



**Clark County Idaho
Multi-Jurisdiction
All Hazard Mitigation Plan
Wildfire/Urban Interface Appendix A**

Idaho - 2021



This appendix is the update to the wildfire section of the previous Clark County Idaho Multi-Jurisdiction All Hazard Mitigation Plan that was completed on August 25, 2014.

County Description

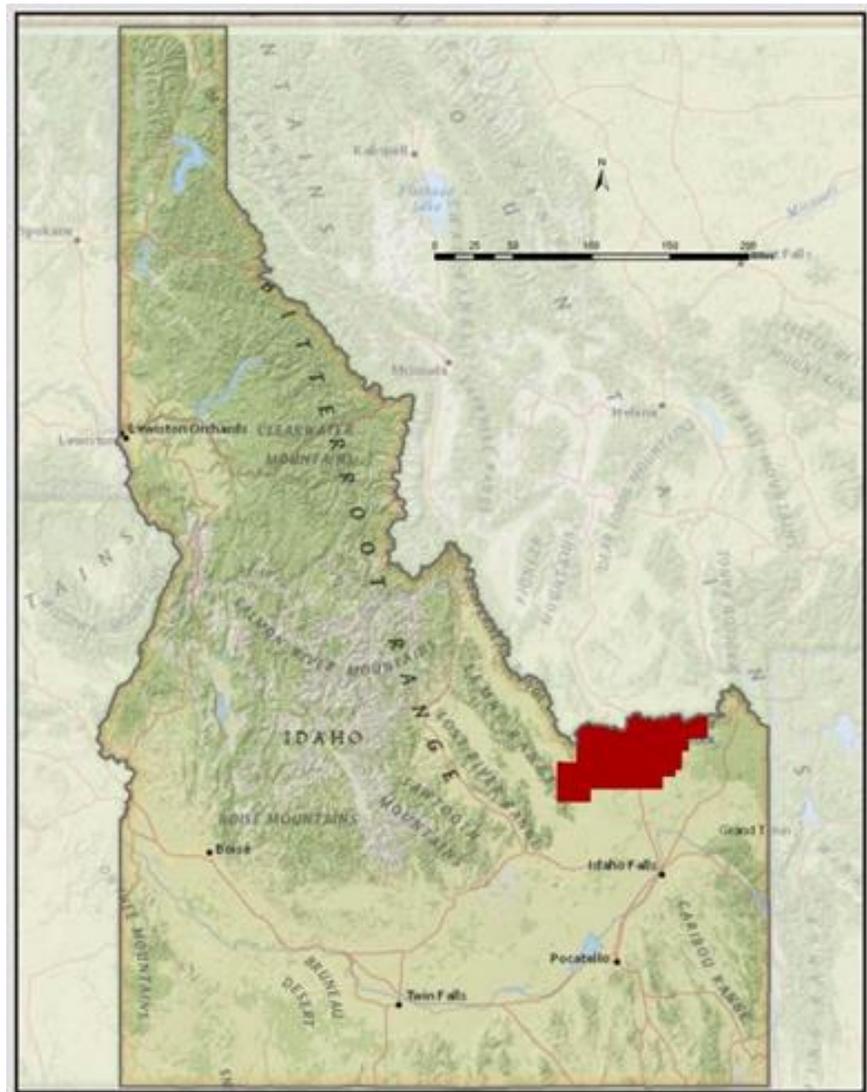
Clark County is the least populated county in Idaho, but very diverse geographically. There are two incorporated cities in Clark County: Dubois and Spencer. Other communities include Kilgore, Humphreys, Lidy Hot Springs, Lone Pine, Small, Edie, and Idmon. The County is considered 100% rural. Farming and ranching are the main livelihood; however, due to the recreational opportunities available and the surrounding natural environment, summer homes are beginning to show up scattered throughout the County.

Location

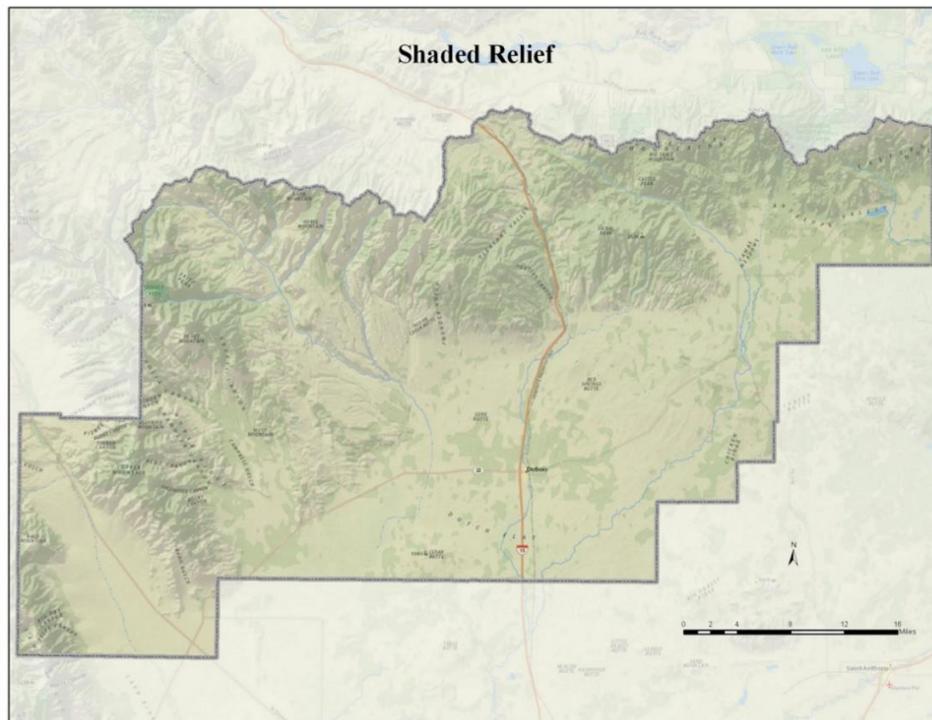
Clark County is located in Eastern Idaho just south of the Continental Divide and contains 1,765 square miles or 1,129,408 acres. Average elevation is 5,400 feet. It is bordered on the north by Montana, on the east by Fremont County, and on the south by Jefferson County. Butte County borders the southwest corner and Lemhi County borders the northwest corner.

Topography and Geography

Topography in the County differs considerably from one end to the other. The south and south-east section of the County lie on the upper reaches of the Snake River Plain. This area is characterized by a gradually

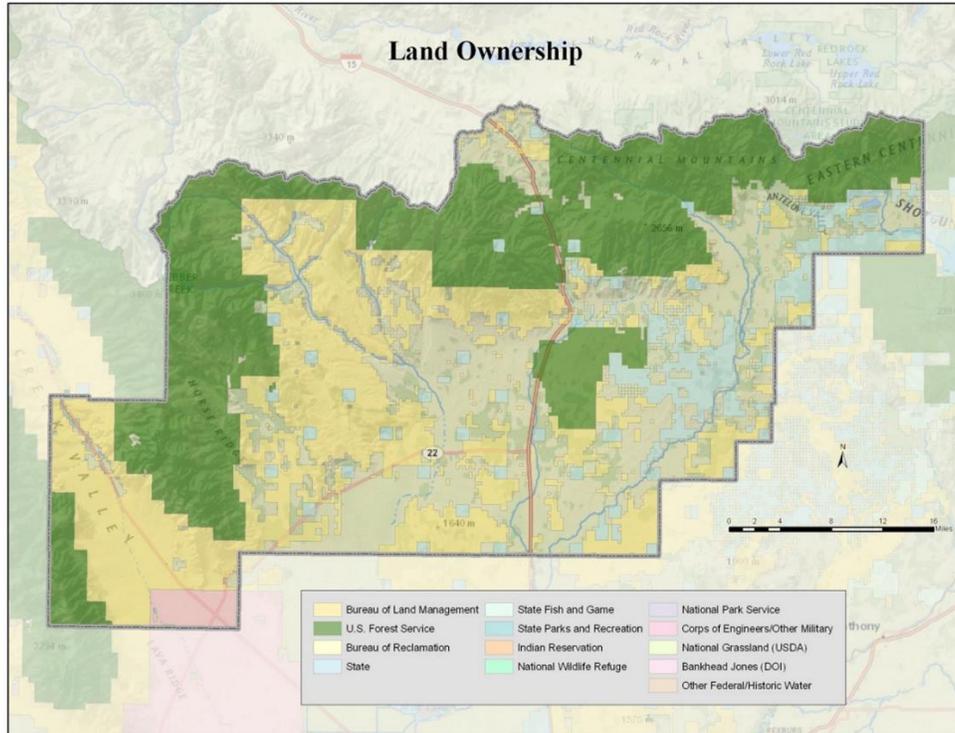


southwestward sloping land surface with foothills and bench lands adjacent to the plain. Conditions are semi-arid with sagebrush and grasses dominating the landscape. Most of the private land is located in this area. The western and northern boundaries are formed by the Centennial and Beaverhead Mountain ranges. The Continental Divide runs along these mountains and makes up the northern most boundary of the County. These mountains range from 6,000-10,000 feet and are characteristically more humid than the Snake River Plain. They have colder winters and cooler summers with more precipitation. The vegetation includes Douglas-fir and Lodge Pole Pine intermixed with sagebrush and grasses. Rocky outcrops are also found in this area. The map below illustrates this topography.



Landownership

Federal and State lands make up almost $\frac{3}{4}$ of the County. Private land is about $\frac{1}{4}$ of the County at 333,813 acres and the city and county lands are less than 1% at 1,604 acres.



Land use and Natural Resources

Grazing is the dominant land use in Clark County, both on public and private lands. Other uses on private land include irrigated and dry crop lands (although this appears to be declining), pasture and alfalfa fields, forest, and recreation. Other uses on public lands include forest, wildlife, recreation, and some cropland on State lands. The table outlines major types of land use.

Land Use	Acres	Percent of Total
Urban Land	300	<.1%
Agriculture	83,200	7.4%
Rangeland	857,600	76.5%
Forest	174,300	15.5%
Water	700	.1%
Wetland	0	0%
Barren Land	5,200	.5%

The USDA also operates the United States Sheep Experiment Station (USSES) in Clark County. It was designated by US President Woodrow Wilson in 1916 and is located on 28,000 acres north of Dubois, employs approximately 40 people, and has 13 houses and trailers on site. The USSES currently has approximately 3,000 mature sheep, plus attendant young sheep of various ages.

There are some minerals and stones found and mined in the County such as thorium, silver, uranium, lead, gold, copper, monazite, zinc, limestone, clay, gemstones, iron, antimony, stone, and rare earths. Opals are also mined in Clark County. The Spencer Opal Mine, an open pit mine, is the only area in North America where opals are plentiful enough to mine. Phosphate rock is also a major commodity and contains fluorine, uranium, vanadium, and rare earths.

Recreation is fast becoming a popular activity in all seasons. Clark County offers snowmobiling, skiing, ice-skating, and sledding in the winter, and fishing, hunting, picnicking, rodeos, horseback riding, hiking, and many other activities in the spring, summer, and fall. The high mountains, clear streams, and a multitude of historical sites, like the Nez Perce battle grounds and Indian writings, bring many photographers and nature and history buffs to Clark County. It is also centrally located to other popular destinations. County Road A2 leaving Dubois to the east travels through Island Park to US Highway 20 which puts one within minutes of Yellowstone National Park. State Highway 22 leaves Dubois to the west and leads one to either Craters of the Moon National Monument to the south, or further west to the Sawtooth National Forest and Sun Valley, Idaho.

Lakes and Rivers

Water makes up less than 1% of the total area in Clark County. There are 4 lakes and reservoirs. Gardner Lake and Three Mile Reservoir are located east of Spencer. Paul Reservoir is located northeast of Spencer close to the Montana border. Sheridan Reservoir, the largest body of water, is in the northeast corner of the County. There are also numerous creeks and streams located throughout the County including Birch Creek, Medicine Lodge Creek, Beaver Creek, Camas Creek, and others.

Geology

Description

Clark County geology has been influenced by the two different topographical regions within the County. The southern portion, where the Snake River Plain extends to, is characterized by a belt of mafic volcanic flow and sedimentary rocks, shown as meta-siltstone on the map below. Most of this belt is composed of quaternary basalt flows covering tertiary rhyolites. These flows are extremely permeable and constitute the chief aquifers of the area.

The Central Rocky Mountains in the north and western areas of the County are made up of preterinary sedimentary rocks that consist of tertiary rhyolites, pyroclastic rocks, and related rocks. These have a low permeability. The map below also shows the upper reaches of the mountains that contain a large amount of sandstone, shale, and mudstone, along with a mixed eugeosyncline suggesting these mountains were formed from volcanic activity compressing and lifting the sedimentary rock.

Climate

The lowest average daily minimum temperature in Clark County is 19.8 degrees (F) which occurs in February. The highest average daily maximum temperature is 67.4 degrees (F) which occurs in August. Average annual total precipitation is 12.5 inches and average annual snowfall is 28 inches. The driest month is October and the wettest month is June. The following tables show the average maximum and minimum temperatures for two weather stations in Clark County located at Dubois and Kilgore.

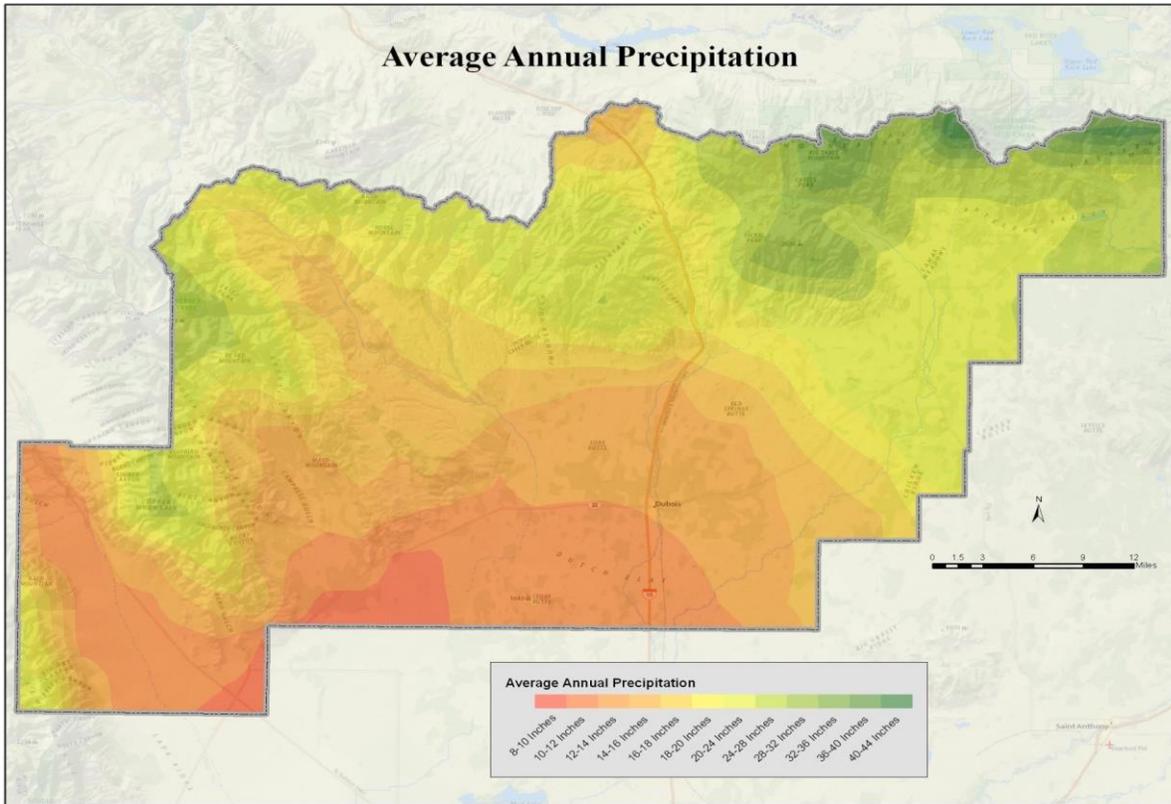
Average Maximum Temperature (F)												
Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
27.2	31.9	40.2	54.6	65.5	74.4	85.4	83.8	72.8	58.4	39.8	29.7	55.3
Average Minimum Temperature (F)												
Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
10.5	14.0	20.6	29.9	38.3	44.9	52.3	50.5	42.1	32.8	21.6	13.4	30.9

Average Maximum and Minimum Temperatures at Dubois, Idaho *Source:*
<http://www.wrcc.dri.edu/summary/climsmid.html>

Average Maximum Temperature (F)												
Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
23.7	30.8	35.5	45.5	58.9	67.4	77.6	76.5	66.1	53.9	36.6	25.9	49.8
Average Minimum Temperature (F)												
Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
1.9	5.0	8.3	20.5	30.8	37.3	40.6	39.3	31.9	24.2	15.5	4.0	21.6

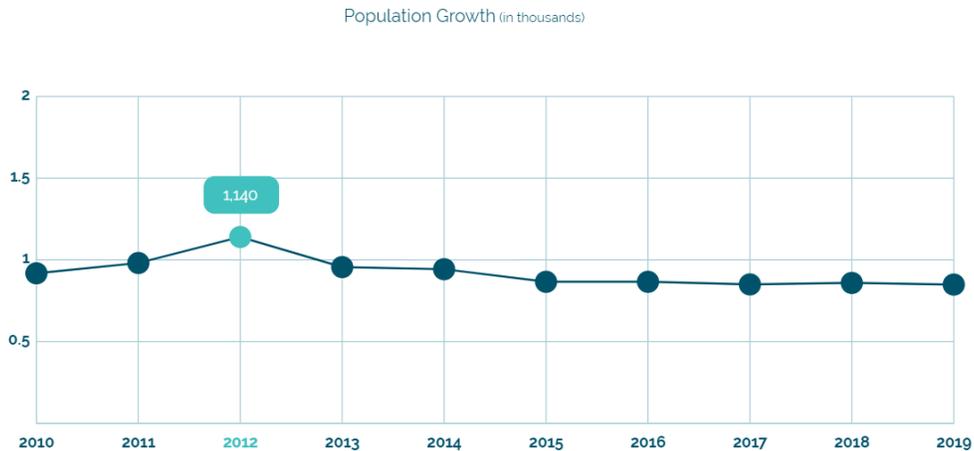
Average Maximum and Minimum Temperatures at Kilgore, Idaho
Source: <http://www.wrcc.dri.edu/summary/climsmid.html>

Average sunshine days are 64 days and the last killing frost in the lower areas usually occurs in late May. The average frost-free season at Dubois is 125 days. The mountain areas receive more than twice the precipitation than the areas of lower elevation, with some areas receiving almost four times that of the lower elevations.



Demographics

The population in Clark County has fluctuated during the last several decades. In 1960, the population was 915 which declined in 1970 to 741 and remained under 800 until the year 2000 when it grew to 1,022. However, in 2013 it started to decline and today is 849 making it the least populated county in Idaho. The table below lists population trends in Clark County.



Critical Infrastructure

County Facilities

The Clark County government offices are housed in two buildings. The City/County building and the City/County Annex Building are both located in Clark County. Other buildings owned by Clark County include a community building, courthouse and jail, fire station, health department building, two road and bridge buildings (one is in Dubois and one in Kilgore), two shops, and a weed building. With the exception of the road and bridge building in Kilgore, all county buildings are located in Dubois.

Public Services and Facilities

With the exception of the County Sheriff's Office, Clark County does not provide any public services directly, nor does the County operate any sort of coordinating public service authority, although informal cooperative agreements have been established among certain districts. All of the County's necessary services are divided among individual public service districts and city offices. Near or within the boundaries of the areas of city impact, most services are provided by the cities or their respective service districts. In other unincorporated areas of the County, services are provided either by the various public service districts or individual landowners.

Sewer and Water

Within Clark County, the City of Dubois provides domestic water distribution and sewage collection and treatment. Beyond the boundaries of Dubois, water is supplied by individual wells, and sewage is treated by septic systems. For any parcel of land, sewer and water arrangements must meet the standards of the Idaho Department of Health.

The City of Dubois' public drinking water system consists of three ground water sources. The system serves approximately 300 people with about 219 connections. All three wells are located near the middle of the city of Dubois with Well #2 located adjacent to the Union Pacific Railroad. There are approximately 12 public water systems in Clark County that serve businesses, recreation sites, etc.

Public Utilities

Rocky Mountain Power Company supplies electric distribution lines for all homes and commercial areas of the County. Propane services are provided by private companies. There is no natural gas service in Clark County. Mud Lake Telephone Cooperate Association Incorporated provides Telecommunications services in Clark County.

Transportation System

Roadways

Clark County maintains 364 total miles of road (98 miles of paved road, 214 miles of gravel road, and 52 miles of earth or unimproved road) and 83 bridges. The County has

approximately 500 road signs and 600 culverts. The budget for the Clark County Road and Bridge Department includes provisions for road grading, snow removal, patching, chip sealing, equipment, and new reconstructed bridges. Historically, funding sources have been 90 percent local and State (fuel tax), and 10 percent Federal. In recent years, the annual operating budget for the Road and Bridge Department has been \$800,000 and \$850,000. About \$220,000 is spent purchasing materials for road maintenance such as oil and gravel for chip sealing. The remainder of the budget is used for equipment, repairs, shop upkeep, and personnel.

Road Type	Length in Feet	Length in Miles
Interstate	196,169	37
Major Road	305,137	58
Local Road	15,769,461	2,987

Roadways in Clark

County

The City of Dubois has approximately 9 miles of road (8.5 miles paved and the remaining gravel) and three bridges. The city has approximately 200 road signs and 20 culverts to maintain. The only traffic light is the flashing warning signal at the intersection of Main Street and County Road A2. The city staff performs all maintenance, with the County Road and Bridge Department assisting in major projects with equipment and labor.

The City of Dubois has an annual street budget of \$52,000. These funds are typically used to purchase road oil and other maintenance materials, and to pay staff salaries and benefits. The funding comes 100% from the State Fuel Tax.

The City of Spencer has only 3 miles of roadway, one quarter mile of which is paved (Main Street). All road maintenance and snow removal are provided by the County. The annual operating budget for the City of Spencer is \$400.

Bridges

Clark County has 83 bridges, 17 of which are inspected by the Idaho Transportation Department. Three bridges have sufficiency ratings of less than 30, which place them in the critical condition category. Several county bridges are scheduled for replacement in the near future.

Airports

Airports are important public facilities in rural communities. They provide expanded local access, economic development opportunities, health and emergency landing capabilities, and recreational pilot access. The only public airport in Clark County is the Dubois Municipal Airport, which is located on the east side of Dubois at an elevation of 5,123 feet. Currently, the unattended airport has a 4600-foot-long by 100-foot-wide dirt runway and a paved helicopter pad. There is no fuel or navigational aids available due to the lack of a fixed base of operations.

Railroads

Railroad traffic passes through Dubois 2 to 4 times daily. There is no set schedule. The track is referred to as the Pocatello-Clark Mainline.

Housing

Clark County had a total of 548 housing units with 323 of them occupied. Of those units, 225 were vacant including 119 seasonal or recreational homes. The median year the structures were built on the east side of the County is 1949 and on the west side of the County 1975.

Education Facilities

Clark County School District is the only school district in Clark County. The junior/senior high school is located in Dubois and houses grades 7-12 with approximately 93 students. The other school located in the district is Ross Elementary, located in Dubois.

Cultural and Historical Sites

Clark County contains many prehistoric and historic sites. Evidence shows human occupation of parts of Clark County as early as 10,000 years ago. These people were the forerunners to the Northern Shoshone and were mostly big game hunters. They used rock outcroppings to butcher and store meat. In later years, the Nez Perce Indians used the general area as a route between the Wallowa Valley and their buffalo hunting ground in Montana.

The area was well traveled by Indians, as well as early trappers, miners, and explorers. Medicine Lodge Canyon, Beaver Creek Canyon, and Monida Pass were all used to transport gold and other freight between the Montana Gold Fields and Utah.

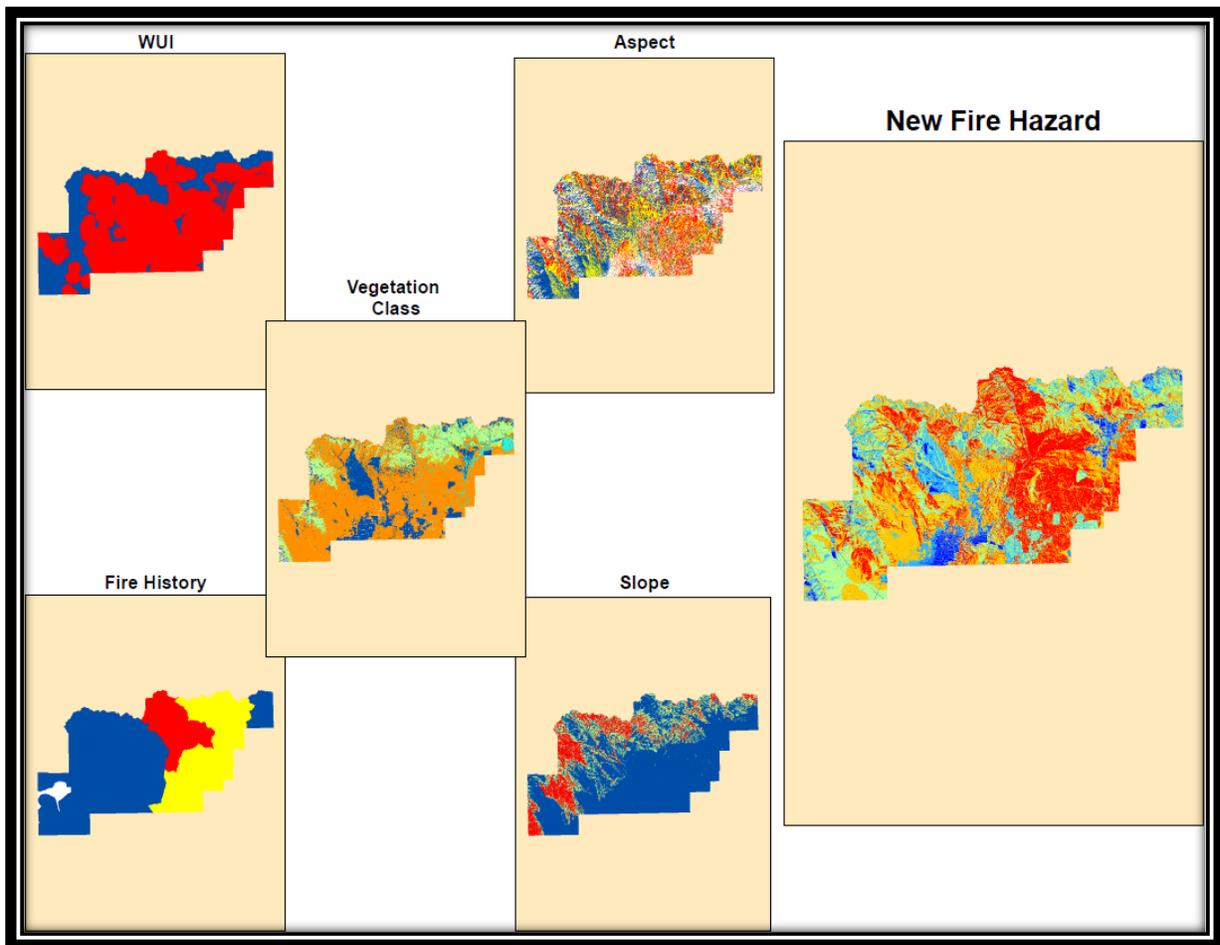
According to the Idaho State Historic Preservation Office, Clark County has 35 architectural sites and 957 prehistoric/archaeological sites. These are sites with some historic value, but may not be included in the National Register of Historic Places. The following are listed on the National Register:

- Birch Creek Rock Shelters (added 1974 - Site - #74000737) address restricted, Blue Dome
- Camas Meadow Camp and Battle Sites (added 1989 - Site - #89001081) E of Kilgore, Kilgore
- Spencer Rock House (added 1989 - Building - #89001991) Also known as Hardy, Charles W., House; Centennial Mountain Lodge Off US 91 at Huntley Canyon, Spencer

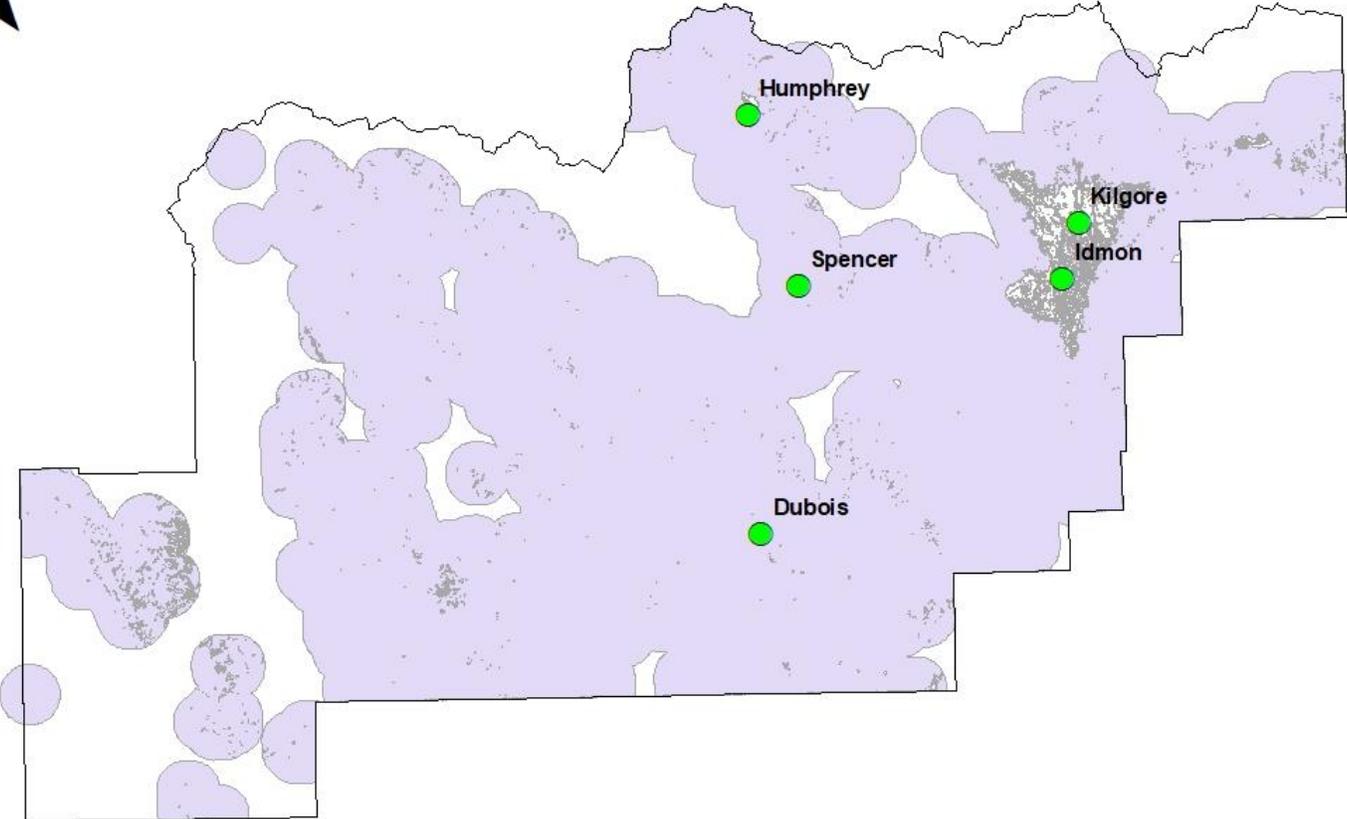
St. James' Episcopal Mission Church (added 1993 - Building - #93000387) Also known as St. Peter's Catholic Mission Church; Heritage Hall Reynolds St. (Old Co. Hwy. 91), Dubois

Fire Hazard Map

Wildfire risk modeling is more accurately define as probability of damage to features found within a geographic area. The modeling used in the Clark County Wildfire Protection Plan (CWPP) was built upon the modeling used in the Idaho Department of Lands Forest Action Plan. This model is based on the same inputs as all other wildfire models but is simpler in form as it used a liner additive model. Modeling natural systems and their various functions is complicated at best. Thus, it was felt that for the CWPP that value inputs that could be easily explained and understood by all who may read or utilize the document was best suited for this endeavor. Additional information about the process used can be found on pages 23-27 in Appendix I.



Clark WUI



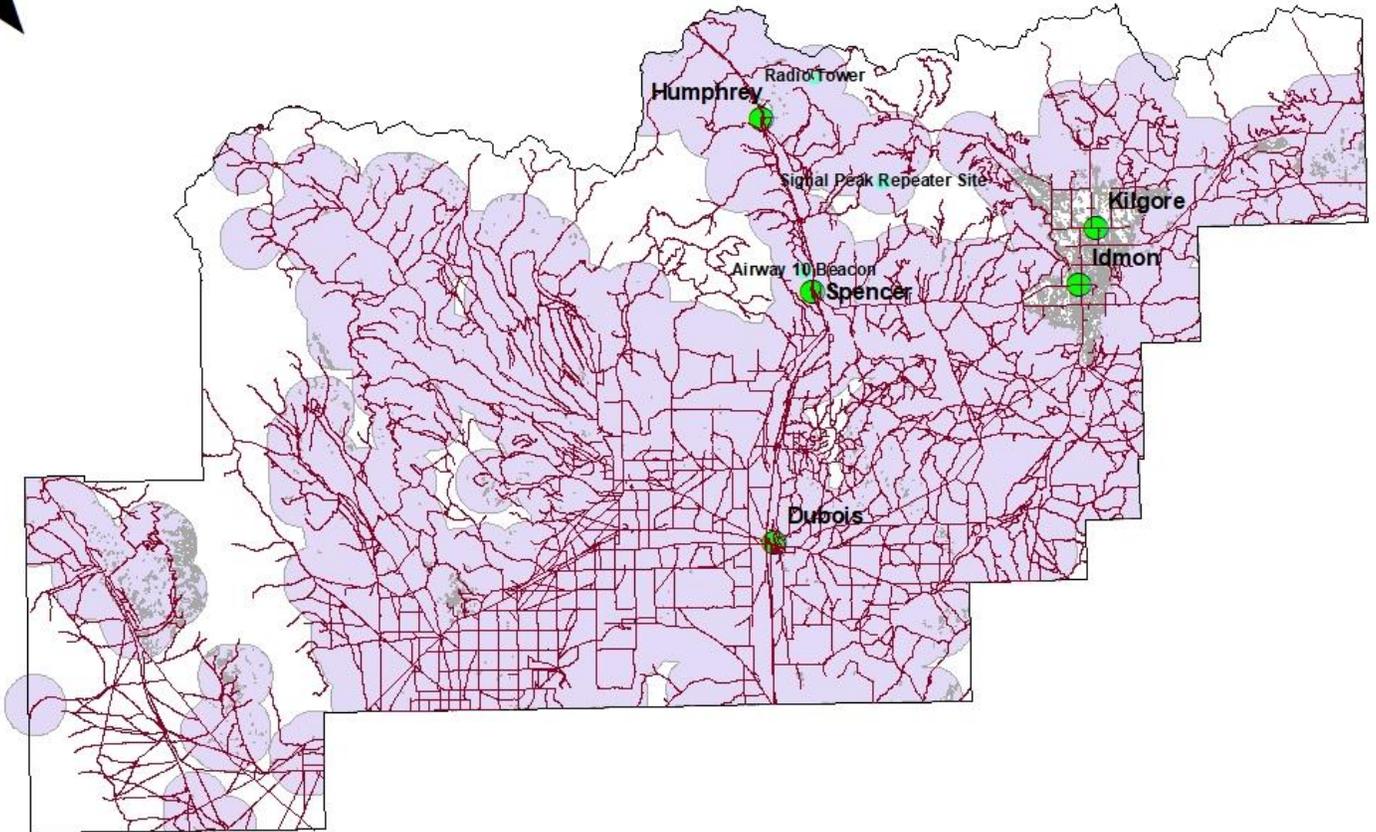
Legend

 Clark_WUI

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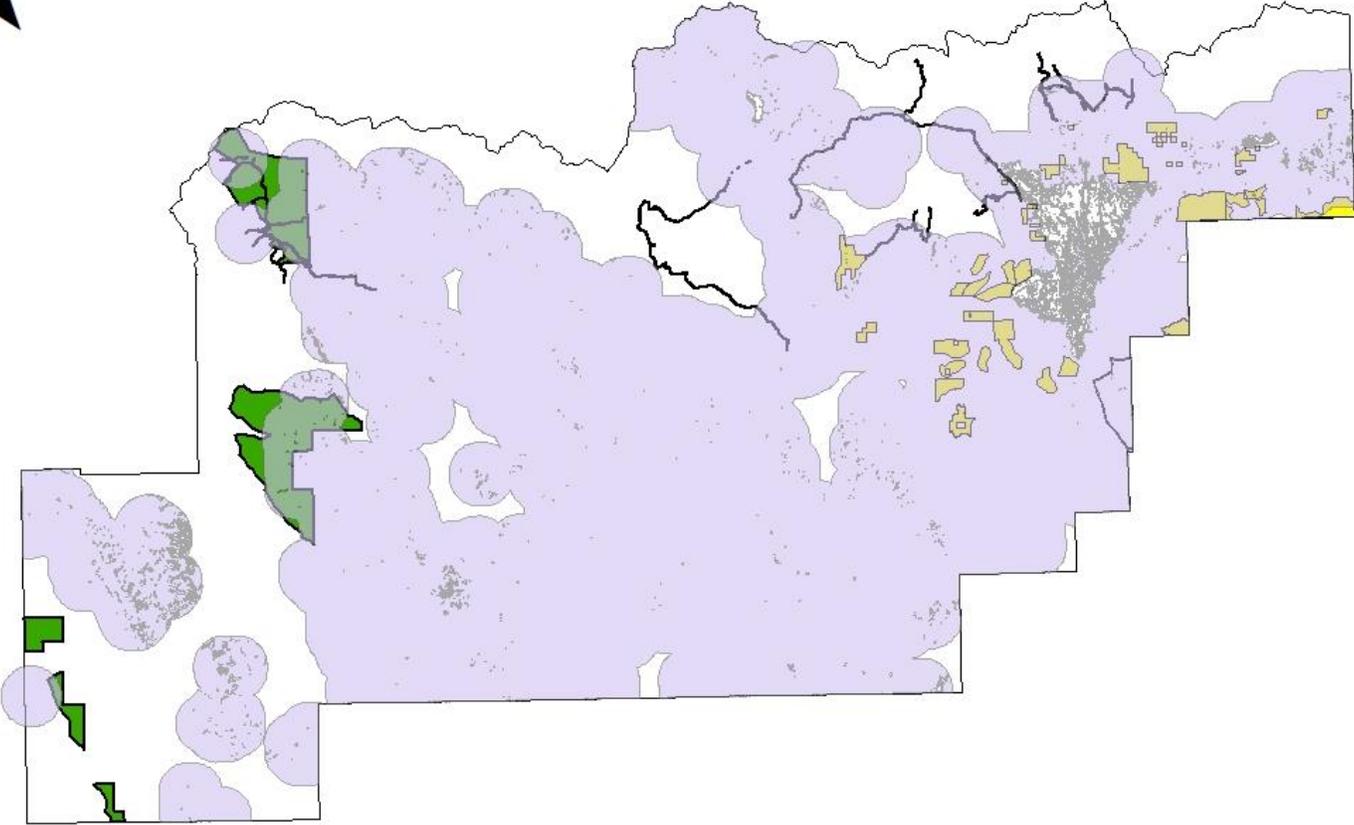
Clark WUI with Roads & Important Infrastructure



Legend

- Clark_Roads
- Clark_Radio_Repeater
- Clark_WUI

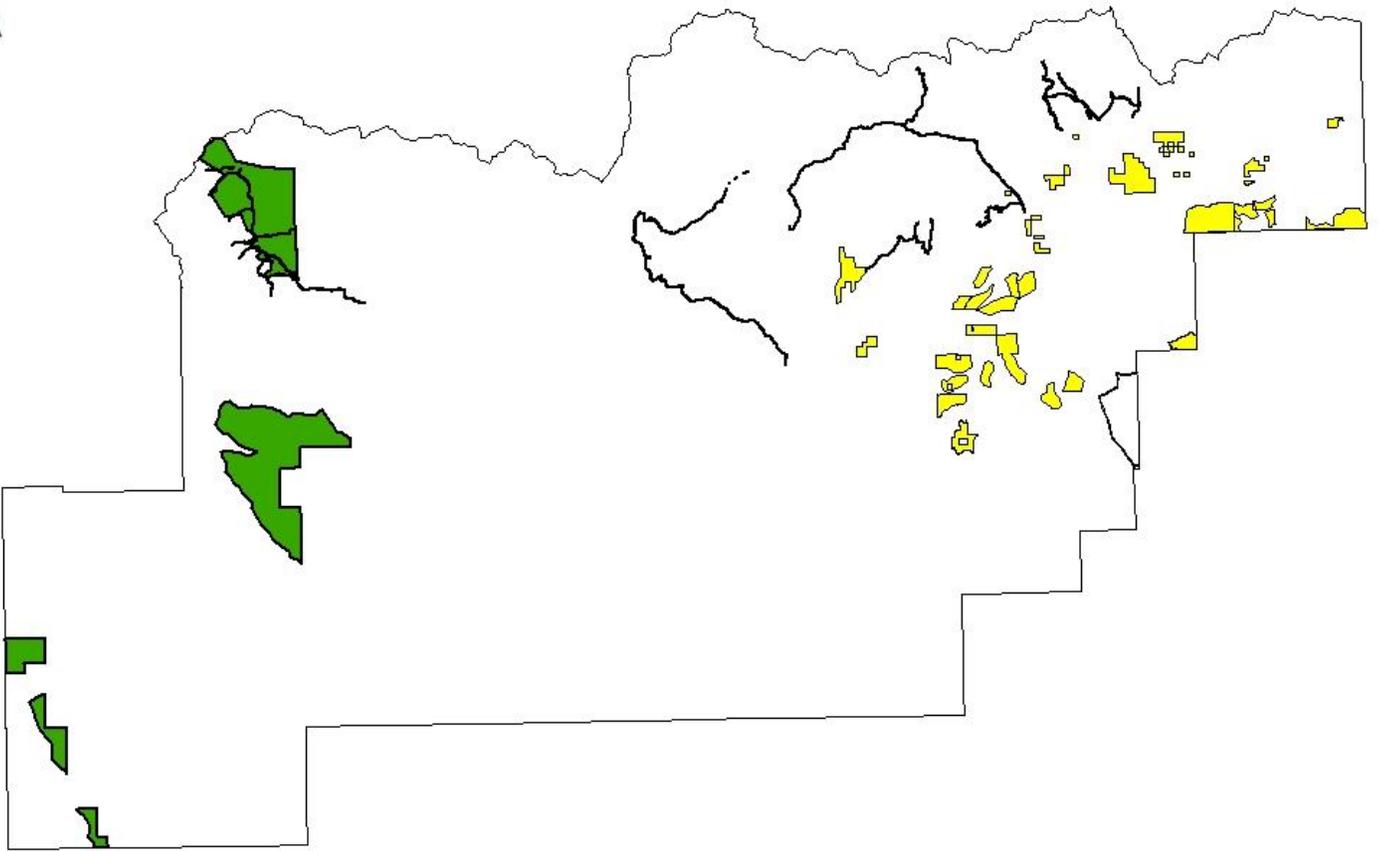
Clark Federal Projects



Legend

- Clark_WUI
- Clark County FS Projects
- BLM_Clark_Co_Fuels_Treatments

Clark Federal Projects



Legend

-  Clark County FS Projects
-  BLM_Clar_Co_Fuels_Treatments

Wildfire Education Projects

WILDFIRE EDUCATION

Fire prevention activities occur year-round throughout eastern Idaho's communities to educate the public on wildfire ignitions, the prevention of human-caused wildfires, and protection of homes and property against wildfire. Human-caused wildland fire risk within Clark County is moderate due to population density, outdoor recreation activities, and the vast amount of accessible public lands. Fire prevention efforts are focused in the areas at highest risk for human-caused ignitions, such as high-use areas and along major travel corridors. Most human-caused fires are due to abandoned campfires, illegal use of personal fireworks on and adjacent to public lands during the dry season, and field/debris burning during high fire danger conditions. In addition to fire prevention education it is important to mitigate wildfire impacts whether they are human-caused or natural-caused.

FIREWISE/DEFENSIBLE SPACE

The threat to private property from wildland fires is increasing as more people choose to build homes, operate businesses, and recreate in areas where public lands border urban areas. Neither wildland firefighting agencies nor local fire departments can completely protect the growing number of structures in these interface areas. It is critical that private landowners take the proper precautionary steps on their own to protect their property.

Creating "defensible" or "survivable" space around structures (including sheds and outbuildings) can make the difference between returning to an intact home or a smoldering pile of ashes when a wildfire does move through the area. There are simple, affordable steps that can greatly increase your home's chances of surviving a wildfire. Research shows that most homes that burn do so as a result of flying embers rather than direct flame contact with the main fire. Embers can travel distances of a mile or more and land on or near the structure on flammable debris, including dead plant material or a path of dry vegetation leading directly to the structure.

The roof and exterior structure of your dwelling should be constructed of non-combustible materials such as fire resistant roofing materials, tile, slate, sheet iron, aluminum, brick, or stone. If you do have wood siding, cedar shakes, exterior wood paneling, and other highly combustible materials, ensure they are treated with fire retardant chemicals.

- Water and maintain your lawn consistently.
- Regularly remove dead plant material, such as pine needles, leaves, and branches, from roof surfaces, eaves, and gutters to avoid accumulation of flammable materials.
- Remove portions of any tree extending within 10 feet of the flue opening of any stove or chimney.
- Remove branches from trees to a height of 15 feet.
- Maintain a screen constructed of non-flammable material with openings not exceeding ½ inch over the flue opening of every chimney or stovepipe.
- Dispose of stove or fireplace ashes and charcoal briquettes only after soaking them in a metal pail of water.

- Landscape vegetation should be spaced so that fire cannot be carried to the structure or surrounding vegetation. Remove lower hanging branches (ladder fuels) that allow fire to leap from grass or shrubs to tree tops.
- Maintain a fuel break – an area completely devoid of flammable shrubs and trees – around all structures. Keep it lean, green and clean at least 30 feet from your home.
 - You do not need a barren landscape to protect your home from fire. Make it both pleasing to the eye and defensible by planting fire resistant plants within this 30-foot break. See the Idaho Firewise website for tips and suggestions: <http://www.idahofirewise.org/homeowners/firewise-landscaping/>.
- All combustibles such as firewood, picnic tables, boats, etc., should be kept away from structures. Stack firewood at least 30 feet from your home.
- Store gasoline in an approved safety can away from occupied buildings.
- Propane tanks should be far enough away from buildings for valves to be shut off in case of fire. Keep area clear of flammable vegetation.
- Clear combustible materials out from underneath decks. Screen in under decks and over exterior vents with ¼-inch screens to keep out flying embers.
- Place non-flammable screens in home vents (openings should not exceed 1/8 inch).
- Create easy access to your emergency water source. Connect the garden hose to the outlet.
- Have fire tools handy: shovel, rake, a bucket for water, and a ladder long enough to reach the roof.
- Addressing should be indicated at all intersections. Clearly mark your street and house number so help can find you quickly.
- All roads and driveways should be at least 16 feet in width.
- Each home should have at least two different entrance and exit routes.¹
- Learn more from your local FD or www.firewise.org.

CAMPAIGN METHODS FOR DISTRIBUTING AND IMPLEMENTING KEY MESSAGES

A variety of forums exists to proactively share the fire prevention message. The following table illustrates which activities can achieve our purpose and the individuals associated with their implementation.

Activity	Purpose	Who	Due Date
Presence at community events	Deliver messages and develop awareness about fire prevention and defensible space	BLM, USFS, FD, RFPA	Throughout the summer
Fire Patrols	During severe fire seasons this activity is highly visible, interacts with campers and extinguishes abandoned campfires	LEOs	All summer, with increased coverage during holidays such as July 4 th and Labor Day weekend and when conditions warrant

¹ <http://www.nifc.gov/preved/protecthome.htm>

News Releases	Increase public awareness about fire danger and current fires	BLM, USFS, County	When appropriate; all summer, with special attention during Wildfire Awareness Month and over July 4 th and Labor Day holidays
Video PSAs (Youtube, social media platforms, TV, etc)	Educate the public on proper techniques for putting out campfires, defensible space	Idaho Firewise BLM & USFS County	Wildfire Awareness Month; mid-August thru hunting season; and as conditions warrant
Social Media	Educate the public on defensible space, evacuations, wildfire as part of the ecosystem	BLM Idaho Fire Facebook & Twitter	Wildfire Awareness Month; mid-August thru hunting season; and as conditions warrant
BLM 4th grade fire ecology program/ FireWorks educational program K-12	Educate students about wildfire	BLM, USFS, School teachers	Throughout the school year
Increased Fire Prevention Signing	Increase awareness of dry conditions, proper campfire techniques	BLM, USFS, County; work with Idaho Department of Transportation (ITD)	Change message/ issue to be pertinent to time of year
Distribute Key Fire Prevention Messages/Literature among County establishments	Provide printed information to the public to educate on driving/parking on dry grass, fireworks, etc.	BLM, USFS, County	Mid-August thru hunting season and as conditions warrant

Annual-Recurring Events, March-October:

- March –
- April – Earth Day
- May – Media invited to Eastern Idaho Fire School; discuss wildfire potential
- May – BLM & USFS host pre-fire season media orientation
- May- Wildfire Awareness Month News Release across state (BLM)
- May- Defensible space/Firewise News Release across east Idaho
- May- BLM Prevention Order (May 10-Oct 20) News Release (Prohibit fireworks, incendiary/steel core/tracer ammunition, and exploding targets on BLM lands)
- May – Wildfire Awareness Month (BLM Idaho Fire Social Media Calendar)
- May – Wildfire Education Month at the Artitorium in Idaho Falls (BLM & USFS)
- June –

July – 4th of July Parades

July- 4th of July Interagency News Release educating about fireworks & fire risk

August- High Fire Danger News Release (BLM)

August – Snake River Roaring Youth Fest in Idaho Falls (BLM & USFS)

August – Community Night Out

August – Preventing combine fires news release

September – National Public Lands Day

October – National Fire Prevention Week

Mitigation Projects

Project Name	Description	Who	When	Funding
Buckboard Gulch	Chainsaw	USFS	2023	Federal
Ching Creek Road	Chainsaw	USFS	2023	Federal
Aldus Road	Chainsaw	USFS	2021	Federal
Cottonwood Loop Road	Chainsaw	USFS	2023	Federal
McGarry Canyon Road	Mechanical	USFS	2025	Federal
Coalmine Road	Chainsaw	USFS	2023	Federal
Pete Creek Road	Mechanical	USFS	2025	Federal
Pleasant Valley Road	Mechanical	USFS	2022	Federal
Trail Creek	Mechanical	USFS	2023	Federal
West Camas-Miners Creek Road	Mechanical	USFS	2025	Federal
Sand Creek HF	Mechanical/Chemical	BLM	2032	Federal
Sand Creek F.B.	Mechanical/Chemical	BLM	2023	Federal
Shotgun Valley Forest Restoration	Mechanical	BLM	2026	Federal
Mowing	Coordinate mowing needs and restrictions (on site) (Review agains CCA)	INL		
Conduct Assessment		INL		
Fuel Breaks	Fuel Break construction would include the removal of hazardous woody fuels and the establishment of perennial, fire-resistant vegetation (native species greenstrips) within right-of-ways around the communities of Dubois, Spencer, and Kilgore and the	County, Cities, IDL, BLM, USFS	2026	State

	Medicine Lodge area. The goal is to tie the fuel breaks into preexisting or proposed federal fuel breaks.			

Planning Projects

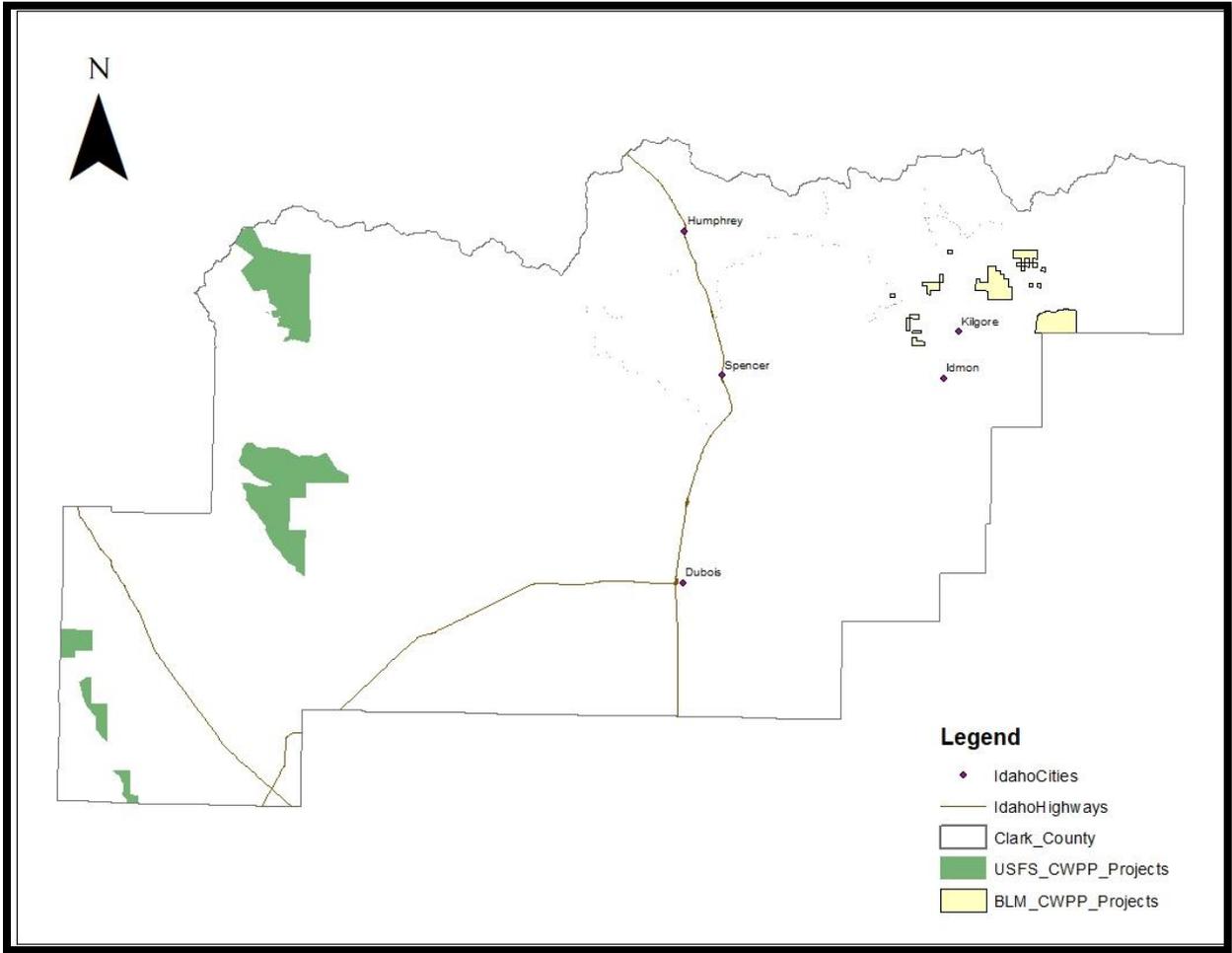
Name	Description	Who	When	Funding
Review and Revise as needed WLF Assessment Documentation		INL		
Coordination Meeting	DEQ/INL Oversight Pre-Wildland Fire Coordination Oversight Meeting	INL		
INL Comm Plan	Define WLF Resource Needs (HEO/EO/Laborers/Mechanics)	INL		
Power Grid Management	Review and Revise Callout Lists For Power Management representation at the ECC.	INL, County, BLM, USFS		
Restriction Enforcement	Ability to enforce wildfire restrictions across jurisdictional boundaries	County, BLM, USFS, INL, IDL	2022	
Pre-Evacuation Planning	Coordination Document for community wildfire response and evacuation	County, BLM, USFS, INL, IDL, RFPA	2022	IDL

Response and Capacity

Name	Description	Who	When	Funding
Plan Review	Up-date INL Fire Department Pre-suppression plan PLN-2114 Rev 5/2016	INL		
Plan Review	Review PLN-14401 Wildland fire management plan and revise as needed	INL		
	Review Spare Parts Availability and Re-stock for All WDLF Equipment	INL		
Identify Critical Heavy Equipment for WLF Needs (Availability)		INL		
Verify INL Support Water Tender Hook-Ups		INL		
Inventory and Inspect WLF PPE and Procure PPE as Needed		INL		

Radio Training	XG-75 Radio training for HEO (Assessment Dozer Mobile radios)	INL		
Radios?				
Fire Trucks?				
Tenders?				
Equipment Storage Building?				
Training?				
Recruitment?				

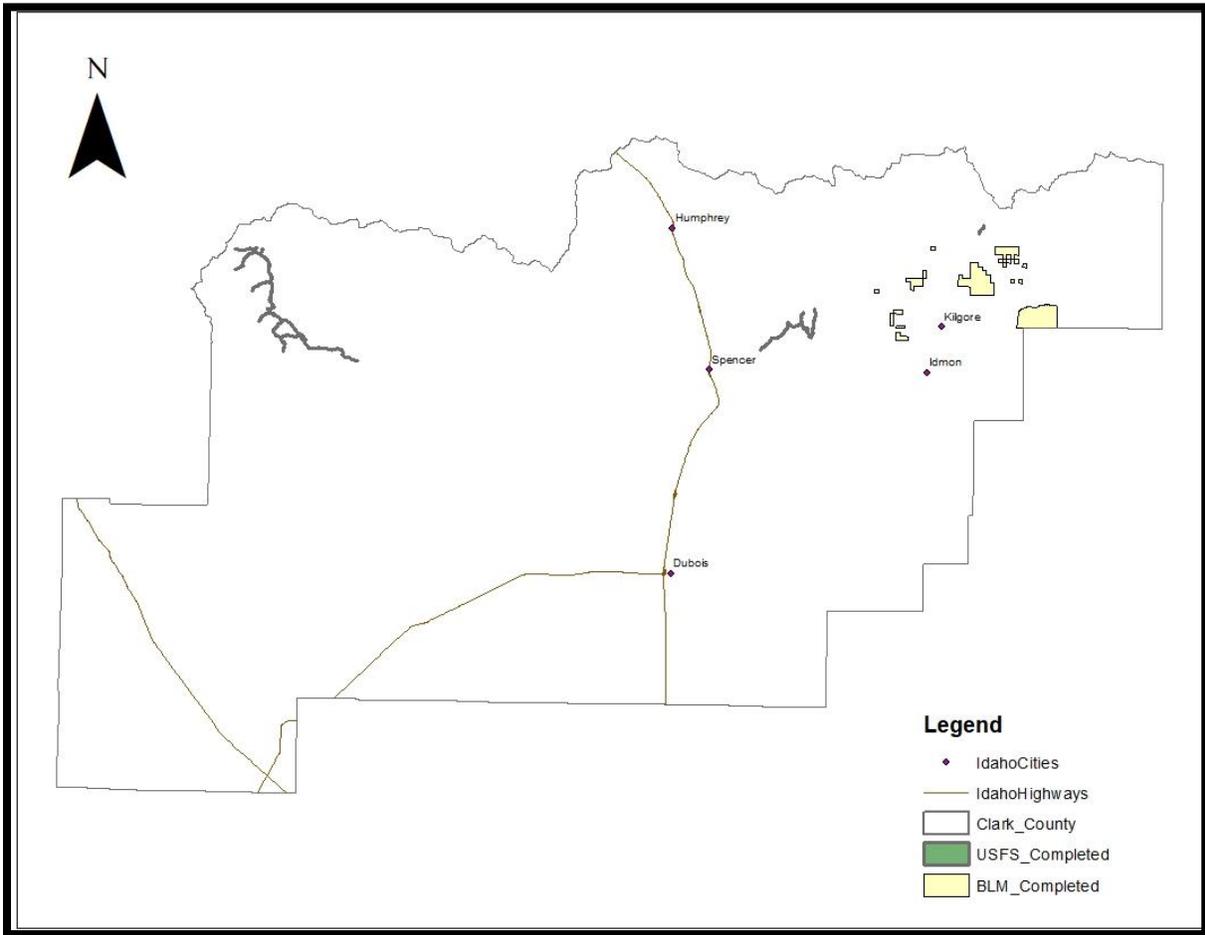
Federal Project Map



Completed Projects

Name	Description	Who	When
Antelope Valley Rx	Rx fire used to thin mountain brush and encourage native grass recruitment	BLM	2008

Kilgore Community Veg Management	Thinned, masticated, and prescribed fire used to reduce vegetation around community	BLM	2014
Antelope Ridge Timber Thinning	Commercial thinning and prescribed fire used to address insect issues	BLM	2006
South Ching Creek Road	Mechanical	USFS	2019
Threemile Road	Mechanical	USFS	2019
West Rattlesnake Road	Mechanical	USFS	2019
Buckboard Gulch Road	Mechanical	USFS	2020
Cole Canyon Road	Mechanical	USFS	2020
Cow Camp Road	Mechanical	USFS	2020
Horse Creek Road	Mechanical	USFS	2020
Medicine Lodge Bench Road	Mechanical	USFS	2020
Porky Spring Road	Mechanical	USFS	2020
South Fork Fritz Road	Mechanical	USFS	2020



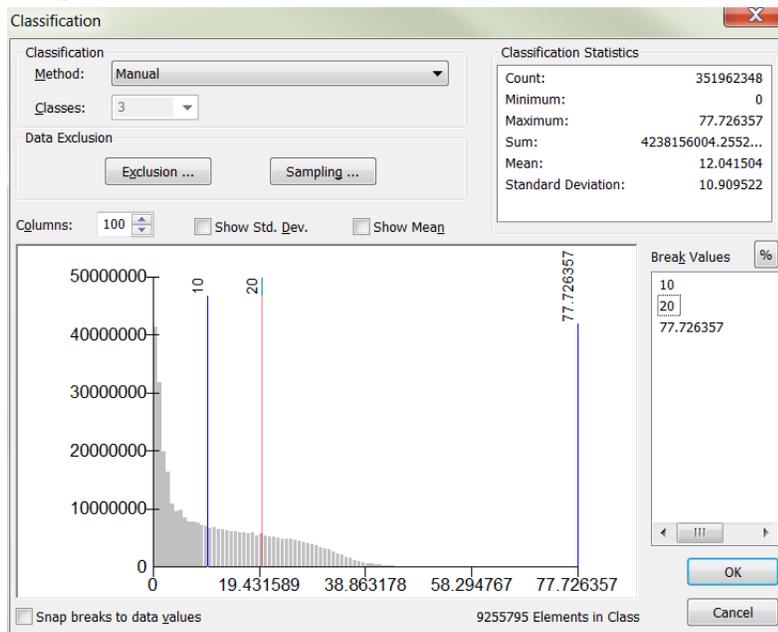
Appendix I

Simple Fire Hazard Model

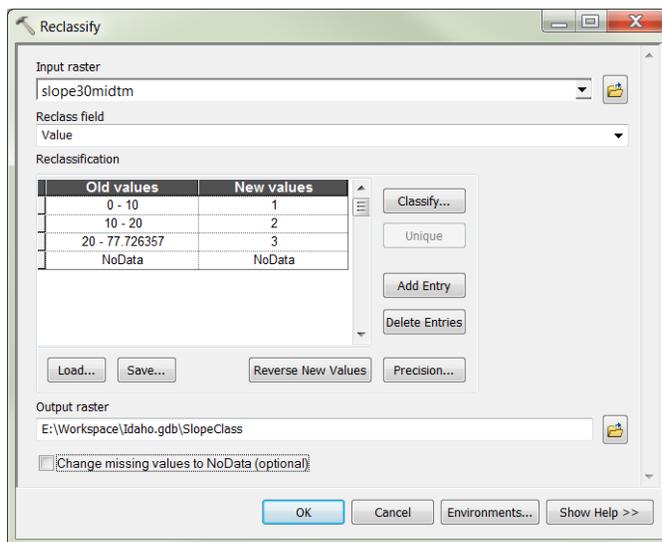
Data Properties and formats

- 1. Slope
 - a. A 30 meter dem used as the source data.

- b. Ran the **Slope** tool in Spatial Analyst on ArcMap. I used PERCENT as the output option.
- c. Ran the **Reclassify** tool to group the slope into 3 categories: 0 – 10%, 10.00001 – 20%, and greater than 20%.



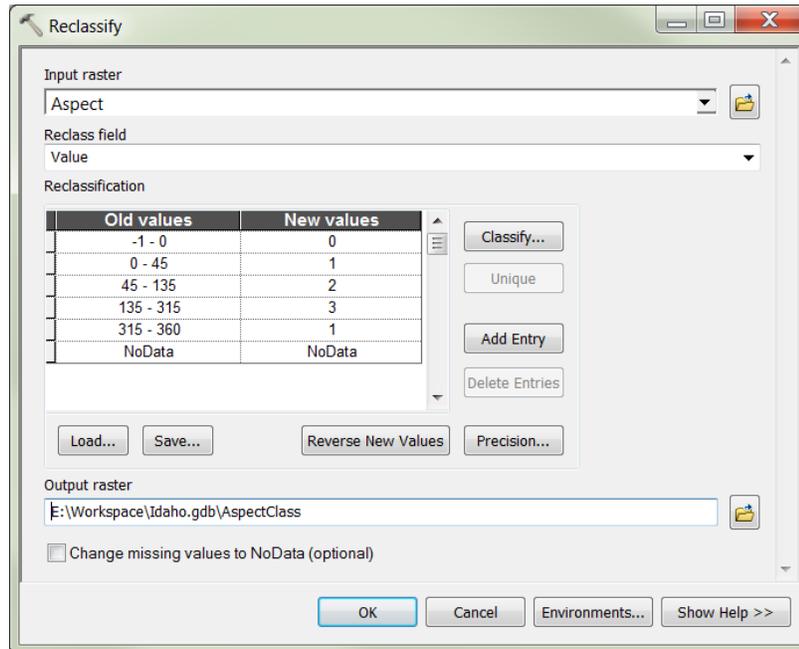
- d. Gave the three class new values of 1, 2 and 3 from low slope to high slope. Named the output Slope_Class.



2. Aspect

- a. A 30 meter dem used as the source data.
- b. Ran the **Aspect** tool in Spatial Analyst on ArcMap.

- c. Ran the **Reclassify** tool to group the aspect into 3 categories: 1. North (0 to 45 degrees and 315 to 360 degrees), 2. East (45 to 135 degrees), 3. South & West (135 to 315 degrees), and 0. Flat (0 degrees).
- d. Gave the three class new values of 1, 2, 3, and 0 according to the above aspect range categories. Named the output Aspect_Class.



3. Vegetation

The 30 meter vegetation data from Landfire was used. The vegetation was classified into 6 categories: grass, grass-brush, grass-tree, brush, brush-tree, tree. Grass was classified to 1, grass-tree 2, grass-shrub 3, shrub 4, shrub-tree 5 (this included pinion and juniper), and tree was classified to 6. All lakes, rock, agriculture and urban areas are classified to 0. The vegetation was classified as given and written to an attribute. The vegetation file was exported with the new attribute as the new value into a file called Veg_Class.

4. Fire History

A fire history dataset of fire points and polygons (when available) from 1980 to 2016 for Idaho was used. In 30 meter cells there were most cells with no fires many with one fire and a few cells with 2 fires. This did not give a good fire density. The HUC12 watershed polygons were used as the population density area.

Spatial Join was used to count the number of fire points within each HUC12. See <http://support.esri.com/cn/knowledgebase/techarticles/detail/30779>

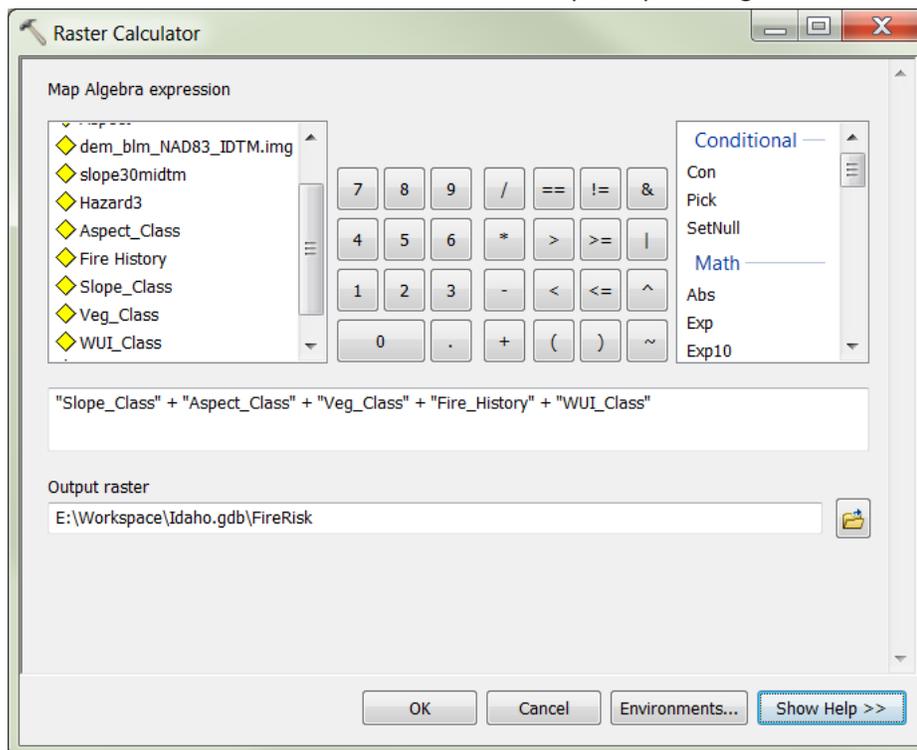
The output polygon layer was classified into three categories by natural breaks and was assigned 1, 2, and 3 from low fire density to high fire density. This polygon layer of fire density was converted to a 30 meter raster file called Fire_Class.

5. Wildland – Urban Interface (WUI)

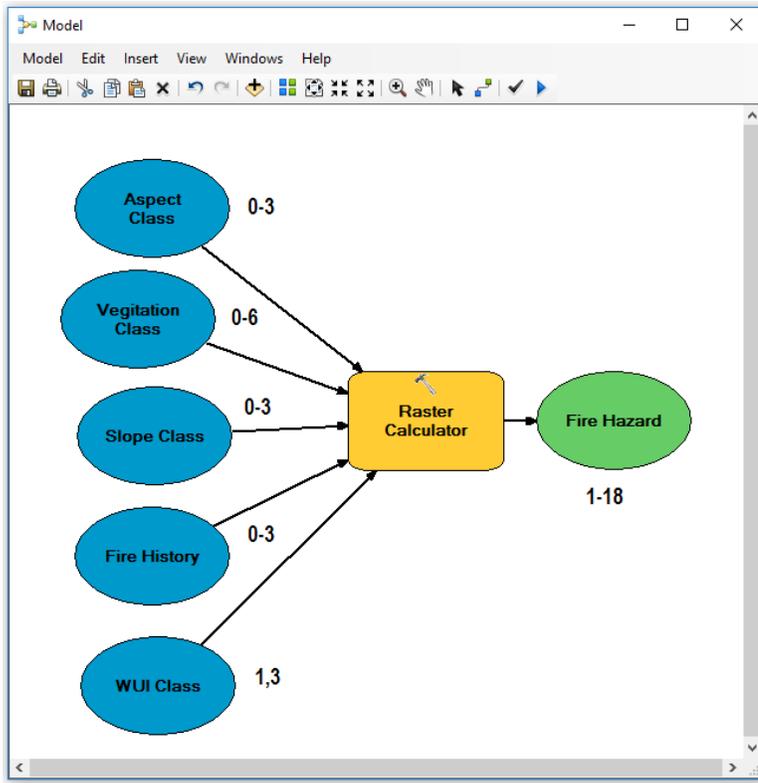
The WUI layer used was composed of the layers originally developed by the USFS and BLM. Where counties have defined and mapped their WUI as part of their CWPP it was substituted in place of the USFS or BLM layers. The WUI data layer was classified as 3 if in the WUI area and 1 if out of the WUI area. This polygon layer was also converted to a 30 meter raster file called WUI_Class.

Data Analysis

1. Used **Raster Calculator** to sum the values of Slope, Aspect, Vegetation, Fire History, and WUI.

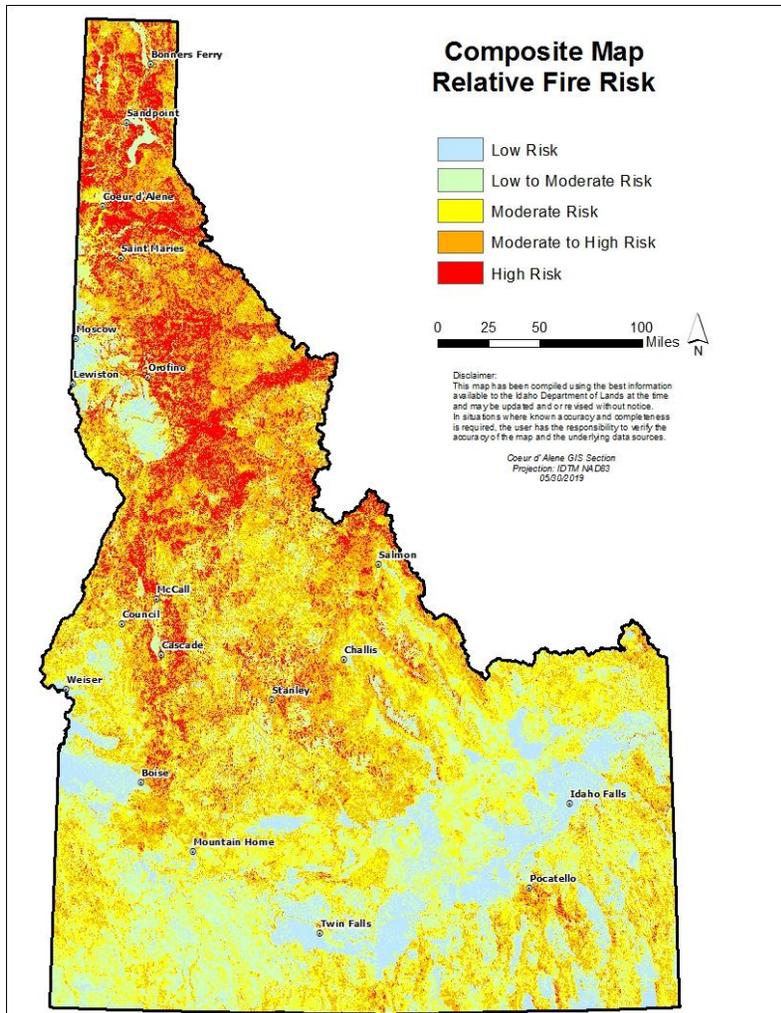


In Model Builder this process is outlined like this:



The output fire hazard will be the sum of the class values for Fire History, Aspect, Slope, Vegetation, and WUI. The lowest value in this analysis was 3 – 1 for aspect, 1 for slope and 1 for WUI. The highest value in this analysis can be 18.

The Hazard layer raster was classified in to 4 classes but can be done in any number of ways. A recommended starting point is to use natural breaks within the display information table of the layer.



This is a simple starting point for you. You are welcome to refine it to fit your needs. Anyone of the data layers could be replaced or even additional characteristics (layers) added. The classification could be changed for any of the input data. Try a modification and check if the resulting output makes sense with what is on the ground.