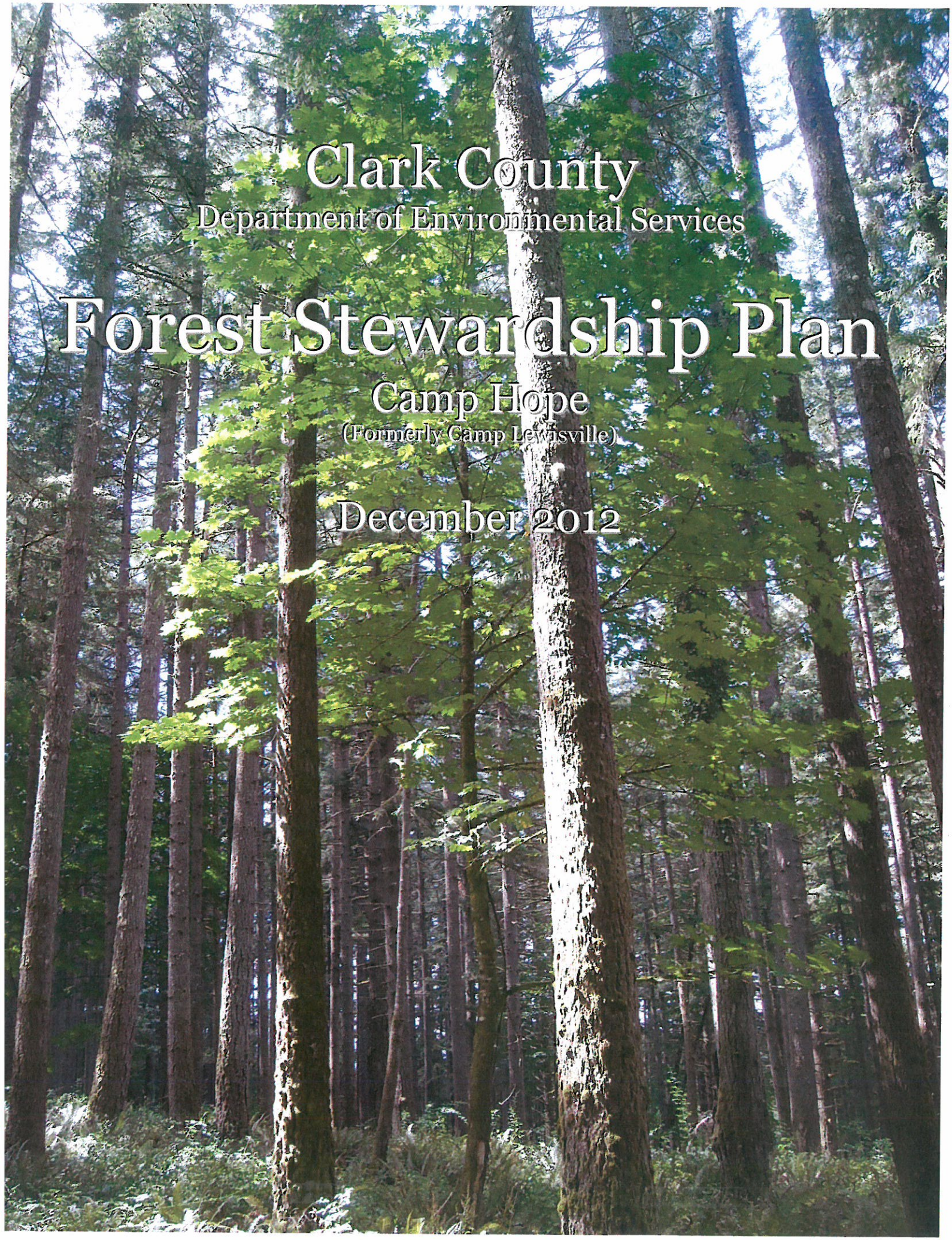


Clark County

Department of Environmental Services

Forest Stewardship Plan

Camp Hope

(Formerly Camp Lewisville)

December 2012

Forest Stewardship Plan

Forest name:	**Camp Hope**
# of acres plan covers:	**107 Acres**
Forest certification #:	
Plan prepared by:	**Jim Vandling**
Date plan prepared:	**December 2012**
County and state:	**Clark County, WA**

Plan revision dates

Plan revised	Monitoring data incorporated

Location and Access

This property is located approximately 1 mile north of Battleground in the East ½ of the SE ¼ of Section 22 and the NW ¼ of the SW ¼ of Section 23, Township 4 North, Range 2 East, WM.. Assessors parcel numbers are 225818 (67 acres) and 226049 (40 acres) respectively. The terrain on the property ranges from flat to moderately steep.

The primary access to the property is from the west on State Hwy. 503 and Roper Road. The topographic layout of the property will accommodate a large segment of the existing road network for purposes of accessing the timber. Minimal new construction will be required, of which other multi-use benefits will result through non-timber activities.

Forest Management

GENERAL APPROACH

This forest management plan is being developed to improve or protect wildlife and plant habitat, maintain a diverse forest, assure a healthy, sustainable forest, and reach ecological objectives. Wildlife habitat conditions, forest types, successional stages, and management activities of adjacent lands will be considered as they pertain to forest management of this tract. Forest management activities, including timber harvest, will be carried out on appropriate sites that are not selected for some higher priority use (watershed protection, rare and endangered element buffers, scenic buffers, etc) which have not been identified in this report.

Although revenues incidental to timber harvest will be earmarked for management of the property, timber harvest will not be relied upon as a major funding source. Timber harvest will be conducted to enhance habitat and biodiversity, and to sustain forest health.

Forest regeneration methods will incorporate natural and artificial regeneration of species most suitable to a specific site. These methods include: single tree selection, group selection, seed tree and shelterwood. Planting of species will be done on sites that cannot be successfully regenerated to target species by natural methods. Interplanting will be empasized in areas which would not otherwise establish an understory within an acceptable timeframe. It is prudent to maintain a diverse array of accepted harvesting and regeneration approaches.

Single tree selection or uneven-age management may be applied to regenerate shade tolerant species or maintain mast production, while maintaining aesthetics in areas where visual concerns are important (for example, the East Fork Lewis River viewshed).

Stand condition may dictate short-term forest management practices. For example, approximately 28 percent of the property was shelterwood-cut approximately 30 years ago, and 4 acres was clearcut 12 years ago. In both instances, there was no significant effort to manage for competing vegetation, causing natural regeneration in the shelterwood unit, and handplanting in the clearcut to fail. In the case of the shelterwood, which was mostly a Douglas fir residual timber-type, a successful seed crop may only be expected every 5 to 7 years. In this case, the brush had overtaken and dominated the understory site before natural regeneration could re-establish an uneven aged second story. Here, a prescription which utilized interplanting soon after harvest would have reestablished the second crop, before the competing vegetation dominated.

Detailed forest management plans will be management-unit specific and site specific. An example of a potential management unit would be the East Fork Lewis River watershed. Forest regeneration practices in this management unit would likely be geared toward uneven-age management practices to maintain scenic qualities of the lower viewshed. Certain management units or areas may be set aside for preservation of the riparian habitat or mature forest development.

FOREST MANAGEMENT GUIDELINES
BMPs for the Property: "Washington Forest Practice Rules WAC 222" and Washington Forest Practices Board Manual (1995) with superseding Emergency Water Typing Rules will serve as a minimum requirement to protect soil and water quality. In most cases, because of steep slopes, highly erosive soils and known existence of unique resources, the State BMP's will be exceeded. BMP application on the property will be site specific, performance based and rigorous. Monitoring of the effectiveness of BMP's in meeting stated objectives for erosion control and water quality protection will afford managers the information necessary for adaptive management. Timber harvest buffers will be developed to protect scenic areas, threatened and endangered species and streamside management zones (includes filtration, shade buffers, and coarse woody debris). A management unit for watershed protection adjacent to the East Fork Lewis River will be designated.

FOREST HEALTH
Maintaining forest health will be an important component of forest management. Both natural and introduced disease and pest systems play a role in plant and animal composition. Tree vigor often affects the vulnerability of trees to bark beetle attack. At present the aggregate stand is low in vigor due to age, and stocking. Douglas fir bark (Dentroctonus pseudotsugae) is present in some of the larger stagnant timber on the east side of the property.

Observations made in Lewisville Park which lays to the north of this tract indicate many stands of commercial species in viable quantities and merchantable quality. Some of the stands within the older conifer types (70-90 year age class) have developed advanced pathogenic conditions due to overstocked stand densities and root system damage sustained through soil compacting activity. In essence, many of these trees are overmature, or too old to maintain the vigor required under existing site conditions to produce sound wood fiber. If the tree has bark on it, green foliage on lateral branches, and in the upright position, it may not neccessarily indicate a healthy stem.
In areas near the Lewisville Park system roads and campgrounds, the presence of sporophores (fruiting bodies, or "conks"), was readily detectable on many stems of large diameter Douglas-fir. These "conks" are the best indicators for the presence of rot. An older Douglas-fir that is likely to be infected with conk rot, yet does not have it visible on the exterior bole of the stem, is a serious problem. The absence of sporophores may indicate decay is more advanced than if fruiting bodies remained on the tree, as they fall off after a period of years. This was proven when a few core samples were extracted from trees which had no visible external indicators. One was totally rotten; a second was perfectly sound, and the third core contained traces of laminated root rot (Polyporous anceps).
Many of these trees are considered to be high risk trees, which will not likely survive the next 15 to 20 years. Some of them may be classified as public hazards given the high use of the area. The presence of rot in these areas shows the need to balance aesthetics with the overall health of a forest ecosystem.

OUTDOOR RECREATION
Many recreational activities are compatible. Each activity will be managed to minimize impact on the resources, meet recreational demand and reduce visitor conflicts. Visitor carrying capacity of the site and the social carrying capacity are major elements in planning for the recreation component of the overall management plan. Data on human carrying capacity are not currently available for use in planning the recreation component. Because of the lack of this information, great care and a conservative approach must be taken in making the area available for recreation. Throughout the years, the property has been used for a variety of outdoor recreational activities. The acquisition by the county will increase public knowledge and interest in the property. Request for access from a wide variety of interest groups will increase. Each case will be evaluated based upon the impact on the natural characteristics of the site and its relationship with other user groups.

Recreation is a "quality of life" issue and is important to local residents and county residents who will be visiting the property. Recreation on the property will not be measured solely by the amount or variety of recreation provided. It will primarily be measured by the quality of the experience made possible by interacting with the natural resource.

Management Unit Descriptions and Productivity

Unit 100

This Management Unit lays in the NW ¼ SW ¼ of Section 23 of T. 4 N., R. 2 E., WM. It is approximately 22.0 Net Commercial Forest Land acres in size. The unit has a current annual sustained yield of approximately 6.3 Mbf representing approximately $ 2,700 in net operating revenue at current market prices. Species composition is predominately Douglas fir and total growing stock is 233 Mbf with a Basal Area of 120 Sq.Ft./Acre. Average side slope ranges from 5% to 30%. The average age of this stand is 75 years and was select tree harvested 25 to 30 years ago. Douglas fir Bark Beetle is present at an endemic level in this unit. Average crown closure is 10%.

Unit 200

This Management Unit lays in the NW ¼ SW ¼ of Section 23 and the NE ¼ 0f the SE ¼ of Section 22 in T. 4 N., R. 2 E., WM. It is approximately 20.0 Net Commercial Forest Land acres in size. The unit has a current annual sustained yield of approximately 9.9 Mbf representing approximately $ 4,200 in net operating revenue at current market prices. Species composition is predominately Douglas fir and total growing stock is 343 Mbf with a Basal Area of 166 Sq.Ft./Acre. Average side slope ranges from 5% to 10%. This stand averages 62 years in age, and was commercially thinned apprximately 25 years ago. Average crown closure is 25%.

Unit 300

This Management Unit lays in the SE ¼ SE ¼ of Section 22 of T. 4 N., R. 2 E., WM. It is approximately 34.0 Net Commercial Forest Land acres in size. The unit has a current annual sustained yield of approximately 16.3 Mbf representing approximately $ 6,900 in net operating revenue at current market prices. Species composition is predominately Douglas fir and total growing stock is 574 Mbf with a Basal Area of 144 Sq.Ft./Acre. Average side slope ranges from 10% to 35%. This stand averages 72 years in age and was group tree select harvested approximately 30 years ago. Average crown closure is 10%.

Unit 2830

This Management Unit lays in the NW ¼ SW ¼ of Section 23 and the NE ¼ 0f the SE ¼ of Section 22 in T. 4 N., R. 2 E., WM. It is approximately 25.0 Net Commercial Forest Land acres in size. The unit has a current annual sustained yield of approximately 12.8 Mbf representing approximately $ 9,400 in net operating revenue at current market prices. Species composition is predominately Red Cedar and total growing stock is 366 Mbf with a Basal Area of 200 Sq.Ft./Acre. Average side slope ranges from 0% to 12%. This stand comprises the shoreline and riparian mangaement zone on the East Fork of the Lewis River. Average crown closure is 35%.

Unit 400

This Management Unit lays in the NE ¼ SE ¼ of Section 22 of T. 4 N., R. 2 E., WM. It is approximately 6.0.0 Net Commercial Forest Land acres in size. The unit is currently non-forested.

Ownership Composite

These five described management units comprise the entire 107 gross acres of the ownership. A total current annual sustained yield of approximately 37.8 Mbf represents approximately $ 17,400 in net operating revenue at current market prices on a growing stock of 1,500 Mbf. These values include the removal of 15 acres from Unit 2830 for long term Shoreline and Riparian protection.

The above 5 described management units total 92 acres of the 107 acres in CFL, outside retention, wetland and riparian mangement zones. The 107 acres were originally identified during staffs' timber inventory conducted in September and October 1998.

The current sustained annual yield of this timberbase is currently 37.5 Mbf (thousand board feet) Scribner log scale. It must be understood that this growth realization is low and represents a general lack of forest management on this tract. The empirical sustained yield based upon silvicultural practices which utilize periodic thinnings to promote an older age class of the seral species has been calculated at > 90 Mbf. This yield is what the growing stock should be generating under management given its' current physical condition and position in the rotation cycle. It is estimated that stand response to timed thinnings will be conservatively 5 to 7 years.

The empirical calculation is based on soil type, basal area, stocking, stand age, diameter, and height classes. Derivations using these elements combined to form a logarithmic relationship which were cross checked against McArdles Yield Tables for inconsistencies.

This current annual yield represents a net annual operating revenue of $17,000. This value is based on the size, grade and quality of the growing stock and it's demand within the tributary domestic log marketing area. The annual return on the same growing stock 1 year ago, would have been 12% higher, and 30% 2 years ago, thus indicating the cyclic tendencies of the forest products markets. Given the ten year all time low in the market,. and the current pricing elasticity, use of prevailing rates, some level of conservatism is built into the valuation procedure herein discussed.

The annual return on the projected sustained empirical yield is slightly in excess of $36,000 and achievable within the 5 to 7 year response time.

Management Goals

The long term management goal of maintaining and enhancing the riparian and upland forest habitat types in an uneven-aged configuration will be carried out over an intermediate rotation. Functionality of the wildlife habitat will be improved with the resulting multi-canopied stand structure and improvement of the forests production of solid wood fiber will be extended decades into the future.

The amount of harvest in each consecutive 10 year period will be equal to or less than the 10 year Periodic Annual Increment (PAI) of growth for that period.

The timing of harvest will correlate to the timing of subsequent timber stand improvement activities for each preceding harvest on any given management unit. This provides improved economies for equipment utilization and manpower needs. It is foreseeable that post harvest, stand improvement activities will become part of a contractors harvesting requirements, and allowance has been made for these in the operating budget.

There will be a reliance on stocking and crown closure ratio control to provide the understory platform for the establishment of a multi-tiered canopy structure.

Semi-annual monitoring through Continuous Forest Inventory (CFI) Plots will yield managers the data necessary to make changes or alterations to any multi-decade plan.

Silvicultural Prescription by Management Unit

There will generally be 3 equally spaced limited harvest entries for each unit which within the first decade of this plan. Each entry will be limited to the basal area equating to 1/3 of the volume which is represented by the periodic annual increment for that decade. Individual Tree Marking will be utilized on the ground to insure basal area control, phenotypic selection, and silvicultural objectives of the timber designated for harvest in each management unit. The following represent each units 1st decade plan:

Unit 100

3 equally spaced harvest entries within the first ten years of this plan. Each entry will harvest 20.9 Mbf on a Basal Area of 238 Sq.Ft.

Silvics Objective:	Remove infested and risk trees
Stand Improvement Goals:	Interplant on scarified sites with Doug fir at a rate of 120 stems per acre.
Other Considerations:	Maintain a 25 foot buffer along both sides of the unnamed Type 5 stream. Lop & Scatter Slash. Protect Type 3 snags where possible.

Unit 200

3 equally spaced harvest entries within the first ten years of this plan. Each entry will harvest 32.9 Mbf on a Basal Area of 318 Sq.Ft.

Silvics Objective:	Thin for release and open for understory establishment
Stand Improvement Goals:	Interplant on scarified sites with a mix of Grand fir and Doug fir at a rate of 120 stems per acre. Lop & Scatter Slash. Protect Type 3 snags where possible.

Unit 300

3 equally spaced harvest entries within the first ten years of this plan. Each entry will harvest 53.6 Mbf on a Basal Area of 457 Sq.Ft.

Silvics Objective:	Remove at risk trees and open for understory establishment
Stand Improvement Goals:	Interplant on scarified sites with a mix of Grand fir and Doug fir at a rate of 120 stems per acre.
Other Considerations:	Maintain a 25 foot buffer along both sides of the unnamed Type 5 stream. Lop & Scatter Slash. Protect Type 3 snags where possible.

Unit 400

Scarify and replant to Douglas fir at a stocking of 250 stems / acre upon 1st harvest entry.

Unit 2830

3 equally spaced harvest entries within the first ten years of this plan with the outer 100 feet of the 200 foot SMZ/RMZ or at a distance equal to 2/3 of the Site Potential Tree Height exclusive of the 50 foot inner zone no-cut and 100 foot intermediate management area. Each entry will harvest 17.05 Mbf on a Basal Area of 233 Sq.Ft.

Silvics Objective:	Reduce stocking for understory establishment
Stand Improvement Goals:	Interplant on scarified sites with a mix of Grand fir and Red Cedar at a rate of 120 stems per acre.
Other Considerations:	Maintain all parameters of Temperature and Shading Guidelines as per WAC 222-30.

All Management Units 2nd Decade through 5th Decade

Beginning in the 10th year of this plan an understory and second canopy layer should be evident from the previous interplantings and natural regeneration of the residual stand. Some care should be excersized from this point onward to monitor areas of overstocked understory which may require limited precommercial thinnings. Continued removal of the periodic annual increment will be allowed in the overstory at the same volume and basal area for each unit, however only on the basis of 2 entries during the course of the second decade; years 10 through 20. This is to ensure the maintenance of the preceding genotype and preserve the viewshed qualities of the subsequent timber type.

Beginning in the 20th year of this plan, the understory should be at a height of 40% of the overstory canopy, with almost 50 percent of the land area being managed to the preceding silvicultural prescriptions. For the next ten years, only 2 more entries based on the original volume and basal area will be allowed as in the years 10 through 20. In year 25, it is projected that some commercial thinning will begin on the first understory areas interplanted in the beginning of the plan.

Beginning in the 3rd decade, harvest in the original stand's overstory will be limited to individual tree selection in one entry, based on the original unit volume and basal area calculations. Although this will only yield one third of each of the 1st decades harvests, the diameter and basal area of the co-dominant understory should provide a second source of periodic annual increment which should equal or exceed the initial production of the stand.

Beginning in the 4th decade , the harvest of the original overstory will cease, however almost 25% of it's basal area will remain . These will form the basis of the green recruitment wildlife tree element. The co-dominant understory will be at the same sustained yield as the plan, when initiated. Continued monitoring of the CFI plots will provide the basis for new for growth and yield information.

The 5th decade will initiate the start of a third rotation in areas entered during the initiation of this plan, and the establishment of a 3 tiered stand.

APPENDIX 1.0

The Department of Natural Resources "Slope Stability Study of Cark County" indicates Areas of Older Landslide debris. The Soil Survey of Clark County, Washington, USDA Soil Conservation Service (1972), identifies the following series and types of soil on the property:

Puyallup Series

The Puyallup series consists of somewhat excessively drained, mostly level to gently sloping soils that are shallow or moderately shallow over sand and gravel. These are loamy, stratified soils that formed in material of mixed origin on alluvial bottom lands along the Lewis River and the East Fork of the Lewis River. The original vegetation was cottonwood, willow, grasses, and weedy plants. The annual precipitation is 40 to 60 inches. Puyallup soils are used for rown crops, hay, pasture, and orchards.

Puyallup fine sandy loam, PuA, 0 to 3 percent slopes (PuA). This soil is on low terraces along the Lewis River and the East Fork of the Lewis River. In a typical profile the surface layer is about 18 inches thick. In sequence from the top, the upper 4 inches is very dark brown fine sandy loam; the next 4 inches is dark grayish-brown loam; and the lower part is dark-brown fine sandy loam. Below the surface layer is loose, dark-brown loamy sand about 9 inches thick. The underlying material, to a depth of 60 inches, is very dark grayish-brown gravelly sand.

This soil is somewhat excessively drained. Permeability is moderately rapid in the uppermost part of the profile and rapid in the lower part. The available water capacity and fertility are moderate. The soil is easy to work and can be cultivated throughout a wide range of moisture content. Surface runoff is very slow, and there is no erosion hazard. Undiked low areas next to the rivers are subject to flooding.

Washougal Series

The Washougal series consists of somewhat excessively drained, nearly level to very steep soils underlain by sand and gravel at a depth of 26 to 40 inches. These are loamy soils that formed on low terraces in alluvium deposited by swift flowing rivers and streams. Most of the material is of volcanic origin. The original vegetation was Douglas-fir, vine maple, dogwood, snowberry, blackberry, grasses, and ferns. The annual precipitation is 50 to 85 inches. Washougal soils are used for grain, hay, pasture and forestry.

Washougal gravelly loam, 0 to 8% slopes (WgB): This soil is on gravelly stream terraces along the East Fork of the Lewis, Little Washougal, and Washougal Rivers. It is nearly level except for old, narrow stream channels that formed meandering, depressional troughs.

In a typical profile the surface layer is gravelly loam about 22 inches thick. It is black in the upper part and very dark brown in the lower part. Below the surface layer is friable, dark-brown very gravelly loam about 8 inches thick. The next layer is dark-brown very gravelly coarse sandy loam about 6 inches thick. The underlying material, to a depth of 60 inches, is brown and gray sand, pebbles, and cobblestones.

This soil is somewhat excessively drained. It is generally moderately permeable, but is very rapidly permeable in the substratum. The available water capacity is moderate. Roots penetrate to the gravelly sand layer. Tillage is easy, but fertility is low. Surface runoff is slow, and the hazard of erosion is slight. The soil occurs at an elevation that is high enough in most places to be above the normal high water of adjacent rivers. Most of this soil is in second-growth Douglas fir , but red alder, grand fir, vine maple, and other shrubs fill in.

Washougal loam, 0 to 3% slopes (WaA): This soil is in the same areas as Washougal gravelly loam, 0 to 8% slopes, and is similar to that soil except that the surface layer is free of gravel, and gravelly sand is at a depth of 20 to 36 inches. Included in mapping were a few areas that are deeper. Surface runoff is very slow, and there is no hazard of erosion.

This soil has a higher available water capacity than Washougal gravelly loam, 0 to 8% slopes. It is used mainly for forestry, hay, and pasture. (Capability unit IIIs-1; woodland suitability group 3oM0; wildlife site 6)

Washougal gravelly loam, 8 to 30% slopes (WgE): This soil is on terrace fronts along the East Fork of the Lewis and Washougal Rivers. It is similar to Washougal gravelly loam, 0 to 8% slopes, except that the surface layer is generally 1 to 2 inches thinner. Surface runoff is moderate to rapid, and the hazard of erosion is moderate to severe if the surface is left bare.

This soil is used almost exclusively for timber. Areas that were formerly cleared have reverted to trees. (Capability unit Vie-2; woodland suitability group 3fM3; wildlife site 6)

Olequa Series

The Olequa series consists of deep, well-drained, gently undulating to very steep soils on terraces above the flood plains. These are loamy soils that formed in parent material largely of basic igneous material. In the Little Washougal River area, they contain some quartzite but otherwise much the same as in other areas. The original vegetation was chiefly Douglas fir, redcedar, and grand fir. The understory is oceanspray, hazel, vine maple, salal, and Oregon-grape. Nearly all of the original stands have been logged, and the second growth is composed of Douglas fir, red alder, redcedar, and grand fir. Many areas are dominated by red alder. The annual precipitation is 50 to 65 inches.

Olequa silty clay loam, heavy variant, 3 to 20 percent slopes (OhD): This soil is on ridgetops and benches. In most places the slopes are long and smooth, and the slope range is 3 to 8%.

In a typical profile the surface layer is dark reddish brown silty clay loam about 11 inches thick. The next layer is 60 inches thick. In sequence from the top, the upper 9 inches is friable, dark reddish-brown silty clay loam; the next 12 inches is firm, mottled, grayish-brown silty-gray clay; the next 11 inches is firm mottled, light brownish-gray clay; and the lower 16 inches is firm, mottled gray clay. The underlying material, to a depth of 82 inches, is light olive-gray clay.

This soil is somewhat poorly drained and easily tilled. Permeability is moderately slow above the clay horizons, and very slow in the clay horizons. There are very few roots in the clay. The available water capacity is high, and fertility is moderate. Surface runoff is slow to medium, and the erosion hazard is slight to moderate. A high water table is common in winter.

Olympic Series

The Olympic Series consists of well-drained, gently sloping to very steep soils underlain by baslat bedrock at a depth of 40 inches or more. These are moderately fine textured soils that formed on mountainous foot slopes in weathered igneous lava flows. Most of the soils formed in place, but in small areas they formed in material moved by gravity. The original vegetation was Douglas fir, grand fir, hemlock, western redcedar, and Oregon white oak. The understory plants were vine maple, salal, Oregon-grape, ferns, and grasses. The annual precipitation is 45 to 80 inches. Olympic soils are used for timber, hay, pasture, and row crops.

Olympic very stony clay loam, shallow variant, 5 to 15 percent slopes (OrC): This soil is in mountainous terrain on ridgetops and benches. It is similar to Olympic clay loam, shallow variant, 3 to 15 percent slopes, except that the surface is very stony. Timber is suited to this soil. (Capability unit Vis-1; woodland suitability group 3dM5; wildlife site 12)

Olympic clay loam, shallow variant, 3 to 15 percent slopes (OpC): This soil is on benches that are dissected by steep and very steep slopes that lead into creeks and drainageways. It occurrs on remote mountainous terraces.

In a typical profile the surface layer is dark reddish-brown clay loam about 13 inches thick. The next layer is 17 inches thick. The upper 7 inches is friable, dark reddish-brown heavy clay loam; the lower 10 inches is firm, reddish-brown heavy silty clay loam. The underlying material is basalt bedrock.

This soil is well drained and moderately slowly permeable. Tillage is easy. Roots penetrate to the bedrock. The available water capacity is moderately high, and fertility is moderate. Surface runoff is slow to medium, and the hazard of erosion is slight to moderate. This soil is well suited to timber. (Capability unit Ive-3; woodland suitability group 3rL6; wildlife site 7)

Rock Land (Rk)

Rock land consists of steep and very steep areas made up largely of rock outcrops and very shallow soil. Most of this land type is in the ountainous eastern and northeastern parts of the county. The areas are valuable for recreational purposes, wildlife habitat, and water yield. (Capability unit VIIIs-2; not assigned to a woodland suitability group nor a wildlife site)

Revenue / Cost Function Worksheet

Project: Camp Lewisville
Date: 27-Nov-98

Species	Grade	Vol. Net Mbf	Tons	Delivered $ per Mbf	Delivered $ per Ton	Gross Revenue by log scale	Deliv.d Revenue by weight scale	Operating Cost Per / Mbf	Operating Cost Per / Ton	Net Operating Revenue Per/Mbf	Net Operating Revenue P/ Ton	Species Total
Doug Fir	#3 Peeler	118		$ 710		$ 83,780		143.20		$ 66,882		
	SP Mill	132		$ 590		$ 77,880		143.20		$ 58,978		
	#2 Sawmill	589		$ 545		$ 321,005		143.20		$ 236,660		
	#3 Sawmill	109		$ 490		$ 53,410		143.20		$ 37,801		
	#4 Sawmill	54	581	$ 405	$ 65	$ 536,075	$ 37,765		$ 17.87		$ 27,383	
Sub Tot.		1002								$ 400,321	$ 27,383	$ 427,704
PS Fir	#2 Sawmill	32	235	$ 500		$ 16,000		143.20		$ 11,418		
	#3 Sawmill	3	22	$ 450		$ 1,350		143.20		$ 920		
Sub Tot.		35				$ 17,350						$ 12,338
WR Cedar	#2 Sawmill	185	185	$ 900		$ 166,500		143.20		$ 140,008		
	#3 Sawmill	177	177	$ 850		$ 150,450		143.20		$ 125,104		
	#4 Sawmill	5	5	$ 850		$ 4,250		143.20		$ 3,534		
		367				$ 321,200				$ 268,646		
												$ 268,646
R. Alder	#2 Sawmill	13	184	$ 525		$ 6,825		143.20		$ 4,963		
	#3 Sawmill	7	64	$ 475	$ 52	$ 3,325	$ 3,328		$ 17.87		$ 2,184	
	#4 Sawmill	3	29		$ 25		$ 725		$ 17.87		$ 207	
Sub Tot.		23				$ 10,150				$ 4,963	$ 2,391	$ 7,354
BL Maple	#2 Sawmill	46		n/a								
	#3 Sawmill	49		n/a								
	#4 Sawmill	5		n/a								
Sub Tot.		100										
Inventory Total		1,527				$ 1,769,550		$ 1,053,508				$ 716,042

Operating Costs	P/Mbf	P/Ton
Falling & Bucking	18.00	2.25
Yarding	53.00	6.62
Loading	15.00	1.87
Hauling	37.00	4.62
Excise Tax	8.50	1.06
G/A	7.00	0.87
Rd. Maintenance	1.70	0.21
Stand Improvmnt	3.00	0.37
	143.20	17.87

BIOMETRIC BASELINE MODEL
Project: Camp Lewisville
Species: Doug fir

1998 INVENTORY VALUES

Type	Ac.s	D4H	AGE	T.HT	S.I.	Soil Type	Grw Pd.	Ann.* Grw	Int. %	Stems Ac.	Comp. Vol.	Vol. Ac.	BA Ac.	Cu.Ft Ac.	VBAR	MAI	PAI	Unit Ann. Ingrowth
100	22	22.8	75	125	105	WgE	10	0.19	0.027	42.3	233	10.59	120	3675	88.2	141	286	6.3
200	20	18.2	62	110	91	WgB	10	0.24	0.029	91.8	343	17.13	166	5548	103.5	276	497	9.9
300	34	27.5	72	139	120	WgE	10	0.26	0.028	59.3	574	16.87	144	4285	117.2	234	472	16.1
2830	25	29.3	65	105	95	WgB	10	0.35	0.035	42.8	366	14.63	200	6073	73.2	225	512	12.8
	101									59.1	1515	15.00	157	4895	95.5	219	442	45.1

EMPIRICAL VALUES

Type	Ac.s	D4H	AGE	T.HT	emp. S.I.	Soil Type	Ann.* Grw	Int. %	Stems Ac.	Comp. Vol.	Vol. Ac.	BA Ac.	Cu.Ft Ac.	VBAR	MAI	PAI	Unit Ann. Ingrowth
100	22	22.8	75	157	141	WgE	0.24	0.039	102	539	24.5	247	9850	99.2	327	956	21.0
200	20	18.2	62	135	141	WgB	0.28	0.043	150	476	23.8	226	8150	105.3	384	1023	20.5
300	34	27.5	72	185	141	WgE	0.31	0.033	76	935	27.5	244	9650	112.7	382	916	31.1
2830	25	29.3	65	105	141	WgB	0.39	0.044	68	560	22.4	235	8900	95.3	345	986	24.6
	101								99	2510		238	9138	103.1	359	970	97.3

Variance

Stems/ac	60%
Comp Vol	60%
BA/Ac	66%
Cu Ft/ac	54%
VBAR	93%
MAI	61%
PAI	46%

Species	Grade	Vol. Net Mbf	Tons	Delivered $ per Mbf	Delivered $ per Ton	Deliv.d Revenue by log scale	Deliv.d Revenue by weight scale
Doug Fir	#3 Peeler	118		710		83,780.00	
	SP Mill	132		590		77,880.00	
	#2 Sawmill	589		545		321,005.00	
	#3 Sawmill	109		490		53,410.00	
	#4 Sawmill	54	581	405	65	21,870.00	37,765.00
PS Fir	#2 Sawmill	32	235	500		16,000.00	
	#3 Sawmill	3	22	450	45	1,350.00	
WR Cedar	#2 Sawmill	185	185	900		166,500.00	
	#3 Sawmill	177	177	850		150,450.00	
	#4 Sawmill	5	5	850		4,250.00	
R. Alder	#2 Sawmill	13	184	525		6,825.00	
	#3 Sawmill	7	64	475	52	3,325.00	3,328.00
	#4 Sawmill	3	29		25	-	725.00
BL Maple	#2 Sawmill						
	#3 Sawmill						
	#4 Sawmill						
					Total	906,645.00	

Camp Lewisville - FMP
Appendix Table

PROJECT REPORT(FA)
SPP, SORT, GRADE, LEN % - BDFT

CLARK COUNTY COMMUNITY DEVELOPMENT Plots 31 BFT:W PAGE 1
PROJECT LVILLPK Trees 125 CUB:1 DATE: 10/29/98
Acres: 101.00 TRACT: TIME: 03:59pm
T04N R02E S22 T0200,300 T04N R02E S23 T0100 T04N R03E S22 T2830

LOGS/ SP	SORT	GRADE	PCT BDFT	BDFT / ACRE GROSS	NET	TOT MBF	%BDFT/AC BY GROSS LEN. 12-19	20-25	26-34	35-40	LN	AV LOG	BDFT/ ACRE
BM	DOMESTIC	2SAWMILL	46	409	409	41				100	40	460	1
BM	DOMESTIC	3SAWMILL	49	437	437	44	4		96		29	77	5
BM	DOMESTIC	4SAWMILL	5	43	43	4		100			20	20	2
BM	TOTAL		6	890	890	90	2	5	47	46	28	102	9
DF	DOMESTIC	SP MILL	13	1306	1306	132				100	40	654	2
DF	DOMESTIC	2SAWMILL	59	5833	5833	589	0	6	23	70	35	195	30
DF	DOMESTIC	3SAWMILL	11	1078	1078	109	7	7	18	67	27	68	16
DF	DOMESTIC	4SAWMILL	5	533	533	54	5	50	14	31	25	30	18
DF	DOMESTIC	3PEELER	12	1342	1168	118				100	40	927	1
DF	CULL	CULL		21									
DF	TOTAL		66	10119	9918	1002	1	7	17	75	31	148	67
RA	DOMESTIC	2SAWMILL	58	133	133	13			100		30	70	2
RA	DOMESTIC	3SAWMILL	29	66	66	7	100				17	30	2
RA	DOMESTIC	4SAWMILL	13	29	29	3			100		32	30	1
RA	CULL	CULL											
RA	TOTAL		2	227	227	23	29		71		25	45	5
RC	DOMESTIC	2SAWMILL	50	1918	1828	185		3	56	41	32	165	11
RC	DOMESTIC	3SAWMILL	48	1761	1749	177			54	46	34	314	6
RC	DOMESTIC	4SAWMILL	1	45	45	5	100				12	10	5
RC	CULL	CULL		13									
RC	TOTAL		24	3757	3623	366	1	2	55	43	28	171	
21													
SF	DOMESTIC	2SAWMILL	92	315	315	32				100	40	1010	
SF	DOMESTIC	3SAWMILL	8	28	28	3				100	40	90	
SF	CULL	CULL		3									
SF	TOTAL		2	346	343	35				100	40	550	1
PROJECT TOTAL			100	15339	15001	1515	2	5	28	65	30	146	102

Camp Lewisville - FMP
Appendix Table

TYPE REPORT(FA)
SPP, SORT, GRADE, LEN % - BDFT

CLARK COUNTY COMMUNITY DEVELOPMENT
PROJECT LVILLPK
Acres: 22.00
T04N R02E S22 TY 100

Plots 31 BFT:W
Trees 125 CUB:1
TRACT:

PAGE 1
DATE: 10/29/98
TIME: 03:59pm

SP	SORT	GRADE	PCT BDFT	BDFT / ACRE GROSS	BDFT / ACRE NET	TOT MBF	%BDFT/AC BY 12-19	20-25	GROSS LEN. 26-34	35-40	AV LN	BDFT/ LOG	LOGS/ ACRE
DF	DOMESTIC	2SAWMILL	91	9593	9593	211			23	77	35	227	42
DF	DOMESTIC	3SAWMILL	6	588	588	13		50		50	25	27	18
DF	DOMESTIC	4SAWMILL	4	406	406	9		100			21	20	20
DF	CULL	CULL		70									
DF	TOTAL		100	10587	10587	233		7	21	72	29	125	85
TYPE TOTAL			100	10587	10587	233		7	21	72	29	125	85

TYPE REPORT(FA)
SPP, SORT, GRADE, LEN % - BDFT

CLARK COUNTY COMMUNITY DEVELOPMENT
PROJECT LVILLPK
Acres: 20.00
T04N R02E S22 S23 TY 200

Plots 31 BFT:W
Trees 125 CUB:1
TRACT:

PAGE 1
DATE: 10/29/98
TIME: 03:59pm

SP	SORT	GRADE	PCT BDFT	BDFT / ACRE GROSS	BDFT / ACRE NET	TOT MBF	%BDFT/AC BY 12-19	20-25	GROSS LEN. 26-34	35-40	AV LN	BDFT/ LOG	LOGS/ ACRE
DF	DOMESTIC	SP MILL	8	1365	1365	27				100	40	460	3
DF	DOMESTIC	2SAWMILL	76	13011	13011	260	1	13	34	51	33	167	78
DF	DOMESTIC	3SAWMILL	5	873	873	17	21	8		71	21	50	18
DF	DOMESTIC	4SAWMILL	11	1887	1887	38	4	32	20	44	29	38	49
DF	CULL	CULL		70									
DF	TOTAL		100	17206	17136	343	2	14	28	55	30	116	148
TYPE TOTAL			100	17206	17136	343	2	14	28	55	30	116	148

Camp Lewisville - FMP
Appendix Table

TYPE REPORT(FA)
SPP, SORT, GRADE, LEN % - BDFT

CLARK COUNTY COMMUNITY DEVELOPMENT
PROJECT LVILLPK
Acres: 34.00
T04N R02E S23 TY 300

Plots 31 BFT:W
Trees 125 CUB:1
TRACT:

PAGE 1
DATE: 10/29/98
TIME: 03:59pm

SP	SORT	GRADE	PCT BDFT	BDFT / GROSS	ACRE NET	TOT MBF	%BDFT/AC BY 12-19	20-25	GROSS LEN. 26-34	35-40	AV LN	BDFT/ LOG	LOGS/ ACRE
BM	DOMESTIC	2SAWMILL	46	1215	1215	41				100	40	460	3
BM	DOMESTIC	3SAWMILL	49	1300	1300	44	4		96		29	77	17
BM	DOMESTIC	4SAWMILL	5	129	129	4		100			20	20	6
BM	TOTAL		16	2643	2643	90	2	5	47	46	28	102	26
DF	DOMESTIC	SP MILL	25	3075	3075	105				100	40	735	4
DF	DOMESTIC	2SAWMILL	28	3467	3467	118	0	1		99	39	220	16
DF	DOMESTIC	3SAWMILL	18	2309	2309	79	6	0	25	69	39	220	16
DF	DOMESTIC	4SAWMILL	2	209	209	7	21	79			20	20	10
DF	DOMESTIC	3PEELER	28	3987	3471	118				100	40	927	4
DF	CULL	CULL		21									
DF	TOTAL		74	13087	12532	426	1	2	5	92	32	220	57
RA	DOMESTIC	2SAWMILL	58	394	394	13			100		30	70	6
RA	DOMESTIC	3SAWMILL	29	195	195	7	100				17	30	7
RA	DOMESTIC	4SAWMILL	13	86	86	3			100		32	30	3
RA	CULL	CULL											
RA	TOTAL		4	675	675	23	29		71		25	45	15
SF	DOMESTIC	2SAWMILL	92	935	935	32				100	40	1010	1
SF	DOMESTIC	3SAWMILL	8	83	83	3				100	40	90	1
SF	CULL	CULL		9									
SF	TOTAL		6	1028	1019	35				100	40	550	2
TYPE TOTAL			100	17433	16869	574	3	2	14	82	30	169	100

TYPE REPORT(FA)
SPP, SORT, GRADE, LEN % - BDFT

CLARK COUNTY COMMUNITY DEVELOPMENT
PROJECT LVILLPK
Acres: 25.00
T04N R02E S22 S23 TY 2830

Plots 31 BFT:W
Trees 125 CUB:1
TRACT:

PAGE 1
DATE: 10/29/98
TIME: 03:59pm

SP	SORT	GRADE	PCT BDFT	BDFT / GROSS	ACRE NET	TOT MBF	%BDFT/AC BY 12-19	20-25	GROSS LEN. 26-34	35-40	AV LN	BDFT/ LOG	LOGS/ ACRE
RC	DOMESTIC	2SAWMILL	50	7748	7748	185		3	56	41	32	165	45
RC	DOMESTIC	3SAWMILL	48	7112	7112	177			54	46	34	314	23
RC	DOMESTIC	4SAWMILL	1	183	183	5		100			12	10	18
RC	CULL	CULL		70									
RC	TOTAL		100	15180	14636	366	1	2	55	43	28	171	86
TYPE TOTAL			100	15180	14636	366	1	2	55	43	28	171	86

Camp Lewisville - FMP
Appendix Table

PROJECT REPORT(SA)
BARK THICKNESS RATIOS

CLARK COUNTY COMMUNITY DEVELOPMENT
PROJECT LVILLPK
INVENTORY CODE:
SOR SITE INDEX CALCULATIONS

PAGE 1
DATE: 10/29/98

TWP	RGE	SC	TYPE	SITE TREES	SPP	D4H	AGE STY	AVE BH AGE	AVE TOT AGE	AVE TOT HGT	SITE INDEX	AVE GRW PER	ANN DIA. GRWTH	AVE BARK RATIO	POS	CROWN RATIO
04N	02E	22	0100	THRU												
04N	03E	22	2830	19	DF	21.7		68	75	125		10	0.19	0.910		41

TYPE REPORT(SB)
TREE DATA, AGE, SITE, GROWTH(NWOR)

CLARK COUNTY COMMUNITY DEVELOPMENT
PROJECT LVILLPK
INVENTORY CODE:
NWOR SITE INDEX CALCULATIONS

PAGE 1
DATE: 10/29/98

TWP	RGE	SC	TYPE	SITE TREES	SPP	D4H	AGE STY	AVE BH AGE	AVE TOT AGE	AVE TOT HGT	SITE INDEX	AVE GRW PER	ANN DIA. GRWTH	AVE BARK RATIO	POS	CROWN RATIO
04N	02E	ALL	0200	9	DF	15.9	2	71	77	110	91	10	0.12	0.906	C	40
				5	DF	27.5	2	64	72	139	120	10	0.26	0.913	D	42
			AVE.	6	DF	21.7	2	68	75	125	105	10	0.19	0.910	C	41

Camp Lewisville - FMP
Appendix Table

PROJECT REPORT(KA)

STATISTICS - UNSTRATIFIED

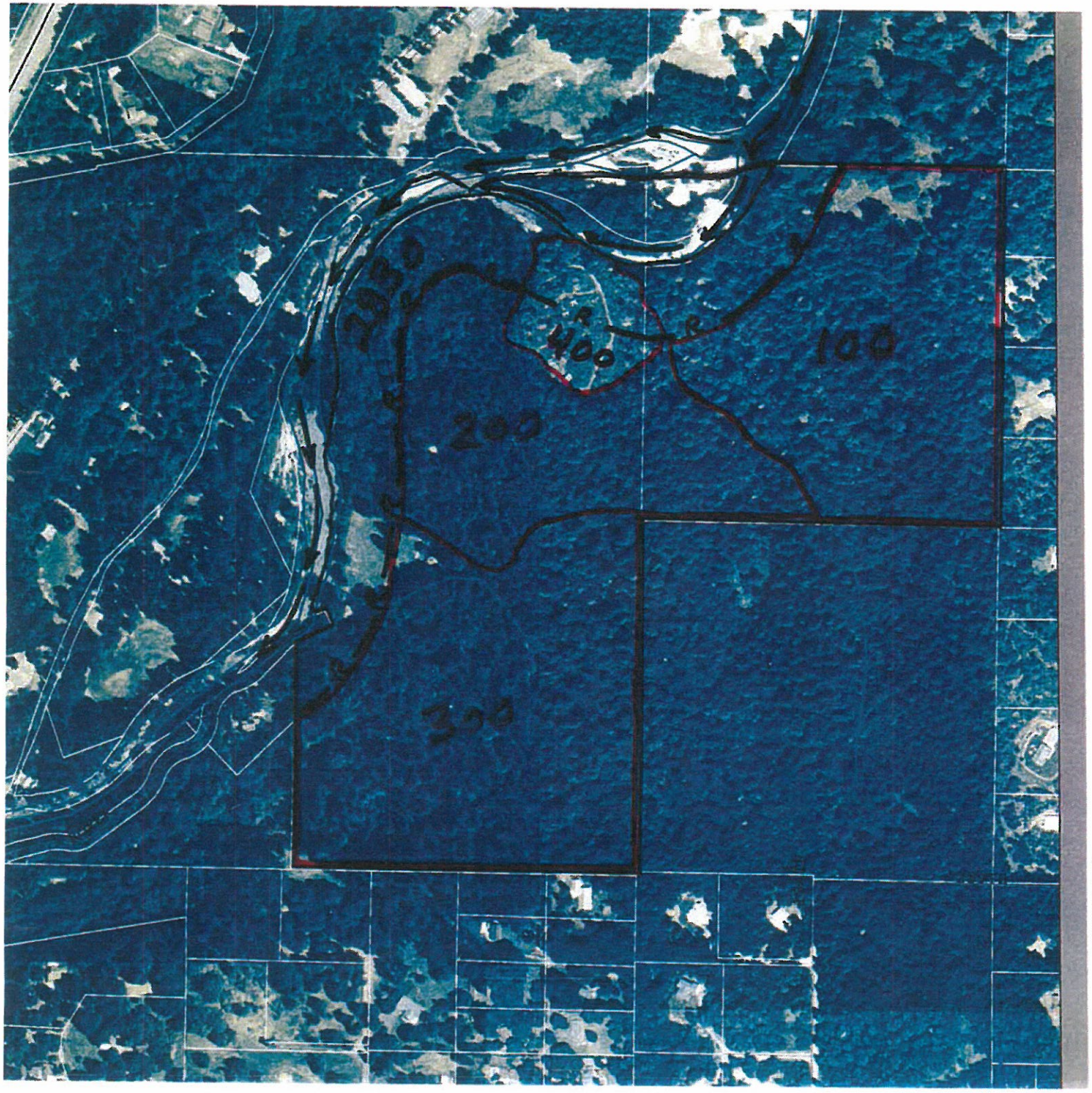
CLARK COUNTY COMMUNITY DEVELOPMENT Plots 31 BFT:W PAGE 1
PROJECT LVILLPK TRACT: Trees 125 CUB:1 DATE:10/29/98
TIME: 04:26pm
TWP 04N RGE 02E SEC 23 TY 0100 AC 22.00
TWP 04N RGE 02E SEC 22,23 TY 0200 AC 20.00
TWP 04N RGE 02E SEC 23 TY 0300 AC 34.00
TWP 04N RGE 02E SEC 23 TY 2830 AC 25.00
TWP 04N RGE 02E SEC 23 TY 500 AC 6.00
PROJECT ACRES: 107.00 TOTAL TYPES: 5 CRUISER: JV

	PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES
TOTAL	31	217	7.0		
CRUISE	12	125	5.7		
COUNT	19	37	9.3		
BLANKS					
100%					

STAND SUMMARY

	SAMPLE TREES	TREES /ACRE	AVE D4H	BOLE LEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
DOUG FIR	25	45.6	20.2	58	101.8	12566	12300	3528	3519
RED ALDER	3	4.3	15.3	37	5.5	307	307	135	135
BL MAPLE	4	9.3	18.0	34	16.4	1201	1201	371	371
SNAG	2	1.2	23.4	23	3.6				
PS FIR	1	0.4	39.8	75	3.6	467	463	138	138
WR CEDAR	5	3.9	29.3	56	18.2	1380	1331	557	552
TOTAL	40	64.7	20.6	52	149.1	15921	15601	4729	4715

SD:1	COEFF. VAR.%	S.E.%	NET BF/ACRE LOW	AVE	HIGH	# OF PLOTS REQ. - INF. POP. 5%	10%	15%
DOUG FIR	66.5	16.1	9832	12300	14768			
R ALDER	23.5	28.4	51	307	562			
BL MAPLE	52.7	43.0	684	1201	1718			
SNAG								
PS FIR	58.5	27.1	152	463	774			
WR CEDAR	61.7	62.0		1331	2661			
TOTAL	42.6	12.9	13596	15601	17606	73	18	8



ClarkView

E1/2SE1/4 S.22

N

(Scale 1:6000)

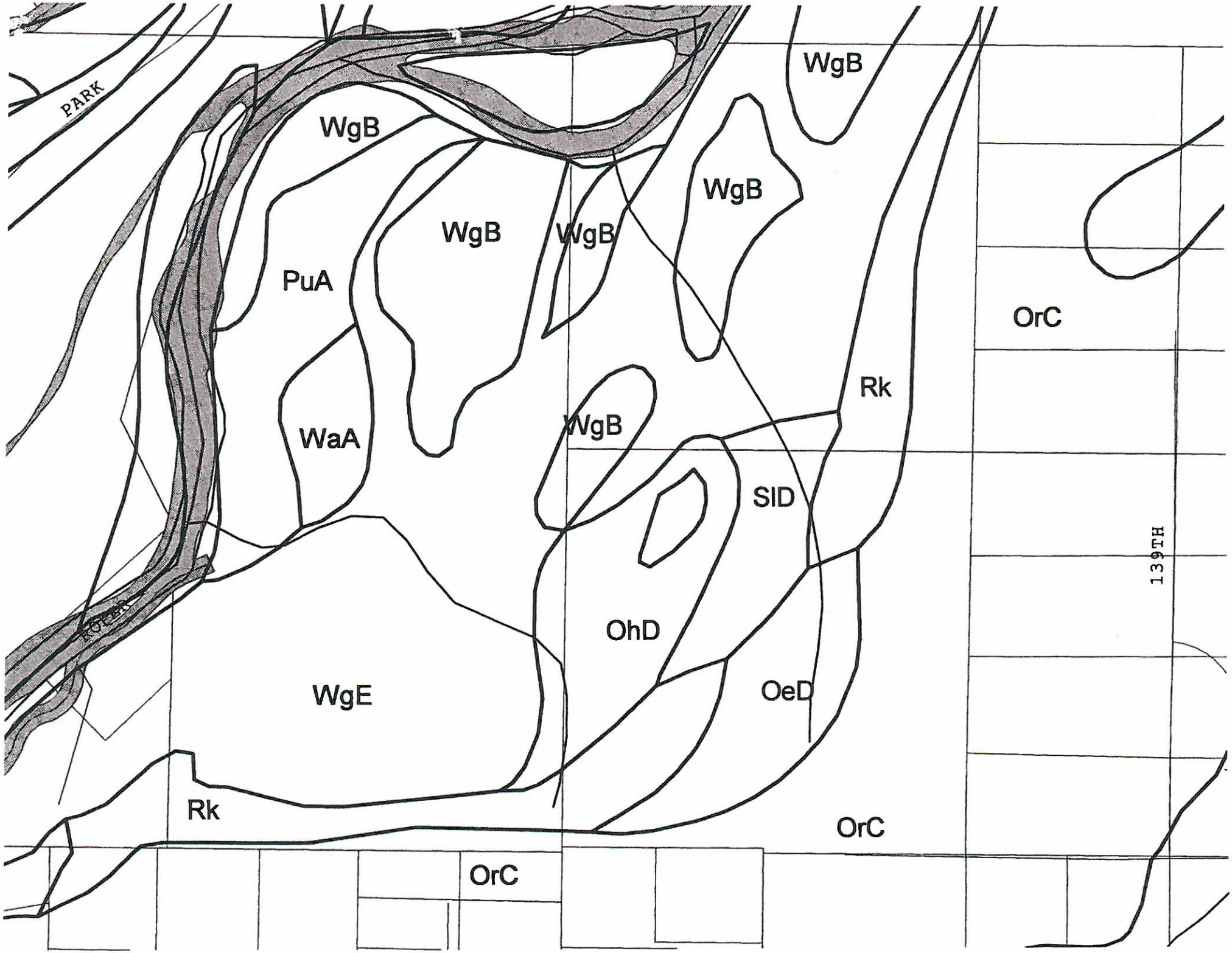
200 0 200 400 600 800 Feet

CCCD

CLARK COUNTY
WASHINGTON

Plot Date: Sep 10, 1998
Map produced by: JEV

Information shown on this map was collected from several sources. Clark County accepts no responsibility for any inaccuracies that may be present.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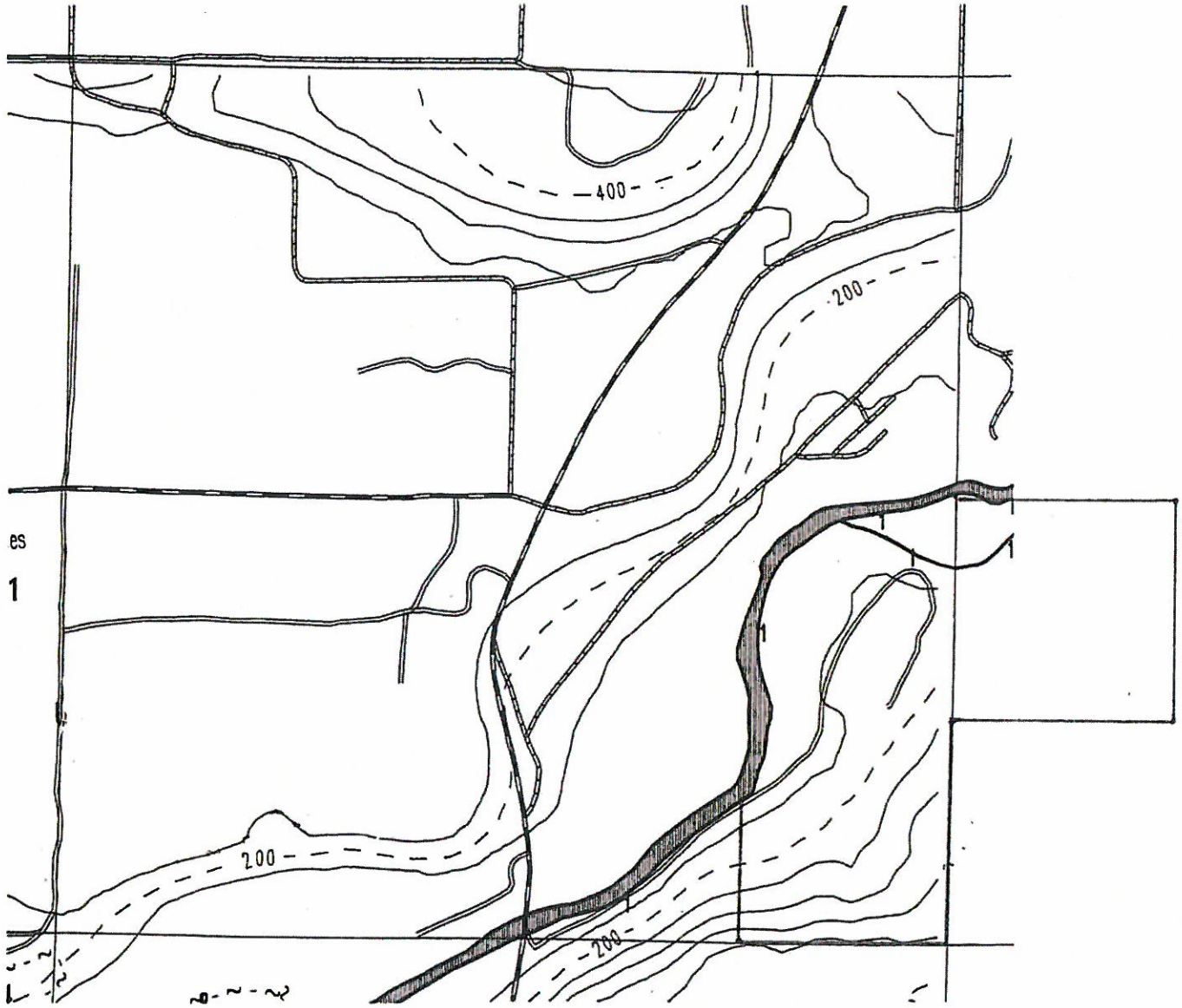
WgB
WgB
WgB
WgB
PuA
WaA
WgB
Rk
SlD
OhD
OeD
WgE
Rk
OrC
OrC
OrC
139TH

FOREST PRACTICE ACTIVITY MAP

TOWNSHIP 04 NORTH, RANGE 02 EAST (W.M.), SECTION 22

APPLICATION #



SCALE

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FEET 1 Mile (5280 ft)

MAP DATE:

N

CONTOUR INTERVAL: 40 Feet

NAD 27

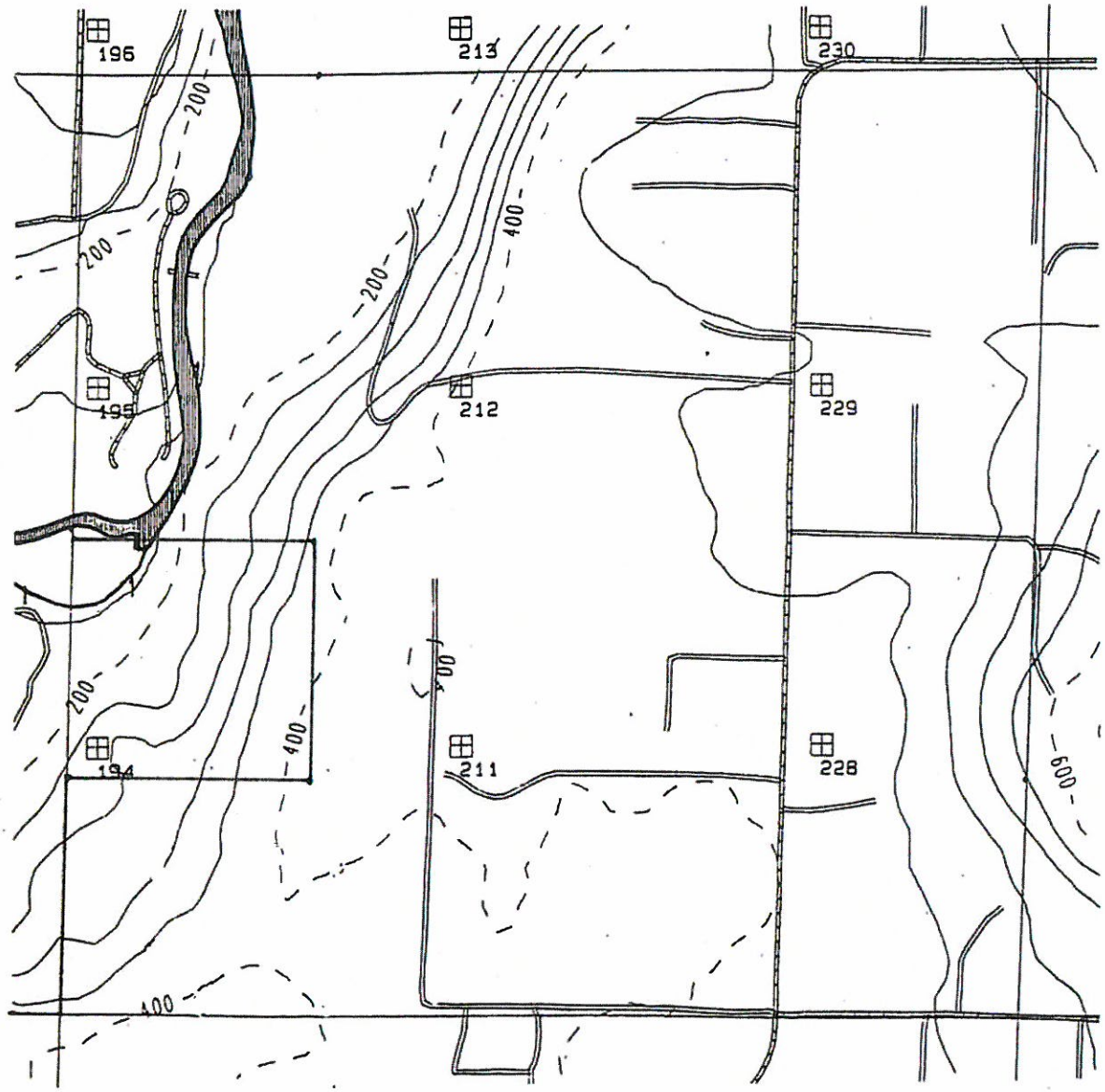
LEGEND: See Instructions

DISCLAIMER: See Legend

FOREST PRACTICE BASE MAP

TOWNSHIP 04 NORTH, RANGE 02 EAST (W.M.), SECTION 23

APPLICATION # _____



SCALE

0 1000 2000 3000 4000 5000 6000

FEET 1 Mile (5280 ft)

MAP DATE:

N

CONTOUR INTERVAL: 40 Feet

NAD 27

LEGEND: See Instructions

DISCLAIMER: See Legend