



WASHINGTON STATE DEPARTMENT OF
Natural Resources
Peter Goldmark - Commissioner of Public Lands

Southeast Region

INVITATION TO BID

Contract Number 1401

Young Stand Data Collection, 657 Acres

Term of Contract: From February 4, 2013 to June 15, 2013

Contract Digest: Young Stand Data Collection

(Data collection using fixed area plots of tree species, diameters, heights and damage codes). Contract requires collecting data in stands from 10 to 25 years of age to prioritize pre-commercial thinning (PCT) treatment.

Notice To Bidders Definitions

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SECTION III

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APPENDIX 1:

- DNR Young Stand Data Collection Field Manual

NOTICE TO BIDDERS

You are invited to bid on this contract and are advised to examine the survey units prior to bidding.

Sealed bids will be accepted at the Department's Pacific Cascade Region office until 2:00 PM on February 4, 2013 at which time and place all bids will be opened and read aloud. Individuals who wish to request special accommodations for the bid opening (e.g., sign language, interpreters, Braille, etc.) should contact the Department ten (10) working days prior to the scheduled bid opening.

The sealed bid envelope should be prepared in the following manner:

Addressed to: Todd Welker, SE Region Manager
Washington State Department of Natural Resources
P.O. Box 280
601 Bond Rd
Castle Rock, WA 98611

Upper left corner: Bidder's Address

Lower left corner: Young Stand Data Collection – “Sealed Bid”
Invitation to Bid/Contract Number: 1401

Questions pertaining to this Invitation to Bid can be answered by contacting Rainer Hummel at 509-493-4379 ext. 229. Oral explanations, interpretation, or instructions given before the award will not be binding.

The Department reserves the right to amend this Invitation to Bid/Contract by giving written notification to all known bidders at least seven (7) days prior to bid opening.

Payments on this Invitation to Bid can only be paid out to contractors who are registered with The Office of Financial Management (OFM)

<http://www.ofm.wa.gov/isd/vendors.asp>.

Please follow the link for instructions on how to register.

Address

**Statewide Payee Desk
P.O. Box 43113
Olympia, WA 98504-3113**

Phone: 360-664-7779

DEFINITIONS

- A. 'Compliance Forester' means the Department staff that performs the compliance inspections, approves Work, and recommends payment to the Contract Manager.
- B. 'Contract' means this Invitation to Bid/Contract the Pre-Work Conference packet and all required documents provided by the contractor.
- C. 'Contract Manager' means the Department staff that processes this Contract, makes payments, provides and facilitates dispute resolution, provides technical advice to the Compliance Forester, and is the first point of contact for questions relating to this Contract or interpretation of Work. The Contract Manager may perform the duties of the Compliance Forester.
- D. 'Contractor' means the bidder who was awarded this Contract.
- E. 'Department' means the Department of Natural Resources of the State of Washington, acting through an authorized employee.
- F. 'Designated Contract Representative(s): Those individuals designated by the Contractor on the Pre Work form during the Pre Work Conference (2-11, 2-12)
- G. 'D.B.H.' - Diameter at breast height, a point on the tree stem 4.5 feet above ground level.
- H. 'Force Majeure' means those acts that are unforeseeable and beyond the control of either party to the Contract. Acts of Force Majeure include, but are not limited to: acts of God, the public enemy, fire, or other casualty. Force Majeure may result in an equitable adjustment in the time period to complete the Contract.
- I. 'Item' means the smallest category of area that can be awarded to one contractor. This contract can be a roll-up of 'Units' within a large geographic area. Items are used for award purposes to identify to the contractor what portions of this contract their specific award is for.
- J. 'Pre-commercial Thinning (PCT) means the cutting of non-merchantable or non-desirable trees with chain saws to allow the most valuable trees to grow with less competition for light, water, nutrients and growing space.
- K. 'Pre-Work Conference' is the meeting between the department and the contractor after award of the contract is made but prior to commencement of work. Items agreed upon in this meeting are signed off by both the department and the contractor and become part of the contract.
- L. 'Region Manager' means the designated Department staff responsible for managing the affairs of the Department in designated large geographic areas. The Region Manager may perform the duties of the Contract Manager.
- M. 'Slash' - shall mean all organic debris in the work area either pre-existing or created by the pre-commercial thinning operation generally consisting of dead and down trees.
- N. 'Surplus Trees' - All trees designated for cutting.
- O. 'Unit' is the individual geographical area that the Work is to be done on. Each unit is specifically identified by number on the Bid Form (Section IV), the Unit Description, and corresponding Unit Map (Section III).
- P. 'Unit Bid Price' is the rate per acre written in the Unit Bid Price column of the bid form (Section IV Bid Form).
- Q. 'Work Schedule' means the approved timeline for how the requirements of this contract will be fulfilled by the contractor. The work schedule is agreed upon during the Pre-Work Conference by both the department and the contractor.
- R. 'Work' means the services the Contractor is required to satisfactorily complete this Contract found in Section II Specifications for the Activity and Section III Unit Description
- S. 'Work Day' means any week day during the contract term. Weekend days or state holidays are not work days unless authorized in advance writing by the Compliance Forester.
- T. 'GPS' means the handheld device that will be provided for use by the contractor to locate the plot center for each

plot within the 'Units'.

- U.** 'Unit Map' means the map provided which illustrates the boundaries for each 'Unit'. Unit maps are included within Section III Unit Description.

SECTION I: INSTRUCTIONS TO BIDDERS AND CONTRACT AWARD

1-01 Unit Inspection & Bid Preparation

Bidders are expected to examine this entire Invitation to Bid/Contract and are urged to inspect the Unit(s) prior to submission of their bid. Bidder acknowledges through submission of their bid that it has ascertained the nature and location of the Work and investigated and satisfied itself as to the general and local conditions which can affect the Work or its cost, including but not limited to:

- A. Conditions bearing upon transportation, disposal, handling, and storage of materials;
- B. The availability of labor, water, electric power, and road;
- C. Uncertainties of weather, river stages, tides, or similar physical conditions at the Unit;
- D. The confirmation and conditions of the ground;
- E. Seasonal conditions that may affect the timing and use of materials needed for the Work; and
- F. The character of equipment and facilities needed to complete the Work.

Bids should include all costs, any failure of the bidder to examine the Invitation to Bid/Contract or the Unit(s) prior to submission of the bid will not relieve the bidder from responsibility for properly estimating the cost of satisfactorily completing this contract.

1-03 Bid Submission is Offer to Contract

Your bid in response to this Invitation to Bid/Contract is an offer to contract with the Department. All offers shall remain firm for a period of 90 calendar days after the bid opening. If there is a problem and the lowest responsible bidder is unable to accept this contract the next lowest responsible bidder will be contacted for possible award. An Invitation to Bid becomes a contract when officially awarded by the Department with the return of a countersigned SECTION V - Offer and Contract Award.

1-05 Bid Contents

The bid shall include the Bid Form (Section IV), the Offer and Contract Award Form (Section V) properly completed and signed, the bid deposit specified in Clause 1-09, Contractor's Declaration of Industrial Insurance Status, and a photocopy of bidder's Washington State Farm Labor Contractors License.

1-07 Withdrawal of Bid

A bid may be withdrawn in person by a bidder's authorized representative before the opening of the bids. Bidder's representative(s) will be required to show ID and sign on the bid summary sheet before it will be released.

1-08 Rejection of Bids

To be considered, bids should conform to the above requirements, except that the Department may waive informalities and minor irregularities in bids received. The Department reserves the right to reject any or all bids received.

1-09 Bid Deposit

A bid deposit of ONE THOUSAND DOLLARS (\$1,000) is required. This deposit assures the Department that the bidder will accept award of any items on which the bidder is the lowest responsible bidder. In the event the bidder rejects award of the contract, the bidder will forfeit the bid deposit. The bid deposit must be in the form of certified check made payable to the Washington State Department of Natural Resources and include a reference to the bid/contract number. The bid deposit must be delivered to the Department's Region Office with the delivery of the bid (Clauses 1-04 and 1-05). The bid deposit of a bidder awarded the contract will be released when the performance/damage deposit has been approved, or the bid deposit may be converted to apply to part or all of the required performance/damage deposits after contract award. Once all the bids are evaluated and the contract has been awarded, bid deposits will be returned to all unsuccessful bidders.

1-10 Performance and Damage Deposit

The bidder awarded the Contract (Contractor) agrees to furnish a performance and damage deposit of ten percent (10%) of the Contractor's total award established in the award letter. The deposit shall be in the form of certified check or cashier's check made payable to "Washington State Department of Natural Resources", irrevocable letter of credit, or a savings account assignment. This deposit guarantees performance of this Contract and payment of damages caused by operations during the performance of this Contract or resulting from Contractor's noncompliance with any contract provisions or the law. In the event the Department needs to utilize the deposit for purposes such as repair or replacement of contractor damage to the EDR or GPS or to complete unfinished work under the original contract, the Contractor shall replace the portion(s) by the due date indicated on the written notification from DNR before work proceeds.

1-11 Lowest Responsible Bidder

Award of this Contract shall be to the lowest responsible bidder as determined by the Department. In determining the lowest responsible bidder, in addition to price, the following may be considered: (a) the ability, capacity, and skill of the bidder to perform the contract; (b) the character, integrity, reputation, judgment, experience, and efficiency of the bidder; (c) whether the bidder can perform the contract within the time specified; (d) the quality of performance of previous contracts and/or through reference checks; and (e) the previous and existing compliance by the bidder with laws relating to the contract or services. The Department's determination that a bidder is not qualified shall result in rejection of the bid submitted.

1-12 Award Letter

The Department will make every effort to mail an award letter with instructions and a copy of the executed contract to the successful bidder within ten (10) business days of bid opening.

1-13 Conditions on Award

Within ten (10) business days after the bidder receives their award letter, the Department must receive the signed contract, the performance and damage deposit, and insurance certificate at the Department's Region Office (Page 2 Notice to Bidders). The Department may extend upon written request to the Contract Manager, the time allowed for receipt of the above items. If the bidder fails to submit the above items within the time specified, the Department may consider the contract award rejected and may terminate award of the contract.

1-14 Contract Modification or Cancellation

The Region Manager reserves the right to modify or cancel this Contract in part or whole without cause. The Contractor shall be paid only for Work performed satisfactorily prior to cancellation of the Contract.

SECTION II-A: GENERAL PROVISIONS

2-01 Compliance with all Laws

The Contractor shall comply with all laws and regulations of the United States, State of Washington, and counties where the Work is located. The Contractor will make any payments, contributions, remittances, and reports or statements required under those laws.

2-02 Licenses and Permits

The Contractor shall, without additional expense to the Department, obtain all required licenses and permits necessary for executing the Contract.

2-03 Indemnification and Hold Harmless

To the fullest extent permitted by law, Contractor shall indemnify, defend, and save harmless the State, agencies of the State, and all officers and employees of the State, from and against any and all claims for injuries or death, including claims by Contractor's employees, or for damages arising out of, resulting from, or incident to Contractor's performance or failure to perform the Contract. Contractor's obligation to indemnify, defend and save harmless shall not be eliminated or reduced by any alleged concurrent negligence of the State or its agencies, employees, and officers. Contractor waives its immunity under Title 51 RCW to the extent required to indemnify, defend, and save harmless the State and its agencies, officers, or employees.

2-04 Insurance

Before commencing Work, the Contractor shall obtain and keep during the term of this Contract the following liability insurance policies, insuring Contractor against liability arising out of its operations, including use of vehicles. Failure to buy and maintain the required insurance may result in termination of the Contract. The limits of insurance, which may be increased by the Department as deemed necessary, shall not be less than as follows:

- A. **Commercial General Liability (CGL) insurance**, with a limit of not less than \$1,000,000 per each occurrence. If such CGL insurance contains aggregate limits, the general aggregate limits shall be at least twice the "each occurrence" limit, and the products-completed operations aggregate limit shall be at least twice the "each occurrence" limit.
- B. **Employer's liability ("Stop Gap") insurance**, and if necessary, commercial umbrella liability insurance with limits not less than \$1,000,000 each accident for bodily injury by accident or \$1,000,000 each employee for bodily injury by disease.
- C. **Business Auto Policy (BAP) insurance**, and if necessary, commercial umbrella liability insurance with a limit of not less than \$1,000,000 per accident, with such insurance covering liability arising out of "Any Auto."

All insurance must be purchased on an occurrence basis and should be issued by companies admitted to do business within the State of Washington and have a rating of A- or better in the most recently published edition of Best's Reports. Any exception shall be reviewed and approved in advance by the Risk Manager for the Department. If an insurer is not admitted, all insurance policies and procedures for issuing the insurance policies must comply with Chapters 48.15 RCW and 284-15 WAC.

The "State of Washington, Department of Natural Resources, its elected and appointed officials, agents and employees" shall be named as an additional insured on all general liability, excess, and umbrella insurance policies.

Before using any rights granted herein, Contractor shall furnish the Department with a certificate(s) of insurance, executed by a duly authorized representative of each insurer, showing compliance with the insurance

requirements specified above. Certificate(s) must reference the Contract number 1401 in the time required by Clause 1-13.

The Contractor shall provide the Department written notice before cancellation or non-renewal of any insurance referred to herein, as prescribed in statute (RCW Title 48).

All insurance provided in compliance with this Contract shall be primary as to any other insurance or self-insurance programs afforded to or maintained by State. Contractor waives all rights against State for recovery of damages to the extent these damages are covered by general liability or umbrella insurance maintained pursuant to this Contract.

By requiring insurance herein, State does not represent that coverage and limits will be adequate to protect Contractor, and such coverage and limits shall not limit Contractor's liability under the indemnities in this Contract.

2-05 Safety Compliance

Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Work.

- A. During the Contract performance, Contractor shall protect the lives and health of employees performing the Work and other persons who may be affected by the Work and prevent damage to property at the Unit and adjacent property. Contractor shall comply with all applicable laws, ordinances, rules, regulations, and orders of any public body having jurisdiction for the safety of persons or property; shall protect from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.
- B. In an emergency affecting the safety or life of employees or adjoining property, Contractor is permitted to act to prevent threatened loss or injury. Within 24 hours of any emergency, Contractor shall notify the Compliance Forester. If directed by the Compliance Forester, within five (5) business days of any emergency, Contractor shall prepare an incident report and submit it to the Department's Region manager within five (5) business days following an emergency if directed to do so by the Compliance Forester.

2-06 Venue

Disputes arising under this Contract shall be brought in the State of Washington and the venue shall be Thurston County.

2-07 Dispute Resolution

Before initiating any litigation over the terms of this Contract, the Contractor commits to the following process:

- A. Any concerns or disputes which the Contractor has relating to this Contract shall first be brought to the attention of the Compliance Forester.
- B. If the Compliance Forester is unable to resolve the dispute to the Contractor's satisfaction, the Contractor will notify the Contract Manager in writing, with specificity, of his dispute. The Contract Manager will provide a written response within ten (10) business days.
- C. If the Contractor is not satisfied with the Contract Manager's response, he will notify the Region Manager in writing of his dispute. The Region Manager will review and set a meeting with the Contractor within fifteen (15) business days, unless the Contractor agrees to a longer period. After the meeting, the Region Manager will provide a written response.

2-08 Subcontracting

The Contractor shall not enter into any subcontract or assignment of this Contract.

2-09 Nondiscrimination

During the performance of this Contract, the Contractor shall comply with all federal and State nondiscrimination laws, regulations, and policies.

2-10 Contractor's noncompliance

In the event of or refusal to comply with any nondiscrimination law, regulation, or policy this Contract may be rescinded, canceled, or terminated in whole or in part, and the Contractor may be declared ineligible for further contracts with the Department. The Contractor shall be given a reasonable time to cure this noncompliance.

2-11 Pre-Work Conference

The Contractor shall attend a Pre-Work Conference before beginning Work. The Compliance Forester will notify the Contractor of the time and place of the Pre-Work Conference.

2-12 Purpose of the Pre-Work Conference

The purpose of the Pre-Work Conference is to document the following on the Pre-Work Conference form:

A. All required documentation as outlined in sections I and II of the contract have been received from the Contractor, such as insurance forms, prior to beginning Work on this Contract. The following forms included in Section III will also be required to be filled out by the contractor at the pre-work conference:

1. The Pre-work Form which Includes

- a. The Work plan of operations including the order and time frame in which Work will occur on individual units or groups of units within this Contract.
- b. Name(s) and contact information for the Contractor and Designated Contract Representative(s), including all personnel authorized to sign unit completion forms and payment invoices.
- c. Clarification of any unique requirements or conditions of the Work within this Contract prior to commencing Work.
- d. Names(s) and contact information for the Contract Manager and Compliance Forester(s).
- e. Time interval(s) at which units will be processed for payment.

2. Key checkout form for all gate keys issued to contractor.

3. Pre-signed A-19 form to release the L&I retainage at the termination of the contract.

4. L&I Report by Landowner form

2-13 Work Delay

Contractor shall promptly notify the Compliance Forester of any actual or anticipated event which is delaying or could delay the Work, including the expected duration of the delay, the anticipated effect of the delay on the schedule, and the action being or to be taken to correct the delay. The notification does not relieve Contractor of the obligation to complete the Work within the time required by this Contract.

2-14 Non-conformances with Work Schedule

If Contractor is not in conformance with the Work schedule for reasons other than acts of Force Majeure, Contractor shall bring its activities into conformance with the schedule or request the Compliance Forester to revise the Work schedule. The Compliance Forester may require a meeting to determine if a revision is necessary. In the event the Contractor stops Work or if the initial start-up is delayed for a period of one (1) week or more, a new Pre-Work Conference may be held.

2-14.1 Twenty Percent Rule

DNR uses what is referred to as the "Twenty Percent Rule" to determine if a project is no longer viable. The "twenty Percent Rule" states:

If the Contractor's rate of progress towards completion of the contract item is such that the difference between the percentage of the total number of work days remaining in the contract period and the percentage of the total number of uncompleted plots remaining in the contract becomes greater than twenty percent (20%) the project is in jeopardy of being no longer viable, in which case the contractor will subject to clause 2-16.

EXAMPLE 1 OF 20% RULE:

If the contract item term is 100 work days for 4,000 plots and progress of the contractor after the first 20 days of operation is less than 800 plots, then the contractor must revise the work plan to show they can successfully complete the remaining work before the contract expires or be subject to clause 2-16.

EXAMPLE 2 OF 20% RULE:

Beginning at a point in time 20% into the contract term the following conditions exist (after 20 work days):

Percentage of work days remaining: $[50 \text{ days}/100 \text{ days} * 100] = 50\%$ of work days remaining

Percentage of plots remaining: $[3280 \text{ plots} / 4,000 \text{ plots} * 100] = 82\%$ plots remaining

Difference in percentages: $82\% - 50\% = 32\%$ difference.

Progress does not meet the "twenty percent rule"; therefore, contractor is subject to clause 2-16.

2-15 Work Days

Work shall only proceed on regular Monday through Friday business days. Work on weekends or a designated State holiday requires written permission from the Compliance Forester.

2-16 Breach of Contract

Nonperformance, unsatisfactory performance, or willful violation of Contract requirements by the Contractor shall constitute breach of contract and the Department may collect liquidated damages, terminate the contract with forfeiture of the performance and damage deposit, or declare breach of contract and make a claim for actual damages suffered by the Department. Any delay or failure of performance by the Department or Contractor, other than the payment of money, shall not constitute a breach if the cause was Force Majeure.

2-17 Washington State Forest Fire Protection Requirements

The Contractor and employees shall be familiar with the Washington State Forest Fire Protection Requirements and adhere to them. These requirements are found in: [Revised Code of Washington Chapter 76.04](#)

2-18 Fire Inspection

The Department may inspect the Units for adherence to regulations and presence of fire tools. Any inspection by the Department shall not limit Contractor's liability for failure to adhere to applicable regulations.

2-19 Spark Arresters

All spark emitting engines will be equipped with approved spark arresters. Spark arrestors are approved by contractor's demonstration to the Compliance Forester as to functionality and serviceability onsite, prior to use of the device. The lists adopted by the agency are from the National Wildfire Coordinating Group (NWCG).

[NWCG approved spark arrestor lists.](#)

2-20 Open Fires

The Contractor shall not build any open fires on the contract area without first obtaining written permission from the Compliance Forester.

2-21 Prohibition from Removal of Merchantable Products

Contractor is prohibited from removing merchantable or potentially merchantable products from the Units. A separate agreement with the Department is required for removal of Christmas trees, boughs, brush pickings, decorative shrubs or trees, firewood, poles, posts and other merchantable or potentially merchantable material.

2-22 Garbage

Contractor shall dispose of garbage brought onto State lands in garbage disposal areas meeting all State, county, and local requirements. Garbage includes equipment maintenance, abandoned equipment, containers, and other expended materials.

2-23 Camping

Contractor is prohibited from using or authorizing its employees to use non-designated State lands, landings, or roads for camping.

Section II-B: Specifications for the Activity

2-24 Precedence between Sections

Section II-B covers the general standards that apply over the whole contract. If a change is required on a site by site basis those differences will be outlined on the Unit Description Form (Section III-A). The site specific details found on the Unit Description Form should take precedence over these general guidelines when they exist.

2-25 Workers, Supervision and Equipment

The Contractor shall provide:

- A. All Workers to complete the work within the contract term.
- B. To provide trained employees or the training necessary to enable employees to accurately identify native forest trees and damage agents, accurately measure tree heights, diameters. A two-year technical degree in Natural Resources or Forestry and minimum three (3) months of young stand data collection experience will meet this requirement. Documentation of a worker's experience shall be provided to the Department upon request.
- C. To bear all costs of operation not specifically furnished by the Department under Clause Section 2-55.
- D. To furnish all required safety equipment, fire equipment, and a vehicle to transport workers. The Contractor shall supply vehicles capable of traveling backcountry roads (4-wheel drive vehicles may be needed for some areas). Where roads are closed by weather, washout, operations or other restrictions, workers shall be required to walk in unless other means of transportation are approved by the Compliance Forester.
- E. To provide waterproof markers to mark on flagging to identify plot centers and reference points.
- F. To provide all plot data files and GPS track logs electronically to DNR Husum Office within one week of completion of any given unit. Download locations and times will be documented in the pre-work form at the pre-work conference and will be somewhat flexible to minimize contractor travel times to submit data within this time frame.
- G. Periodic supervision of workers to insure completion of work to contract standards.

2-25 Boundaries

- A. The contractor is to take the initiative in determining whether boundaries are sufficiently marked. The compliance forester will be available to assist in locating boundaries that are not sufficiently marked with more than 24 hours' notice of a need.
- B. Number of plots as indicated in the Unit Description was measured on the horizontal plane. A small percentage of plots will be located just outside unit boundaries and will not be measured.

2-55 Department shall furnish:

- A. A Department Representative to acquaint the Contractor with each unit to be worked and to conduct periodic field inspections on a minimum of 10% of completed plots prior to payment on any individual unit.

- B. Boundary and plot marking on the Unit Maps and access to the unit as reasonably necessary to complete the contract as indicated on the Unit Maps.
- C. To provide colored ribbon at a rate of one (1) roll per five (5) plots to mark plot centers and road transects. Color ratio will be six (6) rolls pink to four (4) rolls blue.

2-61 Determination of Payment

Compliance and payment for work performed will be based on the following:

- A. The plots illustrated on the Unit Maps in Section III, provide the basis for determining work to be completed. Failure to complete plots within 1 chain (66 feet) of the plot center established by the Department renders work unsatisfactorily completed. The Contractor is to utilize the Garmin GPS with plot locations pre-loaded by the contract manager to navigate to all plot centers. No consideration or payment will be given for work that extends beyond unit boundaries by error. Work procedures shall follow the procedures in SECTION III titled FIELD MANUAL.
- B. Determination of work satisfactorily completed is described in the FIELD MANUAL.
- C. A minimum of 10% of plots completed by the contractor will be evaluated by the Compliance Forester to determine payment on each completed unit.

2-71 Unsatisfactory Work Compliance

- A. The Compliance Forester will inspect the contract work to determine if plot location and data collection accuracy is satisfactory before payment occurs for each work unit.
- B. The Contractor will be notified of any unsatisfactory unit(s) or parts thereof, within 2 weeks of the unit completion date.
- C. If found unsatisfactory, Contractor will be subject to clause 2-16 and any re-work by the contractor will be at his or her own cost and may be deducted from the contractor's performance security for purposes of paying another contractor to complete the work if a Breach of Contract occurs.
- D. At the department's option, the Contractor shall rework a unit on which the Contract's work performance is not rated satisfactory, and further, it shall be the Department's option to require the rework be completed prior to starting new work. Rework areas will be reexamined for contract compliance, the resulting performance rating will supersede the previous performance rating for the area in question.
- E. Plot data must be submitted electronically from the handheld data collectors to Compliance Forester or Contract Manager within seven (7) days of completing a unit or work will be unsatisfactory.

2-72 DATA SCORING

- A. Each data field not filled in correctly will equal one error point.
- B. Any plot with more than two (2) error points is unacceptable. Any unit inspected cannot accumulate more than two (2) failed plots. Any unit that fails inspection will be returned to the contractor. At the option of the Department the Contractor may be required to resurvey the unit by establishing new plot locations.
- C. A point shall be deducted for each of the following errors on the unit file:

1. Missing or incorrect plot number, or incorrect species.
2. The number of total trees per plot is more than one (1) different than the actual number of total trees per plot that are present on a plot when the total number of trees on a plot is less than or equal to fifteen (15).
3. The number of commercial crop trees per species on a plot is ten (10) percent different than the number of commercial crop tree per species that are present on a plot when the total number of commercial crop trees per species on the is greater than fifteen (15).
4. The estimated diameter is not within (10) percent of the actual measured value for trees >4.5 feet tall.
5. The total estimated height measurement is not within ten (10) percent of the actual measured total height measured for trees in Pre-PCT plots.
6. When damage type is incorrect for more than one tree per plot.

Example: If the total points accumulated are two or greater, then the plot will fail compliance. The plots that failed compliance will not receive payment. If more than two (2) plots in a unit fail compliance, resurvey of the unit will be required. If resurvey is not conducted on all unsatisfactory plots, then no payment shall be made for that unit.

2-76 Payment shall be made as follows:

Payment may be made by the month, unit or by one total payment. Details of payment schedule will be determined in the pre-work conference (Clause 2-71). The Department will attempt to comply with the desires and needs of the Contractor but assumes no legal duty or obligations to adhere to the schedule of payments so arranged.

- A. Contractor or contract representative (Clause 2-28) and the Compliance Forester shall sign the Unit Completion Form at time of data download. Final payment will not be made to the Contractor unless the plot data downloaded is deemed satisfactory by the Compliance Forester field audit, and "final" payment is designated thereon.
- B. Ten percent (10%) of all payments due Contractors who employ workers shall be retained by DNR as security for L&I industrial insurance premiums owed for their workers. Upon determination that the Contractor has met all financial obligations for industrial insurance premiums related to the Item(s) of this Contract, the 10% retainage will be returned to the Contractor. DNR will return this retainage approximately 45 days following close of the quarter in which the work was completed. However, if the Contractor notifies DNR in writing that they have paid all L&I premiums associated with the Item(s) of this Contract, DNR will, upon determination that the Contractor has met all financial obligations for industrial insurance premiums related to the Item(s) of this Contract, work diligently to return the retainage as soon as practical.

2-77 Survey Procedures:

Plots shall be 1/50th acre circular plots with a radius of 16 feet 8 inches, measured on a horizontal plane passing through plot center. Location shall be established on an east-west by north south grid. Grids shall be sized for 1 plot per 5 acres, but no fewer than 5 plots in a unit. The survey route, of the lines actually traveled, shall be marked with pink ribbon not more than one chain between ribbons. If a plot falls on a constructed void (road, rock pit, landing, etc.) move forward or backward one chain to establish the plot.

Two types of cards will be used for each unit:

- A.** The cover card, electronic or paper format contains summary information for the unit as well as a map completed by the contractor that shows the location of plots and other pertinent information.
- B.** The plot card, in electronic or paper format is used to record data for each individual plot. One line is to be used per tree. The contractor will use abbreviation codes provided by the Department from this contract. Plot data turned in electronically must be in a MS Excel 2007 or newer format prior to payment.
- C.** Commercial crop tree information that must be collected is:
 - Species
 - Diameter at breast height (nearest inch)
 - Total height (closest foot)
 - Crown Ratio (in percent of length of green crown/total length)
 - Damage or mortality

No more than 15 crop trees of any one species shall be recorded per plot. If more than 15 are present, an estimated total count per species shall be recorded.

Section III: Specifications for the Activity

3-01 Unit Descriptions

The following table describes the **Item A** units that are subject of this contract for pre-PCT assessment

Contract										Shutdown	
Unit	Unit Name	T	R	E/W	Section	Acres	Plots	Gate	Snow	Zone	Elevation
1	North Quigley U0	6	11	E	16	273	55	yes*	yes	609W	2800-3300
2	Mainline Blowdown	6	11	E	18	362	73	no	yes	609W	2200-2500
3	Holmes U4	6	11	E	28	22	5	no	yes	609W	2200-2300
Total						657	133				

*gate requires SEK1-key. Key is available for checkout at Husum District Office.

3-02 Unit Maps

Unit maps are provided for unit boundary identification.

3-03 Vicinity Map

The vicinity map is provided for unit access.

UNIT MAP

Activity Type: Pre-PCT Survey

Southeast Region

Bid No. 1401

Work Unit: Klickitat






Treatment Acres: 273

Unit No. 1

Unit Name: NORTH QUIGLEY U0



1:11,000

-  Unit Boundary
-  Existing Roads
-  Non-Driveable Access
-  Trails
-  Streams



-  Gate
-  Tank Trap
-  Earth Barrier
-  Other Barrier

UNIT MAP

Activity Type: Pre-PCT Survey

Southeast Region

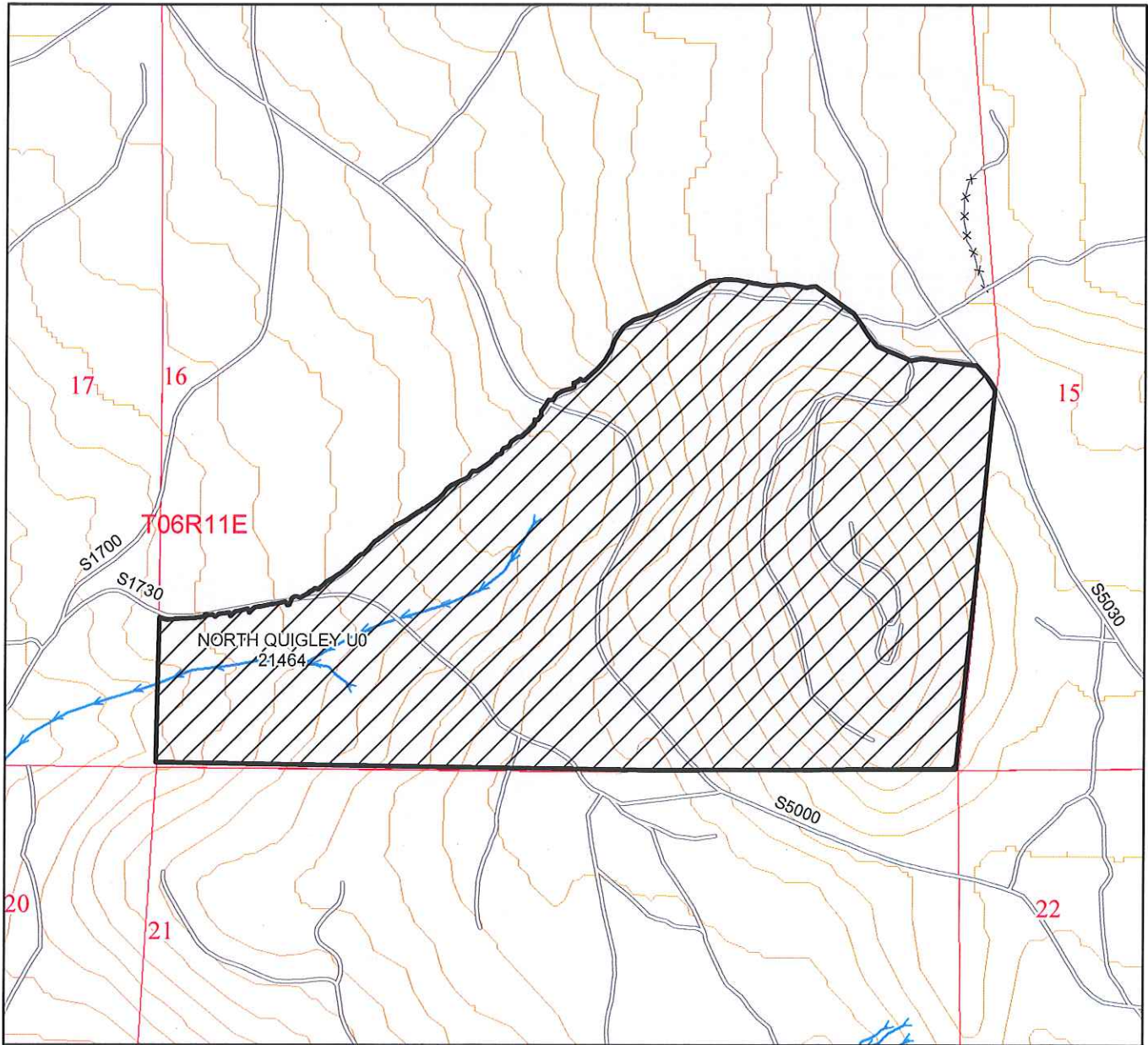
Bid No. 1401





Work Unit: Klickitat

Treatment Acres: 273

Unit No. 1

Unit Name: NORTH QUIGLEY U0








-  Unit Boundary
-  Treatment Area
-  DNR Managed Lands
-  Existing Roads
-  Non-Driveable Access
-  Trails

40' Contours

1:12,000



-  Pink Flagging
-  Gate
-  Tank Trap
-  Earth Barrier
-  Other Barrier
-  Streams

UNIT MAP

Activity Type: Pre-PCT Survey

Southeast Region

Bid No. 1401

Work Unit: Klickitat

Treatment Acres: 362

Unit No. 2

Unit Name: MAINLINE BLOWDOWN



1:11,800

- Unit Boundary
- Existing Roads
- Non-Driveable Access
- Trails
- Streams



- Gate
- Tank Trap
- Earth Barrier
- Other Barrier

UNIT MAP

Activity Type: Pre-PCT Survey

Southeast Region

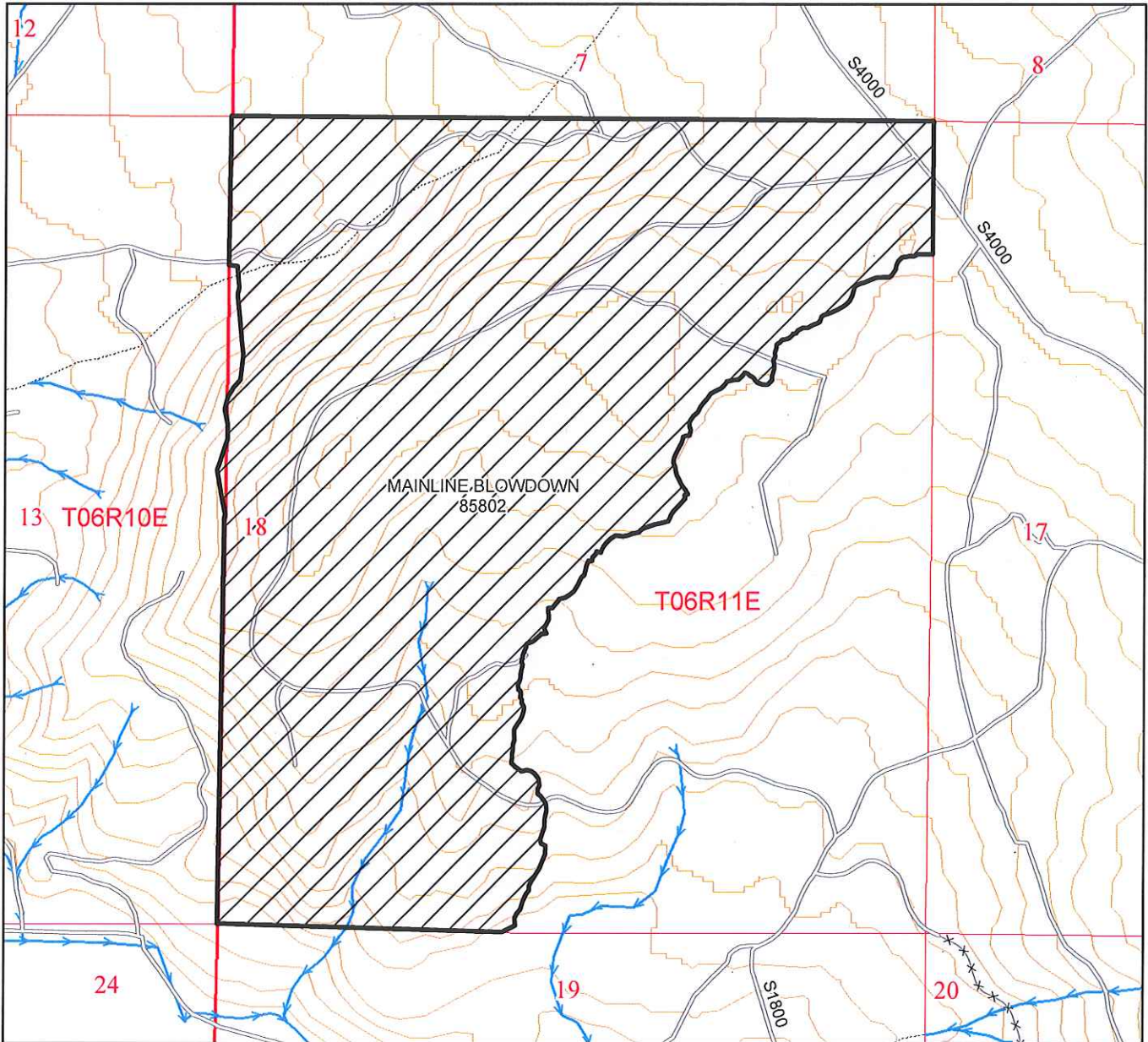
Bid No. 1401

Work Unit: Klickitat

Treatment Acres: 362

Unit No. 2

Unit Name: MAINLINE BLOWDOWN



-  Unit Boundary
-  Treatment Area
-  DNR Managed Lands
-  Existing Roads
-  Non-Driveable Access
-  Trails

40' Contours

1:12,000



-  Pink Flagging
-  Gate
-  Tank Trap
-  Earth Barrier
-  Other Barrier
-  Streams

UNIT MAP

Activity Type: Pre-PCT Survey

Southeast Region

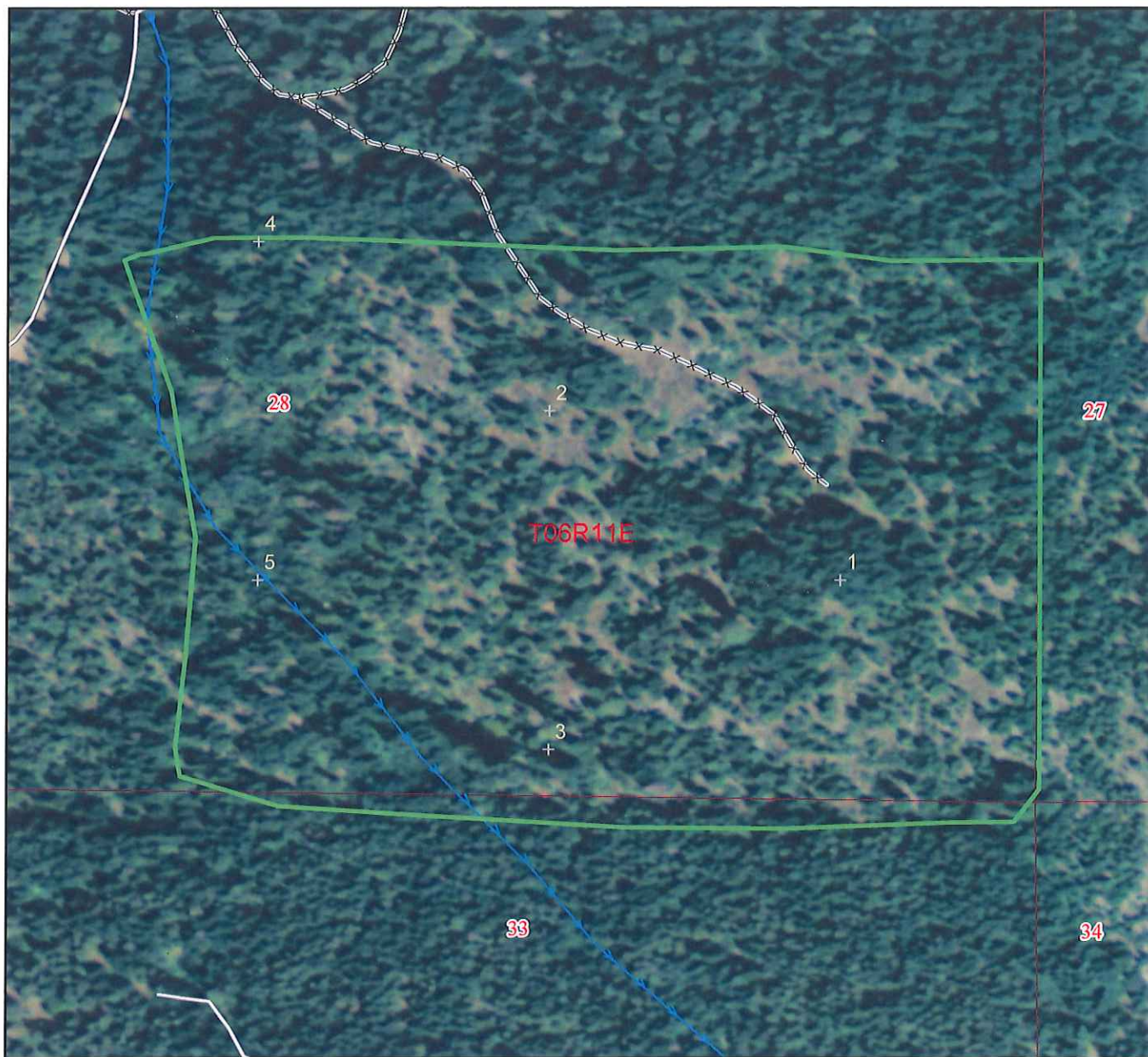
Bid No. 1401

Work Unit: Klickitat






Treatment Acres: 22

Unit No. 3

Unit Name: HOLMES U4



1:2,600

-  Unit Boundary
-  Existing Roads
-  Non-Driveable Access
-  Trails
-  Streams



-  Gate
-  Tank Trap
-  Earth Barrier
-  Other Barrier

UNIT MAP

Activity Type: Pre-PCT Survey

Southeast Region

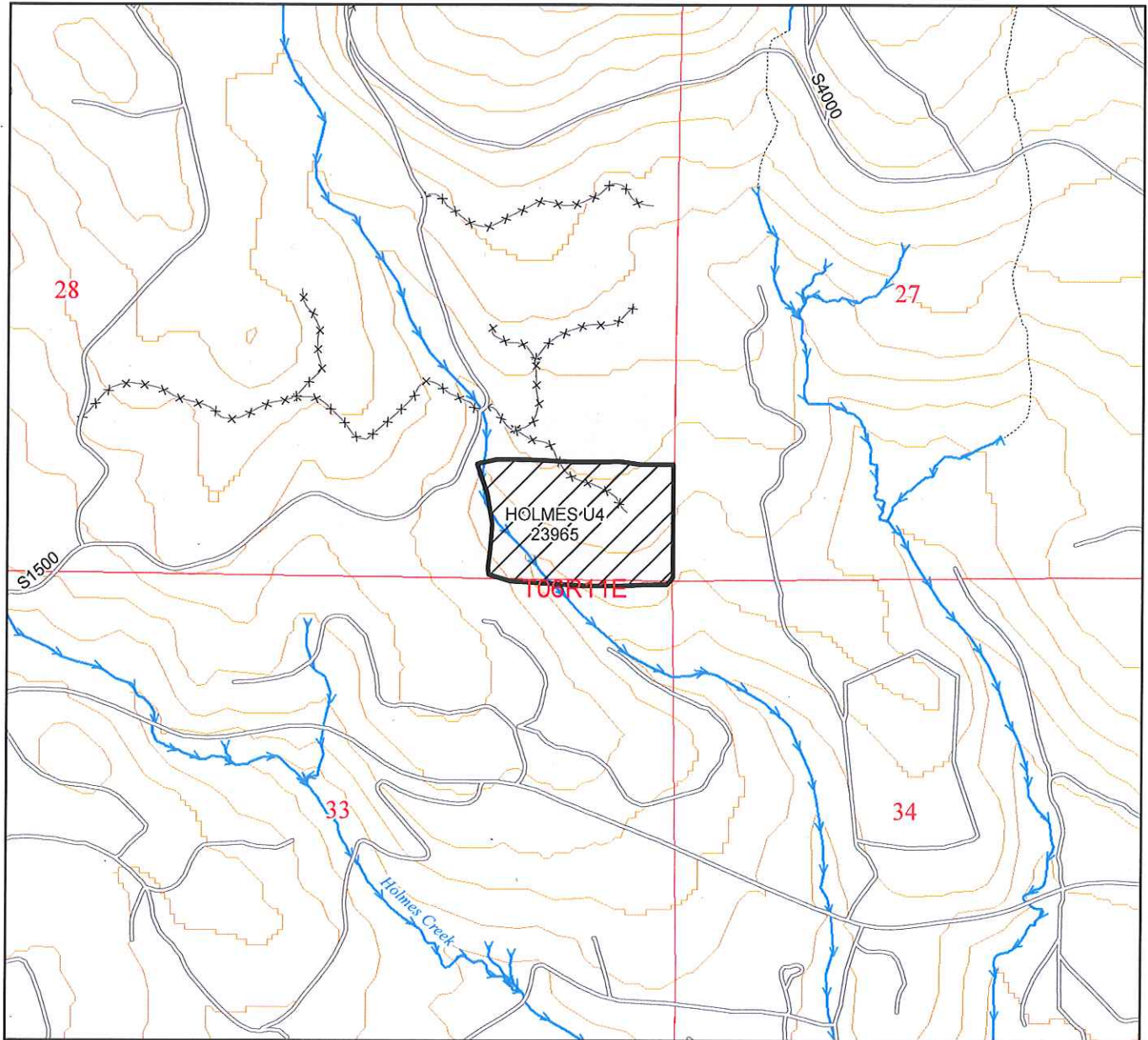
Bid No. 1401

Work Unit: Klickitat

Treatment Acres: 22

Unit No. 3

Unit Name: HOLMES U4



-  Unit Boundary
-  Treatment Area
-  DNR Managed Lands
-  Existing Roads
-  Non-Driveable Access
-  Trails

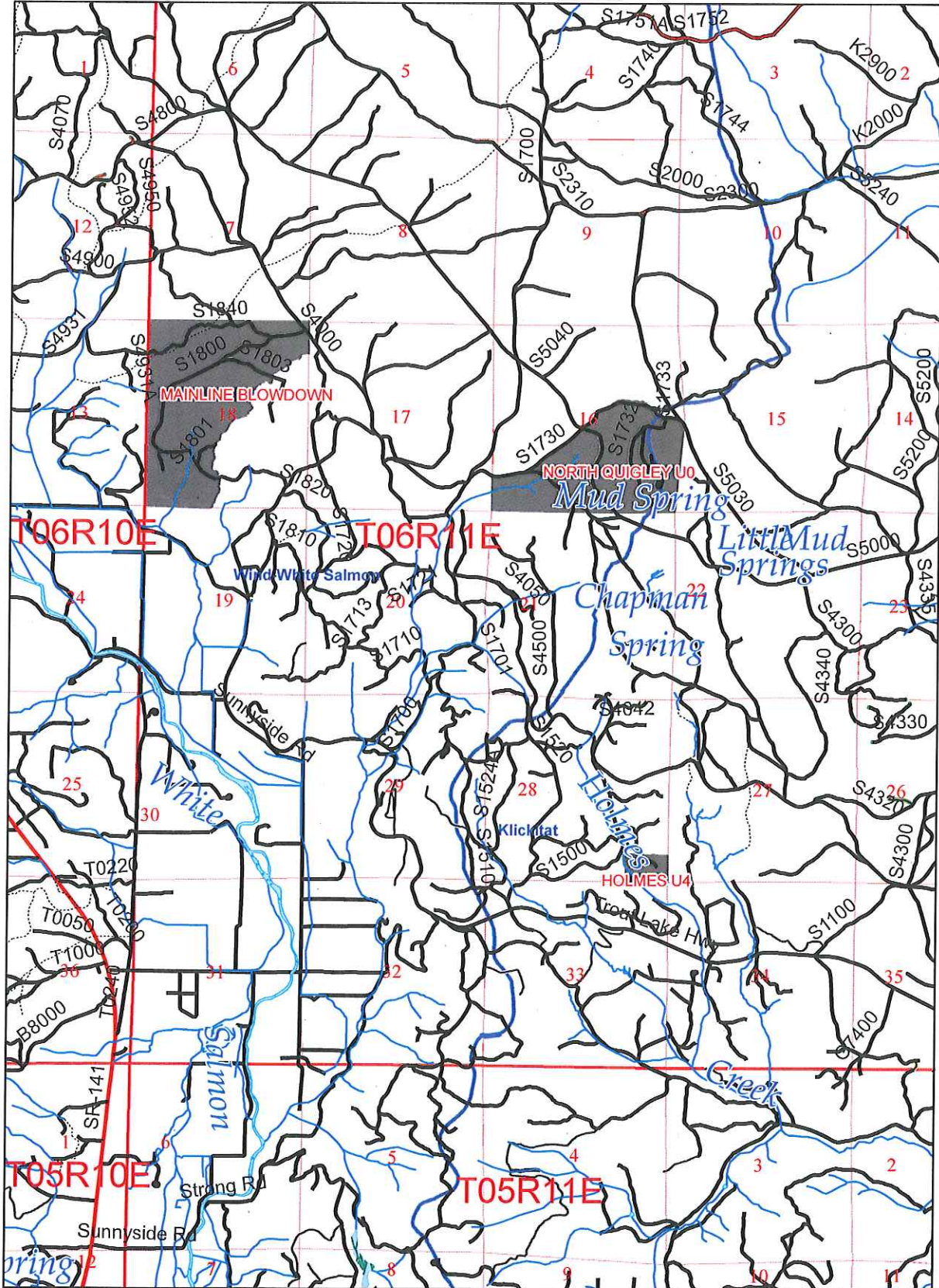
40' Contours

1:12,000

-  Pink Flagging
-  Gate
-  Tank Trap
-  Earth Barrier
-  Other Barrier
-  Streams

Vicinity Map

Pre-PCT survey units 1:48,000



Prewrite Conference Form

Bid XXXX Pre-work Meeting Date, Time, Location:

Attendee's Names, Contract Role:

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17

Contractor Designated Representative Name(s): Cell Phone #

- 1
- 2
- 3
- 4

Address:

Business Phone:

Fax:

Type of Equipment on Job:

Special or /Tool Requirments:

Remarks:

Department Representative

Contractor Representative

Contact Information Region Office:

Chris Razor - 360.575.5058 or Cell 360.880.8288

Mary Hovey - 360.575.5065 - Payment Questions

Contract Administrators:

Leanne Krein - Lewis District Cell 360.584.5500, Rick Palmer Cell 360.880.4244, Tyler Kaech 360.749.3144

Dave Gufler - Black Hills District Cell 360.520.1510, Rich Lee - Cell 360.489.5316

Bruce Hazen - St. Helens District - Cell 360.790.9438, Linda Ratcliff - Cell 360.751.0405, Jon Hill- Cell 360.749.0117

Scott Hancock - Yacolt District - Cell 360.608.9294

**WASHINGTON DEPARTMENT OF NATURAL RESOURCES
CONTRACTOR EQUIPMENT AGREEMENT**

TABLE 1

Equipment Description	Serial Number	Check Out Date	Check-In Date	Replacement Value (\$dollars)
Allegro MX Data Recorder				\$2,475
Blaze orange chest pack (Allegro)				\$100
Garmin 60 GPS				\$425
Allegro MX Data Recorder				\$2,475
Blaze orange chest pack (Allegro)				\$100
Garmin 62c GPS				\$425
	Total Replacement Value:			\$6,000

I _____ (contractor)
 Print full legal name above

hereby agree to pay the full repair or replacement value of any and all equipment damaged between the check out and check in dates listed in Table 1 above. Any equipment damaged or lost between the check out and check in dates listed in Table 1, shall be replaced or repaired at the contractor’s cost prior to commencing work on contract **1401**. Equipment shall be solely used for work on contract **1401**. By signing below I hereby acknowledge that I have read and understand the terms of this agreement as part of contract **1401** and that all equipment listed in Table 1 was in full working order at the time of issue from DNR.

Contractor Signature and Date

DNR Signature and Date

Printed Name: _____

Printed Name: _____

Signature: _____

Signature: _____

Date of Signature: _____

Date of Signature: _____

**SECTION IV
BID FORM**

YOUNG STAND DATA COLLECTION - SURVEY

INVITATION TO BID/CONTRACT NUMBER **1401**

At the following rates, the undersigned hereby offers and agrees to furnish materials, equipment, supplies, supervision, and services in compliance with all terms, conditions and specifications of Invitation to Bid/Contract Number 1401.

All Units	Plots ¹	Contract Bid Price (Per Plot)	Contract Total ²
(1 - 3)	133	\$ _____	\$ _____

The business named hereon is certified by the Office of Minority and Women's Business Enterprises and is bidding as a _____ owned business. (Enter either minority or woman, if appropriate.)

Firm Name _____ Address _____

Signature _____ City and State _____

Title _____ Phone _____

Note:

Detach and return one (1) copy of this form

¹An approximate number.

²Exclusive of Washington State Sales Tax.

**CONTRACTOR'S DECLARATION of
INDUSTRIAL INSURANCE STATUS**

INVITATION TO BID NUMBER 1401

The undersigned represents that they operate as ___ an individual, as ___ a partnership, or as ___ a corporation incorporated in the State of _____. The undersigned further certifies that they ___ will, ___ will not, be assisted by other individuals in the performance of this contract.

For the purpose of Industrial Insurance premiums payable to the Department of Labor and Industries, every individual in a partnership or joint venture must sign this bid sheet. Individuals not signing the bid sheet but assisting with the contract work will be considered workers for the purpose of Industrial Insurance except at the express approval of the Department of Labor and Industries.

Firm Name _____	Labor & Industries Account # _____
Signature _____	Washington Business License # _____
Title _____	Additional Signatures _____
Address _____	_____
City and State _____	_____
Business Phone _____	_____
Home Phone _____	_____

To whom it may concern:

This is to advise persons engaged in contracting forest activities of their liabilities under the mandatory provisions of the Industrial Insurance Act, Title 51 RCW.

The law provides benefits for a worker, injured in the course of his employment, or his family or dependents in case of death of the worker.

Worker is defined in the law as every person employed by an employer or every person working under an independent contract, the essence of which is that person's personal labor.

As one who contracts to perform forest activities you may require the assistance of other individuals to complete these contracts. If such is the case you are required to establish an industrial insurance account with the Department of Labor and Industries and pay the prescribed premium on behalf of your workers.

In the event you obtain the assistance of another person or persons to perform work in connection with your contract, regardless of the circumstances, you should contact the Department of Labor and Industries at one of its statewide service locations or its Olympia headquarters in the General Administration Building. You will then be provided with the necessary information regarding opening an account, premium rates, and reporting requirements.

The law also provides that any agency or firm that lets a contract is liable for payment of industrial insurance premiums should the contractor fail to do so. The agency or firm may also withhold money due the contractor to insure payment of premium. Consequently, failure to comply with the above requirements could delay payment of retained funds.

Note:

Return one (1) copy of this form per Clause 1-05

RES 55-3513 (6/84)

|

Appendix 1: DNR Young Stand Data Collection Field Manual



Free-to-Grow Certification Sampling Design and Field Craft

Purpose of the Field Pamphlet

This pamphlet outlines the procedures used to conduct free-to-grow certification samples of young forest stands managed by the Washington State Department of Natural Resources (DNR). These procedures enforce statistical rigor of field operations and provide data to update P&T activity recording and to support sustainable harvest and program evaluation.

Sample Population

The target population is the collection of established *trees* within the area of a forest management unit (FMU) considered to be a free-to-grow regenerating stand.

- Established trees are alive and greater than or equal to one foot in height.
- A free-to-grow stand is beyond the growth stage of “lethal” suppression where no further regeneration activities are planned and growth is assumed to be on the trajectory specified in the stand prescription.

The regenerating stand is the area to be sampled, but it is not the target population; the live established trees occupying the sample area comprise the target population. Interspersed clumps of residual trees, permanent roads, wetlands, non-stockable areas, etc. not intended to be regenerated are not sampled, even though they may be encompassed by the FMU boundary.

Sample Purposes

1. Documentation of Forest Practice minimum TPA and stocking requirements.
2. Certification of stocking, density, and species to validate that regeneration targets and FMU objectives are met.
3. Provide corporate quantitative data to support future decision-making by foresters and managers.

Sample design

Locating sample points in the field

Sample point locations are identified prior to field visitation using the Random Start Sample Point Locator (RSSPL) GIS application ([Figure 1](#)), and are “loaded” into a GPS unit. Using the GPS, travel toward the sample point by dead-reckoning or pacing and hand compass. Upon reaching the vicinity of the sample point use the GPS to determine if you are within 25 feet of the sample point. If not within 25 feet, use the GPS panning function to obtain a direction and distance and continue travel toward the sample point. If within 25 feet of the sample point use the GPS to obtain a direction and distance and then use a loggers tape and compass to locate an unbiased sample point position.

Stand boundaries (sample point acceptance criteria)

The FMU encompassing the target population may include more than the regenerating area of interest ([Figure 1](#)). There may be errors in boundaries and inclusion of small areas inconsistent with the target sample population. If these areas are of a size or nature that may

be identified or delineated at a future date, do not record data for sample points located in these areas. For example:

1. Sample points located within a residual clump will not be sampled and the point will be recorded as not taken.
2. Sample points located within the permanent road prism will not be sampled and the point will be recorded as not taken.
3. Sample points “falling” outside the regenerating area due to errors in boundary mapping will not be sampled and the point will be recorded as not taken.
4. Sample points located in non-stockable areas that could be identified and mapped from aerial photos will not be sampled and the point will be recorded as not taken

For example these areas will be sampled:

1. Sample points located on secondary roads that are expected to be regenerated will be sampled as part of the population.
2. Sample points located in small non-stockable areas too small to map will be sampled as part of the regenerating area.

Tree selection

Trees are selected into the sample using two selection rules, a small tree selection rule and a large tree rule. Small trees are defined as live trees of a species listed in the EDR that are greater than one-foot in height and less than 8 inches DBH. Small live trees are selected using a user defined fixed radius distance from the sample point (a fixed area plot, sic).

Determining the small tree selection rule is based on a user evaluation of stand density prior to sampling. Select a fixed radius size such that, on average, four to ten small trees greater than 4.5 feet tall will be included at each sample point; trees less than or equal to 4.5 feet are not included in this evaluation. Less than four or more than ten trees greater than 4.5 feet may be occur on a point; the intent is that the average per point tree count is between four and ten trees across the sample area.

When more than ten small trees greater than 4.5 feet are encountered on a sample point using the chosen small tree selection rule the sample area may be split (at the discretion of the sampler) in half such that each half contains approximately an equal number of trees. Apply the coin toss function on the EDR to choose the right half area if heads is displayed, choose the left half if tails is displayed. If there are still more than ten trees, split the chosen half and again use the coin-toss methodology to determine the area to sample. When plots are split, tree counts (see below) need to be adjusted to reflect the reduced plot size.

Large trees are live trees of a species listed in the EDR that are greater than or equal to 8 inches DBH. Large live trees are selected if they are located within 37.2 feet of the sample point (1/10th acre fixed area plot).

The small tree rule should typically select regenerated trees, whereas the large tree rule typically selects scattered residual trees into the sample.

Tree measurements

1. Count large and small trees with multiple stems (whether above or below breast-height) as a single tree with a [damage code](#) of 98. (example would be maple clumps or significantly damaged conifers that will not grow out of the multiple stem configuration)
2. Small trees less than or equal to 4.5 feet tall may be grouped together by species if desired. For each tree record the height; for a species group record the count of selected trees and an estimate of typical tree height. Adjust tree counts to reflect edge trees and split plots.
3. Small trees greater than 4.5 ft tall should typically be observed individually, but; grouping is permissible for nearly identical trees. Record the count (usually one, except for grouped trees or as noted below for edge trees or trees on a “split plot”), the species, estimated DBH, estimated height, and dominate damage code.
4. Some small trees greater than 4.5 feet tall will be “flagged” by the EDR when you add another line after they are recorded (based on a probability proportional to size criteria programmed into the data logger). These trees are to be measured for DBH and height as accurately as possible using a diameter tape or caliper and a height pole or clinometer. When trees have been lumped, select one of the trees at random (the coin toss function can provide a random function) for measurement.
5. Large trees should be observed individually. Record the count (usually one, except as noted above for edge trees), the species, estimated DBH, estimated height, and dominate damage code. The large tree selection “plot” is never split, but large trees near the FMU edge are assessed using the edge tree walkthrough solution. Large trees will not be selected for detailed measurements.
6. For all trees, DBH at 4.5 feet above ground-level on the uphill side of the tree should be estimated to as high a resolution as feasible (1/10th inch when practical) and measured to the nearest 1/10th inch. Similarly, tree height should be estimated from ground-level on the uphill side of the tree to the highest point on the tree (top of the leader unless damaged, then to the highest live point) to as high a resolution as feasible (nearest 1/10th foot for small trees and nearest one foot for large trees when practical).
7. The single most dominate damage for each tree (small and large) is recorded only if the damage can be expected to influence growth and/or quality beyond the next three growing seasons.
8. Edge tree walkthrough solution¹:
 - a. A potential edge tree is one near a stand boundary (near being within two times the distance of the fixed radius of the selection rule). Edge trees need to have their selection probabilities adjusted by increasing their tree count value.
 - b. To determine if a sample tree is an “edge” tree, measure the distance from the sample point to the tree. If the distance from the tree to the stand boundary (projected along a line passing through the sample point and the tree) is greater than the distance from the sample point to the tree, double the tree count ([Figure 2](#)).
 - c. The count for an edge tree on a plot that is split would be four; i.e., multiply the “split plot” count by two.
 - d. For edge trees less than or equal to 4.5 feet tall record “edge” trees separate from trees not near the edge (whether individually or grouped) and double the actual tree count.
 - e. When the stand boundary is not obvious the drip line of live trees in the adjacent stand may be used to establish the boundary. The stand boundary should be ascertained prior to performing the walkthrough solution.
9. When plots are split the tree count is duplicated for each split, i.e., if the plot is split once tree count is doubled, if the plot is split twice tree count is doubled again. For example, tree

¹ Ducey, Mark J. Jeffrey H. Gove, and Harry T. Valentine. 2004. A walkthrough solution to the boundary overlap problem. *Forest Science* 50(4): 427-435.

count on a plot split twice will be multiplied by four. If the tree is also an edge tree it is additionally multiplied by two.

- As sample points are measured the F8 key on the EDR can be used to calculate the number of plots needed for attaining a 20% or less error at a 90% confidence level of the estimated number of small trees greater than 4.5 feet per acre for the FMU. This function is available only after five sample points have been observed.

Figure 1. Sample point locations generated by the Random Start Sample Point Locator (RSSPL) GIS application. Some sample points may be located outside the sample area (on a permanent road, within a residual clump, etc.) but inside the FMU boundary.

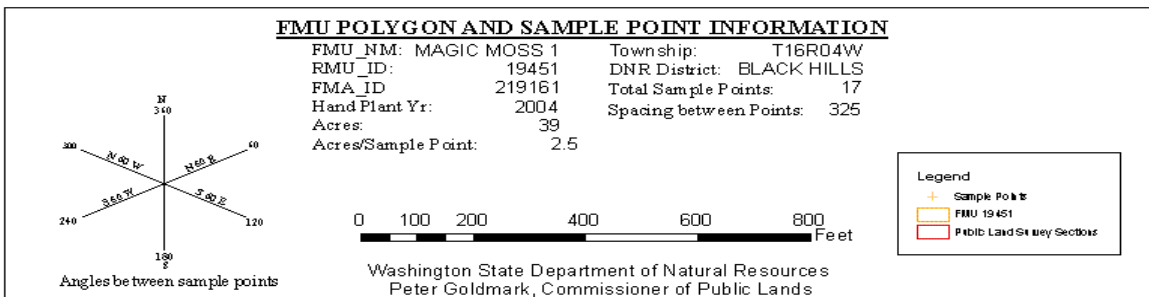
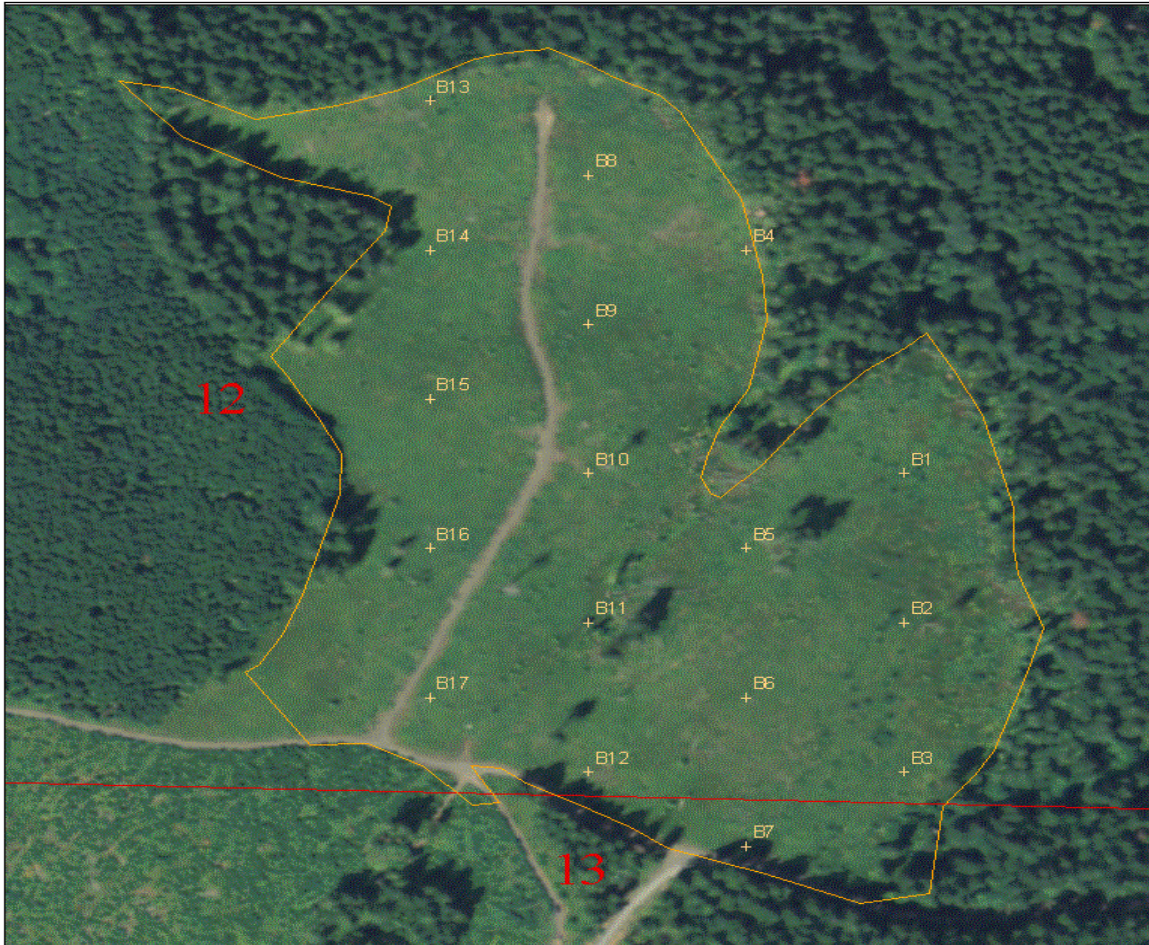
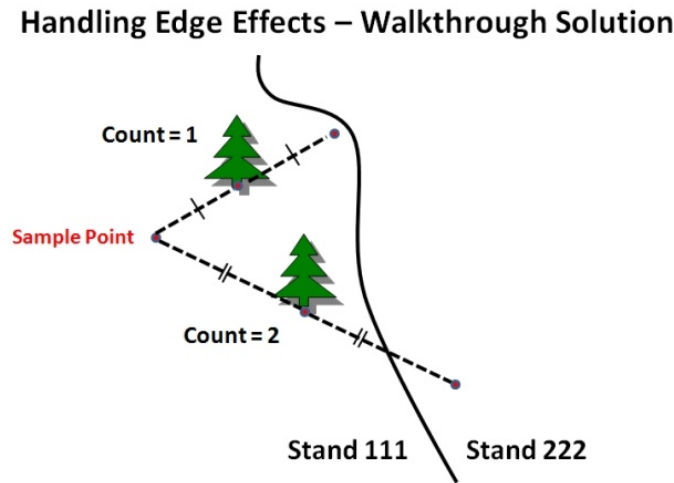


Figure 2. Schematic illustrating the walkthrough solution for determining edge tree selection-probability by projecting a distance (equal to the distance from the tree to the stand).



Equipment

The following equipment is recommended to perform field sampling:

- | | |
|-----------------------------------|--|
| 1. Electronic Data Recorder (EDR) | 5. Inventory unit map (Figure 1) |
| 2. Personal computer or laptop | 6. Caliper or diameter tape |
| 3. Hand compass | 7. Clinometer, Relaskop or height pole |
| 4. Garmin 60CSX GPS | 8. Loggers tape or rangefinder |

Allegro Electronic Data Recorder

Basics for DOS version (EDR displays shown in *italics*)

1. Turn on EDR at the **on/off** button. (If at command prompt, type in "DPP" to load DataPlus.)
2. When **Collect Data** is highlighted press the Enter key.
 - a. When starting a new sample enter a valid FMU_ID as the New File Name.
 - b. When continuing an existing data set select **Old Data Set**, scroll down to highlight the FMU then press the enter key.
3. Press the **F5** key. This takes you to the **FMU Information Screen**. If a valid FMU ID has been entered as a file name, Fmuld, FmuNm and Fmald should automatically load. If an invalid Fmuld has been entered as a file name, then the user will be prompted to delete this dataset (F10) and start again. Once the dataset has been initialized with Fmuld, FmuNm and Fmald, the user can continue entering Name, PlotSz and any stand damages that are observed. Once the information screen is completed, press **F5** and advance to the plot screen.
4. Enter the plot number (SptNo) and press the **F5** key to advance to the tree data screen.
5. Once all trees have been recorded scroll down to add a record to activate potential measurement "flagging" on the last tree entry and then press the **F4** key to return to the plot screen in preparation for the next plot.

Data Recording Screens

FMU Information Screen:

Fmuld – enter FMU ID.

FmuNm - enter FMU Name

Fmald – enter FMA ID

Userld – enter your DNR computer network user name, e.g., bgmm490.

PltSize – select desired fixed radius plot size from the following:

Nominal Plot Size*	Plot Radius [†]	Nominal Plot Size*	Plot Radius [†]
1/10 th acre	37.2 feet	1/200 th acre	8.3 feet
1/20 th acre	26.3 feet	1/250 th acre	7.4 feet
1/50 th acre	16.7 feet	1/400 th acre	5.9 feet
1/100 th acre	11.8 feet		

*Nominal plot size is not an exact expansion factor; actual expansion is based on plot radii.

[†]Radii are horizontal distance measured to the one-tenth foot.

PriDmg, SecDmg, TerDmg – enter any primary, secondary and tertiary stand damages observed ([see damage codes below](#)).

Plot Sample Screen

SptNo – enter sample point number as identified on FMU sample point map.

Taken – Default is **YES**, enter **NO** when sample point is not observe **d**.

Tree Data Collection Screen

Mt – Enter type of measurement: E = estimate (default), L= Large tree, M = measure, automatically determined.

No – Enter a tree number, usually starting at 1 for each sample point.

Cnt – Enter tree count, usually one, except for lumped trees less than or equal to 4.5 feet, split plots, and edge trees.

Spp – Enter tree species number or select from drop down list.

Dbh – Enter diameter breast height to the nearest 1/10th inch, when practical.

Hgt – Enter height to nearest 1/10th foot, when practical.

Dmg – Enter single most dominant damage from drop-down list.

Notes – Enter comments, optional, up to 40 characters.

Damage Conditions

<u>Code</u>	<u>Agent/Condition</u>
00	No Damage Present
10	Defoliators
30	Mistletoe
55	Swiss needle cast
60	Root disease
70	Animal
80	Weather
90	Other
98	Multiple boles or stems

Species Codes

SPECIES CODE	SP ABBREVIATION	MEANING
04	DF	Douglas-fir
06	WH	Western hemlock
07	GF	Grand fir
08	SF	Silver fir
10	SS	Sitka spruce
12	RC	Western redcedar
14	WP	White pine
16	NF	Noble fir
18	AF	Subalpine fir
20	YC	Alaska yellow cedar
22	MH	Mountain hemlock
24	PP	Ponderosa pine
26	LP	Lodgepole pine
28	ES	Engleman spruce
30	WL	Western larch
32	MA	Big leaf maple
34	BC	Black cottonwood
36	RA	Red alder
38	BR	Paper birch
40	AS	Quaking aspen
42	WB	Whitebark pine
44	CH	Cherry
46	OO	Oregon white oak
48	OA	Oregon ash
53	PY	Pacific yew
54	MD	Pacific madrone
57	DG	Dogwood
61	CA	Cascara
62	WO	Willow
70	WA	White alder
71	AC	Crabapple
72	HW	Hawthorn
73	RJ	Rocky Mt. juniper
74	SQ	giant sequoia
99	XX	unknown