Montana Fish, Wildlife & Parks

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Ref: JS087-05
September 29, 2005

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SEP 30 2005
LEGISLATIVE ENVIRONMENTAL
POLICY OFFICE

TO: *Governor's Office, Attn: Mike Volesky, PO Box 200801, Helena, 59620-0801
Environmental Quality Council, PO Box 201704, Helena, 59620-1704
*Dept. of Environmental Quality, Planning, Prevention & Assistance, PO Box 200901, Helena, 59620-0901
*Dept. of Environmental Quality, Permitting Compliance, PO Box 200901, Helena, 59620-0901
DNRC, PO Box 201601, Helena, 59620-1601; Kalispell: Bob Sandman*
Montana Fish, Wildlife & Parks - Director's Office: Reg Peterson, Parks: Walt Timmerman, Fisheries: Karen Zackheim, & Legal Unit: Brandi Fisher
*Montana Historical Society, SHPO, 225 North Roberts, Veteran's Memorial Building, Helena, 59620-1201
*Montana State Library, 1515 East Sixth Ave., Helena, 59620-1800
Marcia Pablo, CSKT Historic Preservation Office, PO Box 278, Pablo, MT 59855
Tom McDonald, Div Admin, CSKT Natural Resources, PO Box 278, Pablo, 59855
Jim Jensen, Montana Environmental Information Center, PO Box 1184, Helena, 59624
George Ochenski, PO Box 689, Helena, 59624
Wayne Hirst, Montana State Parks Foundation, PO Box 728, Libby, 59923
Montana State Parks Association, PO Box 699, Billings, 59103
Joe Gutkoski, President, Montana River Action Network, 304 N 18th Ave., Bozeman, 59715
Rep. Rick Maedje, PO Box 447, Fortine, MT 59918-0447
Sen. Aubyn Curtiss, PO Box 216, Fortine, MT 59918-0216
Lincoln County Commissioners, 512 California Avenue, Libby, MT 59923
Lincoln County Libraries; PO Box 401, Eureka, 59917; 207 N 3rd, Troy, 59935; & 220 W 6th St, Libby, 59923
Interested Parties

Ladies and Gentlemen:

Montana Fish, Wildlife & Parks (FWP), Region One, has written a draft environmental assessment (EA) for the purpose of a forest thinning and fuels reduction project in four areas of Thompson Chain of Lakes in Lincoln County.

The draft is out for a thirty-day public review through October 31, 2005. Please direct your questions or comments to Regional Parks Manager Marty Watkins, FWP, 490 N. Meridian Rd., Kalispell, MT 59901, or e-mail mawatkins@mt.gov.

Sincerely,

Jim Satterfield
Regional Supervisor

/ni
Enclosure

*E-mailed

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DRAFT EA
THOMPSON CHAIN OF LAKES
FORESTRY PROJECT

MEPA/NEPA/HB495 CHECKLIST

PART I. PROPOSED ACTION DESCRIPTION

1. **Type of Proposed State Action:** The proposed project is to do forest thinning and fuels reduction in four areas of Thompson Chain of Lakes.

2. **Agency Authority for the Proposed Action:** Montana Codes Annotated 23-1-101

3. **Name of Project:** Thompson Chain of Lakes Forestry Project

4. **Name, Address, and Phone Number of Project Sponsor (if other than the agency):** This is a cooperative project between Montana Fish, Wildlife & Parks (FWP), Lincoln County, and the Department of Natural Resources, State Lands Division (DNR).

5. **If Applicable:**

   Estimated Construction/Commencement Date: Winter 2005/06
   Estimated Completion Date: Spring 2006
   Current Status of Project Design (% complete): 20%

6. **Location Affected by Proposed Action (county, range, and township):** There are four areas proposed for this project. They are shown on the maps in Appendix A. The areas are:
   - Management Unit 1, 24 acres - Middle Thompson Lake, S4, T26N, R27W
   - Management Unit 2, 11 acres - Crystal Lake, back side, S25, T27N, R28W
   - Management Unit 3, 72 acres - Crystal Lake, highway side, S19, T27N, R27W
   - Management Unit 4, 213 acres - Upper Thompson Lake, S29, 31, and 32, T27N, R27W

7. **Project Size: Estimate the number of acres that would be directly affected that are currently:**

	Acres		Acres
(a) Developed:		(d) Floodplain	
residential			
industrial		(e) Productive:	
		irrigated cropland ..	
(b) Open Space/Woodlands/Recreation		dry cropland	
		forestry	179
(c) Wetlands/Riparian Areas ...		rangeland	
		other	

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8. **Map/Site Plan: Attach an original 8½" x 11" or larger section of the most recent USGS 7.5' series topographic map showing the location and boundaries of the area that would be affected by the proposed action. A different map scale may be substituted if more appropriate or if required by agency rule. If available, a site plan should also be attached.**

Please see Appendix A.

9. **Narrative Summary of the Proposed Action or Project, Including the Benefits and Purpose of the Proposed Action:**

In 2003 FWP hired a forester to look at all the state park and fishing access lands in Region One to make recommendations regarding steps that should be taken to improve forest health. In that environmental analysis, it was recommended that FWP do a group selection harvest, protecting ponderosa pine and western larch. It was also recommended that FWP do commercial and pre-commercial thinning in particular areas containing dense sapling stands. Because FWP has limited expertise in forest management, discussions were started with DNR regarding means to manage the forests on FWP property using the expertise in DNR.

In 2004 a Cooperative Agreement between FWP and DNR was signed with the aim of benefiting the school trust fund and the people of Montana. At that time FWP began working with DNR and Lincoln County to assess the feasibility of doing fuels reduction and forest management in the Thompson Chain of Lakes area. This proposal is the first effort to cooperatively manage the forestlands at Thompson Chain of Lakes.

Through assessments by DNR and Lincoln County, four sites have been identified as having high priority fuels reduction and forest health issues. DNR has written an assessment of the needed management activities in these sections. These reports can be seen in Appendix B.

The goal of the project is to maintain the property over time for safe public use, with a forest cover that is healthy and fire and wind resistant. Large, mature trees are desired as the general forest cover over time. Tree crowns and root systems need adequate site resources in order to resist insect and disease attack. Tree crowns that are not touching will have adequate site resources to grow and remain healthy as well as provide a crown-fire-resistant stand. There will be some diversity of tree sizes and ages on the site to provide replacement trees as some large trees die over time. In addition, consideration will be given to leaving some dead snags to provide habitat for birds. A long-term goal is to restore the site to the historic stand structure of large, open, park-like stands dominated by ponderosa pine and western larch, with some Douglas-fir. Another issue considered at TCL is site control along main vehicle access points to discourage off-road vehicle use.

The preferred climax species for this site, given topography, elevation, soil type, and moisture requirements, would be ponderosa pine. Douglas-fir are not the desired climax tree in a public recreation area, as they are susceptible to wind load due to their shallow root system and are not fire or disease resistant. Therefore this project has been designed to remove Douglas-fir to allow existing ponderosa pine to grow and remain healthy.

DNR will manage the timber sales and hire the appropriate contractors to do the work on the ground. Some funding from Lincoln County firewise grants will be available to offset some of the

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expenses of this project. It is anticipated that this project will be revenue neutral, with Units 1-3 earning revenue that will be spent do to the needed work in Unit 4.

The specific objectives of this project will be:

In all Management Units:
Some trees that are appropriate as snag trees for wildlife will be left. Depending on funding available, some dead trees that are large will be topped to reduce wind load and left as snags. Three to five tons of woody debris per acre will be left on the forest floor in order to provide habitat for small mammals. This debris will be in the 0" to 6" diameter range, with some larger debris left. Best Management Practices will be followed in all treatments. Along roadways some screening will be left to discourage off-road vehicle use. Woody debris will be left in skid trails to discourage vehicle traffic and encourage reclamation of the skid trails. In areas where it is considered appropriate, the contractor will work with the area biologist to create some openings by scarification, to enhance forage for deer. This treatment will take place in winter to reduce impacts to the land. With ground disturbance, weeds will be encouraged to grow. The areas impacted will be aggressively managed for weed infestations. All areas disturbed will be reseeded with native grasses.

Management Unit 1, Middle Thompson Lake: A thin strip of FWP property exists between private housing on the northern end of Middle Thompson Lake and Highway 2. With the main goal being fire suppression, the recommendation is to harvest approximately 50% of the volume in this area, removing the slash at the time of harvest. A thin buffer would be left unthinned along Highway 2 to provide a visual and noise barrier for the remainder of the property and the adjacent private housing. In total, 24 acres would be thinned.

Management Unit 2, back of Crystal Lake: There are two areas in this 11-acre plot, 6 acres contain a two-story stand with a dense understory, and the remaining 5 acres is a nice stand of mature trees with a scattered dense understory of Douglas-fir. This stand is adjacent to private homes along Crystal Lake Road. The main objective of this effort would be fuels reduction. DNR has recommended that the 6-acre section have approximately 50% of the volume removed, along with the slash. Trees that will be left will be larch and pine that are the healthiest, with the smaller trees being removed. In the remaining 5 acres it is recommended that the area be pre-commercially thinned to a 12-14′ spacing and the slash limbed and lopped. Within 100′ of the dirt road and/or property lines, the trees will be spaced to a 10′ crown spacing and the slash piled and burned or chipped. This will improve aesthetics and provide a firebreak from a ground fire. The above action will greatly reduce the possibility of a crown fire, reducing fire risk to adjacent homes, while at the same time giving trees the space and nutrients they need to be resistant to disease and infestations. In total, 11 acres would be treated.

Management Unit 3, Crystal Lake by Highway 2: This parcel abuts lakeshore lots on both the southwest and southeast sides. A large development is currently underway on the southeast side around Rainbow Lake. This property is an integral part of any firewise effort to make this general area safer. The property consists of a dense understory of 1-3″ Douglas-fir with a scattering of merchantable 7-12″ overstory. The overstory is generally very poorly formed.

This stand should have the older, poorly formed overstory trees removed. Any ponderosa pine and western larch should be favored as leave trees, and the remaining understory pre-commercially thinned to a 14′ x 14′ spacing between trees, with the slash being limbed and

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lopped to a depth of less than 2'. A 100' perimeter around the stand should be thinned to a wider spacing with at least 10' between crowns. Slash in that area should be piled and burned or chipped.

To benefit wildlife, small openings will be created of between ¼ and ½ acre to accommodate shrub growth. In total, 72 acres would be treated.

Management Unit 4, Upper Thompson: Much of this parcel is lake and riparian area. Approximately 213 acres are forested. While this area is not as critical in fire prevention, fuels and fire reduction are needed. Large stumps indicate this area was logged 80-90 years ago, and much of the unit was precommercially thinned 30-35 years ago. Most of the thinned stand is around 50 years old.

Douglas-fir is the predominant species, with quite a few western larch. More lodgepole occurs in the western portion of the stand. There are few ponderosa pine. Throughout the stand there are shade-tolerant Douglas-fir that are forming a dense understory. These trees provide ladder fuels and also suppress growth of ponderosa pine. Armillaria root rot, in combination with drought, has claimed many trees in the last few years. There are very few palatable shrubs for big game forage.

The purpose for treating this unit would be to improve wildlife forage, reduce the possibility of crown fires, and remove Douglas-fir understory to enable the growth of ponderosa pine and western larch. The recommended treatment is to remove 1.5 MBF of the smaller, poorly formed and slower growing trees of merchantable size. The recommendation is to remove much of the 1-3" Douglas-fir, and in some areas precommercially thin to a 14' x 14' spacing. Some thickets could be left for hiding and thermal cover. Among the recreation sites along the lakeshore, the recommendation is to remove poorer merchantable trees and precommercially thin the understory. This could be done in such a manner that the natural feel of the area could be maintained.

To remove the timber in this unit it will be necessary to improve the road that provides access to recreation sites along Upper Thompson Lake. This will be part of the contract for timber removal.

10. Listing of Any Other Local, State, or Federal Agency That Has Overlapping or Additional Jurisdiction:

(a) Permits:

Agency Name	Permit	Date Filed/#

(b) Funding:

Agency Name	Funding Amount

(c) Other Overlapping or Additional Jurisdictional Responsibilities:

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Agency Name Type of Responsibility

11. List of Agencies Consulted During Preparation of the EA:

Department of Natural Resources and Conservation, State Lands Division

PART II. ENVIRONMENTAL REVIEW

1. Description and analysis of reasonable alternatives (including the no-action alternative) to the proposed action, whenever alternatives are reasonably available and prudent to consider, and a discussion of how the alternatives would be implemented:

Alternative 1 - No Action: Do not cut trees except for the removal of hazardous trees as needed; allow for natural progression. This does not promote forest health and does not reduce the opportunity for catastrophic fire.

Cumulative Impact:

Impacts from this no-action alternative would be less visible to the public, until lack of action leads to large-tree-stand-scale die-offs, eventually leading to catastrophic fire.

Land Resources: The no-action alternative alone would not add to soil instability or changes in geologic structure; cause soil erosion or compaction; change rates of siltation, deposition or erosion patterns; nor expose people to landslides or ground failure. However, if fuels continue to build up in public use areas, the risk of fire will increase. If a fire were started, the likelihood of its being of catastrophic level would be much greater. With the hotter fires that result from high fuel loads, the top layer of soil could be sterilized, which could result in erosion issues in future years.

Air: The no-action alternative would not impact air quality, unless the lack of action resulted in catastrophic fire.

Water: The no-action alternative would have no impact on surface or subsurface water quality or quantity, nor would it impact any existing water rights. A forested environment slows runoff and increases water storage. However, the management actions listed in this assessment should create no significant change in the ability of the forest to impact the watershed. If the failure to manage diseased trees or remove ladder fuels results in catastrophic fire, water quality will be impacted via changes in drainage patterns, increased siltation, erosion, and increased likelihood of flooding.

Vegetation: The no-action alternative will allow FWP properties to continue to be impacted by beetle kill, fungus, root rot, and other tree health issues due to the overcrowding of trees, causing stress and making the trees more susceptible to disease issues. This, in time, would change the diversity and productivity of plant species and allow the continued alteration of the plant community. The spread of noxious weeds would be inhibited because no ground disturbance would occur.

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Fish and Wildlife: Bird species that rely on snags would benefit from the no-action alternative. As an example, a USGS researcher found that 64 percent of all Cooper's hawk nests in northeastern Oregon were in mistletoe. Ungulates would be negatively impacted as forage is reduced with increased tree densities. No endangered species would be negatively impacted by the no-action alternative.

Noise/Electrical Effects: The no-action alternative would not increase existing noise levels or expose people to severe or nuisance noise. No electrostatic or electromagnetic effects would exist, and there would be no interference with radio or television reception or operation.

Land Use: All the areas included in this assessment are used for recreation. The no-action alternative would not impact that use unless the lack of action results in catastrophic fire in the future.

Risk/Health Hazards: The no-action alternative has no risk of explosion or release of hazardous substances. There is no effect on emergency response plans. The no-action alternative does have an effect on potential fire hazard and individual safety. With the leaving of ladder fuels and the continued buildup of dead timber on the forest floor, the opportunity for fire increases annually.

Community Impact: The no-action alternative will have no impacts in the density or growth rate of the human population of the area. It will not alter the social structure of the community or change the level or distribution of employment or commercial activity. The action will not increase traffic hazards or affect existing transportation facilities.

Public Service/Taxes/Utilities: The no-action alternative will have no impact on public services.

Aesthetics/Recreation: The no-action alternative will not alter any scenic vista or create an aesthetically offensive site. It will not alter the character of the community or change the quality or quantity of recreation. However, if catastrophic fire results from inaction, there will be major impacts to the aesthetics of highly valued recreation property.

Cultural/Historical Resources: The no-action alternative will not affect any historic or cultural resources.

Alternative 2 (Preferred Alternative) - Fuels Reduction Project: Complete a fuels reduction project as outlined in this environmental assessment.

Cumulative Impact:

Impacts from this alternative would be more visible to the public until lack of action might lead to large-tree-stand-scale die-offs, eventually leading to catastrophic fire.

Land Resources: With the removal of trees, some soil instability could occur. This will be mitigated through the planting of native grasses to stabilize soils. If steep slopes are involved, other methods such as matting or the placement of straw will be used to ensure no gullying or channeling occurs. Best Management Practices, as set by the Department of State Lands, will be followed to minimize impacts to stream banks or beds.

Air: During forestry operation some emissions from equipment and dust from ground disturbance will occur. This will be minimal and will end when the project is completed.

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Water: Best Management Practices, as set by the Department of State Lands, will be followed to minimize impacts to stream banks or beds. In addition, these practices should minimize turbidity caused by runoff.

Vegetation: With the removal of trees, plant species that require increased sun will increase, while shade-tolerant species will decrease. This change will be minor and is a desired outcome of the proposed action. Seeding with native grass mixes will occur after ground disturbance to discourage runoff. In addition, disturbed areas will be monitored for noxious weeds, and mechanical and/or biological controls will be used to repress/eliminate noxious weeds. Because individual disturbances would be larger, there would be greater opportunity for noxious weeds to gain a foothold at some sites. Weed management would be incorporated into the Region One Weed Management Program, as kept on file in the FWP Region One Headquarters.

Fish and Wildlife: Snags will be left for wildlife, with some large trees being topped to reduce wind load, while retaining the tree if financially feasible. Three to five tons of woody debris per acre will be left on the forest floor for small mammals. Best Management Practices will be followed, particularly regarding streams and riparian areas. Wolves are present west of Kalispell and, while they may move through the Thompson Chain of Lakes area, no packs have been identified that are living at Thompson Chain of Lakes. No bald eagles nest in the prescription area; however, the Montana Bald Eagle Management Plan will be followed. Loons nest in Upper Thompson, but work will be done in the winter, when loons are not present.

Noise/Electrical Effects: During tree removal operations, chain saw and equipment noises will increase noise levels and may cause a nuisance for adjacent neighbors or visitors. Care will be taken to keep activities between 8:00 a.m. and 5:00 p.m. in sites adjacent to residences.

Land Use: All the areas included in this assessment are used for recreation. None of the alternatives will have impacts on existing land use, outside of the time when the area would be closed during treatments. No alternative would conflict with designated natural area or with existing land use in a way that would prohibit the proposed action.

Risk/Health Hazards: The equipment removing timber will use gasoline and oil. Care will be taken to prevent spills and house substances away from dwellings. Large amounts of gasoline or oil will not be stored on-site.

Danger would exist for the public if they entered into an area where active treatment is occurring. Therefore, areas with ongoing management activity will be closed until that activity is completed.

Community Impact: There will be no impacts that will alter the distribution, density, or growth rate of the human population in the area. There will be no change in the social structure of the community, employment, income, or commercial activity.

Public Service/Taxes/Utilities: Increased fuel will be used to remove timber, but the amount of increase will be insignificant.

Aesthetics/Recreation: Scenic vista and park setting will be changed due to the removal of a larger number of trees at one time. The understory will be opened in some areas creating more of a mosaic effect in forest canopies that currently exist. Some people may not find this as aesthetically pleasing as the current condition. This action will also remove hazardous trees to protect visitors and reduce the potential for catastrophic fire, which would greatly impact the aesthetics of a park area. Visual impacts will be minimized through the removal of slash through chipping or burning and burying, and through spacing and timing of incursions.

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During ongoing management activities, sites would be closed to public use for safety considerations. These closures would be limited in nature and would be timed to avoid peak use seasons when possible.

Cultural/Historical Resources: SHPO and the Salish and Kootenai Tribes will be contacted to ensure protection of cultural sites. It is not anticipated that the project will disturb cultural resources. Group selection harvests will be done in winter months to minimize ground disturbance, which could impact cultural or archeological sites.

2. Evaluation and listing of mitigation, stipulation, or other control measures enforceable by the agency or another government agency:

Best Management Practices Guidelines from the State Lands Division would be followed during harvest of trees.

Wildlife biologists will be consulted while designing any group selection, or precommercial or commercial thinning projects.

With the removal of trees, some soil instability could occur. This will be mitigated through the planting of native grasses to stabilize the soils. If steep slopes are involved, other methods such as matting or the placement of straw will be used to ensure no erosional gullying or channeling occurs. Best Management Practices will be utilized to minimize soil compaction and disturbance.

Work will be done in the winter to minimize ground disturbance. Disturbed areas will be monitored for noxious weeds, and mechanical and/or biological controls will be used to repress/eliminate noxious weeds. The areas are monitored and managed under the Region One Weed Management Program, as kept on file in the FWP Region One Headquarters.

Work will be done during the winter months when loons are not present.

Care will be taken to keep activities between 8:00 a.m. and 5:00 p.m. in sites adjacent to residences.

Care will be taken to prevent spills and house substances away from dwellings. Large amounts of gasoline or oil will not be stored on-site.

Visual impacts will be minimized through the removal of slash through chipping or burning, and through spacing and timing of incursions.

During ongoing management activities, sites would be closed to public use for safety considerations. These closures would be limited in nature and would be timed to avoid peak use seasons when possible.

Before this project begins, SHPO and the Salish and Kootenai Tribes will be contacted to ensure protection of cultural sites. Harvests will be done in winter months to minimize ground disturbance, which could impact cultural or archeological sites.

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PART II. ENVIRONMENTAL REVIEW (continued)

1. Evaluation of the impacts of the proposed action, including secondary and cumulative impacts on the physical and human environment.

A. PHYSICAL ENVIRONMENT

1. LAND RESOURCES Will the proposed action result in:	IMPACT☼				Can Impact Be Mitigated☼	Comment Index
	Unknown☼	None	Minor☼	Potentially Significant		
➢a. Soil instability or changes in geologic substructure?			X		Yes	1a
b. Disruption, displacement, erosion, compaction, moisture loss, or over-covering of soil, which would reduce productivity or fertility?			X		Yes	1b
➢c. Destruction, covering, or modification of any unique geologic or physical features?		X				
d. Changes in siltation, deposition, or erosion patterns that may modify the channel of a river or stream, or the bed or shore of a lake?			X		Yes	1d
e. Exposure of people or property to earthquakes, landslides, ground failure, or other natural hazard?		X				
f. Other (list)						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Land Resources (Attach additional pages of narrative if needed):

1a and b: With the removal of trees, some soil instability could occur. This will be mitigated through the planting of native grasses to stabilize the soils. If steep slopes are involved, other methods such as matting or the placement of straw will be used to ensure no erosional gullying or channeling occurs. Management practices will be utilized to minimize soil compaction and disturbance.

1d: Best Management Practices, as set by the Department of State Lands, will be followed to minimize impacts to stream banks or beds. Please refer to a copy of Best Management Practices.

☼ Include a narrative explanation under Part III describing the scope and level of impact. If the impact is unknown, explain why the unknown impact has not or can not be evaluated.
➢ Include a narrative description addressing the items identified in 12.8.604-1a (ARM).
♦ Determine whether the described impact may result and respond on the checklist. Describe any minor or potentially significant impacts.
♦♦ Include a discussion about the issue in the EA narrative and include documentation if it will be useful.

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2. AIR Will the proposed action result in:	IMPACT☼				Can Impact Be Mitigated☼	Comment Index
	Unknown☼	None	Minor☼	Potentially Significant		
➢a. Emission of air pollutants or deterioration of ambient air quality? (Also see 13c.)			X			2a
b. Creation of objectionable odors?		X				
c. Alteration of air movement, moisture, or temperature patterns or any change in climate, either locally or regionally?		X				
d. Adverse effects on vegetation, including crops, due to increased emissions of pollutants?		X				
♦♦e. For P-R/D-J projects, will the project result in any discharge, which will conflict with federal or state air quality regs? (Also see 2a.)		X				
f. Other						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Air Resources (Attach additional pages of narrative if needed):

2a: During forestry operations some emissions from equipment and dust from ground disturbance will occur. This will be minimal and will end when the forestry project is completed.

☼ Include a narrative explanation under Part III describing the scope and level of impact. If the impact is unknown, explain why the unknown impact has not or can not be evaluated.
➢ Include a narrative description addressing the items identified in 12.8.604-1a (ARM).
♦ Determine whether the described impact may result and respond on the checklist. Describe any minor or potentially significant impacts.
♦♦ Include a discussion about the issue in the EA narrative and include documentation if it will be useful.

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3. WATER Will the proposed action result in:	IMPACT☼				Can Impact Be Mitigated☼	Comment Index
	Unknown☼	None	Minor☼	Potentially Significant		
➢a. Discharge into surface water or any alteration of surface water quality, including but not limited to temperature, dissolved oxygen, or turbidity?			X		Yes	3a
b. Changes in drainage patterns or the rate and amount of surface runoff?		X				
c. Alteration of the course or magnitude of floodwater or other flows?		X				
d. Changes in the amount of surface water in any water body or creation of a new water body?		X				
e. Exposure of people or property to water-related hazards such as flooding?		X				
f. Changes in the quality of groundwater?		X				
g. Changes in the quantity of groundwater?		X				
h. Increase in risk of contamination of surface or groundwater?			X		Yes	3h
i. Effects on any existing water right or reservation?		X				
j. Effects on other water users as a result of any alteration in surface or groundwater quality?		X				
k. Effects on other users as a result of any alteration in surface or groundwater quantity?		X				
♦♦l. For P-R/D-J, will the project affect a designated floodplain? (Also see 3c.)		X				
♦m. For P-R/D-J, will the project result in any discharge that will affect federal or state water quality regulations? (Also see 3a.)		X				
n. Other:						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Water Resources (Attach additional pages of narrative if needed):

3a and 3h: Best Management Practices, as set by the Department of State Lands will be followed to minimize impacts to stream banks or beds. In addition, these practices should minimize turbidity caused by runoff. Please refer to a copy of Best Management Practices.

☼ Include a narrative explanation under Part III describing the scope and level of impact. If the impact is unknown, explain why the unknown impact has not or can not be evaluated.
➢ Include a narrative description addressing the items identified in 12.8.604-1a (ARM).
♦ Determine whether the described impact may result and respond on the checklist. Describe any minor or potentially significant impacts.
♦♦ Include a discussion about the issue in the EA narrative and include documentation if it will be useful.

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4. VEGETATION Will the proposed action result in:	IMPACT☼				Can Impact Be Mitigated☼	Comment Index
	Unknown☼	None	Minor☼	Potentially Significant		
a. Changes in the diversity, productivity, or abundance of plant species (including trees, shrubs, grass, crops, and aquatic plants)?			X		Yes	4a
b. Alteration of a plant community?			X			4b
c. Adverse effects on any unique, rare, threatened, or endangered species?		X				4c
d. Reduction in acreage or productivity of any agricultural land?		X				
e. Establishment or spread of noxious weeds?			X		Yes	4e
♦♦f. For P-R/D-J, will the project affect wetlands, or prime and unique farmland?		x				
g. Other:						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Land Resources (Attach additional pages of narrative if needed):

4a and b: With the removal of some trees, plant species that require increased sun will increase, while shade-tolerant species will decrease. This change will be minor and is a desired outcome of the proposed action. Seeding with native grass mixes will occur after ground disturbance to discourage runoff.

4c: Most actions proposed under this EA would have no impact on unique, rare, threatened, or endangered species because of their small scale and proximity to areas of concentrated human use.

4e: Noxious weeds could impact areas with ground disturbance from tree removal. Work will be done in the winter to minimize ground disturbance. Seeding with native grass mixes will occur if the ground is disturbed. In addition, disturbed areas will be monitored for noxious weeds, and mechanical and/or biological controls will be used to repress/eliminate noxious weeds. The areas are monitored and managed under the Region One Weed Management Program, as kept on file in the FWP Region One Headquarters.

☼ Include a narrative explanation under Part III describing the scope and level of impact. If the impact is unknown, explain why the unknown impact has not or can not be evaluated.
➢ Include a narrative description addressing the items identified in 12.8.604-1a (ARM).
♦ Determine whether the described impact may result and respond on the checklist. Describe any minor or potentially significant impacts.
♦♦ Include a discussion about the issue in the EA narrative and include documentation if it will be useful.

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5. FISH/WILDLIFE Will the proposed action result in:	IMPACT○				Can Impact Be Mitigated○	Comment Index
	Unknown○	None	Minor○	Potentially Significant		
a. Deterioration of critical fish or wildlife habitat?		X				
b. Changes in the diversity or abundance of game animals or bird species?		X				
c. Changes in the diversity or abundance of nongame species?		X				5c
d. Introduction of new species into an area?		X				
e. Creation of a barrier to the migration or movement of animals?		X				
f. Adverse effects on any unique, rare, threatened, or endangered species?		X				
g. Increase in conditions that stress wildlife populations or limit abundance (including harassment, legal or illegal harvest, or other human activity)?		X				
♦♦h. For P-R/D-J, will the project be performed in any area in which T&E species are present, and will the project affect any T&E species or their habitat? (Also see 5f.)		X				5h
♦i. For P-R/D-J, will the project introduce or export any species not presently or historically occurring in the receiving location? (Also see 5d.)		X				
j. Other:						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Land Resources (Attach additional pages of narrative if needed):

5c: Snags will be left for wildlife, with some large trees being topped to reduce wind load, while retaining the tree if financially feasible. Three to five tons of woody debris per acre will be left on the forest floor for small mammals. Best Management Practices will be followed, particularly regarding streams and riparian areas.

5h: Wolves are present west of Kalispell and, while they may move through the Thompson Chain of Lakes area, no packs have been identified that are living at Thompson Chain of Lakes. No bald eagle nests are within the zones identified for treatment. Loons are present in Upper Thompson Lake. Work will be done during the winter months when loons are not present.

○ Include a narrative explanation under Part III describing the scope and level of impact. If the impact is unknown, explain why the unknown impact has not or can not be evaluated.

➢ Include a narrative description addressing the items identified in 12.8.604-1a (ARM).

♦ Determine whether the described impact may result and respond on the checklist. Describe any minor or potentially significant impacts.

♦♦ Include a discussion about the issue in the EA narrative and include documentation if it will be useful.

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B. HUMAN ENVIRONMENT

6. NOISE/ELECTRICAL EFFECTS Will the proposed action result in:	IMPACT☼				Can Impact Be Mitigated☼	Comment Index
	Unknown☼	None	Minor☼	Potentially Significant		
a. Increases in existing noise levels?			X			6a
b. Exposure of people to severe or nuisance noise levels?			X			6b
c. Creation of electrostatic or electromagnetic effects that could be detrimental to human health or property?		X				
d. Interference with radio or television reception and operation?		X				
e. Other:						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Land Resources (Attach additional pages of narrative if needed):

6a and b: During tree removal operations, chain saw and equipment noises will increase noise levels and may cause a nuisance for adjacent neighbors or visitors. Care will be taken to keep activities between 8:00 a.m. and 5:00 p.m. in sites adjacent to residences.

7. LAND USE Will the proposed action result in:	IMPACT☼				Can Impact Be Mitigated☼	Comment Index
	Unknown☼	None	Minor☼	Potentially Significant		
a. Alteration of or interference with the productivity or profitability of the existing land use of an area?		X				
b. Conflict with a designated natural area or area of unusual scientific or educational importance?		X				
c. Conflict with any existing land use whose presence would constrain or potentially prohibit the proposed action?		X				
d. Adverse effects on or relocation of residences?		X				
e. Other: _____						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Land Resources (Attach additional pages of narrative if needed):

☼ Include a narrative explanation under Part III describing the scope and level of impact. If the impact is unknown, explain why the unknown impact has not or can not be evaluated.
➢ Include a narrative description addressing the items identified in 12.8.604-1a (ARM).
♦ Determine whether the described impact may result and respond on the checklist. Describe any minor or potentially significant impacts.
♦♦ Include a discussion about the issue in the EA narrative and include documentation if it will be useful.

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8. RISK/HEALTH HAZARDS Will the proposed action result in:	IMPACT☼				Can Impact Be Mitigated☼	Comment Index
	Unknown☼	None	Minor☼	Potentially Significant		
a. Risk of an explosion or release of hazardous substances (including but not limited to oil, pesticides, chemicals, or radiation) in the event of an accident or other forms of disruption?			X		Yes	8a
b. Affect an existing emergency response or emergency evacuations plans or create a need for a new plan?		X				
c. Creation of any human health hazard or potential hazard?			X		Yes	8c
♦d. For P-R/D-J, will any chemical toxicants be used? (Also see 8a.)			X			8d
e. Other:						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Land Resources (Attach additional pages of narrative if needed):

8a and d: The equipment removing timber will use gasoline and oil. Care will be taken to prevent spills and house substances away from dwellings. Large amounts of gasoline or oil will not be stored on-site.

8c: Danger would exist for the public if they entered into an area where active treatment is occurring. Therefore, areas with ongoing management activity will be closed until that activity is completed.

9. COMMUNITY IMPACT Will the proposed action result in:	IMPACT☼				Can Impact Be Mitigated☼	Comment Index
	Unknown☼	None	Minor☼	Potentially Significant		
a. Alteration of the location, distribution, density, or growth rate of the human population of an area?		X				
b. Alteration of the social structure of a community?		X				
c. Alteration of the level or distribution of employment or community or personal income?		X				
d. Changes in industrial or commercial activity?		X				
e. Increased traffic hazards or effects on existing transportation facilities or patterns of movement of people and goods?		X				
f. Other:						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Land Resources (Attach additional pages of narrative if needed):

☼ Include a narrative explanation under Part III describing the scope and level of impact. If the impact is unknown, explain why the unknown impact has not or can not be evaluated.
➢ Include a narrative description addressing the items identified in 12.8.604-1a (ARM).
♦ Determine whether the described impact may result and respond on the checklist. Describe any minor or potentially significant impacts.
♦♦ Include a discussion about the issue in the EA narrative and include documentation if it will be useful.

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10. PUBLIC SERVICES/TAXES/UTILITIES Will the proposed action result in:	IMPACT○				Can Impact Be Mitigated○	Comment Index
	Unknown○	None	Minor○	Potentially Significant		
a. Will the proposed action have an effect upon or result in a need for new or altered governmental services in any of the following areas: fire or police protection, schools, parks/recreational facilities, roads or other public maintenance, water supply, sewer or septic systems, solid waste disposal, health, or other governmental services? If any, specify:		X				
b. Will the proposed action have an effect upon the local or state tax base and revenues?		X				
c. Will the proposed action result in a need for new facilities or substantial alterations of any of the following utilities: electrical power, natural gas, other fuel supply or distribution systems, or communications?		X				
d. Will the proposed action result in increased use of any energy source?			X			10d
➢e. Define projected revenue sources.						
➢f. Define projected maintenance costs.						
g. Other:						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Land Resources (Attach additional pages of narrative if needed):

10d: Increased fuel will be used to remove timber, but the amount of increase will be insignificant.

○ Include a narrative explanation under Part III describing the scope and level of impact. If the impact is unknown, explain why the unknown impact has not or can not be evaluated.
➢ Include a narrative description addressing the items identified in 12.8.604-1a (ARM).
♦ Determine whether the described impact may result and respond on the checklist. Describe any minor or potentially significant impacts.
♦♦ Include a discussion about the issue in the EA narrative and include documentation if it will be useful.

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11. AESTHETICS/RECREATION Will the proposed action result in:	IMPACT☼				Can Impact Be Mitigated ☼	Comment Index
	Unknown ☼	None	Minor☼	Potentially Significant		
a. Alteration of any scenic vista, or creation of an aesthetically offensive site or effect that is open to public view?			X		Yes	11a
b. Alteration of the aesthetic character of a community or neighborhood?			X			11b
➢c. Alteration of the quality or quantity of recreational/tourism opportunities and settings? (Attach tourism report.)			X			11c
♦d. For P-R/D-J, will any designated or proposed wild or scenic rivers, trails, or wilderness areas be impacted? (Also see 11a, 11c.)		X				
e. Other:						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Land Resources (Attach additional pages of narrative if needed):

11a and b: Scenic vista and the visual setting will be changed due to removal of some trees. The understory will be opened in some areas creating more of a mosaic effect in forest canopies that currently exist. Some people may not find this as aesthetically pleasing as the current condition. However, this action will also reduce the potential for catastrophic fire, which would greatly impact the aesthetics of the area. Visual impacts will be minimized through the removal of slash through chipping or burning and burying, and through spacing and timing of incursions.

11c: During ongoing management activities, sites would be closed to public use for safety considerations. These closures would be limited in nature and would be timed to avoid peak use seasons when possible.

☼ Include a narrative explanation under Part III describing the scope and level of impact. If the impact is unknown, explain why the unknown impact has not or can not be evaluated.

➢ Include a narrative description addressing the items identified in 12.8.604-1a (ARM).

♦ Determine whether the described impact may result and respond on the checklist. Describe any minor or potentially significant impacts.

♦♦ Include a discussion about the issue in the EA narrative and include documentation if it will be useful.

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12. CULTURAL/HISTORICAL RESOURCES Will the proposed action result in:	IMPACT☼				Can Impact Be Mitigated☼	Comment Index
	Unknown☼	None	Minor☼	Potentially Significant		
➢a. Destruction or alteration of any site, structure, or object of prehistoric, historic, or paleontological importance?		X				12a
b. Physical change that would affect unique cultural values?		X				
c. Effects on existing religious or sacred uses of a site or area?		X				
♦♦d. For P-R/D-J, will the project affect historic or cultural resources? Attach SHPO letter of clearance. (Also see 12a.)		X				
e. Other:						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Land Resources (Attach additional pages of narrative if needed):

12a: Before this project begins, SHPO and the Salish and Kooteni Tribes will be contacted to ensure protection of cultural sites. Harvests will be done in winter months to minimize ground disturbance, which could impact cultural or archeological sites.

☼ Include a narrative explanation under Part III describing the scope and level of impact. If the impact is unknown, explain why the unknown impact has not or can not be evaluated.

➢ Include a narrative description addressing the items identified in 12.8.604-1a (ARM).

♦ Determine whether the described impact may result and respond on the checklist. Describe any minor or potentially significant impacts.

♦♦ Include a discussion about the issue in the EA narrative and include documentation if it will be useful.

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C: SIGNIFICANCE CRITERIA

13. SUMMARY EVALUATION OF SIGNIFICANCE Will the proposed action, considered as a whole,:	IMPACT☼				Can Impact Be Mitigated ☼	Comment Index
	Unknown☼	None	Minor☼	Potentially Significant		
a. Have impacts that are individually limited, but cumulatively considerable? (A project or program may result in impacts on two or more separate resources, which create a significant effect when considered together or in total.)		X				
b. Involve potential risks or adverse effects, which are uncertain but extremely hazardous if they were to occur?		X				13b
c. Potentially conflict with the substantive requirements of any local, state, or federal law, regulation, standard, or formal plan?		X				
d. Establish a precedent or likelihood that future actions with significant environmental impacts will be proposed?		X				
e. Generate substantial debate or controversy about the nature of the impacts that would be created?		X				
♦f. For P-R/D-J, is the project expected to have organized opposition or generate substantial public controversy? (Also see 13e.)		X				
♦♦g. For P-R/D-J, list any federal or state permits required.						

Narrative Description and Evaluation of the Cumulative and Secondary Effects on Water Resources (Attach additional pages of narrative if needed):

13b: While the proposed action is not expected to produce extremely hazardous effects, inaction is anticipated to have extremely hazardous effects. Failure to remove hazardous trees will result in injury to persons or damage to property. Failure to remove diseased trees will impact future forest health. Failure to manage forest health may ultimately result in a catastrophic fire, which would impact recreational property as well as adjacent properties.

☼ Include a narrative explanation under Part III describing the scope and level of impact. If the impact is unknown, explain why the unknown impact has not or can not be evaluated.

➢ Include a narrative description addressing the items identified in 12.8.604-1a (ARM).

♦ Determine whether the described impact may result and respond on the checklist. Describe any minor or potentially significant impacts.

♦♦ Include a discussion about the issue in the EA narrative and include documentation if it will be useful.

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PART III. NARRATIVE EVALUATION AND COMMENT

1a and b: With the removal of trees, some soil instability could occur. This will be mitigated through the planting of native grasses to stabilize the soils. If steep slopes are involved, other methods such as matting or the placement of straw will be used to ensure no erosional gullying or channeling occurs. Management practices will be utilized to minimize soil compaction and disturbance.

1d: Best Management Practices, as set by the Department of State Lands, will be followed to minimize impacts to stream banks or beds. Please refer to a copy of Best Management Practices.

2a: During forestry operations some emissions from equipment and dust from ground disturbance will occur. This will be minimal and will end when the forestry project is completed.

3a and 3h: Best Management Practices, as set by the Department of State Lands, will be followed to minimize impacts to stream banks or beds. In addition, these practices should minimize turbidity caused by runoff. Please refer to a copy of Best Management Practices.

4a and b: With the removal of some trees, plant species that require increased sun will increase, while shade-tolerant species will decrease. This change will be minor and is a desired outcome of the proposed action. Seeding with native grass mixes will occur after ground disturbance to discourage runoff.

4c: Most actions proposed under this EA would have no impact on unique, rare, threatened, or endangered species because of their small scale and proximity to areas of concentrated human use.

4e: Noxious weeds could impact areas with ground disturbance from tree removal. Work will be done in the winter to minimize ground disturbance. Seeding with native grass mixes will occur if the ground is disturbed. In addition, disturbed areas will be monitored for noxious weeds, and mechanical and/or biological controls will be used to repress/eliminate noxious weeds. The areas are monitored and managed under the Region One Weed Management Program, as kept on file in the FWP Region One Headquarters.

5c: Snags will be left for wildlife, with some large trees being topped to reduce wind load, while retaining the tree if financially feasible. Three to five tons of woody debris per acre will be left on the forest floor for small mammals. Best Management Practices will be followed, particularly regarding streams and riparian areas.

5h: Wolves are present west of Kalispell and, while they may move through the Thompson Chain of Lakes area, no packs have been identified that are living at Thompson Chain of Lakes. No bald eagles nests are within the zones identified for treatment. Loons are present in Upper Thompson Lake. Work will be done during the winter months when loons are not present.

6a and b: During tree removal operations, chain saw and equipment noises will increase noise levels and may cause a nuisance for adjacent neighbors or visitors. Care will be taken to keep activities between 8:00 a.m. and 5:00 p.m. in sites adjacent to residences.

8a and d: The equipment removing timber will use gasoline and oil. Care will be taken to prevent spills and house substances away from dwellings. Large amounts of gasoline or oil will not be stored on-site.

8c: Danger would exist for the public if they entered into an area where active treatment is occurring. Therefore, areas with ongoing management activity will be closed until that activity is completed.

10d: Increased fuel will be used to remove timber, but the amount of increase will be insignificant.

11a and b: Scenic vista and the visual setting will be changed due to removal of some trees. The understory will be opened in some areas creating more of a mosaic effect in forest canopies that currently exist. Some people may not find this as aesthetically pleasing as the current condition. However, this action will also reduce the potential for catastrophic fire, which would greatly impact the aesthetics of the area. Visual impacts will be minimized through the

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removal of slash through chipping or burning and burying, and through spacing and timing of incursions.

11c: During ongoing management activities, sites would be closed to public use for safety considerations. These closures would be limited in nature and would be timed to avoid peak use seasons when possible.

12a: Before this project begins, SHPO and the Salish and Kootenai Tribes will be contacted to ensure protection of cultural sites. Harvests will be done in winter months to minimize ground disturbance, which could impact cultural or archeological sites.

13b: While the proposed action is not expected to produce extremely hazardous effects, inaction is anticipated to have extremely hazardous effects. Failure to remove hazardous trees will result in injury to persons or damage to property. Failure to remove diseased trees will impact future forest health. Failure to manage forest health may ultimately result in a catastrophic fire, which would impact recreational property as well as adjacent properties.

PART IV. EA CONCLUSION SECTION

1. **Based on the significance criteria evaluated in this EA, is an EIS required? YES/NO If an EIS is not required, explain why the EA is the appropriate level of analysis for this proposed action:**

   Due to the previously completed programmatic environmental assessment, and the level of activity expected from this action, an environmental assessment is the correct level of analysis. No significant impacts are present that cannot be mitigated.

2. **Describe the level of public involvement for this project, if any, and given the complexity and the seriousness of the environmental issues associated with the proposed action, is the level of public involvement appropriate under the circumstances:**

   FWP has communicated with the homeowners association regarding development of this EA. A 30-day comment period will be held, with site tours as appropriate. A formal public hearing will be held if it is deemed necessary.

3. **Duration of comment period, if any:** A minimum of thirty days, from September 29 through October 31, 2005.

4. **Name, title, address, and phone number of the person(s) responsible for preparing the EA:**

   Marty Watkins, Regional Parks Manager
   Fish, Wildlife & Parks
   490 N. Meridian Road
   Kalispell, MT 59901
   (406) 751-4573
   mawatkins@state.mt.us

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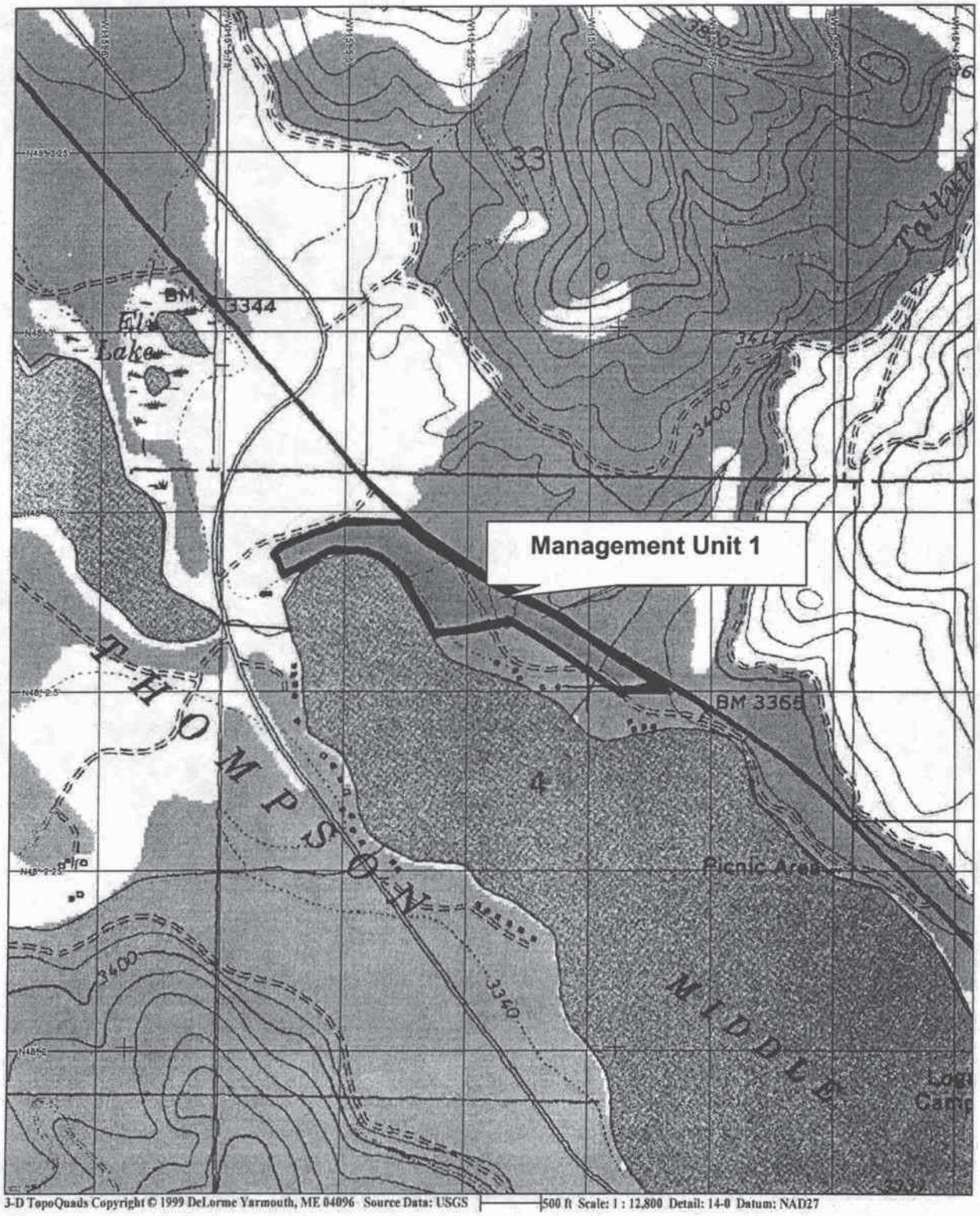
Appendix A – Management Unit 1



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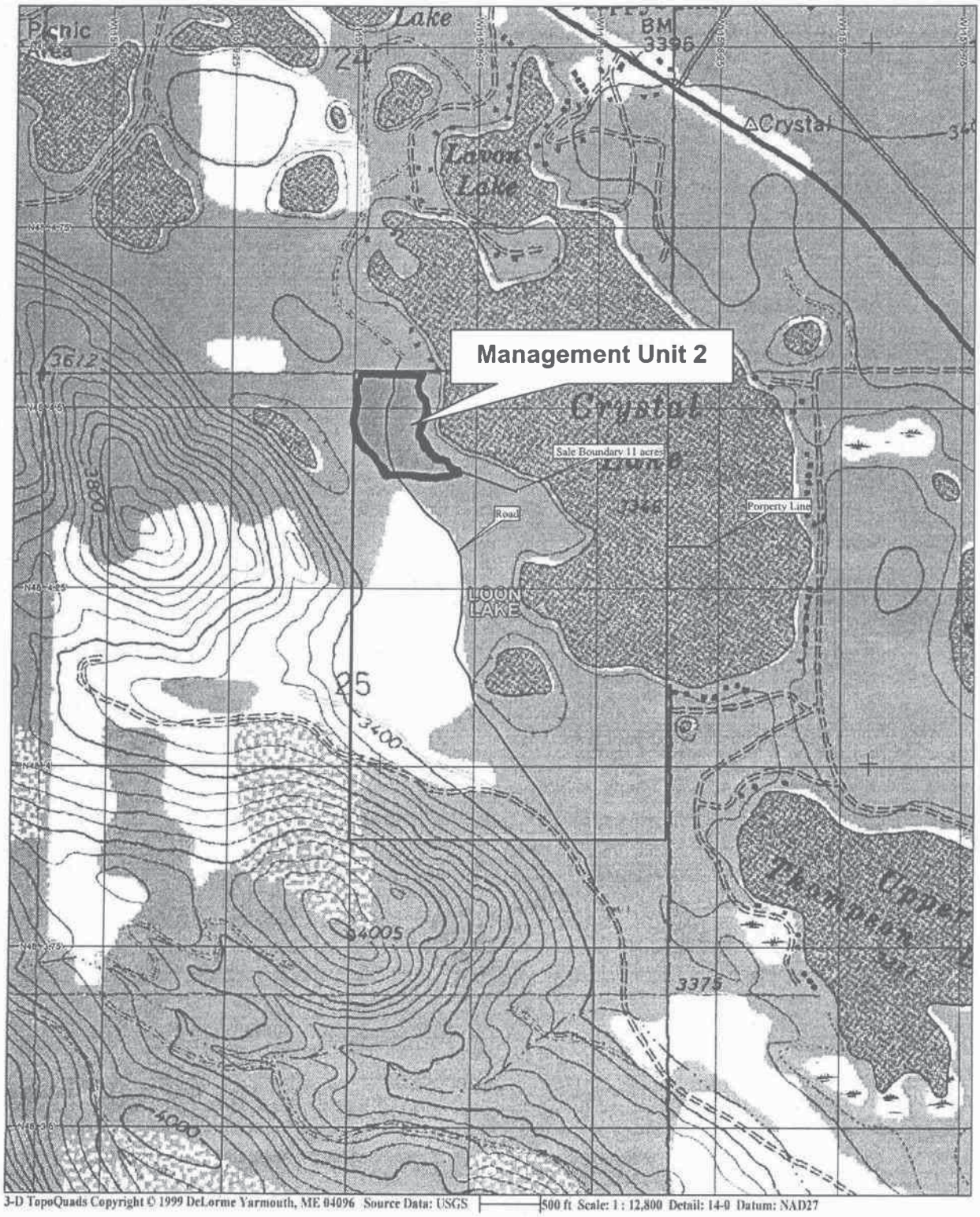
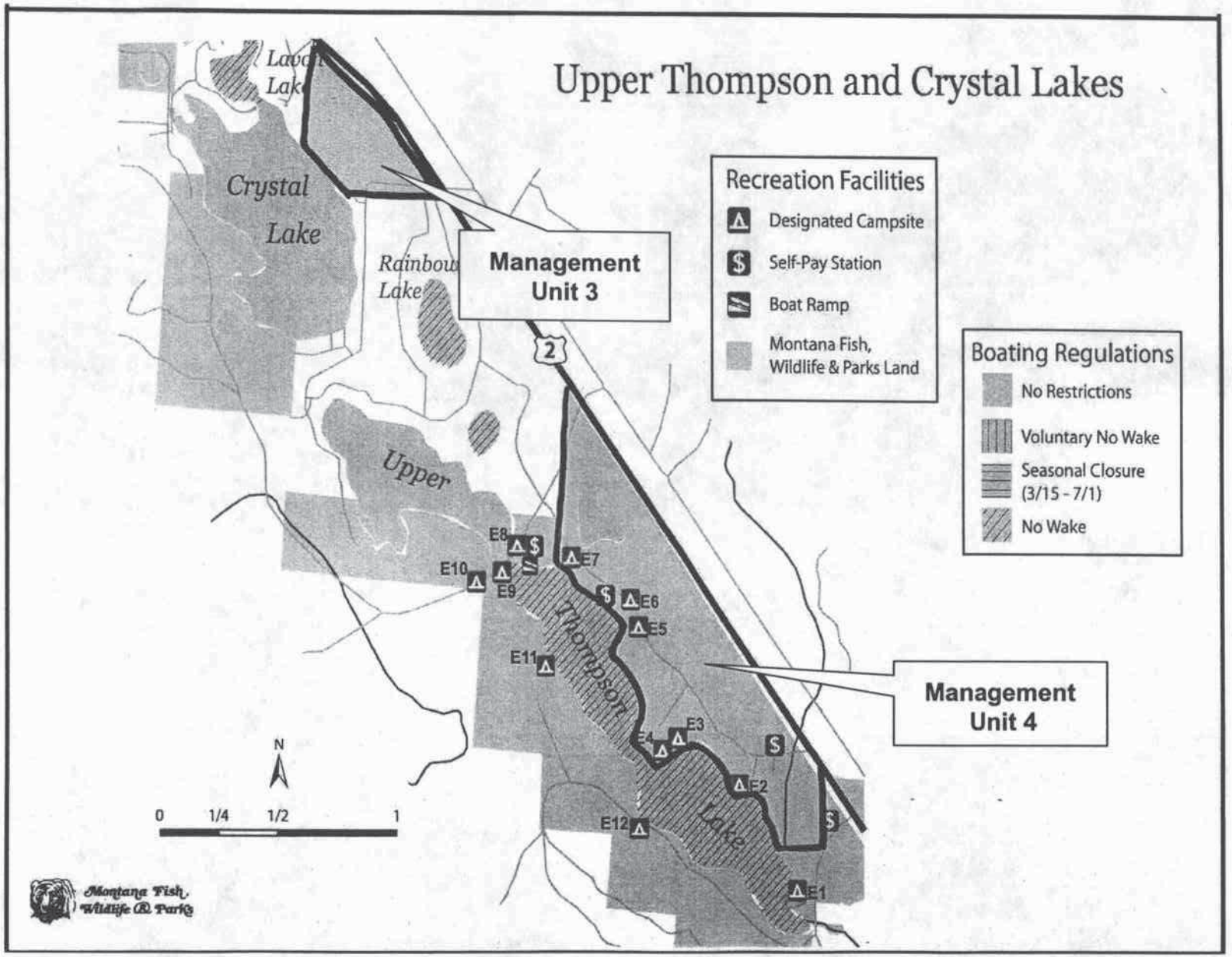
Appendix A – Management Unit 2




Upper Thompson and Crystal Lakes
Crystal Lake
Rainbow Lake
Upper Thompson Lake
Management Unit 3
Management Unit 4
2
Recreation Facilities
Designated Campsite
Self-Pay Station
Boat Ramp
Montana Fish, Wildlife & Parks Land
Boating Regulations
No Restrictions
Voluntary No Wake
Seasonal Closure (3/15 - 7/1)
No Wake
E1
E2
E3
E4
E5
E6
E7
E8
E9
E10
E11
E12
N
0
1/4
1/2
1
Montana Fish, Wildlife & Parks

Prescription
for
Chain of Lakes Fire Hazard Reduction Proposal

Management Unit 1 – 24 Acres

Middle Thompson (S4, T26N, R27W)

Existing Condition: Mature, overstocked stand with a volume of approximately 25 MBF/acre (25,000 board feet per acre).

Proposed Treatment: Harvest approximately 50% of the volume or 24 acres x 12 MBF/acre = 288 MBF. (Slash treatment is included.)

Estimated Stumpage Value: 288 MBF @ $300/MBF = $86,400.

Management Unit 2 – 11 Acres

Crystal Up - 6 acres (S25, T27N, R28W)

Existing Condition: Two-story stand with dense understory. The overstory is light, with a merchantable volume of approximately 2 MBF/acre.

Proposed Treatment: Remove through timber harvest approximately 50% of the overstory volume or 6 acres x 1 MBF/acre = 6 MBF.

The understory will be precommercially thinned to a 12′-14′ spacing and the slash limbed and lopped. Within 100′ of the dirt road and/or property line, the trees will be spaced to a 10′ crown spacing and the slash piled and burned or chipped.

Crystal Down - 5 acres (S25, T27N, R28W)

Existing Condition: Nice stand of mature, sawtimber-sized trees with a scattered, dense understory of Douglas-fir.

Proposed Treatment: Remove approximately 4-5 MBF of the poorer merchantable-sized trees, for a total volume of approximately 22 MBF.

The understory will be precommercially thinned to a 12′-14′ spacing and the slash limbed and lopped. Within 100′ of the dirt road and/or property line, the trees will be spaced to a 10′ crown spacing and the slash piled and burned or chipped.

Economics:
Crystal Up:
Estimated Stumpage Value: 6 MBF @ $100/MBF = $600.

Cost of precommercial thin-and-slash treatment: 3 acres of thinning, limb and lop @ $350/acre = $1,050; and 3 acres of thinning and piling @ $800/acre = $2,400, for a total cost of $3,450.

Cost of treating Crystal Up = $3,450 (cost) less $600 (stumpage value) = $2,650 (net cost).

Crystal Down:
Estimated Stumpage Value: 22 MBF @ $200/MBF = $4,400.

Cost of precommercial thin-and-slash treatment: 3 acres of thinning, limb and lop @ $350/acre = $1,050; and 2 acres of thinning and piling @ $800/acre = $1,600, for a total cost of $2,650.

Cost of treating Crystal Down = $4,400 (stumpage value) less $2,650 (cost) = $1,750 (net value).

Total cost of treating Management Unit 2 = $2,650 (net cost for Crystal Up) less $1,750 (net value for Crystal Down) = $1,100 (net cost for treating Unit 2).

Management Unit 3 – 72 Acres

Crystal Lake – Highway side (S19, T27N, R27W)

Existing Condition – A scattered overstory of very poor merchantable-sized trees, 6"-10" DBH (diameter breast height). The understory is somewhat patchy and very dense. The understory is composed almost entirely of Douglas-fir. The overstory volume is approximately 1-2 MBF/acre.

Proposed Treatment – Remove, through a timber harvest, the overstory. Precommercially thin and limb and lop the understory to a 14'x14' spacing. Within 100' along the perimeter of Management Unit 3, thin to a wider spacing with crowns 10' apart on average. In this area the slash should be hand piled and burned or chipped.

Economics:
Estimated Stumpage Value: 72 acres x 2 MBF/acre @ $70/MBF = $10,080.

Cost of precommercial thin-and-slash treatment: 58 acres of thinning, limb and lop @ $350/acre = $20,300.

Cost of 17 acres of precommercial thinning, hand piling, and burning along the perimeter @ $800/acre = $13,600.

Total cost of treating Management Unit 3 = $33,900 (cost) less $10,080 (stumpage value) = $23,820 (net cost).

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Management Unit 4 – 213 Acres

Upper Thompson (S32, T27N, R27W)

Existing Condition: There are varying age classes, but the majority of this stand is around 50 years of age. There are older age classes around the lake and in clumps along the west portion of the management unit. The stand is made up primarily of 9-14" Douglas-fir and western larch with a fair component of lodgepole pine. Throughout the stand there is a 1-3" understory of Douglas-fir. Much of the stand was precommercially thinned about 30 years ago.

Proposed Treatment: Commercially thin the stand to about 60-80 square feet of basal area leaving primarily the best larch and Douglas-fir. Remove the understory, except where hiding and thermal cover are a consideration, at the time of harvest. Hand pile or chip along Highway 2 and the roads that surround the unit for 100'.

Economics:
Estimated Stumpage Value: 1.5 MBF/acre @ $100/acre x 213 acres = $21,300.

Cost of hand piling and burning 33 acres along the perimeter @ $800/acre = $26,400.

Ten acres of precommercial thinning, limb and lop in old landings @ $350/acre= $3500.

Total cost of treating Management Unit 4 = $29,900 (cost) less $21,300 (stumpage value) = $8,600 (net cost).

Economic Analysis of Entire Project:

It is the goal of this project to be revenue neutral. Work in Management Unit 4 will be based on the funding available for the first three management units, which are more of a concern for fuels reduction due to their proximity to adjacent housing. Work would be prioritized based on needs for fuels reduction, completing work that will lead to a forest environment that is healthier and provides forage and thermal cover for wildlife. Doing some road maintenance on the road into Upper Thompson Lake is also a high priority, but the amount of work done on the road will be based on cost considerations.

Management Unit 1:	$86,400
Management Unit 2:	($ 1,100)
Management Unit 3:	($23,820)
Management Unit 4:	($ 8,600)
Subtotal	**$52,880**
Road Repair	($52,880)
Total	**$ 0**