

**Forest Health and Nutrition Study: Establishment Report**

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## SUMMARY

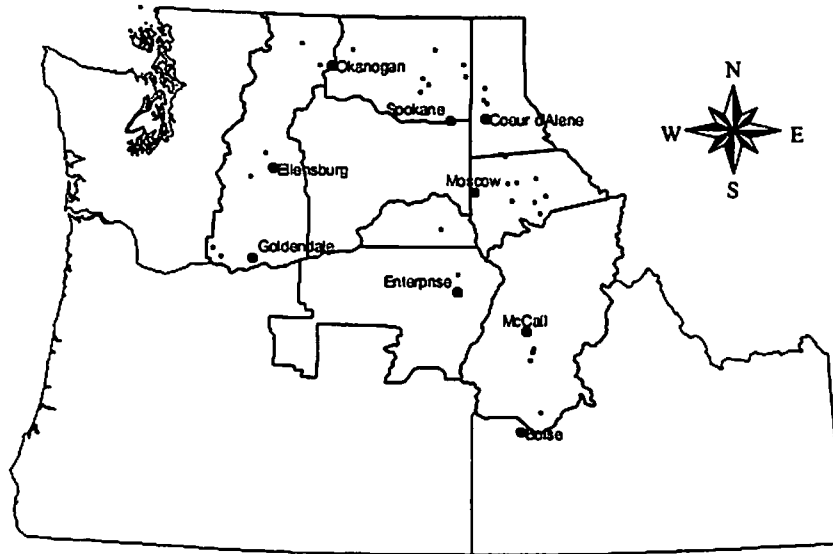
Thirty-one fertilization test sites were established during a three year period, from 1994 through 1996, by the Intermountain Forest Tree Nutrition Cooperative. The sites were set up under the Third Five Year Study Plan for the IFTNC. The focus of this plan was a new study with a forest nutrition/forest health emphasis. The study covered five geographical regions of the Intermountain region, including north Idaho, central Idaho, northeast Washington, central Washington, and northeast Oregon. The location, installation name and number, and ownership of each site are provided in this report, along with the year of establishment and fertilizer regime applied.

### Introduction

Prior to 1993, results of IFTNC studies have suggested a link between forest nutrition, particularly potassium, and insect and disease pests. During these previous studies, a correlation was found between mortality and potassium status of the sites. Mortality was primarily due to *Armillaria* root rot and to bark beetles, and tended to occur on low potassium sites. In order to better understand and evaluate this phenomenon, and to continue the ongoing evaluation of growth response to fertilization, a study focusing on forest health and nutrition was developed. According to the Third Five Year Study Plan, the overall purpose of the new experiment was to obtain a better understanding of the relationship between forest nutrient status and forest growth and mortality processes in the Inland West.

The design of the Forest Health and Nutrition Study incorporated four parent material classes and three vegetation series, for a total of 12 cells. This matrix was proposed to cover typical forest habitat types and soils found in the Intermountain region. The parent material classes included granitic, basaltic, metasedimentary, and mixed (glacial till). The vegetation series studied included Douglas-fir, grand fir, and western red cedar/western hemlock. The original design called for three installations within each of the 12 cells, for a total of 36 installations. Later modifications to the experiment included dropping the Douglas-fir and grand fir cells on the metasedimentary parent material type, decreasing the actual number of installations established to 31. Twelve

installations were established in 1994, twelve in 1995, and seven in 1996. Figure 1 shows the locations of 31 study sites across the Inland Northwest.



**Figure 1:** Locations of forest health and nutrition study sites, 1994-1996.

Four fertilization prescriptions were developed within the overall Forest Health and Nutrition Study. All prescriptions revolved around a basic factorial design which included two rates each of nitrogen and potassium fertilization, for a total of four plots. Depending on the strata within which a site fell, additional treatments were assigned. The first prescription was a nitrogen-rate trial (N), incorporating the basic four treatments and three additional nitrogen rates, for a total of seven plots. As an add-on to this study, the repeated-nitrogen rate study (R) was developed. This included the seven fertilizer rates from the N-rate trial, with periodic nitrogen re-treatments at 4 and 8 year intervals, for a total of 14 plots. The nitrogen-potassium response surface trial (K) evaluated several rates of nitrogen and potassium fertilization in various combinations, including the four basic plots and ten additional plots, for a total of 14 plots. A fourth prescription was

incorporated to examine the effects of nitrogen and potassium fertilization on bark beetle infestation. This bark beetle study (B) received only the basic treatments, for a total of four plots. Table 1 lists the specific fertilization rates applied.

**Table 1: Fertilization Treatments for IFTNC Forest Health Study.** Four experiments were included in this study. Each experiment is listed here with its abbreviation in parenthesis, followed by the name of the experiment, the number of plots required for this experiment, and the fertilization treatments assigned to each of these plots.

**(N) Nitrogen Rate Experiment**

7 Plots:	<u>N Rate (lb/ac)</u>	<u>K Rate (lb/ac)</u>
	0	0
	300	0
	0	200
	300	200
	100	0
	200	0
	600	0

**(R) Repeated Nitrogen Rate** – added to the Nitrogen Rate Experiment. Interval until re-treatment is given in years. An interval of zero means that a single application was made at the time of establishment, and will not be repeated.

14 Plots	<u>N Rate (lb/ac)</u>	<u>K Rate (lb/ac)</u>	<u>Interval</u>
	0	0	0 years
	300	0	0 years
	0	200	0 years
	300	200	0 years
*	300	200	0 years
	100	0	0 years
	200	0	0 years
	600	0	0 years
	100	0	8 years
	200	0	8 years
	300	0	8 years
	100	0	4 years
	200	0	4 years
	300	0	4 years

\* For plots receiving this treatment, the K source and addition of micronutrients varied depending on year of installation:

1994	KCl
1995	K <sub>2</sub> SO <sub>4</sub>
1996	K <sub>2</sub> SO <sub>4</sub> + micronutrients (Cu, Zn, B, Mo)

**Table 1 (continued): Fertilization Treatments for IFTNC Forest Health Study.**

**(K) Nitrogen-potassium Response Surface**

14 Plots	<u>N Rate</u> (lb/ac)	<u>K Rate</u> (lb/ac)
	0	0
	300	0
	0	200
	300	200
*	300	200
	57.9	58.6
	87.9	341.4
	512.1	58.6
	512.1	341.1
	600	200
	300	400
	300	200
	300	200
	300	200

\* For plots receiving this treatment, the K source and addition of micronutrients varied depending on year of installation:

1994	KCl
1995	K <sub>2</sub> SO <sub>4</sub>
1996	K <sub>2</sub> SO <sub>4</sub> + micronutrients (Cu, Zn, B, Mo)

**(B) Bark Beetle Study**

4 Plots	<u>N Rate</u> (lb/ac)	<u>K Rate</u> (lb/ac)
	0	0
	300	0
	0	200
	300	200

## Site Selection

Within the overall experimental design, stands selected for study were required to meet several selection criteria. The first of these required that these be mixed conifer stands composed primarily of Douglas-fir, grand fir and/or ponderosa pine, though other species could also be present. Eligible stands needed to show uniform stocking across the site, with some sort of stocking control conducted at least two years prior to plot establishment. Uniform stand history across the entire unit was also necessary, and stand ages of 10 to 80 years were desired. We also looked for large sites (30 acres minimum, 50 acres preferred), with uniform physiognomy (slope and aspect).

## Installation Establishment

After suitable sites were selected, installations were established. Depending on the experimental design, each installation consisted of either seven or fourteen plots. Each plot was 1/2 acre in size with a 20 ft buffer strip around the outside. Inside the plot, a 1/10 acre plot was designated as the growth plot. All trees inside the 1/2 acre plot were painted at dbh (4.5 ft) and numbered. Trees within the growth plots were numbered separately from other trees in the 1/2 acre plot. The 1/2 acre plot was subdivided into nine subplots, and a center stake was placed at each subplot center. Fixed-radius plots of 1/250 acre in size were established at each subplot center to be used for regeneration monitoring. Further details on plot setup can be found in Appendix A, Procedures.

Fertilizer was applied in the fall of the year of establishment (see Table 2 for fertilizer regimes). Initial tree measurements were also taken at this time. Information recorded included species, diameter, height, crown ratio, damage and defects. All trees greater than 2 in dbh were measured on the entire plot, and on the regeneration plots, all trees less than 2 in dbh but greater than 4.5 ft tall were also measured. Initial mensurational information is summarized by plot in Appendix B, Plot Summary Sheets. Diameters will be remeasured every two years after establishment, and heights every four years, on the growth plots only. Other information collected at the time of establishment included soil samples, vegetative cover, and soil profile description. Each installation

was also mapped with bearings and distances between plots. Further details may be found in Appendix A, Procedures.

The forest health and nutrition study covered the five geographical regions currently represented by the IFTNC, including north Idaho, central Idaho, northeast Washington, central Washington, and northeast Oregon. Table 2 lists all installations established according to strata within the study design, and treatment received.

Table 3 summarizes installation names, geographical regions and ownership by year of establishment.

**Table 2: IFTNC Site Selection by Parent Material and Vegetation Series** - Each cell shows which installations were established within that category of the experimental design for the forest health and nutrition study. Installation number is given, followed by the treatment regime in parenthesis, and the year of establishment. Treatment regimes include N-rate (N), repeated N-rate (R), nitrogen-potassium response surface (K), and bark beetle (B).

<u>Vegetation Series</u> <u>Parent Material</u>	Douglas-Fir	Grand Fir	Western Red Cedar/ Western Hemlock
<b>Granitic</b>	345 (K,B), 1994 351 (K), 1995 352 (K), 1995	362 (K), 1996 ↑ 363 (K), 1996   364 (K), 1996	335 (K), 1994 341 (K), 1994 344 (K), 1994
<b>Basaltic</b>	337 (N), 1994 339 (R), 1994 350 (R), 1995	338 (K), 1994   342 (K), 1994   343 (K), 1994	356 (N), 1995 357 (R), 1995 359 (R), 1996
<b>Metasedimentary, Metamorphic</b>	0	346 (K), 1994	348 (K), 1995 349 (K), 1995 355 (K), 1995
<b>Mixed (Glacial Till)</b>	340 (N,B), 1994 347 (N), 1995 353 (N), 1995	354 (K), 1995 360 (K), 1996 365 (K), 1996	336 (N), 1994 358 (N), 1995 361 (N), 1996



**Table 3. IFTNC forest health and nutrition study sites, 1994-1996:** Sites are listed in order of establishment by year. For each site established, the installation number and name are given, followed by geographical region and ownership.

Installation	Region	Ownership
<u>1994</u>		
335 - Cemetery	N Idaho	Idaho Department of Lands
336 - Spirit Lake	N Idaho	Inland Empire Paper
337 - Enterprise	NE Oregon	Boise Cascade Corporation
338 - Snowden #2	C Washington	Longview Fiber Corporation
339 - First Creek	C Washington	Boise Cascade Corporation
340 - Chewuch	C Washington	Okanogan National Forest
341 - Grasshopper	N Idaho	Potlatch Corporation
342 - Upper Pataha #2	NE Oregon	Umatilla National Forest
343 - B.Z. Corner #2	C Washington	Washington DNR
344 - Scofield Divide	N Idaho	Potlatch Corporation
345 - Idaho City	C Idaho	Idaho Department of Lands
346 - Springdale	NE Washington	Washington DNR
<u>1995</u>		
347 - Vay	N Idaho	Idaho Department of Lands
348 - Whiskey Butte	N Idaho	Potlatch Corporation
349 - Pivash Creek	N Idaho	Potlatch Corporation
350 - Cleman Mtn. #2	C Washington	Wenatchee National Forest
351 - Little Donner	C Idaho	Idaho Department of Lands
352 - Summit Creek #2	C Washington	Washington DNR
353 - Peony Creek	C Washington	Okanogan National Forest
354 - Huckleberry Creek	NE Washington	Boise Cascade Corporation
355 - Stanton Creek	N Idaho	Idaho Department of Lands
356 - Sportsman Access	N Idaho	Potlatch Corporation
357 - Soldier Creek	N Idaho	Idaho Department of Lands
358 - Skookum Lake	NE Washington	Washington DNR
<u>1996</u>		
359 - Dick's Creek	N Idaho	Idaho Department of Lands
360 - Furport	NE Washington	Colville National Forest
361 - Hanson Creek	NE Washington	Colville National Forest
362 - Haverland Meadows	C Washington	Washington DNR
363 - Kennally Creek	C Idaho	Boise Cascade Corporation
364 - Gold Fork	C Idaho	Boise Cascade Corporation
365 - Eight-Mile	N Idaho	Idaho Department of Lands

## Foliar Analyses

Laboratory analyses for the forest health and nutrition study included needle weights and foliar nutrient analyses. One year after establishment, dormant season foliage samples were collected from the two most dominant species represented on each installation. Five dominant or codominant trees from each species on each plot were selected for collection. Foliage was collected from the third whorl from the top of each tree by climbing, and both current season's foliage and second year's growth were clipped and bagged. A sample was also taken from the lower crown, and current season growth clipped and bagged. Samples were placed in plastic bags and stored in ice-cooled containers in the field.

In the laboratory, needles representing current and second year's foliage were separated from stems and oven-dried at 70° centigrade for 24 hours. These samples were then composited on a volume basis for the five trees for each species and each plot, keeping current and second year's foliage separate. The dried needle samples for each treatment and species were counted and weighed (3 repetitions of 30 needles each) for needle weight comparisons. The remaining dried samples were then ground and sent to an outside laboratory for tissue analysis. Nutrients analyzed for included nitrogen, phosphorus, potassium, calcium, magnesium, boron, iron, manganese, copper, zinc, molybdenum, aluminum and sodium.

**APPENDIX A: INSTALLATION SETUP PROCEDURES**

## IFTNC Forest Health Experiment Installation Setup Procedures

### I. Plot Reconnaissance

1. Each installation will consist of 7 or 14 plots, depending on parent material, vegetation series, and the fertilizer treatment to be applied, as detailed in the IFTNC study plan. Each plot will consist of a growth plot (1/10 ac) inside of a 1/2 ac plot, which is surrounded by a 20 foot buffer zone. The 1/2 ac plot will be subdivided into 9 subplots. The growth plots will be used for periodic growth remeasurement. The 1/2 ac plots will provide adequate space and number of sample trees for future sampling of fertilized areas without disturbing the growth plot. The subplots will be used for measurement of regeneration (trees > 4.5' tall and < 2" dbh) and tracking of disease pockets. The buffer zone provides an additional "safety zone" and decreases edge effects on the main plot.
2. At each site the desired number of plots to be established should be laid out where site and stand factors are as uniform as possible. The completed plot should contain a minimum number of trees of each species (at least two healthy dominants/codominants of each of two dominant species), of a minimum diameter or greater. The number of trees and minimum diameter will vary for each stand, and will be determined by IFTNC staff.
3. IFTNC field staff will "flag" tentative plots for each installation, preferably before crew arrival. This procedure should be followed to be certain that all plots can be

established in the area under uniform conditions of aspect, slope, soil, stand density, and species composition. The reconnaissance person should use a hand compass to pace off the sides of each growth plot (66 feet square), and place flagging at center and corners. A minimum of three chains should be left between flagged growth plots to ensure sufficient space for surrounding 1/2 ac plots and buffer strips. The trees per acre and species composition, along with any additional comments, will be noted and passed on to the field crew for plot establishment.

## II. Plot Establishment

1. All 1/10 ac (growth) plots will be established first, followed by the corresponding 1/2 ac plots, subplots and buffer zones. In some stands we may establish all of the growth plots before starting 1/2 ac plots in order to ensure uniformity between the growth plots. The 1/2 ac plots are of secondary priority for uniformity; we generally "fit" the 1/2 ac plots in where we can in order to accommodate the growth plots. The IFTNC field crew will establish the permanent plots by using staff compass and fiberglass measuring tape to lay out each 1/10 ac plot, 1/2 ac plot, 9 subplots and buffer strip. Measurements will be in horizontal distance rather than slope distance, so on steep slopes a technique for "breaking-chain" or correcting for slope angle must be employed to get the correct horizontal distance.
2. At each flagged location, a tentative growth plot should be established, and the trees on the plot tallied. For the Tally procedure, one person will measure diameters of all trees on the plot, one person will record diameters either on the Initial Tally

sheet (Figure 1) or on the Husky (using the TALLY program), while other crew members stand on the corners and help the measuring person keep track of the trees.

At least three growth plots should be completed prior to scooching (see below), to get an idea of the "target" basal area (BA) and trees per acre (TPA) for the overall installation.

3. At this point "Scooching" may be necessary. Scooching refers to shifting the growth plot a few feet in one direction or another in order to add or lose trees in order to reach the target BA and TPA levels. Scooching may also be employed in order to obtain the desired species composition. Once the satisfactory BA, TPA and species composition have been attained for a growth plot, corner stakes should be pounded in and the crew may proceed to establishment of 1/2 ac, subplots and buffer zone.
4. Two common methods of setting up the 1/2 ac plot and buffers have been developed and are shown in Figures 2 and 3. Figure 2 shows the "Double Corner Method," which involves using one corner of the growth plot as a corner for the 1/2 ac plot. Figure 3 shows the "Double Center Method," which involves using the center of the growth plot as plot center for the 1/2 ac plot. For both methods, a convenient procedure is to place the staff compass at growth plot center and lay out growth plot corners from there. Then, for the Double Center Method, no further moving of the staff compass is necessary; all 1/2 ac corners, buffer corners and subplot centers may also be laid out from plot center.

Figure 1: Initial Tally Sheet

INITIAL TALLY SHEET

Plot Number	Date		Installation Name		Total Number	Basal Area
DBH	sp:	sp:	sp:	sp:		
2						
2.5						
3						
3.5						
4						
4.5						
5						
5.5						
6						
6.5						
7						
7.5						
8						
8.5						
9						
9.5						
10						
10.5						
11						
11.5						
12						
12.5						
13						
13.5						
TOTAL						

Figure 2: Double Corner plot sketch

1/2 Acre Plot, 20' Buffer, Double Corner.

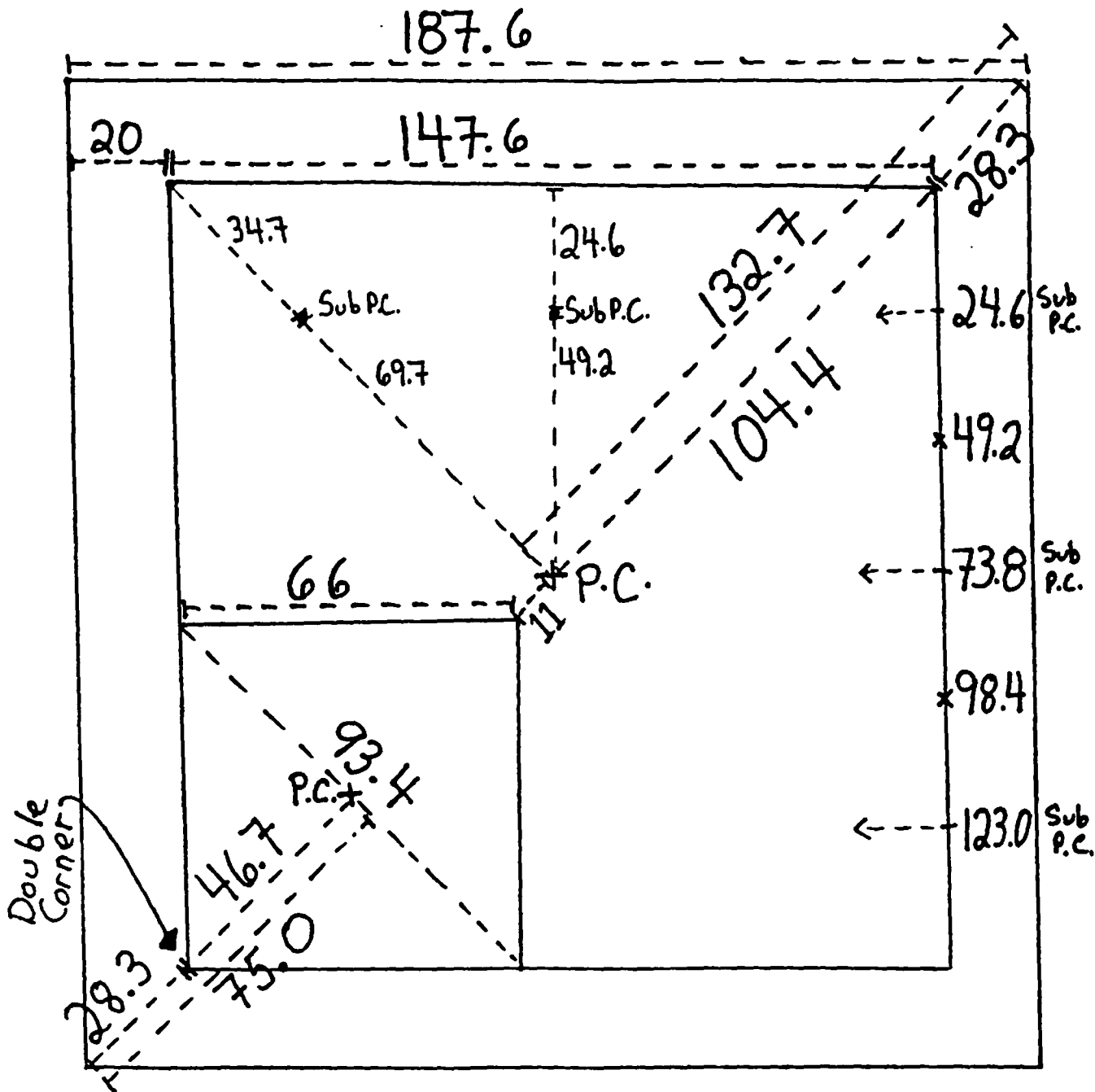
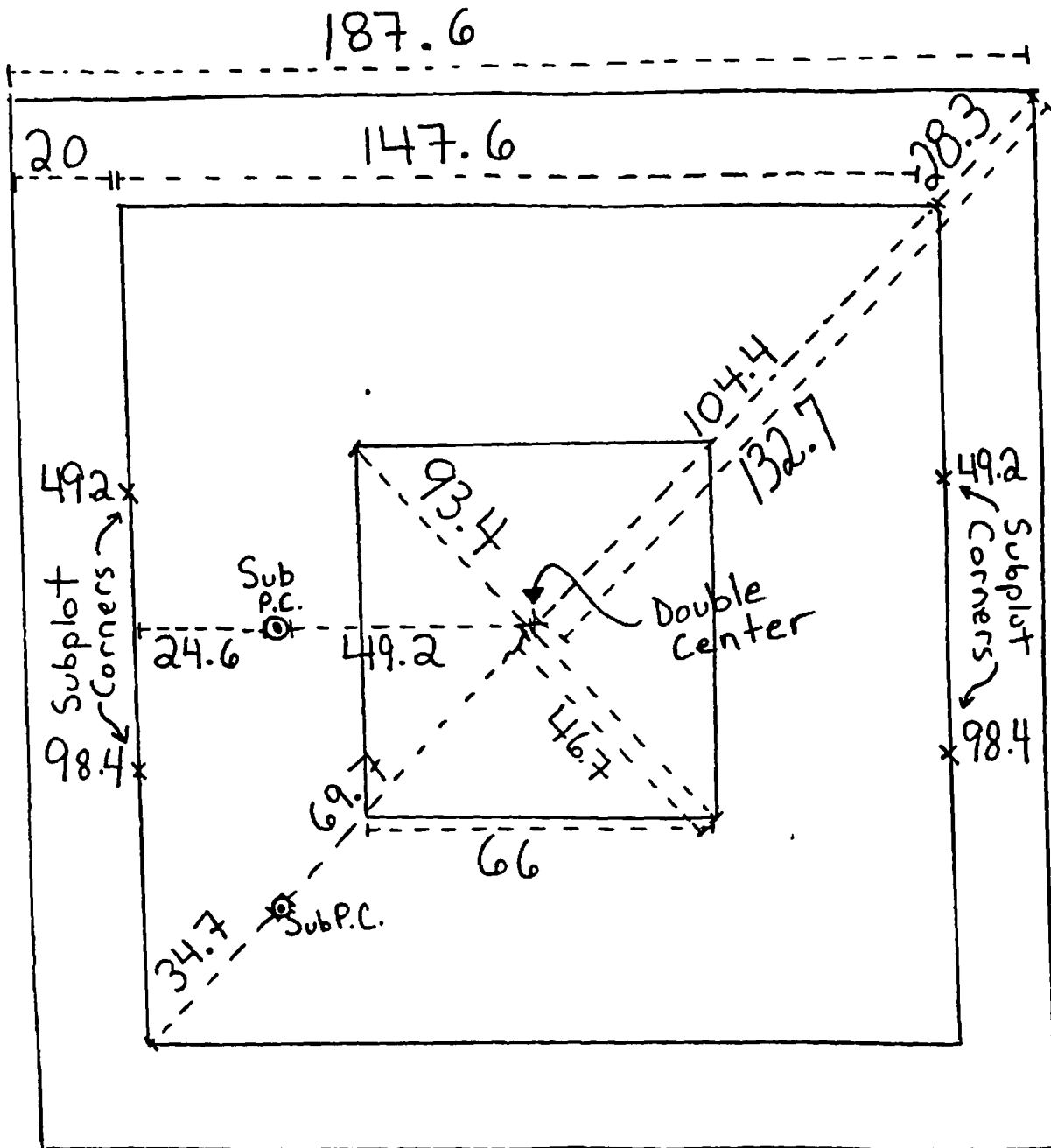




Figure 3: Double Center plot sketch

Double Center.  $\frac{1}{2}Ac$ , 20' buffer.



For the Double Corner Method, the staff compass needs to be moved once, from the growth plot center to the 1/2 ac plot center, to finish layout of the 1/2 ac corners, buffer corners and subplot centers. Stakes should be set at growth plot center (4.5' gray stake), corners of growth plots, 1/2 ac plots, and buffer strips (2.5' gray stakes), and centers of the subplots (2' white).

5. When the stakes have been set (pound them in tight) paint them and place a stick with flagging in them using the following color scheme:

Growth plot corners	=	Yellow
Growth plot center	=	Yellow
1/2 ac plot corners	=	Blue
Buffer corners	=	Yellow
Double corners	=	1/2 Blue, 1/2 Yellow
Subplot centers	=	do nothing

Also mark trees just outside the border with 2 short diagonal stripes on the side facing the plot. These marks help indicate "in" and "out" trees for numbering and measurement, and also facilitate finding the boundaries when we fertilize in the fall, especially in the snow!

6. Time-permitting, use the brush hook or hatchet to prune off all dead branches on trees within the growth plot to a height of about six or seven feet.
7. Once all plots have been established for an installation, the plot locations should be documented using the Plot Establishment Checklist forms (Figure 4),

Figure 4: Plot Establishment checklist

**PLOT ESTABLISHMENT CHECKLIST**

Plot \_\_\_\_\_

Installation Number \_\_\_\_\_ Installation Name \_\_\_\_\_

Technician \_\_\_\_\_ Date \_\_\_\_\_

From Plot Center:

SLOPE \_\_\_\_\_ ASPECT \_\_\_\_\_

From 1/10 Ac. Corner:

AZIMUTH OF ANY SIDE (Indicate which side on sketch) \_\_\_\_\_

Location:	Plot	Azimuth	Distance
FROM (previous)	_____	_____	_____
TO (next)	_____	_____	_____
NEAREST PLOT	_____	_____	_____

Plot Sketch (Include location of 1/10 ac. within 1/2 ac., roads, ridges, drainages, etc.)

one per plot. Two persons are needed to record plot locations. One person stands at the reference point or current growth plot center stake, and the other goes to the next growth plot center stake. Calling out to each other, the first person (recorder) uses a hand compass to determine bearing, then paces off the distance to the person waiting at the next plot. While waiting for the recorder, the other person should affix the red IFTNC tag and treatment tag to the plot center stake. Upon arrival, the recorder gathers information requested on forms, while the other person takes soil surface samples (See Section V.1). The recorder must create a detailed sketch (See Section V.3) which will be used help us find the plots in the future, and also indicates access points for fall fertilizer application.

8. Information to be recorded at each plot includes:
- a) Plot Establishment Checklists: slope, aspect, directions, plot sketch
  - b) Cover Percentages (Figure 5): shrubs, grasses/forbs, and bare ground.  
Coverage codes are provided on the form.
  - c) Any other pertinent information

### III. Tree Marking

1. All trees will be marked at dbh for fall measurement and future remeasurements. A gray PVC stake with a black line at 4.5', or any stick with a mark at 4.5', will be used as a guide to mark d.b.h. on the plot trees. Locate the section of the stem representing d.b.h. (4.5 feet above the ground on the UPHILL side of the tree). If a branch or stem defect appears at this height, move up or down the stem as far as

### COVER PERCENTAGES FOR SHRUBS, GRASSES/FORBS

Installation Number:  
Installation Name:

Technician:  
Date:

SPECIES /	PLOTS	1	2	3	4	5	6	7	8	9	10	11	12	13	14
<u>Shrubs &gt; 3'</u>															
<u>Shrubs &lt; 3'</u>															
<u>Total Coverage, shrubs &gt; 3'</u>															
<u>Total Coverage, shrubs &lt; 3'</u>															
<u>Total Coverage, Grasses/Forbs</u>															
<u>Total Coverage, Bare Ground</u>															

**Codes: 1 = 0-5%    2 = 5-25%    3 = 25-50%    4 = 50-75%    5 = 75-95%    6 = >95%**

Figure 5: Cover percentages

necessary to avoid the irregularity in the stem surface. Carefully paint a horizontal band at the point where the diameter will be taken. On the growth plot trees, yellow paint will be used, and the band should extend all the way around the tree. On the 1/2 acre trees, blue paint will be used and the band should extend about halfway around the tree, clearly visible from the uphill side of the tree.

2. All trees will also be numbered just above the dbh mark in order to track individual tree growth/mortality over the course of the study. Standing at the center of the growth plot, face uphill and select the corner on the uphill left-hand side to begin numbering. Paint a number on each tree at about eye level on the uphill side of the tree. Number the trees systematically so that it is easy to find the trees in consecutive order. Numbering for growth plots should start at 1 on Plot 1, and run continuously through all growth plots, using yellow paint. Numbering for 1/2 acre trees will start over at 1 on each subplot, and run continuously through that subplot only, using blue paint. Include the subplot number (1 through 9) before the tree number. Subplots will be numbered starting on the uphill, left-hand corner of the plot and run consecutively.
5. At the time of numbering trees, each tree number and species should be recorded on the Final Tally form (Figure 6) or on the Husky (using FINAL program) in order to create a data file for fall measurements.



#### IV Plot Marking

1. If a snag, solid log or exposed rock is present near the growth plot center, paint the plot number to identify the plot on successive visits (i.e. "Plot 2"). Repeat this procedure at the edge of the road nearest the plot area, making the number readily visible from the road.
2. Place several of the red IFTNC signs in the area, particularly near the first plot encountered when entering the installation, and at any visible, central points within the installation. Avoid putting them on live trees.
3. Draw a map of the area using the Installation Sketch (Figure 7). Include the contour of the road near the plots (curves, turnouts, etc.) and spur roads that might aid in finding the plot area. Also include ridges, draws, any dominant features in the area near the plots, and of course, the plots. Indicate azimuths and distances between plots and a reference point from the road to at least one plot. The map need be only hand drawn, but should be accurate enough that anyone can find the plot once they are in the area.

#### V Other Data Collection

1. **Surface Soil Sampling:** One sample will be collected from each plot using the soil auger. The sample will be taken from the upper 10" of mineral soil near the growth plot center. Before taking the core sample, remove any litter or duff from the soil surface. Avoid taking the sample where trees are decaying where there are other irregularities. Composite all samples for the installation in a bucket and mix them.



Figure 7: Installation sketch

**INSTALLATION SKETCH (NK Surface Response - 14 Plots)**

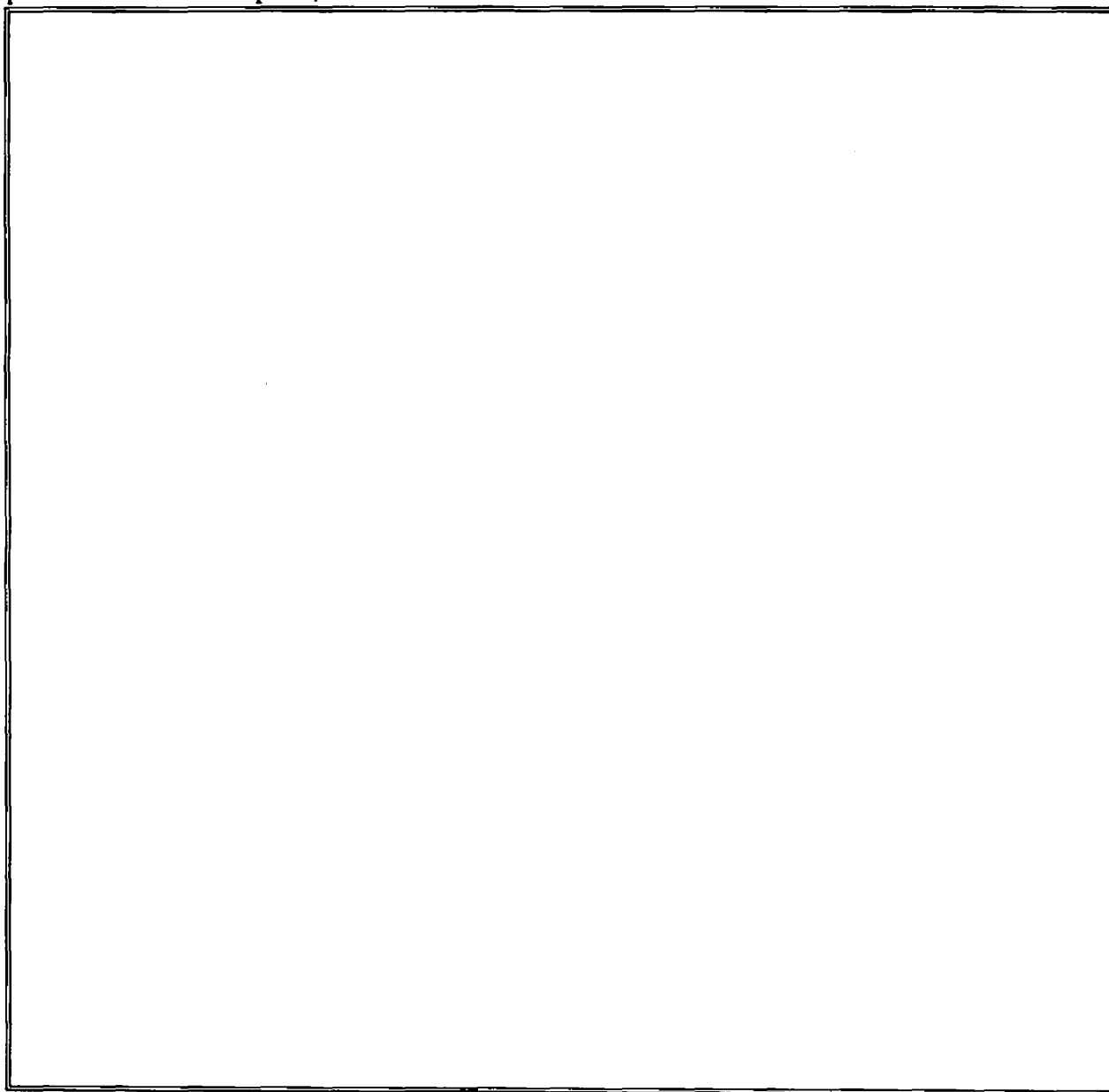
Installation Number \_\_\_\_\_

Date \_\_\_\_\_

Installation Name \_\_\_\_\_

Technician \_\_\_\_\_

**Installation Sketch:** Include azimuths and distances between plots, orientation of plots, growth plots within 1/2 acre plots, roads or access for fertilizer.



Remove a sample from the bucket and place it in a single zip-loc bag. Label the bag with installation name and number and date of sampling.

2. **Soil Pit Sampling:** At each site, dig a pit down to bedrock, hardpan, restrictive layer, or to unaltered parent material, whichever comes first. Using the Soil Profile Description (Figure 8), describe the soil horizons present, the depths of each, and the characteristics of the peds in each horizon. Note any soil characteristics that may be pertinent to understanding the quality of the site. Include any surface ash layer in the comments.
3. **Vegetative Abundance:** For each plot carefully observe the vegetation present within the plot boundaries. On the form provided (Figure 9), note the relative abundance of each species present, including trees, shrubs, grasses and forbs. If you observe species on the plot that are not listed on the form, write them in the spaces provided. If some species are present which you cannot identify but which are relatively abundant throughout the stand, collect and press them. Fill out ID sheets for each species collected. Temporarily give this species a code name, record it on the vegetative description sheet and record its abundance on each plot. After identification change the code name to the species name.
4. **Habitat Type:** Habitat type or plant association should be determined using information on vegetative abundance, soils, slope, aspect, elevation and other necessary information. This determination should be made using a manual specific to the region. Record habitat type on the Vegetative Abundance form and on the



Figure 9: Vegetative Abundance (page 1 of 2)

VEGETATIVE ABUNDANCE\*

Stand No _____	Local Feature _____	Photo No _____
<b>Plot No</b>		<b>Plot No</b>
<b>Trees</b>		
Abies concolor		Rubus
Abies grandis		Rubus parviflorus
Abies lasiocarpa		Salix scouleriana
Betula papyrifera		Sambucus caerulea
Larix lyallii		Shepherdia canadensis
Larix occidentalis		Sorbus scopulina
Picea engelmannii		Sorbus sitchensis
Picea glauca		Spirea betulifolia
Pinus albicaulis		Symphoricarpos albus
Pinus contorta		Symphoricarpos oreophilus
Pinus monticola		Taxus brevifolia
Pinus ponderosa		Vaccinium membranaceum
Populus deltoides		Vaccinium scoparium
Populus tremuloides		
Pseudotsuga menziesii		
Thuja plicata		
Tsuga heterophylla		<b>Ferns</b>
Tsuga mertensiana		Adiantum pedatum
		Athyrium filix-femina
		Dryopteris filix-mas
		Gymnocarpium dryopteris
<b>Large &amp; Medium Shrubs</b>		Polystichum munitum
Acer glabrum		Pteridium aquilinum
Alnus sinuata		
Alnus tenuifolia		<b>Perennial Graminoids</b>
Amelanchier alnifolia		Agropyron spicatum
Artemesia tridentata		Bromus vulgaris
Ceanothus sanguineus		Calamagrostis rubescens
Ceanothus velutinus		Carex
Cercocarpus ledifolius		Carex geyeri
Clematis columbianum		Deschampsia elongata
Cornus stolonifera		Elymus glaucus
Crataegus douglasii		Festuca
Holodiscus discolor		Festuca occidentalis
Juniperus communis		Graminoids
Juniperus horizontalis		Luzula
Lonicera ciliosa		Poa
Lonicera utahensis		
Menziesia ferruginea		
Pachistima myrsinites		
Philadelphus lewisii		
Physocarpus malvaceus		
Prunus emarginata		
Prunus virginiana		
Rhamnus purshiana		
Rhododendron albiflorum		
Ribes		
Rosa gymnocarpa		
Rosa nutkana		
Rosa woodsii		



**Installation Checklist form.**

**VI. Installation Information**

1. Provide as much information as possible about the stand, using the Installation Checklist (Figure 10).
2. Provide written directions to the plot area from a prominent place on an area map (i.e. specific place in a town or a major road intersection that can be easily found by anyone with little knowledge of the area). Provide mileage estimates to road intersections or prominent features so that anyone with the directions can locate the plot area.
4. Record the name of the nearest local feature to the plot area (i.e. Deer Creek, Thompson Butte, Johnson's Mill, etc.). This will be the name that applies to this site.
5. If possible, locate the position of the plot area to the nearest quarter-section, using a topographic quadrangle. Record the township, range, section and subsection. Also include ownership, soils information, and other information requested on the Installation Checklist.
6. If the crew must leave the installation before completing all of the above steps, then note ALL remaining tasks on the TO DO CHECKLIST (Figure 11).

Figure 10: Installation checklist

**INSTALLATION CHECKLIST**  
(To be completed before leaving site)

Installation Number \_\_\_\_\_ Installation Name \_\_\_\_\_

Date Completed \_\_\_\_\_ Number of Plots \_\_\_\_\_

Region \_\_\_\_\_ Ownership \_\_\_\_\_

Contacts:

Legal Description: (T)                      (R)                      (S)

Instructions for how to arrive:

Vegetation & Soil Information

Habitat Type \_\_\_\_\_

Parent Material \_\_\_\_\_

Soil-forming Process \_\_\_\_\_

Soil Depth (in) \_\_\_\_\_ Ash Depth (in) \_\_\_\_\_

Tasks completed:

Stakes placed & painted \_\_\_\_\_

Boundaries marked \_\_\_\_\_

Growth plot center stakes \_\_\_\_\_

IFTNC red tags \_\_\_\_\_

Subplot center stakes \_\_\_\_\_

Final tallies completed \_\_\_\_\_

Tree numbers painted(1/10) \_\_\_\_\_

Tree numbers painted (1/2) \_\_\_\_\_

Soil samples \_\_\_\_\_

Forms completed:

Plot Establishment (14) \_\_\_\_\_

Installation Sketch \_\_\_\_\_

Cover Percentages \_\_\_\_\_

Vegetation List \_\_\_\_\_

Soil Pit \_\_\_\_\_

To Do List \_\_\_\_\_

Initial Tally (14) \_\_\_\_\_

Final Tally (14) \_\_\_\_\_

Figure 11: To Do Checklist

**TO BE COMPLETED  
1996 Installations**

INSTALLATION NUMBER: \_\_\_\_\_ NAME: \_\_\_\_\_

General jobs:

PLOT:	JOB:
1	_____
2	_____
3	_____
4	_____
5	_____
6	_____
7	_____
8	_____
9	_____
10	_____
11	_____
12	_____
13	_____
14	_____

Other instructions, comments:



## VII. Initial Tree Measurements

1. Initial tree measurements will be taken in the fall of the year of installation. Using the IFTNC2 program on the Husky data recorder, record the following information for each tree, using the codes shown in Figure 12:
  - a. Tree number (should be in the startup data set)
  - b. Species (should also be in the startup data set; if not use number codes for species)
  - c. Crown Ratio for trees being measured by height pole rather than clinometer (generally trees less than 20' tall, or deformed/sweepy/leaning trees).
  - d. Management codes and defects
  - e. Diameter of the tree at the painted dbh line. Record this diameter to the nearest 1/100 inch. Make sure the D-tape is straight and that no debris is wedged between the tape and the tree.
  - f. Height is automatically calculated by the Husky using the following four angles (measured in percent with a Suunto clinometer): Top Height, Misc. Angle (greater than dbh but less than top height), Base of Live Crown, and DBH line. Also enter distance to the tree, using measuring tape or Sonins to obtain horizontal distance from clinometer to the center of the tree. The data recorder person should inform the clinometer person of the resultant tree height, to try and screen out incorrect measurements. If a tree is measured with height pole or otherwise calculated, be sure to enter the height and

Figure 12: Tree codes

1	Douglas-fir	11	Maple
2	Grand fir	12	Amalanchier
3	Subalpine fir	13	Alder
4	Western redcedar	14	Birch
5	Western hemlock	15	Willow
6	Western larch	16	Aspen
7	Lodgepole pine	17	Black cottonwood
8	Western white pine	18	Juniper
9	Ponderosa pine	19	Bitter Cherry
10	Engelmann spruce		

crown ratio in the correct columns of the Husky.

2. Also at this time, any tasks which were not accomplished during the installation process should be completed. These tasks may be found on the TO DO form (see VI.6).

### VIII. Fertilization

1. Determine the exact amount of fertilizer compound needed for each plot by multiplying the number of pounds per acre to be applied by the total plot size (.8 ac). Then divide this number by the percentage of element in the fertilizer compound (46% N in urea, 60% K in potash, 50%  $K_2O$  in potassium sulfate). This gives the total pounds of each fertilizer compound to be delivered to the plot; divide this number by 50 to get the number of 50# bags required.
2. Hand spreaders will be used to spread the fertilizer over the plot. Subdivide the plot according to growth plot, remaining 1/2 ac plot, and buffer zone. The growth plot will receive 1/8 of the total fertilizer, the remaining 1/2 ac plot will receive 4/8 of the fertilizer, and the buffer strip gets the rest (3/8 of the fertilizer). Apply the fertilizer as evenly as possible over the entire plot. Until precision in applying the fertilizer is gained, it is best to begin conservatively, going over each area several times if necessary. This would avoid the possibility of running out of fertilizer before finishing the plot.
3. Record the fertilizer treatment and weather conditions at time of application on the Treatment Checklist (Figure 13).

**YEAR 0 TREATMENT RECORD**  
**(N-K Response Surface, N-Rate, and Repeated N Addition Experiments)**

**Installation Name:**  
**Installation Number:**

**Date:**

**Weather Conditions**

<b>Plot</b>	<b>Treatment</b>	
1	_____	<b>Treatments:</b>
2	_____	<u>(14-Plot): N-K Resp. Surf.</u>
3	_____	00: 0/0
4	_____	30: 300/0
5	_____	02: 0/200
6	_____	85: 87.9/58.6
7	_____	83: 87.9/341.4
8	_____	55: 512.1/58.6
9	_____	53: 512.1/341.4
10	_____	62: 600/200
11	_____	34: 300/400
12	_____	32: 300/200 (5x)
13	_____	32S: 300/200 K <sub>2</sub> SO <sub>4</sub> (32M = 32S + micros)
14	_____	<u>(7-Plot): N Rate</u>
		00: 0/0
		30: 300/0
		02: 0/200
		32: 300/200
		10: 100/0
		20: 200/0
		60: 600/0
		<u>14-Plot: Repeated N Addition</u>
		00: 0/0
		32S: 300/200K <sub>2</sub> SO <sub>4</sub> (32M = 32S + micros)
		10: 100/0 (3x)
		20: 200/0 (3x)
		30: 300/0 (3x)
		60: 600/0
		02: 0/200
		32: 300/200

**APPENDIX B: PLOT SUMMARY SHEETS**

**(1) Growth (1/10 ac) Plots**



PLOT SUMMARY REPORT: TENTH ACRE PLOTS

Installation 336 Spirit Lake

Region: N Idaho

Legal Description: T53N R4W Sect.15

Ownership: Inland Empire

Meridian: Willamette

Treatment Regime: 7-plot N Rate

Year established: 1994

Elevation: 2600

Aspect: SE

Slope: 5%

Vegetation Series: THPL (Western redcedar)

Habitat Type: PAMY (pachistima)

Phase: none

Parent Material: Mixed (Glacial Till)

Soil depth (in.): 13

Ash depth (in.): 1

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	60	02	20	30	32	10	00							
Slope (%)	4	5	5	3	6	4	6	.	.	.	.	.	.	.
Aspect (degrees)	203	109	89	189	201	122	231	.	.	.	.	.	.	.

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1994)

Live Trees per Acre >2" Dbh	250	300	330	320	180	130	290	.	.	.	.	.	.	.
Live Basal Area (sq.ft/a)	114.3	120.3	120.2	118.3	121.3	122.3	131.0	.	.	.	.	.	.	.
Live Total Volume (cu.ft/a)	2801	3354	3176	3087	3298	3373	3715	.	.	.	.	.	.	.
Crown Competition Factor	130	144	143	130	134	121	133	.	.	.	.	.	.	.
Relative Density Index	37.8	41.1	42.0	41.2	36.4	33.8	43.4	.	.	.	.	.	.	.
Site Height (ft)	76.6	78.9	75.9	85.9	78.1	76.4	91.3	.	.	.	.	.	.	.
Mean Diameter (in)	9.2	8.6	8.2	8.2	11.1	13.1	9.1	.	.	.	.	.	.	.
Average crown ratio (%)	55	42	40	43	38	59	35	.	.	.	.	.	.	.
Average crown length (ft)	29.2	23.9	20.7	22.2	24.8	43.8	21.9	.	.	.	.	.	.	.
Species composition (% of BA)														
Douglas-fir	70.2	60.8	83.6	63.6	99.5	83.2	38.8	.	.	.	.	.	.	.
Grand fir	13.5	24.2	5.2	2.5	0.5	0.0	0.3	.	.	.	.	.	.	.
Western redcedar	0.0	0.0	0.0	0.7	0.0	0.0	0.0	.	.	.	.	.	.	.
Western larch	16.3	9.5	11.2	33.2	0.0	16.8	60.9	.	.	.	.	.	.	.
Ponderosa pine	0.0	5.6	0.0	0.0	0.0	0.0	0.0	.	.	.	.	.	.	.

PLOT SUMMARY REPORT: TENTH ACRE PLOTS

Installation 337 Enterprise

Region: NE Oregon

Legal Description: T2N R44E Sect.14

Ownership: Boise Cascade

Meridian: Willamette

Treatment Regime: 7-plot N Rate

Year established: 1994

Elevation: 4700

Aspect: W-SW

Slope: 17%

Vegetation Series: PSME (Douglas-fir)

Habitat Type: CARU (pinegrass)

Phase: none

Parent Material: Basaltic

Soil depth (in.): 30

Ash depth (in): T

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	10	20	00	30	32	60	02							
Slope (%)	27	17	20	14	15	15	12	.	.	.	.	.	.	.
Aspect (degrees)	200	192	255	286	242	234	250	.	.	.	.	.	.	.

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1994)

Live Trees per Acre >2" Dbh	200	240	270	220	240	340	290	.	.	.	.	.	.	.
Live Basal Area (sq.ft/a)	110.0	107.0	135.8	127.9	111.4	123.3	127.5	.	.	.	.	.	.	.
Live Total Volume (cu.ft/a)	2941	2427	3074	3018	2356	2604	3001	.	.	.	.	.	.	.
Crown Competition Factor	129	130	155	145	130	146	144	.	.	.	.	.	.	.
Relative Density Index	34.7	35.6	43.8	39.8	36.7	43.2	42.6	.	.	.	.	.	.	.
Site Height (ft)	79.2	67.1	65.2	67.2	58.1	68.2	71.7	.	.	.	.	.	.	.
Mean Diameter (in)	10.0	9.0	9.6	10.3	9.2	8.2	9.0	.	.	.	.	.	.	.
Average crown ratio (%)	40	47	49	53	44	51	51	.	.	.	.	.	.	.
Average crown length (ft)	26.4	25.5	25.3	29.0	23.0	23.1	25.9	.	.	.	.	.	.	.
Species composition (% of BA)														
Douglas-fir	100.0	98.8	90.3	86.0	91.2	96.2	93.8	.	.	.	.	.	.	.
Lodgepole pine	0.0	0.0	4.5	0.0	0.0	2.6	6.2	.	.	.	.	.	.	.
Ponderosa pine	0.0	1.2	5.1	14.0	8.8	1.2	0.0	.	.	.	.	.	.	.



PLOT SUMMARY REPORT: TENTH ACRE PLOTS

Installation 338 Snowden #2

Region: C Washington

Legal Description: T4N R11E Sect.24

Ownership: Longview Fiber

Meridian: Willamette

Treatment Regime: 14-plot NxK Response Surface

Year established: 1994

Elevation: 2200

Aspect: N

Slope: 8%

Vegetation Series: PSME (Douglas-fir)

Habitat Type: ACCI (vinemaple)

Phase: BEAQ (tall oregon grape)

Parent Material: Basaltic

Soil depth (in.): 125

Ash depth (in.): 10

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	62	53	32	32	32	55	32	30	34	83	00	02	85	32
Slope (%)	10	5	2	7	9	17	4	6	8	5	5	12	8	9
Aspect (degrees)	20	15	355	279	282	308	258	260	79	35	289	196	196	183

MENSURATIONAL CHARACTERISTICS:

-----  
At Time of Treatment (1994)  
-----

Live Trees per Acre >2" Dbh	130	130	120	200	200	190	220	220	150	230	220	160	180	190
Live Basal Area (sq.ft/a)	145.8	145.9	149.1	136.6	155.4	134.7	147.7	152.8	148.0	143.5	137.8	136.2	143.4	152.0
Live Total Volume (cu.ft/a)	5291	5850	4816	3518	4917	4370	4307	4303	5220	4737	4005	4308	4747	4418
Crown Competition Factor	152	144	141	148	163	155	166	162	163	156	143	141	157	150
Relative Density Index	38.5	38.5	38.4	40.8	45.0	39.9	44.4	45.5	40.4	43.9	42.1	38.5	41.3	43.7
Site Height (ft)	102.1	102.8	92.5	75.3	96.0	93.2	88.6	75.5	98.3	88.4	86.3	85.8	87.0	88.4
Mean Diameter (in)	14.3	14.4	15.1	11.2	11.9	11.4	11.1	11.3	13.5	10.7	10.7	12.5	12.1	12.1
Average crown ratio (%)	53	57	64	67	64	55	58	53	45	42	48	53	45	54
Average crown length (ft)	45.6	50.3	50.1	37.4	40.8	42.1	38.3	34.6	38.4	30.3	29.3	36.0	35.2	35.0
Species composition (% of BA)														
Douglas-fir	59.2	45.8	89.4	79.3	76.4	55.9	72.6	68.1	44.0	42.0	43.2	56.9	45.1	57.0
Grand fir	40.9	43.0	10.7	20.7	23.6	44.2	27.4	13.0	56.0	44.7	42.6	33.0	46.1	17.8
Ponderosa pine	0.0	11.3	0.0	0.0	0.0	0.0	0.0	18.9	0.0	11.6	7.3	10.1	8.8	25.2

PLOT SUMMARY REPORT: TENTH ACRE PLOTS

Installation 339 First Creek  
 Region: C Washington  
 Legal Description: T20N R17E Sect.22

Ownership: Boise Cascade  
 Meridian: Willamette

Treatment Regime: 14-plot N Rate Repeated App.  
 Year established: 1994

Elevation: 2500  
 Aspect: NW  
 Slope: 25%

Vegetation Series: PSME (Douglas-fir)  
 Habitat Type: SYAL (snowberry)  
 Phase: none

Parent Material: Basaltic  
 Soil depth (in.): 22  
 Ash depth (in):

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	10	32	20	60	10	02	20	60	30	20	00	10	30	30
Slope (%)	25	18	18	18	14	35	36	28	30	32	27	15	.	25
Aspect (degrees)	.	.	.	.	.	.	.	.	.	.	.	.	.	.

MENSURATIONAL CHARACTERISTICS:

-----  
 At Time of Treatment (1994)  
 -----

Live Trees per Acre >2" Dbh	140	140	140	120	100	150	110	100	100	150	150	130	150	140
Live Basal Area (sq.ft/a)	108.0	102.3	97.5	108.9	108.4	111.2	103.2	100.5	116.2	101.8	97.9	98.1	105.9	111.8
Live Total Volume (cu.ft/a)	2716	2628	2215	3222	3124	2704	2874	2888	3405	2289	2510	2638	2824	2771
Crown Competition Factor	117	106	110	113	105	121	106	102	112	118	106	107	114	117
Relative Density Index	31.3	30.1	29.0	30.3	28.9	32.6	28.5	27.3	30.4	30.5	29.6	28.6	31.4	32.2
Site Height (ft)	73.2	74.8	62.3	87.4	83.2	70.5	80.3	85.4	82.7	64.0	72.6	80.3	74.8	71.5
Mean Diameter (in)	11.9	11.6	11.3	12.9	14.1	11.7	13.1	13.6	14.6	11.2	10.9	11.8	11.4	12.1
Average crown ratio (%)	48	52	51	49	62	45	47	52	41	49	51	56	48	57
Average crown length (ft)	31.3	33.4	30.3	38.3	46.3	28.2	34.1	38.9	32.1	29.3	31.9	38.2	32.9	34.9
Species composition (% of BA)														
Douglas-fir	92.3	77.1	94.1	100.0	93.9	100.0	100.0	100.0	90.8	100.0	80.4	100.0	87.1	90.3
Ponderosa pine	7.7	22.9	5.9	0.0	6.2	0.0	0.0	0.0	9.3	0.0	19.6	0.0	13.0	9.7

PLOT SUMMARY REPORT: TENTH ACRE PLOTS

Installation 340 Chewuch River  
 Region: C Washington  
 Legal Description: T36N R21E Sect. 1

Ownership: Forest Service  
 Meridian: Willamette  
 Treatment Regime: 7-plot N Rate  
 4-plot Bark Beetle Site  
 Year established: 1994

Elevation: 2360  
 Aspect: W-NW  
 Slope: 7%

Vegetation Series: PSME (Douglas-fir)  
 Habitat Type: ARUV (kinnikinnik)  
 Phase: none

Parent Material: Mixed (Glacial Till)  
 Soil depth (in.): 26  
 Ash depth (in):

Plot Number	1	2	3	4	5	6	7	1BB	2BB	3BB	4BB	.	.	.
Treatment	32	60	30	10	20	02	00	30	00	02	32	.	.	.
Slope (%)	7	4	5	7	7	9	10	10	12	16	6	.	.	.
Aspect (degrees)	248	106	324	296	46	244	256	324	352	344	359	.	.	.

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1994)

Live Trees per Acre >2" Dbh	160	170	180	160	170	180	220	170	140	150	190	.	.	.
Live Basal Area (sq.ft/a)	100.2	98.4	108.0	103.9	110.8	98.3	105.7	89.5	89.1	93.1	93.6	.	.	.
Live Total Volume (cu.ft/a)	2754	2178	2358	2452	3048	2264	2267	2160	2207	2291	2155	.	.	.
Crown Competition Factor	89	90	96	93	100	89	101	75	74	78	81	.	.	.
Relative Density Index	30.6	30.7	33.4	31.5	33.5	31.1	34.5	28.6	27.1	28.5	30.4	.	.	.
Site Height (ft)	76.9	61.3	61.6	66.8	74.6	59.8	60.9	70.6	62.1	58.8	62.9	.	.	.
Mean Diameter (in)	10.7	10.3	10.5	10.9	10.9	10.0	9.4	9.8	10.8	10.7	9.5	.	.	.
Average crown ratio (%)	55	61	64	62	51	63	49	46	54	47	46	.	.	.
Average crown length (ft)	32.9	31.6	30.0	34.4	32.1	30.0	25.0	22.4	30.3	27.5	24.8	.	.	.
Species composition (% of BA)														
Douglas-fir	26.4	21.7	34.7	31.4	29.2	37.2	31.4	0.0	0.0	0.0	0.0	.	.	.
Ponderosa pine	73.6	78.3	65.3	68.6	70.8	62.8	68.6	100.0	100.0	100.0	100.0	.	.	.

PLOT SUMMARY REPORT: TENTH ACRE PLOTS

Installation 341 Grasshopper Creek  
 Region: N Idaho  
 Legal Description: T36N R5E Sect.21

Ownership: Potlatch  
 Meridian: Boise

Treatment Regime: 14-plot NxK Response Surface  
 Year established: 1994

Elevation: 3400  
 Aspect: SW  
 Slope: 26%

Vegetation Series: THPL (Western redcedar)  
 Habitat Type: ASCA3 (wild ginger)  
 Phase: ASCA3 (wild ginger)

Parent Material: Granitic  
 Soil depth (in.): 46  
 Ash depth (in.): 13

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	00	30	83	02	32	85	55	53	62	34	32	32	32	32
Slope (%)	38	41	35	36	27	28	20	22	8	15	15	15	25	33
Aspect (degrees)	307	303	316	357	301	299	310	324	328	304	330	305	332	278

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1994)

Live Trees per Acre >2" Dbh	610	640	610	650	540	770	740	510	480	670	510	420	500	490
Live Basal Area (sq.ft/a)	215.9	207.1	206.8	203.0	207.4	196.2	214.3	198.0	205.6	212.0	214.3	234.2	211.3	207.5
Live Total Volume (cu.ft/a)	5329	6002	5549	5828	6996	4965	5615	5752	6094	5564	6248	8034	6365	6309
Crown Competition Factor	274	274	282	275	282	280	301	268	287	290	282	305	272	279
Relative Density Index	76.1	74.6	73.7	73.8	71.6	75.1	79.4	68.2	69.1	76.8	72.3	73.7	71.2	69.9
Site Height (ft)	69.9	85.0	75.0	84.5	96.7	66.8	77.8	84.8	77.5	77.0	80.0	91.8	88.9	81.2
Mean Diameter (in)	8.1	7.7	7.9	7.6	8.4	6.8	7.3	8.4	8.9	7.6	8.8	10.1	8.8	8.8
Average crown ratio (%)	45	44	52	36	45	47	52	51	54	47	48	42	40	36
Average crown length (ft)	22.6	26.1	27.7	22.6	29.9	23.3	26.6	31.8	34.7	25.2	32.5	33.4	26.4	26.3
Species composition (% of BA)														
Douglas-fir	43.2	21.3	22.5	16.2	4.5	26.1	19.3	9.2	0.0	20.0	27.4	15.9	42.3	46.5
Grand fir	26.0	63.4	61.8	55.9	89.3	61.1	71.7	70.2	84.7	58.6	50.7	73.0	47.1	51.7
Western redcedar	27.1	2.8	12.6	17.9	5.2	5.7	8.5	11.9	15.3	14.7	18.9	11.1	10.7	0.0
Western larch	3.8	12.6	3.1	10.0	1.0	4.9	0.5	7.3	0.0	0.0	0.0	0.0	0.0	1.7
Lodgepole pine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0
Western white pine	0.0	0.0	0.0	0.0	0.0	2.2	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0
Engelmann spruce	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	0.0	0.0	0.0	0.0

PLOT SUMMARY REPORT: TENTH ACRE PLOTS

Installation 342 Upper Pataha #2  
 Region: C Washington  
 Legal Description: T9N R42E Sect.20

Ownership: Forest Service  
 Meridian: Willamette

Treatment Regime: 14-plot NxK Response Surface  
 Year established: 1994

Elevation: 5000  
 Aspect: NE  
 Slope: 23%

Vegetation Series: ABGR (Grand fir)  
 Habitat Type: VAME (big huckleberry)  
 Phase: LIBO2 (twinflower)

Parent Material: Basaltic  
 Soil depth (in.): 24  
 Ash depth (in): 11

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	32	85	02	55	32	32	32	32	34	62	83	83	30	00
Slope (%)	30	15	20	14	20	30	30	30	35	30	14	11	27	15
Aspect (degrees)	76	94	18	338	28	60	30	50	120	292	16	346	356	356

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1994)

Live Trees per Acre >2" Dbh	180	240	230	210	210	240	250	210	210	220	220	230	220	280
Live Basal Area (sq.ft/a)	29.9	30.2	27.8	28.7	32.3	28.2	27.3	26.8	32.3	27.9	27.6	30.5	24.9	35.2
Live Total Volume (cu.ft/a)	305	280	239	280	297	266	249	232	295	238	253	258	192	305
Crown Competition Factor	32	37	28	32	34	31	33	30	33	28	32	34	26	39
Relative Density Index	12.7	13.8	12.8	12.8	14.0	13.1	12.9	12.2	14.0	12.7	12.6	13.8	11.7	16.1
Site Height (ft)	25.8	24.2	23.3	23.2	24.0	24.5	25.2	22.4	23.1	22.4	22.1	20.5	19.1	23.0
Mean Diameter (in)	5.5	4.8	4.7	5.0	5.3	4.6	4.5	4.8	5.3	4.8	4.8	4.9	4.6	4.8
Average crown ratio (%)	87	88	86	88	87	90	88	86	85	85	87	90	84	88
Average crown length (ft)	19.2	16.7	15.5	17.2	16.4	16.7	15.8	16.2	16.5	14.4	16.4	15.8	14.5	15.9
Species composition (% of BA)														
Douglas-fir	17.0	3.4	5.9	5.9	8.8	16.4	12.7	11.1	8.7	4.9	23.8	17.5	7.5	2.6
Grand fir	0.0	24.1	0.0	13.4	4.1	0.0	15.2	6.2	0.0	0.0	3.3	3.2	0.0	11.9
Subalpine fir	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2
Western larch	3.9	0.0	0.0	0.0	3.0	0.0	0.0	2.8	0.0	0.0	3.5	0.0	8.7	7.6
Lodgepole pine	0.0	0.0	0.0	5.4	0.0	0.0	0.0	0.0	4.8	6.1	8.3	5.8	0.0	0.0
Ponderosa pine	72.1	62.6	81.1	67.3	78.5	62.6	67.7	73.0	85.4	79.5	50.7	72.0	79.7	71.1
Engelmann spruce	7.0	9.9	13.0	8.0	5.5	21.1	4.4	6.9	1.1	9.6	10.4	1.5	4.1	2.6





PLOT SUMMARY REPORT: TENTH ACRE PLOTS

Installation 345 Idaho City

Region: C Idaho

Legal Description: T6N R5E Sect.16

Ownership: IDL

Meridian: Boise

Treatment Regime: 14-plot NxK Response Surface  
4-plot Bark Beetle Site

Year established: 1994

Elevation: 4900

Aspect: E-SE

Slope: 13%

Vegetation Series: PSME (Douglas-fir)

Habitat Type: CAGE (elk sedge)

Phase: none

Parent Material: Granitic

Soil depth (in.): .

Ash depth (in):

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	32	32	32	02	53	62	85	00	55	32	83	30	32	34
Slope (%)	12	14	5	14	15	10	20	25	7	5	10	15	10	20
Aspect (degrees)	230	199	217	210	359	295	2	292	233	331	260	188	245	234

MENSURATIONAL CHARACTERISTICS:

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At Time of Treatment (1994)  
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Live Trees per Acre >2" Dbh	160	150	110	170	170	170	210	170	160	180	210	180	140	180
Live Basal Area (sq.ft/a)	85.3	81.8	79.5	89.1	84.5	83.1	86.5	97.7	86.1	101.9	97.7	93.3	81.1	87.4
Live Total Volume (cu.ft/a)	2112	2177	2391	2396	2245	1925	1967	2495	2288	2681	2299	2406	2072	2275
Crown Competition Factor	92	80	77	90	90	79	86	99	84	98	93	85	77	83
Relative Density Index	27.1	25.9	23.4	28.5	27.4	27.0	29.3	30.5	27.3	31.9	32.1	29.9	25.3	28.5
Site Height (ft)	67.2	67.4	78.4	72.6	69.6	59.7	58.0	65.0	74.4	71.6	64.7	70.1	67.9	64.9
Mean Diameter (in)	9.9	10.0	11.5	9.8	9.5	9.5	8.7	10.3	9.9	10.2	9.2	9.8	10.3	9.4
Average crown ratio (%)	42	47	45	39	36	45	46	46	46	43	43	44	41	46
Average crown length (ft)	25.4	28.2	33.1	25.7	22.9	24.3	24.1	28.2	28.6	26.3	23.4	26.4	25.6	25.8
Species composition (% of BA)														
Douglas-fir	65.0	36.1	40.7	47.1	65.2	26.5	33.1	45.6	39.4	44.1	23.0	25.7	28.1	25.2
Ponderosa pine	35.0	63.9	59.3	52.9	34.8	73.5	66.9	54.4	60.6	55.9	77.0	74.3	71.9	74.8





PLOT SUMMARY REPORT: TENTH ACRE PLOTS

Installation 346 Springdale

Region: NE Washington

Legal Description: T29N R38E Sect. 2

Ownership: Washington DNR

Meridian: Willamette

Treatment Regime: 14-plot NxK Response Surface

Year established: 1994

Elevation: 2600

Aspect: S-SE

Slope: 21%

Vegetation Series: ABGR (Grand fir)

Habitat Type: MISSING

Phase: none

Parent Material: Metamorphic/Metasedimentary

Soil depth (in.): 8

Ash depth (in): 8

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	00	32	85	32	53	55	62	83	32	32	34	02	32	30
Slope (%)	35	10	27	20	16	17	15	20	14	24	25	25	27	12
Aspect (degrees)	110	80	120	130	160	180	60	114	196	90	232	122	232	174

MENSURATIONAL CHARACTERISTICS:

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At Time of Treatment (1994)  
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Live Trees per Acre >2" Dbh	110	130	140	120	160	120	120	170	120	140	120	110	100	140
Live Basal Area (sq.ft/a)	56.5	55.2	52.7	56.1	54.8	39.9	48.4	57.8	52.4	52.5	50.5	55.0	54.3	54.3
Live Total Volume (cu.ft/a)	1323	1339	1173	1440	1198	983	909	1374	1154	1014	1004	1479	1509	1485
Crown Competition Factor	54	59	57	61	57	41	53	63	57	58	48	52	53	59
Relative Density Index	18.1	18.6	18.3	18.4	19.5	14.3	16.5	20.6	17.5	18.2	17.0	17.8	17.2	18.7
Site Height (ft)	58.8	63.1	61.5	69.6	53.2	58.9	49.1	63.9	57.3	50.1	49.0	68.7	68.4	75.1
Mean Diameter (in)	9.7	8.8	8.3	9.3	7.9	7.8	8.6	7.9	9.0	8.3	8.8	9.6	10.0	8.4
Average crown ratio (%)	62	45	59	57	57	57	76	54	71	66	67	55	54	48
Average crown length (ft)	31.2	24.1	28.8	34.5	30.2	24.0	30.4	25.0	32.5	28.9	31.4	28.2	27.9	23.4
Species composition (% of BA)														
Douglas-fir	36.5	56.5	53.5	74.3	39.8	29.1	55.2	66.7	60.7	53.3	21.5	25.9	29.1	79.8
Grand fir	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	5.6	0.5
Western larch	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.8	0.0	0.0
Ponderosa pine	63.5	43.5	46.5	25.7	60.2	70.9	44.8	33.4	39.4	46.7	78.6	55.3	65.3	19.7

PLOT SUMMARY REPORT: TENTH ACRE PLOTS

Installation 347 Vay

Region: N Idaho

Legal Description: T55N R4W Sect.22

Ownership: IDL

Meridian: Boise

Treatment Regime: 7-plot N Rate

Year established: 1995

Elevation: 750

Vegetation Series: PSME (Douglas-fir)

Parent Material: Mixed (Glacial Till)

Aspect: FLAT

Habitat Type: SYAL (snowberry)

Soil depth (in.): 42

Slope: 1%

Phase: none

Ash depth (in): T

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	32	60	20	30	02	00	10							
Slope (%)	1	1	1	1	1	1	1	.	.	.	.	.	.	.
Aspect (degrees)	1	1	1	1	1	1	1	.	.	.	.	.	.	.

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1995)

Live Trees per Acre >2" Dbh	380	360	360	350	350	330	350	.	.	.	.	.	.	.
Live Basal Area (sq.ft/a)	42.1	39.4	40.1	39.0	44.0	43.6	41.2	.	.	.	.	.	.	.
Live Total Volume (cu.ft/a)	338	341	337	352	382	416	366	.	.	.	.	.	.	.
Crown Competition Factor	42	40	40	40	44	44	41	.	.	.	.	.	.	.
Relative Density Index	19.8	18.6	18.9	18.4	20.1	19.7	19.1	.	.	.	.	.	.	.
Site Height (ft)	21.3	23.2	23.2	23.8	21.3	23.7	22.6	.	.	.	.	.	.	.
Mean Diameter (in)	4.5	4.5	4.5	4.5	4.8	4.9	4.6	.	.	.	.	.	.	.
Average crown ratio (%)	68	69	71	72	72	72	77	.	.	.	.	.	.	.
Average crown length (ft)	12.0	13.1	12.9	14.1	14.1	14.5	15.4	.	.	.	.	.	.	.
Species composition (% of BA)														
Lodgepole pine	6.1	12.3	5.6	13.0	4.6	20.6	8.4	.	.	.	.	.	.	.
Ponderosa pine	93.9	87.7	94.4	87.0	95.4	79.4	91.6	.	.	.	.	.	.	.

PLOT SUMMARY REPORT: TENTH ACRE PLOTS

Installation 348 Whiskey Butte  
 Region: N Idaho  
 Legal Description: T38N R4E Sect.34

Ownership: Potlatch  
 Meridian: Boise

Treatment Regime: 14-plot NxK Response Surface  
 Year established: 1995

Elevation: 3100  
 Aspect: S-SW  
 Slope: 16%

Vegetation Series: THPL (Western redcedar)  
 Habitat Type: CLUN (queencup beadlily)  
 Phase: none

Parent Material: Metamorphic/Metasedimentary  
 Soil depth (in.): 33  
 Ash depth (in): 9

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	02	62	83	30	32	32	55	32	34	32	85	32S	00	53
Slope (%)	17	16	23	18	21	12	12	14	8	16	22	16	18	14
Aspect (degrees)	196	217	237	266	294	224	239	228	166	163	175	248	304	175

MENSURATIONAL CHARACTERISTICS:

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 At Time of Treatment (1995)  
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Live Trees per Acre	130	160	210	260	270	220	260	260	220	190	240	270	190	210
Live Basal Area (sq.ft/a)	28.2	32.4	31.5	34.7	30.5	26.6	33.1	26.7	31.5	28.4	29.1	36.1	37.3	29.8
Live Total Volume (cu.ft/a)	393	429	423	444	395	329	430	316	403	372	387	461	539	359
Crown Competition Factor	38	45	45	51	48	42	51	42	47	42	44	55	53	43
Relative Density Index	11.2	13.1	13.8	15.6	14.3	12.3	15.1	12.8	13.9	12.4	13.4	16.2	15.2	13.2
Site Height (ft)	37.4	38.1	38.3	34.3	36.1	32.4	32.8	31.0	35.9	35.9	35.1	32.5	37.2	32.6
Mean Diameter (in)	6.3	6.1	5.3	5.0	4.6	4.7	4.8	4.3	5.1	5.2	4.7	5.0	6.0	5.1
Average crown ratio (%)	85	88	88	88	87	88	87	88	87	87	87	87	83	86
Average crown length (ft)	24.1	25.3	22.5	21.2	20.7	22.0	22.9	20.0	22.5	21.6	20.5	21.4	25.4	20.2
Species composition (% of BA)														
Douglas-fir	92.4	100.0	94.5	92.6	87.7	83.3	89.1	85.4	78.2	69.6	57.5	67.4	87.9	85.5
Grand fir	7.6	0.0	0.0	4.7	11.3	16.7	8.2	8.1	17.7	28.0	28.8	24.7	12.1	8.6
Western redcedar	0.0	0.0	5.5	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0
Western white pine	0.0	0.0	0.0	2.0	1.0	0.0	2.7	6.5	4.2	2.4	3.3	7.1	0.0	5.9
Ponderosa pine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.4	0.0	0.0	0.0

PLOT SUMMARY REPORT: TENTH ACRE PLOTS

Installation 349 Pivash Creek

Region: N Idaho

Legal Description: T41N R2E Sect.31

Ownership: Potlatch

Meridian: Boise

Treatment Regime: 14-plot NxK Response Surface

Year established: 1995

Elevation: 3800

Aspect: S

Slope: 15%

Vegetation Series: THPL (Western redcedar)

Habitat Type: ASCA3 (wild ginger)

Phase: none

Parent Material: Metamorphic/Metasedimentary

Soil depth (in.): 23

Ash depth (in.): 4

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	62	34	83	55	53	32	32	32S	32	32	02	30	85	00
Slope (%)	16	19	18	17	19	26	9	18	13	22	5	9	1	21
Aspect (degrees)	217	132	140	147	152	252	90	275	191	192	183	251	206	288

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1995)

Live Trees per Acre >2" Dbh	340	240	240	260	310	190	200	280	310	270	380	300	300	430
Live Basal Area (sq.ft/a)	57.1	55.5	52.1	52.5	54.8	56.5	48.4	48.8	59.9	52.8	59.1	58.0	54.5	62.1
Live Total Volume (cu.ft/a)	912	885	801	827	841	983	751	672	884	782	902	908	861	896
Crown Competition Factor	84	72	72	74	80	76	63	66	82	67	72	69	69	90
Relative Density Index	24.2	21.8	20.8	21.3	23.0	20.8	18.8	20.5	24.5	21.6	25.6	23.8	22.7	27.4
Site Height (ft)	41.7	44.2	42.1	41.4	41.5	47.2	44.8	37.2	43.4	42.8	45.7	43.2	49.6	42.1
Mean Diameter (in)	5.5	6.5	6.3	6.1	5.7	7.4	6.7	5.7	6.0	6.0	5.3	6.0	5.8	5.1
Average crown ratio (%)	77	82	82	82	77	78	83	82	83	78	71	78	78	79
Average crown length (ft)	23.9	28.2	28.0	28.9	24.5	29.8	27.3	25.3	24.8	23.3	22.5	24.2	24.4	22.1
Species composition (% of BA)														
Douglas-fir	65.8	88.3	97.4	92.8	88.9	54.8	71.4	57.7	86.3	86.5	77.4	79.9	59.2	78.6
Grand fir	28.6	0.0	0.7	7.2	11.1	30.5	14.4	14.5	11.6	7.7	8.7	5.9	18.7	17.5
Subalpine fir	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.0	0.0
Western redcedar	0.0	0.0	0.0	0.0	0.0	14.7	10.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Western hemlock	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7
Western larch	0.0	6.8	1.9	0.0	0.0	0.0	0.0	18.5	1.0	0.0	0.0	6.7	11.5	0.0
Western white pine	5.6	4.9	0.0	0.0	0.0	0.0	3.7	6.1	0.0	0.0	1.8	0.0	6.3	0.0
Hardwood species	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	5.7	12.1	7.5	4.3	2.2

PLOT SUMMARY REPORT: TENTH ACRE PLOTS

Installation 350 Cleman Mtn. #2  
 Region: C Washington  
 Legal Description: T16N R15E Sect.15

Ownership: Forest Service  
 Meridian: Willamette

Treatment Regime: 14-plot N Rate Repeated App.  
 Year established: 1995

Elevation: 3400      Vegetation Series: PSME (Douglas-fir)      Parent Material: Basaltic  
 Aspect: S            Habitat Type: CAGE (elk sedge)            Soil depth (in.): 29  
 Slope: 18%          Phase: none                                    Ash depth (in): T

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	30	30	10	00	10	20	20	02	60	10	32	32S	30	20
Slope (%)	18	15	25	25	17	17	15	15	17	15	15	16	16	20
Aspect (degrees)	265	260	28	255	240	293	282	270	280	25	220	263	285	290

MENSURATIONAL CHARACTERISTICS:

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 At Time of Treatment (1995)  
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Live Trees per Acre >2" Dbh	180	170	170	170	180	210	190	170	270	220	210	160	180	220
Live Basal Area (sq.ft/a)	118.6	121.2	101.5	104.1	115.1	121.0	119.5	118.2	116.5	116.1	119.9	116.0	107.3	113.3
Live Total Volume (cu.ft/a)	2938	2924	2536	2506	2743	2851	2583	2959	2488	2648	2932	3135	2741	2620
Crown Competition Factor	130	128	102	115	120	126	127	125	123	115	129	108	115	123
Relative Density Index	35.8	35.8	31.4	32.0	35.0	37.7	36.5	35.2	39.1	37.0	37.5	34.2	33.2	36.4
Site Height (ft)	71.4	70.1	73.0	71.2	69.5	73.3	59.8	71.3	66.6	70.7	76.3	79.3	74.4	67.2
Mean Diameter (in)	11.0	11.4	10.5	10.6	10.8	10.3	10.7	11.3	8.9	9.8	10.2	11.5	10.5	9.7
Average crown ratio (%)	57	52	54	54	61	58	69	63	65	64	55	60	49	57
Average crown length (ft)	34.1	33.0	32.7	33.1	36.0	31.3	36.0	40.0	28.0	31.8	32.8	36.2	31.2	31.6
Species composition (% of BA)														
Douglas-fir	91.9	81.1	57.4	82.7	83.7	78.2	79.9	87.5	82.8	63.1	75.0	69.5	79.8	77.7
Grand fir	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	7.6	0.0	0.0	0.0
Ponderosa pine	8.1	18.9	42.6	17.3	16.3	21.8	20.1	12.5	16.5	36.9	17.5	30.5	20.2	22.3

PLOT SUMMARY REPORT: TENTH ACRE PLOTS

Installation 351 Little Donner

Region: C Idaho

Legal Description: T14N R3E Sect.13

Ownership: IDL

Meridian: Boise

Treatment Regime: 14-plot NxK Response Surface

Year established: 1995

Elevation: 5000

Aspect: W-NW

Slope: 24%

Vegetation Series: PSME (Douglas-fir)

Habitat Type: CAGE (elk sedge)

Phase: PIPO (ponderosa pine)

Parent Material: Granitic

Soil depth (in.): 23

Ash depth (in.): 3

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	32	32	55	32	34	85	02	62	00	30	83	32S	32	53
Slope (%)	26	25	20	19	28	23	38	22	43	31	20	10	8	28
Aspect (degrees)	333	335	324	252	236	285	325	257	278	309	274	139	210	340

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1995)

Live Trees per Acre >2" Dbh	160	190	140	120	130	150	250	180	180	270	140	170	250	140
Live Basal Area (sq.ft/a)	125.3	135.6	122.8	120.9	129.5	125.6	122.2	113.6	127.2	129.3	118.7	139.1	138.7	129.0
Live Total Volume (cu.ft/a)	3432	3470	3821	3408	3994	3196	2862	2976	3136	2799	3284	3804	2871	3313
Crown Competition Factor	107	115	102	110	118	104	119	114	121	120	102	120	123	120
Relative Density Index	36.2	40.1	34.5	32.8	35.2	35.7	39.7	34.6	37.7	42.3	33.6	39.7	43.7	35.8
Site Height (ft)	71.9	64.7	79.0	74.9	83.5	64.1	60.6	74.6	64.6	60.4	74.0	69.2	56.7	72.5
Mean Diameter (in)	12.0	11.4	12.7	13.6	13.5	12.4	9.5	10.8	11.4	9.4	12.5	12.2	10.1	13.0
Average crown ratio (%)	50	50	52	52	51	54	48	57	48	45	49	49	52	52
Average crown length (ft)	30.5	28.3	35.9	35.6	37.3	29.0	26.6	30.4	27.8	23.2	29.6	30.4	23.8	32.9
Species composition (% of BA)														
Douglas-fir	18.3	12.2	12.7	47.6	64.2	13.4	33.5	55.1	49.5	28.9	26.6	20.8	18.5	71.9
Ponderosa pine	81.7	87.8	87.3	52.4	35.8	86.6	66.5	44.9	50.5	71.1	73.4	79.2	81.5	28.1

PLOT SUMMARY REPORT: TENTH ACRE PLOTS

Installation 352 Summit Creek #2  
 Region: C Washington  
 Legal Description: T33N R24E Sect.11

Ownership: Washington DNR  
 Meridian: Willamette

Treatment Regime: 14-plot NxK Response Surface  
 Year established: 1995

Elevation: 2800      Vegetation Series: PSME (Douglas-fir)      Parent Material: Granitic  
 Aspect: N          Habitat Type: MISSING      Soil depth (in.): 20  
 Slope: 21%        Phase: none                Ash depth (in): 17

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	53	32	85	00	83	62	32	02	32	30	32S	32	34	55
Slope (%)	18	23	23	22	32	9	37	38	31	14	22	18	18	17
Aspect (degrees)	327	356	359	34	344	350	355	327	360	322	320	302	349	329

MENSURATIONAL CHARACTERISTICS:

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 At Time of Treatment (1995)  
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Live Trees per Acre >2" Dbh	120	100	100	130	130	210	150	150	120	180	140	120	130	140
Live Basal Area (sq.ft/a)	81.1	83.3	76.7	77.5	73.5	81.1	83.8	76.9	81.5	83.8	78.4	76.4	88.7	80.0
Live Total Volume (cu.ft/a)	2176	1969	1987	1918	1677	2095	1904	1784	2056	2046	2075	2031	2356	2048
Crown Competition Factor	77	86	78	83	75	95	102	75	92	79	82	84	98	87
Relative Density Index	24.3	23.7	22.3	24.0	23.0	28.0	26.4	24.7	24.4	27.6	24.6	23.2	26.5	25.0
Site Height (ft)	66.9	68.2	75.8	67.7	63.2	73.8	66.2	72.5	74.4	65.8	79.7	72.7	78.2	73.6
Mean Diameter (in)	11.1	12.4	11.9	10.5	10.2	8.4	10.1	9.7	11.2	9.2	10.1	10.8	11.2	10.2
Average crown ratio (%)	56	66	60	48	63	45	52	52	56	62	47	47	47	47
Average crown length (ft)	35.1	39.4	40.6	30.8	35.6	23.3	29.9	26.5	35.4	27.7	30.6	29.1	27.9	27.7
Species composition (% of BA)														
Douglas-fir	26.4	98.1	70.3	75.6	49.3	86.9	100.0	30.8	100.0	39.0	69.9	100.0	99.2	89.8
Western larch	21.7	1.9	22.1	11.7	28.2	0.0	0.0	50.2	0.0	5.8	30.1	0.0	0.0	1.5
Lodgepole pine	29.4	0.0	0.0	0.0	11.7	13.1	0.0	18.7	0.0	0.0	0.0	0.0	0.8	8.7
Ponderosa pine	22.5	0.0	7.6	12.8	10.7	0.0	0.0	0.3	0.0	55.3	0.0	0.0	0.0	0.0



PLOT SUMMARY REPORT: TENTH ACRE PLOTS

Installation 353 Peony Creek

Region: C Washington

Legal Description: T36N R29E Sect.28

Ownership: Forest Service

Meridian: Willamette

Treatment Regime: 7-plot N Rate

Year established: 1995

Elevation: 3100

Aspect: NE

Slope: 7%

Vegetation Series: PSME (Douglas-fir)

Habitat Type: MISSING

Phase: none

Parent Material: Mixed (Glacial Till)

Soil depth (in.): 22

Ash depth (in): T

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	60	32	02	10	30	20	00							
Slope (%)	7	5	7	10	3	16	4	.	.	.	.	.	.	.
Aspect (degrees)	71	48	11	29	29	84	59	.	.	.	.	.	.	.

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1995)

Live Trees per Acre >2" Dbh	100	140	110	110	100	130	100	.	.	.	.	.	.	.
Live Basal Area (sq.ft/a)	50.2	54.0	53.8	45.3	54.5	50.5	48.1	.	.	.	.	.	.	.
Live Total Volume (cu.ft/a)	1023	1076	1194	978	1349	1206	1190	.	.	.	.	.	.	.
Crown Competition Factor	53	59	62	54	63	60	52	.	.	.	.	.	.	.
Relative Density Index	16.2	18.6	17.5	15.4	17.2	17.4	15.7	.	.	.	.	.	.	.
Site Height (ft)	56.9	60.7	66.2	61.2	67.6	67.2	71.3	.	.	.	.	.	.	.
Mean Diameter (in)	9.6	8.4	9.5	8.7	10.0	8.4	9.4	.	.	.	.	.	.	.
Average crown ratio (%)	75	71	61	56	43	47	46	.	.	.	.	.	.	.
Average crown length (ft)	39.6	33.3	33.0	29.3	26.8	26.5	28.1	.	.	.	.	.	.	.
Species composition (% of BA)														
Douglas-fir	47.8	61.7	85.2	87.2	100.0	79.7	82.4	.	.	.	.	.	.	.
Western larch	27.6	30.9	14.8	12.8	0.0	20.3	17.6	.	.	.	.	.	.	.
Lodgepole pine	0.0	3.6	0.0	0.0	0.0	0.0	0.0	.	.	.	.	.	.	.
Ponderosa pine	24.6	3.9	0.0	0.0	0.0	0.0	0.0	.	.	.	.	.	.	.

PLOT SUMMARY REPORT: TENTH ACRE PLOTS

Installation 354 Huckleberry Creek  
 Region: NE Oregon  
 Legal Description: T32N R39E Sect.31

Ownership: Boise Cascade  
 Meridian: Willamette

Treatment Regime: 14-plot NxK Response Surface  
 Year established: 1995

Elevation: 3500  
 Aspect: S  
 Slope: 31%

Vegetation Series: ABGR (Grand fir)  
 Habitat Type: MISSING  
 Phase: none

Parent Material: Mixed (Glacial Till)  
 Soil depth (in.): .  
 Ash depth (in):

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	53	32	32	32	62	55	30	34	83	02	32	85	00	32S
Slope (%)	23	35	37	26	34	39	35	44	35	8	39	19	29	34
Aspect (degrees)	33	45	26	5	34	44	58	9	39	47	49	55	60	58

MENSURATIONAL CHARACTERISTICS:

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 At Time of Treatment (1995)  
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Live Trees per Acre >2" Dbh	160	170	250	200	200	340	260	250	220	230	250	230	230	250
Live Basal Area (sq.ft/a)	48.0	42.2	48.1	43.0	50.9	48.5	44.4	49.5	47.2	52.9	54.1	50.4	44.0	46.3
Live Total Volume (cu.ft/a)	1062	857	914	922	1045	918	801	928	893	1057	1149	957	816	1129
Crown Competition Factor	64	54	73	53	55	66	64	69	64	65	67	65	60	60
Relative Density Index	17.6	16.3	19.7	17.2	19.5	21.5	18.8	20.2	18.9	20.8	21.6	20.0	18.1	19.2
Site Height (ft)	58.3	56.5	51.6	58.0	65.5	54.9	45.1	50.0	53.4	50.3	55.4	43.0	48.9	59.2
Mean Diameter (in)	7.4	6.7	5.9	6.3	6.8	5.1	5.6	6.0	6.3	6.5	6.3	6.3	5.9	5.8
Average crown ratio (%)	69	60	65	59	52	56	59	61	61	54	58	60	60	57
Average crown length (ft)	34.4	28.0	26.9	24.2	25.8	22.6	22.4	24.4	24.5	22.8	24.1	25.4	24.0	23.2
Species composition (% of BA)														
Douglas-fir	42.4	61.3	54.7	39.7	26.4	30.2	56.4	81.1	63.9	58.3	79.8	76.0	92.7	46.4
Grand fir	46.1	13.7	41.0	22.4	2.3	25.5	27.2	11.9	25.5	0.0	0.5	0.0	1.0	15.2
Western larch	4.0	18.2	4.2	18.3	65.2	30.6	8.4	5.3	6.3	6.0	6.7	1.6	6.3	5.7
Lodgepole pine	0.0	6.8	0.0	19.6	6.1	13.7	8.0	1.7	2.2	35.8	6.1	22.4	0.0	32.7
Ponderosa pine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.9	0.0	0.0	0.0
Hardwood species	7.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0



PLOT SUMMARY REPORT: TENTH ACRE PLOTS

Installation 356 Sportsman Access  
 Region: N Idaho  
 Legal Description: T45N R1W Sect.19

Ownership: Potlatch  
 Meridian: Boise

Treatment Regime: 7-plot N Rate  
 Year established: 1995

Elevation: 3100  
 Aspect: N-NW  
 Slope: 5%

Vegetation Series: TSHE (Western hemlock)  
 Habitat Type: CLUN (queencup beadlily)  
 Phase: CLUN (queencup beadlily)

Parent Material: Basaltic  
 Soil depth (in.): 72  
 Ash depth (in): 2

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	60	30	00	10	32	20	02							
Slope (%)	2	4	6	6	11	1	10							
Aspect (degrees)	106	336	310	296	295	330	290							

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1995)

Live Trees per Acre >2" Dbh	130	240	160	150	140	170	210							
Live Basal Area (sq.ft/a)	82.9	86.3	80.8	82.3	84.1	79.9	81.4							
Live Total Volume (cu.ft/a)	2334	2296	2424	2396	2635	2337	2307							
Crown Competition Factor	99	106	102	98	103	101	105							
Relative Density Index	25.2	30.3	26.0	26.0	26.0	26.2	28.0							
Site Height (ft)	78.0	75.8	80.0	78.4	80.2	79.5	72.4							
Mean Diameter (in)	10.8	8.1	9.6	10.0	10.5	9.3	8.4							
Average crown ratio (%)	30	38	34	40	34	38	36							
Average crown length (ft)	22.2	22.5	24.3	26.8	25.1	24.8	21.3							
Species composition (% of BA)														
Douglas-fir	48.1	27.9	50.3	49.0	22.2	31.4	25.8							
Grand fir	28.3	31.6	49.7	47.6	56.5	58.4	54.1							
Western redcedar	14.4	5.6	0.0	2.7	21.3	6.2	2.3							
Western hemlock	0.0	5.4	0.0	0.8	0.0	4.0	17.8							
Western larch	9.1	29.5	0.0	0.0	0.0	0.0	0.0							

PLOT SUMMARY REPORT: TENTH ACRE PLOTS

Installation 357 Soldier Creek  
 Region: N Idaho  
 Legal Description: T45N R1W Sect.34

Ownership: IDL  
 Meridian: Boise

Treatment Regime: 14-plot N Rate Repeated App.  
 Year established: 1995

Elevation: 3200  
 Aspect: S-SW  
 Slope: 11%

Vegetation Series: TSHE (Western hemlock)  
 Habitat Type: CLUN (queencup beadlily)  
 Phase: none

Parent Material: Basaltic  
 Soil depth (in.): 23  
 Ash depth (in.): 16

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	32	32S	10	10	20	02	00	10	20	30	30	60	20	30
Slope (%)	13	9	12	8	15	10	3	8	10	10	10	15	18	15
Aspect (degrees)	300	209	175	163	178	177	157	143	120	275	195	110	280	247

MENSURATIONAL CHARACTERISTICS:

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 At Time of Treatment (1995)  
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Live Trees per Acre >2" Dbh	430	350	350	340	430	310	510	350	440	290	430	480	470	420
Live Basal Area (sq.ft/a)	146.8	160.1	147.0	150.0	153.1	138.4	150.5	135.9	160.0	150.4	158.0	134.8	160.6	148.3
Live Total Volume (cu.ft/a)	3359	3606	3886	4036	3779	3401	3712	3444	4395	4460	3763	2932	3653	3353
Crown Competition Factor	197	190	174	167	203	175	188	152	184	165	186	167	187	169
Relative Density Index	52.2	52.9	49.6	50.0	53.9	46.0	55.5	46.8	56.0	48.2	55.2	50.3	57.1	52.3
Site Height (ft)	62.9	63.0	72.3	68.6	67.7	68.0	74.6	72.7	71.7	78.1	67.2	65.6	64.7	66.6
Mean Diameter (in)	7.9	9.2	8.8	9.0	8.1	9.1	7.4	8.4	8.2	9.8	8.2	7.2	7.9	8.0
Average crown ratio (%)	57	65	47	54	48	63	46	51	52	57	60	59	50	55
Average crown length (ft)	30.1	36.3	28.9	34.7	27.0	37.1	27.5	31.4	30.7	38.1	33.6	31.1	27.5	31.1
Species composition (% of BA)														
Douglas-fir	13.1	16.1	70.7	21.2	36.2	33.4	25.4	35.7	14.9	10.2	12.6	7.7	7.5	18.1
Grand fir	36.4	10.2	7.0	4.9	28.5	30.8	35.0	2.8	12.9	10.0	8.3	25.3	15.4	6.5
Western redcedar	12.8	47.2	0.0	23.1	20.9	35.8	11.5	22.5	27.4	21.6	35.2	11.4	39.5	21.6
Western hemlock	37.7	23.0	1.4	11.1	4.9	0.0	3.4	12.6	6.0	28.8	32.5	36.7	15.2	28.0
Western larch	0.0	3.5	2.3	17.9	2.0	0.0	23.1	19.6	4.5	1.9	1.3	18.8	19.4	25.8
Lodgepole pine	0.0	0.0	18.6	21.8	7.6	0.0	1.7	6.7	34.3	27.6	10.1	0.0	3.1	0.0

PLOT SUMMARY REPORT: TENTH ACRE PLOTS

Installation 358 Skookum Lake

Region: NE Washington

Legal Description: T34N R44E Sect.36

Ownership: Washington DNR

Meridian: Willamette

Treatment Regime: 7-plot N Rate

Year established: 1995

Elevation: 3600

Aspect: S-SE

Slope: 4%

Vegetation Series: TSHE (Western hemlock)

Habitat Type: CLUN (queencup beadlily)

Phase: none

Parent Material: Mixed (Glacial Till)

Soil depth (in.): .

Ash depth (in):

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	00	10	60	20	30	32	02							
Slope (%)	1	1	1	4	6	15	3							
Aspect (degrees)	155	160	160	185	165	185	185	.	.	.	.	.	.	.

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1995)

Live Trees per Acre >2" Dbh	350	350	290	380	370	320	300	.	.	.	.	.	.	.
Live Basal Area (sq.ft/a)	46.1	51.7	40.6	50.4	45.4	53.1	46.8	.	.	.	.	.	.	.
Live Total Volume (cu.ft/a)	551	629	479	582	557	635	553	.	.	.	.	.	.	.
Crown Competition Factor	68	77	61	76	70	78	67	.	.	.	.	.	.	.
Relative Density Index	20.8	22.7	18.0	22.7	20.9	22.6	20.2	.	.	.	.	.	.	.
Site Height (ft)	30.5	30.0	28.7	29.3	31.7	32.8	29.6	.	.	.	.	.	.	.
Mean Diameter (in)	4.9	5.2	5.1	4.9	4.7	5.5	5.3	.	.	.	.	.	.	.
Average crown ratio (%)	86	86	88	83	82	85	85	.	.	.	.	.	.	.
Average crown length (ft)	20.3	22.0	21.6	19.6	20.6	22.0	21.9	.	.	.	.	.	.	.
Species composition (% of BA)														
Douglas-fir	98.0	100.0	97.5	99.4	100.0	100.0	94.5	.	.	.	.	.	.	.
Western larch	0.0	0.0	2.5	0.0	0.0	0.0	1.9	.	.	.	.	.	.	.
Lodgepole pine	2.0	0.0	0.0	0.0	0.0	0.0	3.6	.	.	.	.	.	.	.
Ponderosa pine	0.0	0.0	0.0	0.6	0.0	0.0	0.0	.	.	.	.	.	.	.

PLOT SUMMARY REPORT: TENTH ACRE PLOTS

Installation 359 Dicks Creek

Region: N Idaho

Legal Description: T38N R1E Sect.28

Ownership: IDL

Meridian: Boise

Treatment Regime: 14-plot N Rate Repeated App.

Year established: 1996

Elevation: 3000

Aspect: N

Slope: 16%

Vegetation Series: THPL (Western redcedar)

Habitat Type: CLUN (queencup beadlily)

Phase: CLUN (queencup beadlily)

Parent Material: Basaltic

Soil depth (in.): .

Ash depth (in):

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	30	20	00	10	20	30	32	20	30	32M	60	10	10	02
Slope (%)	12	22	11	5	12	14	7	28	25	15	17	15	20	22
Aspect (degrees)	22	108	355	359	16	38	24	104	108	126	293	340	86	6

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1996)

Live Trees per Acre >2" Dbh	440	270	370	370	280	290	330	360	290	300	260	450	420	430
Live Basal Area (sq.ft/a)	178.6	144.9	160.0	180.2	167.9	153.9	148.0	153.2	136.1	183.5	139.3	151.8	174.6	148.1
Live Total Volume (cu.ft/a)	4888	4262	4307	5031	5245	4689	3842	3915	4063	5212	4132	3437	4551	3318
Crown Competition Factor	231	191	196	215	209	195	181	193	170	208	188	217	251	210
Relative Density Index	60.8	46.0	53.6	58.6	51.9	49.0	49.2	51.6	44.7	56.4	44.3	54.1	59.1	52.5
Site Height (ft)	79.5	79.5	78.6	82.4	81.0	82.3	73.1	73.1	82.9	77.5	82.7	60.5	66.7	65.5
Mean Diameter (in)	8.6	9.9	8.9	9.5	10.5	9.9	9.1	8.8	9.3	10.6	9.9	7.9	8.7	8.0
Average crown ratio (%)	55	53	54	48	51	50	60	55	59	63	62	54	52	59
Average crown length (ft)	30.1	36.9	34.3	33.4	37.0	36.0	32.0	30.2	37.4	38.6	38.8	27.8	30.6	27.3
Species composition (% of BA)														
Douglas-fir	19.9	37.9	16.8	60.4	12.2	16.3	32.5	25.0	19.9	40.1	9.4	8.4	4.9	22.5
Grand fir	64.5	58.1	41.1	21.4	68.0	58.3	57.1	56.3	68.4	46.5	90.6	63.4	91.5	61.0
Western redcedar	15.7	3.9	23.4	7.1	13.8	17.4	10.4	6.5	4.5	7.0	0.0	28.1	2.0	16.5
Western larch	0.0	0.0	18.8	11.1	6.0	8.0	0.0	12.2	7.2	6.5	0.0	0.0	1.6	0.0

PLOT SUMMARY REPORT: TENTH ACRE PLOTS

Installation 360 Furport

Region: NE Washington

Legal Description: T32N R45E Sect.19

Ownership: Forest Service

Meridian: Willamette

Treatment Regime: 14-plot NxK Response Surface

Year established: 1996

Elevation: 2200

Aspect: FLAT

Slope: 2%

Vegetation Series: ABGR (Grand fir)

Habitat Type: PAMY (pachistima)

Phase: none

Parent Material: Mixed (Glacial Till)

Soil depth (in.): 65

Ash depth (in): 31

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	53	32M	34	62	32	02	00	32	83	55	32	30	32	85
Slope (%)	1	1	1	3	3	1	1	1	3	2	3	2	5	5
Aspect (degrees)	205	155	175	160	203	225	225	100	129	135	115	120	155	250

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1996)

Live Trees per Acre >2" Dbh	280	270	260	240	230	300	340	220	230	280	290	330	320	290
Live Basal Area (sq.ft/a)	54.1	64.3	62.4	64.6	62.7	60.1	64.0	56.9	68.9	60.6	57.7	59.5	58.0	64.0
Live Total Volume (cu.ft/a)	610	824	1000	828	937	721	899	834	1084	810	736	761	672	750
Crown Competition Factor	51	62	62	61	60	63	66	56	65	62	58	59	56	62
Relative Density Index	22.2	25.0	24.2	24.4	23.6	24.4	26.4	21.7	25.3	24.1	23.5	24.8	24.2	25.4
Site Height (ft)	34.8	34.4	37.7	32.2	35.6	33.5	31.3	36.0	39.4	32.0	31.0	33.0	33.3	34.7
Mean Diameter (in)	6.0	6.6	6.6	7.0	7.1	6.1	5.9	6.9	7.4	6.3	6.0	5.8	5.8	6.4
Average crown ratio (%)	78	76	76	77	75	76	69	75	77	75	77	70	71	74
Average crown length (ft)	18.1	20.8	22.0	19.5	21.7	17.9	18.7	21.3	23.5	18.9	18.9	16.0	16.2	18.9
Species composition (% of BA)														
Douglas-fir	1.7	0.0	0.0	0.0	0.0	8.5	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grand fir	0.0	0.0	0.0	0.0	1.2	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	6.3
Subalpine fir	0.0	0.0	0.0	0.0	0.0	10.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lodgepole pine	7.6	33.6	74.5	37.1	51.4	25.0	53.9	66.6	55.9	67.5	55.9	49.6	19.1	0.0
Western white pine	0.0	0.0	0.0	0.0	2.2	0.0	1.4	0.0	0.0	0.6	7.2	0.0	0.0	0.0
Ponderosa pine	90.7	66.4	25.5	62.9	45.2	55.6	43.2	33.4	44.1	31.9	37.0	50.4	80.9	93.7



PLOT SUMMARY REPORT: TENTH ACRE PLOTS

Installation 361 Hanson Creek  
 Region: NE Washington  
 Legal Description: T36N R40E Sect.25

Ownership: Forest Service      Treatment Regime: 7-plot N Rate  
 Meridian: Willamette            Year established: 1996

Elevation: 3300            Vegetation Series: THPL (Western redcedar)      Parent Material: Mixed (Glacial Till)  
 Aspect: E                Habitat Type: PAMY (pachistima)                  Soil depth (in.): 13  
 Slope: 12%                Phase: none    Ash depth (in): 9

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	30	20	02	32	10	60	00							
Slope (%)	10	15	18	10	10	10	12	.	.	.	.	.	.	.
Aspect (degrees)	108	132	5	138	114	75	108	.	.	.	.	.	.	.

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1996)

Live Trees per Acre >2" Dbh	260	300	320	320	300	290	380	.	.	.	.	.	.	.
Live Basal Area (sq.ft/a)	29.1	27.1	27.3	27.2	27.1	25.7	30.3	.	.	.	.	.	.	.
Live Total Volume (cu.ft/a)	312	295	281	285	294	288	318	.	.	.	.	.	.	.
Crown Competition Factor	44	41	44	43	39	42	44	.	.	.	.	.	.	.
Relative Density Index	13.7	13.4	13.7	13.7	13.4	12.8	15.5	.	.	.	.	.	.	.
Site Height (ft)	25.5	27.5	24.3	24.7	26.2	26.4	26.8	.	.	.	.	.	.	.
Mean Diameter (in)	4.5	4.1	4.0	4.0	4.1	4.0	3.8	.	.	.	.	.	.	.
Average crown ratio (%)	89	86	86	86	88	83	88	.	.	.	.	.	.	.
Average crown length (ft)	20.6	18.6	18.0	18.5	19.0	17.9	17.7	.	.	.	.	.	.	.
Species composition (% of BA)														
Douglas-fir	77.6	69.2	88.7	87.7	54.4	96.0	65.5	.	.	.	.	.	.	.
Grand fir	5.3	0.0	0.0	0.0	7.0	0.0	3.2	.	.	.	.	.	.	.
Western larch	7.7	11.6	9.9	10.4	13.7	0.0	6.7	.	.	.	.	.	.	.
Lodgepole pine	0.0	19.3	0.0	0.0	9.7	4.0	0.0	.	.	.	.	.	.	.
Western white pine	0.0	0.0	1.3	0.0	0.0	0.0	1.1	.	.	.	.	.	.	.
Ponderosa pine	9.4	0.0	0.0	1.9	2.0	0.0	0.0	.	.	.	.	.	.	.
Engelmann spruce	0.0	0.0	0.0	0.0	13.2	0.0	23.6	.	.	.	.	.	.	.

PLOT SUMMARY REPORT: TENTH ACRE PLOTS

Installation 362 Haverland Meadows  
 Region: NE Washington  
 Legal Description: T31N R39E Sect.36

Ownership: Washington DNR  
 Meridian: Willamette

Treatment Regime: 14-plot NxK Response Surface  
 Year established: 1996

Elevation: 2400  
 Aspect: SE  
 Slope: 13%

Vegetation Series: ABGR (Grand fir)  
 Habitat Type: PAMY (pachistima)  
 Phase: none

Parent Material: Granitic  
 Soil depth (in.): 35  
 Ash depth (in): 15

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	32	32	62	32	53	34	32	32M	02	85	00	55	83	30
Slope (%)	25	15	8	5	2	3	1	13	22	5	15	35	4	35
Aspect (degrees)	120	191	164	106	135	146	141	108	136	121	100	100	201	111

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1996)

Live Trees per Acre >2" Dbh	210	280	260	410	330	260	290	270	210	400	330	260	180	180
Live Basal Area (sq.ft/a)	118.6	132.4	123.9	129.5	127.0	116.1	131.3	124.0	126.3	135.3	131.4	122.1	126.2	122.2
Live Total Volume (cu.ft/a)	3218	3805	3583	3636	3732	3486	3677	3709	3952	3625	4083	3574	3685	3510
Crown Competition Factor	126	146	135	148	140	131	152	136	130	161	147	142	126	126
Relative Density Index	37.2	43.4	40.5	47.0	43.8	38.6	43.5	40.9	39.0	48.2	44.9	40.1	37.5	36.6
Site Height (ft)	80.3	81.0	82.1	74.9	88.6	87.7	89.2	87.3	89.6	85.4	104.4	88.4	89.7	88.6
Mean Diameter (in)	10.2	9.3	9.4	7.6	8.4	9.1	9.1	9.2	10.5	7.9	8.5	9.3	11.3	11.2
Average crown ratio (%)	44	48	40	46	43	43	40	45	46	41	41	45	52	53
Average crown length (ft)	27.0	26.5	22.0	21.9	24.8	23.9	22.2	28.4	27.8	21.7	25.0	28.7	31.4	32.1
Species composition (% of BA)														
Douglas-fir	80.9	74.2	83.9	63.4	64.2	77.9	95.3	62.6	76.1	95.6	84.1	100.0	77.9	93.5
Grand fir	4.1	0.0	0.2	0.0	0.0	8.9	1.3	0.0	3.6	0.0	0.0	0.0	5.7	0.0
Western larch	6.6	0.0	3.5	0.0	13.9	0.0	0.0	17.0	0.0	1.7	15.9	0.0	16.4	0.0
Lodgepole pine	8.4	6.5	12.4	36.1	10.9	13.3	3.5	20.3	7.7	2.7	0.0	0.0	0.0	0.0
Ponderosa pine	0.0	19.3	0.0	0.5	11.1	0.0	0.0	0.0	12.6	0.0	0.0	0.0	0.0	6.5

PLOT SUMMARY REPORT: TENTH ACRE PLOTS

Installation 363 Kennally Creek

Region: C Idaho

Legal Description: T16N R4E Sect.28

Ownership: Boise Cascade

Meridian: Boise

Treatment Regime: 14-plot NxK Response Surface

Year established: 1996

Elevation: 5400

Aspect: E

Slope: 22%

Vegetation Series: ABGR (Grand fir)

Habitat Type: VACA (dwarf huckleberry)

Phase: none

Parent Material: Granitic

Soil depth (in.): 34

Ash depth (in):

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	32	32M	32	32	34	62	53	55	30	00	85	83	32	02
Slope (%)	29	32	20	23	22	22	16	20	16	29	19	25	26	5
Aspect (degrees)	50	20	36	134	75	4	48	89	79	60	22	77	14	10

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1996)

Live Trees per Acre >2" Dbh	160	170	180	130	170	130	200	160	160	190	220	190	230	170
Live Basal Area (sq.ft/a)	117.8	105.8	110.4	113.0	109.2	104.5	110.7	110.2	103.7	121.8	107.9	107.6	109.7	116.5
Live Total Volume (cu.ft/a)	3374	2838	2461	2621	2446	2503	2603	2495	2426	2991	2520	2397	2879	3046
Crown Competition Factor	119	116	119	111	118	109	116	119	112	128	125	107	124	110
Relative Density Index	34.6	32.4	33.9	31.8	33.2	30.0	34.9	32.9	31.4	37.0	35.0	33.7	35.9	34.8
Site Height (ft)	84.6	76.5	65.5	68.8	67.3	70.3	69.4	63.2	68.8	73.8	68.0	60.5	75.4	74.1
Mean Diameter (in)	11.6	10.7	10.6	12.6	10.9	12.1	10.1	11.2	10.9	10.8	9.5	10.2	9.4	11.2
Average crown ratio (%)	40	49	50	57	64	53	48	43	50	54	45	58	41	52
Average crown length (ft)	27.3	32.1	25.7	31.4	28.0	32.8	25.3	24.3	26.5	24.8	24.6	27.0	23.1	29.1
Species composition (% of BA)														
Douglas-fir	79.2	90.2	79.0	92.5	87.6	100.0	77.8	91.9	100.0	79.2	92.2	65.4	66.9	58.4
Grand fir	0.0	2.9	0.0	0.0	12.4	0.0	0.0	0.0	0.0	16.8	4.7	0.0	9.9	0.0
Western larch	20.8	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ponderosa pine	0.0	0.9	21.1	7.5	0.0	0.0	22.2	8.1	0.0	4.0	3.1	34.6	23.2	41.6

PLOT SUMMARY REPORT: TENTH ACRE PLOTS

Installation 364 Gold Fork

Region: C Idaho

Legal Description: T15N R4E Sect. 5

Ownership: Boise Cascade

Meridian: Boise

Treatment Regime: 14-plot NxK Response Surface

Year established: 1996

Elevation: 5700

Aspect: W

Slope: 34%

Vegetation Series: ABGR (Grand fir)

Habitat Type: VACA (dwarf huckleberry)

Phase: none

Parent Material: Granitic

Soil depth (in.): 25

Ash depth (in):

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	53	85	32	32	62	83	32	32	55	32M	00	02	30	34
Slope (%)	34	35	35	38	40	40	35	23	32	30	40	40	25	35
Aspect (degrees)	300	290	290	300	300	291	317	326	322	288	304	287	337	319

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1996)

Live Trees per Acre >2" Dbh	130	240	150	190	190	160	120	150	140	100	140	190	170	170
Live Basal Area (sq.ft/a)	89.3	94.3	102.4	100.7	95.5	98.1	92.0	100.3	104.2	97.8	102.3	99.7	102.1	94.7
Live Total Volume (cu.ft/a)	2068	1817	2523	2522	2256	2509	2346	2223	2715	1845	2435	2265	2361	2123
Crown Competition Factor	94	100	115	113	111	111	92	113	116	96	104	109	115	111
Relative Density Index	26.7	32.4	30.6	32.1	30.8	30.1	26.7	30.1	30.5	26.7	30.1	31.8	31.5	29.8
Site Height (ft)	66.1	55.0	66.5	66.9	64.6	70.7	70.5	67.4	70.7	55.0	60.9	62.5	64.1	61.3
Mean Diameter (in)	11.2	8.5	11.2	9.9	9.6	10.6	11.9	11.1	11.7	13.4	11.6	9.8	10.5	10.1
Average crown ratio (%)	72	76	60	62	66	63	64	59	54	80	74	58	66	72
Average crown length (ft)	39.8	26.0	38.6	33.9	34.9	40.0	38.7	34.7	36.0	39.4	41.7	31.6	35.2	39.3
Species composition (% of BA)														
Douglas-fir	94.0	50.8	100.0	88.7	91.8	82.1	69.1	88.7	85.3	87.3	41.3	51.2	93.4	73.9
Grand fir	0.0	7.4	0.0	0.6	0.0	0.0	0.0	11.4	9.5	0.0	15.7	18.0	6.6	16.2
Lodgepole pine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2	0.0	6.0	0.0	0.0	0.0
Ponderosa pine	6.0	41.9	0.0	10.7	8.2	17.9	30.9	0.0	0.0	12.7	37.0	30.9	0.0	9.9

PLOT SUMMARY REPORT: TENTH ACRE PLOTS

Installation 365 Eight Mile  
 Region: N Idaho  
 Legal Description: T53N R4W Sect.36

Ownership: IDL  
 Meridian: Boise

Treatment Regime: 14-plot NxK Response Surface  
 Year established: 1996

Elevation: 2400  
 Aspect: FLAT  
 Slope: 1%

Vegetation Series: ABGR (Grand fir)  
 Habitat Type: MISSING  
 Phase: none

Parent Material: Mixed (Glacial Till)  
 Soil depth (in.): 24  
 Ash depth (in.): 24

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	32M	00	85	53	62	83	32	34	55	32	32	02	30	32
Slope (%)	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Aspect (degrees)	160	150	140	165	175	155	148	183	170	140	165	170	138	180

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1996)

Live Trees per Acre >2" Dbh	150	150	160	150	110	150	130	100	130	130	160	190	140	120
Live Basal Area (sq.ft/a)	48.4	48.4	48.4	45.2	47.2	46.9	50.5	42.3	39.7	39.2	42.3	45.0	41.9	43.7
Live Total Volume (cu.ft/a)	574	595	561	538	630	549	654	565	465	460	453	459	497	488
Crown Competition Factor	43	44	43	41	41	42	45	37	36	35	38	41	38	39
Relative Density Index	17.5	17.5	17.7	16.6	15.9	17.1	17.4	14.3	14.5	14.4	16.0	17.5	15.4	15.3
Site Height (ft)	29.8	34.0	31.2	32.0	34.2	30.7	35.8	32.8	24.8	32.1	29.1	26.6	30.7	28.0
Mean Diameter (in)	7.7	7.7	7.5	7.4	8.9	7.6	8.4	8.8	7.5	7.4	7.0	6.6	7.4	8.2
Average crown ratio (%)	73	75	73	79	75	69	78	70	72	75	76	73	76	77
Average crown length (ft)	20.0	21.1	19.6	21.2	23.6	19.1	23.2	21.9	19.5	20.6	19.0	17.9	20.9	20.0
Species composition (% of BA)														
Douglas-fir	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lodgepole pine	5.8	0.0	0.0	0.0	0.0	0.0	3.8	0.0	11.5	0.0	0.0	0.0	3.9	8.0
Ponderosa pine	94.2	98.1	100.0	100.0	100.0	100.0	96.2	100.0	88.5	100.0	100.0	100.0	96.1	92.0

**APPENDIX B: PLOT SUMMARY SHEETS**

**(2) Half Acre Plots**

PLOT SUMMARY REPORT: HALF ACRE PLOTS INCLUDING GROWTH PLOTS

Installation 365 Eight Mile

Region: N Idaho

Legal Description: T53N R4W Sect.36

Ownership: IDL

Meridian: Boise

Treatment Regime: 14-plot NxK Response Surface

Year established: 1996

Elevation: 2400

Aspect: FLAT

Slope: 1%

Vegetation Series: ABGR (Grand fir)

Habitat Type: MISSING

Phase: none

Parent Material: Mixed (Glacial Till)

Soil depth (in.): 24

Ash depth (in): 24

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	32M	00	85	53	62	83	32	34	55	32	32	02	30	32
Slope (%)	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Aspect (degrees)	160	150	140	165	175	155	148	183	170	140	165	170	138	180

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1996)

Live Trees per Acre > 2"dbh	124	136	118	120	110	122	116	80	120	108	126	150	114	96
Live Basal Area (sq.ft/a)	38.7	45.9	36.5	38.9	43.6	39.5	39.6	27.5	39.2	33.0	33.4	38.1	35.4	30.4
Live Total Volume (cu.ft/a)	434	552	400	456	560	463	485	329	477	365	398	413	415	337
Crown Competition Factor	35	41	33	35	39	35	36	25	35	30	31	35	32	27
Relative Density Index	14.1	16.4	13.3	14.0	14.9	14.2	14.1	9.8	14.1	12.1	12.7	14.6	12.9	11.0
Site Height (ft)	29.3	32.9	28.8	32.0	33.1	31.5	31.3	29.6	32.8	29.4	28.4	27.7	30.2	29.4
Mean Diameter (in)	7.6	7.9	7.5	7.7	8.5	7.7	7.9	7.9	7.7	7.5	7.0	6.8	7.6	7.6
Average crown ratio (%)	74	78	78	78	79	78	78	80	75	79	76	71	76	79
Average crown length (ft)	19.4	21.0	19.8	20.8	23.6	20.8	21.6	21.1	21.1	20.4	20.1	18.2	20.5	20.6
Species composition (% of BA)														
Douglas-fir	0.2	0.5	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lodgepole pine	1.4	0.0	0.0	0.0	4.6	1.0	8.6	5.9	4.6	3.5	26.2	4.0	6.1	2.3
Ponderosa pine	98.4	99.5	100.0	100.0	95.4	98.8	91.4	94.1	95.4	96.5	73.8	96.0	93.9	97.7

PLOT SUMMARY REPORT: HALF ACRE PLOTS INCLUDING GROWTH PLOTS

Installation 364 Gold Fork

Region: C Idaho

Legal Description: T15N R4E Sect. 5

Ownership: Boise Cascade

Meridian: Boise

Treatment Regime: 14-plot NxK Response Surface

Year established: 1996

Elevation: 5700

Aspect: W

Slope: 34%

Vegetation Series: ABGR (Grand fir)

Habitat Type: VACA (dwarf huckleberry)

Phase: none

Parent Material: Granitic

Soil depth (in.): 25

Ash depth (in):

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	53	85	32	32	62	83	32	32	55	32M	00	02	30	34
Slope (%)	34	35	35	38	40	40	35	23	32	30	40	40	25	35
Aspect (degrees)	300	290	290	300	300	291	317	326	322	288	304	287	337	319

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1996)

Live Trees per Acre > 2"dbh	122	158	140	156	124	136	166	136	166	180	134	162	132	126
Live Basal Area (sq.ft/a)	76.1	61.9	84.0	91.5	95.3	84.3	109.1	107.7	118.0	85.0	101.5	97.2	100.9	62.0
Live Total Volume (cu.ft/a)	1706	1151	2168	2135	2414	2040	2589	2775	3049	1559	2524	2312	2440	1333
Crown Competition Factor	77	64	89	97	98	83	96	108	134	81	104	111	110	77
Relative Density Index	23.3	21.3	25.9	28.4	27.7	25.8	32.9	31.0	34.9	27.9	29.6	30.0	29.3	20.1
Site Height (ft)	61.1	54.1	67.8	65.6	70.0	63.8	63.7	68.6	71.0	54.1	67.6	65.3	68.0	57.6
Mean Diameter (in)	10.7	8.5	10.5	10.4	11.9	10.7	11.0	12.1	11.4	9.3	11.8	10.5	11.8	9.5
Average crown ratio (%)	71	73	67	61	62	62	62	65	56	72	67	62	67	66
Average crown length (ft)	33.0	23.7	29.9	30.1	36.2	32.0	31.7	34.3	36.4	24.6	37.4	31.1	38.3	31.2
Species composition (% of BA)														
Douglas-fir	68.5	58.2	67.1	86.1	83.3	47.4	40.1	50.9	87.6	57.3	43.8	48.9	73.8	51.1
Grand fir	0.0	2.4	25.4	0.6	4.2	4.6	0.0	26.2	11.5	3.1	27.6	43.5	23.4	42.0
Western larch	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.9	0.0
Lodgepole pine	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.9	0.0	1.4	0.0	0.0	2.0
Ponderosa pine	31.5	39.4	7.4	12.8	12.5	48.0	55.0	22.9	0.0	39.6	27.2	7.3	1.9	4.9
Engelmann spruce	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0



PLOT SUMMARY REPORT: HALF ACRE PLOTS INCLUDING GROWTH PLOTS

Installation 363 Kennally Creek

Region: C Idaho

Legal Description: T16N R4E Sect.28

Ownership: Boise Cascade

Meridian: Boise

Treatment Regime: 14-plot NxK Response Surface

Year established: 1996

Elevation: 5400

Aspect: E

Slope: 22%

Vegetation Series: ABGR (Grand fir)

Habitat Type: VACA (dwarf huckleberry)

Phase: none

Parent Material: Granitic

Soil depth (in.): 34

Ash depth (in):

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	32	32M	32	32	34	62	53	55	30	00	85	83	32	02
Slope (%)	29	32	20	23	22	22	16	20	16	29	19	25	26	5
Aspect (degrees)	50	20	36	134	75	4	48	89	79	60	22	77	14	10

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1996)

Live Trees per Acre > 2"dbh	140	128	178	106	122	118	202	194	208	146	232	182	142	176
Live Basal Area (sq.ft/a)	95.8	93.7	101.9	79.0	63.5	78.8	101.0	83.3	84.2	81.6	80.6	76.9	76.1	97.0
Live Total Volume (cu.ft/a)	2749	2432	2338	1861	1533	1825	2324	1828	1794	2157	1799	1655	1984	2377
Crown Competition Factor	96	91	105	76	61	77	101	99	98	90	98	83	90	93
Relative Density Index	28.6	27.5	31.8	23.1	20.3	23.7	32.6	28.0	28.7	25.7	28.5	25.9	24.2	30.6
Site Height (ft)	85.8	73.0	67.8	67.8	63.2	65.0	63.0	60.7	62.8	75.4	64.4	58.7	68.0	69.2
Mean Diameter (in)	11.2	11.6	10.2	11.7	9.8	11.1	9.6	8.9	8.6	10.1	8.0	8.8	9.9	10.1
Average crown ratio (%)	43	54	53	60	69	59	53	48	53	59	51	54	46	56
Average crown length (ft)	28.8	33.1	26.5	30.4	23.2	27.8	24.1	22.2	21.1	26.0	19.5	23.1	26.3	27.0
Species composition (% of BA)														
Douglas-fir	67.1	77.1	75.4	83.1	70.7	69.6	54.4	75.2	74.2	65.9	66.7	44.0	37.0	52.6
Grand fir	0.0	0.7	0.0	1.9	6.8	4.6	0.0	16.3	16.5	33.0	28.3	16.1	42.9	9.8
Subalpine fir	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Western larch	23.9	1.8	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lodgepole pine	0.0	0.0	0.0	1.4	1.7	0.8	0.0	1.0	0.5	0.0	0.5	0.6	0.0	0.0
Ponderosa pine	9.0	18.5	22.6	13.7	20.8	23.6	45.6	7.5	8.8	1.2	4.4	39.2	20.1	33.2

PLOT SUMMARY REPORT: HALF ACRE PLOTS INCLUDING GROWTH PLOTS

Installation 362 Haverland Meadows  
 Region: NE Washington  
 Legal Description: T31N R39E Sect.36

Ownership: Washington DNR  
 Meridian: Willamette

Treatment Regime: 14-plot NxK Response Surface  
 Year established: 1996

Elevation: 2400  
 Aspect: SE  
 Slope: 13%

Vegetation Series: ABGR (Grand fir)  
 Habitat Type: PAMY (pachistima)  
 Phase: none

Parent Material: Granitic  
 Soil depth (in.): 35  
 Ash depth (in): 15

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	32	32	62	32	53	34	32	32M	02	85	00	55	83	30
Slope (%)	25	15	8	5	2	3	1	13	22	5	15	35	4	35
Aspect (degrees)	120	191	164	106	135	146	141	108	136	121	100	100	201	111

MENSURATIONAL CHARACTERISTICS:

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 At Time of Treatment (1996)  
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Live Trees per Acre > 2"dbh	154	228	186	196	230	202	260	290	260	240	254	182	144	192
Live Basal Area (sq.ft/a)	85.5	90.6	119.0	100.7	129.6	105.6	99.8	139.1	113.6	103.8	96.1	71.9	106.0	97.7
Live Total Volume (cu.ft/a)	2720	2628	3771	2962	4600	3400	2908	4337	3804	3149	2871	1906	3744	3041
Crown Competition Factor	82	95	117	101	125	111	107	146	111	108	105	79	102	101
Relative Density Index	26.9	31.0	36.2	32.3	40.6	33.8	34.5	45.4	38.0	34.8	33.3	24.6	31.1	31.4
Site Height (ft)	80.5	77.6	89.1	83.3	95.3	94.1	84.6	98.1	93.9	93.9	91.2	78.9	103.8	88.6
Mean Diameter (in)	10.1	8.5	10.8	9.7	10.2	9.8	8.4	9.4	9.0	8.9	8.3	8.5	11.6	9.7
Average crown ratio (%)	39	52	43	49	42	52	53	41	55	54	55	62	58	61
Average crown length (ft)	17.0	23.2	24.2	24.0	25.1	25.9	21.4	25.5	25.5	26.9	26.3	27.9	33.9	30.7
Species composition (% of BA)														
Douglas-fir	54.8	56.2	76.2	74.4	42.9	53.6	78.5	66.8	62.0	85.9	79.8	94.8	65.9	66.4
Grand fir	5.6	0.5	0.1	2.5	0.0	23.1	1.0	0.2	0.9	0.1	3.6	0.4	9.6	11.2
Western redcedar	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2
Western larch	7.6	6.5	0.7	3.7	9.1	6.2	0.3	19.0	4.0	6.7	5.5	1.0	18.2	2.5
Lodgepole pine	4.2	25.2	4.5	16.9	21.6	9.2	5.8	10.1	6.1	0.8	0.4	0.9	0.0	0.0
Ponderosa pine	27.8	11.7	18.5	2.5	26.4	8.0	14.5	3.9	26.9	6.5	10.6	2.9	6.3	19.7

PLOT SUMMARY REPORT: HALF ACRE PLOTS INCLUDING GROWTH PLOTS

Installation 361 Hanson Creek

Region: NE Washington

Legal Description: T36N R40E Sect.25

Ownership: Forest Service

Meridian: Willamette

Treatment Regime: 7-plot N Rate

Year established: 1996

Elevation: 3300

Aspect: E

Slope: 12%

Vegetation Series: THPL (Western redcedar)

Habitat Type: PAMY (pachistima)

Phase: none

Parent Material: Mixed (Glacial Till)

Soil depth (in.): 13

Ash depth (in): 9

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	30	20	02	32	10	60	00							
Slope (%)	10	15	18	10	10	10	12	.	.	.	.	.	.	.
Aspect (degrees)	108	132	5	138	114	75	108	.	.	.	.	.	.	.

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1996)

Live Trees per Acre > 2"dbh	258	232	232	258	292	300	362	.	.	.	.	.	.	.
Live Basal Area (sq.ft/a)	26.2	20.3	17.5	23.1	25.4	25.2	30.9	.	.	.	.	.	.	.
Live Total Volume (cu.ft/a)	270	215	175	243	271	280	333	.	.	.	.	.	.	.
Crown Competition Factor	37	31	28	36	37	41	44	.	.	.	.	.	.	.
Relative Density Index	12.6	10.1	9.1	11.5	12.7	12.7	15.6	.	.	.	.	.	.	.
Site Height (ft)	25.2	25.0	24.3	25.3	27.6	27.0	27.0	.	.	.	.	.	.	.
Mean Diameter (in)	4.3	4.0	3.7	4.1	4.0	3.9	4.0	.	.	.	.	.	.	.
Average crown ratio (%)	85	86	88	86	88	83	85	.	.	.	.	.	.	.
Average crown length (ft)	17.7	18.0	17.8	18.4	18.5	17.3	17.7	.	.	.	.	.	.	.
Species composition (% of BA)														
Douglas-fir	61.7	67.1	77.1	81.4	56.0	79.3	62.8	.	.	.	.	.	.	.
Grand fir	1.4	0.0	0.5	0.0	10.9	5.8	1.5	.	.	.	.	.	.	.
Western larch	4.6	9.8	17.6	7.8	15.8	1.0	6.0	.	.	.	.	.	.	.
Lodgepole pine	0.0	19.7	0.8	8.3	5.8	12.1	3.7	.	.	.	.	.	.	.
Western white pine	0.8	1.0	1.8	1.1	1.7	0.2	0.2	.	.	.	.	.	.	.
Ponderosa pine	31.5	2.4	2.2	1.5	2.0	1.6	2.5	.	.	.	.	.	.	.
Engelmann spruce	0.0	0.0	0.0	0.0	8.0	0.0	23.4	.	.	.	.	.	.	.



PLOT SUMMARY REPORT: HALF ACRE PLOTS INCLUDING GROWTH PLOTS

Installation 359 Dicks Creek

Region: N Idaho

Legal Description: T38N R1E Sect.28

Ownership: IDL

Meridian: Boise

Treatment Regime: 14-plot N Rate Repeated App.

Year established: 1996

Elevation: 3000

Aspect: N

Slope: 16%

Vegetation Series: THPL (Western redcedar)

Habitat Type: CLUN (queencup beadlily)

Phase: CLUN (queencup beadlily)

Parent Material: Basaltic

Soil depth (in.): .

Ash depth (in):

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	30	20	00	10	20	30	32	20	30	32M	60	10	10	02
Slope (%)	12	22	11	5	12	14	7	28	25	15	17	15	20	22
Aspect (degrees)	22	108	355	359	16	38	24	104	108	126	293	340	86	6

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1996)

Live Trees per Acre > 2"dbh	474	282	322	288	286	316	458	336	236	240	264	380	330	330
Live Basal Area (sq.ft/a)	173.3	149.9	154.0	148.1	175.4	175.0	184.1	143.0	126.9	135.8	120.2	135.9	130.5	99.1
Live Total Volume (cu.ft/a)	4283	4458	4164	4113	5968	5189	5139	3741	3726	3813	3158	3079	3223	2072
Crown Competition Factor	235	198	184	173	217	210	234	181	162	163	157	187	181	143
Relative Density Index	60.6	47.7	50.3	47.5	53.9	55.1	62.8	48.1	40.3	42.6	39.8	47.8	44.7	36.4
Site Height (ft)	68.4	77.5	80.7	81.9	91.8	83.8	80.1	78.4	80.6	78.2	75.2	63.0	68.3	58.7
Mean Diameter (in)	8.2	9.9	9.4	9.7	10.6	10.1	8.6	8.8	9.9	10.2	9.1	8.1	8.5	7.4
Average crown ratio (%)	61	57	55	56	56	53	57	63	60	61	62	57	56	63
Average crown length (ft)	30.1	37.6	32.9	34.2	40.2	34.5	31.3	33.5	37.8	37.8	34.8	26.9	28.5	25.0
Species composition (% of BA)														
Douglas-fir	4.9	15.7	10.2	35.6	2.3	39.3	16.2	8.8	19.0	17.5	9.2	6.9	8.7	8.2
Grand fir	58.5	71.3	43.4	36.9	82.1	50.3	67.7	50.6	56.8	50.3	71.9	67.4	85.1	67.6
Western redcedar	36.3	13.0	28.3	13.5	11.6	6.8	15.5	29.6	22.7	18.5	12.2	25.7	4.9	24.2
Western hemlock	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Western larch	0.0	0.0	18.1	14.0	1.6	3.7	0.6	11.0	1.6	13.7	5.0	0.0	1.3	0.0
Western white pine	0.0	0.0	0.0	0.0	2.4	0.0	0.1	0.0	0.0	0.0	1.8	0.1	0.0	0.0

PLOT SUMMARY REPORT: HALF ACRE PLOTS INCLUDING GROWTH PLOTS

Installation 358 Skookum Lake

Region: NE Washington

Legal Description: T34N R44E Sect.36

Ownership: Washington DNR

Meridian: Willamette

Treatment Regime: 7-plot N Rate

Year established: 1995

Elevation: 3600

Aspect: S-SE

Slope: 4%

Vegetation Series: TSHE (Western hemlock)

Habitat Type: CLUN (queencup beadlily)

Phase: none

Parent Material: Mixed (Glacial Till)

Soil depth (in.): .

Ash depth (in):

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	00	10	60	20	30	32	02							
Slope (%)	1	1	1	4	6	15	3	.	.	.	.	.	.	.
Aspect (degrees)	155	160	160	185	165	185	185	.	.	.	.	.	.	.

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1995)

Live Trees per Acre > 2"dbh	310	310	276	282	342	302	312	.	.	.	.	.	.	.
Live Basal Area (sq.ft/a)	42.8	45.6	37.6	40.1	43.7	48.4	43.0	.	.	.	.	.	.	.
Live Total Volume (cu.ft/a)	509	541	443	478	534	583	508	.	.	.	.	.	.	.
Crown Competition Factor	64	67	56	58	66	70	63	.	.	.	.	.	.	.
Relative Density Index	19.1	20.0	16.8	17.7	19.9	20.8	19.2	.	.	.	.	.	.	.
Site Height (ft)	30.3	30.3	29.6	30.3	31.2	30.2	30.5	.	.	.	.	.	.	.
Mean Diameter (in)	5.0	5.2	5.0	5.1	4.8	5.4	5.0	.	.	.	.	.	.	.
Average crown ratio (%)	86	86	87	85	83	84	87	.	.	.	.	.	.	.
Average crown length (ft)	20.7	21.2	21.0	20.7	20.5	21.8	20.7	.	.	.	.	.	.	.
Species composition (% of BA)														
Douglas-fir	97.9	97.8	95.7	90.1	94.4	94.1	95.4	.	.	.	.	.	.	.
Grand fir	0.2	0.0	0.0	0.0	0.0	0.0	0.0	.	.	.	.	.	.	.
Western redcedar	0.2	0.0	0.0	0.0	0.0	0.0	0.0	.	.	.	.	.	.	.
Western hemlock	0.1	0.0	0.0	0.0	0.0	0.0	0.0	.	.	.	.	.	.	.
Western larch	0.1	0.0	1.0	2.9	0.9	1.8	1.9	.	.	.	.	.	.	.
Lodgepole pine	1.3	2.2	2.4	6.7	4.7	4.1	2.5	.	.	.	.	.	.	.
Western white pine	0.0	0.0	0.0	0.1	0.0	0.0	0.2	.	.	.	.	.	.	.
Ponderosa pine	0.1	0.0	0.9	0.2	0.0	0.0	0.0	.	.	.	.	.	.	.



PLOT SUMMARY REPORT: HALF ACRE PLOTS INCLUDING GROWTH PLOTS

Installation 356 Sportsman Access

Region: N Idaho

Legal Description: T45N R1W Sect.19

Ownership: Potlatch

Meridian: Boise

Treatment Regime: 7-plot N Rate

Year established: 1995

Elevation: 3100

Aspect: N-NW

Slope: 5%

Vegetation Series: TSHE (Western hemlock)

Habitat Type: CLUN (queencup beadlily)

Phase: CLUN (queencup beadlily)

Parent Material: Basaltic

Soil depth (in.): 72

Ash depth (in): 2

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	60	30	00	10	32	20	02							
Slope (%)	2	4	6	6	11	1	10	.	.	.	.	.	.	.
Aspect (degrees)	106	336	310	296	295	330	290	.	.	.	.	.	.	.

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1995)

Live Trees per Acre > 2"dbh	132	166	138	164	194	184	256	.	.	.	.	.	.	.
Live Basal Area (sq.ft/a)	87.1	83.9	62.7	74.5	80.4	65.2	87.0	.	.	.	.	.	.	.
Live Total Volume (cu.ft/a)	2759	2539	1817	2119	2412	1727	2415	.	.	.	.	.	.	.
Crown Competition Factor	108	103	83	100	109	86	113	.	.	.	.	.	.	.
Relative Density Index	26.3	27.0	20.8	24.7	27.2	23.0	31.0	.	.	.	.	.	.	.
Site Height (ft)	82.7	80.9	75.0	75.0	79.5	72.7	78.3	.	.	.	.	.	.	.
Mean Diameter (in)	11.0	9.6	9.1	9.1	8.7	8.1	7.9	.	.	.	.	.	.	.
Average crown ratio (%)	41	42	40	43	38	41	42	.	.	.	.	.	.	.
Average crown length (ft)	30.2	27.7	26.6	27.3	24.8	22.0	23.1	.	.	.	.	.	.	.
Species composition (% of BA)														
Douglas-fir	13.0	9.8	37.7	25.0	4.6	15.2	15.1	.	.	.	.	.	.	.
Grand fir	57.0	47.7	53.3	66.5	72.2	57.8	54.1	.	.	.	.	.	.	.
Western redcedar	26.7	21.2	8.7	7.3	17.2	16.9	13.3	.	.	.	.	.	.	.
Western hemlock	0.0	6.1	0.3	1.1	6.0	9.7	11.9	.	.	.	.	.	.	.
Western larch	1.7	15.3	0.0	0.0	0.0	0.0	2.5	.	.	.	.	.	.	.
Lodgepole pine	1.6	0.0	0.0	0.0	0.0	0.0	2.5	.	.	.	.	.	.	.
Western white pine	0.0	0.0	0.0	0.0	0.0	0.5	0.5	.	.	.	.	.	.	.





PLOT SUMMARY REPORT: HALF ACRE PLOTS INCLUDING GROWTH PLOTS

Installation 354 Huckleberry Creek  
 Region: NE Oregon  
 Legal Description: T32N R39E Sect.31

Ownership: Boise Cascade  
 Meridian: Willamette

Treatment Regime: 14-plot NxK Response Surface  
 Year established: 1995

Elevation: 3500  
 Aspect: S  
 Slope: 31%

Vegetation Series: ABGR (Grand fir)  
 Habitat Type: MISSING  
 Phase: none

Parent Material: Mixed (Glacial Till)  
 Soil depth (in.): .  
 Ash depth (in):

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	53	32	32	32	62	55	30	34	83	02	32	85	00	32S
Slope (%)	23	35	37	26	34	39	35	44	35	8	39	19	29	34
Aspect (degrees)	33	45	26	5	34	44	58	9	39	47	49	55	60	58

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1995)

Live Trees per Acre > 2"dbh	128	126	174	156	196	254	190	222	160	230	206	248	264	198
Live Basal Area (sq.ft/a)	41.3	40.7	56.6	54.8	74.2	55.6	34.8	50.2	33.0	46.4	52.5	75.8	55.1	66.6
Live Total Volume (cu.ft/a)	912	903	1387	1232	1968	1253	619	1086	616	964	1067	1604	1119	1962
Crown Competition Factor	55	50	76	62	86	76	48	66	40	59	65	83	69	84
Relative Density Index	14.9	14.7	20.4	19.3	25.7	22.1	14.5	19.8	13.3	18.8	20.1	27.7	22.1	23.8
Site Height (ft)	58.6	59.5	66.1	61.2	70.7	63.6	44.7	61.0	50.2	57.3	53.8	57.6	52.4	76.6
Mean Diameter (in)	7.7	7.7	7.7	8.0	8.3	6.3	5.8	6.4	6.1	6.1	6.8	7.5	6.2	7.9
Average crown ratio (%)	72	66	63	59	56	57	64	59	60	59	61	60	62	56
Average crown length (ft)	34.4	28.7	31.8	25.0	30.2	26.2	23.2	25.2	22.2	21.5	26.0	25.4	21.2	27.3
Species composition (% of BA)														
Douglas-fir	39.5	74.1	35.7	75.3	12.9	33.6	67.2	55.2	54.3	61.9	83.6	72.4	72.9	9.8
Grand fir	49.5	16.0	55.5	5.9	47.9	43.8	15.1	22.4	12.1	5.8	0.1	2.2	8.9	65.1
Western larch	2.4	5.6	4.0	6.2	20.5	15.1	6.6	8.1	10.9	3.7	3.8	5.2	16.1	4.8
Lodgepole pine	4.5	4.3	4.9	11.0	16.3	4.0	8.0	8.6	16.8	27.7	10.4	8.5	2.1	20.3
Ponderosa pine	0.0	0.0	0.0	1.6	0.0	0.0	3.1	0.0	0.0	0.5	1.4	7.9	0.0	0.0
Engelmann spruce	0.0	0.0	0.0	0.0	0.0	3.5	0.0	5.8	0.0	0.0	0.0	0.0	0.0	0.0

PLOT SUMMARY REPORT: HALF ACRE PLOTS INCLUDING GROWTH PLOTS

Installation 353 Peony Creek

Region: C Washington

Legal Description: T36N R29E Sect.28

Ownership: Forest Service

Meridian: Willamette

Treatment Regime: 7-plot N Rate

Year established: 1995

Elevation: 3100

Aspect: NE

Slope: 7%

Vegetation Series: PSME (Douglas-fir)

Habitat Type: MISSING

Phase: none

Parent Material: Mixed (Glacial Till)

Soil depth (in.): 22

Ash depth (in): T

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	60	32	02	10	30	20	00							
Slope (%)	7	5	7	10	3	16	4	.	.	.	.	.	.	.
Aspect (degrees)	71	48	11	29	29	84	59	.	.	.	.	.	.	.

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1995)

Live Trees per Acre > 2"dbh	66	90	66	88	80	114	76	.	.	.	.	.	.	.
Live Basal Area (sq.ft/a)	31.3	44.4	32.4	41.5	38.0	67.6	36.2	.	.	.	.	.	.	.
Live Total Volume (cu.ft/a)	710	961	681	1029	854	1753	987	.	.	.	.	.	.	.
Crown Competition Factor	33	47	38	47	44	73	39	.	.	.	.	.	.	.
Relative Density Index	10.2	14.4	10.5	13.6	12.4	20.9	11.8	.	.	.	.	.	.	.
Site Height (ft)	53.5	64.6	56.7	62.3	62.4	74.8	67.8	.	.	.	.	.	.	.
Mean Diameter (in)	9.3	9.5	9.5	9.3	9.3	10.4	9.3	.	.	.	.	.	.	.
Average crown ratio (%)	75	65	64	61	49	50	54	.	.	.	.	.	.	.
Average crown length (ft)	32.7	33.9	32.2	31.6	25.8	30.3	30.2	.	.	.	.	.	.	.
Species composition (% of BA)														
Douglas-fir	64.9	63.5	94.1	81.2	89.4	87.2	63.6	.	.	.	.	.	.	.
Western larch	10.0	34.7	4.9	4.7	7.7	7.6	34.4	.	.	.	.	.	.	.
Lodgepole pine	0.0	0.9	0.0	0.2	0.0	0.0	2.0	.	.	.	.	.	.	.
Ponderosa pine	25.1	0.9	0.9	13.9	2.9	5.2	0.0	.	.	.	.	.	.	.

PLOT SUMMARY REPORT: HALF ACRE PLOTS INCLUDING GROWTH PLOTS

Installation 352 Summit Creek #2

Region: C Washington

Legal Description: T33N R24E Sect.11

Ownership: Washington DNR

Meridian: Willamette

Treatment Regime: 14-plot NxK Response Surface

Year established: 1995

Elevation: 2800

Aspect: N

Slope: 21%

Vegetation Series: PSME (Douglas-fir)

Habitat Type: MISSING

Phase: none

Parent Material: Granitic

Soil depth (in.): 20

Ash depth (in.): 17

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	53	32	85	00	83	62	32	02	32	30	32S	32	34	55
Slope (%)	18	23	23	22	32	9	37	38	31	14	22	18	18	17
Aspect (degrees)	327	356	359	34	344	350	355	327	360	322	320	302	349	329

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1995)

Live Trees per Acre > 2"dbh	106	96	86	92	140	140	128	140	166	144	96	88	102	120
Live Basal Area (sq.ft/a)	66.6	54.3	68.8	71.3	51.0	57.9	75.3	68.4	100.6	71.8	79.7	67.6	81.6	58.0
Live Total Volume (cu.ft/a)	1748	1362	1845	1934	1065	1524	1896	1565	2532	1963	2567	1895	2334	1411
Crown Competition Factor	60	54	71	73	52	63	86	68	106	66	74	70	85	67
Relative Density Index	20.3	17.0	19.8	20.7	17.8	19.6	23.4	22.2	31.0	23.2	22.7	19.6	23.5	18.9
Site Height (ft)	71.2	68.1	77.1	72.1	59.3	72.2	73.8	66.1	71.2	69.9	90.3	77.3	81.0	68.1
Mean Diameter (in)	10.7	10.2	12.1	11.9	8.2	8.7	10.4	9.5	10.5	9.6	12.3	11.9	12.1	9.4
Average crown ratio (%)	57	63	54	51	63	45	51	59	53	63	46	45	47	44
Average crown length (ft)	34.5	30.9	37.0	33.6	25.2	22.5	30.6	28.8	31.1	27.6	33.0	29.9	32.0	24.7
Species composition (% of BA)														
Douglas-fir	11.1	69.3	81.9	79.4	47.3	78.8	98.8	44.7	73.0	44.3	66.0	97.2	99.8	91.4
Western larch	35.0	13.7	14.1	5.5	25.6	1.7	1.2	31.9	8.0	13.4	34.0	0.5	0.0	2.9
Lodgepole pine	17.4	1.2	0.0	0.0	6.4	15.0	0.0	6.7	0.1	2.0	0.0	2.3	0.2	2.4
Ponderosa pine	36.5	15.9	4.0	15.1	20.7	4.5	0.0	16.7	18.9	40.3	0.0	0.0	0.0	3.3

PLOT SUMMARY REPORT: HALF ACRE PLOTS INCLUDING GROWTH PLOTS

Installation 351 Little Donner

Region: C Idaho

Legal Description: T14N R3E Sect.13

Ownership: IDL

Meridian: Boise

Treatment Regime: 14-plot NxK Response Surface

Year established: 1995

Elevation: 5000

Aspect: W-NW

Slope: 24%

Vegetation Series: PSME (Douglas-fir)

Habitat Type: CAGE (elk sedge)

Phase: PIPO (ponderosa pine)

Parent Material: Granitic

Soil depth (in.): 23

Ash depth (in): 3

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	32	32	55	32	34	85	02	62	00	30	83	32S	32	53
Slope (%)	26	25	20	19	28	23	38	22	43	31	20	10	8	28
Aspect (degrees)	333	335	324	252	236	285	325	257	278	309	274	139	210	340

MENSURATIONAL CHARACTERISTICS:

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At Time of Treatment (1995)  
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Live Trees per Acre > 2"dbh	56	64	132	84	106	142	216	90	146	168	88	148	128	116
Live Basal Area (sq.ft/a)	52.6	56.9	118.7	83.7	106.8	91.7	127.1	71.7	80.9	84.7	87.8	103.5	82.7	69.1
Live Total Volume (cu.ft/a)	1426	1485	3617	2477	3216	2038	3246	2020	2027	1789	2690	2635	1887	1562
Crown Competition Factor	43	46	100	73	93	79	132	62	84	79	74	95	72	71
Relative Density Index	14.5	15.9	33.1	22.8	29.0	27.8	39.4	20.6	25.5	27.3	23.9	30.7	25.1	21.4
Site Height (ft)	61.1	62.3	74.8	73.1	79.1	57.1	73.0	68.9	64.8	57.2	76.2	65.3	57.0	61.2
Mean Diameter (in)	13.1	12.8	12.8	13.5	13.6	10.9	10.4	12.1	10.1	9.6	13.5	11.3	10.9	10.5
Average crown ratio (%)	55	57	52	51	47	53	42	56	47	49	50	54	52	56
Average crown length (ft)	31.3	32.0	34.3	34.5	33.0	26.4	25.9	31.1	25.5	23.3	33.0	29.4	25.9	28.3
Species composition (% of BA)														
Douglas-fir	20.0	15.0	20.3	36.2	44.1	11.4	67.9	24.6	65.9	34.3	32.5	33.0	19.0	71.3
Ponderosa pine	80.0	85.0	79.7	63.8	55.9	88.6	32.1	75.4	34.1	65.7	67.5	67.0	81.0	28.7

PLOT SUMMARY REPORT: HALF ACRE PLOTS INCLUDING GROWTH PLOTS

Installation 350 Cleman Mtn. #2

Region: C Washington

Legal Description: T16N R15E Sect.15

Ownership: Forest Service

Meridian: Willamette

Treatment Regime: 14-plot N Rate Repeated App.

Year established: 1995

Elevation: 3400

Aspect: S

Slope: 18%

Vegetation Series: PSME (Douglas-fir)

Habitat Type: CAGE (elk sedge)

Phase: none

Parent Material: Basaltic

Soil depth (in.): 29

Ash depth (in): T

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	30	30	10	00	10	20	20	02	60	10	32	32S	30	20
Slope (%)	18	15	25	25	17	17	15	15	17	15	15	16	16	20
Aspect (degrees)	265	260	28	255	240	293	282	270	280	25	220	263	285	290

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1995)

Live Trees per Acre > 2"dbh	176	134	170	198	190	172	164	170	178	166	150	120	174	188
Live Basal Area (sq.ft/a)	110.3	97.8	86.0	108.9	111.5	84.3	95.3	113.9	80.3	80.2	108.7	78.7	131.1	110.8
Live Total Volume (cu.ft/a)	2840	2412	2019	2554	2550	1874	2050	2704	1713	1905	2817	1943	3488	2634
Crown Competition Factor	109	101	91	121	116	82	98	121	84	80	105	76	128	117
Relative Density Index	33.7	28.8	27.7	34.4	34.6	27.4	29.7	34.2	26.6	26.1	32.0	23.8	38.2	34.4
Site Height (ft)	71.8	71.6	68.6	69.8	67.0	66.3	62.9	68.2	64.3	69.8	73.8	70.9	75.5	71.1
Mean Diameter (in)	10.7	11.6	9.6	10.0	10.4	9.5	10.3	11.1	9.1	9.4	11.5	11.0	11.8	10.4
Average crown ratio (%)	70	64	71	56	65	67	69	64	69	69	55	64	54	57
Average crown length (ft)	35.3	37.8	34.4	32.5	34.0	31.4	33.8	36.8	31.0	30.0	32.8	34.0	33.0	32.1
Species composition (% of BA)														
Douglas-fir	66.6	85.1	75.5	82.6	77.2	49.7	67.1	78.0	67.9	62.2	67.4	70.7	69.7	81.6
Grand fir	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.0	1.7	0.0	0.0	0.0
Ponderosa pine	33.4	14.9	24.4	17.4	22.8	50.3	32.9	22.0	31.9	37.8	30.9	29.3	30.3	18.4



PLOT SUMMARY REPORT: HALF ACRE PLOTS INCLUDING GROWTH PLOTS

Installation 348 Whiskey Butte  
 Region: N Idaho  
 Legal Description: T38N R4E Sect.34

Ownership: Potlatch  
 Meridian: Boise

Treatment Regime: 14-plot NxK Response Surface  
 Year established: 1995

Elevation: 3100  
 Aspect: S-SW  
 Slope: 16%

Vegetation Series: THPL (Western redcedar)  
 Habitat Type: CLUN (queencup beadlily)  
 Phase: none

Parent Material: Metasedimentary/Metamorphic  
 Soil depth (in.): 33  
 Ash depth (in): 9

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	02	62	83	30	32	32	55	32	34	32	85	32S	00	53
Slope (%)	17	16	23	18	21	12	12	14	8	16	22	16	18	14
Aspect (degrees)	196	217	237	266	294	224	239	228	166	163	175	248	304	175

MENSURATIONAL CHARACTERISTICS:

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 At Time of Treatment (1995)  
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Live Trees per Acre > 2"dbh	156	160	204	214	214	212	214	174	174	224	184	218	274	180
Live Basal Area (sq.ft/a)	25.2	29.5	29.1	30.4	30.6	28.0	38.5	22.9	27.9	44.6	23.8	36.6	50.9	32.5
Live Total Volume (cu.ft/a)	328	400	364	388	404	350	518	283	375	656	312	496	751	425
Crown Competition Factor	37	41	43	44	45	43	54	35	40	64	35	53	73	44
Relative Density Index	10.8	12.2	12.9	13.5	13.5	12.6	16.1	10.3	12.0	18.1	10.8	15.5	21.1	13.5
Site Height (ft)	34.5	38.0	34.2	34.1	36.2	33.6	36.6	31.7	36.1	40.5	35.3	36.0	40.4	34.6
Mean Diameter (in)	5.4	5.8	5.1	5.1	5.1	4.9	5.7	4.9	5.4	6.0	4.9	5.5	5.8	5.8
Average crown ratio (%)	84	84	87	85	85	83	85	87	83	83	86	85	79	85
Average crown length (ft)	21.8	23.4	21.0	21.5	21.3	20.4	24.4	21.0	21.5	23.7	20.8	22.6	24.5	21.8
Species composition (% of BA)														
Douglas-fir	83.5	92.4	86.5	85.3	90.0	79.4	93.0	68.2	60.4	56.6	71.2	64.4	81.7	53.4
Grand fir	13.9	1.0	8.5	5.6	6.4	15.6	5.7	24.1	29.7	38.1	17.2	26.4	13.5	17.7
Western redcedar	2.0	2.9	3.3	1.3	0.7	3.3	0.0	1.3	1.2	2.2	4.7	3.9	4.8	11.5
Western larch	0.0	0.0	0.0	2.5	0.0	1.7	0.0	0.0	0.0	1.1	0.0	0.0	0.0	2.5
Western white pine	0.5	2.4	1.8	5.3	2.9	0.0	0.9	5.6	8.8	2.0	4.3	4.9	0.0	6.3
Ponderosa pine	0.0	1.4	0.0	0.0	0.0	0.0	0.3	0.8	0.0	0.0	2.5	0.3	0.0	8.6



PLOT SUMMARY REPORT: HALF ACRE PLOTS INCLUDING GROWTH PLOTS

Installation 347 Vay

Region: N Idaho

Legal Description: T55N R4W Sect.22

Ownership: IDL

Meridian: Boise

Treatment Regime: 7-plot N Rate

Year established: 1995

Elevation: 750

Vegetation Series: PSME (Douglas-fir)

Parent Material: Mixed (Glacial Till)

Aspect: FLAT

Habitat Type: SYAL (snowberry)

Soil depth (in.): 42

Slope: 1%

Phase: none

Ash depth (in): T

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	32	60	20	30	02	00	10							
Slope (%)	1	1	1	1	1	1	1	.	.	.	.	.	.	.
Aspect (degrees)	1	1	1	1	1	1	1	.	.	.	.	.	.	.

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1995)

Live Trees per Acre > 2"dbh	368	410	268	216	256	262	364	.	.	.	.	.	.	.
Live Basal Area (sq.ft/a)	37.7	43.4	30.1	26.4	28.8	30.1	41.1	.	.	.	.	.	.	.
Live Total Volume (cu.ft/a)	306	403	260	201	255	275	388	.	.	.	.	.	.	.
Crown Competition Factor	39	45	30	26	29	30	42	.	.	.	.	.	.	.
Relative Density Index	18.1	20.7	14.1	12.1	13.5	14.0	19.3	.	.	.	.	.	.	.
Site Height (ft)	21.4	23.6	23.3	21.7	23.4	24.5	25.1	.	.	.	.	.	.	.
Mean Diameter (in)	4.3	4.4	4.5	4.7	4.5	4.6	4.5	.	.	.	.	.	.	.
Average crown ratio (%)	78	77	79	81	78	79	73	.	.	.	.	.	.	.
Average crown length (ft)	14.0	15.2	14.5	14.8	14.7	15.6	15.0	.	.	.	.	.	.	.
Species composition (% of BA)														
Lodgepole pine	9.0	23.4	5.4	13.6	12.8	11.4	15.7	.	.	.	.	.	.	.
Western white pine	0.0	0.0	0.0	0.5	0.0	2.7	0.0	.	.	.	.	.	.	.
Ponderosa pine	91.0	76.6	94.6	85.8	87.2	85.9	84.3	.	.	.	.	.	.	.

PLOT SUMMARY REPORT: HALF ACRE PLOTS INCLUDING GROWTH PLOTS

Installation 346 Springdale

Region: NE Washington

Legal Description: T29N R38E Sect. 2

Ownership: Washington DNR

Meridian: Willamette

Treatment Regime: 14-plot NxK Response Surface

Year established: 1994

Elevation: 2600

Aspect: S-SE

Slope: 21%

Vegetation Series: ABGR (Grand fir)

Habitat Type: MISSING

Phase: none

Parent Material: Metamorphic/Metasedimentary

Soil depth (in.): 8

Ash depth (in.): 8

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	00	32	85	32	53	55	62	83	32	32	34	02	32	30
Slope (%)	35	10	27	20	16	17	15	20	14	24	25	25	27	12
Aspect (degrees)	110	80	120	130	160	180	60	114	196	90	232	122	232	174

MENSURATIONAL CHARACTERISTICS:

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At Time of Treatment (1994)  
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Live Trees per Acre > 2"dbh	88	74	86	74	138	84	80	144	74	84	68	94	70	84
Live Basal Area (sq.ft/a)	46.0	30.7	27.3	30.8	50.3	36.2	29.4	51.7	31.7	46.4	44.5	46.9	42.1	44.5
Live Total Volume (cu.ft/a)	1092	850	536	703	1193	909	586	1141	946	1121	1096	1248	1240	1212
Crown Competition Factor	42	30	29	34	53	34	31	57	31	46	38	48	39	45
Relative Density Index	14.7	10.4	9.9	10.4	17.6	12.1	10.3	18.2	10.6	14.6	13.4	15.2	13.0	14.2
Site Height (ft)	57.4	57.1	49.1	58.1	55.5	59.0	46.1	61.5	49.7	64.4	58.2	77.6	70.5	67.7
Mean Diameter (in)	9.8	8.7	7.6	8.7	8.2	8.9	8.2	8.1	8.9	10.1	11.0	9.6	10.5	9.9
Average crown ratio (%)	74	68	72	71	62	68	78	65	74	73	68	66	65	70
Average crown length (ft)	37.2	29.1	28.3	37.6	26.9	32.7	28.1	30.2	28.8	37.5	34.2	37.7	39.6	39.7
Species composition (% of BA)														
Douglas-fir	29.1	44.5	50.4	72.9	48.7	21.6	67.5	67.7	46.4	38.3	31.5	21.1	22.5	59.6
Grand fir	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.1	2.7	1.4
Western larch	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	42.3	0.0	52.6	24.8	0.0
Ponderosa pine	70.9	55.5	49.6	27.1	51.3	78.4	32.5	32.3	53.6	19.4	68.5	15.2	50.1	39.0



PLOT SUMMARY REPORT: HALF ACRE PLOTS INCLUDING GROWTH PLOTS

Installation 345 Idaho City

Region: C Idaho

Legal Description: T6N R5E Sect.16

Ownership: IDL

Meridian: Boise

Treatment Regime: 14-plot NxK Response Surface

4-plot Bark Beetle Site

Year established: 1994

Elevation: 4900

Aspect: E-SE

Slope: 13%

Vegetation Series: PSME (Douglas-fir)

Habitat Type: CAGE (elk sedge)

Phase: none

Parent Material: Granitic

Soil depth (in.): .

Ash depth (in):

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	32	32	32	02	53	62	85	00	55	32	83	30	32	34
Slope (%)	12	14	5	14	15	10	20	25	7	5	10	15	10	20
Aspect (degrees)	230	199	217	210	359	295	2	292	233	331	260	188	245	234

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1994)

Live Trees per Acre > 2"dbh	124	126	82	92	114	118	100	106	84	116	138	110	106	102
Live Basal Area (sq.ft/a)	68.6	63.3	49.7	45.8	60.2	64.2	41.9	51.1	59.2	67.4	65.1	54.6	56.4	60.0
Live Total Volume (cu.ft/a)	1807	1545	1347	1214	1477	1702	981	1214	1904	1797	1568	1372	1409	1726
Crown Competition Factor	72	63	46	47	64	61	43	55	55	66	61	51	54	53
Relative Density Index	21.6	20.4	15.3	14.8	19.2	20.3	14.1	16.7	17.6	21.0	21.4	17.7	18.0	18.6
Site Height (ft)	71.0	65.1	68.5	66.3	66.0	68.4	61.9	63.4	75.6	71.9	66.0	66.6	64.8	68.9
Mean Diameter (in)	10.1	9.6	10.5	9.6	9.8	10.0	8.8	9.4	11.4	10.3	9.3	9.5	9.9	10.4
Average crown ratio (%)	54	75	72	50	45	55	55	51	55	54	53	51	54	54
Average crown length (ft)	33.7	40.8	43.2	27.1	27.0	31.7	28.0	27.0	35.1	33.3	28.8	29.5	31.3	30.0
Species composition (% of BA)														
Douglas-fir	65.1	43.9	26.3	52.1	65.8	37.4	50.5	65.6	43.4	48.9	25.6	30.5	30.0	20.3
Ponderosa pine	34.9	56.1	73.7	47.9	34.2	62.6	49.5	34.4	56.6	51.1	74.4	69.5	70.0	79.7





PLOT SUMMARY REPORT: HALF ACRE PLOTS INCLUDING GROWTH PLOTS

Installation 342 Upper Pataha #2  
 Region: C Washington  
 Legal Description: T9N R42E Sect.20

Ownership: Forest Service  
 Meridian: Willamette

Treatment Regime: 14-plot NxK Response Surface  
 Year established: 1994

Elevation: 5000  
 Aspect: NE  
 Slope: 23%

Vegetation Series: ABGR (Grand fir)  
 Habitat Type: VAME (big huckleberry)  
 Phase: LIBO2 (twinflor)

Parent Material: Basaltic  
 Soil depth (in.): 24  
 Ash depth (in.): 11

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	32	85	02	55	32	32	32	32	34	62	83	83	30	00
Slope (%)	30	15	20	14	20	30	30	30	35	30	14	11	27	15
Aspect (degrees)	76	94	18	338	28	60	30	50	120	292	16	346	356	356

MENSURATIONAL CHARACTERISTICS:

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 At Time of Treatment (1994)  
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Live Trees per Acre > 2"dbh	164	172	214	232	196	214	242	192	156	186	202	218	208	220
Live Basal Area (sq.ft/a)	31.2	26.9	25.5	33.4	31.2	23.7	26.2	26.2	30.6	20.3	25.1	28.4	24.0	35.3
Live Total Volume (cu.ft/a)	310	249	221	325	301	213	240	237	280	168	221	244	189	313
Crown Competition Factor	32	28	27	37	33	27	33	30	30	22	27	31	25	37
Relative Density Index	12.8	11.6	11.8	14.7	13.4	11.1	12.4	11.7	12.5	9.6	11.5	12.9	11.2	15.2
Site Height (ft)	26.1	24.8	22.7	24.7	24.9	23.3	25.0	22.9	24.1	21.2	22.5	22.0	20.1	23.6
Mean Diameter (in)	5.9	5.4	4.7	5.1	5.4	4.5	4.5	5.0	6.0	4.5	4.8	4.9	4.6	5.4
Average crown ratio (%)	84	85	84	86	85	87	87	85	83	85	85	86	83	83
Average crown length (ft)	18.3	16.0	14.1	16.6	16.3	15.4	15.1	15.8	16.4	14.0	14.9	15.5	13.9	15.5
Species composition (% of BA)														
Douglas-fir	10.5	2.4	4.1	9.5	10.0	13.4	6.8	5.0	5.0	8.9	11.7	15.2	3.9	1.2
Grand fir	2.1	9.8	10.7	8.5	9.0	5.4	26.6	14.8	0.2	6.0	3.1	2.3	3.4	9.6
Subalpine fir	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	2.1	0.8
Western larch	1.6	0.0	0.0	1.7	0.6	0.0	0.0	2.4	0.0	0.0	2.1	2.9	3.4	4.1
Lodgepole pine	1.7	0.0	0.0	6.1	3.5	2.8	0.0	7.4	3.6	4.6	9.6	4.3	2.2	1.6
Ponderosa pine	81.6	83.6	76.6	65.5	71.9	60.7	57.4	64.6	89.3	69.4	62.7	70.1	82.0	78.7
Engelmann spruce	2.5	4.2	8.0	8.8	4.9	17.7	9.1	5.8	0.7	11.2	10.8	5.2	3.1	4.0

PLOT SUMMARY REPORT: HALF ACRE PLOTS INCLUDING GROWTH PLOTS

Installation 341 Grasshopper Creek  
 Region: N Idaho  
 Legal Description: T36N R5E Sect.21

Ownership: Potlatch  
 Meridian: Boise

Treatment Regime: 14-plot NxK Response Surface  
 Year established: 1994

Elevation: 3400  
 Aspect:  
 Slope: 26%

Vegetation Series: THPL (Western redcedar)  
 Habitat Type: ASCA3 (wild ginger)  
 Phase: ASCA3 (wild ginger)

Parent Material: Granitic  
 Soil depth (in.): 46  
 Ash depth (in.): 13

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	00	30	83	02	32	85	55	53	62	34	32	32	32	32
Slope (%)	38	41	35	36	27	28	20	22	8	15	15	15	25	33
Aspect (degrees)	307	303	316	357	301	299	310	324	328	304	330	305	332	278

MENSURATIONAL CHARACTERISTICS:

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 At Time of Treatment (1994)  
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Live Trees per Acre > 2"dbh	518	550	484	582	612	588	538	452	450	476	506	398	434	414
Live Basal Area (sq.ft/a)	198.8	181.9	152.3	198.6	241.8	155.9	176.9	196.7	169.0	160.1	218.5	204.6	223.1	218.4
Live Total Volume (cu.ft/a)	5480	5063	4129	5849	8055	3598	4477	6013	4252	4086	7139	6427	7147	6926
Crown Competition Factor	243	235	198	263	325	218	231	260	227	219	284	261	271	274
Relative Density Index	68.6	65.2	55.3	70.6	82.9	59.0	63.5	65.8	58.7	57.1	73.3	65.7	71.6	69.6
Site Height (ft)	79.5	85.4	80.9	82.8	91.4	62.6	75.1	87.1	65.5	73.3	92.4	87.3	89.3	88.4
Mean Diameter (in)	8.4	7.8	7.6	7.9	8.5	7.0	7.8	8.9	8.3	7.9	8.9	9.7	9.7	9.8
Average crown ratio (%)	64	62	64	61	58	65	66	63	69	62	63	65	58	59
Average crown length (ft)	34.5	35.2	31.7	34.8	37.9	28.9	31.4	41.0	33.2	31.2	43.1	41.9	37.0	41.8
Species composition (% of BA)														
Douglas-fir	36.4	36.7	24.2	9.5	1.1	17.5	15.8	7.2	0.3	8.2	15.6	13.0	30.8	41.0
Grand fir	34.9	43.4	56.2	62.5	87.1	56.2	61.5	74.0	66.1	63.6	71.4	62.6	48.5	54.3
Western redcedar	20.6	6.4	13.1	23.3	10.3	22.3	19.7	8.4	32.1	25.0	7.4	23.2	20.0	3.5
Western larch	6.8	12.8	6.1	4.6	0.8	3.4	3.0	9.3	1.5	0.0	3.9	1.2	0.5	1.0
Lodgepole pine	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
Western white pine	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.7	0.0	0.0	1.7	0.0	0.0	0.0
Ponderosa pine	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Engelmann spruce	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.1	3.1	0.0	0.0	0.0	0.0



PLOT SUMMARY REPORT: HALF ACRE PLOTS INCLUDING GROWTH PLOTS

Installation 340 Chewuch River

Region: C Washington

Legal Description: T36N R21E Sect. 1

Ownership: Forest Service

Meridian: Willamette

Treatment Regime: 7-plot N Rate

4-plot Bark Beetle Site

Year established: 1994

Elevation: 2360

Aspect: W-NW

Slope: 7%

Vegetation Series: PSME (Douglas-fir)

Habitat Type: ARUV (kinnikinnik)

Phase: none

Parent Material: Mixed (Glacial Till)

Soil depth (in.): 26

Ash depth (in.):

Plot Number	1	2	3	4	5	6	7	1BB	2BB	3BB	4BB	.	.	.
Treatment	32	60	30	10	20	02	00	30	00	02	32	.	.	.
Slope (%)	7	4	5	7	7	9	10	10	12	16	6	.	.	.
Aspect (degrees)	248	106	324	296	46	244	256	324	352	344	359	.	.	.

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1994)

Live Trees per Acre > 2"dbh	168	166	174	196	184	170	174	170	136	130	174	.	.	.
Live Basal Area (sq.ft/a)	116.2	75.9	83.6	120.1	126.2	100.3	76.0	94.3	72.3	64.8	83.4	.	.	.
Live Total Volume (cu.ft/a)	3379	1524	1798	3169	3779	2639	1475	2363	1695	1465	1875	.	.	.
Crown Competition Factor	101	68	73	102	107	93	71	79	64	59	72	.	.	.
Relative Density Index	34.6	25.1	27.3	36.9	37.7	31.1	25.4	29.7	23.0	21.0	27.2	.	.	.
Site Height (ft)	75.9	56.0	61.6	74.1	79.9	74.9	55.8	67.1	62.8	60.6	60.9	.	.	.
Mean Diameter (in)	11.3	9.2	9.4	10.6	11.2	10.4	8.9	10.1	9.9	9.6	9.4	.	.	.
Average crown ratio (%)	59	65	68	69	65	68	64	59	66	74	74	.	.	.
Average crown length (ft)	36.7	29.8	28.3	39.2	44.3	39.0	27.4	31.3	33.4	38.0	36.6	.	.	.
Species composition (% of BA)												.	.	.
Douglas-fir	21.4	10.4	15.7	11.0	9.9	39.2	23.7	0.0	14.6	16.8	0.0	.	.	.
Lodgepole pine	0.0	2.8	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0	.	.	.
Western white pine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.	.	.
Ponderosa pine	78.6	86.7	84.3	89.0	90.1	58.1	76.3	100.0	85.4	83.2	100.0	.	.	.
Engelmann spruce	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	.	.	.

PLOT SUMMARY REPORT: HALF ACRE PLOTS INCLUDING GROWTH PLOTS

Installation 339 First Creek

Region: C Washington

Legal Description: T20N R17E Sect.22

Ownership: Boise Cascade

Meridian: Willamette

Treatment Regime: 14-plot N Rate Repeated App.

Year established: 1994

Elevation: 2500

Aspect: NW

Slope: 25%

Vegetation Series: PSME (Douglas-fir)

Habitat Type: SYAL (snowberry)

Phase: none

Parent Material: Basaltic

Soil depth (in.): 22

Ash depth (in):

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	10	32	20	60	10	02	20	60	30	20	00	10	30	30
Slope (%)	25	18	18	18	14	35	36	28	30	32	27	15	.	25
Aspect (degrees)	.	.	.	.	.	.	.	.	.	.	.	.	.	.

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1994)

Live Trees per Acre > 2"dbh	82	110	92	134	62	120	102	94	96	120	116	112	118	92
Live Basal Area (sq.ft/a)	83.2	93.2	83.0	137.0	74.4	95.5	88.6	98.8	100.1	79.2	86.4	84.6	97.6	76.3
Live Total Volume (cu.ft/a)	2338	2485	2140	4544	2296	2561	2379	2909	3004	1871	2344	2284	2755	1928
Crown Competition Factor	82	93	83	134	67	100	94	98	100	91	92	93	101	77
Relative Density Index	22.5	26.4	23.1	37.0	19.3	27.5	24.9	26.5	26.9	23.9	25.3	24.7	27.8	21.7
Site Height (ft)	77.7	78.3	72.8	101.7	84.0	75.7	78.0	83.9	83.0	67.1	75.7	76.6	80.4	70.8
Mean Diameter (in)	13.6	12.5	12.9	13.7	14.8	12.1	12.6	13.9	13.8	11.0	11.7	11.8	12.3	12.3
Average crown ratio (%)	64	70	71	73	76	65	64	78	63	70	71	67	70	70
Average crown length (ft)	46.6	47.2	46.8	61.2	60.3	43.4	44.6	59.9	50.3	43.2	48.1	47.1	49.2	42.8
Species composition (% of BA)														
Douglas-fir	95.5	80.9	82.4	99.1	80.2	91.6	100.0	94.7	91.6	97.5	90.5	100.0	87.5	84.4
Ponderosa pine	4.5	19.1	17.6	0.9	19.8	8.4	0.0	5.3	8.4	2.5	9.5	0.0	12.5	15.6

PLOT SUMMARY REPORT: HALF ACRE PLOTS INCLUDING GROWTH PLOTS

Installation 338 Snowden #2

Region: C Washington

Legal Description: T4N R11E Sect.24

Ownership: Longview Fiber

Meridian: Willamette

Treatment Regime: 14-plot NxK Response Surface

Year established: 1994

Elevation: 2200

Aspect: N

Slope: 8%

Vegetation Series: ABGR (Grand fir)

Habitat Type: ACCI (vinemaple)

Phase: BEAQ (tall oregon grape)

Parent Material: Basaltic

Soil depth (in.): 125

Ash depth (in): 10

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	62	53	32	32	32	55	32	30	34	83	00	02	85	32
Slope (%)	10	5	2	7	9	17	4	6	8	5	5	12	8	9
Aspect (degrees)	20	15	355	279	282	308	258	260	79	35	289	196	196	183

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1994)

Live Trees per Acre > 2"dbh	136	116	124	200	128	312	338	254	216	326	244	146	170	160
Live Basal Area (sq.ft/a)	121.2	93.8	93.0	108.6	118.7	132.0	188.9	144.8	136.4	202.4	139.7	126.2	156.6	106.6
Live Total Volume (cu.ft/a)	4144	3237	2708	2550	3634	3570	5547	4024	4179	6547	3817	3693	5214	3011
Crown Competition Factor	129	99	98	119	118	162	213	167	156	218	157	134	156	112
Relative Density Index	33.9	26.9	27.2	34.4	32.9	44.5	59.4	45.3	41.6	62.0	43.6	35.6	43.4	32.1
Site Height (ft)	96.3	94.0	81.7	67.1	94.1	80.0	88.8	79.9	88.0	93.5	79.3	79.0	84.7	76.0
Mean Diameter (in)	12.8	12.2	11.7	10.0	13.0	8.8	10.1	10.2	10.8	10.7	10.2	12.6	13.0	11.1
Average crown ratio (%)	75	75	79	77	67	65	61	67	68	62	65	69	63	68
Average crown length (ft)	54.2	49.2	45.0	37.9	46.1	35.2	39.3	41.0	42.9	43.4	35.7	43.5	45.9	38.1
Species composition (% of BA)														
Douglas-fir	55.6	48.4	69.2	69.4	92.3	62.5	91.5	61.4	56.0	66.4	34.2	34.4	31.5	38.4
Grand fir	44.4	48.1	29.9	16.5	7.7	35.3	8.5	28.4	37.3	29.5	46.8	48.9	35.8	35.5
Ponderosa pine	0.0	3.5	0.9	14.0	0.0	2.2	0.0	10.2	6.6	1.6	17.7	16.8	32.7	26.1

PLOT SUMMARY REPORT: HALF ACRE PLOTS INCLUDING GROWTH PLOTS

Installation 337 Enterprise

Region: NE Oregon

Legal Description: T2N R44E Sect.14

Ownership: Boise Cascade

Meridian: Willamette

Treatment Regime: 7-plot N Rate

Year established: 1994

Elevation: 4700

Aspect: W-SW

Slope: 17%

Vegetation Series: PSME (Douglas-fir)

Habitat Type: CARU (pinegrass)

Phase: none

Parent Material: Basaltic

Soil depth (in.): 30

Ash depth (in): T

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	10	20	00	30	32	60	02							
Slope (%)	27	17	20	14	15	15	12	.	.	.	.	.	.	.
Aspect (degrees)	200	192	255	286	242	234	250	.	.	.	.	.	.	.

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1994)

Live Trees per Acre > 2"dbh	204	258	228	144	144	222	284	.	.	.	.	.	.	.
Live Basal Area (sq.ft/a)	136.4	151.3	107.2	95.8	75.7	96.3	109.4	.	.	.	.	.	.	.
Live Total Volume (cu.ft/a)	3711	4012	2284	2429	1582	2051	2595	.	.	.	.	.	.	.
Crown Competition Factor	145	163	120	99	83	103	125	.	.	.	.	.	.	.
Relative Density Index	41.0	47.0	35.2	28.8	24.2	32.2	37.7	.	.	.	.	.	.	.
Site Height (ft)	78.9	75.0	60.7	69.4	57.7	64.2	73.7	.	.	.	.	.	.	.
Mean Diameter (in)	11.1	10.4	9.3	11.0	9.8	8.9	8.4	.	.	.	.	.	.	.
Average crown ratio (%)	66	70	66	67	62	64	67	.	.	.	.	.	.	.
Average crown length (ft)	43.9	43.1	32.0	37.2	29.3	27.8	31.1	.	.	.	.	.	.	.
Species composition (% of BA)														
Douglas-fir	89.3	74.7	79.4	71.5	84.8	71.9	90.4	.	.	.	.	.	.	.
Grand fir	0.0	0.7	0.0	0.0	0.0	0.0	1.2	.	.	.	.	.	.	.
Western larch	0.0	1.1	0.6	0.0	0.0	0.0	0.0	.	.	.	.	.	.	.
Lodgepole pine	0.0	1.1	1.1	0.0	0.0	4.2	5.8	.	.	.	.	.	.	.
Ponderosa pine	10.3	22.5	18.9	28.5	15.2	23.9	2.6	.	.	.	.	.	.	.

PLOT SUMMARY REPORT: HALF ACRE PLOTS INCLUDING GROWTH PLOTS

Installation 336 Spirit Lake

Region: N Idaho

Legal Description: T53N R4W Sect.15

Ownership: Inland Empire

Meridian: Willamette

Treatment Regime: 7-plot N Rate

Year established: 1994

Elevation: 2600

Aspect: SE

Slope: 5%

Vegetation Series: THPL (Western redcedar)

Habitat Type: PAMY (pachistima)

Phase: none

Parent Material: Mixed (Glacial Till)

Soil depth (in.): 13

Ash depth (in.): 1

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	60	02	20	30	32	10	00							
Slope (%)	4	5	5	3	6	4	6	.	.	.	.	.	.	.
Aspect (degrees)	203	109	89	189	201	122	231	.	.	.	.	.	.	.

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1994)

Live Trees per Acre > 2"dbh	170	226	392	216	196	148	176	.	.	.	.	.	.	.
Live Basal Area (sq.ft/a)	68.5	120.2	119.4	95.2	117.1	73.1	85.9	.	.	.	.	.	.	.
Live Total Volume (cu.ft/a)	1744	3282	3046	2514	3380	2037	2417	.	.	.	.	.	.	.
Crown Competition Factor	77	128	140	102	125	74	92	.	.	.	.	.	.	.
Relative Density Index	23.4	38.2	43.7	31.7	36.2	23.7	27.9	.	.	.	.	.	.	.
Site Height (ft)	75.8	80.2	77.3	82.0	84.3	86.1	84.1	.	.	.	.	.	.	.
Mean Diameter (in)	8.6	9.9	7.5	9.0	10.5	9.5	9.5	.	.	.	.	.	.	.
Average crown ratio (%)	70	62	69	72	73	76	66	.	.	.	.	.	.	.
Average crown length (ft)	33.1	37.3	33.3	39.3	50.5	40.1	40.4	.	.	.	.	.	.	.
Species composition (% of BA)														
Douglas-fir	71.5	61.5	55.7	63.9	75.9	69.9	69.6	.	.	.	.	.	.	.
Grand fir	12.1	8.8	13.3	2.6	1.0	0.0	1.7	.	.	.	.	.	.	.
Western redcedar	0.0	0.0	0.4	0.3	0.0	5.6	0.5	.	.	.	.	.	.	.
Western larch	12.5	24.6	27.7	29.1	23.1	21.3	22.0	.	.	.	.	.	.	.
Lodgepole pine	3.9	0.7	0.0	0.0	0.0	3.2	2.0	.	.	.	.	.	.	.
Ponderosa pine	0.0	4.4	2.9	4.1	0.0	0.0	4.2	.	.	.	.	.	.	.
Engelmann spruce	0.0	0.0	0.1	0.0	0.0	0.0	0.0	.	.	.	.	.	.	.

PLOT SUMMARY REPORT: HALF ACRE PLOTS INCLUDING GROWTH PLOTS

Installation 335 Cemetery

Region: N Idaho

Legal Description: T41N R1W Sect.36

Ownership: IDL

Meridian: Boise

Treatment Regime: 14-plot NxK Response Surface

Year established: 1994

Elevation: 3000

Aspect: NE

Slope: 11%

Vegetation Series: THPL (Western redcedar)

Habitat Type: CLUN (queencup beadlily)

Phase: CLUN (queencup beadlily)

Parent Material: Granitic

Soil depth (in.): 68

Ash depth (in): 11

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	53	62	55	32	00	30	85	32	34	32	32	32	83	02
Slope (%)	14	7	7	13	14	14	16	13	6	4	4	24	10	5
Aspect (degrees)	84	283	308	174	296	48	60	145	60	227	240	26	165	165

MENSURATIONAL CHARACTERISTICS:

At Time of Treatment (1994)

Live Trees per Acre > 2"dbh	154	144	136	100	144	100	130	130	160	190	200	216	200	146
Live Basal Area (sq.ft/a)	123.1	105.2	105.2	75.7	104.6	96.3	98.9	132.8	112.6	123.4	121.0	134.9	112.0	128.0
Live Total Volume (cu.ft/a)	4589	3847	3969	2759	3667	3673	4257	5774	4259	4607	4258	4983	3838	4718
Crown Competition Factor	139	114	117	78	111	106	111	143	123	146	140	155	132	142
Relative Density Index	35.4	30.9	30.5	22.1	30.8	26.4	28.8	35.9	33.4	37.4	37.3	41.2	35.2	36.0
Site Height (ft)	98.3	97.5	99.2	99.7	94.6	93.0	112.6	112.3	100.7	96.2	93.2	100.2	94.7	90.1
Mean Diameter (in)	12.1	11.6	11.9	11.8	11.5	13.3	11.8	13.7	11.4	10.9	10.5	10.7	10.1	12.7
Average crown ratio (%)	73	76	76	74	79	74	69	75	71	74	72	74	72	77
Average crown length (ft)	52.6	52.2	56.0	47.4	48.7	55.8	57.5	68.3	50.1	55.9	49.3	53.1	48.2	59.2
Species composition (% of BA)														
Douglas-fir	15.3	15.3	19.6	14.6	35.5	8.8	14.6	21.5	15.8	10.0	16.6	28.1	30.1	8.1
Grand fir	82.9	68.0	75.8	55.7	61.9	90.3	81.4	76.7	72.6	86.3	77.5	67.8	65.7	83.6
Western redcedar	0.0	0.0	0.7	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Western larch	1.9	9.7	3.8	28.6	0.0	0.0	1.7	1.8	6.7	1.5	5.9	3.9	3.9	3.5
Lodgepole pine	0.0	0.0	0.0	0.5	0.0	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0	4.8
Western white pine	0.0	7.0	0.1	0.6	2.6	0.9	0.0	0.0	4.8	2.2	0.0	0.0	0.3	0.0

**APPENDIX B: PLOT SUMMARY SHEETS**

**(3) Regeneration and Vegetative Cover**

























PLOT SUMMARY REPORT: REGENERATION AND VEGETATIVE COVER  
At Time of Establishment (1994)

Installation 345 Idaho City  
Region: C Idaho

Ownership: IDL

Treatment Regime: 14-plot NxK Response Surface  
4-plot Bark Beetle Site

Legal Description: T6N R5E Sect.16

Meridian: Boise

Year established: 1994

Elevation: 4900  
Aspect: E-SE  
Slope: 13%

Vegetation Series: PSME (Douglas-fir)  
Habitat Type: CAGE (elk sedge)  
Phase: none

Parent Material: Granitic  
Soil depth (in.): 0  
Ash depth (in):

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	32	32	32	02	53	62	85	00	55	32	83	30	32	34
Slope (%)	12	14	5	14	15	10	20	25	7	5	10	15	10	20
Aspect (degrees)	230	199	217	210	359	295	2	292	233	331	260	188	245	234

REGENERATION: TENTH-ACRE PLOTS

Live Trees per Acre < 2" DBH

Douglas-fir	0	10	0	0	0	0	0	10	0	0	0	0	0	0
Ponderosa pine	0	0	0	0	0	0	0	0	0	0	10	0	0	0
Total Live Trees per Acre	0	10	0	0	0	0	0	10	0	0	10	0	0	0

REGENERATION: HALF-ACRE PLOTS INCLUDING GROWTH PLOTS

Live Trees per Acre < 2" DBH

Douglas-fir	0	10	0	0	0	0	0	10	0	0	0	0	31	0
Ponderosa pine	0	0	0	0	0	0	0	0	0	0	10	0	0	0
Total Live Trees per Acre	0	10	0	0	0	0	0	10	0	0	10	0	31	0

COVER PERCENTAGES: % Canopy Cover

Shrubs > 3 ft	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Shrubs < 3 ft	0-5	0-5	0-5	0-5	0-5	0-5	25-50	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Grasses	0-5	5-25	5-25	5-25	5-25	5-25	5-25	5-25	25-50	5-10	25-50	0-5	5-25	5-25
Forbs	0-5	0-5	0-5	0-5	0-5	0-5	25-50	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Bare Ground	>95	75-95	75-95	75-95	75-95	75-95	75-95	75-95	75-95	50-75	75-95	50-75	50-75	75-95



**PLOT SUMMARY REPORT: REGENERATION AND VEGETATIVE COVER**  
At Time of Establishment (1994)

Installation 346 Springdale

Region: NE Washington

Legal Description: T29N R38E Sect. 2

Ownership: Washington DNR

Meridian: Willamette

Treatment Regime: 14-plot NxK Response Surface

Year established: 1994

Elevation: 2600

Aspect: S-SE

Slope: 21%

Vegetation Series: ABGR (Grand fir)

Habitat Type: MISSING

Phase: none

Parent Material: Metamorphic/Metasedimentary

Soil depth (in.): 8

Ash depth (in): 8

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	00	32	85	32	53	55	62	83	32	32	34	02	32	30
Slope (%)	35	10	27	20	16	17	15	20	14	24	25	25	27	12
Aspect (degrees)	110	80	120	130	160	180	60	114	196	90	232	122	232	174

**REGENERATION: TENTH-ACRE PLOTS**

Live Trees per Acre < 2" DBH

Douglas-fir	20	0	20	10	0	10	80	50	20	10	60	20	10	0
Grand fir	0	0	0	0	0	0	0	10	0	0	0	20	0	10
Ponderosa pine	0	0	0	0	0	10	50	0	10	0	10	0	0	0
Total Live Trees per Acre	20	0	20	10	0	20	130	60	30	10	70	40	10	10

**REGENERATION: HALF-ACRE PLOTS INCLUDING GROWTH PLOTS**

Live Trees per Acre < 2" DBH

Douglas-fir	20	0	20	10	31	10	174	50	83	10	60	20	10	31
Grand fir	0	0	0	0	0	0	0	10	0	0	0	20	0	10
Ponderosa pine	0	31	0	0	31	10	144	0	135	94	10	0	0	0
Total Live Trees per Acre	20	31	20	10	63	20	318	60	218	104	70	40	10	41

**COVER PERCENTAGES: % Canopy Cover**

Shrubs > 3 ft	0-5	5-25	0-5	0-5	0-5	0-5	0-5	25-50	25-50	5-25	25-50	5-25	5-25	5-25
Shrubs < 3 ft	5-25	5-25	5-25	5-25	5-25	5-25	5-25	0-5	0-5	0-5	5-25	5-25	5-25	5-25
Grasses	5-25	0-5	5-25	25-50	25-50	25-50	50-75	0-5	50-75	25-50	25-50	5-25	5-25	50-75
Forbs	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Bare Ground	25-50	25-50	5-25	25-50	25-50	25-50	50-75	50-75	5-25	5-25	5-25	5-25	25-50	50-75

**PLOT SUMMARY REPORT: REGENERATION AND VEGETATIVE COVER**  
At Time of Establishment (1995)

Installation 347 Vay

Region: N Idaho

Legal Description: T55N R4W Sect.22

Ownership: IDL

Meridian: Boise

Treatment Regime: 7-plot N Rate

Year established: 1995

Elevation: 750

Aspect: FLAT

Slope: 1%

Vegetation Series: PSME (Douglas-fir)

Habitat Type: SYAL (snowberry)

Phase: none

Parent Material: Mixed (Glacial Till)

Soil depth (in.): 42

Ash depth (in): T

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	32	60	20	30	02	00	10							
Slope (%)	1	1	1	1	1	1	1	.	.	.	.	.	.	.
Aspect (degrees)	1	1	1	1	1	1	1	.	.	.	.	.	.	.

REGENERATION: TENTH-ACRE PLOTS

LIVE TREES PER ACRE < 2" DBH

Douglas-fir	0	0	0	10	0	0	0	.	.	.	.	.	.	.
Lodgepole pine	120	70	70	130	40	190	190	.	.	.	.	.	.	.
Ponderosa pine	40	0	10	0	10	10	40	.	.	.	.	.	.	.
Total Live Trees per Acre	160	70	80	140	50	200	230	.	.	.	.	.	.	.

REGENERATION: HALF-ACRE PLOTS INCLUDING GROWTH PLOTS

LIVE TREES PER ACRE < 2" DBH

Douglas-fir	0	0	0	10	0	0	0	.	.	.	.	.	.	.
Lodgepole pine	433	195	70	255	103	190	409	.	.	.	.	.	.	.
Ponderosa pine	71	31	41	0	10	135	71	.	.	.	.	.	.	.
Total Live Trees per Acre	504	226	111	265	113	325	480	.	.	.	.	.	.	.

COVER PERCENTAGES: % Canopy Cover

Shrubs > 3 ft	0-5	0-5	0-5	0-5	0-5	0-5	0-5	.	.	.	.	.	.	.
Shrubs < 3 ft	50-75	50-75	50-75	50-75	50-75	50-75	50-75	.	.	.	.	.	.	.
Grasses	5-25	5-25	5-25	5-25	5-25	5-25	5-25	.	.	.	.	.	.	.
Forbs	25-50	5-25	5-25	25-50	25-50	5-25	25-50	.	.	.	.	.	.	.
Bare Ground	0-5	5-25	5-25	0-5	5-25	5-25	5-25	.	.	.	.	.	.	.

PLOT SUMMARY REPORT: REGENERATION AND VEGETATIVE COVER  
At Time of Establishment (1995)

Installation 348 Whiskey Butte

Region: N Idaho

Legal Description: T38N R4E Sect.34

Ownership: Potlatch

Meridian: Boise

Treatment Regime: 14-plot NxK Response Surface

Year established: 1995

Elevation: 3100

Aspect: S-SW

Slope: 16%

Vegetation Series: THPL (Western redcedar)

Habitat Type: CLUN (queencup beadlily)

Phase: none

Parent Material: Metasedimentary/Metamorphic

Soil depth (in.): 33

Ash depth (in): 9

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	02	62	83	30	32	32	55	32	34	32	85	32S	00	53
Slope (%)	17	16	23	18	21	12	12	14	8	16	22	16	18	14
Aspect (degrees)	196	217	237	266	294	224	239	228	166	163	175	248	304	175

REGENERATION: TENTH-ACRE PLOTS

Live Trees per Acre < 2" DBH

Douglas-fir	40	0	60	40	40	60	40	10	10	10	30	30	0	0
Grand fir	90	20	20	40	50	70	10	50	130	190	20	160	10	40
Western redcedar	0	20	40	10	0	0	0	20	0	0	0	10	10	0
Western white pine	10	20	90	0	40	20	70	20	40	20	10	10	0	10
Total Live Trees per Acre	140	60	210	90	130	150	120	100	180	220	60	210	20	50

REGENERATION: HALF-ACRE PLOTS INCLUDING GROWTH PLOTS

Live Trees per Acre < 2" DBH

Douglas-fir	103	0	60	40	71	60	40	41	10	10	61	30	0	0
Grand fir	90	20	83	103	81	70	41	50	255	253	145	254	10	71
Subalpine fir	0	0	0	0	31	0	0	0	0	0	0	0	0	0
Western redcedar	0	20	40	10	0	0	0	51	0	31	63	41	104	0
Western white pine	104	20	90	94	40	20	101	20	40	20	10	10	0	10
Total Live Trees per Acre	296	60	273	246	224	150	183	163	305	314	279	335	114	81

COVER PERCENTAGES: % Canopy Cover

Shrubs > 3 ft	5-25	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Shrubs < 3 ft	25-50	5-25	5-25	5-25	5-25	5-25	5-25	5-25	5-25	5-25	5-25	5-25	5-25	5-25
Grasses	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	5-25	0-5	0-5	0-5	0-5
Forbs	5-25	25-50	25-50	5-25	5-25	25-50	5-25	5-25	25-50	5-25	5-25	25-50	25-50	25-50
Bare Ground	25-50	5-25	5-25	25-50	25-50	5-25	5-25	25-50	25-50	5-25	25-50	5-25	25-50	5-25



PLOT SUMMARY REPORT: REGENERATION AND VEGETATIVE COVER  
At Time of Establishment (1995)

Installation 350 Cleman Mtn. #2  
Region: C Washington  
Legal Description: T16N R15E Sect.15

Ownership: Forest Service      Treatment Regime: 14-plot N Rate Repeated App.  
Meridian: Willamette              Year established: 1995

Elevation: 3400      Vegetation Series: PSME (Douglas-fir)      Parent Material: Basaltic  
Aspect: S            Habitat Type: CAGE (elk sedge)              Soil depth (in.): 29  
Slope: 18%          Phase: none                                      Ash depth (in): T

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	30	30	10	00	10	20	20	02	60	10	32	32S	30	20
Slope (%)	18	15	25	25	17	17	15	15	17	15	15	16	16	20
Aspect (degrees)	265	260	28	255	240	293	282	270	280	25	220	263	285	290

REGENERATION: TENTH-ACRE PLOTS

Live Trees per Acre < 2" DBH	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Douglas-fir	0	90	50	60	30	50	10	0	140	90	0	10	30	0
Ponderosa pine	0	0	0	0	0	0	0	0	70	10	0	0	0	0
Total Live Trees per Acre	0	90	50	60	30	50	10	0	210	100	0	10	30	0

REGENERATION: HALF-ACRE PLOTS INCLUDING GROWTH PLOTS

Live Trees per Acre < 2" DBH	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Douglas-fir	31	121	81	60	30	81	41	31	203	90	0	10	30	0
Ponderosa pine	0	0	0	0	94	31	0	0	226	41	0	0	0	0
Total Live Trees per Acre	31	121	81	60	124	113	41	31	429	131	0	10	30	0

COVER PERCENTAGES: % Canopy Cover

Shrubs > 3 ft	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Shrubs < 3 ft	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Grasses	25-50	25-50	5-25	5-25	25-50	25-50	25-50	25-50	25-50	25-50	50-75	25-50	50-75	50-75	
Forbs	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	
Bare Ground	25-50	25-50	50-75	50-75	25-50	25-50	5-25	25-50	25-50	25-50	25-50	25-50	5-25	5-25	



PLOT SUMMARY REPORT: REGENERATION AND VEGETATIVE COVER  
At Time of Establishment (1995)

Installation 351 Little Donner  
Region: C Idaho  
Legal Description: T14N R3E Sect.13

Ownership: IDL  
Meridian: Boise

Treatment Regime: 14-plot NxK Response Surface  
Year established: 1995

Elevation: 5000  
Aspect: W-NW  
Slope: 24%

Vegetation Series: PSME (Douglas-fir)  
Habitat Type: CAGE (elk sedge)  
Phase: PIPO (ponderosa pine)

Parent Material: Granitic  
Soil depth (in.): 23  
Ash depth (in): 3

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	32	32	55	32	34	85	02	62	00	30	83	32S	32	53
Slope (%)	26	25	20	19	28	23	38	22	43	31	20	10	8	28
Aspect (degrees)	333	335	324	252	236	285	325	257	278	309	274	139	210	340

REGENERATION: TENTH-ACRE PLOTS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Live Trees per Acre < 2" DBH														
Total Live Trees per Acre	0	0	0	0	0	0	0	0	0	0	0	0	0	0

REGENERATION: HALF-ACRE PLOTS INCLUDING GROWTH PLOTS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Live Trees per Acre < 2" DBH														
Douglas-fir	0	31	0	0	0	0	0	31	0	0	0	0	0	0
Total Live Trees per Acre	0	31	0	0	0	0	0	31	0	0	0	0	0	0

COVER PERCENTAGES: % Canopy Cover

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Shrubs > 3 ft	.	.	.	.	0-5	0-5	0-5	0-5	.	0-5	0-5	0-5	0-5	0-5
Shrubs < 3 ft	.	.	.	.	0-5	0-5	0-5	0-5	.	0-5	5-25	0-5	0-5	50-75
Grasses	.	.	.	.	50-75	5-25	25-50	5-25	.	25-50	5-25	25-50	25-50	5-25
Forbs	.	.	.	.	0-5	5-25	5-25	0-5	.	0-5	0-5	0-5	0-5	5-25
Bare Ground	.	.	.	.	5-25	25-50	25-50	25-50	.	25-50	25-50	25-50	25-50	5-25

PLOT SUMMARY REPORT: REGENERATION AND VEGETATIVE COVER  
At Time of Establishment (1995)

Installation 352 Summit Creek #2  
Region: C Washington  
Legal Description: T33N R24E Sect.11

Ownership: Washington DNR  
Meridian: Willamette

Treatment Regime: 14-plot NxK Response Surface  
Year established: 1995

Elevation: 2800  
Aspect: N  
Slope: 21%

Vegetation Series: PSME (Douglas-fir)  
Habitat Type: MISSING  
Phase: none

Parent Material: Granitic  
Soil depth (in.): 20  
Ash depth (in): 17

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	53	32	85	00	83	62	32	02	32	30	32S	32	34	55
Slope (%)	18	23	23	22	32	9	37	38	31	14	22	18	18	17
Aspect (degrees)	327	356	359	34	344	350	355	327	360	322	320	302	349	329

REGENERATION: TENTH-ACRE PLOTS

Live Trees per Acre < 2" DBH

Douglas-fir	0	10	30	0	0	60	0	20	0	40	10	0	0	10
Western larch	0	0	0	0	0	0	0	10	0	10	0	0	0	0
Lodgepole pine	0	0	0	0	10	0	0	0	0	0	0	0	0	0
Ponderosa pine	0	0	0	10	0	0	0	0	0	0	0	0	0	0
Total Live Trees per Acre	0	10	30	10	10	60	0	30	0	50	10	0	0	10

REGENERATION: HALF-ACRE PLOTS INCLUDING GROWTH PLOTS

Live Trees per Acre < 2" DBH

Douglas-fir	0	10	61	0	188	91	0	51	0	134	10	0	0	10
Western larch	0	63	0	0	31	0	0	41	0	10	0	0	0	0
Lodgepole pine	0	0	0	0	10	0	0	0	0	0	0	0	0	0
Ponderosa pine	0	31	0	10	0	31	0	31	0	281	0	0	0	0
Total Live Trees per Acre	0	104	61	10	229	123	0	124	0	425	10	0	0	10

COVER PERCENTAGES: % Canopy Cover

Shrubs > 3 ft	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Shrubs < 3 ft	5-25	5-25	5-25	0-5	5-25	5-25	0-5	0-5	0-5	5-25	5-25	5-25	0-5	5-25
Grasses	5-25	0-5	0-5	0-5	5-25	0-5	25-50	0-5	5-25	0-5	0-5	0-5	0-5	0-5
Forbs	0-5	5-25	0-5	0-5	0-5	0-5	0-5	0-5	5-25	0-5	0-5	5-25	0-5	0-5
Bare Ground	25-50	5-25	25-50	50-75	5-25	25-50	5-25	50-75	5-25	25-50	25-50	5-25	25-50	25-50

**PLOT SUMMARY REPORT: REGENERATION AND VEGETATIVE COVER**  
At Time of Establishment (1995)

Installation 353 Peony Creek

Region: C Washington

Legal Description: T36N R29E Sect.28

Ownership: Forest Service

Meridian: Willamette

Treatment Regime: 7-plot N Rate

Year established: 1995

Elevation: 3100

Aspect: NE

Slope: 7%

Vegetation Series: PSME (Douglas-fir)

Habitat Type: MISSING

Phase: none

Parent Material: Mixed (Glacial Till)

Soil depth (in.): 22

Ash depth (in): T

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	60	32	02	10	30	20	00							
Slope (%)	7	5	7	10	3	16	4	.	.	.	.	.	.	.
Aspect (degrees)	71	48	11	29	29	84	59	.	.	.	.	.	.	.

REGENERATION: TENTH-ACRE PLOTS

LIVE TREES PER ACRE < 2" DBH

Douglas-fir	10	0	10	0	0	0	0	.	.	.	.	.	.	.
Western larch	0	0	10	0	0	0	0	.	.	.	.	.	.	.
Total Live Trees per Acre	10	0	20	0	0	0	0	.	.	.	.	.	.	.

REGENERATION: HALF-ACRE PLOTS INCLUDING GROWTH PLOTS

LIVE TREES PER ACRE < 2" DBH

Douglas-fir	10	0	10	0	0	0	0	.	.	.	.	.	.	.
Western larch	0	0	10	0	0	0	0	.	.	.	.	.	.	.
Total Live Trees per Acre	10	0	20	0	0	0	0	.	.	.	.	.	.	.

COVER PERCENTAGES: % Canopy Cover

Shrubs > 3 ft	0-5	0-5	0-5	0-5	0-5	0-5	0-5	.	.	.	.	.	.	.
Shrubs < 3 ft	5-25	25-50	5-25	5-25	0-5	0-5	5-25	.	.	.	.	.	.	.
Grasses	50-75	50-75	50-75	50-75	50-75	50-75	50-75	.	.	.	.	.	.	.
Forbs	5-25	25-50	5-25	25-50	0-5	0-5	0-5	.	.	.	.	.	.	.
Bare Ground	0-5	5-25	0-5	0-5	25-50	25-50	5-25	.	.	.	.	.	.	.





PLOT SUMMARY REPORT: REGENERATION AND VEGETATIVE COVER  
At Time of Establishment (1995)

Installation 356 Sportsman Access  
Region: N Idaho  
Legal Description: T45N R1W Sect.19

Ownership: Potlatch  
Meridian: Boise

Treatment Regime: 7-plot N Rate  
Year established: 1995

Elevation: 3100  
Aspect: N-NW  
Slope: 5%

Vegetation Series: TSHE (Western hemlock)  
Habitat Type: CLUN (queencup beadlily)  
Phase: CLUN (queencup beadlily)

Parent Material: Basaltic  
Soil depth (in.): 72  
Ash depth (in): 2

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	60	30	00	10	32	20	02							
Slope (%)	2	4	6	6	11	1	10	.	.	.	.	.	.	.
Aspect (degrees)	106	336	310	296	295	330	290	.	.	.	.	.	.	.

REGENERATION: TENTH-ACRE PLOTS

LIVE TREES PER ACRE < 2" DBH

Western redcedar	0	110	30	0	20	20	20	.	.	.	.	.	.	.
Western hemlock	0	0	20	20	10	10	30	.	.	.	.	.	.	.
Lodgepole pine	0	10	0	0	0	0	0	.	.	.	.	.	.	.
Total Live Trees per Acre	0	120	50	20	30	30	50	.	.	.	.	.	.	.

REGENERATION: HALF-ACRE PLOTS INCLUDING GROWTH PLOTS

LIVE TREES PER ACRE < 2" DBH

Grand fir	0	0	31	0	0	0	31	.	.	.	.	.	.	.
Western redcedar	0	204	30	31	20	20	20	.	.	.	.	.	.	.
Western hemlock	0	0	20	20	10	10	93	.	.	.	.	.	.	.
Lodgepole pine	0	10	0	0	0	0	0	.	.	.	.	.	.	.
Total Live Trees per Acre	0	214	81	51	30	30	144	.	.	.	.	.	.	.

COVER PERCENTAGES: % Canopy Cover

Shrubs > 3 ft	0-5	0-5	0-5	0-5	0-5	0-5	0-5	.	.	.	.	.	.	.
Shrubs < 3 ft	0-5	0-5	0-5	0-5	0-5	0-5	0-5	.	.	.	.	.	.	.
Grasses	0-5	0-5	0-5	0-5	0-5	0-5	0-5	.	.	.	.	.	.	.
Forbs	25-50	25-50	5-25	5-25	5-25	5-25	0-5	.	.	.	.	.	.	.
Bare Ground	50-75	50-75	75-95	75-95	75-95	75-95	75-95	.	.	.	.	.	.	.

PLOT SUMMARY REPORT: REGENERATION AND VEGETATIVE COVER  
At Time of Establishment (1995)

Installation 357 Soldier Creek

Region: N Idaho

Legal Description: T45N R1W Sect.34

Ownership: IDL

Meridian: Boise

Treatment Regime: 14-plot N Rate Repeated App.

Year established: 1995

Elevation: 3200

Aspect: S-SW

Slope: 11%

Vegetation Series: TSHE (Western hemlock)

Habitat Type: CLUN (queencup beadlily)

Phase: none

Parent Material: Basaltic

Soil depth (in.): 0

Ash depth (in):

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	32	32S	10	10	20	02	00	10	20	30	30	60	20	30
Slope (%)	13	9	12	8	15	10	3	8	10	10	10	15	18	15
Aspect (degrees)	300	209	175	163	178	177	157	143	120	275	195	110	280	247

REGENERATION: TENTH-ACRE PLOTS

Live Trees per Acre < 2" DBH

Douglas-fir	0	0	10	0	0	0	0	0	0	0	0	0	0	0
Grand fir	0	0	0	0	20	0	0	0	0	0	40	0	0	0
Western redcedar	0	0	90	10	10	30	40	30	0	20	20	10	0	20
Western hemlock	0	20	10	0	0	10	0	30	0	20	10	10	0	10
Total Live Trees per Acre	0	20	110	10	30	40	40	60	0	40	70	20	0	30

REGENERATION: HALF-ACRE PLOTS INCLUDING GROWTH PLOTS

Live Trees per Acre < 2" DBH

Douglas-fir	0	0	10	0	0	0	0	0	0	0	0	0	0	0
Grand fir	0	31	0	0	20	31	31	0	0	31	40	63	0	0
Western redcedar	31	0	90	10	10	30	134	30	0	20	20	166	219	208
Western hemlock	94	83	10	0	0	10	0	30	0	20	104	104	0	10
Total Live Trees per Acre	125	114	110	10	30	71	165	60	0	71	164	333	219	218

COVER PERCENTAGES: % Canopy Cover

Shrubs > 3 ft	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Shrubs < 3 ft	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Grasses	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Forbs	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Bare Ground	>95	75-95	75-95	75-95	75-95	75-95	75-95	75-95	75-95	75-95	>95	>95	75-95	75-95

PLOT SUMMARY REPORT: REGENERATION AND VEGETATIVE COVER  
At Time of Establishment (1995)

Installation 358 Skookum Lake

Region: NE Washington

Legal Description: T34N R44E Sect.36

Ownership: Washington DNR

Meridian: Willamette

Treatment Regime: 7-plot N Rate

Year established: 1995

Elevation: 3600

Vegetation Series: TSHE (Western hemlock)

Parent Material: Mixed (Glacial Till)

Aspect: S-SE

Habitat Type: CLUN (queencup beadlily)

Soil depth (in.):

Slope: 4%

Phase: none

Ash depth (in):

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	00	10	60	20	30	32	02							
Slope (%)	1	1	1	4	6	15	3	.	.	.	.	.	.	.
Aspect (degrees)	155	160	160	185	165	185	185	.	.	.	.	.	.	.

REGENERATION: TENTH-ACRE PLOTS

LIVE TREES PER ACRE < 2" DBH

Douglas-fir	70	60	40	40	50	0	130	.	.	.	.	.	.	.
Grand fir	10	60	0	0	0	0	140	.	.	.	.	.	.	.
Western hemlock	40	10	0	0	0	0	10	.	.	.	.	.	.	.
Western larch	0	10	0	10	0	0	10	.	.	.	.	.	.	.
Lodgepole pine	0	20	0	0	10	0	0	.	.	.	.	.	.	.
Western white pine	0	0	0	0	0	0	30	.	.	.	.	.	.	.
Total Live Trees per Acre	120	160	40	50	60	0	320	.	.	.	.	.	.	.

REGENERATION: HALF-ACRE PLOTS INCLUDING GROWTH PLOTS

LIVE TREES PER ACRE < 2" DBH

Douglas-fir	133	154	40	40	50	156	193	.	.	.	.	.	.	.
Grand fir	73	60	0	0	31	31	296	.	.	.	.	.	.	.
Western hemlock	40	10	0	0	0	0	41	.	.	.	.	.	.	.
Western larch	0	41	0	10	31	0	10	.	.	.	.	.	.	.
Lodgepole pine	0	20	0	0	10	0	31	.	.	.	.	.	.	.
Western white pine	0	0	0	0	0	31	61	.	.	.	.	.	.	.
Total Live Trees per Acre	245	285	40	50	123	219	633	.	.	.	.	.	.	.

COVER PERCENTAGES: % Canopy Cover

Shrubs > 3 ft	5-25	5-25	5-25	5-25	5-25	5-25	5-25	.	.	.	.	.	.	.
Shrubs < 3 ft	25-50	25-50	5-25	25-50	25-50	25-50	25-50	.	.	.	.	.	.	.
Grasses	5-25	5-25	5-25	5-25	5-25	5-25	5-25	.	.	.	.	.	.	.
Forbs	25-50	25-50	25-50	25-50	25-50	25-50	25-50	.	.	.	.	.	.	.
Bare Ground	5-25	5-25	25-50	5-25	5-25	25-50	5-25	.	.	.	.	.	.	.



PLOT SUMMARY REPORT: REGENERATION AND VEGETATIVE COVER  
At Time of Establishment (1996)

Installation 359 Dicks Creek

Region: N Idaho

Legal Description: T38N R1E Sect.28

Ownership: IDL

Meridian: Boise

Treatment Regime: 14-plot N Rate Repeated App.

Year established: 1996

Elevation: 3000

Vegetation Series: THPL (Western redcedar)

Parent Material: Basaltic

Aspect: N

Habitat Type: CLUN (queencup beadlily)

Soil depth (in.): .

Slope: 16%

Phase: CLUN (queencup beadlily)

Ash depth (in):

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	30	20	00	10	20	30	32	20	30	32M	60	10	10	02
Slope (%)	12	22	11	5	12	14	7	28	25	15	17	15	20	22
Aspect (degrees)	22	108	355	359	16	38	24	104	108	126	293	340	86	6

REGENERATION: GROWTH PLOTS ONLY

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Live Trees per Acre Under 2" dbh

Grand fir	80	0	0	0	40	0	30	10	0	0	10	20	30	30
Western redcedar	300	10	70	60	320	50	90	480	180	120	130	300	100	260
Total Live Trees per Acre	380	10	70	60	360	50	120	490	180	120	140	320	130	290

REGENERATION: HALF-ACRE PLOTS INCLUDING GROWTH PLOTS

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Live Trees per Acre Under 2" dbh

Grand fir	174	0	0	0	103	0	30	41	31	0	73	83	30	155
Western redcedar	488	166	476	498	414	206	184	824	336	651	130	800	881	573
Total Live Trees per Acre	661	166	476	498	516	206	214	865	368	651	203	883	911	728

COVER PERCENTAGES: % Canopy Cover

Shrubs > 3 ft	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Shrubs < 3 ft	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Grasses	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Forbs	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Bare Ground	75-95	75-95	75-95	25-50	75-95	50-75	75-95	75-95	75-95	>95	>95	75-95	50-75	75-95

**PLOT SUMMARY REPORT: REGENERATION AND VEGETATIVE COVER**  
At Time of Establishment (1996)

Installation 360 Furport

Region: NE Washington

Legal Description: T32N R45E Sect.19

Ownership: Forest Service

Meridian: Willamette

Treatment Regime: 14-plot NxK Response Surface

Year established: 1996

Elevation: 2200

Vegetation Series: ABGR (Grand fir)

Parent Material: Mixed (Glacial Till)

Aspect: FLAT

Habitat Type: PAMY (pachistima)

Soil depth (in.): 65

Slope: 2%

Phase: none

Ash depth (in): 31

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	53	32M	34	62	32	02	00	32	83	55	32	30	32	85
Slope (%)	1	1	1	3	3	1	1	1	3	2	3	2	5	5
Aspect (degrees)	205	155	175	160	203	225	225	100	129	135	115	120	155	250

**REGENERATION: GROWTH PLOTS ONLY**

**Live Trees per Acre Under 2" dbh**

Douglas-fir	.	0	10	0	40	0	20	20	10	40	0	10	0	10
Grand fir	.	0	0	20	10	0	0	10	0	10	30	20	10	10
Subalpine fir	.	0	0	0	0	10	0	0	0	0	0	0	0	0
Lodgepole pine	.	0	10	40	120	20	30	50	30	40	30	100	30	0
Western white pine	.	0	0	0	0	0	0	10	0	10	10	0	0	0
Ponderosa pine	.	0	30	0	10	0	0	0	30	10	10	10	0	0
Engelmann spruce	.	0	0	0	0	0	0	0	0	10	0	0	0	0
Total Live Trees per Acre	.	0	50	60	180	30	50	90	70	120	80	140	40	20

**REGENERATION: HALF-ACRE PLOTS INCLUDING GROWTH PLOTS**

**Live Trees per Acre Under 2" dbh**

Douglas-fir	.	0	104	0	71	0	51	20	73	40	31	41	0	41
Grand fir	.	0	0	20	10	0	0	10	0	10	30	20	41	10
Subalpine fir	.	0	0	0	0	10	0	0	0	0	0	0	0	0
Lodgepole pine	.	31	10	228	183	51	61	269	30	165	124	131	124	0
Western white pine	.	0	0	0	0	0	0	10	0	10	10	0	0	0
Ponderosa pine	.	0	93	0	10	0	0	0	124	10	10	41	31	0
Engelmann spruce	.	0	0	0	0	0	0	0	0	10	0	0	0	0
Total Live Trees per Acre	.	31	206	248	274	61	113	309	226	245	205	234	196	51

**COVER PERCENTAGES: % Canopy Cover**

Shrubs > 3 ft	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Shrubs < 3 ft	5-25	0-5	0-5	0-5	5-25	0-5	0-5	5-25	0-5	5-25	5-25	5-25	0-5	0-5
Grasses	5-25	5-25	5-25	5-25	5-25	5-25	5-25	5-25	5-25	5-25	25-50	5-25	5-25	5-25
Forbs	25-50	25-50	25-50	25-50	25-50	25-50	25-50	5-25	5-25	25-50	25-50	25-50	5-25	25-50
Bare Ground	5-25	5-25	5-25	5-25	5-25	5-25	5-25	25-50	25-50	5-25	5-25	5-25	5-25	5-25

PLOT SUMMARY REPORT: REGENERATION AND VEGETATIVE COVER  
At Time of Establishment (1996)

Installation 361 Hanson Creek  
Region: NE Washington  
Legal Description: T36N R40E Sect.25

Ownership: Forest Service  
Meridian: Willamette

Treatment Regime: 7-plot N Rate  
Year established: 1996

Elevation: 3300  
Aspect: E  
Slope: 12%

Vegetation Series: THPL (Western redcedar)  
Habitat Type: PAMY (pachistima)  
Phase: none

Parent Material: Mixed (Glacial Till)  
Soil depth (in.): 13  
Ash depth (in): 9

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	30	20	02	32	10	60	00							
Slope (%)	10	15	18	10	10	10	12	.	.	.	.	.	.	.
Aspect (degrees)	108	132	5	138	114	75	108	.	.	.	.	.	.	.

REGENERATION: GROWTH PLOTS ONLY

Live Trees per Acre Under 2" dbh

Douglas-fir	30	10	20	40	70	60	40	.	.	.	.	.	.	.
Grand fir	40	10	0	0	50	80	50	.	.	.	.	.	.	.
Western larch	10	10	0	0	0	0	0	.	.	.	.	.	.	.
Lodgepole pine	10	10	0	0	0	0	0	.	.	.	.	.	.	.
Western white pine	10	20	10	0	50	40	10	.	.	.	.	.	.	.
Engelmann spruce	10	0	0	0	0	0	10	.	.	.	.	.	.	.
Total Live Trees per Acre	110	60	30	40	170	180	110	.	.	.	.	.	.	.

REGENERATION: HALF-ACRE PLOTS INCLUDING GROWTH PLOTS

Live Trees per Acre Under 2" dbh

Douglas-fir	30	10	51	71	101	60	103	.	.	.	.	.	.	.
Grand fir	40	10	0	0	50	80	144	.	.	.	.	.	.	.
Western larch	41	41	0	0	0	0	0	.	.	.	.	.	.	.
Lodgepole pine	10	10	63	0	0	0	0	.	.	.	.	.	.	.
Western white pine	10	20	41	31	81	40	41	.	.	.	.	.	.	.
Engelmann spruce	10	0	0	0	0	0	10	.	.	.	.	.	.	.
Total Live Trees per Acre	141	91	155	103	233	180	298	.	.	.	.	.	.	.

COVER PERCENTAGES: % Canopy Cover

Shrubs > 3 ft	0-5	0-5	0-5	0-5	5-25	0-5	0-5	.	.	.	.	.	.	.
Shrubs < 3 ft	5-25	25-50	25-50	25-50	25-50	5-25	25-50	.	.	.	.	.	.	.
Grasses	0-5	0-5	0-5	0-5	0-5	0-5	0-5	.	.	.	.	.	.	.
Forbs	5-25	5-25	5-25	5-25	5-25	5-25	5-25	.	.	.	.	.	.	.
Bare Ground	25-50	25-50	25-50	25-50	25-50	25-50	25-50	.	.	.	.	.	.	.

PLOT SUMMARY REPORT: REGENERATION AND VEGETATIVE COVER  
At Time of Establishment (1996)

Installation 362 Haverland Meadows  
Region: NE Washington  
Legal Description: T31N R39E Sect.36

Ownership: Washington DNR  
Meridian: Willamette

Treatment Regime: 14-plot NxK Response Surface  
Year established: 1996

Elevation: 2400  
Aspect: SE  
Slope: 13%

Vegetation Series: ABGR (Grand fir)  
Habitat Type: PAMY (pachistima)  
Phase: none

Parent Material: Granitic  
Soil depth (in.): 35  
Ash depth (in): 15

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	32	32	62	32	53	34	32	32M	02	85	00	55	83	30
Slope (%)	25	15	8	5	2	3	1	13	22	5	15	35	4	35
Aspect (degrees)	120	191	164	106	135	146	141	108	136	121	100	100	201	111

REGENERATION: GROWTH PLOTS ONLY

Live Trees per Acre Under 2" dbh

Douglas-fir	120	280	160	440	130	510	10	100	0	10	10	70	10	0
Grand fir	30	0	0	0	110	960	10	10	10	0	0	10	130	0
Western larch	0	0	0	10	0	20	10	0	0	0	0	0	0	0
Lodgepole pine	10	30	50	70	0	390	20	110	0	0	0	0	0	0
Ponderosa pine	20	10	0	20	0	10	0	0	0	0	80	0	0	0
Total Live Trees per Acre	180	320	210	540	240	1890	50	220	10	10	90	80	140	0

REGENERATION: HALF-ACRE PLOTS INCLUDING GROWTH PLOTS

Live Trees per Acre Under 2" dbh

Douglas-fir	558	1686	535	753	193	729	448	131	594	73	541	539	354	31
Grand fir	186	31	31	31	141	1429	416	10	10	0	63	10	411	94
Western redcedar	0	0	0	0	0	0	0	0	0	0	0	0	0	31
Western larch	0	0	0	10	31	51	198	0	94	0	0	0	0	0
Lodgepole pine	73	30	81	226	0	515	208	110	125	0	0	0	0	0
Ponderosa pine	176	135	219	51	31	10	94	0	94	31	361	0	0	0
Total Live Trees per Acre	993	1883	866	1071	396	2734	1363	251	916	104	965	549	765	156

COVER PERCENTAGES: % Canopy Cover

Shrubs > 3 ft	5-25	0-5	5-25	0-5	5-25	0-5	5-25	0-5	5-25	50-75	25-50	50-75	50-75	5-25
Shrubs < 3 ft	0-5	5-25	5-25	5-25	0-5	5-25	0-5	0-5	5-25	5-25	5-25	5-25	25-50	50-75
Grasses	25-50	25-50	25-50	25-50	25-50	25-50	25-50	25-50	25-50	25-50	25-50	0-5	0-5	25-50
Forbs	0-5	0-5	0-5	0-5	0-5	0-5	0-5	5-25	0-5	0-5	0-5	0-5	0-5	0-5
Bare Ground	50-75	50-75	50-75	50-75	25-50	25-50	25-50	50-75	25-50	50-75	50-75	75-95	75-95	75-95

PLOT SUMMARY REPORT: REGENERATION AND VEGETATIVE COVER  
At Time of Establishment (1996)

Installation 363 Kennally Creek

Region: C Idaho

Legal Description: T16N R4E Sect.28

Ownership: Boise Cascade

Meridian: Boise

Treatment Regime: 14-plot NxK Response Surface

Year established: 1996

Elevation: 5400

Aspect: E

Slope: 22%

Vegetation Series: ABGR (Grand fir)

Habitat Type: VACA (dwarf huckleberry)

Phase: none

Parent Material: Granitic

Soil depth (in.): 34

Ash depth (in):

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	32	32M	32	32	34	62	53	55	30	00	85	83	32	02
Slope (%)	29	32	20	23	22	22	16	20	16	29	19	25	26	5
Aspect (degrees)	50	20	36	134	75	4	48	89	79	60	22	77	14	10

REGENERATION: GROWTH PLOTS ONLY

Live Trees per Acre Under 2" dbh

Douglas-fir	.	.	0	10	100	0	0	10	0	0	10	30	0	0
Grand fir	.	.	0	0	50	10	0	0	0	90	20	0	10	0
Ponderosa pine	.	.	10	0	0	0	0	0	0	0	0	0	0	0
Total Live Trees per Acre	.	.	10	10	150	10	0	10	0	90	30	30	10	0

REGENERATION: HALF-ACRE PLOTS INCLUDING GROWTH PLOTS

Live Trees per Acre Under 2" dbh

Douglas-fir	.	.	0	41	100	31	156	10	125	0	73	61	0	31
Grand fir	.	.	0	0	144	10	0	31	63	528	20	0	10	31
Lodgepole pine	.	.	0	0	31	0	0	0	0	0	0	0	0	0
Ponderosa pine	.	.	10	31	0	31	0	0	31	0	0	0	31	0
Total Live Trees per Acre	.	.	10	73	275	73	156	41	219	528	93	61	41	63

COVER PERCENTAGES: % Canopy Cover

Shrubs > 3 ft	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Shrubs < 3 ft	25-50	5-25	0-5	5-25	0-5	5-25	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Grasses	25-50	25-50	50-75	5-25	25-50	5-25	25-50	50-75	25-50	25-50	50-75	25-50	50-75	75-95
Forbs	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Bare Ground	5-25	25-50	5-25	50-75	25-50	50-75	25-50	25-50	25-50	50-75	5-25	5-25	5-25	5-25

PLOT SUMMARY REPORT: REGENERATION AND VEGETATIVE COVER  
At Time of Establishment (1996)

Installation 364 Gold Fork

Region: C Idaho

Legal Description: T15N R4E Sect. 5

Ownership: Boise Cascade

Meridian: Boise

Treatment Regime: 14-plot NxK Response Surface

Year established: 1996

Elevation: 5700

Aspect: W

Slope: 34%

Vegetation Series: ABGR (Grand fir)

Habitat Type: VACA (dwarf huckleberry)

Phase: none

Parent Material: Granitic

Soil depth (in.): 25

Ash depth (in):

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	53	85	32	32	62	83	32	32	55	32M	00	02	30	34
Slope (%)	34	35	35	38	40	40	35	23	32	30	40	40	25	35
Aspect (degrees)	300	290	290	300	300	291	317	326	322	288	304	287	337	319

REGENERATION: GROWTH PLOTS ONLY

Live Trees per Acre Under 2" dbh

Douglas-fir	50	170	50	260	80	80	10	0	30	0	10	10	10	20
Grand fir	20	0	0	0	10	10	0	0	0	0	0	50	0	0
Ponderosa pine	10	0	10	10	0	0	0	0	10	10	30	10	0	10
Total Live Trees per Acre	80	170	60	270	90	90	10	0	40	10	40	70	10	30

REGENERATION: HALF-ACRE PLOTS INCLUDING GROWTH PLOTS

Live Trees per Acre Under 2" dbh

Douglas-fir	81	170	113	573	111	205	73	125	61	63	104	41	10	114
Grand fir	20	0	0	0	10	10	0	0	0	0	0	50	0	94
Ponderosa pine	41	0	41	10	0	0	0	0	10	198	30	10	0	10
Total Live Trees per Acre	143	170	154	583	121	215	73	125	71	260	134	101	10	218

COVER PERCENTAGES: % Canopy Cover

Shrubs > 3 ft	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	5-25	0-5	0-5
Shrubs < 3 ft	0-5	5-25	5-25	5-25	5-25	25-50	25-50	5-25	5-25	0-5	5-25	0-5	25-50	25-50
Grasses	25-50	5-25	25-50	25-50	5-25	25-50	5-25	5-25	5-25	5-25	5-25	5-25	5-25	5-25
Forbs	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Bare Ground	25-50	25-50	25-50	25-50	25-50	25-50	50-75	25-50	25-50	5-25	25-50	50-75	50-75	50-75

PLOT SUMMARY REPORT: REGENERATION AND VEGETATIVE COVER  
At Time of Establishment (1996)

Installation 365 Eight Mile

Region: N Idaho

Legal Description: T53N R4W Sect.36

Ownership: IDL

Meridian: Boise

Treatment Regime: 14-plot NxK Response Surface

Year established: 1996

Elevation: 2400

Aspect: FLAT

Slope: 1%

Vegetation Series: ABGR (Grand fir)

Habitat Type: MISSING

Phase: none

Parent Material: Mixed (Glacial Till)

Soil depth (in.): 24

Ash depth (in.): 24

Plot Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Treatment	32M	00	85	53	62	83	32	34	55	32	32	02	30	32
Slope (%)	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Aspect (degrees)	160	150	140	165	175	155	148	183	170	140	165	170	138	180

REGENERATION: GROWTH PLOTS ONLY

Live Trees per Acre Under 2" dbh

Douglas-fir	.	.	0	.	10	.	0	20	.	0	0	0	.	0
Lodgepole pine	.	.	10	.	0	.	0	0	.	0	0	0	.	0
Ponderosa pine	.	.	0	.	10	.	10	0	.	30	10	20	.	0
Total Live Trees per Acre	.	.	10	.	20	.	10	20	.	30	10	20	.	0

REGENERATION: HALF-ACRE PLOTS INCLUDING GROWTH PLOTS

Live Trees per Acre Under 2" dbh

Douglas-fir	.	.	0	.	10	.	0	20	.	0	0	0	.	0
Lodgepole pine	.	.	10	.	0	.	0	0	.	0	0	0	.	0
Ponderosa pine	.	.	0	.	10	.	10	31	.	30	10	51	.	31
Total Live Trees per Acre	.	.	10	.	20	.	10	51	.	30	10	51	.	31

COVER PERCENTAGES: % Canopy Cover

Shrubs > 3 ft	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Shrubs < 3 ft	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Grasses	5-25	5-25	50-75	25-50	25-50	5-25	25-50	5-25	5-25	5-25	5-25	5-25	50-75	25-50	
Forbs	5-25	5-25	5-25	5-25	5-25	5-25	5-25	5-25	5-25	25-50	25-50	5-25	5-25	5-25	
Bare Ground	75-95	75-95	5-25	25-50	25-50	50-75	25-50	25-50	50-75	25-50	25-50	50-75	5-25	25-50	