

## CHECKLIST ENVIRONMENTAL ASSESSMENT

<b>Project Name:</b>	BLM Big Hole West Alternative Practice
<b>Proposed Implementation Date:</b>	Fall 2025
<b>Proponent:</b>	BLM
<b>Location:</b>	Multiple locations - Sections 13, 14, 15 & 21-T1N-R11W
<b>County:</b>	Silverbow County
<b>Land Owner:</b>	Bureau of Land Management
<b>HRA#:</b>	N/A

### I. TYPE AND PURPOSE OF ACTION

Michael O'Brien of Bureau of Land Management (BLM) Butte Field Office is requesting an Alternative Practice for the Big Hole West Forest Management Project (BHW), to allow for the restoration of riparian vegetation (aspen, willow, alder etc.) in coordination with timber sale operations, due to conifer shading out and out competing riparian vegetation.

The project is located approximately three miles north of Wise River, Montana. (refer to Attachment's vicinity map A-1 and project maps A-2, A-3) and includes the following sections: 13, 14, 15, 21.

Michael O'Brien of Bureau of Land Management Butte Field Office is requesting an Alternative Practice to Rule 4: (36.11.304), ***Equipment Operation in the SMZ*** and Rule 5: (36.11.305), ***Retention of Trees in the SMZ*** in the Streamside Management Zone (SMZ) of ~8,605 feet of multiple Class 1 streams, and ~11,080 feet of Class 2 streams (see attached map). Total linear extent along the stream is approximately 3.7 miles. This Alternative Practice would allow the aforementioned activities to occur in the SMZ under Rule 4 and Rule 5, Montana Guide to the Streamside Zone Law and Rules 2006 (ARM 36.11.300-313).

According to MCA 77-5-301 through 307, DNRC is authorized to administer and enforce the provisions of the SMZ Law. This Law was developed to protect the public interest of water quality and quantity within forested areas; provide for standards, oversights and penalties to ensure forest practices conserve the integrity of SMZ's; provide voluntary guidelines for wildlife management within SMZ's; and allow operators necessary flexibility to use practices appropriate to site-specific conditions in the SMZ. ARM 36.11.301 through 313 further specify the design of SMZ boundaries, allowable activities, and prohibitions within the SMZ, penalties and other related provisions.

According to MCA 77-5-304 and ARM 36.11.310, DNRC *may* approve alternative practices that are different from practices required by the SMZ Law only if such practices would be otherwise lawful and continue to conserve or not significantly diminish the integrity and function of the SMZ. This AP would allow for the 2 requests listed above.

(See **Attachment B** for complete description of proposed forest practices and mitigations to be implemented.)

The MT-DNRC's implementation of the Streamside Management Zone (SMZ) law and rules protects and maintains the functions of a SMZ. The six functions of an SMZ, as identified in the SMZ law (77-5-301[1] MCA), are:

- Acts as an effective sediment filter to maintain water quality.
- Provides shade to regulate stream temperature.
- Supports diverse and productive aquatic and terrestrial riparian habitats.
- Protects the stream channel and banks.
- Provide large woody debris that is eventually recruited into a stream to maintain riffles, pools, and other elements of channel structure.
- Promotes floodplain stability

Proposed activities include:

Rule	Action	Quantity	
	<b>Proposed Alternative Practices</b>		
1	Broadcast burning		acres
2	Operation of Equipment in SMZ	3.7	miles
3	Tree Retention	80.5	acres
4	Road construction		feet
5	Hazardous Materials		feet
6	Side Casting of Material		feet
7	Depositing Slash		feet
	<b>Total Treatment Acres</b>		<b>80.5</b>
<b>Duration of Activities:</b>		4 years-contract period	
<b>Implementation Period:</b>		10/30/2025-09/30/2029	

## II. PROJECT DEVELOPMENT

### 1. PUBLIC INVOLVEMENT, AGENCIES, GROUPS OR INDIVIDUALS CONTACTED:

*Provide a brief chronology of the scoping and ongoing involvement for this project.*

A field review was conducted on September 16<sup>th</sup>-the 18th by DNRC Service Forester Kyle Carpenter

Other contacts:

Montana Fisheries Information System

Montana Natural Heritage Program

USDA Web Soil Survey

### 2. OTHER GOVERNMENTAL AGENCIES WITH JURISDICTION, LIST OF PERMITS NEEDED:

Silver Bow County CD and Montana DEQ. No permits are needed for proposed activities.

### 3. ALTERNATIVES CONSIDERED:

No Action Alternative: Not approve Alternative Practice. No equipment would be allowed inside the SMZ. SMZ retention standards would be recognized. Trees would be hand-felled and skidded by cable through the SMZ, left standing or removed in a non-commercial manner. In instances when trees are removed non-commercially, the DNRC has no jurisdiction over operations and excessive disturbance may occur.

Action Alternative: Alternative Practice to operate equipment inside the SMZ and deviate from retention standards would be granted, with additional mitigation measures outlined in **Attachment B**.

### III. IMPACTS ON THE PHYSICAL ENVIRONMENT

- *RESOURCES* potentially impacted are listed on the form, followed by common issues that would be considered.
- Explain *POTENTIAL IMPACTS AND MITIGATIONS* following each resource heading.
- Enter "NONE" If no impacts are identified or the resource is not present.

#### 4. GEOLOGY AND SOIL QUALITY, STABILITY AND MOISTURE:

*Consider the presence of fragile, compactable or unstable soils. Identify unusual geologic features. Specify any special reclamation considerations. Identify any cumulative impacts to soils.*

Soils are a gravelly to stony loam, deep and well drained. Parent material was formed in colluvium and alluvium derived from mixed rock sources. (See Attachment C for soil ratings and characteristics used to conduct analysis.)

No Action Alternative: Equipment would not be allowed to enter the SMZ, Trees would be hand-felled and skidded by cable through the SMZ, left standing or removed in a non-commercial manner. Trees skidded by cable out of the SMZ would likely not have the leading edge suspended above the ground. Depending on the number of trees cable-skidded out of the SMZ, the length of skidding, and season/ground conditions when SMZ cable-skidding occurs impacts to soils could range from none to high and prolonged.

In instances when trees are removed non-commercially, the DNRC has no jurisdiction over operations and excessive disturbance may occur.

Action Alternative: An Alternative Practice to operate equipment within the SMZ and drop below the minimum retention requirements would be granted.

The proposed activities within the SMZ are located on gentle tractor to steep cable slopes. A feller buncher and skidding equipment would be allowed to enter the SMZ, straight in and straight out, to within 20 feet of the ordinary high-water mark where slopes are <35%, and to within 50 feet of the ordinary high-water mark where slopes are between 35% and 45%, no equipment entry into the SMZ would be allowed on slopes >45%

Up to 100% of the conifers would be removed depending on species, size and prescription of harvest area. Activities would be conducted on dry or frozen, snow-covered ground conditions and would implement Best Management Practices (BMP's) and any recommended mitigations measures.

Due to conducting operations during dry or frozen, snow-covered ground conditions, implementation of BMP's and additional mitigation measures, impacts to soils are expected to be minor and temporary.

(See **Attachment B** for a complete description of proposed forest practices and mitigations to be implemented.)

## 5. WATER QUALITY, QUANTITY AND DISTRIBUTION:

*Identify important surface or groundwater resources. Consider the potential for violation of ambient water quality standards, drinking water maximum contaminant levels, or degradation of water quality. Identify cumulative effects to water resources.*

**Is it possible that implementing this Alternative Practice would impact the integrity of the SMZ and these specific functions?**

1. Ability to act as an effective sediment filter.
2. Ability to provide shade to regulate stream temperature.
3. Protection of stream channel and banks.
4. Ability to provide large, woody debris for eventual recruitment into the stream to maintain riffles pools and other elements of channel structure.
5. Promotes floodplain stability.

Proposed treatment of ~4,830 lineal feet of Class 1 Mud Spring on the east and west sides with an active channel width of ~2-4 feet; ~530 lineal feet of Class 2 Mud Spring Spur with an active channel width of ~2 feet; ~2,345 lineal feet of Class 1 West Fork Jimmie Creek primarily on the east side with an active channel width of ~2-5 feet; ~1,470 lineal feet of Class 1 Jimmie New Creek on the east and west sides with an active channel of ~2-5 feet; ~1,430 lineal feet of Class 2 South Jimmie draw with an active channel width of ~2-3 feet; ~800 lineal feet of Class 2 West Fork Jimmie Spur a tributary to West Fork Jimmie Creek on both sides of the stream with an active channel width of ~1-2 feet; ~2,500 lineal of Class 2 Deer Canyon stream on the east and west sides with an active channel width of ~1-2 feet; ~3,730 lineal feet of Class 2 LaDucet Creek stream on the west and primarily east sides with an active channel width of ~2 feet and ~2,050 lineal feet of unnamed Class 2 stream in Patton Gulch on the east and west side with an active channel width of ~2 feet, would be addressed under the alternative practice, including adjacent wetlands.

No Action Alternative: No functions of the SMZ would be impacted.

Action Alternative: Through proper use of forestry BMPs and additional mitigations:

- Ability to act as an effective sediment filter.

All activities would be conducted on dry or frozen, snow-covered ground conditions and equipment operation would be restricted to entering the SMZ "straight in and straight out". The felling and skidding process would deposit slash from limbs and tops. Residual vegetation within the SMZ, not meeting the harvest unit tree retention limits described in Attachment B, would be retained and protected to the greatest extent possible. Natural revegetation would aid in sediment filtration. Any disturbed areas would be grass seeded at completion of activities. Impacts from the proposed activities to the SMZ to act as an *effective* sediment filter are expected to be minor and temporary.

- Ability to provide shade to regulate stream temperature.

Most of proposed project area is comprised of wider valley bottoms vegetated with grasses, small deciduous trees, aspen, and spruce. All stream bank stabilizing trees would be protected. Residual vegetation within the SMZ, not meeting the harvest unit tree retention limits described in Attachment B, would be retained and protected to the greatest extent possible. Natural revegetation and grass seeding of any disturbed areas would aid in vegetation recovery. Stream shading would be reduced temporarily, and peak seasonal stream temperatures may see an increase during this period. Impacts from the proposed activities to provide shade to regulate stream temperature are expected to be minor and short term.

- Protection of stream channel and banks.

All activities would be conducted on dry or frozen, snow-covered ground conditions. Equipment operation would be restricted to entering the SMZ "straight in and straight out" and there would be no crossing of stream banks or channels. Bank edge trees would be retained. Residual vegetation within the SMZ not meeting the harvest unit tree retention limits described in Attachment B, would be retained and protected to the greatest extent possible. Impacts from the proposed activities to

stream channels and banks are expected to be minor and short term.

- Ability to provide large, woody debris for eventual recruitment into the stream to maintain riffles pools and other elements of channel structure.

All stream bank stabilizing trees would be protected. Tree boles laying across a stream would be left in place. Residual vegetation within the SMZ not meeting the harvest unit tree retention limits described in Attachment B, would be retained and protected to the greatest extent possible. Recruitable woody debris would be reduced but the forest would give way to a flush of regeneration and new vegetation after activities. Impacts from the proposed activities to provide large, woody debris for eventual recruitment into the streams are expected to be minor and long term.

- Promotes floodplain stability.

There is no indication of past flooding or a true floodplain. Impacts from the proposed activities to floodplain stability are not expected.

Due to conducting operations during dry or frozen, snow-covered ground conditions, and with the implementation of BMP's and additional mitigation measures, the proposed project should not adversely impact the integrity and specific functions of the SMZ's as identified in the SMZ law (77-5-301[1] MCA). No significant impacts or cumulative effects due to the proposed activities are expected to occur to water quality, water yield, watershed conditions, fisheries or any other beneficial uses associated with the watersheds adjacent to the proposed project areas or any downstream tributaries.

(See **Attachment B** for a complete description of proposed forest practices and mitigations to be implemented)

#### **6. AIR QUALITY:**

*What pollutants or particulate would be produced? Identify air quality regulations or zones (e.g. Class I air shed) the project would influence. Identify cumulative effects to air quality.*

The proposed project includes burning of logging slash. Localized short duration particulate emissions occur during slash burning. Slash burning is normally conducted in late October through November. The DEQ and the Cooperative Airshed groups regulate particulate emissions during this period. Burning times are coordinated to 1) limit burning periods of acceptable smoke dispersion and 2) to limit the cumulative generation of particulates.

Under both the no action and action alternatives a small amount of additional slash creation is anticipated. Any effects to air quality are anticipated to be minor and temporary.

#### **7. VEGETATION COVER, QUANTITY AND QUALITY:**

*What changes would the action cause to vegetative communities? Consider rare plants or cover types that would be affected. Identify cumulative effects to vegetation.*

No Action Alternative: Equipment would not be allowed to enter the SMZ, Trees would be hand-felled and skidded by cable through the SMZ, left standing or removed in a non-commercial manner. Trees skidded by cable out of the SMZ would likely not have the leading edge suspended above the ground. Depending on the number of trees cable-skidded out of the SMZ, the length of skidding, and season/ground conditions when SMZ cable-skidding occurs impacts to soils could range from none to high and prolonged. Effects to the current vegetative cover could be none if no actions are taken to address the conifers in the SMZ to high if the existing understory vegetation is removed/damaged by cable skidding. Disturbed soils would likely be partially colonized by various species of weeds such as knapweed, thistle, mullein, hounds tongue etc.

Action Alternative: The proposed project is part of a larger 13,678 acre timber sale to address the increase in conifer density in forests, conifer encroachment in riparian and upland areas, and wildfire hazard/fuel loading in

the WUI. Most stands are fully to heavily stocked with Douglas-fir which is exhibiting defoliation and thinning crowns -signs of spruce bud worm infestation and pockets of mortality -likely Douglas-fir beetle. Additionally broadleaf riparian vegetation and sagebrush habitat have been diminished due to conifer encroachment/competition.

*Comments:* In conducting analysis for the BHW project the BLM used Vegetation Condition Class data to determine how similar a particular landscapes fire regime and vegetation attributes are to their natural or historic state. The BLM has incorporated surveys for any rare or sensitive plant species in their BHW environmental assessment.

The felling and skidding process within the SMZ would deposit slash from limbs and tops for nutrient recycling and erosion. Skid trails, spur road and disturbed areas would be grass seeded at completion of activities.

Residual vegetation within the SMZ not meeting the harvest unit tree retention limits described in Attachment B, would be retained and protected to the greatest extent possible. Removal of other conifers would be expected to result in changes to the vegetation community from conifer dominated to sagebrush/deciduous broad lead trees. Impacts from the proposed activities to vegetation communities are expected to be moderate and long term.

One of the purposes of this application for an alternative practice is to remove conifer encroachment to allow revegetation to more historic conditions. Sage brush and deciduous broadleaf trees would be expected to increase upon the landscape following the removal of conifer competition. Due to conducting operations during dry or frozen, snow-covered ground conditions, implementation of BMP's and additional mitigation measures, no *adverse* impacts to vegetative communities are expected from the proposed action.

(See **Attachment B** for a complete description of proposed forest practices and mitigations to be implemented.)

#### **8. TERRESTRIAL, AVIAN AND AQUATIC LIFE AND HABITATS:**

*Consider substantial habitat values and use of the area by wildlife, birds or fish. Identify cumulative effects to fish and wildlife.*

**Would implementing this Alternative Practice impact the ability of the SMZ to support diverse and productive aquatic and terrestrial habitats?**

The project area provides habitat for a variety of wildlife species. Deer, elk and moose likely use the area as do multiple avian species. None of the streams in the project area have confirmed fish species. While in the immediate project area there would be a reduction in the number of snag recruits the overall area of the watersheds and the untreated portions of the streams and surrounding landscape would still provide equivalent habitat. Within the project area, recruitable woody debris and stream shading would be reduced and peak seasonal stream temperatures may see an increase. Residual vegetation within the SMZ not meeting the harvest unit tree retention limits described in Attachment B, would be retained and protected to the greatest extent possible. Revegetation from natural sources and grass seeding would aid in vegetation *recovery*. Operating restrictions and mitigation measures would minimize sedimentation impacts to aquatic habitat where present.

The overall purpose of the Alternative Practice is to allow and facilitate the restoration of the project area to a state that is more beneficial for wildlife that depend on the habitats within the project area. Due to the implementation of BMP's and additional mitigation measures, no adverse impacts are expected to wildlife, birds, fish and terrestrial habitats from the proposed action. Impacts to aquatic habitats are expected to be minor and temporary.

(See **Attachment B** for a complete description of proposed forest practices and mitigations to be implemented)

**9. UNIQUE, ENDANGERED, FRAGILE OR LIMITED ENVIRONMENTAL RESOURCES:**

*Consider any federally listed threatened or endangered species or habitat identified in the project area. Determine effects to wetlands. Consider Sensitive Species or Species of special concern. Identify cumulative effects to these species and their habitat.*

The landscape encompassing the project area is likely habitat for some threatened or endangered species/sensitive species/species of concern and occasional or transient use of the area may occur. The project area is small in comparison to the overall area of the surrounding landscape.

Due to the implementation of BMP's and additional mitigation measures, no adverse impacts to the fisheries, threatened or endangered species or other species of concern within these watersheds are expected from the proposed action.

*Comments:* In conducting analysis for the BHW project the BLM submitted a Biological Assessment (BA) to the U.S. Fish and Wildlife Service (FWS) for informal consultation. The FWS concurred with the finding of the BA, agreeing with the determinations of "no Jeopardy" or "not likely to adversely affect" for all species and habitats evaluated.

(See **Attachment B** for a complete description of proposed forest practices and mitigations to be implemented.)

**10. HISTORICAL AND ARCHAEOLOGICAL SITES:**

*Identify and determine effects to historical, archaeological or paleontological resources.*

None are known to occur within the proposed project areas.

*Comments:* In conducting analysis for the BHW project the BLM consulted the Montana State Historic Preservation Office (SHPO) and Tribes with ties to the area. BLM received concurrence on project effect and site eligibility from SHPO and received no comments from any Tribes.

**11. AESTHETICS:**

*Determine if the project is located on a prominent topographic feature, or may be visible from populated or scenic areas. What level of noise, light or visual change would be produced? Identify cumulative effects to aesthetics.*

The project area is open to the public and marginally visible from open roads. Regeneration would be expected in the harvest areas and the residual trees and other vegetation would continue to grow, reducing the openness of the stands over time. Although cumulative in regard to the scope of the proposed timber sale, due to the topography, location and activities proposed, impacts from the proposed alternative practice concerning aesthetics are expected to be minor and temporary.

**12. DEMANDS ON ENVIRONMENTAL RESOURCES OF LAND, WATER, AIR OR ENERGY:**

*Determine the amount of limited resources the project would require. Identify other activities nearby that the project would affect. Identify cumulative effects to environmental resources.*

None.

**13. OTHER ENVIRONMENTAL DOCUMENTS PERTINENT TO THE AREA:**

*List other studies, plans or projects on this tract. Determine cumulative impacts likely to occur as a result of current private, state or federal actions in the analysis area, and from future proposed state actions in the analysis area that are under MEPA review (scoped) or permitting review by any state agency.*

#### IV. IMPACTS ON THE HUMAN POPULATION

- *RESOURCES* potentially impacted are listed on the form, followed by common issues that would be considered.
- Explain *POTENTIAL IMPACTS AND MIT/GAT/ONS* following each resource heading.
- Enter "NONE" if no impacts are identified or the resource is not present.

##### 14. HUMAN HEALTH AND SAFETY:

*Identify any health and safety risks posed by the project.*

None.

##### 15. INDUSTRIAL, COMMERCIAL AND AGRICULTURE ACTIVITIES AND PRODUCTION:

*Identify how the project would add to or alter these activities.*

None.

##### 16. QUANTITY AND DISTRIBUTION OF EMPLOYMENT:

*Estimate the number of jobs the project would create, move or eliminate. Identify cumulative effects to the employment market.*

People are currently employed in the construction and wood products industry. Due to the relatively short duration and size of the project, there would be no measurable direct, indirect, or cumulative impact from this proposed action on employment.

##### 17. LOCAL AND STATE TAX BASE REVENUES:

*Estimate tax revenue the project would create or eliminate. Identify cumulative effects to taxes and revenue.*

People are currently paying taxes from the construction and wood products industry in the region. Due to the relatively short duration and size of the project, there would be no measurable direct, indirect, or cumulative impact from this proposed action on tax revenues.

##### 18. DEMAND FOR GOVERNMENT SERVICES:

*Estimate increases in traffic and changes to traffic patterns. What changes would be needed to fire protection, police, schools, etc.? Identify cumulative effects of this and other projects on government services.*

There would be no measurable direct, indirect, or cumulative impacts related to demand for government services due to the short duration and size of the project, the short-term impacts to traffic and the very small possibility of a few people temporarily relocating to the area.

##### 19. LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS:

*List State, County, City, USFS, BLM, Tribal, and other zoning or management plans, and identify how they would affect this project.*

None.



**20. ACCESS TO AND QUALITY OF RECREATIONAL AND WILDERNESS ACTIVITIES:**

*Identify any wilderness or recreational areas nearby or access routes through this tract. Determine the effects of the project on recreational potential within the tract. Identify cumulative effects to recreational and wilderness*

None.

**21. DENSITY AND DISTRIBUTION OF POPULATION AND HOUSING:**

*Estimate population changes and additional housing the project would require. Identify cumulative effects to population and housing.*

There would be no measurable direct, indirect, or cumulative impacts related to population and housing due to the project, and the fact that people are already employed in the affected occupations in the region.

**22. SOCIAL STRUCTURES AND MORES:**

*Identify potential disruption of native or traditional lifestyles or communities.*

None.

**23. CULTURAL UNIQUENESS AND DIVERSITY:**

*How would the action affect any unique quality of the area?*

None.

**24. OTHER APPROPRIATE SOCIAL AND ECONOMIC CIRCUMSTANCES:**

*Estimate the return to the trust. Include appropriate economic analysis. Identify potential future uses for the analysis area other than existing management. Identify cumulative economic and social effects likely to occur as a result of the proposed action.*

None.

**EA Checklist  
Prepared By:**

**Name:** Kyle Carpenter

**Date:** October 20, 2025

**Title:** Clearwater Unit Service Forester

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### Finding

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**Alternative Selected**  
Action Alternative

**Significance of Potential Impacts**  
No significant impacts to the integrity and function of the SMZ will occur with the implementation of the proposed site practices and mitigations (Attachment B.)

**Need for Further Environmental Analysis**

☐

EIS

☐

More Detailed EA

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No Further Analysis

### Environmental Assessment Checklist Approved By:

**Name:** Craig Hansen

**Title:** Anaconda Unit Manager

**Date:** December 11, 2025

**Signature:** /s/ *Craig Hansen*

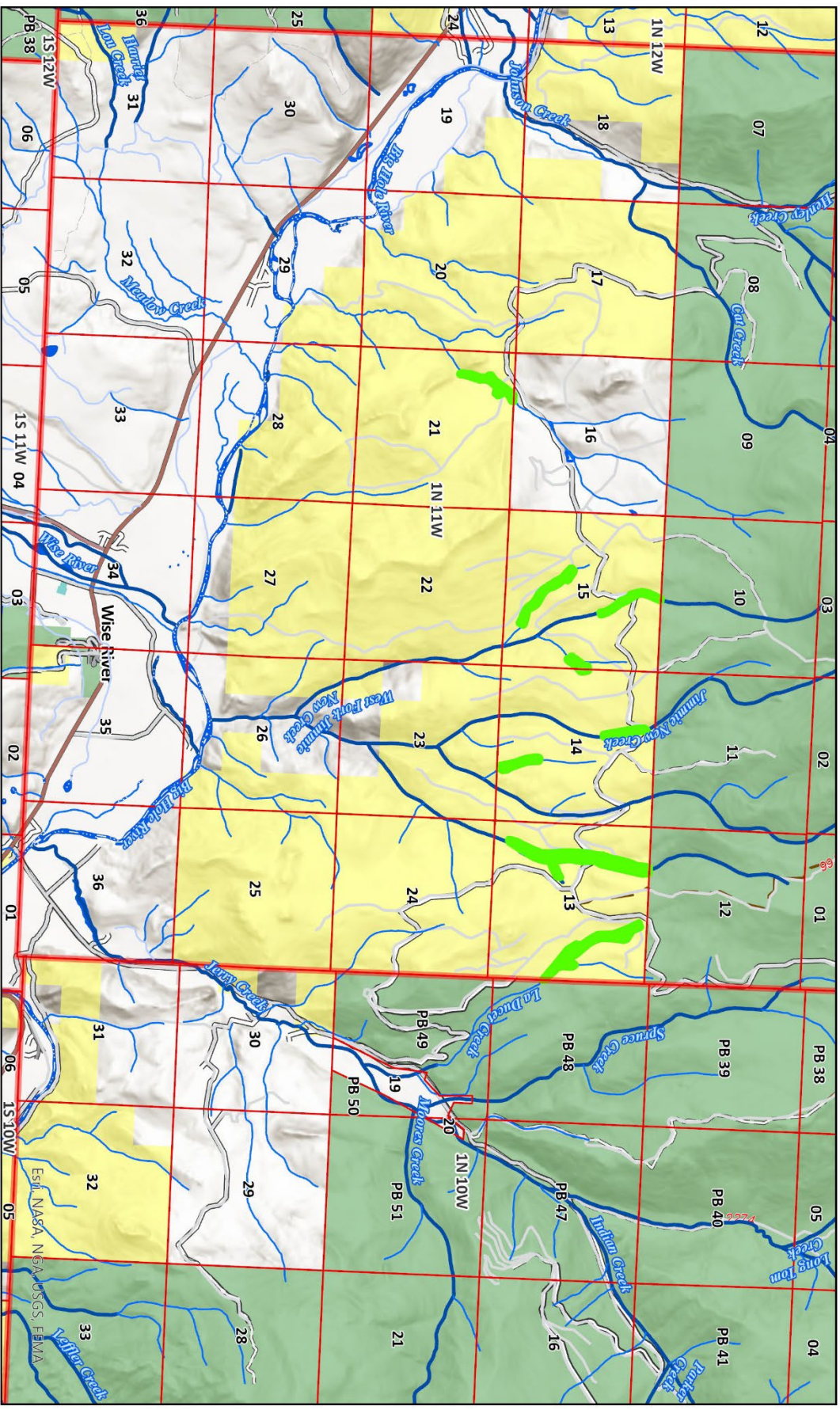
### ATTACHMENTS

Attachment A - Site Map

Attachment B - Proposed Site Practices and Mitigations

Attachment C- Soils

## **ATTACHMENT A- Maps**

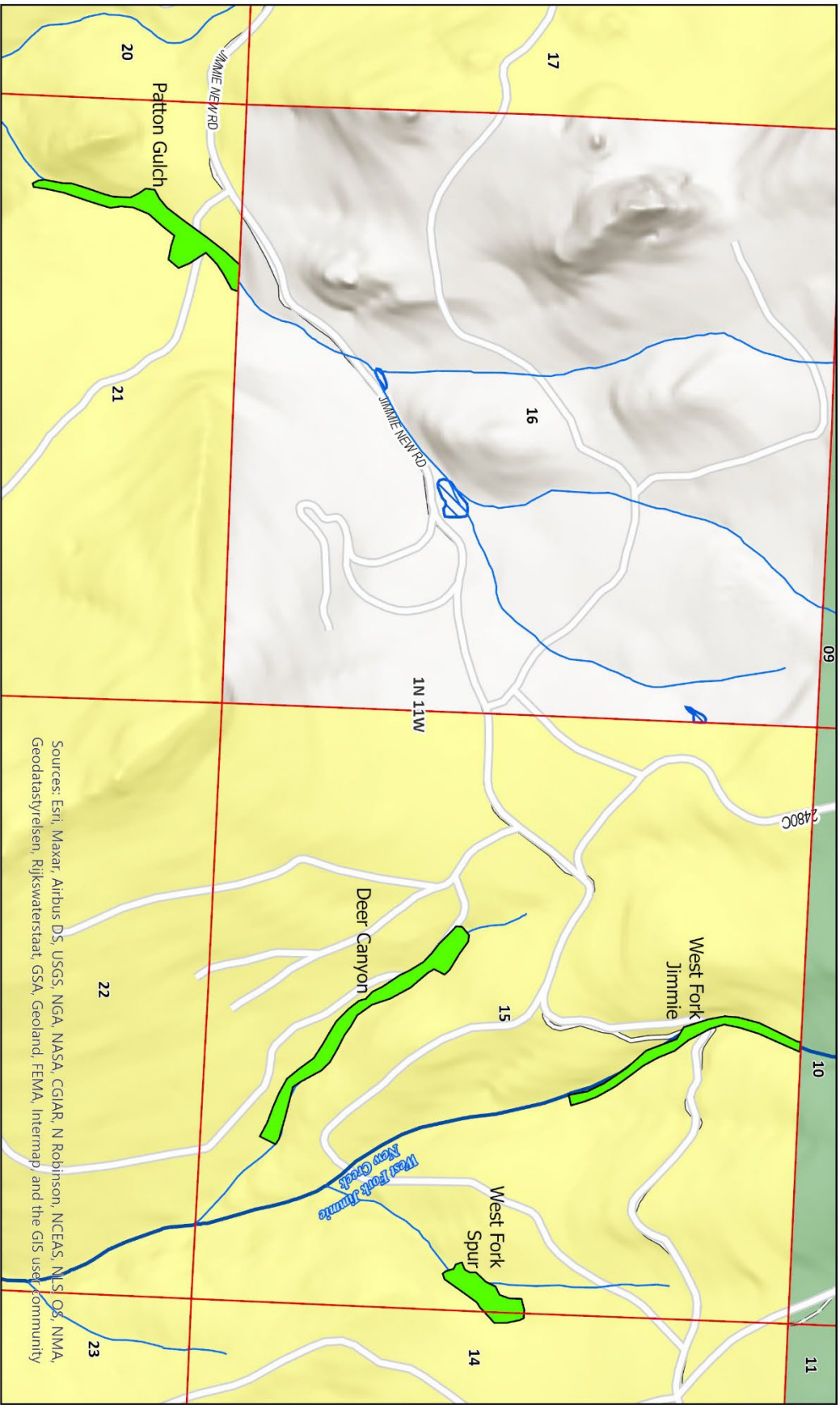


# **BIG HOLE WEST ALTERNATIVE PRACTICE**

Big Hole West AP Vicinity Map







## Legend

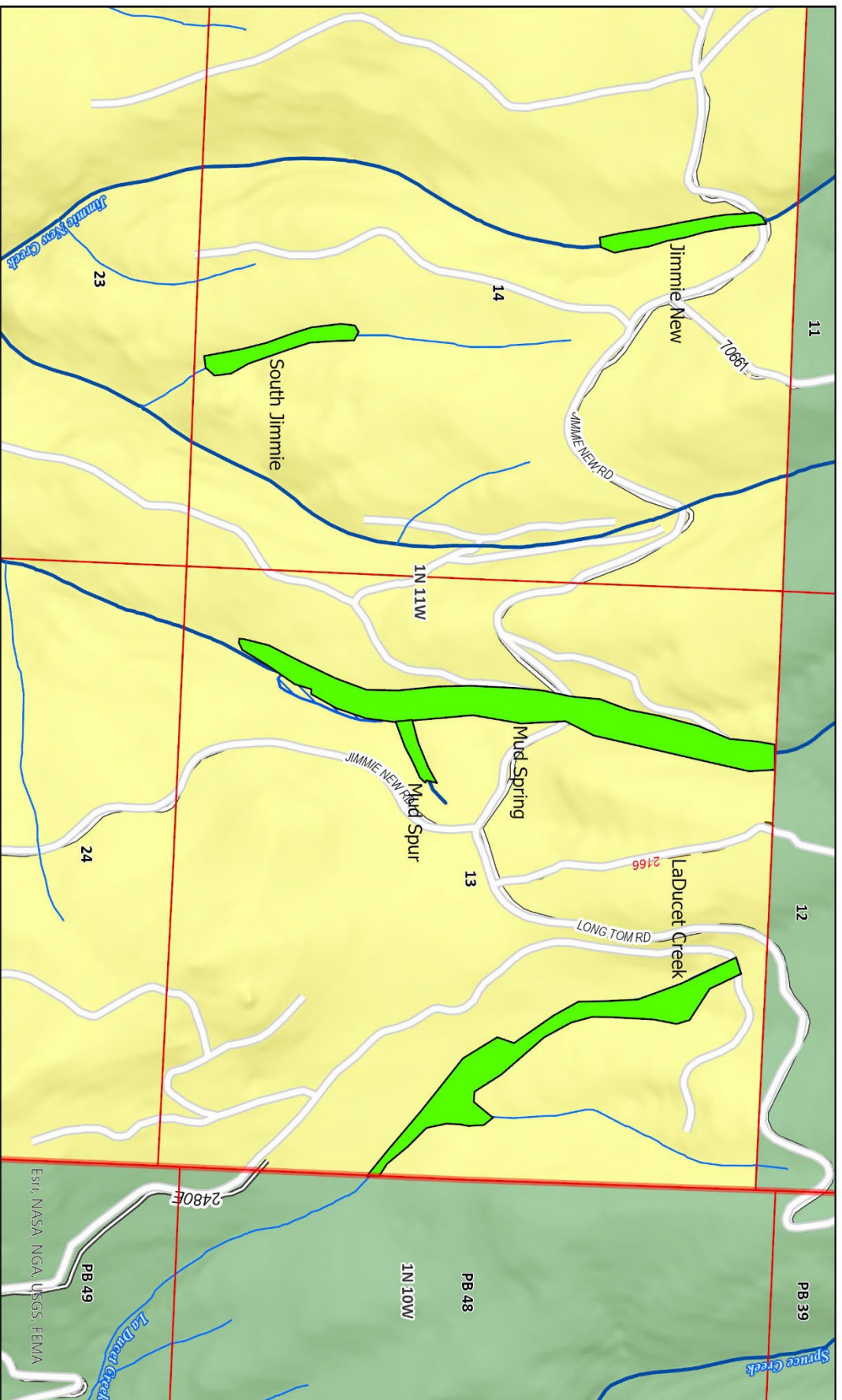
- SMZ TREATMENT AREA
- Class 1
- Class 2

## BIG HOLE WEST ALTERNATIVE PRACTICE

*A-2 Alternative Practice West*



Sources: Esri, Maxar, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NIS OS, NMA, Geodasttyreisen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, and the GIS user community



## Legend

- SMZ TREATMENT AREA
- Class 1
- Class 2

## BIG HOLE WEST ALTERNATIVE PRACTICE

A-2 Alternative Practice East



## Attachment B

### Proposed Site Practices and Mitigations

#### General SMZ mitigations.

- **SMZ's would be visibly identified.** Residual vegetation within the SMZ not meeting the harvest unit tree retention limits described below would be retained and protected to the greatest extent possible.
- Deposition of slash into the stream channel and bank area would be avoided. All woody debris from the activities under this alternative practice that are deposited into the stream would be removed and placed by hand an appropriate distance away from the stream so as not to reenter the stream by the end of the day's activities.
- Residual slash, outside of the main-stream channel and bank area would be retained, where practical, for additional sediment filter.
- Disturbed areas within the SMZ would be grass seeded at completion of activities.
- Compliance with Alternative Practice and 310 Permit, applicable Forestry Best Management Practices (BMP's) and Streamside Management Zone (SMZ) laws.
- If unauthorized disturbance occurs to stream channels, banks or ground within a SMZ, all activities would cease until the DNRC Forest Practices representative can assess the situation.

#### Tree retention requirements for all Units/SMZs.

- Retain all spruce and subalpine fir.
- Retain all bank edge trees.
- Retain all non-lodgepole snags.
- Retain, undisturbed, all down trees across a stream.
- Retain and protect all lodgepole pine less than 4" Diameter at Breast Height (DBH).
- Retain and protect all other species of submerchantable trees (less than 8" DBH) and shrubs, to the fullest extent possible.

Additional tree retention requirements for **Class 1** streams (Mud spring, West Fork Jimmie Creek, and Jimmie New Creek).

- Retain a minimum of 10 trees per 100 foot SMZ segment.
- Species composition of retained trees does not need to represent pretreatment stand.

Additional tree retention requirements for **Class 2** streams (South Jimmie, West Fork Jimmie Spur, Deer Canyon, LaDucet, and Patton Gulch, Mud Spring Spur).

- Retain a minimum of 5 trees per 100 foot SMZ segment.
- Species composition of retained trees does not need to represent pretreatment stand.

## SMZ equipment operations for all Units/SMZs.

- Operations/activities would be conducted during dry (less than 20% soil moisture) or frozen/snow-covered ground conditions to minimize soil compaction, rutting and vegetative disturbance.
- No turning of equipment in the SMZ.
- The Lead end of logs will be suspended above the ground during skidding.
- Fall and place trees in a manner that minimizes the number of entries required by skidding equipment.
- A feller buncher and skidding equipment would be allowed to enter a 50-foot SMZ, straight in and straight out perpendicular to the stream channel, to within 20 feet of the ordinary high-water mark where slopes are less than or equal to 35%.
- A feller buncher and skidding equipment would be allowed to enter a 100-foot SMZ buffer straight in and straight out perpendicular to the stream channel, to within 50 feet of the ordinary high-water mark on slopes between 35% and 45%
  1. If **ANY** soil disturbance occurs in the 100-foot SMZ, operations in these areas are to cease immediately and the DNRC Forest Practices representative will be alerted.
  2. The DNRC Forest Practices representative will visit the site and determine if equipment operation within the 100-foot SMZ may resume and may require additional mitigations.
  3. Operations within the 100-foot SMZ may not resume without written approval from the DNRC Forest Practices representative.

(Soil disturbance shall be defined as disturbance caused by machine tracks. In this instance soil disturbance does not include that caused by felled trees or logs moving across the ground.)
- No Equipment operation would be allowed in the SMZ on slopes above 45%.

If all mitigation measures are followed this project should have no long-term significant impacts or cumulative effects to the stream drainages.



## Attachment C

### Soil Ratings and Characteristics

Soil Type	Suitability for Harvest Equipment	Offroad Erosion Hazard	Rutting Hazard
557D	MODERATE	SLIGHT	SEVERE
595D	WELLSUITED	SLIGHT	MODERATE
616D	MODERATE	SLIGHT	SEVERE
706E	MODERATE	SLIGHT	MODERATE
712F	MODERATE	SLIGHT	MODERATE
717F	WELLSUITED	SLIGHT	SLIGHT
721E	MODERATE	SLIGHT	SLIGHT
738E	MODERATE	SLIGHT	MODERATE
814E	MODERATE	SLIGHT	MODERATE
905E	MODERATE	SLIGHT	MODERATE
911E	MODERATE	SLIGHT	SLIGHT

Rating criteria from NRCS Web Soil Survey

**Suitability for Harvest Equipment:** Ratings for this interpretation indicate the suitability for use of forestland harvesting equipment. The ratings are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification of the soil, depth to a water table, and ponding. Standard rubber-tire skidders and bulldozers are assumed to be used for ground-based harvesting and transport.

**Offroad Erosion Hazard:** The ratings in this interpretation indicate the hazard of soil loss from off-road and off-trail areas after disturbance activities that expose the soil surface. The ratings are based on slope, soil erosion factor K, and an index of rainfall erosivity (R). The soil loss is caused by sheet or rill erosion in off-road or off-trail areas where 50 to 75 percent of the surface *has been exposed* by logging, grazing, mining, or other kinds of disturbance. (emphasis added).

**Rutting Hazard:** The ratings in this interpretation indicate the hazard of surface rut formation through the operation of forestland equipment. Soil displacement and puddling (soil deformation and compaction) may occur simultaneously with rutting.

**Patton Gulch**

A query of physical soil properties using the NRCS Web Soil Survey showed that the harvest area is primarily in the 595D, 905E and 911E soil types.

**Deer Canyon**

A query of physical soil properties using the NRCS Web Soil Survey showed that the harvest area is primarily in the 706E, 905E and 911E soil types.

**West Fork Jimmie**

A query of physical soil properties using the NRCS Web Soil Survey showed that the harvest area is primarily in the 712F soil type.

**West Fork Jimmie Spur**

A query of physical soil properties using the NRCS Web Soil Survey showed that the harvest area is primarily in the 738E, 706E and 712F soil types.

**Jimmie New**

A query of physical soil properties using the NRCS Web Soil Survey showed that the harvest area is primarily in the 738E soil type.

**South Jimmie**

A query of physical soil properties using the NRCS Web Soil Survey showed that the harvest area is primarily in the 717E soil type.

**Mud Spring and Mud Spur**

A query of physical soil properties using the NRCS Web Soil Survey showed that the harvest area is primarily in the 738E and 814E soil types.

**LaDucet Creek**

A query of physical soil properties using the NRCS Web Soil Survey showed that the harvest area is primarily in the 616D, 717E, 557D, and 721E soil types.