

CS-251 ENVIRONMENTAL ASSESSMENT COVER SHEET File#: 016.4

APPLICANT Department of State Lands, NWLC, Plains Unit

TYPE OF OPERATION Deerhorn Creek Timber Sale

LOCATION Section 36, T23N, R28W, M.P.M.

PERSON PREPARING E.A. Jon M. Hayes () DRAFT EIS
 Lead Mgmt. Forester, Plains Unit (X) NO DRAFT EIS

DATE PREPARED Dec. 19, 1991 EXPECTED IMPLEMENTATION DATE June 1992

REVIEWED BY Marvin W. Miller RECOMMENDATION () DRAFT EIS
 (X) NO DRAFT EIS

REVIEWED BY [Signature] RECOMMENDATION () DRAFT EIS
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REVIEWED BY [Signature] RECOMMENDATION () DRAFT EIS
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Approved by: Hary G. Brown (X) NO DRAFT EIS ⁸²⁰

SUMMARY OF POTENTIAL IMPACTS

PHYSICAL ENVIRONMENT	SIGNIFICANT		INSIGNIFICANT WITH MITIGATION		INSIGNIFICANT AS PROPOSED	
	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term
1. TOPOGRAPHY					X	X
	See EA/Prescription, Pg. 1 & Exhibit B					
2. GEOLOGY; stability					X	X
	See EA/Prescription, Exhibit D					
3. SOILS; Quality, distribution					X	X
	See EA/Prescription, Pgs. 2, 7, 9, and Exhibit D					
4. WATER; Quality, Quantity, Distribution					X	X
	See EA/Prescription, Pgs. 1, 4, 7 & Exhibit C					
5. AIR; Quality					X	X
	See EA/Prescription, Pg. 9					
6. UNIQUE, ENDANGERED, FRAGILE, or LIMITED environmental resources					X	X
	See EA/Prescription, Pgs. 2-3, 5 & Exhibit F					

EGC.
This EA on the Western
Graded Sale was approved
by the Land Board
on March 16, 1992.

RECEIVED

APR 01 1992

ENVIRONMENTAL
QUALITY COUNCIL

Janet
Crawford

DSL - 2074

	SIGNIFICANT		INSIGNIFICANT WITH MITIGATION		INSIGNIFICANT AS PROPOSED	
	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term
BIOLOGICAL ENVIRONMENT						
1. <u>TERRESTRIAL, AVIAN, & AQUATIC</u> ; species and habitats					X	X
	See EA/Prescription, Pgs. 2, 4-10 & Exhibit F					
2. <u>VEGETATION</u> ; quantity, quality, species					X	X
	See EA/Prescription, Pgs. 2-10 & Exhibits E & I					
3. <u>AGRICULTURE</u> ; grazing crops, production					X	X
	See EA/Prescription, Pg. 3					
HUMAN ENVIRONMENT						
1. <u>SOCIAL</u> structure and mores					X	X
2. <u>CULTURAL</u> uniqueness, diversity					X	X
3. <u>POPULATION</u> ; quantity and distribution					X	X
4. <u>HOUSING</u> ; quantity and distribution					X	X
5. <u>HUMAN HEALTH & SAFETY</u>					X	X
6. <u>COMMUNITY & PERSONAL INCOME</u>					X	X
7. <u>EMPLOYMENT</u> ; quantity and distribution					X	X
8. <u>TAX BASE</u> : local & State tax revenue					X	X

TT-551 continued

HUMAN ENVIRONMENT (continued)	SIGNIFICANT		INSIGNIFICANT WITH MITIGATION		INSIGNIFICANT AS PROPOSED	
	Short Term	Long Term	Short Term	Long Term	Short Term	Long Term
9. <u>GOVERNMENT SERVICES:</u> demand on					X	
10. <u>INDUSTRIAL, COMMERCIAL & AGRICULTURAL</u> activities					X	X
11. <u>HISTORICAL & ARCHAEOLOGICAL</u>					X	X
	See EA/Prescription, Pg. 1 & Exhibit E					
12. <u>AESTHETICS</u>					X	X
	See EA/Prescription, Pg. 5					
13. <u>ENVIRONMENTAL PLANS</u> and <u>GOALS</u>					X	X
14. <u>DEMANDS on ENVIRONMENTAL RESOURCES</u> of land, water, air and energy					X	X
15. <u>TRANSPORTATION</u> networks and traffic flows					X	X
	See EA/Prescription, Pg. 4					

Route Copies to:

1. Environmental Quality Council (EQC)
2. File (016.4)

DEERHORN CREEK TIMBER SALE

SUMMARY OF ACTION

The proposed action is a timber sale set up to generate revenue for the Public School (C.S.) Trust Grant. Also, this action will minimize volume and value losses presently being incurred due to various insect, disease and decay problems. The sale consists of twelve harvest units totaling 124 acres. A total of 3,172 thousand board feet (MBF) of sawtimber and 3,900 tons of non-sawlog material will be harvested. This sale is located in Sanders County, in Section 36, T23N, R28W. The gross sale area is 640 acres.

3.75 miles of new road construction will be necessary to properly access this area for this harvest entry. The new road construction will result in clearing a total of 26 acres of timberland (24 acres State and 2 acres Champion Timberland). Also, about 7.68 miles of road will require minor reconstruction. The new road construction and minor reconstruction will be grass seeded to prevent soil erosion and to provide for weed control.

The sale area provides summer range for several big game species. Recommendations of a wildlife biologist from the Department of Fish, Wildlife & Parks have been included in this sale to help protect the habitat for future game use.

Slash disposal and site preparation will be done by broadcast burning. Burning will take place during periods of good atmospheric ventilation to allow for rapid smoke dispersal. A total of 43,920 trees will be hand planted in the harvest units.

No unusual land features were found on the sale area. There will be no impacts on or to adjacent lands. The DSL Archaeologist completed a record search, and no archaeological or historical sites were recorded for this sale area.

No major environmental impacts will result from this harvest operation. A further discussion of impacts is included in the EA/Silvicultural Prescription.

EA/SILVICULTURAL PRESCRIPTION

FOR

DEERHORN CREEK TIMBER SALE

I. LOCATION:

The Deerhorn Creek Timber Sale is located within the Thompson River State Forest, about 18 air miles northwest of Plains, Montana in Sanders County. The harvest area lies within the Deerhorn Creek drainage in Section 36, T23N, R28W (see Sale Map - Exhibit A). The State owns all of Section 36. The gross sale area is 640 acres. A total of 150 acres will be treated in this harvest entry.

This parcel of land is surrounded on three sides by private industrial timberlands, Champion International on the north and east, and Plum Creek on the west side. The U.S. Forest Service owns the land immediately to the south of this State parcel.

Access to this section is by way of the Thompson River county road and the Deerhorn Jungle Road #529.

II. SITE DATA:

A. Physiography:

This sale area lies on a steep hillside that drains into Deerhorn Creek. A series of steep V-draws run roughly south to north across the southeast half of this section (see Topography Map - Exhibit B).

✓ Slopes within the gross sale area vary from 20-80%. Of the 150 acres to be harvested, 85% of the harvest area has slopes of 55% or greater.

The main aspects on the sale are north to northwest. Elevations within the harvest units vary from 3600 feet to 4800 feet.

B. Hydrology:

The main hydrologic feature located in the gross sale area is Deerhorn Creek. It flows through the middle of the section, from the southwest corner to the northeast corner. Deerhorn Creek is a third order stream with a 9.6 square mile watershed. Natural water yield is approximately 12,700 acre-ft/year.

The average annual precipitation ranges from 30" near the mouth of Deerhorn Creek to 70" in the extreme headwaters.

The DSL Hydrologist has reviewed the sale plans for this harvest and made an on-site inspection of the area (see Hydrologist Report - Exhibit C).

C. Soils:

The soils in the sale area are mainly shallow to moderately deep colluvial deposits on steep mountain sideslopes of 40-60% or greater. Surface soils are volcanic ash influenced silt loams over very gravelly and cobbly loams.

The DSL Soil Scientist has reviewed the sale plans for this harvest and made an on-site inspection of the area. His main concerns are maintaining topsoil depth and minimizing erosion (see Soil Scientist Report - Exhibit D).

These soils are moderately productive, well drained and have a long season of use.

D. Habitat Types:

This sale area contains three different habitat types (see Habitat Type Map - Exhibit E). The habitat types found within the harvest units are Thuja plicata/Clintonia uniflora (THPL/CLUN), Tsuga heterophylla/Clintonia uniflora (TSHE/CLUN), and Abies grandis/Clintonia uniflora (ABGR/CLUN). In most places throughout the sale area there are distinct breaks between the three types.

The most widely represented habitat type is TSHE/CLUN. This type covers approximately 102 acres and occurs in nine harvest units.

The THPL/CLUN type covers approximately 26 acres and is found in 3 harvest units. The ABGR/CLUN type covers approximately 22 acres and is present in 2 harvest units.

According to Forest Habitat Types of Montana, by Robert D. Pfister, et. al., these habitat types have the following yield capabilities:

TSHE/CLUN	80 to 142 cu. ft./acre/year
THPL/CLUN	78 to 145 cu. ft./acre/year
ABGR/CLUN	83 to 143 cu. ft./acre/year

Field observations indicate that these types are capable of growing within the mid to upper part of the ranges shown.

E. Wildlife Use:

The sale area provides summer range for several big game species, including mule deer, elk and black bear.

A wildlife biologist with the Department of Fish, Wildlife & Parks was shown the sale area in September 1990. In his opinion the sale

area is not deer winter range. His main concerns are maintaining security cover, year-long road closures, and improving big game forage quantities (see Wildlife Biologist Report - Exhibit F).

Based upon the recommendations of the Wildlife Biologist, all of the cutting units are less than 30 acres in size. They are also as irregular in shape as cable logging and broadcast burning will allow. No wallows occur within the sale units.

A 300 foot buffer was maintained from the existing clearcuts in Section 31. Snags and dead trees between the units should provide sufficient habitat for cavity nesting wildlife within the section. Snags were not maintained inside the units due to the hazards of skidding and broadcast burning. The year-long road closure will continue at the current gate location.

F. Human Use of the Area:

This section receives use by the general public during the fall hunting season. Access is by foot or horse due to the year-long road closure gate.

G. Cultural & Historic Sites:

In the preliminary field investigation of the sale area no obvious cultural, historic or archaeological sites were noticed.

The DSL Archaeologist conducted a record search of the sale area. No historic or cultural sites were located, and clearance was issued (see Cultural/Historic Clearance - Exhibit G).

Later, during the time of actual preparation, no sites were found.

H. Management History:

A very limited amount of harvesting has occurred on this section. In 1985 a 7 acre clearcut was done to prepare a site for a rust resistant white pine plantation. Also, Champion trespassed about 2½ acres of road right-of-way on Section 36 when they were constructing their road system in Section 31.

The total volume removed to date from this parcel is 147.95 MBF. The sale of forest products from this section has brought in a total of \$13,860.33 in stumpage payments.

I. Grazing:

This section does not lie within the Lower Thompson Unit of the Thompson River Grazing Cooperative. This area receives virtually no grazing use by cattle due to the steepness of slopes and the undergrowth species associated with the timber types found on this

parcel. The sale is expected to increase the forage and grazing potential on this site for wildlife.

J. Roads:

Only ½ mile of road now exists on Section 36. This ½ mile of road was built in trespass by Champion in the late 1970's.

On this entry, 3.75 miles of new road will be constructed, and 7.68 miles of minor road reconstruction will be done. Of the 3.75 miles of new road construction, 3.31 miles of it will be built in Section 36.

Disturbed areas caused by the new road construction and reconstruction will be grass seeded for erosion control and noxious weed control.

The year-long road closure of the Deerhorn Creek Road will continue at the current gate location.

K. Trust Account:

This section, totalling 640 acres of State Trust Land, is part of the Public School (C.S.) Trust grant.

III. CUMULATIVE EFFECTS:

A. Water Yield:

A watershed analysis of the Deerhorn Creek watershed was completed by the Lolo National Forest on 3/23/90. The study concluded that existing management activity had increased water yield in the drainage by approximately 7.6%.

DSL analysis show that ongoing Champion International harvest and the proposed DSL Deerhorn Creek Timber Sale will add an additional 2.0% to the residual water yield increase. The predicted cumulative water yield increase of 9.6% is approaching water yield thresholds. On 4/26/90, the Deerhorn Creek watershed was reviewed in the field. The stream channel was found to be in good condition and reasonably stable.

The DSL Hydrologist does not anticipate any hydrologic constraints if the initial entry is limited to 200 acres of clearcut harvest and 6.25 miles of new road.

The sale as planned, prescribes 124 acres of clearcut harvest and 3.75 miles of new road construction. The total area affected by this harvest proposal is 150 acres, which falls well short of the acreage limitation imposed by the hydrologist for watershed cumulative effect constraints.

B. Wildlife:

1. Grizzly Bear: This sale location lies outside the Northern Continental Divide Grizzly Recovery Area. Therefore, a cumulative effects analysis for grizzly bears is not needed for this sale.
2. Bald Eagle: There are no identified bald eagle nesting sites within many miles of the sale area. Therefore, a cumulative effects analysis for bald eagles is not needed for this sale.
3. Gray Wolves: There are no confirmed gray wolves or denning sites in or near the sale area.

Management in support of gray wolf recovery translates into protection of active denning sites and managing lands to support the wolf's prey base. Site-specific and cumulative effects considerations implemented for big game species in this proposal are considered adequate for gray wolves because they assure perpetuation of a healthy prey base.

4. White-tailed Deer: This sale area is not white-tailed deer winter range. It is generally greater than 3,800 feet in elevation with north and west aspects. Also, the slopes are quite steep. Some white-tailed deer probably use some of the area during the summer and fall months. Because the area is not white-tailed deer winter range, the DSL White-Tailed Deer Winter Range Standards and Guidelines were not used in designing this sale. No adverse cumulative effects are anticipated.

C. Old Growth:

The stands within the planned sale area exhibit characteristics of old-growth as defined in the Interim Old-Growth Standards for State Lands. Although these standards do not apply to this scattered section, it is important to note that old-growth is present. The State of Montana owns only 640 acres in this drainage. After this planned harvest, well over 10% of the stand will remain and will be well over 50 acres of contiguous area. Old-growth was not raised as an issue during sale planning.

D. Visual Effects:

None of the proposed harvest units will be visible from either the Thompson River county road or Champion's Main Thompson River Haul Road. The sale area is located in the middle of very intensely managed timber lands. Harvest activity in this area is the norm rather than the exception. The small nature of the planned harvest

activity and the location of the sale will have no major effect on the general visual quality of the area.

IV. STAND DATA:

A. Composition & Stocking:

The overstory is a mixture of ten species, dominated by grand fir (51%), followed by Douglas-fir (26%), western red cedar (8%), lodgepole pine (5%), western hemlock (4%), subalpine fir (3%), spruce (1%), western larch (1%), and a trace of ponderosa pine and western white pine. The percentage break down is based on trees per acre from the cruise data.

The overstory within the three habitat types (TSHE/CLUN, THPL/CLUN, ABGR/CLUN) are dominated by grand fir and Douglas-fir. The grand fir is more prevalent in the TSHE/CLUN and the THPL/CLUN types, and Douglas-fir dominates the ABGR/CLUN type. The overstory is 200+ years old and as a whole is very uniform. The overstory stand volumes vary from 16 to 36 MBF per acre (gross). This stand is very decadent.

The understory stand is a mix of grand fir, subalpine fir, western hemlock, and western red cedar. These stands are headed towards climax. The understory is 20 to 40 years old and varies from 5 to 20 feet tall. Stocking levels vary from about 500 trees per acre to over 3,000 trees per acre. This regeneration is quite badly suppressed, and is considered undesirable to manage through to maturity, both from a vigor and species composition standpoint.

B. Insect & Disease Activity:

1. Indian Paint Fungus: Many of the larger, older grand fir and western hemlock contain visible conks of the Indian paint fungus (Echinodontium tinctorium). About 25% of the total grand fir volume and about 33% of the western hemlock volume will be lost due to the rot caused by this disease.
2. Armillaria Root Rot: Small pockets of root rot (Armillaria obscura) are located throughout the sale area, and are affecting mainly the Douglas-fir, although some grand fir are involved also.
3. Brown Cubicle Root and Butt Rot: Many of the larger, older Douglas-fir contain visible signs of root rot (Phaeolus schweinitzii). About 6% of the total Douglas-fir volume will be lost due to the rot caused by this disease.
4. Pini Rot: Some of the larger Douglas-fir, western larch, and western white pine contain Pini rot (Phellinus pini). It is minor at this time, but present.

5. Cedar Brown Pocket Rot: The larger, older western red cedar are infected with cedar brown pocket rot (Poria sericeomollis). About 7% of the total cedar volume will be lost due to the rot caused by this disease.
6. Mountain Pine Beetle: The Mountain Pine Beetle (Dendroctonus ponderosae) has attacked and killed some of the lodgepole pine in the sale area. Bark beetle populations appear to be on the decline. Few fresh beetle hit trees were observed during sale preparation.

V. MANAGEMENT OBJECTIVES:

- A. Provide revenue to the Public School (C.S.) Trust Grant.
- B. Remove decadent, mature and overmature trees, and replace them with a new, healthy, manageable stand.
- C. Minimize volume and value losses presently being incurred due to various insect, disease, and decay problems.
- D. Manage this site for the appropriate site-related higher value seral species, such as western larch, western white pine, and ponderosa pine.
- E. Protect the overall integrity of this section for big game use, while still meeting the timber management goals. Leave areas of big game hiding and thermal cover.
- F. Minimize soil displacement.
- G. Minimize potential soil compaction problems.
- H. Protect the water influence zones from damage.
- I. Correct existing road drainage problems and stream crossing problems.

VI. ALTERNATIVES:

A. No Action:

This would involve no harvest of timber from the sale area and would have the following effects:

Income to the Public School Trust Grant would not be realized. No suitable (revenue generating) alternative uses have been identified at this time for this tract.

No action would forego silvicultural treatments designed to improve timber productivity on this site. This option would result in continued deterioration of this mature timber stand, and would

allow natural plant succession to continue towards a climax condition. This stand at climax would be dominated by species that are less desirable (grand fir, subalpine fir, western hemlock, western red cedar) and of less value as a commercial product. Long term timber management opportunities would be reduced.

This action would also increase mortality, volume and value loss due to the continued effects of Indian paint fungus, and various root and butt rots.

The no action alternative would continue to produce snags for cavity nesting birds, and perch trees for raptors. Security cover and thermal cover for big game animals would be unchanged. Forage value for big game animals would continue to decrease.

The chance of sedimentation due to ground disturbance from skidding, decking and road building would be eliminated. However, existing road drainage problems and poor stream crossings would continue to cause sedimentation.

In the short term, scenic value would not change, but in the long term a deteriorating stand could cause a negative impact in scenic values.

B. Harvest Proposal:

Due to the harvesting on lands adjacent to this section, it was determined that the maximum area that could be treated on this entry was 200 acres of clearcut harvest and 6 miles of new road construction. These limits were imposed to keep the Deerhorn Creek watershed from exceeding the water yield threshold. These limits were determined by a watershed analysis, and field visits by a DSL Hydrologist.

The entire 640 acres was explored to determine the feasibility of timber harvesting activities. This section is virtually roadless and contains only ½ mile of existing road. Any planned harvest activity would have to include extensive road design and construction.

The section as a whole is quite steep with most of the slope readings being over 50%. This would necessitate some type of cable yarding system. When a cable yarding system is used on steep slopes, generally speaking you are restricted to regeneration type harvest treatments.

VII. SELECTED ALTERNATIVE/PREScribed TREATMENT:

The selected alternative is Alternative B. It is felt that this option will best meet all of the management objectives.

After examining the portion of this section north and west of Deerhorn Creek, it was decided to defer any harvest activity on that side of the creek at this time. Due to the fact that we are limited to 200 acres of harvest and 6 miles of new road construction and that the timber stands generally appear to be much healthier than the stands south and east of the creek, it was decided to apply all the allowable harvest acreage to the area of greatest need.

The prescribed treatment therefore includes construction of 3.75 miles of new road (approximately 26 acres), and 12 harvest units totaling 124 acres. All road construction and harvest units are south and east of Deerhorn Creek. Only 23% of this tract of land will be impacted on this entry.

The best silvicultural system to use to regenerate these units was determined to be: clearcut, broadcast burn and then plant. The harvest areas were surveyed quite thoroughly to determine if there was a sufficient number of healthy, potential seed trees of the seral species to provide adequate seed coverage. This would be necessary to make a seed tree regeneration harvest successful. It was determined that not enough high quality dominant seral species trees were present to make a seed tree a viable option. Also, it was very doubtful even if there were enough present, whether they would survive the cable yarding and broadcast burning on such steep slopes.

Following removal of the merchantable timber in the harvest units, all of the unmerchantable understory will be slashed. Fireline will be constructed around each unit in preparation for broadcast burning. This work will be done to reduce the fire hazard and prepare the site for planting. Duff reduction in the units would be approximately 60%, with an objective of leaving at least 10-15 tons/acre of large down woody material on site. Extensive mineral soil exposure is not needed. The units will be burned when the atmospheric conditions are suitable for rapid smoke dispersal, and when weather conditions minimize the risk of an escaped fire.

In order to maintain topsoil depth and minimize erosion potential on this site, skyline type logging will be required. This means the leading end of the logs will be suspended while yarding.

The two major concerns in designing the harvest units were the actual size of the units, and not to include the numerous steep draws inside of the units. Upon the recommendations of the wildlife biologist, all of the harvest units are under 30 acres in size, and are as irregular in shape as cable logging and broadcast burning will allow. Although logging in the numerous draws is permissible, site prep and prescribed fire were to be excluded. So to simplify the site prep, no major draws occur within the harvest units.

Upon completion of logging and brush work, the harvest units will be hand planted (11 x 11 spacing). A total of 43,920 trees will be planted, consisting of 21,960 western larch, 13,176 western white pine

and 8,734 ponderosa pine. A generous amount of natural regeneration is expected (Douglas-fir and grand fir), especially along the edge of the units. This will help provide a healthy species mixture.

In the event that this level of planting is unfeasible, a wider spacing could be used and still meet minimum silvicultural requirements for species diversity. At a 15 x 15 spacing, 23,668 trees would be required. a mix of 11,834 larch, 7,100 white pine, and 4734 ponderosa pine would be planted.

If budgetary constraints do not allow planting on this site, stands would still be regenerated. The primary species would be grand fir and Douglas-fir due to lack of significant other seed sources. This would not be as desirable as the mixed species for diversity on the site, but would provide a manageable future stand.

VIII. LONG TERM PRESCRIPTION:

Once sufficient regeneration has been established and the regeneration has reached a height of about 20 feet (this is estimated to take about 20-30 years), the rest of this section could receive some type of treatment. The surrounding corporate lands will have also recovered within that time period. The type of treatment for the remaining portion of the section will probably be similar to this entry. Some limited precommercial thinning may be necessary when the stand reaches age 20 to maintain vigor and species preference.

IX. TIME TABLE:

Summer/Fall 1992	Harvest work to begin on sale.
August 1, 1995	End of sale contract. Sale terminated.
Fall 1995	Complete burning in all units. Plant all units.
Fall 1996	Complete planting survival check.
Fall 2000	Regeneration survey to make sure stocking is adequate.
Spring 2015	Check for precommercial thinning needs.
2025	Next harvest entry. Check deferred area for harvest chance.

X. ACKNOWLEDGEMENTS & LITERATURE CITED:

Gary Frank, Hydrologist, Department of State Lands, Missoula, MT.

Jeff Collins, Soil Scientist, Department of State Lands, Missoula, MT.

Dori Passmann, Archaeologist, Department of State Lands, Helena, MT.

Bruce Sterling, Wildlife Biologist, Department of Fish, Wildlife & Parks, Thompson Falls, MT.

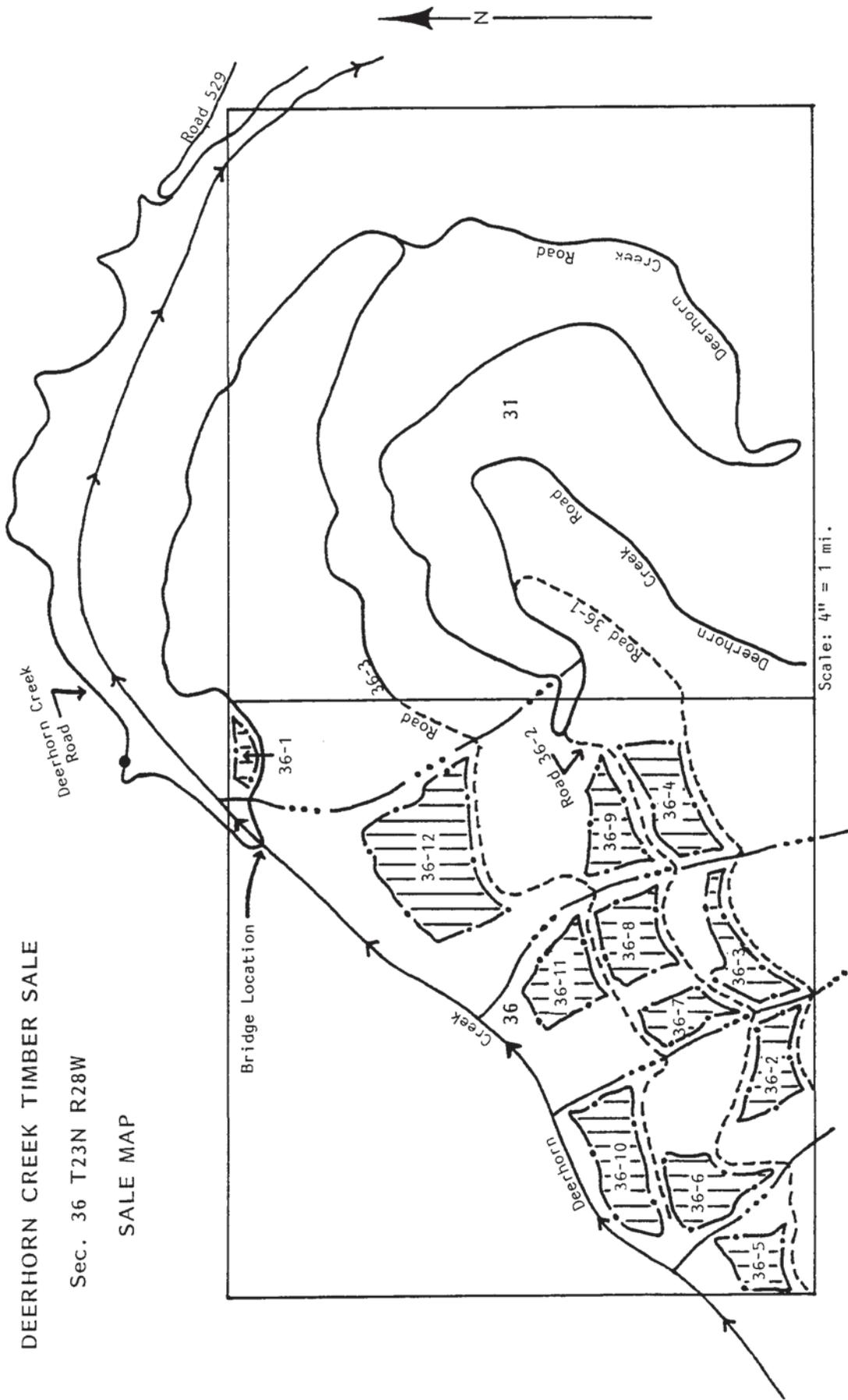
Pfister, et. al., Forest Habitat Types of Montana, U.S.D.A. Forest Service General Technical Report, INT 34, May 1977.

Best Management Practices for Forestry in Montana, Department of State Lands, July 1989.

Interim Old-Growth Standards for State Lands, Department of State Lands, May 1991.

The Enabling Act of 1889, (25 STAT. 679) State of Montana.

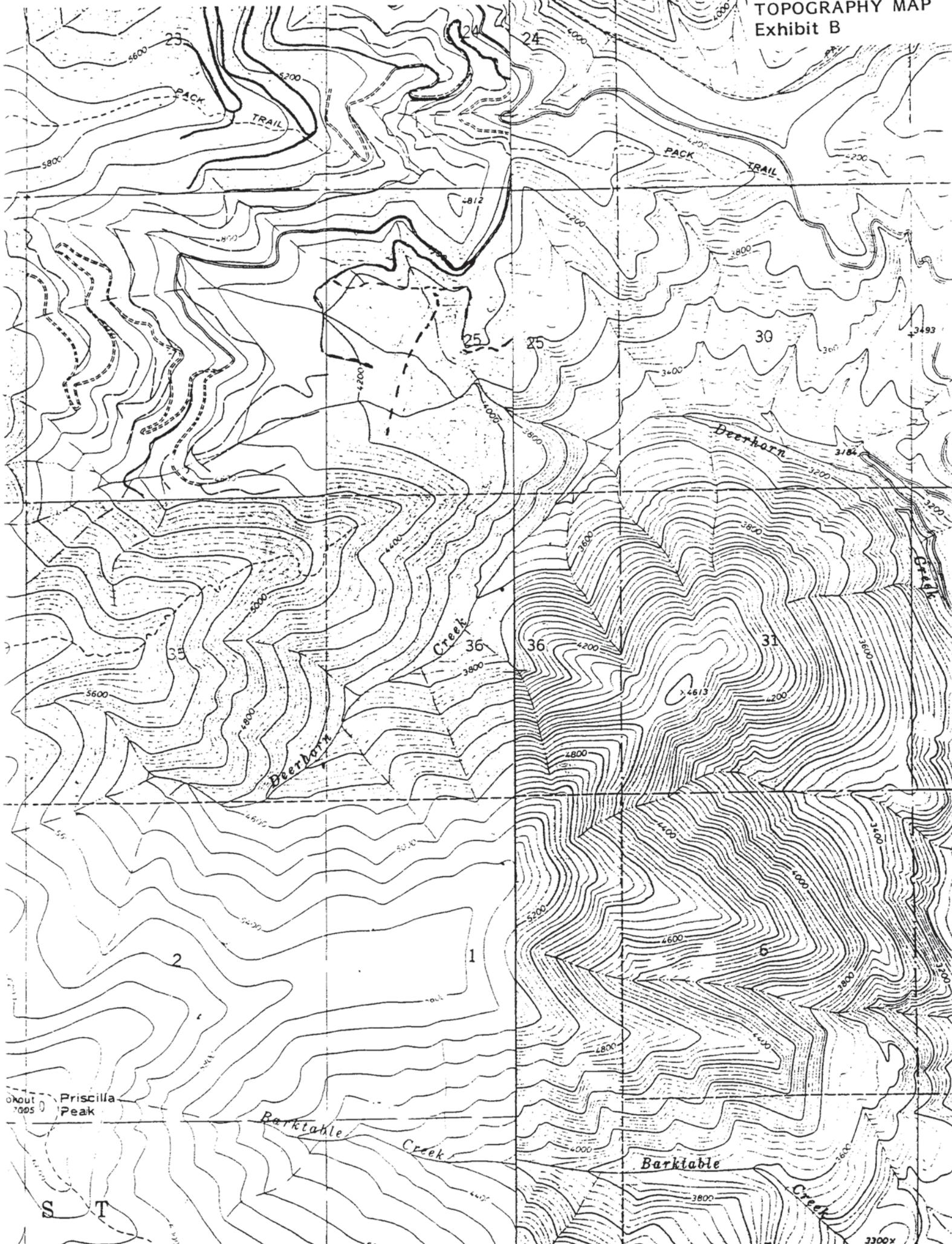
DEERHORN CREEK TIMBER SALE
Sec. 36 T23N R28W
SALE MAP



LEGEND:

- Harvest Unit Boundary —•—•—
- Harvest Unit |||
- Stream —————>
- Intermittent Stream —••••—
- Access Roads —————
- New Road Construction - - - - -
- Gate ●

TOPOGRAPHY MAP
Exhibit B



May 8, 1990

562

TO: JIM GRAGG, Manager, NWLO
PAT FLOWERS, Supervisor, State Land Management
WRIGHT, MILLER, GRAY, VARS, CALDWELL, Unit Supervisors

FROM: GARY FRANK, Hydrologist *g.f.*
BILL SCHULTZ, Hydrologist *WGS*

SUBJECT: Preliminary Input - FY91 Northwest Land Office Timber
Sale Plan.

We reviewed the first year (FY91) of the Six Year Sale Plan for preliminary input as called for in the timber sale planning process. These comments primarily address potential for off-site impacts, such as water yield, sediment yield and cumulative effects of multiple activities. These comments do not address onsite recommendations. The final review and comment will be made after receiving a sale plan.

Kalispell Unit

BIG DRAW - Reported on 8/22/89. No significant cumulative effect impacts are anticipated due to the prescription, logging method (helicopter), and low runoff from the site.

LITTLE BITTERROOT LAKE STR - No hydrologic constraint because of size and prescription (seed tree removal).

Plains Unit

DEERHORN - A watershed analysis of the Deerhorn Creek watershed was completed by the Lolo National Forest on 3/23/90. The study concluded that existing management activity had increased water yield in the drainage by approximately 7.6 % .

Our analysis show that ongoing Champion International harvest and the proposed DSL Deerhorn timber sale will add an additional 2.0 % to the residual water yield increase. The predicted cumulative water yield increase of 9.6% is approaching water yield thresholds. On 4/26/90, the Deerhorn Creek watershed was reviewed in the field. The stream channel was found to be in good condition and reasonable stable. Harvest on Forest Service and private ground had regenerated to an acceptable level, indicating that hydrologic recovery has proceeded as assumed in the model. We do not anticipate any hydrologic constraints if the initial entry is limited to the 200 acres of clearcut harvest and 6.25 miles of road building prescribed in the memorandum sent on 4/11/90. The original prescription in the 1991 Six Year Plan proposed 500 acres of clearcut harvest and 4 miles of road construction. Additional harvest in the future will have to be carefully

planned and coordinated with hydrologic recovery to avoid possible water yield constraints.

MARTEN CREEK - On 4/26/90, the Martin Creek and Little Rock Creek drainages were reviewed in the field. Both drainage have undergone a moderate degree of development. Most existing harvest units received selection or group selection type harvest. Those unit treated with regeneration type harvest are well stocked with seedlings or saplings. Channel stability is variable which is probably more a factor of the natural landscape. Because the proposed prescription is limited to selection harvest and no new road construction is planned, I do not anticipate any cumulative watershed effects constraints in either drainage.

BIG PRAIRIE CREEK ROAD - Field reviewed on 4/26/90. Big Prairie Creek flows subsurface upstream of sale section. No evidence of surface channel flow through sale area or deliver into the Thompson River. There are no cumulative watershed effect constraints associated with this sale.

Stillwater Unit

SWEDE CREEK - Design project using recommended allowable equivalent acres (eca) and other guidelines outlined in the Whitefish Basin Watershed Management Guidelines.

CYCLONE PARK - Staff from the Flathead National Forest recently conducted water yield analysis for several portions of the Coal Creek Watershed. The results indicate that water yields in the tributary drainages are well below threshold limits. The prescription is for 30 acres of clearcut in the lower portion of the watershed with no new road construction. This small level of activity will not have a significant effect on water yield in the basin. This sale is not constrained by cumulative watershed effects.

<u>Sub-Tributary</u>	<u>Water Yield Inc.</u>	<u>Allowable ECA</u>
North Fork Coal Creek	2.6 %	1447
South Fork Coal Creek	2.5 %	1522
Cyclone (above lake)	1.5 %	263
Deadhorse	2.1 %	851

FORTINE - This sale lies in the Fortine Creek Watershed (267 mi²). The watershed has been heavily developed and several tributary drainage are at or above water yield thresholds. The proposed harvest area is drained by the mainstem of Fortine Creek. The sale prescription includes 160 acres of select harvest with no new road construction. The light harvest coupled with the moderate acreage will not have a significant effect on water

September 13, 1990

562

TO: MARV MILLER, SUPERVISOR, PLAINS UNIT
JIM GRAGG, MANAGER, NWLO
PAT FLOWERS, SUPERVISOR, STATE LAND MANAGEMENT

FROM: GARY FRANK, HYDROLOGIST *G.F.*

SUBJECT: DEERHORN TIMBER SALE
Section 36, T23N, R28W

WATERSHED

The sale area lies entirely within the Deerhorn Creek drainage. Deerhorn Creek is a 3rd order stream with a 9.6 square mile watershed. Precipitation ranges from 30" annually near its mouth to 70" inches in the extreme headwaters. Natural water yield is approximately 12,700 acre-ft./year. Stream channel inventories were conducted during the spring of 1990 on the main stem of Deerhorn Creek immediately below the sale section and near the mouth. Both stream reaches were rated as being in good condition with relatively stable channels and streambanks.

CUMULATIVE EFFECTS:

A watershed analysis was completed on the Deerhorn drainage during the spring of 1990. The results were reported in the Preliminary Input to the FY1991 Northwest Land Office Six Year Timber Sale Plan. In Summary, the watershed is approaching threshold values for water yield constraints. However, I do not anticipate hydrologic constraints if planned harvest units are held at or below 200 acres and proposed road construction is limited to 6 miles during this initial entry.

HARVEST:

The sale prescription calls for several (5-6) small (20-30 acre) regeneration type harvest units. One of the proposed unit will be tractor skidded with the remaining units to utilize cable yarding systems. The actual harvest unit boundaries have not yet been established.

With in the tractor unit there is a small seep/spring area (see road location #1). Mark and maintain an equipment restriction zone to exclude equipment operation within 25 ft of this or any other "wet" sites found with in the unit.

(The seep/spring area referred to does not occur within any of the harvest units, therefore these comments do not apply).

The sale section contains several dry draws and several flowing first order perennial draws. Establish Streamside Management Zones on all stream channels and well defined draws (see accompanying map for specific locations). Use draw banks and slope break to establish SMZ boundaries as discussed during field review.

Merchantable trees may be removed from draws and upper streambanks by directionally felling toward locations accessible to cable yarding. Locate yarding system on spur ridges or slopes well away from draw and channel locations. Do not cable trees through or across stream channels or well defined draws (v-draws). Yarding system should be planned and layed out to avoid any wet areas. This includes both the presence of surface water, boggy areas and/or areas with wet site plant indicators present.

Well defined dry draws and stream channels should be excluded from site prep. and prescribed fire. Build handlines or establish harvest unit boundaries to insure exclusion.

ROADS:

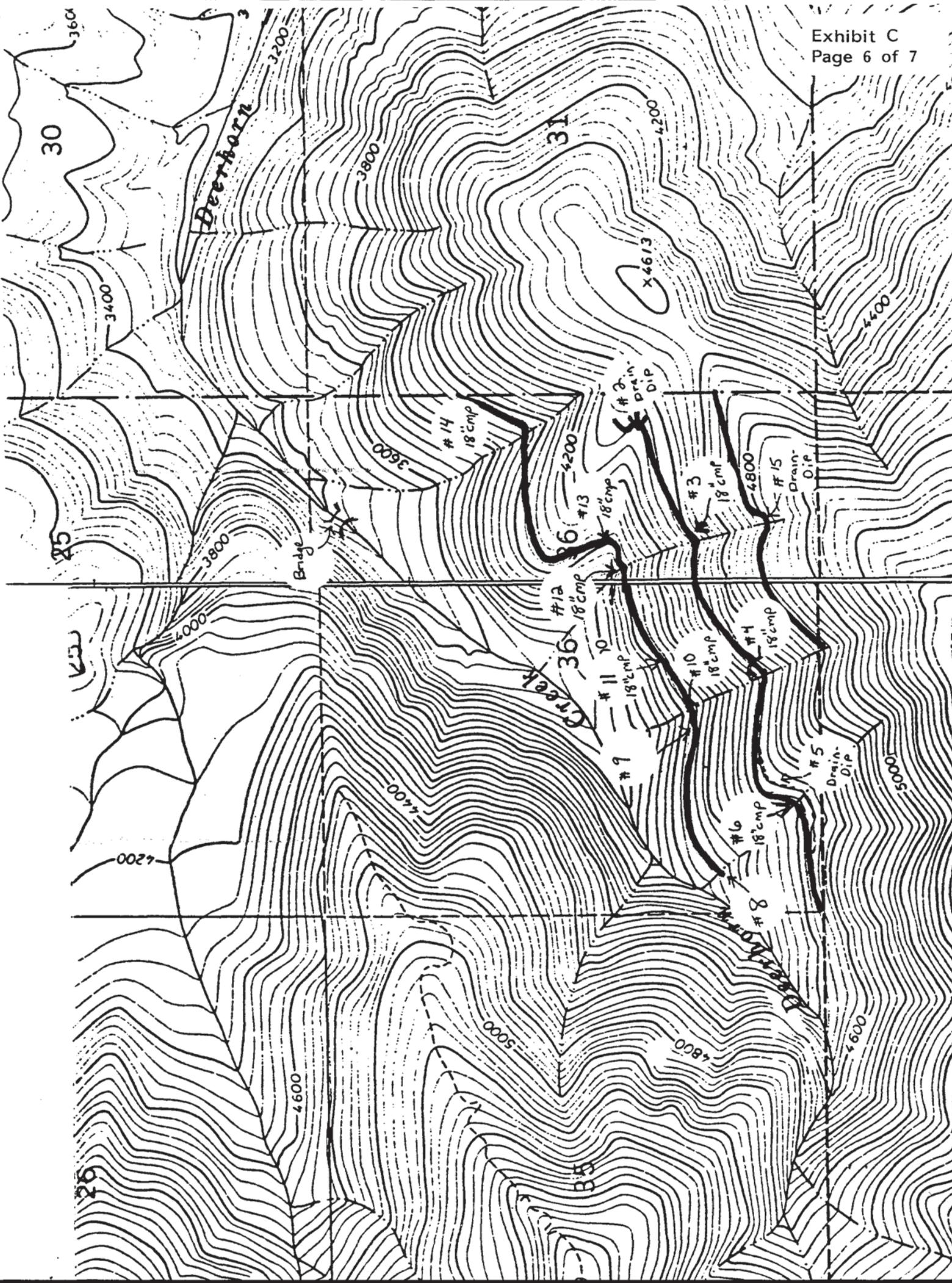
The sale will utilize both an existing road system and bridge as well as 3 miles of new road construction. Existing roads will require some reconstruction to provide adequate surface drainage features. Construct drain dips in accordance with general spacing guidelines outlined in table.

The bridge Champion International built on state land will need repair before it will satisfactorily meet our needs. Several of the running boards and curb logs need to be replaced. We should probably check the stringers to make sure they are acceptable and not rotted.

Specific recommendation are as follows (see enclosed map for locations):

- Site #2 Swale with wet spring/seep 50 ft. below road center line. A drive thru drain dip should provide adequate drainage at this location. If centerline should drop downslope install an 18" CMP. You may want to add an extra pipe to the sale package incase its needed.
- Site #3 Well defined dry draw with no detectable channel. Due to the well defined shape and deep incision of the draw, presence of intermittent channel on USGS quad, size of drainage area and high amount of precipitation I would recommend the installation of an 18" CMP.
- Site #4 Well defined dry draw with no detectable channel (Same as Site #3). I recommend installing an 18" CMP for the same reasons cited previously for Site #3.

- Site #5 Small draw with some evidence of surface flow. Construct a drive through drain dip.
- Site #6 Deep V-draw with no channel or evidence of recent surface flow at proposed crossing. Water seeping and considerable channel flow directly below crossing. Relocate crossing upslope as flagged to avoid large rock obstruction and install 18" CMP at new crossing location.
- Site #8 End of lower road. Terminate road outside 50 ft. SMZ established along the flowing stream channel.
- Site #9 Seepage along sideslope. Drive thru drain dip might provide adequate road surface and relief drainage. I recommend planning on installing an 18" cmp. You can always stockpile the CMP and construct drain dip if after the initial stages of road construction you determine a pipe is not needed.
- Site #10 Deep V-draw with not channel. Install 18" CMP.
- Site #11 Draw/sale with no channel. Install 18" CMP.
- Site #12 Broad and moderately deep draw/sale with no flow or channel. Install 18" CMP.
- Site #13 Steep, deep draw (v-draw) with dry stream channel. Install a 18" CMP.
- Site #14 Draw with a definable stream bed. Some pooled and seeping water present. Install a 18" CMP using dry site installation methods.



OCTOBER 11, 1991

562

TO: MARV MILLER, UNIT MANAGER, PLAINS UNIT
JON HAYES, FORESTER, PLAINS UNIT
PAT FLOWERS, SUPERVISOR, STATE LAND MANAGEMENT

FROM: GARY FRANK, HYDROLOGIST *GF*

SUBJECT: CMP INSTALLATION FOR TRIBUTARY TO DEERHORN CREEK

On September 25, I evaluated an existing stream crossing on an unnamed perennial tributary to Deerhorn Creek. The crossing is located on Champion International ownership and the current plan is to use the road to access the states proposed Deerhorn Creek Timber Sale.

The crossing is located in a narrow and deep v-draw and consist of a 30" CMP installed at stream grade with a slightly skewed alignment. The pipe is too short with both ends barely projecting from a deep and overly steepened road fill. The site was just recently repaired after a partial washout of the road fill and road surface.

Road surface drainage needs to be added to crossing approaches to prevent erosion and subsequent failure of the fill slopes. The fill depth should probably be built up to provide for a wider curve, better alignment and more stable fill slope angle. The existing culvert is too short and additional fill depth will require an even longer pipe length.

I have figured the predicted 25 year flood flow for the crossing site and have calculated the proper size culvert needed to accommodate that flow. Install a 30" CMP at the site utilizing a dry site installation. Armor both the inlet and the outlet of the new culvert. Construct drain dips at locations discussed in the field.

October 4, 1990

552

TO: PAT FLOWERS, Supervisor, State Land Management Section
JIM GRAGG, Area Manager, Northwest Land Office
MARVIN MILLER, Field Supervisor, Plains Unit
JON HAYES, Forester, Plains Unit

FROM: JEFF COLLINS, Soil Scientist

SUBJECT: DEARHORN CREEK TIMBER SALE, Section 36 T23N, R28W

The Deerhorn drainage is strongly bedrock controlled by geologic faults which formed steep drainages and sharp V shaped draws. Bedrock within the sale area is paleozoic argillite. Portions of the road system crossing steep sideslope with exposed rock will require blasting and ripping as noted in the field. Slope stability is good and no slumps occur in the sale area.

Soils are mainly shallow to moderately deep colluvial deposits (Map unit 30D) on steep mountain sideslopes of 40-60%. Surface soils are volcanic ash influenced silt loams over very gravelly and cobbly loams. These are productive soils supporting Lodgepole, Ponderosa Pine, Douglas fir, and Larch.

Main soils concerns are maintaining topsoil depth and minimizing erosion. These soils are moderately productive, well drained and have a long season of use.

The toeslopes and riparian area includes seasonally wet soils (Map unit 13-D). Cable logging is well suited to this site.

Map unit 30U-9-C are moderately deep colluvial soil forming from bedrock with a volcanic ash surface. Slopes are moderate to steep with several sideslope benches. Topsoils are typically shallow gravelly silt loams over very gravelly subsoils. Ridge noses typically have bedrock at shallow depth. Regeneration depends on maintaining topsoil depth and moisture properties. Soil unit **30U-9-D** has typically deeper soils and higher productivity than the 9-C unit. Bedrock occurrence is also less common.

Soil compaction hazards are low and these soils have a long season of use. Soil displacement hazard is severe for tractor operations. Soil impacts can be avoided by cable yarding with broadcast burning. Excavator piling of slash is suitable for slopes less than 50% .

Erosion hazard is moderate and easily controlled with standard road drainage practices. Some new drain-dips will be needed on roads to maintain drainage.

General Recommendation:

The average steepness of the slopes require cable logging for most of the section. Tractor skidding is not recommended on slopes over 45% .

Cable units should be broadcast burned to encourage regeneration and avoid soil impacts. Excavator piling is an option on portions of units with slopes less than 50%, but do not dozer pile.

Equipment operations should be limited to periods when soils are relatively dry, frozen or snow covered.

ROADS crossing deep V-Draw were field reviewed and are located on best available terrain. These crossings required in-depth engineering and field design which was completed with Hadlock and Wolf..

Material is mainly common excavation with limited areas along ridges which may require ripping or blasting as noted in field.

All roads should be pioneered with track mounted excavator construction. Cutslope in rock can be constructed as steep as will stand. Upper cutslope edge in soil should be slope rounded by excavator at 1:1 (refer to dia. 1).

Water erosion hazard is moderate and can be mitigated by providing adequate drainage on roads and skid trails using erodibility class 60 from the drainage guide . All new road cut and fill slopes should be promptly revegetated with site adapted grasses.

- A * Road intersection section 31- Poor bearing material requires gravel at intersection and upgrade across thru-cut portion of road. Place gravel at least 9" depth. Gravel may be available from cutslope at bridge site.
- B * Bridge site drainage -Road surface sediment is washing onto existing bridge and into creek. Curve radius would be improved by widening approaches. Southeast approach cutslope is very steep and ravel which continues to be a maintenance and erosion problem. The upper edge of cut needs to be sloped with an excavator or step cut with a dozer to reduce ravel and allow vegetation to establish. Install drain-dip in road at least 75ft before bridge on East approach to route sediment off road. Place slash filter barrier or hale bales near drain-dip outlet to catch sediment.
- C * Flood damaged drainage section 30- Replace pipe and build up road fill to even out grade. Good material available form either approach. Install slash filter windrow for roughly 25ft. on both sides of pipe.

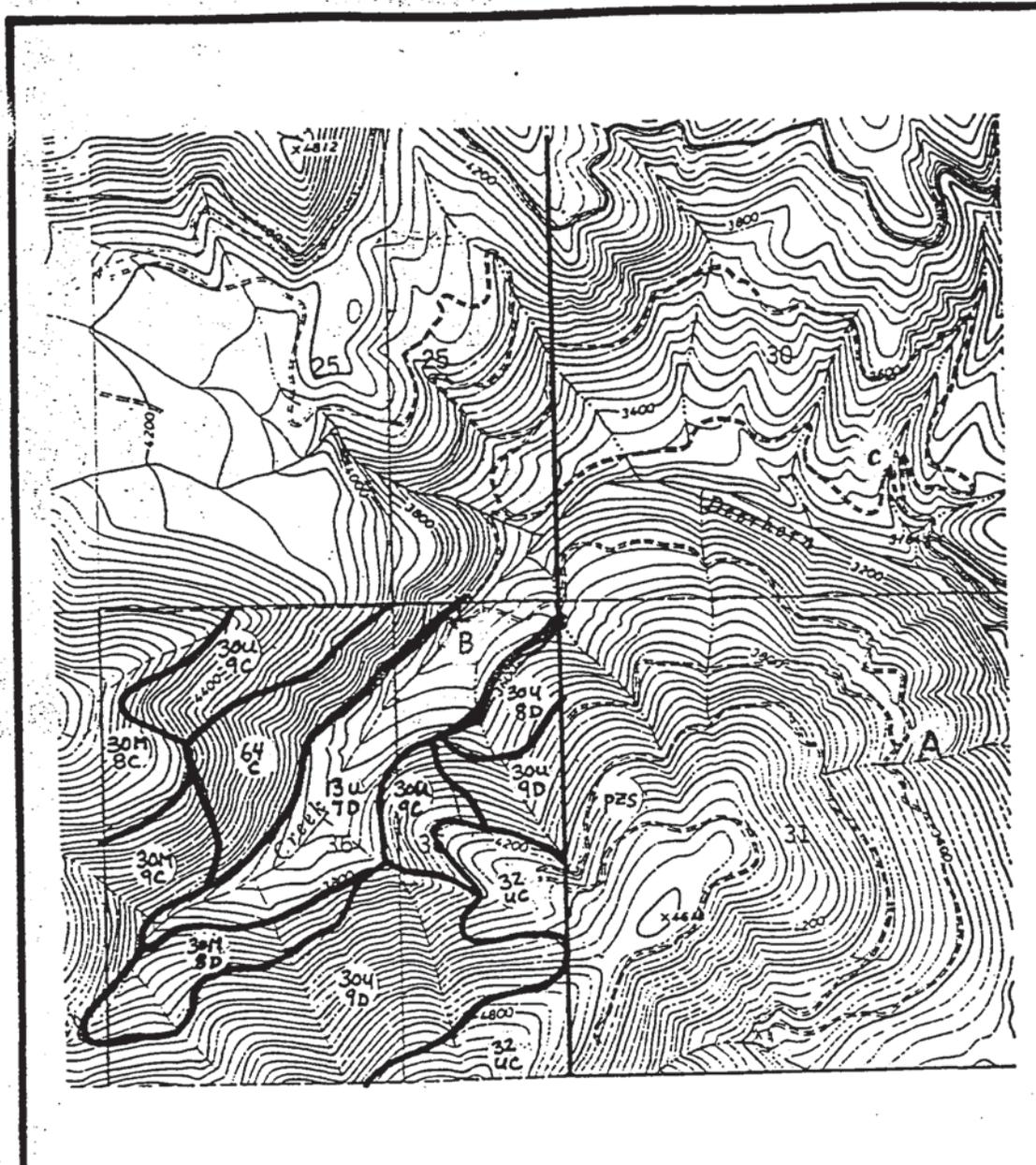
Map Unit

Description

- 13-U-7C Alluvial terraces and fans, deep very gravelly sandy loams, well drained on (7) 0-20% slopes
- 30-U-9D Mountain sideslopes, moderately deep extremely gravelly soils, some what excessively well drained on (9) 40-60% slopes.
- 30-U-9C Mountain sideslopes, shallow bedrock and residual soils, shallow to mod. deep,

Additional notes in Plains Unit Soil Survey

T23N-R28W



Map Unit

Description

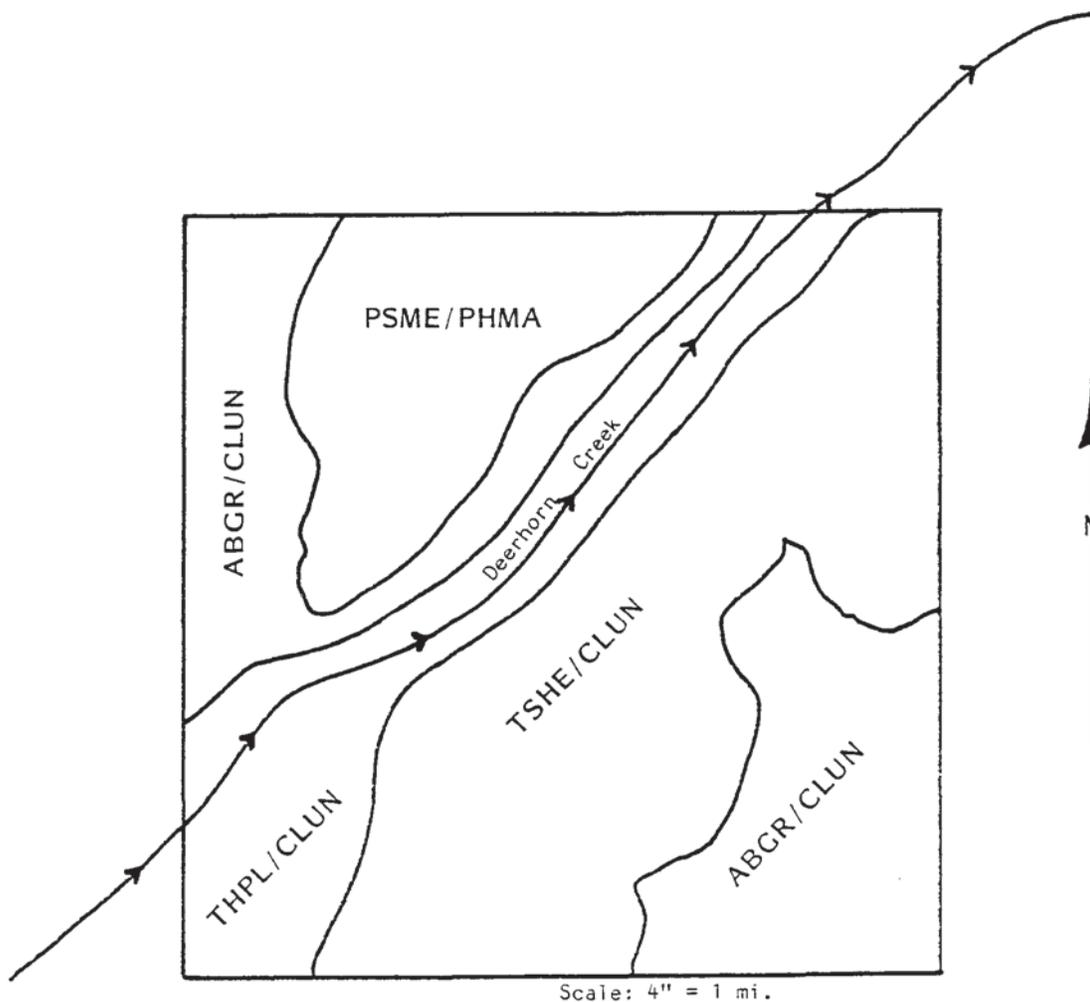
- 13-U-7C Alluvial terraces and fans, deep very gravelly sandy loams, well drained on (7) 0-20% slopes
- 30-U-9D Mountain sideslopes, moderately deep extremely gravelly soils, some what excessively well drained on (9) 40-60% slopes.
- 30-U-9C Mountain sideslopes, shallow bedrock and residual soils, shallow to mod. deep,

1 : 24000

DEERHORN CREEK TIMBER SALE

Sec 36 T23N R28W

HABITAT TYPE MAP



Scale: 4" = 1 mi.

**Montana Department
of
Fish, Wildlife & Parks**



Box 35
T. Falls, MT 59873
19 September 90

Jon Hayes
Dept. of State Lands
P.O. Box 219
Plains, MT 59859

Dear Jon,

These comments are specific to your proposed timber sale in Deerhorn Creek. Most of the items were discussed during our field trip on 6 Sept.

I understand the new plan does not include logging or road construction north and west of the creek. Therefore, my comments are not specific to that area. I also understand this area is designated, by DSL, deer winter range. I have a hard time arguing in favor of the winter range designation, since the elevation is generally greater than 3,800 feet with north and west aspects. These parameters are not considered "ideal" in any winter range designation that I'm familiar with in the Thompson River drainage.

The area does provide, however, excellent security cover for big game and any logging plan should take this into consideration. Therefore, I have the following recommendations.

- 1) Cutting units must be small, less than 30 acres, and should be irregular in shape.
- 2) A 300 foot buffer from existing clearcuts should be established.
- 3) All wallows/seeps must be protected by a 200 foot buffer zone of standing timber and not "island" within a cutting unit.
- 4) Standing snags 14 inch dbh or greater, relatively sound, should remain uncut, unless for safety reasons, for cavity nesting wildlife.
- 5) Cutting units should be broadcast burned to help improve big game forage quantities.
- 6) Yearlong road closure must continue, if possible, at the current gate location.
- 7) This timber sale, as planned, has no apparent significant impact to the well being of recognized threatened or endangered species.

I appreciate the opportunity to comment on this timber sale. If I can be of further help, please call.

Sincerely,

Barthelme

DEPARTMENT OF STATE LANDS



STAN STEPHENS, GOVERNOR

CAPITOL STATION

STATE OF MONTANA

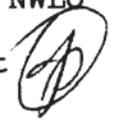
(406) 444-2074

1625 ELEVENTH AVENUE
HELENA, MONTANA 59620

May 2, 1990

MEMORANDUM

TO: Jon Hayes, Lead Management Forester, Plains Unit, NWLO

FROM: Dori Passmann, Archaeologist, Resource Development Bureau 

RE: Deerhorn Creek Timber Sale
36-23N-28W

There are no known sites in your area of interest. Based on the information provided in your letter of April 11, and conversations with you and Marv, the potential for impacting significant cultural properties is low. No survey is required and the sale is cleared.

Please let me know if I can be of further assistance.

/nn

DEERHORN CREEK TIMBER SALE
PROJECTED BRUSH & TSI INCOME

Brush	3,172 MBF @ \$ 8.91/MBF	=	\$ 28,262.52
	3,900 tons @ \$ 0.50/MBF	=	\$ 1,950.00
TSI	3,172 MBF @ \$ 8.91/MBF	=	\$ 28,262.52
	3,900 tons @ \$ 0.50/MBF	=	\$ 1,950.00
	TOTAL	=	\$ 60,425.04

Note: A \$2.09/MBF reduction in brush and a \$2.09/MBF reduction in TSI collection is for purchaser-do slashing and fireline construction.

Broadcast burn Units 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

122 acres @ \$100.00/acre = \$ 12,200.00

Plant a total of 43,920 trees in Units 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

43,920 trees @ \$0.15/tree = \$ 6,588.00

Purchase seedlings from nursery

43,920 trees @ \$0.15/tree = \$ 6,588.00

Total Projected Cost = \$ 25,376.00

Net Brush/TSI Credit = \$ 35,049.04

CONTAINER ORDER FORM

ORDER # _____ AREA NW40 UNIT Plains DATE 12-6-91
SPECIES Western Larch LOT # 66 # OF SEEDLINGS 21,960
CONTAINER TYPE 5.5 cu. in. SHIPPING DATE FALL 1995
PLANTING LOCATION Deerhorn Creek T.S. Sec. 36 T23N R28W
HEIGHT 7 " to 12 CALIPER > 2.5 mm SHOOT/ROOT RATIO Normal 1:1
SPECIAL GRADING SPECS. cut out double tops

ADDITIONAL COMMENTS - 11x11 spacing option

ORDERED BY Jack E. Isaacs

NURSERY USE ONLY

Date to begin stratification _____ Sowing date _____
% Germination _____ Seeds/lb. _____ # Seeds/cell _____ Plate size _____
of containers _____ Lbs. of seed to stratify _____
Tray identification _____

Shipping Arrangements _____
Nursery Order # _____ # of Seedlings Shipped _____ # of Boxes Shipped _____
Date of Shipment _____ Receiving Person _____ Signature _____ Date _____

CONTAINER ORDER FORM

ORDER # _____ AREA NWLO UNIT Plains DATE 12-6-91

SPECIES Western White Pine LOT # _____ # OF SEEDLINGS 13,176

CONTAINER TYPE 5.5 cu. in SHIPPING DATE Fall 1995

PLANTING LOCATION Deerhorn Creek T.S. Sec. 36 T23N R28W

HEIGHT 3 " to 5 CALIPER > 2.5 mm SHOOT/ROOT RATIO Normal 1:1

SPECIAL GRADING SPECS. Cull out double tops

ADDITIONAL COMMENTS - 11x11 spacing option

ORDERED BY Jack E. Isaacs

NURSERY USE ONLY

Date to begin stratification _____ Sowing date _____

% Germination _____ Seeds/lb. _____ # Seeds/cell _____ Plate size _____

of containers _____ Lbs. of seed to stratify _____

Tray identification _____

Shipping Arrangements _____

Nursery Order # _____ # of Seedlings Shipped _____ # of Boxes Shipped _____

Date of Shipment _____ Receiving Person _____ Signature _____ Date _____

CONTAINER ORDER FORM

ORDER # _____ AREA NWLO UNIT Plains DATE 12-6-91
SPECIES Ponderosa Pine LOT # 70 # OF SEEDLINGS 8,784
CONTAINER TYPE 5.5 cu. in. SHIPPING DATE FALL 1995
PLANTING LOCATION Deerhorn Creek T.S. Sec. 36 T23N R28W
HEIGHT 3 " to 5 CALIPER > 2.5 mm SHOOT/ROOT RATIO Normal 1:1
SPECIAL GRADING SPECS. cull out double tops

ADDITIONAL COMMENTS - 11x11 spacing option

ORDERED BY Jack E. Isaacs

NURSERY USE ONLY

Date to begin stratification _____ Sowing date _____
% Germination _____ Seeds/lb. _____ # Seeds/cell _____ Plate size _____
of containers _____ Lbs. of seed to stratify _____
Tray identification _____

Shipping Arrangements _____

Nursery Order # _____ # of Seedlings Shipped _____ # of Boxes Shipped _____

Date of Shipment _____ Receiving Person _____
Signature _____ Date _____

CONTAINER ORDER FORM

ORDER # _____ AREA NW40 UNIT Plains DATE 12-6-91
 SPECIES Western Larch LOT # 66 # OF SEEDLINGS 11,834
 CONTAINER TYPE 5.5 cu. in. SHIPPING DATE FALL 1995
 PLANTING LOCATION Deerhorn Creek T.S. Sec. 36 T23N R28W
 HEIGHT 7 " to 12 CALIPER > 2.5 mm SHOOT/ROOT RATIO Normal 1:1
 SPECIAL GRADING SPECS. call out double tops

ADDITIONAL COMMENTS - 15x15 spacing option

ORDERED BY Jack E. Isaacs

NURSERY USE ONLY

Date to begin stratification _____ Sowing date _____
 % Germination _____ Seeds/lb. _____ # Seeds/cell _____ Plate size _____
 # of containers _____ Lbs. of seed to stratify _____
 Tray identification _____

Shipping Arrangements _____

Nursery Order # _____ # of Seedlings Shipped _____ # of Boxes Shipped _____

Date of Shipment _____ Receiving Person _____ Signature _____ Date _____

CONTAINER ORDER FORM

ORDER # _____ AREA NWLO UNIT Plains DATE 12-6-91

SPECIES Western White Pine LOT # _____ # OF SEEDLINGS 7,100

CONTAINER TYPE 5.5 cu. in SHIPPING DATE Fall 1995

PLANTING LOCATION Deerhorn Creek T.S. Sec. 36 T23N R28W

HEIGHT 3 " to 5 CALIPER > 2.5 mm SHOOT/ROOT RATIO Normal 1:1

SPECIAL GRADING SPECS. Cull out double tops

ADDITIONAL COMMENTS - 15x15 spacing option

ORDERED BY Jack E. Isaacs

NURSERY USE ONLY

Date to begin stratification _____ Sowing date _____

% Germination _____ Seeds/lb. _____ # Seeds/cell _____ Plate size _____

of containers _____ Lbs. of seed to stratify _____

Tray identification _____

Shipping Arrangements _____

Nursery Order # _____ # of Seedlings Shipped _____ # of Boxes Shipped _____

Date of Shipment _____ Receiving Person _____ Signature _____ Date _____

CONTAINER ORDER FORM

ORDER # _____ AREA NWLO UNIT Plains DATE 12-6-91

SPECIES Ponderosa Pine LOT # 70 # OF SEEDLINGS 4,734

CONTAINER TYPE 5.5 cu. in. SHIPPING DATE FALL 1995

PLANTING LOCATION Deerhorn Creek T.S. Sec. 36 T23N R28W

HEIGHT 3 " to 5 CALIPER > 2.5 mm SHOOT/ROOT RATIO Normal 1:1

SPECIAL GRADING SPECS. cull out double tops

ADDITIONAL COMMENTS - 15x15 spacing option

ORDERED BY Jack E. Luuacs

NURSERY USE ONLY

Date to begin stratification _____ Sowing date _____

% Germination _____ Seeds/lb. _____ # Seeds/cell _____ Plate size _____

of containers _____ Lbs. of seed to stratify _____

Tray identification _____

Shipping Arrangements _____

Nursery Order # _____ # of Seedlings Shipped _____ # of Boxes Shipped _____

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