

## CHECKLIST ENVIRONMENTAL ASSESSMENT

<b>Project Name:</b>	Kanduch – Western Sunshine Lodgepole Pine Salvage
<b>Proposed Implementation Date:</b>	Upon Signature
<b>Proponent:</b>	Joe Kanduch
<b>Location:</b>	T5N, R15W, S33
<b>County:</b>	Granite

### I. TYPE AND PURPOSE OF ACTION

Joe Kanduch is requesting an Alternative Practice to allow the salvage of mountain pine beetle infested lodgepole pine along an unnamed Class 1 stream (see attached map). In addition, a short (20 yards) skid trail would be used to access felled trees inside the SMZ. This area has been significantly affected by mountain pine beetle in the lodgepole pine stands and this Alternative Practice would facilitate safe removal of dead and dying trees that would become a safety hazard near homes, cabins, roads, recreational areas or other improvements.

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 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. The proximity of the beetle infested trees to homes, cabins, roads and recreation areas has created safety issues that will require treatments outside of the allowances of the SMZ law. Treatments would include operation of a feller-buncher inside the 50 foot SMZ, but no closer than 15 feet to the ordinary high water mark. Operations would only be allowed when ground conditions are frozen to a depth of four inches, covered with eight inches of snow, or dry to less than 20% moisture content. A skidder would be allowed to travel along an approved skid trail (see map). These treatments would allow removal of lodgepole pine to below minimum retention standards as identified under Rules 4 and 5 in the *Montana Guide to the Streamside Zone Law and Rules 2006* (ARM 36.11.310-313). Additional stipulations of this request would include:

- Operation of the skidder would be allowed inside the SMZ, but only along a predetermined skid trail to minimize disturbance inside the 50 foot boundary. All equipment would recognize a 15 foot equipment exclusion zone.
- In areas where skid trail is inside the 50 foot SMZ buffer, a slash filter windrow would be installed below the trail.
- Operation would only occur during periods when soil disturbance can be minimized under conditions of frozen ground to a depth of four inches, snow to a depth of eight inches, or periods when ground moisture is less than 20%.
- If operations take place during periods of dry ground conditions, mitigation measures would include grass seeding and slash filter windrows placed on disturbed areas to prevent run-off and sediment from reaching water.
- Some trees along the skid trail would be high stumped to protect the residual stand during skidding operations.

- Small, un-infested lodgepole pine, in addition to other species of trees such as Douglas-fir, Engelmann spruce, quaking aspen and all brush species, would be retained and protected to the greatest extent possible.

## II. PROJECT DEVELOPMENT

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

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

MT DNRC Service Forester and Joe Kanduch

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

N/A

### 3. ALTERNATIVES CONSIDERED:

Alternative A –No Action.

This alternative would not operate machinery inside the fifty foot buffer. Beetle-killed trees would be hand-felled to minimum retention standards, left standing or removed in a non-commercial manner, such as by an arborist. In instances when the trees are removed non-commercially, the DNRC has no jurisdiction over operations and excessive disturbance or increased risks to safety may occur.

Alternative B – Action.

Please see *Type and Purpose of Action* for a full description of this alternative.

## 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.*

Alternative A - No Action

No equipment operation would be allowed inside the 50 foot SMZ. Minimum retention standards would be recognized. Trees would be hand-felled and skidded by cable through the SMZ. Felling and skidding may occur on various types of soils and on various degrees of slopes.

Alternative B – Action

Equipment operation would be limited to soils that are described as "moderately or well suited" for timber harvest in the Web Soil Survey. Mitigation measures would include operating season restrictions that require frozen ground to a depth of four inches, snow depth of eight inches or ground moisture of 20% or less. In addition, grass-seeding and installation of erosion control measures such as a slash-filter windrow on any disturbed area would be required upon completion of activity. Minimal direct, indirect or cumulative impacts to soil stability and compaction are anticipated due to the soil rating restrictions, operation restrictions and mitigation measures.

### 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.*

Alternative A - No Action

No equipment operation would be allowed inside the 50 foot SMZ. Minimum retention standards would be recognized. Trees would be hand-felled and skidded by cable through the SMZ or left standing. Hand-felling operations may introduce low levels of sediment delivery to adjacent waterbodies. Sedimentation delivery from existing roads, other land treatments and developments would continue. Minimal direct, indirect, and cumulative impacts to water quality and quantity would be expected.

#### Alternative B – Action

Increases in sedimentation would be expected to be minimal and temporary due to application of mitigation measures. Mitigation measures include imposing seasonal operating restrictions that require frozen ground to a depth of four inches, snow depth of eight inches or ground moisture of 20% or less; and requiring grass seeding and installation of erosion control measures such as a slash-filter windrow on any disturbed area upon completion of operations. DNRC may monitor AP sites to verify effectiveness. Minimal direct, indirect, and cumulative impacts to water quality and quantity are expected due to operation restrictions and mitigation measures.

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#### 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.*

N/A

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#### 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.*

#### Alternative A - No Action

If no action is taken the dead trees will fall over, potentially causing damage to improvements and people. Trees may be hand-felled to minimum retention standards, but it would be expected that as retention trees fell the landowner would remove them anyway.

#### Alternative B – Action

Vegetative communities would be affected to the extent that lodgepole pine would be reduced to below minimum retention standards as outlined in Rule 5 of the *Montana Guide to the Streamside Management Zone Law and Rules* handbook. Other species of trees such as Douglas-fir, Engelmann spruce and quaking aspen would be retained where present and understory vegetation would be protected to the greatest extent possible. Removal of the dead trees would expedite natural regeneration and cumulative effects to vegetative communities would decrease as trees regenerate and replace those that are harvested.

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#### 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.*

#### Alternative A – No Action

Minimum retention standards would be adhered to as well as equipment restrictions. Due to the areas being heavily used for recreation and their proximity to roads and cabins, the suitability of the proposed sites would continue to be marginal at best for terrestrial and avian habitat. Dead lodgepole pine would eventually fall over and/or be removed in a non-commercial manner.

#### Alternative B – Action

In areas of pure lodgepole pine stands, stream shading would be reduced and peak seasonal stream temperatures may see an increase in July and August. This stream segment does not contain fish. All other

species of trees and brush would be retained and protected to the greatest extent possible. Cumulative impacts would be expected to be short term.

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**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.*

**Alternative A – No Action**

A query of the Montana Natural Heritage Program identifies the area as being possible habitat for gray wolf, Canada lynx, wolverine and fisher. Due to the proximity of heavy recreational activities and access to cabin sites, this area is not ideal habitat for grey wolf, Canada lynx, wolverine or fisher. Minimum retention standards would be adhered to as well as equipment restrictions. Dead lodgepole pine would eventually fall over and/or be removed in a non-commercial manner.

**Alternative B - Action**

Due to the proximity of heavy recreational activities and access to cabin sites, this area would continue to not be ideal habitat for gray wolf, Canada lynx, wolverine or fisher. If a sighting of any of the listed species of concern (or evidence such as nests, dens etc...) occurs, operations would be halted, or not allowed, until further assessment can take place.

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**10. HISTORICAL AND ARCHAEOLOGICAL SITES:**

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

Although no cultural or paleontological resources are known to exist in the project APE, a systematic inventory of such resources has not occurred. Because the project is not located on state land, the DNRC has no jurisdiction to require private landholders to conduct professional level inventories to identify, or develop treatment plans for, privately owned National Register eligible properties.

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**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.*

**Alternative A – No Action**

Minimum retention standards would be adhered to as well as equipment restrictions. Dead lodgepole pine would eventually fall over and/or be removed in a non-commercial manner. Aesthetics would be degraded as green trees transitioned to red and eventually fell over.

**Alternative B - Action**

Potential impacts may be perceived as adverse by recreationists, landowners and travelers. The removal of beetle killed lodgepole pine would look unsightly in the short term, but would encourage regeneration. This regeneration would eventually soften and replace aesthetic quality damaged by mountain pine beetle infestation.

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**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.*

N/A

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**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.*

There have been other SMZ AP's issued in this area. All of them have required similar operating restrictions and mitigation measures and have proved beneficial with minimal impacts.

#### 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 MITIGATIONS* 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.*

Cabins and recreational sites would become unsafe as beetle killed trees begin to fall over and improvements such as culverts and bridges would be put in jeopardy as falling trees impede water movement. The removal of beetle killed trees would improve safety to the landowner and those that use the area for recreation.

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

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

N/A

#### 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.*

Harvest of trees may generate 10 mbf and would employ one logging crew over the entire area. In addition this project would provide raw material for local mill operations.

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

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

Negligible amounts.

#### 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*

N/A

#### 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.*

This project, under this Alternative Practice, would allow timber salvage in an area considered at high risk for wildfire under Granite County's Community Wildfire Protection Plan.

#### 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 activities.*

N/A

#### 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.*

N/A

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**22. SOCIAL STRUCTURES AND MORES:**

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

N/A

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**23. CULTURAL UNIQUENESS AND DIVERSITY:**

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

N/A

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**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.*

N/A

<b>EA Checklist Prepared By:</b>	<b>Name:</b> Sean Steinebach	<b>Date:</b> 6/3/13
	<b>Title:</b> Service Forester	

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<b>V. FINDING</b>
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**25. ALTERNATIVE SELECTED:**

Alternative B - Action

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**26. SIGNIFICANCE OF POTENTIAL IMPACTS:**

No significant impacts to the integrity and function of the SMZ will occur with the implementation of operating restrictions and mitigation measures.

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**27. NEED FOR FURTHER ENVIRONMENTAL ANALYSIS:**

EIS

More Detailed EA

No Further Analysis

<b>EA Checklist Approved By:</b>	<b>Name:</b> Fred Staedler
	<b>Title:</b> Anaconda Unit Manager
<b>Signature:</b>	<b>Date:</b>

**June 18, 2013**

Kanduch Logging Inc.  
48 Woodland Lane  
Philipsburg, MT 59858

Ref: Western Sunshine Lodgepole Pine Salvage SMZ AP

Dear Mr. Kanduch,

This letter is in reference to a request made by Joe Kanduch to the Department of Natural Resources and Conservation for an Alternative Practice. This AP is located on private land near the McDonald Creek in T5N, R15W, S33 (see attached map) in Granite County. After a visit to the proposed Alternative Practice site this request has been approved. Approval is subject to the following conditions:

- 1) Operation of the skidder would be allowed inside the SMZ, but only along a predetermined skid trail to minimize disturbance inside the 50 foot boundary. All equipment would recognize a 15 foot equipment exclusion zone.
- 2) Segments of the constructed skid trail that lay within the 50 foot SMZ buffer will have a slash filter windrow placed below.
- 3) Operation would only occur during periods when soil disturbance can be minimized under conditions of frozen ground to a depth of four inches, snow to a depth of eight inches, or periods when ground moisture is less than 20%.
- 4) If operations take place during periods of dry ground conditions, mitigation measures would include grass seeding and slash filter windrows placed on disturbed areas to prevent run-off and sediment from reaching water.
- 5) Some trees along the skid trail would be high stumped to protect the residual stand during skidding operations.
- 6) Small, un-infested lodgepole pine, in addition to other species of trees such as Douglas-fir, Engelmann spruce, quaking aspen and all brush species, would be retained and protected to the greatest extent possible.
- 7) All SMZ's will be marked prior to harvest.

Approved Alternative Practices, including any additional conditions required by DNRC, shall have the same force and authority as the standards contained in 77-5-303, MCA, and shall be enforceable by DNRC under 77-5-305, MCA, to the same extent as such standards.

It is your responsibility to ensure that your operators understand that an Alternative Practice has been issued for their operations in this area, and that these conditions must be fully met to achieve compliance with the SMZ Law.

Thank you for your cooperation in this matter. Please call me if you have any questions.

Sincerely,

Sean Steinebach  
Service Forester

cc: HRA file, Landowner, Applicant,  
Unit Office, Land Office,  
Service Forestry Bureau

June 18, 2013

## **Western Sunshine Timber Salvage AP**

### **ALTERNATIVE PRACTICE RESPONSIBILITY AFFIDAVIT**

In consideration of DNRC's approval of the alternative practice(s) in T5N, R15W, S33, I hereby certify that I, or by written contract the legal entity I represent, am responsible for the compliance with the Montana Streamside Management Zone Law. I understand that failure to implement any of the mitigation measures required by the DNRC will be considered a violation of the SMZ Law (77-5-301 et. Seq.), and may result in penalties assessed against me or the legal entity I represent.

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**Signature of Responsible Party**

**Date**

**From:** [no-reply-dnrc@mt.gov](mailto:no-reply-dnrc@mt.gov)  
**To:** [DNR Webwork](#)  
**Subject:** MEPA Submittal Form  
**Date:** Monday, June 17, 2013 8:43:45 AM  
**Attachments:** [Kanduch\\_WesternSunshineAP.zip](#)

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**Project Title:** Western Sunshine  
**Project Date:** 06/13/2013  
**MEPA Type:** EC  
**Website Category:** FP  
**Summary:** Joe Kanduch is requesting an Alternative Practice to allow the salvage of mountain pine beetle infested lodgepole pine along an unnamed Class 1 stream.  
**Proponent Applicant:** Kanduch Logging Inc.  
**Section Town Range:** T5N, R15W, S33  
**Water Source:**  
**County:** Granite  
**Division:** FOR  
**Bureau:** Forestry Assistance  
**Area Region:** SWLO  
**Unit Field:** Anaconda  
**Comments:**  
**Prepared By:** Sean Steinebach  
**Approved By:** Fred Staedler  
**Post By Date:** 6/17/13  
**Approval Date:** 6/14/13  
**Post Time:**

## Forestland Planting and Harvesting

This table can help forestland owners or managers plan the use of soils for wood crops. Interpretive ratings are given for the soils according to the limitations that affect planting and harvesting on forestland. The ratings are both verbal and numerical.

Rating class terms indicate the degree to which the soils are suited to a specified aspect of forestland management. *Well suited* indicates that the soil has features that are favorable for the specified management aspect and has no limitations. Good performance can be expected, and little or no maintenance is needed. *Moderately suited* indicates that the soil has features that are moderately favorable for the specified management aspect. One or more soil properties are less than desirable, and fair performance can be expected. Some maintenance is needed. *Poorly suited* indicates that the soil has one or more properties that are unfavorable for the specified management aspect. Overcoming the unfavorable properties requires special design, extra maintenance, and costly alteration. *Unsuited* indicates that the expected performance of the soil is unacceptable for the specified management aspect or that extreme measures are needed to overcome the undesirable soil properties.

Numerical ratings in the table indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified aspect of forestland management (1.00) and the point at which the soil feature is not a limitation (0.00).

The paragraphs that follow indicate the soil properties considered in rating the soils. More detailed information about the criteria used in the ratings is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

Ratings in the columns *suitability for hand planting* and *suitability for mechanical planting* are based on slope, depth to a restrictive layer, content of sand, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, moderately suited, poorly suited, or unsuited to these methods of planting. It is assumed that necessary site preparation is completed before seedlings are planted.

Ratings in the column *suitability for use of harvesting equipment* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, and ponding. The soils are described as well suited, moderately suited, or poorly suited to this use.

Reference:

United States Department of Agriculture, Natural Resources Conservation Service, [National forestry manual](#).

## Report—Forestland Planting and Harvesting

[Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the potential limitation. The table shows only the top five limitations for any given soil. The soil may have additional limitations]

Forestland Planting and Harvesting— Granite County Area, Montana							
Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
142E—Shanley-Brazil-Water complex, 8 to 25 percent slopes							
Shanley	55	Moderately suited		Poorly suited		Well suited	
		Stickiness; high plasticity index	0.50	Slope	0.75		
				Rock fragments	0.50		
				Stickiness; high plasticity index	0.50		
Brazil	20	Well suited		Poorly suited		Well suited	
				Slope	0.75		
				Rock fragments	0.50		
Water	10	Not rated		Not rated		Not rated	
145D—Redchief-Mollet complex, 8 to 15 percent slopes							
Redchief	50	Moderately suited		Moderately suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50	Low strength	0.50
				Slope	0.50		
				Rock fragments	0.50		
Mollet	35	Moderately suited		Moderately suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	0.50	Low strength	0.50
				Stickiness; high plasticity index	0.50		
145E—Redchief-Mollet complex, 15 to 35 percent slopes							
Redchief	50	Moderately suited		Poorly suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	0.75	Low strength	0.50
				Stickiness; high plasticity index	0.50	Slope	0.50
				Rock fragments	0.50		
Mollet	35	Moderately suited		Poorly suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	0.75	Low strength	0.50
				Stickiness; high plasticity index	0.50	Slope	0.50

Forestland Planting and Harvesting— Granite County Area, Montana							
Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
145F—Redchief-Mollet complex, 35 to 60 percent slopes							
Redchief	50	Moderately suited		Unsuited		Poorly suited	
		Stickiness; high plasticity index	0.50	Slope	1.00	Slope	1.00
		Slope	0.50	Stickiness; high plasticity index	0.50	Low strength	0.50
				Rock fragments	0.50		
Mollet	35	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50	Low strength	0.50
387E—Danaher-Loberg complex, 15 to 35 percent slopes							
Danaher	55	Moderately suited		Poorly suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	0.75	Low strength	0.50
				Stickiness; high plasticity index	0.50	Slope	0.50
Loberg	30	Moderately suited		Poorly suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	0.75	Slope	0.50
				Rock fragments	0.50		
				Stickiness; high plasticity index	0.50		
387F—Danaher-Loberg complex, 35 to 60 percent slopes							
Danaher	55	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Stickiness; high plasticity index	0.50	Stickiness; high plasticity index	0.50	Low strength	0.50
Loberg	30	Moderately suited		Unsuited		Poorly suited	
		Slope	0.50	Slope	1.00	Slope	1.00
		Stickiness; high plasticity index	0.50	Rock fragments	0.50	Low strength	0.50
				Stickiness; high plasticity index	0.50		

Forestland Planting and Harvesting— Granite County Area, Montana							
Map symbol and soil name	Pct. of map unit	Suitability for hand planting		Suitability for mechanical planting		Suitability for use of harvesting equipment	
		Rating class and limiting features	Value	Rating class and limiting features	Value	Rating class and limiting features	Value
542D—Braziel-Shanley gravelly loams, 8 to 15 percent slopes							
Braziel	50	Well suited		Moderately suited		Well suited	
				Slope	0.50		
				Rock fragments	0.50		
Shanley	35	Moderately suited		Moderately suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Rock fragments	0.50	Low strength	0.50
				Stickiness; high plasticity index	0.50		
				Slope	0.50		
542E—Braziel-Shanley gravelly loams, 15 to 35 percent slopes							
Braziel	50	Well suited		Poorly suited		Moderately suited	
				Slope	0.75	Slope	0.50
				Rock fragments	0.50		
Shanley	35	Moderately suited		Poorly suited		Moderately suited	
		Stickiness; high plasticity index	0.50	Slope	0.75	Low strength	0.50
				Rock fragments	0.50	Slope	0.50
				Stickiness; high plasticity index	0.50		

### Data Source Information

Soil Survey Area: Granite County Area, Montana  
 Survey Area Data: Version 12, Jan 9, 2012