



Draft Environmental Assessment

Wildfire Fuels Reduction Project

Kittitas County, WA

FEMA-PDMC-PJ-10-WA-2013-002

September 26, 2014



FEMA

Federal Emergency Management

Department of Homeland Security
500 C Street, SW
Washington, DC 20472

This document was prepared for:

FEMA Region X
130 - 228th Street, SW
Bothell, WA 98021

by:

URS Group, Inc.
1501 4th Avenue, Suite 1400
Seattle, WA 98101

Contract No. HSFEHQ-06-D-0162
Task Order HSFEHQ-11-J-0026

15702626

Cover photo credit: courtesy of Kittitas
County.

Acronyms	iii
Glossary	v
SECTION ONE INTRODUCTION	1-1
SECTION TWO PURPOSE AND NEED	2-1
SECTION THREE ALTERNATIVES	3-1
3.1 No Action Alternative	3-1
3.2 Proposed Action	3-1
3.3 Alternatives Considered and Dismissed	3-3
SECTION FOUR AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS	4-1
4.1 Physical Resources	4-1
4.1.1 Geology and Soils	4-1
4.1.2 Air Quality	4-2
4.1.3 Climate Change	4-3
4.1.4 Consequences of Alternatives	4-3
4.2 Water Resources	4-4
4.2.1 Surface Water	4-4
4.2.2 Water Quality	4-5
4.2.3 Wetlands	4-6
4.2.4 Floodplains	4-7
4.2.5 Consequences of Alternatives	4-7
4.3 Biological Resources	4-9
4.3.1 Vegetation	4-9
4.3.2 Wildlife and Fish	4-10
4.3.3 Threatened and Endangered Species and Critical Habitat	4-11
4.3.4 Special-Status Species	4-14
4.3.5 Consequences of Alternatives	4-14
4.4 Cultural Resources	4-16
4.4.1 Ethnographic and Historical Context	4-17
4.4.2 Identification of Historic Properties	4-19
4.4.3 Summary of Documented Cultural Resources	4-21
4.4.4 Consequences of Alternatives	4-23
4.5 Socioeconomic Resources	4-24
4.5.1 Public Safety	4-24
4.5.2 Environmental Justice	4-24
4.5.3 Consequences of Alternatives	4-25

4.6	Recreation.....	4-26
4.6.1	Consequences of Alternatives.....	4-26
4.7	Cumulative Impacts.....	4-27
SECTION FIVE	AGENCY COORDINATION AND PUBLIC INVOLVEMENT	5-1
5.1	Kittitas County Hazard Mitigation Plan.....	5-1
5.2	Kittitas County Wildfire Protection Plan	5-2
SECTION SIX	PERMITTING, PROJECT CONDITIONS, AND MITIGATION MEASURES.....	6-1
SECTION SEVEN	CONCLUSION.....	7-1
SECTION EIGHT	LIST OF PREPARERS.....	8-1
SECTION NINE	REFERENCES	9-1

Appendices

Appendix A Figures

- Figure 1 Project Vicinity
- Figure 2 Hidden Valley Project Area
- Figure 3 Pine Loch Sun Project Area
- Figure 4 Sky Meadows Project Area
- Figure 5 Treatment Methodology
- Figure 6 Treated Home (Example)

Appendix B Kittitas County Prescription for Fuels Reduction

Appendix C Migratory Bird Species in Kittitas County

Appendix D Public Notice

Tables

Table 4-1	Evaluation Criteria for Potential Impacts	4-1
Table 4-2	Previously Documented Cultural Resources within the Project Area	4-22

Acronyms

APE	Area of Potential Effects
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
County	Kittitas County
dbh	diameter at breast height
DNR	Washington Department of Natural Resources
EA	Environmental Assessment
Ecology	Washington Department of Ecology
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
FMO	foraging, migrating and overwintering
FPPA	Farmland Protection Policy Act
ICC	International Code Council
KCCD	Kittitas County Conservation District
MBTA	Migratory Bird Treaty Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
OHWM	ordinary high water mark
PDM-C	Pre-Disaster Mitigation–Competitive
SHPO	State Historic Preservation Office
URS	URS Group, Inc.
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
WACCIA	Washington Climate Change Impact Assessment
WDFW	Washington State Department of Fish and Wildlife

WISAARD	Washington Information System for Architectural and Archaeological Records Data
WNHP	Washington Natural Heritage Program
WRCC	Western Regional Climate Center
WSDOH	Washington State Department of Health
WSHP	Washington State Horse Park

Glossary

Alluvium: Loose, unconsolidated soils that have been eroded and reshaped by water in some form.

Area of Potential Effects: Geographic area or areas within which an undertaking may cause changes in the character or use of historic properties, if such properties exist. The APE is influenced by the scale and nature of the undertaking.

Best Management Practice: Environmental protective measure for conducting projects in an environmentally responsible manner.

Colluvium: Loose, unconsolidated soils that have been deposited at the base of hillslopes.

Defensible space: Clearings between wildland vegetation and structures.

Ephemeral channel: Channel that holds water only during and immediately after rain events.

Fuels reduction: Removal of excess flammable vegetation through thinning, limbing, or other methods to reduce the potential for severe wildfires.

Limbing: Removal of large tree limbs to reduce fuel load and the potential for crown fires.

Loam: Well-drained soils composed of sand, silt, and clay in relatively even proportions.

Loess: Deposits of silt that have been laid down by wind action.

Ordinary high water mark: Point on a bank or shore up to which the presence and action of the water leaves a distinct mark by erosion, destruction of terrestrial vegetation, or other easily recognized characteristic.

Residuum: Remaining soil after soluble elements have dissolved.

Prescribed burn: Any fire ignited for vegetation management.

Slash: Vegetative debris created by property clearing, right-of-way clearing, and forest management activities.

Suppression: Response to wildland fire that results in the curtailment of fire spread and elimination of all identified threats from the fire.

Thinning: Partial removal of trees, branches, or shrubs from a stand to reduce fuel loads.

Wildfire: Unwanted wildland fire.

Wildland-urban interface: Line, area, or zone where structures and other human development meet or intermingle with vegetative fuels in wildlands.

SECTION ONE INTRODUCTION

Kittitas County, Washington, has applied for fiscal year 2013 funding under the Federal Emergency Management Agency (FEMA) Pre-Disaster Mitigation-Competitive (PDM-C) grant program for financial assistance for the Wildfire Fuels Reduction Project in Kittitas County (County) in central Washington. The proposed project in Kittitas County targets the communities of Hidden Valley, Pine Loch Sun, and Sky Meadows. Appendix A, Figures 1 through 4, show the project area.

The objective of the PDM-C grant program is to fund pre-disaster mitigation planning and projects that address primarily natural hazards for States, Territories, and federally recognized Indian Tribes to reduce risks to vulnerable populations and structures while also reducing reliance on funding from actual disaster declarations.

This Environmental Assessment (EA) has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. §§ 4321–4327); the President’s Council on Environmental Quality (CEQ) regulations to implement NEPA (40 CFR Parts 1500–1508); and FEMA’s regulations implementing NEPA (44 CFR Part 10). FEMA is required to consider potential environmental impacts before funding or approving actions or projects.

The purpose of this EA is to analyze the potential environmental impacts of the Kittitas County Wildfire Fuels Reduction Project. FEMA will use the findings in this EA to determine whether an Environmental Impact Statement is required or a Finding of No Significant Impact (FONSI) should be issued.

SECTION TWO PURPOSE AND NEED

The purpose of the PDM-C is to reduce overall risks to vulnerable populations and structures, while also reducing reliance on funding from actual disaster declarations. The Wildfire Fuels Reduction Project would provide an incentive for property owners in the project area to establish and maintain defensible space that would reduce the risk of wildfire. The purpose of the Wildfire Fuels Reduction Project is to enhance protection for residents and firefighters in the Hidden Valley, Pine Loch Sun, and Sky Meadows communities and to reduce the potential impacts of a catastrophic wildfire. The need for this action is detailed below.

According to the *Kittitas County Wildfire Protection Plan* (Kittitas County 2009), the Washington Department of Natural Resources (DNR) has rated the wildfire hazard in Hidden Valley, Pine Loch Sun, and Sky Meadows as extreme. The *Kittitas County Wildfire Protection Plan* lists the following wildfire risk factors for the three communities:

- Hidden Valley – Rough gravel roads, steep slopes, and canyons surrounding homes; heavy timber and slash within 30 to 70 feet of most homes; and most of the area outside a fire district
- Pine Loch Sun – Steep and graveled roads, development on steep slopes that mostly exceed 30 percent, and timber and heavy brush within 30 feet of most homes
- Sky Meadows – Narrow brushy roads, steep elevation gain with many slopes exceeding 40 percent, heavy timber and brush, very little defensible space, mostly recreational areas, and inadequate fire flow from water source

Hidden Valley, Pine Loch Sun, and Sky Meadows were established in the 1960s and 1970s and have few fire protection mechanisms in place. The *2006 International Wildland-Urban Interface Code* (ICC 2006) requires property owners of new construction to meet building construction and defensible space requirements, but the County does not have the authority to mandate these requirements for owners of properties that were constructed before 2006. Some property owners have participated in the Firewise program, but many have not adopted defensible space measures because of time, expense, competing concerns, misperceptions about wildfire risks, or a lack of awareness that they share responsibility for fire protection (Kittitas County 2009).

The total of approximately 3,351 acres in the project area contain 1,245 lots, and approximately 764 of the lots have structures. There are many primary and secondary residences and State and Federal lands in Kittitas County with dangerous levels of high-hazard fuels adjacent to the extreme wildfire risk areas that are included in the Wildfire

Fuels Reduction Project, which create additional hazards for wildfire in the larger vicinity¹.

Much of the residential development in the County in the past 7 years has occurred in the wildland-urban interface in areas identified as having an extreme wildfire risk. A wildland-urban interface analysis conducted by the National Fire Protection Association for Kittitas County found that 33 percent of the County is classified as high risk for wildfires (Kittitas County 2012).

In the 2012 and 2013 fire seasons, four major wildfires occurred in the County (Taylor Bridge, Table Mountain, Colockum Tarps, and Manastash Ridge), resulting in the decimation of more than 143,000 acres, the loss of more than 115 structures, and a cost of more than \$70 million for fire suppression and repair of damage to infrastructure and properties. Recovery from the four wildfires is projected to occur over the next 5 years, stressing the County's already limited resources.

¹ Kittitas County Wildfire Fuels Reduction Project PDM-C grant application.

SECTION THREE ALTERNATIVES

The No Action Alternative, Proposed Action, and alternatives that were considered and dismissed are discussed in this section.

3.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, no FEMA-funded fuels reduction mitigation would occur in the project area. Wildfire risk in the wildland-urban interface would continue as a result of existing, untended heavy ladder fuels and poor access for emergency responders. At-risk property owners would continue to implement wildfire mitigation activities on their own initiative or as otherwise assisted or required by the County or homeowners insurance providers.

3.2 PROPOSED ACTION

The description of the Proposed Action is based primarily on the March 2013 PDM-C grant application, information collected during site visits in June and August of 2014, and updates from Kittitas County and Kittitas County Conservation District (KCCD).

Kittitas County would work with the local fire districts and KCCD to implement the Proposed Action. The Proposed Action consists of the following components which would be implemented only for the property owners in the project area who elect to participate in the Proposed Action.

- Assessment of the wildfire threat to the property.
- Development and implementation of a fuels reduction and vegetation management plan for the property. Ladder fuels and other biomass would be removed using chainsaws, chippers, brush mowers, and masticators. Limited ground disturbance would occur during fuels reduction. Vegetative debris would be chipped onsite or piled.
- Creation of a defensible space around the property. A properly maintained defensible space protects a structure from surrounding wildfires and provides a relatively safe area for firefighters in which to work. The defensible space would be created according to Firewise program guidelines.

The Firewise program is sponsored by the U.S. Forest Service, U.S. Department of the Interior, and National Association of State Foresters. Appendix A, Figures 5 and 6, graphically show Firewise guidelines and an example of a treated home. Firewise guidelines for defensible space (NFPA 2009) include the following:

- Create a defensible space zone with at least a 30-foot radius and out to 200 feet around a structure's foundation. The radius may be expanded to provide additional defensible space around structures on steep slopes. Fuels reduction

could occur on properties as large as 10 acres, but treatment would be more intense closer to structures in the defensible space zone.

- Plant grass and small islands of fire-resistant plants in the defensible space.
- Trim trees in the defensible space so the lowest branches are 6 to 10 feet above the ground.
- Space plants in the defensible space so the plants or plant canopies do not touch; use wider spacing along slopes.
- Plant fire- or drought-resistant plants in the defensible space.
- Do not remove all vegetation in the defensible space because doing so could increase soil erosion, especially on the sloped areas, which are found in much of the project area.

The County's requirements for fuels reduction projects listed in Appendix B would also be followed. The requirements pertain, for example, to dead and downed materials, stumps and standing dead trees, and live tree pruning and spacing.

Vegetation management activities would be exempt from the County's Critical Area Ordinance.² The Washington State Growth Management Act requires counties to have regulations to protect critical areas, including: wetlands, critical aquifer recharge areas, frequently flooded areas, geologically hazardous areas, and fish and wildlife habitat conservation areas.

Removal of trees 8 inches dbh or greater would be prohibited within 100 feet of water bodies with known presence of fish species listed under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. §§ 1531–1544), or as otherwise specified during ESA consultation³ (see Section 4.3.2). The prohibition would be applied 100 feet from the ordinary high water mark (OHWM) on each side of the following water bodies with known presence of ESA-listed fish species: Cle Elum Lake, Teanaway River, and Swauk Creek. No work would be allowed in wetlands.

The project area consists of extreme fire risk areas in the communities of Hidden Valley, Pine Loch Sun, and Sky Meadows. The project area comprises approximately 3,351 acres that contain 1,245 lots, and approximately 764 of the lots have structures. Up to 300 structures could be protected depending on property owner participation and funding in the Proposed Action.

² Christina Wollman, planner, Kittitas County, oral communication, July 28, 2014.

³ Dale Bambrick, biologist, National Oceanic and Atmospheric Administration, written communication, July 18, 2014.

The County's goal for the Proposed Action is a minimum of 20 percent of property owner participation, but because of the recent wildfires in the County, participation is expected to be 40 percent or more. A participation of 20 percent would be as follows:

- Hidden Valley has 131 lots, and 53 have structures. Property owners of 10 of the lots with structures would need to participate for 20 percent participation. More than 25 property owners have expressed interest in fuels reduction assistance to date, and more are anticipated to participate because Hidden Valley was in the Taylor Bridge Fire footprint. However, adherence to the no-work buffer established for ESA-listed fish-bearing water bodies could reduce the acreage treated in Hidden Valley along the Teanaway River.
- Pine Loch Sun has 521 lots, and 371 have structures. Property owners of 74 of the lots with structures would need to participate for 20 percent participation. More than 87 property owners have expressed interest in fuels reduction assistance to date, and more than 100 property owners are expected to participate.
- Sky Meadows has 593 lots, and 340 have structures. Property owners of 68 of the lots with structures would need to participate for 20 percent participation. More than 38 property owners have expressed interest in fuels reduction assistance, and more are expected to participate.

Participating property owners would be required to sign a 10-year maintenance contract with the KCCD that specifies the required annual maintenance. Scheduled maintenance activities would be conducted annually generally during the Firewise Community Days events, which take place during the spring after snow-melt. Maintenance of fuel treatment and mitigation would be reviewed by property owners and community committees. The review would be conducted within 1 year after fuels reduction, and additional maintenance and mitigation would be conducted as needed after each annual reassessment. Prior to project completion, an operations and maintenance plan would be developed by KCCD and submitted to FEMA for approval.

Mitigation measures including avoidance and minimization measures would be incorporated into the project to limit the potential for adverse impacts to wildlife, water and cultural resources.

3.3 ALTERNATIVES CONSIDERED AND DISMISSED

Two alternatives were considered and dismissed: reducing fuel loads through prescribed burning and replacing flammable structural materials with fire-resistant materials.

Prescribed burning was considered for areas beyond the 30-foot radius of structures, but the risk of an escaped fire would be high. Multiple burn locations would be required throughout the project area to effectively manage fuel loads. Prescribed burning is most

effective in areas with light fuel loads. The risk to the residual forest increases where fuels are heavy and at higher elevations. Large stands of dead and dying pine, fir, and spruce trees in the County are easily ignitable fuels and create potentially unpredictable scenarios for prescribed burning. Surveys indicate that mortality of large stands of dead and dying pine, fir, and spruce trees is increasing throughout the County from the western pine beetle, douglas-fir beetle and western spruce budworm (Kittitas County 2009). Because of the risk presented by the existing ignitable fuels, the prescribed burning alternative was dismissed.

Replacing flammable structural materials with fire-resistant materials was also considered, but this alternative would not address the lack of defensible space or the presence of heavy fuel loads and would be more costly and less effective than vegetation removal. No other practicable alternatives were identified.

SECTION FOUR AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS

This section discusses the potential impacts of the No Action Alternative and the Proposed Action on six categories of environmental resources (physical, water, biological, cultural, socioeconomic, and recreation). The cumulative potential environmental impacts are also discussed (see Section 4.7).

The impact analysis follows the same approach for all resource categories. When possible, quantitative information is provided to establish potential impacts, and the potential impacts are evaluated qualitatively based on the criteria listed in Table 4-1.

Table 4-1. Evaluation Criteria for Potential Impacts

Impact Scale	Criteria
None/Negligible	The resource area would not be affected, or changes would either be non-detectable or if detected, the effects would be slight and local. Impacts would be well below regulatory standards, as applicable.
Minor	Changes to the resource would be measurable, but the changes would be small and localized. Impacts would be within or below regulatory standards, as applicable. Mitigation measures would reduce any potential adverse effects.
Moderate	Changes to the resource would be measurable and have both localized and regional impacts. Impacts would be within or below regulatory standards, but historical conditions would be altered temporarily. Mitigation measures would be necessary, and the measures would reduce any potential adverse effects.
Major	Changes would be readily measurable and would have substantial consequences on local and regional levels. Impacts would exceed regulatory standards. Mitigation measures to offset the adverse effects would be required to reduce impacts, but long-term changes to the resource would be expected.

Impacts are predicted based on the degree of change or loss of the resource from the baseline conditions. Impacts may be direct or indirect. Direct impacts are caused by an action and occur at the same time and place as the action. Indirect impacts are caused by an action and occur later or are farther removed from the area but are still reasonably foreseeable (40 CFR Part 1508).

4.1 PHYSICAL RESOURCES

4.1.1 Geology and Soils

The major geological features in Kittitas County are the Cascade and Wenatchee Mountains on the west and north, respectively; the Yakima River Valley in the central portion of the County; and the Boylston and Saddle Mountains in the southeast along the Columbia River. The Swauk formation is a non-marine sedimentary formation underlying the Cle Elum River drainage. It is composed of conglomerate sandstone and shale interbeds and dates to the Tertiary Period from 65 million years to 1.6 million years ago. Other bedrock formations in Kittitas County include metamorphic rocks,

granite intrusions, and thick sequences of volcanic and marine sedimentary rock (Kittitas County 2012).

From the Cascades, the topography slopes generally downward to the east and south in the Yakima River Valley to the Columbia River. The eastern part of the County consists of low, rolling to moderately steep glacial terraces and long, narrow valleys, and the southeast section of the County is characterized by moderately steep to steep glacial terraces and steep, rough, broken mountain foothills (Kittitas County 2012).

Most of the soils in the County formed in residuum and colluvium derived from basalt with loess in the upper part. Other soils formed in alluvium, glacial till, glacial outwash, lacustrine deposits, volcanic ash, and residuum and colluvium derived from sedimentary, metamorphic, and igneous rock. Major soil types in the project area include Yalelake sandy loam, Cattcreek loamy sand, Bickleton silt loam, Underwood loam, Colter cindery sandy loam, Rockly-Rock outcrop complex, Firoke ashy fine sandy loam, and Swauk-Qualla complex (USDA 2014).

The Farmland Protection Policy Act of 1981 (FPPA), as amended (7 U.S.C. §§ 4201 et seq.), requires that Federal agencies minimize the extent to which their programs contribute to the unnecessary conversion of prime farmland, unique farmland, and land of statewide or local importance to non-agricultural uses. Farmlands subject to FPPA requirements may be forestland, pastureland, or cropland but cannot be urban built-up land. The project area contains the following areas of prime farmlands and farmlands of statewide or unique importance: approximately 520 acres in Hidden Valley, 67 acres in Pine Loch Sun, and 593 acres in Sky Meadows.

4.1.2 Air Quality

The Clean Air Act of 1970, as amended (CAA) (42 U.S.C. §§ 7401–7661) requires that States adopt ambient air quality standards. The standards have been established to protect the public from potentially harmful amounts of pollutants.

Under the CAA, the U.S. Environmental Protection Agency (EPA) establishes primary and secondary air quality standards. Primary air quality standards protect the public health, including the health of sensitive populations such as people with asthma, children, and older adults. Secondary air quality standards protect public welfare by promoting ecosystems health and preventing decreased visibility and damage to crops and buildings (USEPA 2014).

The EPA has set national ambient air quality standards (NAAQS) for the following six criteria pollutants: ozone (O₃), particulate matter (PM_{2.5}, PM₁₀), nitrogen dioxide (NO₂), carbon monoxide (CO), sulfur dioxide (SO₂), and lead (Pb) (USEPA 2014).

Wildfires emit smoke that is a mixture of gases and fine particles which include ozone, carbon monoxide, and particulate matter (PM 2.5). Communities exposed to wildfire smoke are advised to check current Ecology air quality information and public health

messages. Other recommendations include staying inside as much as possible, avoiding outdoor physical activity, keeping windows and doors closed, and recirculating air conditioners. Generally, those that are most at risk by wildfire smoke are older adults, children, pregnant women, smokers, and individuals with respiratory infections or diabetes (WSDOH 2014).

The nearest air quality monitoring station to the project area is in Ellensburg. The station has a current air quality advisory rating of “good,” which indicates that air pollution is minimal and there is little health risk (Ecology 2014).

4.1.3 Climate Change

Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions (CEQ 2010) contains guidance on how Federal agencies should consider climate change in their decisions and suggests that quantitative analysis should be done if an action would release more than 25,000 metric tons of greenhouse gases per year.

Kittitas County and the Yakima River Basin are east of the Cascade Range in the rain shadow and generally have warm, dry summers and cold, moist winters. During the winter, colder temperatures and higher precipitation occur in the Cascades and the surrounding foothills. Cle Elum, which is southeast of the project area, has an average annual precipitation of 23 inches of rainfall and 83 inches of snowfall. Temperatures in degrees Fahrenheit range from highs in the 80s in the summer to the 30s in winter and lows in the 30s in the summer to the 20s in the winter (WRCC 2013). The five types of severe weather events that occur in Kittitas County are thunderstorms, damaging winds, hail storms, heavy snowfall associated with winter storms, and flash flooding (Kittitas County 2012).

Global and regional climate change is expected to accelerate in the coming decades. According to the *Washington Climate Change Impacts Assessment* (Climate Impacts Group 2009), temperatures could increase by 2 degrees (Fahrenheit) by the 2020s, 3.2 degrees by the 2040s, and 5.3 degrees by the 2080s. Because of increased summer temperature and decreased summer precipitation, the area burned by fire regionally is projected to double by the 2040s and triple by the 2080s (Climate Impacts Group 2009). Generally, hotter and drier conditions contribute to larger wildfires and longer fire seasons. Increased fire probability in the region as a result of changing climatic conditions in the coming years could increasingly put communities in the wildland-urban interface at risk.

4.1.4 Consequences of Alternatives

No Action Alternative

Under the No Action Alternative, FEMA would not provide funding for vegetation removal; however some wildfire mitigation activities would be expected to continue as initiated by property owners, through existing local programs/requirements, or as

required by homeowners insurance providers. There would be no impacts to geology. Soil resources in the project area would be affected by erosion if vegetation is burned in a catastrophic wildfire, in particular on steep slopes. A significant loss of mature vegetation along steep slopes could increase the risk of landslides and thus risks to proximate structures and infrastructure.

In the event of a wildfire, air quality would likely decline putting the elderly, school children and other vulnerable populations at risk. Depending on the air quality advisory, the public could be advised to change their daily activities including outdoor work and essential errands and school cancellations could occur. If the risk of wildfires increases as a result of climate change, the project area could be even more vulnerable to wildfire impacts in the decades ahead. Although wildfires are a natural element of an ecosystem, a large wildfire can release more than 25,000 metric tons of greenhouse gases, thereby incrementally contributing to overall climate change. Adverse impacts would range from minor to moderate, depending on the severity and location of a wildfire and subsequent air pollution and soil erosion.

Proposed Action

Adverse impacts to geology and climate would be negligible based on the scale of the project and limited ground-disturbing activities. Ground-disturbing activities may occur if shrub and tree roots are removed. However, in most cases, thinning and limbing would provide sufficient fuels reduction, and complete removal of shrubs and trees (including roots) would be limited. Some soil could be disturbed during project activities, but adverse impacts would be negligible based on the low-impact nature of vegetation removal by hand and the proposed protective stream buffers.

Fuels reduction activities would occur on a localized scale and focus on protection of structures in contiguous areas, thus likely reducing the spread/severity of wildfires. Reducing the risk or severity of wildfires would generally be a positive effect to air quality and climate change because of the consequent reduction in air pollution and greenhouse gas releases.

4.2 WATER RESOURCES

4.2.1 Surface Water

The Proposed Action is located in the Upper Yakima subbasin (Water Resource Inventory Area 39), and Hidden Valley, Pine Loch Sun, and Sky Meadows are located in smaller nested subwatersheds and associated stream networks (USGS 2014).

Hidden Valley

The Teanaway River and its tributaries flow through the northwestern part of Hidden Valley in the Teanaway River subwatershed. Swauk Creek and several of its tributaries flow along the eastern side of Hidden Valley in the Swauk Creek subwatershed. Teanaway River and Swauk Creek are Shorelines of Statewide Significance. Both the Teanaway River and Swauk Creek contain a known fish-bearing tributary that flows through a property in the project area.

Pine Loch Sun

Four tributaries flow west from Pine Loch Sun to Cle Elum Lake in the Middle Cle Elum River subwatershed, and five tributaries flow south from Pine Loch Sun to Cle Elum River in the Lower Cle Elum River subwatershed. Cle Elum River is a Shoreline of Statewide Significance, and one Cle Elum River known fish-bearing tributary flows through the project area.

Sky Meadows

Six streams, including Thornton Creek, flow through Sky Meadows, and all are tributaries of the Yakima River in the Crystal Creek-Yakima River subwatershed. The Yakima River is a Shoreline of Statewide Significance, and one known fish-bearing tributary flows through the project area.

The Upper Yakima subbasin is on the eastern side of the Cascade Mountains in south-central Washington, and it drains 1,594 square miles from its headwaters to its downstream boundary at Umtanum Creek. Headwaters begin in the Wenatchee National Forest, which is to the north and west of the Yakima River, and is predominantly forests and shrubs at elevations that reach approximately 8,184 feet. Snowpack and glacier runoff together with precipitation provides most of the water for irrigation and streamflow. Headwaters of tributaries east of the Yakima River originate at relatively lower elevation reaches of approximately 3,950 feet. These headwaters are not part of the Cascade Range but instead transition to the Columbia Plateau where vegetation is primarily shrub steppe with deciduous vegetation and conifers at higher elevations. Snowpack is ephemeral and contributes far less water to the system when compared to the Cascades (Ecology 2005).

4.2.2 Water Quality

Section 303(d) of the Clean Water Act of 1977, as amended (33 U.S.C. § 1313(d)(2)), establishes requirements for States and Tribes to identify and prioritize water bodies that do not meet water quality standards. Data from Ecology were queried to determine whether any streams in the project area are considered impaired or waters of concern. No streams in the project area are considered Section 303(d) impaired streams. Some

stream segments north of the project area in Hidden Valley, Pine Loch Sun, and Sky Meadows contain stream segments that are rated Category 1 and Category 5. Category 1 stream segments meet tested standards for waters, and Category 5 stream segments are polluted waters that require water quality improvements.

Swauk Creek on the eastern side of Hidden Valley has a Class 5 rating for temperature just north of the project area. Cle Elum River has a Class 5 rating for temperature north and south of Cle Elum Lake, but these are outside the Pine Loch Sun project area. Segments of the Yakima River upstream of the Sky Meadows project area have a Class 5 rating for dissolved oxygen and temperature and a Class 1 rating for ammonia-nitrogen, arsenic, bacteria, and pH (Ecology 2012).

Two water quality improvement projects are currently active in the Upper Yakima subbasin (Water Resource Inventory Area 39): the Upper Yakima Multi-parameter Project and the Teanaway River Project. The Upper Yakima Multi-parameter Project has Environmental Protection Agency (EPA)-approved plans for suspended sediment, toxics, and turbidity and a plan under development for temperature. The Teanaway River Project has an EPA-approved plan for temperature (Ecology 2012).

Many fish species require cold water that holds dissolved oxygen to survive, and a lack of riparian shade, excessive sediment load, and low stream flow can increase stream temperature. Land management activities, including forest management, can affect temperature adversely when vegetation adjacent to streams is damaged, erosion of stream banks and sediment into streams is increased, and instream flow is reduced (Ecology 2012).

4.2.3 Wetlands

Executive Order (EO) 11990, Protection of Wetlands, requires Federal agencies, in planning their actions, to consider alternatives to wetland sites and limit potential damage if an activity affecting a wetland cannot be avoided.

According to the National Wetland Inventory (USFWS 2014b), approximately 42 acres of wetlands are located in Hidden Valley and Sky Meadows, primarily associated with Teanaway River and Swauk Creek. Wetlands associated with Teanaway River and its tributaries on the northwestern part of Hidden Valley have affected approximately 17 acres of freshwater emergent wetlands, freshwater forested/shrub wetlands, and riverine wetlands. Wetlands associated with Swauk Creek and several of its tributaries on the eastern side of Hidden Valley have affected approximately 24 acres of freshwater emergent wetlands and freshwater forested/shrub wetlands. An approximately 0.5-acre freshwater forested/shrub wetland was identified on the southwestern corner of Sky Meadows. Pine Loch Sun is located on the eastern side of Cle Elum Lake, and no wetlands have been identified.

All wetlands in the project area are likely to be adjacent to Teanaway River, Swauk Creek in Hidden Valley, or other seasonal drainages. Much of the Pine Loch Sun and Sky Meadows project sites are on steep slopes dominated by upland forest, which would not favor the development of wetlands. No wetlands were observed within upland forest areas during a reconnaissance site visit in August 2014.

4.2.4 Floodplains

EO 11988, Floodplain Management, 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.

Flood Insurance Rate Maps for the project area, Panels 5300950262B, 5300950266B, and 5300950267B (all effective 1996), show floodplains associated with Teanaway River and Swauk Creek (FEMA 1996) that are designated Zone A, which is subject to inundation by the 1-percent-annual-chance flood event (100-year floodplain). Portions of the floodplains are located in developed areas near residential structures in Hidden Valley. The hillsides surrounding Teanaway River and Swauk Creek are characterized by moderate to steep slopes, which result in floodplains that are generally between 300 to 1,000 feet wide.

Kittitas County participates in the National Flood Insurance Program, and floodplain development permits are required prior to beginning any work on improved or unimproved properties within a 100-year floodplain. Floods and flood-related damage are common in Kittitas County. The County has experienced eight federally declared flood disasters since 1975, and the public and private costs have exceeded \$50 million. Additional non-federally declared flood disasters caused significant damage in 1998, 2006, and 2011. The County has significant floodplains along the Yakima, Cle Elum, and Teanaway Rivers, and all have a flood history (Kittitas County 2014).

4.2.5 Consequences of Alternatives

No Action Alternative

Under the No Action Alternative, FEMA would not provide funding to reduce vegetation around residences, however some wildfire mitigation activities would be expected to continue as initiated by property owners, through existing local programs/requirements, or as required by homeowners insurance providers. Thus existing conditions and risks to water resources would not change. Properties with maintained defensible space would be expected to be less vulnerable to catastrophic wildfires and thus less likely to contribute to post-burn erosion and sedimentation of water resources. In the event of a wildfire, impacts to the water quality, including sedimentation, of water resources would

be minor to moderate, depending on the size and intensity of the fire and on subsequent erosion due to the loss of vegetation. A significant loss of mature vegetation along steep slopes can increase the risk of landslides into surface waters, wetlands, and floodplains that may be below and change local hydrologic and hydraulic conditions.

Proposed Action

Local, short-term, minor impacts to surface water from sedimentation during vegetation removal could occur. To minimize impacts, no vegetation management activities would be allowed within 5 feet of a stream's OHWM. Within 15 feet of the OHWM, limbing and thinning would not be allowed on trees greater than 7 inches dbh that overhang the streams. These restrictions would minimize the release of sediments by limiting ground-disturbing activities near streams.

Long-term, minor adverse impacts to water quality, including temperature and dissolved oxygen, could occur but would be minimized by following the stream buffers described above. Ecology and the EPA do not consider the segments of Swauk Creek, Cle Elum River, and Yakima River near the project area affected for these parameters (Ecology 2012), and water quality impacts are not anticipated to increase by project activities.

Most riparian wetland areas would be avoided by restricting work within 5 feet of the OHWM of streams and within 100 feet of the OHWM for Cle Elum Lake, Teanaway River, and Swauk Creek. If work is not restricted in these water bodies, there would be potential for minor-to-moderate adverse impacts.

Impacts to floodplains are not anticipated. The stream buffers described above would be required. The Proposed Action would not increase flood elevations or velocities because modifications to banks would not occur and land in the floodplain would not be built-up. If work is not restricted in the stream buffers, there would be potential for minor-to-moderate adverse impacts. Vegetation removal in the wildland-urban interface does not promote occupancy of the floodplain.

In the long term, the mitigated properties that maintain defensible space would be expected to be less vulnerable to catastrophic wildfires and thus less likely to contribute to post-burn erosion and sedimentation of water resources. Thus depending on the scale of participation and how contiguous the mitigated properties are, the Proposed Action is expected to have a minor positive affect to water resources from the reduced wildfire vulnerabilities in treated locations.

4.3 BIOLOGICAL RESOURCES

4.3.1 Vegetation

Vegetation in the County varies from forested, mountainous terrain in the Cascades to the dry, shrub-steppe hills in the Columbia Basin. Forestlands primarily in the northwestern and northeastern parts of Kittitas County make up more than 50 percent of the County. Agricultural lands are predominant in the Yakima River Valley, which runs through the center of the County. Irrigated croplands include timothy hay, alfalfa hay, corn, potatoes, small grains, tree fruit, and livestock pasture. Forestlands transition to shrublands in the southeast part of the county as climatic conditions change (Kittitas County 2009). Cle Elum is in a transition zone between the moist coniferous forests of the Snoqualmie Pass-Easton corridor and the drier Ponderosa pine zone.

The project area is located on the eastern side of the Cascade Mountains. In this area, black cottonwood (*Populus trichocarpa*) typically occurs along streams, with groves of quaking aspen (*Populus tremuloides*) in wetter places. In lower elevation forested areas, Douglas-fir (*Pseudotsuga menziesii*) begins to appear alongside ponderosa pine (*Pinus ponderosa*), lodgepole pine (*Pinus contorta*), and western larch (*Larix occidentalis*). Typical plants of the understory are common snowberry (*Symphoricarpos albus*), bitterbrush (*Purshia* sp.), and kinnikinnick (*Arctostaphylos uva-ursi*). Grand fir (*Abies grandis*) is the prevalent tree species at middle elevations. Moist mountain meadows are common in forest openings. Damp conditions on the upper Cascade slopes promote growth of a closed-canopy conifer forest dominated by western hemlock (*Tsuga heterophylla*) and western red cedar (*Thuja plicata*) with a shrubby understory (huckleberries [*Vaccinium* sp.], Oregon boxwood (*Paxistima myrsinites*), and western twinflower [*Linnaea borealis*]). Near residential areas, landscaping trees and shrubs may also be present.

In Pine Loch Sun and Sky Meadows, dense stands of second growth Douglas-fir and ponderosa pine are dominant. The Hidden Valley area has the same forested vegetation community, with the addition of black cottonwood and quaking aspen alongside drainages. Some non-forested areas in Hidden Valley are composed of non-native grassland and/or agricultural fields.

As discussed in Section 4.3.2, the treatment areas may provide habitat for large mammals, fish, game birds, migratory birds, and other forms of wildlife and include food sources, water, breeding sites, roosting sites, and refugia.

According to the Washington Natural Heritage Program (WNHP 2014), the Washington State rare plant Suksdorf's monkeyflower (*Mimulus suksdorfii*) is located in the vicinity of the Hidden Valley project area. The site was recorded by the Nature Conservancy in 1980 on the Lookout Mountain Reserve (WNHP 2014). The plant grows in seasonally

moist areas within shrub-steppe vegetation, and this is the easternmost known site in Kittitas County. Suksdorf's monkeyflower is not an ESA-listed species. No known records occur within the project area.

4.3.2 Wildlife and Fish

The US Fish and Wildlife Service (USFWS) Office of Migratory Bird Management maintains a list of migratory birds (50 CFR § 10.13). The Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 U.S.C. §§ 703–711), provides Federal protections for migratory birds and their nests, eggs, and body parts from harm, sale, or other injurious actions. The act includes a “no take” provision.

Common MBTA bird species of mixed conifer forest of this region include red-tailed hawk (*Buteo jamaicensis*), northern flicker (*colaptes auratus*), Steller's jay (*Cyanocitta sterlleri*), mountain chickadee (*Poecile gambeli*), red-breasted nuthatch (*Sitta canadensis*), golden-crowned kinglet (*regulus satrapa*), cedar waxwing (*Bombycilla cedrorum*), brown-headed cowbird (*Molothurs ater*). A list of MBTA species common in Kittitas County is provided in Appendix C.

Mammals that may commonly be seen in the vicinity of Cle Elum include white-tailed deer (*Odocoileus virginianus*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), yellow-pine chipmunk (*Tamias amoenus*), Douglas' squirrel (*Tamiasciurus douglasii*), short-tailed weasel (*Mustela erminia*), and numerous bat species.

According to the Washington Department of Fish and Wildlife (WDFW), several large mammals use the project area, including winter ranges and year-round concentrations of mule deer (*Odocoileus hemionus hemionus*) and elk (*Cervus elaphus*) (WDFW 2014c).

Fish have been observed in Teanaway River in the Hidden Valley project area and include bull trout (*Salvelinus confluentus*), chinook salmon (*Oncorhynchus tshawytscha*), coho salmon (*Oncorhynchus kisutch*), mountain whitefish (*Prosopium williamsoni*), rainbow trout (*Oncorhynchus mykiss*), steelhead trout (*Oncorhynchus mykiss*), and westslope cutthroat (*Oncorhynchus clarki lewisi*) (WDFW 2014c).

Other typical freshwater fish species that may use streams in the project area include redbside shiner (*Richardsonius balteatus*), bridgelip sucker (*Catostomus columbianus*), largescale sucker (*Catostomus macrocheilus*), chiselmouth (*Acrocheilus alutaceus*), pikeminnow (*Ptychocheilus oregonensis*), speckled dace (*Rhinichthys osculus*), longnose dace (*Rhinichthys cataractae*), and bluegill (*Lepomis macrochirus*).

4.3.3 Threatened and Endangered Species and Critical Habitat

The Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. §§ 1531–1544), was established to conserve, protect, and restore Threatened and Endangered species and their habitats. Section 7 of the ESA (16 U.S.C. § 1536) requires Federal agencies to ensure their actions do not jeopardize the continued existence of listed species and do not result in adverse modification to designated critical habitat.

The WDFW, USFWS, and the National Marine Fisheries Service databases identify 10 Threatened, Endangered, Candidate, and Proposed species with potential to occur in the project area (USFWS 2014a). Three of the 10 species are known to occur within the project area: bull trout (*Salvelinus confluentus*), steelhead, and northern spotted owl (*Strix occidentalis caurina*). The three species are discussed in more detail below.

A fourth species, the gray wolf (*Canis lupus*) ranges widely, and the Teanaway Pack is confirmed to occur throughout in the vicinity of the three housing developments in the project area. The area is considered suitable gray wolf habitat (WDFW 2014a).

The remaining six of the 10 species are either not known to occur in the general vicinity of the project area or no suitable habitat exists. The six species are:

- Endangered: Showy stickseed (*Hackelia venusta*)
- Threatened: Grizzly bear (*Ursus arctos horribilis*)
- Candidate for listing: Greater sage-grouse (*Centrocercus urophasianus*) and Whitebark pine (*Pinus albicaulis*)
- Proposed for listing: Yellow-billed Cuckoo (*Coccyzus americanus*) and North American wolverine (*Gulo gulo luscus*)

These six species are eliminated from further discussion in this EA because they have no potential to occur within the project area.

Critical habitat is present in Kittitas County for bull trout, steelhead, and northern spotted owl. Critical habitat for bull trout and steelhead is present in Teanaway River and Swauk Creek, which flow through the Hidden Valley project area and Cle Elum River, which flows just south of Pine Loch Sun. Critical habitat for northern spotted owl is located in Pine Loch Sun and on the southwestern edge of Sky Meadows.

Bull Trout

Bull trout have stringent requirements for cold water and clean gravel to rear and reproduce, and spawning usually occurs in mountain streams fed by snow-melt or springs fed by snow fields (Goetz et al. 2004). The habitat components required by bull trout are often summed up as the “Four C’s” (cold, clean, complex, and connected). Bull

trout exhibit patchy distributions because even under pristine conditions, the required habitat components are not ubiquitous throughout river basins.

All three portions of the project area fall within the Middle Columbia River Recovery Unit of bull trout, which is part of the Yakima River Basin. The Yakima River Basin is considered a “core area” by USFWS as part of the Recovery Plan (Reiss et al. 2012). The Teanaway River flows through the Hidden Valley project area and has known presence of foraging, migrating, and overwintering (FMO) bull trout. The Teanaway River population appears to be a resident population but may be extirpated (Reiss et al. 2012).

Swauk Creek, also located in Hidden Valley, has one known record of an adult bull trout. It was captured in Swauk Creek in 1993, approximately 0.1 mile upstream from the Yakima River (Reiss et al. 2012).

The Cle Elum River flows near the Pine Loch Sun project area, and Cle Elum Lake is immediately adjacent. These two water bodies have known presence of FMO bull trout. The Cle Elum dam was built in 1933 at the confluence of Cle Elum Lake and the lower Cle Elum River (below the lake) and is a complete fish passage barrier. If bull trout are present in Cle Elum Lake, they would be considered a resident population. The lower Cle Elum River is considered bull trout critical habitat and may be used by bull trout. However, there is no confirmed FMO presence or spawning.

Thornton Creek flows through Sky Meadows. Bull trout is not known to occur in Thornton Creek.

Steelhead

Steelhead exhibit the most complex life history of any species of Pacific salmonid. Steelhead can be anadromous (referred to as steelhead) or freshwater (referred to as rainbow trout).

The Middle Columbia River steelhead Evolutionarily Significant Unit (ESU) occurs in the project area. It includes the steelhead population up to and including the Yakima River. Almost all steelhead populations within this ESU are summer-run fish including those in the project area. A balance between 1- and 2-year-old smolt outmigrants characterize most of the populations within this ESU. Adults return after 1 or 2 years at sea. Hatchery production of steelhead in the Yakima River system was relatively limited historically and was phased out in the early 1990s. Decades of agricultural impacts have heavily affected lower reaches of most major tributaries in this ESU (Good et al. 2005).

Teanaway River and Swauk Creek in Hidden Valley are designated critical habitat for steelhead, and individuals are known to occur. Steelhead does not occur within Pine Loch Sun or Sky Meadows.

Northern Spotted Owl

Northern spotted owls live in forests characterized by dense canopy closure of mature and old-growth trees, abundant logs, standing snags, and live trees with broken tops. Although they are known to nest, roost, and feed in a wide variety of habitat types, spotted owls prefer older forest stands with variety: multi-layered canopies of several tree species of varying size and age, both standing and fallen dead trees and open space among the lower branches to allow flight under the canopy. Typically, forests do not attain these characteristics until they are at least 150 to 200 years old (USFWS 2014c).

There are no known northern spotted owl “site centers” or nesting areas within the project area (WDFW 2014a). A 1.8-mile-radius median home range circle is typically applied to each site center by WDFW. Two of these circles overlap within the project area. They are for the site centers at Dingbat Creek, which contained a pair with young at the nest in 2005 northeast of Pine Loch Sun, and Osborn Point southwest of Sky Meadows, which contained a single owl observation in 2005. There are no site centers or home range circles in the vicinity of Hidden Valley.

Northern spotted owl habitat is mapped as present within the project area for all stages of spotted owl life history (Davis et al. 2011). Spotted owl habitat is often subdivided into the following categories (USFWS 1992; 2011):

- Nesting/roosting habitat – Forested areas used for nesting, roosting, foraging, and dispersal by spotted owls that usually have more late-seral forest characteristics than “foraging” or “dispersal” habitats.
- Foraging habitat – Forested areas used largely for foraging, dispersal, and other nocturnal activities but not nesting or roosting.
- Dispersal habitat – Forested areas used predominantly for dispersal but not nesting, roosting, or foraging.

These categories are not absolutes but instead represent generalizations and are created from modeling of forest stands. Hidden Valley is mapped as containing little suitable habitat, and it is in small pockets along the Teanaway River and near the higher elevation forested ridges. Pine Loch Sun is mapped as containing nesting/roosting habitat near the central portion of the project area where houses are at the highest density. Approximately half of Sky Meadows is mapped as nesting/roosting habitat, and all of the habitat is in the southern and eastern portions.

For more details about northern spotted owl see the *Wildfire Fuels Reduction Project Biological Assessment* (2014).

4.3.4 Special-Status Species

Two species are listed in Kittitas County as Candidate Species under the ESA: greater sage-grouse (*Centrocercus urophasianus*) and whitebark pine (*Pinus albicaulis*). Candidate Species are those that have been petitioned and are actively being considered for listing as Endangered or Threatened under the ESA. Candidate Species are afforded no protection under the ESA.

Data from WDFW and WNHP were queried for known special-status species in and near the project area (WDFW 2014a and WNHP 2014). These data show no special-status species in the project area.

4.3.5 Consequences of Alternatives

No Action Alternative

Under the No Action Alternative, vegetation management activities would not be funded, however some wildfire mitigation activities would be expected to continue as initiated by property owners, through existing local programs/requirements, or as required by homeowners insurance providers. The existing high risk of vegetation loss from catastrophic wildfires would continue, as would vulnerabilities to biological resources (e.g., vegetation, wildlife, fish).

Vegetation management activities could cause minor localized and temporary disturbance to wildlife, including ESA-listed species. There would be human activity or noise associated with chainsaws, chippers, brush mowers, and masticators. Future uncontrolled wildfires, especially catastrophic fires, could affect wildlife through the loss of habitat or the mortality of individuals. These impacts could be minor to moderate, depending on the severity and location of wildfires.

Proposed Action

Vegetation

As the defensible spaces are established and maintained, various disturbances from work crews, removal of individual small trees and brush, and hand pruning or limbing may result in local, indirect, small adverse effects to native plant communities. However, many of the properties have non-native ornamental or weedy species in the potential treatment areas. Trimming or removing these plants would not negatively affect native plant communities. Because these activities have negligible ground-disturbance and would be done mostly by hand, the potential is low that new invasive plant species populations would become established or that existing populations would expand as a result of the Proposed Action.

No adverse impacts to Suksdorf's monkeyflower are anticipated from the Proposed Action. The species is not expected to be in the treatment areas, and treatments and maintenance are likely to have negligible ground disturbance.

Wildlife, Fish and Threatened and Endangered Species

Wildfire fuels reduction activities to establish the defensible spaces could have minor, localized, and scattered impacts to wildlife through habitat modification. Various factors, including changes in food sources, shelter, population density, and dispersal effort, would determine the severity of impacts to non-listed wildlife. Adverse effects from maintenance of defensible spaces would be negligible.

No permanent conversion of forested habitat to other types of habitat is anticipated as part of the Proposed Action. The project area would remain as upland forest habitat, and wildlife habitat would in general remain intact. The Proposed Action would focus only on limited thinning of existing forest and removing biomass near structures.

Temporary disturbance to wildlife could occur from the physical presence of workers and by noise generated the equipment used (e.g., chainsaws, chippers, brush mowers, masticators). The disturbance is anticipated to be of short duration (no more than a few days) on each property during the first year. The disturbance could result in temporary avoidance of the area by wildlife. Additional disturbance may occur once a year for the 10-year maintenance period. Impacts to wildlife from the temporary disturbance are considered minor because of the short duration of work on any given parcel. It is also considered minor because the most intense treatment would occur within a limited radius of existing homes and structures where localized human activity already occurs.

The temporary disturbance could occur at any time of the year. Work that occurs during the summer bird breeding season may have minor impacts to nesting birds and birds protected under the Migratory Bird Treaty Act. The disturbance could result in abandonment of nesting efforts or displacement from preferred foraging areas, which would affect ground-nesting and shrub nesting birds to a greater extent than birds that nest in the upper canopy of trees. Cavity-nesting birds such as woodpeckers and nuthatches may be disproportionately affected because of the emphasis on removal of dead or dying trees (snags). Small mammals and reptiles may lose some habitat as a result of the removal of downed wood.

The Proposed Action would benefit wildlife habitat and species by reducing the risk of catastrophic loss from future wildfires.

There would be no impact to ESA-listed aquatic species (e.g., bull trout, steelhead) because of the prohibition on removal of 8-inch-dbh or larger trees near Teanaway River, Swauk Creek, and Cle Elum Lake.

Impacts to the northern spotted owl are considered minor. No known nests occur within the project area. Some northern spotted owl habitat has been mapped through computer modeling as occurring in the project area in Pine Loch Sun and Sky Meadows (USFWS 1992; 2011). Jennifer Pretare, a URS Group, Inc. (URS) professional biologist, reviewed the habitat sites in the field on August 1, 2014 and determined that they are likely too young, single-layered, and too densely forested to be highly suitable for northern spotted owls. In addition, most areas contain houses. The sites may be suitable for dispersal of northern spotted owls but are not likely to contain standing snags or live trees with broken tops large enough for nesting.

The Proposed Action may benefit northern spotted owls in the long term. Wildfire appears to be the leading cause of habitat loss for the northern spotted owl (Davis et al. 2011). Reducing the risk of wildfire may prevent catastrophic wildfires in the project area and therefore prevent loss of existing forest stands.

For more details about northern spotted owl see the *Wildfire Fuels Reduction Project Biological Assessment* (2014).

4.4 CULTURAL RESOURCES

Cultural resources consist of locations of human activity, occupation, or use identified through field inventory, historic documentation, or oral evidence. The term encompasses historic properties as defined by the National Register of Historic Places (NRHP), including archaeological and architectural properties, as well as sites or places of traditional cultural or religious importance to Native American Tribes or other social or cultural groups.

Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended (16 U.S.C. § 470f), requires that activities needing Federal permits or using Federal funds undergo a review process to consider historic properties that are listed in or may be eligible for listing in the NRHP. The State Historic Preservation Office (SHPO) is the Federal agency's primary Section 106 partner. Because Section 106 is a process by which the Federal Government assesses the effects of its undertakings on historic properties, it is the primary regulatory framework used in the NEPA process to determine impacts on cultural resources.

In accordance with Section 106, FEMA has delineated the Area of Potential Effects (APE) for the project area as approximately 3,351 acres encompassing 1,245 lots in Hidden Valley, Pine Loch Sun, and Sky Meadows (see Appendix A, Figures 2 through 4).

4.4.1 Ethnographic and Historical Context

Ethnographic Period

During the ethnographic period, the project area was within the territory used primarily by the Kittitas, a Sahaptin-speaking group also referred to as the Upper Yakima who occupied the Upper Yakima Valley north of Selah and the Kittitas Valley (Ruby and Brown 1992). The Kittitas were bounded to the north by Middle Columbia River Salishans and to the south by the Yakima proper or Lower Yakima (Miller 1998; Schuster 1998). The largest Kittitas settlement of approximately 500 people was located near the present town of Thorp. Additional villages were located a few miles below Thorp, near Ellensburg, and at Kittitas.

The Kittitas were semi-nomadic with the primary subsistence activity being fishing, supplemented by hunting and gathering. They practiced a seasonal subsistence and settlement system that included wintering in semi-permanent villages along the Columbia River and its tributaries. Salmon was of primary importance and could be taken in mid-spring; people left winter villages for established fishing stations. Kittitas territory had a fishing site where groups including the Kittitas, Yakima, Wenatchi, and Columbia gathered; as many as 1,000 people gathered at this place (Anastasio 1985).

As summer progressed, families established small camps at higher elevations to gather berries, bulbs, roots, and nuts. Near the beginning of August, groups convened at the camas grounds in the Kittitas Valley (Schuster 1998). With the onset of fall, families returned from the higher country to prepare for the winter and coalesced into semi-permanent villages along the river once again. This pattern of subsistence and settlement was established throughout prehistory and persisted into the ethnographic period until Euroamerican settlement and subsequent establishment of reservations resulted in a disruption to the native economy in the Columbia Plateau by the middle of the nineteenth century.

Historical Period

Fur traders were among the first Euroamericans to frequent the Kittitas Valley during the early 1800s. Alexander Ross of the North West Company traveled the region in 1814 and observed a large tribal gathering in the Kittitas Valley (Schuster 1998). Soon after the decline of the fur trade, missionaries began to inhabit the region. Father Charles Pandosy is considered the first permanent Euroamerican settler to have lived near Ellensburg, having established a mission on Manastash Creek in 1848.

Ranching

Within 2 years of the establishment of Washington Territory, Governor Isaac Stevens signed a treaty on June 9, 1855, with Yakama Chief Kamiakin and other tribal leaders.

Increased Euroamerican settlement occurred within the ceded lands as cattle ranchers patented land claims in the Kittitas Valley during the 1860s. The abundant bunchgrass and clear streams of the Kittitas Valley gave rise to a prosperous cattle industry. As early as 1861, white ranchers from the Yakima Valley grazed their cattle in the Kittitas Valley (Ochran 2014). By the late 1860s, cattle ranchers established land claims in Kittitas itself. A wagon road over Snoqualmie Pass was completed in 1867, which allowed ranchers easy, dependable access to larger markets to sell their cattle. Over the next 10 years, especially in the late 1870s, new ranches flourished and large herds of cattle grazed freely. The resulting overproduction led to declining beef prices. Prices, however, rose to earlier levels after the severe winter in 1880 to 1881 killed more than half the herds. Although the number of cattle eventually returned to early levels, overgrazing was beginning to affect the range. As a result, the Federal Government began to regulate grazing in 1897, which led to a gradual shift from open grazing to fenced pastures and hay feeding (Ochran 2014).

Mining

Gold and coal were discovered in the region in 1867 and 1883, respectively, which also contributed to increased development. Local prospectors discovered gold around Swauk Creek in 1867, but local residents were skeptical about the discovery. The prospectors discovered more gold in 1873 and established the Swauk Mining District and mining laws.

Coal was discovered by homesteaders in 1883. In the early 1880s, coal and mineral activities began in the Cle Elum River Valley and the surrounding mountains. Early miners extracted the fossil fuel with picks, hoisted it from shafts by basket and rope, and shoveled it onto wagons by hand. The ropes and baskets were eventually replaced by mules and mule skinnners. These methods were suitable because the coal was primarily for local use.

In 1886, the Northern Pacific Company began to actively develop the region's coal deposits. By the end of the year, a railway to Cle Elum and Roslyn had been constructed, and the first shipment of coal (1,500 tons) was sent to markets to the west. At the turn of the century, several large coal concerns were mining more than a million tons of coal per year. Production peaked in the 1920s as companies introduced modern extractors, loaders and conveyors, and electric locomotives. Mining subsided because of competition from oil producers in the 1930s (Ochran 2014).

Roslyn and Cle Elum prospered because of their large coal deposits. Coal mining in the Kittitas region was initially developed by the Northern Pacific Railroad in 1886 to fuel steam locomotives. The Northern Pacific owned the Roslyn town site and many area mines. The Roslyn–Cle Elum coalfield contained eight known seams, six of which were mineable.

By 1963, the year the last mine in the region closed, Roslyn–Cle Elum had shipped more than 50 million tons of coal. Interest in reopening mines has surfaced periodically since then. Some gravel surface mining is operational today on private lands, and permits are being issued by the U.S. Forest Service for exploratory precious metal mining. The Swauk Mining District remains organized and is under Federal and State laws.

Community Development

Among the first Euroamerican settlers in the Kittitas Valley were Frederick Ludi and John Goller, who in 1867 built a trading post at the site of what is now Ellensburg. By 1883, a few businesses were well established, and the town was designated as the seat of newly formed Kittitas County. The Kittitas County Fair was held near Ellensburg beginning in 1885. The Northern Pacific Railroad arrived in 1886, and the town became a center for commerce and banking and for farming and ranching families in the Kittitas Valley. A fire burned much of Ellensburg in 1889. In 1891, a normal school, the predecessor to Central Washington University, was chartered (Becker 2005a; 2005b).

By the early 1900s, agriculture began to replace ranching as the primary industry, and the completion of several irrigation projects spurred the growth of the local fruit economy. The Chicago, Milwaukee & St. Paul Railroad arrived in Kittitas County in 1909. By the 1920s, automobile routes were well established, facilitating transportation of goods to and from the Seattle area. In 1923, the first official Ellensburg Rodeo was held in conjunction with the Kittitas County Fair and became an annual event, a tradition that has continued (Becker 2005a; 2005b).

Recent community developments include Pine Loch Sun, Hidden Valley, and Sky Meadows, which were established in the 1960s and 1970s. These communities encompass the project Area of Potential Effects.

4.4.2 Identification of Historic Properties

The identification of historic properties was completed by Sarah McDaniel, a URS professional archaeologist, and Leesa Gratreak, a URS architectural historian, both of whom meet the Secretary of the Interior’s Professional Qualification Standards for their disciplines. Analysis was based on a review of digital photographs, readily available materials collected during a desktop review, and a confidential search of the Washington Information System for Architectural and Archaeological Records Data (WISAARD). The WISAARD search was conducted in July 2014 to determine the presence or absence of previously recorded properties and the extent of survey coverage in and near the Area of Potential Effects.

Above-ground Resources

Hidden Valley

One previously documented historic property is present within the Hidden Valley project area. The Zuke Barn is a gambrel-roofed building listed on the Washington State Heritage Register and may date to the 1890s.

Pine Loch Sun

No previously documented historic properties are present within the Pine Loch Sun project area. Based on available data via WISAARD, there are at least two historic houses within approximately 1,000 feet of the Pine Loch Sun project area. One residence is along the Cle Elum Lake shoreline, and others are clustered in the town of Ronald southeast of the project area near the former Roslyn Cascade Coal Mine No. 4 entrance. Most appear to date from the 1910s to mid-1950s.

Sky Meadows

No previously documented historic properties are present within the Sky Meadows project area or its immediate vicinity. The nearest inventoried historic property is more than 1 mile to the northeast.

Archaeological Resources

Hidden Valley

The most comprehensive study in the Hidden Valley project area consists of a cultural resources inventory that covered more than approximately 400 acres for a proposed property development along Highway 97 (Landreau 2007). The historic Zuke Farmstead (45KT2748) and Zuke Barn and the pre-contact Zuke Spring site (45KT2747) were identified within the Hidden Valley project area as a result of the inventory (Landreau 2007). A smaller scale survey was conducted along Swauk Creek and documented a historic railroad berm (45ST3123) (Landreau and McClean 2010). The McCallum Graves (45KT2761), Swauk Ranch Refuse Scatter (45KT2712), and Swauk Ranch Talus pits (45KT2711) were also identified as part of a forest practices application study that examined 265 acres within the eastern portion of the Hidden Valley project area (Orvald 2006; 2007).

Pine Loch Sun

No recent inventories (post-1995) have occurred within the Pine Loch Sun project area. However, a previous inventory documenting cultural resources associated with the Roslyn Coal Field formally documented one archaeological site (45KT570) as well as numerous historic mining-related features within the modern Pine Loch Sun subdivision

and surrounding areas (Boreson and Shideler 1984; Shideler 1984). Site 45KT570 consists of the historic Roslyn Cascade Coal Mine No. 4 entrance. The site measures 150 feet by 30 feet and consists of a rock tunnel portal with attached snowshed, a powder house, an unidentified structure, cables, wood boards, and waste coal pile. The site is potentially eligible for listing in the NRHP and is in the southeastern portion of the project area.

Sky Meadows

No cultural resources inventories and no archaeological sites have been documented for Sky Meadows. The nearest site within 1 mile of the modern subdivision is 45KT3291, a circa 1920s cistern located about 500 feet west of the project area. The cistern was used to provide water to the Peoh Point School/Grange and ceased to be used when the Sky Meadows subdivision was developed in the mid-1990s (Amara 2010).

4.4.3 Summary of Documented Cultural Resources

The cultural resources found within the project area are listed in Table 4-2. Seven archaeological resources consisting of historic-era sites (including a coal mine, railroad berm, refuse scatter, homestead, and cemetery) and two pre-contact-era sites (including talus pits and a camp) are found in the project area. All archaeological resources are considered potentially eligible for listing in the NRHP. In addition, one above-ground historic property, the listed Zuke Barn, is also present.

The Hidden Valley, Pine Loch Sun, and Sky Meadows communities were established in the 1960s and 1970s. Previous cultural resources are rare primarily because the lands are privately held. However, previous inventories have occurred across approximately one-third of the Hidden Valley project area, in the easternmost portion. Because this area has a variety of historic and pre-contact site types, similar resources would be expected to occur within areas that have never been inventoried for cultural resources. Mining-related features are also likely to be present at Pine Loch Sun given its proximity to the Roslyn Cascade Coal Mine, while Sky Meadows is more likely to have evidence for rural farmsteads. Each of the three project areas is likely to have evidence for pre-contact use given the large areal extent of the project and the variety of sensitive landforms present, such as streams, knolls, rock outcrops, and prairies.

Table 4-2. Previously Documented Cultural Resources within the Project Area

Site No.	Name	Description	NRHP Eligibility	Distance to Project Area	Project Area
45KT570	Roslyn Cascade Coal Mine	No. 4 entrance, 150 x 30 feet, plus coal waste piles	Potentially Eligible	0	Pine Loch Sun
45KT2711	Swauk Ranch Talus Pits	Three pre-contact talus pits within a 20-meter-diameter area	Potentially Eligible	0	Hidden Valley
45KT2712	Swauk Ranch Refuse Scatter	Bottles, glass, cans, early to mid-20th century, 55 x 30 meters	Potentially Eligible	0	Hidden Valley
45KT2747	Zuke Spring Site	Pre-contact camp, 60 x 50 meters	Potentially Eligible	0	Hidden Valley
45KT2748	Zuke Farmstead	Historic Homestead, cattle fields, c.1894, 80 x 100 meters	Potentially Eligible	0	Hidden Valley
45KT2761	McCallum Graves	Family interment plot with six graves dating from 1892 to 2002	Potentially Eligible	0	Hidden Valley
45KT3123	Swauk Logging Grade	Earthen berm, ca. 1930-1946, 50 x 4 meters	Potentially Eligible	0	Hidden Valley
Zuke Barn	Barn	Standing barn at Zuke Farmstead (45KT2748)	Listed on State Register	0	Hidden Valley

4.4.4 Consequences of Alternatives

No Action Alternative

Under the No Action Alternative, FEMA would not provide funding to reduce fuels in selected areas of Kittitas County, however some wildfire mitigation activities would be expected to continue as initiated by property owners, through existing local programs/requirements, or as required by homeowners insurance providers. Ground-disturbing activities associated with these activities would be limited thus the potential to impact cultural resources is also expected to be limited. The archaeological sites and historic property in the project area and others not yet identified would continue to be at risk to damage from wildfires.

Proposed Action

The Proposed Action would reduce fuels around residences in three rural subdivision developments in Kittitas County. Under the Proposed Action, fuels and other biomass would be removed by means of chainsaws, chippers, brush mowers, and masticators. Areas targeted for vegetation removal include at least a 30-foot radius around main residential structures. Contractors would conduct vegetation removal activities by hand, including thinning and trimming. Vegetative debris would be chipped onsite or piled. Ground-disturbing activities with the potential to impact cultural resources associated with the project are therefore expected to be limited.

Above-ground Resources

According to the SHPO, the Zuke Barn at Hidden Valley is listed on the State Heritage Register. However, because of the low impacts of the project activities and lack of work on structures, the SHPO has concurred that the Proposed Action would have no effect on National Register eligibility or listed historic and cultural resources. The Proposed Action would benefit historic buildings such as the Zuke Barn by reducing vulnerabilities from wildfires.

Archaeological Resources

The Proposed Action would occur in areas generally considered to be archaeologically sensitive, where surface or deeply buried cultural resources could be present, as evidenced by seven previously recorded sites within the project area. Additional sites are likely present that have not yet been documented.

Although direct impacts to previously documented archaeological sites are not anticipated, Kittitas County would be required to avoid these resources as a precaution to prevent even minor potential disturbances, such as pedestrian traffic across a site. In addition to avoiding known sites, to reduce the potential for impacts to cultural

resources, the Proposed Action would be conditioned to maximize machinery vehicles to stay within existing roads. The vegetation thinning and trimming around residential structures would have little potential to affect archaeological resources because of the proposed low-impact methods. FEMA has determined that no additional identification or evaluation efforts are necessary, and that the Proposed Action would have no effect to historic properties.

FEMA requires all its funded ground-disturbing projects to protect cultural resources during site work. In the event of an unanticipated discovery, and in compliance with State and Federal laws protecting cultural resources, including Section 106, all work is required to cease in the immediate vicinity of the find until the appropriate parties (including the SHPO) are consulted and an appropriate resolution plan is established.

FEMA provided these Section 106 findings and determinations in a formal letter to the SHPO, and received a concurrence on August 21, 2014. Additionally, Section 106 consultation letters, dated August 1, 2014, were provided to the following Indian Tribes: Yakama Nation and Confederated Tribes of Colville Reservation. No responses have been received to date.

4.5 SOCIOECONOMIC RESOURCES

4.5.1 Public Safety

Residential development in the wildland-urban interface places communities at risk of a catastrophic wildfire and threatens public safety. Fire alerts and warnings and evacuations are designed to prepare communities to be proactive in preventing wildfires and respond immediately if an evacuation is declared. Wildfires can put homes directly at risk and also result in transportation and utility failures, flash flooding and mudslides, and air pollution concerns. Emergency responders typically coordinate with communities as wildfires approach and educate homeowners on how to protect their home and safely evacuate. It is important for the public to stay informed of the current risk of wildfire in their community and discuss an evacuation plan with their family and neighbors. Many local and state media resources (e.g., television, radio, newspaper, internet), telephone numbers, local emergency response offices, and word of mouth inform the public on wildfire risk in their area.

4.5.2 Environmental Justice

EO 12898, Environmental Justice, directs Federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects on minority and low-income populations resulting from Federal programs, policies, and activities. Socioeconomic and demographic data for residents in the project vicinity were studied to determine whether the Proposed Action would have disproportionate impacts on minority or low-income persons.

Data from the 2012 Census American Community Survey 5-year estimates for Kittitas County were used to identify the minority⁴ and low-income⁵ compositions of the project area, which are located in Census Tracts 9751, 9752, and 9753. In the project area, the minority population was approximately 6 percent, and the poverty rate was approximately 10 percent (U.S. Census Bureau 2012). Because these levels are lower than in Kittitas County or Washington State, minority and low-income populations are not considered to be present in the project area.

4.5.3 Consequences of Alternatives

No Action Alternative

Under the No Action Alternative, FEMA would not provide funding to reduce fuels however some wildfire mitigation activities would be expected to continue as initiated by property owners, through existing local programs/requirements, or as required by homeowners insurance providers. In the event of a wildfire, there would be an increased risk to public safety and emergency responders in these extreme risk communities. Rough gravel roads, steep slopes and canyons, and inadequate fire flow would likely make an evacuation and emergency response in these communities more challenging. There are no minority or low-income populations in the project area; therefore, no disproportionately high and adverse effect would occur.

Proposed Action

Properties with maintained defensible space would be expected to be less vulnerable to catastrophic wildfires. Reducing the risk or severity of wildfires would generally be a positive effect to public safety and emergency responders because of the consequent reduction in risk to structures, roads, utilities, and air pollution. The project area was chosen as a high priority for mitigation based solely on the need to protect residences from wildfires; demographics were not a factor in the decision. Furthermore, there are no minority or low-income populations in the project area.

⁴ A minority is “a person who is: (1) Black (a person having origins in any of the black racial groups of Africa); (2) Hispanic (a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race); (3) Asian American (a person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands); or (4) American Indian and Alaskan Native (a person having origins in any of the original people of North America and who maintains cultural identification through Tribal affiliation or community recognition)” (U.S. Census Bureau 2014).

⁵ A person with low income is identified as “one whose median household income is at or below the Department of Health and Human Services poverty guidelines” (USHHS 2013). Income data based on Department of Health and Human Services guidelines are difficult to gather, so U.S. Census Bureau data are often used for environmental justice analyses.

4.6 RECREATION

Kittitas County is home to many recreational activities (e.g., fishing, hiking, horseback riding, kayaking, boating, biking, birding, hunting, skiing, golf). The following recreational areas are adjacent to or near the project area:

- *Okanogan-Wenatchee National Forest*. This national forest has 4 million acres and is situated along the eastern slopes of the Cascade Mountains. It stretches 180 miles from the Canadian border to the Goat Rocks Wilderness and ranges from glaciated alpine peaks, valleys of old-growth forest, and shrub-steppe conditions on the eastern edge. The basin contains marshes and meadows associated with Upper Klamath Lake and the Williamson River. Speelyi Beach Park is located along the southern shore of Cle Elum Lake (USFS 2014).
- *Teanaway Community Forest*. This DNR/WDFW managed forest has 50,272 acres and is at the headwaters of the Upper Yakima subbasin between Cle Elum Lake and U.S. Highway 97. Teanaway West Fork, Indian Camp, and 29 Pines Campgrounds are free and open to the public. Trailheads to several trails in nearby national forests are located within a community park (DNR 2014).
- *Suncadia Resort*. This planned unincorporated resort community for permanent residents and visitors is located on the southern shore of Cle Elum Lake and covers approximately 6,300 acres. The Suncadia Conservancy is a 1,200-acre conservation easement along the Cle Elum River, which is open to the public (Suncadia 2014).
- *Washington State Horse Park*. This park is located on 112 acres of gently sloping terrain and is used primarily for equestrian activities. The park has 23 recreational vehicle hookup sites and spaces for tent camping (WSHP 2014).
- *L.T. Murray Wildlife Area*. The L.T. Murray Unit of the wildlife area is 54,000 acres and is owned by WDFW, DNR, and the U.S. Forest Service. Camping is available in the summer, and wildlife viewing includes eagles, elk, deer, bighorn sheep, and black bears (WDFW 2014b).

4.6.1 Consequences of Alternatives

No Action Alternative

Under the No Action Alternative, FEMA would not provide funding to reduce fuels however some wildfire mitigation activities would be expected to continue as initiated by property owners, through existing local programs/requirements, or as required by homeowners insurance providers. In the event of a wildfire, ingress and egress to recreational areas could be disrupted. Depending on the size and severity of the

wildfire, portions of nearby forests or parks could be damaged or destroyed. Adverse impacts would range from minor to major.

Proposed Action

Project activities would avoid recreational areas because private property is targeted in residential areas. Vegetation removal activities would be coordinated with recreational facility managing agencies, if necessary. Thinning of trees and shrubs is not anticipated to adversely affect recreational activities or viewpoints. Impacts would be negligible and temporary.

4.7 CUMULATIVE IMPACTS

CEQ regulations for implementing NEPA require an assessment of cumulative effects during the decision-making process for Federal projects. Cumulative effects are defined as:

... the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 CFR § 1508.7).

Cumulative effects were determined by combining the effects of these alternatives with other past, present, and reasonably foreseeable future actions.

The Kittitas County *2006 International Wildland-Urban Interface Code* (ICC 2006) requires property owners of new construction to meet building construction and defensible space requirements. The County does not have the authority to mandate these requirements for owners of properties that were constructed before 2006.

The Kittitas County Conservation District is working together with Washington State Department of Natural Resources, U.S. Forest Service, and local fire districts to educate landowners about wildfires through Firewise and other programs. In 2013, KCCD provided nearly \$500,000 in cost-share for property improvements and helped seven communities become Firewise communities (KCCD 2013). These agencies have approximately 2,900 acres of treatment projects and Forest Practice Applications in the surrounding area. Firewise is an ongoing program in Kittitas County and risk assessments and cost-shares for property improvements are continuing in 2014, with 68 acres of treatment completed as of early September (KCCD 2014).

Ongoing vegetation management activities on neighboring tracts of land; as initiated by residential landowners, and private, local, state or federal entities; similar in scale to those of the Proposed Action, would further reduce the possibility of an intense and widespread fire in the project vicinity. However, vegetation management across a wider

area would also have a minor impact because it could alter natural vegetation communities that are adapted to fires at irregular intervals.

The Proposed Action and other activities that are planned by the County are not expected to have adverse cumulative impacts to geology or soils; air quality; climate; water resources, wetlands, or floodplains; wildlife or fish (including ESA-listed species and habitat); historic and archaeological cultural resources; socioeconomic resources or environmental justice; or recreation because no project impacts are anticipated. Minor cumulative impacts to vegetation are anticipated, but the impacts would be limited to the project area and surrounding properties.

SECTION FIVE AGENCY COORDINATION AND PUBLIC INVOLVEMENT

During project development, Kittitas County coordinated with surrounding jurisdictions, local agencies, and landowners in the project area. During preparation of this EA, the SHPO and the Confederated Tribes of the Yakama Nation and the Confederated Tribes of the Colville Reservation were also contacted for comment.

FEMA initiated the NEPA scoping process by sending out a scoping notice on July 5, 2014, to agencies and interested parties. The purpose of the scoping process was to inform agencies and stakeholders about the proposed project and allow the public, organizations, agencies, and Tribes to provide comments regarding the scope of the project, the proposed alternatives, and any environmental and historic preservation issues of concern that should be considered in the NEPA Draft EA. There was a 30-day period for scoping comments, which ended on August 4, 2014. No substantive comments were received.

A public notice is required for the Draft EA and is included as Appendix D. The public, Tribes, and agencies will have the opportunity to comment on the EA for 30 days after publication of the notice. The notice identifies the action, location of the proposed site, participants, location of the Draft EA, and how to submit comments. FEMA will review all substantive written comments for issues that need to be addressed with the County and will incorporate any resolutions into the final EA, as appropriate.

The *Kittitas County Hazard Mitigation Plan* (Kittitas County 2012) and the *Kittitas County Wildfire Protection Plan* (Kittitas County 2009) are relevant to public involvement efforts supporting this Draft EA.

5.1 KITTITAS COUNTY HAZARD MITIGATION PLAN

The *Kittitas County Hazard Mitigation Plan* (Kittitas County 2012) was completed in 2012. The plan identifies hazard mitigation goals, objectives, and proposed projects that will reduce or prevent injury or damage from hazards. The lead agency developing the plan was Kittitas County and participating partners included Kittitas County Conservation District, cities, fire districts, school districts, utility districts, water districts, other local agencies, and the public.

The primary natural hazards identified in the plan were avalanche, dam failure, drought, earthquake, flood, landslide, severe weather, volcano, and wildfire. The likelihood of a major wildfire in the County in the next 25 years is rated as high, and the Proposed Action is within wildland hazard extreme and high risk areas (Kittitas County 2012).

5.2 KITTITAS COUNTY WILDFIRE PROTECTION PLAN

The *Kittitas County Wildfire Protection Plan* was completed in 2009 by the Kittitas County Fire Protection Committee in cooperation with Federal, State, and local staff and public input. The vision of the plan is to “develop and implement a countywide fire protection plan that provides for sustainable development, resident and responder safety, and the protection of both natural and man-made resources of Kittitas County.” Goals of the plan include reducing the amount of burned land and losses in the wildland-urban interface, public education, targeted fuel reduction projects, and alternative treatment methods such as modifying tree stand density (Kittitas County 2009).

SECTION SIX PERMITTING, PROJECT CONDITIONS, AND MITIGATION MEASURES

No permits would be required for the Proposed Action. Activities in the project area would comply with the project's scope of work methodology described in Section 3.

Kittitas County would comply with the following project conditions and mitigation measures:

- Removal of trees 8 inches dbh or greater would be prohibited within 100 feet of the OHWM of water bodies with known presence of ESA-listed fish species or as otherwise specified during ESA consultation, including: Cle Elum Lake, Teanaway River, and Swauk Creek.⁶
- The County is responsible for selecting, implementing, monitoring, and maintaining Best Management Practices to control erosion and sedimentation, reduce spills and pollution, and provide wetland and habitat protection.
- The County is responsible for securing all applicable local, State, and Federal permitting before site work and complying with conditions therein.
- In the event that cultural resources are discovered during project activities, and in compliance with State and Federal laws protecting cultural resources, including Section 106 of the NHPA, work in the immediate vicinity would cease, the area would be secured, and the SHPO and FEMA would be notified.
- Any change to the approved scope of work would require re-evaluation for compliance with NEPA and other laws and EOs before implementation.

⁶ Dale Bambrick, biologist, National Oceanic and Atmospheric Administration, written communication, July 18, 2014.

SECTION SEVEN CONCLUSION

The Draft EA evaluates environmental and historic resources that could be affected by the Proposed Action. The evaluation does not identify any significant adverse impacts associated with the resources of geology or soils; air quality; climate; water resources, wetlands, or floodplains; vegetation; wildlife or fish (including ESA-listed species and habitat); historic and archaeological cultural resources; socioeconomic resources or environmental justice; or recreation. Implementing the Proposed Action, along with any conditions associated with permits or approvals, is expected to avoid or minimize adverse effects associated with the action.

Following public involvement, FEMA will determine whether to issue a FONSI for the Proposed Action.

SECTION EIGHT LIST OF PREPARERS

URS Group, Inc.

Julie Blakeslee, AICP, Senior Planner

Joel Hancock, AICP, Environmental Planner

Mike Kelly, RPA, Archaeologist

Sarah McDaniel, RPA, Archaeologist

Stephanie Butler, Archaeologist

Anisa Becker, Architectural Historian

Jennifer Pretare, PhD, Senior Biologist

Jeff Walker, PWS, Biologist/Botanist

FEMA

Science Kilner, FEMA Reviewer

SECTION NINE REFERENCES

- Amara, M. 2010. State of Washington Archaeological Site Form: 45kT3291. On file, Washington Department of Archaeology and Historic Preservation, Olympia.
- Anastasio, A. 1985. *The Southern Plateau: An Ecological Analysis of Intergroup Relations*. Moscow: University of Idaho, Alfred W. Bowers Laboratory of Anthropology Northwest Anthropological Research Notes.
- Becker, P. 2005a. "Ellensburg – Thumbnail History." Available at http://www.historylink.org/index.cfm?DisplayPage=output.cfm&file_id=7554. Accessed August 15, 2014.
- Becker, P. 2005b. "Kittitas County – Thumbnail History." Available at http://www.historylink.org/index.cfm?DisplayPage=output.cfm&file_id=7484. Accessed August 15, 2014.
- Boreson, K and J.C. Shideler. 1984. State of Washington Archaeological Site Form: 45KT568H. Washington Department of Archaeology and Historic Preservation, Olympia.
- CEQ (Council on Environmental Quality). 2010. *Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions*. Available at http://ceq.hss.doe.gov/nepa/regs/Consideration_of_Effects_of_GHG_Draft_NEPA_Guidance_FINAL_02182010.pdf. Accessed July 10, 2014.
- Climate Impacts Group. 2009. *Washington Climate Change Impact Assessment*. University of Washington. Available at <http://cses.washington.edu/cig/res/ia/waccia.shtml>. Accessed July 10, 2014.
- Davis, R.J., K.M. Dugger, S. Mohoric, L. Evers, and W.C. Aney. 2011. *Northwest Forest Plan—The First 15 Years (1994–2008): Status and Trends of Northern Spotted Owl Populations and Habitats*. Gen. Tech. Rep. PNWGTR- 850. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station.
- DNR (Washington Department of Natural Resources). 2014. Teanaway Community Forest. Available at http://www.dnr.wa.gov/BusinessPermits/Topics/OtherLandTransactions/Pages/amp_teanaway.aspx. Accessed July 11, 2014.
- Ecology (Washington Department of Ecology). 2005. Upper Yakima Basin Temperature Total Maximum Daily Load Study. Quality Assurance Project Plan. Available at <https://fortress.wa.gov/ecy/publications/publications/0503111.pdf>. Accessed July 10, 2014.
- _____. 2012. Water Quality Assessment for Washington. Available at <http://apps.ecy.wa.gov/wats/>. Accessed July 10, 2014.

-
- _____. 2014. Air Quality. Available at <http://www.ecy.wa.gov/programs/air/airhome.html>. Accessed July 10, 2014.
- FEMA (Federal Emergency Management Agency). 1996. Map Service Center. Available at <https://msc.fema.gov>. Accessed July 8, 2014.
- Goetz, F.A., E. Jeanes, and E. Beamer (eds.). 2004. *Bull Trout in the Nearshore*. Seattle, WA: U.S. Army Corps of Engineers, Seattle District.
- Good, T.P., R.S. Waples, and P. Adams (eds.). 2005. Updated status of federally listed ESUs of West Coast salmon and steelhead. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-66.
- ICC (International Code Council). 2006. *2006 International Wildland-Urban Interface Code*.
- Kittitas County. 2009. *Kittitas County Wildfire Protection Plan*. Kittitas County Fire Protection Committee. Available at <http://www.co.kittitas.wa.us/firemarshal/20090218-KCWFPP.pdf>. Accessed July 10, 2014.
- _____. 2012. *Kittitas County Hazard Mitigation Plan*. Available at <http://www.co.kittitas.wa.us/public-works/hazard-mitigation-plan/default.aspx>. Accessed July 10, 2014.
- _____. 2014. Flood information. Available at <http://www.co.kittitas.wa.us/public-works/flood/default.aspx>. Accessed July 10, 2014.
- KCCD (Kittitas County Conservation District). 2013. Firewise. Available at <http://www.kccd.net/firewise.htm>. Accessed August 25, 2014.
- _____. 2014. Communication with Suzanne Wade, GIS Specialist. September 9.
- Landreau, C. 2007. *An Archaeological and Historical Review and Inventory at a Proposed Dunford Property Development Project, Kittitas County, Washington*. Reiss-Landreau Research Report 2007-95-19. On file, Washington Department of Archaeology and Historic Preservation, Olympia.
- Landreau, C. and J. McLean. 2010. *Archaeological Review and Inventory of the Swauk, Kittitas County, Washington*. Reiss-Landreau Research Report 2007-95-19. On file, Washington Department of Archaeology and Historic Preservation, Olympia.
- Miller, J. 1998. *Middle Columbia River Salishans*. In *Plateau*, volume XII, Handbook of North American Indians. William C. Sturtevant, editor. Washington, D.C.: Smithsonian Institution.
- NFPA (National Fire Protection Association). 2009. *Introduction to Firewise Principles*. 2nd Edition.

- Ochran 2014. *Kittitas County. About the County*. Available at <https://www.co.kittitas.wa.us/about/history.aspx>. Accessed on July 15, 2014.
- Orvald, T. 2006. *Cultural Resources Inventory for the Ranch on Swauk Creek, LLC*. Forest Practices Application, Kittitas County, Washington. On file, Washington Department of Archaeology and Historic Preservation, Olympia.
- _____. 2007. *Amended Cultural Resources Inventory for the Ranch on Swauk Creek, LLC*. Forest Practices Application. Kittitas County, Washington. On file, Washington Department of Archaeology and Historic Preservation, Olympia.
- Reiss, K.Y., J. Thomas, E. Anderson, and J. Cummins. 2012. *Yakima Bull Trout Action Plan*. Final Version.
- Ruby, R.H. and J.A. Brown. 1992. *A Guide to the Indian Tribes of the Pacific Northwest*. Norman: University of Oklahoma Press.
- Schuster, H.H. 1998. *Yakima and Neighboring Groups*. In *Plateau*, volume XII. Handbook of North American Indians. William C. Sturtevant (ed.). Washington, D.C.: Smithsonian Institution.
- Shideler, J.C. 1984. *Final Report to the Office of Surface Mining: Cultural Resources in the Project Areas of the Roslyn Coal Field, Kittitas County, Washington*. Spokane, WA: Futurepast: The History Company. On file, Washington Department of Archaeology and Historic Preservation, Olympia.
- Suncadia. 2014. *A Land of Many Stories*. Available at <http://www.suncadiaresort.com/about/cle-elum-resorts>. Accessed on July 11, 2014.
- U.S. Census Bureau. 2014. Race. Available at <http://www.census.gov/topics/population/race/about.html>. Accessed August 18, 2014.
- U.S. Census Bureau. 2012. American Community Survey 5-year Estimates. Available at <http://factfinder2.census.gov>. Accessed July 7, 2014.
- USDA (U.S. Department of Agriculture). 2014. Web Soil Survey. U.S. Department of Agriculture, Natural Resources Conservation Service. Available at websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed July 10, 2014.
- USFS (U.S. Forest Service). 2014. Okanogan-Wenatchee National Forest. Available at <http://www.fs.usda.gov/main/okawen/about-forest>. Accessed July 11, 2014.
- USFWS (U.S. Fish and Wildlife Service). 1992. "Endangered and threatened wildlife and plants: Determination of critical habitat for the northern spotted owl." *57 Fed. Reg.* 1,796, 1,809 (Jan. 15, 1992).

- _____. 2011. *Revised Recovery Plan for the Northern Spotted Owl* (*Strix occidentalis caurina*). Portland, OR: U.S. Fish and Wildlife Service.
- _____. 2014a. Information, Planning and Conservation System. Available at <http://ecos.fws.gov/ipac/>. Accessed July 10, 2014.
- _____. 2014b. National Wetland Inventory. Available at www.fws.gov/wetlands/Data/Mapper.html. Accessed July 10, 2014.
- _____. 2014c. Northern Spotted Owl fact sheet. Accessed at <http://www.fws.gov/oregonfwo/species/data/northernspottedowl/default.asp>. Accessed July 31, 2014.
- USGS (U.S. Geological Survey). 2014. Hydrologic Unit Maps. Available at <http://water.usgs.gov/GIS/huc.html>. Accessed July 10, 2014.
- USHHS. (U.S. Health & Human Services). 2013. 2013 Poverty Guidelines. Available at <http://aspe.hhs.gov/poverty/13poverty.cfm>. Accessed August 18, 2014.
- WDFW (Washington Department of Fish and Wildlife). 2014a. Grey Wolf Conservation and Management. Available at http://wdfw.wa.gov/conservation/gray_wolf/. Accessed July 1, 2014.
- _____. 2014b. L.T. Murray Unit. Available at http://wdfw.wa.gov/lands/wildlife_areas/lt_murray/L.T.%20Murray/. Accessed July 11, 2014.
- _____. 2014c. Priority habitats and species list and data. Available at <http://wdfw.wa.gov/conservation/phs/list/>. Accessed July 1, 2014.
- WNHP (Washington Natural Heritage Program). 2014. Element Occurrence GIS data. Available at <http://www1.dnr.wa.gov/nhp/refdesk/gis/wnhpgis.html>. Accessed July 18, 2014.
- WSDOH (Washington State Department of Health). 2014. Wildfire Smoke. Available at <http://www.doh.wa.gov/CommunityandEnvironment/AirQuality/OutdoorAir/SmokeFromFires/WildfireSmoke>. Accessed August 25, 2014.
- WSHP (Washington State Horse Park). 2014. Washington State Horse Park. Available at <http://www.wahorsepark.org/>. Accessed July 11, 2014.
- WRCC (Western Regional Climate Center). 2013. Cle Elum, Washington Climate Summary. Available at <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?wa1504>. Accessed July 10, 2014.

Appendix A
Figures

Appendix B
Kittitas County Prescription for Fuels Reduction

KITTITAS COUNTY PRESCRIPTION FOR FUELS REDUCTION

The Kittitas County Conservation District would review the project design to ensure that is consistent with Natural Resources Conservation Service and/or the Washington Department of Natural Resources standards and specifications. When approved, the design would be incorporated into the project design packet. Before initiating the project, the contractor would meet with the property owner to discuss the planned start date, operation schedule, and order of the project components.

The following Kittitas County fuels reduction prescription would be followed:

1. Dead and down material up to 10 inches in diameter will be chipped and the chips scattered over the work site. Coordinate with landowner to see if any should be left for firewood.
2. The limbs of dead and down trees greater than 10 inches in diameter will be removed and chipped and the remaining trunk will be left in place unless several trees have created a piled concentration. In this case, the remaining tree trunks will be separated by at least 10 feet from any other logs and left on site.
3. All vegetation stumps heights will be cut no higher than 2 inches above the ground. All cuts will be a flat or parallel cut to the ground.
4. Standing dead trees with red needles still attached shall be felled and treated using the dead and down prescription as required in item 1 and 2 above.
5. The Contractor will not cut any green trees from the premises that are greater than 8-inch diameter at breast height without prior approval from the Landowner.
6. Trees 8 inches and greater in diameter (DBH) will be pruned (live and dead limbs) up to a height of 15 feet. Limbs will be pruned when branches are larger than 2 inches diameter (regardless of length) or greater than 2 feet in length (regardless of diameter). No pruning will be done to a height greater than 50% of total tree height. The cut limbs will be chipped on site.
7. Trees less than 8 inches DBH will be spaced leaving 2 feet - 5 feet between crowns. Live and dead limbs will be pruned up to a height of 15 feet. Limbs will be pruned when branches are larger than 2 inches diameter (regardless of length) or greater than 2 feet in length (regardless of diameter). No pruning will be done to a height greater than 50% of total tree height. The cut limbs and stems will be chipped on site. Trees < 3 feet high do not require pruning.
8. Non-coniferous brush will be cut and chipped/mowed on site unless islands are pre designated or agreed to by the landowner.

Appendix C
Migratory Bird Species in Kittitas County

The following migratory bird species are common to the region that includes Kittitas County.

Common Name	Scientific Name
American crow	<i>Corvus brachyrhynchos</i>
American goldfinch	<i>Spinus tristis</i>
American robin	<i>Turdus migratorius</i>
Black-billed magpie	<i>Pica hudsonia</i>
Black-capped chickadee	<i>Poecile atricapillus</i>
Brown-headed cowbird	<i>Molothrus ater</i>
Cedar waxwing	<i>Bombycilla cedrorum</i>
California quail	<i>Callipepla californica</i>
Common raven	<i>Corvus corax</i>
Dark-eyed junco	<i>Junco hyemalis</i>
Hairy woodpecker	<i>Picoides villosus</i>
Golden-crowned kinglet	<i>Regulus satrapa</i>
Great horned owl	<i>Bubo virginianus</i>
Killdeer	<i>Charadrius vociferus</i>
Lazuli bunting	<i>Passerina amoena</i>
Mourning dove	<i>Zenaida macroura</i>
Northern flicker	<i>Colaptes auratus</i>
Pacific wren	<i>Troglodytes pacificus</i>
Red-breasted nuthatch	<i>Sitta canadensis</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Rufous hummingbird	<i>Selasphorus rufus</i>
Song sparrow	<i>Melospiza melodia</i>
Spotted towhee	<i>Pipilo maculatus</i>
Spotted sandpiper	<i>Actitis macularius</i>
Steller's jay	<i>Cyanocitta stelleri</i>
Tree wallow	<i>Tachycineta bicolor</i>
Warbling vireo	<i>Vireo gilvus</i>
Western kingbird	<i>Tyrannus verticalis</i>
Western meadowlark	<i>Sturnella neglecta</i>
Western tanager	<i>Piranga ludoviciana</i>
Western wood peewee	<i>Contopus sordidulus</i>
White-crowned sparrow	<i>Zonotrichia leucophrys</i>

Violet-green swallow

Tachycineta thalassina

Yellow warbler

Dendroica petechia

Appendix D
Public Notice

PUBLIC NOTICE
Federal Emergency Management Agency
Draft Environmental Assessment
Wildfire Fuels Reduction Project in Kittitas County

The U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) proposes to provide funding to Kittitas County for a fuels reduction project in Kittitas County, WA. Funding would be provided as authorized by Section 203 of the Robert T. Stafford Disaster Assistance and Emergency Relief Act.

FEMA has prepared a Draft Environmental Assessment (EA) for the proposed project pursuant to the National Environmental Policy Act of 1969 and FEMA's implementing regulations in 44 Code of Federal Regulations Part 10. The Draft EA evaluates alternatives for compliance with applicable environmental laws, including Executive Orders 11990 (Protection of Wetlands), 11988 (Floodplain Management), and 12898 (Environmental Justice). The alternatives that are evaluated in the Draft EA are (1) no action and (2) fuels reduction in the areas of Hidden Valley, Pine Loch Sun, and Sky Meadows with extreme fire risk (proposed action).

The Draft EA is available to the public on FEMA's Web site at www.fema.gov/plan/ehp/envdocuments under Region X and will be available on [REDACTED], 2014, at the Kittitas County Conservation District at 2211 W Dolarway Road, Suite #4, Ellensburg, WA 98926.

If no significant issues are identified during the comment period on the Draft EA, FEMA will finalize the Draft EA, issue a Finding of No Significant Impact (FONSI), and fund the project. The FONSI will be available to the public at www.fema.gov/plan/ehp/envdocuments under Region X. Unless substantive comments on the Draft EA are received, FEMA will not publish another notice for this project.

The deadline for submitting written comments on the Draft EA is [REDACTED], 2014, at 5 p.m. Comments should be mailed to Science Kilner, Deputy Regional Environmental Officer, FEMA Region X, 130 228th Street SW, Bothell, WA 98021; e-mailed to science.kilner@fema.dhs.gov; or faxed to 425-487-4613.