9, 2018 at <https://www.nps.gov/akso/parks/Index.cfm>.
- NPS. 1992. Guidelines for Evaluating and Documenting Traditional Cultural Properties. National Register Bulletin 38. Interagency Resources Division. Accessed May 6, 2020 at <https://www.nps.gov/subjects/nationalregister/upload/NRB38-Compleweb.pdf>.
- NRCS (Natural Resources Conservation Service). 2019. Prime Farmland. Accessed November 17, 2019 at https://www.nrcs.usda.gov/wps/portal/nrcs/detail/null/?cid=nrcs143_014052.

- NRCS. 2001. Acres of Prime Farmland, 1997. USDA NRCS map ID: m4983. Accessed November 7, 2019 at https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs143_012232.pdf.
- NRCS. 1995. Wetlands Values and Trends. RCA Issue Brief. November. Accessed December 2019 at <https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/nra/rca/?cid=stelprdb1042133>.
- NWS (National Weather Service). 2012. Mid-Atlantic River Forecast Center: Top 20 Individual Flood Events. Accessed March 2018 at http://www.erh.noaa.gov/marfc/Rivers/FloodClimo/Top_Flood_Crests/Top20_PointsOneEvent.php.
- NYU Furman Center. 2017. Housing in the U.S. Floodplains. Data Brief. May 2017. Accessed December 2019 at <https://furmancenter.org/research/publication/housing-in-the-us-floodplains>.
- Office of Management and Budget. 2018. Revised Delineations of Metropolitan Statistical Areas, Micropolitan Statistical Areas, and Combined Statistical Areas, and Guidance on Uses of the Delineations of These Areas. OMB Bulletin 18-04. Accessed March 23, 2020 at <https://www.whitehouse.gov/wp-content/uploads/2018/09/Bulletin-18-04.pdf>.
- Omernik, J.M. 1987. Ecoregions of the conterminous United States. Map (scale 1:7,500,000). *Annals of the Association of American Geographers* 77(1):118-125. Accessed May 2, 2018 at https://www.jstor.org/stable/pdf/2569206.pdf?casa_token=7Z7YmSlzKyoAAAAA:op9DwE3Lv1T0jA0W3a3NVHTq-W8Ehx9qdRYp5lv4TjNVKNzm8CZwQtplrPcE3Jqeg3s4piR8sIIUKW7KviCYvGMw0Yvc7NkmeF9AngdZWz_K3c-s-Vmu.
- Oregon Department of Environmental Quality. 2018. Groundwater Management Areas. Accessed May 2, 2018 at <http://www.oregon.gov/deq/wq/programs/Pages/GWP-Management-Areas.aspx>.
- Pedersen et al. 2007. Infectious Diseases and Extinction Risk in Wild Mammals. *Conservation Biology* Vol. 21 No. 5. Accessed May 2, 2018 at https://conbio.onlinelibrary.wiley.com/doi/full/10.1111/j.1523-1739.2007.00776.x?casa_token=zklVohGy3owAAAAA%3AYFBeGwRvJsPUoHlkn71ATVpb4ZvF2ULTIHfgFtJZeVWBqyWuSdff2Xnw7KLIGWUFH6eU-h2osIn9zxM.
- Price, Don and Ted Arnow. 1974. Summary Appraisals of the Nation's Ground-Water Resources – Upper Colorado Region. Geological Survey Professional Paper 813-C. 1974. Accessed May 1, 2018 at <https://pubs.usgs.gov/pp/0813c/report.pdf>.
- Public Law 78-346. Servicemen's Readjustment Act of 1944. June 1944. Accessed on May 8, 2020 at <https://www.loc.gov/law/help/statutes-at-large/78th-congress/session-2/c78s2ch268.pdf>.

- Public Law 80-702. Specially Adapted Housing. June 7, 1948. Accessed on April 22, 2021 at <https://www.loc.gov/law/help/statutes-at-large/80th-congress/session-2/c80s2ch533.pdf>
- Public Law 88-577. Wilderness Act. Accessed on April 29, 2020 at <https://www.govinfo.gov/content/pkg/STATUTE-78/pdf/STATUTE-78-Pg890.pdf>.
- Public Law 90-542. Wild and Scenic Rivers Act. Accessed April 29, 2020 at <https://www.govinfo.gov/link/statute/82/910>.
- Public Law 102-547. Veterans Home Loan Program Amendments of 1992. October 28, 1992. Accessed on May 6, 2020 at <https://www.govinfo.gov/link/statute/106/3634>.
- Puerto Rico. 2018. Geography of Puerto Rico. Welcome to Puerto Rico. Last accessed May 3, 2018. Available at <http://welcome.topuertorico.org/geogra.shtml>.
- Rankin, W (Eds). 1977. Studies Related to the Charleston, South Carolina Earthquake of 1886 – A Preliminary Report. Accessed November 15, 2019 at <https://pubs.usgs.gov/pp/1028/report.pdf>.
- Reba, M.L., J.H. Massey, M.A. Adviento-Borbe, D. Leslie, M.A. Yaeger, M. Anders, and J. Farris. 2017. Aquifer Depletion in the Lower Mississippi River Basin: Challenges and Solutions. Universities Council on Water Resources. Journal of Contemporary Water Research & Education. Issue 162, pg 128-139. December 2017. Accessed April 27, 2018 at <https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1936-704X.2017.03264.x>.
- Reeder, Harold O. 1978. Summary Appraisals of the Nation's Ground-Water Resources—Souris-Red-Rainy Region. Geological Survey Professional Paper 813-K. 1978. Accessed April 29, 2018 at <https://pubs.usgs.gov/pp/0813k/report.pdf>.
- Reilly, T., Dennehy, K., Alley, W., & Cunningham, W. 2008. Ground Water Availability in the United States: U.S. Geological Survey Circular 1323. Accessed April 28, 2018 at <http://pubs.usgs.gov/circ/1323/>.
- Robson, S.G. and E.R. Banta. 1995. Ground Water Atlas of the United States. Arizona, Colorado, New Mexico, Utah. HA 730-C. 1995. Accessed May 1, 2018 at https://pubs.usgs.gov/ha/ha730/ch_c/C-text4.html.
- Rodriguez, Jose M. 2014. Groundwater Quality Monitoring Project. Page last modified January 16, 2018. Accessed May 2, 2018 at https://pr.water.usgs.gov/projects/GW_quality_monitoring/.
- Sada, D. 2008. Great Basin Riparian and Aquatic Ecosystems. Accessed March 2018 at http://www.fs.fed.us/rm/pubs/rmrs_gtr204/rmrs_gtr204_049_052.
- Satija, Neena. 2013. Groundwater Pumping Takes an Unexpected Toll on the Texas Gulf Coast. The Texas Tribune. December 20, 2013. Accessed May 1, 2018 at <https://www.texastribune.org/2013/12/20/groundwater-pumping-gulf-coast-leads-consequences/>.

- Schaefer, Donald H., Susan A. Thiros, and Michael R. Rosen. 2005. Ground-Water Quality in the Carbonate-Rock Aquifer of the Great Basin, Nevada and Utah, 2003. Scientific Investigations Report 2005-5232. 2005. Accessed May 1, 2018 at <https://pubs.usgs.gov/sir/2005/5232/pdf/sir20055232.pdf>.
- Schaefer, Joe. 2018. Addressing Wildlife Needs in Construction Site Management Plans. University of Florida Extension Service. Wildlife Ecology and Conservation Department. March 2016. Accessed November 11, 2019 at <https://edis.ifas.ufl.edu/uw105>.
- Schultz, Jennifer. 2017. Veterans By the Numbers. The NCSL Blog. National Conference of State Legislators. November 10. Accessed May 1, 2020 at <https://www.ncsl.org/blog/2017/11/10/veterans-by-the-numbers.aspx>.
- SGA (Smart Growth America). 2014. *Measuring Sprawl 2014*. Accessed on May 9, 2018 at <https://www.smartgrowthamerica.org/app/legacy/documents/measuring-sprawl-2014.pdf>.
- Southern Company. 2016. 2016 Water Action Report. Accessed April 24, 2018 at <https://www.southerncompany.com/content/dam/southern-company/pdf/reports/WaterActionReport2016.pdf>.
- Spahr, Norman E., Lori E. Apodaca, Jeffrey R. Deacon, Jeffrey B. Bails, Nancy J. Bauch, C. Michelle Smith, and Nancy E. Driver. 2000. Water Quality in the Upper Colorado River Basin, Colorado, 1996-98. USGS Circular 1214. Accessed May 1, 2018 at <https://pubs.usgs.gov/circ/circ1214/pdf/circ1214.pdf>.
- Stark J.R., P.E. Hanson, R.M. Goldstein, J.D. Fallon, A.L. Fong, K.E. Lee, S.E. Kroening, and W.J. Andrews. 2000. Water Quality in the Upper Mississippi River Basin, Minnesota, Wisconsin, South Dakota, Iowa, and North Dakota, 1995-98. U.S. Geological Survey Circular 1211. Accessed April 27, 2018 at <https://pubs.usgs.gov/circ/circ1211/pdf/circular1211.pdf>.
- Statista. 2019. Number of all hospital beds in the U.S. from 1975 to 2017. Last updated August 9, 2019. Accessed August 15, 2019 at <https://www.statista.com/statistics/185860/number-of-all-hospital-beds-in-the-us-since-2001/>
- Stoner, J.D., D.L. Lorenz, R.M. Goldstein, M.E. Bringham, and T.K. Cowdery. 1998. Water Quality in the Red River of the North Basin, Minnesota, North Dakota, and South Dakota, 1992-95. U.S. Geological Survey Circular 1169. 1998. Accessed April 29, 2018 at https://pubs.usgs.gov/circ/circ1169/14_occur.html.
- Takasaki, K.J. 1978. Summary Appraisals of the Nation's Ground-Water Resources—Hawaii Region. Geological Survey Professional Paper 813-M. 1978. Accessed May 2, 2018 at <https://pubs.usgs.gov/pp/0813m/report.pdf>.

- Taylor, O. James. 1978. Summary Appraisals of the Nation's Ground-Water Resources—Missouri Basin Region. Geological Survey Professional Paper 813-Q. 1978. Accessed April 29, 2018 at <https://pubs.usgs.gov/pp/0813q/report.pdf>.
- Technical Assistance Collaborative. 2014. State Funded Housing Assistance Programs. April. Available at <http://www.tacinc.org/media/43566/State%20Funded%20Housing%20Assistance%20Report.pdf>
- Texas Water Development Board. 2018. Major Aquifers. Accessed May 1, 2018 at <http://www.twdb.texas.gov/groundwater/aquifer/majors/gulf-coast.asp>.
- The Weather Channel. 2016. Where Flooding Has Been Most Frequent in the U.S. August 3, 2016 Accessed September 2019 at <https://weather.com/safety/floods/news/flooding-united-states-frequency>
- Thomas, H.E. and D.A. Phoenix. 1976. Summary Appraisals of the Nation's Ground-Water Resources—California Region. Geological Survey Professional paper 813-E. 1976. Accessed May 2, 2018 at <https://pubs.usgs.gov/pp/0813e/report.pdf>.
- Thurston, Jack. 2017. Tree Removal Aimed at Protecting Endangered Bats in Vermont. Published Apr 5, 2017 Accessed 11 November 2019 at <https://www.necn.com/news/new-england/Tree-Removal-Aimed-at-Protecting-Endangered-Bats-in-Vermont-418430193.html>.
- Towne, Douglas C. and Jason D. Jones. 2016. Groundwater Quality in Arizona: A 20-Year Overview of the ADEQ Ambient Groundwater Monitoring Program 1995-2015. Arizona Department of Environmental Quality Open File Report 16-02. 2016. Accessed May 4, 2018 at http://static.azdeq.gov/pub/ofr_20yr_overview.pdf.
- Traweek, M. and R. Welch. 1992. Exotics in Texas. Texas Parks and Wildlife Department. Accessed May 2, 2018 at http://tpwd.texas.gov/publications/pwdpubs/media/pwd_bk_w7000_0206.pdf.
- Trulia Research. 2014. Where Veterans Live. Housing Policy. November 10, 2014. Accessed May 27, 2020 at <https://www.trulia.com/research/veterans-live/>.
- TVA. (Tennessee Valley Authority). 2018. Navigation on the Tennessee River. Accessed April 20, 2018 at <https://www.tva.gov/Environment/Managing-the-River/Navigation-on-the-Tennessee-River>.
- University of Florida (UF) Extension Service. Accessed November 11, 2019 at <https://edis.ifas.ufl.edu/uw105> .
- University of Michigan Center for Sustainable Systems. 2018. Municipal Solid Waste. August 2018. Accessed August 15, 2019 at http://css.umich.edu/sites/default/files/Municipal_Solid_Waste_Factsheet_CSS04-15_e2018.pdf.

- University of Montana. 2017. Wilderness Connect. Wilderness Statistics Reports. Last updated October 15. Available at <https://www.wilderness.net/NWPS/fastfacts>.
- University of Nevada, Reno. 2012. Nevada's Great 1915 Earthquake – Get Earthquake Ready. Accessed November 15, 2019 at <http://www.nbmng.unr.edu/Geohazards/Earthquakes/1915article.html>.
- University of Nevada, Reno. 2010. Earthquakes in Nevada and How to Survive Them. The Nevada Seismological Laboratory. Accessed April 25, 2020 at <http://www.seismo.unr.edu/Preparedness>.
- UMRBA (Upper Mississippi River Basin Association). 2018. River and Basin Facts. Accessed May 3, 2018 at <http://www.umrba.org/facts.htm>.
- USACE (United States Army Corps of Engineers). 2009. Ohio River Basin Comprehensive Reconnaissance Report. December 2009. Accessed April 25, 2018 at <http://www.lrh.usace.army.mil/Portals/38/docs/orba/Ohio%20River%20Basin%20Comp%20Recon%20Study%20-%20Dec%202009.pdf>.
- USBR (United States Bureau of Reclamation). 2016. Reclamation. Managing Water in the West. Chapter 10: Other Western River Basins. Accessed May 3, 2018 at <https://www.usbr.gov/climate/secure/docs/2016secure/2016SECUREREport-chapter10.pdf>.
- USCB (United States Census Bureau). 2019. Annual Characteristics of New Housing (Financing, Single Family Home Completed). Accessed December 2019 at <https://www.census.gov/construction/chars/>.
- USCB. 2018a. Population Division. Table PEPANNRES. Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2017. Accessed April 2018 at <https://factfinder.census.gov>.
- USCB. 2018b. 2016 American Community Survey 1-Year Estimates. Table S0201. Selected Population Profile in the United States. Accessed April 2018 at <https://factfinder.census.gov>.
- USCB. 2018c. 2016 American Community Survey 1-Year Estimates. Table CP05. Comparative Demographic Estimates for 2016. Accessed April 2018 at <https://factfinder.census.gov>.
- USCB. 2018d. 2011 American Community Survey 1-Year Estimates. Table CP05. Comparative Demographic Estimates for 2010. Accessed April 2018 at <https://factfinder.census.gov>.
- USCB. 2018e. Census 2000 Summary File 1. Table P001. Total population. Accessed April 2018 at <https://factfinder.census.gov>.
- USDA (United States Department of Agriculture). 2020. Properties for Sale by the USDA-RD and USDA-FSA/FSA Properties, About Us and How to Buy. Accessed April 2020 at <https://properties.sc.egov.usda.gov/resales/public/home>.

- USDA. 2019a. Rural Development. Multi-Family Housing Direct Loans. Accessed December 2019 at <https://www.rd.usda.gov/programs-services/multi-family-housing-direct-loans>.
- USDA. 2019b. Rural Development. Multi-Family Housing Rental Assistance. Accessed December 2019 at <https://www.rd.usda.gov/programs-services/multi-family-housing-rental-assistance>.
- USDA. 2019c. Rural Development. Multi-Family Housing Loan Guarantees. Accessed December 2019 at <https://www.rd.usda.gov/programs-services/multi-family-housing-loan-guarantees>.
- USDA. 2017. Direct Single Family Housing Loans and Grants – Field Office Handbook. HB-1-3550. Chapter 16. Disposing of Real Estate Owned Property (Paragraph 16.1 Overview and 16.10 Disposal of Property for Special Purposes). Revised March 15, 2019. Accessed April 2020 at <https://www.rd.usda.gov/files/3550-1chapter16.pdf>.
- USDA. 2013. Summary Report. 2010 National Resources Inventory. With Iowa State University Center for Survey Statistics and Methodology. September 2013. Accessed December 2019 at https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1167354.pdf.
- USDA. 2012. Economic Research Service. Major Land Uses in the United States, 2012. Accessed May 10, 2018 at <https://www.ers.usda.gov/publications/pub-details/?pubid=84879>.
- USDA. 2006. Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin. Natural Resources Conservation Service. United States Department of Agriculture Handbook 296.
- USDA, Agricultural Research Service. 2013. Response to RFI for Long-Term Agro-ecosystem Research (LTAR) Network 2012. Lower Mississippi River Basin. 2013. Accessed April 27, 2018 at <https://www.ars.usda.gov/ARSUserFiles/np211/LMRBProposal.pdf>.
- USDOT (United States Department of Transportation). 2012. High-Speed Ground Transportation Noise and Vibration Impact Assessment. Office of Railroad Policy and Development. Federal Railroad Administration. DOT/FRA/ORD-12/15. September 2012.
- USDOT. 2006. Transit Noise and Vibration Impact Assessment. Office Planning and Environment. Federal Transit Administration. FTA-VA-90-1003-06. May 2006.
- USEPA (United States Environmental Protection Agency). 2020. 2014 National Emissions Inventory Report. Accessed February 27, 2020 at <https://gispub.epa.gov/neireport/2014/>.
- USEPA. 2019a. Inventory of Greenhouse Gas Emissions and Sinks: 1990-2017. Washington, D.C. EPA 430-R-19-001. April 11, 2019. Accessed October 28, 2019 at <https://www.epa.gov/sites/production/files/2019-04/documents/us-ghg-inventory-2019-main-text.pdf>.

- USEPA. 2019b. Constructed Wetlands. Accessed on November 11, 2019 at <https://www.epa.gov/wetlands/constructed-wetlands>.
- USEPA. 2019c. Classification and Types of Wetlands. Accessed on November 11, 2019 at <https://www.epa.gov/wetlands/classification-and-types-wetlands#marshes>
- USEPA. 2019d. Why Wetlands are Important. Accessed on November 11, 2019 at <https://www.epa.gov/wetlands/why-are-wetlands-important>.
- USEPA. 2019e. Sole Source Aquifer Locations (digital vector data). Accessed online August 15, 2019 at <https://www.usgs.gov/core-science-systems/ngp/national-hydrography/access-national-hydrography-products>.
- USEPA. 2019f. Basic Information About Wyoming and Tribal Drinking Water Programs in EPA Region 8. Last updated June 27, 2019. Accessed August 15, 2019 at <https://www.epa.gov/region8-waterops/basic-information-about-wyoming-and-tribal-drinking-water-programs-epa-region-8>.
- USEPA. 2019g. Protect Your Family from Exposures to Lead. Last updated March 26, 2019. Accessed August 15, 2019 at <https://www.epa.gov/lead/protect-your-family-exposures-lead>.
- USEPA. 2019h. Greenhouse Gases Equivalencies Calculator – Calculations and References. Accessed October 21, 2019 at <https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references>.
- USEPA. 2019i. AP-42: Compilation of Air Emissions Factors. Volume 1: Stationary Area and Point Emissions Sources. Chapter 1: External Combustion Sources. Accessed October 28, 2019 at <https://www3.epa.gov/ttn/chief/ap42/ch01/index.html>.
- USEPA. 2019j. Nonattainment Areas for Criteria Pollutants (Green Book). Accessed October 22, 2019 at <https://www.epa.gov/green-book>.
- USEPA. 2018a. Ecoregions. Accessed on March 14, 2018 at <https://www.epa.gov/eco-research/ecoregions-north-america>.
- USEPA 2018b. Air Trends. Air Quality – National Summary. Accessed April 4, 2018 at <https://www.epa.gov/air-trends/air-quality-national-summary>.
- USEPA 2018c. Criteria Pollutant Nonattainment Summary Report. Accessed April 12 at <https://www3.epa.gov/airquality/greenbook/anc13.html#Notes>.
- USEPA. 2018d. Map of Sole Source Aquifer Locations.. Accessed April 6, 2018 at <https://www.epa.gov/dwssa/map-sole-source-aquifer-locations>.
- USEPA. 2018e. National Primary Drinking Water Regulations. Last updated March 22, 2018. Accessed March 27, 2018 at <https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations>.

- USEPA. 2018f. How We Use Water. Accessed April 9, 2018 at <https://www.epa.gov/watersense/how-we-use-water>.
- USEPA. 2018g. Emissions & Generation Resource Integrated Database (eGRID). Released February 15, 2018. Accessed October 18, 2019 at <https://www.epa.gov/energy/emissions-generation-resource-integrated-database-egrid>.
- USEPA. 2017. Great Lakes Facts and Figures. Last Modified September 12, 2017. Accessed April 20, 2018 at <https://www.epa.gov/greatlakes/great-lakes-facts-and-figures>.
- USEPA. 2016a. Celebrate Coastal Wetlands. EPA Wetland Fact Sheet Series. Accessed March 2018 at <https://www.epa.gov/wetlands/wetlands-factsheet-series> [specific pdf file found at: https://www.epa.gov/sites/production/files/2016-04/documents/coastal_wetlands.pdf].
- USEPA. 2016b. National Rivers and Streams Assessment, 2008-2009. A Collaborative Summary. Accessed May 3, 2018 at https://www.epa.gov/sites/production/files/201603/documents/nrsa_0809_march_2_final.pdf.
- USEPA. 2016c. Construction: Sector Profile. Accessed October 15, 2019 at <https://archive.epa.gov/sectors/web/html/construction.html>.
- USEPA. 2015a. 303(d) Listed Impaired Waters. U.S. Environmental Protection Agency, Office of Water. Washington DC. Accessed online September 6, 2019 <https://www.epa.gov/waterdata/waters-geospatial-data-downloads>.
- USEPA. 2015b. 305(b) Waters as Assessed. U.S. Environmental Protection Agency, Office of Water. Washington DC. Accessed online October 10, 2019 <https://www.epa.gov/waterdata/waters-geospatial-data-downloads>.
- USEPA. 2013. National Rivers and Streams Assessment 2008-2009: A Collaborative Survey. Accessed March 2018 at http://water.epa.gov/type/rsi/monitoring/riverssurvey/upload/NRSA0809_Report_Final_508Compliant_130228.pdf.
- USEPA. 2012. National Coastal Condition Report IV. Accessed March 2018 at http://www.epa.gov/sites/production/files/2014-10/documents/0_nccr_4_report_508_bookmarks.pdf.
- USEPA. 2011. National Wetland Condition Assessment 2011. Accessed March 2018 at https://www.epa.gov/sites/production/files/2016-05/documents/2011_nwca_fact_sheet_final.pdf [web page summary - <https://www.epa.gov/national-aquatic-resource-surveys/national-wetland-condition-assessment-2011-results>].

- USEPA. 2010. NA_Eco_Level1 (vector digital data). U.S. EPA, Office of Research and Development - National Health and Environmental Effects Research Laboratory. Accessed on February 14, 2020 at <http://www.epa.gov/wed/pages/ecoregions.htm>.
- USEPA. 2009a. National Lakes Assessment: A Collaborative Survey of the Nation's Lakes. Accessed April 18, 2018 at http://www.epa.gov/sites/production/files/2013-11/documents/nla_newlowres_fullrpt.pdf.
- USEPA. 2009b. National Primary Drinking Water Regulations. May 2009. Accessed March 27, 2018 at https://www.epa.gov/sites/production/files/2016-06/documents/npwdr_complete_table.pdf
- USEPA. 2008. Sole Source Aquifer Program. Region 1: EPA New England. Accessed April 9, 2018 at https://www3.epa.gov/region1/eco/drinkwater/pc_solesource_aquifer.html.
- USEPA. 2004. Understanding the Safe Drinking Water Act. June 2004. Accessed March 27, 2018 at <https://www.epa.gov/sites/production/files/2015-04/documents/epa816f04030.pdf>.
- USEPA. 2001. Types of Wetlands. EPA 843-F-01-002b (part of EPA Wetland Fact Sheet Series). Accessed September 2018 at <https://www.epa.gov/wetlands/wetlands-factsheet-series>.
[specific pdf file found at:
<https://nepis.epa.gov/Exe/ZyPDF.cgi/200053PZ.PDF?Dockey=200053PZ.PDF>].
- USEPA. 1978. Protective Noise Levels, Condensed Version of EPA Levels Document. Office of Noise Abatement and Control. EPA 550/9-79-100. November 1978.
- USEPA. 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. Office of Noise Abatement and Control. Publication 550/9-74-004. March 1974.
- USFS. (United States Forest Service). 2019. Bailey's ecoregions and subregions of the United States, Puerto Rico, and the U.S. Virgin Islands. Accessed November 11, 2019 at <https://www.fs.fed.us/land/ecosysmgmt/colorimagemap/images/m411.html>.
- USFS. 2018. S_USA.WildScenicRiverSegment_LN (vector digital data). Developed by Managing Agencies United States Forest Service (USFS), National Park Service (NPS), Bureau of Land Management (BLM), Fish and Wildlife Services (FWS). Accessed online May 4, 2018 at <https://data.fs.usda.gov/geodata/edw/datasets.php>.
- USFS. 2013a. Forest Service By the Numbers. Last updated November 2013. Available at: <https://www.fs.fed.us/about-agency/newsroom/by-the-number>.
- USFS. 2013b. Find a Forest by State. Last modified March 28, 2013. Available at: https://www.fs.fed.us/recreation/map/state_list.shtml.

- USFS. 2011. Upper Mississippi Forest Partnership, Highlights 2005-2010. August 2011. Accessed May 3, 2018 at https://www.fs.usda.gov/naspf/sites/default/files/umfp_2005-2010.pdf.
- USFWS. (United States Fish and Wildlife Service). 2019a. Caribou Migrations. Accessed on November 11, 2019 at <https://www.fws.gov/refuge/arctic/carcon.html>.
- USFWS. 2019b. Economic Cost of Large Constrictor Snakes. Accessed on November 11, 2019 at <https://www.fws.gov/home/feature/2012/pdfs/EconImpact.pdf>.
- USFWS. 2019c. Neotropical Migratory Bird Conservation Act (NMBCA). Accessed on November 11, 2019 <https://www.fws.gov/birds/grants/neotropical-migratory-bird-conservation-act.php>
- USFWS. 2019d. Summary of Listed Species Listed Populations and Recovery Plans Accessed on November 11, 2019 at <https://ecos.fws.gov/ecp0/reports/box-score-report>.
- USFWS. 2019e. Threatened and Endangered Listing – Animals. Accessed on November 11, 2019 at <https://ecos.fws.gov/ecp0/reports/ad-hoc-species-report?kingdom=V&kingdom=I&status=E&status=T&status=EmE&status=EmT&status=EXPE&status=EXPN&status=SAE&status=SAT&fcrithab=on&fstatus=on&fspecrule=on&finvpop=on&fgroup=on&header=Listed+Animals>.
- USFWS. 2019f. Threatened and Endangered Listing – Plants. Accessed on November 11, 2019 at <https://ecos.fws.gov/ecp0/reports/ad-hoc-species-report?kingdom=P&status=E&status=T&status=EmE&status=EmT&status=EXPE&status=EXPN&status=SAE&status=SAT&fcrithab=on&fstatus=on&fspecrule=on&finvpop=on&fgroup=on&family=on&header=Listed+Plants>.
- USFWS. 2019g. USFWS Threatened & Endangered Species Active Critical Habitat Report. Environmental Conservation Online System. Accessed November 11, 2019 at <https://ecos.fws.gov/ecp/report/table/critical-habitat.html>.
- USFWS. 2019h. Wetlands. Accessed on November 11, 2019 at <https://www.fws.gov/refuges/about/public-lands-waters/wetlands/>.
- USFWS. 2019i. Okefenokee National Wildlife Refuge information. Access on November 11, 2019 at https://www.fws.gov/refuge/Okefenokee/wildlife_and_habitat/index.html.
- USFWS. 2018a. Habitat. Accessed on April 25, 2018 at <https://www.fws.gov/habitat/>.
- USFWS. 2018b. Office of Law Enforcement: Laws and Regulations. Accessed on April 26, 2018 at <https://www.fws.gov/le/laws-regulations.html>.
- USFWS. 2018c. Frequently Asked Question About Invasive Species. Accessed on May 2018 at <https://www.fws.gov/invasives/faq.html#q3>.

- USFWS. 2018d. Migratory Bird Treaty Act Protected Species (10:13 List). Accessed on May 15, 2018 at <https://www.fws.gov/birds/management/managed-species/migratory-bird-treaty-act-protected-species.php>.
- USFWS. 2018e. Flyways: Administrative. Accessed on May 16, 2018 at <https://www.fws.gov/birds/management/flyways.php>.
- USFWS. 2018f. Endangered Species: Listing and Critical Habitat. Accessed on May 4, 2018 at <http://www.fws.gov/endangered/what-we-do/critical-habitats-faq.html>.
- USFWS. 2018g. Coastal Barrier Resources System. Last updated March 18, 2018. Accessed November 2019 at <https://www.fws.gov/CBRA/>.
- USFWS. 2018h. Wetland Density of the Conterminous United States. Accessed March 20, 2018 at <https://www.fws.gov/wetlands/Downloads/Gallery/Wetland-Density-of-the-Conterminous-United-States.pdf>.
- USFWS. 2015. *National Wildlife Refuge Alaska Region*. Accessed on May 10, 2018 at <https://www.fws.gov/alaska/nwr/map.htm>.
- USFWS. 2011. Recovery Plan for Hawaiian Waterbirds, Second Revision. U.S. Fish and Wildlife Service, Portland, Oregon. 233 pp. Accessed on November 11, 2019 at https://www.fws.gov/pacificislands/CH_Rules/Hawaiian%20Waterbirds%20RP%202nd%20Revision.pdf.
- USFWS. 2000. Coastal Barrier Improvement Act. Report to Congress on Inclusion of Pacific Coastal Barriers in the National Coastal Barriers Resource System. Accessed May 2018 at <https://www.fws.gov/cbra/documents/Pacific-Coastal-Barriers-Report-May-2000.pdf>.
- USFWS. 1994. Status of Alaska Wetlands. Accessed March 2018 at <https://www.fws.gov/wetlands/documents/status-of-alaska-wetlands.pdf>.
- USGS NRCS (United States Geological Survey Natural Resources Conservation Service). 2019. National Hydrography Dataset (vector digital data). U.S. Geological Survey. Accessed September 4, 2019 at <https://www.usgs.gov/core-science-systems/ngp/national-hydrography/access-national-hydrography-products>.
- USGS NRCS. 2018. Washed Boundary Dataset - 2-digit HU (Region) (vector digital data). U.S. Geological Survey. Accessed online May 4, 2018 at <https://www.usgs.gov/core-science-systems/ngp/national-hydrography/access-national-hydrography-products>.
- USGS (United States Geological Survey). 2020a. Hydrologic Unit Maps. Last updated April 16, 2020. Accessed May 21, 2020 at <https://water.usgs.gov/GIS/huc.html>.

- USGS. 2020b. Induced Earthquakes. Accessed June 6, 2020 at <https://www.usgs.gov/natural-hazards/earthquake-hazards/induced-earthquakes>.
- USGS. 2019. USGS National Watershed Boundary Dataset (vector digital data). Accessed on May 21, 2020 at <https://www.usgs.gov/core-science-systems/ngp/national-hydrography/access-national-hydrography-products>.
- USGS. 2018a. East vs West Coast Earthquakes. Accessed April 28, 2018 at <https://www.usgs.gov/news/east-vs-west-coast-earthquakes>.
- USGS. 2018b. 2018 Long-term National Seismic Hazard Map. Accessed April 30, 2020 at <https://www.usgs.gov/media/images/2018-long-term-national-seismic-hazard-map>.
- USGS. 2018c. Geologic Provinces of the United States: Records of an Active Earth. Accessed May 2, 2018 at <https://archive.usgs.gov/archive/sites/geomaps.wr.usgs.gov/parks/province/index.html>.
- USGS. 2017a. Geologic Provinces of the United States. Last modified April 21, 2017. Accessed June 2018. Available at <https://geomaps.wr.usgs.gov/parks/province/appalach.html> [links to each of the regions found at this url].
- USGS. 2016a. Boundary Descriptions and Names of Regions, Subregions, Accounting Units, and Cataloging Units. Last Modified December 1, 2016. Accessed April 9, 2018 at https://water.usgs.gov/GIS/huc_name.html#Region01.
- USGS. 2016b. *National Land Cover Database 2016 (NLCD2016) Statistics for 2016*. Accessed on August 13, 2019 at <https://www.mrlc.gov/data/statistics/national-land-cover-database-2016-nlcd2016-statistics-2016>.
- USGS. 2015a. East vs West Coast Earthquakes. Accessed May 2, 2020 at <https://www.usgs.gov/news/east-vs-west-coast-earthquakes>.
- USGS. 2015b. M5.8 August 23, 2011 Mineral, Virginia. Accessed on May 3, 2020 at https://www.usgs.gov/natural-hazards/earthquake-hazards/science/m58-august-23-2011-mineral-virginia?qt-science_center_objects=0#qt-science_center_objects.
- USGS. 2015c. UCERF3: A New Earthquake Forecast for California's Complex Fault System. Accessed May 3, 2020 at <https://pubs.usgs.gov/fs/2015/3009/pdf/fs2015-3009.pdf>.
- USGS. 2014a. Cool Earthquake Facts. Accessed May 2, 2020 at <https://www.usgs.gov/natural-hazards/earthquake-hazards/science/cool-earthquake-facts>.
- USGS. 2014b. The Great M7.9 1857 Fort Tejon Earthquake. Accessed May 2, 2020 at <https://www.usgs.gov/natural-hazards/earthquake-hazards/science/great-m79-1857-fort-tejon-earthquake>.

- USGS. 2014c. Regional Assessment of Groundwater Quality in the New England Crystalline-Rock Aquifers. Last modified March 4, 2014. Accessed April 18, 2018 at <https://water.usgs.gov/nawqa/studies/prag/necrys/index.html>.
- USGS. 2013. Hydrologic Unit Map. Accessed March 2018 at <http://water.usgs.gov/GIS/regions.html>.
- USGS. 2012a. Number of Strong Earthquakes in the U.S. from 1974 to 2003, by State. June 2012. Accessed May 2, 2020 at <https://www.statista.com/statistics/203956/number-of-strong-earthquakes-in-the-us-by-state/>.
- USGS. 2012b. Seismic Hazard Assessment for Guam and the Northern Mariana Islands. Open-File Report 2012–1015. Reston, Virginia. Accessed November 7, 2019 at <https://pubs.usgs.gov/of/2012/1015/report/OF12-1015.pdf>.
- USGS. 2011a. M 5.7 Oklahoma Earthquake of 06 November 2011. Accessed November 15, 2019 at <https://earthquake.usgs.gov/archive/product/poster/20111106/us/1481139875138/poster.pdf>.
- USGS. 2011b. NLCD 2011 Land Cover Alaska – National Geospatial Data Assess Land Use Land Cover. Accessed on November 14, 2019 at <http://www.mrlc.gov>.
- USGS. 2009. Earthquake Hazard in the New Madrid Seismic Zone Remains a Concern. Accessed April 25, 2020 at <https://pubs.usgs.gov/fs/2009/3071/pdf/FS09-3071.pdf>.
- USGS. 2005. Coastal Vulnerability Assessment of National Park of American Samoa (NPSA) to Sea-Level Rise. Accessed February 25, 2020 at <https://pubs.usgs.gov/of/2005/1055/images/pdf/report.pdf>.
- USGS. 2004a. Physiographic Divisions of the Conterminous U.S. Derived from Fenneman, N.M., and Johnson, D.W. 1:7,000,000-scale map "Physical Divisions of the United States" published in 1946. Accessed on February 14, 2020 at <https://water.usgs.gov/GIS/metadata/usgswrd/XML/physio.xml#stdorder>.
- USGS. 2004b. Documentation for 2003 USGS Seismic Hazard Maps for Puerto Rico and the U.S. Virgin Islands. U.S. Geological Survey Open-File Report 03-379. U.S. Geological Survey, Reston, Virginia. 2004.
- USGS. 2003a. M4.6 Fort Payne, Alabama Earthquake of 29 April 2003. Accessed November 15, 2019 at <ftp://hazards.cr.usgs.gov/maps/sigeqs/20030429/20030429tab.pdf>.
- USGS. 2003b. Surface Water in Hawaii. Accessed May 3, 2018 at <https://pubs.usgs.gov/fs/fs04503/pdf/fs045-03.pdf>.
- USGS. 2001. Floods and Flood Plains (Open File Report 93-641). Accessed March 2018 at <http://pubs.usgs.gov/of/1993/ofr93-641/>.

- USGS. 1997. National Water Summary on Wetland Resources. USGS Water Supply Paper 2425. State Summary Highlights. Last modified March 7, 1997. Accessed March 2018 at <https://water.usgs.gov/nwsum/WSP2425/>.
- USGS. 1993. Seismicity of the United States, 1568-1989 (revised). Professional Paper 1527. Accessed May 2, 2020 at <https://pubs.er.usgs.gov/publication/pp1527>.
- USGS. 1978. Summary Appraisals of the Nation's Ground-Water Resources – Mid-Atlantic Region. Accessed April 18, 2018 at <https://pubs.usgs.gov/pp/0813i/report.pdf>.
- United States Water Resources Council. 1978. The Nation's Water Resources: 1975-2000, Volume 4: Texas-Gulf Region. Accessed March 2018 at http://water.usgs.gov/watercensus/file/Vol_4_Texas_Gulf.pdf.
- Utah Geological Survey. 1996. The Wasatch Fault. Utah Geological Survey Public Information Series 40. Accessed May 2, 2020 at https://ugspub.nr.utah.gov/publications/public_information/pi-40.pdf.
- VA (United States Departments of Veterans Affairs). 2020. Home Improvements and Structural Alterations (HISA). Accessed March 2020 at <https://www.prosthetics.va.gov/psas/HISA2.asp>.
- VA. 2019a. National Center for Veterans Analysis and Statistics. State/Territory Summary Reports. Last updated May 9, 2019. Accessed December 2019 at <https://www.va.gov/vetdata/stateSummaries.asp>.
- VA. 2019b. *Lenders Handbook*. Pamphlet 26-7. Chapter 9 Legal Instruments, Liens, Escrows, and Related Issues. Last updated October 22, 2019. Accessed October 28, 2019 at https://www.benefits.va.gov/warms/pam26_7.asp.
- VA. 2019c. Profile of Veterans: 2017 Highlights. National Center for Veterans Analysis and Statistics. Last updated November 5, 2019. Accessed December 5, 2019 at https://www.va.gov/vetdata/docs/QuickFacts/2017_Veterans_Profile_Fact_Sheet.PDF.
- VA. 2019d. Veteran Population (Population Tables) – Nation Race/Ethnicity. National Center for Veterans Analysis and Statistics. Last updated November 8, 2019. Accessed December 5, 2019 at https://www.va.gov/vetdata/Veteran_Population.aspb.
- VA. 2018a. VA Home Loans. Regional Loan Center Contact Information. Accessed April 19, 2018 at https://www.benefits.va.gov/homeloans/contact_rlc_info.asp.
- VA. 2018b. Annual Benefits Report FY 2017. Veterans Benefits Administration Reports Accessed July 15, 2019 at https://benefits.va.gov/REPORTS/abr/docs/2017_abr.pdf.

- VA. 2017a. VA Circular 26-17-26. Annual Increase in Construction Cost Index and Specially Adapted Housing (SAH), Special Housing Adaptations (SHA), and Temporary Residence Adaptations (TRA) Grants. September 19, 2017. Accessed April 9, 2018 at https://www.benefits.va.gov/HOMELOANS/documents/circulars/26_17_26.pdf.
- VA. 2017b. VA Lender's Handbook. VA Pamphlet 26-7, Revised. Accessed December 20, 2017 at https://www.benefits.va.gov/WARMS/pam26_7.asp.
- VA. 2013. VA Directive 0067. VA National Environmental Policy Act Implementation. June 21, 2013. Accessed January 23, 2018 at https://www.va.gov/vapubs/search_action.cfm?dType=1.
- VA. 2011. VA Directive 7545, Cultural Resource Management. December 5, 2011. Accessed May 6, 2020 at <https://www.google.com/search?q=VA+Directive+7545&oq=VA+Directive+7545&aqs=chrome..69i57j69i64.1787476876j0j7&sourceid=chrome&ie=UTF-8>.
- VA. 2010. NEPA Interim Guidance for Projects. Department of Veterans Affairs. Office of Construction and Facilities Management. 30 September 2010.
- VA. 2004. Evaluation of VA's Home Loan Guaranty Program. Final Report. Prepared by Economic Systems Inc., ORC Macro, The Hay Group. July 2004. Accessed January 23, 2018 at https://www.benefits.va.gov/homeloans/documents/docs/final_report.pdf
- VA. 2001. VA Pamphlet 26-7, Revised. Chapter 12: Minimum Property Requirements. January 1, 2001.
- Vaouli, Elena, Christianera Tuiteli, Edna L. Buchan, Josephine Regis, Phil Wiles, and Nate Ilaoa. 2010. Territory of American Samoa Integrated Water Quality Monitoring and Assessment Report 2010. Accessed November 21, 2019 at <https://www.epa.as.gov/sites/default/files/documents/surface/americansamoa2010integratedwaterqualityreport031910.pdf>.
- Virgil, J.F., R.J. Pike, D.G. Howell. 2000. A Tapestry of Time and Terrain. Pamphlet to accompany Geologic Investigations Series I-2720.
- Virgin Islands Department of Planning & Natural Resources. 2016. USVI Integrated Water Quality Monitoring & Assessment Report. 2016. Accessed May 2, 2018 at https://www.epa.gov/sites/production/files/2017-02/documents/2016_usvi_303d_list.pdf.
- Virgin Islands Now. 2018. Virgin Islands Best Online Guide. Last accessed May 3, 2018. Available at: http://www.vinow.com/general_usvi/geography/
- Walton, Brett. 2017. U.S. Household Water Use Continues to Decline. November 8, 2017. Accessed April 11, 2018 at <http://www.circleofblue.org/2017/world/u-s-household-water-use-continues-decline/>.

- Wang, Chao; Yu, Mei; Gao, Qiong; and Wang, Xian. 2016. "Puerto Rico Land Cover/Land Use Map in 2010". Accessed online November 14, 2019 at <https://doi.org/10.7910/DVN/V55JDP>.
- West, Larry. 2017. Tap Water in 42 States Contaminated by Chemicals. March 17, 2017. Accessed April 11, 2018 at <https://www.thoughtco.com/chemical-contaminated-tap-water-in-us-1204205>.
- Wilderness Society. 2018. National Wilderness Preservation System. Last accessed May 15, 2018. Available at: <https://wilderness.org/article/national-wilderness-preservation-system>.
- Williams, Lester J. and Eve L. Kuniansky. 2016. Revised Hydrogeologic Framework of the Floridan Aquifer System in Florida and Parts of Georgia, Alabama, and South Carolina. Professional Paper 1807. Version 1.1. Revised March 2016. Accessed April 24, 2018 at <https://pubs.usgs.gov/pp/1807/pdf/pp1807.pdf>.
- Winter, T., J. Harvey, O. Franke, and W. Alley. 1998. Ground water and surface water; a single resource. Published by United States Geological Society Circular 1139. Accessed on May 11, 2018 at <https://pubs.er.usgs.gov/publication/cir1139>.
- Woodside, Michael D., Anne B. Hoos, James A. Kingsbury, Jeffrey R. Powell, Rodney R. Knight, Jerry W. Garrett, Reavis L. Michell III, and John A. Robinson. 2004. Water Quality in the Lower Tennessee River Basin, Tennessee, Alabama, Kentucky, Mississippi, and Georgia, 1999-2001. USGS Circular 1233. 2004. Accessed April 26, 2018 at <https://pubs.usgs.gov/circ/2004/1233/pdf/circular1233.pdf>.
- World Atlas – Alaska. 2018a. Accessed June 2018. Available at: <https://www.worldatlas.com/webimage/countrys/namerica/usstates/akland.htm#page>.
- World Atlas – Hawaii. 2018b. Accessed June 2018. Available at: <https://www.worldatlas.com/webimage/countrys/namerica/usstates/hiland.htm>
- World Resources Institute. 2018. CAIT – Historical Emissions Data (Countries, U.S. States, UNFCCC). Washington, D.C. Accessed May 8, 2018 at <http://www.wri.org/resources/data-sets/caithistorical-emissions-data-countries-us-states-unfccc>.
- WWF (World Wildlife Fund). 2019a. Western Micronesia: north of Papua New Guinea. Accessed November 11, 2019 at <https://www.worldwildlife.org/ecoregions/oc0203>.
- WWF. 2019b. Islands of Western Samoa and American Samoa in the Southern Pacific. Accessed November 12, 2019 at <https://www.worldwildlife.org/ecoregions/oc0112>.
- Wyoming State Geological Survey. 2020. Earthquakes. Accessed on May 3, 2020 at <https://www.wsgs.wyo.gov/hazards/earthquakes>.

- Wyoming State Geological Survey. 2019. Geologic Hazards in Wyoming. January 2019 Summary Report. Accessed May 2, 2020 at <https://www.wsgs.wyo.gov/products/wsgs-2019-geologic%20hazards-summary.pdf>.
- Zenone, Chester and Gary S. Anderson. 1978. Summary Appraisals of the Nation's Ground-Water Resources—Alaska. Geological Survey Professional Paper 813-P. 1978. Accessed May 2, 2018 at <https://pubs.usgs.gov/pp/0813p/report.pdf>.
- Zurawaski, Ann. 1978. Summary Appraisals of the Nation's Ground-Water Resources – Tennessee Region. Geological Survey Professional Paper 813-L. 1978. Accessed April 25, 2018 at <https://pubs.usgs.gov/pp/0813l/report.pdf>.

APPENDIX A PUBLIC SCOPING

INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

APPENDIX A PUBLIC SCOPING..... A-1
Notice of Intent..... A-2
Sample Letter A – Federal Agencies..... A-4
Sample Letter B – Federal Officials..... A-6
Sample Letter C – Tribal Contacts..... A-8

LIST OF TABLES

Table A-1. Record of Letter Communication: Federal Agencies..... A-10
Table A-2. Record of Letter Communication: Federal Officials..... A-10
Table A-3. Record of Letter Communication: Tribal and Territorial Contacts..... A-11

INTENTIONALLY LEFT BLANK

APPENDIX A PUBLIC SCOPING

This appendix provides a copy of The Department of Veterans Affairs (VA) Notice of Intent issued on July 16, 2018 in the *Federal Register* stating that it would prepare a Programmatic Environmental Impact Statement of the VA Housing Loan Program. Also provided are copies of scoping letters (Sample Letters A, B, and C) VA sent to relevant federal agencies, federal officials, and Native American Tribes and Territories with Memoranda of Understanding with VA during the scoping period.

NOTICE OF INTENT



32952

Federal Register / Vol. 83, No. 136 / Monday, July 16, 2018 / Notices

carrier vehicle maintenance practices as a result of an intervention; significant benefits of interventions; and ways the intervention process could be improved. Information provided by the IE Group will address the portion of Objective 2 regarding sufficiency of regulations and where interventions need to be improved to facilitate complying with these regulations.

Survey responses will be summarized and reported using plots, tables, content analysis, and calculated summary statistics. Plots and tables will provide a visual comparison of multiple choice and checkbox survey responses for successful carriers (*i.e.*, carriers in the RP Group) and those receiving interventions in the last 24 months (*i.e.*, carriers in the IE Group). These methods will also allow researchers to summarize responses by carrier operation type (*i.e.*, truck or bus) and size. Bar charts will be used to plot responses to many survey questions. Some survey responses may be summarized with tables with rows for each of the carrier operation types (truck or bus) and each carrier-size subgroup. To explore and summarize responses to open-ended survey questions, researchers will use content analysis methods. An illustration of an open-ended question in the survey is "List examples of critical safety-related maintenance activities for trailer vehicle milestones." The goal of content analysis of open-ended questions will be to identify common answers.

The results of this information collection will be documented in a technical report to be delivered to and published by FMCSA. In addition, the results will be used to create a "recommended best practices" report that will outline minimum standards for inspection intervals, mechanic qualifications and training, and certification of maintenance facilities. Finally, VTTI is required under the contract with FMCSA to compile and analyze the collected information and develop a public-use data set.

This ICR is for a one-time data collection. If this data collection does not take place, the truck and bus industry would continue to operate with the uncertainty of what a "systematic maintenance" program, as currently worded in section 396.3(a), consists of. This term's ambiguous definition makes it difficult for federal and state inspectors to evaluate the effectiveness of a carrier's maintenance program or its compliance with this provision. Furthermore, this uncertainty may make it difficult for carriers to ascertain and therefore comply with the regulation's intent.

Title: Truck and Bus Maintenance Requirements and Their Impact on Safety.

OMB Control Number: 2126-XXXX.

Type of Request: New information collection.

Respondents: Freight motor carriers and passenger carriers.

Estimated Number of Respondents: 578 respondents [578 respondents will complete the Online Recruitment Survey. Of those 578 respondents, 289 will also complete the Carrier Maintenance Manager Survey].

Estimated Time per Response: Varies [Online Recruitment Survey: 5 minutes. Carrier Maintenance Manager Survey: 45 minutes].

Expiration Date: 3 years after approval.

Frequency of Response: Once.

Estimated Total Annual Burden: 265 hours [Online Recruitment Survey: 578 respondents \times (5 minutes \div 60 minutes) = 48 hours; Carrier Maintenance Manager Survey: 289 respondents \times (45 minutes \div 60 minutes) = 217 hours].

Public Comments Invited: You are asked to comment on any aspect of this information collection, including: (1) Whether the proposed collection is necessary for the performance of FMCSA's functions; (2) the accuracy of the estimated burden; (3) ways for FMCSA to enhance the quality, usefulness, and clarity of the collected information; and (4) ways that the burden could be minimized without reducing the quality of the collected information. The agency will summarize or include your comments in the request for OMB's clearance of this information collection.

Issued under the authority of 49 CFR 1.87 on: July 10, 2018.

Kelly Regal,

Associate Administrator for Office of Research and Information Technology.

[FR Doc. 2018-15151 Filed 7-13-18; 8:45 am]

BILLING CODE 4910-EX-P

DEPARTMENT OF VETERANS AFFAIRS

Notice of Intent To Prepare a Programmatic Environmental Impact Statement of the Department of Veterans Affairs Housing Loan Program

AGENCY: Department of Veterans Affairs.

ACTION: Notice of intent.

SUMMARY: Under the authority of the National Environmental Policy Act (NEPA) and its implementing regulations, VA intends to prepare a Programmatic Environmental Impact

Statement (PEIS) to evaluate the potential direct, indirect, and cumulative environmental consequences of continued operation and administration of VA's Housing Loan Program (HLP). VA's reference to the HLP includes federal assistance, administered by the Veterans Benefits Administration (VBA), in the form of loans made, insured, or guaranteed by VA. It also includes housing benefits that can be used in conjunction with the HLP (*e.g.*, the Specially Adapted Housing program). Under the HLP, VBA is also responsible for the management, marketing, and disposition of real estate owned (REO) properties that VA acquires following the foreclosure of certain VA-guaranteed loans and loans held in VA's portfolio. This notice opens the public scoping phase and invites interested parties to identify potential issues, concerns, and reasonable alternatives that should be considered in the PEIS. Following the scoping meeting referenced below, a Draft PEIS will be prepared and circulated for public comment.

DATES: All written comments should be submitted by August 15, 2018.

VA invites federal, state, tribal, and local entities; non-profit organizations; businesses; interested parties; and the general public to comment on the proposed scope and content of the PEIS. VA will consider all scoping comments in developing the PEIS. VA will conduct a public scoping meeting on Thursday, August 2, 2018, from 6:00 to 8:00 p.m. at the Bethesda North Marriott Hotel and Conference Center, 5701 Marinelli Road, Rockville, Maryland 20852. The scoping meeting will afford the public an opportunity to learn more about the project and provide input on the environmental analysis process. During the meeting, VA will provide an overview of the project, as well as details regarding the PEIS scope, purpose, and need. VA will also outline the overall NEPA process. Additionally, VA will post a scoping presentation on a publicly available website during the 30-day scoping period. Such presentation will be available at http://www.benefits.va.gov/homeloans/environmental_impact.asp.

Proposed Actions and Alternatives: VA's Proposed Action is to continue administering the HLP and incorporating programmatic changes as necessitated by amendments to program authorities, Veteran need, market conditions, and factors not foreseen at the time of this publication.

VA's No Action Alternative refers to a scenario wherein VA operates the HLP in a manner consistent with policies

and procedures as of fiscal year 2017 (October 1, 2016 through September 30, 2017). The No Action Alternative is being presented as a snapshot in time to provide a baseline from which to compare the Proposed Action. Nevertheless, the No Action Alternative is likely unrealistic, as it assumes that HLP policies and requirements are frozen, and thereby does not account for subsequent programmatic improvements, legislation, Executive Branch directives, or other requirements.

ADDRESSES: Written comments may be submitted through <http://www.regulations.gov>; by mail or hand delivery to the Director, Office of Regulation Policy and Management (00REG), Department of Veterans Affairs, 810 Vermont Avenue NW, Room 1063B, Washington DC 20420; or by fax to 202-273-9026. Comments should indicate that they are submitted in response to "Notice of Intent to Prepare a Programmatic Environmental Impact Statement of the Department of Veterans Affairs Housing Loan Program". Copies of comments received will be available for public inspection in the Office of Regulation Policy and Management (00REG), Department of Veterans Affairs, 810 Vermont Ave. NW, Room 1063B, Washington, DC 20420, between the hours of 8:00 a.m. and 4:30 p.m., Monday through Friday (except Federal holidays). Please call (202) 461-4902 (this is not a toll-free number) for an appointment. During the comment period, comments may also be viewed online through the Federal Docket Management System at www.regulations.gov.

FOR FURTHER INFORMATION CONTACT: Elysium Drumm, VA Housing Loan Program, at 202-632-8790 or VAHLPNEPA.VBAVACO@va.gov.

SUPPLEMENTARY INFORMATION: The most significant element of the HLP is the provision of housing benefits that assist eligible Veterans in financing the purchase, construction, repair, or improvement of a home for their personal occupancy. See 38 U.S.C. 3701 *et seq.* VBA administers these and other housing benefits, such as assistance to Veterans who want to adapt their homes, to assist Veterans in readjusting to civilian life. The HLP provides what can be, for some Veterans, their sole opportunity to obtain crucial housing loans and adaptations.

Through this PEIS, VA is using the NEPA process to evaluate the potential physical, environmental, cultural, and socioeconomic effects of the HLP; to invite public participation; and to assist with and inform future planning

and decision making related to the HLP. The PEIS will also evaluate the HLP, which assists hundreds of thousands of Veterans each year across the United States and its territories, to ensure that VA appropriately considers the human environmental elements and effects specified in 40 CFR 1508.8 (*i.e.*, ecological, aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative) in carrying out the various elements and aspects of the program. This PEIS is unique in that it addresses an existing program, and VA has no specific or immediate need to change its operational structure or procedures to address environmental impacts. Furthermore, the making of loan guaranties, direct loans, and grants do not typically, in and of themselves, result in direct environmental impacts. Environmental impacts, if they occur, would be the result of private citizen actions (*e.g.*, construction of a house funded by VA-guaranteed loan financing) related to a specific property. In this case, the primary environmental impacts of concern for VA would be the potential indirect impacts from homeowner actions and the potentially significant cumulative impacts of small incremental actions on local and regional resources.

As part of the scoping process, VA encourages federal, state, tribal, and local entities; non-profit organizations; businesses; interested parties; and the general public to provide input on any areas of environmental concern relevant to the HLP, and suggestions regarding potential environmental impacts that should be evaluated. VA will consult with such parties during VA's preparation of the PEIS.

Signing Authority

The Secretary of Veterans Affairs, or designee, approved this document and authorized the undersigned to sign and submit the document to the Office of the Federal Register for publication electronically as an official document of the Department of Veterans Affairs. Jacquelyn Hayes-Byrd, Deputy Chief of Staff, Department of Veterans Affairs, approved this document on July 10, 2018, for publication.

Dated: July 10, 2018.

Jeffrey M. Martin,

Impact Analyst, Office of Regulation Policy & Management, Office of the Secretary, Department of Veterans Affairs.

[FR Doc. 2018-15073 Filed 7-13-18; 8:45 am]

BILLING CODE 8320-01-P

DEPARTMENT OF VETERANS AFFAIRS

[OMB Control No. 2900-0609]

Agency Information Collection Activity: Survey of Veteran Enrollees' Health and Use of Health Care

AGENCY: Veterans Health Administration, Department of Veterans Affairs.

ACTION: Notice.

SUMMARY: Veterans Health Administration, Department of Veterans Affairs (VA), is announcing an opportunity for public comment on the proposed collection of certain information by the agency. Under the Paperwork Reduction Act (PRA) of 1995, Federal agencies are required to publish notice in the **Federal Register** concerning each proposed collection of information, including each renewal of a currently approved collection, and allow 60 days for public comment in response to the notice.

DATES: Written comments and recommendations on the proposed collection of information should be received on or before September 14, 2018.

ADDRESSES: Submit written comments on the collection of information through Federal Docket Management System (FDMS) at www.Regulations.gov or to Brian McCarthy, Office of Regulatory and Administrative Affairs (10B4), Department of Veterans Affairs, 810 Vermont Avenue NW, Washington, DC 20420 or email to Brian.McCarthy4@va.gov. Please refer to "OMB Control No. 2900-0609" in any correspondence. During the comment period, comments may be viewed online through FDMS.

FOR FURTHER INFORMATION CONTACT: Brian McCarthy at (202) 615-9241.

SUPPLEMENTARY INFORMATION: Under the PRA of 1995, Federal agencies must obtain approval from the Office of Management and Budget (OMB) for each collection of information they conduct or sponsor. This request for comment is being made pursuant to Section 3506(c)(2)(A) of the PRA.

With respect to the following collection of information, VHA invites comments on: (1) Whether the proposed collection of information is necessary for the proper performance of VHA's functions, including whether the information will have practical utility; (2) the accuracy of VHA's estimate of the burden of the proposed collection of information; (3) ways to enhance the quality, utility, and clarity of the information to be collected; and (4) ways to minimize the burden of the

SAMPLE LETTER A – FEDERAL AGENCIES



DEPARTMENT OF VETERANS AFFAIRS
Veterans Benefits Administration
Washington, DC 20420

July 20, 2018

Agency Point of Contact
Agency Point of Contact Title
Agency
Agency Division
Agency Address
Agency Address

Dear Agency Point of Contact:

Under the authority of the National Environmental Policy Act (NEPA) and its implementing regulations, the U.S. Department of Veterans Affairs (VA) intends to prepare a Programmatic Environmental Impact Statement (PEIS) to evaluate the potential direct, indirect, and cumulative environmental consequences of continued operation and administration of VA's Housing Loan Program (HLP). This letter is part of the project's public scoping phase, and VA invites interested parties like you to identify potential issues, concerns, and reasonable alternatives that should be considered in the PEIS.

VA's HLP includes not only its guaranteed and direct loan programs, but also other housing benefits that can be used in conjunction with them, for example, the Specially Adapted Housing program. The HLP assists hundreds of thousands of Veterans each year, and provides what can be, for some Veterans, the sole opportunity to obtain crucial housing loans and adaptations. Through this PEIS, and the NEPA process, VA will evaluate the potential physical, environmental, cultural, and socioeconomic effects of the HLP and use the study to inform potential future planning and decision making related to the HLP.

The HLP PEIS is unique in that it addresses an existing, ongoing program, and VA has no specific or immediate need to change the program's operational structure or procedures to address environmental impacts. Since the making of loan guaranties, direct loans, and grants do not typically, in and of themselves, result in direct environmental impacts, environmental impacts, if they occur, would be the result of private citizen actions (e.g., construction of a house funded by VA-guaranteed loan financing) related to a specific property. In this case, the primary environmental impacts of concern for VA would be the potential indirect impacts from homeowner actions and the potentially significant cumulative impacts of small incremental actions on local and regional resources.

Page 2

Agency Point of Contact

Comments on the Proposed Scope of the PEIS

We are writing to invite you to submit any comments you might have that would assist VA in identifying environmental and other relevant issues, concerns, and reasonable alternatives that should be considered in the PEIS. VA invites you to share such comments at the in-person public scoping meeting being held on August 2, 2018 (see below for details). Alternatively, you may provide written comments in writing before August 15, 2018. Written comments may be submitted through <http://www.regulations.gov> or by fax to (202) 273-9026. If preferred, you may also submit written comments by mail or hand delivery to:

Director, Office of Regulation Policy and Management (00REG)
Department of Veterans Affairs
810 Vermont Avenue NW, Room 1063B
Washington DC 20420.

Comments should indicate that they are submitted in response to Docket VA-2018-VACO-0001-1061.

Public Scoping Process and Meeting

VA invites federal, state, tribal, and local entities; non-profit organizations; businesses; interested parties; and the general public to comment on the proposed scope and content of the PEIS. VA will consider all scoping comments in developing the PEIS. Following the scoping meeting, referenced below, VA will prepare a Draft PEIS document and circulate it for public comment. The public scoping meeting will be held on:

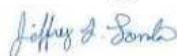
Thursday, August 2, 2018, from 6:00 to 8:00 PM at the Bethesda North Marriott Hotel and Conference Center, 5701 Marinelli Road, Rockville, Maryland 20852.

The scoping meeting will afford the public an opportunity to learn more about the project and provide input on the environmental analysis process. During the meeting, VA will provide an overview of the project, as well as details regarding the PEIS scope, purpose, and need. VA will also outline the overall NEPA process.

Additionally, VA will post a scoping presentation on a publicly available website during the 30-day scoping period. Such presentation will be available at http://www.benefits.va.gov/homeloans/environmental_impact.asp. If you have any questions or require additional information, please contact Elysium Drumm, VA Housing Loan Program, at VAHLPNEPA.VBAVACO@va.gov.

We look forward to hearing from you.

Sincerely,



Jeffrey F. London
Director, Loan Guaranty Service

SAMPLE LETTER B – FEDERAL OFFICIALS



DEPARTMENT OF VETERANS AFFAIRS
Veterans Benefits Administration
Washington, DC 20420

July 20, 2018

Federal Representative Point of Contact
Federal Representative Title
Federal Representative Agency
Federal Representative Address
Federal Representative Address

Dear Federal Representative Point of Contact:

Under the authority of the National Environmental Policy Act (NEPA) and its implementing regulations, the U.S. Department of Veterans Affairs (VA) intends to prepare a Programmatic Environmental Impact Statement (PEIS) to evaluate the potential direct, indirect, and cumulative environmental consequences of continued operation and administration of VA's Housing Loan Program (HLP). This letter is part of the project's public scoping phase, and VA invites interested parties like you to identify potential issues, concerns, and reasonable alternatives that should be considered in the PEIS.

VA's HLP includes not only its guaranteed and direct loan programs, but also other housing benefits that can be used in conjunction with them, for example, the Specially Adapted Housing program. The HLP assists hundreds of thousands of Veterans each year, and provides what can be, for some Veterans, the sole opportunity to obtain crucial housing loans and adaptations. Through this PEIS, and the NEPA process, VA will evaluate the potential physical, environmental, cultural, and socioeconomic effects of the HLP and use the study to inform potential future planning and decision making related to the HLP.

The HLP PEIS is unique in that it addresses an existing, ongoing program, and VA has no specific or immediate need to change the program's operational structure or procedures to address environmental impacts. Since the making of loan guaranties, direct loans, and grants do not typically, in and of themselves, result in direct environmental impacts, environmental impacts, if they occur, would be the result of private citizen actions (e.g., construction of a house funded by VA-guaranteed loan financing) related to a specific property. In this case, the primary environmental impacts of concern for VA would be the potential indirect impacts from homeowner actions and the potentially significant cumulative impacts of small incremental actions on local and regional resources.

Page 2

Federal Representative Point of Contact

Comments on the Proposed Scope of the PEIS

We are writing to invite you to submit any comments you might have that would assist VA in identifying environmental and other relevant issues, concerns, and reasonable alternatives that should be considered in the PEIS. VA invites you to share such comments at the in-person public scoping meeting being held on August 2, 2018 (see below for details). Alternatively, you may provide written comments in writing before August 15, 2018. Written comments may be submitted through <http://www.regulations.gov> or by fax to (202) 273-9026. If preferred, you may also submit written comments by mail or hand delivery to:

Director, Office of Regulation Policy and Management (00REG)
Department of Veterans Affairs
810 Vermont Avenue NW, Room 1063B
Washington DC 20420.

Comments should indicate that they are submitted in response to Docket VA-2018-VACO-0001-1061.

Public Scoping Process and Meeting

VA invites federal, state, tribal, and local entities; non-profit organizations; businesses; interested parties; and the general public to comment on the proposed scope and content of the PEIS. VA will consider all scoping comments in developing the PEIS. Following the scoping meeting, referenced below, VA will prepare a Draft PEIS document and circulate it for public comment. The public scoping meeting will be held on:

Thursday, August 2, 2018, from 6:00 to 8:00 PM at the Bethesda North Marriott Hotel and Conference Center, 5701 Marinelli Road, Rockville, Maryland 20852.

The scoping meeting will afford the public an opportunity to learn more about the project and provide input on the environmental analysis process. During the meeting, VA will provide an overview of the project, as well as details regarding the PEIS scope, purpose, and need. VA will also outline the overall NEPA process.

Additionally, VA will post a scoping presentation on a publicly available website during the 30-day scoping period. Such presentation will be available at http://www.benefits.va.gov/homeloans/environmental_impact.asp. If you have any questions or require additional information, please contact Elysium Drumm, VA Housing Loan Program, at VAHLPNEPA.VBAVACO@va.gov.

We look forward to hearing from you.

Sincerely,



Jeffrey F. London
Director, Loan Guaranty Service

SAMPLE LETTER C – TRIBAL CONTACTS



DEPARTMENT OF VETERANS AFFAIRS
Veterans Benefits Administration
Washington, DC 20420

July 20, 2018

Indian Tribe Point of Contact
Indian Tribe Point of Contact Title
Indian Tribe
Indian Tribe Address
Indian Tribe Address

Dear Indian Tribe Point of Contact:

Under the authority of the National Environmental Policy Act (NEPA) and its implementing regulations, the U.S. Department of Veterans Affairs (VA) intends to prepare a Programmatic Environmental Impact Statement (PEIS) to evaluate the potential direct, indirect, and cumulative environmental consequences of continued operation and administration of VA's Housing Loan Program (HLP). This letter is part of the project's public scoping phase, and VA invites interested parties like you to identify potential issues, concerns, and reasonable alternatives that should be considered in the PEIS.

VA's HLP includes not only its guaranteed and direct loan programs, but also other housing benefits that can be used in conjunction with them, for example, the Specially Adapted Housing program. The HLP assists hundreds of thousands of Veterans each year, and provides what can be, for some Veterans, the sole opportunity to obtain crucial housing loans and adaptations. Through this PEIS, and the NEPA process, VA will evaluate the potential physical, environmental, cultural, and socioeconomic effects of the HLP and use the study to inform potential future planning and decision making related to the HLP.

The HLP PEIS is unique in that it addresses an existing, ongoing program, and VA has no specific or immediate need to change the program's operational structure or procedures to address environmental impacts. Since the making of loan guaranties, direct loans, and grants do not typically, in and of themselves, result in direct environmental impacts, environmental impacts, if they occur, would be the result of private citizen actions (e.g., construction of a house funded by VA-guaranteed loan financing) related to a specific property. In this case, the primary environmental impacts of concern for VA would be the potential indirect impacts from homeowner actions and the potentially significant cumulative impacts of small incremental actions on local and regional resources.

page 2

Indian Tribe Point of Contact

Comments on the Proposed Scope of the PEIS

We are writing to invite you to submit any comments you might have that would assist VA in identifying environmental and other relevant issues, concerns, and reasonable alternatives that should be considered in the PEIS. VA invites you to share such comments at the in-person public scoping meeting being held on August 2, 2018 (see below for details). Alternatively, you may provide written comments in writing before August 15, 2018. Written comments may be submitted through <http://www.regulations.gov> or by fax to (202) 273-9026. If preferred, you may also submit written comments by mail or hand delivery to:

Director, Office of Regulation Policy and Management (00REG)
Department of Veterans Affairs
810 Vermont Avenue NW, Room 1063B
Washington DC 20420.

Comments should indicate that they are submitted in response to Docket VA-2018-VACO-0001-1061.

Public Scoping Process and Meeting

VA invites federal, state, tribal, and local entities; non-profit organizations; businesses; interested parties; and the general public to comment on the proposed scope and content of the PEIS. VA will consider all scoping comments in developing the PEIS. Following the scoping meeting, referenced below, VA will prepare a Draft PEIS document and circulate it for public comment. The public scoping meeting will be held on:

Thursday, August 2, 2018, from 6:00 to 8:00 PM at the Bethesda North Marriott Hotel and Conference Center, 5701 Marinelli Road, Rockville, Maryland 20852.

The scoping meeting will afford the public an opportunity to learn more about the project and provide input on the environmental analysis process. During the meeting, VA will provide an overview of the project, as well as details regarding the PEIS scope, purpose, and need. VA will also outline the overall NEPA process.

Additionally, VA will post a scoping presentation on a publicly available website during the 30-day scoping period. Such presentation will be available at http://www.benefits.va.gov/homeloans/environmental_impact.asp. If you have any questions or require additional information, please contact Elysium Drumm, VA Housing Loan Program, at VAHLPNEPA.VBAVACO@va.gov.

We look forward to hearing from you.

Sincerely,



Jeffrey F. London
Director, Loan Guaranty Service

Table A-1. Record of Letter Communication: Federal Agencies

Agency	Contact
Advisory Council on Historic Preservation Office of Federal Agency Programs	Mr. Reid Nelson, Director
Bureau of Indian Affairs Division of Environmental and Cultural Resources Management	Mr. Terry McClung, NEPA Coordinator
Council on Environmental Quality	Mr. Ted Boling, Associate Director for NEPA
Department of Homeland Security Office of Environmental Planning and Historic Preservation	Ms. Katherine Zeringue, Environmental Officer
Department of Housing and Urban Development Office of Environment and Energy	Ms. Danielle Schopp, JD, MPA; Director
Farm Credit Administration Office of Regulatory Policy	Mr. Gaylon Dykstra, Assistant to the Director
U.S. Army Corps of Engineers Office of the Assistant Secretary of the Army	Mr. Gib Owen, Assistant for Environmental, Tribal and Regulatory Affairs
U.S. Department of Agriculture Rural Development Service Engineering and Environmental Staff	Ms. Kellie Kubena, Director
U.S. Environmental Protection Agency Office of Federal Activities	Ms. Kelly Knight, Director NEPA Compliance Division
U.S. Fish and Wildlife Service Branch of Conservation Planning Assistance	Ms. Christy Johnson-Hughes, Ecological Services

Table A-2. Record of Letter Communication: Federal Officials

Department	Contact	State
House Committee on Veterans Affairs	Representative Phil Roe, R-TN Chairman	Tennessee
House Committee on Veterans Affairs	Representative Tim Walz, D-MN Ranking Member	Minnesota
Senate Committee on Veterans Affairs	Senator Johnny Isakson, R-GA Chairman	Georgia
Senate Committee on Veterans Affairs	Senator Jon Testor, D-MT Ranking Member	Montana

Table A-3. Record of Letter Communication: Tribal and Territorial Contacts

Native American Tribe, Nation, or Territory	Contact	State or Territory
Assiniboine and Sioux Tribes of Fort Peck	Floyd Azure, Chairman	Montana
Bad River Band of the Lake Superior Chippewa	Michael Wiggins, Chairman	Wisconsin
Bay Mills Indian Community	Bryan Newland, President	Michigan
Blackfeet Tribe	Harry Barnes, Chairman	Montana
Bois Forte Band of Chippewa Indians	Catherine Chavers, Chairman	Minnesota
Catawaba Indian Nation	William Harris, Chief	South Carolina
Cheyenne River Sioux Tribe	Harold Frazier, Chairman	South Dakota
Chippewa Cree Indians of the Rocky Boy's Reservation	Harlan Baker, Chairman	Montana
Colorado River Indian Tribes	Dennis Patch, Chairman	Arizona
Confederated Salish and Kootenai Tribes of the Flathead Reservation	Ron Trahan, Chairman	Montana
Confederated Tribes and Bands of the Yakama Nation	JoDe Goudy, Chairman	Washington
Confederated Tribes of the Colville Reservation	Michael Marchand, Chairman	Washington
Confederated Tribes of the Umatilla Reservation	Gary Burke, Board of Trustees Chairman	Oregon
Confederated Tribes of the Warm Springs Reservation	Eugene Greene, Jr., Chairman	Oregon
Crow Creek Sioux Tribe of the Crow Creek Reservation	Brandon Sazue, Chairman	South Dakota
Crow Tribe of Montana	AJ Not Afraid, Chairman	Montana
Development Bank of American Samoa	Ruth Matagi-Fa'atili, President	American Samoa
Eastern Band of Cherokee Indians	Richard Sneed, Principal Chief	North Carolina
Flandreau Santee Sioux Tribe	Anthony Reider, President	South Dakota
Fond du Lac Band of Lake Superior Chippewa	Kevin Dupuis, Sr., Chairman	Minnesota
Fort Belknap Indian Community	Mark Azure, President	Montana
Fort Mojave Indian Tribe of AZ, CA & NV	Timothy Williams, Chairman	California
Gila River Indian Community	Stephen Lewis, Governor	Arizona
Grand Portage Band, Minnesota Chippewa Tribe	Norman DesChampe, Chairman	Minnesota
Grand Traverse Band of Ottawa and Chippewa Indians	Thurlow McClellan, Chairperson	Michigan
Guam Housing Corporation	Martin Benavente, President	Guam

Table A-3. Record of Letter Communication: Tribal and Territorial Contacts

Native American Tribe, Nation, or Territory	Contact	State or Territory
Hawaiian Homelands	Jobie Masagatani, Chairperson	Hawaii
Hoopla Valley Tribe	Ryan Jackson, Chairperson	California
Hopi Tribe of Arizona	Herman Honanie, Chairman	Arizona
Hualapai Indian Tribe	Damon Clarke, Chairman	Arizona
Jicarilla Apache Nation	Levi Pesata, President	New Mexico
Kewa Pueblo	Thomas Moquino, Jr., Governor	New Mexico
Keweenaw Bay Indian Community	Warren Swartz, Jr., President	Michigan
Lac Courte Oreilles Band of Lake Superior Chippewa Indians	Louis Taylor, Chairman	Wisconsin
Lac du Flambeau Band of Lake Superior Chippewa Indians	Joseph Wildcat, Sr., President	Wisconsin
Leech Lake Band of Minnesota Chippewa Tribe	Faron Jackson, Sr., Chairman	Minnesota
Little Traverse Bay Band of Odawa Indians	Regina Gasco-Bentley, Chairman	Michigan
Lower Brule Sioux Tribe	Boyd Gourneau, Chairman	South Dakota
Lummi Tribe	Jeremiah Johnson, Chairman	Washington
Makah Indian Tribe	Nathan Tyler, Chairman	Washington
Menominee Indian Tribe of Wisconsin	Douglas Cox, Chairman	Wisconsin
Mescalero Apache Tribe of the Mescalero Reservation	Danny Breuninger, Sr., President	New Mexico
Metlakatla Indian Community, Annette Island Reserve	Karl Cook, Mayor	Alaska
Mississippi Band of Choctaw Indians	Phyllis Anderson, Chief	Mississippi
Morongo Band of Mission Indians	Robert Martin, Chairman	California
Navajo Nation	Russell Begaye, President	Arizona
Nez Perce Tribe	Shannon Wheeler, Chairman	Idaho
Nooksack Indian Tribe	Roswell Cline, Sr., Chairman	Washington
Northern Cheyenne Tribe	Lawrence Killsback, President	Montana
Northern Mariana Islands Housing Corporation	Mortgage and Credit Division Director	Commonwealth of the Northern Mariana Islands
Oglala Sioux Tribe	Scott Weston, President	South Dakota
Ohkay-Owingeh Pueblo	Peter Garcia, Jr., Governor	New Mexico

Table A-3. Record of Letter Communication: Tribal and Territorial Contacts

Native American Tribe, Nation, or Territory	Contact	State or Territory
Omaha Tribe of Nebraska	Michael Wolfe, Chairman	Nebraska
Oneida Indian Nation	Ray Halbritter, Nation Representative	New York
Osage Tribe	Corinthian Lorenzo, Chair	Oklahoma
Pascua Yaqui Indian Tribe	Robert Valencia, Chairman	Arizona
Passamaquoddy Tribe	William Nicholas, Sr., Chief	Maine
Ponca Tribe of Indians of Oklahoma	Earl Howe, III, Chairman	Oklahoma
Prairie Band Potawatomi Nation	Liana Onnen, Chairperson	Kansas
Pueblo of Acoma	Floyd Toralita, Chairman	New Mexico
Pueblo of Cochiti	Dwayne Herrera, Governor	New Mexico
Pueblo of Isleta	J. Robert Benavides, Governor	New Mexico
Pueblo of Jemez	Paul Chinana, Governor	New Mexico
Pueblo of Laguna	Virgil Siow, Governor	New Mexico
Pueblo of Nambe	Phillip Perez, Governor	New Mexico
Pueblo of Picuris	Craig Quanchello, Governor	New Mexico
Pueblo of Pojoaque	Joseph Talachy, Governor	New Mexico
Pueblo of San Felipe	Anthony Ortiz, Governor	New Mexico
Pueblo of Sandia	Richard Bernal, Governor	New Mexico
Pueblo of Santa Ana	Glenn Tenorio, Governor	New Mexico
Pueblo of Santa Clara	J. Michael Chavarria, Governor	New Mexico
Pueblo of Taos	Gilbert Suazo, Sr., Governor	New Mexico
Pueblo of Zia	Anthony Delgarito, Governor	New Mexico
Quinault Indian Nation	Fawn Sharp, President	Washington
Rosebud Sioux Tribe	William Kindle, President	South Dakota
Salt River Pima-Maricopa Indian Community	Delbert Ray, Sr., President	Arizona
San Carlos Apache Tribe	Terry Rambler, Chairperson	Arizona
Seminole Tribe of Florida	Marcellus Osceola, Jr., Chairman	Florida
Shoshone-Bannock Tribes	Nathan Small, Chairman	Idaho
Shoshone-Paiute Tribes of the Duck Valley Reservation	Theodore Howard, Chairman	Nevada

Table A-3. Record of Letter Communication: Tribal and Territorial Contacts

Native American Tribe, Nation, or Territory	Contact	State or Territory
Sisseton-Wahpeton Oyate of the Lake Traverse Reservation	Dave Flute, Chairman	South Dakota
Skokomish Inidan Tribe	Larry Winders, Chairman	Washington
Sokaogon Chippewa Community	Chris McGeshick, Chairman	Wisconsin
Southern Ute Indian Tribe	Clement Frost, Chairman	Colorado
Spokane Tribe	Carol Evans, Chairwoman	Washington
St. Regis Mohawk Tribe	Beverly Cook; Eric Thompson; Michael Connors; Chiefs	New York
Standing Rock Sioux Tribe	Dave Archambault, II, Chairman	North Dakota
Suquamish Indian Tribe of the Port Madison Reservation	Leonard Forsman, Chairman	Washington
Swinomish Tribal Community	M. Brian Cladoosby, Chairman	Washington
The Muscogee (Creek) Nation	James Floyd, Principal Chief	Oklahoma
The Seminole Nation of Oklahoma	Gregory Chilcoat, Chief	Oklahoma
Three Affiliated Tribes of the Fort Berthold Reservation	Mark Fox, Chairman	North Dakota
Tolowa Dee-ni' Nation	Scott Sullivan, Chairperson	California
Tulalip Tribes of Washington	Marie Zackuse, Chairperson	Washington
Turtle Mountain Band of Chippewa Indians	Wayne Keplin, Chairman	North Dakota
Upper Sioux Community	Kevin Jensvold, Chairman	Minnesota
Ute Indian Tribe of the Uintah & Ouray Reservation	Luke Duncan, Chairman	Utah
Ute Mountain Ute Tribe	Harold Cuthair, Chairman	Colorado
White Earth Band, Minnesota Chippewa Tribe	Terrence Tibbetts, Chairman	Minnesota
White Mountain Apache Tribe	Ronnie Lupe, Chairman	Arizona
Winnebago Tribe of Nebraska	Frank White, Chairperson	Nebraska
Yankton Sioux Tribe	Robert Flying Hawk, Chairman	South Dakota
Yavapai-Apache Nation of Camp Verde	Jane Russell-Winiecki, Chairman	Arizona
Yerington Paiute Tribe	Laurie Thom, Chairperson	Nevada
Ysleta del Sur Pueblo	Carlos Hisa, Governor	Texas
Zuni Tribe of the Zuni Reservation	Val Panteah, Sr., Governor	New Mexico

**APPENDIX B
LIST OF NATIVE AMERICAN TRIBES THAT HAVE
MEMORANDA OF UNDERSTANDING WITH
DEPARTMENT OF VETERANS AFFAIRS**

INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

**APPENDIX B LIST OF NATIVE AMERICAN TRIBES THAT HAVE
MEMORANDA OF UNDERSTANDING WITH DEPARTMENT OF
VETERANS AFFAIRS..... B-1**

INTENTIONALLY LEFT BLANK

APPENDIX B LIST OF NATIVE AMERICAN TRIBES THAT HAVE MEMORANDA OF UNDERSTANDING WITH DEPARTMENT OF VETERANS AFFAIRS

American Samoa

Lemanu Mauga, Governor

Bad River Band of the Lake Superior Chippewa

Michael Wiggins, Chairman

Bay Mills Indian Community

Whitney Gravelle, Chairwoman

Blackfeet Nation

Timothy Davis, Chairman

Bois Forte Band of Chippewa

Catherine Chavers, Chairwoman

Catawba Indian Nation

William Harris, Chief

Cheyenne River Sioux Tribe

Harold Frazier, Chairman

*Chippewa Cree Indians of the Rocky Boy's
Reservation*

Harlan Baker, Chairman

Colorado River Indian Tribes

Amelia Flores, Chairwoman

*Commonwealth of the Northern Mariana
Islands*Northern Marianas Housing Corporation,
Mortgage Credit Division, Director*Confederated Salish and Kootenai Tribes of the
Flathead Reservation*

Shelly Fyant, Chairwoman

*Confederated Tribes and Bands of the
Yakama Nation*

Delano Saluskin, Chairman

Confederated Tribes of the Colville Reservation

Rodney Cawston, Chairman

*Confederated Tribes of the Umatilla Indian
Reservation*

Kat Brigham, Board of Trustees Chairwoman

Confederated Tribes of Warm Springs

Raymond Tsumpti., Chairman

Coquille Indian Tribe

Brenda Meade, Chair

Crow Creek Sioux Tribe

Peter Lengkeek, Chairman

Crow Tribe of Montana

Frank Whiteclay, Chairman

Eastern Band of Cherokee Indians

Richard Sneed, Principal Chief

Flandreau Santee Sioux Tribe

Anthony Reider, President

Fond du Lac Band of Lake Superior Chippewa

Kevin Dupuis, Sr., Chairman

Fort Belknap Indian Community

Andrew Werk, Jr., President

Fort Mojave Indian Tribe

Timothy Williams, Chairman

Fort Peck Assiniboine & Sioux Tribes

Floyd Azure, Chairman

Gila River Indian Community

Stephen Roe Lewis, Governor

Grand Portage Band of Lake Superior Chippewa

Robert Deshampe, Chairman

*Grand Traverse Band of Ottawa and Chippewa
Indians*

David Arroyo, Chairman

Guam

Lou Leon Guerrero, Governor

Department of Hawaiian Home Lands
William Aila, Jr., Chairman

Hoopa Valley Tribe
Byron Nelson, Jr., Chairman

Hopi Tribe
Timothy Nuvangyaoma, Chairman

Hualapai Tribe
Damon Clarke, Chairman

Jicarilla Apache Nation
Edward Velarde, President

Kewa Pueblo
Sidelio Tenorio , Governor

Keweenaw Bay Indian Community
Warren Swartz, Jr., President

*Lac Courte Oreilles Band of Lake Superior
Chippewa Indians*
Louis Taylor, Chairman

*Lac du Flambeau Band of Lake Superior
Chippewa Indians*
John Johnson, Sr., President

Leech Lake Band of Ojibwe
Faron Jackson, Sr., Chairman

Little Traverse Bay Band of Odawa Indians
Regina Gasco-Bentley, Chairperson

Lower Brule Sioux Tribe
Clyde Estes, Chairman

Lummi Nation
Lawrence Solomon, Chairman

Makah Tribe
Timothy Greene, Sr., Chairman

Menominee Indian Tribe of Wisconsin
Gunnar Peters, Chairman

Mescalero Apache Tribe
Gabe Aguilar, President

*Metlakatla Indian Community, Annette Island
Reserve*
Karl Cook, Mayor

Mississippi Band of Choctaw Indians
Cyrus Ben, Chief

Morongo Band of Mission Indians
Robert Martin, Chairman

Navajo Nation
Jonathan Nez, President

The Muscogee (Creek) Nation
David Hill, Principal Chief

Nez Perce Tribe
Shannon Wheeler, Chairman

Nooksack Indian Tribe
Ross Cline, Sr., Chairman

Northern Cheyenne Tribe
Donna Fisher, President

Oglala Lakota Nation
Kevin Killer, President

Ohkay Owingeh
Joseph Aguino, Governor

Omaha Tribe of Nebraska
Everett Baxter, Jr., Chairman

Oneida Indian Nation
Ray Halbritter, Oneida Nation Representative

Osage Nation
Geoffrey Standing Bear, Principal Chief

Pascua Yaqui Tribe
Peter Yucupicio, Chairman

Passamaquoddy Tribe
William Nicholas, Sr., Chief

Ponca Tribe of Indians of Oklahoma
Oliver Little Cook, Chairman

Prairie Band Potawatomi Nation
Joseph Rupnick, Chairperson

Pueblo of Acoma
Brian Vallo, Governor

Pueblo of Cochiti
Joseph Herrera, Governor

<i>Pueblo of Isleta</i> Vernon Abeita, Governor	<i>Seminole Tribe of Florida</i> Marcellus Osceola, Jr., Chairman
<i>Pueblo of Jemez</i> Michael Toledo, Governor	<i>Shoshone-Bannock Tribes</i> Devon Boyer, Chairman
<i>Pueblo of Laguna</i> John Antonio, Sr., Governor	<i>Shoshone-Paiute Tribes of the Duck Valley Reservation</i> Brian Thomas, Chairman
<i>Pueblo of Nambe</i> Phillip Perez, Governor	<i>Sisston Wahpeton Oyate of the Lake Traverse Reservation</i> Delbert Hopkins, Jr., Chairman
<i>Pueblo of Picuris</i> Craig Quanchello, Governor	<i>Skokomish Indian Tribe</i> Charles Miller, Chairman
<i>Pueblo of Pojoaque</i> Jenelle Roybal, Governor	<i>Sokaogon Chippewa Community</i> Robert VanZile, Jr., Chairman
<i>Pueblo of San Felipe</i> Anthony Ortiz, Governor	<i>Southern Ute Indian Tribe</i> Melvin Baker, Chairman
<i>Pueblo of Sandia</i> Stuart Paisano, Governor	<i>Spokane Tribe</i> Carol Evans, Chairwoman
<i>Pueblo of Santa Ana</i> Ulysses Leon, Governor	<i>St. Regis Mohawk Tribe</i> Beverly Cook, Chief
<i>Pueblo of Santa Clara</i> J. Michael Chavarria, Governor	<i>Standing Rock Sioux Tribe</i> Mike Faith, Chairman
<i>Taos Pueblo</i> Clyde Romero, Governor	<i>Suquamish Tribe</i> Leonard Forsman, Chairman
<i>Pueblo of Zia</i> Jerome Lucero, Governor	<i>Swinomish Indian Tribal Community</i> Steve Edwards, Chair
<i>Puyallup Tribe</i> Bill Sterud, Chairman	<i>Three Affiliated Tribes of the Fort Berthold Reservation</i> Mark Fox, Chairman
<i>Quinault Indian Nation</i> Guy Capoeman, President	<i>Tolowa Dee-ni' Nation</i> Denise Richards-Padgette, Chairperson
<i>Rosebud Sioux Tribe</i> Rodney Bordeaux, President	<i>Tulalip Tribes of Washington</i> Teri Gobin, Chairwoman
<i>Salt River Pima-Maricopa Indian Community</i> Martin Harvier, President	<i>Turtle Mountain Band of Chippewa</i> Jamie Azure, Chairman
<i>San Carlos Apache Tribe</i> Terry Rambler, Chairperson	<i>Upper Sioux Community</i> Kevin Jensvold, Chairman
<i>The Seminole Nation of Oklahoma</i> Gregory Chilcoat, Chief	

*Ute Indian Tribe of the Uintah & Ouray
Reservation*

Luke Duncan, Chairman

Ute Mountain Ute Tribe

Manuel Heart, Chairman

White Earth Nation

Michael Fairbanks, Chairman

White Mountain Apache Tribe

Gwendena Lee-Gatewood, Chairwoman

Winnebago Tribe of Nebraska

Victoria Kitcheyan, Chairwoman

Yankton Sioux Tribe

Robert Flying Hawk, Chairman

Yavapai-Apache Nation

Jon Huey, Chairman

Yerington Paiute Tribe

Ginny Hatch, Chairman

Ysleta del Sur Pueblo

Michael Silvas, Governor

Pueblo of Zuni

Val Panteah, Sr., Governor

**APPENDIX C
KEY LEGISLATIVE
HOUSING LOAN PROGRAM MILESTONES**

INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

APPENDIX C. KEY LEGISLATIVE HOUSING LOAN PROGRAM MILESTONES... C-1

LIST OF TABLES

Table C-1. Key Legislative Housing Loan Program Milestones C-1

INTENTIONALLY LEFT BLANK

APPENDIX C KEY LEGISLATIVE HOUSING LOAN PROGRAM MILESTONES

Table C-1. Key Legislative Housing Loan Program Milestones

Year: Public Law No.	Description
1944: P.L. 78-346	<i>Servicemen's Readjustment Act of 1944 (GI Bill).</i> Established the home loan guaranty benefit for eligible Veterans returning from World War II.
1948: P.L. 80-702	<i>Specially Adapted Housing.</i> Established SAH grants to assist Veterans in acquiring housing adaptations made necessary by the nature of certain service-connected disabilities.
1970: P.L. 91-506	<i>Veterans Housing Act of 1970.</i> Expanded eligibility for VA-guaranteed loans, authorized use of such loans to purchase condominium units, and authorized VA-guaranteed loans to refinance existing mortgage loans or other liens.
1971: P.L. 92-95	Established Veterans Mortgage Life Insurance benefits for Veterans who obtained a SAH grant.
1980: P.L. 96-385	<i>Veterans' Disability Compensation and Housing Benefits Amendments of 1980.</i> Expanded SAH grants to include certain Veterans who were blind or who had lost the use of both hands. Expanded the home loan benefit to permit refinancing of existing VA loans for purposes of reducing the interest rate.
1990: P.L. 101-508	<i>Federal Credit Reform Act of 1990.</i> Dramatically changed the way in which the federal government accounted and reflected costs for its credit programs (including VA's HLP).
1992: P.L. 102-547	<i>Veterans Home Loan Program Amendments of 1992.</i> Expanded the home loan benefit to include members of the Selected Reserve, who were not otherwise eligible. Established the NADL program (with VA as the lender) for Native American Veterans living on trust, tribal, or communally owned lands.
2004: P.L. 108-454	<i>Veterans Benefits Improvement Act of 2004.</i> Modified, for certain loans, VA's maximum guaranty amount, i.e., 25 percent of the Freddie Mac Conforming Loan Limit. This was especially helpful to Veterans wishing to use their VA benefit in high cost housing markets, like California.
2006: P.L. 109-233	<i>Veterans' Housing Opportunity and Benefits Improvement Act of 2006.</i> Expanded the SAH program to permit grant fund assistance to Veterans who are temporarily residing in a home owned by a family member. Also established that Veterans could use the SAH grant up to three times throughout their lives, up to the grant maximum aggregate dollar amount. Made the NADL program permanent, and also extended NADL benefits to non-Native American Veterans who are married to Native Americans living on trust, tribal, or communally owned lands.
2008: P.L. 110-289	<i>Housing and Economic Recovery Act of 2008.</i> Indexed SAH program grant amounts to a cost of construction index, allowing for upward fluctuations in the SAH grant amount, to keep pace with increases in housing construction costs. Also permits SAH grants to be made for Veterans living outside the United States.

Table C-1. Key Legislative Housing Loan Program Milestones

Year: Public Law No.	Description
2010: P.L. 111-203	<i>Dodd-Frank Wall Street Reform and Consumer Protection Act.</i> Established financial provisions to regulate home loans and credit in the U.S. economy. The law generally requires that creditors make a reasonable, good faith determination of a consumer's ability to repay a loan or other credit obligation.
2012: P.L. 112-154	<i>Honoring America's Veterans and Caring for Camp Lejeune Families Act of 2012.</i> Expanded home loan benefits to permit the occupancy requirement to be satisfied by the dependent child of an active duty servicemember. Provides assistance to Veterans impacted by disasters. Included were provisions to permit a one-time reuse of SAH grant benefits to repair or replace a home damaged by disaster, and a provision to allow VA to subordinate its first lien status to a public entity that provided assistance to Veterans impacted by disasters.
2019: P.L. 116-23	<i>Blue Water Navy Vietnam Veterans Act.</i> Authorized changes to VA statutes regarding the maximum amount of entitlement available to Veterans, the maximum guaranty of loans in excess of \$144,000, the VA loan (funding) fee table, and an additional waiver of the VA funding fee.

HLP = Housing Loan Program; NADL = Native American Direct Loan; P.L. = Public Law; SAH = Specially Adapted Housing; U.S. = United States; VA = Department of Veterans Affairs

**APPENDIX D
SOCIOECONOMIC DATA BY
REGIONAL LOAN CENTER**

INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

APPENDIX D SOCIOECONOMIC DATA BY REGIONAL LOAN CENTER.....	D-1
D.1 Demography Data by RLC.....	D-1
D.2 Economic and Employment Characteristics by RLC	D-12
D.3 Housing Characteristics	D-23
D.4 References	D-34

LIST OF TABLES

Table D-1. Population and Demography, Atlanta Regional Loan Center	D-2
Table D-2. Population and Demography, Cleveland Regional Loan Center (Part 1).....	D-3
Table D-3. Population and Demography, Denver Regional Loan Center	D-5
Table D-4. Population and Demography, Houston Regional Loan Center	D-6
Table D-5. Population and Demography, Phoenix Regional Loan Center (Part 1).....	D-7
Table D-6. Population and Demography, Roanoke Regional Loan Center	D-9
Table D-7. Population and Demography, St. Paul Regional Loan Center	D-10
Table D-8. Population and Demography, St. Petersburg Regional Loan Center	D-11
Table D-9. Economy and Employment, Atlanta Regional Loan Center (2016).....	D-13
Table D-10. Economy and Employment, Cleveland Regional Loan Center (2016) (Part 1) ..	D-14
Table D-11. Economy and Employment, Denver Regional Loan Center (2016)	D-16
Table D-12. Economy and Employment, Houston Regional Loan Center (2016).....	D-17
Table D-13. Economy and Employment, Phoenix Regional Loan Center (2016) (Part 1)	D-18
Table D-14. Economy and Employment, Roanoke Regional Loan Center (2016).....	D-20
Table D-15. Economy and Employment, St. Paul Regional Loan Center (2016)	D-21
Table D-16. Economy and Employment, St. Petersburg Regional Loan Center (2016)	D-22
Table D-17. Housing Characteristics, Atlanta Regional Loan Center (2016).....	D-24
Table D-18. Housing Characteristics, Cleveland Regional Loan Center (2016) (Part 1)	D-25
Table D-19. Housing Characteristics, Denver Regional Loan Center (2016)	D-27
Table D-20. Housing Characteristics, Houston Regional Loan Center (2016)	D-28
Table D-21. Housing Characteristics, Phoenix Regional Loan Center (2016) (Part 1)	D-29
Table D-22. Housing Characteristics, Roanoke Regional Loan Center (2016)	D-31
Table D-23. Housing Characteristics, St. Paul Regional Loan Center (2016)	D-32
Table D-24. Housing Characteristics, St. Petersburg Regional Loan Center (2016a)	D-33

INTENTIONALLY LEFT BLANK

APPENDIX D SOCIOECONOMIC DATA BY REGIONAL LOAN CENTER

D.1 DEMOGRAPHY DATA BY RLC

Tables D-1 through D-8 summarize key population and demographic data for each of the states and territories of the United States (U.S.) served by the eight Regional Loan Centers (RLC) and the Honolulu Regional Office. Based on data from the U.S. Census Bureau, the tables list the most recent population estimates, the average annual change in population from 2000 to 2010 and from 2010 to 2017, the median age of the population, distribution of males and females, and the percentage of Veterans in the total population aged 18 and older.

The tables also summarize the racial compositions and proportions of ethnic groups within each RLC jurisdiction for purposes of establishing baseline conditions applicable to the assessment of environmental justice considerations. For the purposes of environmental justice, a minority population is defined by individuals within any of the principal racial categories recorded by the U.S. Census Bureau as well as within the Hispanic and Latino ethnic group regardless of race. The tables therefore list the most recent proportion of all defined minorities within the respective jurisdictions and the proportions that existed at the 2010 Census for comparison.

Table D-1. Population and Demography, Atlanta Regional Loan Center

Characteristic	Georgia	North Carolina	South Carolina	Tennessee
Total Population (July 2017)	10,429,379	10,273,419	5,024,369	6,715,984
Average Annual Change (2010-2017)	1.1%	1.0%	1.2%	0.8%
Average Annual Change (2000-2010)	1.8%	1.9%	1.5%	1.2%
Median Age (2016)	36.5	38.7	39.1	38.6
Veterans in Population Aged 18+ (2017)	9.0%	9.3%	10.3%	9.3%
Distribution by Sex (2016)				
Male	48.7%	48.6%	48.5%	48.8%
Female	51.3%	51.4%	51.5%	51.2%
Racial Composition (2016) ^a				
White	58.7%	68.9%	67.4%	77.8%
Black or African American	31.6%	21.5%	27.0%	16.8%
American Indian or Native Alaskan	0.4%	1.2%	0.3%	0.3%
Asian	3.9%	2.7%	1.5%	1.7%
Native Hawaiian or Pacific Islander	0.1%	0.1%	0.1%	0.1%
Other Race	2.9%	3.0%	1.6%	1.2%
Two or More Races	2.5%	2.6%	2.2%	2.1%
Hispanic or Latino, Any Race (2016)	9.3%	9.2%	5.5%	5.2%
Percentage of Minorities (2016) ^b	46.8%	36.5%	36.3%	25.9%
Percentage of Minorities (2010) ^b	44.2%	34.8%	36.0%	24.4%

Source: USCB 2018a, 2018b, 2018c, 2018d, 2018e; VA 2019

^a Racial composition includes all individuals of Hispanic or Latino heritage.

^b Minorities for purposes of environmental justice include all Hispanic or Latino individuals of any race and all non-Hispanic or Latino individuals of any race except white.

Table D-2. Population and Demography, Cleveland Regional Loan Center (Part 1)

Characteristic	Connecticut	Delaware	Indiana	Maine	Massachusetts	Michigan	New Hampshire
Total Population (July 2017)	3,588,184	961,939	6,666,818	1,335,907	6,859,819	9,962,311	1,342,795
Average Annual Change (2010-2017)	0.03%	1.0%	0.4%	0.1%	0.6%	0.1%	0.3%
Average Annual Change (2000-2010)	0.5%	1.5%	0.7%	0.4%	0.3%	(0.1)%	0.7%
Median Age (2016)	40.9	40.6	37.6	44.5	39.5	39.7	42.7
Veterans in Population Aged 18+ (2017)	7.1%	9.9%	8.6%	11.2%	6.7%	8.2%	10.2%
Distribution by Sex (2016)							
Male	48.8%	48.3%	49.3%	48.9%	48.5%	49.2%	49.8%
Female	51.2%	51.7%	50.7%	51.1%	51.5%	50.8%	50.2%
Racial Composition (2016) ^a							
White	76.7%	69.2%	83.5%	94.4%	78.5%	78.5%	93.4%
Black or African American	10.6%	22.0%	9.3%	1.5%	7.4%	13.7%	1.2%
American Indian or Native Alaskan	0.3%	0.4%	0.3%	0.6%	0.2%	0.5%	0.1%
Asian	4.5%	3.7%	2.1%	1.3%	6.5%	2.9%	2.4%
Native Hawaiian or Pacific Islander	0.0%	0.2%	0.1%	0.0%	0.1%	0.0%	0.0%
Other Race	4.8%	1.6%	2.4%	0.2%	4.2%	1.2%	0.6%
Two or More Races	3.1%	2.7%	2.4%	2.0%	3.1%	3.1%	2.2%
Hispanic or Latino, Any Race (2016)	15.7%	9.2%	6.8%	1.6%	11.4%	4.9%	3.5%
Percentage of Minorities (2016) ^b	32.6%	37.3%	20.5%	6.6%	27.6%	24.7%	9.3%
Percentage of Minorities (2010) ^b	29.0%	34.7%	18.5%	5.5%	23.7%	23.5%	7.8%

Source: USCB 2018a, 2018b, 2018c, 2018d, 2018e; VA 2019

^a Racial composition includes all individuals of Hispanic or Latino heritage.

^b Minorities for purposes of environmental justice include all Hispanic or Latino individuals of any race and all non-Hispanic or Latino individuals of any race except white.

Table D-2 (cont.). Population and Demography, Cleveland Regional Loan Center (Part 2)

Characteristic	New Jersey	New York	Ohio	Pennsylvania	Rhode Island	Vermont
Total Population (July 2017)	9,005,644	19,849,399	11,658,609	12,805,537	1,059,639	623,657
Average Annual Change (2010-2017)	0.3%	0.3%	0.2%	0.1%	0.1%	(0.1)%
Average Annual Change (2000-2010)	0.5%	0.2%	0.2%	0.3%	0.04%	0.3%
Median Age (2016)	39.5	38.4	39.3	40.6	40.2	43.1
Veterans in Population Aged 18+ (2017)	5.7%	5.4%	9.1%	8.7%	7.9%	8.9%
Distribution by Sex (2016)						
Male	48.9%	48.5%	49.0%	49.0%	48.4%	49.3%
Female	51.1%	51.5%	51.0%	51.0%	51.6%	50.7%
Racial Composition (2016) ^a						
White	68.1%	63.5%	81.6%	80.9%	80.5%	94.4%
Black or African American	13.4%	15.6%	12.4%	11.0%	6.4%	1.3%
American Indian or Native Alaskan	0.2%	0.4%	0.2%	0.2%	0.5%	0.3%
Asian	9.5%	8.4%	2.1%	3.3%	3.5%	1.5%
Native Hawaiian or Pacific Islander	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
Other Race	6.1%	8.9%	0.9%	2.1%	5.9%	0.5%
Two or More Races	2.7%	3.1%	2.8%	2.5%	3.1%	2.0%
Hispanic or Latino, Any Race (2016)	20.0%	19.0%	3.6%	7.0%	14.9%	2.0%
Percentage of Minorities (2016) ^b	44.5%	44.5%	20.6%	23.1%	27.2%	7.0%
Percentage of Minorities (2010) ^b	40.8%	41.8%	19.0%	20.6%	23.7%	5.7%

Source: USCB 2018a, 2018b, 2018c, 2018d, 2018e; VA 2019

^a Racial composition includes all individuals of Hispanic or Latino heritage.

^b Minorities for purposes of environmental justice include all Hispanic or Latino individuals of any race and all non-Hispanic or Latino individuals of any race except white.

Table D-3. Population and Demography, Denver Regional Loan Center

Characteristic	Alaska	Colorado	Idaho	Montana	Oregon	Utah	Washington	Wyoming
Total Population (July 2017)	739,795	5,607,154	1,716,943	1,050,493	4,142,776	3,101,833	7,405,743	579,315
Average Annual Change (2010-2017)	0.5%	1.6%	1.3%	0.9%	1.1%	1.7%	1.4%	0.4%
Average Annual Change (2000-2010)	1.3%	1.7%	2.1%	1.0%	1.2%	2.4%	1.4%	1.4%
Median Age (2016)	33.5	36.7	36.1	40.1	39.2	30.7	37.7	37.2
Veterans in Population Aged 18+ (201y)	9.8%	9.8%	10.1%	11.4%	10.0%	6.7%	10.6%	11.0%
Distribution by Sex (2016)								
Male	52.6%	50.4%	50.0%	50.5%	49.5%	50.4%	49.9%	50.9%
Female	47.4%	49.6%	50.0%	49.5%	50.5%	49.6%	50.1%	49.1%
Racial Composition (2016) ^a								
White	64.4%	84.0%	89.7%	89.0%	84.4%	86.3%	75.7%	92.0%
Black or African American	3.2%	4.2%	0.7%	0.4%	1.9%	1.1%	3.7%	1.0%
American Indian or Native Alaskan	14.6%	1.0%	1.6%	6.4%	1.1%	1.0%	1.3%	2.3%
Asian	6.1%	3.2%	1.5%	0.8%	4.1%	2.3%	8.2%	1.0%
Native Hawaiian or Pacific Islander	1.3%	0.2%	0.1%	0.1%	0.4%	1.0%	0.7%	0.1%
Other Race	1.7%	4.1%	3.9%	0.4%	3.0%	5.4%	4.8%	1.0%
Two or More Races	8.6%	3.3%	2.5%	3.1%	5.1%	2.9%	5.7%	2.6%
Hispanic or Latino, Any Race (2016)	6.9%	21.3%	12.3%	3.6%	12.8%	13.8%	12.4%	9.6%
Percentage of Minorities (2016) ^b	39.0%	31.5%	17.7%	13.6%	23.8%	21.3%	30.7%	15.6%
Percentage of Minorities (2010) ^b	36.0%	30.1%	16.0%	12.2%	21.7%	19.7%	27.5%	14.2%

Source: USCB 2018a, 2018b, 2018c, 2018d, 2018e; VA 2019

^a Racial composition includes all individuals of Hispanic or Latino heritage.

^b Minorities for purposes of environmental justice include all Hispanic or Latino individuals of any race and all non-Hispanic or Latino individuals of any race except white.

Table D-4. Population and Demography, Houston Regional Loan Center

Characteristic	Arkansas	Louisiana	Oklahoma	Texas
Total Population (July 2017)	3,004,279	4,684,333	3,930,864	28,304,596
Average Annual Change (2010-2017)	0.4%	0.4%	0.7%	1.7%
Average Annual Change (2000-2010)	0.9%	0.1%	0.9%	2.1%
Median Age (2016)	38.0	36.5	36.4	34.5
Veterans in Population Aged 18+ (2017)	9.8%	8.1%	10.3%	7.9%
Distribution by Sex (2016)				
Male	49.2%	49.0%	49.5%	49.6%
Female	50.8%	51.0%	50.5%	50.4%
Racial Composition (2016) ^a				
White	76.6%	62.0%	72.4%	74.3%
Black or African American	15.5%	32.4%	7.3%	12.1%
American Indian or Native Alaskan	0.6%	0.5%	7.6%	0.5%
Asian	1.4%	1.7%	2.0%	4.7%
Native Hawaiian or Pacific Islander	0.3%	0.0%	0.2%	0.1%
Other Race	2.9%	1.5%	2.7%	5.8%
Two or More Races	2.6%	2.0%	7.7%	2.6%
Hispanic or Latino, Any Race (2016)	7.2%	4.9%	10.3%	39.1%
Percentage of Minorities (2016) ^b	27.2%	41.2%	33.8%	57.5%
Percentage of Minorities (2010) ^b	25.5%	39.7%	31.4%	54.8%

Source: USCB 2018a, 2018b, 2018c, 2018d, 2018e; VA 2019

^a Racial composition includes all individuals of Hispanic or Latino heritage.

^b Minorities for purposes of environmental justice include all Hispanic or Latino individuals of any race and all non-Hispanic or Latino individuals of any race except white.

Table D-5. Population and Demography, Phoenix Regional Loan Center (Part 1)

Characteristic	Arizona	California	Nevada	New Mexico
Total Population (July 2017)	7,016,270	39,536,653	2,998,039	2,088,070
Average Annual Change (2010-2017)	2.5%	1.0%	3.5%	1.3%
Average Annual Change (2000-2010)	1.4%	0.9%	1.6%	0.2%
Median Age (2016)	37.5	36.4	37.9	37.7
Veterans in Population Aged 18+ (2017)	10.1%	6.1%	10.4%	10.5%
Distribution by Sex (2016)				
Male	49.7%	49.7%	50.1%	49.5%
Female	50.3%	50.3%	49.9%	50.5%
Racial Composition (2016) ^a				
White	75.8%	59.7%	66.9%	74.0%
Black or African American	4.3%	5.8%	8.9%	2.0%
American Indian or Native Alaskan	4.4%	0.7%	1.2%	9.3%
Asian	3.2%	14.3%	8.3%	1.6%
Native Hawaiian or Pacific Islander	0.2%	0.4%	0.7%	0.1%
Other Race	8.5%	14.4%	9.3%	9.9%
Two or More Races	3.6%	4.8%	4.7%	3.2%
Hispanic or Latino, Any Race (2016)	30.9%	38.9%	28.5%	48.5%
Percentage of Minorities (2016) ^b	44.7%	62.5%	50.2%	62.2%
Percentage of Minorities (2010) ^b	42.3%	60.0%	46.0%	59.6%

Source: USCB 2018a, 2018b, 2018c, 2018d, 2018e; VA 2019

^a Racial composition includes all individuals of Hispanic or Latino heritage.

^b Minorities for purposes of environmental justice include all Hispanic or Latino individuals of any race and all non-Hispanic or Latino individuals of any race except white.

Table D-5 (cont.). Population and Demography, Phoenix Regional Loan Center (Part 2)

Characteristic	Hawaii	American Samoa ^a	Northern Mariana Islands ^a	Guam ^a
Total Population (July 2017)	1,427,538	55,519	53,883	159,358
Average Annual Change (2010-2017)	1.2%	N/A	N/A	N/A
Average Annual Change (2000-2010)	0.7%	(0.3)%	(2.2)%	0.3%
Median Age (2016)	38.9	22.4	33.4	29.5
Veterans in Population Aged 18+ (2017)	10.4%	3.1%	1.9%	7.9%
Distribution by Sex (2016)				
Male	50.3%	50.7%	51.5%	51.2%
Female	49.7%	49.3%	48.5%	48.8%
Racial Composition (2016) ^b				
White	25.1%	0.9%	2.1%	7.1%
Black or African American	1.8%	0.0%	0.1%	1.0%
American Indian or Native Alaskan	0.2%	0.0%	0.0%	0.0%
Asian	38.0%	3.6%	49.9%	32.2%
Native Hawaiian or Pacific Islander	10.1%	92.6%	34.9%	49.3%
Other Race	0.9%	0.1%	0.2%	0.3%
Two or More Races	23.9%	2.7%	12.7%	9.4%
Hispanic or Latino, Any Race (2016)	10.4%	N/A	0.1%	0.8%
Percentage of Minorities (2016) ^c	77.9%	N/A	N/A	N/A
Percentage of Minorities (2010) ^c	77.3%	99.1%	97.9%	92.9%

Source: USCB 2018a, 2018b, 2018c, 2018d, 2018e, 2018f; VA 2019

N/A = data not available

^a All data for American Samoa, the Northern Mariana Islands, and Guam are from 2010 Census.

^b Racial composition includes all individuals of Hispanic or Latino heritage.

^c Minorities for purposes of environmental justice include all Hispanic or Latino individuals of any race and all non-Hispanic or Latino individuals of any race except white.

Table D-6. Population and Demography, Roanoke Regional Loan Center

Characteristic	District of Columbia	Kentucky	Maryland	Virginia	West Virginia
Total Population (July 2017)	693,972	4,454,189	6,052,177	8,470,020	1,815,857
Average Annual Change (2010-2017)	2.1%	0.4%	0.7%	0.8%	(0.3)%
Average Annual Change (2000-2010)	0.5%	0.7%	0.9%	1.3%	0.3%
Median Age (2016)	33.9	38.7	38.5	38.2	42.3
Veterans in Population Aged 18+ (2017)	5.4%	8.8%	8.9%	11.3%	10.2%
Distribution by Sex (2016)					
Male	47.5%	49.1%	48.5%	49.2%	49.2%
Female	52.5%	50.9%	51.5%	50.8%	50.8%
Racial Composition (2016) ^a					
White	40.7%	87.1%	56.5%	67.8%	93.1%
Black or African American	47.1%	8.3%	29.8%	19.0%	3.8%
American Indian or Native Alaskan	0.3%	0.3%	0.3%	0.3%	0.2%
Asian	3.9%	1.4%	6.3%	6.3%	0.8%
Native Hawaiian or Pacific Islander	0.0%	0.1%	0.0%	0.1%	0.0%
Other Race	5.5%	0.8%	3.8%	2.7%	0.4%
Two or More Races	2.6%	2.1%	3.3%	3.7%	1.7%
Hispanic or Latino, Any Race (2016)	10.9%	3.4%	9.8%	9.0%	1.5%
Percentage of Minorities (2016) ^b	63.7%	15.1%	48.6%	37.8%	8.0%
Percentage of Minorities (2010) ^b	65.2%	13.6%	45.4%	35.3%	6.8%

Source: USCB 2018a, 2018b, 2018c, 2018d, 2018e; VA 2019

^a Racial composition includes all individuals of Hispanic or Latino heritage.

^b Minorities for purposes of environmental justice include all Hispanic or Latino individuals of any race and all non-Hispanic or Latino individuals of any race except white.

Table D-7. Population and Demography, St. Paul Regional Loan Center

Characteristic	Illinois	Iowa	Kansas	Minnesota	Missouri	Nebraska	North Dakota	South Dakota	Wisconsin
Total Population (July 2017)	12,802,023	3,145,711	2,913,123	5,576,606	6,113,532	1,920,076	755,393	869,666	5,795,483
Average Annual Change (2010-2017)	(0.04)%	0.5%	0.3%	0.7%	0.3%	0.7%	1.7%	1.0%	0.3%
Average Annual Change (2000-2010)	0.3%	0.4%	0.6%	0.8%	0.7%	0.7%	0.5%	0.8%	0.6%
Median Age (2016)	37.9	38.0	36.5	37.9	38.4	36.3	35.0	36.8	39.4
Veterans in Population Aged 18+ (2017)	6.8%	8.9%	9.2%	8.3%	9.8%	9.5%	9.3%	10.1%	8.6%
Distribution by Sex (2016)									
Male	49.1%	49.7%	49.8%	49.8%	49.1%	49.8%	51.5%	50.3%	49.7%
Female	50.9%	50.3%	50.2%	50.2%	50.9%	50.2%	48.5%	49.7%	50.3%
Racial Composition (2016) ^a									
White	71.3%	90.4%	84.6%	83.3%	82.3%	87.8%	87.2%	84.7%	85.5%
Black or African American	14.2%	3.6%	5.7%	6.0%	11.5%	4.7%	2.5%	1.7%	6.3%
American Indian or Native Alaskan	0.2%	0.3%	0.7%	1.1%	0.5%	0.8%	5.5%	8.9%	0.9%
Asian	5.3%	2.4%	2.7%	4.7%	1.9%	2.2%	1.2%	1.5%	2.7%
Native Hawaiian or Pacific Islander	0.0%	0.1%	0.1%	0.0%	0.2%	0.1%	0.0%	0.0%	0.0%
Other Race	6.4%	1.3%	2.5%	2.0%	1.2%	2.0%	0.7%	0.7%	2.2%
Two or More Races	2.5%	1.8%	3.6%	2.8%	2.5%	2.4%	2.8%	2.5%	2.4%
Hispanic or Latino, Any Race (2016)	17.0%	5.7%	11.6%	5.2%	4.0%	10.6%	3.5%	3.7%	6.7%
Percentage of Minorities (2016) ^b	38.4%	13.6%	23.8%	19.5%	20.4%	20.3%	14.9%	17.6%	18.4%
Percentage of Minorities (2010) ^b	36.4%	11.4%	21.9%	16.9%	19.0%	17.8%	11.1%	15.4%	16.7%

Source: USCB 2018a, 2018b, 2018c, 2018d, 2018e; VA 2019

^a Racial composition includes all individuals of Hispanic or Latino heritage.

^b Minorities for purposes of environmental justice include all Hispanic or Latino individuals of any race and all non-Hispanic or Latino individuals of any race except white.

Table D-8. Population and Demography, St. Petersburg Regional Loan Center

Characteristic*	Alabama	Florida	Mississippi	Puerto Rico	U.S. Virgin Islands*
Total Population (July 2017)	4,874,747	20,984,400	2,984,100	3,337,177	106,405
Average Annual Change (2010-2017)	0.3%	1.6%	0.1%	(1.5)%	N/A
Average Annual Change (2000-2010)	0.8%	1.8%	0.4%	(0.2)%	(0.2)%
Median Age (2016)	39	42.1	37.2	40.7	39.2
Veterans in Population Aged 18+ (2017)	9.8%	9.7%	8.24%	3.43%	5.5%
Distribution by Sex (2016)					
Male	48.4%	48.9%	48.2%	47.7%	47.8%
Female	51.6%	51.1%	51.8%	52.3%	52.2%
Racial Composition (2016) ^a					
White	68.2%	75.6%	58.5%	66.8%	15.6%
Black or African American	26.8%	16.1%	38.0%	11.6%	76.0%
American Indian or Native Alaskan	0.5%	0.3%	0.4%	0.2%	c
Asian	1.3%	2.7%	0.9%	0.2%	c
Native Hawaiian or Pacific Islander	0.0%	0.1%	0.0%	0.0%	c
Other Race	1.4%	2.8%	1.0%	16.9%	6.2% ^c
Two or More Races	1.7%	2.6%	1.1%	4.3%	2.1%
Hispanic or Latino, Any Race (2016)	4.1%	24.9%	2.9%	98.7%	17.4%
Percentage of Minorities (2016) ^b	34.3%	45.3%	43.2%	98.9%	N/A
Percentage of Minorities (2010) ^b	33.0%	42.2%	42.0%	99.2%	86.5%

Source: USCB 2018a, 2018b, 2018c, 2018d, 2018e, 2018f; VA 2019
 N/A = data not available

* All data for U.S. Virgin Islands are from 2010 Census.

^a Racial composition includes all individuals of Hispanic or Latino heritage.

^b Minorities for purposes of environmental justice include all Hispanic or Latino individuals of any race and all non-Hispanic or Latino individuals of any race except white.

^c For U.S. Virgin Islands, "other race" includes American Indian or Native Alaskan, Asian, Native Hawaiian, or Pacific Islander.

D.2 ECONOMIC AND EMPLOYMENT CHARACTERISTICS BY RLC

Tables D-9 through D-16 summarize data about economic and employment conditions for the United States as a whole and for each of the states and U.S. Territories served by the eight RLCs and the Honolulu Regional Office. The tables list data that are most relevant to the analysis of VA Housing Loan Program (HLP) activities, including proportions of the population aged 16 and older in either military service or civilian employment, the unemployment rate, median family and per capita incomes, poverty rates, and distributions of civilian employment by occupation type based on data from the latest (2016) U.S. Census Bureau American Community Survey. These data provide a baseline for comparison with the states and U.S. Territories overseen by the respective RLCs regarding employment and income characteristics in the jurisdictions served.

The poverty data provide information about low-income populations for the assessment of environmental justice considerations. For the purposes of environmental justice, a low-income population is defined by families and individuals with incomes below U.S. Census Bureau poverty levels established in accordance with the Office of Management and Budget's Statistical Policy Directive 14.

Table D-9. Economy and Employment, Atlanta Regional Loan Center (2016)

Characteristic	Georgia	North Carolina	South Carolina	Tennessee
Population 16 years and older	8,085,411	8,115,833	3,986,784	5,320,715
In Armed Forces	0.6%	0.9%	0.8%	0.4%
Employed in civilian labor force	58.6%	57.2%	55.9%	56.8%
Not in labor force	37.1%	38.0%	39.5%	39.4%
Unemployed	3.7%	3.8%	3.7%	3.3%
Unemployment rate	6.0%	6.2%	6.3%	5.5%
Income				
Median family	\$65,018	\$62,289	\$61,535	\$60,659
Individual per capita	\$28,183	\$28,156	\$27,016	27,087
Poverty rates				
Families below poverty level	12.0%	11.2%	10.8%	11.6%
Individuals below poverty level	16.0%	15.4%	15.3%	15.8%
Civilian employment by occupation				
Management, business, science, and arts	36.4%	37.1%	33.9%	34.4%
Service occupations	16.7%	17.4%	17.5%	16.8%
Sales and office occupations	24.1%	23.0%	24.4%	24.1%
Natural resources, construction, maintenance	9.4%	9.1%	9.0%	8.9%
Production, transportation, material moving	13.3%	13.4%	15.2%	15.8%

Source: USCB 2018b

Table D-10. Economy and Employment, Cleveland Regional Loan Center (2016) (Part 1)

Characteristic	Connecticut	Delaware	Indiana	Maine	Massachusetts	Michigan	New Hampshire
Population 16 years and older	2,919,678	771,059	5,239,497	1,108,711	5,601,991	8,002,285	1,108,050
In Armed Forces	0.3%	0.3%	0.1%	0.2%	0.1%	0.0%	0.2%
Employed in civilian labor force	62.1%	57.6%	60.4%	59.4%	63.7%	57.3%	65.0%
Not in labor force	33.4%	38.6%	36.3%	37.7%	32.6%	38.8%	32.4%
Unemployed	4.2%	3.5%	3.2%	2.8%	3.5%	3.8%	2.4%
Unemployment rate	6.4%	5.7%	5.0%	4.4%	5.3%	6.2%	3.6%
Income							
Median family	\$94,449	\$74,251	\$66,032	\$68,277	\$95,207	\$67,330	\$86,696
Individual per capita	\$41,087	\$31,712	\$27,464	\$29,604	\$39,771	\$29,128	\$36,320
Poverty rates							
Families below poverty level	6.8%	8.1%	9.6%	7.6%	7.3%	10.2%	4.0%
Individuals below poverty level	9.8%	11.7%	14.1%	12.5%	10.4%	15.0%	7.3%
Civilian employment by occupation							
Management, business, science, and arts	42.8%	39.9%	33.1%	37.2%	45.6%	35.8%	39.9%
Service occupations	18.2%	17.5%	16.8%	18.3%	17.6%	17.7%	16.8%
Sales and office occupations	22.7%	22.5%	22.8%	22.9%	21.5%	22.8%	23.8%
Natural resources, construction, maintenance	7.1%	9.5%	8.9%	10.8%	6.8%	8.0%	8.1%
Production, transportation, material moving	9.2%	10.7%	18.4%	10.8%	8.6%	15.7%	11.4%

Source: USCB 2018b

Table D-10 (cont.). Economy and Employment, Cleveland Regional Loan Center (2016) (Part 2)

Characteristic	New Jersey	New York	Ohio	Pennsylvania	Rhode Island	Vermont
Population 16 years and older	7,197,473	16,048,423	9,318,105	10,427,404	874,310	519,521
In Armed Forces	0.1%	0.1%	0.1%	0.1%	0.4%	0.1%
Employed in civilian labor force	61.3%	59.2%	59.5%	58.5%	59.7%	62.5%
Not in labor force	34.7%	36.9%	36.8%	37.9%	36.1%	34.8%
Unemployed	3.9%	3.7%	3.6%	3.6%	3.8%	2.6%
Unemployment rate	6.0%	5.9%	5.7%	5.8%	5.9%	3.9%
Income						
Median family	\$94,546	\$77,379	\$66,722	\$72,313	\$77,940	\$74,805
Individual per capita	\$38,911	\$35,534	\$29,164	\$31,272	\$33,008	\$31,836
Poverty rates						
Families below poverty level	7.6%	10.9%	10.5%	8.6%	9.2%	7.7%
Individuals below poverty level	10.4%	14.7%	14.6%	12.9%	12.8%	11.9%
Civilian employment by occupation						
Management, business, science, and arts	42.1%	40.3%	36.0%	38.0%	39.3%	40.6%
Service occupations	16.4%	20.2%	17.6%	17.9%	19.5%	17.5%
Sales and office occupations	23.7%	23.1%	23.1%	22.9%	22.8%	21.2%
Natural resources, construction, maintenance	7.1%	7.2%	7.4%	8.1%	7.4%	9.7%
Production, transportation, material moving	10.7%	9.2%	16.0%	13.1%	10.9%	11.0%

Source: USCB 2018b

Table D-11. Economy and Employment, Denver Regional Loan Center (2016)

Characteristic	Alaska	Colorado	Idaho	Montana	Oregon	Utah	Washington	Wyoming
Population 16 years and older	575,088	4,417,829	1,296,599	838,974	3,327,652	2,228,666	5,841,524	459,694
In Armed Forces	2.7%	0.8%	0.2%	0.4%	0.1%	0.2%	0.8%	0.5%
Employed in civilian labor force	62.1%	64.0%	58.8%	60.1%	58.3%	65.2%	59.8%	62.6%
Not in labor force	29.8%	32.0%	38.0%	36.6%	38.1%	31.8%	35.9%	33.2%
Unemployed	5.4%	3.2%	2.9%	3.0%	3.5%	2.8%	3.4%	3.7%
Unemployment rate	8.0%	4.7%	4.7%	4.8%	5.7%	4.1%	5.4%	5.6%
Income								
Median family	\$88,604	\$80,761	\$63,182	\$66,288	\$70,929	\$74,181	\$81,234	\$73,574
Individual per capita	\$34,187	\$34,542	\$25,678	\$28,933	\$30,822	\$26,993	\$35,284	\$30,042
Poverty rates								
Families below poverty level	6.7%	7.0%	10.0%	8.0%	8.5%	7.2%	7.1%	6.3%
Individuals below poverty level	9.9%	11.0%	14.4%	13.3%	13.3%	10.2%	11.3%	11.3%
Civilian employment by occupation								
Management, business, science, and arts	37.2%	41.7%	35.0%	36.3%	38.8%	37.8%	40.6%	33.0%
Service occupations	17.6%	17.2%	17.8%	20.2%	17.7%	15.6%	17.1%	18.4%
Sales and office occupations	22.3%	22.7%	23.9%	21.6%	23.0%	26.0%	21.3%	20.8%
Natural resources, construction, maintenance	11.6%	9.2%	10.8%	11.9%	8.7%	8.4%	9.7%	15.7%
Production, transportation, material moving	11.3%	9.1%	12.4%	10.0%	11.8%	12.2%	11.3%	12.0%

Source: USCB 2018b

Table D-12. Economy and Employment, Houston Regional Loan Center (2016)

Characteristic	Arkansas	Louisiana	Oklahoma	Texas
Population 16 years and older	2,358,465	3,690,800	3,063,649	21,368,307
In Armed Forces	0.2%	0.4%	0.5%	0.4%
Employed in civilian labor force	54.4%	54.8%	56.9%	60.5%
Not in labor force	42.5%	40.7%	39.0%	35.5%
Unemployed	2.9%	4.1%	3.6%	3.6%
Unemployment rate	5.1%	7.0%	6.0%	5.6%
Income				
Median family	\$55,484	\$57,490	\$61,633	\$67,025
Individual per capita	\$24,264	\$25,664	\$25,880	\$28,714
Poverty rates				
Families below poverty level	12.4%	15.4%	11.5%	12.0%
Individuals below poverty level	17.2%	20.2%	16.3%	15.6%
Civilian employment by occupation				
Management, business, science, and arts	33.5%	33.4%	34.1%	36.0%
Service occupations	17.0%	19.5%	17.4%	17.8%
Sales and office occupations	23.9%	23.8%	24.4%	23.6%
Natural resources, construction, maintenance	10.0%	11.4%	11.0%	11.0%
Production, transportation, material moving	15.5%	12.0%	13.1%	11.7%

Source: USCB 2018b

Table D-13. Economy and Employment, Phoenix Regional Loan Center (2016) (Part 1)

Characteristic	Arizona	California	Nevada	New Mexico
Population 16 years and older	5,483,490	31,191,530	2,339,612	1,650,960
In Armed Forces	0.3%	0.4%	0.3%	0.6%
Employed in civilian labor force	55.3%	58.8%	58.8%	53.3%
Not in labor force	40.6%	36.7%	36.7%	41.8%
Unemployed	3.8%	4.1%	4.2%	4.3%
Unemployment rate	6.5%	6.5%	6.7%	7.5%
Income				
Median family	\$63,877	\$77,359	\$65,384	\$56,802
Individual per capita	\$27,997	\$33,389	\$28,117	\$25,146
Poverty rates				
Families below poverty level	11.9%	10.5%	10.2%	15.3%
Individuals below poverty level	16.4%	14.3%	13.8%	19.8%
Civilian employment by occupation				
Management, business, science, and arts	36.1%	38.3%	28.9%	35.9%
Service occupations	20.0%	18.9%	26.5%	21.1%
Sales and office occupations	25.2%	22.8%	25.3%	23.8%
Natural resources, construction, maintenance	8.8%	9.0%	8.8%	10.3%
Production, transportation, material moving	9.8%	11.0%	10.4%	8.8%

Source: USCB 2018b

Table D-13 (cont.). Economy and Employment, Phoenix Regional Loan Center (2016) (Part 2)

Characteristic	Hawaii (2016 ^a)	American Samoa (2010 ^a)	Northern Mariana Islands (2010 ^a)	Guam (2010 ^a)
Population 16 years and older	1,152,321	34,767	38,679	113,067
In Armed Forces	3.3%	0.3%	0.0%	4.4%
Employed in civilian labor force	59.6%	47.8%	64.2%	56.3%
Not in labor force	34.3%	47.1%	27.7%	34.2%
Unemployed	2.8%	4.8%	8.1%	5.1%
Unemployment rate	4.4%	9.2%	11.2%	8.2%
Income				
Median family	\$86,768	\$24,706	\$22,455	\$50,607
Individual per capita	\$32,634	\$6,311	\$9,656	\$16,549
Poverty rates				
Families below poverty level	6.0%	54.4%	44.4%	19.0%
Individuals below poverty level	9.3%	57.3%	51.8%	22.5%
Civilian employment by occupation				
Management, business, science, and arts	33.6%	26.9%	27.1%	27.6%
Service occupations	23.2%	16.8%	29.9%	21.8%
Sales and office occupations	24.6%	21.0%	20.2%	26.9%
Natural resources, construction, maintenance	9.8%	14.2%	14.4%	14.1%
Production, transportation, material moving	8.9%	21.1%	8.3%	9.6%

Source: USCB 2018b, 2018e

^a All data for American Samoa, the Northern Mariana Islands, and Guam are from 2010 Census.

Table D-14. Economy and Employment, Roanoke Regional Loan Center (2016)

Characteristic	District of Columbia	Kentucky	Maryland	Virginia	West Virginia
Population 16 years and older	569,932	3,542,057	4,819,956	6,761,091	1,499,100
In Armed Forces	0.6%	0.4%	0.6%	1.7%	0.1%
Employed in civilian labor force	64.0%	55.2%	63.8%	60.9%	49.4%
Not in labor force	30.7%	40.9%	32.0%	34.2%	46.5%
Unemployed	4.8%	3.5%	3.6%	3.2%	4.1%
Unemployment rate	6.9%	6.0%	5.4%	5.0%	7.6%
Income					
Median family	\$98,498	\$59,023	\$95,336	\$83,306	\$56,703
Individual per capita	\$50,567	\$26,046	\$38,662	\$36,206	\$24,769
Poverty rates					
Families below poverty level	13.7%	14.0%	6.3%	7.6%	12.9%
Individuals below poverty level	18.6%	18.5%	9.7%	11.0%	17.9%
Civilian employment by occupation					
Management, business, science, and arts	61.4%	33.4%	45.1%	43.5%	33.8%
Service occupations	15.8%	16.6%	17.4%	16.4%	19.9%
Sales and office occupations	15.7%	23.3%	21.6%	22.1%	23.2%
Natural resources, construction, maintenance	3.0%	8.9%	7.7%	8.4%	10.4%
Production, transportation, material moving	4.1%	17.7%	8.1%	9.5%	12.7%

Source: USCB 2018b

Table D-15. Economy and Employment, St. Paul Regional Loan Center (2016)

Characteristic	Illinois	Iowa	Kansas	Minnesota	Missouri	Nebraska	North Dakota	South Dakota	Wisconsin
Population 16 years and older	10,222,986	2,489,194	2,273,338	4,375,523	4,865,244	1,484,034	600,126	673,517	4,646,895
In Armed Forces	0.2%	0.1%	0.7%	0.1%	0.4%	0.4%	1.1%	0.3%	0.1%
Employed in civilian labor force	61.0%	64.8%	62.7%	66.8%	59.5%	66.6%	67.9%	65.0%	63.8%
Not in labor force	34.8%	32.4%	33.7%	30.5%	37.0%	30.5%	29.0%	32.1%	33.5%
Unemployed	4.1%	2.7%	2.9%	2.7%	3.1%	2.5%	2.0%	2.6%	2.7%
Unemployment rate	6.3%	3.9%	4.5%	3.8%	4.9%	3.7%	2.8%	3.9%	4.1%
Income									
Median family	\$76,950	\$72,351	\$70,792	\$83,344	\$65,058	\$73,488	\$79,530	\$70,853	\$72,891
Individual per capita	\$32,849	\$30,047	\$28,950	\$34,515	\$28,406	\$29,910	\$33,339	\$28,585	\$30,902
Poverty rates									
Families below poverty level	9.5%	7.6%	7.9%	5.9%	9.8%	7.4%	6.4%	8.2%	7.7%
Individuals below poverty level	13.0%	11.8%	12.1%	9.9%	14.0%	11.4%	10.7%	13.3%	11.8%
Civilian employment by occupation									
Management, business, science, and arts	37.6%	36.1%	38.1%	40.0%	35.6%	36.7%	36.1%	36.7%	35.9%
Service occupations	17.3%	16.4%	16.9%	16.4%	17.8%	16.5%	17.6%	16.4%	16.9%
Sales and office occupations	23.8%	22.2%	22.2%	22.6%	24.1%	23.5%	21.5%	23.0%	22.4%
Natural resources, construction, maintenance	7.3%	9.5%	9.3%	8.1%	8.7%	9.7%	11.6%	10.9%	8.4%
Production, transportation, material moving	14.1%	15.8%	13.5%	12.8%	13.8%	13.5%	13.1%	13.0%	16.5%

Source: USCB 2018b

Table D-16. Economy and Employment, St. Petersburg Regional Loan Center (2016)

Characteristic	Alabama	Florida	Mississippi	Puerto Rico	U.S. Virgin Islands (2010 ^a)
Population 16 years and older	3,897,741	16,950,176	2,349,401	2,809,340	82,634
In Armed Forces	0.3%	0.4%	0.5%	0.1%	0.3%
Employed in civilian labor force	53.3%	54.4%	52.3%	37.5%	60.0%
Not in labor force	42.7%	41.8%	42.9%	55.3%	34.0%
Unemployed	3.6%	3.5%	4.4%	7.1%	5.7%
Unemployment rate	6.4%	6.0%	7.7%	7.2%	8.7%
Income					
Median family	\$59,764	\$61,289	\$52,672	\$24,212	\$45,058
Individual per capita	\$25,810	\$28,621	\$22,694	\$11,952	\$23,623
Poverty rates					
Families below poverty level	12.7%	10.5%	16.5%	39.4%	18.3%
Individuals below poverty level	17.1%	14.7%	20.8%	43.5%	22.2%
Civilian employment by occupation					
Management, business, science, and arts	34.2%	34.3%	31.2%	24.5%	26.7%
Service occupations	16.7%	20.6%	18.6%	22.0%	24.7%
Sales and office occupations	23.9%	26.3%	22.8%	21.2%	25.3%
Natural resources, construction, maintenance	9.4%	9.5%	10.8%	17.6%	12.8%
Production, transportation, material moving	15.8%	9.3%	16.5%	14.7%	10.6%

Source: USCB 2018b, 2018e

^a All data for U.S. Virgin Islands are from 2010 Census.

D.3 HOUSING CHARACTERISTICS

Tables D-17 through D-24 summarize data about housing conditions for each of the states and U.S. Territories served by the eight RLCs and the Honolulu Regional Office. Housing conditions are important factors related to VA HLP activities. The tables summarize the number of occupied housing units, the distribution between owner-occupied and renter-occupied units, housing vacancy rates, the distribution of housing by year built, average household sizes, median housing value, median monthly owner costs with mortgage, numbers of housing units with a mortgage, and percentage of units with a mortgage value greater than 30 percent of household income.

Table D-17. Housing Characteristics, Atlanta Regional Loan Center (2016)

Characteristic	Georgia	North Carolina	South Carolina	Tennessee
Occupied housing units	3,686,135	3,882,423	1,877,887	2,556,332
Owner-occupied	61.5%	64.2%	68.6%	65.1%
Renter-occupied	38.5%	35.8%	31.4%	34.9%
Vacancy rate	12.6%	14.5%	16.0%	12.4%
Distribution by year built				
2000 and later	27.0%	26.4%	27.2%	22.2%
1960 to 1999	60.8%	58.5%	59.3%	58.9%
Before 1960	12.2%	15.2%	13.4%	18.8%
Average household size				
Owner-occupied	2.8	2.6	2.6	2.6
Renter-occupied	2.7	2.5	2.5	2.5
Median value of owner-occupied housing	\$166,800	\$165,400	\$153,900	\$157,700
Median monthly owner costs with mortgage	\$1,336	\$1,225	\$1,182	\$1,172
Housing units with a mortgage	1,465,345	1,571,348	744,666	983,463
Units with mortgage 30% or more of household income	25.9%	25.9%	26.8%	25.1%

Source: USCB 2018b

Table D-18. Housing Characteristics, Cleveland Regional Loan Center (2016) (Part 1)

Characteristic	Connecticut	Delaware	Indiana	Maine	Massachusetts	Michigan	New Hampshire
Occupied housing units	1,357,269	351,085	2,533,270	531,660	2,579,398	3,884,153	520,643
Owner-occupied	64.8%	69.8%	68.3%	71.9%	62.0%	70.3%	70.1%
Renter-occupied	35.2%	30.2%	31.7%	28.1%	38.0%	29.7%	29.9%
Vacancy rate	9.5%	17.6%	11.3%	27.2%	9.8%	14.8%	16.7%
Distribution by year built							
2000 and later	9.2%	25.2%	16.7%	18.4%	9.6%	12.4%	14.7%
1960 to 1999	48.0%	51.8%	50.5%	47.8%	40.1%	51.4%	54.3%
Before 1960	42.8%	23.0%	32.7%	33.9%	50.2%	36.2%	30.9%
Average household size							
Owner-occupied	2.7	2.7	2.6	2.6	2.7	2.6	2.6
Renter-occupied	2.3	2.5	2.4	2.2	2.3	2.3	2.2
Median value of owner-occupied housing	\$274,600	\$243,400	\$134,800	\$184,700	\$366,900	\$147,100	\$251,100
Median monthly owner costs with mortgage	\$1,997	\$1,463	\$1,070	\$1,328	\$2,069	\$1,215	\$1,821
Housing units with a mortgage	595,155	155,523	1,130,431	236,360	1,108,576	1,649,287	242,136
Units with mortgage 30% or more of household income	30.8%	27.4%	19.4%	28.1%	29.9%	23.4%	27.8%

Source: USCB 2018b

Table D-18 (cont.). Housing Characteristics, Cleveland Regional Loan Center (2016) (Part 2)

Characteristic	New Jersey	New York	Ohio	Pennsylvania	Rhode Island	Vermont
Occupied housing units	3,194,519	7,209,054	4,624,669	4,937,771	408,239	254,851
Owner-occupied	63.2%	53.3%	65.4%	68.5%	58.0%	69.8%
Renter-occupied	36.8%	46.7%	34.6%	31.5%	42.0%	30.2%
Vacancy rate	11.4%	12.4%	10.5%	12.0%	11.8%	22.7%
Distribution by year built						
2000 and later	11.5%	8.3%	12.5%	11.3%	7.5%	15.5%
1960 to 1999	47.9%	36.2%	47.8%	42.1%	43.4%	49.9%
Before 1960	40.6%	55.6%	39.6%	46.6%	49.0%	34.6%
Average household size						
Owner-occupied	2.8	2.8	2.5	2.6	2.7	2.5
Renter-occupied	2.6	2.5	2.3	2.3	2.2	2.1
Median value of owner-occupied housing	\$328,200	\$302,400	\$140,100	\$174,100	\$247,700	\$223,700
Median monthly owner costs with mortgage	\$2,343	\$2,020	\$1,211	\$1,416	\$1,740	\$1,507
Housing units with a mortgage	1,358,434	2,336,485	1,902,356	2,028,633	159,013	114,207
Units with mortgage 30% or more of household income	36.5%	34.0%	22.0%	25.5%	31.7%	32.6%

Source: USCB 2018b

Table D-19. Housing Characteristics, Denver Regional Loan Center (2016)

Characteristic	Alaska	Colorado	Idaho	Montana	Oregon	Utah	Washington	Wyoming
Occupied housing units	248,468	2,108,992	610,872	416,125	1,571,678	943,147	2,768,076	223,619
Owner-occupied	64.5%	64.8%	68.5%	68.0%	61.7%	69.9%	62.5%	68.8%
Renter-occupied	35.5%	35.2%	31.5%	32.0%	38.3%	30.1%	37.5%	31.2%
Vacancy rate	20.0%	9.8%	12.8%	16.4%	9.3%	10.5%	8.5%	17.4%
Distribution by year built								
2000 and later	19.3%	23.5%	27.9%	20.5%	18.5%	28.3%	21.0%	21.9%
1960 to 1999	74.0%	58.5%	53.3%	50.4%	56.6%	54.0%	56.0%	53.7%
Before 1960	6.8%	18.1%	18.8%	29.0%	24.9%	17.7%	22.9%	24.3%
Average household size								
Owner-occupied	3.0	2.6	2.8	2.5	2.6	3.3	2.7	2.6
Renter-occupied	2.7	2.5	2.6	2.3	2.4	2.9	2.4	2.4
Median value of owner-occupied housing	\$267,800	\$314,200	\$189,400	\$217,200	\$287,100	\$250,300	\$306,400	\$209,500
Median monthly owner costs with mortgage	\$1,851	\$1,597	\$1,168	\$1,327	\$1,572	\$1,437	\$1,727	\$1,367
Housing units with a mortgage	100,640	973,983	266,576	159,313	640,882	466,040	1,187,984	87,086
Units with mortgage 30% or more of household income	28.2%	27.1%	25.1%	29.8%	30.2%	23.1%	29.4%	24.5%

Source: USCB 2018b

Table D-20. Housing Characteristics, Houston Regional Loan Center (2016)

Characteristic	Arkansas	Louisiana	Oklahoma	Texas
Occupied housing units	1,142,718	1,720,801	1,469,342	9,535,612
Owner-occupied	64.6%	64.3%	64.9%	61.1%
Renter-occupied	35.4%	35.7%	35.1%	38.9%
Vacancy rate	15.7%	15.5%	14.6%	11.3%
Distribution by year built				
2000 and later	22.7%	20.8%	21.2%	28.8%
1960 to 1999	61.7%	59.5%	56.3%	56.3%
Before 1960	15.5%	19.8%	22.4%	14.9%
Average household size				
Owner-occupied	2.6	2.7	2.7	3.0
Renter-occupied	2.4	2.5	2.5	2.7
Median value of owner-occupied housing	\$123,300	\$158,000	\$132,200	\$161,500
Median monthly owner costs with mortgage	\$1,017	\$1,214	\$1,168	\$1,469
Housing units with a mortgage	399,534	575,924	529,667	3,347,683
Units with mortgage 30% or more of household income	21.0%	26.7%	22.7%	26.5%

Source: USCB 2018b

Table D-21. Housing Characteristics, Phoenix Regional Loan Center (2016) (Part 1)

Characteristic	Arizona	California	Nevada	New Mexico
Occupied housing units	2,519,052	12,944,178	1,055,158	758,364
Owner-occupied	63.2%	53.6%	54.9%	67.4%
Renter-occupied	36.8%	46.4%	45.1%	32.6%
Vacancy rate	14.9%	7.9%	13.6%	17.4%
Distribution by year built				
2000 and later	29.1%	13.7%	32.2%	20.4%
1960 to 1999	62.2%	57.3%	62.7%	62.7%
Before 1960	8.8%	28.9%	5.1%	17.0%
Average household size				
Owner-occupied	2.7	3.0	2.8	2.7
Renter-occupied	2.7	2.9	2.7	2.6
Median value of owner-occupied housing	\$205,900	\$477,500	\$239,500	\$167,500
Median monthly owner costs with mortgage	\$1,328	\$2,188	\$1,401	\$1,210
Housing units with a mortgage	1,011,494	4,906,165	390,652	277,906
Units with mortgage 30% or more of household income	28.5%	38.8%	31.5%	30.3%

Source: USCB 2018b

Table D-21 (cont.). Housing Characteristics, Phoenix Regional Loan Center (2016) (Part 2)

Characteristic	Hawaii	American Samoa (2010 ^a)	Northern Mariana Islands (2010 ^a)	Guam (2010 ^a)
Occupied housing units	455,868	9,688	16,035	42,026
Owner-occupied	57.2%	73.3%	28.3%	50.3%
Renter-occupied	42.8%	26.7%	71.7%	49.7%
Vacancy rate	15.1%	11.6%	23.1%	16.9%
Distribution by year built				
2000 and later	17.0%	27.8%	26.3%	17.2%
1960 to 1999	65.9%	69.4%	73.5%	80.6%
Before 1960	17.1%	2.9%	0.4%	2.1%
Average household size				
Owner-occupied	3.2	6.0	4.2	3.8
Renter-occupied	2.9	4.5	2.9	3.5
Median value of owner-occupied housing	\$592,000	\$68,175	\$123,777	\$216,145
Median monthly owner costs with mortgage	\$2,239	\$927	\$1,027	\$1,468
Housing units with a mortgage	170,801	726	1,272	12,227
Units with mortgage 30% or more of household income	38.1%	N/A	N/A	N/A

Source: USCB 2018b, 2018f

N/A = data not available

^a All data for American Samoa, the Northern Mariana Islands, and Guam are from 2010 Census.

Table D-22. Housing Characteristics, Roanoke Regional Loan Center (2016)

Characteristic	District of Columbia	Kentucky	Maryland	Virginia	West Virginia
Occupied housing units	281,241	1,717,706	2,194,657	3,120,692	722,125
Owner-occupied	39.2%	66.8%	65.9%	65.3%	72.4%
Renter-occupied	60.8%	33.2%	34.1%	34.7%	27.6%
Vacancy rate	10.3%	12.6%	10.3%	10.6%	18.6%
Distribution by year built					
2000 and later	13.5%	19.9%	16.1%	20.6%	16.3%
1960 to 1999	26.5%	57.4%	56.3%	59.5%	50.6%
Before 1960	60.0%	22.6%	27.6%	19.9%	33.1%
Average household size					
Owner-occupied	2.4	2.6	2.8	2.7	2.5
Renter-occupied	2.2	2.4	2.5	2.5	2.4
Median value of owner-occupied housing	\$576,100	\$135,600	\$306,900	\$264,000	\$117,900
Median monthly owner costs with mortgage	\$2,422	\$1,111	\$1,918	\$1,692	\$997
Housing units with a mortgage	82,847	670,242	1,059,729	1,403,851	249,473
Units with mortgage 30% or more of household income	26.0%	22.4%	28.9%	26.7%	20.8%

Source: USCB 2018b

Table D-23. Housing Characteristics, St. Paul Regional Loan Center (2016)

Characteristic	Illinois	Iowa	Kansas	Minnesota	Missouri	Nebraska	North Dakota	South Dakota	Wisconsin
Occupied housing units	4,822,046	1,247,932	1,110,407	2,148,725	2,372,190	747,562	315,134	334,003	2,326,998
Owner-occupied	65.3%	70.6%	65.7%	71.3%	66.1%	65.3%	63.2%	67.2%	66.7%
Renter-occupied	34.7%	29.4%	34.3%	28.7%	33.9%	34.7%	36.8%	32.8%	33.3%
Vacancy rate	9.5%	9.6%	11.9%	10.8%	14.1%	9.6%	14.5%	13.0%	12.8%
Distribution by year built									
2000 and later	13.4%	16.1%	15.8%	18.7%	18.1%	16.9%	24.1%	22.8%	15.8%
1960 to 1999	47.1%	44.0%	50.7%	51.0%	53.6%	48.8%	49.7%	47.6%	48.5%
Before 1960	39.5%	39.8%	33.6%	30.4%	28.3%	34.3%	26.1%	29.6%	35.7%
Average household size									
Owner-occupied	2.7	2.5	2.7	2.6	2.6	2.6	2.5	2.6	2.6
Renter-occupied	2.4	2.2	2.4	2.2	2.3	2.3	2.0	2.2	2.2
Median value of owner-occupied housing	\$186,500	\$142,300	\$144,900	\$211,800	\$151,400	\$148,100	\$184,100	\$160,700	\$173,200
Median monthly owner costs with mortgage	\$1,588	\$1,186	\$1,264	\$1,472	\$1,210	\$1,290	\$1,318	\$1,239	\$1,348
Housing units with a mortgage	2,003,228	532,888	433,471	1,026,348	965,673	294,210	106,275	125,800	991,148
Units with mortgage 30% or more of household income	28.3%	19.8%	21.0%	22.4%	22.5%	19.6%	18.0%	21.3%	23.9%

Source: USCB 2018b

Table D-24. Housing Characteristics, St. Petersburg Regional Loan Center (2016a)

Characteristic	Alabama	Florida	Mississippi	Puerto Rico	U.S. Virgin Islands (2010^a)
Occupied housing units	1,852,518	7,573,456	1,091,245	1,208,438	43,214
Owner-occupied	68.5%	64.1%	67.3%	68.0%	47.9%
Renter-occupied	31.5%	35.9%	32.7%	32.0%	52.1%
Vacancy rate	16.9%	18.6%	16.5%	21.3%	22.7%
Distribution by year built					
2000 and later	22.0%	24.0%	22.3%	13.5%	16.1%
1960 to 1999	61.0%	64.2%	62.6%	72.9%	75.8%
Before 1960	17.0%	11.8%	15.1%	13.6%	8.2%
Average household size					
Owner-occupied	2.6	2.6	2.7	2.9	2.5
Renter-occupied	2.5	2.7	2.6	2.7	2.4
Median value of owner-occupied housing	\$136,200	\$197,700	\$113,900	\$111,900	\$254,296
Median monthly owner costs with mortgage	\$1,126	\$1,410	\$1,087	\$846	\$1,524
Housing units with a mortgage	712,965	2,750,740	364,980	320,273	9,409
Units with mortgage 30% or more of household income	25.2%	34.3%	26.6%	42.7%	N/A

Source: USCB 2018b, 2018f

N/A = data not available

^a All data for U.S. Virgin Islands are from 2010 Census.

D.4 REFERENCES

- USCB (U. S. Census Bureau). 2018a. Population Division. Table PEPANNRES. Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2017. Accessed April 2018 at <https://factfinder.census.gov>.
- USCB. 2018b. 2016 American Community Survey 1-Year Estimates. Table S0201. Selected Population Profile in the United States. Accessed April 2018 at <https://factfinder.census.gov>.
- USCB. 2018c. 2016 American Community Survey 1-Year Estimates. Table CP05. Comparative Demographic Estimates for 2016. Accessed April 2018 at <https://factfinder.census.gov>.
- USCB. 2018d. 2011 American Community Survey 1-Year Estimates. Table CP05. Comparative Demographic Estimates for 2010. Accessed April 2018 at <https://factfinder.census.gov>.
- USCB. 2018e. Census 2000 Summary File 1. Table P001. Total population. Accessed April 2018 at <https://factfinder.census.gov>.
- VA (U.S. Department of Veterans Affairs). 2019. Veteran Population (Population Tables) – Nation Race/Ethnicity. National Center for Veterans Analysis and Statistics. Last updated November 8, 2019. Accessed December 5, 2019 at https://www.va.gov/vetdata/Veteran_Population.aspb.