



TIMBER NOTICE OF SALE

SALE NAME: SOUTH CHICAGO

AGREEMENT NO: 30-99255

AUCTION: June 17, 2020 starting at 10:00 a.m., Olympic Region Office, Forks, WA

COUNTY: Clallam

SALE LOCATION: Sale located approximately 15 miles west of Port Angeles

PRODUCTS SOLD AND SALE AREA:

All timber, except trees banded with blue paint or bounded out by yellow leave tree area tags, and all downed red cedar, or any timber that has been on the ground for 5 year or more (five years is defined by more than 1.5 inches of sap rot), bounded by the following: Timber Sale Boundary tags, the PA-J-5025 road, and red painted "take" trees along private property lines in Unit 1; Timber Sale Boundary tags, and the PA-S-2510 in Unit 2; Timber Sale Boundary Tags in Units 3 and 7; Timber Sale Boundary tags, timber type change and flag line in Unit 4; Timber Sale Boundary tags and the PA-S-2582.1 in Unit 5; Timber Sale Boundary Tags in Unit 6; Timber Sale Boundary tags, the PA-S-1000 and flag line in Unit 8; Timber Sale Boundary tags and the PA-S-2550 in Unit 9; Timber Sale Boundary tags in Unit 21; all timber bounded by right-of-way boundary tags, located in Units 12,13,14,15,16,17,18,19, and 20 on part(s) of Sections 5 and 6 all in Township 30 North, Range 9 West, Sections 29, 30 and 31 all in Township 31 North, Range 9 West, Sections 27 and 28 all in Township 31 North, Range 8 West, W.M., containing 349 acres, more or less.

CERTIFICATION: This sale is certified under the Sustainable Forestry Initiative® program Standard (cert no: PwC-SFIFM-513)

ESTIMATED SALE VOLUMES AND QUALITY:

Table with columns: Species, Avg DBH, Ring Count, Total MBF, and MBF by Grade (1P, 2P, 3P, SM, 1S, 2S, 3S, 4S, UT). Rows include Red alder, Douglas fir, Hemlock, Red cedar, Maple, Spruce, and Sale Total.

MINIMUM BID: \$1,282,000.00

BID METHOD: Sealed Bids

PERFORMANCE SECURITY:

\$100,000.00

SALE TYPE: Lump Sum

EXPIRATION DATE: October 31, 2022

ALLOCATION: Export Restricted

BID DEPOSIT: \$128,200.00 or Bid Bond. Said deposit shall constitute an opening bid at the appraised price.

HARVEST METHOD: Cable 14% Ground Based 86% Rubber tired skidders are restricted; tracked skidders, feller buncher and shovels will not operate on sustained slopes over 40%. Authority to use other equipment or to operate outside the equipment specifications detailed above must be approved in writing by the State.



## TIMBER NOTICE OF SALE

Falling, yarding, and timber hauling shall not be permitted on weekends, State recognized holidays and from 8:00 p.m. to 6 a.m., unless authorized in writing by the Contract Administrator. Designated crossings are to be approved by the Contract Administrator. 30' equipment limitation zone on all typed waters.

In Unit 6: As indicated on the Timber Sale Map and Logging Plan Map; no cutting, yarding, tailholding, or any other harvest related activities shall occur within the "No Harvest Eagle Buffer". Within the "Eagle Timing Restriction"; activities such as cutting, yarding, tailholding, or any other harvest related activities shall not be allowed from January 1st to August 15th.

### **ROADS:**

175.70 stations of required construction. 89.70 stations of required reconstruction. 40.66 stations of optional construction. 4.35 stations of optional reconstruction. 787.10 stations of required prehaul maintenance. 35.95 stations of optional prehaul maintenance. 14.36 stations of decommissioning.

All road activity, including rock haul and rock pit development is not permitted from November 1- March 1, or on weekends, State recognized holidays and between 8:00 p.m.- 6:00 a.m., unless authorized in writing by the Contract Administrator.

Timber falling, road work or operation of heavy equipment on the PA-I-2600, PA-I 2610, PA-I-2620 and Place Pit performed, during the marbled murrelet nesting season, (April 1 through September 23), is restricted to, two hours after sunrise to two hours before sunset. This does not apply to hauling timber, rock or equipment.

### **ACREAGE DETERMINATION**

**CRUISE METHOD:** Sale area was 100% GPS'd. Sale units were cruised using a variable plot sample.

**FEES:** \$152,728.00 is due on day of sale. \$9.00 per MBF is due upon removal. These are in addition to the bid price.

**SPECIAL REMARKS:** There are locked gates on the PA-I-2600, PA-S-1200, PA-S-2550, PA-S-2600, PA-S-1000, PA-J-5000, PA-J-5400, and the PA-J-5500. Contact the Olympic Region Dispatch Center at 360-374-2800 to obtain an AA-1-key.

Purchaser supplied bridge required. Refer to Road plan for details.

Purchaser shall complete road work by 6/01/2021 on the PA-J-5000, PA-J-5020, PA-J-5400 and the PA-J-5410.

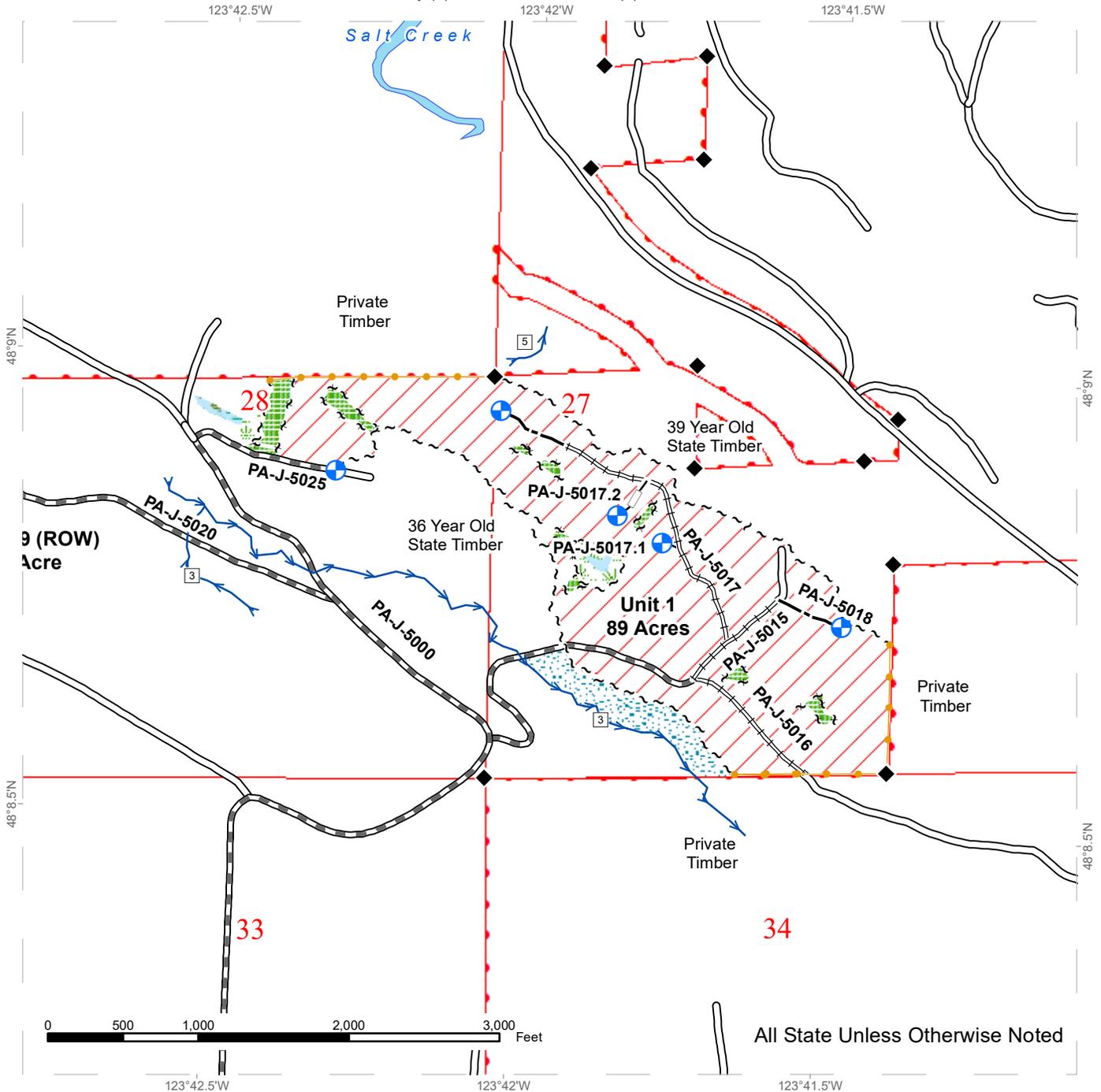
Purchaser shall complete decommissioning on the PA-S-2550 before 11/15/2020 and complete decommissioning on the 3+75 Spur by 10/31/2021.

Purchaser shall develop existing rock source called Agate Pit. Purchaser shall develop a new rock source called Arm Pit.

# TIMBER SALE MAP

**SALE NAME:** SOUTH CHICAGO  
**AGREEMENT #:** 30-099255  
**TOWNSHIP(S):** T31R8W, T31R9W, T30R9W  
**TRUST(S):** Common School and Indemnity (3), State Forest Transfer (1)

**REGION:** Olympic Region  
**COUNTY(S):** Clallam  
**ELEVATION RGE:** 40'-920'



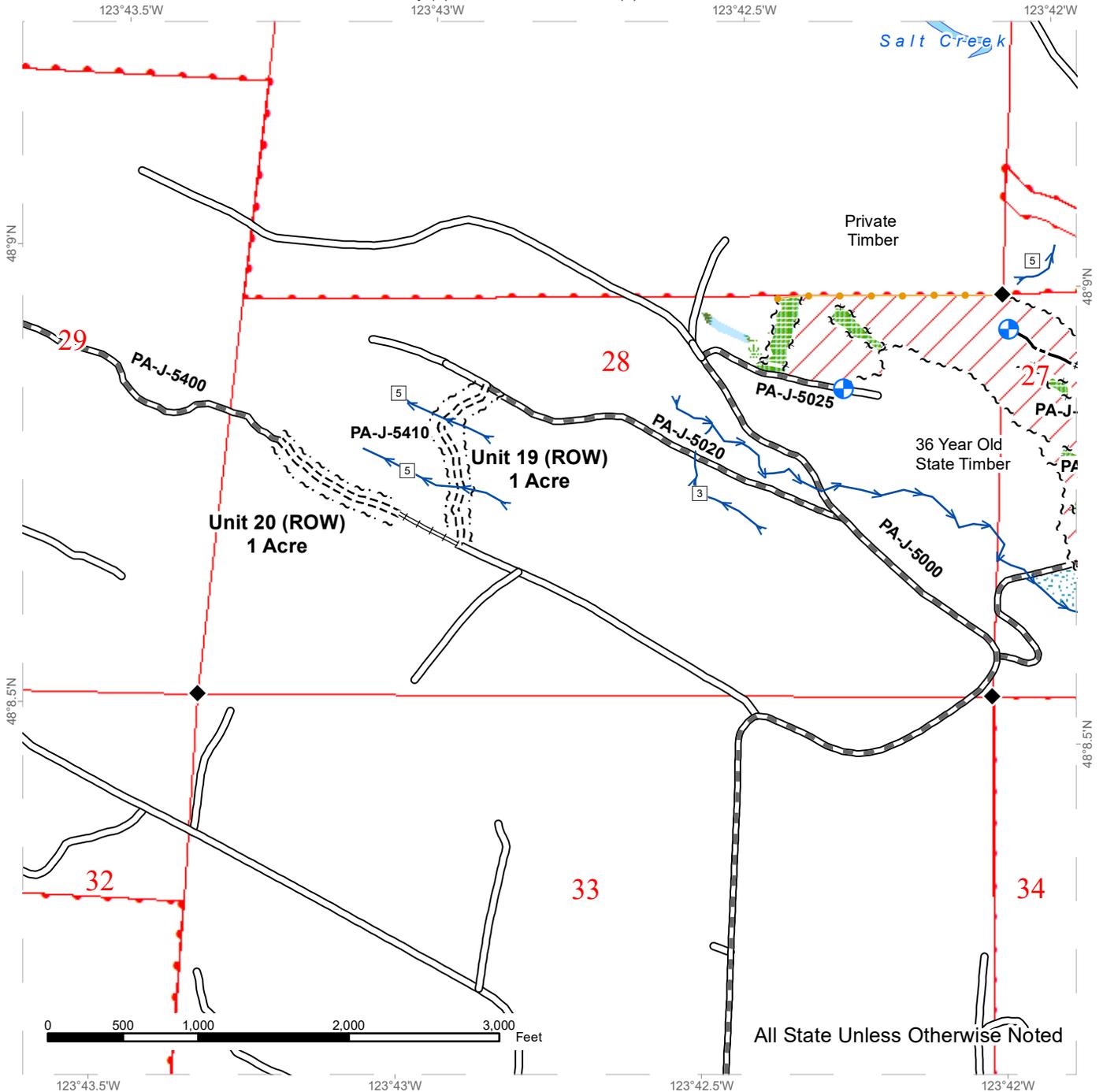
All State Unless Otherwise Noted




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Variable Retention Harvest	No Harvest Eagle Buffer	Sale Boundary Tags	Waste Area
Variable Density Thinning	Open Water	Leave Tree Tags	Streams
Bog	Existing Road	Right of Way Tags	Stream Type
Leave Tree Area	Optional Construction	Take / Removal Trees	Stream Type Break
Hazard Abatement	Optional Pre-Haul Maintenance	Flag Line	Survey Monument
Eagle Timing Restriction	Optional Reconstruction	Timber Type Change	Rock Pit
Riparian Management Zone	Required Construction	DNR Managed Lands	Gate
Forested Wetland	Required Pre-Haul Maintenance	Proposed Landing	4x4 Trails
Wetland Mangement Zone	Required Reconstruction		

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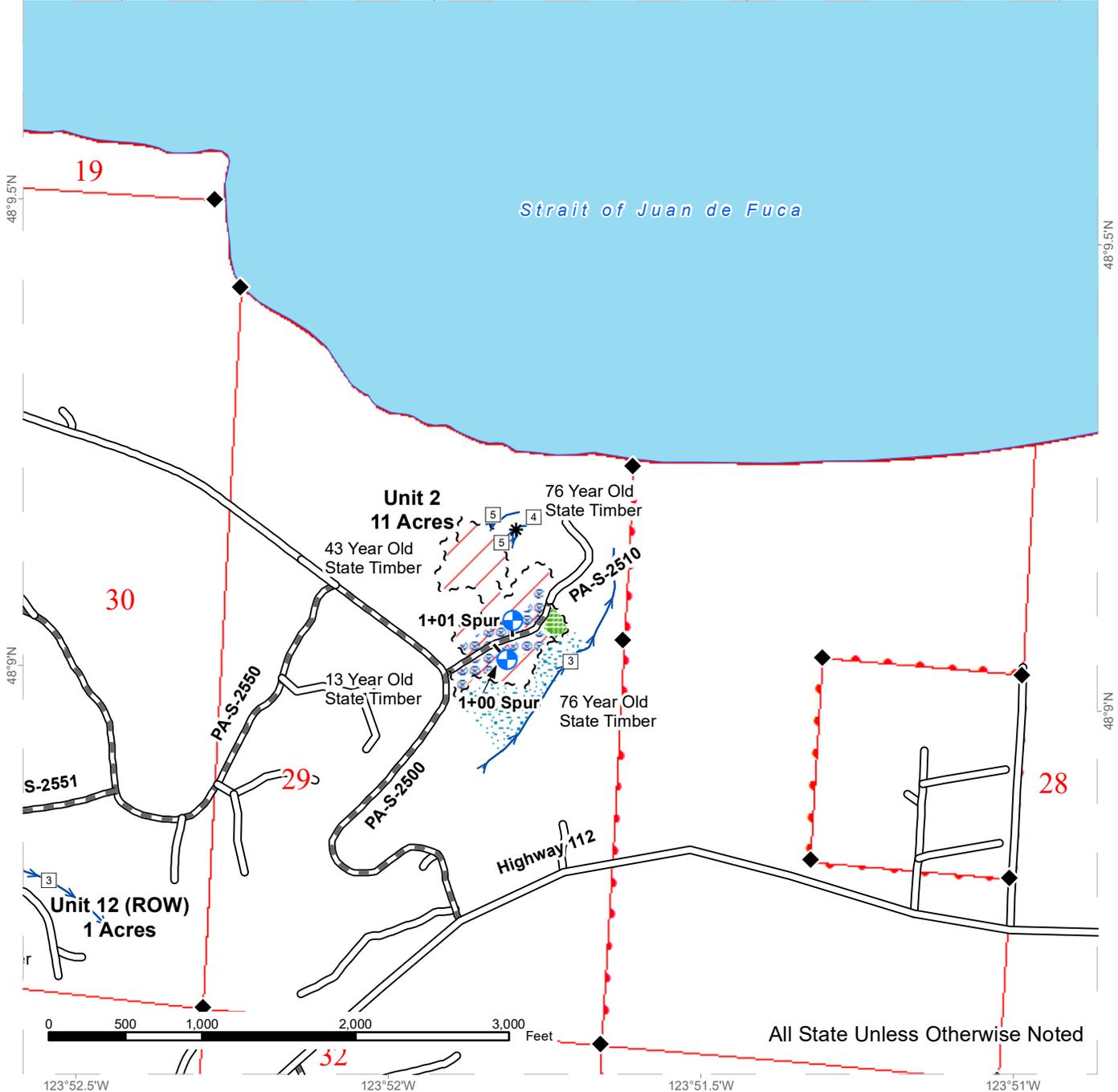
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123°52.5'W

123°52'W

123°51.5'W

123°51'W



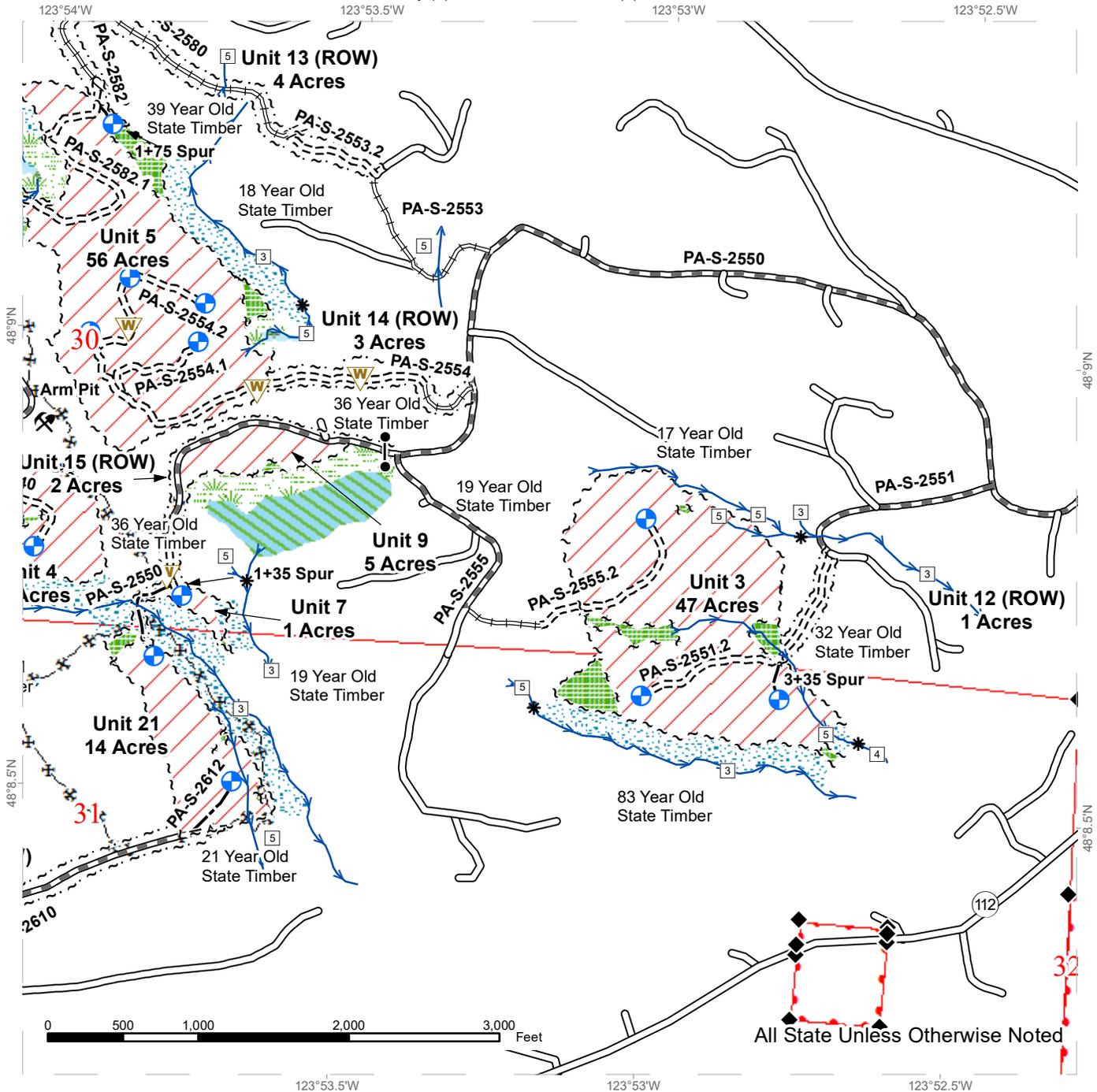
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Bog	Existing Road	Right of Way Tags	Stream Type
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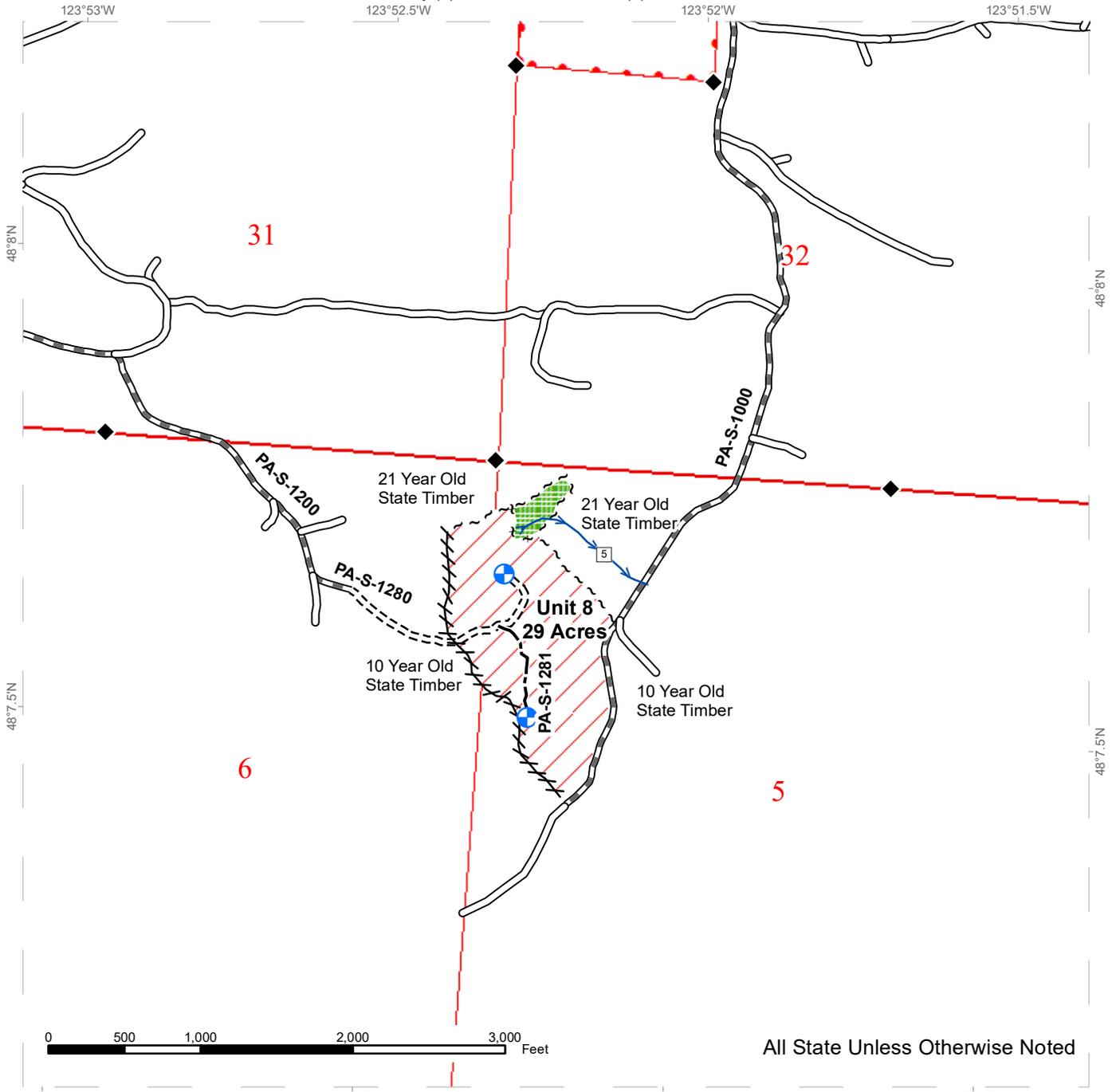




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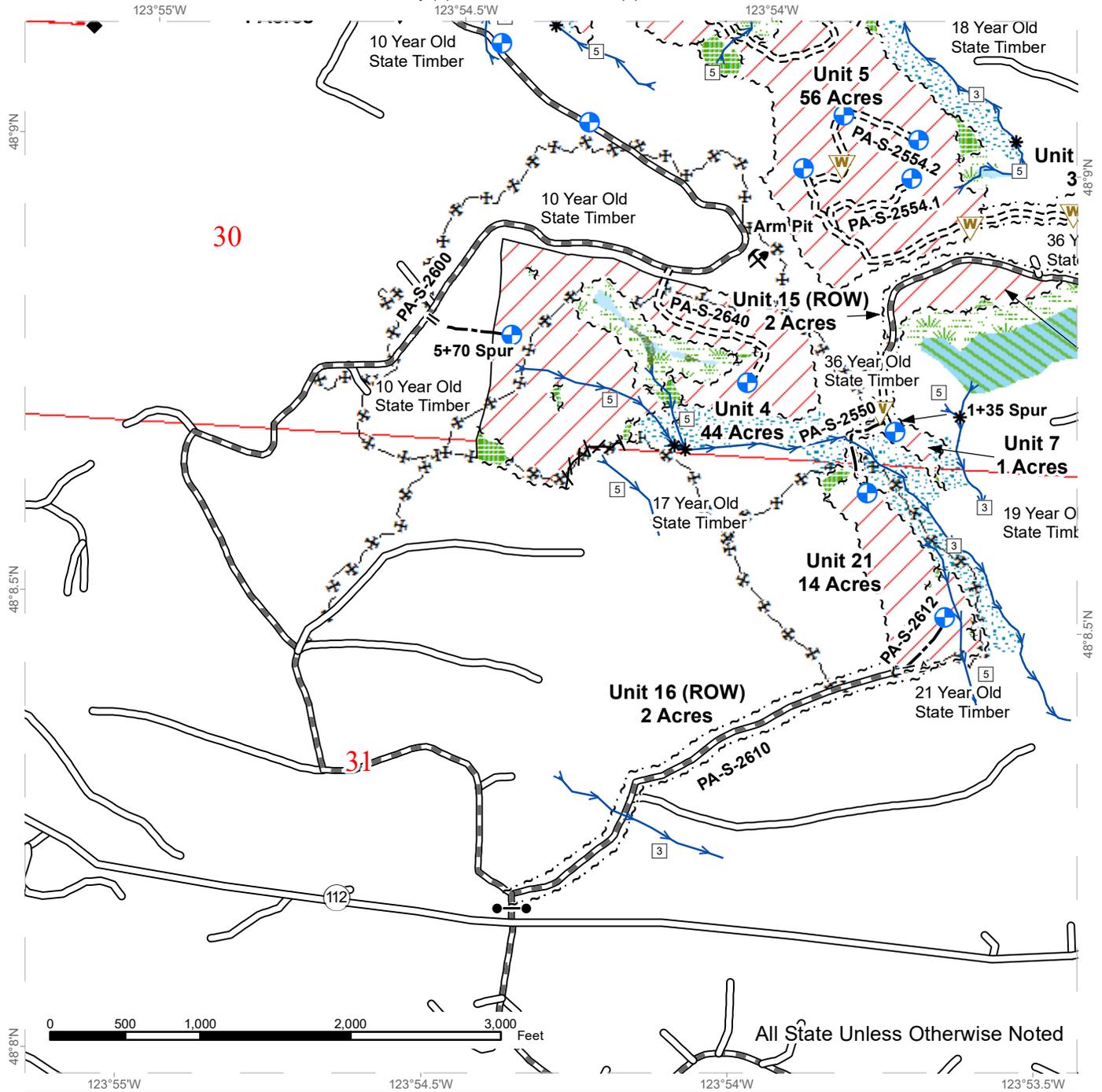
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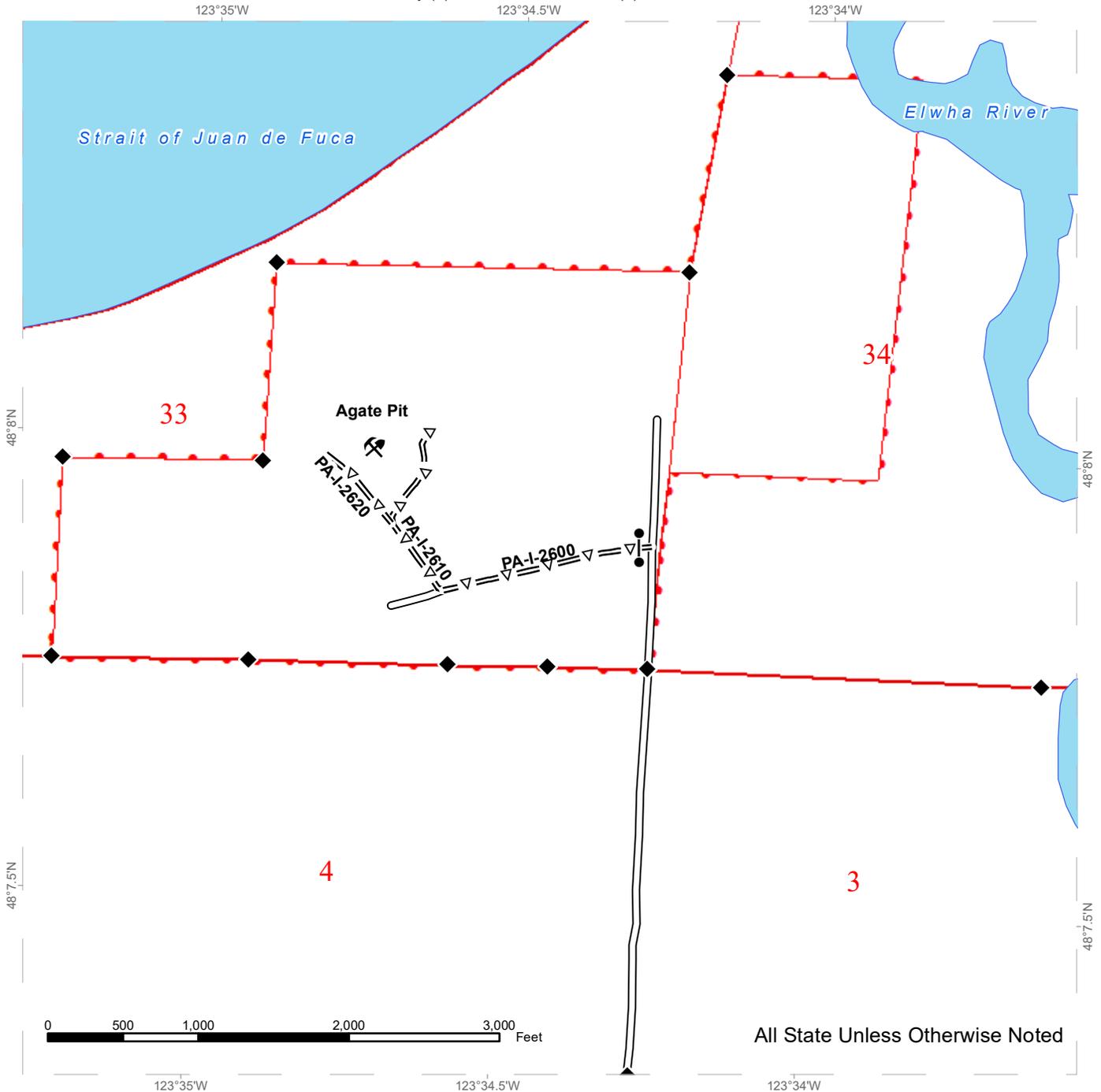
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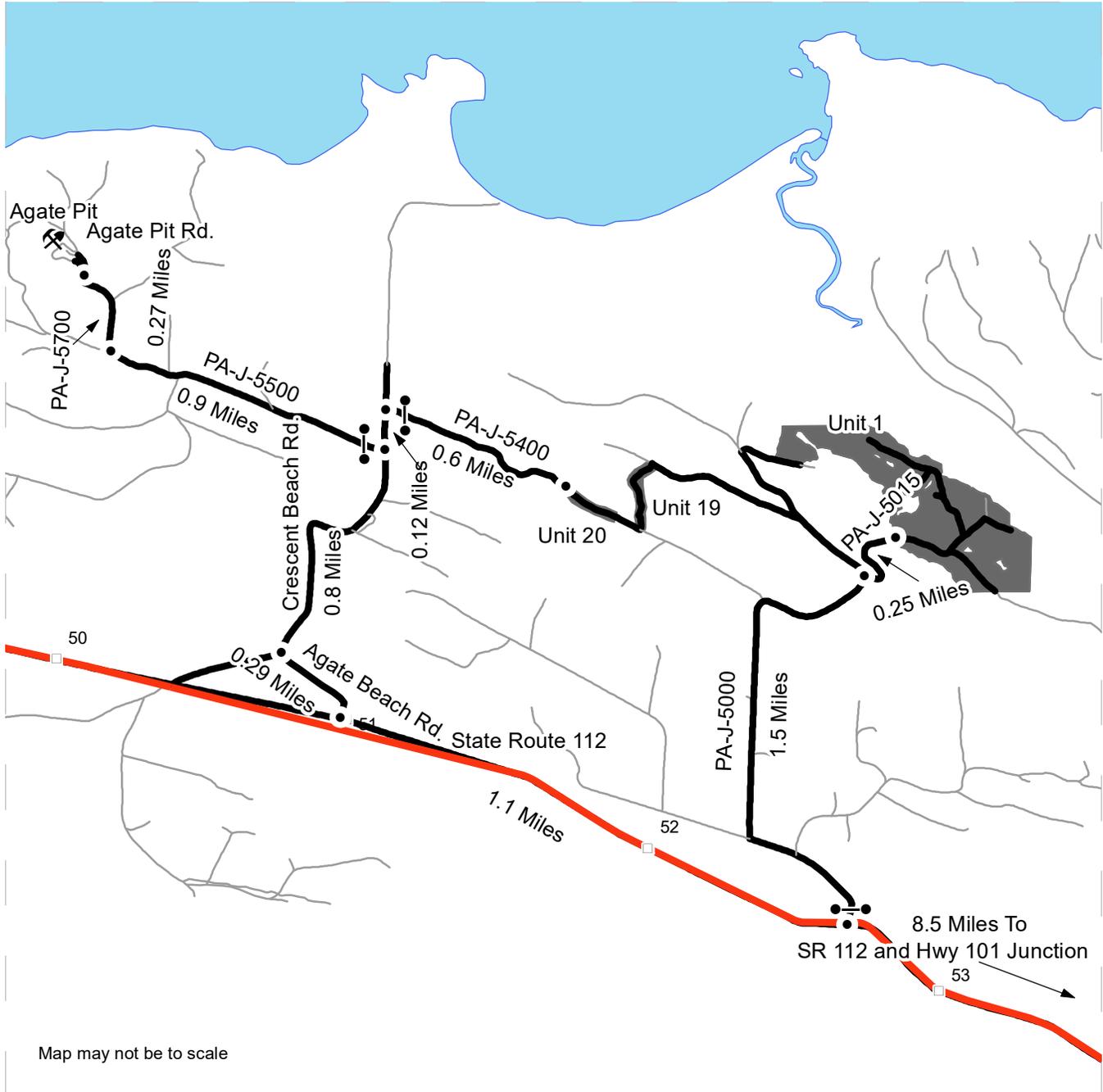
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# DRIVING MAP

**SALE NAME:** SOUTH CHICAGO  
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**TOWNSHIP(S):** T31R8W, T31R9W  
**TRUST(S):** Common School and Indemnity (3), State Forest Transfer (1)

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- Timber Sale Unit
- Milepost Markers
- Distance Indicator
- Gate
- Rock Pit
- Other Roads
- Haul Route
- Highway

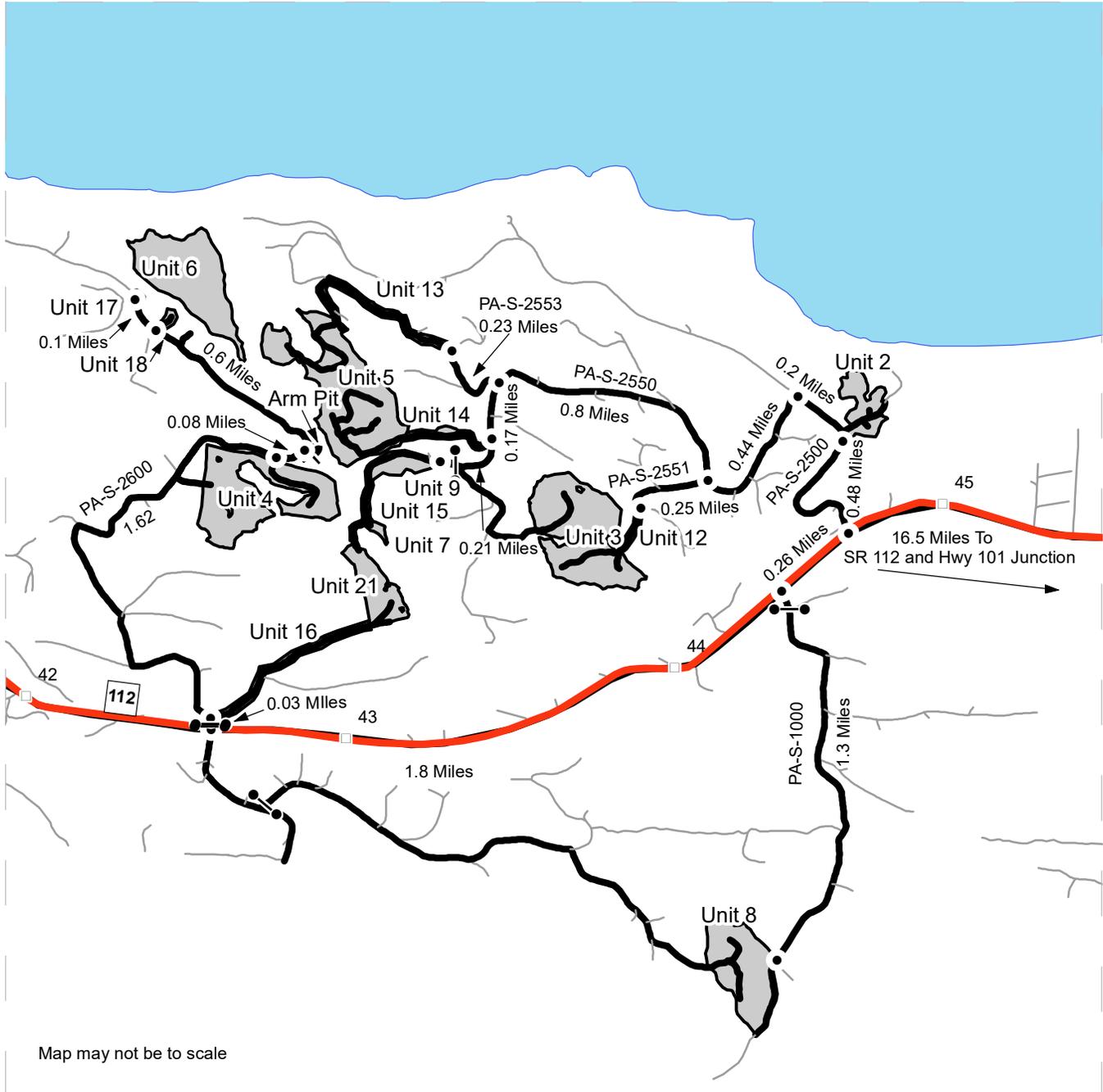
See Attached Driving Directions



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Map may not be to scale

- Timber Sale Unit
- Milepost Markers
- Distance Indicator
- Gate (AA1)
- Rock Pit
- Other Roads
- Haul Route
- Highway

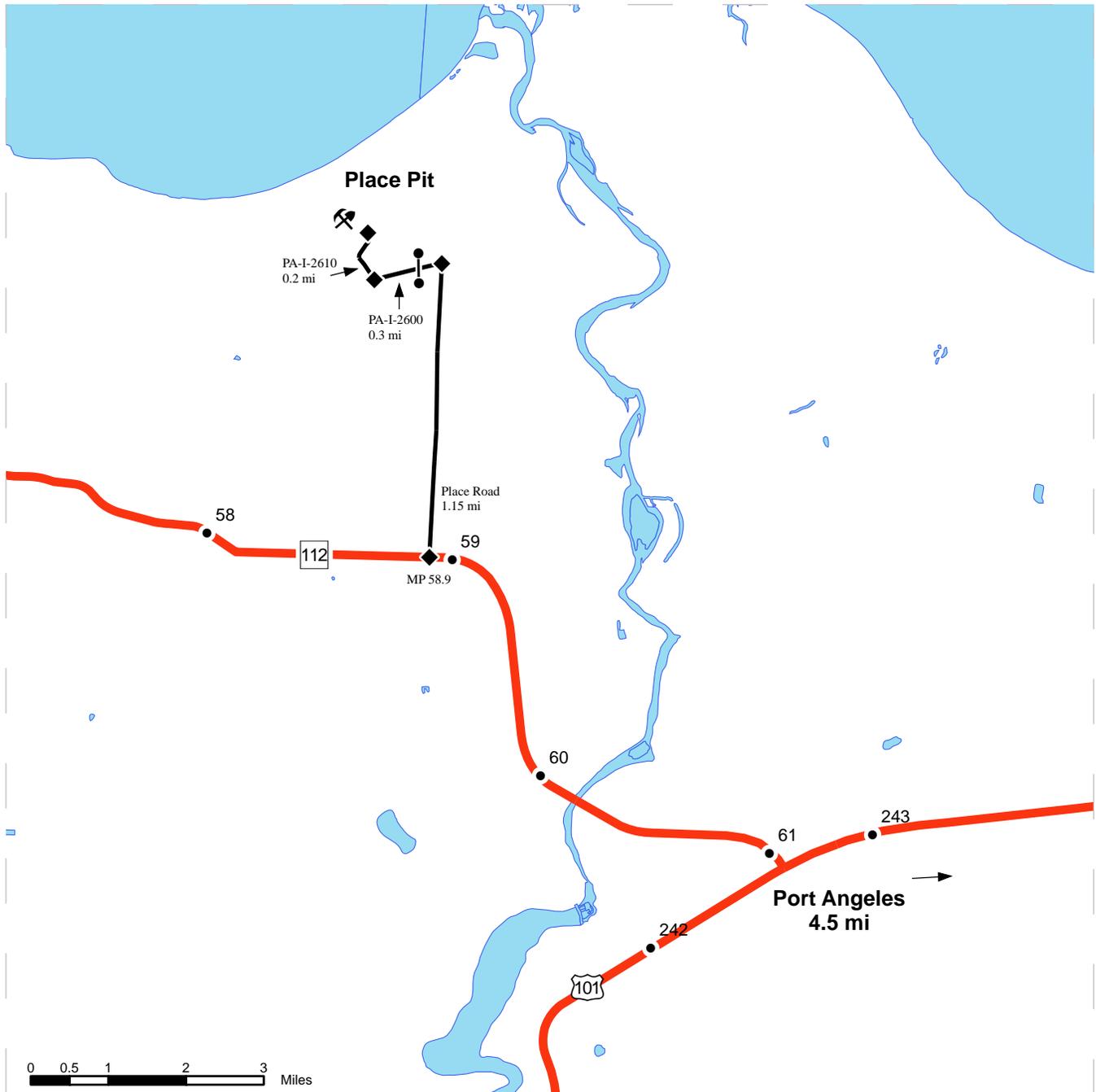
See Attached Driving Directions



# DRIVING MAP

**SALE NAME:** South Chicago  
**AGREEMENT#:** 30-099255  
**TOWNSHIP(S):** T31N R07W  
**TRUST(S):** Common School and Indemnity (3), State Forest Transfer (01)

**REGION:** Olympic  
**COUNTY(S):** Clallam  
**ELEVATION RGE:** 40-920'



- Rock Pit
- Distance Indicator
- Milepost Markers
- Gate (AA1)

**DRIVING DIRECTIONS:**  
 Place Pit: Drive 4.5 miles west of Port Angeles to State Route 112. Turn northwest (right) and drive to MP 58.9. Turn north (right) onto Place Road and drive to MP 1.15. Turn west (left) onto the PA-I-2600/2610. AA-1 required for gate. Drive 0.5 miles to the pit.



## Driving Directions

Unit 1: From the junction of SR 112 and Hwy 101 drive 8.5 miles west. Turn right onto the PA-J-5000 and drive for 1.5 miles. Turn right onto the PA-J-5015 and drive for 0.25 miles to the unit.

Agate Pit: From the junction of SR 112 and PA-J-5000 continue west for 1.1 miles. Turn right onto Agate Beach Rd. and drive for 0.29 miles. Turn right onto Crescent Beach Rd. and drive for 0.8 miles. Turn left onto the PA-J-5500 and drive for 0.9 miles. Turn right onto the PA-J-5700 and drive for 0.27 miles. Turn left onto Agate Pit Rd. which will take you to the pit.

Unit 19 and 20: From the junction of Crescent Beach Rd. and PA-J-5500 continue on Crescent Beach Rd. for 0.12 miles. Turn right onto the PA-J-5400 and drive for 0.6 miles to Unit 20. Walk through Unit 20 and continue 0.08 miles on the existing road to get to Unit 19.

Unit 2: From the junction of SR 112 and Hwy 101 drive 16.5 miles west. Turn right onto the PA-S-2500, and drive for 0.48 miles to the unit.

Unit 3 and 12: From Unit 2 continue on the PA-S-2500 for 0.2 miles. Turn left onto the PA-S-2550 and drive 0.44 miles. Turn left onto the PA-S-2551 and drive for 0.25 miles to Unit 12. Walk through Unit 12 to get to Unit 3.

Unit 5 and 13: From the PA-S-2551 and PA-S-2550 junction continue on the PA-S-2550 for 0.8 miles. At this point start walking on the PA-S-2553 for 0.23 miles to Unit 13. Walk through Unit 13 to Unit 5.

Unit 14: From the PA-S-2550 and PA-S-2553 junction continue on the PA-S-2550 for 0.17 miles, which is where Unit 14 begins.

Unit 7, 9, 15 and 21: From Unit 14, continue on the PA-S-2550 for 0.21 miles to the start of Unit 15 and 9. Walk through Unit 15 to get to Unit 7 and Unit 21.

Unit 8: From the PA-S-2500 and SR 112 junction, continue on SR 112 for 0.26 miles. Turn left onto the PA-S-1000 and drive 1.3 miles to the unit.

Unit 16: From the PA-S-1000 and SR 112 junction, continue on SR 112 for 1.8 miles. Turn right onto the PA-S-2600 and drive for 0.03 miles to the unit.

Unit 4: From the beginning of Unit 16 continue on the PA-S-2600 for 1.62 miles to the new construction road that will lead to the Unit 4.

Arm Pit: Continue on the PA-S-2600 for 0.08 miles to the pit.

Unit 18: Continue on the PA-S-2600 for 0.6 miles to the unit.

Unit 6 and 17: Continue on the PA-S-2600 for 0.1 miles to Unit 17. From Unit 17 walk across the creek to Unit 6.

**STATE OF WASHINGTON  
DEPARTMENT OF NATURAL RESOURCES**

**BILL OF SALE AND CONTRACT FOR  
FOREST PRODUCTS**

**Export Restricted Lump Sum AGREEMENT NO. 30-099255**

**SALE NAME: SOUTH CHICAGO**

**THE STATE OF WASHINGTON DEPARTMENT OF NATURAL  
RESOURCES, HEREINAFTER ACTING SOLELY, IN ITS PROPRIETARY  
CAPACITY, STATE, AND PURCHASER, AGREE AS FOLLOWS:**

Section G: General Terms

G-001 Definitions

The following definitions apply throughout this contract;

Bill of Sale and Contract for Forest Products: Contract between the Purchaser and the State, which sets forth the procedures and obligations of the Purchaser in exchange for the right to remove forest products from the sale area. The Bill of Sale and Contract for Forest Products may include a Road Plan for any road construction or reconstruction, where applicable.

Contract Administrator: Region Manager's designee responsible for assuring that the contractual obligations of the Purchaser are met.

Forest Product: Any material derived from the forest for commercial use.

Purchaser: The company or individual that has entered into a Bill of Sale and Contract for Forest Products with the State for the right to harvest and remove forest products from the timber sale area.

Road Construction: Includes building new and maintaining existing forest roads and associated work that may be optional or required as described in the Road Plan.

State: The Washington State Department of Natural Resources, landowner and seller of Forest Products from the timber sale area. The State is represented by the Region Manager as designated on the contract signature page. Contractual obligations to the State are enforced by the Region Manager or the designated Contract Administrator.

Subcontractor: Individual or company employed by the Purchaser to perform a portion or all of the services required by The Bill of Sale and Contract for Forest Products. The Purchaser is responsible for independently negotiating, procuring and paying for all subcontracted services rendered.

G-011 Right to Remove Forest Products and Contract Area

Purchaser was the successful bidder on June 17, 2020 and the sale was confirmed on \_\_\_\_\_. The State, as owner, agrees to sell to Purchaser, and Purchaser agrees to purchase as much of the following forest products as can be cut and removed during the term of this contract: All timber, except trees banded with blue paint or bounded out by yellow leave tree area tags, and all downed red cedar, or any timber that has been on the ground for 5 year or more (five years is defined by more than 1.5 inches of sap rot), bounded by the following: Timber Sale Boundary tags, the PA-J-5025 road, and red painted "take" trees along private property lines in Unit 1; Timber Sale Boundary tags, and the PA-S-2510 in Unit 2; Timber Sale Boundary Tags in Units 3 and 7; Timber Sale Boundary tags, timber type change and flag line in Unit 4; Timber Sale Boundary tags and the PA-S-2582.1 in Unit 5; Timber Sale Boundary Tags in Unit 6; Timber Sale Boundary tags, the PA-S-1000 and flag line in Unit 8; Timber Sale Boundary tags and the PA-S-2550 in Unit 9; Timber Sale Boundary tags in Unit 21; all timber bounded by right-of-way boundary tags, located in Units 12,13,14,15,16,17,18,19, and 20, located on approximately 349 acres on part(s) of Sections 5, and 6 all in Township 30 North, Range 9 West, Sections 29, 30, and 31 all in Township 31 North, Range 9 West, Sections 27, and 28 all in Township 31 North, Range 8 West W.M. in Clallam County(s) as designated on the sale area and as shown on the attached timber sale map.

All forest products described above from the bole of the tree that meet or exceed 2 inches diameter inside bark on the small end are eligible for removal. Above ground components of a tree that remain as by-products after the manufacture of logs, including but not limited to tree tops, branches, limbs, needles, leaves, stumps, are eligible for removal under the terms of this contract.

Forest products purchased under a contract that is designated as export restricted shall not be exported until processed. Forest products purchased under a contract that is designated as exportable may be exported prior to processing.

G-020 Inspection By Purchaser

Purchaser hereby warrants to the State that they have had an opportunity to fully inspect the sale area and the forest products being sold. Purchaser further warrants to

the State that they enter this contract based solely upon their own judgment of the value of the forest products, formed after their own examination and inspection of both the timber sale area and the forest products being sold. Purchaser also warrants to the State that they enter this contract without any reliance upon the volume estimates, acreage estimates, appraisals, pre-bid documentation, or any other representations by the State Department of Natural Resources.

G-025 Schedules

The following attached schedules are hereby incorporated by reference:

Schedule	Title
A	SLASH PILING SPECS
B	GREEN TREE RETENTION PLAN

G-031 Contract Term

Purchaser shall complete all work required by this contract prior to October 31, 2022.

G-040 Contract Term Adjustment - No Payment

Purchaser may request an adjustment in the contract term. A claim must be submitted in writing and received by the State within 30 days after the start of interruption or delay. The claim must also indicate the actual or anticipated length of interruption or delay. The State may grant an adjustment without charge only if the cause for contract term adjustment is beyond Purchaser's control. The cause must be one of the following and the adjustment may be granted only if operations or planned operations under this contract are actually interrupted or delayed:

- a. Road and bridge failures which deny access.
- b. Access road closures imposed by road owner.
- c. Excessive suspensions as provided in clause G-220.
- d. Regulatory actions not arising from Purchaser's failure to comply with this contract which will prevent timber harvest for a period less than 6 months.

G-051 Contract Term Extension - Payment

Extensions of this contract term may be granted only if, in the judgment of the State, Purchaser is acting in good faith and is endeavoring to remove the forest products conveyed. The term of this contract may be extended for a reasonable time by the State if all of the following conditions are satisfied:

- a. A written request for extension of the contract term must be received prior to the expiration date of the contract.
- b. Completion of all required roads and compliance with all contract and regulatory requirements.

- c. For the first extension, not to exceed 1 year, payment of at least 25 percent of the total contract price.

For the second extension, not to exceed 1 year, payment of at least 90 percent of the total contract price.

The payments shall not include the initial deposit which shall be held according to the provisions of RCW 79.15.100.

- D. Payment of an amount based on 12 percent interest per annum on the unpaid portion of the total contract price.

All payments, except the initial deposit, will be deducted from the total contract price to determine the unpaid portion of the contract.

- e. Payment of \$958.00 per acre per annum for the acres on which an operating release has not been issued.
- f. In no event will the extension charge be less than \$200.00.
- g. Extension payments are non-refundable.

#### G-053 Surveys - Sensitive, Threatened, Endangered Species

Whenever the State determines that a survey for sensitive, threatened, or endangered species is prudent, or when Purchaser determines a survey is prudent and the State agrees, Purchaser shall perform such surveys at Purchaser's expense and to the standards required by the State. The survey information shall be supplied to the State.

#### G-060 Exclusion of Warranties

The PARTIES AGREE that the IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE and ALL OTHER WARRANTIES EXPRESSED OR IMPLIED ARE EXCLUDED from this transaction and shall not apply to the goods sold. For example, THE FOLLOWING SPECIFIC MATTERS ARE NOT WARRANTED, and are EXCLUDED from this transaction:

- a. The MERCHANTABILITY of the forest products. The use of the term "merchantable" in any document is not intended to vary the foregoing.
- b. The CONDITION of the forest products. The forest products will be conveyed "AS IS."
- c. The ACREAGE contained within any sale area. Any acreage descriptions appearing in the timber notice of sale, timber sale contract, or other documents are estimates only, provided solely for administrative and identification purposes.

- d. The VOLUME, QUALITY, OR GRADE of the forest products. The State neither warrants nor limits the amount of timber to be harvested. The descriptions of the forest products to be conveyed are estimates only, made solely for administrative and identification purposes.
- e. The CORRECTNESS OF ANY SOIL OR SURFACE CONDITIONS, PRE-SALE CONSTRUCTION APPRAISALS, INVESTIGATIONS, AND ALL OTHER PRE-BID DOCUMENTS PREPARED BY OR FOR THE STATE. These documents have been prepared for the State's appraisal purposes only.
- f. THAT THE SALE AREA IS FREE FROM THREATENED OR ENDANGERED SPECIES or their habitat. The State is not responsible for any interference with forestry operations that result from the presence of any threatened or endangered species, or the presence of their habitat, within the sale area.
- g. THAT THE FORESTRY OPERATIONS to be performed under this contract WILL BE FREE FROM REGULATORY ACTIONS by governmental agencies. The State is not responsible for actions to enforce regulatory laws, such as the Washington Forest Practices Act (chapter 76.09 RCW), taken by the Department of Natural Resources or any other agency that may affect the operability of this timber sale.
- h. Items contained in any other documents prepared for or by the State.

G-062 Habitat Conservation Plan

The State has entered into a Habitat Conservation Plan (HCP) with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service (the Services) to address state trust land management issues relating to compliance with the Federal Endangered Species Act. The activities to be carried out under this contract are located within the State's HCP area and are subject to the terms and conditions of the HCP, and the Services' Incidental Take Permit Nos. TE812521-1 and 1168 (collectively referred to as ITP), or as amended hereafter by the Services. The ITP authorizes the incidental take of certain federally listed threatened and endangered species, as specified in the ITP conditions. All HCP materials, including the ITP, are available for review at the State's Regional Offices and the administrative headquarters in Olympia, Washington.

By signing this contract, Purchaser agrees to comply with the terms and conditions of the ITP, and the HCP, which shall become terms of this contract. The State agrees to authorize the lawful activities of the Purchaser carried out pursuant to this contract, PROVIDED the Purchaser remains in compliance with the terms and conditions of both the HCP and ITP. The requirements set forth in this contract are intended to comply with the terms and conditions of the HCP and ITP. Accordingly, non-compliance with the terms and conditions of the HCP and ITP will render the authorization provided in this paragraph void, be deemed a breach of the contract and may subject Purchaser to liability for violation of the Endangered Species Act.

Any modifications to the contract shall be proposed in writing by Purchaser, shall continue to meet the terms and conditions of the HCP and ITP, and shall require the prior written approval of the Region Manager before taking effect.

G-063 Incidental Take Permit Notification Requirements

- a. Purchaser shall immediately notify the Contract Administrator of new locations of permit species covered by the Incidental Take Permits (ITP) that are discovered within the area covered by the State's Habitat Conservation Plan (HCP), including, but not limited to: locations of occupied murrelet habitat; spotted owl nest sites; wolves; grizzly bears; nests, communal roosts, or feeding concentrations of bald eagles; peregrine falcon nests; Columbian white-tailed deer; Aleutian Canada geese; Oregon silverspot butterflies; and additional stream reaches found to contain bull trout. Purchaser is required to notify the Contract Administrator upon discovery of any fish species found in streams or bodies of water classified as non-fish bearing. In all circumstances, notification must occur within a 24 hour time period.
- b. Upon locating any live, dead, injured, or sick specimens of any permit species covered by the ITP, Purchaser shall immediately notify the Contract Administrator. Purchaser shall notify the Contract Administrator if there is any doubt as to the identification of a discovered permit species. Purchaser may be required to take certain actions to help the Contract Administrator safeguard the well-being of any live, injured or sick specimens of any permit species discovered, until the proper disposition of such specimens can be determined by the Contract Administrator. Any such requirements will be explained to Purchaser by the Contract Administrator during the Pre-Work Conference. In all circumstances, notification must occur within a 24 hour time period.
- c. Purchaser shall refer to a specific ITP number, ITP TE812521-1 or ITP 1168 (copies which are located in the region office) in all correspondence and reports concerning permit activities.
- d. Provisions and requirements of the ITP shall be clearly presented and explained to Purchaser by Contract Administrator during the Pre-Work Conference as per contract clause G-330. All applicable provisions of the ITP and this schedule must be presented and clearly explained by Purchaser to all authorized officers, employees, contractors, or agents of Purchaser conducting authorized activities in the timber sale area. Any questions Purchaser may have about the ITP should be directed to the Contract Administrator.

G-064 Permits

Purchaser is responsible for obtaining any permits not already obtained by the State that relate to Purchaser's operation. Forest Practice Application / Hydraulic Project Approval permits obtained by the State shall be transferred to Purchaser. Purchaser is responsible for all permits, amendments and renewals.

## G-065 Regulatory Disclaimer

The State disclaims any responsibility for, or liability relating to, regulatory actions by any government agency, including actions pursuant to the Forest Practices Act, Ch. 76.09 RCW that may affect the operability of the timber sale.

## G-066 Governmental Regulatory Actions

## a. Risk

Purchaser shall be responsible for any increased operational costs arising from any applicable foreign or domestic governmental regulation or order that does not cause contract performance to become commercially impracticable or that does not substantially frustrate the purpose of the contract. If impracticability or frustration results from Purchaser's failure to comply with this contract, Purchaser shall remain responsible for payment of the total contract price notwithstanding the impracticability or frustration.

## b. Sale Area

When portions of the sale area become subject to a foreign or domestic governmental regulation or order that will likely prevent timber harvest for a period that will exceed the expiration date of this contract, and Purchaser has complied with this contract, the following shall apply:

i. RCW 79.15.140 shall govern all adjustments to the contract area.

## c. Adjustment of Price

The State shall adjust the total contract price by subtracting from the total contract price an amount determined in the following manner: The State shall cause the timber sale area subject to governmental regulation or order to be measured. The State shall calculate the percentage of the total sale area subject to the governmental regulation or order. The State shall reduce the total contract price by that calculated percentage. However, variations in species, value, costs, or other items pertaining to the affected sale area will be analyzed and included in the adjustment if deemed appropriate by the State. The State will further reduce the total contract price by the reasonable cost of unamortized roads Purchaser constructed but was unable to fully use for removing timber. A reduction in total contract price terminates all of the Purchaser's rights to purchase and remove the timber and all other interest in the affected sale area.

## G-070 Limitation on Damage

In the event of a breach of any provision of this contract by the State, the exclusive remedy available to Purchaser will be limited to a return of the initial deposit, unapplied payments, and credit for unamortized improvements made by Purchaser.

The State shall not be liable for any damages, whether direct, incidental or consequential.

G-080 Scope of State Advice

No advice by any agent, employee, or representative of the State regarding the method or manner of performing shall constitute a representation or warranty that said method, manner or result thereof will conform to the contract or be suitable for Purchaser's purposes under the contract. Purchaser's reliance on any State advice regarding the method or manner of performance shall not relieve Purchaser of any risk or obligation under the contract. Purchaser retains the final responsibility for its operations under this contract and State shall not be liable for any injuries resulting from Purchaser's reliance on any State advice regarding the method or manner of performance.

G-091 Sale Area Adjustment

The Parties may agree to adjustments in the sale area boundary. The cumulative changes to the sale area during the term of the contract shall not exceed more than four percent of the original sale area. If the sale area is increased, the added forest products become a part of this contract. The State shall determine the volume added and shall calculate the increase to the total contract price using the rates set forth in clause G-101, G-102, or G-103. If the sale area is reduced, the State shall determine the volume to be reduced. The State shall calculate the reduction to the total contract price using the rates set forth in clause G-101, G-102, or G-103.

G-101 Forest Products Not Designated

Any forest products not designated for removal, which must be removed in the course of operations authorized by the State, shall be approved and designated by the Contract Administrator. Added forest products become a part of this contract and the Scribner log scale volume, as defined by the Northwest Log Rules Advisory Group, shall be determined by the Contract Administrator. Added forest products shall be paid for at the following contract payment rates per Mbf Scribner log scale.

The pricing schedule has not been set for the sale.

G-106 Adding Naturally Damaged Forest Products

Any forest products not designated for removal that are seriously damaged by disease, insects or wind, or that may contribute seriously to the spread of insect or disease damage may be added to this sale by the State's Contract Administrator. Additions must be in unlogged areas of the sale and added volume shall not exceed an amount equal to 10 percent of the original advertised volume. Added forest products become a part of this contract and shall be paid for at the rate set forth in clause G-101, G-102 or G-103.

G-111 Title and Risk of Loss

Title to the forest products under this contract passes to the Purchaser after they are removed from the sale area, if adequate advance payment or payment security has been provided to the State under this contract. Purchaser bears all risk of loss of, or damage to, and has an insurable interest in, the forest products described in this contract from

the time the sale is confirmed under RCW 79.15.120. Breach of this contract shall have no effect on this provision.

G-116 Sustainable Forestry Initiative® (SFI) Certification

Forest products purchased under this contract are certified as being in conformance with the Sustainable Forestry Initiative program Standard under certificate number: PwC-SFIFM-513.

Purchaser shall have at least one person regularly on-site during active operations that have completed training according to the requirements outlined within the SFI® program Standard. Purchaser shall designate in writing the name(s) of the individual(s) who will be on-site and provide proof of their successful completion of an approved training program prior to active operations.

G-120 Responsibility for Work

All work, equipment, and materials necessary to perform this contract shall be the responsibility of Purchaser. Any damage to improvements, except as provided in clause G-121 or unless the State issues an operating release pursuant to clause G-280, shall be repaired promptly to the satisfaction of the State and at Purchaser's expense.

G-121 Exceptions

Exceptions to Purchaser's responsibility in clause G-120 shall be limited exclusively to the following. These exceptions shall not apply where road damage occurs due to Purchaser's failure to take reasonable precautions or to exercise sound forest engineering and construction practices.

Road is defined as the road bed, including but not limited to its component parts, such as subgrade, ditches, culverts, bridges, and cattle guards.

For the purposes of this clause, damage will be identified by the State and is defined as:

1. Failure of (a) required improvements or roads designated in clause C-050, or (b) required or optional construction completed to the point that authorization to haul has been issued;
2. Caused by a single event from forces beyond the control of Purchaser, its employees, agents, or invitees, including independent contractors; and
3. Includes, but is not limited to natural disasters such as earthquakes, volcanic eruptions, landslides, and floods.

The repair work identified by the State shall be promptly completed by Purchaser at an agreed price. The State may elect to accomplish repairs by means of State-provided resources. The State will bear the cost to repair damages caused by a third party. In all other cases, the Purchaser shall bear responsibility for the costs as described below.

For each event, Purchaser shall be solely responsible for the initial \$5,000 in repairs. For repairs in excess of \$5,000, the parties shall share equally the portion of costs between \$5,000 and \$15,000. The State shall be solely responsible for the portion of the cost of repairs that exceed \$15,000.

Nothing contained in clauses G-120 and G-121 shall be construed as relieving Purchaser of responsibility for, or damage resulting from, Purchaser's operations or negligence, nor shall Purchaser be relieved from full responsibility for making good any defective work or materials. Authorization to haul does not warrant that Purchaser built roads are free from material defect and the State may require additional work, at Purchasers expense regardless of cost, to remedy deficiencies at any time.

G-140 Indemnity

To the fullest extent permitted by law, Purchaser shall indemnify, defend and hold harmless State, agencies of State and all officials, agents and employees of State, from and against all claims arising out of or resulting from the performance of the contract. "Claim" as used in this contract means any financial loss, claim, suit, action, damage, or expense, including but not limited to attorneys' fees, attributable for bodily injury, sickness, disease or death, or injury to or destruction of tangible property including loss of use resulting therefrom. Purchasers' obligations to indemnify, defend, and hold harmless includes any claim by Purchasers' agents, employees, representatives, or any subcontractor or its employees. Purchaser expressly agrees to indemnify, defend, and hold harmless State for any claim arising out of or incident to Purchasers' or any subcontractors' performance or failure to perform the contract. Purchasers' obligation to indemnify, defend, and hold harmless State shall not be eliminated or reduced by any actual or alleged concurrent negligence of State or its agents, agencies, employees and officials. Purchaser waives its immunity under Title 51 RCW to the extent it is required to indemnify, defend and hold harmless State and its agencies, officials, agents or employees.

G-150 Insurance

Purchaser shall, at its cost and expense, buy and maintain insurance of the types and amounts listed below. Failure to buy and maintain the required insurance may result in a breach and/or termination of the contract at State's option. State may suspend Purchaser operations until required insurance has been secured.

All insurance and surety bonds should be issued by companies admitted to do business within the State of Washington and have a rating of A-, Class VII or better in the most recently published edition of Best's Reports. If an insurer is not admitted, all insurance policies and procedures for issuing the insurance policies must comply with Chapter 48.15 RCW and 284-15 WAC.

The State of Washington, Department of Natural Resources region office of sale origin shall be provided written notice before cancellation or non-renewal of any insurance referred to therein, in accord with the following specifications:

1. Insurers subject to Chapter 48.18 RCW (admitted and regulated by the Insurance Commissioner): The insurer shall give the State 45 days advance notice of cancellation or non-renewal. If cancellation is due to non-payment of premium, the State shall be given 10 days advance notice of cancellation.
2. Insurers subject to Chapter 48.15 RCW (surplus lines): The State shall be given 20 days advance notice of cancellation. If cancellation is due to non-payment of premium, the State shall be given 10 days advance notice of cancellation.

Before starting work, Purchaser shall furnish State of Washington, Department of Natural Resources with a certificate(s) of insurance, executed by a duly authorized representative of each insurer, showing compliance with the insurance requirements specified in the contract. Insurance coverage shall be obtained by the Purchaser prior to operations commencing and continually maintained in full force until all contract obligations have been satisfied or an operating release has been signed by the State.

Purchaser shall include all subcontractors as insured under all required insurance policies, or shall furnish separate certificates of insurance and endorsements for each subcontractor. Subcontractor(s) must comply fully with all insurance requirements stated herein. Failure of subcontractor(s) to comply with insurance requirements does not limit Purchaser's liability or responsibility.

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

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. Purchaser 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 Purchaser and such coverage and limits shall not limit Purchaser's liability under the indemnities and reimbursements granted to State in this contract.

The limits of insurance, which may be increased as deemed necessary by State of Washington, Department of Natural Resources, shall not be less than as follows:

Commercial General Liability (CGL) Insurance. Purchaser shall maintain general liability (CGL) insurance, and, if necessary, commercial umbrella insurance with a limit of not less than \$1,000,000.00 per each occurrence. If such CGL insurance contains aggregate limits, the General Aggregate limit shall be at least twice the "each occurrence" limit. CGL insurance shall have products-completed operations aggregate limit of at least two times the "each occurrence" limit. CGL coverage shall include a Logging and Lumbering Endorsement (i.e. Logger's Broad-Form) to cover the events

that include, but are not limited to, fire suppression expenses, accidental timber trespasses, and wildfire property damage with limits of not less than \$2,000,000.00 each occurrence.

CGL insurance shall be written on Insurance Services Office (ISO) occurrence form CG 00 01 (or a substitute form providing equivalent coverage). All insurance shall cover liability arising out of premises, operations, independent contractors, products completed operations, personal injury and advertising injury, and liability assumed under an insured contract (including the tort liability of another party assumed in a business contract), and contain separation of insured (cross liability) condition.

Employer's Liability "Stop Gap" Insurance. Purchaser shall buy employers liability insurance, and, if necessary, commercial umbrella liability insurance with limits not less than \$1,000,000.00 each accident for bodily injury by accident or \$1,000,000.00 each employee for bodily injury by disease.

Workers' Compensation Coverage. Purchaser shall comply with all State of Washington workers' compensation statutes and regulations. Workers' compensation coverage shall be provided for all employees of Purchaser and employees of any subcontractor or sub-subcontractor. Coverage shall include bodily injury (including death) by accident or disease, which exists out of or in connection with the performance of this contract. Except as prohibited by law, Purchaser waives all rights of subrogation against State for recovery of damages to the extent they are covered by workers' compensation, employer's liability, commercial general liability, or commercial umbrella liability insurance.

If Purchaser, subcontractor or sub-subcontractor fails to comply with all State of Washington workers' compensation statutes and regulations and State incurs fines or is required by law to provide benefits to or obtain coverage for such employees, Purchaser shall indemnify State. Indemnity shall include all fines, payment of benefits to Purchaser or subcontractor employees, or their heirs or legal representatives, and the cost of effecting coverage on behalf of such employees.

Business Auto Policy (BAP). Purchaser shall maintain business auto liability and, if necessary, commercial umbrella liability insurance with a limit not less than \$1,000,000.00 per accident. Such insurance shall cover liability arising out of "Any Auto". Business auto coverage shall be written on ISO form CA 00 01, or substitute liability form providing equivalent coverage. If necessary the policy shall be endorsed to provide contractual liability coverage and cover a "covered pollution cost or expense" as provided in the 1990 or later editions of CA 00 01. Purchaser waives all rights against State for the recovery of damages to the extent they are covered by business auto liability or commercial umbrella liability insurance.

#### G-160 Agents

The State's rights and duties will be exercised by the Region Manager at Forks, Washington. The Region Manager will notify Purchaser in writing who is responsible for administering the contract. The Region Manager has sole authority to waive,

modify, or amend the terms of this contract in the manner prescribed in clause G-180. No agent, employee, or representative of the State has any authority to bind the State to any affirmation, representation, or warranty concerning the forest products conveyed beyond the terms of this contract.

Purchaser is required to have a person on site during all operations who is authorized to receive instructions and notices from the State. Purchaser shall inform the State in writing who is authorized to receive instructions and notices from the State, and any limits to this person's authority.

G-170 Assignment and Delegation

No rights or interest in this contract shall be assigned by Purchaser without prior written permission of the State. Any attempted assignment shall be void and ineffective for all purposes unless made in conformity with this paragraph. Purchaser may perform any duty through a delegate, but Purchaser is not thereby relieved of any duty to perform or any liability. Any assignee or delegate shall be bound by the terms of the contract in the same manner as Purchaser.

G-180 Modifications

Waivers, modifications, or amendments of the terms of this contract must be in writing signed by Purchaser and the State.

G-190 Contract Complete

This contract is the final expression of the Parties' agreement. There are no understandings, agreements, or representations, expressed or implied, which are not specified in this contract.

G-200 Notice

Notices required to be given under the following clauses shall be in writing and shall be delivered to Purchaser's authorized agent or sent by certified mail to Purchaser's address of record:

G-210 Violation of Contract

G-220 State Suspends Operations

All other notices required to be given under this contract shall be in writing and delivered to the authorized agent or mailed to the Party's post office address. Purchaser agrees to notify the State of any change of address.

G-210 Violation of Contract

- a. If Purchaser violates any provision of this contract, the Contract Administrator, by written notice, may suspend those operations in violation. If the violation is capable of being remedied, Purchaser has 30 days after receipt of a suspension notice to remedy the violation. If the violation cannot be remedied (such as a violation of WAC 240-15-015) or Purchaser fails to remedy the violation within 30 days after receipt of a suspension notice, the

State may terminate the rights of Purchaser under this contract and collect damages.

- b. If the contract expires pursuant to clause G-030 or G-031 without Purchaser having performed all its duties under this contract, Purchaser's right to operate is terminated and Purchaser shall not have the right to remedy the breach. This provision shall not relieve Purchaser of any payment obligations.
- c. The State has the right to remedy the breach in the absence of any indicated attempt by Purchaser or if Purchaser is unable, as determined by the State, to remedy the breach. Any expense incurred by the State shall be charged to Purchaser and shall be paid within 30 days of receipt of billing.
- d. If Purchaser's violation is a result of a failure to make a payment when due, in addition to a. and b. above, interest shall accrue on the unpaid balance at 12 percent per annum, beginning the date payment was due.

#### G-220 State Suspends Operation

The Contract Administrator may suspend any operation of Purchaser under this contract when the State is suffering, or there is a reasonable expectation the State will suffer environmental, monetary, or other damage if the operation is allowed to continue.

Purchaser shall be in breach of this contract if the operation continues after the suspension notice or if the operation resumes without prior approval and notice from the Contract Administrator.

Purchaser may request a modification of a suspension within 30 days of the start of suspension through the dispute resolution process in clause G-240. If this process results in a finding that the suspension exceeded the time reasonably necessary to stop or prevent damage to the State, Purchaser is entitled to request a contract term adjustment under clause G-040.

If it reasonably appears that the damage that the State is suffering, or can reasonably be expected to suffer if the operation is allowed to continue, will prevent harvest for a period that will exceed 6 months, and Purchaser has complied with this contract, the provisions of clause G-066 shall govern just as if the harvest was prevented by an applicable foreign or domestic governmental regulation or order.

#### G-230 Unauthorized Activity

Any cutting, removal, or damage of forest products by Purchaser, its employees, agents, or invitees, including independent contractors, in a manner inconsistent with the terms of this contract or State law, is unauthorized. Such activity may subject Purchaser to liability for triple the value of said forest products under RCW 79.02.320 or RCW 79.02.300 and may result in prosecution under RCW 79.02.330 or other applicable statutes.

**G-240 Dispute Resolution**

The following procedures apply in the event of a dispute regarding interpretation or administration of this contract and the parties agree that these procedures must be followed before a lawsuit can be initiated.

- a. In the event of a dispute, Purchaser must make a written request to the Region Manager for resolution prior to seeking other relief.
- b. The Region Manager will issue a written decision on Purchaser's request within ten business days.
- c. Within ten business days of receipt of the Region Manager's decision, Purchaser may make a written request for resolution to the Deputy Supervisor - Uplands of the Department of Natural Resources.
- d. Unless otherwise agreed, a conference will be held by the Deputy Supervisor - Uplands within 30 calendar days of the receipt of Purchaser's request for review of the Region Manager's written decision. Purchaser and the Region Manager will have an opportunity to present their positions. The Deputy Supervisor - Uplands will issue a decision within a reasonable time of being presented with both Parties' positions.

**G-250 Compliance with All Laws**

Purchaser shall comply with all applicable statutes, regulations and laws, including, but not limited to; chapter 27.53 RCW, chapter 68.50 RCW, WAC 240-15 and WAC 296-54. Failure to comply may result in forfeiture of this contract.

**G-260 Venue**

This contract shall be governed by the laws of the State of Washington. In the event of a lawsuit involving this contract, venue shall be proper only in Thurston County Superior Court.

**G-270 Equipment Left on State Land**

All equipment owned or in the possession of Purchaser, its employees, agents, or invitees, including independent contractors, shall be removed from the sale area and other State land by the termination date of this contract. Equipment remaining unclaimed on State land 60 days after the expiration of the contract period is subject to disposition as provided by law. Purchaser shall pay to the State all costs of moving, storing, and disposing of such equipment. The State shall not be responsible for any damages to or loss of the equipment or damage caused by the moving, storing or disposal of the equipment.

**G-280 Operating Release**

An operating release is a written document, signed by the State and Purchaser, indicating that Purchaser has been relieved of certain rights or responsibilities with regard to the entire or a portion of the timber sales contract. Purchaser and State may agree to an operating release for this sale, or portion of this sale, prior to the contract

expiration, when all contract requirements pertaining to the release area have been satisfactorily completed. Upon issuance of a release, Purchaser's right to cut and remove forest products on the released area will terminate.

**G-310 Road Use Authorization**

Purchaser is authorized to use the following State roads and roads for which the State has acquired easements and road use permits; PA-J-5000, PA-J-5015, PA-J-5016, PA-J-5017, PA-J-5017.1, PA-J-5017.2, PA-J-5018, 1+00 Spur, 1+01 Spur, PA-J-5020, PA-J-5025, PA-J-5400, PA-J-5410, PA-J-5500, PA-J-5700 A, Agate Pit Road, PA-S-2500, PA-S-2510, PA-S-2550, 1+35 Spur, 3+35 Spur, 1+75 Spur, PA-S-2551, PA-S-2551.2, PA-S-2553, PA-S-2553.2, PA-S-2554, PA-S-2554.1, PA-S-2554.2, PA-S-2555, PA-S-2555.2, PA-S-2580, PA-S-2582, PA-S-2582.1, PA-S-2600, PA-S-2610, PA-S-2612, 5+70 Spur, PA-S-2640, 2+60 Spur, 3+75 Spur, 0+70 Spur, PA-S-1000, PA-S-1100, PA-S-1200, PA-S-1280, PA-S-1281, PA-I-2600, PA- I-2610, and the PA-I-2620. The State may authorize in writing the use of other roads subject to fees, restrictions, and prior rights.

**G-330 Pre-work Conference**

Purchaser shall arrange with the Contract Administrator to review this contract and to examine the sale area before beginning any operations. A plan of operations shall be developed and agreed upon by the Contract Administrator and Purchaser before beginning any operations. To the extent that the plan of operations is inconsistent with the contract, the terms of the contract shall prevail. State's acceptance and approval of Purchaser's plan of operations shall not be construed as any statement or warranty that the plan of operations is adequate for Purchaser's purposes or complies with applicable laws.

**G-340 Preservation of Markers**

Any legal land subdivision survey corners and witness objects are to be preserved. If such are destroyed or disturbed, the Purchaser shall, at the Purchaser's own expense, re-establish them through a licensed land surveyor in accordance with U.S. General Land Office standards. Corners and/or witness objects that must be disturbed or destroyed in the process of road construction or logging shall be adequately referenced and/or replaced in accordance with RCW 58.24.040(8). Such references must be approved by the Contract Administrator prior to removal of said corners and/or witness objects.

**G-360 Road Use Reservation**

The State shall have the right to use, without charge, all existing roads and any road constructed or reconstructed on State lands by Purchaser under this contract. The State may extend such rights to others. If the State grants such rights to others, the State shall require performance or payment, as directed by the State, for their proportionate share of maintenance based on their use.

**G-370 Blocking Roads**

Purchaser shall not block the PA-S-1000, PA-S-2500, PA-S-2510, PA-S-2600, or PA-J-5000, unless authority is granted in writing by the Contract Administrator.

**G-380 Road Easement and Road Use Permit Requirements**

Purchaser agrees to comply with the terms and conditions of the attached:

55-095367 US Forest Service Easement

**G-430 Open Fires**

Purchaser shall not set, or allow to be set by Purchaser's employees, agents, invitees and independent contractors, any open fire at any time of the year without first obtaining permission, in writing, from the Contract Administrator.

**G-450 Encumbrances**

This contract and Purchaser's activities are subject to the following:

DATA MISSING

**Section P: Payments and Securities****P-011 Initial Deposit**

Purchaser paid DATA MISSING initial deposit, which will be maintained pursuant to RCW 79.15.100(3). If the operating authority on this contract expires without Purchaser's payment of the full amount specified in Clause P-020, the initial deposit will be immediately forfeited to the State, and will be offset against Purchaser's remaining balance due. Any excess initial deposit funds not needed to ensure full payment of the contract price, or not needed to complete any remaining obligations of the Purchaser existing after contract expiration, will be refunded to the Purchaser.

**P-020 Payment for Forest Products**

Purchaser agrees to pay the total, lump sum contract price of \$233,584.00. The total contract price consists of a \$0.00 contract bid price plus \$233,584.00 in fees. Fees collected shall be retained by the state unless the contract is adjusted via the G-066 clause. Purchaser shall be liable for the entire purchase price, and will not be entitled to any refunds or offsets unless expressly stated in this contract.

THE PURCHASE PRICE SHALL NOT BE AFFECTED BY ANY FACTORS, INCLUDING: the amount of forest products actually present within the contract area, the actual acreage covered by the contract area, the amount or volume of forest products actually cut or removed by purchaser, whether it becomes physically impossible or uneconomic to remove the forest products, and whether the subject forest products have been lost or damaged by fire or any other cause. The only situations Purchaser may not be liable for the full purchase price are governed by clause G-066, concerning governmental regulatory actions taken during the term of the contract.

**P-045 Guarantee of Payment**

Purchaser will pay for forest products prior to cutting or will guarantee payment by posting an approved payment security. The amount of cash or payment security shall be determined by the State and shall equal or exceed the value of the cutting proposed by Purchaser.

P-050 Billing Procedure

The State will compute and forward to Purchaser statements of charges provided for in the contract. Purchaser shall deliver payment to the State on or before the date shown on the billing statement.

P-080 Payment Account Refund

Advance payments made under P-045 or P-045.2 remaining on account above the value for the charges shall be returned to Purchaser within 30 days following the final report of charges. Refunds not made within the 30 day period will accrue interest at the interest rate, as established by WAC 332-100-030, computed on a daily basis until paid.

P-090 Performance Security

Purchaser agrees to furnish, within 30 days of the confirmation date, security acceptable to the State in the amount of \$100,000.00. The Security provided shall guarantee performance of all provisions of this contract and payment of any damages caused by operations under this contract or resulting from Purchaser's noncompliance with any rule or law. Acceptable performance security may be in the form of a performance bond, irrevocable letter of credit, cash, savings or certificate of deposit account assignments, and must name the State as the obligee or beneficiary. A letter of credit must comply with Title 62A RCW, Article 5. Performance security must remain in full force over the duration of the contract length. Surety bonds issued shall conform to the issuance and rating requirements in clause G-150. The State shall retain the performance security pursuant to RCW 79.15.100. Purchaser shall not operate unless the performance security has been accepted by the State. If at any time the State decides that the security document or amount has become unsatisfactory, Purchaser agrees to suspend operations and, within 30 days of notification, to replace the security with one acceptable to the State or to supplement the amount of the existing security.

P-100 Performance Security Reduction

The State may reduce the performance security after an operating release has been issued if the State determines that adequate security exists for any remaining obligations of Purchaser.

Section H: Harvesting Operations

H-001 Operations Outside the Sale Boundaries

No operations shall occur outside the sale boundaries, as described within the contract, unless approved in writing by the State.

H-010 Cutting and Yarding Schedule

Falling and Yarding will not be permitted on weekends, State recognized holidays and from 6:00 pm to 8:00 am unless authorized in writing by the Contract Administrator.

H-013 Reserve Tree Damage Definition

Reserve trees are trees required and designated for retention within the sale boundary. Purchaser shall protect reserve trees from being cut, damaged, or removed during operations.

Reserve tree damage exists when one or more of the following criteria occur as a result of Purchaser's operation, as determined by the Contract Administrator:

- a. A reserve tree has one or more scars on its trunk exposing the cambium layer, which in total exceeds 100 square inches.
- b. A reserve tree top is broken or the live crown ratio is reduced below 30 percent.
- c. A reserve tree has more than 1/3 of the circumference of its root system injured such that the cambium layer is exposed.

If the Contract Administrator determines that a reserve tree has been cut or damaged, the Purchaser shall provide a replacement reserve tree of like condition, size, and species within the sale unit containing the damaged leave tree, as approved by the Contract Administrator. Purchaser may be required to pay liquidated damages for Excessive Reserve Tree Damage as detailed in clause D-041.

Removal of designated reserve trees from the sale area is unauthorized, and may invoke the use of the G-230 'Trespass and Unauthorized Activity' clause. Purchaser is required to leave all cut or damaged reserve trees on site.

#### H-017 Preventing Excessive Soil Disturbance

Operations may be suspended when soil rutting exceeds 12 inches as measured from the natural ground line. To reduce soil damage, the Contract Administrator may require water bars to be constructed, grass seed to be placed on exposed soils, or other mitigation measures. Suspended operations shall not resume unless approval to do so has been given, in writing, by the Contract Administrator.

#### H-018 Temporary Stream Crossings

A temporary stream crossing is required to access Units 3, 4 and 21.

Purchaser shall comply with the following during the yarding operation:

- a. Adhere to the approved Hydraulic Permit Application (HPA) or Forest Practice Application (FPA) with approved hydraulic project work, if required, amend a current FPA or obtain a new FPA prior to commencing any new stream crossing construction.
- b. Location of the temporary stream crossing must be approved by the Contract Administrator.
- c. A temporary stream crossing shall not exceed 15 feet in width, including rub trees.

- d. Purchaser shall suspend operations during periods of wet weather when a high potential for sediment delivery into typed waters may occur.
- e. Temporary stream crossings shall be removed at the time of completion of yarding as required by the Contract Administrator.

Purchaser shall not deviate from the requirements set forth in this clause without prior written approval from the Contract Administrator.

H-051 Branding and Painting

Purchaser shall provide a State of Washington registered log brand, acceptable to the State, unless the State agrees to furnish the brand. All purchased timber shall be branded in a manner that meets the requirements of WAC 240-15-030(2)(a)(i). All timber purchased under a contract designated as export restricted shall also be painted in a manner that meets the requirements of WAC 240-15-030(2)(a)(ii).

For pulp loads purchased under a contract designated as export restricted, Purchaser shall brand at least 3 logs with legible brands at one end. Also, 10 logs shall be painted at one end with durable red paint.

H-080 Snags Not to be Felled

Snags not required to be felled for safety reasons may be left standing. Snags felled for safety reasons shall not be removed and must remain where felled.

H-090 Designated Trees Felled

All trees in Unit 1 banded with red paint, constituting the cutting line boundaries shall be felled concurrently with the falling operation.

H-120 Harvesting Equipment

Forest products sold under this contract shall be harvested and removed using ground and cable based methods with the following exceptions: rubber tired skidders are restricted; tracked skidders, feller buncher and shovels will not operate on sustained slopes over 40%. Authority to use other equipment or to operate outside the equipment specifications detailed above must be approved in writing by the State.

H-125 Log Suspension Requirements

Lead-end suspension is required for all yarding activities.

H-130 Hauling Schedule

The hauling of forest products will not be permitted on weekends, State recognized holidays and between 8:00 p.m. - 6:00 a.m., unless authorized in writing by the Contract Administrator.

## H-140 Special Harvest Requirements

Purchaser shall accomplish the following during the harvest operations:

1. Purchaser must have utility lines located before beginning operations or any road operations.
2. Purchaser shall immediately repair all gate damage resulting from operations to an equal or better condition than existed at the time of the sale.
3. While felling timber, two warning signs must be posted on the PA-S-1000, PA-S-2500, PA-S-2510, PA-S-2600, and PA-J-5000 roads.
4. Yarding equipment shall not cross live streams without an FPHP.
5. The Purchaser shall notify all employees and contractors working on this sale that any danger tree, marked or unmarked, may be felled. Any felled marked danger tree shall be replaced with a suitable tree of similar size and species as approved by the Contract Administrator.
6. Purchaser shall harvest and retain trees banded with pink paint in Unit 2 for construction of the log stringer bridge design in Road Plan dated 10/15/2019.
7. Purchaser shall perform abandonment of all skid trails in the sale area, at the discretion of the Contract Administrator. Abandonment shall consist of re-establishing natural drainage and natural slopes, fluffing compacted soil to an 18 inch depth using shovel grapples, placing stumps and debris back into the trail, and installing water bars as directed by the Contract Administrator.
8. All yarding corridors for Unit 6 must be identified in the field by the Purchaser or their representatives and approved by a Licensed State Lands Geotechnical Engineer.
9. Leave tree areas designated on the maps and within the sale area that are double tagged shall not be traded. No harvest may occur within them.
10. "Full suspension cable yarding will occur over inner gorged streams in the southern portion of Unit 6 to prevent soil damage on the incised stream banks."
11. Purchaser shall complete decommissioning on the PA-S-2550 before 11/15/2020 and on the 3+75 Spur by 10/31/2021.
12. Purchaser shall complete road work by 6/01/2021 on the PA-J-5000, PA-J-5020, PA-J-5400 and the PA-J-5410.

13. Tailholds in Unit 6 must be approved by the Contract Administrator.

Permission to do otherwise must be granted in writing by the Contract Administrator.

H-142 Wildlife Timing Restrictions

The following wildlife timing restrictions apply to this contract and shall be in place in the locations shown on the attached timber sale map.

All timber falling, road work or operation of heavy equipment performed on the PA-I-2600, PA-I-2610, the PA-I-2620 and all operations in Place Pit, performed during the marbled murrelet nesting season, ( April 1 through September 23), is restricted to, two hours after sunrise to two hours before sunset. This restriction does not apply to the hauling of timber, rock, or equipment.

In Unit 6: As indicated on the “Timber Sale Map” and “Logging Plan Map”; no cutting, yarding, tailholding, or any other harvest related activities shall occur within the “No Harvest Eagle Buffer”. Within the “Eagle Timing Restriction”; activities such as cutting, yarding, tailholding, or any other harvest related activities shall not be allowed from January 1st to August 15th.

Permission to do otherwise must be granted in writing by the State

H-190 Completion of Settings

Operations begun on any setting of the sale area shall be completed before any operation begins on subsequent settings unless authorized in writing by the Contract Administrator.

H-220 Protection of Residual or Adjacent Trees

Unless otherwise specified by this contract, the Contract Administrator shall identify damaged adjacent or leave trees that shall be paid for according to clause G-230.

H-230 Tops and Limbs Outside the Sale Boundary

Tops and limbs outside the sale boundary as a result of Purchaser's operation shall be removed concurrently with the yarding operation unless otherwise directed by the Contract Administrator.

Section C: Construction and Maintenance

C-040 Road Plan

Road construction and associated work provisions of the Road Plan for this sale, dated 10/15/2019 are hereby made a part of this contract.

C-050 Purchaser Road Maintenance and Repair

Purchaser shall perform work at their own expense on PA-J-5015, PA-J-5016, PA-J-5017, PA-J-5017.1, PA-J-5017.2, PA-J-5018, 1+00 Spur, 1+01 Spur, PA-J-5025, Agate Pit Road, PA-S-2550, 1+35 Spur, 3+35 Spur, 1+75 Spur, PA-S-2551, PA-S-2551.2, PA-S-2553, PA-S-2553.2, PA-S-2554, PA-S-2554.1, PA-S-2554.2, PA-S-2555, PA-S-

2555.2, PA-S-2580, PA-S-2582, PA-S-2582.1, PA-S-2610, PA-S-2612, 5+70 Spur, PA-S-2640, 2+60 Spur, 3+75 Spur, 0+70 Spur, PA-S-1280, PA-S-1281, PA-I-2600, PA-I-2610, PA-J-5000, PA-J-5020, PA-J-5410 and the PA-I-2620. All work shall be completed to the specifications detailed in the Road Plan.

**C-060 Designated Road Maintainer**

If required by the State, Purchaser shall perform maintenance and replacement work as directed by the Contract Administrator on PA-S-1000, PA-S-1100, PA-S-1200, PA-S-2500, PA-S-2510, PA-S-2600, PA-J-5000, PA-J-5020, PA-J-5400, PA-J-5410, PA-J-5500, and PA-J-5700 A and all roads not covered in C-050. Purchaser shall furnish a statement in a form satisfactory to the State showing the costs incurred while performing this work. Costs shall be based on the rates set forth in the equipment rate schedule on file at the Region office or Engineering Division in Olympia. The State shall reimburse Purchaser for said costs within 30 days of receipt and approval of the statement.

**C-100 Landing Location Restricted**

Landing locations are restricted to those shown on the timber sale map unless otherwise authorized in writing by the Contract Administrator.

**C-130 Dust Abatement**

Purchaser shall abate dust on the PA-S-2500 and PA-S-2510 roads.

**C-140 Water Bars**

Purchaser shall, as directed by the Contract Administrator, construct water bars across haul roads, skid trails and fire trails as necessary to control soil erosion and water pollution.

**Section S: Site Preparation and Protection**

**S-001 Emergency Response Plan**

An Emergency Response Plan (ERP) shall be provided to the Contract Administrator containing but not limited to, valid contact numbers and procedures for medical emergencies, fire, hazardous spills, forest practice violations and any unauthorized or unlawful activity on or in the vicinity of the sale area. The Contract Administrator and the State shall be promptly notified whenever an incident occurs requiring an emergency response.

The ERP must be presented for inspection at the prework meeting and kept readily available to all personnel, including subcontractors, on site during active operations.

**S-010 Fire Hazardous Conditions**

Purchaser acknowledges that operations under this Contract may increase the risk of fire. Purchaser shall conduct all operations under this agreement following the requirements of WAC 332-24-005 and WAC 332-24-405 and further agrees to use the highest degree of care to prevent uncontrolled fires from starting.

In the event of an uncontrolled fire, Purchaser agrees to provide equipment and personnel working at the site to safely and effectively engage in first response fire suppression activity.

Purchaser's failure to effectively engage in fire-safe operations is considered a breach and may result in suspension of operations.

S-020 Extreme Hazard Abatement

Purchaser shall provide a written Extreme Hazard Abatement plan that meets the requirements of WAC 332-24 prior to the beginning of logging operations. The plan must be acceptable to the Contract Administrator. The plan will identify how Purchaser will accomplish abatement. Purchaser shall also provide, and keep current, a written timetable for completion of all specified work in the plan. The Contract Administrator's acceptance and approval of Purchaser's hazard abatement plan shall not be construed as any statement or warranty that the hazard abatement plan is adequate for Purchaser's purposes or complies with applicable laws.

S-050 Cessation of Operations for Low Humidity

When the humidity is 30 percent or lower on the sale area, all operations must cease unless authority to continue is granted by the State in writing.

S-060 Pump Truck or Pump Trailer

Purchaser shall provide a fully functional pump truck or pump trailer equipped to meet the specifications of WAC 332-24-005 and WAC 332-24-405 during the "closed season" or as extended by the State and shall provide trained personnel to operate this equipment on the sale area during all operating periods.

S-100 Stream Cleanout

Slash or debris which enters all typed waters as a result of operations under this contract and which is identified by the Contract Administrator shall be removed and deposited in a stable position. Removal of slash or debris shall be accomplished in a manner that avoids damage to the natural stream bed and bank vegetation.

S-110 Resource Protection

No equipment may operate within 30' of any typed water or leave tree areas unless authority is granted in writing by the Contract Administrator.

S-120 Stream Protection

No timber shall be felled into, across, or yarded through any streams.

S-130 Hazardous Materials

a. Hazardous Materials and Waste - Regulatory Compliance

Purchaser is responsible for understanding and complying with all applicable local, state, and federal hazardous material/waste laws and regulations for operations conducted under this contract. Such regulations pertain to, but may not be limited to, hazardous material storage, handling and transport,

personnel protection, release notification and emergency response, cleanup and waste disposal. Purchaser shall be responsible for restoring the site in the event of a spill.

b. Hazardous Materials Spill Prevention

All operations shall be conducted in a manner that avoids the release of hazardous materials, including petroleum products, into the environment (water, air or land).

c. Hazardous Materials Spill Containment, Control and Cleanup

If safe to do so, Purchaser shall take immediate action to contain and control all hazardous material spills. Purchaser shall ensure that enough quick response spill kits capable of absorbing 10 gallons of oil, coolant, solvent or contaminated water are available on site to quickly address potential spills from any piece of equipment at all times throughout active operations. If large quantities of bulk fuel/other hazardous materials are stored on site, Purchaser must be able to effectively control a container leak and contain & recover a hazmat spill equal to the largest single on site storage container volume. (HAZWOPER reg. 29CFR 1910.120 (j) (1) (vii)).

d. Hazardous Material Release Reporting

Releases of oil or hazardous materials to the environment must be reported according to the State Department of Ecology (ECY). It is the responsibility of the Purchaser to have all emergency contact information readily available and a means of remote communication for purposes of quick notification. In the event of a spill, the Purchaser is responsible for notifying the following:

Appropriate Department of Ecology regional office (contact information below).

DNR Contract Administrator

ECY - Northwest Region:

1-425-649-7000

(Island, King, Kitsap, San Juan, Skagit, Snohomish, and Whatcom counties)

ECY - Southwest Region:

1-360-407-6300

(Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, and Wahkiakum counties)

ECY - Central Region:

1-509-575-2490

(Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, and Yakima counties)

ECY - Eastern Region:

1-509-329-3400

(Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, and Whitman counties)

S-131 Refuse Disposal

As required by RCW 70.93, All Purchaser generated refuse shall be removed from state lands for proper disposal prior to termination of this contract. No refuse shall be burned, buried or abandoned on state forest lands. All refuse shall be transported in a manner such that it is in compliance with RCW 70.93 and all loads or loose materials shall be covered/secured such that these waste materials are properly contained during transport.

S-150 Recreation Trail Cleanout

At the completion of logging operations, Purchaser shall repair any damage to and clean out all logging debris from recreational trail(s).

Section D: Damages

D-013 Liquidated Damages or Failure to Perform

The following clauses provide for payments by Purchaser to the State for breaches of the terms of this contract other than failure to perform. These payments are agreed to as liquidated damages and not as penalties. They are reasonable estimates of anticipated harm to the State, which will be caused by Purchaser's breach. These liquidated damages provisions are agreed to by the State and Purchaser with the understanding of the difficulty of proving loss and the inconvenience or infeasibility of obtaining an adequate remedy. These liquidated damages provisions provide greater certainty for the Purchaser by allowing the Purchaser to better assess its responsibilities under the contract.

Clause P-020 governs Purchaser's liability in the event Purchaser fails to perform any of the contract requirements other than the below liquidated damage clauses without written approval by the State. Purchaser's failure to pay for all or part of the forest products sold in this contract prior to expiration of the contract term results in substantial injury to the State. Therefore, Purchaser agrees to pay the State the full lump sum contract price in P-020 in the event of failure to perform.

D-041 Reserve Tree Excessive Damage

When Purchaser's operations exceed the damage limits set forth in clause H-013, Reserve Tree Damage Definition, and when the Contract Administrator determines that a suitable replacement for a damaged reserve tree is not possible, the damaged trees result in substantial injury to the State. The value of the damaged reserve trees at the time of the breach is not readily ascertainable. Therefore, the Purchaser agrees to pay the State as liquidated damages at the rate of \$500.00 per tree for all damaged reserve trees that are not replaced in all timber sale units.

IN WITNESS WHEREOF, the Parties hereto have entered into this contract.

STATE OF WASHINGTON  
DEPARTMENT OF NATURAL RESOURCES

\_\_\_\_\_  
Purchaser

\_\_\_\_\_  
Mona Griswold  
Olympic Region Manager

\_\_\_\_\_  
Print Name

Date: \_\_\_\_\_

Date: \_\_\_\_\_

Address:

CORPORATE ACKNOWLEDGEMENT  
(Required for both LLC and Inc. Entities)

STATE OF \_\_\_\_\_ )

COUNTY OF \_\_\_\_\_ )

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, before me personally  
appeared \_\_\_\_\_

\_\_\_\_\_ to me known to be the  
\_\_\_\_\_ of the corporation  
that executed the within and foregoing instrument and acknowledged said instrument to be the  
free and voluntary act and deed of the corporation, for the uses and purposes therein mentioned,  
and on oath stated that (he/she was) (they were) authorized to execute said instrument.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and  
year first above written.

\_\_\_\_\_  
Notary Public in and for the State of

\_\_\_\_\_

My appointment expires \_\_\_\_\_

**Schedule A**  
**SLASH PILING SPECS**

The area shall be piled by creating circular piles of slash and brush conforming to the following specifications:

- A. Piles shall be a minimum of 12 feet tall by 8 feet wide to a maximum of 30 feet tall and 16 feet wide. Piles shall be cone shaped and stable.
- B. Piles shall be free of topsoil, large rotten logs and large stumps. No material larger than 8 inches in diameter shall be piled. Any unburnable material shall be well scattered.
- C. Piles shall not be placed on large stumps or logs.
- D. Piles shall be stacked a minimum of 50 feet from all unit boundaries, Riparian Management Zones, leave trees and any standing timber; a minimum of 100 feet from any public roads and highways; and a minimum of 200 feet from any structures.
- E. Piling shall be completed using an approved hydraulic shovel and grapples.
- F. Slash and displaced soil shall be removed from swales and natural drainage channels concurrent with yarding.
- G. Slash shall be placed in skid roads or ahead of machinery. Slash which accumulates on landings and/or roads shall be lopped and scattered within the harvest area or as designated by the Contract Administrator.
- H. Slash generated during cable yarding shall be stacked in dirt free piles and shall not block roads or interfere with functioning of drainage structures, ditches, or stream channels.
- I. Slash generated during felling and yarding within 100 feet of the PA-S-2510 road, 100 feet of county roads and 200 feet of structures must be pulled back to reduce the residual volume to less than 9 tons per acre of material 3 inches and less in diameter in accordance with WAC 332-24-650, extreme fire hazard requiring abatement, and approved by the Contract Administrator.
- J. Purchaser may remove Slash as Bio Fuel.

**Schedule B**  
**GREEN TREE RETENTION PLAN**

Leave the following as directed by the Contract Administrator:

1. All trees marked with Blue paint and all leave tree area clumps shall remain standing. The perimeter of the leave tree clumps are designated by Leave Tree Area tags. The tags face outward from the leave tree clumps.

Unit #	# of Individually Marked Trees	# of Clumps	# of Trees Clumped	Total # of Leave Trees
1	33	9	676	709
2	16	1	72	8
3	40	5	346	386
4	56	6	320	376
5	20	3	452	472
6	17	1	314	331
7	1	1	7	8
8	31	1	201	23
9	3	1	27	40
21	22	4	90	112



**WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES**  
**FOREST EXCISE TAX ROAD SUMMARY SHEET**

**Region:**

**Timber Sale Name:**

**Application Number:**

**EXCISE TAX APPLICABLE ACTIVITIES**

**Construction:** **linear feet**  
*Road to be constructed (optional and required) but not abandoned*

**Reconstruction:** **linear feet**  
*Road to be reconstructed (optional and required) but not abandoned*

**Abandonment:** **linear feet**  
*Abandonment of existing roads not reconstructed under the contract*

**Decommission:** **linear feet**  
*Road to be made undriveable but not officially abandoned.*

**Pre-Haul Maintenance:** **linear feet**  
*Existing road to receive maintenance work (optional and required) prior to haul*

**EXCISE TAX EXEMPT ACTIVITIES**

**Temporary Construction:** **linear feet**  
*Roads to be constructed (optional and required) and then abandoned*

**Temporary Reconstruction:** **linear feet**  
*Roads to be reconstructed (optional and required) and then abandoned*

All parties must make their own assessment of the taxable or non-taxable status of any work performed under the timber sale contract. The Department of Revenue bears responsibility for determining forest road excise taxes. The Department of Natural Resources developed this form to help estimate the impact of forest excise taxes. However, the information provided may not precisely calculate the actual amount of taxes due. The Department of Revenue is available for consultation by calling 1.800.548.8829.

(Revised 9/18)



## WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES

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(Revised 9/18)

**State of Washington  
Department of Natural Resources  
Timber Bill of Sale Extension Charges**

**Extension Per Acre Charge Worksheet**

Agreement No.:

Sale Name:

Region:

Sale Method:

Harvest Type:

Geographic Area:

Site Class (westside only):

- 1. Growth Loss
  - 2. Additional Growth
  - 3. Loss thru Disrupt.
- Per Acre Charge**

Westside PC/Thin		Westside Evenage		Eastside PC/Thin		Eastside Evenage	
scale	lump	scale	lump	scale	lump	scale	lump
			29.00				
			884.34				
			44.22				
<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$957.56</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>

**Total Per Acre Charge:**

This figure to be Input into the G-050 or G051 clause.

# Cruise Narrative

<b>Sale Name:</b> South Chicago	<b>Region:</b> Olympic
<b>Agreement #:</b> 30-099255	<b>District:</b> Straits
<b>Lead Cruiser:</b> Kevin Peterson	<b>Completion Date:</b> 12/4/2019 Revised 2/4/20
<b>Other Cruisers:</b> none	

## Unit acreage specifications:

Unit #	Cruised Acres	Cruised acres agree with sale acres? Y/N	If acres do not agree explain why.
1	89	Y	
2	11	Y	
3	47	Y	
4	44	Y	
5	56	Y	
6	38	Y	
7	1	Y	
8	29	Y	
9	5	Y	
12	1	Y	
13	4	Y	
14	3	Y	
15	2	Y	
16	2	Y	
17	1	Y	
18	0.25	Y	
19	1	Y	
20	1	y	
21	14	Y	
<b>Total</b>	349.25	Y	

## Unit cruise specifications:

Unit #	Sample Type (VP,FP,ITS,100%)	Expansion Factor (baf,full/half)	Sighting Height (4.5', 16')	Grid Size (plot spacing)	Plot Ratio (cruise/count)	Number of plots
1	VP	54.44/40	4.5'	250 x 250	1:2	50
2	VP	71.11/54.44	4.5'	250 x 250	1:1	7
3	VP	71.11/54.44	4.5'	250 x 250	1:1	30
4	VP	71.11/54.44	4.5'	250 x 250	1:1	29
5	VP	71.11/54.44	4.5'	250 x 250	1:1	34
6	VP	71.11/54.44	4.5'	250 x 250	1:1	25
7	VP	71.11/54.44	4.5'	250 x 250	All	1
8	VP	71.11/54.44	4.5'	250 x 250	1:1	18
9	VP	71.11/54.44	4.5'	250 x 250	All	3
12	VP	40	4.5'	Random	All	1
13	VP	20	4.5'	Random	All	2

14	VP	40	4.5'	Random	All	1
15	VP	40	4.5'	Random	All	2
16	VP	20	4.5'	Random	All	1
17	VP	40	4.5'	Random	All	1
18	VP	40	4.5'	Random	All	1
19	VP	20	4.5'	Random	All	1
20	VP	20	4.5'	Random	All	1
21	VP	71.11/54.44	4.5'	250 x 250	1:1	10

**Sale/Cruise Description:**

<b>Minor species cruise intensity</b>	Minor species sampled using same cruise plots. Red Cedar, Bigleaf Maple and Red Alder were cruised at a 40 or 54.44 BAF					
<b>Minimum cruise spec:</b>	40% of Form Factor at 16 ft. D.O.B or 5 inch top.					
<b>Average ring count:</b>	<b>DF =</b>	8	<b>WH =</b>	8	<b>SS =</b>	N/A
<b>Leave/take tree description:</b>	Leave tree clumps are bounded out with yellow tags, pink flashers and blue paint. Individual leave trees are marked with blue bands and two blue butt marks.					
<b>Other conditions:</b>	Exterior boundaries are marked with white tags and pink flashers					

<b>Sort Description:</b>	<p><b>HA</b>– Logs meeting the following criteria: Surface characteristics for a high quality A sort will have sound tight knots not to exceed 1 ½” in diameter, numbering not more than an average of one per foot of log length. May include logs with not more than two larger knots. Knots and knot indicators ½” in diameter and smaller shall not be a determining factor. Logs will have a growth ring count of 6 or more rings per inch in the outer third top end of the log. (minimum diameter 8”.)</p> <p><b>R</b> – Logs meeting the following criteria: Gross diameter of 12 inches or greater, excessive knots greater than 2 ½ inches with recovery less than 65% of the net scale.</p>
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**Field Observations:**

South Chicago is a sale located near Joyce off of US 112. The sale has 10 VRH and 9 Right-of-Way units. The total acreage for the sale is 349.25 acres. The sale is 85% ground based harvest and 15% uphill cable.

The total volume is 8,985 MBF and is comprised of 45% Red Alder, 28% Douglas-fir, 16% Western Hemlock and 9% Western Red Cedar; with traces of Bigleaf Maple and Sitka Spruce. The average RA has a DBH of 16” and bole height of 62’. The average DF has DBH of 15.1” and bole height of 56’. The average WH has a DBH of 14.1 and bole height of 52’. Common defects were sweep, forked tops and some butt rot. Some of the units have small pockets of root rot.

Access to most of the units is pretty good and an AA1 key is needed to access some road systems.

**Grants:** 01, 04

**Prepared By:** Kevin Peterson – Olympic Region Cruiser

TC		PSPCSTGR		Species, Sort Grade - Board Foot Volumes (Project)																			
T000 R000 S00 TyU1 THRU T000 R000 S00 TyU9				Project: <b>SOUTH</b>										Page <b>1</b>									
				Acres <b>349.25</b>										Date <b>2/4/2020</b>									
														Time <b>12:46:58PM</b>									
Spp	S T	So rt	Gr ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent of Net Board Foot Volume								Average Log				Logs Per /Acre		
					Def%	Gross	Net		Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft	CF/ Lf			
									4-7	8-11	12-15	16+	12-20	21-30	31-35	36-99							
RC	CU	CU																3	6		0.00	4.2	
RC	D	3S		88	18.7	2,562	2,083	728	9	33	29	30	0	2	4	94		35	10	132	1.56	15.8	
RC	D	4S		12	4.9	294	279	98	92	8			18	61	9	12		23	5	26	0.44	10.7	
<b>RC Totals</b>				9	17.3	2,856	2,363	825	19	30	25	26	2	9	5	84		27	8	77	1.19	30.7	
DF	CU	CU			100.0	69												11	8		0.00	2.3	
DF	HQ	2S		4	8.5	380	348	122			62	38				100		40	15	325	2.26	1.1	
DF	D	2S		41	3.6	3,014	2,906	1,015			68	32				100		40	14	320	2.15	9.1	
DF	D	3S		39	2.9	2,931	2,847	994	36	64				1	13	86		38	8	90	0.76	31.7	
DF	D	4S		14		1,007	1,007	352	99	1			24	54	18	4		24	5	26	0.29	39.0	
DF	D	UT		2		99	99	34	100				51			49		14	5	9	0.25	10.9	
<b>DF Totals</b>				28	3.9	7,499	7,206	2,517	30	25	30	15	4	8	8	80		29	7	77	0.77	94.1	
WH	CU	CU																3	7		0.00	1.9	
WH	D	2S		31	7.9	1,439	1,325	463			59	41				100		40	15	305	2.18	4.3	
WH	D	3S		46	1.5	1,979	1,950	681	40	60					19	81		38	8	83	0.71	23.4	
WH	D	4S		18		797	797	278	99	1			20	32	28	21		25	5	28	0.40	28.8	
WH	D	UT		5		170	170	59	100				47		53			18	5	14	0.26	12.4	
<b>WH Totals</b>				16	3.3	4,385	4,242	1,481	41	28	19	13	6	6	16	73		28	7	60	0.67	70.9	
RA	CU	CU																8			0.00	1.9	
RA	D	2S		48	14.6	6,588	5,629	1,966			86	14	2	14		84		37	13	215	1.87	26.1	
RA	D	3S		17	7.6	2,137	1,974	689		100			4	34		62		35	10	111	0.95	17.8	
RA	D	4S		32	8.7	4,096	3,738	1,305		100			8	47	11	34		25	8	46	0.62	81.9	
RA	D	UT		3		250	250	87		100			72	28				4	8	6	0.40	42.9	
<b>RA Totals</b>				45	11.3	13,070	11,590	4,048			51	42	7	6	28	4	62		23	9	68	0.98	170.5
BM	D	2S		26	25.9	81	60	21					100					20	18	200	2.75	.3	
BM	D	4S		59		132	132	46	100					54	46			31	6	38	0.41	3.5	
BM	D	UT		15		33	33	12	7	36	56		7	93				14	6	17	0.47	2.0	
<b>BM Totals</b>				1	8.5	247	226	79	60	5	8	27	28	45	27				25	6	39	0.52	5.7
SS	D	2S		80	9.0	86	78	27			53	47				100		40	15	305	2.23	.3	
SS	D	4S		6		6	6	2	64	36			36	64				19	7	30	0.59	.2	
SS	D	UT		14		13	13	4	100						100			31	5	30	0.77	.4	
<b>SS Totals</b>				0	7.4	104	96	34	17	2	43	38	2	4	13	81		31	8	111	1.30	.9	
<b>Totals</b>					8.7	28,161	25,723	8,984	17	38	33	12	5	17	7	71		26	8	69	0.87	372.8	

TC PSTATS											<b>PROJECT STATISTICS</b>				PAGE	<b>1</b>
											<b>PROJECT SOUTH</b>				DATE	2/4/2020
TWP	RGE	SC	TRACT	TYPE		ACRES		PLOTS	TREES	CuFt	BdFt					
000	000	00	CHICAGO	U1	THR	349.25		218	1,101	S	W					
000	000	00	CHICAGO	U9												
			PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES									
TOTAL			218	1101	5.1											
CRUISE			108	516	4.8	73,793	.7									
DBH COUNT REFOREST COUNT			110	571	5.2											
BLANKS 100 %																
<b>STAND SUMMARY</b>																
SAMPLE TREES		TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC						
R ALDER	229	90.5	16.0	62	31.7	126.9	13,070	11,590	3,792	3,763						
WHEMLOCK	99	43.6	14.1	52	12.5	47.0	4,385	4,242	1,348	1,348						
DOUG FIR	107	56.2	15.1	56	18.1	70.3	7,499	7,206	2,130	2,110						
WR CEDAR	70	16.6	19.2	54	7.6	33.5	2,856	2,363	985	984						
BL MAPLE	7	3.9	13.0	44	1.0	3.6	247	226	74	74						
S SPRUCE	4	.6	19.1	46	0.3	1.2	104	96	35	35						
<b>TOTAL</b>	<b>516</b>	<b>211.3</b>	<b>15.7</b>	<b>57</b>	<b>71.4</b>	<b>282.5</b>	<b>28,161</b>	<b>25,723</b>	<b>8,364</b>	<b>8,315</b>						
CONFIDENCE LIMITS OF THE SAMPLE																
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR																
CL	68.1	COEFF		TREES/ACRE			# OF PLOTS REQ.		INF. POP.							
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10							
R ALDER		85.0	5.8	85	90	96										
WHEMLOCK		145.7	9.9	39	44	48										
DOUG FIR		159.7	10.8	50	56	62										
WR CEDAR		180.6	12.2	15	17	19										
BL MAPLE		643.8	43.6	2	4	6										
S SPRUCE		792.7	53.7	0	1	1										
<b>TOTAL</b>		<b>41.7</b>	<b>2.8</b>	<b>205</b>	<b>211</b>	<b>217</b>	<b>70</b>	<b>36</b>	<b>17</b>							
CL	68.1	COEFF		BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.							
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10							
R ALDER		83.3	5.6	120	127	134										
WHEMLOCK		137.9	9.3	43	47	51										
DOUG FIR		130.0	8.8	64	70	76										
WR CEDAR		151.4	10.3	30	33	37										
BL MAPLE		542.4	36.7	2	4	5										
S SPRUCE		733.7	49.7	1	1	2										
<b>TOTAL</b>		<b>33.4</b>	<b>2.3</b>	<b>276</b>	<b>283</b>	<b>289</b>	<b>45</b>	<b>23</b>	<b>11</b>							
CL	68.1	COEFF		NET BF/ACRE			# OF PLOTS REQ.		INF. POP.							
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10							
R ALDER		86.5	5.9	10,911	11,590	12,270										
WHEMLOCK		145.9	9.9	3,823	4,242	4,661										
DOUG FIR		131.5	8.9	6,564	7,206	7,848										
WR CEDAR		155.9	10.6	2,113	2,363	2,612										
BL MAPLE		535.4	36.3	144	226	308										
S SPRUCE		954.5	64.6	34	96	159										
<b>TOTAL</b>		<b>41.4</b>	<b>2.8</b>	<b>25,002</b>	<b>25,723</b>	<b>26,444</b>	<b>68</b>	<b>35</b>	<b>17</b>							
CL	68.1	COEFF		V_BAR/ACRE			# OF PLOTS REQ.		INF. POP.							
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10							
R ALDER				86	91	97										
WHEMLOCK		79.2	5.4	81	90	99										
DOUG FIR		16.8	1.1	93	103	112										
WR CEDAR		89.9	6.1	63	71	78										

T TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)										Page 1											
Project: SOUTH												Date 2/4/2020											
												Time 12:46:59PM											
T000 R000 S00 TU1										T000 R000 S00 TU1													
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt														
000	000	00	CHICAGO	U1	89.00	50	72	S	W														
Spp	S T	So rt	Gr ad	%	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log				Logs Per /Acre		
					Def%	Gross	Net		Log Scale Dia.				Log Length				Ln	Dia	Bd	CF/ Lf			
DF	D	2S		20	3.4	2,927	2,828	252	100				100				40	13	223	1.68	12.7		
DF	D	3S		56	3.6	7,979	7,690	684	42	58					14	86	38	8	88	0.76	87.5		
DF	D	4S		22		3,103	3,103	276	100					23	58	19			24	5	25	0.28	124.8
DF	D	UT		2		190	190	17	100					100				12	5	6	0.15	33.2	
<b>DF</b>	<b>Totals</b>			73	2.7	14,200	13,811	1,229	47	32	20	7	13	12	68	28	6	54	0.60	258.1			
WH	D	2S		8	10.0	309	278	25	100				100				40	12	180	1.48	1.5		
WH	D	3S		63		2,143	2,143	191	45	55					12	88	39	8	88	0.73	24.2		
WH	D	4S		29		957	957	85	100					24	23	27	26	24	5	30	0.34	31.9	
WH	D	UT																	0.00	8.6			
<b>WH</b>	<b>Totals</b>			18	.9	3,409	3,378	301	57	35	8	7	7	15	71	28	6	51	0.56	66.3			
RC	CU	CU														8	5		0.00	2.7			
RC	D	3S		84	18.2	945	773	69	100				100				36	9	81	1.14	9.5		
RC	D	4S		16		137	137	12	100					56	44			19	5	20	0.30	6.8	
<b>RC</b>	<b>Totals</b>			5	15.9	1,082	910	81	15	85		8	7	85	26	7	48	0.87	19.1				
RA	D	3S		22		187	187	17	100				100				30	11	130	1.12	1.4		
RA	D	4S		70	4.1	595	571	51	100				29	71			20	8	33	0.53	17.1		
RA	D	UT		8		58	58	5	100				100				3	7	6	0.50	10.2		
<b>RA</b>	<b>Totals</b>			4	2.9	840	815	73	100				20	80			14	8	28	0.59	28.7		
<b>Type Totals</b>					3.2	19,530	18,913	1,683	45	38	16	7	14	12	67	27	7	51	0.60	372.2			

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	SOUTH			DATE	2/4/2020	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
000	000	00	CHICAGO	U1	89.00	50	221	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		50	221	4.4						
CRUISE		16	72	4.5	20,633	.3				
DBH COUNT REFOREST COUNT		34	149	4.4						
BLANKS 100 %										
STAND SUMMARY										
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
DOUG FIR	52	167.5	13.4	51	44.7	163.3	14,200	13,811	4,292	4,292
WHEMLOCK	11	36.2	13.7	58	10.0	37.0	3,409	3,378	1,041	1,041
WR CEDAR	3	9.5	17.5	54	3.8	16.0	1,082	910	430	430
R ALDER	6	18.5	11.6	51	4.0	13.6	840	815	244	244
<b>TOTAL</b>	<b>72</b>	<b>231.8</b>	<b>13.5</b>	<b>52</b>	<b>62.6</b>	<b>229.9</b>	<b>19,530</b>	<b>18,913</b>	<b>6,007</b>	<b>6,007</b>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL:	68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
DOUG FIR	53.1	7.5		155	168	180				
WHEMLOCK	164.1	23.2		28	36	45				
WR CEDAR	189.2	26.8		7	10	12				
R ALDER	327.3	46.3		10	19	27				
<b>TOTAL</b>	<b>30.4</b>	<b>4.3</b>		<b>222</b>	<b>232</b>	<b>242</b>	<b>37</b>	<b>19</b>	<b>9</b>	
CL:	68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
DOUG FIR	44.7	6.3		153	163	174				
WHEMLOCK	161.2	22.8		29	37	45				
WR CEDAR	189.0	26.7		12	16	20				
R ALDER	334.1	47.2		7	14	20				
<b>TOTAL</b>	<b>23.5</b>	<b>3.3</b>		<b>222</b>	<b>230</b>	<b>238</b>	<b>22</b>	<b>11</b>	<b>6</b>	
CL:	68.1 %	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
DOUG FIR	46.2	6.5		12,909	13,811	14,712				
WHEMLOCK	160.2	22.6		2,613	3,378	4,143				
WR CEDAR	190.5	26.9		665	910	1,155				
R ALDER	343.0	48.5		420	815	1,211				
<b>TOTAL</b>	<b>28.4</b>	<b>4.0</b>		<b>18,153</b>	<b>18,913</b>	<b>19,674</b>	<b>32</b>	<b>17</b>	<b>8</b>	
CL:	68.1 %	COEFF	V-BAR/ACRE				# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
DOUG FIR				79	85	90				
WHEMLOCK				71	91	112				
WR CEDAR				42	57	72				
R ALDER	204.2	28.9		31	60	89				
<b>TOTAL</b>	<b>299.9</b>	<b>42.4</b>		<b>79</b>	<b>82</b>	<b>86</b>	<b>3,597</b>	<b>1,835</b>	<b>899</b>	

T	TSPCSTGR	Species, Sort Grade - Board Foot Volumes (Type)										Page	1								
												Date		2/4/2020							
												Time		12:46:59PM							
T000 R000 S00 TU2										T000 R000 S00 TU2											
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt												
000	000	00	CHICAGO	U2	11.00	7	19	S	W												
Spp	S	So	Gr	%	Bd. Ft. per Acre			Total	Percent Net Board Foot Volume								Average Log				Logs Per /Acre
					Net BdFt	Def%	Gross		Net	Log Scale Dia.				Log Length				Ln	Dia	Bd	
	T	rt	ad					Net MBF	4-7	8-11	12-15	16+	12-20	21-30	31-35	36-99	Ft	In	Ft		
RA	D	2S		30	8.8	3,007	2,743	30									40	13	252	1.94	10.9
RA	D	3S		34	7.5	3,314	3,065	34									40	10	128	1.07	23.9
RA	D	4S		27	2.0	2,549	2,497	27					19	71	10		22	8	40	0.60	62.3
RA	D	UT		9		755	755	8					100				10	8	16	0.39	46.4
<b>RA</b>	<b>Totals</b>			27	5.9	9,625	9,060	100		70	30		14	20	3	64	22	9	63	0.89	143.4
WH	D	2S		43	8.7	4,578	4,182	46									40	13	240	1.93	17.4
WH	D	3S		46		4,437	4,437	49	57	43					11	89	39	7	74	0.60	60.0
WH	D	4S		11		1,036	1,036	11	100				28	72			19	5	18	0.31	58.4
<b>WH</b>	<b>Totals</b>			29	3.9	10,050	9,654	106	37	20	43		3	8	5	84	30	7	71	0.75	135.8
DF	CU	CU															8	7		0.00	5.2
DF	HQ	2S		28	4.8	3,496	3,327	37									40	14	308	2.08	10.8
DF	D	2S		51	4.4	6,268	5,994	66			66	34					40	14	318	2.08	18.8
DF	D	3S		18		2,182	2,182	24	36	64							39	8	93	0.69	23.4
DF	D	4S		3		279	279	3	56	44			100				16	8	34	0.51	8.3
<b>DF</b>	<b>Totals</b>			35	3.6	12,225	11,783	130	8	13	62	17	2			98	34	11	177	1.39	66.5
RC	D	3S		92	12.8	3,029	2,641	29	10	90					10	90	35	10	132	1.34	20.1
RC	D	4S		8		214	214	2	100								28	5	30	0.46	7.1
<b>RC</b>	<b>Totals</b>			9	12.0	3,243	2,855	31	17	83				7	9	83	33	9	105	1.15	27.2
<b>Type Totals</b>					5.1	35,143	33,352	367	15	29	50	6	5	8	3	83	28	8	89	0.96	373.0

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	SOUTH			DATE	2/4/2020	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
000	000	00	CHICAGO	U2	11.00	7	34	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		7	34	4.9						
CRUISE		4	19	4.8	2,081	.9				
DBH COUNT										
REFOREST										
COUNT		3	15	5.0						
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
R ALDER	8	81.2	15.3	59	26.5	103.5	9,625	9,060	2,852	2,852
WHEMLOCK	4	67.9	15.7	66	23.1	91.4	10,050	9,654	3,085	3,085
DOUG FIR	5	26.5	23.7	89	16.7	81.3	12,225	11,783	3,173	3,173
WR CEDAR	2	13.6	20.5	68	6.9	31.1	3,243	2,855	1,035	1,035
<b>TOTAL</b>	<i>19</i>	<i>189.2</i>	<i>17.3</i>	<i>66</i>	<i>74.0</i>	<i>307.3</i>	<i>35,143</i>	<i>33,352</i>	<i>10,145</i>	<i>10,145</i>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL:	68.1 %	COEFF	TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER	68.6	27.9		58	81	104				
WHEMLOCK	119.4	48.6		35	68	101				
DOUG FIR	107.6	43.8		15	27	38				
WR CEDAR	137.8	56.1		6	14	21				
<b>TOTAL</b>	<i>37.7</i>	<i>15.3</i>		<i>160</i>	<i>189</i>	<i>218</i>	<i>66</i>	<i>34</i>	<i>16</i>	
CL:	68.1 %	COEFF	BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER	54.4	22.2		81	103	126				
WHEMLOCK	107.3	43.7		51	91	131				
DOUG FIR	106.3	43.3		46	81	116				
WR CEDAR	137.7	56.1		14	31	49				
<b>TOTAL</b>	<i>31.0</i>	<i>12.6</i>		<i>269</i>	<i>307</i>	<i>346</i>	<i>45</i>	<i>23</i>	<i>11</i>	
CL:	68.1 %	COEFF	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER	49.7	20.2		7,226	9,060	10,893				
WHEMLOCK	108.9	44.4		5,371	9,654	13,937				
DOUG FIR	110.7	45.1		6,472	11,783	17,093				
WR CEDAR	137.8	56.1		1,253	2,855	4,457				
<b>TOTAL</b>	<i>38.2</i>	<i>15.5</i>		<i>28,168</i>	<i>33,352</i>	<i>38,535</i>	<i>68</i>	<i>35</i>	<i>17</i>	
CL:	68.1 %	COEFF	V-BAR/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER				70	88	105				
WHEMLOCK				59	106	152				
DOUG FIR	27.6	11.2		80	145	210				
WR CEDAR				40	92	143				
<b>TOTAL</b>	<i>168.7</i>	<i>68.7</i>		<i>92</i>	<i>109</i>	<i>125</i>	<i>1,323</i>	<i>675</i>	<i>331</i>	

T TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)										Page 1										
		Project: SOUTH										Date 2/4/2020										
												Time 12:46:59PM										
T000 R000 S00 TU3										T000 R000 S00 TU3												
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt													
000	000	00	CHICAGO	U3	47.00	30	86	S	W													
Spp	S	So	Gr	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log				Logs Per /Acre	
					Def%	Gross	Net		Log Scale Dia.				Log Length				Ln	Dia	Bd	CF/ Lf		
								4-7	8-11	12-15	16+	12-20	21-30	31-35	36-99	Ft	In	Ft				
RA	D	2S		55	16.1	13,590	11,401			95	5		1	4	95	39	13	215	1.87	53.1		
RA	D	3S		18	8.3	3,935	3,609		100					33	67	36	10	119	1.03	30.4		
RA	D	4S		22	4.0	4,836	4,640		100			11	65	20	5	24	8	45	0.62	102.9		
RA	D	UT		5		829	829		100			77	23			10	8	14	0.42	58.1		
<b>RA</b>	<b>Totals</b>			66	11.7	23,190	20,480		44	53	3	6	24	4	65	25	9	84	1.09	244.5		
RC	D	3S		89	17.5	3,149	2,596		35	34	30	1		2	98	35	12	164	1.79	15.8		
RC	D	4S		11	5.3	336	318		100			8	74	18		24	5	26	0.42	12.4		
<b>RC</b>	<b>Totals</b>			9	16.4	3,484	2,914		11	31	31	27	2	8	3	87	31	9	103	1.31	28.2	
WH	D	2S		48	9.8	1,765	1,593			100					100	40	14	264	2.03	6.0		
WH	D	3S		36	6.1	1,293	1,215		38	62				7	93	39	8	81	0.69	15.0		
WH	D	4S		8		245	245		100			22	78			20	5	20	0.37	12.0		
WH	D	UT		8		264	264		100			20		80		27	5	28	0.40	9.4		
<b>WH</b>	<b>Totals</b>			11	7.0	3,568	3,317		29	23	48	3	6	9	82	31	7	78	0.82	42.4		
DF	CU	CU			100.0	57										18	7		0.00	2.6		
DF	HQ	2S		13	4.8	552	526		25		100				100	40	14	308	2.08	1.7		
DF	D	2S		54	5.1	2,230	2,117		99		73	27			100	40	14	308	2.08	6.9		
DF	D	3S		29		1,124	1,124		53	34	66			17	83	38	8	93	0.76	12.1		
DF	D	4S		4		143	143		7	86	14		31	69		24	6	31	0.35	4.6		
DF	D	UT														11	5		0.00	3.3		
<b>DF</b>	<b>Totals</b>			13	4.8	4,107	3,910		184	13	20	53	15	1	3	5	91	32	9	126	1.10	31.1
SS	D	2S		87	12.5	216	189		9		100				100	40	13	210	1.90	.9		
SS	D	4S		13		27	27		1	100				100		22	6	30	0.56	.9		
<b>SS</b>	<b>Totals</b>			1	11.1	242	216		10	13	88			13	88	31	10	120	1.43	1.8		
BM	D	UT		100		157	157		7	12	88		12	88		24	9	85	1.03	1.8		
<b>BM</b>	<b>Totals</b>			1		157	157		7	12	88		12	88		24	9	85	1.03	1.8		
<b>Type Totals</b>					10.8	34,748	30,993		1,457	6	37	51	6	5	18	5	72	27	9	89	1.07	349.8

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	SOUTH		DATE	2/4/2020		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
000	000	00	CHICAGO	U3	47.00	30	167	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		30	167	5.6						
CRUISE		17	86	5.1	8,613	1.0				
DBH COUNT										
REFOREST										
COUNT		13	77	5.9						
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
R ALDER	53	130.4	17.4	64	51.8	216.5	23,190	20,480	6,759	6,759
WR CEDAR	11	13.9	21.3	64	7.5	34.5	3,484	2,914	1,130	1,130
WHEMLOCK	8	23.1	16.2	62	8.2	33.2	3,568	3,317	1,087	1,087
DOUG FIR	12	14.0	20.1	75	6.9	30.8	4,107	3,910	1,116	1,094
S SPRUCE	1	.9	22.0	64	0.5	2.4	242	216	79	79
BL MAPLE	1	.9	19.0	50	0.4	1.8	157	157	46	46
<b>TOTAL</b>	86	183.3	17.9	65	75.5	319.2	34,748	30,993	10,216	10,195
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL:	68.1 %	COEFF	TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER	43.1	8.0		120	130	141				
WR CEDAR	134.1	24.9		10	14	17				
WHEMLOCK	180.5	33.5		15	23	31				
DOUG FIR	196.2	36.4		9	14	19				
S SPRUCE	547.7	101.8			1	2				
BL MAPLE	547.7	101.8			1	2				
<b>TOTAL</b>	27.5	5.1		174	183	193	31	16		8
CL:	68.1 %	COEFF	BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER	42.1	7.8		200	217	233				
WR CEDAR	134.3	24.9		26	34	43				
WHEMLOCK	156.5	29.1		24	33	43				
DOUG FIR	156.7	29.1		22	31	40				
S SPRUCE	547.7	101.8			2	5				
BL MAPLE	547.7	101.8			2	4				
<b>TOTAL</b>	23.0	4.3		306	319	333	22	11		5
CL:	68.1 %	COEFF	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER	44.2	8.2		18,800	20,480	22,161				
WR CEDAR	142.2	26.4		2,144	2,914	3,684				
WHEMLOCK	165.2	30.7		2,299	3,317	4,335				
DOUG FIR	166.1	30.9		2,703	3,910	5,116				
S SPRUCE	547.7	101.8			216	435				
BL MAPLE	547.7	101.8			157	316				
<b>TOTAL</b>	27.0	5.0		29,441	30,993	32,545	30	15		8
CL:	68.1 %	COEFF	V-BAR/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER				87	95	102				
WR CEDAR	107.8	20.0		62	85	107				
WHEMLOCK	121.0	22.5		69	100	131				
DOUG FIR	160.4	29.8		88	127	166				
S SPRUCE	547.7	101.8			91	183				
BL MAPLE	547.7	101.8			86	174				



TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	SOUTH		DATE	2/4/2020		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
000	000	00	CHICAGO	U4	44.00	29	162	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		29	162	5.6						
CRUISE		15	79	5.3	9,312	.8				
DBH COUNT										
REFOREST										
COUNT		14	78	5.6						
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
R ALDER	39	124.2	16.5	65	45.3	184.0	19,712	17,128	5,606	5,509
WHEMLOCK	18	57.1	15.1	54	18.3	71.1	7,178	6,753	2,138	2,138
WR CEDAR	17	19.6	21.4	50	10.6	48.8	4,347	3,584	1,447	1,446
DOUG FIR	3	8.5	19.2	71	3.9	17.2	2,308	1,993	609	549
S SPRUCE	1	1.8	16.0	32	0.6	2.5	53	53	42	42
BL MAPLE	1	.5	26.0	44	0.4	1.9	158	122	40	40
<b>TOTAL</b>	<b>79</b>	<b>211.6</b>	<b>16.8</b>	<b>60</b>	<b>79.4</b>	<b>325.4</b>	<b>33,755</b>	<b>29,632</b>	<b>9,882</b>	<b>9,724</b>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL:	68.1 %	COEFF	TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER	54.0	10.2		112	124	137				
WHEMLOCK	131.3	24.8		43	57	71				
WR CEDAR	146.6	27.7		14	20	25				
DOUG FIR	345.3	65.3		3	9	14				
S SPRUCE	538.5	101.8			2	4				
BL MAPLE	538.5	101.8			1	1				
<b>TOTAL</b>	<b>43.0</b>	<b>8.1</b>		<b>194</b>	<b>212</b>	<b>229</b>	<b>77</b>	<b>39</b>	<b>19</b>	
CL:	68.1 %	COEFF	BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER	49.7	9.4		167	184	201				
WHEMLOCK	119.5	22.6		55	71	87				
WR CEDAR	108.9	20.6		39	49	59				
DOUG FIR	325.7	61.6		7	17	28				
S SPRUCE	538.5	101.8			2	5				
BL MAPLE	538.5	101.8			2	4				
<b>TOTAL</b>	<b>28.4</b>	<b>5.4</b>		<b>308</b>	<b>325</b>	<b>343</b>	<b>33</b>	<b>17</b>	<b>8</b>	
CL:	68.1 %	COEFF	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER	51.9	9.8		15,447	17,128	18,809				
WHEMLOCK	125.5	23.7		5,152	6,753	8,354				
WR CEDAR	114.4	21.6		2,809	3,584	4,359				
DOUG FIR	326.1	61.6		765	1,993	3,221				
S SPRUCE	538.5	101.8			53	106				
BL MAPLE	538.5	101.8			122	247				
<b>TOTAL</b>	<b>34.2</b>	<b>6.5</b>		<b>27,719</b>	<b>29,632</b>	<b>31,545</b>	<b>48</b>	<b>25</b>	<b>12</b>	
CL:	68.1 %	COEFF	V-BAR/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER				84	93	102				
WHEMLOCK	82.5	15.6		72	95	117				
WR CEDAR	85.5	16.2		58	73	89				
DOUG FIR	90.9	17.2		45	116	188				
S SPRUCE	538.5	101.8			21	43				
BL MAPLE	538.5	101.8			65	131				

T TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)										Page 1										
Project: SOUTH												Date 2/4/2020										
												Time 12:46:59PM										
T000 R000 S00 TU5										T000 R000 S00 TU5												
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt													
000	000	00	CHICAGO	U5	56.00	34	76	S	W													
Spp	S T	So rt	Gr ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log				Logs Per /Acre	
					Def%	Gross	Net		Log Scale Dia.				Log Length				Ln	Dia	Bd	CF/ Lf		
								4-7	8-11	12-15	16+	12-20	21-30	31-35	36-99	Ft	In	Ft				
RA		CU	CU													8			0.00		1.6	
RA		D	2S	47	13.2	8,990	7,806			79	21		17		83	38	14	231	1.90		33.8	
RA		D	3S	14	7.2	2,546	2,363		100			12	17		71	35	10	105	0.91		22.6	
RA		D	4S	39	11.0	7,132	6,349		100			4	35	9	52	27	8	48	0.62		132.5	
RA		D	UT													8			0.00		57.4	
<b>RA</b>	<b>Totals</b>			57	11.5	18,669	16,518			53	37	10	3	24	3	69	23	9	67	0.95	247.8	
WH		CU	CU													2	7		0.00		4.1	
WH		D	2S	41	7.3	2,311	2,143			43	57				100	40	15	346	2.36		6.2	
WH		D	3S	38	1.7	2,013	1,979		36	64				14	86	38	7	78	0.71		25.4	
WH		D	4S	13		694	694		100			33	29	27	11	22	5	23	0.40		30.8	
WH		D	UT	8		376	376		100			56		44		23	5	23	0.32		16.0	
<b>WH</b>	<b>Totals</b>			18	3.7	5,394	5,192		291	34	25	18	24	9	4	12	75	28	7	63	0.73	82.5
RC		CU	CU													7			0.00		3.3	
RC		D	3S	94	19.8	4,103	3,293		184	7	25	23	45		1	6	93	35	11	155	1.74	21.2
RC		D	4S	6		194	194		11	100				26	74			22	5	26	0.39	7.6
<b>RC</b>	<b>Totals</b>			12	18.9	4,297	3,486		195	12	24	22	42	1	5	6	88	29	9	109	1.50	32.0
DF		CU	CU													8	7		0.00		1.2	
DF		HQ	2S	13	15.0	492	418		23			100			100	40	16	340	2.54		1.2	
DF		D	2S	34		1,039	1,039		58			100			100	40	15	360	2.18		2.9	
DF		D	3S	38		1,162	1,162		65	37	63				17	83	39	8	88	0.71	13.3	
DF		D	4S	9		269	269		15	100			53	47		20	5	25	0.25		10.6	
DF		D	UT	6		170	170		9	100						37	5	40	0.53		4.2	
<b>DF</b>	<b>Totals</b>			11	2.4	3,130	3,056		171	28	24	34	14	5	4	7	85	32	8	91	0.83	33.4
BM		D	4S	100		475	475		27	100				54	46			31	6	38	0.41	12.4
BM		D	UT													11	5		0.00		5.1	
<b>BM</b>	<b>Totals</b>			2		475	475		27	100				54	46	25	6	27	0.36		17.5	
<b>Type Totals</b>					10.1	31,965	28,727		1,609	12	40	31	17	4	16	6	73	25	8	69	0.91	413.4

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	SOUTH		DATE	2/4/2020		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
000	000	00	CHICAGO	U5	56.00	34	185	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		34	185	5.4						
CRUISE		15	76	5.1	12,823	.6				
DBH COUNT										
REFOREST										
COUNT		19	109	5.7						
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
R ALDER	36	127.9	16.0	63	44.8	179.3	18,669	16,518	5,448	5,345
WHEMLOCK	16	55.2	14.0	46	15.7	58.6	5,394	5,192	1,661	1,661
WR CEDAR	16	16.0	22.3	61	9.2	43.2	4,297	3,486	1,372	1,372
DOUG FIR	6	17.5	16.9	65	6.6	27.2	3,130	3,056	878	878
BL MAPLE	2	12.4	10.9	43	2.4	8.0	475	475	161	161
<b>TOTAL</b>	<b>76</b>	<b>229.0</b>	<b>15.9</b>	<b>58</b>	<b>79.3</b>	<b>316.3</b>	<b>31,965</b>	<b>28,727</b>	<b>9,520</b>	<b>9,415</b>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL:	68.1 %	COEFF	TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER	56.1	9.6		116	128	140				
WHEMLOCK	131.2	22.5		43	55	68				
WR CEDAR	144.2	24.7		12	16	20				
DOUG FIR	212.4	36.4		11	18	24				
BL MAPLE	414.6	71.1		4	12	21				
<b>TOTAL</b>	<b>47.1</b>	<b>8.1</b>		<b>210</b>	<b>229</b>	<b>247</b>	<b>89</b>	<b>45</b>	<b>22</b>	
CL:	68.1 %	COEFF	BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER	53.1	9.1		163	179	196				
WHEMLOCK	121.3	20.8		46	59	71				
WR CEDAR	130.7	22.4		34	43	53				
DOUG FIR	203.8	34.9		18	27	37				
BL MAPLE	414.6	71.1		2	8	14				
<b>TOTAL</b>	<b>37.7</b>	<b>6.5</b>		<b>296</b>	<b>316</b>	<b>337</b>	<b>57</b>	<b>29</b>	<b>14</b>	
CL:	68.1 %	COEFF	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER	54.7	9.4		14,969	16,518	18,066				
WHEMLOCK	123.0	21.1		4,097	5,192	6,287				
WR CEDAR	135.8	23.3		2,674	3,486	4,298				
DOUG FIR	207.6	35.6		1,968	3,056	4,144				
BL MAPLE	414.6	71.1		137	475	813				
<b>TOTAL</b>	<b>41.3</b>	<b>7.1</b>		<b>26,695</b>	<b>28,727</b>	<b>30,760</b>	<b>68</b>	<b>35</b>	<b>17</b>	
CL:	68.1 %	COEFF	V-BAR/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER				83	92	101				
WHEMLOCK	59.3	10.2		70	89	107				
WR CEDAR	80.2	13.7		62	81	99				
DOUG FIR	60.9	10.4		72	112	152				
BL MAPLE	213.9	36.7		17	59	102				
<b>TOTAL</b>	<b>246.8</b>	<b>42.3</b>		<b>84</b>	<b>91</b>	<b>97</b>	<b>2,437</b>	<b>1,243</b>	<b>609</b>	

T	TSPCSTGR	Species, Sort Grade - Board Foot Volumes (Type)										Page	1								
												Date		2/4/2020							
												Time		12:46:59PM							
T000 R000 S00 TU6										T000 R000 S00 TU6											
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt												
000	000	00	CHICAGO	U6	38.00	25	57	S	W												
Spp	S	So	Gr	%	Net	Bd. Ft. per Acre	Total	Percent Net Board Foot Volume	Average Log	Logs	Per	/Acre									
													BdFt	Def%	Gross	Net	Net MBF	Log Scale Dia.	Log Length	Ln	Dia
								4-7	8-11	12-15	16+	12-20	21-30	31-35	36-99	Ft	In	Ft	Lf		
RA	CU	CU														8			0.00	1.6	
RA	D	2S		48	14.1	8,968	7,700	293		88	12		17		83	37	13	216	1.86	35.6	
RA	D	3S		14	7.8	2,414	2,226	85	100				13		87	36	10	119	0.96	18.8	
RA	D	4S		37	6.1	6,138	5,763	219	100				4	29	17	50	30	8	57	0.64	101.0
RA	D	UT		1		75	75	3	100				100			2	8	1	0.27	64.4	
<b>RA</b>	<b>Totals</b>			62	10.4	17,594	15,764	599		51	43	6	3	19	6	71	23	9	71	0.99	221.3
RC	CU	CU														4	6		0.00	13.3	
RC	D	3S		83	17.1	2,832	2,349	89	39	25	36				7	93	36	8	86	1.01	27.3
RC	D	4S		17		461	461	18	100				24	76		21	5	21	0.28	22.2	
<b>RC</b>	<b>Totals</b>			11	14.7	3,293	2,810	107	49	21	30		4	12	6	78	24	7	45	0.75	62.8
WH	D	3S		66		1,687	1,687	64	58	42					58	42	34	8	78	0.67	21.8
WH	D	4S		24		603	603	23	100				5		36	59	27	5	26	0.38	22.8
WH	D	UT		10		244	244	9	100				100			15	5	11	0.17	23.1	
<b>WH</b>	<b>Totals</b>			10		2,535	2,535	96	72	28			11		47	42	25	6	37	0.47	67.7
DF	D	2S		76	1.2	2,657	2,626	100		55	45				100	40	16	390	2.40	6.7	
DF	D	3S		17	2.4	586	573	22	17	83				9	40	51	34	9	101	0.86	5.7
DF	D	4S		1		49	49	2	100				100			17	7	30	0.46	1.6	
DF	D	UT		6		192	192	7	100						100	31	5	31	0.49	6.2	
<b>DF</b>	<b>Totals</b>			13	1.3	3,484	3,439	131	10	14	42	34	1	2	7	90	34	10	170	1.35	20.2
BM	D	4S		100		517	517	20	100					54	46	31	6	38	0.41	13.5	
BM	D	UT														11	5		0.00	5.5	
<b>BM</b>	<b>Totals</b>			2		517	517	20	100					54	46	25	6	27	0.36	19.1	
SS	D	2S		96	7.1	521	484	18		31	69				100	40	16	390	2.53	1.2	
SS	D	4S		4		19	19	1	100				100			15	9	30	0.68	.6	
<b>SS</b>	<b>Totals</b>			2	6.9	539	502	19		4	30	67	4		96	32	14	270	2.23	1.9	
<b>Type Totals</b>					8.6	27,963	25,567	972	16	39	36	9	4	15	11	71	24	8	65	0.86	392.9

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	SOUTH			DATE	2/4/2020	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
000	000	00	CHICAGO	U6	38.00	25	119	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		25	119	4.8						
CRUISE		12	57	4.8	8,462	.7				
DBH COUNT										
REFOREST										
COUNT		13	62	4.8						
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
R ALDER	32	114.0	16.2	64	40.5	163.1	17,594	15,764	5,095	5,095
WR CEDAR	9	38.2	14.3	47	11.3	42.7	3,293	2,810	1,115	1,116
WHEMLOCK	8	45.9	11.7	43	10.0	34.1	2,535	2,535	786	786
DOUG FIR	5	10.5	21.2	68	5.6	25.6	3,484	3,439	921	921
BL MAPLE	2	13.5	10.9	43	2.6	8.7	517	517	175	175
S SPRUCE	1	.6	29.0	98	0.5	2.8	539	502	132	132
<b>TOTAL</b>	<b>57</b>	<b>222.7</b>	<b>15.1</b>	<b>56</b>	<b>71.3</b>	<b>277.1</b>	<b>27,963</b>	<b>25,567</b>	<b>8,223</b>	<b>8,223</b>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL:	68.1 %	COEFF	TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER	55.5	11.3		101	114	127				
WR CEDAR	162.4	33.1		26	38	51				
WHEMLOCK	154.8	31.6		31	46	60				
DOUG FIR	165.7	33.8		7	10	14				
BL MAPLE	295.4	60.3		5	14	22				
S SPRUCE	500.0	102.1			1	1				
<b>TOTAL</b>	<b>38.0</b>	<b>7.8</b>		<b>205</b>	<b>223</b>	<b>240</b>	<b>60</b>	<b>31</b>	<b>15</b>	
CL:	68.1 %	COEFF	BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER	55.3	11.3		145	163	182				
WR CEDAR	148.2	30.2		30	43	56				
WHEMLOCK	148.8	30.4		24	34	44				
DOUG FIR	158.0	32.2		17	26	34				
BL MAPLE	295.4	60.3		3	9	14				
S SPRUCE	500.0	102.1			3	6				
<b>TOTAL</b>	<b>22.0</b>	<b>4.5</b>		<b>265</b>	<b>277</b>	<b>290</b>	<b>20</b>	<b>10</b>	<b>5</b>	
CL:	68.1 %	COEFF	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER	54.9	11.2		13,996	15,764	17,532				
WR CEDAR	155.1	31.7		1,920	2,810	3,699				
WHEMLOCK	146.6	29.9		1,776	2,535	3,294				
DOUG FIR	174.8	35.7		2,212	3,439	4,666				
BL MAPLE	295.4	60.3		205	517	828				
S SPRUCE	500.0	102.1			502	1,015				
<b>TOTAL</b>	<b>24.0</b>	<b>4.9</b>		<b>24,317</b>	<b>25,567</b>	<b>26,816</b>	<b>24</b>	<b>12</b>	<b>6</b>	
CL:	68.1 %	COEFF	V-BAR/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER				86	97	107				
WR CEDAR	76.8	15.7		45	66	87				
WHEMLOCK	103.2	21.1		52	74	96				
DOUG FIR	133.1	27.2		86	134	182				
BL MAPLE	233.9	47.7		24	59	95				
S SPRUCE	500.0	102.1			177	357				



TC TSTATS				<b>STATISTICS</b>				PAGE	1		
				PROJECT		SOUTH		DATE	2/4/2020		
<b>TWP</b>	<b>RGE</b>	<b>SECT</b>	<b>TRACT</b>	<b>TYPE</b>	<b>ACRES</b>	<b>PLOTS</b>	<b>TREES</b>	<b>CuFt</b>	<b>BdFt</b>		
<b>000</b>	<b>000</b>	<b>00</b>	<b>CHICAGO</b>	<b>U7</b>	1.00	1	5	S	W		
				TREES	ESTIMATED			PERCENT			
				PER PLOT	TOTAL			SAMPLE			
				PLOTS	TREES			TREES			
TOTAL			1	5	5.0						
CRUISE			1	5	5.0		200			2.5	
DBH COUNT											
REFOREST											
COUNT											
BLANKS											
100 %											
<b>STAND SUMMARY</b>											
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET	
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC	
R ALDER	4	133.1	17.3	67	52.3	217.8	23,007	21,733	6,985	6,985	
WHEMLOCK	1	66.5	14.0	62	19.0	71.1	7,317	7,317	2,161	2,161	
<b>TOTAL</b>	<b>5</b>	<b>199.6</b>	<b>16.3</b>	<b>65</b>	<b>71.6</b>	<b>288.9</b>	<b>30,324</b>	<b>29,050</b>	<b>9,146</b>	<b>9,146</b>	
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											

<b>T000 R000 S00 TU8</b>	<b>T000 R000 S00 TU8</b>
<b>Twp Rge Sec Tract Type Acres Plots Sample Trees CuFt</b>	<b>BdFt</b>
<b>000 000 00 CHICAGO U8 29.00 18 37 S</b>	<b>W</b>

Spp	S T	So rt	Gr ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log				Logs Per /Acre
					Def%	Gross	Net		Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft	CF/ Lf	
									4-7	8-11	12-15	16+	12-20	21-30	31-35	36-99					
RA	D	2S		62	15.1	8,134	6,908	200			93	7		19	81	38	13	203	1.85	34.1	
RA	D	3S		18	4.2	2,081	1,994	58		100				78	22	32	10	108	0.91	18.5	
RA	D	4S		19	10.5	2,339	2,094	61		100			18	69	13	24	8	39	0.60	53.7	
RA	D	UT		1		92	92	3		100				100		6	7	6	0.43	14.3	
<b>RA</b>	<b>Totals</b>			36	12.3	12,645	11,089	322		38	58	4	3	40	3	54	27	10	92	1.15	120.6
DF	CU	CU														3	8		0.00	11.0	
DF	D	2S		81	4.8	13,033	12,402	360			54	46			100	40	16	370	2.43	33.5	
DF	D	3S		16	3.2	2,556	2,474	72		100				12	88	37	9	105	0.87	23.7	
DF	D	4S		3		327	327	9	100					50	50	31	6	40	0.55	8.2	
<b>DF</b>	<b>Totals</b>			49	4.5	15,916	15,203	441	2	16	44	37		3	97	33	11	199	1.67	76.4	
RC	CU	CU														5	6		0.00	9.9	
RC	D	3S		88	24.6	2,470	1,862	54	27	27	47			22	78	35	10	100	1.63	18.6	
RC	D	4S		12	14.6	285	243	7	100				28	72		22	6	28	0.55	8.7	
<b>RC</b>	<b>Totals</b>			7	23.6	2,754	2,105	61	35	24	41		3	28	69	24	8	56	1.32	37.3	
WH	CU	CU														3	6		0.00	6.4	
WH	D	2S		56		1,597	1,597	46			44	56			100	40	15	327	2.17	4.9	
WH	D	3S		16		467	467	14	38	62				100		40	8	96	0.76	4.9	
WH	D	4S		28		774	774	22	100						77	23	36	5	40	0.63	19.4
<b>WH</b>	<b>Totals</b>			9		2,838	2,838	82	34	10	25	31		21	79	31	7	80	0.91	35.6	
<b>Type Totals</b>					8.5	34,153	31,234	906	6	24	47	23	1	17	3	78	29	10	116	1.30	269.8

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	SOUTH			DATE	2/4/2020	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
000	000	00	CHICAGO	U8	29.00	18	88	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		18	88	4.9						
CRUISE		9	37	4.1	3,797	1.0				
DBH COUNT										
REFOREST										
COUNT		9	51	5.7						
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
R ALDER	19	60.3	18.7	66	26.6	114.9	12,645	11,089	3,717	3,715
DOUG FIR	8	27.7	26.1	93	20.1	102.7	15,916	15,203	4,157	4,157
WR CEDAR	5	18.6	21.1	50	9.9	45.4	2,754	2,105	1,175	1,174
WHEMLOCK	5	24.2	16.4	49	8.8	35.6	2,838	2,838	1,012	1,012
<b>TOTAL</b>	<b>37</b>	<b>130.9</b>	<b>20.4</b>	<b>66</b>	<b>66.0</b>	<b>298.6</b>	<b>34,153</b>	<b>31,234</b>	<b>10,060</b>	<b>10,058</b>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL:	68.1 %	COEFF	TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER	66.6	16.1		51	60	70				
DOUG FIR	90.7	22.0		22	28	34				
WR CEDAR	170.9	41.5		11	19	26				
WHEMLOCK	166.7	40.4		14	24	34				
<b>TOTAL</b>	<b>36.5</b>	<b>8.9</b>		<b>119</b>	<b>131</b>	<b>143</b>	<b>57</b>	<b>29</b>	<b>14</b>	
CL:	68.1 %	COEFF	BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER	62.7	15.2		97	115	132				
DOUG FIR	92.6	22.5		80	103	126				
WR CEDAR	170.9	41.5		27	45	64				
WHEMLOCK	157.2	38.1		22	36	49				
<b>TOTAL</b>	<b>33.8</b>	<b>8.2</b>		<b>274</b>	<b>299</b>	<b>323</b>	<b>48</b>	<b>25</b>	<b>12</b>	
CL:	68.1 %	COEFF	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER	61.9	15.0		9,424	11,089	12,753				
DOUG FIR	91.5	22.2		11,831	15,203	18,575				
WR CEDAR	170.4	41.3		1,235	2,105	2,975				
WHEMLOCK	174.3	42.3		1,638	2,838	4,038				
<b>TOTAL</b>	<b>39.6</b>	<b>9.6</b>		<b>28,237</b>	<b>31,234</b>	<b>34,231</b>	<b>66</b>	<b>34</b>	<b>17</b>	
CL:	68.1 %	COEFF	V-BAR/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER				82	96	111				
DOUG FIR				115	148	181				
WR CEDAR				27	46	66				
WHEMLOCK	82.8	20.1		46	80	114				
<b>TOTAL</b>	<b>245.9</b>	<b>59.6</b>		<b>95</b>	<b>105</b>	<b>115</b>	<b>2,561</b>	<b>1,307</b>	<b>640</b>	



TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	SOUTH			DATE	2/4/2020	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
000	000	00	CHICAGO	U9	5.00	3	16	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		3	16	5.3						
CRUISE		3	16	5.3	1,032	1.5				
DBH COUNT										
REFOREST										
COUNT										
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
R ALDER	7	100.7	15.2	55	32.6	127.0	10,948	9,899	3,423	3,426
DOUG FIR	3	32.4	20.0	85	15.9	71.1	9,731	9,383	2,640	2,640
WHEMLOCK	3	39.6	18.2	76	16.7	71.1	9,836	9,836	2,631	2,631
WR CEDAR	3	33.8	17.2	53	13.1	54.4	4,585	3,845	1,607	1,609
<b>TOTAL</b>	<i>16</i>	<i>206.5</i>	<i>17.0</i>	<i>63</i>	<i>78.6</i>	<i>323.7</i>	<i>35,101</i>	<i>32,964</i>	<i>10,301</i>	<i>10,307</i>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL:	68.1 %	COEFF	TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER	82.5	57.1		43	101	158				
DOUG FIR	87.3	60.5		13	32	52				
WHEMLOCK	93.8	64.9		14	40	65				
WR CEDAR	131.3	91.0		3	34	65				
<b>TOTAL</b>	<i>17.7</i>	<i>12.3</i>		<i>181</i>	<i>206</i>	<i>232</i>	<i>18</i>	<i>9</i>	<i>5</i>	
CL:	68.1 %	COEFF	BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER	65.5	45.3		69	127	185				
DOUG FIR	100.0	69.3		22	71	120				
WHEMLOCK	100.0	69.3		22	71	120				
WR CEDAR	100.0	69.3		17	54	92				
<b>TOTAL</b>	<i>28.3</i>	<i>19.6</i>		<i>260</i>	<i>324</i>	<i>387</i>	<i>46</i>	<i>24</i>	<i>12</i>	
CL:	68.1 %	COEFF	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER	62.5	43.3		5,613	9,899	14,185				
DOUG FIR	107.4	74.4		2,406	9,383	16,360				
WHEMLOCK	107.0	74.1		2,547	9,836	17,126				
WR CEDAR	94.3	65.3		1,334	3,845	6,356				
<b>TOTAL</b>	<i>45.1</i>	<i>31.2</i>		<i>22,671</i>	<i>32,964</i>	<i>43,256</i>	<i>117</i>	<i>60</i>	<i>29</i>	
CL:	68.1 %	COEFF	V-BAR/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER	62.5	43.3		44	78	112				
DOUG FIR	107.4	74.4		34	132	230				
WHEMLOCK	107.0	74.1		36	138	241				
WR CEDAR	94.3	65.3		25	71	117				
<b>TOTAL</b>	<i>38.7</i>	<i>26.8</i>		<i>70</i>	<i>102</i>	<i>134</i>	<i>86</i>	<i>44</i>	<i>22</i>	

T000 R000 S00 TU12	T000 R000 S00 TU12
Twp <b>000</b> Rge <b>000</b> Sec <b>00</b> Tract <b>CHICAGO</b> Type <b>U12</b> Acres <b>1.00</b> Plots <b>1</b> Sample Trees <b>4</b> CuFt <b>S</b> BdFt <b>W</b>	

Spp	So	Gr	%	Bd. Ft. per Acre			Total	Percent Net Board Foot Volume								Average Log				Logs Per /Acre					
								Net BdFt	Def%	Gross	Net	Net MBF	Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft	CF/Lf	
													4-7	8-11	12-15	16+	12-20	21-30	31-35						36-99
WH	D	3S	47	2,619	2,619	3	100					100					32	8	70	0.71	37.4				
WH	D	4S	53	2,949	2,949	3	100					25	75			25	5	27	0.32	110.8					
<b>WH</b>	<b>Totals</b>		79	5,568	5,568	6	53	47					13	40	47		27	6	38	0.44	148.2				
RA	D	4S	100	1,467	1,467	1	100					100				5	7	8	0.45	187.9					
<b>RA</b>	<b>Totals</b>		21	1,467	1,467	1	100					100				5	7	8	0.45	187.9					
<b>Type Totals</b>				7,035	7,035	7	42	58					31	31	37		15	7	21	0.44	336.1				

TC TSTATS				<b>STATISTICS</b>				PAGE	1	
				PROJECT		SOUTH		DATE	2/4/2020	
<b>TWP</b>	<b>RGE</b>	<b>SECT</b>	<b>TRACT</b>	<b>TYPE</b>	<b>ACRES</b>	<b>PLOTS</b>	<b>TREES</b>	<b>CuFt</b>	<b>BdFt</b>	
<b>000</b>	<b>000</b>	<b>00</b>	<b>CHICAGO</b>	<b>U12</b>	1.00	1	4	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		1	4	4.0						
CRUISE		1	4	4.0	299	1.3				
DBH COUNT										
REFOREST										
COUNT										
BLANKS										
100 %										
<b>STAND SUMMARY</b>										
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
WHEMLOCK	2	110.8	11.5	43	23.6	80.0	5,568	5,568	1,735	1,735
R ALDER	2	187.9	8.8	34	26.9	80.0	1,467	1,467	426	426
<b>TOTAL</b>	<b>4</b>	<b>298.7</b>	<b>9.9</b>	<b>37</b>	<b>50.8</b>	<b>160.0</b>	<b>7,035</b>	<b>7,035</b>	<b>2,162</b>	<b>2,162</b>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										



TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	SOUTH			DATE	2/4/2020	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
000	000	00	CHICAGO	U13	4.00	2	9	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		2	9	4.5						
CRUISE		2	9	4.5	517	1.7				
DBH COUNT										
REFOREST										
COUNT										
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
WHEMLOCK	4	58.8	11.2	40	12.0	40.0	1,984	1,984	801	801
R ALDER	3	46.0	10.9	37	9.1	30.0	1,201	1,201	399	399
DOUG FIR	2	24.5	12.2	45	5.7	20.0	1,448	1,448	417	417
<b>TOTAL</b>	9	129.3	11.3	40	26.8	90.0	4,633	4,633	1,617	1,617
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL:	68.1 %	COEFF	TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK	8.1	7.6		54	59	63				
R ALDER	28.7	26.9		34	46	58				
DOUG FIR	33.5	31.4		17	25	32				
<b>TOTAL</b>	7.6	7.1		120	129	138	4	2	1	
CL:	68.1 %	COEFF	BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK				40	40	40				
R ALDER	47.1	44.2		17	30	43				
DOUG FIR				20	20	20				
<b>TOTAL</b>	15.7	14.7		77	90	103	17	9	4	
CL:	68.1 %	COEFF	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK	9.6	9.0		1,804	1,984	2,163				
R ALDER	55.1	51.6		581	1,201	1,821				
DOUG FIR	23.0	21.6		1,135	1,448	1,761				
<b>TOTAL</b>	25.6	24.0		3,521	4,633	5,744	46	24	12	
CL:	68.1 %	COEFF	V-BAR/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK	9.6	9.0		45	50	54				
R ALDER	55.1	51.6		19	40	61				
DOUG FIR	23.0	21.6		57	72	88				
<b>TOTAL</b>	25.6	24.0		39	51	64	46	24	12	



TC TSTATS				<b>STATISTICS</b>				PAGE	1		
				PROJECT		SOUTH		DATE	2/4/2020		
<b>TWP</b>	<b>RGE</b>	<b>SECT</b>	<b>TRACT</b>	<b>TYPE</b>	<b>ACRES</b>	<b>PLOTS</b>	<b>TREES</b>	<b>CuFt</b>	<b>BdFt</b>		
<b>000</b>	<b>000</b>	<b>00</b>	<b>CHICAGO</b>	<b>U14</b>	3.00	1	5	S	W		
				TREES	ESTIMATED			PERCENT			
				PER PLOT	TOTAL			SAMPLE			
				PLOTS	TREES			TREES			
TOTAL		1	5	5.0							
CRUISE		1	5	5.0	835		.6				
DBH COUNT											
REFOREST											
COUNT											
BLANKS											
100 %											
<b>STAND SUMMARY</b>											
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET	
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC	
WHEMLOCK	2	110.8	11.5	43	23.6	80.0	5,568	5,568	1,735	1,735	
DOUG FIR	2	94.3	12.5	42	22.7	80.0	3,773	3,773	1,489	1,489	
R ALDER	1	73.3	10.0	24	12.6	40.0	1,467	1,467	426	426	
<b>TOTAL</b>	<b>5</b>	<b>278.4</b>	<b>11.5</b>	<b>38</b>	<b>59.0</b>	<b>200.0</b>	<b>10,808</b>	<b>10,808</b>	<b>3,651</b>	<b>3,651</b>	
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											

<b>T000 R000 S00 TU15</b>		<b>T000 R000 S00 TU15</b>
<b>Twp Rge Sec Tract Type Acres Plots Sample Trees CuFt BdFt</b>		
<b>000 000 00 CHICAGO U15 2.00 2 5 S W</b>		

Spp	So	Gr	%	Bd. Ft. per Acre			Total	Percent Net Board Foot Volume								Average Log				Logs Per /Acre					
								Net BdFt	Def%	Gross	Net	Net MBF	Log Scale Dia.				Log Length				Ln	Dia	Bd	CF/Lf	
													4-7	8-11	12-15	16+	12-20	21-30	31-35						36-99
RA	D	UT	100	1,467	1,467	3	100					100				13	8	20	0.45	73.3					
<b>RA Totals</b>			33	1,467	1,467	3	100					100				13	8	20	0.45	73.3					
WH	D	4S	100	1,924	1,924	4	100					47	53			25	5	27	0.38	70.7					
<b>WH Totals</b>			43	1,924	1,924	4	100					47	53			25	5	27	0.38	70.7					
DF	D	4S	100	1,100	1,100	2	100					100				29	5	30	0.29	36.7					
<b>DF Totals</b>			24	1,100	1,100	2	100					100				29	5	30	0.29	36.7					
<b>Type Totals</b>				4,491	4,491	9	67	33					53	24	23	21	6	25	0.37	180.7					

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	SOUTH			DATE	2/4/2020	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
000	000	00	CHICAGO	U15	2.00	2	5	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		2	5	2.5						
CRUISE		2	5	2.5	361	1.4				
DBH COUNT										
REFOREST										
COUNT										
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
R ALDER	2	73.3	10.0	34	12.6	40.0	1,467	1,467	426	426
WHEMLOCK	2	70.7	10.2	30	12.5	40.0	1,924	1,924	659	659
DOUG FIR	1	36.7	10.0	38	6.3	20.0	1,100	1,100	307	307
<b>TOTAL</b>	<b>5</b>	<b>180.7</b>	<b>10.1</b>	<b>33</b>	<b>31.5</b>	<b>100.0</b>	<b>4,491</b>	<b>4,491</b>	<b>1,393</b>	<b>1,393</b>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL:	68.1 %	COEFF	TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER				73	73	73				
WHEMLOCK	141.4	132.6			71	165				
DOUG FIR	141.4	132.6			37	85				
<b>TOTAL</b>	<b>84.0</b>	<b>78.8</b>		<b>38</b>	<b>181</b>	<b>323</b>	<b>496</b>	<b>253</b>	<b>124</b>	
CL:	68.1 %	COEFF	BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER				40	40	40				
WHEMLOCK	141.4	132.6			40	93				
DOUG FIR	141.4	132.6			20	47				
<b>TOTAL</b>	<b>84.9</b>	<b>79.5</b>		<b>20</b>	<b>100</b>	<b>180</b>	<b>506</b>	<b>258</b>	<b>127</b>	
CL:	68.1 %	COEFF	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER	.0	.0		1,467	1,467	1,467				
WHEMLOCK	141.4	132.6			1,924	4,475				
DOUG FIR	141.4	132.6			1,100	2,558				
<b>TOTAL</b>	<b>95.2</b>	<b>89.3</b>		<b>482</b>	<b>4,491</b>	<b>8,500</b>	<b>638</b>	<b>325</b>	<b>159</b>	
CL:	68.1 %	COEFF	V-BAR/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
R ALDER				37	37	37				
WHEMLOCK	141.4	132.6			48	112				
DOUG FIR	141.4	132.6			55	128				
<b>TOTAL</b>	<b>95.2</b>	<b>89.3</b>		<b>5</b>	<b>45</b>	<b>85</b>	<b>638</b>	<b>325</b>	<b>159</b>	



TC TSTATS				<b>STATISTICS</b>				PAGE	1		
				PROJECT		SOUTH		DATE	2/4/2020		
<b>TWP</b>	<b>RGE</b>	<b>SECT</b>	<b>TRACT</b>	<b>TYPE</b>	<b>ACRES</b>	<b>PLOTS</b>	<b>TREES</b>	<b>CuFt</b>	<b>BdFt</b>		
<b>000</b>	<b>000</b>	<b>00</b>	<b>CHICAGO</b>	<b>U16</b>	2.00	1	4	S	W		
				TREES	ESTIMATED			PERCENT			
				PER PLOT	TOTAL			SAMPLE			
				PLOTS	TREES			TREES			
				TREES	TREES			TREES			
TOTAL		1	4	4.0							
CRUISE		1	4	4.0	241		1.7				
DBH COUNT											
REFOREST											
COUNT											
BLANKS											
100 %											
<b>STAND SUMMARY</b>											
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET	
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC	
WHEMLOCK	2	58.4	11.2	37	11.9	40.0	2,619	2,619	765	765	
R ALDER	2	62.1	10.9	39	12.1	40.0	2,007	2,007	574	574	
<b>TOTAL</b>	<b>4</b>	<b>120.5</b>	<b>11.0</b>	<b>38</b>	<b>24.1</b>	<b>80.0</b>	<b>4,626</b>	<b>4,626</b>	<b>1,340</b>	<b>1,340</b>	
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											

T000 R000 S00 TU17		T000 R000 S00 TU17
Twp <b>000</b>	Rge <b>000</b>	Sec <b>00</b>
Tract <b>CHICAGO</b>	Type <b>U17</b>	Acres <b>1.00</b>
	Plots <b>1</b>	Sample Trees <b>5</b>
		CuFt <b>S</b>
		BdFt <b>W</b>

Spp	So	Gr	%	Bd. Ft. per Acre			Total	Percent Net Board Foot Volume								Average Log				Logs Per /Acre					
								Net	Def%	Gross	Net	Net MBF	Log Scale Dia.				Log Length				Ln	Dia	Bd	CF/Lf	
													4-7	8-11	12-15	16+	12-20	21-30	31-35						36-99
RA	D	4S	100	2,037		2,037	2	100					100					7	7	12	0.57	165.5			
<b>RA</b>	<b>Totals</b>		22	2,037		2,037	2	100					100					7	7	12	0.57	165.5			
WH	D	4S	100	5,462		5,462	5	60	40				40	16	44			26	6	37	0.44	147.4			
<b>WH</b>	<b>Totals</b>		59	5,462		5,462	5	60	40				40	16	44			26	6	37	0.44	147.4			
DF	D	4S	100	1,818		1,818	2	100					100					31	5	30	0.34	60.6			
<b>DF</b>	<b>Totals</b>		20	1,818		1,818	2	100					100					31	5	30	0.34	60.6			
<b>Type Totals</b>				9,318		9,318	9	55	45				23	31	46			18	6	25	0.43	373.5			

TC TSTATS				<b>STATISTICS</b>				PAGE	1		
				PROJECT		SOUTH		DATE	2/4/2020		
<b>TWP</b>	<b>RGE</b>	<b>SECT</b>	<b>TRACT</b>	<b>TYPE</b>	<b>ACRES</b>	<b>PLOTS</b>	<b>TREES</b>	<b>CuFt</b>	<b>BdFt</b>		
<b>000</b>	<b>000</b>	<b>00</b>	<b>CHICAGO</b>	<b>U17</b>	1.00	1	5	S	W		
				TREES	ESTIMATED			PERCENT			
				PER PLOT	TOTAL			SAMPLE			
				PLOTS	TREES			TREES			
TOTAL			1	5	5.0						
CRUISE			1	5	5.0	330	1.5				
DBH COUNT											
REFOREST											
COUNT											
BLANKS											
100 %											
<b>STAND SUMMARY</b>											
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET	
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC	
R ALDER	2	165.5	9.4	29	26.1	80.0	2,037	2,037	664	664	
WHEMLOCK	2	104.0	11.9	43	23.2	80.0	5,462	5,462	1,664	1,664	
DOUG FIR	1	60.6	11.0	38	12.1	40.0	1,818	1,818	640	640	
<b>TOTAL</b>	<b>5</b>	<b>330.1</b>	<b>10.5</b>	<b>35</b>	<b>61.6</b>	<b>200.0</b>	<b>9,318</b>	<b>9,318</b>	<b>2,969</b>	<b>2,969</b>	
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											

<b>T000 R000 S00 TU18</b>										<b>T000 R000 S00 TU18</b>				
<b>Twp</b>	<b>Rge</b>	<b>Sec</b>	<b>Tract</b>	<b>Type</b>	<b>Acres</b>	<b>Plots</b>	<b>Sample Trees</b>	<b>CuFt</b>	<b>BdFt</b>					
000	000	00	CHICAGO	U18	.25	1	4	S	W					

Spp	So	Gr	%	Bd. Ft. per Acre			Total	Percent Net Board Foot Volume								Average Log				Logs						
								Net	BdFt	Def%	Gross	Net	Net MBF	Log Scale Dia.				Log Length				Ln	Dia	Bd	CF/	
														4-7	8-11	12-15	16+	12-20	21-30		31-35					36-99
RA	D	4S	100	2,037	2,037	1	100									7	7	12	0.57	165.5						
<b>RA Totals</b>			34	2,037	2,037	1	100									7	7	12	0.57	165.5						
WH	D	4S	100	1,818	1,818	0	100									32	5	30	0.40	60.6						
<b>WH Totals</b>			30	1,818	1,818	0	100									32	5	30	0.40	60.6						
DF	D	4S	100	2,200	2,200	1	100									29	5	30	0.29	73.3						
<b>DF Totals</b>			36	2,200	2,200	1	100									29	5	30	0.29	73.3						
<b>Type Totals</b>				6,056	6,056	2	66	34				70	30			17	6	20	0.39	299.5						

TC TSTATS				<b>STATISTICS</b>				PAGE	1		
				PROJECT		SOUTH		DATE	2/4/2020		
<b>TWP</b>	<b>RGE</b>	<b>SECT</b>	<b>TRACT</b>	<b>TYPE</b>	<b>ACRES</b>	<b>PLOTS</b>	<b>TREES</b>	<b>CuFt</b>	<b>BdFt</b>		
<b>000</b>	<b>000</b>	<b>00</b>	<b>CHICAGO</b>	<b>U18</b>	0.25	1	4	S	W		
				TREES	ESTIMATED			PERCENT			
				PER PLOT	TOTAL			SAMPLE			
				PLOTS	TREES			TREES			
TOTAL			1	4	4.0						
CRUISE			1	4	4.0		75	5.3			
DBH COUNT											
REFOREST											
COUNT											
BLANKS											
100 %											
<b>STAND SUMMARY</b>											
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET	
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC	
R ALDER	2	165.5	9.4	28	26.1	80.0	2,037	2,037	636	636	
WHEMLOCK	1	60.6	11.0	38	12.1	40.0	1,818	1,818	772	772	
DOUG FIR	1	73.3	10.0	38	12.6	40.0	2,200	2,200	615	615	
<b>TOTAL</b>	<b>4</b>	<b>299.5</b>	<b>9.9</b>	<b>32</b>	<b>50.9</b>	<b>160.0</b>	<b>6,056</b>	<b>6,056</b>	<b>2,023</b>	<b>2,023</b>	
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											

T000 R000 S00 TU19	T000 R000 S00 TU19
Twp Rge Sec Tract Type Acres Plots Sample Trees CuFt	BdFt
000 000 00 CHICAGO U19 1.00 1 4 S	W

Spp	So	Gr	%	Bd. Ft. per Acre			Total	Percent Net Board Foot Volume								Average Log				Logs Per /Acre					
								Net BdFt	Def%	Gross	Net	Net MBF	Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft	CF/Lf	
													4-7	8-11	12-15	16+	12-20	21-30	31-35						36-99
DF	D	4S	100	2,005	2,005	2	100					100					25	5	24	0.27	81.9				
<b>DF</b>	<b>Totals</b>		46	2,005	2,005	2	100					100					25	5	24	0.27	81.9				
WH	D	4S	100	2,358	2,358	2	100					49	51			25	5	27	0.31	87.6					
<b>WH</b>	<b>Totals</b>		54	2,358	2,358	2	100					49	51			25	5	27	0.31	87.6					
<b>Type Totals</b>				4,364	4,364	4	100					72	28			25	5	26	0.29	169.5					

TC TSTATS				<b>STATISTICS</b>				PAGE	1		
				PROJECT		SOUTH		DATE	2/4/2020		
<b>TWP</b>	<b>RGE</b>	<b>SECT</b>	<b>TRACT</b>	<b>TYPE</b>	<b>ACRES</b>	<b>PLOTS</b>	<b>TREES</b>	<b>CuFt</b>	<b>BdFt</b>		
<b>000</b>	<b>000</b>	<b>00</b>	<b>CHICAGO</b>	<b>U19</b>	1.00	1	4	S	W		
				TREES	ESTIMATED			PERCENT			
				PER PLOT	TOTAL			SAMPLE			
				PLOTS	TREES			TREES			
TOTAL			1	4			4.0				
CRUISE			1	4			4.0	170	2.4		
DBH COUNT											
REFOREST											
COUNT											
BLANKS											
100 %											
<b>STAND SUMMARY</b>											
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET	
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC	
DOUG FIR	2	81.9	9.5	34	13.0	40.0	2,005	2,005	549	549	
WHEMLOCK	2	87.6	9.1	33	13.2	40.0	2,358	2,358	690	690	
<b>TOTAL</b>	<b>4</b>	<b>169.5</b>	<b>9.3</b>	<b>34</b>	<b>26.2</b>	<b>80.0</b>	<b>4,364</b>	<b>4,364</b>	<b>1,239</b>	<b>1,239</b>	
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											



TC TSTATS				<b>STATISTICS</b>				PAGE	1	
				PROJECT		SOUTH		DATE	2/4/2020	
<b>TWP</b>	<b>RGE</b>	<b>SECT</b>	<b>TRACT</b>	<b>TYPE</b>	<b>ACRES</b>	<b>PLOTS</b>	<b>TREES</b>	<b>CuFt</b>	<b>BdFt</b>	
<b>000</b>	<b>000</b>	<b>00</b>	<b>CHICAGO</b>	<b>U20</b>	1.00	1	5	S	W	
				TREES	ESTIMATED	PERCENT				
				PER PLOT	TOTAL	SAMPLE				
		PLOTS	TREES		TREES	TREES				
TOTAL		1	5	5.0						
CRUISE		1	5	5.0	233		2.1			
DBH COUNT										
REFOREST										
COUNT										
BLANKS										
100 %										
<b>STAND SUMMARY</b>										
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC
DOUG FIR	2	102.6	8.5	31	13.8	40.0	2,051	2,051	484	484
WHEMLOCK	2	94.0	8.8	33	13.5	40.0	2,246	2,246	667	667
R ALDER	1	36.7	10.0	32	6.3	20.0	733	733	213	213
<b>TOTAL</b>	<b>5</b>	<b>233.2</b>	<b>8.9</b>	<b>32</b>	<b>33.6</b>	<b>100.0</b>	<b>5,031</b>	<b>5,031</b>	<b>1,364</b>	<b>1,364</b>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										

T TSPCSTGR		Species, Sort Grade - Board Foot Volumes (Type)										Page 1									
Project: SOUTH												Date 2/4/2020									
												Time 12:46:59PM									
T000 R000 S00 TU21										T000 R000 S00 TU21											
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt												
000	000	00	CHICAGO	U21	14.00	10	24	S	W												
S Sp	So T	Gr rt ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log				Logs Per /Acre	
				Def%	Gross	Net		Log Scale Dia.				Log Length				Ln	Dia	Bd	CF/ Lf		
								4-7	8-11	12-15	16+	12-20	21-30	31-35	36-99	Ft	In	Ft			
RA	CU	CU														9			0.00		10.8
RA	D	2S	32	12.1	5,765	5,068	71		100			21			79	31	14	206	1.90		24.6
RA	D	3S	18	8.5	3,209	2,936	41		100				54		46	35	10	114	1.00		25.7
RA	D	4S	50	9.8	8,695	7,838	110		100			9	48	7	37	26	8	44	0.58		176.9
RA	D	UT														7			0.00		91.6
<b>RA</b>	<b>Totals</b>		56	10.3	17,668	15,843	222		68	32		11	34	3	52	19	9	48	0.81		329.7
WH	D	2S	26		857	857	12		100						100	40	14	290	1.74		3.0
WH	D	3S	39	5.8	1,380	1,299	18	14	86						100	40	8	95	0.83		13.6
WH	D	4S	23		756	756	11	100				18	52		31	26	5	30	0.43		25.5
WH	D	UT	12		363	363	5	100				11		89		27	5	25	0.39		14.8
<b>WH</b>	<b>Totals</b>		12	2.4	3,356	3,276	46	40	34	26		5	12	10	73	30	6	58	0.64		56.9
DF	CU	CU		100.0	829											26	12		0.00		5.7
DF	D	2S	52		2,686	2,686	38		100						100	40	23	940	5.38		2.9
DF	D	3S	36		1,796	1,796	25		100						100	40	8	90	0.71		20.0
DF	D	4S	12		599	599	8	100					100			24	5	30	0.24		20.0
<b>DF</b>	<b>Totals</b>		18	14.0	5,909	5,080	71	12	35	53			12		88	32	8	105	0.84		48.5
RC	CU	CU														9			0.00		3.6
RC	D	3S	80	13.8	2,390	2,060	29		62	38					100	36	11	144	1.63		14.3
RC	D	4S	20	17.7	613	505	7	50	50				50		50	28	6	36	0.78		14.0
<b>RC</b>	<b>Totals</b>		9	14.6	3,003	2,565	36	10	60	30			10		90	29	8	80	1.26		31.9
BM	D	2S	83	25.9	1,595	1,181	17			100		100				20	18	200	2.75		5.9
BM	D	UT	17		236	236	3		100				100			22	8	40	1.06		5.9
<b>BM</b>	<b>Totals</b>		5	22.6	1,831	1,417	20		17	83		83	17			21	13	120	1.86		11.8
SS	D	UT	100		153	153	2	100						100		31	5	30	0.77		5.1
<b>SS</b>	<b>Totals</b>		1		153	153	2	100						100		31	5	30	0.77		5.1
<b>Type Totals</b>				11.2	31,920	28,334	397	8	55	21	16	11	24	4	61	22	8	59	0.85		483.8

TC TSTATS				STATISTICS						PAGE	1
				PROJECT		SOUTH		DATE	2/4/2020		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
000	000	00	CHICAGO	U21	14.00	10	59	S	W		
				TREES	ESTIMATED	PERCENT					
				PER PLOT	TOTAL	SAMPLE					
		PLOTS	TREES		TREES	TREES					
TOTAL		10	59	5.9							
CRUISE		5	24	4.8	3,779		.6				
DBH COUNT											
REFOREST											
COUNT		5	30	6.0							
BLANKS											
100 %											
STAND SUMMARY											
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET	
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC	
R ALDER	10	176.9	14.1	59	50.8	190.5	17,668	15,843	5,002	5,002	
WHEMLOCK	6	43.2	13.5	44	11.6	42.7	3,356	3,276	1,091	1,091	
DOUG FIR	2	22.8	18.5	74	9.9	42.7	5,909	5,080	1,523	1,297	
WR CEDAR	4	16.0	20.9	60	8.3	38.1	3,003	2,565	1,150	1,148	
BL MAPLE	1	5.9	26.0	44	4.3	21.8	1,831	1,417	460	462	
S SPRUCE	1	5.1	16.0	32	1.8	7.1	153	153	121	121	
<b>TOTAL</b>	<b>24</b>	<b>269.9</b>	<b>15.3</b>	<b>57</b>	<b>87.8</b>	<b>342.9</b>	<b>31,920</b>	<b>28,334</b>	<b>9,347</b>	<b>9,123</b>	
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											
CL:	68.1 %	COEFF	TREES/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
R ALDER		59.2	19.7	142	177	212					
WHEMLOCK		177.4	59.1	18	43	69					
DOUG FIR		218.9	72.9	6	23	39					
WR CEDAR		134.4	44.8	9	16	23					
BL MAPLE		241.5	80.4	1	6	11					
S SPRUCE		316.2	105.3		5	10					
<b>TOTAL</b>		<b>10.7</b>	<b>3.6</b>	<b>260</b>	<b>270</b>	<b>280</b>	<b>5</b>	<b>3</b>	<b>1</b>		
CL:	68.1 %	COEFF	BASAL AREA/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
R ALDER		57.5	19.2	154	191	227					
WHEMLOCK		140.5	46.8	23	43	63					
DOUG FIR		210.8	70.2	13	43	73					
WR CEDAR		117.6	39.2	23	38	53					
BL MAPLE		241.5	80.4	4	22	39					
S SPRUCE		316.2	105.3		7	15					
<b>TOTAL</b>				<b>343</b>	<b>343</b>	<b>343</b>			<b>5</b>	<b>3</b>	
CL:	68.1 %	COEFF	NET BF/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
R ALDER		57.9	19.3	12,788	15,843	18,897					
WHEMLOCK		131.7	43.9	1,839	3,276	4,713					
DOUG FIR		210.9	70.2	1,512	5,080	8,649					
WR CEDAR		126.0	42.0	1,488	2,565	3,641					
BL MAPLE		241.5	80.4	277	1,417	2,558					
S SPRUCE		316.2	105.3		153	314					
<b>TOTAL</b>		<b>15.5</b>	<b>5.2</b>	<b>26,872</b>	<b>28,334</b>	<b>29,795</b>	<b>11</b>	<b>5</b>	<b>3</b>		
CL:	68.1 %	COEFF	V-BAR/ACRE				# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
R ALDER				67	83	99					
WHEMLOCK		131.7	43.9	43	77	110					
DOUG FIR				35	119	203					
WR CEDAR		67.4	22.4	39	67	96					
BL MAPLE				13	65	117					
S SPRUCE		316.2	105.3		21	44					

## Species Summary - Trees, Logs, Tons, CCF, MBF

T000 R000 S00 TyU1	89.0
T000 R000 S00 TyU12	1.0
T000 R000 S00 TyU9	5.0

Project **SOUTH**  
Acres **349.25**

Page No **1**  
Date: **2/4/2020**  
Time **12:46:59PM**

Species	Total	Total	Total	Net Cubic Ft/		CF/ LF	Total CCF		Total MBF	
	Trees	Logs	Tons	Tree	Log		Gross	Net	Gross	Net
R ALDER	31,596	58,649	36,421	41.60	22.41	0.98	13,244	13,143	4,565	4,048
DOUG FIR	19,618	32,029	21,202	37.57	23.01	0.80	7,439	7,371	2,619	2,517
WHEMLOCK	15,212	24,154	15,063	30.95	19.49	0.68	4,707	4,707	1,531	1,481
WR CEDAR	5,795	9,271	8,080	59.32	37.08	1.22	3,438	3,438	998	825
BL MAPLE	1,359	2,004	688	19.13	12.98	0.53	260	260	86	79
S SPRUCE	214	304	319	57.21	40.38	1.29	123	123	36	34
<b>Totals</b>	<b>73,793</b>	<b>126,410</b>	<b>81,773</b>	<b>39.36</b>	<b>22.97</b>	<b>0.88</b>	<b>29,211</b>	<b>29,041</b>	<b>9,835</b>	<b>8,984</b>

Wood Type Species	Total	Total	Total	Net Cubic Ft/		CF/ LF	Total CCF		Total MBF	
	Trees	Logs	Tons	Tree	Log		Gross	Net	Gross	Net
C	40,839	65,757	44,664	38.29	23.78	0.82	15,708	15,638	5,185	4,857
H	32,955	60,652	37,108	40.67	22.10	0.97	13,503	13,403	4,651	4,127
<b>Totals</b>	<b>73,793</b>	<b>126,410</b>	<b>81,773</b>	<b>39.36</b>	<b>22.97</b>	<b>0.88</b>	<b>29,211</b>	<b>29,041</b>	<b>9,835</b>	<b>8,984</b>

T000 R000 S00 TyU12  
 THRU  
 T000 R000 S00 TyU9

Project: SOUTH  
 Acres 127.00

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 Date 2/4/2020  
 Time 1:02:36PM

Spp	S T	So rt	Gr de	Log Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches									
									2-3	4-6	7-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29
WH		D	2S	40	299	9.2	272	40.2				72	106	54		40		
WH		D	3S	32	34		34	5.1		32		3						
WH		D	3S	34	9		9	1.4		9								
WH		D	3S	38	11		11	1.6		7	4							
WH		D	3S	40	248	3.4	239	35.4		12	40	103	84					
WH		D	4S	13	6		6	.8		6								
WH		D	4S	15	1		1	.1		1								
WH		D	4S	16	2		2	.3		2								
WH		D	4S	17	1		1	.2		1								
WH		D	4S	19	8		8	1.2		8								
WH		D	4S	23	8		8	1.2		8								
WH		D	4S	24	2		2	.3		2								
WH		D	4S	26	15		15	2.2		15								
WH		D	4S	28	3		3	.4		3								
WH		D	4S	29	16		16	2.3		16								
WH		D	4S	30	2		2	.3		2								
WH		D	4S	32	3		3	.4			3							
WH		D	4S	33	3		3	.4			3							
WH		D	4S	35	2		2	.3		2								
WH		D	4S	36	9		9	1.3		9								
WH		D	4S	39	4		4	.5		4								
WH		D	UT	12	0		0	.1		0								
WH		D	UT	14	2		2	.2		2								
WH		D	UT	19	2		2	.4		2								
WH		D	UT	32	12		12	1.8		12								
WH		D	UT	35	10		10	1.5		10								
WH		Totals			712	5.1	676	18.1		168	46	106	84	72	106	54		40
RA		D	2S	20	40	13.6	34	1.6				34						
RA		D	2S	30	147	15.8	123	5.8				95	8	20				
RA		D	2S	40	1,035	15.1	878	41.5				334	441	104				
RA		D	3S	30	158	6.4	148	7.0			12	136						
RA		D	3S	40	277	9.7	250	11.8			140	110						
RA		D	4S	12	5		5	.2			5							
RA		D	4S	13	15		15	.7			15							
RA		D	4S	15	5		5	.2			5							

T000 R000 S00 TyU12  
 THRU  
 T000 R000 S00 TyU9

Project: SOUTH  
 Acres 127.00

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Spp	S T	So rt	Gr de	Log Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches												
									2-3	4-6	7-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+	
RA	D	4S	17		13		13	.6					13								
RA	D	4S	18		6		6	.3					6								
RA	D	4S	19		6		6	.3					6								
RA	D	4S	20		11		11	.5					11								
RA	D	4S	21		23		23	1.1					23								
RA	D	4S	22		21	12.7	18	.9					18								
RA	D	4S	23		35		35	1.7					35								
RA	D	4S	24		8		8	.4					8								
RA	D	4S	25		3		3	.1					3								
RA	D	4S	26		20	7.6	18	.9					18								
RA	D	4S	27		10		10	.5					10								
RA	D	4S	28		9	8.8	8	.4					8								
RA	D	4S	29		27		27	1.3					27								
RA	D	4S	30		202	8.2	186	8.8					186								
RA	D	4S	31		22	9.9	20	.9					20								
RA	D	4S	32		10		10	.5					10								
RA	D	4S	33		19	47.7	10	.5					10								
RA	D	4S	34		14	17.4	12	.5					12								
RA	D	4S	35		17		17	.8					17								
RA	D	4S	36		10	13.0	9	.4					9								
RA	D	4S	37		22	10.3	20	.9					20								
RA	D	4S	38		41	12.5	36	1.7					36								
RA	D	4S	39		17	11.1	16	.7					16								
RA	D	4S	40		79	14.6	68	3.2					68								
RA	D	UT	13		12		12	.6					12								
RA	D	UT	14		3		3	.1					3								
RA	D	UT	16		4		4	.2					4								
RA	D	UT	17		6		6	.3					6								
RA	D	UT	19		12		12	.5					12								
RA	D	UT	20		20		20	.9					20								
RA	D	UT	22		5		5	.2					5								
RA	D	UT	24		3		3	.1					3								
RA	D	UT	26		3		3	.1					3								
RA	D	UT	29		3		3	.2					3								
RA		Totals			2,397	11.7	2,117	56.6					836	246	463	449	124				
DF	HQ	2S	40		105	6.8	98	18.8						75	23						



T000 R000 S00 TyU12  
 THRU  
 T000 R000 S00 TyU9

Project: SOUTH  
 Acres 127.00

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 Date 2/4/2020  
 Time 1:02:36PM

Spp	S T	So rt	Gr de	Log Len	Gross MBF	Def %	Net MBF	% Sp	Net Volume by Scaling Diameter in Inches													
									2-3	4-6	7-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+		
BM		D	UT	22	4		4	12.9				4										
BM		D	UT	30	6		6	19.9					6									
BM		Totals			40	18.4	33	.9		1		4		6		21						
SS		D	2S	40	10	12.5	9	60.8					9									
SS		D	4S	22	1		1	8.7		1												
SS		D	UT	31	4		4	30.6		4												
SS		Totals			16	8.0	15	.4		6			9									
Total		All Species			4,183	10.5	3,743	100.0		258	83	1063	411	684	732	318	134	62				







T000 R000 S00 TyU1  
 THRU  
 T000 R000 S00 TyU8

Project: SOUTH  
 Acres 222.25

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 Date 2/4/2020  
 Time 1:03:51PM

Spp	S T	So rt	Gr de	Log Len	Gross MBF	Def %	Net MBF	% Spc	Net Volume by Scaling Diameter in Inches										
									2-3	4-6	7-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39
RA		D	4S	39	23	11.1	21	1.1				21							
RA		D	4S	40	213	4.0	204	10.6				204							
RA		D	UT	13	7		7	.3				7							
RA		D	UT	21	5		5	.3				5							
RA		D	UT	24	3		3	.1				3							
RA		D	UT	28	3		3	.1				3							
RA		Totals			2,168	10.9	1,931	36.8				806	195	409	380	142			
BM		D	4S	30	25		25	53.6				25							
BM		D	4S	32	21		21	46.4			21								
BM		Totals			46		46	.9			21	25							
SS		D	2S	40	20	7.1	18	96.3				6		13					
SS		D	4S	15	1		1	3.7				1							
SS		Totals			21	6.9	19	.4				1	6		13				
Total		All Species			5,652	7.3	5,241	100.0			817	402	1281	625	743	807	507	23	35



**Project Log Stock Table - TONS**

T000 R000 S00 TyU1  
 THRU  
 T000 R000 S00 TyU9

**Project: SOUTH**  
**Acres 349.25**

**Page 2**  
**Date 2/4/2020**  
**Time 1:04:55PM**

Spp	S T	So rt	Gr de	Log Len	TONS	% Spc	Tons by Scaling Diameter in Inches									
							2-3	4-6	7-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29
DF		D	3S	36	176	.8		67	109							
DF		D	3S	38	143	.7		143								
DF		D	3S	40	7,708	35.9		846	1378	2810	2673					
DF		D	4S	16	39	.2		21	18							
DF		D	4S	17	51	.2			32	19						
DF		D	4S	18	47	.2	25	22								
DF		D	4S	19	24	.1		24								
DF		D	4S	20	53	.2		53								
DF		D	4S	21	187	.9	34	153								
DF		D	4S	22	201	.9		167	34							
DF		D	4S	25	48	.2	48									
DF		D	4S	26	142	.7		142								
DF		D	4S	29	363	1.7	109	254								
DF		D	4S	31	107	.5	7	100								
DF		D	4S	32	165	.8		165								
DF		D	4S	33	59	.3		59								
DF		D	4S	36	26	.1		26								
DF		D	4S	37	827	3.9	827									
DF		D	4S	38	127	.6	127									
DF		D	4S	39	80	.4	80									
DF		D	4S	40	150	.7		150								
DF		D	4S	41	147	.7	147									
DF		D	UT													
DF		D	UT	10												
DF		D	UT	11												
DF		D	UT	15	20	.1		20								
DF		D	UT	16	40	.2	40									
DF		D	UT	17	134	.6	134									
DF		D	UT	18	27	.1	22	4								
DF		D	UT	20	55	.3	55									
DF		D	UT	39	235	1.1		235								
DF		Totals			21,455	25.1	1655	2988	2167	2954	2796	2462	3663	2066	705	
WH		D	2S	40	4,237	27.7					1432	1230	1041		534	
WH		D	3S	32	1,031	6.7		242	680	109						
WH		D	3S	34	113	.7		113								
WH		D	3S	38	328	2.1		215	112							

**Project Log Stock Table - TONS**

T000 R000 S00 TyU1  
 THRU  
 T000 R000 S00 TyU9

**Project: SOUTH**  
**Acres 349.25**

**Page 3**  
**Date 2/4/2020**  
**Time 1:04:55PM**

Spp	S T	So rt	Gr de	Log Len	TONS	% Spc	Tons by Scaling Diameter in Inches											
							2-3	4-6	7-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29	30-39	40+
WH		D	3S	40	5,518	36.1		636	862	2668	1352							
WH		D	4S	13	31	.2	31											
WH		D	4S	14	26	.2		26										
WH		D	4S	17	27	.2		27										
WH		D	4S	18	33	.2		33										
WH		D	4S	19	92	.6	55	38										
WH		D	4S	20	9	.1		9										
WH		D	4S	21	38	.2		38										
WH		D	4S	22	375	2.5	42	154	157	21								
WH		D	4S	23	61	.4	15	46										
WH		D	4S	24	76	.5	67	9										
WH		D	4S	25	45	.3		45										
WH		D	4S	26	76	.5		76										
WH		D	4S	29	328	2.1	40	288										
WH		D	4S	31	259	1.7	259											
WH		D	4S	32	232	1.5			232									
WH		D	4S	33	27	.2		27										
WH		D	4S	36	127	.8		127										
WH		D	4S	37	412	2.7	123	289										
WH		D	4S	39	808	5.3	528	280										
WH		D	4S	40	190	1.2		190										
WH		D	UT	11														
WH		D	UT	13	14	.1	14											
WH		D	UT	14	24	.2		24										
WH		D	UT	16	21	.1	17	4										
WH		D	UT	17	33	.2	33											
WH		D	UT	18	64	.4	49	14										
WH		D	UT	19	22	.1		22										
WH		D	UT	21	26	.2	26											
WH		D	UT	25	156	1.0	156											
WH		D	UT	37	304	2.0	304											
WH		D	UT	39	129	.8	129											
WH		Totals			15,290	17.9	1887	2972	2044	2798	1352	1432	1230	1041		534		
RA		D	2S	20	255	.6					255							
RA		D	2S	30	2,264	5.7					1723	234	307					
RA		D	2S	40	14,943	37.6					6088	7080	1774					



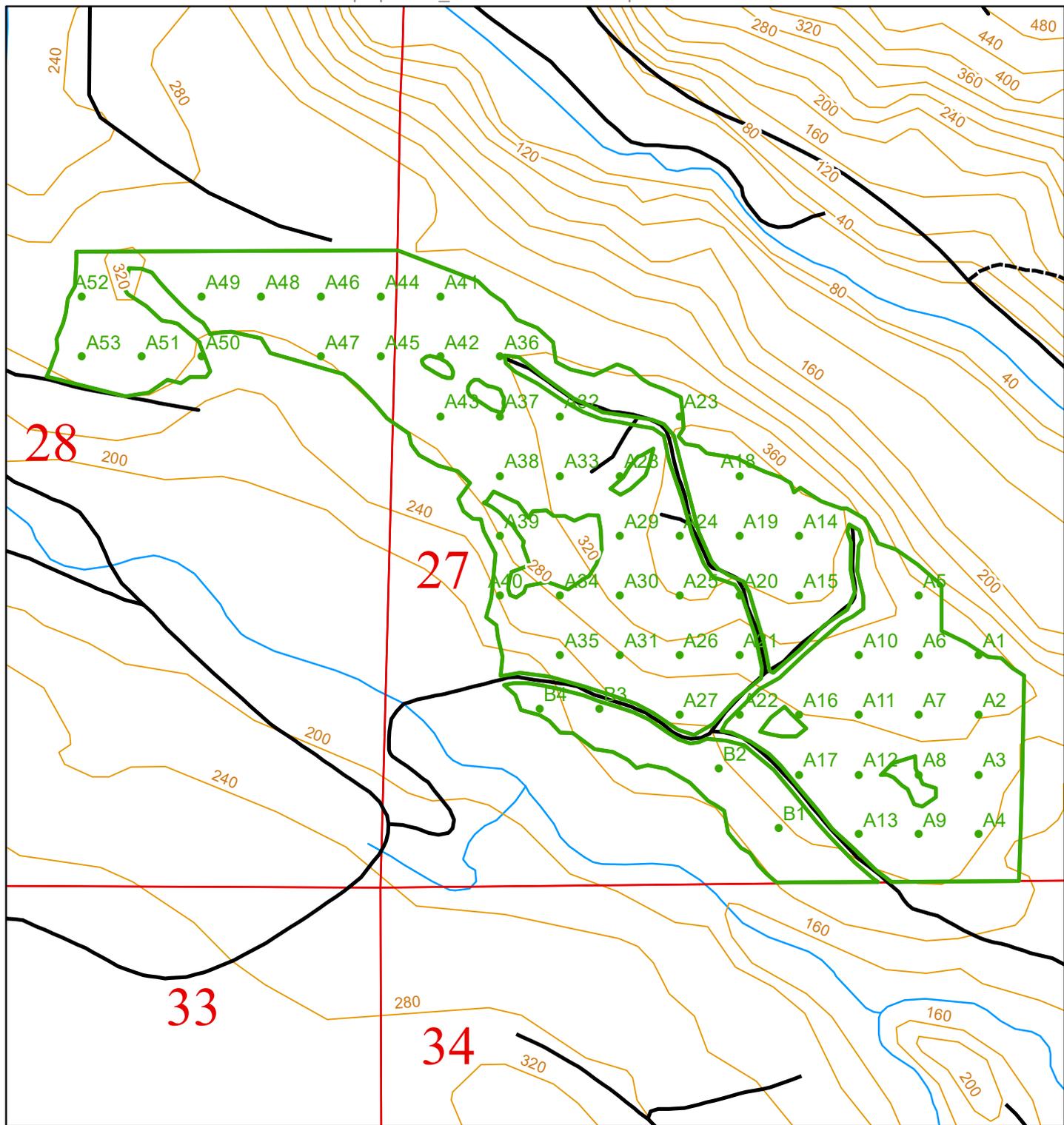
**Project Log Stock Table - TONS**

T000 R000 S00 TyU1  
 THRU  
 T000 R000 S00 TyU9

**Project: SOUTH**  
**Acres 349.25**

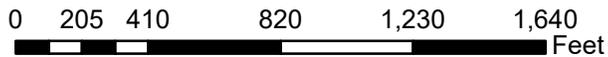
**Page 5**  
**Date 2/4/2020**  
**Time 1:04:55PM**

Spp	S T	So rt	Gr de	Log Len	TONS	% Spc	Tons by Scaling Diameter in Inches									
							2-3	4-6	7-7	8-9	10-11	12-13	14-15	16-19	20-23	24-29
RA	D	UT	23	72	.2	72										
RA	D	UT	24	31	.1	31										
RA	D	UT	25	93	.2	28	65									
RA	D	UT	26	93	.2	59	33									
RA	D	UT	27	60	.2			60								
RA	D	UT	28	510	1.3	378	131									
RA	D	UT	29	204	.5	56	114	34								
RA	D	UT	31	74	.2	28	46									
RA	D	UT	32	126	.3	43	45	39								
RA	D	UT	33	20	.0	20										
RA	D	UT	34	56	.1		56									
RA	D	UT	35	48	.1	48										
RA	D	UT	36	61	.2		61									
RA	D	UT	37	126	.3	126										
RA	D	UT	39	110	.3	110										
RA	Totals			39,693	46.4	1740	5031	4499	7522	3437	8067	7314	2081			
BM	D	2S	20	152	20.7							152				
BM	D	4S	30	208	28.3			208								
BM	D	4S	39	219	29.9	219										
BM	D	UT	16	33	4.5	33										
BM	D	UT	18	10	1.3		10									
BM	D	UT	22	65	8.8			65								
BM	D	UT	30	47	6.5						47					
BM	Totals			734	.9	253	10	208	65		47		152			
SS	D	2S	40	207	65.0						119		88			
SS	D	4S	15	6	2.0			6								
SS	D	4S	22	13	4.2		13									
SS	D	UT	31	92	28.8		92									
SS	Totals			319	.4		105	6			119		88			
Total	All Species			85,571	100.0	5535	12073	9497	14824	8816	13030	13313	6534	1140	811	



**Cruiser Sample Point Locations**

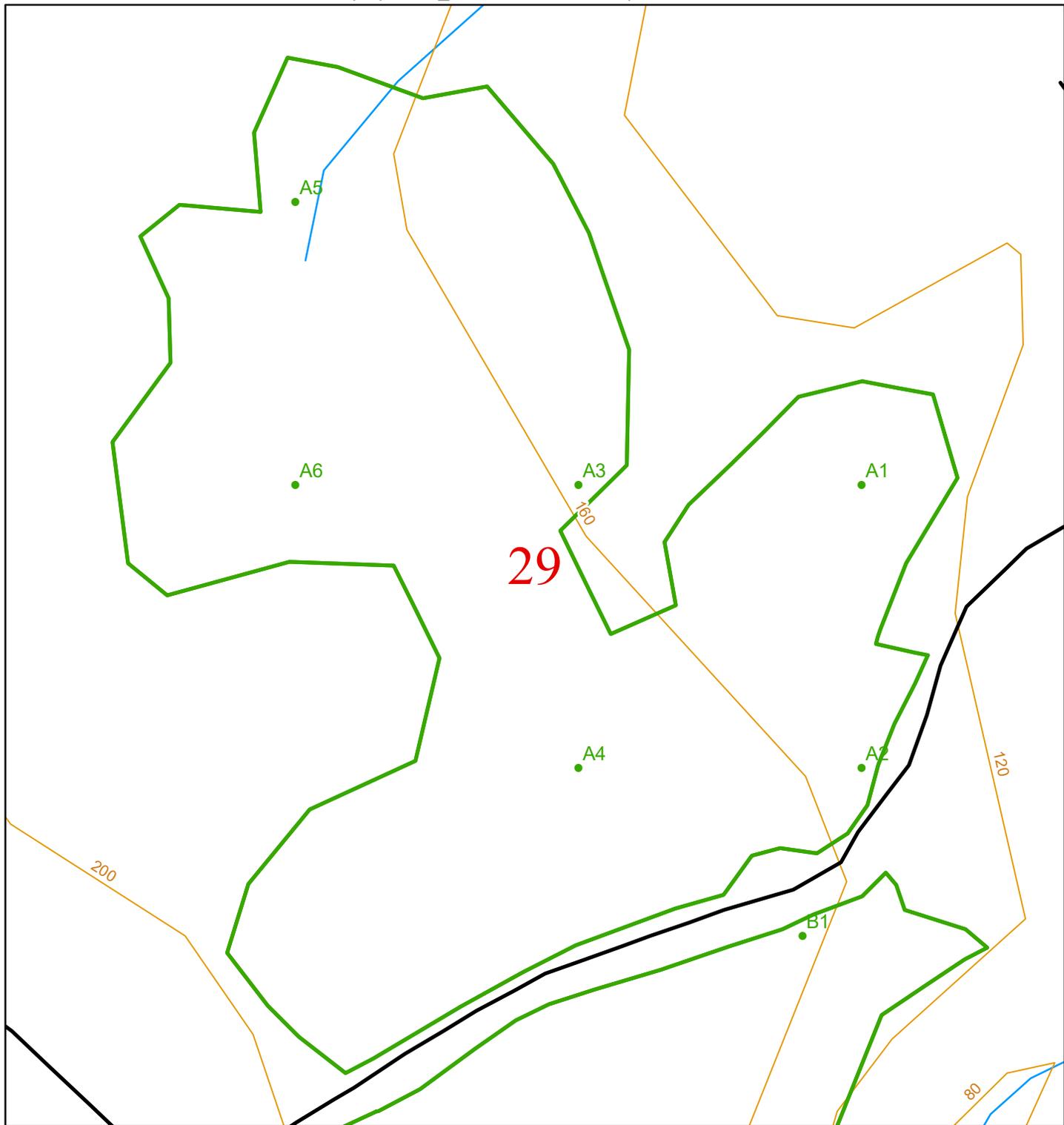
LAYER NAME	south_chicago_boundary	Township:	T31R08W
POLY ID:	1	Total Sample Points:	53
Acres:	82	Spacing Between Points:	Width: 250 Height: 250
		Point Rotation Degrees:	0



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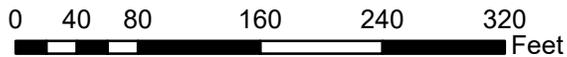
**Legend**

- Sample Points
- Unit
- Public Land Survey Sections
- Contours 40-foot



**Cruiser Sample Point Locations**

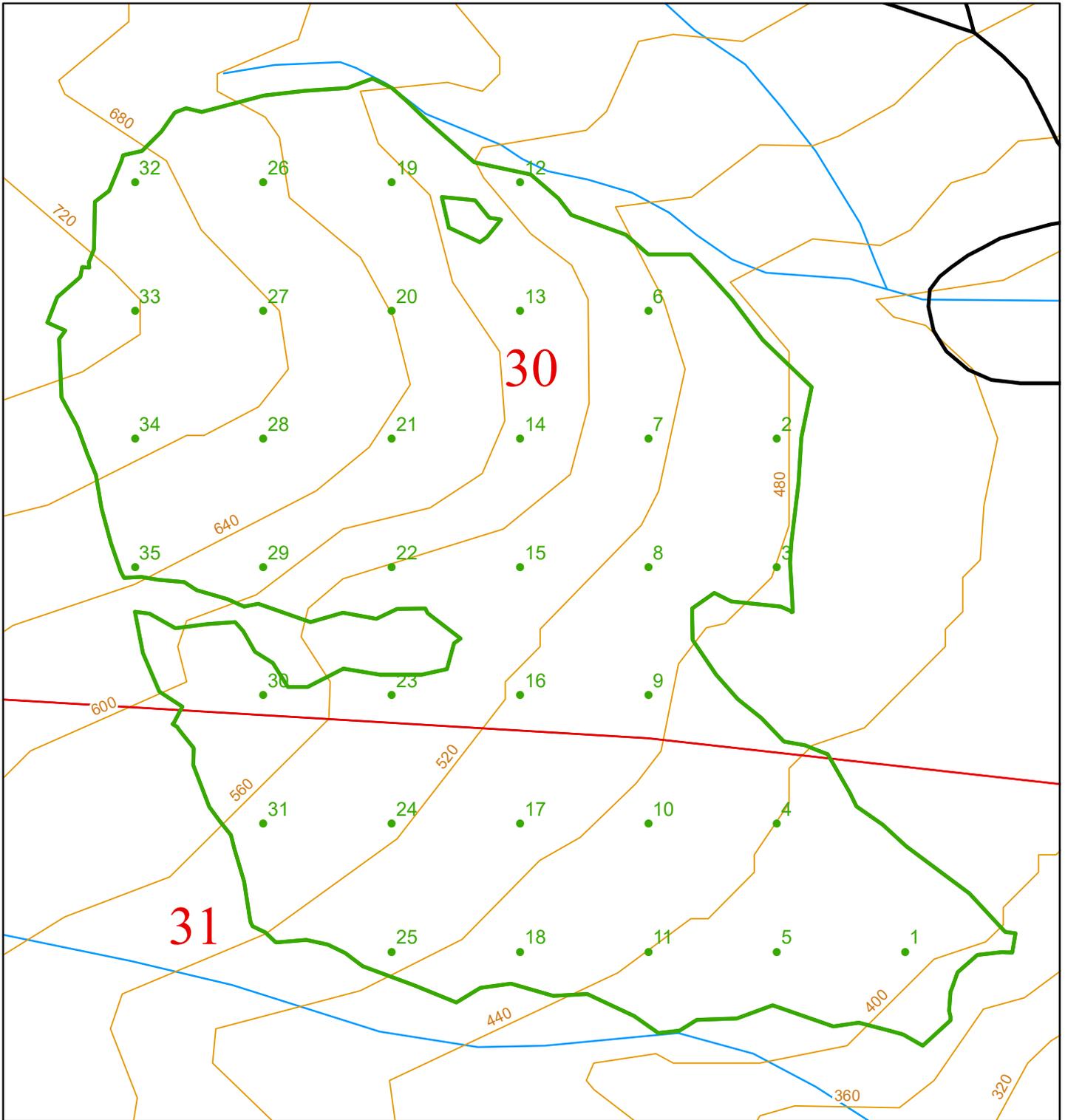
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POLY ID:	1	Total Sample Points:	6
Acres:	8	Spacing Between Points:	Width: 250 Height: 250
		Point Rotation Degrees:	0



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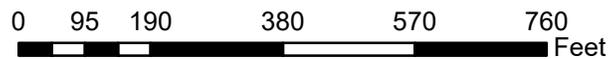
**Legend**

- Sample Points
- Unit
- Public Land Survey Sections
- Contours 40-foot



**Cruiser Sample Point Locations**

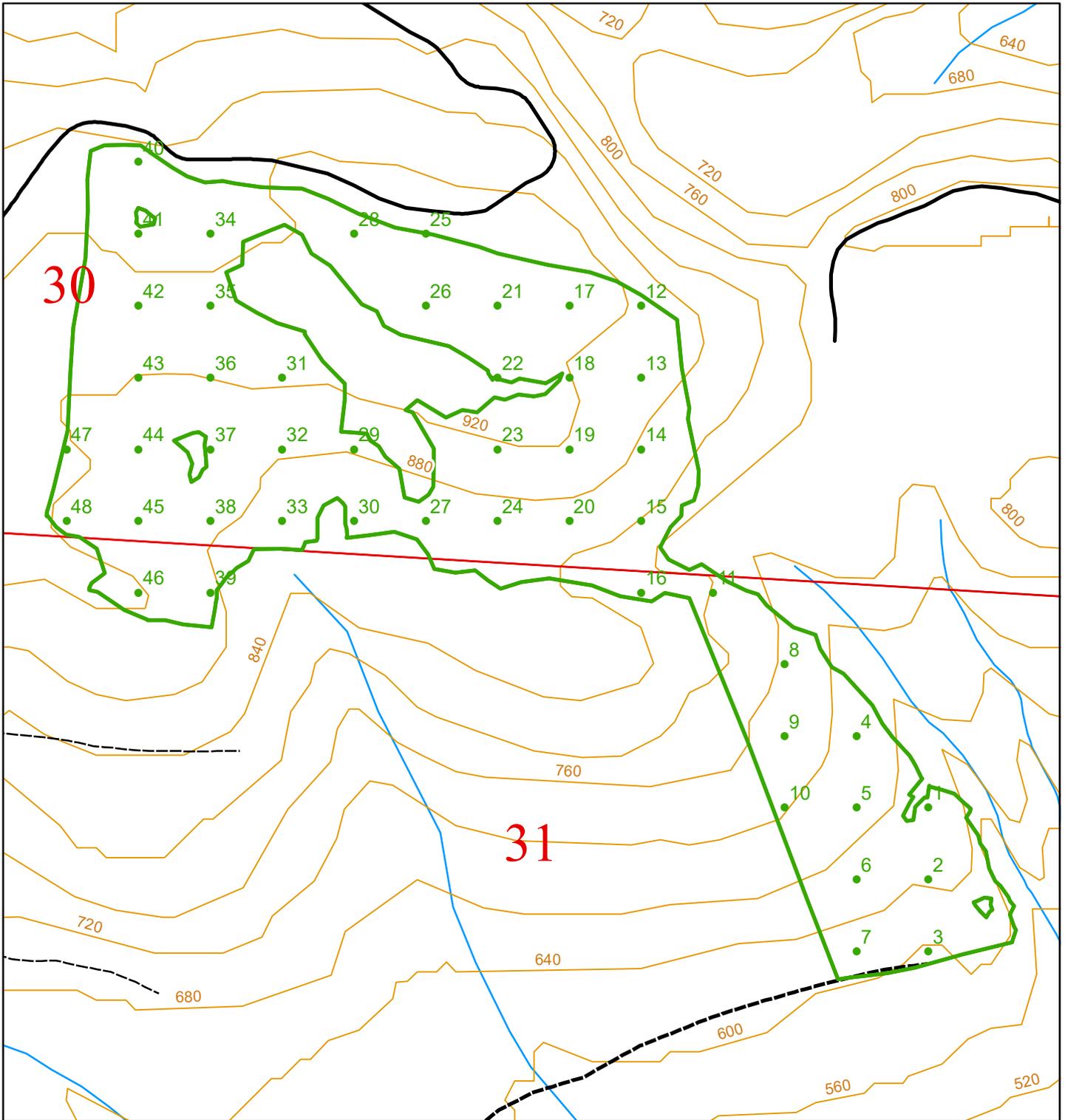
LAYER NAME	south_chicago_boundary	Township:	T31R09W
POLY ID:	1	Total Sample Points:	35
Acres:	47	Spacing Between Points:	Width: 250 Height: 250
		Point Rotation Degrees:	0



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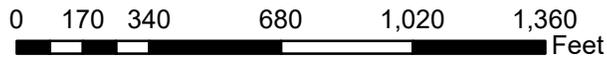
**Legend**

- Sample Points
- Unit
- Public Land Survey Sections
- Contours 40-foot



**Cruiser Sample Point Locations**

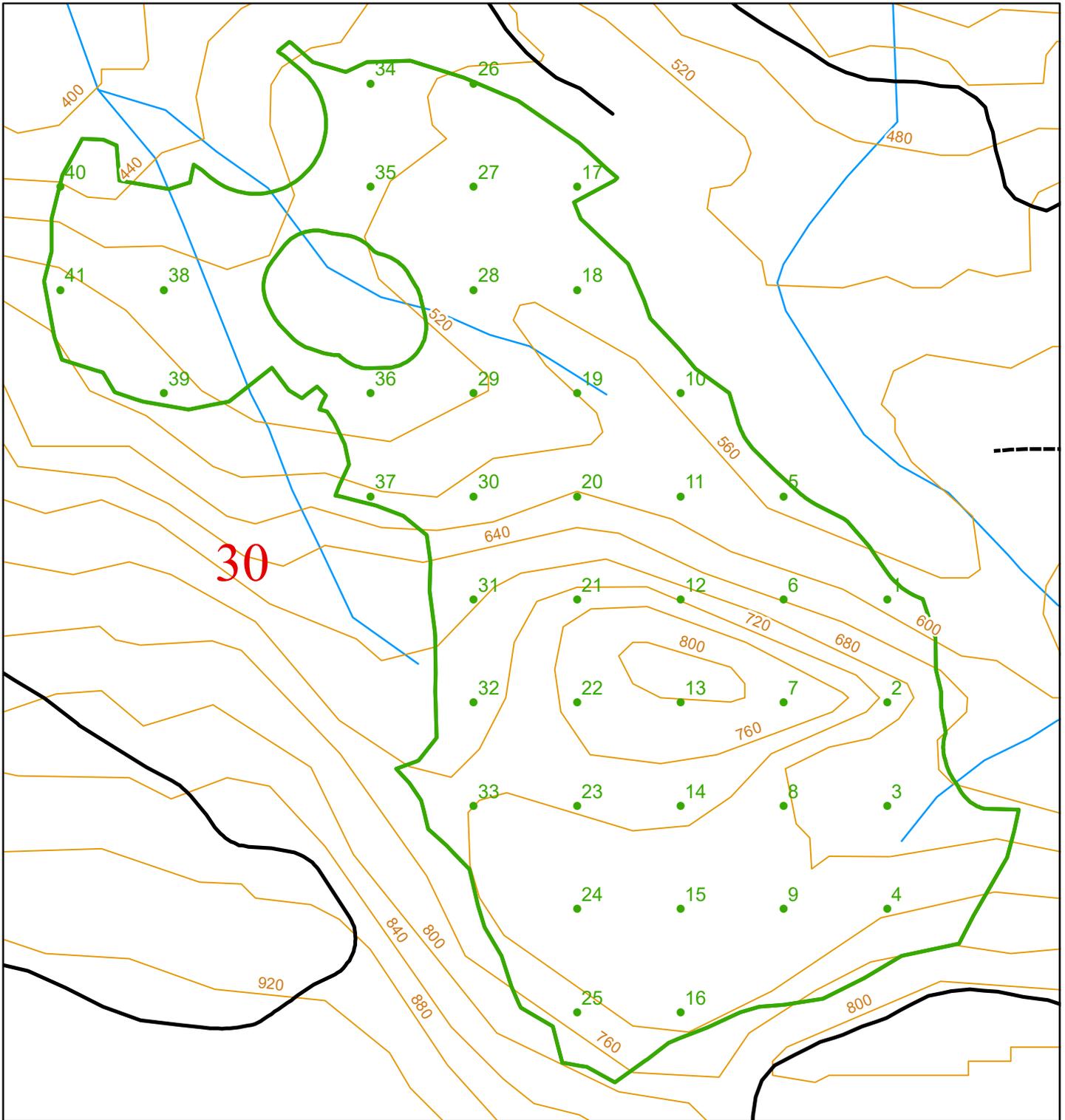
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POLY ID:	1	Total Sample Points:	48
Acres:	69	Spacing Between Points:	Width: 250 Height: 250
		Point Rotation Degrees:	0



Scale 1:5,900

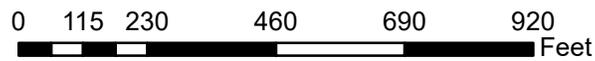
**Legend**

- Sample Points
- Unit
- Public Land Survey Sections
- Contours 40-foot



**Cruiser Sample Point Locations**

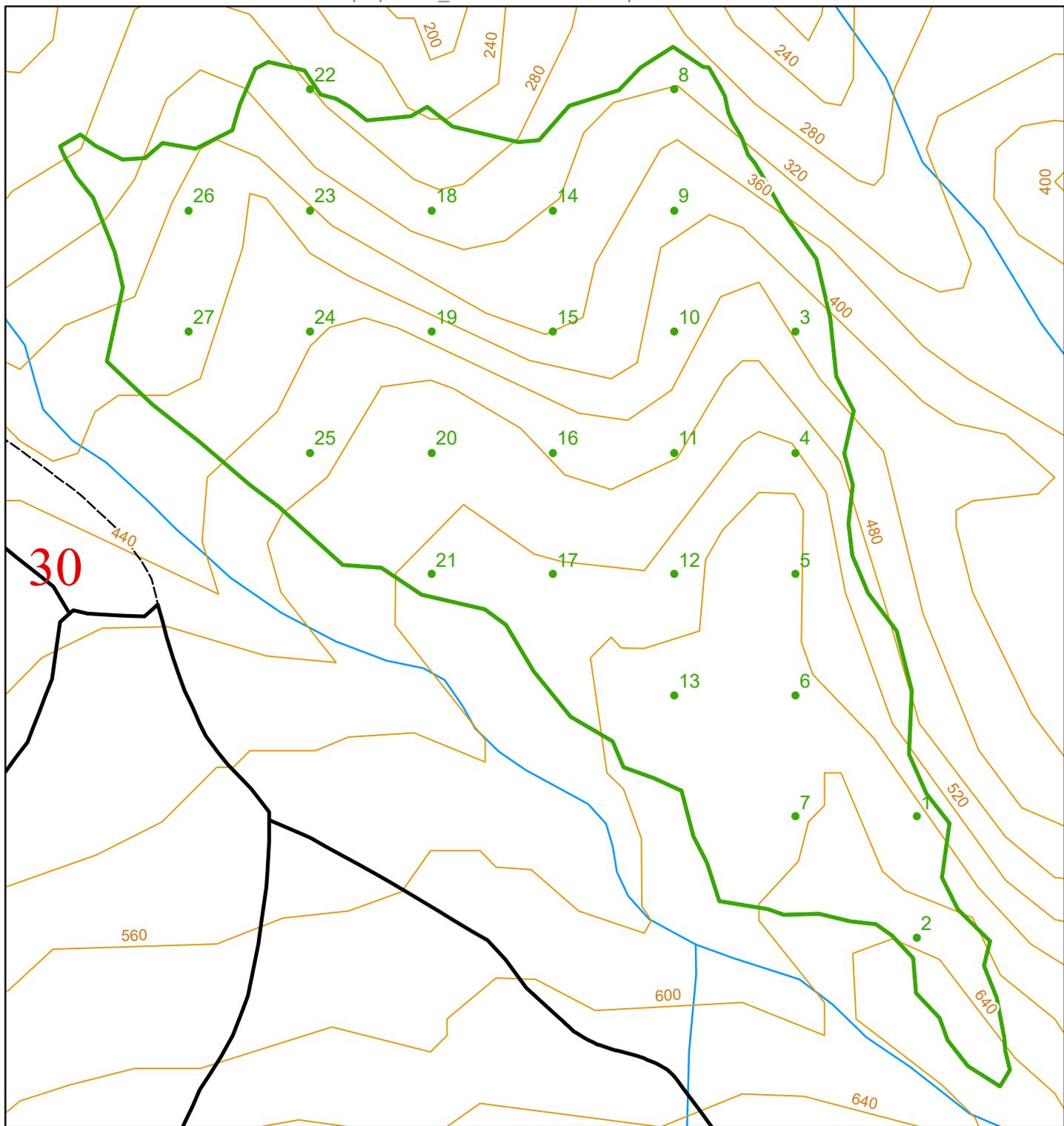
LAYER NAME	south_chicago_boundary	Township:	T31R09W
POLY ID:	1	Total Sample Points:	41
Acres:	59	Spacing Between Points:	Width: 250 Height: 250
		Point Rotation Degrees:	0



Scale 1:4,100

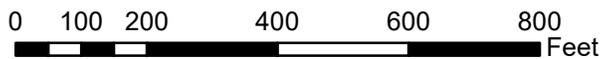
**Legend**

- Sample Points
- Unit
- Public Land Survey Sections
- Contours 40-foot



**Cruiser Sample Point Locations**

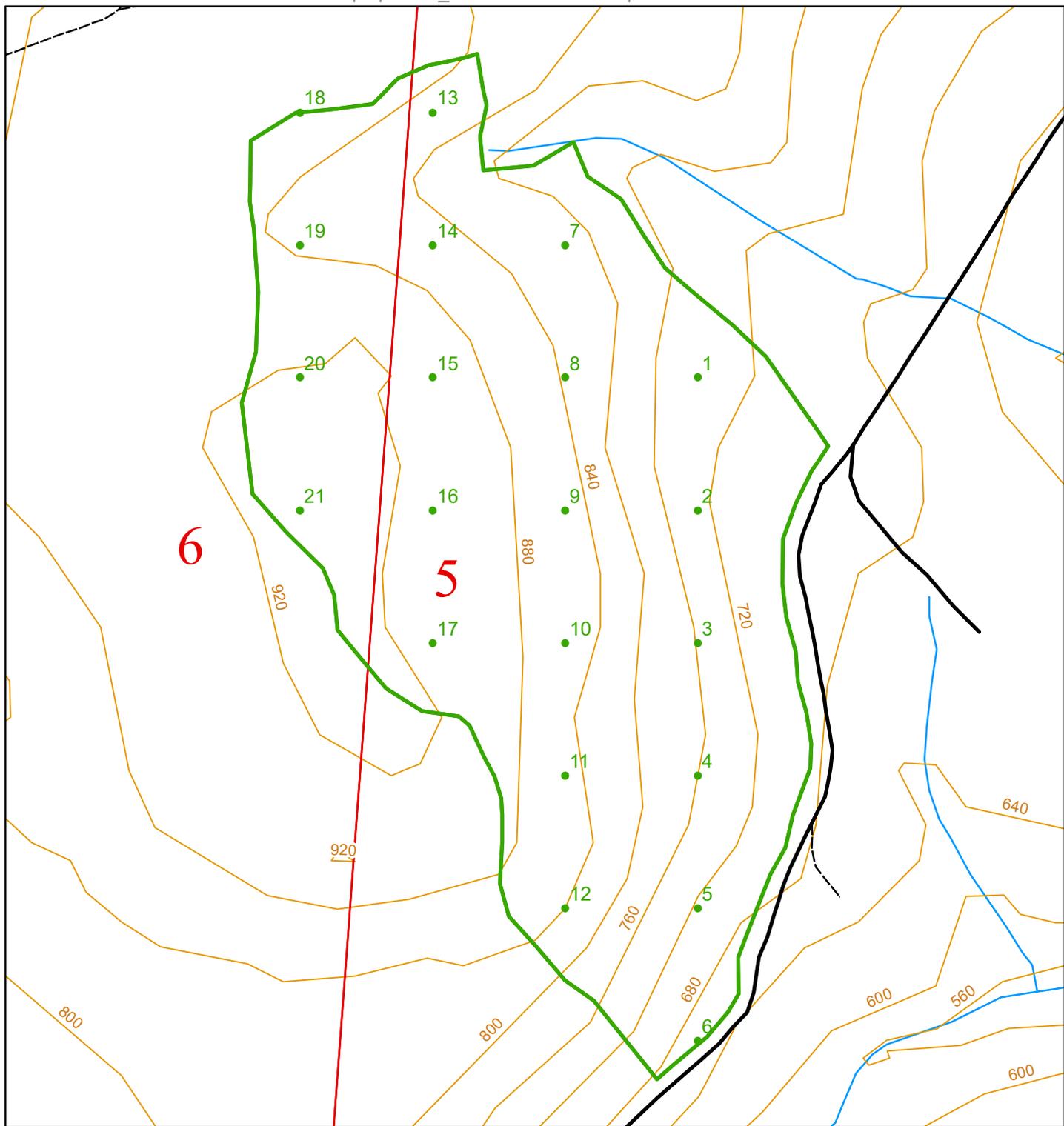
LAYER NAME	south_chicago_boundary	Township:	T31R09W
POLY ID:	1	Total Sample Points:	27
Acres:	41	Spacing Between Points:	Width: 250 Height: 250
		Point Rotation Degrees:	0



Scale 1:3,500

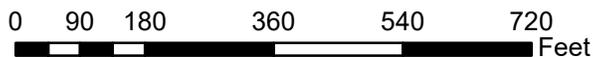
**Legend**

- Sample Points
- Unit
- Public Land Survey Sections
- Contours 40-foot



**Cruiser Sample Point Locations**

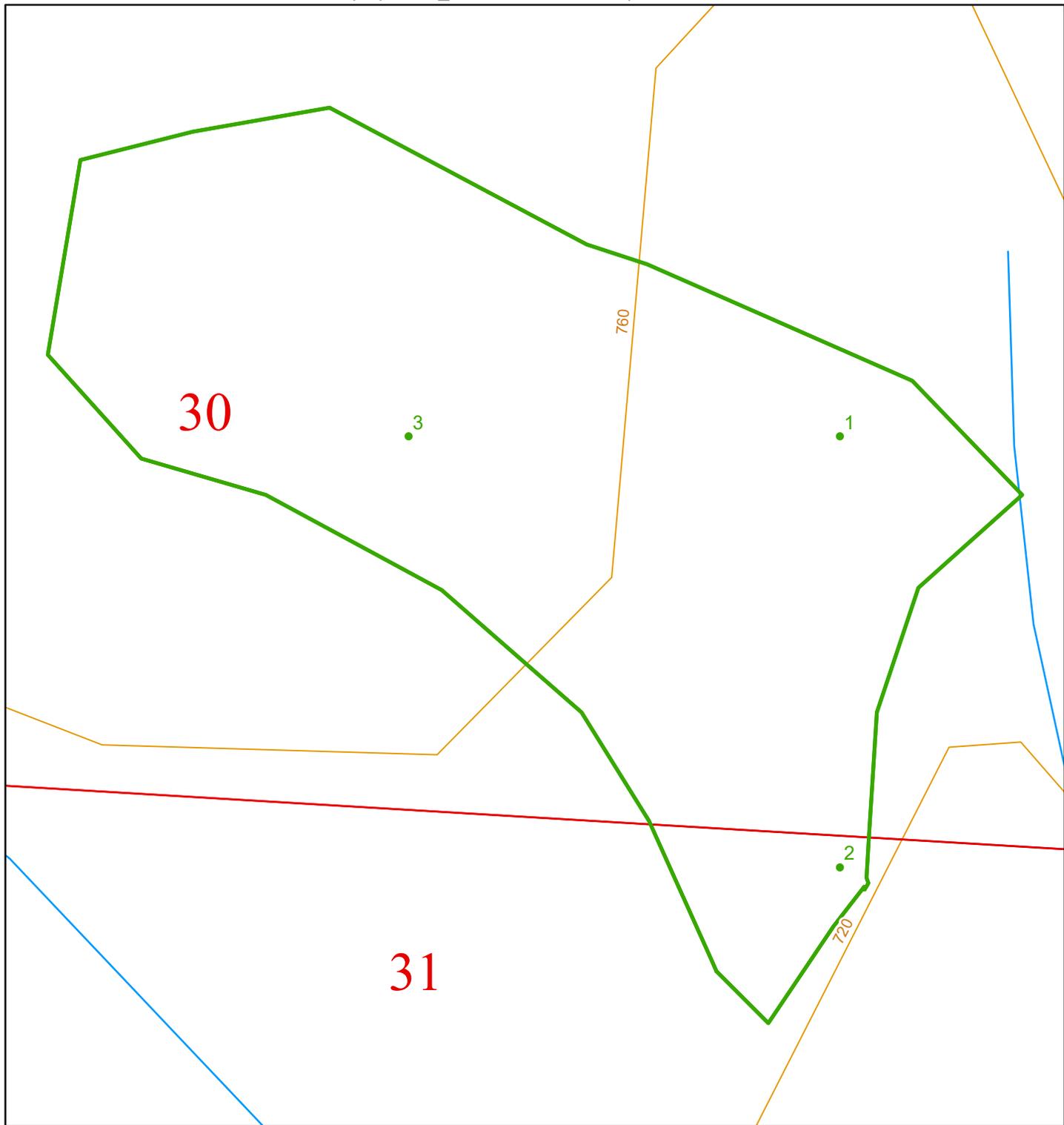
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POLY ID:	1	Total Sample Points:	21
Acres:	29	Spacing Between Points:	Width: 250 Height: 250
		Point Rotation Degrees:	0



Scale 1:3,200

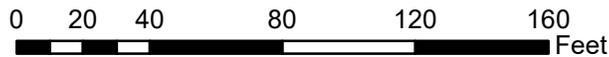
**Legend**

- Sample Points
- Unit
- Public Land Survey Sections
- Contours 40-foot



**Cruiser Sample Point Locations**

LAYER NAME	south_chicago_boundary	Township:	T31R09W
POLY ID:	1	Total Sample Points:	3
Acres:	2	Spacing Between Points:	175
		Point Rotation Degrees:	0



Scale 1:690

**Legend**

- Sample Points
- Unit
- Public Land Survey Sections
- Contours 40-foot



Forest Practices Application/Notification  
**Notice of Decision**

FPA/N No: 2616368

Effective Date: 3/13/2020

Expiration Date: 3/13/2023

Shut Down Zone: 653S

EARR Tax Credit:  Eligible  Non-eligible

Reference: South Chicago Sorts

**Decision**

- Notification**      Operations shall not begin before the effective date.
- Approved**        This Forest Practices Application is subject to the conditions listed below.
- Disapproved**    This Forest Practices Application is disapproved for the reasons listed below.
- Closed**            Applicant has withdrawn approved FPA/N

**FPA/N Classification**

**Number of Years Granted on Multi-Year Request**

- Class II     Class III     Class IVG     Class IVS     4 yrs     5 yrs

**Conditions on Approval / Reasons for Disapproval**

Timing restrictions for fish streams as follows:  
 For the permanent culvert (C9) and bridge (C5) – July 1st through September 30th.  
 For the temporary culvert (C4) – June 15th through November 15th, 2020.  
 For the temporary culvert (C10) – No timing limitations but work shall occur in dry weather.

Issued By: Erik Dukes

Region: Olympic

Title: Forest Practice Forester

Date: 3/13/2020

Copies to:     Landowner, Timber Owner and Operator.

Issued in person:     Landowner  Timber Owner  Operator By: Chelsea Drum

**Appeal Information**

You have thirty (30) days to appeal this Decision and any related State Environmental Policy Act determinations to the Pollution Control Hearings Board in writing at the following addresses:

**Physical address: 1111 Israel Rd. SW, Ste 301, Tumwater, WA 98501**

**Mailing address: P.O. BOX 40903, OLYMPIA, WA 98504-0903**

Information regarding the Pollution Control Hearings Board can be found at: <http://www.eluho.wa.gov/>

At the same time you file an appeal with the Pollution Control Hearings Board, also send a copy of the appeal to the Department of Natural Resources' region office and the Office of the Attorney General at the following addresses:

Office of the Attorney General  
Natural Resources Division  
1125 Washington Street SE  
PO Box 40100  
Olympia, WA 98504-0100

And

Department Of Natural Resources  
Olympic Region  
411 Tillicum Lane  
Forks, WA 98331

**Other Applicable Laws**

Operating as described in this application/notification does not ensure compliance with the Endangered Species Act, or other federal, state, or local laws.

**Transfer of Forest Practices Application/Notification (WAC 222-20-010)**

Use the "Notice of Transfer of Approved Forest Practices Application/Notification" form. This form is available at region offices and on the Forest Practices website: <http://www.dnr.wa.gov/businesspermits/forestpractices>.

Notify DNR of new Operators within 48 hours.

**Continuing Forest Land Obligations (RCW 76.09.060, RCW 76.09.070, RCW 76.09.390, and WAC 222-20-055)**

Obligations include reforestation, road maintenance and abandonment plans, conversions of forest land to non-forestry use and/or harvest strategies on perennial non-fish habitat (Type Np) waters in Eastern Washington.

Before the sale or transfer of land or perpetual timber rights subject to continuing forest land obligations, the seller must notify the buyer of such an obligation on a form titled "Notice of Continuing Forest Land Obligation". The seller and buyer must both sign the "Notice of Continuing Forest Land Obligation" form and send it to the DNR Region Office for retention. This form is available at DNR region offices.

If the seller fails to notify the buyer about the continuing forest land obligation, the seller must pay the buyer's costs related to continuing forest land obligations, including all legal costs and reasonable attorneys' fees incurred by the buyer in enforcing the continuing forest land obligation against the seller.

Failure by the seller to send the required notice to the DNR at the time of sale will be prima facie evidence in an action by the buyer against the seller for costs related to the continuing forest land obligation prior to sale.

**DNR affidavit of mailing:**

On this day 3/13/2020, I placed in the United States mail at Forks, WA, postage paid, a true and accurate copy of this document. Notice of Decision FPA #2616368

Chelsea Drum

(Printed name)

(Signature)

STATE OF WASHINGTON  
DEPARTMENT OF NATURAL RESOURCES

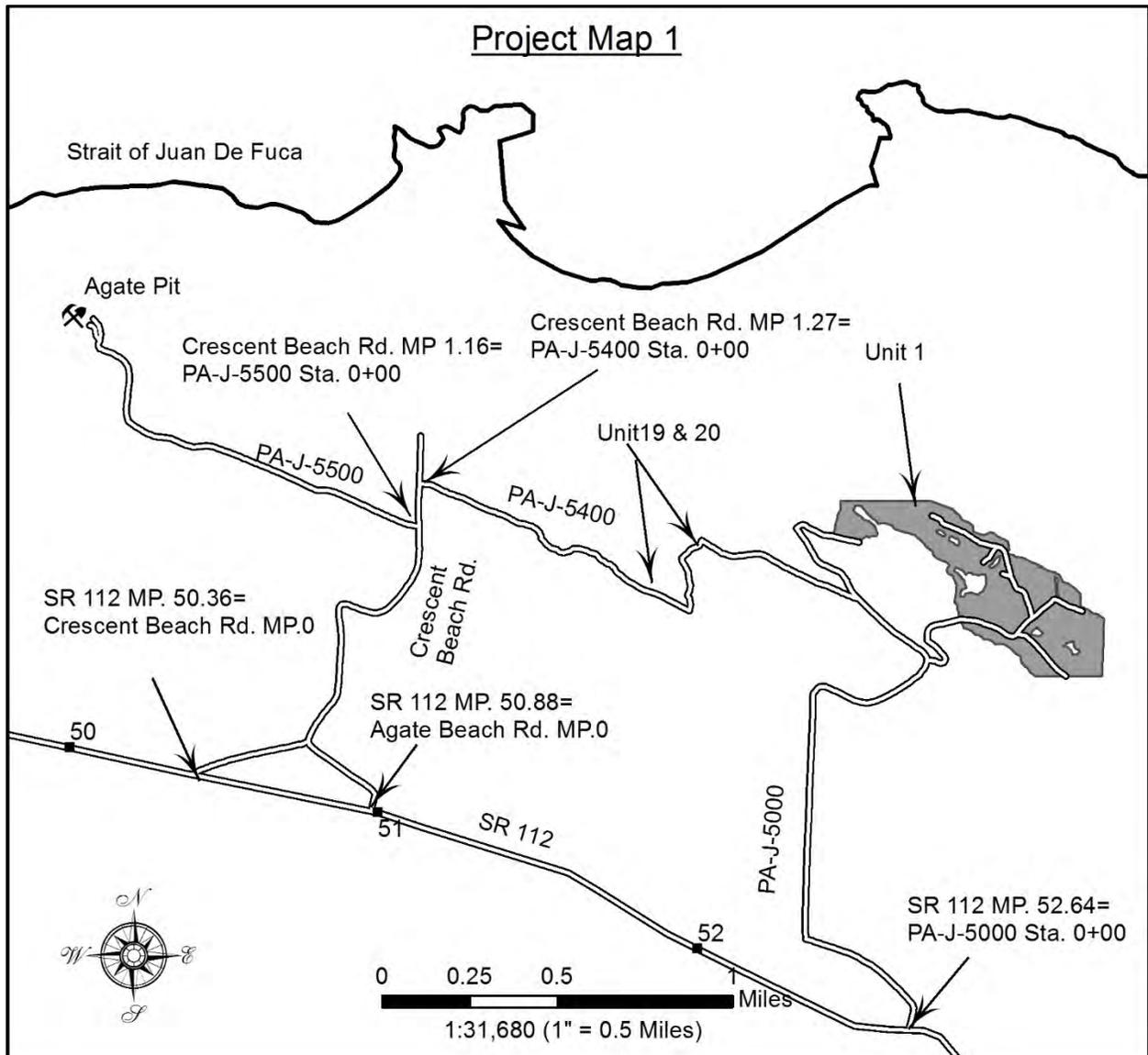
SOUTH CHICAGO TIMBER SALE ROAD PLAN  
CLALLAM COUNTY  
STRAITS DISTRICT  
OLYMPIC REGION

AGREEMENT NO.: 30-099255

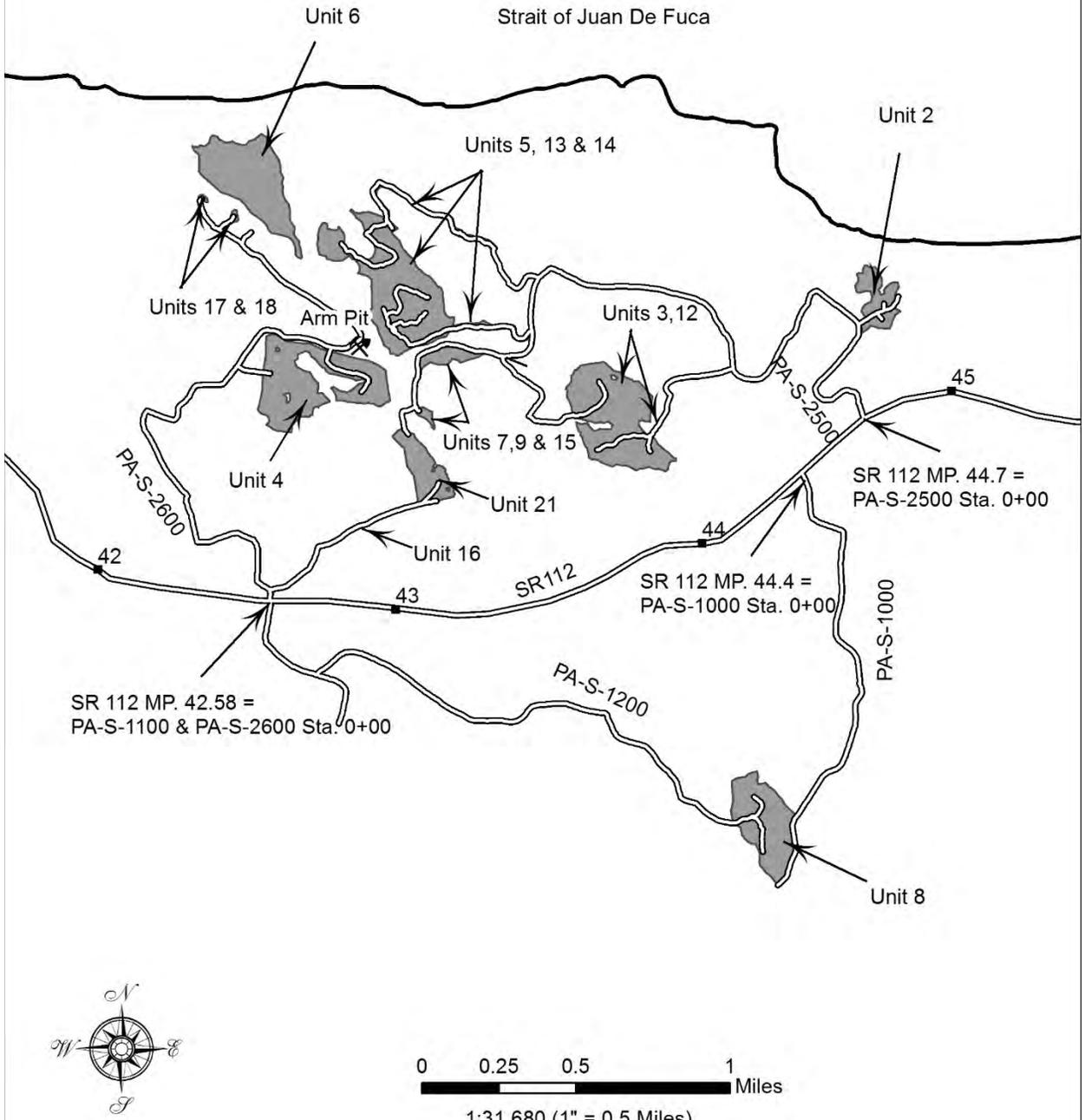
DISTRICT ENGINEER: GREGORY ELLIS

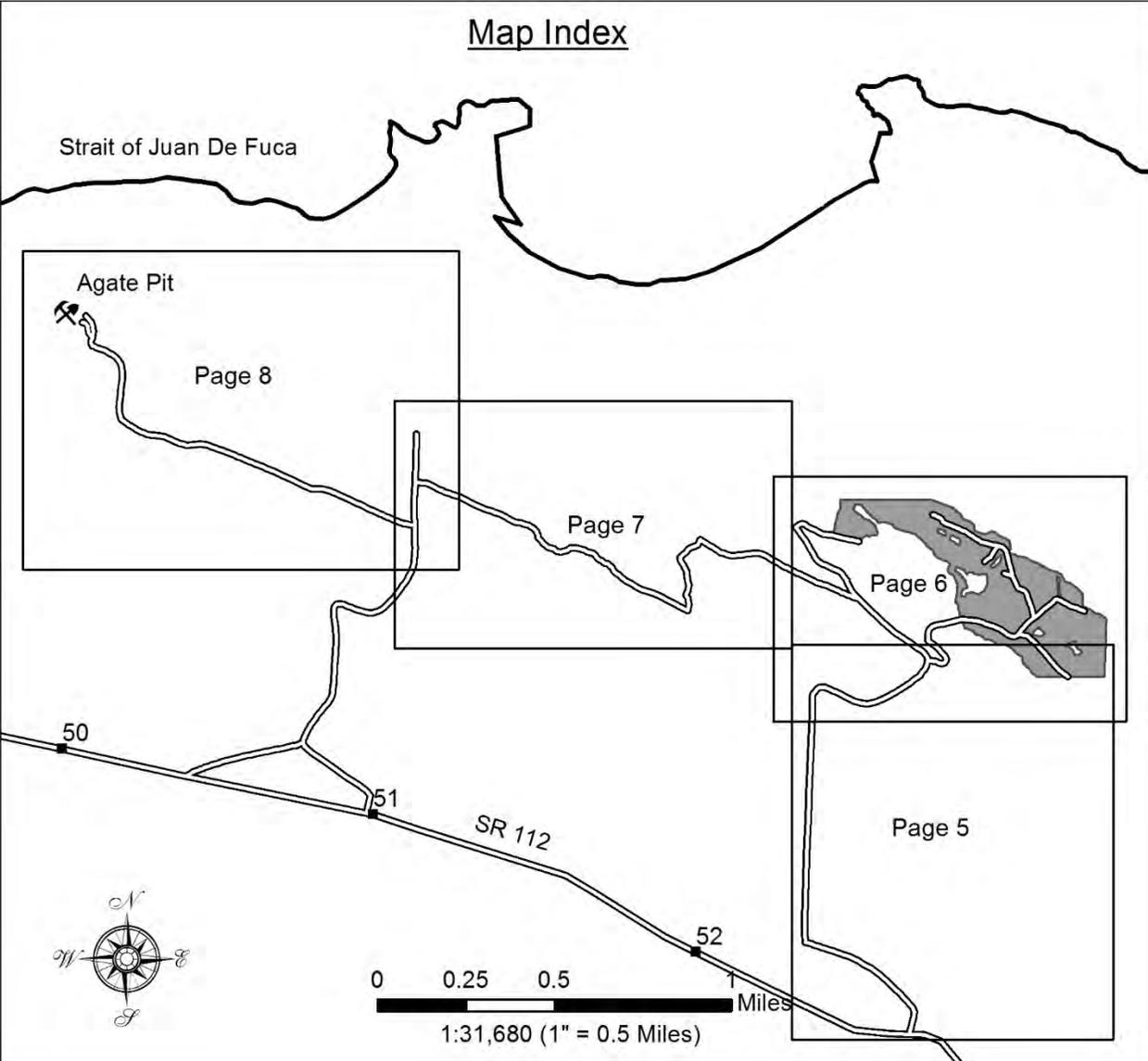
DATE: 10/15/2019

DRAWN & COMPILED BY: GREGORY ELLIS

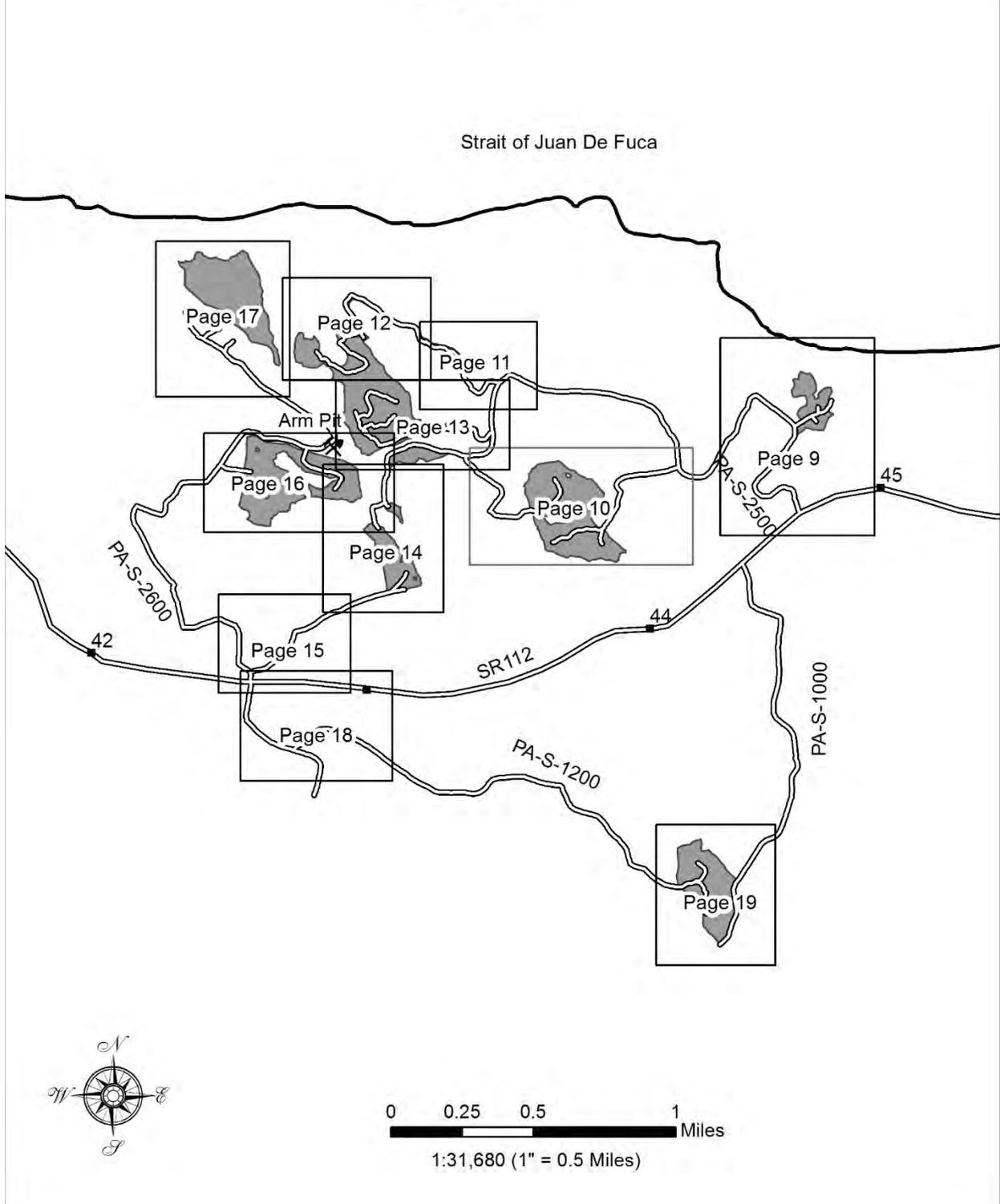


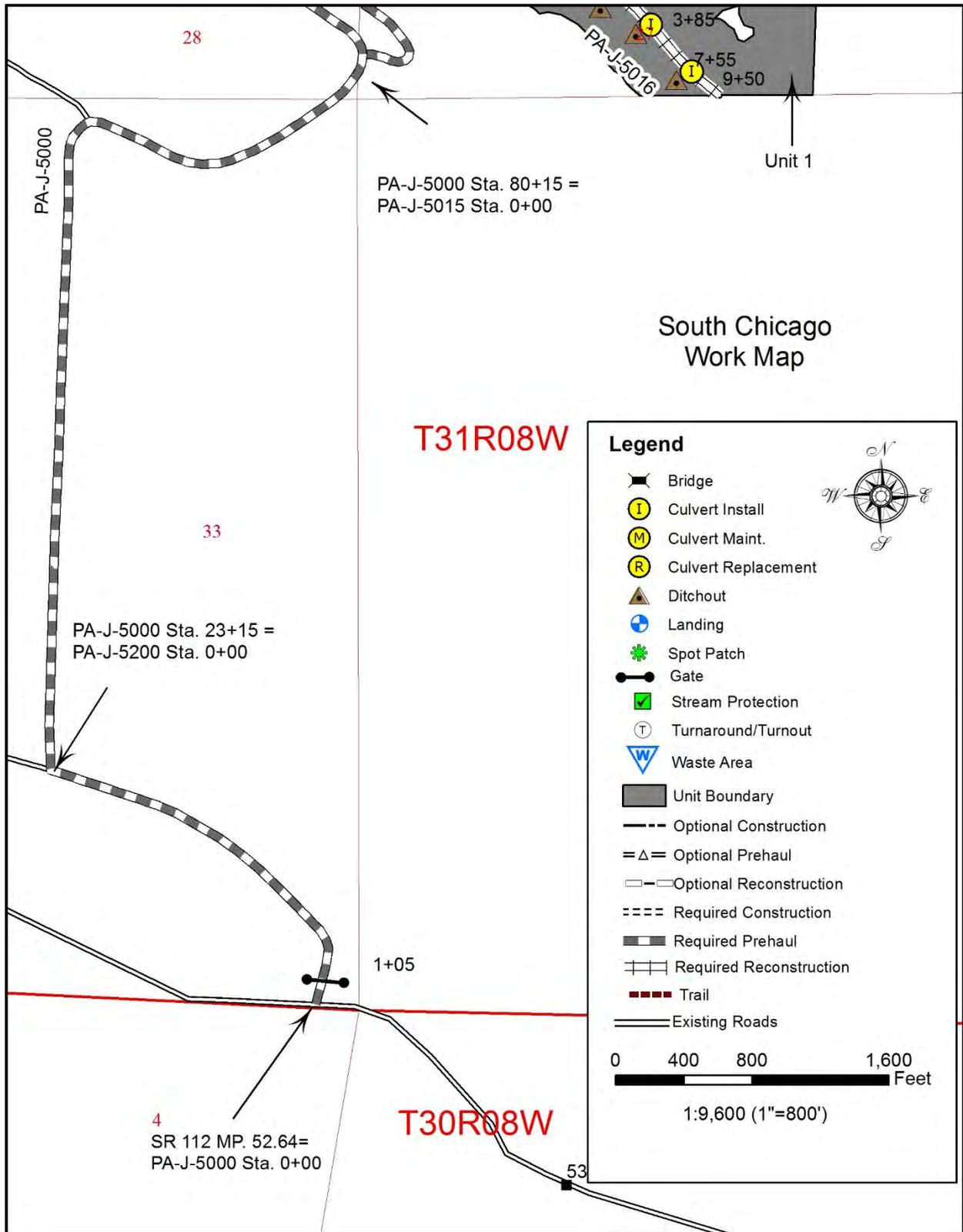
# Project Map 2

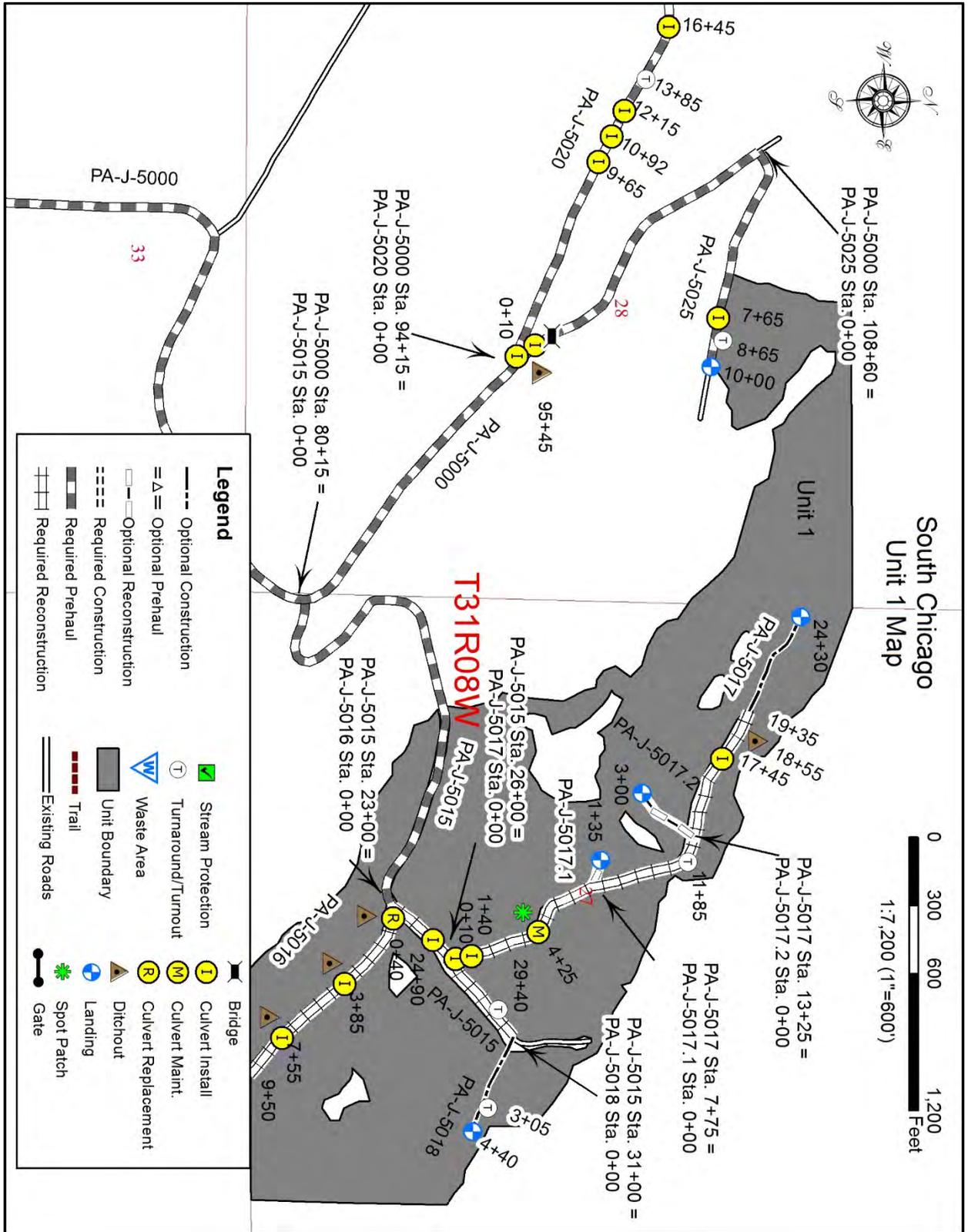


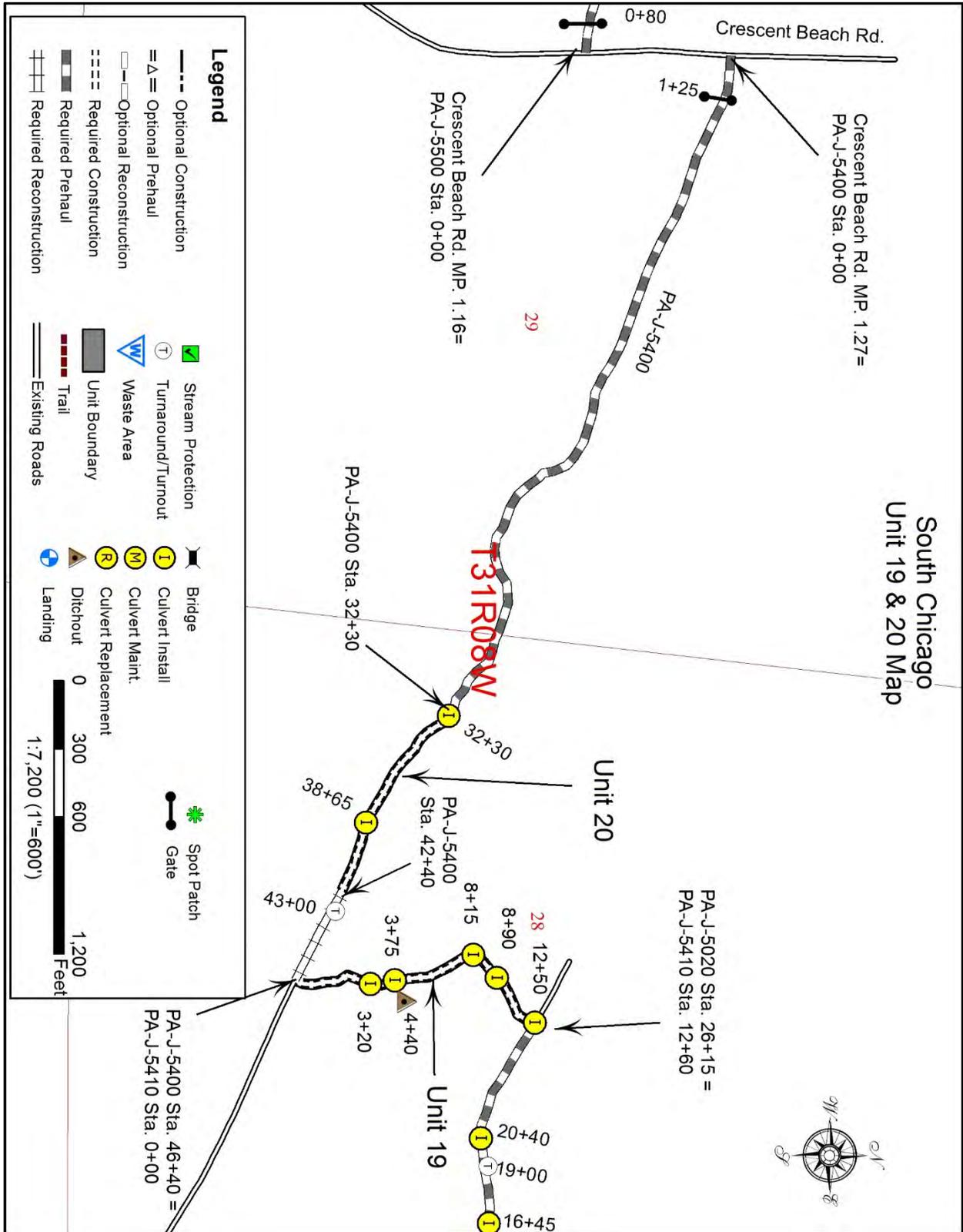


# Map Index

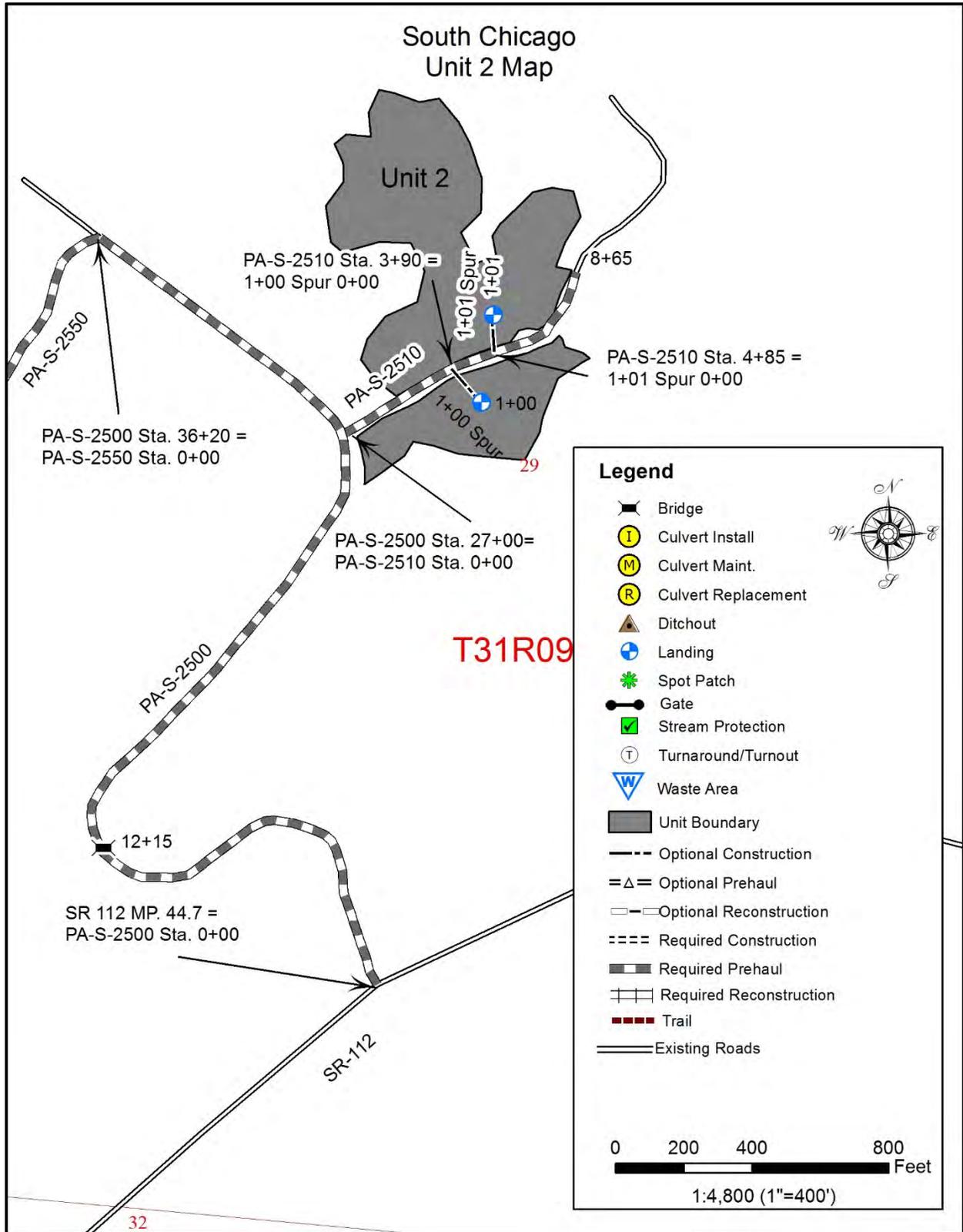


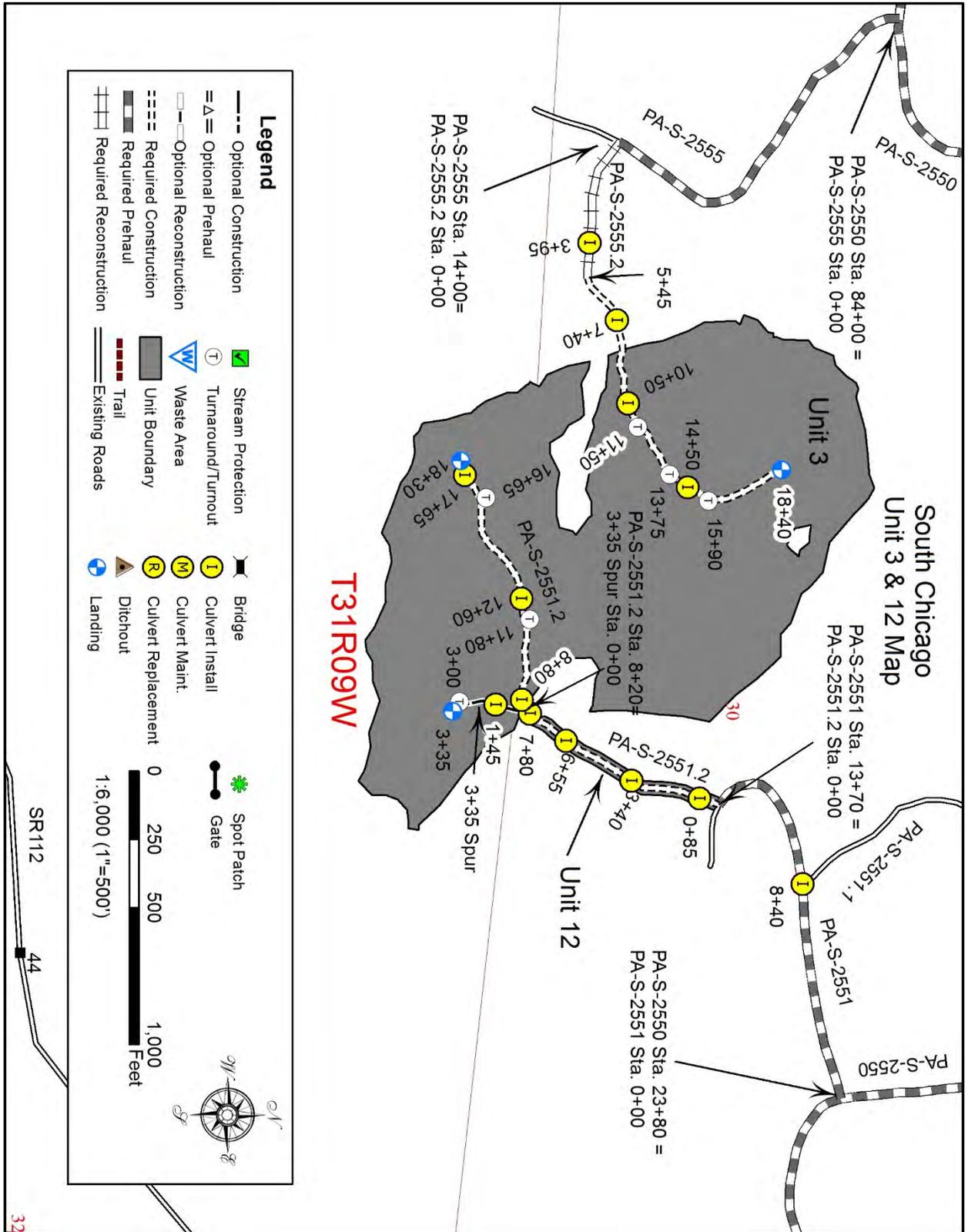


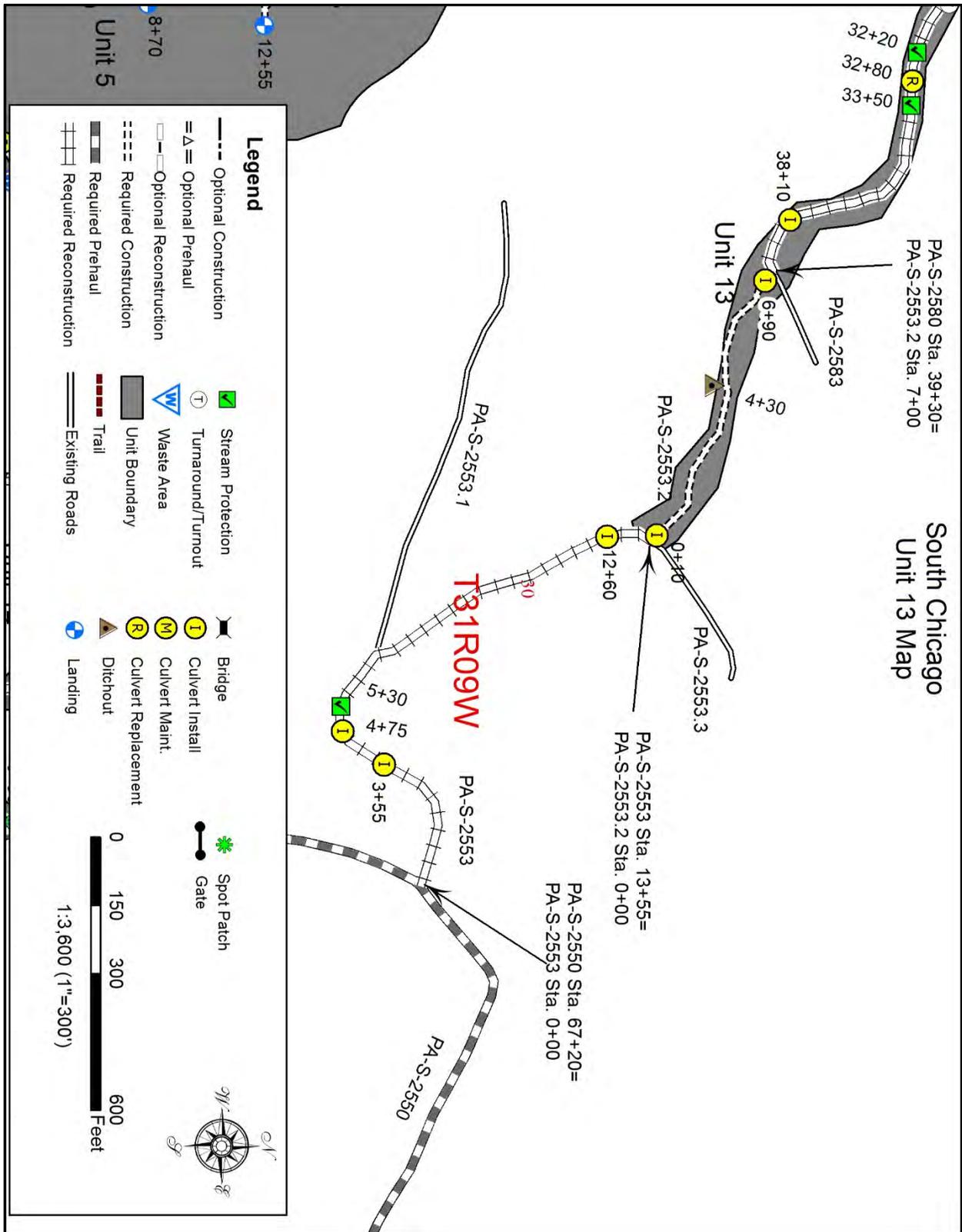


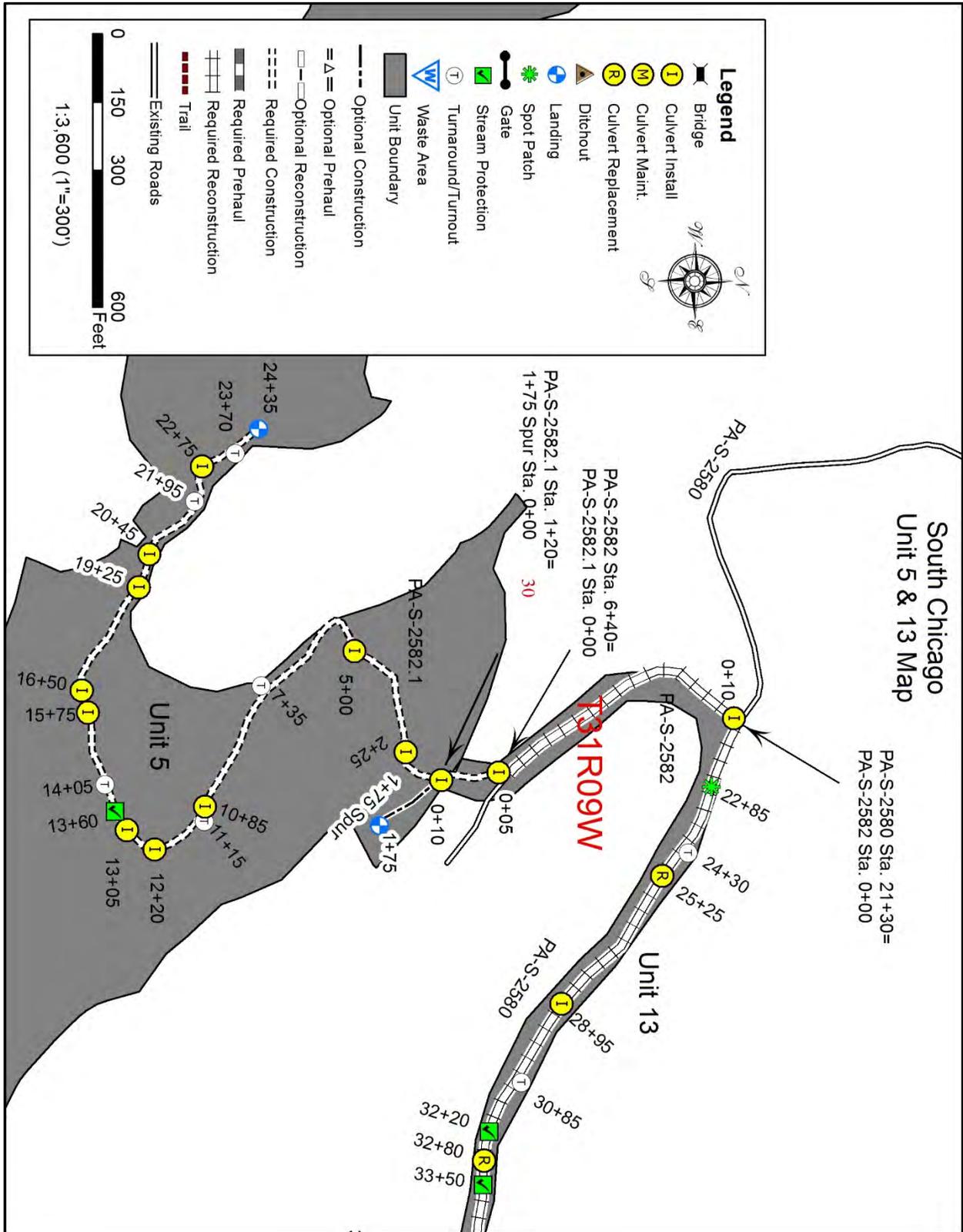


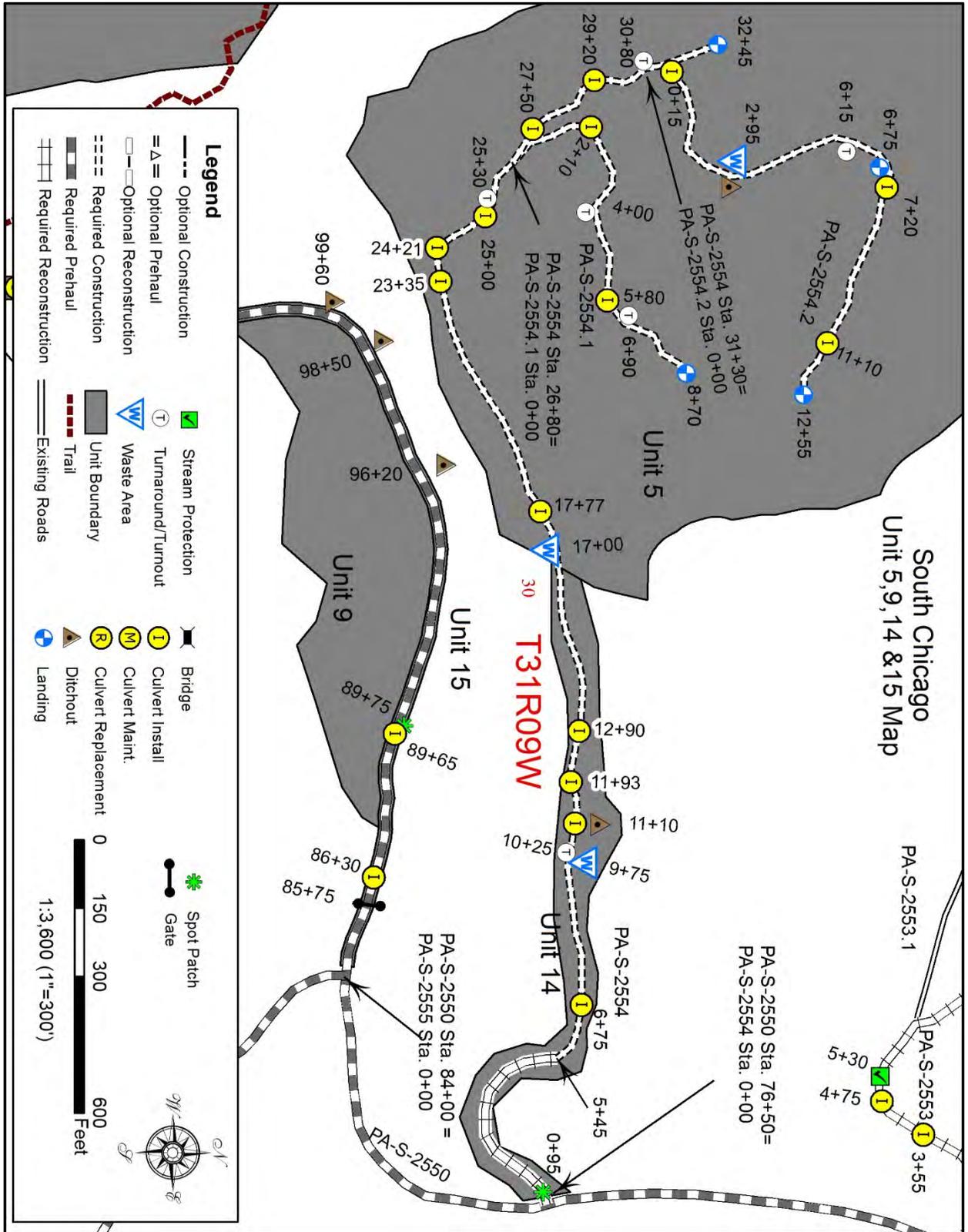






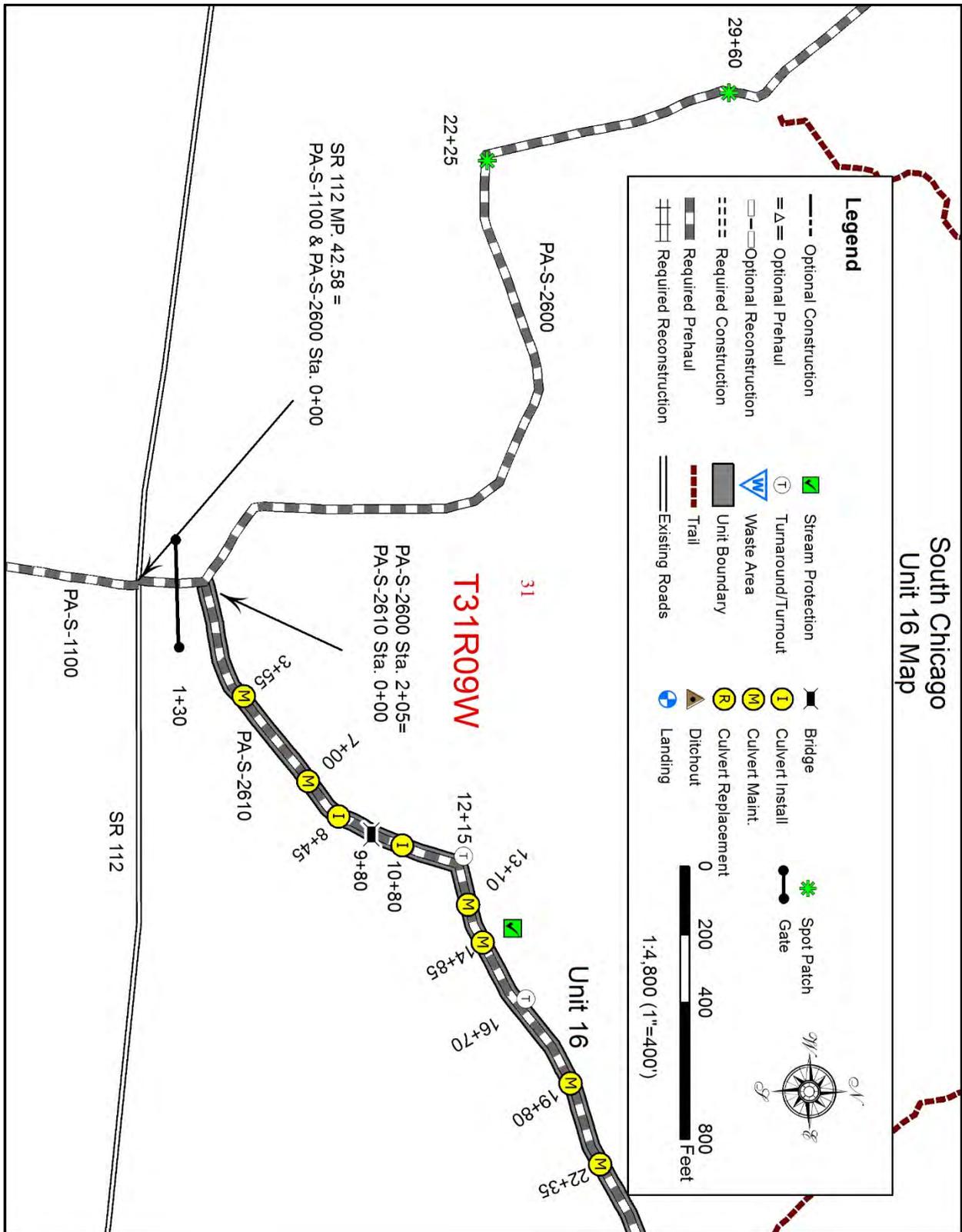




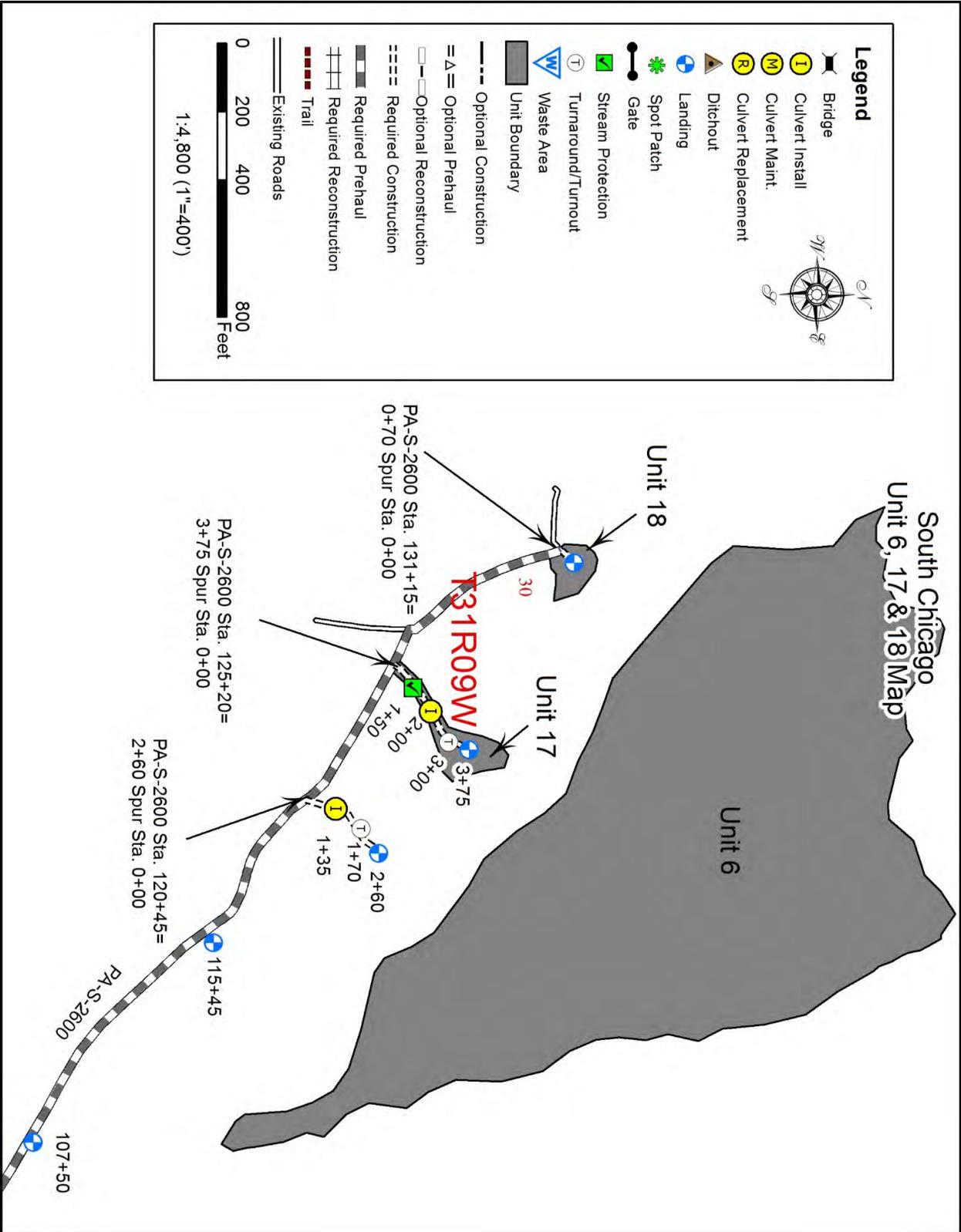


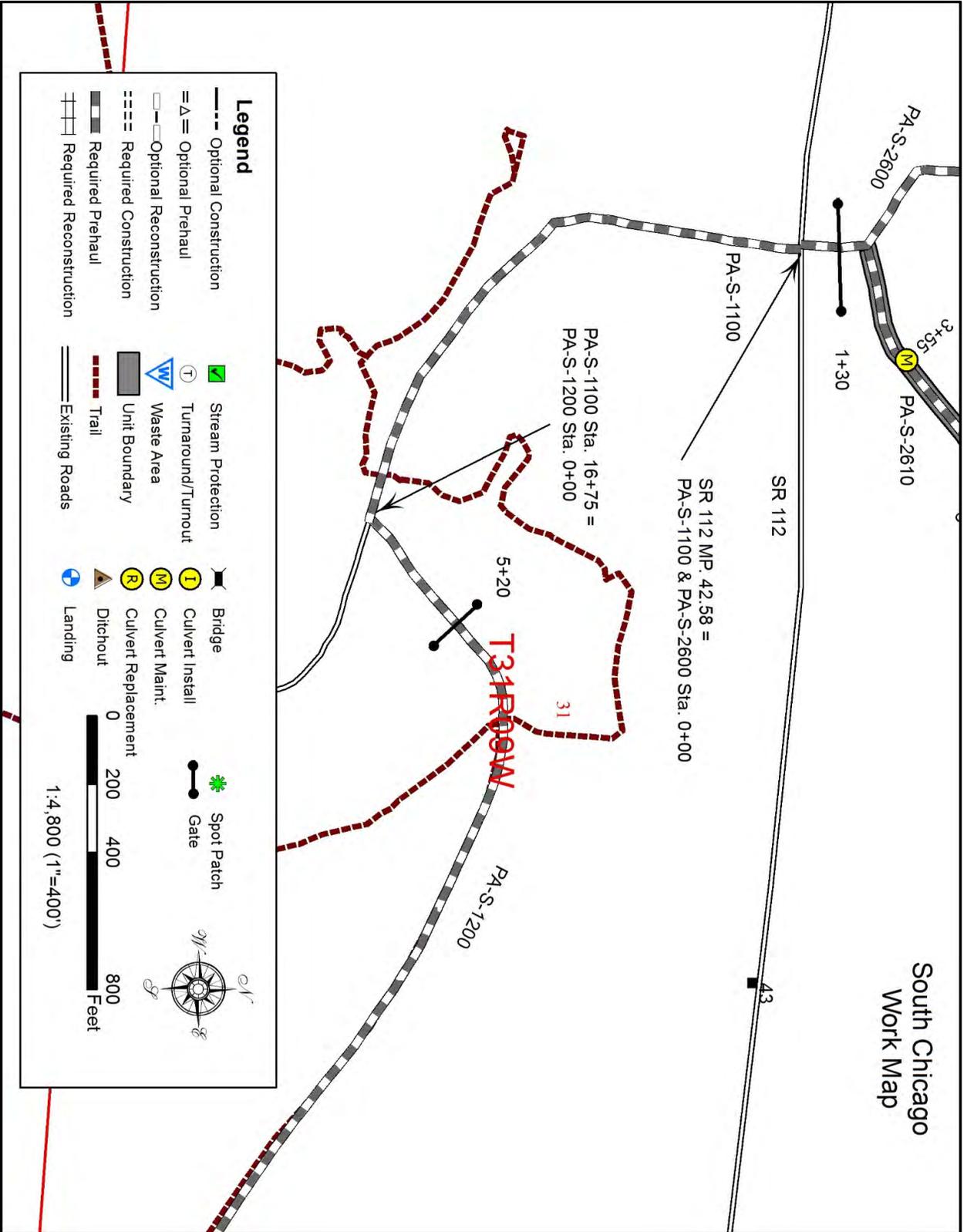


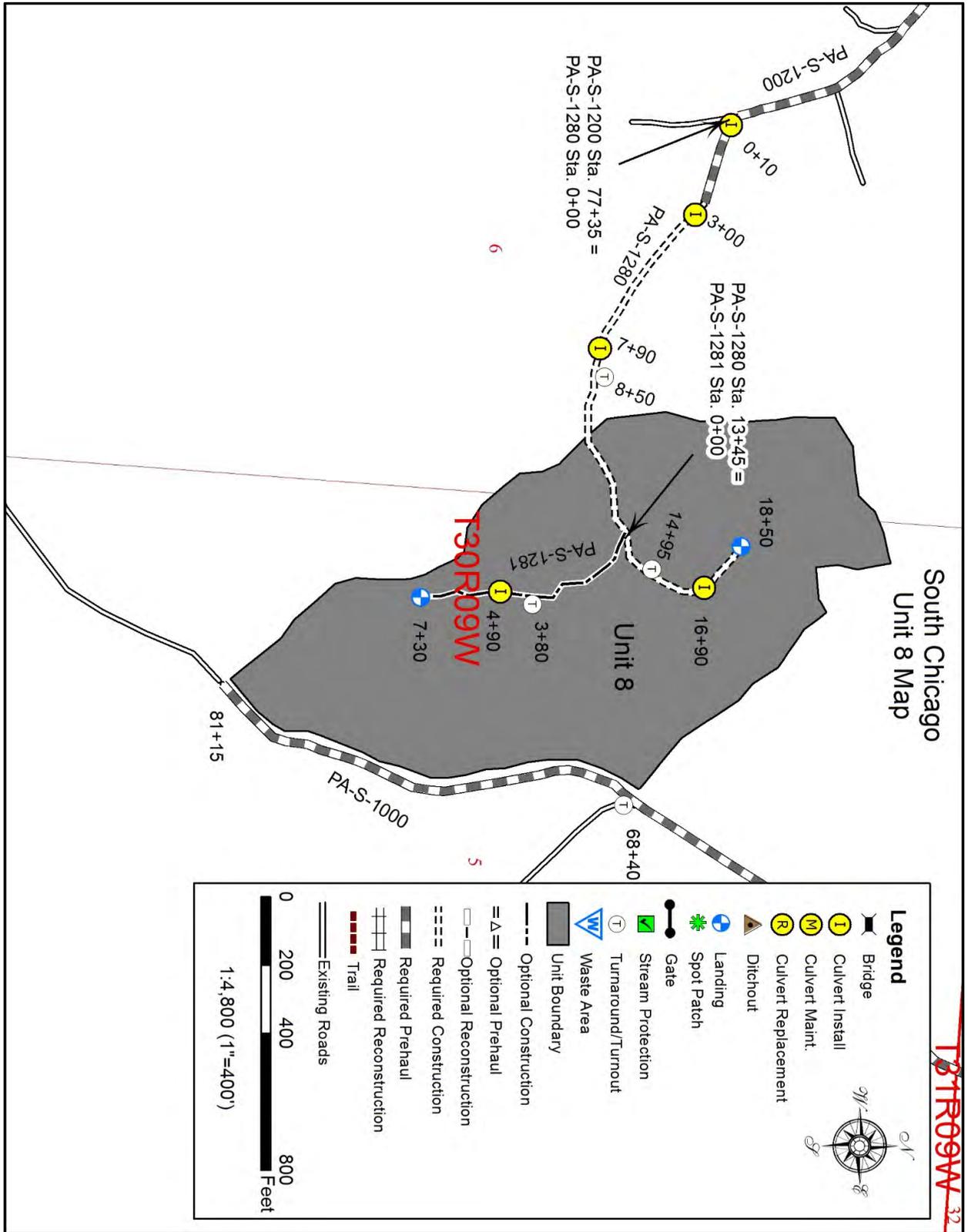
# South Chicago Unit 16 Map



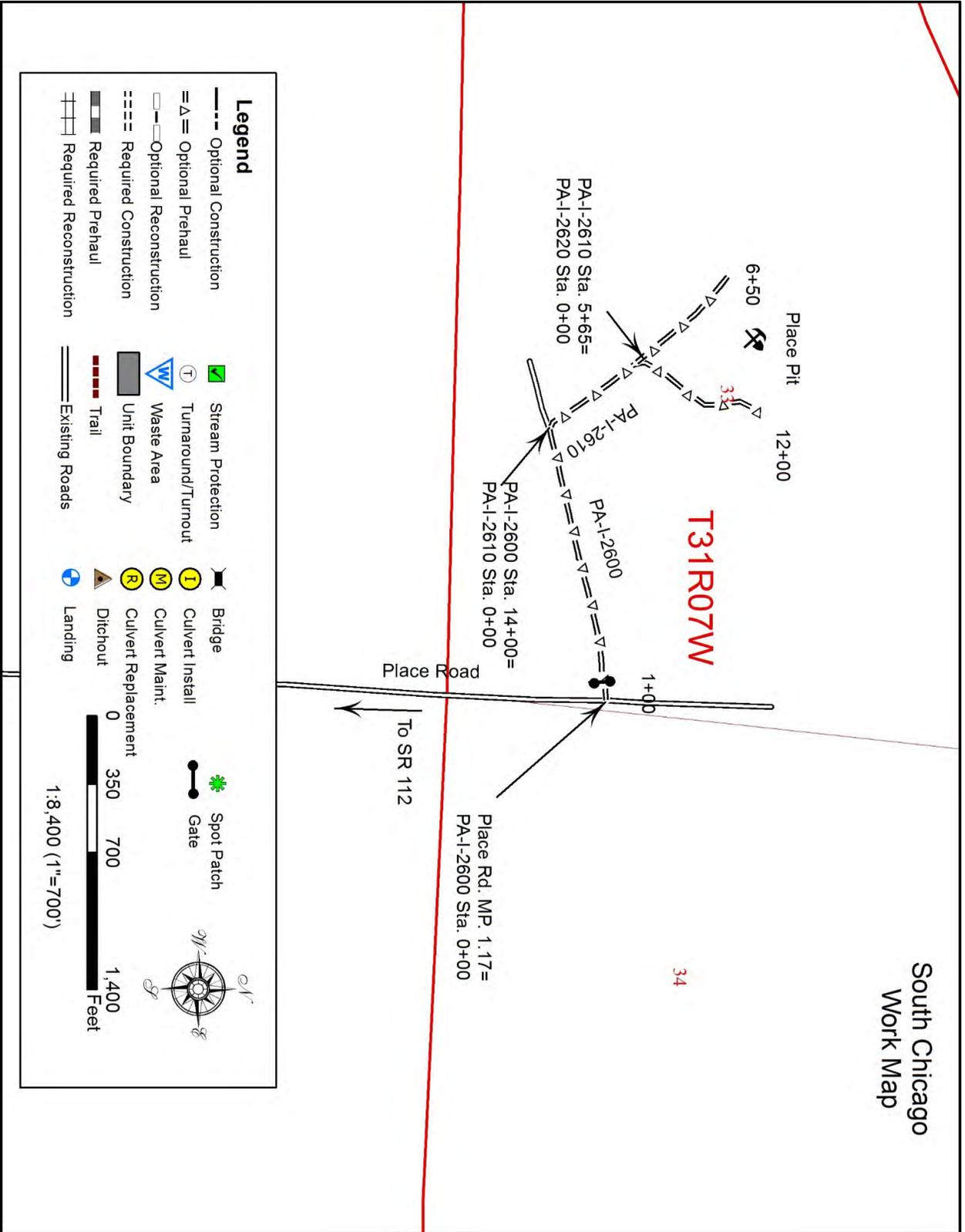




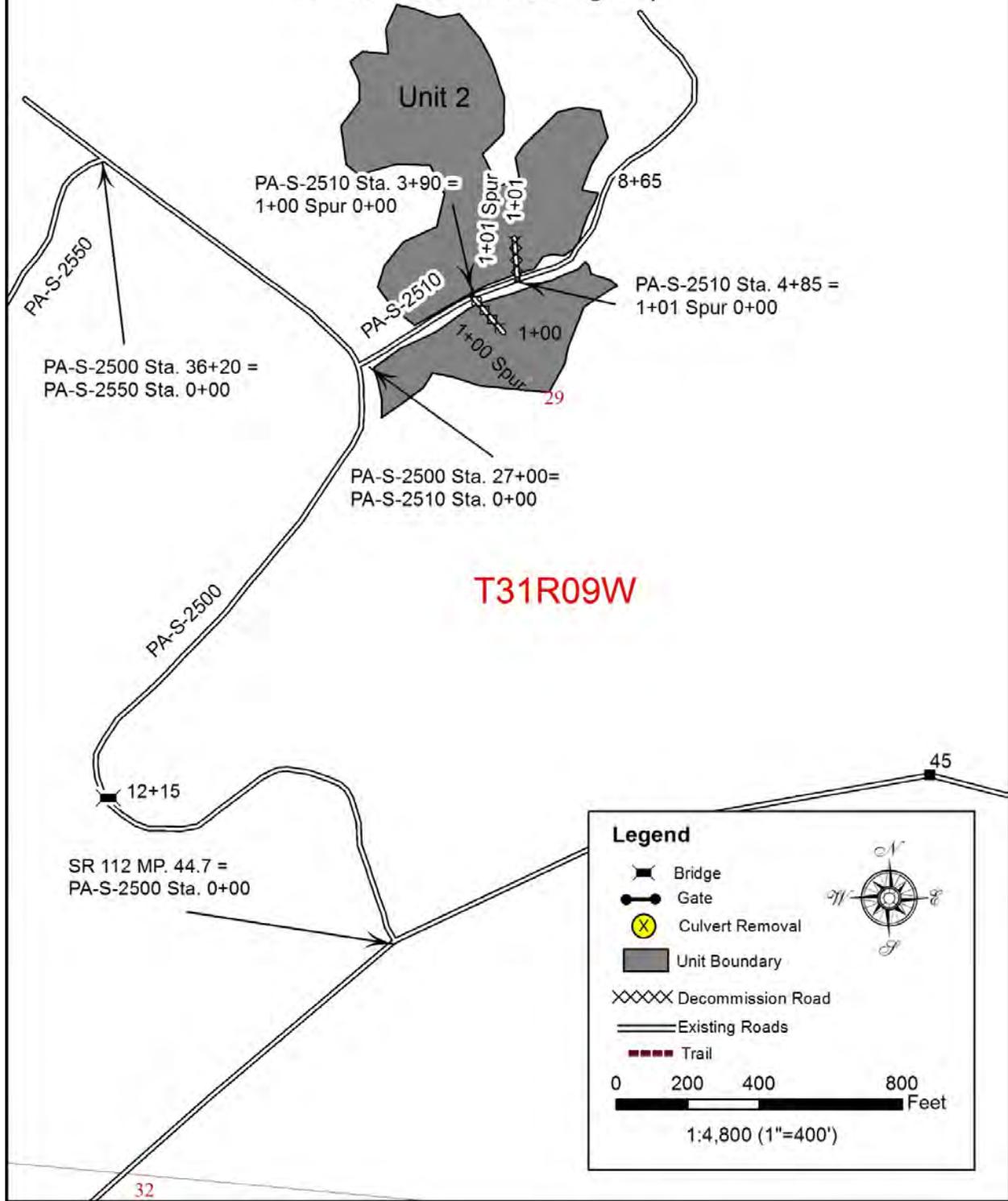


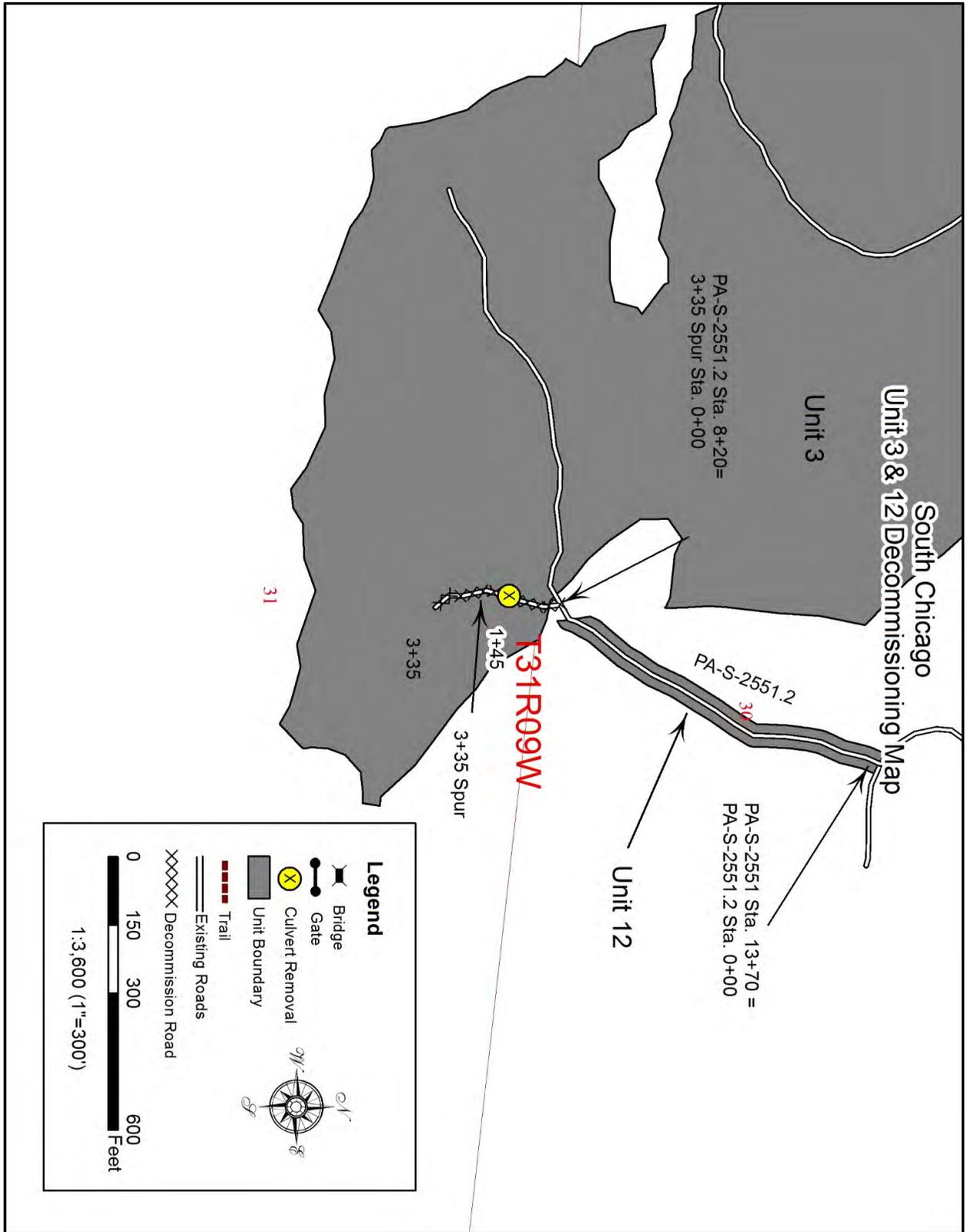


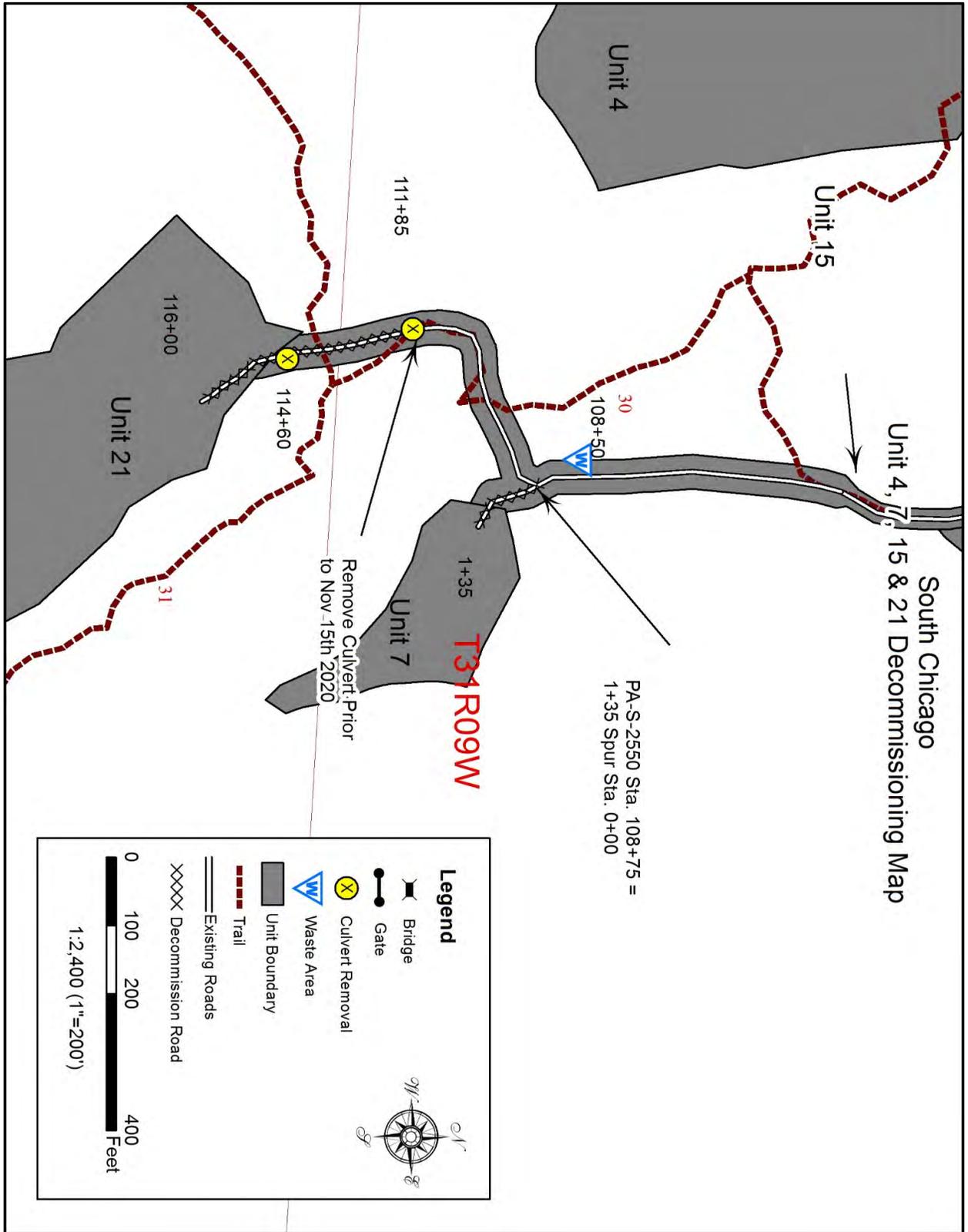
South Chicago  
Work Map

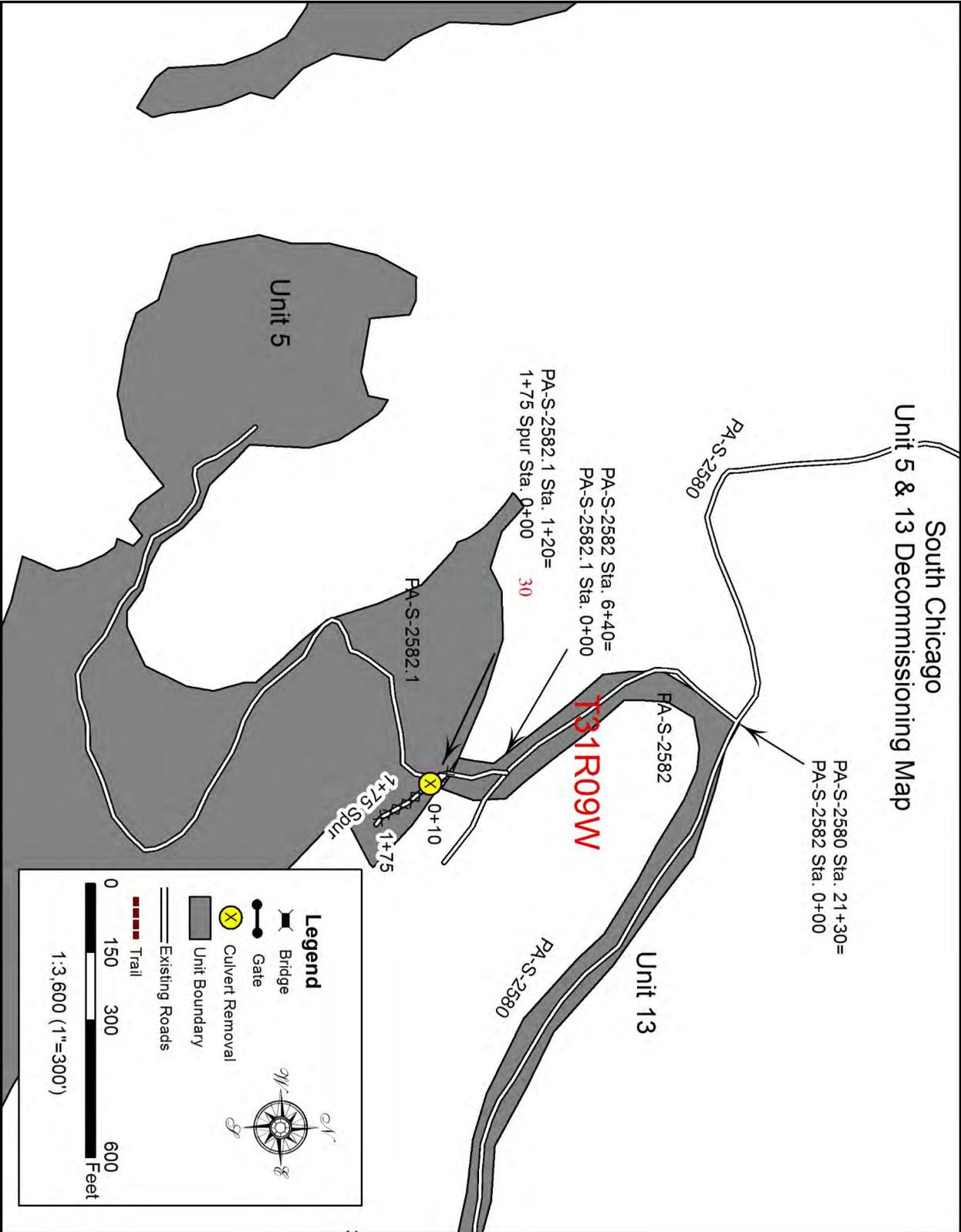


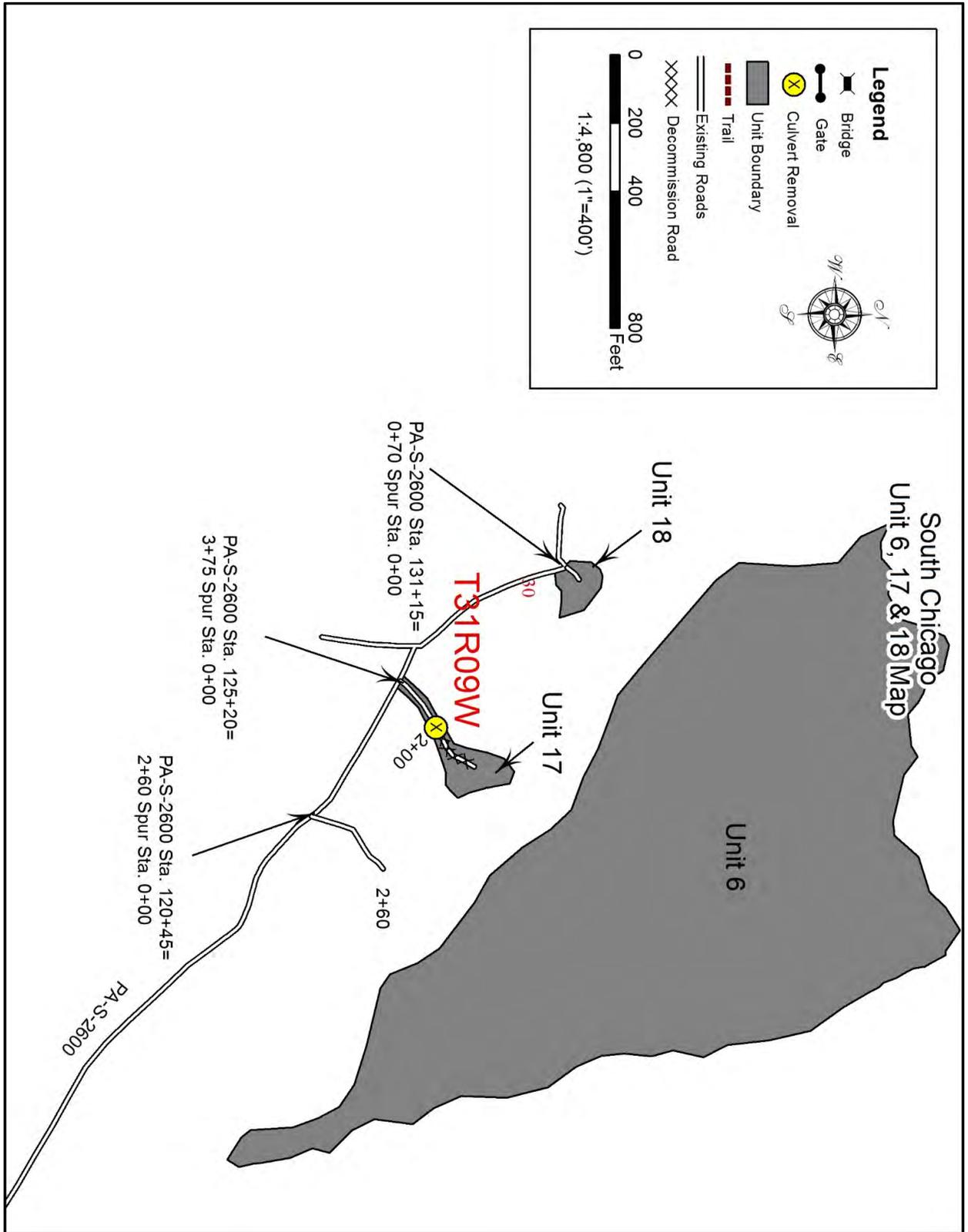
# South Chicago Unit 2 Decommissioning Map











## SECTION 0 – SCOPE OF PROJECT

### 0-1 ROAD PLAN SCOPE

Clauses in this road plan apply to all road related work, including landings and rock source development, unless otherwise noted.

### 0-2 REQUIRED ROADS

The specified work on the following roads is required.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
PA-J-5000	0+00 – 108+60	Pre-haul Maintenance
PA-J-5015	0+00 – 23+00	Pre-haul Maintenance
PA-J-5015	23+00 – 31+00	Reconstruction
PA-J-5016	0+00 – 9+50	Reconstruction
PA-J-5017	0+00 – 19+35	Reconstruction
PA-J-5020	0+00 – 26+15	Pre-haul Maintenance
PA-J-5025	0+00 – 10+00	Pre-haul Maintenance
PA-J-5400	0+00 – 32+30	Pre-haul Maintenance
PA-J-5400	32+30 – 42+40	Construction
PA-J-5400	42+40 – 46+40	Reconstruction
PA-J-5410	0+00 – 12+60	Construction
PA-J-5500	0+00 – 47+35	Pre-haul Maintenance
PA-J-5700 A	0+00 – 19+00	Pre-haul Maintenance
Agate Pit Road	0+00 – 3+00	Pre-haul Maintenance
PA-S-2500	0+00 – 36+20	Pre-haul Maintenance
PA-S-2510	0+00 – 8+65	Pre-haul Maintenance
PA-S-2550	0+00 – 104+10	Pre-haul Maintenance
PA-S-2550	104+10 – 108+75	Construction
1+35 Spur	0+00 – 1+35	Construction
PA-S-2551	0+00 – 13+70	Pre-haul Maintenance
PA-S-2551.2	0+00 – 18+30	Construction
PA-S-2553	0+00 – 13+55	Reconstruction
PA-S-2553.2	0+00 – 7+00	Construction
PA-S-2554	0+00 – 5+45	Reconstruction
PA-S-2554	5+45 – 32+45	Construction
PA-S-2554.1	0+00 – 8+70	Construction
PA-S-2554.2	0+00 – 12+55	Construction
PA-S-2555	0+00 – 14+00	Pre-haul Maintenance
PA-S-2555.2	0+00 – 5+45	Reconstruction
PA-S-2555.2	5+45 – 18+40	Construction
PA-S-2580	21+30 – 39+30	Reconstruction
PA-S-2582	0+00 – 6+40	Reconstruction

PA-S-2582.1	0+00 – 24+35	Construction
PA-S-2600	0+00 – 131+15	Pre-haul Maintenance
PA-S-2610	0+00 – 31+85	Pre-haul Maintenance
PA-S-2640	0+00 – 13+40	Construction
2+60 Spur	0+00 – 2+60	Construction
3+75 Spur	0+00 – 3+75	Construction
0+70 Spur	0+00 – 0+70	Construction
PA-S-1000	0+00 – 81+15	Pre-haul Maintenance
PA-S-1100	0+00 – 16+75	Pre-haul Maintenance
PA-S-1200	0+00 – 77+35	Pre-haul Maintenance
PA-S-1280	0+00 – 2+80	Pre-haul Maintenance
PA-S-1280	2+80 – 18+50	Construction

### 0-3 OPTIONAL ROADS

The specified work on the following roads is not required. Any optional roads built by the Purchaser must meet all the specifications in the road plan.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
PA-J-5017	19+35 – 24+30	Construction
PA-J-5017.1	0+00 – 1+35	Reconstruction
PA-J-5017.2	0+00 – 3+00	Reconstruction
PA-J-5018	0+00 – 4+40	Construction
1+00 Spur	0+00 – 1+00	Construction
1+01 Spur	0+00 – 1+01	Construction
PA-S-2550	108+75 – 116+00	Construction
3+35 Spur	0+00 – 3+35	Construction
1+75 Spur	0+00 – 1+75	Construction
PA-S-2610	31+85 – 34+20	Pre-haul Maintenance
PA-S-2612	0+00 – 5+05	Construction
5+70 Spur	0+00 – 1+10	Pre-haul Maintenance
5+70 Spur	1+10 – 5+70	Construction
PA-S-1281	0+00 – 7+30	Construction
PA-I-2600	0+00 – 14+00	Pre-haul Maintenance
PA-I-2610	0+00 – 12+00	Pre-haul Maintenance
PA-I-2620	0+00 – 6+50	Pre-haul Maintenance

**0-4 CONSTRUCTION**

This project includes, but is not limited to the following construction requirements:

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
PA-J-5017	19+35 – 24+30	See Below
PA-J-5018	0+00 – 4+40	
PA-J-5400	32+30 – 42+40	
PA-J-5410	0+00 – 12+60	
1+00 Spur	0+00 – 1+00	
1+01 Spur	0+00 – 1+01	
PA-S-2550	104+10 – 108+75	
PA-S-2550	108+75 – 116+00	
1+35 Spur	0+00 – 1+35	
PA-S-2551.2	0+00 – 18+30	
3+35 Spur	0+00 – 3+35	
PA-S-2553.2	0+00 – 7+00	
PA-S-2554	5+45 – 32+45	
PA-S-2554.1	0+00 – 8+70	
PA-S-2554.2	0+00 – 12+55	
PA-S-2555.2	5+45 – 18+40	
PA-S-2582.1	0+00 – 24+35	
1+75 Spur	0+00 – 1+75	
PA-S-2612	0+00 – 5+05	
5+70 Spur	1+10 – 5+70	
PA-S-2640	0+00 – 13+40	
2+60 Spur	0+00 – 2+60	
3+75 Spur	0+00 – 3+75	
0+70 Spur	0+00 – 0+70	
PA-S-1280	2+80 – 18+50	
PA-S-1281	0+00 – 7+30	
Total Stations	216.36 Stations	

Construction includes, but is not limited to: Clearing, grubbing, right-of-way debris disposal, excavation and/or embankment to subgrade, end hauling material for construction, compacting road surfaces, constructing ditchlines, constructing ditchouts, constructing turnouts and turnarounds, curve widening, acquisition and installation of drainage structures, application of rock, spreading grass seed and hay.

**0-5 RECONSTRUCTION**

This project includes, but is not limited to the following reconstruction requirements:

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
PA-J-5015	23+00 – 31+00	See Below
PA-J-5016	0+00 – 9+50	
PA-J-5017	0+00 – 19+35	
PA-J-5017.1	0+00 – 1+35	
PA-J-5017.2	0+00 – 3+00	
PA-J-5400	42+40 – 46+40	
PA-S-2553	0+00 – 13+55	
PA-S-2554	0+00 – 5+45	
PA-S-2555.2	0+00 – 5+45	
PA-S-2580	21+30 – 39+30	
PA-S-2582	0+00 – 6+40	
Total Stations	94.05 Stations	

Reconstruction includes, but is not limited to: Removal of all vegetative material with minimum loss or rock and dispose of in accordance with Clause 2-9 and Clause 3-23. Cleaning ditches and constructing ditches, constructing headwalls, cleaning culvert inlets and outlets in accordance with Clause 2-6 and Clause 2-7. Installing additional culverts and replacing culverts in accordance with the culvert list. Grading, shaping and compacting existing road surface, turnouts and turnaround in accordance with Clause 2-5, realigning road segments, spreading grass seed and hay, and the application of rock in accordance with the Rock List.

**0-6 PRE-HAUL MAINTENANCE**

This project includes, but is not limited to the following pre-haul maintenance requirements:

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
PA-J-5000	0+00 – 108+60	Grade, shape and compact existing running surface in accordance to Clause 2-5, apply rock in accordance with Rock list. Install culverts in accordance with culvert list and paint gate in accordance with Clause 7-75.
PA-J-5015	0+00 – 23+00	Grade, shape and compact existing running surface in accordance to Clause 2-5 as directed by contract administrator and apply rock in accordance with Rock List.

PA-J-5020	0+00 – 26+15	Remove all vegetative material with a minimum loss of rock and dispose of in accordance with Clause 2-9 and Clause 3-23, grade, shape and compact existing running surface in accordance with Clause 2-5, apply rock in accordance with Rock list, install culverts in accordance with culvert list, clean/construct ditch lines in accordance with Clause 2-7 and add turnouts/turnarounds.
PA-J-5025	0+00 – 10+00	Remove all vegetative material with a minimum loss of rock and dispose of in accordance with Clause 2-9 and Clause 3-23, grade, shape and compact existing running surface in accordance with Clause 2-5, apply rock in accordance with Rock list, install culverts in accordance with culvert list and add turnouts/turnarounds.
PA-J-5400	0+00 – 32+30	Grade, shape and compact existing running surface in accordance to Clause 2-5 as directed by contract administrator, apply rock in accordance with Rock List and perform gate maintenance in accordance with Clause 7-75.
PA-J-5500	0+00 – 47+35	Grade, shape and compact existing running surface in accordance to Clause 2-5 as directed by contract administrator, apply rock in accordance with Rock List and perform gate maintenance in accordance with Clause 7-75.
PA-J-5700 A	0+00 – 19+00	Grade, shape and compact existing running surface in accordance to Clause 2-5 as directed by contract administrator and apply rock in accordance with Rock List.
Agate Pit Road	0+00 – 3+00	Grade, shape and compact existing running surface in accordance to Clause 2-5 as directed by contract

		administrator and apply rock in accordance with Rock List.
PA-S-2500	0+00 – 36+20	Grade, shape and compact existing running surface in accordance to Clause 2-5, apply rock in accordance with Rock list.
PA-S-2510	0+00 – 8+65	Grade, shape and compact existing running surface in accordance to Clause 2-5, apply rock in accordance with Rock list.
PA-S-2550	0+00 – 84+00	Grade, shape and compact existing running surface in accordance to Clause 2-5, apply rock in accordance with Rock list. Brush road in accordance with Clause 3-1 and perform gate maintenance in accordance with Clause 7-75.
PA-S-2550	84+00 – 104+10	Remove all vegetative material with a minimum loss of rock and dispose of in accordance with Clause 2-9 and Clause 3-23, grade, shape and compact existing running surface in accordance with Clause 2-5, apply rock in accordance with Rock list, install culverts in accordance with culvert list, clean/construct ditch lines in accordance with Clause 2-7, construct ditchouts in accordance with Clause 4-29 and add turnouts/turnarounds.
PA-S-2551	0+00 -13+70	Grade, shape and compact existing running surface in accordance to Clause 2-5, apply rock in accordance with Rock list.
PA-S-2555	0+00 – 14+00	Grade, shape and compact existing running surface in accordance to Clause 2-5, apply rock in accordance with Rock list. Brush road in accordance with Clause 3-1.
PA-S-2600	0+00 – 131+15	Grade, shape and compact existing running surface in accordance to Clause 2-5, apply rock in accordance with Rock list and perform gate

		maintenance in accordance with Clause 7-75.
PA-S-2610	0+00 – 31+85	Remove all vegetative material with a minimum loss of rock and dispose of in accordance with Clause 2-9 and Clause 3-23, grade, shape and compact existing running surface in accordance with Clause 2-5, apply rock in accordance with Rock list, install culverts in accordance with culvert list, clean/construct ditch lines in accordance with Clause 2-7, apply sediment control in accordance with Clause 8-1 and add turnouts/turnarounds.
PA-S-2610	31+85 – 34+20	Remove all vegetative material with a minimum loss of rock and dispose of in accordance with Clause 2-9 and Clause 3-23, grade, shape and compact existing running surface in accordance with Clause 2-5 as directed by contract administrator, apply rock in accordance with Rock list.
5+70 Spur	0+00 – 1+10	Grade, shape and compact existing running surface in accordance to Clause 2-5, apply rock in accordance with Rock list. Install culverts in accordance with culvert list, clean/construct ditch lines in accordance with Clause 2-7. Brush road in accordance with Clause 3-1.
PA-S-1000	0+00 – 81+15	Grade, shape and compact existing running surface in accordance to Clause 2-5 as directed by contract administrator, apply rock in accordance with Rock List and paint gate in accordance with Clause 7-75.
PA-S-1100	0+00 – 16+75	Grade, shape and compact existing running surface in accordance to Clause 2-5 as directed by contract administrator and apply rock in accordance with Rock List.

PA-S-1200	0+00 – 77+35	Grade, shape and compact existing running surface in accordance to Clause 2-5 as directed by contract administrator, apply rock in accordance with Rock List and perform gate maintenance in accordance with Clause 7-75.
PA-S-1280	0+00 – 2+80	Grade, shape and compact existing running surface in accordance to Clause 2-5, apply rock in accordance with Rock list. Install culverts in accordance with culvert list, clean/construct ditch lines in accordance with Clause 2-7. Brush road in accordance with Clause 3-1.
PA-I-2600	0+00 – 14+00	Grade, shape and compact existing running surface in accordance to Clause 2-5 as directed by contract administrator and perform gate maintenance in accordance with Clause 7-75.
PA-I-2610	0+00 – 12+00	Grade, shape and compact existing running surface in accordance to Clause 2-5 as directed by contract administrator.
PA-I-2620	0+00 – 6+50	Grade, shape and compact existing running surface in accordance to Clause 2-5 as directed by contract administrator.
<b>Total Stations</b>	<b>823.05 Stations</b>	

Pre-haul maintenance includes, but is not limited to: Brushing right-of-way, right-of-way debris disposal, cleaning ditches, constructing ditches, installing additional culverts, widening road segments, constructing headwalls, cleaning culvert inlets and outlets, cross drain culvert replacements, installing erosion control materials and sediment removal structures, spot rocking, grading and shaping existing road surface and turnouts, constructing additional turnouts, compaction of road surface, application of rock, acquisition and application of grass seed and hay.

**0-7 POST-HAUL MAINTENANCE**

This project includes post-haul road maintenance listed in Clause 9-5 POST-HAUL MAINTENANCE.

**0-9 DECOMMISSIONING**

This project includes decommissioning listed in Clause 9-20 ROAD DECOMMISSIONING.

**0-12 DEVELOP ROCK SOURCE**

Purchaser shall develop existing rock source called Agate Pit. Rock source development will involve drilling and shooting to obtain a minimum of 20,750 yds<sup>3</sup> of Clean rock, Shot Ballast, the manufacture of a minimum of 25,030 yds<sup>3</sup> of 3" minus Jaw Run Rock in accordance with Clause 6-20.

Purchaser shall develop a new rock source called Arm Pit. Rock source development will involve stripping approximately 0.5 acre to useable rock as determined by the Contract Administrator to obtain Borrow material.

Work for developing rock sources is listed in Section 6 ROCK AND SURFACING.

**0-13 STRUCTURES**

Purchaser shall install a log stringer bridge and fish culvert as part of South Chicago Sorts Timber Sale. Requirements for these structures are listed in Section 7 STRUCTURES.

**SECTION 1 – GENERAL**

**1-1 ROAD PLAN CHANGES**

If the Purchaser desires a change from this road plan including, but not limited to, relocation, extension, change in design, or adding roads; a revised road plan must be submitted in writing to the Contract Administrator for consideration. Before work begins, Purchaser shall obtain approval from the State for the submitted plan.

**1-2 UNFORESEEN CONDITIONS**

Quantities established in this road plan are minimum acceptable values. Additional quantities required by the state due to unforeseen conditions, or Purchaser's choice of construction season or techniques will be at the Purchaser's expense. Unforeseen conditions include, but are not limited to, solid subsurface rock, subsurface springs, saturated ground, and unstable soils.

**1-3 ROAD DIMENSIONS**

Purchaser shall perform road work in accordance with the dimensions shown on the TYPICAL SECTION SHEET and the specifications within this road plan, unless controlled by construction stakes or design data (plan, profile, and cross-sections).

**1-4 ROAD TOLERANCES**

Purchaser shall perform road work within the tolerances listed below. The tolerance class for each road is listed on the TYPICAL SECTION SHEET.

<u>Tolerance Class</u>	<u>A</u>	<u>B</u>	<u>C</u>
Road and Subgrade Width (feet)	+1.5	+1.5	+2.0
Subgrade Elevation (feet +/-)	0.5	1.0	2.0
Centerline alignment (feet lt./rt.)	1.0	1.5	3.0

**1-5 DESIGN DATA**

Log Stringer Bridge, Fish Culvert and Road design data is available upon request at the Department of Natural Resources Straits District Office in Port Angeles, WA.

**1-6 ORDER OF PRECEDENCE**

Any conflict or inconsistency in the road plan will be resolved by giving the documents precedence in the following order:

1. Addenda.
2. Designs or Plans. On designs and plans, figured dimensions shall take precedence over scaled dimensions.
3. Road Plan Clauses.
4. Typical Section Sheet.
5. Standard Lists.
6. Standard Details.
7. Road Planmaps.

In case of any ambiguity or dispute over interpreting the road plan, the Contract Administrator’s or designee’s decision will be final.

**1-8 REPAIR OR REPLACEMENT OF DAMAGED MATERIALS**

Purchaser shall repair or replace all materials, roadway infrastructure, and road components damaged during road work or operation activities. The Contract Administrator will direct repairs and replacements. Repairs to structural materials must be made in accordance with the manufacturer’s recommendation, and may not begin without written approval from the Contract Administrator.

**1-9 DAMAGED METALLIC COATING**

Any cut ends, or damaged galvanized or aluminized coating on existing or new bridge components, culverts, downspouts, and flumes must be cleaned and treated with a minimum of two coats of zinc rich paint or cold galvanizing compound.

**1-10 WSDOT STANDARD SPECIFICATION REFERENCE**

References in this road plan to “WSDOT Standard Specifications” mean the Washington State Department of Transportation’s Standard Specifications for Road, Bridge, and Municipal Construction 2012 (M41-10).

**1-11 FPHP REQUIREMENTS**

The following work is subject to requirements under a Forest Practice Hydraulics Project Approval issued by the State of Washington.

<u>Road</u>	<u>Stations</u>	<u>Work Type</u>
PA-J-5020	10+92	Fish Culvert Installation
PA-S-2610	9+80	Log Strigger Bridge Installation

**1-12 SURVEY MONUMENTS**

At no time during construction, reconstruction, or maintenance shall survey monuments, witness trees, or bearing trees be disturbed or damaged. If damaged or disturbed, Purchaser shall hire a licensed land surveyor to repair, replace, and/or reset them.

**1-13 LOG LOADING**

At no time shall the loading of logs occur on the PA-S-2500 and PA-S-2510 road. In addition, no debris from harvesting operations shall be allowed on this road.

**1-14 NON-SALE ASSOCIATED CLOSURE**

Culvert and fill replacement work is currently scheduled to take place on the PA-J-5000 sometime during the hydraulic season of 2021 starting as early as June 15<sup>th</sup> 2021, which will result in the road being closed indefinitely from stations 23+15 to 80+15. State shall give at least 2 weeks notice to Purchaser before closure begins.

SUBSECTION ROAD MARKING

**1-15 ROAD MARKING**

Purchaser shall perform road work in accordance with the state’s marked location. All road work is marked as follows:

- Orange ribbon and paint for construction centerlines.
- Construction stakes for everything else.

**1-16 CONSTRUCTION STAKES SET BY STATE**

Purchaser shall perform work on the following road(s) in accordance with the construction stakes set in the field for grade and alignment.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
PA-S-2554	11+10 – 24+77	New Construction Centerline Stakes

**1-18 REFERENCE POINT DAMAGE**

Purchaser shall reset reference points (RPs) that were moved or damaged at any time during construction to their original locations. Excavation and embankment may not proceed on road segments controlled by said RPs until Purchaser resets all moved or damaged RPs.

SUBSECTION TIMING

**1-20 COMPLETE BY DATE**

Purchaser shall complete reconstruction, construction and pre-haul road work before the start of timber haul.

Purchaser shall complete reconstruction, construction and pre-haul work before 6/1/2021 on the PA-J-5000, PA-J-5020, PA-J-5400 and the PA-J-5410.

Purchaser shall completed decommissioning on the PA-S-2550 before 11/15/2020. Purchaser shall completed decommissioning on the 3+75 Spur before 10/31/2021.

**1-21 HAUL APPROVAL**

Purchaser shall not use roads under this road plan without written approval from the Contract Administrator.

**1-22 WORK NOTIFICATIONS**

Purchaser shall notify the Contract Administrator a minimum of 3 business days before work begins.

**1-23 ROAD WORK PHASE APPROVAL**

Purchaser shall obtain written approval from the Contract Administrator upon completion of each of the following phases of road work:

- Subgrade construction
- Drainage installation
- Subgrade compaction
- Rock application
- Rock compaction

**SUBSECTION RESTRICTIONS**

**1-25 ACTIVITY TIMING RESTRICTION**

On the following road(s), are not allowed during the listed closure period(s) unless authorized in writing by the Contract Administrator.

<u>Road</u>	<u>Stations</u>	<u>Activity</u>	<u>Closure Period</u>
All	All	All	Weekends and State Recognized Holidays
All	All	All roadwork activities including rock haul and rock pit development.	November 1 <sup>st</sup> – March 1 <sup>st</sup>

**1-26 OPERATING DURING CLOSURE PERIOD**

If permission is granted to operate during a closure period listed in Clause 1-25 ACTIVITY TIMING RESTRICTION or Contract Clause H-130 HAULING SCHEDULE, Purchaser shall provide a maintenance plan to include further protection of state resources. Purchaser shall obtain written approval from the Contract Administrator for the maintenance plan, and shall put preventative measures in place before operating during the closure period. Purchaser is required to maintain all haul roads at their own expense including those listed in Contract Clause C-060 DESIGNATED ROAD MAINTAINER. If other operators are using, or desire to use these designated maintainer roads, a joint operating plan must be developed. All parties shall follow this plan.

**1-27 TIMING RESTRICTION FOR MARBLED MURRELET**

On the following road(s), timber felling, road work or operation of heavy equipment performed during the marbled murrelet nesting season (April 1 through September 23), is restricted to, two hours after sunrise to two hours before sunset. This does not apply to hauling timber, rock or equipment.

<u>Road</u>	<u>Stations</u>
PA-I-2600, PA-I-2610, PA-I-2620	All
Place Pit	All

**1-29 SEDIMENT RESTRICTION**

Purchaser shall not allow silt-bearing runoff to enter any streams.

### **1-30 CLOSURE TO PREVENT DAMAGE**

In accordance with Contract Clause G-220 STATE SUSPENDS OPERATION, the Contract Administrator will suspend road work or hauling right-of-way timber, forest products, or rock under the following conditions:

- Wheel track rutting exceeds 6 inches on jaw run and pit run roads.
- Wheel track rutting exceeds 4 inches on crushed rock roads.
- Wheel track rutting exceeds 4 inches on native surface roads.
- Surface or base stability problems persist.
- Weather is such that satisfactory results cannot be obtained in an area of operations.
- When, in the opinion of the Contract Administrator excessive road damage or rutting may occur.

Operations must stop unless authority to continue working or hauling is granted in writing by the Contract Administrator. In the event that surface or base stability problems persist, Purchaser shall cease operations, or perform corrective maintenance or repairs, subject to specifications within this road plan. Before and during any suspension, Purchaser shall protect the work from damage or deterioration.

### **1-32 BRIDGE AND ASPHALT SURFACE RESTRICTION**

The use of metal tracked equipment is not allowed on concrete bridge or asphalt surfaces at any time. If Purchaser must run equipment on concrete bridge or asphalt surfaces, then rubber tired equipment or other methods, approved in writing by Contract Administrator, must be used.

If tracked equipment is used on concrete bridge or asphalt surfaces, Purchaser shall immediately cease all road construction and hauling operations. Purchaser shall remove any dirt, rock, or other material tracked or spilled on the concrete bridge or asphalt surface(s) and have surface(s) evaluated by the District Engineer or their designee for any damage caused by transporting equipment. Any damage to the surface(s) will be repaired, at the Purchaser's expense, as directed by the Contract Administrator.

### **1-33 SNOW PLOWING RESTRICTION**

On the following road(s), snowplowing will be allowed after the execution of a SNOW PLOWING AGREEMENT, which is available from the Contract Administrator upon request. Purchaser shall request a SNOW PLOWING AGREEMENT each time plowing occurs. If damage occurs while plowing, further permission to plow may be revoked by the Contract Administrator.

SUBSECTION OTHER INFRASTRUCTURE

**1-40 ROAD APPROACHES TO COUNTY ROADS AND STATE HIGHWAYS**

Purchaser shall immediately remove any mud, dirt, rock, or other material tracked or spilled on to county roads and state highways.

If additional damage to the surface, signs, guardrails, etc. occurs then the damage will be repaired, at the Purchaser’s expense, as directed by the Contract Administrator when authorized by the county or WSDOT.

The following county roads and state highways are affected by this sale:

<u>Road Name</u>
SR 112
Place Road
Crescent Beach Road

**1-41 REQUIREMENTS FOR PAVED ROAD APPROACHES**

Requirements for all paved road approaches associated with this sale:

Purchaser shall build up approaches to allow a smooth grade transition between the DNR roads and all paved roads associated with this sale. The top of the DNR road surfacing must be kept level with the surface of all paved roads associated with this sale at all times. The surface of the DNR road approaches must slope from the edge of the paved roads at the rate of 2% , unless otherwise directed by the Contract Administrator.

**1-42 UTILITY ACCESS ROAD**

The following road(s) intersect(s) existing utility access roads. Purchaser shall conduct road work on the intersecting roads so that the utility access roads are accessible at all times.

<u>Road</u>	<u>Stations</u>
PA-S-1000	0+00 – 45+00
PA-S-1100	0+00 – 16+75
PA-S-1200	0+00 – 56+05

**1-43 ROAD WORK AROUND UTILITIES**

Road work is in close proximity to a utility. Known utilities are listed, but it is the Purchaser’s responsibility to identify any utilities not listed. Purchaser shall work in accordance with all applicable laws or rules concerning utilities. Purchaser is responsible for all notification, including “call before you dig”, and liabilities associated with the utilities and their rights-of-way.

<u>Road</u>	<u>Stations</u>	<u>Utility</u>	<u>Utility Contact</u>
PA-S-1000	43+00 – 45+00	Overhead BPA	811
PA-S-1100	28+10 – 29+30	Overhead BPA	811
PA-S-1200	27+60 – 29+55, 43+50 – 49+20	Overhead BPA	811
PA-S-2500	0+00 – 36+20	Possible Underground Communication	811

## SECTION 2 – MAINTENANCE

### 2-1 GENERAL ROAD MAINTENANCE

Purchaser shall maintain all roads used under this contract in accordance with the FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS for the entire term of this contract. Maintenance is required even during periods of inactivity.

### 2-2 ROAD MAINTENANCE – PURCHASER MAINTENANCE

Purchaser shall perform maintenance on roads listed in Contract Clause C-050 PURCHASER ROAD MAINTENANCE AND REPAIR in accordance with FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS.

### 2-3 ROAD MAINTENANCE – DESIGNATED MAINTAINER

Purchaser may be required to perform maintenance on roads listed in Contract Clause C-060 DESIGNATED ROAD MAINTAINER as directed by the Contract Administrator. Purchaser shall maintain roads in accordance with FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS.

### 2-4 PASSAGE OF LIGHT VEHICLES

Purchaser shall maintain road(s) in a condition that will allow the passage of light administrative vehicles.

### 2-5 MAINTENANCE GRADING – EXISTING ROAD

On the following road(s), Purchaser shall use a grader to shape the existing surface.

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
PA-J-5000	0+00 – 108+60	Grade, shape, compact and remove shoulder vegetation.
PA-J-5015	0+00 – 23+00	Grade, shape, compact and remove shoulder vegetation as required by contract administrator.
PA-J-5020	0+00 – 26+15	Grade, shape, compact and remove shoulder vegetation.
PA-J-5025	0+00 – 10+00	Grade, shape, compact and remove shoulder vegetation.

PA-J-5400	0+00 – 32+30	Grade, shape, compact and remove shoulder vegetation as required by contract administrator.
PA-J-5500	0+00 – 47+35	Grade, shape, compact and remove shoulder vegetation as required by contract administrator.
PA-J-5700 A	0+00 – 19+00	Grade, shape, compact and remove shoulder vegetation as required by contract administrator.
Agate Pit Road	0+00 – 3+00	Grade, shape, compact and remove shoulder vegetation as required by contract administrator.
PA-S-2500	0+00 – 36+20	Grade, shape, compact and remove shoulder vegetation.
PA-S-2510	0+00 – 8+65	Grade, shape, compact and remove shoulder vegetation.
PA-S-2550	0+00 – 104+10	Grade, shape, compact and remove shoulder vegetation.
PA-S-2551	0+00 – 13+70	Grade, shape, compact and remove shoulder vegetation.
PA-S-2555	0+00 – 14+00	Grade, shape, compact and remove shoulder vegetation.
PA-S-2600	0+00 – 131+15	Grade, shape, compact and remove shoulder vegetation.
PA-S-2610	0+00 – 31+85	Grade, shape, compact and remove shoulder vegetation.
PA-S-2610	31+85 – 34+20	Grade, shape, compact and remove shoulder vegetation as required by contract administrator.
5+70 Spur	0+00 – 1+10	Grade, shape, compact and remove shoulder vegetation.
PA-S-1000	0+00 – 81+15	Grade, shape, compact and remove shoulder vegetation as required by contract administrator.
PA-S-1100	0+00 – 16+75	Grade, shape, compact and remove shoulder vegetation as required by contract administrator.
PA-S-1200	0+00 – 77+35	Grade, shape, compact and remove shoulder vegetation as required by contract administrator.
PA-S-1280	0+00 – 2+80	Grade, shape, compact and remove shoulder vegetation.

PA-I-2600	0+00 – 14+00	Grade, shape, compact and remove shoulder vegetation as required by contract administrator.
PA-I-2610	0+00 – 12+00	Grade, shape, compact and remove shoulder vegetation as required by contract administrator.
PA-I-2620	0+00 – 6+50	Grade, shape, compact and remove shoulder vegetation as required by contract administrator.

## 2-6 CLEANING CULVERTS

On the following road(s), Purchaser shall clean the inlets and outlets of all culverts and shall obtain written approval from the Contract Administrator before start of timber haul.

<u>Road</u>	<u>Stations</u>
PA-J-1700	4+25
PA-S-2600	95+75
PA-S-2610	3+55, 7+00, 13+10, 14+85, 19+80, 22+35, 27+25

## 2-7 CLEANING DITCHES, HEADWALLS, AND CATCH BASINS

On the following road(s), Purchaser shall clean and/or construct ditches, headwalls, and catchbasins. Work must be completed before the start of timber haul and must be done in accordance with the Typical Section Sheet. Pulling ditch material across the road or mixing in with the road surface is not allowed. Ditchlines, headwalls, and catch basins shall not encroach into the existing road.

<u>Road</u>	<u>Stations</u>	<u>Left and/or Right</u>	<u>Comments</u>
PA-J-1500	23+00 – 31+00	Left	Ditching
PA-J-5016	0+00 – 9+50	Left	Ditching
PA-J-5017	0+00 – 19+35	Right	Ditching
PA-J-5017.1	0+00 – 1+00	Left	Ditching
PA-J-5017.2	0+50 – 1+35	Left and Right	Ditching
PA-J-5020	0+00 – 26+15	Left	Ditching
PA-S-2550	84+00 – 104+10	Right	Ditching
PA-S-2553	0+00 – 13+55	Left	Ditching
PA-S-2553	5+30 – 7+00	Right	Ditching
PA-S-2553	5+30	Left and Right	Catch Basin Install x 2
PA-S-2554	0+00 – 5+45	Left	Ditching
PA-S-2555.2	0+00 – 5+45	Left	Ditching
PA-S-2580	21+30 – 23+70	Left	Ditching

PA-S-2580	21+30 – 39+30	Right	Ditching
PA-S-2580	32+20	Right	Catch Basin Install x 2
PA-S-2580	33+50	Left and Right	Catch Basin Install x 2
PA-S-2582	0+10 – 6+40	Left	Ditching
PA-S-2582	1+80 – 6+40	Right	Ditching
PA-S-2610	0+00 – 34+20	Left	Ditching
PA-S-2610	14+35, 15+35	Left	Catch Basin Install x 2
5+70 Spur	0+00 – 1+10	Left	Ditching
3+75 Spur	1+50	Right	Catch Basin Install x 2
PA-S-1280	0+00 – 2+80	Left	Ditching

**2-9 REMOVING VEGETATIVE MATERIAL**

On the following road(s), Purchaser shall remove all vegetative material, dirt, mud and other debris on the existing road surface with a minimum loss of rock. Material must be disposed of as specified in Clauses 4-35 through 4-38. Purchaser shall remove vegetative debris from the road surface, ditchlines, and culvert inlets and outlets.

<u>Road</u>	<u>Stations</u>
PA-J-5020	0+00 – 26+15
PA-J-5025	0+00 – 10+00
PA-S-2550	84+00 – 104+10
PA-S-2610	0+00 – 34+20

**SECTION 3 – CLEARING, GRUBBING, AND DISPOSAL**

**SUBSECTION BRUSHING**

**3-1 BRUSHING**

On the following road(s), Purchaser shall cut vegetative material up to 5 inches in diameter, including limbs, as shown on the BRUSHING DETAIL. Brushing must be achieved by mechanical cutting of brush, trees, and branches. Root systems and stumps of cut vegetation may not be disturbed unless directed by the Contract Administrator. Purchaser shall remove brushing debris from the road surface, ditchlines, and culvert inlets and outlets.

<u>Road</u>	<u>Stations</u>
PA-S-2550	24+00 – 84+00
PA-S-2555	0+00 – 14+00
PA-S-2555.2	0+00 – 5+45

5+70 Spur	0+00 – 1+10
PA-S-1280	0+00 – 2+80

**3-2 BRUSHING RESTRICTION**

Pulling, digging, pushing over, and other non-cutting methods used for vegetation removal may not be used for brushing. Excavator buckets, log loaders and similar equipment may not be used for brushing unless otherwise approved in writing by the Contract Administrator.

**3-3 BRUSH REMOVAL**

Remove brushing debris from the road surface, ditchlines, and culvert inlets and outlets. Brush should be disposed of so that it will not fall back onto the road prism.

SUBSECTION CLEARING

**3-5 CLEARING**

Purchaser shall fall all vegetative material larger than 5 inches DBH or over 15 feet high between the marked right-of-way boundaries or if not marked in the field, between the clearing limits specified on the TYPICAL SECTION SHEET. Clearing must be completed before starting excavation and embankment.

**3-6 CLEARING WITHIN RIPARIAN AREA AT TYPE 1-3 STREAM CROSSING**

At the following stream crossing location(s), Purchaser shall place a log, with length equal to two (2) times the width of the ordinary high water, from the largest diameter class conifer tree cut from within the Inner Zone (25 feet either side of the stream) in the stream in accordance with the typical riparian strategy stream crossing plan.

<u>Road</u>	<u>Stations</u>	<u>Comments</u>
PA-J-5020	10+92	Fish Culvert Installation

**3-7 RIGHT-OF-WAY DECKING**

Purchaser shall deck all right-of-way timber. Decks must be parallel to the road centerline and placed within the cleared right-of-way. Decks must be free of dirt, limbs, and other right-of-way debris, and removable by standard log loading equipment from the roadbed.

**3-8 PROHIBITED DECKING AREAS**

Purchaser shall not deck right-of-way timber in the following areas:

- Within the grubbing limits.
- Within 50 feet of any stream.
- In locations that interfere with the construction of the road prism.
- In locations that impede drainage.
- On slopes greater than 40%.
- Against standing trees.

SUBSECTION GRUBBING

**3-10 GRUBBING**

Purchaser shall remove all stumps between the grubbing limits specified on the TYPICAL SECTION SHEET. Purchaser shall also remove stumps with undercut roots outside the grubbing limits. Purchaser shall remove stumps using a hydraulic mounted excavator unless authorized in writing by the Contract Administrator. Grubbing must be completed before starting excavation and embankment.

**3-11 GRUBBING WITHIN RIPARIAN AREA AT TYPE 1-3 STREAM CROSSING**

Purchaser shall retain all grubbed stumps (root wads) within the Inner Zone (25 feet either side of the stream) for placement in accordance with the typical riparian strategy stream crossing plan. Three root wads must be placed in or adjacent to the stream channel. The remaining stumps grubbed from the Inner Zone must be placed at least 50 feet from the roadway in the Middle (25 feet to 100 feet from the stream) or the Outer Zones (remaining portion of RMZ).

<u>Road</u>	<u>Stations</u>	<u>Comments</u>
PA-J-5020	10+92	Fish Culvert Installation

**3-12 STUMP PLACEMENT**

Purchaser shall place grubbed stumps outside of the clearing limits, as directed by the Contract Administrator and in compliance with all other clauses in this road plan. Stumps must be positioned upright, with root wads in contact with the forest floor and on stable locations.

**3-13 STUMPS FOR PUNCHEON MATERIAL**

On the following road(s), stumps from within the grubbing limits may be overturned and driven flush with the ground surface for use as subgrade puncheon material.

Road	Stations
1+00 Spur	0+00 – 1+00
1+01 Spur	0+00 – 1+01
1+35 Spur	0+00 – 1+35
3+35 Spur	0+00 – 3+35
1+75 Spur	0+00 – 1+75
2+60 Spur	0+00 – 2+60

## SUBSECTION ORGANIC DEBRIS

### 3-20 ORGANIC DEBRIS DEFINITION

Organic debris is defined as all vegetative material not eligible for removal by Contract Clause G-010 PRODUCTS SOLD AND SALE AREA or G-011 RIGHT TO REMOVE FOREST PRODUCTS AND CONTRACT AREA, that is larger than one cubic foot in volume within the grubbing limits as shown on the TYPICAL SECTION SHEET.

### 3-21 DISPOSAL COMPLETION

Purchaser shall remove organic debris from the road surface, ditchlines, and culvert inlets and outlets. Purchaser shall complete all disposal of organic debris, before the application of rock.

### 3-22 DESIGNATED WASTE AREA FOR ORGANIC DEBRIS

Waste areas for organic debris are located as listed below.

<u>Road</u>	<u>Stations</u>	<u>Disposal Location</u>	<u>Requirements</u>
PA-S-2554	11+10 – 25+00	Waste Areas at Stations 9+75 and 17+00	Deposit organic waste where slopes are not greater than 45% between stations 11+10 – 25+00 into waste areas.
PA-S-2554.2	4+75 – 5+95, 7+20 – 11+40	Waste Area Location 2+95	Deposit organic waste where slopes are not greater than 45% between stations 4+75 – 5+95 and 7+20 – 11+40.

### 3-23 PROHIBITED DISPOSAL AREAS

Purchaser shall not place organic debris in the following areas:

- Within 50 feet of a cross drain culvert.
- Within 100 feet of a live stream, or wetland, unless used to comply with the specifications detailed in the Riparian Strategy, Clause 3-6 CLEARING WITHIN RIPARIAN AREA AT TYPE 1-3 STREAM CROSSING, and Clause 3-11 GRUBBING WITHIN RIPARIAN AREA AT TYPE 1-3 STREAM CROSSING.
- On road subgrades, or excavation and embankment slopes.
- On slopes greater than 45%.
- Within the operational area for cable landings where debris may shift or roll.
- On locations where brush can fall into the ditch or onto the road surface.
- Against standing timber.

### 3-24 BURYING ORGANIC DEBRIS RESTRICTED

Purchaser shall not bury organic debris unless otherwise stated in this plan.

**3-25 SCATTERING ORGANIC DEBRIS**

Purchaser shall scatter organic debris outside of the grubbing limits in accordance with Clause 3-23 unless otherwise detailed in this road plan and as directed by the Contract Administrator.

**SUBSECTION PILE**

**3-32 END HAULING ORGANIC DEBRIS**

On the following road(s), and on slopes greater than 45%, Purchaser shall end haul or push organic debris to the designated waste areas specified in Clause 3-22 DESIGNATED WASTE AREA FOR ORGANIC DEBRIS, or to a waste area located by the Contract Administrator.

<u>Road</u>	<u>Stations</u>
PA-S-2554	11+10 – 25+00
PA-S-2554.2	4+75 – 5+95, 7+20 – 11+40

**SECTION 4 – EXCAVATION**

**4-1 EXCAVATOR CONSTRUCTION**

Purchaser shall use a track mounted hydraulic excavator for construction, reconstruction and maintenance work unless stated otherwise within this Road Plan or authorized in writing by the Contract Administrator.

**4-2 PIONEERING**

Pioneering may not extend past construction that will be completed during the current construction season. Pioneering may not extend more than 1000 feet beyond completed construction unless approved in writing by the Contract Administrator. In addition, the following actions must be taken as pioneering progresses:

- Drainage must be provided on all uncompleted construction.
- Road pioneering operations may not undercut the final cut slope or restrict drainage.
- Culverts at live stream crossings must be installed during pioneering operations.

**4-3 ROAD GRADE AND ALIGNMENT STANDARDS**

Purchaser shall follow these standards for road grade and alignment:

- Grade and alignment must have smooth continuity, without abrupt changes in direction.
- Maximum grades may not exceed 18 percent favorable and 16 percent adverse.
- Minimum curve radius is 60 feet at centerline.
- Maximum grade change for sag vertical curves is 5% in 100 feet.
- Maximum grade change for crest vertical curves is 4% in 100 feet.

**4-4 SWITCHBACK STANDARDS**

A switchback is defined as a curved segment of road between a beginning and end of the same curve, where the change of traffic travel direction is greater than 90 degrees.

Purchaser shall follow these standards for switchbacks:

- Maximum adverse grades for switchbacks is 10%.
- Maximum favorable grades for switchbacks is 12%.
- Maximum transition grades entering and leaving switchbacks is a 5% grade change.
- Transition grades required to meet switchback grade limitations must be constructed on the tangents preceding and departing from the switchbacks.

**4-5 CUT SLOPE RATIO**

Purchaser shall construct excavation slopes no steeper than shown on the following table, unless construction staked or designed:

<u>Material Type</u>	<u>Excavation Slope Ratio</u>	<u>Excavation Slope Percent</u>
Common Earth (on side slopes up to 55%)	1:1	100
Common Earth (56% to 70% side slopes)	¾:1	133
Common Earth (on slopes over 70%)	½:1	200
Fractured or loose rock	½:1	200
Hardpan or solid rock	¼:1	400

**4-6 EMBANKMENT SLOPE RATIO**

Purchaser shall construct embankment slopes no steeper than shown on the following table, unless construction staked or designed:

<u>Material Type</u>	<u>Embankment Slope Ratio</u>	<u>Embankment Slope Percent</u>
Sandy Soils	2:1	50
Common Earth and Rounded Gravel	1½:1	67
Angular Rock	1¼:1	80

**4-7 SHAPING CUT AND FILL SLOPE**

Purchaser shall construct excavation and embankment slopes to a uniform line and left rough for easier revegetation.

**4-8 CURVE WIDENING**

The minimum widening placed on the inside of curves is:

- 6 feet for curves of 50 to 79 feet radius.
- 4 feet for curves of 80 to 100 feet radius.

**4-9 EMBANKMENT WIDENING**

The minimum embankment widening is:

- 2 feet for embankment heights at centerline of 2 to 6 feet.
- 4 feet for embankment heights at centerline of greater than 6 feet.

**4-12 FULL BENCH CONSTRUCTION**

On the following road(s), and where side slopes exceed 45%, Purchaser shall use full bench construction for the entire subgrade width . Purchaser shall end haul waste material to the location specified in Clause 4-37 WASTE AREA LOCATION.

<u>Road</u>	<u>Full Bench Location</u>
PA-S-2554	11+10 – 25+00
PA-S-2554.2	4+75 – 5+95, 7+20 – 11+40

**SUBSECTION INTERSECTIONS, TURNOUTS AND TURNAROUNDS**

**4-21 TURNOUTS**

Purchaser shall construct turnouts intervisible with a maximum distance of 1,000 feet between turnouts unless otherwise shown on drawings. Locations may be adjusted to fit the final subgrade alignment and sight distances. Locations changes are subject to written approval by the Contract Administrator. Minimum dimensions are shown on the TYPICAL SECTION SHEET.

**4-22 TURNAROUNDS**

Turnarounds must be no larger than 50 feet long and 30 feet wide. Locations are subject to written approval by the Contract Administrator.

**SUBSECTION DITCH CONSTRUCTION**

**4-25 DITCH CONSTRUCTION AND RECONSTRUCTION**

Purchaser shall construct ditches into the subgrade as specified on the TYPICAL SECTION SHEET. Ditches must be constructed concurrently with construction of the subgrade.

**4-27 DITCH WORK – MATERIAL USE PROHIBITED**

Purchaser shall not pull ditch material across the road or mix in with the road surface. Excavated material must be end hauled to the location specified in Clauses 4-36 through 4-38.

**4-28 DITCH DRAINAGE**

Ditches must drain to cross-drain culverts or ditchouts.

**4-29 DITCHOUTS**

Purchaser shall construct ditchouts as identified in the table below and as needed to fit as built conditions. Ditchouts must be constructed in a manner that diverts ditch water onto the forest floor and must have excavation backslopes no steeper than a 1:1 ratio. L or R denotes ditchout left or ditchout right.

<u>Road</u>	<u>Stations</u>	<u>L or R</u>
PA-J-5000	95+45 (approx. 25')	R
PA-J-5016	0+40 (approx. 15')	R
PA-J-5016	3+85 (approx. 20')	R
PA-J-5016	7+55 (approx. 25')	R
PA-J-5017	18+55 (approx. 20')	R
PA-J-5410	4+40 (approx. 20')	R
PA-S-2550	96+20 (approx. 20')	R
PA-S-2550	98+50 (approx. 15')	R
PA-S-2550	99+60 (approx. 15')	R
PA-S-2553.2	4+30 (approx. 20')	L
PA-S-2554	11+10 (approx. 20')	R
PA-S-2554.2	2+95 (approx. 20')	R

**SUBSECTION WASTE MATERIAL (DIRT)**

**4-35 WASTE MATERIAL DEFINITION**

Waste material is defined as all dirt, rock, mud, or related material that is extraneous or unsuitable for construction material. Waste material, as used in Section 4 EXCAVATION, is not organic debris.

**4-36 DISPOSAL OF WASTE MATERIAL**

Purchaser may sidecast waste material on side slopes up to 45% if the waste material is compacted and free of organic debris. On side slopes greater than 45%, all waste material must be end hauled or pushed to the designated embankment sites and waste areas identified in Clause 4-37 WASTE AREA LOCATION.

**4-37 WASTE AREA LOCATION**

Purchaser shall deposit waste material in the listed designated areas. The amount of material allowed in a waste area is at the discretion of the Contract Administrator.

Note: All amount values are estimated bank yards.

<u>Waste Area Location</u>	<u>Waste Generated From Road</u>	<u>Waste Generated at Stations</u>	<u>Estimated Volume</u>
PA-S-2554 Sta. 9+75	PA-S-2554	11+20 – 25+00	5000 CY

PA-S-2554 Sta. 17+00	PA-S-2554	11+20 – 25+00	500 CY
PA-S-2554.2 Sta. 2+95	PA-S-2554.2	4+75 – 5+95, 7+20 – 11+40	5000 CY
PA-S-2550	PA-S-2550	111+85	500 CY

**4-38 PROHIBITED WASTE DISPOSAL AREAS**

Purchaser shall not deposit waste material in the following areas:

- Within 50 feet of a cross drain culvert.
- Within 100 feet of a live stream or wetland.
- Within a riparian management zone.
- On side slopes steeper than 45%.
- In locations that interfere with the construction of the road prism.
- In locations that impede drainage.
- Within the operational area for cable landings.
- Against standing timber.

**4-39 WASTE AREA COMPACTION**

Excavated material may be deposited adjacent to the road prism on side slopes up to 45% if the waste material is compacted and free of debris. On side slopes of 45% or more, all excavation shall be end hauled or pushed to designated waste areas. All waste material shall be compacted. The minimum acceptable compaction is achieved by placing embankments in 2 foot or shallower lifts and routing excavation equipment over the entire width of the lifts, with the exception of side hill embankments too narrow to accommodate excavation equipment which may be placed by end-dumping or sidecasting until sufficiently wide to support the equipment.

SUBSECTION BORROW

**4-47 NATIVE MATERIAL**

Native material consists of naturally occurring material that is free of organic debris, trash, and rocks greater than 12 inches in any dimension.

**4-48 BORROW MATERIAL**

Borrow material may not contain more than 5% clay, organic debris, or trash by volume.

**4-49 BORROW SOURCE**

Purchaser shall obtain borrow material from the listed borrow source(s). Development of the borrow source must be in accordance with the attached BORROW SOURCE DETAIL.

<u>Source</u>	<u>Location</u>	<u>Size</u>
Arm Pit	PA-S-2600 Sta. 93+10	0.5 Acres

## SUBSECTION SHAPING

### **4-55 ROAD SHAPING**

Purchaser shall shape the subgrade and surface as shown on the TYPICAL SECTION SHEET. The subgrade and surface shape must ensure runoff in an even, un-concentrated manner, and must be uniform, firm, and rut-free.

### **4-56 DRY WEATHER SHAPING**

The Contract Administrator may require the application of water to facilitate shaping activities. The method of water application is subject to written approval by the Contract Administrator.

## SUBSECTION COMPACTION

### **4-60 FILL COMPACTION**

Purchaser shall compact all embankment and waste material in accordance with the COMPACTION LIST by routing equipment over the entire width of each lift. A plate compactor must be used for areas specifically requiring keyed embankment construction and for embankment segments too narrow to accommodate equipment.

### **4-61 SUBGRADE COMPACTION**

Purchaser shall compact constructed and reconstructed subgrades in accordance with the COMPACTION LIST by routing equipment over the entire width, except ditch. Purchaser shall obtain written approval from the Contract Administrator for subgrade compaction before placement of rock.

### **4-62 DRY WEATHER COMPACTION**

The Contract Administrator may require the application of water to facilitate compaction activities. The method of water application is subject to written approval by the Contract Administrator.

### **4-63 EXISTING SURFACE COMPACTION**

Purchaser shall compact maintained road surfaces in accordance with the COMPACTION LIST by routing equipment over the entire width.

### **4-64 WASTE MATERIAL COMPACTION**

All waste material shall be compacted by running equipment over it or bucket tamping.

### **4-65 CULVERT BACKFILL COMPACTION**

Culvert backfills shall be accomplished by using a jumping jack compactor, performing at least 2 passes per lift, in lifts not to exceed 8 inches.

**4-66 COMPACTION BY METHOD**

Compaction shall consist of three complete passes over the entire width of each lift with a vibratory drum roller weighing a minimum of 6,000 pounds at a maximum operating speed of 3 mph. For embankment segments too narrow to accommodate a drum roller, a plate compactor shall be used.

SECTION 5 – DRAINAGE

**5-1 REMOVAL OF SHOULDER BERMS**

On the following road(s), Purchaser shall remove berms from road shoulders. The construction of ditchouts is required where ponding could result from the effects of sidecast debris.

<u>Road</u>	<u>Stations</u>
PA-J-5015	0+00 – 31+00
PA-J-5020	0+00 – 26+15
PA-S-2550	0+00 – 104+10
PA-S-2555	0+00 – 14+00
PA-S-2600	0+00 – 131+15
PA-S-2610	0+00 – 34+20

**5-3 PUNCHEON PLACEMENT**

On the following road(s), puncheon shall be utilized in the subgrade on the following road. Puncheon shall consist of logs of at least 4 inches in diameter and shall be at least 17 feet long.

<u>Road</u>	<u>Stations</u>
1+00 Spur	0+00 – 1+00
1+01 Spur	0+00 – 1+01
1+35 Spur	0+00 – 1+35
3+35 Spur	0+00 – 3+35
1+75 Spur	0+00 – 1+75
2+60 Spur	0+00 – 2+60

**5-4 PUNCHEON RESTRICTED**

At no time shall puncheon be used in the subgrade, unless approved by the Contract Administrator or as listed above.

## SUBSECTION CULVERTS

### 5-5 CULVERTS

Purchaser shall install culverts as part of this contract. Culverts must be installed concurrently with subgrade work and must be installed before subgrade compaction and rock application. Culvert locations and the minimum requirements for culvert length and diameter are designated on the CULVERT LIST. Culvert, downspout, and flume lengths may be adjusted to fit as-built conditions and may not terminate directly on unprotected soil. Culverts must be new material and meet the specifications in Clauses 10-15 through 10-23.

### 5-7 USED CULVERT MATERIAL

On the following road(s), Purchaser may install used culverts. All other culverts must have new culverts installed. Purchaser shall obtain approval from the Contract Administrator for the quality of the used culverts before installation. Culverts must meet the specifications in Clauses 10-15 through 10-23.

<u>Road</u>	<u>Stations</u>
1+75 Spur	0+10
3+35 Spur	1+45

### 5-9 BEVELED ENDS

The following culverts must have their ends beveled as specified below.

<u>Road</u>	<u>Stations</u>	<u>Bevel Type</u>
PA-J-5020	10+92	1.5:1 Half way up the culvert see design

### 5-12 UNUSED MATERIALS STATE PROPERTY

On required roads, any materials listed on the CULVERT LIST and ROCK LIST that are not installed will become the property of the state. Purchaser shall stockpile materials as directed by the Contract Administrator.

### 5-13 CONTINGENCY CULVERTS

The following culverts will be supplied by the Purchaser and are available for installation as directed by the Contract Administrator. In the event that culverts are not used, culverts shall be stockpiled at Place Pit.

<u>Road</u>	<u>Size</u>
On any portion of road used for timber or rock haul.	3-18" dia. x 30' culvert 2-18" dia. culvert band

On any portion of road used for timber or rock haul.	1-24" dia. X 30' culvert
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**SUBSECTION CULVERT INSTALLATION**

**5-15 CULVERT INSTALLATION**

Culvert installation must be in accordance with the TYPICAL CROSS DRAIN CULVERT INSTALLATION DETAIL SHEET, TYPICAL TYPE NS NP CULVERT INSTALLATION DETAIL SHEET, the National Corrugated Metal Pipe Association's "Installation Manual for Corrugated Steel Drainage Structures" and the Corrugated Polyethylene Pipe Association's "Recommended Installation Practices for Corrugated Polyethylene Pipe and Fittings". Corrugated Polyethylene pipe must be installed in a manner consistent with the manufacturer's recommendations. Culverts over 15 inches diameter shall be banded using lengths of no less than 10 feet, and no more than one length less than 16 feet. Shorter section of banded culvert shall be installed at the inlet end.

**5-16 APPROVAL FOR LARGER CULVERT INSTALLATION**

Purchaser shall obtain written approval from the District Engineer or his/her designee for the installation of culverts 30 inches in diameter and over before backfilling.

**5-17 CROSS DRAIN SKEW AND SLOPE**

Cross drains, on road grades in excess of 3%, must be skewed at least 30 degrees from perpendicular to the road centerline, except where the cross drain is at the low point in the road culverts will not be skewed. Cross drain culverts must be installed at a slope steeper than the incoming ditch grade, but not less than 3% or more than 10%.

**5-18 CULVERT DEPTH OF COVER**

Cross drain culverts must be installed with a depth of cover of not less than 18 inches of compacted subgrade over the top of the culvert at the shallowest point. Stream crossing culverts must be installed with a depth of cover specified in the Engineer's design, TYPICAL TYPE NS NP DETAIL SHEET, or recommended by the culvert manufacturer for the type and size of the pipe, whichever is greater.

**SUBSECTION ENERGY DISSIPATERS**

**5-20 ENERGY DISSIPATERS**

Purchaser shall install energy dissipaters at all culverts on the CULVERT AND ROCK LIST that specify the placement of rock. Energy dissipater installation is subject to approval by the Contract Administrator.

Rock used for energy dissipaters must weigh at least 10 pounds. Energy dissipaters must extend a minimum of 1 foot to each side of the culvert at the outlet and a minimum of 2 feet beyond the outlet. Placement must be with a zero-drop-height method only.

SUBSECTION CATCH BASINS, HEADWALLS, AND ARMORING

**5-25 CATCH BASINS**

Purchaser shall construct catch basins to resist erosion. Minimum dimensions of catch basins are 1-2 feet wide, 1-2 feet deep and 2-4 feet long.

**5-26 HEADWALLS FOR CROSS DRAIN CULVERTS**

Purchaser shall construct headwalls in accordance with the TYPICAL CROSS DRAIN CULVERT INSTALLATION DETAIL at all cross drain culverts that specify the placement of rock. Rock used for headwalls must consist of oversize or quarry spall material. Rock must be placed on shoulders, slopes, and around culvert inlets and outlets. Minimum specifications require that rock be placed at a width of one culvert diameter on each side of the culvert opening, and to a height of one culvert diameter above the top of the culvert. Rock may not restrict the flow of water into culvert inlets or catch basins. No placement by end dumping or dropping of rock is allowed.

SECTION 6 – ROCK AND SURFACING

SUBSECTION ROCK SOURCE

**6-2 ROCK SOURCE ON STATE LAND**

Rock used in accordance with the quantities on the ROCK LIST may be obtained from the following source(s) on state land at no charge to the Purchaser. Purchaser shall obtain written approval from the Contract Administrator for the use of material from any other source. If other operators are using, or desire to use the rock source(s), a joint operating plan must be developed. All parties shall follow this plan. Purchaser shall notify the Contract Administrator a minimum of 5 business days before starting any operations in the listed locations.

<u>Source</u>	<u>Location</u>	<u>Rock Type</u>
Agate Pit	T31 R08W Sec 30	Shot rock Ballast, 3” minus Jaw Run Rock, Light Loose Rip Rap
Arm Pit	T31 R09W Sec 30	Borrow Material
Place Pit	T31 R07W Sec 33	1 ¼” minus Rock, Engineered Streambed Material

**6-3 ROCK SOURCE STATE LAND, EXISTING STOCKPILE**

Rock used in accordance with the quantities on the ROCK LIST may be obtained from the following existing stockpile(s) on state land at no charge to the Purchaser. Purchaser shall not remove more than 400 cubic yards of 1 ¼” minus rock. Purchaser shall not remove additional yardage without prior written approval from the Contract Administrator. Other stockpiles may not be used without prior written approval from the Contract Administrator.

<u>Source</u>	<u>Location</u>	<u>Rock Type</u>	<u>Quantity</u>
Place Pit	T31 R07W Sec 33	1 ¼” minus	400 yd <sup>3</sup>

**6-5 ROCK FROM COMMERCIAL SOURCE**

Rock used in accordance with the quantities on the ROCK LIST may be obtained from any commercial source at the Purchaser 's expense. Rock sources are subject to written approval by the Contract Administrator before their use. Prior to approval, Purchaser shall submit a passing sieve test performed by procedure described in WSDOT FOP for WAQTC T 27/11.

SUBSECTION ROCK SOURCE DEVELOPMENT

**6-10 ROCK SOURCE DEVELOPMENT PLAN BY STATE**

Purchaser shall conduct rock source development and use at the following sources, in accordance with the written ROCK SOURCE DEVELOPMENT PLAN prepared by the state and included in this road plan. Upon completion of operations, the rock source must be left in the condition specified in the ROCK SOURCE DEVELOPMENT PLAN, and approved in writing by the Contract Administrator. Purchaser shall notify the Contract Administrator a minimum of 5 business days before starting any operations in the rock source.

<u>Source</u>	<u>Rock Type</u>
Agate Pit	Shot Rock Ballast, 3” minus Jaw Run Rock, Light Loose Rip Rap
Arm Pit	Borrow Material
Place Pit	Engineered Streambed Material

## 6-12 ROCK SOURCE SPECIFICATIONS

Rock sources must be in accordance with the following specifications , unless otherwise specified in the ROCK SOURCE DEVELOPMENT PLAN:

- Pit walls may not be undermined or over steepened. The maximum slope of the walls must be consistent with recognized engineering standards for the type of material being excavated in accordance with the following table:

Material	Maximum Slope Ratio (Horiz. :Vert.)	Maximum Slope Percent
Sand	2:1	50
Gravel	1.5:1	67
Common Earth	1:1	100
Fractured Rock	0.5:1	200
Solid Rock	0:1	vertical

- Pit walls must be maintained in a condition to minimize the possibility of the walls sliding or failing.
- The width of pit benches must be a minimum of 1.5 times the maximum length of the largest machine used.
- The surface of pit floors and benches must be uniform and free-draining at a minimum 2% outslope gradient.
- All operations must be carried out in compliance with all regulations of the Regulations and Standards Applicable to Metal and Nonmetal Mining and Milling Operations (30 CFR) U.S. Department of Labor, Mine Safety and Health Administration and Safety Standards for Construction Work (296-155 WAC), Washington Department of Labor and Industries.
- All vehicle access to the top of the pit faces must be blocked.

## 6-14 DRILL AND SHOOT

Rock drilling and shooting must meet the following specifications:

- Oversize material remaining in the rock source at the conclusion of the timber sale may not exceed 5% of the total volume mined in that source.
- Oversize material is defined as rock fragments larger than five feet in any dimension.
- Oversized rock that exceeds the maximum allowable amount must be shot or broken up.
- Purchaser shall notify the Contract Administrator a minimum of 3 working days before blasting operations.
- Purchaser shall submit an informational drilling and shooting plan to the Contract Administrator 10 working days before any drilling (Form #M-126PAC).
- All operations must be carried out in compliance with the Regulations and Standards Applicable to Metal and Nonmetal Mining and Milling Operations (30

CFR) U.S. Department of Labor, Mine Safety and Health Administration and the Safety Standards for Construction Work (296-155 WAC), Washington Department of Labor and Industries.

- Purchaser shall block access roads and trails before blasting operations.

## **6-16 DRILL AND SHOOT TECHNICAL SPECIFICATIONS**

### **DRILLING**

The Purchaser shall drill in accordance to an approved Shot Plan. Drill depth shall not extend more than 5 feet below existing pit floor. The District Engineer or their designee and Purchaser shall jointly measure and determine drill depths, hole spacing and pattern and must be approved prior to loading explosives. During drilling operation, drill operator shall keep a bore log which includes the depth and location of each hole drilled. The District Engineer or their designee may ask to see the bore log during and after the drilling process has completed.

### **BLASTING**

The Purchaser shall furnish and load appropriate explosives, detonators, and ignition sources in accordance to all State and Federal laws and in accordance to an approved Shot Plan.

### **DRILLING AND SHOOTING PLAN “SHOT PLAN”**

The Purchaser shall submit a written drilling and shooting plan, including drawings, to the District Engineer or their designee, which must meet the approval of the District Engineer or their designee prior to the start of the drilling operation. The plan and drawing(s) shall include the following proposals: drill hole diameter, drill hole spacing, drill hole pattern, drill hole depth, any stemming depths, type and depth of explosive including amount per drill hole, detonator and ignition type, and proposed delay pattern. Any adjustment or modifications to the proposals during operations must be noted and resubmitted prior to loading of explosives.

### **WEATHER LIMITATIONS**

When, in the opinion of the District Engineer or their designee, the weather is such that satisfactory results cannot be obtained in any phase of operation, Purchaser shall suspend operations until the weather is favorable. Before and during any suspension, Purchaser shall protect the work from damage or deterioration.

## SUBSECTION ROCK MANUFACTURE

### 6-20 ROCK CRUSHING OPERATIONS

Rock crushing operations must conform to the following specifications:

- Operations and placement of oversize material must be conducted in or near the rock source site, as approved in writing by the Contract Administrator.
- The crushing operation must be concluded within 45 working days from the time it begins. All testing and operations must be performed in accordance with the attached ROCK CRUSHING COMPLIANCE PROCEDURE.
- Purchaser shall produce sieve analysis for crushing operations as described in Clause 6-24 ROCK CRUSHING COMPLIANCE PROCEDURE.
- Purchaser may use a commercial testing lab to produce sieve analyses.
- Sieve analysis for acceptance of aggregate shall be performed by procedure described in WSDOT FOP for WAQTC T 27/11.

### 6-23 ROCK GRADATION TYPES

Purchaser shall manufacture rock in accordance with the types and amounts listed in the Manufacturing list below. Rock must meet the following specifications for gradation and uniform quality during manufacture and placement into a stockpile. Purchaser shall provide a sieve analysis upon request from the Contract Administrator.

<u>Rock Type</u>	<u>Amount</u>
3" Minus Jaw Run Rock	25030 yd <sup>3</sup>
Shot Rock Ballast	20750 yd <sup>3</sup>
Light Loose Rip Rap	100 yd <sup>3</sup>

## 6-24 ROCK CRUSHING COMPLIANCE PROCEDURE

### Phase I. Equipment Adjustment

#### **Step 1:**

At start up of crushing operations, the Purchaser will notify the Contract Administrator when the rock meets the gradation specifications in the contract. None of the rock crushed during this calibration period will be counted toward the amount required to be crushed, and this rock must be kept separate from accepted rock crushed later.

#### **Step 2:**

The Purchaser will test the rock. Two samples will be taken. If the rock meets specifications, crushing may begin. If the rock does not meet specifications, return to Step 1.

### Phase II. Production

#### **Step 3:**

The Purchaser will continue periodic testing to ensure that rock stays in spec. Testing will take place according to the following schedule:

- After the first 500 yards
  - After every 2,000 yards thereafter.
- a) Any time a sample is out of spec, but is within 5%\*, the Purchaser will be notified and a second sample will be taken later in the day. If the second sample meets specifications, the rock crushed during that day will be accepted. If the second sample also fails to meet spec, none of the rock crushed since the last acceptable test will be counted toward the amount to be crushed.
- b) Any time a sample is out of spec and is more than 5% off in any category, none of the rock crushed since the last acceptable test will be accepted and that rock must be kept separate from the stockpile. Return to Step 1.
- c) Purchaser is strongly encouraged to take their own samples regularly and keep their operations in spec to avoid unnecessary expenses.
- The 5% will be applied only to sieve specs for 2" to ¼"; rock that is out of spec in larger sizes must be kept separate from the acceptable rock.

## SUBSECTION ROCK GRADATIONS

### 6-28 1 ¼-INCH MINUS CRUSHED ROCK

% Passing 1 ¼" square sieve	100%
% Passing 5/8" square sieve	50 - 80%
% Passing U.S. #4 sieve	30 - 50%
% Passing U.S. #40 sieve	3 - 18%
% Passing U.S. #200 sieve	5%

The portion of aggregate retained on the No. 4 sieve may not contain more than 0.2 percent organic debris and trash. All percentages are by weight.

### 6-33 3-INCH MINUS CRUSHED ROCK

% Passing 3" square sieve	100%
% Passing 1 ¼" square sieve	50 - 70%
% Passing U.S. #4 sieve	30 - 50%
% Passing U.S. #200 sieve	5% maximum

The portion of aggregate retained on the No. 4 sieve may not contain more than 0.2 percent organic debris and trash. All percentages are by weight.

### 6-42 CLEAN ROCK, SHOT BALLAST

No more than 10 percent of the rock by visual inspection may exceed 8 inches in any dimension and no rock may be larger than 12 inches in any dimension. Shot Ballast rock may not contain more than 5 percent by weight of organic debris , dirt, and trash.

### 6-45 1-FOOT MINUS ENGINEERED STREAMBED MATERIAL

% Passing 12" square sieve	80 - 95%
% Passing 5" square sieve	70 - 90%
% Passing 2" square sieve	40 - 60%
% Passing 5/8" square sieve	15 - 35%
% Passing U.S. #4 sieve	5 - 20%
% Passing U.S. #200 sieve	5% maximum

The portion of aggregate retained on the No. 4 sieve may not contain more than 0.2 percent organic debris and/or trash. All percentages are by weight.

### 6-50 LIGHT LOOSE RIP RAP

Light loose rip rap must consist of angular, hard, sound, and durable stone. It must be free from segregation, seams, cracks, and other defects tending to destroy its resistance to weather. Light loose rip rap must be free of rock fines, soil, organic debris or other extraneous material, and must meet the following requirements:

<u>Quantity</u>	<u>Approximate Size Range</u>
20% to 90%	500 lbs. to 1 ton (18"- 28")
15% to 80%	50 lbs. to 500 lbs. (8"- 18")
10% to 20%	3 inch to 50 lbs. (3"- 8")

SUBSECTION ROCK MEASUREMENT

**6-55 ROCK APPLICATION MEASURED BY COMPACTED DEPTH**

Measurement of specified rock depths, are defined as the compacted depth(s) using the compaction methods required in this road plan. Estimated quantities specified in the ROCK LIST are estimated truck yards. Purchaser shall apply adequate amounts of rock to meet the specified rock depths. Specified rock depths are minimum requirements and are not subject to reduction.

SUBSECTION ROCK STOCKPILE

**6-65 ROCK STOCKPILE LOCATION**

Purchaser shall stockpile rock as listed below and as directed by the Contract Administrator. Rock stockpiles must be in accordance with Clause 6-67 ROCK STOCKPILE SPECIFICATIONS and the ROCK SOURCE DEVELOPMENT PLAN.

<u>Rock Source</u>	<u>Rock Type</u>	<u>Quantity (c.y.)</u>	<u>Stockpile Location</u>
Agate Pit	3" minus Rock	200 yd <sup>3</sup>	See Rock Source Development Plan
Agate Pit	Shot Rock Ballast	1000 yd <sup>3</sup>	

**6-67 ROCK STOCKPILE SPECIFICATIONS**

Rock stockpiles listed in Clause 6-65 ROCK STOCKPILE LOCATION must meet the following specifications:

Before placing aggregates upon the stockpile site, the site must be cleared of vegetation, trees, stumps, brush, rocks, or other debris and the ground leveled to a smooth, firm, uniform surface.

When completed, the stockpile must be neat and regular in shape. The stockpile height is limited to a maximum of 30 feet. Stockpiles in excess of 500 cubic yards must be built up in layers of not more than 8 feet deep. Stockpile layers must be constructed by trucks, clamshells, or other methods approved in writing by the Contract Administrator. Each layer must be completed over the entire area of the pile before depositing aggregates in the next layer. The aggregates may not be dumped so that they run down and over the lower layers in the stockpile. The method of dropping from a bucket or spout in one location to form a cone shaped pile is not allowed.

Stockpiles of different types or sizes of aggregate must be spaced far enough apart, or separated by suitable walls or partitions, to prevent the mixing of the aggregates.

SUBSECTION ROCK APPLICATION

**6-70 APPROVAL BEFORE ROCK APPLICATION**

Purchaser shall obtain written approval from the Contract Administrator for subgrade drainage installation included grading and compaction before rock application.

**6-71 ROCK APPLICATION**

Purchaser shall apply rock in accordance with the specifications and quantities shown on the ROCK LIST. Rock must be spread, shaped, and compacted full width concurrent with rock hauling operations. The Contract Administrator will direct locations for rock that is to be applied as spot patching. Road surfaces must be compacted in accordance with the COMPACTION LIST by routing equipment over the entire width and in lifts not to exceed 6 inches.

**6-72 ROCK APPLICATION AFTER HAULING**

On the following road(s), upon completion of all hauling operations, Purchaser shall apply rock in accordance with the quantities shown on the ROCK LIST and listed below.

<u>Road</u>	<u>Stations</u>	<u>Rock Type</u>	<u>Amount</u>
PA-J-5000	80+15 – 108+60	3" minus	50 yd <sup>3</sup>
PA-J-5020	0+00 – 26+15	3" minus	50 yd <sup>3</sup>
PA-J-5400	0+00 – 46+40	3" minus	50 yd <sup>3</sup>
PA-J-5410	0+00 – 12+60	3" minus	50 yd <sup>3</sup>
PA-S-2500	0+00 – 27+00	1 ¼" minus	50 yd <sup>3</sup>
PA-S-2510	0+00 – 8+65	1 ¼" minus	50 yd <sup>3</sup>
PA-S-2550	0+00 – 116+00	3" minus	150 yd <sup>3</sup>
PA-S-2553	0+00 – 13+55	3" minus	50 yd <sup>3</sup>
PA-S-2580	21+30 – 39+30	3" minus	50 yd <sup>3</sup>
PA-S-2600	0+00 – 131+15	3" minus	200 yd <sup>3</sup>
PA-S-2610	0+00 – 34+20	3" minus	50 yd <sup>3</sup>
PA-S-1000	0+00 – 81+15	1 ¼" minus	50 yd <sup>3</sup>
PA-S-1100	0+00 – 16+15	3" minus	50 yd <sup>3</sup>
PA-S-1200	0+00 – 77+35	3" minus	50 yd <sup>3</sup>

**6-73 ROCK FOR WIDENED PORTIONS**

Purchaser shall apply rock to turnarounds, turnouts, and areas with curve widening to the same depth and specifications as the traveled way.

**6-76 DRY WEATHER ROCK COMPACTION**

On the following roads, The Contract Administrator may require the application of water to facilitate compaction of the rock surfacing. The method of water application is subject to approval by the Contract Administrator.

**6-78 ROCK FOR SPOT PATCHING**

Rock for spot patching shall be applied before any grading is done and before any rock lifts are applied. Once applied, spot patches shall be graded into the existing running surface.

SECTION 7 – STRUCTURES

SUBSECTION SIGNS

**7-1 SIGN INSTALLATION**

Purchaser shall purchase, install, and maintain the following road signs. Signs must be installed a minimum of 7 days before hauling logs and/or rock. Signs must comply with the Federal Highway Administration’s Manual on Uniform Traffic Control Devices.

<u>Road</u>	<u>Station</u>	<u>Sign</u>
SR 112	Junction of PA-J-5000 and SR 112	2 Truck Crossing Signs East and West
Crescent Beach Rd.	Junction of PA-J-5400 and Crescent Beach Road	2 Truck Crossing Signs North and South
SR 112	Junctions of PA-S-2500, PA-S-1000 and SR 112	2 Truck Crossing Signs East and West
SR 112	Junctions of PA-S-2600, PA-S-1100 and SR 112	2 Truck Crossing Signs East and West

SUBSECTION STREAM CROSSING STRUCTURES GENERAL

**7-5 STRUCTURE DEBRIS**

Purchaser shall not allow debris from the installation or removal of structures to enter any stream. Components removed from existing structures(s) must be removed from state land or, as directed in writing, by the Contract Administrator. Purchaser shall maintain a clean jobsite, with all materials stored away from the high water mark or other area presenting a risk of the materials entering a stream. Debris entering any stream must be removed immediately, and placed in the site(s) designated for stockpiling or disposal. Purchaser shall retrieve all material carried downstream from the jobsite.

**7-6 STREAM CROSSING INSTALLATION**

Purchaser shall install stream crossing structures in accordance with the manufacturer's requirements, and as directed by the District Engineer or their designee.

**7-7 BANK PROTECTION FOR STREAM CROSSING STRUCTURES**

Purchaser shall design and construct bank protection to prevent the undermining of the structure.

SUBSECTION ACCEPTANCE

**7-17 INSTALLATION PRODUCTION SCHEDULE**

Purchaser shall provide the Contract Administrator or their designee, with a production schedule showing projected completion dates for the following items before starting construction of the structure(s). Production schedule must include:

- dewatering
- excavation
- placement of sills/abutments/footings/structure
- placement of fish culvert
- backfill compaction, rock application and compaction
- placement of engineered streambed material

**7-18 INSTALLATION STAGE ACCEPTANCE**

Purchaser shall ensure that all materials and procedures used during construction comply with the design. Purchaser shall obtain written approval from the Contract Administrator or their designee, for each stage of construction, listed in Clause 7-17 INSTALLATION PRODUCTION SCHEDULE, before starting construction on the next stage. Purchaser shall notify the Contract Administrator when each construction stage is complete.

**7-19 INSTALLATION FINAL ACCEPTANCE**

Purchaser shall notify the Contract Administrator in writing when each structure is complete.

SUBSECTION BRIDGE MAINTENANCE

**7-30 BRIDGE MAINTENANCE**

Purchaser shall conduct bridge maintenance as listed.

<u>Road</u>	<u>Station</u>	<u>Requirements</u>
PA-S-2500	12+15	Installation of Inbound Bridge Delineators and installation of one 4 x 4 sign post.

**7-39 PA-S-2500 BRIDGE DELINEATOR INSTALLATION**

Purchaser shall install 1 4x4 wooden post and 2 delineators on each side (2 inbound) of the bridge with reflector stripes angled downward and guiding traffic towards the center of the bridge. Bridge delineators shall consist of 12" x 36" MUTCD OM3-L and OM3-R black and retroreflective yellow striped markers. The minimum width of the stripes shall be 3". At a minimum, the sheeting shall meet the specifications of Type III sheeting (high intensity sheeting) as per ASTM Specification D4956.

**7-39 PA-S-2610 BRIDGE DELINEATOR INSTALLATION**

Purchaser shall install 4 4x4 wooden posts and 4 delineators on each side (2 inbound and 2 outbound) of the bridge with reflector stripes angled downward and guiding traffic towards the center of the bridge. Bridge delineators shall consist of 12" x 36" MUTCD 2 OM3-L and 2 OM3-R black and retroreflective yellow striped markers. The minimum width of the stripes shall be 3". At a minimum, the sheeting shall meet the specifications of Type III sheeting (high intensity sheeting) as per ASTM Specification D4956.

**SUBSECTION BRIDGE INSTALLATION**

**7-45 PURCHASER SUPPLIED BRIDGE**

Purchaser shall provide, and construct each bridge listed below, in accordance with this Road Plan. Refer to attached log stringer design sheets for details.

Road	Station	Length (ft.)	W.B.S.R. <sup>1</sup> (ft.)	Loading/Deflection Ratio	Type	Vert. Clear <sup>2</sup> (ft.)	Hor. Align <sup>3</sup> (ft.)
PA-S-2610	9+80	50'	16'	U-80	Log Stringer	7.9'	P.P

<sup>1</sup>W.B.S.R. = Width between shear rails.

<sup>2</sup>Vertical clearance shall be measured from 100 year flood level.

<sup>3</sup>Horizontal alignment: P.P. = on the attached plan/profile, C.S. = according to construction stakes on the ground.

**7-47 PURCHASER SUPPLIED STRINGERS, ABUTMENTS, CURBS AND NEEDLE BEAM**

Purchaser is responsible for acquiring stringers and abutments from timber sale unit 2. All stringers have been marked with an orange ribbon and pink paint ring. Stringers shall meet a minimum mid-span diameter of 32" and abutments shall meet a minimum mid span diameter of 32". Curbs shall meet a minimum small end diameter of 12" and the needle beam shall meet a minimum mid-span diameter of 12". Stringers, abutments and curbs shall be constructed of douglas fir. Needle beam may be constructed of douglas fir or cedar.

**7-51 EMBANKMENT RETENTION**

Purchaser shall provide embankment retention to ensure that bridge approach embankments are stable, contained, and do not encroach the stream channel. Bin wall or Hilfiker systems are two pre-approved designs. Alternate designs for embankment retention must be submitted to District Engineer or designee for consideration. Reports and plans will be accepted or rejected within 10 working days of receipt.

SUBSECTION LARGE CULVERTS

**7-55 LARGE CULVERT INSTALLATION**

Purchaser shall provide and install large culverts in accordance with the Designs and/or Detail sheets. Culvert designs must meet or exceed the following specifications:

<u>Road</u>	PA-J-5020	PA-S-2550	PA-S-2580	3+75 Spur
<u>Station</u>	10+92	111+85	32+80	2+00
<u>Type</u>	Round	Round	Round	Round
<u>Stream Type</u>	3	3	5	3
<u>Material and Coating Type*</u>	Aluminized Steel	Plastic or Aluminized Steel	Plastic or Aluminized Steel	Plastic or Aluminized Steel
<u>Length (ft.)</u>	74'	50'	40'	40'
<u>Diameter</u>	9'	36"	36"	36"
<u>Depth of Cover Material ft.</u>	11'	6.5'	5'	5'
<u>End design</u>	1.5:1 Miter halfway up, See Design Sheets			
<u>Corrugations</u>	3" x 1" or 5" x 1"	2 2/3" X 1/2"	2 2/3" X 1/2"	2 2/3" X 1/2"
<u>Gauge</u>	10	14	14	14
<u>Timing Restrictions</u>	Install between July 1 <sup>st</sup> – Sept. 30 <sup>th</sup>	Install after June 15 <sup>th</sup> and remove prior to Nov. 15 <sup>th</sup> 2020		

\* See Clause 10-15 CORRUGATED STEEL CULVERT for culvert specifications.

**7-56 STEEL PIPE, PIPE ARCH, AND STRUCTURAL PLATE INSTALLATION**

Purchaser shall install steel pipe, pipe arches, and structural plate culverts in accordance with the National Corrugated Steel Pipe Association "Installation Manual for Corrugated Steel Pipe, Pipe Arches, and Structural Plate." Installation is subject to the inspection and approval of the Contract Administrator before placement and backfill. The latest edition of the NCSPA Installation Manual can be found at [www.ncspa.org](http://www.ncspa.org).

**7-57 CULVERT SHAPE CONTROL**

Purchaser shall monitor the culvert shape during backfill and compaction. Special attention must be paid to maintaining the structure's rise dimensions, concentricity, and smooth uniform curvature. If compaction methods are resulting in peaking or deflection of the culvert, Purchaser shall modify the compaction method to achieve the appropriate end result.

**7-58 MATERIAL INSIDE CULVERT**

Purchaser shall provide and install engineered streambed material rock inside the following culvert(s) as specified in the 10+92 culvert design. Engineered Streambed material must meet the specifications in Clause 6-45 1 FOOT MINUS ENGINEERED STREAMBED MATERIAL and quantities in the ROCK LIST.

<u>Road</u>	<u>Stations</u>
PA-J-5020	10+92

**SUBSECTION GATE CLOSURE**

**7-70 GATE CLOSURE**

On the following road(s), Purchaser shall keep gates closed and locked except during periods of haul. All gates that remain open during haul must be locked or securely fastened in the open position. All gates must be closed at termination of use.

<u>Road</u>	<u>Station</u>
PA-J-5000	1+05
PA-J-5400	1+50
PA-J-5500	0+80
PA-S-2550	85+70
PA-S-1000	2+00
PA-S-2600	1+30
PA-S-1200	5+20
PA-I-2600	1+00

**SUBSECTION GATES AND FENCES**

**7-75 GATE MAINTENANCE**

Purchaser shall conduct gate maintenance as listed. Purchaser shall remove all old gate material from state land before the termination of the contract.

<u>Road</u>	<u>Station</u>	<u>Requirements</u>
PA-J-5000	1+05	Gate shall be painted Safety Yellow color using high gloss alkyd enamel paint. Prior to painting, surfaces shall be prepared by cleaning, sanding and removing all loose rust and paint. All surfaces shall be dry at the time of painting. Two coats of paint shall be applied, using the procedures described in the

		product instructions, with a minimum of eight hours drying time between coats. Grease all lubrication points.
PA-J-5400	1+50	Grease all lubrication points.
PA-J-5500	0+80	Grease all lubrication points.
PA-S-2550	85+70	Grease all lubrication points.
PA-S-1000	2+00	Gate shall be painted Safety Yellow color using high gloss alkyd enamel paint. Prior to painting, surfaces shall be prepared by cleaning, sanding and removing all loose rust and paint. All surfaces shall be dry at the time of painting. Two coats of paint shall be applied, using the procedures described in the product instructions, with a minimum of eight hours drying time between coats. Grease all lubrication points.
PA-S-2600	1+30	Grease all lubrication points.
PA-S-1200	5+20	Grease all lubrication points.
PA-I-2600	1+00	Grease all lubrication points.

## SECTION 8 – EROSION CONTROL

### 8-1 SEDIMENT CONTROL STRUCTURES

On the following road(s), Sediment control shall be accomplished as listed below or other methods as approved in writing by the Contract Administrator.

<u>Road</u>	<u>Stations</u>	<u>Left and/or Right</u>	<u>Comments</u>
PA-S-2553	5+30	Left and Right	Silt Fence in Ditch x 2
PA-S-2580	32+20	Right	Silt Fence in Ditch x 2
PA-S-2580	33+50	Left and Right	Silt Fence in Ditch x 2
PA-S-2582.1	13+60	Left	Silt Fence in Ditch x 2
PA-S-2610	14+35, 15+35	Left	Silt Fence in Ditch x 2
3+75 Spur	1+50	Right	Silt Fence in Ditch x 2

**8-2 PROTECTION FOR EXPOSED SOIL**

Purchaser shall provide and evenly spread a 3-inch layer of straw or hay to all exposed soils at bridge installation and at culvert installations within 100 feet of a stream or wetland. Soils must be covered before the first anticipated storm event. Soils may not sit exposed during any rain event.

SUBSECTION REVEGETATION

**8-15 REVEGETATION**

Purchaser shall spread grass seed and straw and/or hay mulch on all exposed soils including, but not limited to, stream culverts, waste areas, sidecast pullback areas, stream crossing removals, bridge installations, and other areas directed by the Contract Administrator. Revegetation of exposed soils shall be accomplished by manual dispersal of grass seed unless otherwise detailed in this Road Plan. Other methods of covering must be approved in writing by the Contract Administrator.

**8-16 REVEGETATION SUPPLY**

The Purchaser shall provide the all seed, mulch, straw and/or hay, matting etc..

**8-17 REVEGETATION TIMING**

Purchaser shall revegetate during the first available opportunity. Soils may not be allowed to sit exposed for longer than one month without receiving revegetation treatment unless otherwise approved in writing by the Contract Administrator. Soils shall not be allowed to sit exposed during any rain event.

**8-18 PROTECTION FOR SEED**

Purchaser shall provide a protective cover over the revegetated area. The protective cover may consist of but not be limited to, such items as dispersed straw and/or hay mulch 3" thick or jute matting. Seed must be covered before the first anticipated storm event.

**8-19 ASSURANCE FOR SEEDED AREA**

Purchaser shall ensure the growth of a uniform and dense crop (at least 50% coverage) of 3-inch tall grass. Purchaser shall reapply the grass seed and/or straw and/or hay mulch in areas that have failed to germinate or have been damaged through any cause, restore eroded or disturbed areas, clean up and properly dispose of eroded materials, and reapply the grass seed and/or straw and/or hay mulch at no addition cost to the state.

SUBSECTION SEED, FERTILIZER, AND MULCH

**8-25 GRASS SEED**

Purchaser shall evenly spread the seed mixture listed below on all exposed soil at a rate of 60 pounds per acre of exposed soil. Grass seed must meet the following specifications:

1. Weed seed may not exceed 0.5% by weight.
2. All seed species must have a minimum 90% germination rate, unless otherwise specified.
3. Seed must be certified.
4. Seed must be furnished in standard containers showing the following information:
  - a. Common name of seed
  - b. Net weight
  - c. Percent of purity
  - d. Percentage of germination
  - e. Percentage of weed seed and inert material
5. Seed must conform to the following mixture unless a comparable mix is approved in writing by the Contract Administrator.

<u>Kind and Variety of Seed in Mixture</u>	<u>% by Weight</u>	<u>Minimum % germination</u>
Perennial Rye	35-45	90
Red Fescue	30-40	90
Highland Bent	5-15	85
White Clover	10-20	90
Inert and Other Crop	0.5	

SECTION 9 – POST-HAUL ROAD WORK

SUBSECTION STRUCTURES

**9-1 EARTHEN BARRICADES**

Purchaser shall construct barricades in accordance with the EARTHEN BARRICADE DETAIL.

<u>Road</u>	<u>Stations</u>
1+00 Spur	0+10
1+01 Spur	0+10
1+35 Spur	0+10
3+35 Spur	0+10
1+75 Spur	0+10

**9-3 CULVERT MATERIAL REMOVED FROM STATE LAND**

Culverts removed from roads become the property of the Purchaser and must be removed from state land.

SUBSECTION POST-HAUL MAINTENANCE

**9-5 POST-HAUL MAINTENANCE**

Purchaser shall perform post-haul maintenance in accordance with the FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS and as specified below.

<u>Road</u>	<u>Stations</u>	<u>Additional Requirements</u>
All	All	Clean culverts, clean ditches, grade road shape and compact as directed by the Contract Administrator.
PA-J-5000	80+15 – 108+60	Apply post haul rock per Clause 6-72.
PA-J-5020	0+00 – 26+15	
PA-J-5400	0+00 – 46+40	
PA-J-5410	0+00 – 12+60	
PA-S-2500	0+00 – 27+00	
PA-S-2510	0+00 – 8+65	
PA-S-2550	0+00 – 116+00	
PA-S-2553	0+00 – 13+55	
PA-S-2580	21+30 – 39+30	
PA-S-2600	0+00 – 131+15	
PA-S-2610	0+00 – 34+20	
PA-S-1000	0+00 – 81+15	
PA-S-1100	0+00 – 16+15	
PA-S-1200	0+00 – 77+35	

SUBSECTION POST-HAUL LANDING MAINTENANCE

**9-10 LANDING DRAINAGE**

Purchaser shall provide for drainage of the landing surface as approved in writing by the Contract Administrator.

**9-11 LANDING EMBANKMENT**

Purchaser shall slope landing embankments to the original construction specifications.

SUBSECTION DECOMMISSIONING AND ABANDONMENT

**9-20 ROAD DECOMMISSIONING**

Purchaser shall decommission the following roads before the termination of this contract.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
1+00 Spur	0+00 – 1+00	Light Decommissioning
1+01 Spur	0+00 – 1+01	
1+35 Spur	0+00 – 1+35	
3+35 Spur	0+00 – 3+35	
1+75 Spur	0+00 – 1+75	
PA-S-2550	111+85 – 116+00	
3+75 Spur	2+00 – 3+75	
Total Stations	14.36 Stations	

**9-22 LIGHT DECOMMISSIONING**

- Remove road shoulder berms except as directed.
- Construct non-drivable waterbars according to the attached NON-DRIVABLE WATERBAR DETAIL at a maximum spacing that will produce a vertical drop of no more than 10 feet between waterbars or between natural drainage paths and with a maximum spacing of 300 feet, or as marked in the field.
- Skew waterbars at least 30 degrees from perpendicular to the road centerline on roads in excess of 3 percent grade.
- Key waterbars into the cut-slope to intercept the ditch. Waterbars must be outsloped to provide positive drainage. Outlets must be on stable locations.
- Block roads with earthen barricades in accordance with the attached EARTHEN BARRICADE DETAIL.
- Remove culverts.
- Remove ditch cross drain culverts and leave the resulting trench open.
- Slope all trench walls and approach embankments no steeper than 1.5:1.
- Cover, concurrently with decommissioning, all exposed soils within 100 feet of any live stream, with a 3-inch deep layer of straw and/or hay.

SECTION 10 MATERIALS

SUBSECTION GEOTEXTILES

**10-2 GEOTEXTILE FOR SEPARATION**

Geotextiles must meet the following minimum requirements for strength and property qualities, and must be designed by the manufacturer to be used for separation. Material must be free of defects, cuts, and tears.

	<u>ASTM Test</u>	<u>Requirements</u>
Type	--	Non-woven
Apparent opening size	D 4751	No. 30 max
Water permittivity	D 4491	0.02 sec <sup>-1</sup>
Grab tensile strength	D 4632	160 lb
Grab tensile elongation	D 4632	>= 50%
Puncture strength	D 6241	310 lb
Tear strength	D 4533	50 lb
Ultraviolet stability	D 4355	50% retained after 500 hours of exposure

**10-3 GEOTEXTILE FOR STABILIZATION**

Geotextiles must meet the following minimum requirements for strength and property qualities, and must be designed by the manufacturer to be used for stabilization or reinforcement, and filtration. Material must be free of defects, cuts, and tears.

	<u>ASTM Test</u>	<u>Requirements</u>
Type	--	Woven
Apparent opening size	D 4751	No. 40 max
Water permittivity	D 4491	0.10 sec <sup>-1</sup>
Grab tensile strength	D 4632	315 lb
Grab tensile elongation	D 4632	<50%
Puncture strength	D 6241	620 lb
Tear strength	D 4533	112 lb
Ultraviolet stability	D 4355	50% retained after 500 hours of exposure

**10-6 GEOTEXTILE FOR TEMPORARY SILT FENCE**

Geotextiles must meet the following minimum requirements for strength and property qualities, and must be designed by the manufacturer to be used for filtration. Woven slit-film geotextiles are not allowed. Material must be free of defects, cuts, and tears.

	<u>ASTM Test</u>	<u>Requirements</u>
Type	--	Unsupported between posts
Apparent opening size	D 4751	No. 30 max., No. 100 min.
Water permittivity	D 4491	0.02 sec <sup>-1</sup>
Grab tensile strength	D 4632	180 lb in machine direction, 100lb in cross-machine direction
Grab tensile elongation	D 4632	30% max. at 180 lb or more
Ultraviolet stability	D 4355	70% retained after 500 hours of exposure

SUBSECTION CULVERTS

**10-15 CORRUGATED STEEL CULVERT**

Metallic coated steel culverts must meet AASHTO M-36 (ASTM A-760) specifications. Culverts must be galvanized (zinc coated meeting AASHTO M-218) except culverts over 36 inches must be aluminized (aluminum type 2 coated meeting AASHTO M-274).

**10-17 CORRUGATED PLASTIC CULVERT**

Polyethylene culverts must meet AASHTO M-294 specifications, or ASTM F-2648 specifications for recycled polyethylene. Culverts must be Type S – double walled with a corrugated exterior and smooth interior.

**10-21 METAL BAND**

Metal coupling and end bands must meet the AASHTO specification designated for the culvert and must have matching corrugations. Culverts 24 inches and smaller must have bands with a minimum width of 12 inches. Culverts over 24 inches must have bands with a minimum width of 24 inches.

**10-22 PLASTIC BAND**

Plastic coupling and end bands must meet the AASHTO specification designated for the culvert. Only fittings supplied or recommended by the culvert manufacturer may be used. Couplings must be split coupling band. Split coupling bands must have a minimum of four corrugations, two on each side of the pipe joint.

**10-23 RUBBER CULVERT GASKETS**

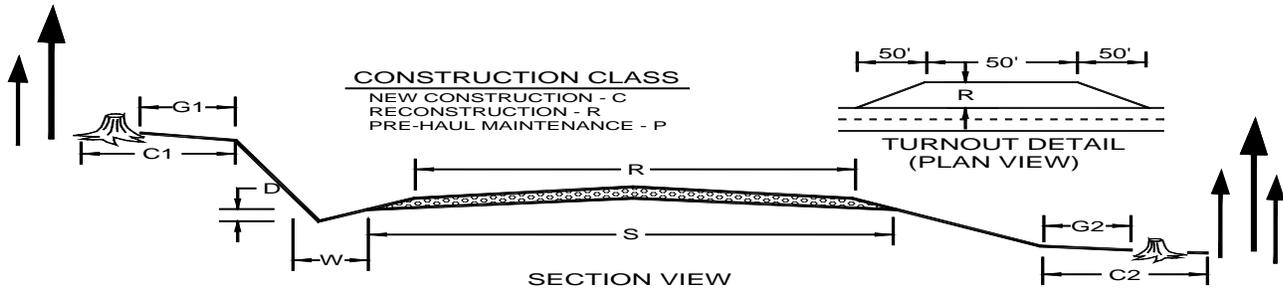
Rubber gaskets must be continuous closed cell, synthetic expanded rubber gaskets conforming to the requirements of ASTM D 1056. Rubber gaskets must be used with all corrugated metal pipe coupling bands.

**10-24 GAUGE AND CORRUGATION**

Unless otherwise stated in the design, detail sheets or in Clause 7-55 LARGE CULVERT INSTALLATION, metal culverts must conform to the following specifications for gage and corrugation as a function of diameter.

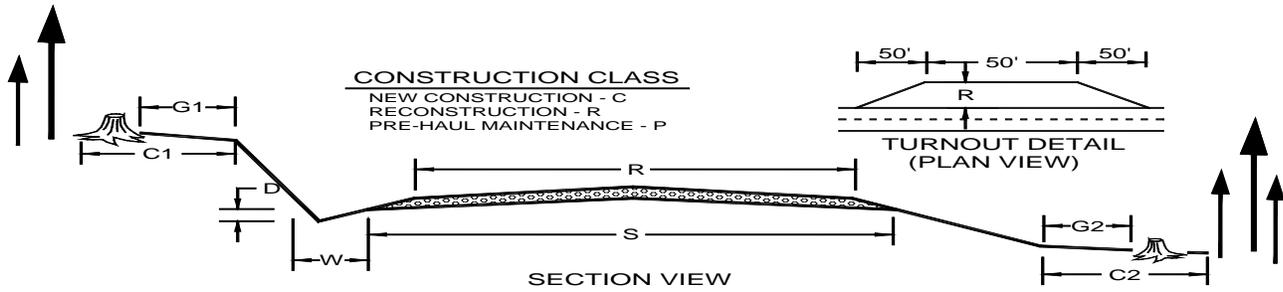
<u>Diameter</u>	<u>Gauge</u>	<u>Corrugation</u>
18"	16 (0.064")	2 2/3" X 1/2"
24" to 48"	14 (0.079")	2 2/3" X 1/2"
54" to 96"	12 (0.109")	3" X 1" or 5" x 1"

## TYPICAL SECTION SHEET



ROAD NAME	START STATION	END STATION	CONSTRUCTION CLASS	TOLERANCE CLASS	SUBGRADE WIDTH (S)	ROAD WIDTH (R)	CROWN AT CL (in)	DITCH WIDTH (W)	DITCH DEPTH (D)	GRUBBING CUT BANK (G1)	GRUBBING FILL TOE (G2)	ROAD CUT CLEARING (C1)	ROAD FILL CLEARING (C2)
PA-J-5000	0+00	108+60	P			12'	3"	3'	1'				
PA-J-5015	0+00	23+00	P			12'	3"	3'	1'				
PA-J-5015	23+00	31+00	R	B	17'	12'	3"	3'	1'	5'	5'	10'	5'
PA-J-5016	0+00	9+50	R	B	17'	12'	3"	3'	1'	5'	5'	10'	5'
PA-J-5017	0+00	19+35	R	B	17'	12'	3"	3'	1'	5'	5'	10'	5'
PA-J-5017	19+35	24+30	C	C	17'	12'	3"	3'	1'	5'	5'	10'	5'
PA-J-5017.1	0+00	1+35	R	B	17'	12'	3"	3'	1'	5'	5'	10'	5'
PA-J-5017.2	0+00	3+00	R	B	17'	12'	3"	3'	1'	5'	5'	10'	5'
PA-J-5018	0+00	4+40	C	C	17'	12'	3"	3'	1'	5'	5'	10'	5'
PA-J-5020	0+00	26+15	P			12'	3"	3'	1'				
PA-J-5025	0+00	10+00	P	B	17'	12'	3"	3'	1'	5'	5'	10'	5'
PA-J-5400	0+00	32+30	P			12'	3"	3'	1'				
PA-J-5400	32+30	42+40	C	C	17'	12'	3"	3'	1'	5'	5'	10'	5'
PA-J-5400	42+40	46+40	R	B	17'	12'	3"	3'	1'	5'	5'	10'	5'
PA-J-5410	0+00	12+60	C	C	17'	12'	3"	3'	1'	5'	5'	10'	5'
PA-J-5500	0+00	47+35	P			12'	3"	3'	1'				
PA-J-5700 A	0+00	19+00	P			12'	3"	3'	1'				
Agate Pit Road	0+00	3+00	P			12'	3"	3'	1'				
PA-S-2500	0+00	36+20	P			12'	3"	3'	1'				
PA-S-2510	0+00	8+65	P			12'	3"	3'	1'				
1+00 Spur	0+00	1+00	C	C	17'	12'	3"	3'	1'	5'	5'	10'	5'
1+01 Spur	0+00	1+01	C	C	17'	12'	3"	3'	1'	5'	5'	10'	5'
PA-S-2550	0+00	104+10	P			12'							
PA-S-2550	104+10	116+00	C	C	17'	12'	3"	3'	1'	5'	5'	10'	5'

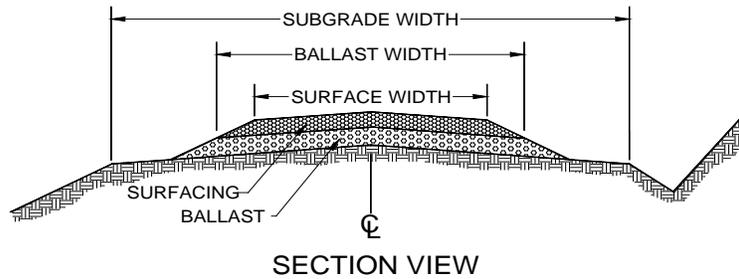
## TYPICAL SECTION SHEET CONTINUED



ROAD NAME	START STATION	END STATION	CONSTRUCTION CLASS	TOLERANCE CLASS	SUBGRADE WIDTH (S)	ROAD WIDTH (R)	CROWN AT CL (in)	DITCH WIDTH (W)	DITCH DEPTH (D)	GRUBBING CUT BANK (G1)	GRUBBING FILL TOE (G2)	ROAD CUT CLEARING (C1)	ROAD FILL CLEARING (C2)
1+35 Spur	0+00	1+35	C	C	17'	12'	3"	3'	1'	5'	5'	10'	5'
PA-S-2551	0+00	13+70	P			12'	3"	3'	1'				
PA-S-2551.2	0+00	18+30	C	C	17'	12'	3"	3'	1'	5'	5'	10'	5'
3+35 Spur	0+00	3+35	C	C	17'	12'	3"	3'	1'	5'	5'	10'	5'
PA-S-2553	0+00	13+55	R	B	17'	12'	3"	3'	1'	5'	5'	10'	5'
PA-S-2553.2	0+00	7+00	C	C	17'	12'	3"	3'	1'	5'	5'	10'	5'
PA-S-2554	0+00	5+45	R	B	17'	12'	3"	3'	1'	5'	5'	10'	5'
PA-S-2554	5+45	25+00	C	B	17'	12'	3"	3'	1'	5'	5'	10'	5'
PA-S-2554	25+00	32+45	C	C	17'	12'	3"	3'	1'	5'	5'	10'	5'
PA-S-2554.1	0+00	8+70	C	C	17'	12'	3"	3'	1'	5'	5'	10'	5'
PA-S-2554.2	0+00	12+55	C	C	17'	12'	3"	3'	1'	5'	5'	10'	5'
PA-S-2555	0+00	14+00	P			12'	3"	3'	1'				
PA-S-2555.2	0+00	5+45	R	B	17'	12'	3"	3'	1'	5'	5'	10'	5'
PA-S-2555.2	5+45	18+40	C	C	17'	12'	3"	3'	1'	5'	5'	10'	5'
PA-S-2580	21+30	39+30	R	B	17'	12'	3"	3'	1'	5'	5'	10'	5'
PA-S-2582	0+00	6+40	R	B	17'	12'	3"	3'	1'	5'	5'	10'	5'
PA-S-2582.1	0+00	24+35	C	C	17'	12'	3"	3'	1'	5'	5'	10'	5'
1+75 Spur	0+00	1+75	C	C	17'	12'	3"	3'	1'	5'	5'	10'	5'
PA-S-2600	0+00	131+15	P			12'	3"	3'	1'				
PA-S-2610	0+00	31+85	P			12'	3"	3'	1'				
PA-S-2610	31+85	34+20	P			12'	3"	3'	1'				
PA-S-2612	0+00	5+05	C	C	17'	12'	3"	3'	1'	5'	5'	10'	5'
5+70 Spur	0+00	1+10	P			12'	3"	3'	1'				
5+70 Spur	1+10	5+70	C	C	17'	12'	3"	3'	1'	5'	5'	10'	5'
PA-S-2640	0+00	13+40	C	C	17'	12'	3"	3'	1'	5'	5'	10'	5'



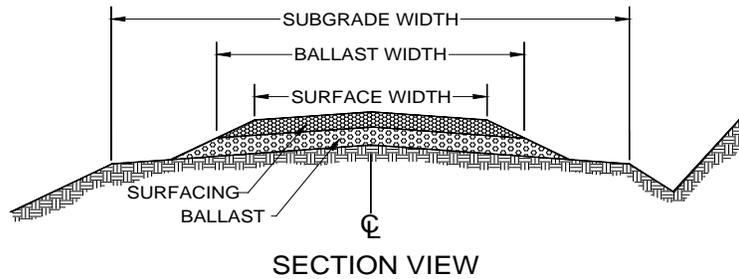
## ROCK LIST SHEET



1. Rock quantities, subtotals and totals are "truck measure" estimates. Rock shall be applied to at least the depths listed.
2. All depths are compacted depths.
3. Rock slopes shall be 1½ (H) : 1 (V).
4. All rock sources are subject to approval by the Contract Administrator.
5. Pitrun is defined as pitrun or ballast per Line 6. Crushed is defined as any crushed rock from ¼" minus to 4" minus per Line 6. Oversize is defined as oversize, quarry spalls, light loose rip rap, or heavy loose rip rap per Line 6.
6. Rock sources= 1: Agate Pit Shot Rock Ballast, 2: Agate Pit 3" minus, 3: Agate Pit Light Loose Rip Rap 4: Place Pit 1 ¼" minus 5: Place Pit Eng. Streambed 6: Commercial Source

ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	Pitrun SOURCE	Pitrun WIDTH (ft)	Pitrun DEPTH (in)	Pitrun Quantity(yd <sup>3</sup> /sta)	Pitrun SUBTOTAL(yd <sup>3</sup> )	Crushed SOURCE	Crushed WIDTH (ft)	Crushed DEPTH (in)	Crushed Quantity(yd <sup>3</sup> /sta)	Crushed Subtotal(yd <sup>3</sup> )	Oversize/ Rip rap Source	Oversize/Rip Rap Quantity(yd <sup>3</sup> )
<b>PA-J-5000</b>															
Misc.	0+00	108+60							2				300		
Culvert	95+45								2				20		
Post Haul	80+15	108+60							2				50		
<b>PA-J-5015</b>															
Misc.	0+00	31+00							2				50		
Lift	23+00	31+00							2	12	12	70	560		
Culvert	24+90								2				20		
Turnout	29+40			1			20								
<b>PA-J-5016</b>															
Lift	0+00	9+50							2	12	12	70	660		
Culvert	0+40								2				20		
Culvert	3+85								2				20		
Culvert	7+55								2				20		
<b>PA-J-5017</b>															
Lift	0+00	19+35							2	12	12	70	1360		
Culvert	0+10												20		
Culvert	1+40												20		
Culvert	17+45								2				20		
<b>Totals:</b>								1: 20					2: 3140		

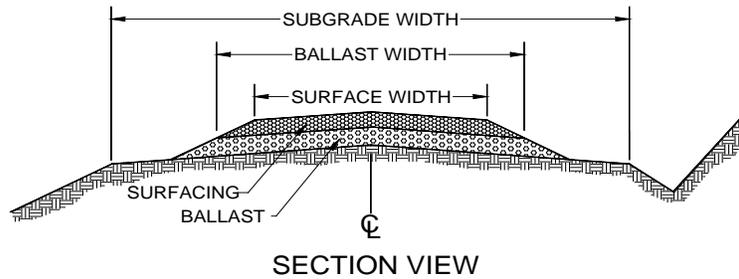
## ROCK LIST SHEET CONTINUED



1. Rock quantities, subtotals and totals are "truck measure" estimates. Rock shall be applied to at least the depths listed.
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6. Rock sources= 1: Agate Pit Shot Rock Ballast, 2: Agate Pit 3" minus, 3: Agate Pit Light Loose Rip Rap 4: Place Pit 1 ¼" minus 5: Place Pit Eng. Streambed 6: Commercial Source

ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	Pitrun SOURCE	Pitrun WIDTH (ft)	Pitrun DEPTH (in)	Pitrun Quantity(yd <sup>3</sup> /sta)	Pitrun SUBTOTAL(yd <sup>3</sup> )	Crushed SOURCE	Crushed WIDTH (ft)	Crushed DEPTH (in)	Crushed Quantity(yd <sup>3</sup> /sta)	Crushed Subtotal(yd <sup>3</sup> )	Oversize/ Rip rap	Oversize/Rip Rap Quantity(yd <sup>3</sup> )
<b>PA-J-5017 Cont.</b>															
Turnaround	11+85			1			50								
Lift	19+35	24+30	17	1	14	12	70	350	2	12	6	35	170		
Landing	24+30			1			50								
<b>PA-J-5017.1</b>															
Lift	0+00	1+35							2	12	12	70	90		
Landing	1+35			1			50								
<b>PA-J-5017.2</b>															
Lift	0+00	3+00							2	12	12	70	210		
Landing	3+00			1			50								
<b>PA-J-5018</b>															
Lift	0+00	4+00	17	1	14	12	70	310	2	12	6	35	160		
Turnaround	3+05			1			50								
Landing	4+40			1			50								
<b>PA-J-5020</b>															
Lift	0+00	26+15							2	12	12	70	1830		
Culvert	0+10								2				20		
Culvert	9+65								2				20		
Culvert	10+92			1			360		2				160	3	20
Culvert	10+92			5			180								
Culvert	12+15								2				20		
<b>Totals:</b>								1: 1320, 5: 180					2: 2680		20

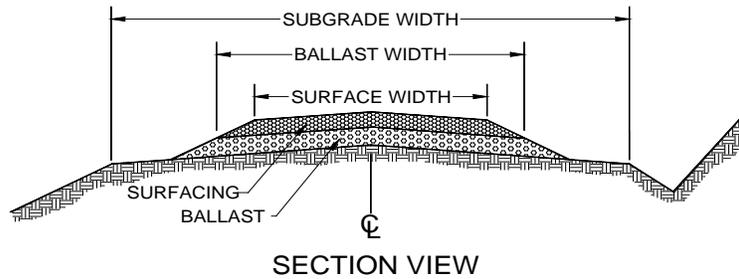
## ROCK LIST SHEET CONTINUED



1. Rock quantities, subtotals and totals are "truck measure" estimates. Rock shall be applied to at least the depths listed.
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4. All rock sources are subject to approval by the Contract Administrator.
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ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	Pitrun SOURCE	Pitrun WIDTH (ft)	Pitrun DEPTH (in)	Pitrun Quantity(yd <sup>3</sup> /sta)	Pitrun SUBTOTAL(yd <sup>3</sup> )	Crushed SOURCE	Crushed WIDTH (ft)	Crushed DEPTH (in)	Crushed Quantity(yd <sup>3</sup> /sta)	Crushed Subtotal(yd <sup>3</sup> )	Oversize/ Rip rap Source	Oversize/Rip Rap Quantity(yd <sup>3</sup> )
<b>PA-J-5020 Cont.</b>															
Turnaround	13+85			1				50							
Culvert	16+45								2				20		
Turnout	19+00			1				20							
Culvert	20+40								2				20		
Post Haul	0+00	26+15							2				50		
<b>PA-J-5025</b>															
Lift	0+00	10+00							2	12	6	35	350		
Culvert	7+65								2				20		
Turnaround	8+65			1				50							
Landing	10+00			1				50							
<b>PA-J-5400</b>															
Lift	32+30	42+40	17	1	14	12	70	710	2	12	6	35	400		
Culvert	32+30								2				20		
Culvert	38+65								2				20		
Lift	42+40	46+40							2	12	6	35	140		
Turnout	43+00			1				20							
Post Haul	0+00	46+40							2				50		
<b>Totals:</b>								<b>1: 900</b>					<b>2: 1090</b>		

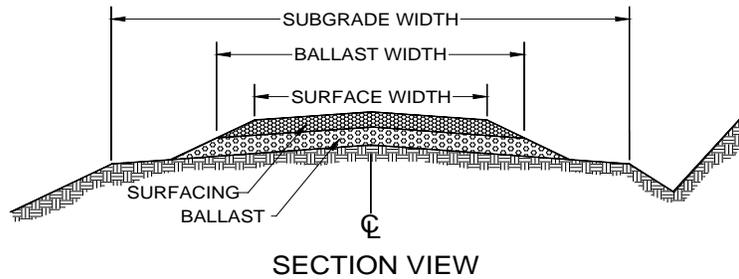
## ROCK LIST SHEET CONTINUED



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ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	Pitrun SOURCE	Pitrun WIDTH (ft)	Pitrun DEPTH (in)	Pitrun Quantity(yd <sup>3</sup> /sta)	Pitrun SUBTOTAL(yd <sup>3</sup> )	Crushed SOURCE	Crushed WIDTH (ft)	Crushed DEPTH (in)	Crushed Quantity(yd <sup>3</sup> /sta)	Crushed Subtotal(yd <sup>3</sup> )	Oversize/ Rip rap Source	Oversize/Rip Rap Quantity(yd <sup>3</sup> )
<b>PA-J-5410</b>															
Lift	0+00	12+60	17	1	14	12	70	880	2	12	6	35	440		
Culvert	3+20												20		
Culvert	3+75												20		
Culvert	8+15												20		
Culvert	8+90												20		
Culvert	12+50												20		
Post Haul	0+00	12+60											50		
<b>PA-S-2500</b>															
Misc.	0+00	27+00							4,6				100		
Misc.	27+00	36+20							2				100		
Post Haul	0+00	27+00							4,6				50		
<b>PA-S-2510</b>															
Misc.	0+00	8+65							4,6				50		
Post Haul	0+00	8+65							4,6				50		
<b>1+00 Spur</b>															
Lift	0+00	1+00	17	1	14	12	70	70	2	12	6	35	40		
Landing	1+00							50							
Totals:								1: 1000					2:730, 4 or 6: 250		

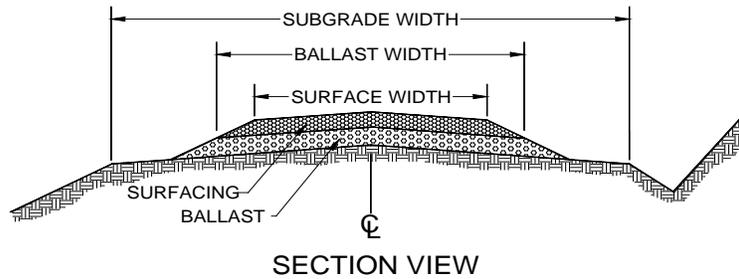
## ROCK LIST SHEET CONTINUED



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ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	Pitrun SOURCE	Pitrun WIDTH (ft)	Pitrun DEPTH (in)	Pitrun Quantity(yd <sup>3</sup> /sta)	Pitrun SUBTOTAL(yd <sup>3</sup> )	Crushed SOURCE	Crushed WIDTH (ft)	Crushed DEPTH (in)	Crushed Quantity(yd <sup>3</sup> /sta)	Crushed Subtotal(yd <sup>3</sup> )	Oversize/ Rip rap Source	Oversize/Rip Rap Quantity(yd <sup>3</sup> )
<b>1+01 Spur</b>															
Lift	0+00	1+01	17	1	14	12	70	70	2	12	6	35	40		
Landing	1+01							50							
<b>PA-S-2550</b>															
Misc.	0+00	104+10							2				250		
Lift	0+00	4+75							2	12	3	15	70		
Lift	33+75	49+10							2	12	6	35	540		
Lift	51+75	57+00							2	12	6	35	190		
Lift	68+00	104+10							2	12	6	35	1260		
Culvert	86+30								2				20		
Culvert	89+65								2				20		
Spot Patch	89+75			1				30							
Turnout	102+80			1				20							
Lift	104+10	108+75	17	1	14	12	70	330	2	12	6	35	160		
Lift	108+75	116+00	17	1	12	18	110	800							
Culvert	104+35								2				20		
Culvert	107+90								2				20		
Turnaround	108+50			1				50							
Culvert	110+30								2				20		
<b>Totals:</b>								<b>1: 1350</b>					<b>2: 2610</b>		

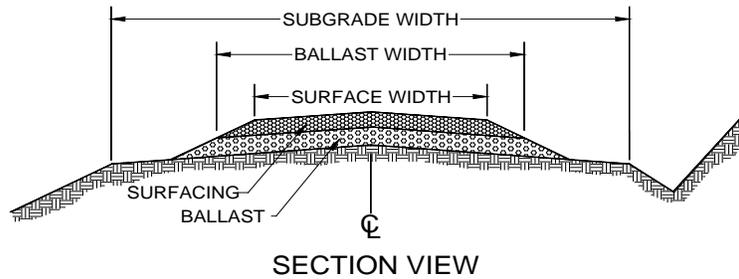
## ROCK LIST SHEET CONTINUED



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ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	Pitrun SOURCE	Pitrun WIDTH (ft)	Pitrun DEPTH (in)	Pitrun Quantity(yd <sup>3</sup> /sta)	Pitrun SUBTOTAL(yd <sup>3</sup> )	Crushed SOURCE	Crushed WIDTH (ft)	Crushed DEPTH (in)	Crushed Quantity(yd <sup>3</sup> /sta)	Crushed Subtotal(yd <sup>3</sup> )	Oversize/ Rip rap Source	Oversize/Rip Rap Quantity(yd <sup>3</sup> )
<b>PA-S-2550 Cont.</b>															
Culvert	111+85			1				80							
Culvert	114+60								2				20		
Turnaround	114+75			1				50							
Landing	116+00			1				50							
Post Haul	0+00	116+00							2				150		
<b>1+35 Spur</b>															
Lift	0+00	1+35	17	1	14	12	70	100	2	12	6	35	50		
Landing	1+35			1				50							
<b>PA-S-2551</b>															
Misc.	0+00	13+70							2				50		
Culvert	8+40								2				20		
<b>PA-S-2551.2</b>															
Lift	0+00	18+30	17	1	14	12	70	1280	2	12	6	35	640		
Culvert	0+85								2				20		
Culvert	3+40								2				20		
Culvert	6+55								2				20		
Culvert	7+80								2				20		
Totals:								1: 1610					2: 1010		

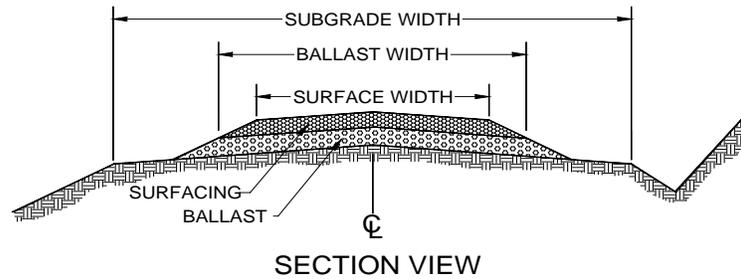
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ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	Pitrun SOURCE	Pitrun WIDTH (ft)	Pitrun DEPTH (in)	Pitrun Quantity(yd <sup>3</sup> /sta)	Pitrun SUBTOTAL(yd <sup>3</sup> )	Crushed SOURCE	Crushed WIDTH (ft)	Crushed DEPTH (in)	Crushed Quantity(yd <sup>3</sup> /sta)	Crushed Subtotal(yd <sup>3</sup> )	Oversize/ Rip rap Source	Oversize/Rip Rap Quantity(yd <sup>3</sup> )
<b>PA-S-2551.2 Cont.</b>															
Culvert	8+80								2				20		
Turnout	11+80								2				20		
Culvert	12+60								2				20		
Turnaround	16+65			1			50								
Culvert	17+65								2				20		
Landing	18+30			1			50								
<b>3+35 Spur</b>															
Lift	0+00	3+35	17	1	14	12	70	240	2	12	6	35	120		
Culvert	1+45								2				20		
Turnaround	3+00			1			50								
Landing	3+35			1			50								
<b>PA-S-2553</b>															
Lift	0+00	13+55							2	12	12	70	950		
Culvert	3+55								2				20		
Culvert	4+75			1			40	40	2				10		
Culvert	12+60								2				20		
Post Haul	0+00	13+55							2				50		
Totals:								1: 480					2: 1270		

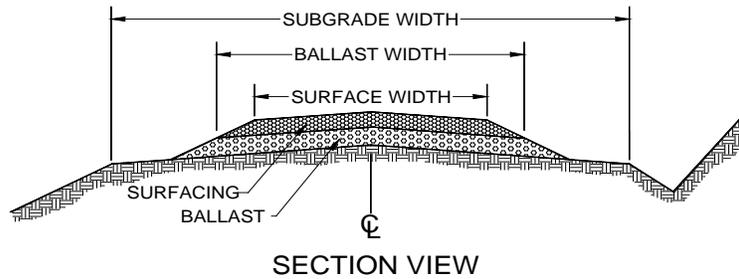
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ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	Pitrun SOURCE	Pitrun WIDTH (ft)	Pitrun DEPTH (in)	Pitrun Quantity(yd <sup>3</sup> /sta)	Pitrun SUBTOTAL(yd <sup>3</sup> )	Crushed SOURCE	Crushed WIDTH (ft)	Crushed DEPTH (in)	Crushed Quantity(yd <sup>3</sup> /sta)	Crushed Subtotal(yd <sup>3</sup> )	Oversize/ Rip rap Source	Oversize/Rip Rap Quantity(yd <sup>3</sup> )
<b>PA-S-2553.2</b>															
Lift	0+00	7+00	17	1	14	12	70	490	2	12	6	35	250		
Culvert	0+10								2				20		
Culvert	6+90								2				20		
<b>PA-S-2554</b>															
Lift	0+00	5+45							2	12	6	35	190		
Spot Patch	0+95			1				20							
Lift	5+45	32+45	17	1	14	12	70	1890	2	12	6	35	950		
Culvert	6+75								2				20		
Turnout	10+25			1				20							
Culvert	11+10								2				20		
Culvert	11+93								2				20	3	5
Culvert	12+90								2				20	3	5
Culvert	17+77								2				20	3	5
Culvert	23+35								2				20	3	5
Culvert	24+21								2				20	3	5
Culvert	25+00								2				20	3	5
Turnout	25+30			1				20							
Totals:								1: 2440					2: 1590		30

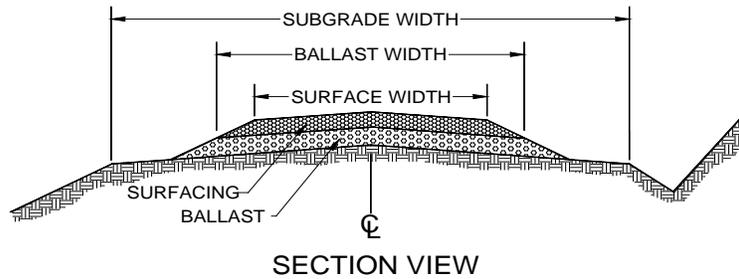
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ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	Pitrun SOURCE	Pitrun WIDTH (ft)	Pitrun DEPTH (in)	Pitrun Quantity(yd <sup>3</sup> /sta)	Pitrun SUBTOTAL(yd <sup>3</sup> )	Crushed SOURCE	Crushed WIDTH (ft)	Crushed DEPTH (in)	Crushed Quantity(yd <sup>3</sup> /sta)	Crushed Subtotal(yd <sup>3</sup> )	Oversize/ Rip rap Source	Oversize/Rip Rap Quantity(yd <sup>3</sup> )
<b>PA-S-2554 Cont.</b>															
Culvert	27+50								2				20		
Culvert	29+20								2				20	3	5
Turnout	30+80			1				20							
Landing	32+45			1				50							
<b>PA-S-2554.1</b>															
Lift	0+00	8+70	17	1	14	12	70	610	2	12	6	35	300		
Culvert	2+10								2				20		
Turnout	4+00			1				20							
Culvert	5+80								2				20		
Turnaround	6+90			1				50							
Landing	8+70			1				50							
<b>PA-S-2554.2</b>															
Lift	0+00	12+55	17	1	14	12	70	880	2	12	6	35	440		
Culvert	0+15								2				20		
Turnaround	6+15			1				50							
Landing	6+75			1				50							
Culvert	7+20								2				20	3	5
Totals:								1: 1780					2: 860		10

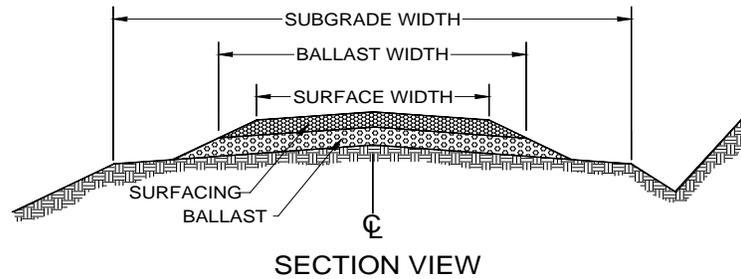
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ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	Pitrun SOURCE	Pitrun WIDTH (ft)	Pitrun DEPTH (in)	Pitrun Quantity(yd <sup>3</sup> /sta)	Pitrun SUBTOTAL(yd <sup>3</sup> )	Crushed SOURCE	Crushed WIDTH (ft)	Crushed DEPTH (in)	Crushed Quantity(yd <sup>3</sup> /sta)	Crushed Subtotal(yd <sup>3</sup> )	Oversize/ Rip rap Source	Oversize/Rip Rap Quantity(yd <sup>3</sup> )
<b>PA-S-2554.2</b> Cont.															
Culvert	11+10								2				20	3	5
Landing	12+55			1				80							
<b>PA-S-2555</b>															
Lift	0+00	14+00							2	12	6	35	490		
<b>PA-S-2555.2</b>															
Lift	0+00	5+45							2	12	12	70	380		
Lift	5+45	18+40	17	1	14	12	70	910	2	12	6	35	450		
Culvert	3+95								2				20		
Culvert	7+40								2				20		
Culvert	10+50								2				20		
Turnaround	11+50			1				50							
Turnout	13+75			1				20							
Culvert	14+50								2				20		
Turnaround	15+90			1				50							
Landing	18+40			1				50							
<b>PA-S-2580</b>															
Lift	21+30	39+30							2	12	6	70	1260		
Totals:								1: 1160					2: 2680		5

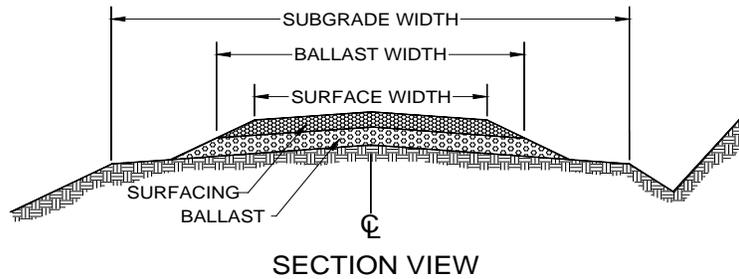
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ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	Pitrun SOURCE	Pitrun WIDTH (ft)	Pitrun DEPTH (in)	Pitrun Quantity(yd <sup>3</sup> /sta)	Pitrun SUBTOTAL(yd <sup>3</sup> )	Crushed SOURCE	Crushed WIDTH (ft)	Crushed DEPTH (in)	Crushed Quantity(yd <sup>3</sup> /sta)	Crushed Subtotal(yd <sup>3</sup> )	Oversize/ Rip rap Source	Oversize/Rip Rap Quantity(yd <sup>3</sup> )
<b>PA-S-2580 Cont.</b>															
Spot Patch	22+85			1				20							
Turnout	24+30			1				20							
Culvert	25+25								2				20		
Culvert	28+95								2				20		
Turnout	30+85			1				20							
Culvert	32+80								2				20	3	5
Culvert	38+10								2				20		
Post Haul	21+30	39+30							2				50		
<b>PA-S-2582</b>															
Lift	0+00	6+40		1	14	12	70	450	2	12	6	35	230		
Culvert	0+10												20		
<b>PA-S-2582.1</b>															
Lift	0+00	24+35	17	1	14	12	70	1700	2	12	6	35	860		
Culvert	0+05								2				20		
Culvert	2+25								2				20		
Culvert	5+00								2				20		
Turnout	7+35			1				20							
Culvert	10+85								2				20		
<b>Totals:</b>								<b>1: 2230</b>					<b>2: 1320</b>		<b>5</b>

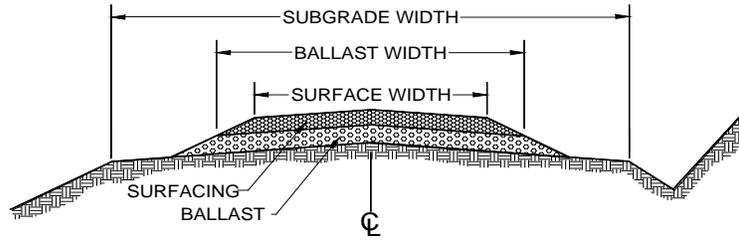
## ROCK LIST SHEET CONTINUED



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6. Rock sources= 1: Agate Pit Shot Rock Ballast, 2: Agate Pit 3" minus, 3: Agate Pit Light Loose Rip Rap 4: Place Pit 1 ¼" minus 5: Place Pit Eng. Streambed 6: Commercial Source

ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	Pitrun SOURCE	Pitrun WIDTH (ft)	Pitrun DEPTH (in)	Pitrun Quantity(yd <sup>3</sup> /sta)	Pitrun SUBTOTAL(yd <sup>3</sup> )	Crushed SOURCE	Crushed WIDTH (ft)	Crushed DEPTH (in)	Crushed Quantity(yd <sup>3</sup> /sta)	Crushed Subtotal(yd <sup>3</sup> )	Oversize/ Rip rap Source	Oversize/Rip Rap Quantity(yd <sup>3</sup> )
<b>PA-S-2582.1 Cont.</b>															
Turnaround	11+15			1			50								
Culvert	12+20								2				20		
Culvert	13+05								2				20		
Turnout	14+05			1			20								
Culvert	15+75								2				20	3	5
Culvert	16+50								2				20	3	5
Culvert	19+25								2				20	3	5
Culvert	20+45								2				20	3	5
Turnout	21+95			1			20								
Culvert	22+75								2				20		
Turnaround	23+70			1			50								
Landing	24+35			1			50								
<b>1+75 Spur</b>															
Lift	0+00	1+75	17	1	14	12	70	120	2	12	6	35	60		
Culvert	0+10								2				20		
Landing	1+75			1			50								
<b>PA-S-2600</b>															
Misc.	0+00	131+15							2				150		
Lift	2+20	5+85							2	12	6	35	130		
<b>Totals:</b>								<b>1: 360</b>					<b>2: 500</b>		<b>20</b>

## ROCK LIST SHEET CONTINUED

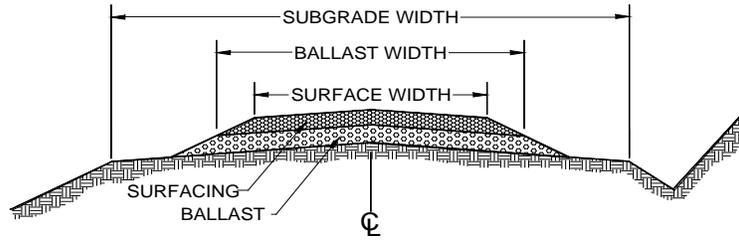


SECTION VIEW

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ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	Pitrun SOURCE	Pitrun WIDTH (ft)	Pitrun DEPTH (in)	Pitrun Quantity(yd <sup>3</sup> /sta)	Pitrun SUBTOTAL(yd <sup>3</sup> )	Crushed SOURCE	Crushed WIDTH (ft)	Crushed DEPTH (in)	Crushed Quantity(yd <sup>3</sup> /sta)	Crushed Subtotal(yd <sup>3</sup> )	Oversize/ Rip rap Source	Oversize/Rip Rap Quantity(yd <sup>3</sup> )
<b>PA-S-2600 Cont.</b>															
Lift	8+20	14+20							2	12	6	35	210		
Spot Patch	22+25			1				10	2				10		
Spot Patch	29+60			1				10	2				10		
Lift	42+30	54+70							2	12	6	35	430		
Lift	80+40	86+15							2	12	6	35	200		
Lift	91+10	131+15							2	12	3	15	600		
Landing	107+50			1				50							
Landing	115+45			1				80							
Post Haul	0+00	131+15							2				200		
<b>PA-S-2610</b>															
Lift	0+00	34+20							2	12	6	35	1200		
Culvert	8+45								2				20		
Bridge Install	9+80			1				150	2				50		
Culvert	10+80								2				20		
Turnaround	12+15			1				50							
Turnout	16+70			1				20							
Turnout	30+15			1				20							
Post Haul	0+00	34+20							2				50		
Totals:								1: 390					2: 3000		

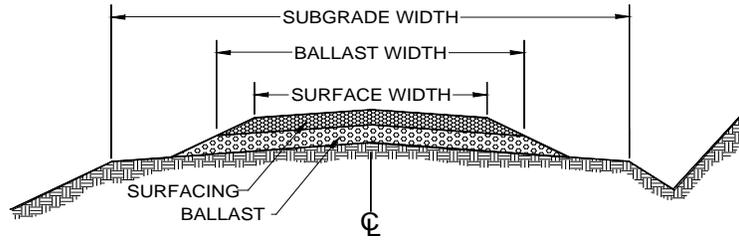
## ROCK LIST SHEET CONTINUED



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ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	Pitrun SOURCE	Pitrun WIDTH (ft)	Pitrun DEPTH (in)	Pitrun Quantity(yd <sup>3</sup> /sta)	Pitrun SUBTOTAL(yd <sup>3</sup> )	Crushed SOURCE	Crushed WIDTH (ft)	Crushed DEPTH (in)	Crushed Quantity(yd <sup>3</sup> /sta)	Crushed Subtotal(yd <sup>3</sup> )	Oversize/ Rip rap Source	Oversize/Rip Rap Quantity(yd <sup>3</sup> )
<b>PA-S-2612</b>															
Lift	0+00	5+05	17	1	17	12	70	350	2	12	6	35	180		
Culvert	0+10								2				20		
Culvert	2+20								2				20		
Turnaround	4+25			1			50								
Landing	5+05			1			50								
<b>5+70 Spur</b>															
Lift	1+10	5+70	17	1	17	12	70	320	2	12	6	35	160		
Culvert	0+10								2				20		
Culvert	4+55								2				20		
Turnaround	5+20			1			50								
Landing	5+70			1			50								
<b>PA-S-2640</b>															
Lift	0+00	13+40	17	1	17	12	70	940	2	12	6	35	470		
Culvert	0+10								2				20		
Culvert	1+70								2				20		
Turnout	3+45			1			20								
Culvert	11+05								2				20		
Totals:								1: 1830					2: 950		

## ROCK LIST SHEET CONTINUED

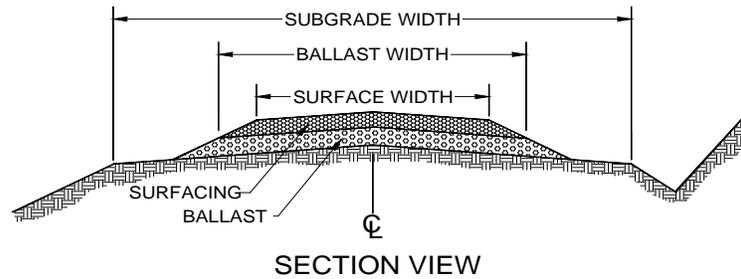


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ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	Pitrun SOURCE	Pitrun WIDTH (ft)	Pitrun DEPTH (in)	Pitrun Quantity(yd <sup>3</sup> /sta)	Pitrun SUBTOTAL(yd <sup>3</sup> )	Crushed SOURCE	Crushed WIDTH (ft)	Crushed DEPTH (in)	Crushed Quantity(yd <sup>3</sup> /sta)	Crushed Subtotal(yd <sup>3</sup> )	Oversize/ Rip rap Source	Oversize/Rip Rap Quantity(yd <sup>3</sup> )
<b>PA-S-2640 Cont.</b>															
Turnaround	12+35			1				50							
Landing	13+40			1				50							
<b>2+60 Spur</b>															
Lift	0+00	2+60	17	1	14	12	70	180	2	12	6	35	90		
Culvert	1+35								2				20		
Turnaroud	1+70			1				50							
Landing	2+60			1				80							
<b>3+75 Spur</b>															
Lift	0+00	3+75	17	1	14	12	70	260	2	12	6	35	130		
Culvert	2+00								2				20		
Turnaround	3+00			1				50							
Landing	3+75			1				80							
<b>0+70 Spur</b>															
Lift	0+00	0+70	17	1	14	12	70	50	2	12	6	35	30		
Landing	0+70							80							
<b>PA-S-1000</b>															
Misc.	0+00	81+15							4,6				100		
Post Haul	0+00	81+15							4,6				50		
Totals:								1: 930					2: 290, 4 or 6: 150		

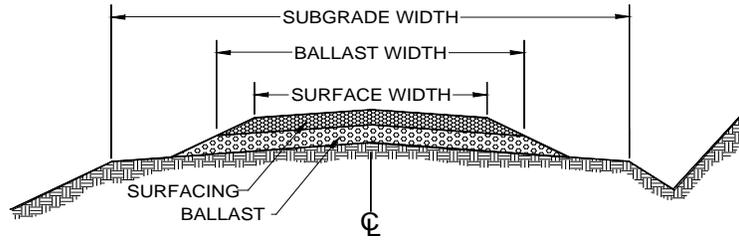
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<b>PA-S-1100</b>															
Post Haul	0+00	16+15							2				50		
<b>PA-S-1200</b>															
Post Haul	0+00	77+35							2				50		
<b>PA-S-1280</b>															
Lift	0+00	2+80							2	12	6	35	100		
Culvert	0+10												20		
Lift	2+80	18+50	17	1	14	12	70	1100	2	12	6	35	550		
Culvert	3+00								2				20		
Culvert	7+90								2				20		
Turnout	8+50			1				20							
Turnaround	14+95			1				50							
Culvert	16+90								2				20	3	5
Landing	18+50			1				50							
<b>PA-S-1281</b>															
Lift	0+00	7+30	17	1	14	12	70	510	2	12	6	35	260		
Turnaround	3+80			1				50							
Culvert	4+90								2				20	3	5
Landing	7+30			1				50							
<b>Stockpile</b>				1				1000	2				200		
Totals:								1: 2830					2: 1310		10

## ROCK LIST SHEET CONTINUED



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## ROCK LIST TOTALS

Rock Pit	Grand Total
1: Agate Pit Shot Rock Ballast	20750 yd <sup>3</sup>
2: Agate Pit 3" Minus Jaw Run Rock	25030 yd <sup>3</sup>
3: Agate Pit Light Loose Rip Rap	100 yd <sup>3</sup>
4, 6: Place Pit 1 ¼" Minus or Commerical Source	400 yd <sup>3</sup>
5: Place Pit Engineered Streambed Material	180 yd <sup>3</sup>

## CULVERT LIST

ROAD NAME	STATION	CULVERT DIAMETER (in)	CULVERT LENGTH (ft)	FLUME LENGTH (ft)		RIP RAP - INLET (cy)	RIP RAP - OUTLET (cy)	BACKFILL MATERIAL	NOTES
PA-J-5000	95+45	18	30					CR	Culvert Install
PA-J-5015	24+90	18	30					CR	Culvert Install
PA-J-5016	0+40	18	30					CR	Culvert Replacement
PA-J-5016	3+85	18	30					CR	Culvert Install
PA-J-5016	7+55	18	30					CR	Culvert Install
PA-J-5017	0+10	18	40					CR	Culvert Install
PA-J-5017	1+40	18	30					CR	Culvert Install
PA-J-5017	4+25	18							Clean Inlet and Outlet
PA-J-5017	17+40	18	30					CR	Culvert Install
PA-J-5020	0+10	18	40					CR	Culvert Install
PA-J-5020	9+65	18	30					CR	Culvert Install
PA-J-5020	10+92	108	74			10	10	CR	Culvert Install* For Rip Rap see Detail
PA-J-5020	12+15	18	30					CR	Culvert Install
PA-J-5020	16+45	18	30					CR	Culvert Install
PA-J-5020	20+40	18	30					CR	Culvert Install
PA-J-5025	7+65	18	30					CR	Culvert Install
PA-J-5400	32+30	18	30					CR	Culvert Install
PA-J-5400	38+65	18	30					CR	Culvert Install
PA-J-5410	3+20	18	30					CR	Culvert Install
PA-J-5410	3+75	24	30					CR	Culvert Install*
PA-J-5410	8+15	18	30					CR	Culvert Install
PA-J-5410	8+90	24	30					CR	Culvert Install*
PA-J-5410	12+50	18	30					CR	Culvert Install
PA-S-2550	86+30	18	30					CR	Culvert Install
PA-S-2550	89+65	18	30					CR	Culvert Install
PA-S-2550	104+35	18	30					CR	Culvert Install

All rip rap shall be Oversize unless specified in the Rock List, or in the field.

All backfill shall be native material (NT) unless specified otherwise. CR= 3"- crushed Jaw run rock, PR= Pit Run Rock. \* Live water

### CULVERT LIST Continued

ROAD NAME	STATION	CULVERT DIAMETER (in)	CULVERT LENGTH (ft)	FLUME LENGTH (ft)		RIP RAP - INLET (cy)	RIP RAP - OUTLET (cy)	BACKFILL MATERIAL	NOTES
PA-S-2550	107+90	18	30					CR	Culvert Install
PA-S-2550	110+30	18	30					CR	Culvert Install
PA-S-2550	111+85	36	50					CR	Culvert Install/Remove culvert during Decommissioning
PA-S-2550	114+60	18	30					CR	Culvert Install/Remove culvert during Decommissioning
PA-S-2551	8+40	18	30					CR	Culvert Install
PA-S-2551.2	0+85	18	30					CR	Culvert Install
PA-S-2551.2	3+40	18	30					CR	Culvert Install
PA-S-2551.2	6+55	18	30					CR	Culvert Install
PA-S-2551.2	7+80	24	40					CR	Culvert Install*
PA-S-2551.2	8+80	18	30					CR	Culvert Install
PA-S-2551.2	12+60	18	30					CR	Culvert Install
PA-S-2551.2	17+65	18	30					CR	Culvert Install
3+35 Spur	1+45	18	30					CR	Culvert Install/Remove culvert during Decommissioning
PA-S-2553	3+55	18	30					CR	Culvert Install
PA-S-2553	4+75	24	50					CR	Culvert Install*
PA-S-2553	12+60	18	30					CR	Culvert Install
PA-PA-S-2553.2	0+10	18	40					CR	Culvert Install
PA-S-2553.2	6+90	18	40					CR	Culvert Install
PA-S-2554	6+75	18	30					CR	Culvert Install
PA-S-2554	11+10	18	30					CR	Culvert Install
PA-S-2554	11+93	24	50				5	CR	Culvert Install/ Energy Dissapator rock
PA-S-2554	12+90	18	30				5	CR	Culvert Install/ Energy Dissapator rock
PA-S-2554	17+77	18	50				5	CR	Culvert Install/ Energy Dissapator rock
PA-S-2554	23+35	18	30				5	CR	Culvert Install/ Energy Dissapator rock
PA-S-2554	24+21	24	50				5	CR	Culvert Install/ Energy Dissapator rock
PA-S-2554	25+00	18	30				5	CR	Culvert Install/ Energy Dissapator rock

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### CULVERT LIST Continued

ROAD NAME	STATION	CULVERT DIAMETER (in)	CULVERT LENGTH (ft)	FLUME LENGTH (ft)		RIP RAP - INLET (cy)	RIP RAP - OUTLET (cy)	BACKFILL MATERIAL	NOTES
PA-S-2554	27+50	18	30					CR	Culvert Install
PA-S-2554	29+20	18	30				5	CR	Culvert Install/ Energy Dissapator rock
PA-S-2554.1	2+10	18	30					CR	Culvert Install
PA-S-2554.1	5+80	18	30					CR	Culvert Install
PA-S-2554.2	0+15	18	40					CR	Culvert Install
PA-S-2554.2	7+20	18	30				5	CR	Culvert Install/ Energy Dissapator rock
PA-S-2554.2	11+10	18	40				5	CR	Culvert Install/ Energy Dissapator rock
PA-S-2555.2	3+95	18	30					CR	Culvert Install
PA-S-2555.2	7+40	18	30					CR	Culvert Install
PA-S-2555.2	10+50	18	30					CR	Culvert Install
PA-S-2555.2	14+50	18	30					CR	Culvert Install
PA-S-2580	25+25	18	30					CR	Culvert Replacement
PA-S-2580	28+95	18	30					CR	Culvert Install
PA-S-2580	32+80	36	40				5	CR	Culvert Replacement*/ Energy Dissapator rock
PA-S-2580	38+10	18	30					CR	Culvert Install
PA-S-2582	0+10	18	40					CR	Culvert Install
PA-S-2582.1	0+05	18	40					CR	Culvert Install
PA-S-2582.1	2+25	18	30					CR	Culvert Install
PA-S-2582.1	5+00	18	30					CR	Culvert Install
PA-S-2582.1	10+85	18	30					CR	Culvert Install
PA-S-2582.1	12+20	24	40					CR	Culvert Install
PA-S-2582.1	13+05	24	40					CR	Culvert Install
PA-S-2582.1	15+75	18	30				5	CR	Culvert Install/ Energy Dissapator rock
PA-S-2582.1	16+50	24	40				5	CR	Culvert Install/ Energy Dissapator rock
PA-S-2582.1	19+25	18	30				5	CR	Culvert Install/ Energy Dissapator rock
PA-S-2582.1	20+45	24	50				5	CR	Culvert Install*/ Energy Dissapator rock
PA-S-2582.1	22+75	18	30					CR	Culvert Install
1+75 Spur	0+10	18	40					CR	Culvert Install/Remove culvert during decommissioning

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### CULVERT LIST Continued

ROAD NAME	STATION	CULVERT DIAMETER (in)	CULVERT LENGTH (ft)	FLUME LENGTH (ft)		RIP RAP - INLET (cy)	RIP RAP - OUTLET (cy)	BACKFILL MATERIAL	NOTES
PA-S-2600	95+75	18							Clean Inlet and Outlet
PA-S-2610	3+55	18							Clean Inlet and Outlet
PA-S-2610	7+00	24							Clean Inlet
PA-S-2610	8+45	18	30					CR	Culvert Install
PA-S-2610	10+80	18	30					CR	Culvert Install
PA-S-2610	13+10	18							Clean Inlet and Outlet
PA-S-2610	14+85	24							Clean Inlet and Outlet
PA-S-2610	19+80	18							Clean Inlet
PA-S-2610	22+35	18							Clean Inlet and Outlet
PA-S-2610	27+25	18							Clean Inlet
PA-S-2612	0+10	18	40					CR	Culvert Install
PA-S-2612	2+20	18	30					CR	Culvert Install
5+70 Spur	0+10	18	40					CR	Culvert Install
5+70 Spur	4+55	18	30					CR	Culvert Install
PA-S-2640	0+10	18	40					CR	Culvert Replacement
PA-S-2640	1+70	18	30					CR	Culvert Install
PA-S-2640	11+05	18	30					CR	Culvert Install
2+60 Spur	1+35	18	30					CR	Culvert Install
3+75 Spur	2+00	36	40					CR	Culvert Install/Remove culvert during Decommissioning
PA-S-1280	0+10	18	40					CR	Culvert Install
PA-S-1280	3+00	18	30					CR	Culvert Install
PA-S-1280	16+90	18	30				5	CR	Culvert Install/ Energy Dissapator rock
PA-S-1281	4+90	18	30				5	CR	Culvert Install/ Energy Dissapator rock
Contingency Culvert		18	30						
Contingency Culvert		18	30						
Contingency Culvert		18	30						
Contingency Culvert		24	30						

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## FISH STREAM WORK PROVISIONS

TIMING LIMITATIONS: The fish culvert project may begin July 1 and shall be completed by September 30.

1. Work shall conform to plans and specifications in the road plan.
2. Prior to the commencement of in-stream work, the Purchaser shall isolate the work area in a manner that fish cannot enter the work area, capture and safely move fish and other fish life from the work area. The Purchaser shall have fish capture and transportation equipment ready and on the job site. Captured fish shall be immediately and safely transferred to free-flowing water downstream of the work area.

### TEMPORARY STREAM FLOW BYPASS

3. All in-stream work shall be conducted in the dry or in isolation from the stream flow by the installation of a bypass flume/pipe or by pumping the flow around the work area, back into the stream below the work area. Waste water pumped from within the work area shall terminate on the forest floor, sufficient distance from the stream to filter sediment prior to entering the stream.
4. The temporary bypass to divert flow around the work area shall be in place prior to initiation of other work in the wetted perimeter.
5. A sandbag revetment or similar device shall be installed at the bypass inlet to divert the entire flow through the bypass.
6. The bypass shall be of sufficient size to pass all flows and debris for the duration of the project.
7. If a pump is used for diverting water from the stream where fish are present, as per RCW 77.57.010 and 77.57.070, the pump intake shall be equipped with a fish guard to prevent passage of fish into the diversion pump. The pump intake shall be screened with 1/8 inch mesh to prevent fish from entering the pump. Velocity through the screened intake shall be less than 0.4 feet per second. Screens shall be maintained to prevent injury or entrapment of juvenile fish.

### WATER QUALITY

8. Extreme care shall be taken to ensure that no petroleum products, hydraulic fluid, chemicals, or any other toxic or deleterious materials are allowed to enter or leach into the stream.

## COMPACTION LIST

Road	Stations	Type	Max Depth Per Lift (inches)	Equipment Type	Minimum Equipment Weight (lbs)	Minimum Number of Passes	Maximum Operating Speed (mph)
Pre-haul	All	Culvert Backfill	8"	Jumping Jack		3	
Pre-haul	All	Rock Lifts	6"	Vibratory Smooth Drum	6,000	3	3
Pre-haul	All	Pre-haul Surface		Vibratory Smooth Drum	6,000	3	3
Construction	All	Subgrade (Except Puncheon)	6"	Vibratory Smooth Drum	6,000	2	3
Construction	All	Culvert Backfill	8"	Jumping Jack		3	
Construction	All	Rock Placement	6"	Vibratory Smooth Drum	6,000	2	3
Reconstruction	All	Subgrade (Except Puncheon)	6"	Vibratory Smooth Drum	6,000	2	3
Reconstruction	All	Culvert Backfill	8"	Jumping Jack		3	
Reconstruction	All	Rock Placement	6"	Vibratory Smooth Drum	6,000	2	3
Post-haul Maintenance See Clause 6-72	All	Rock Placement	6"	Vibratory Smooth Drum	6,000	2	3
Waste Areas			24"	Excavation Equipment or Vibratory Smooth Drum	6,000	2	3

### Typical Type Ns, Np Culvert Installation Detail Sheet.

-Water shall be diverted away from the work site before any "in stream" work begins, and shall continue until culvert installation is complete.

-Culvert lay shall match stream gradient up to 5%.

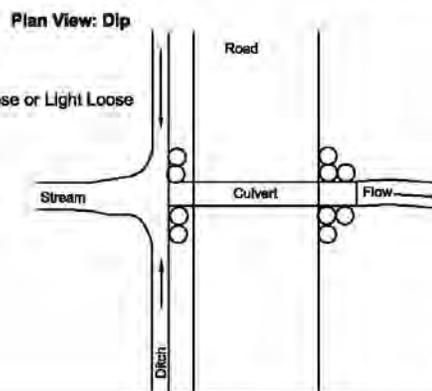
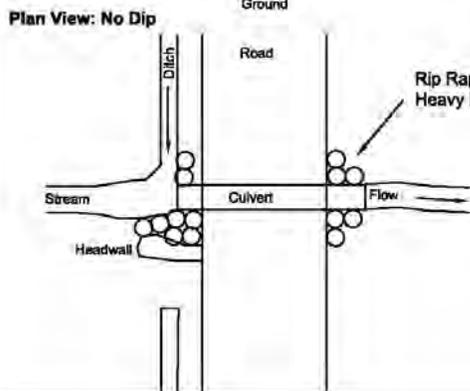
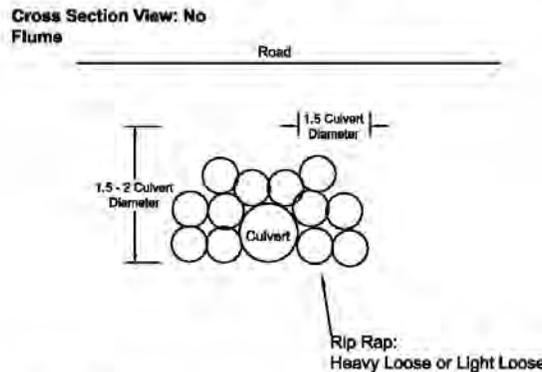
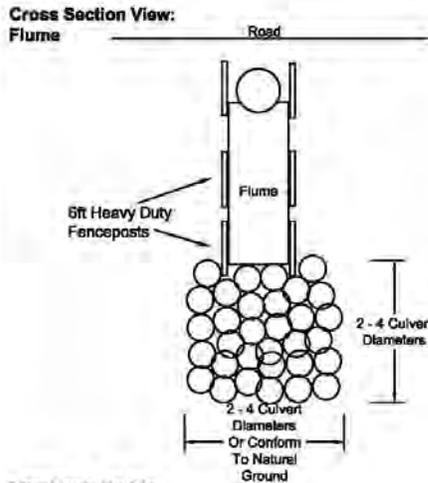
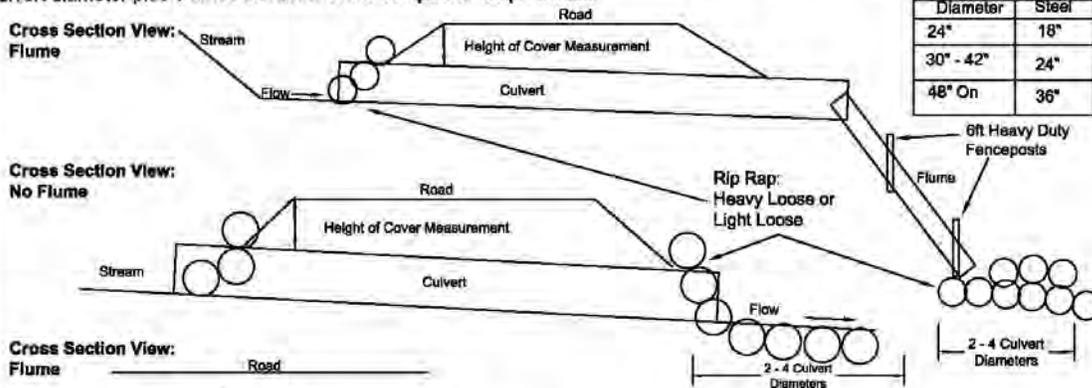
-Flumes longer than 10ft shall be staked on both sides at maximum intervals of 10ft with 6ft heavy duty steel fence posts, and fastened securely to the posts with No. 10 galvanized smooth wire or bolted to the fence posts.

-Rip rap shall be placed using a "zero height drop method", and shall be set in conjunction with the culvert installation.

-Rip rap shall be placed at headwalls, along the fill at the inlet, and at the end off flumes in accordance with this Detail. On culverts with no flume rip rap shall be placed along the fill at the outlet, unless there is stream drop or it is called for in the Road Plan, at which point it will be installed as an energy dissipater at the end of the culvert as specified in this Detail. All rip rap distance to be determined by the Contract Administrator or the District Engineer.

-Backfill compaction shall be achieved using a jumping jack, walk behind vibratory roller, or plate compactor on lifts not to exceed 8in. 3 complete passes per lift is required for compaction. Backfill shall be placed and compacted evenly on both sides of the culvert. Care shall be taken to ensure adequate compaction of backfill material under the haunches of the pipe. Excavation french width shall be at least culvert diameter plus 3 times the width of the compactor footprint used.

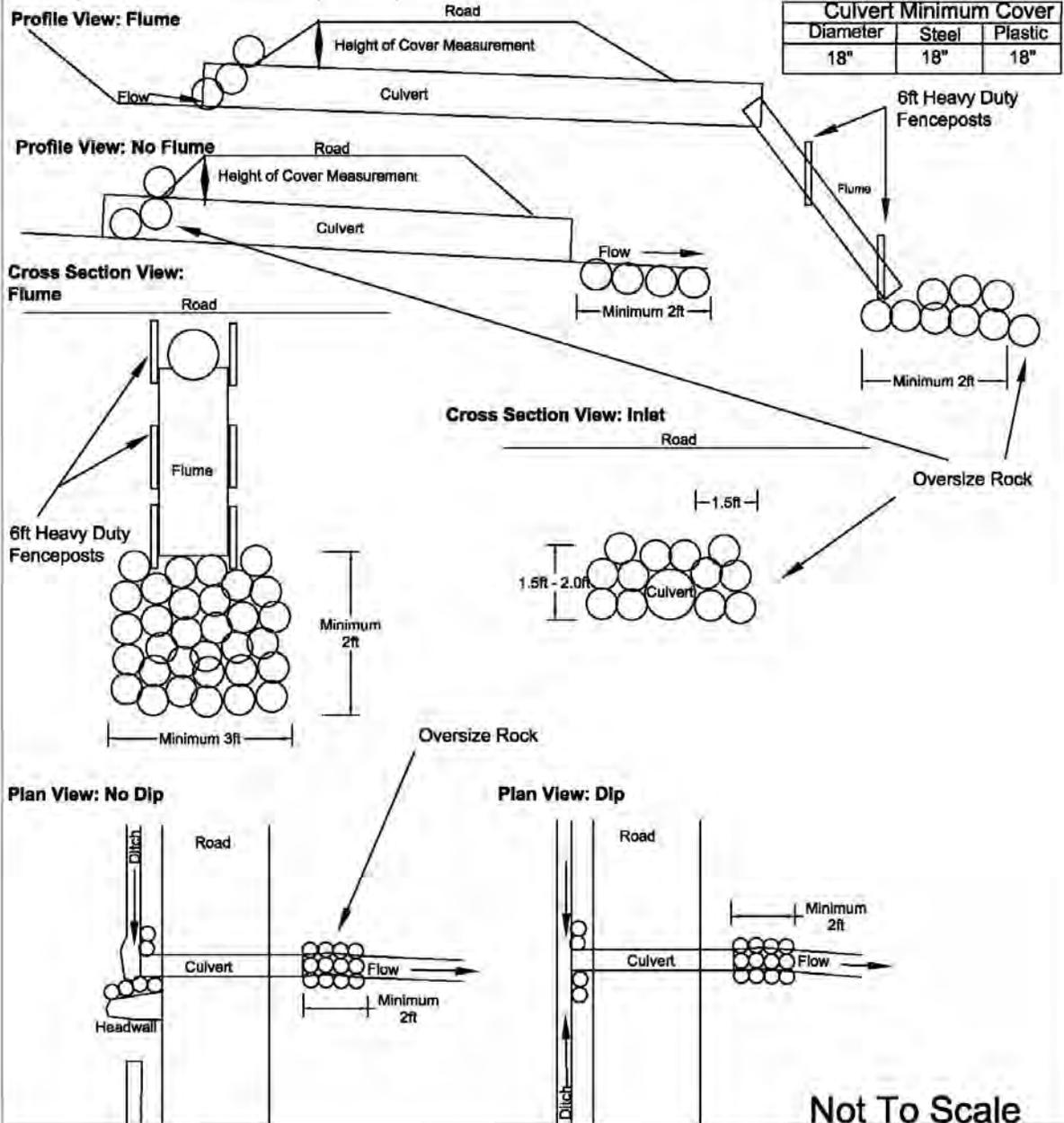
Culvert Diameter	Culvert Minimum Cover	
	Steel	Plastic
24"	18"	24"
30" - 42"	24"	24"
48" On	36"	36"



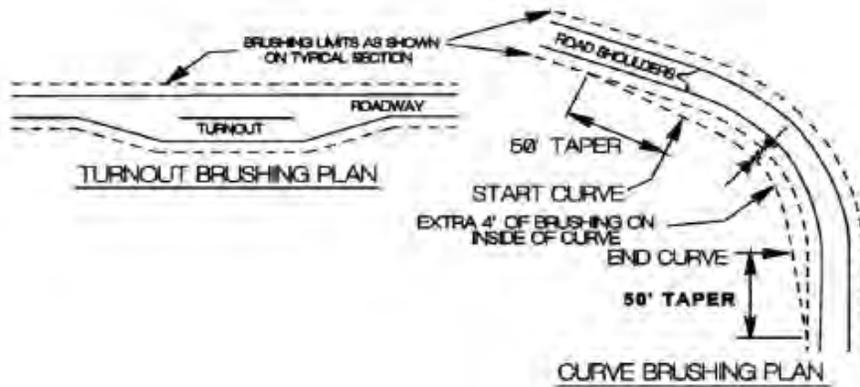
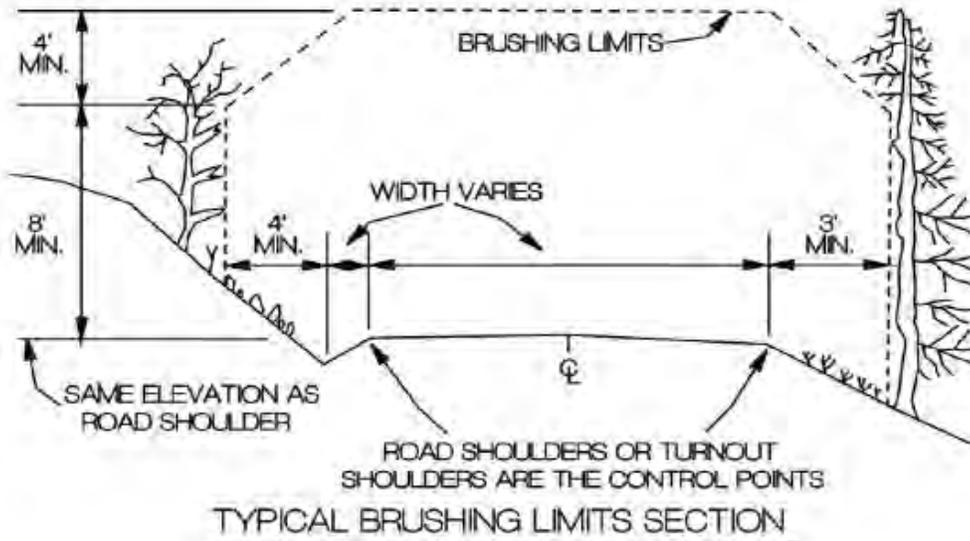
**Not To Scale**

# Typical Cross Drain Culvert Installation Detail Sheet

- Culvert lay shall not exceed 10%.
- Flumes longer than 10ft shall be staked on both sides at maximum intervals of 10ft with 6ft heavy duty steel fence posts, and fastened securely to the posts with No. 10 galvanized smooth wire or bolted to the fence posts.
- Oversize shall be placed using a "zero height drop method", and shall be set in conjunction with the culvert installation.
- Oversize shall be placed at headwalls, along the fill at the inlet, and at the end off flumes in accordance with this Detail. On culverts with no flume oversize shall be placed at the outlet as an energy dissipater as specified in this Detail. All oversize distance to be determined by the Contract Administrator.
- Backfill compaction for installations on existing roads shall be achieved using a jumping jack, or plate compactor on lifts not to exceed 8in. 3 complete passes per lift is required for compaction. Backfill shall be placed and compacted evenly on both sides of the culvert. Care shall be taken to ensure adequate compaction of backfill material under the haunches of the pipe. Excavation trench width shall be at least culvert diameter plus at least the width of the compactor footprint used.

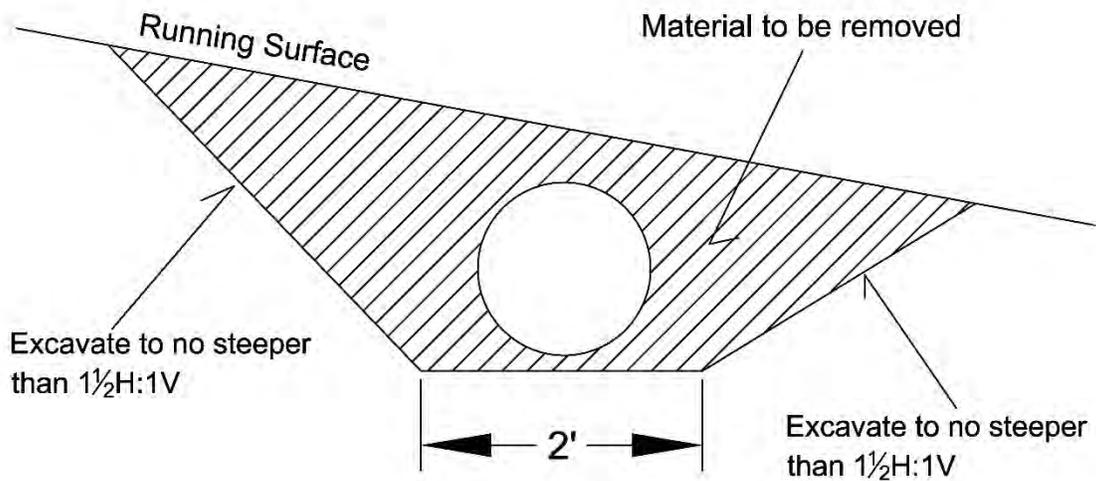


# BRUSHING DETAIL



- 1) ALL VEGETATION WITHIN THE BRUSHING LIMITS SHALL BE CUT TO WITHIN 8' OF THE GROUND, UNLESS OTHERWISE DIRECTED BY THE CONTRACT ADMINISTRATOR.
- 2) ALL BRUSH, TREES, LIMBS, ETC. SHALL BE REMOVED FROM THE ROAD SURFACE.
- 3) ALL BRUSH, TREES, LIMBS, ETC. THAT MAY RESTRICT THE FLOW OF WATER SHALL BE REMOVED FROM THE DITCH LINE.
- 4) ALL DEBRIS THAT MAY ROLL OR MIGRATE INTO THE DITCHLINE SHALL BE REMOVED.

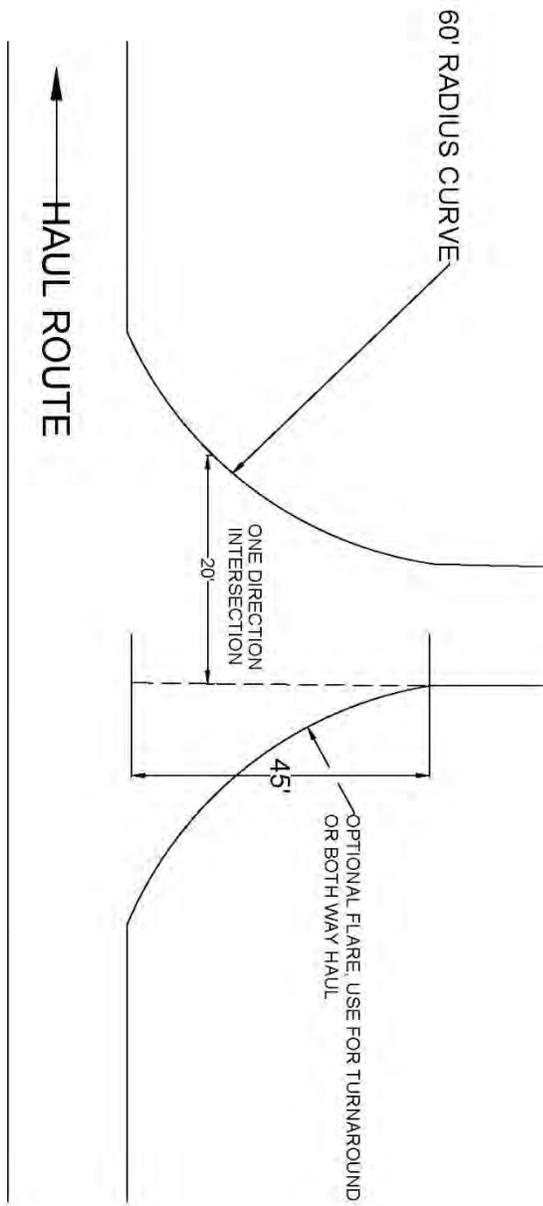
# CROSSDRAIN REMOVAL DETAIL



1) Excavated material may be wasted on the road surface on the downhill side of the excavation. Waste material shall be sloped at no steeper than ½ H:1V.

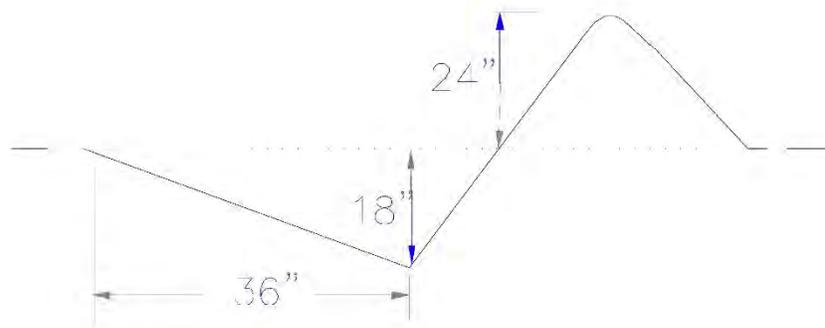
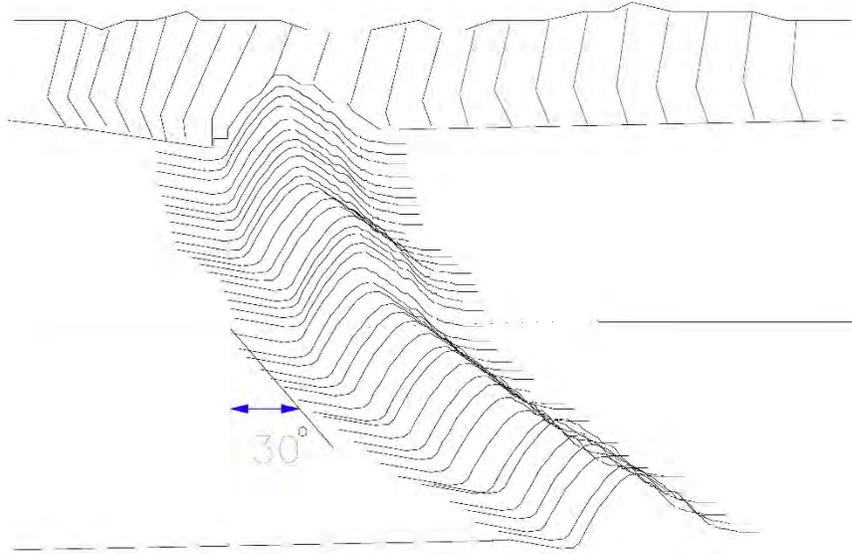
2) Resulting trench shall be keyed into the ditchline and sloped towards the outside edge of the road with a drop of at least 1 foot in 10 feet.

# TYPICAL INTERSECTION

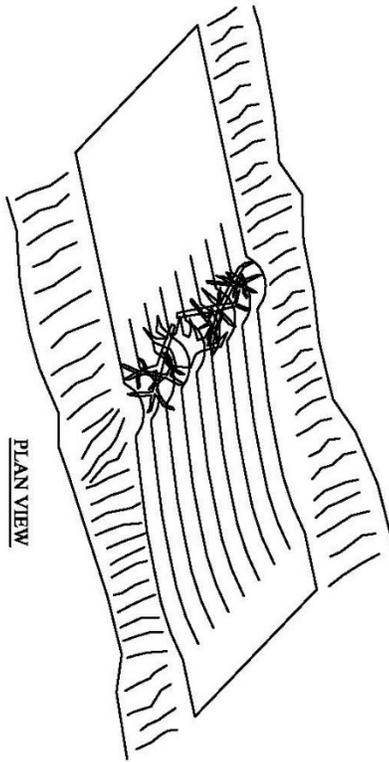


NOT TO SCALE

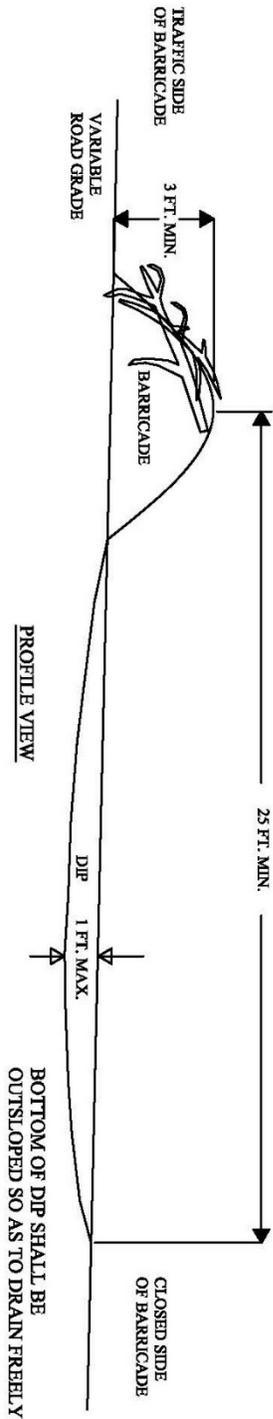
NON-DRIVABLE WATER BAR DETAIL



# EARTHEN BARRICADE DETAIL

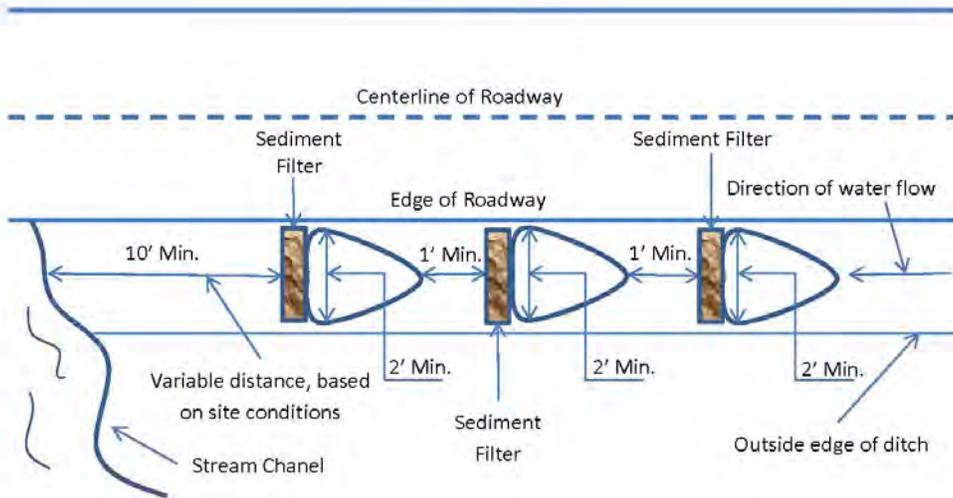


SLASH AND ROOT WADS SHALL BE INCORPORATED INTO THE TRAFFIC SIDE OF THE BARRICADE.

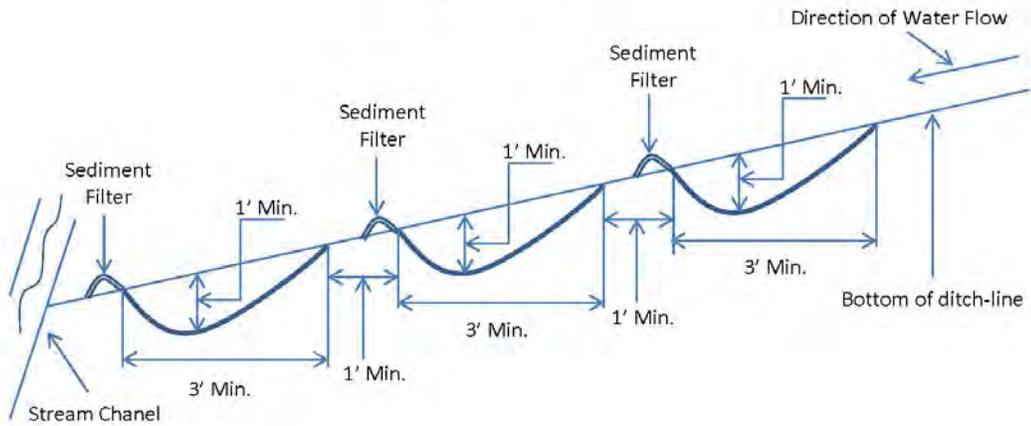


## SEDIMENT TRAP DETAIL

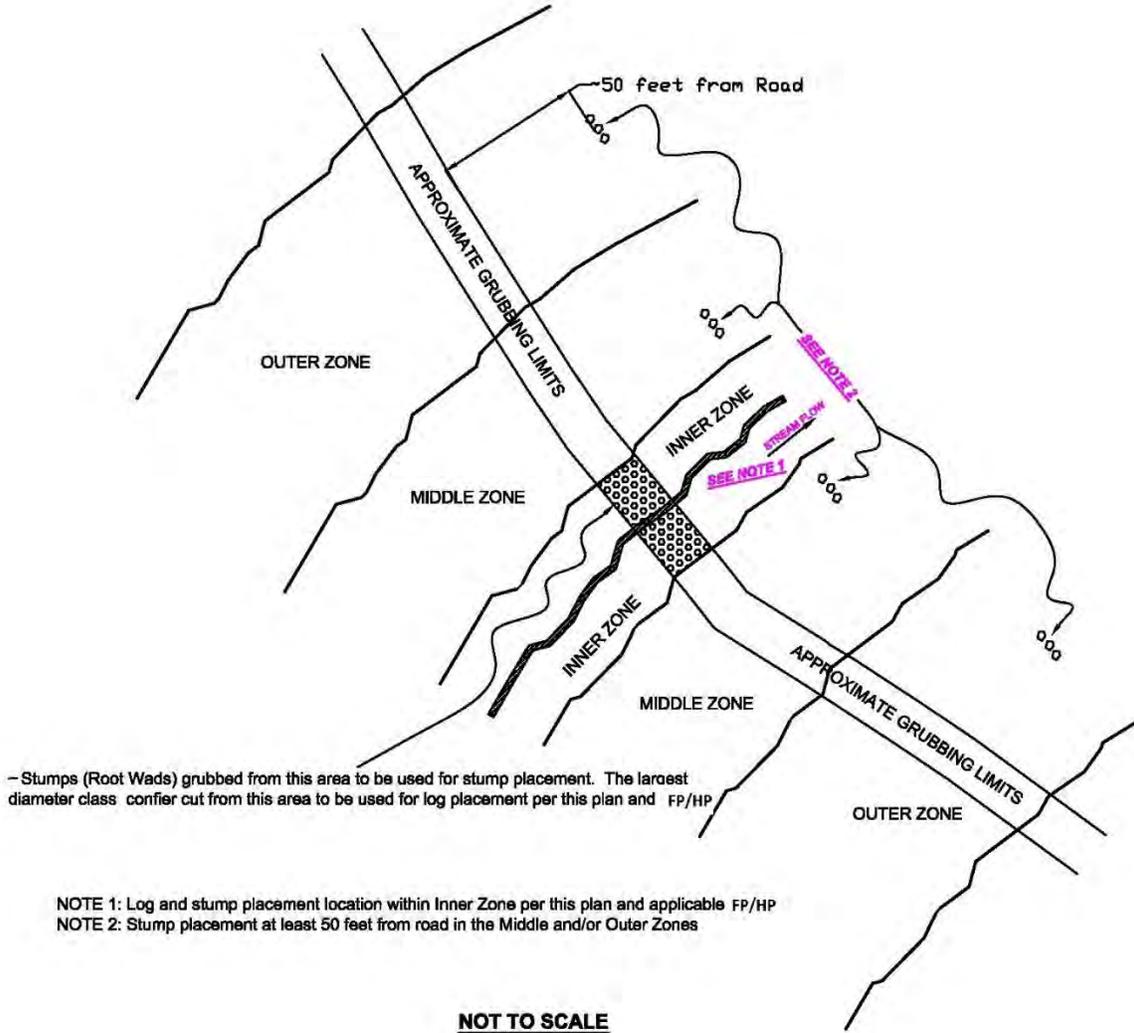
### Top View

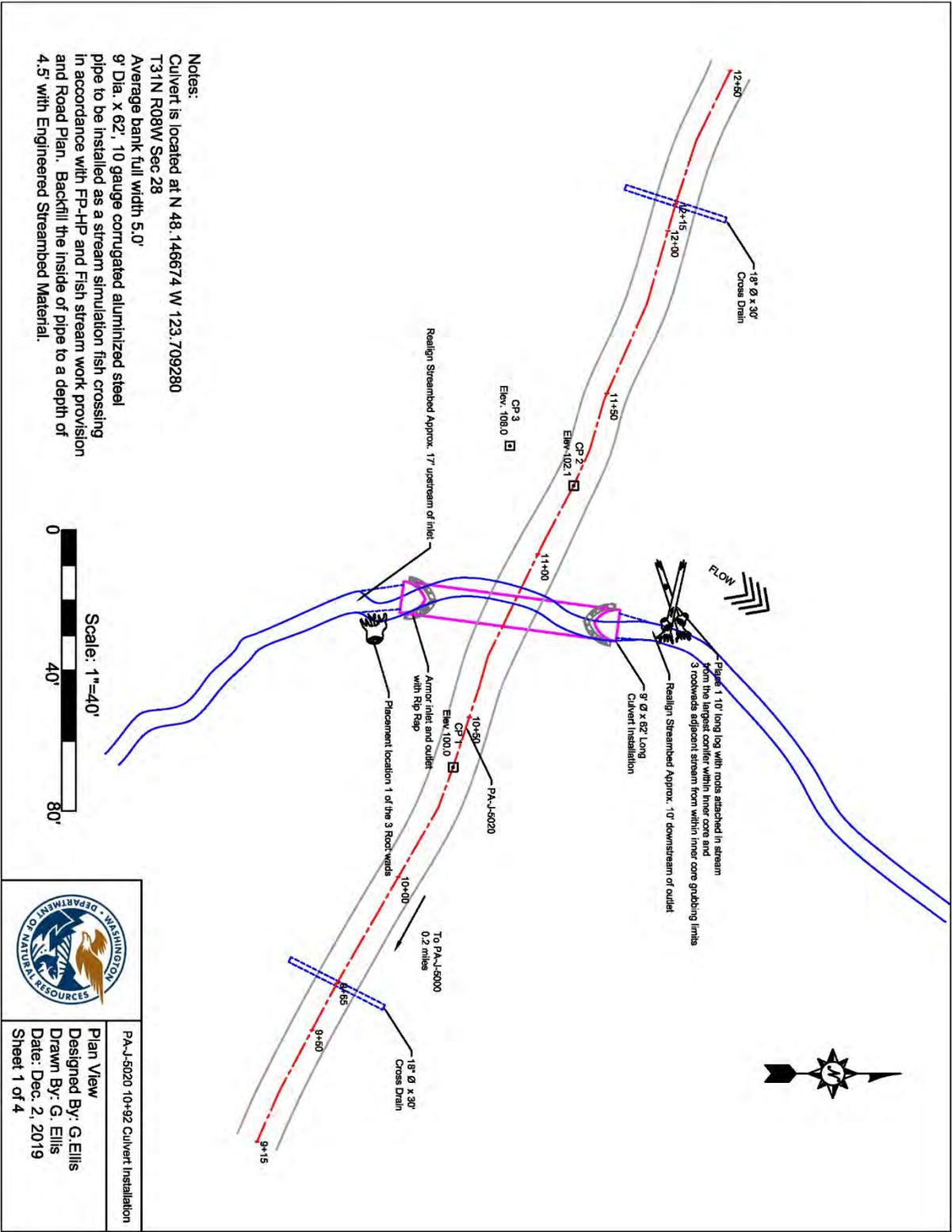


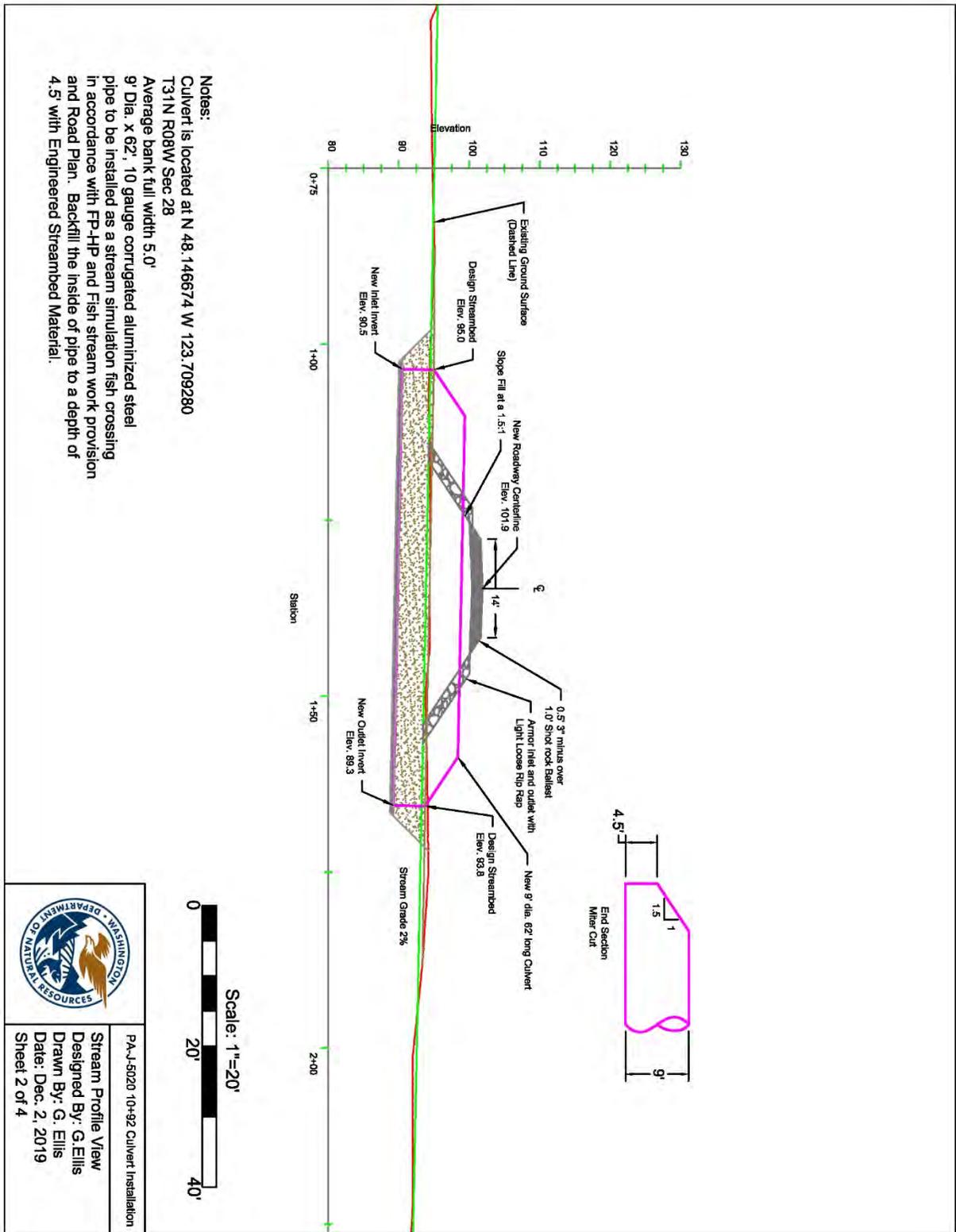
### Profile View

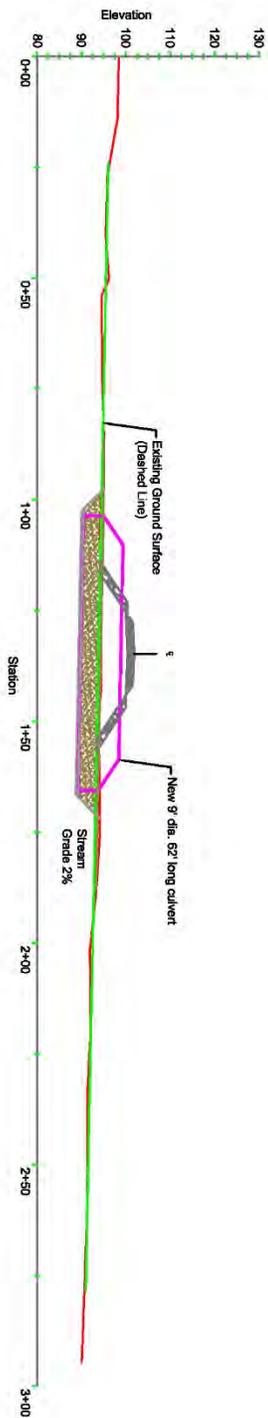


# TYPICAL RIPARIAN STRATEGY STREAM CROSSING PLAN



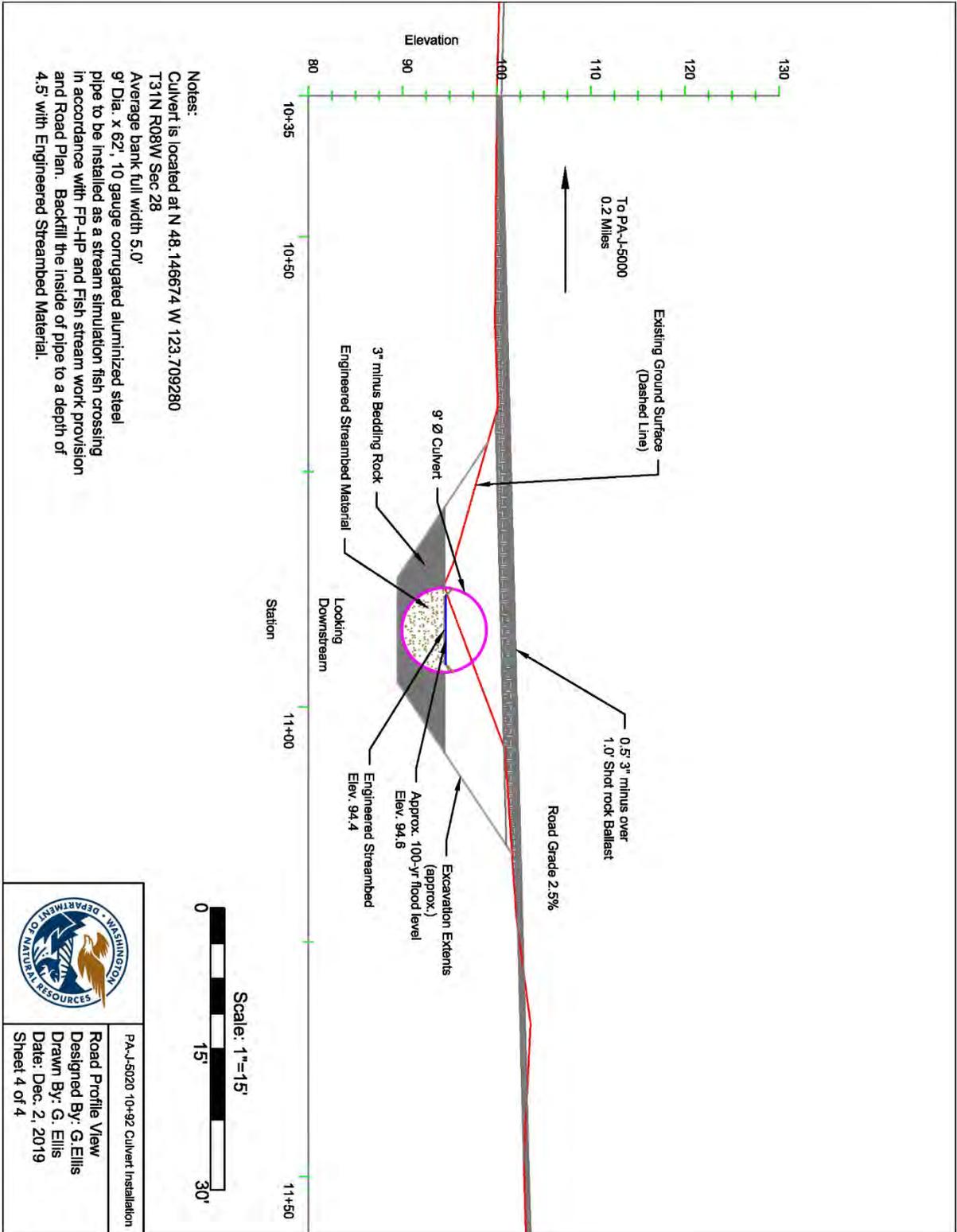




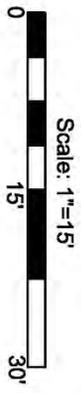


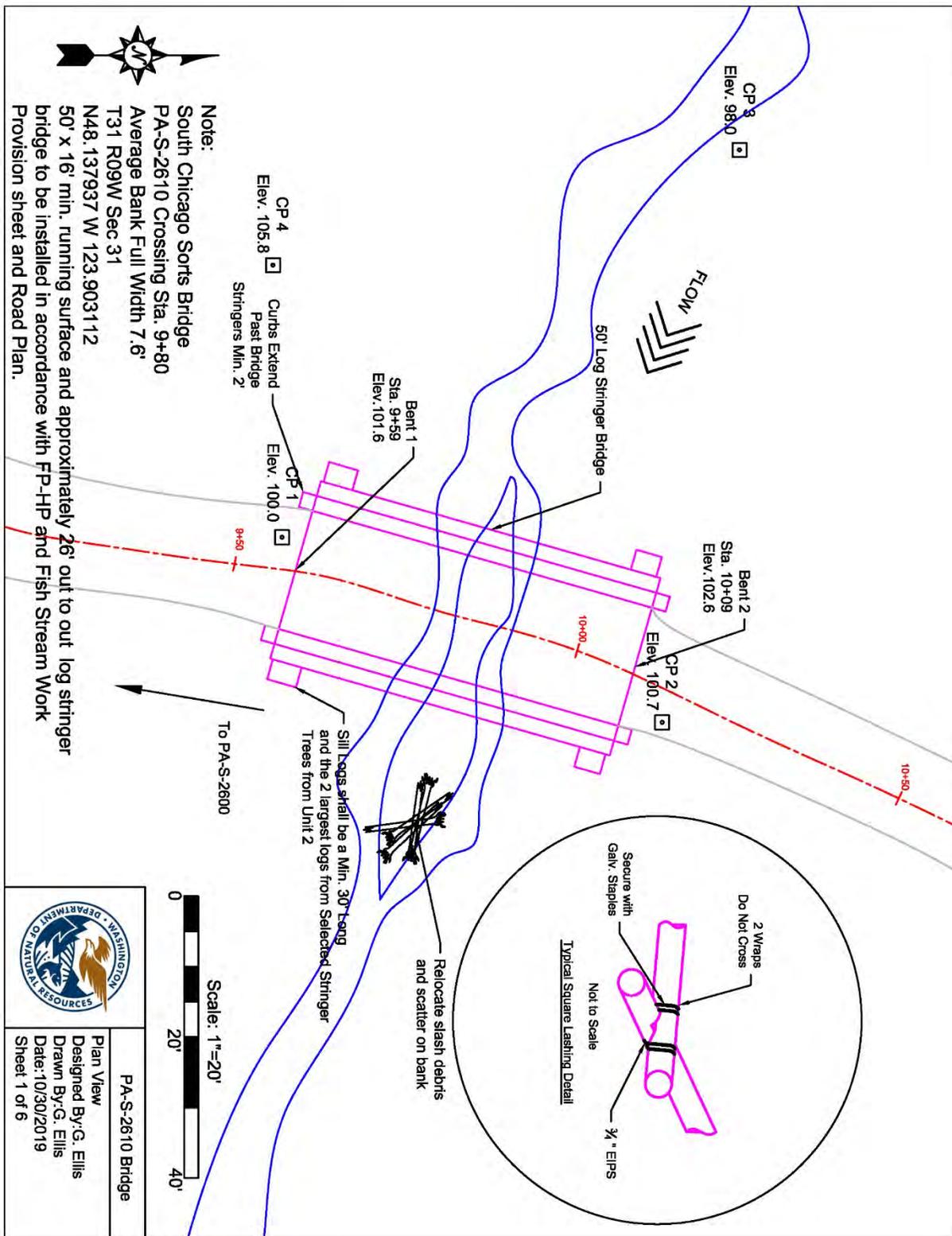
Notes:  
 Culvert is located at N 48. 146674 W 123.709280  
 T31N R08W Sec 28  
 Average bank full width 5.0'  
 9' Dia. x 62'. 10 gauge corrugated aluminized steel  
 pipe to be installed as a stream simulation fish crossing  
 in accordance with FP-HP and Fish stream work provision  
 and Road Plan. Backfill the inside of pipe to a depth of  
 4.5' with Engineered Streambed Material.

	PA-J-5020 10+92 Culvert Installation
	Extended Stream Profile View Designed By: G.Ellis Drawn By: G. Ellis Date: Dec. 2, 2019 Sheet 3 of 4



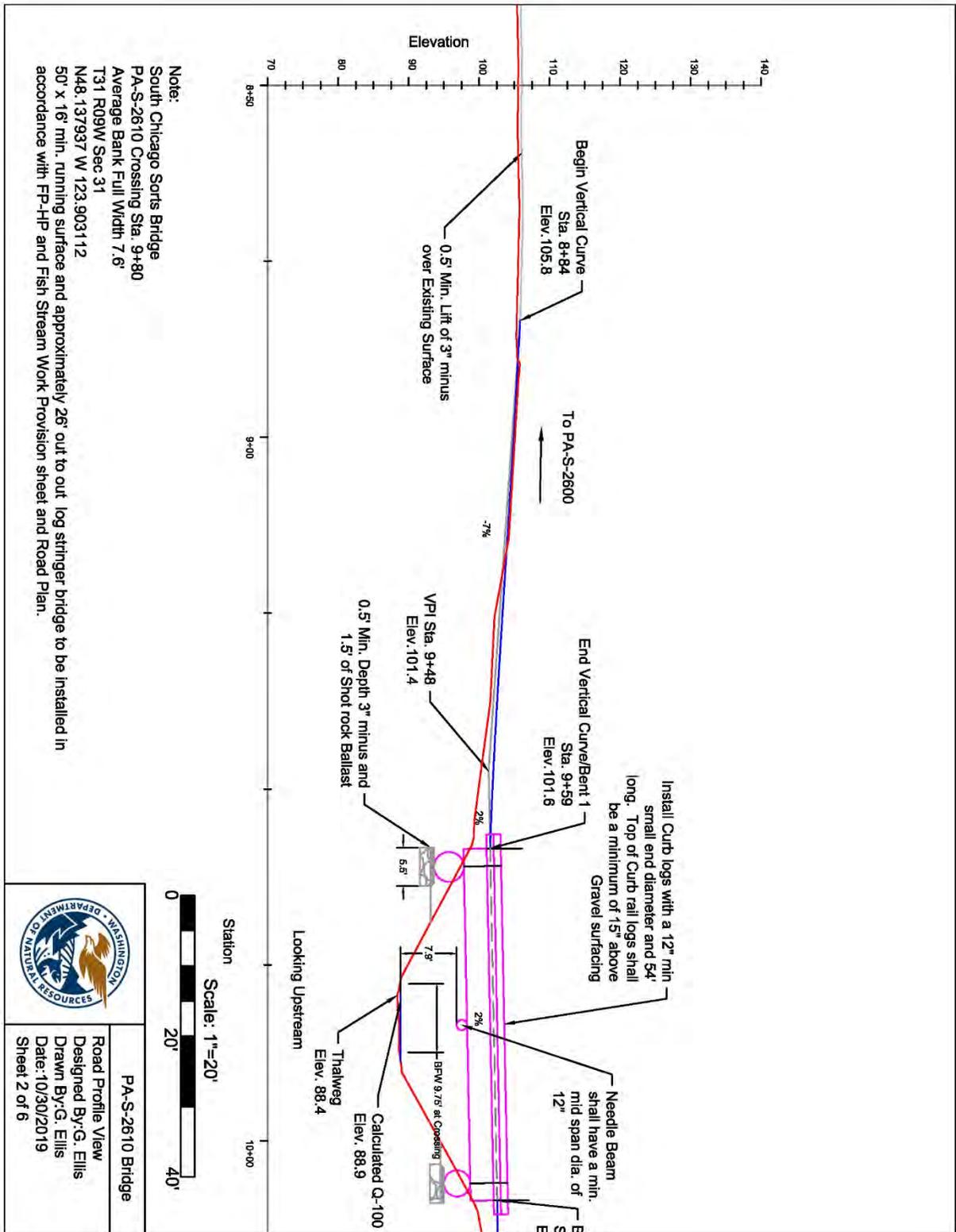
PA-J-5020 10+92 Culvert Installation  
 Road Profile View  
 Designed By: G. Ellis  
 Drawn By: G. Ellis  
 Date: Dec. 2, 2019  
 Sheet 4 of 4





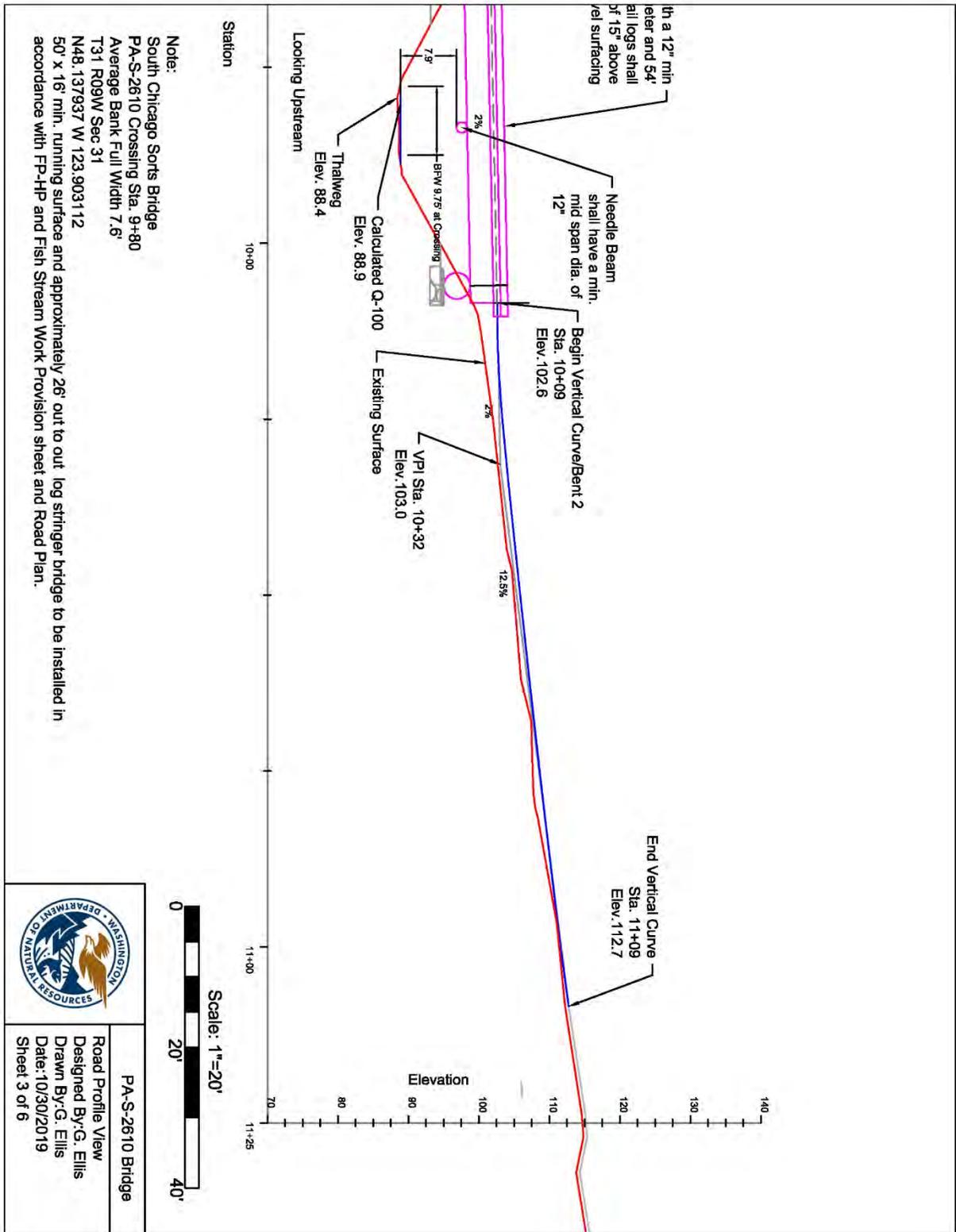
Note:  
 South Chicago Sorts Bridge  
 PA-S-2610 Crossing Sta. 9+80  
 Average Bank Full Width 7.6'  
 T31 R09W Sec 31  
 N48.137937 W 123.903112  
 50' x 16' min. running surface and approximately 26' out to out log stringer  
 bridge to be installed in accordance with FP-HP and Fish Stream Work  
 Provision sheet and Road Plan.

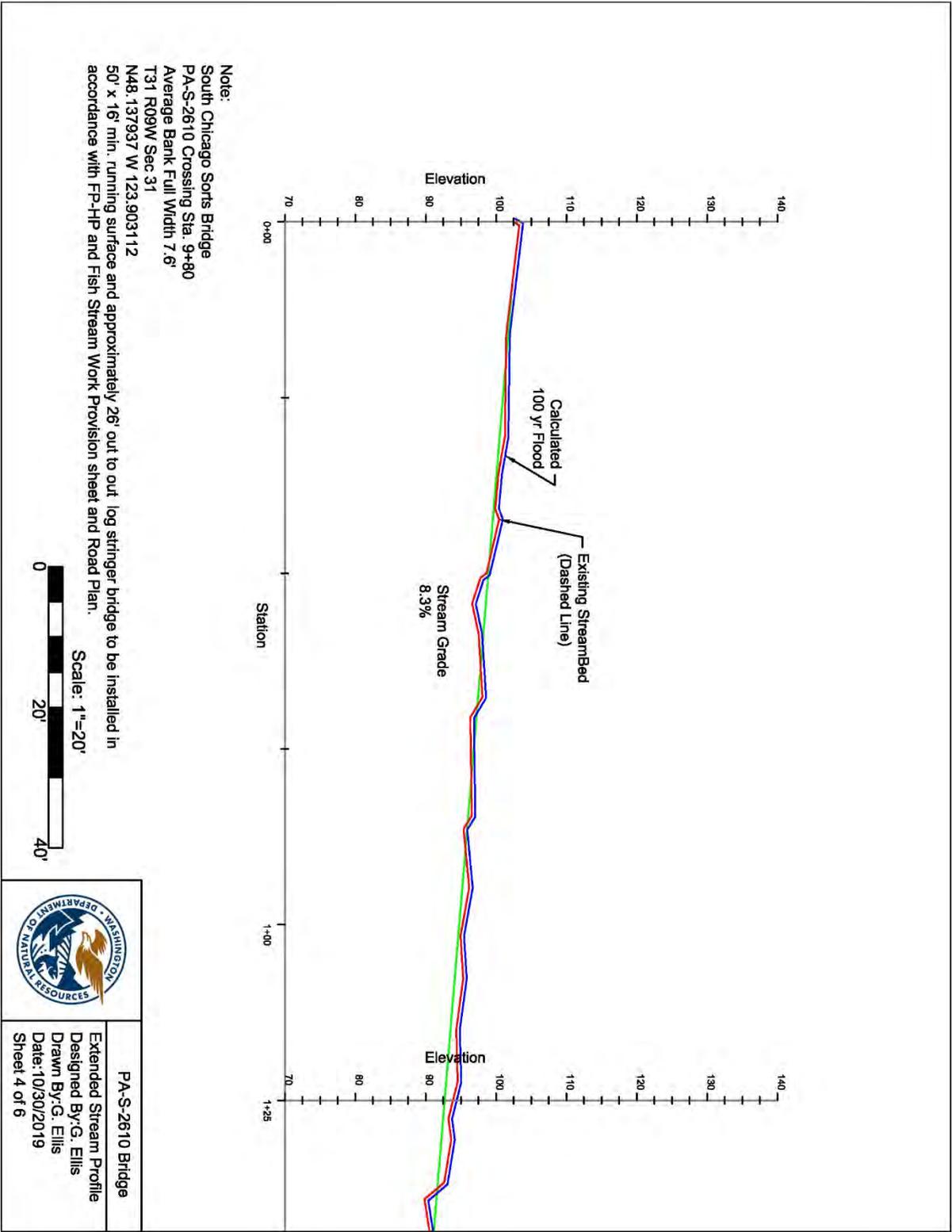
	PA-S-2610 Bridge
	Plan View Designed By: G. Ellis Drawn By: G. Ellis Date: 10/30/2019 Sheet 1 of 6

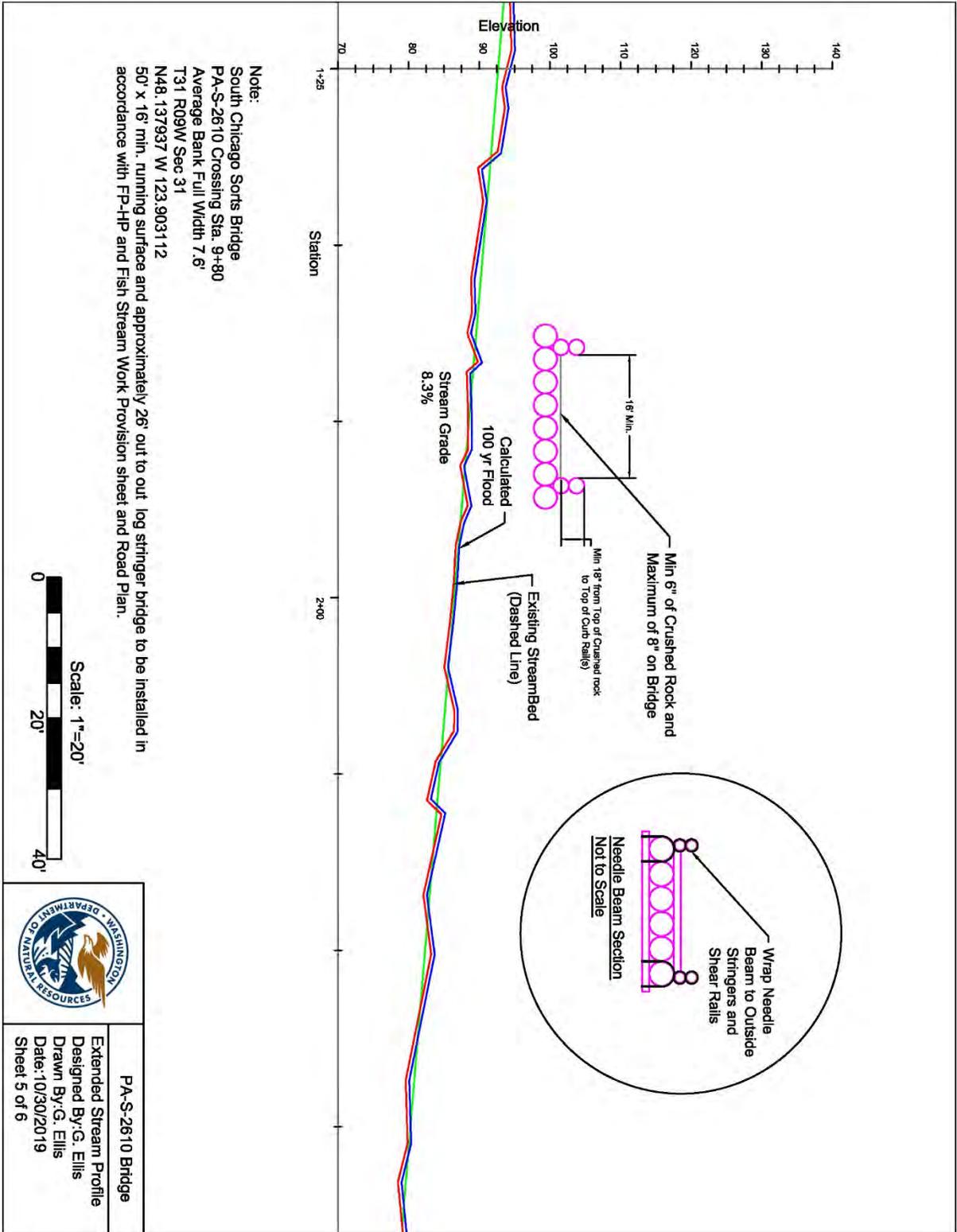


Note:  
 South Chicago Sports Bridge  
 PA-S-2610 Crossing Sta. 9+80  
 Average Bank Full Width 7.6'  
 T31 R09W Sec 31  
 N48.137937 W 123.903112  
 50' x 16' min. running surface and approximately 26' out to out log stringer bridge to be installed in accordance with FP-HP and Fish Stream Work Provision sheet and Road Plan.

	PA-S-2610 Bridge
	Road Profile View Designed By: G. Ellis Drawn By: G. Ellis Date: 10/30/2019 Sheet 2 of 6

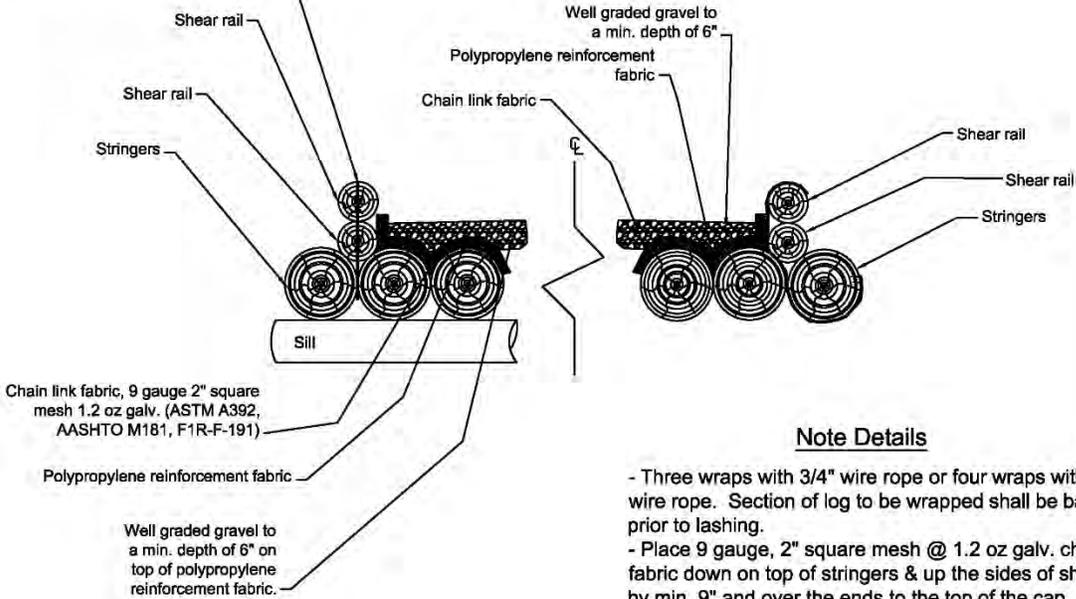






## Bridge Surfacing & Shear Rail Details

1" Ø rod (drift pin) through both shear rails, lashed to log stringer. Minimum of 4 pins shall be used

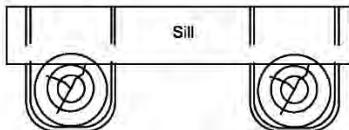


Chain link fabric, 9 gauge 2" square mesh 1.2 oz galv. (ASTM A392, AASHTO M181, F1R-F-191)

Polypropylene reinforcement fabric

Well graded gravel to a min. depth of 6" on top of polypropylene reinforcement fabric.

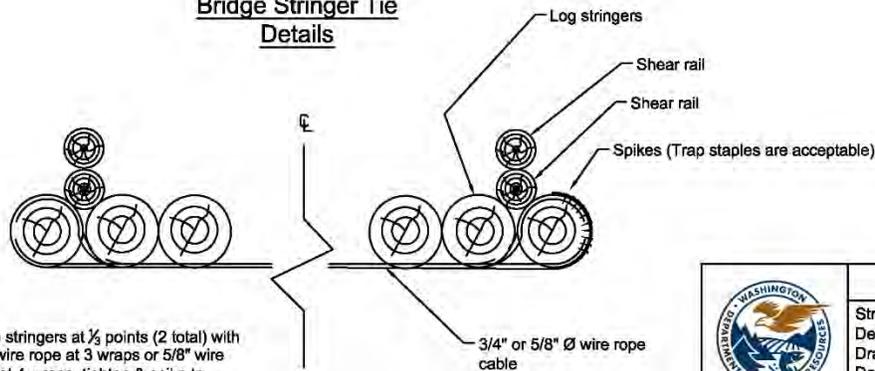
### Lashing Detail



### Note Details

- Three wraps with 3/4" wire rope or four wraps with 5/8" wire rope. Section of log to be wrapped shall be barked prior to lashing.
- Place 9 gauge, 2" square mesh @ 1.2 oz galv. chain link fabric down on top of stringers & up the sides of shear rails by min. 9" and over the ends to the top of the cap.
- After placement of chain link fabric, place polypropylene reinforcement fabric over the chain link fabric.
- Place well graded gravel over the polypropylene reinforcement fabric to a min. depth of 6". Finished surface elevation shall transition smoothly to road surface.
- Rail logs shall be selected and placed so that at least 15" are free and above the top of the gravel surfacing.

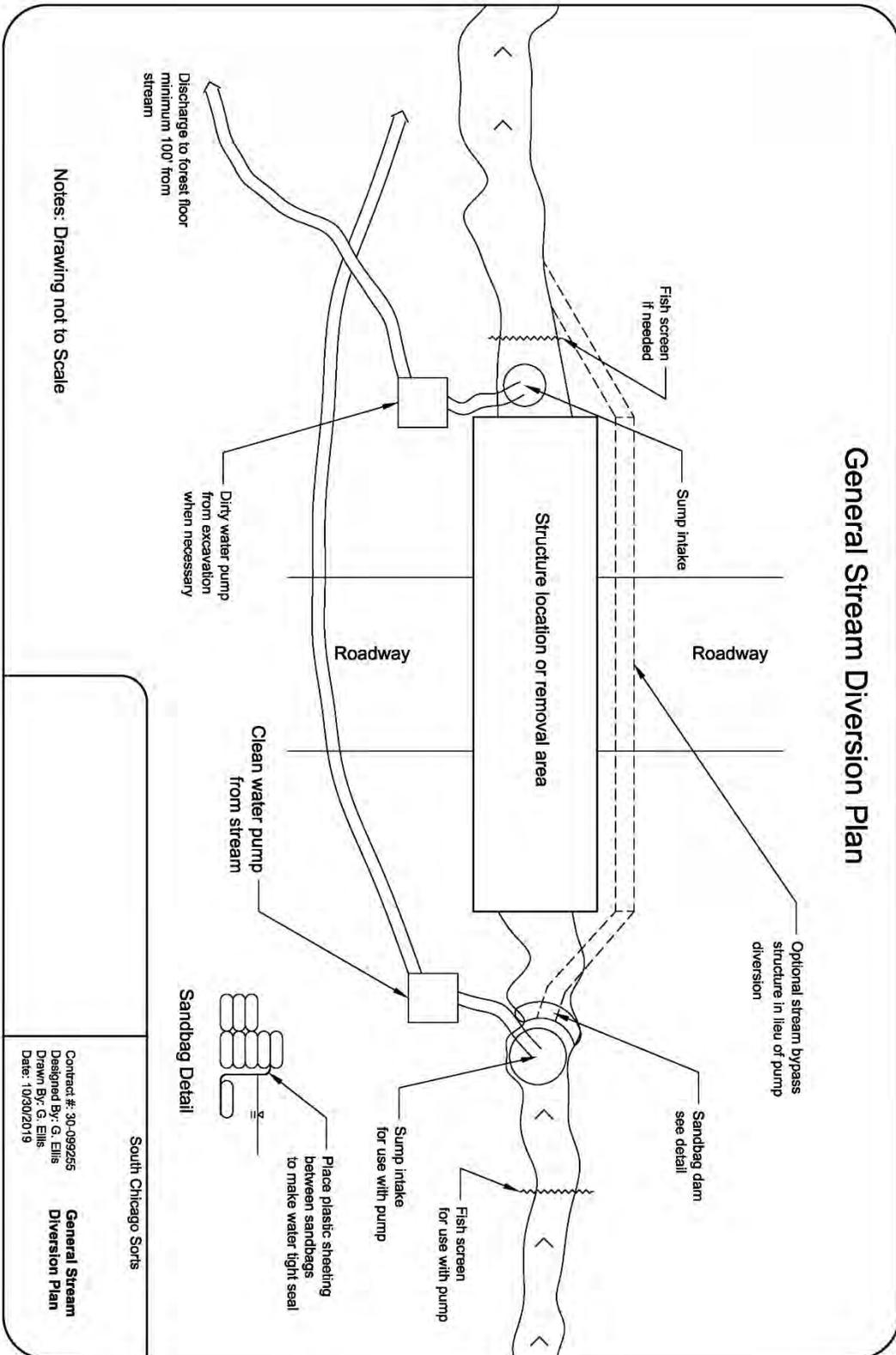
### Bridge Stringer Tie Details



Wrap stringers at 1/3 points (2 total) with 3/4" wire rope at 3 wraps or 5/8" wire rope at 4 wraps, tighten & spike to stringers.

	PA-S-2610 Bridge
	Stringer and Rail Details Designed By: G.Ellis Drawn By: G.Ellis Date: 10/30/2019 Sheet 6 of 6

# General Stream Diversion Plan



Contract #: 30-099255  
 Designed By: G. Ellis  
 Drawn By: G. Ellis  
 Date: 10/30/2019

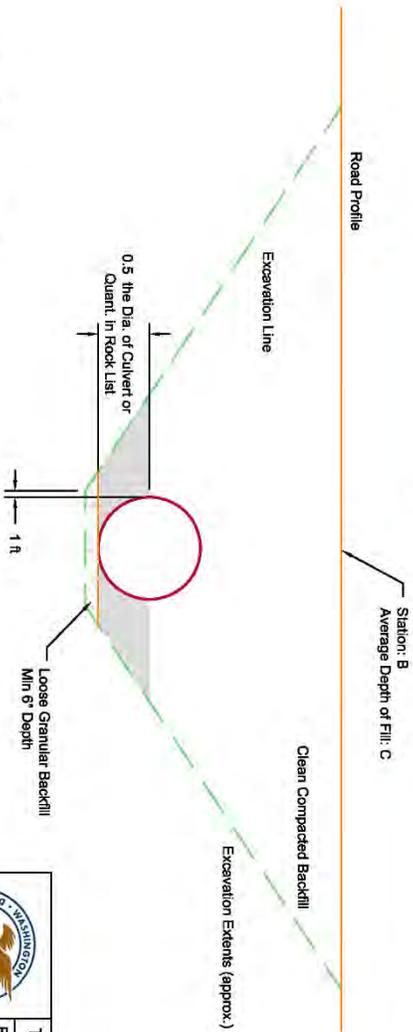
South Chicago Sorts

General Stream Diversion Plan

TYPICAL CULVERT INSTALL  
TEMP TYPE 3, TYPE 4 AND TYPE 5

A	B	C	D	E
Road Name	Station	Avg. Fill Depth (ft)	Size of Pipe (in)	Length of Pipe (ft)
PA-S-2550	111+85	6	36	50
PA-S-2580	32+80	5	36	40
3+75 SPUR	2+00	5	36	40

PROFILE - CENTERLINE OF ROAD  
LOOKING UPSTREAM



Note: Drawing not to scale



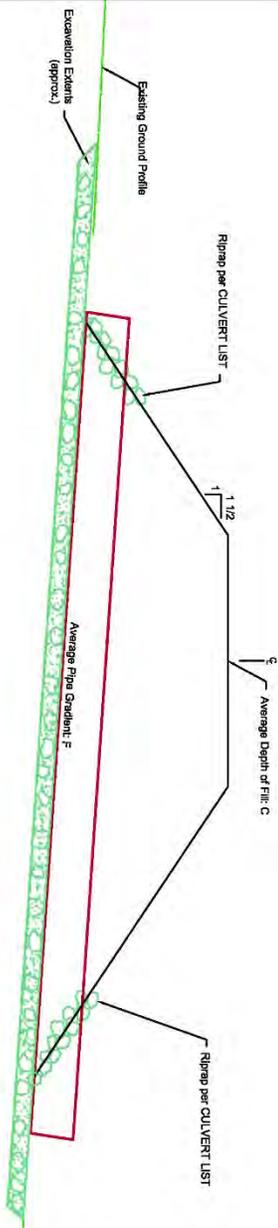
Typical Large Culvert Detail  
Road Profile View  
Designed By: G. Ellis  
Drawn By: G. Ellis  
Date: 10/31/2019  
Sheet 1 of 2

TYPICAL CULVERT INSTALL  
TEMP TYPE 3, TYPE 4 AND TYPE 5

A	B	C	D	E	F	G
Road Name	Station	Avg. Fill Depth (ft)	Size of Pipe (in)	Length of Pipe (ft)	Avg. Pipe Gradient (%)	Stream Type
PA-S-2550	111+85	6	36	50	9	3
PA-S-2580	32+80	5	36	40	5	5
3+75 SPUR	2+00	5	36	40	9	3

Note:  
1) Crown at centerline not shown

PROFILE - CENTERLINE OF CULVERT

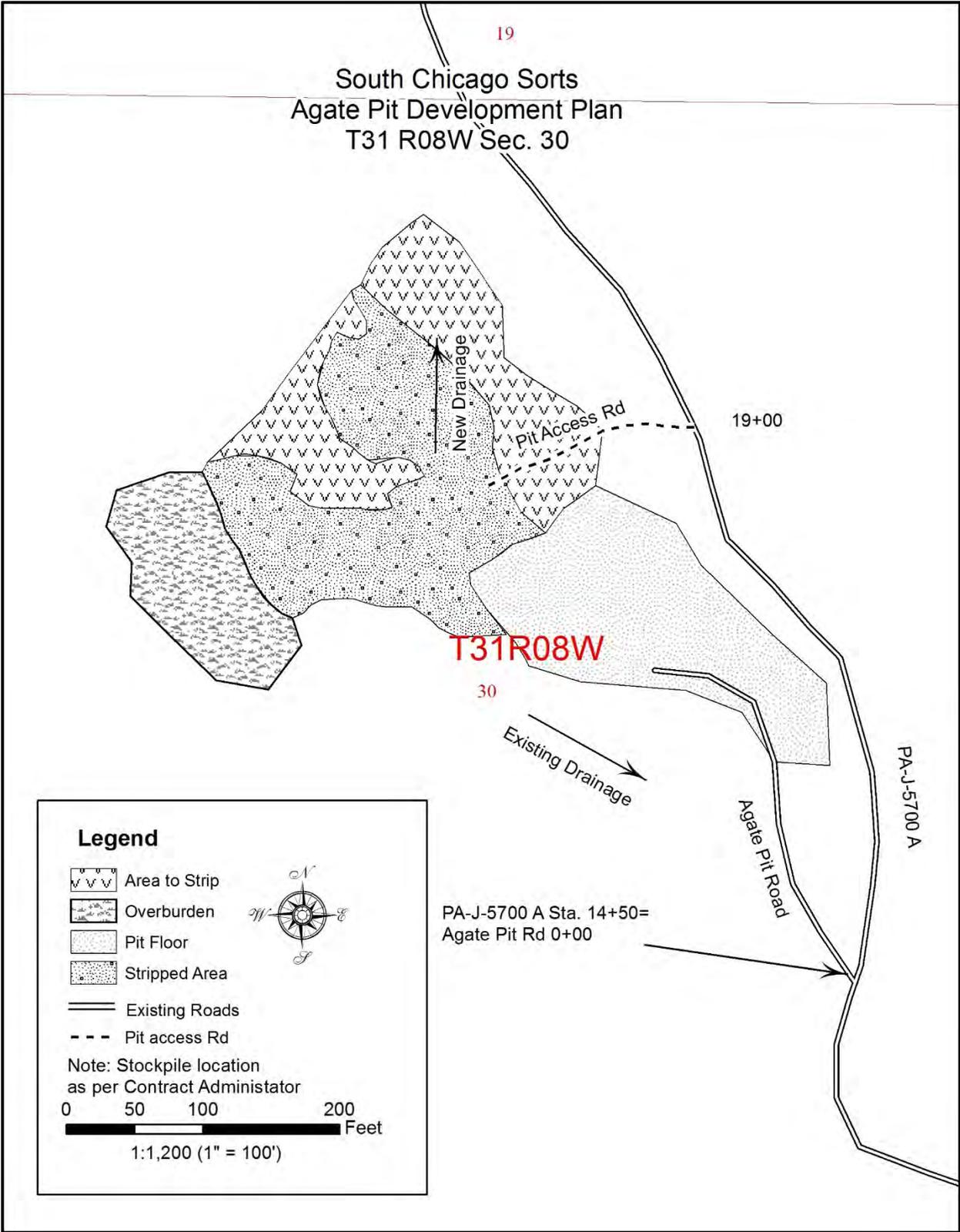


Note: Drawing not to Scale



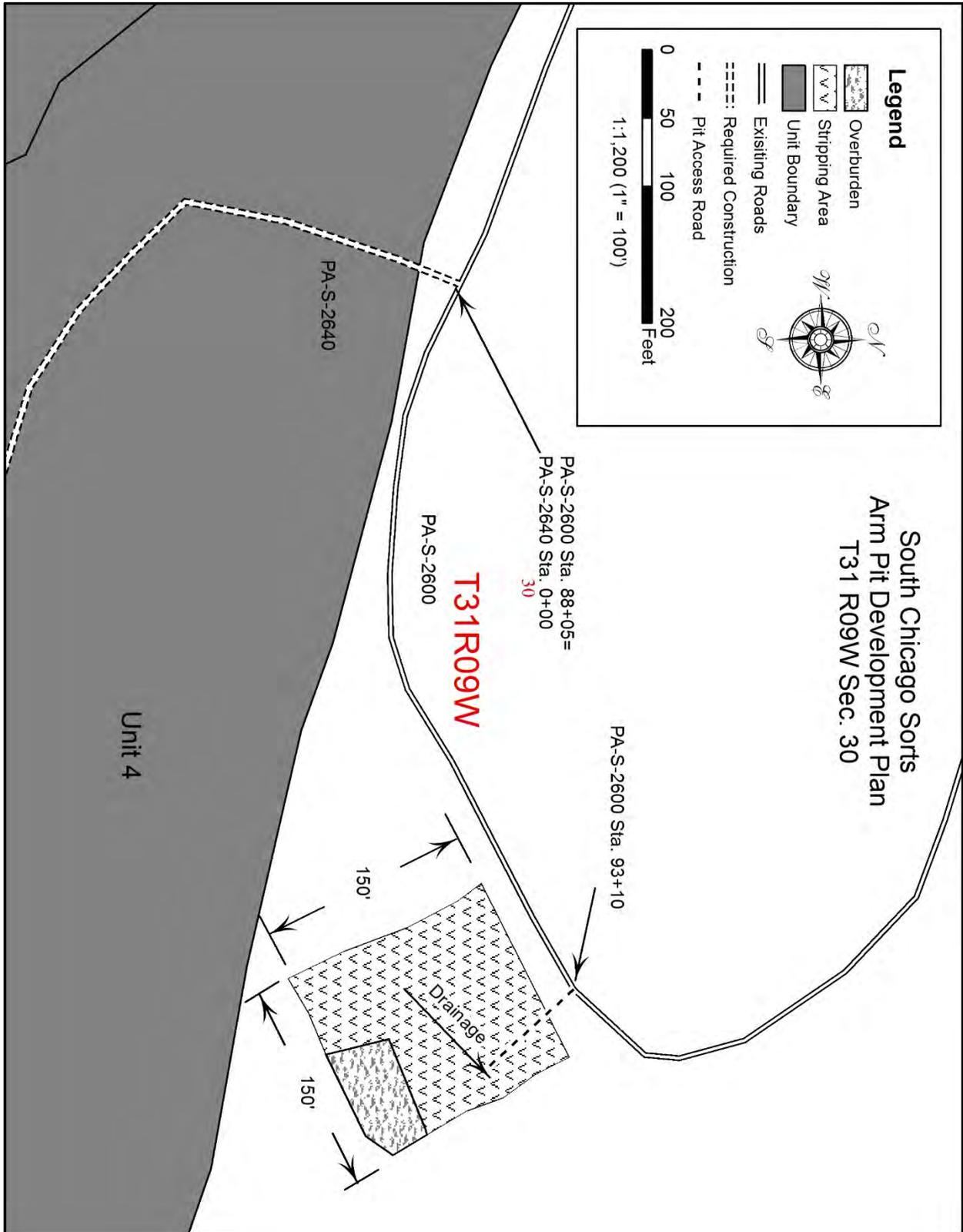
Typical Large Culvert Detail  
Stream Profile View  
Designed By: G. Ellis  
Drawn By: G. Ellis  
Date: 10/31/2019  
Sheet 2 of 2





**Agate Pit**  
**ROCK SOURCE DEVELOPMENT PLAN**  
**SEC. 30, T.31N., R.8W**  
**PIT USE REQUIREMENTS**

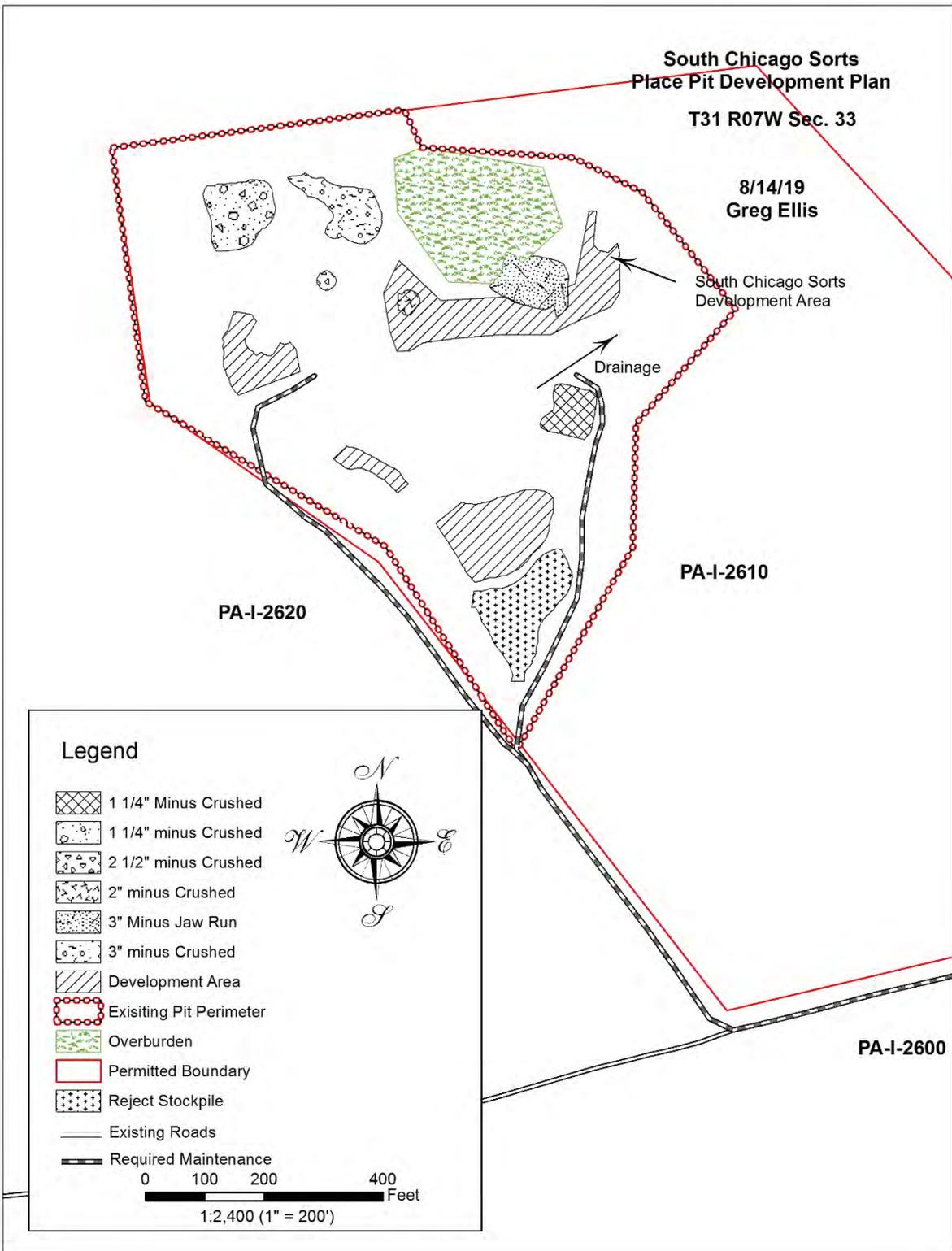
1. Pit expansion shall commence in the following order until the desired quantity of rock is achieved; Mid Pit Stripped Areas and then Upper Pit Stripped Areas.
2. Activity restrictions per Clause 1-25.
3. Only the quantities and sorts specified in this road plan for this sale may be used or manufactured, unless otherwise approved by the Contract Administrator in writing.
4. Maintain drainage of the pit floor and all drainage structures within the pit boundaries. The pit floor shall have continuity of slope be left in a smooth and neat condition, providing drainage to the southwest at a minimum of 2 percent. All knobs, bumps, or extrusions shall be removed to the designated floor level by excavation or drill and shoot techniques.
5. Excavated face height shall not exceed 20 feet and shall be sloped no steeper than 1/4:1.
6. Excavated slopes shall have a 1 1/2:1 backslope or less at the completion of operations.
7. A minimum 4 foot high berm shall be constructed and constantly maintained along the upper edge of excavated pit faces. No pit faces shall be left unblocked at any time.
8. All operations shall be completed prior to the end of each operating season, including but not limited to: drainage maintenance, sloping of the excavated face, and construction of berms, unless otherwise approved in writing by the Contract Administrator.
9. At the end of operations, pit faces and walls shall be scaled and cleared of loose and overhanging material, benches shall have safety berms constructed or access blocked to highway vehicles. Upon completion of operations in the pit, the area will be left in a condition that will not endanger public safety, damage property, or be hazardous to animal or human life. The Purchaser shall use Light Loose Rip Rap to block the drill trail.
10. All material shall remain the property of the State.
11. At the conclusion of operations, Purchaser shall ask the Contract Administrator for written approval of the final rock source condition and compliance with the terms of this plan.
12. All work shall be conducted according to relevant specifications in this Road Plan, and the Contract Administrator.
13. Purchaser shall give the Contract Administrator a minimum of 7 days notice prior to commencing any operations.
14. Purchaser is required to inform Clallam County Dispatch (PenCom) of a day and approximate time of the pit blasting.



**Arm Pit**  
**ROCK SOURCE DEVELOPMENT PLAN**  
**Sec. 30, T.31N., R.09W.**  
**PIT USE REQUIREMENTS**

PIT USE REQUIREMENTS include but are not limited to the following:

1. Purchaser shall give the Contract Administrator a minimum of 7 days' notice prior to commencing any operations, and prepare an approved ROCK SOURCE DEVELOPMENT PLAN as per **Clause 6-10**.
2. Only the quantities and sorts specified in this road plan for this sale may be used or manufactured, unless otherwise approved by the Contract Administrator in writing.
3. If Purchaser elects to use rock from a stockpile or from a pit face, Purchaser shall remove no more than the following volume of material (cubic yards truck measure) from the existing stockpile or pit face as shown on the PLAN VIEW and PROFILE VIEW, unless otherwise approved by the Contract Administrator in writing.
4. Maintain drainage of the pit floor and all drainage structures within the pit boundaries at all times to the designated settling ponds.
5. Excavated face height shall not exceed 15 feet.
6. All excavated slopes shall have a 1 1/2:1 backslope or less at the completion of operations.
7. A minimum 4 foot high berm shall be constructed and constantly maintained along the upper edge of excavated pit faces. No pit faces shall be left unblocked at any time.
8. All operations shall be completed prior to the end of each operating season, including but not limited to: drainage maintenance, sloping of the excavated face, and construction of berms, unless otherwise approved in writing by the Contract Administrator.
9. The quality and quantity of rock and materials are not guaranteed.
10. All material shall remain the property of the State.
11. At the conclusion of operations, Purchaser shall ask the Contract Administrator for written approval of the final rock source condition and compliance with the terms of this plan.
12. All operations shall be carried out in compliance with the regulation of:
  - a. Regulations and Standards Applicable to "Metal and Nonmetal Mining and Milling Operations" (30 CFR) U.S. Department of Labor, Mine Safety and Health Administration
13. All work shall be conducted according to relevant specifications in this Road Plan, and the Contract Administrator.



**Place Pit**  
**ROCK SOURCE DEVELOPMENT PLAN**  
**Sec. 33, T.31N., R.07W.**  
**PIT USE REQUIREMENTS**

PIT USE REQUIREMENTS include but are not limited to the following:

1. Activity and Marbled Murrelet restrictions per **Clause 1-25** and **Clause 1-27**
2. Purchaser shall give the Contract Administrator a minimum of 7 days' notice prior to commencing any operations, and prepare an approved ROCK SOURCE DEVELOPMENT PLAN as per **Clause 6-10**.
3. Only the quantities and sorts specified in this road plan for this sale may be used or manufactured, unless otherwise approved by the Contract Administrator in writing.
4. If Purchaser elects to use rock from a stockpile or from a pit face, Purchaser shall remove no more than the following volume of material (cubic yards truck measure) from the existing stockpile or pit face as shown on the PLAN VIEW and PROFILE VIEW, unless otherwise approved by the Contract Administrator in writing.
5. Maintain drainage of the pit floor and all drainage structures within the pit boundaries at all times to the designated settling ponds.
6. Excavated face height shall not exceed 15 feet.
7. All excavated slopes shall have a 1 1/2:1 backslope or less at the completion of operations.
8. A minimum 4 foot high berm shall be constructed and constantly maintained along the upper edge of excavated pit faces. No pit faces shall be left unblocked at any time.
9. All operations shall be completed prior to the end of each operating season, including but not limited to: drainage maintenance, sloping of the excavated face, and construction of berms, unless otherwise approved in writing by the Contract Administrator.
10. The quality and quantity of rock and materials are not guaranteed.
11. All material shall remain the property of the State.
12. At the conclusion of operations, Purchaser shall ask the Contract Administrator for written approval of the final rock source condition and compliance with the terms of this plan.
13. All operations shall be carried out in compliance with the regulation of:
  - a. Regulations and Standards Applicable to "Metal and Nonmetal Mining and Milling Operations" (30 CFR) U.S. Department of Labor, Mine Safety and Health Administration
14. All work shall be conducted according to relevant specifications in this Road Plan, and the Contract Administrator.

STATE OF WASHINGTON  
DEPARTMENT OF NATURAL RESOURCES  
OLYMPIC REGION

**INFORMATIONAL BLASTING PLAN**

Timber Sale/Project Name: \_\_\_\_\_ App./Project No.: \_\_\_\_\_

1. Blaster-in-Charge: Name: \_\_\_\_\_  
Company: \_\_\_\_\_  
Address: \_\_\_\_\_  
\_\_\_\_\_  
Telephone: \_\_\_\_\_
2. Quarry Name/Location: \_\_\_\_\_
3. Total Estimated Cubic Yards in Blast (loose): \_\_\_\_\_
4. Hole Spacing: \_\_\_\_\_
5. Burden: \_\_\_\_\_
6. Hole Diameter: \_\_\_\_\_
7. Hole Depth: \_\_\_\_\_
8. Sub Drill: \_\_\_\_\_
9. Number of Holes: \_\_\_\_\_
10. Stemming Depth: \_\_\_\_\_
11. Explosive (mfg., name, density, %, V.O.D.): \_\_\_\_\_  
\_\_\_\_\_
12. Type and Size of Primer (if applicable): \_\_\_\_\_
13. Total Weight of Primers for Shot: \_\_\_\_\_
14. Calculated Powder Factor/Cubic Yard: \_\_\_\_\_
15. Number of Delays (in M.S.): \_\_\_\_\_  
\_\_\_\_\_
16. Number of Holes Fired on Each Delay: \_\_\_\_\_  
\_\_\_\_\_
17. Total Amount of Explosives Fired on Each Delay: \_\_\_\_\_  
\_\_\_\_\_
18. Type of Blasting Machine: \_\_\_\_\_  
\_\_\_\_\_
19. Date, Start Drilling: \_\_\_\_\_
20. Date and Time, Start Loading: \_\_\_\_\_
21. Date and Time of Blast (approx.): \_\_\_\_\_

INFORMATIONAL BLASTING PLAN  
M-126PAC (03/04)

22. Detail drawing of delay system (show hole pattern and delays in milliseconds). Attach additional sheets if required:

23. Typical cross-section of hole (show primer, main charge, sub drill, and stemming):

23. Submitted by: \_\_\_\_\_ Date: \_\_\_\_\_

24. Received by: \_\_\_\_\_ Date: \_\_\_\_\_

Note: Attach copies of manufacturer=s data sheet(s) for explosive and caps.

INFORMATIONAL BLASTING PLAN  
M-126PAC (03/04)

SUMMARY - Road Development Costs															
SALE NAME:	South Chicago	CONTRACT#:	30-099255	REGION:	Olympic	DISTRICT:	Straits								
LEGAL DESCRIPTION:	0														
ROAD NAME:	J-5017	J-5018	J-5400	J-5410	1+00 Spur	1+01 Spur	S-2550	1+35 Spur	S-2551.2	3+35 Spur	S-2553.2	TOTAL:	SHEET #2-6		
ROAD TYPE:	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Construction	TOTAL			
NUMBER OF STATIONS:	4.95	4.40	10.10	12.60	1.00	1.01	11.90	1.35	18.30	3.35	7.00	75.96	2,105.40		
SIDESLOPE:	10%	10%	10%	20%	10%	10%	10%	10%	20%	20%	35%				
CLEARING AND GRUBBING:	\$626	\$557	\$1,278	\$1,594	\$159	\$140	\$1,506	\$171	\$2,545	\$424	\$1,329	\$10,310	\$45,312		
ROAD BRUSHING:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,402		
EXCAVATION AND FILL:	\$839	\$746	\$1,712	\$2,848	\$170	\$171	\$2,017	\$229	\$4,136	\$757	\$2,373	\$15,997	\$168,754		
ROAD GRADING:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$10,761		
DITCH CLEANING/CONSTRUCTION:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$7,040		
ROCK TOTALS (Ct. Yds./)ROCK COSTS:															
Balast:	21,325	21,330	400	410	710	880	120	120	1,360	150	1,380	340	490	6,358	14,967
	\$5,213	\$5,113	\$8,016	\$10,578	\$1,590	\$1,736	\$2,125	\$2,326	\$18,947	\$4,665	\$6,899	\$6,318	\$204,465		
Surfice:	25,036	25,030	170	160	400	540	40	40	240	50	800	140	290	2,870	22,166
	\$3,116	\$2,875	\$6,608	\$9,326	\$740	\$746	\$4,704	\$983	\$15,175	\$2,663	\$5,606	\$2,541	\$415,522		
Over-size:	100	100	0	0	0	0	0	0	0	0	0	0	0	100	100
	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,131	\$1,131
CULVERTS AND FLOWERS:	\$0	\$0	\$1,330	\$3,761	\$0	\$0	\$4,590	\$0	\$5,000	\$660	\$1,760	\$17,091	\$55,563		
STRUCTURES:	0	0	0	0	0	0	0	0	0	0	0	0	\$44,096		
MISC. EXPENSES:	29	26	59	210	6	6	186	8	223	20	61	\$882	\$30,575		
OVERHEAD:	786	745	1,519	2,265	212	224	2,739	297	3,682	735	1,442	\$14,647	\$79,069		
TOTAL COSTS:	10,609	10,062	20,512	30,581	2,856	3,024	36,976	4,014	49,708	9,924	19,470	\$197,736	\$1,063,690		
	0	0	0	0	0	0	0	0	0	0	0	0	0		
COST PER STATION:	2.143	2.287	2.031	2.427	2.856	2.994	3.107	2.973	2.716	2.962	2.781	\$2,603	#DIV/0!		
MOBILIZATION:			\$21,600												
ROAD DEACTIVATION AND ABANDONMENT COSTS:			\$4,485												
Pit Work			\$15,000												
NOTE: This appraisal has no allowance for profit and risk.															
Sheet 1 of 6															

Road Standard	Const.	Reconst.	Prehaul	Posthaul	TOTAL (All Roads) =
Total Costs =	761,408	214,110	285,680	38,028	\$1,303,711
Total Sta. =	216	104	813	1,048	8,985
Cost per Sta. =	3,519	2,058	351	36	\$145,10
Complied by:	Gege Ellis				TOTAL COST PER STATION = \$597.66
					Date: 10/28/2019

SALENAME: South Chicago		SUMMARY - Road Development Costs										DISTRRICT: Straits						
LEGAL DESCRIPTION: 0		CONTRACT#: 30-099255										REGION: Olymptic						
ROAD NAME:		S-2554	S-2554.1	S-2554.2	S-2555.2	S-2582.1	1+75 Spur	S-2612	5+70 Spur	S-2640	2+60 Spur	3+75 Spur	0+70 Spur	S-1280	S-1281	J-5015	J-5016	J-5017
ROAD TYPE:		Construction	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Construction	Recon.	Recon.	Recon.
NUMBER OF STATIONS:		27/00	8/70	12/55	12/95	24/35	1/75	5/05	4/60	13/40	2/60	3/75	0/70	15/70	7/30	8/00	9/50	19/35
SIDESLOPE:		60%	20%	60%	35%	45%	10%	35%	10%	35%	30%	30%	10%	35%	35%	5%	5%	25%
CLEARING AND GRUBBING:		\$9,896	\$1,101	\$4,364	\$2,746	\$5,704	\$221	\$1,071	\$582	\$3,139	\$551	\$795	\$97	\$3,678	\$1,710	\$798	\$948	\$1,930
ROAD BRUSHING:		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
EXCAVATION AND FILL:		\$76,936	\$1,966	\$31,985	\$4,390	\$15,134	\$297	\$1,712	\$780	\$4,543	\$735	\$1,059	\$119	\$5,322	\$2,475	\$1,130	\$1,342	\$4,920
ROAD GRADING:		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$52	\$62	\$126
DITCH CLEANING/CONSTRUCTION:		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$312	\$371	\$755
ROCK TOTALS (Cu. Yds.)/ROCK COSTS:																		
Balloon:		2,000	730	1,060	1,080	1,910	170	450	420	1,060	310	390	130	1,220	610	20	0	50
Surface:		\$28,320	\$10,439	\$15,204	\$15,426	\$27,592	\$2,432	\$6,446	\$6,149	\$15,752	\$4,684	\$5,905	\$1,977	\$18,239	\$9,162	\$258	\$0	\$653
Over-size:		1,150	340	500	530	1,080	80	220	200	530	110	150	30	610	280	580	730	1,430
		\$22,322	\$6,637	\$9,805	\$10,361	\$21,281	\$1,573	\$4,305	\$3,978	\$10,658	\$2,240	\$3,067	\$604	\$12,312	\$5,665	\$10,231	\$10,894	\$25,977
CULVERTS AND FLUMES:		\$408	\$0	\$119	\$0	\$239	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$62	\$63	\$0	\$0	\$0
		\$8,321	\$1,320	\$2,420	\$1,980	\$9,262	\$880	\$1,540	\$1,540	\$2,200	\$660	\$1,560	\$0	\$1,320	\$660	\$660	\$1,980	\$1,980
STRUCTURES:		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
MISC. EXPENSES:		\$526	\$51	\$93	\$76	\$658	\$10	\$30	\$27	\$78	\$15	\$22	\$4	\$92	\$43	\$825	\$1,040	\$2,041
OVERHEAD:		\$11,738	\$1,721	\$5,119	\$2,798	\$6,390	\$433	\$1,208	\$1,044	\$2,910	\$711	\$993	\$224	\$3,282	\$1,582	\$1,141	\$1,331	\$3,070
TOTAL COSTS:		\$158,467	\$23,235	\$69,108	\$37,777	\$86,259	\$5,847	\$16,311	\$14,100	\$39,280	\$9,595	\$13,400	\$3,025	\$44,307	\$21,360	\$15,408	\$17,966	\$41,451
COST PER STATION:		\$5,869	\$2,671	\$5,507	\$2,917	\$3,542	\$3,341	\$3,230	\$3,065	\$2,931	\$3,691	\$3,573	\$4,321	\$2,822	\$2,926	\$1,926	\$1,891	\$2,142

SALE NAME: South Chicago	CONTRACT#: 30-099255	SUMMARY - Road Development Costs															
LEGAL DESCRIPTION	0	REGION: Olympic															
		DISTRICT: Straits															
ROAD NAME:	J-50171	J-50172	J-5025	J-5400	S-2553	S-2554	S-2555.2	S-2580	S-2582	J-5000	J-5015	J-5020	J-5400	J-5500	J-5700 A	Agate Pt R.	S-2500
ROAD TYPE:	Recon.	Recon.	Recon.	Recon.	Recon.	Recon.	Recon.	Recon.	Recon.	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul	Prehaul
NUMBER OF STATIONS:	1.35	3.00	10.00	4.00	13.55	5.45	5.45	18.00	6.40	108.60	23.00	26.15	32.30	47.35	19.00	3.00	36.20
SIDESLOPE:	25%	25%	10%	10%	25%	25%	10%	10%	25%	0%	0%	0%	0%	0%	0%	0%	0%
CLEARING AND GRUBBING:	\$135	\$299	\$855	\$399	\$1,352	\$466	\$388	\$1,539	\$547	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ROAD BRUSHING:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
EXCAVATION AND FILL:	\$343	\$763	\$1,695	\$678	\$3,445	\$1,386	\$924	\$3,051	\$1,627	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ROAD GRADING:	\$9	\$20	\$65	\$26	\$88	\$35	\$35	\$117	\$42	\$706	\$150	\$170	\$0	\$0	\$0	\$0	\$235
DITCHING:	\$39	\$33	\$0	\$0	\$595	\$213	\$213	\$796	\$425	\$0	\$0	\$1,020	\$0	\$0	\$0	\$0	\$0
ROCK TOTALS (Cu. Yds./ROCK COSTS):																	
Ballast:	50	50	100	20	40	20	0	60	450	0	0	550	0	0	0	0	100
Surface:	\$699	\$645	\$1,220	\$214	\$359	\$283	\$0	\$851	\$6,440	\$0	\$0	\$6,386	\$0	\$0	\$0	\$0	\$1,309
Over-size:	90	210	370	140	1,050	190	380	1,340	250	320	50	2,090	0	0	0	0	100
CULVERTS AND FILMS:	\$1,613	\$2,157	\$6,457	\$2,233	\$20,182	\$3,683	\$7,415	\$26,050	\$4,890	\$5,789	\$882	\$35,229	\$0	\$0	\$0	\$0	\$981
STRUCTURES:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$5	\$0	\$0	\$0	\$20	\$0	\$0	\$0	\$0	\$0
MISC. EXPENSES:	\$139	\$310	\$1,032	\$413	\$1,612	\$562	\$562	\$2,088	\$660	\$655	\$135	\$3,046	\$0	\$0	\$0	\$0	\$212
OVERHEAD:	\$233	\$338	\$959	\$317	\$2,436	\$530	\$816	\$3,047	\$1,241	\$625	\$93	\$6,185	\$0	\$0	\$0	\$0	\$219
TOTAL COSTS:	\$3,150	\$4,564	\$12,942	\$4,280	\$32,890	\$7,158	\$11,014	\$41,137	\$16,752	\$8,435	\$1,259	\$83,492	\$0	\$0	\$0	\$0	\$2,956
COST PER STATION:	\$2,333	\$1,521	\$1,294	\$1,070	\$2,427	\$1,313	\$2,021	\$2,285	\$2,617	\$78	\$55	\$3,193	\$0	\$0	\$0	\$0	\$82



SALE NAME	South Chicago	CONTRACT#:	SUMMARY - Road Development Costs										DISTRICT:				
LEGAL DESCRIPTION	0	30099255	REGION: Olympic										Straits				
ROAD NAME:	J-5015	J-5017	J-5020	J-5400	J-5410	J-5900	J-5700 A	S-2500	S-2510	S-2550	S-2551	S-2551.2	S-2553	S-2553.2	S-2554	S-2554.1	S-2554.2
ROAD TYPE:	Posthaul	Posthaul	Posthaul	Posthaul	Posthaul	Posthaul	Posthaul	Posthaul	Posthaul	Posthaul	Posthaul	Posthaul	Posthaul	Posthaul	Posthaul	Posthaul	Posthaul
NUMBER OF STATIONS:	31.00	24.30	26.15	46.40	12.60	47.35	19.00	36.20	8.65	116.00	13.70	18.30	13.55	7.00	32.45	8.70	12.55
SLOPE:	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
CLEARING AND GRUBBING	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ROAD BRUSHING	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
EXCAVATION AND FILL:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ROAD GRADING	\$302	\$158	\$170	\$302	\$82	\$308	\$124	\$235	\$56	\$754	\$89	\$119	\$88	\$46	\$211	\$57	\$82
DITCHING:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ROCK TOTALS (Cu. Yds.)/ROCK COSTS:	0	0	0	0	0	0	0	50	50	0	0	0	0	0	0	0	0
Ballast:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$655	\$657	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Surface:	0	0	50	50	50	0	0	0	0	150	0	0	50	0	0	0	0
Over-size:	\$0	\$0	\$809	\$798	\$874	\$0	\$0	\$0	\$0	\$2,943	\$0	\$0	\$962	\$0	\$0	\$0	\$0
CULVERTS AND FLUMES:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
STRUCTURES:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
MISC. EXPENSES:	\$181	\$142	\$153	\$271	\$74	\$277	\$111	\$212	\$51	\$679	\$80	\$107	\$79	\$41	\$190	\$51	\$73
OVERHEAD:	\$34	\$27	\$102	\$123	\$93	\$53	\$21	\$99	\$69	\$394	\$15	\$20	\$102	\$8	\$36	\$10	\$14
TOTAL COSTS:	\$417	\$327	\$1,233	\$1,494	\$1,122	\$637	\$256	\$1,201	\$832	\$4,769	\$184	\$246	\$1,230	\$94	\$437	\$117	\$169
COST PER STATION:	\$13	\$13	\$47	\$32	\$89	\$13	\$13	\$33	\$96	\$41	\$13	\$13	\$91	\$13	\$13	\$13	\$13

SUMMARY - Road Development Costs												
SALE NAME: South Chicago	CONTRACT#: 30-099255	REGION: Olympic	DISTRICT: Stratis									
LEGAL DESCRIPTION: 0												
ROAD NAME:	S-2555	S-2580	S-2582	S-2582.1	S-2600	S-2610	S-2640	S-1000	S-1100	S-1200 Sys	Place Pit	Stockpile
ROAD TYPE:	Posthaul	Posthaul	Posthaul	Posthaul	Posthaul	Posthaul	Posthaul	Posthaul	Posthaul	Posthaul	Posthaul	Prehaul
NUMBER OF STATIONS:	14.00	18.00	6.40	24.35	131.15	31.85	13.40	81.15	16.75	95.85	32.50	0
SIDE SLOPE:	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0
CLEARING AND GRUBBING:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ROAD BRUSHING:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
EXCAVATION AND FILL:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ROAD GRADING:	\$91	\$117	\$42	\$158	\$852	\$207	\$87	\$527	\$109	\$623	\$211	\$0
DITCHING:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ROCK TOTALS (Cu. Yds.)/ROCK COSTS:												
Ballast:	13747	0	0	0	0	0	0	50	0	0	0	1,000
	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$684	\$0	\$0	\$0	\$5,060
Surface:	50	0	0	0	200	50	0	0	50	50	0	200
	\$0	\$972	\$0	\$0	\$3,970	\$853	\$0	\$0	\$966	\$988	\$0	\$2,112
Oversize:	0	0	0	0	0	0	0	0	0	0	0	0
	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
CULVERTS AND FLUMES:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,760
STRUCTURES:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
MISC. EXPENSES:	\$82	\$105	\$37	\$142	\$767	\$186	\$78	\$475	\$98	\$561	\$190	\$0
OVERHEAD:	\$16	\$107	\$7	\$27	\$503	\$112	\$15	\$152	\$106	\$195	\$36	\$795
TOTAL COSTS:	\$188	\$1,302	\$86	\$328	\$6,093	\$1,358	\$180	\$1,837	\$1,278	\$2,367	\$437	\$10,727
COST PER STATION:	\$13	\$72	\$13	\$13	\$46	\$43	\$13	\$23	\$76	\$25	\$13	#DIV/0!

## **Forest Access Road Maintenance Specifications**

### **Cuts and Fills**

- Maintain slope lines to a stable gradient compatible with the cut slope/fill slope ratios. Remove slides from ditches and the roadway. Repair fill-failures, in accordance with Clause 4-6 EMBANKMENT SLOPE RATIO, with selected material or material approved by the Contract Administrator. Remove overhanging material from the top of cut slopes.
- Waste material from slides or other sources shall be placed and compacted in stable locations identified in the road plan or approved by the Contract Administrator, so that sediment will not deliver to any streams or wetlands.
- Slide material and debris shall not be mixed into the road surface materials, unless approved by the Contract Administrator.

### **Surface**

- Grade, shape and compact the road surface, turnouts, and shoulders to the original shape on the TYPICAL SECTION SHEET to provide a smooth, rut-free traveled surface and maintain surface water runoff in an even, unconcentrated manner.
- Blading shall not undercut the backslope or cut into geotextile fabric on the road.
- If required by the Contract Administrator, water shall be applied as necessary to control dust and retain fine surface rock.
- Surface material shall not be bladed off the roadway. Replace surface material when lost or worn away, or as directed by the Contract Administrator.
- Remove shoulder berms, created by grading, to facilitate drainage, except as marked or directed by the Contract Administrator.
- For roads with geotextile fabric: spread surface aggregate to fill in soft spots and wheel ruts (barrel spread) to prevent damage to the geotextile fabric.

### **Drainage**

- Prevent silt bearing road surface and ditch runoff from delivering sediment to any streams or wetlands.
- Maintain rolling dips and drivable waterbars as needed to keep them functioning as intended.
- Maintain headwalls to the road shoulder level with material that will resist erosion.
- Maintain energy dissipaters at culvert outlets with non-erodible material or rock.
- Keep ditches, culverts, and other drainage structures clear of obstructions and functioning as intended.
- Inspect and clean culverts at least monthly, with additional inspections during storms and periods of high runoff. This shall be done even during periods of inactivity.

## Forest Access Road Maintenance Specifications

### Preventative Maintenance

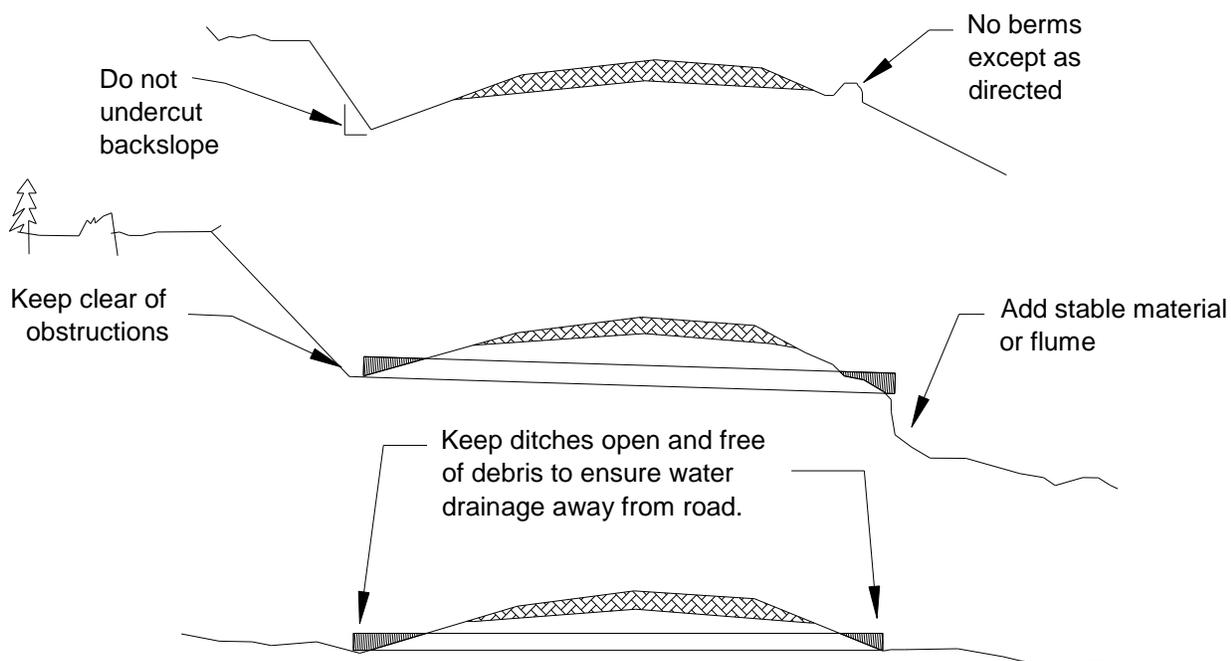
- Perform preventative maintenance work to safeguard against storm damage, such as blading to ensure correct runoff, ditch and culvert cleaning, and waterbar maintenance.

### Termination of Use or End of Season

- At the conclusion of logging operations, ensure all conditions of these specifications have been met.

### Debris

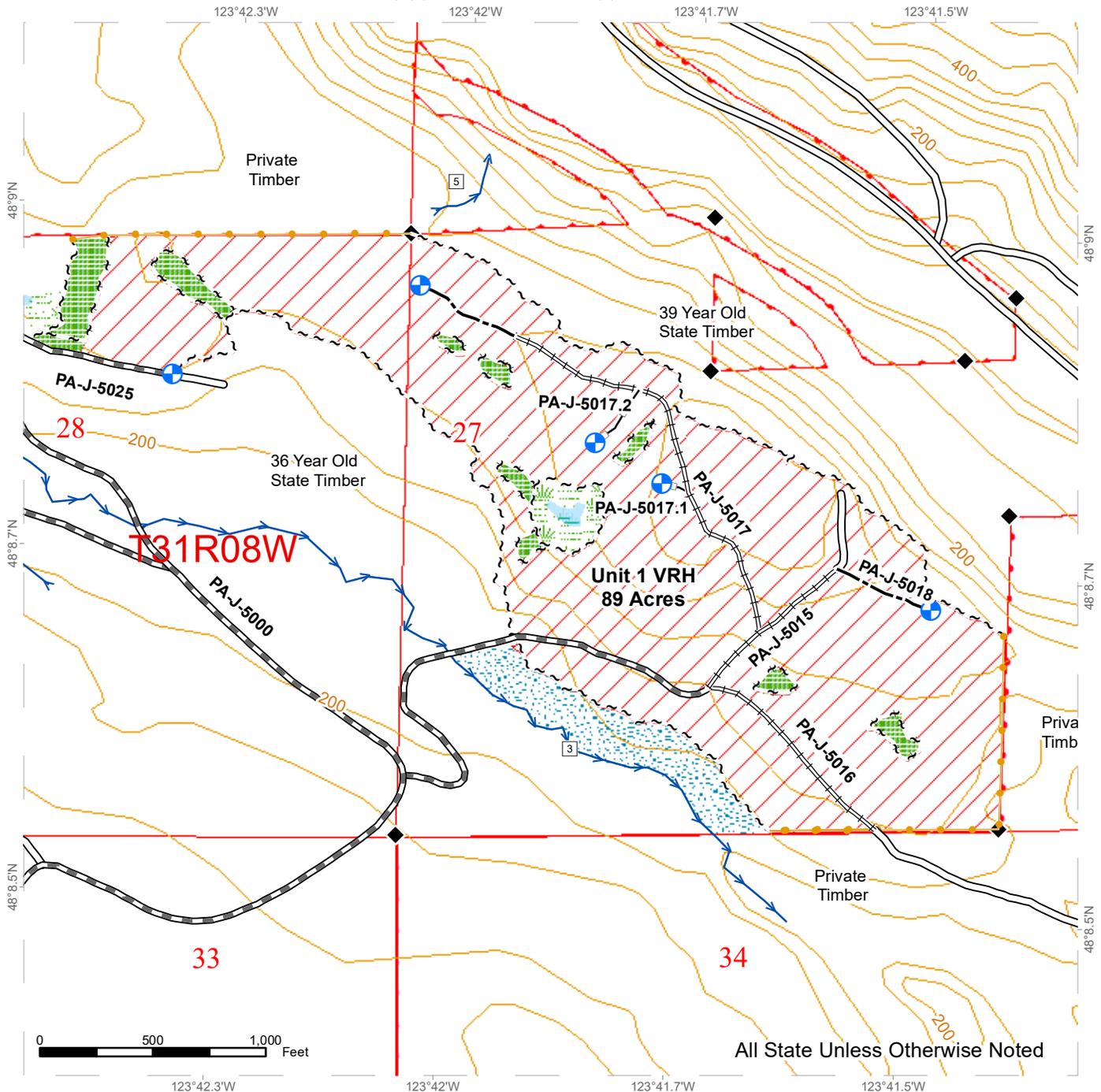
- Remove fallen timber, limbs, and stumps from the slopes, roadway, ditchlines, and culvert inlets.



# LOGGING PLAN MAP

**SALE NAME:** SOUTH CHICAGO  
**AGREEMENT#:** 30-099255  
**TOWNSHIP(S):** T31R8W, T31R9W, T30R9W  
**TRUST(S):** Common School and Indemnity (3), State Forest Transfer (1)

**REGION:** Olympic Region  
**COUNTY(S):** Clallam  
**ELEVATION RGE:** 40'-920'



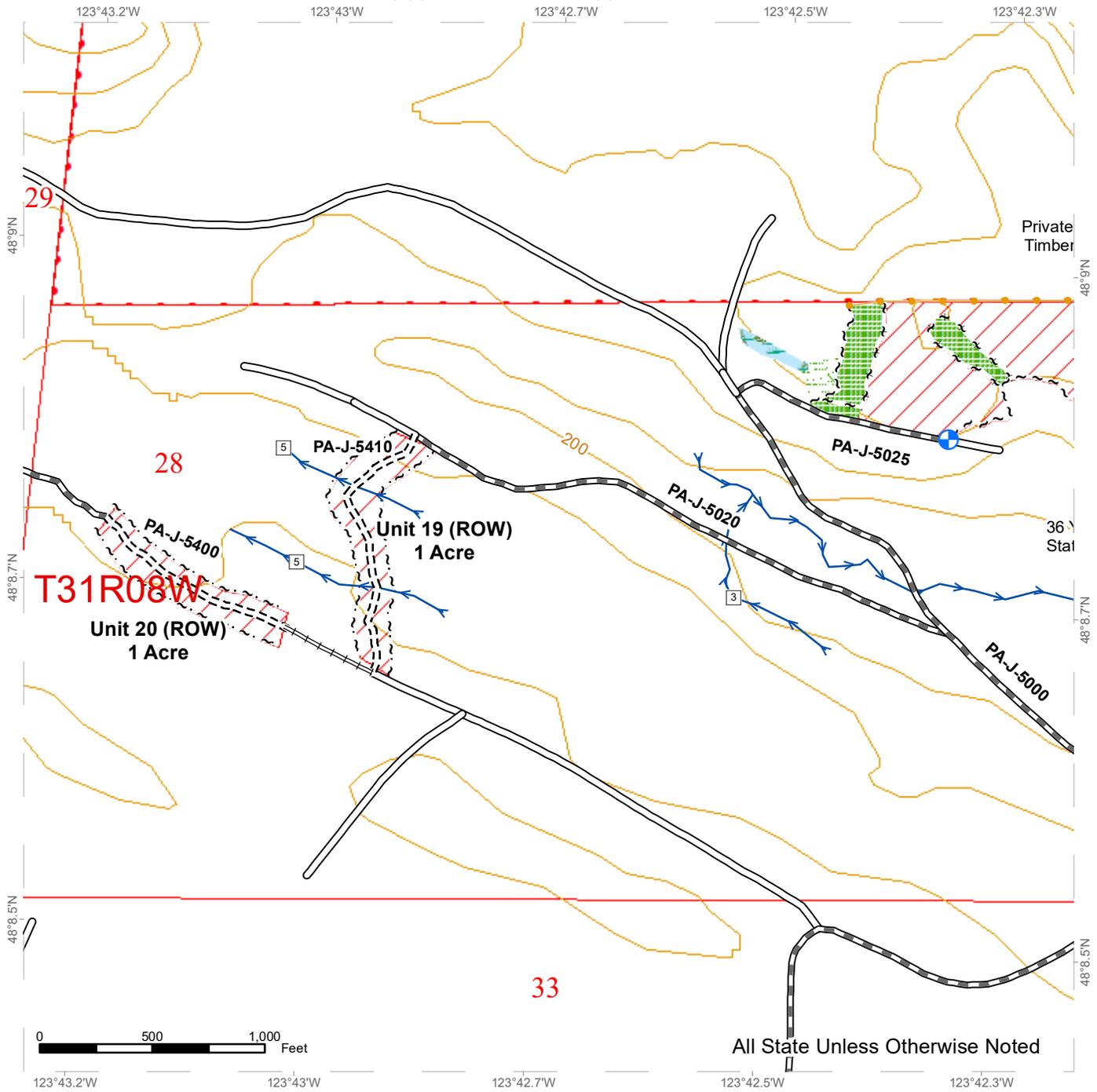
Ground	Open Water	Waste Area	Stream Type
Cable	Existing Road	Sale Boundary Tags	Stream Type Break
No Harvest Eagle Buffer	Optional Construction	Timber Type Change	Survey Monument
Eagle Timing Restriction	Optional Pre-Haul Maintenance	Leave Tree Tags	Bridge
Leave Tree Area	Optional Reconstruction	Right of Way Tags	Gate
Hazard Abatement	Required Construction	Take / Removal Trees	Rock Pit
Bog	Required Pre-Haul Maintenance	Flag Line	4x4 Trails
Riparian Management Zone	Required Reconstruction	Streams	
Forested Wetland			
Wetland Management Zone			



# LOGGING PLAN MAP

**SALE NAME:** SOUTH CHICAGO  
**AGREEMENT#:** 30-099255  
**TOWNSHIP(S):** T31R8W, T31R9W, T30R9W  
**TRUST(S):** Common School and Indemnity (3), State Forest Transfer (1)

**REGION:** Olympic Region  
**COUNTY(S):** Clallam  
**ELEVATION RGE:** 40'-920'



Ground	Open Water	Waste Area	Stream Type
Cable	Existing Road	Stream Type Break	Survey Monument
No Harvest Eagle Buffer	Optional Construction	Sale Boundary Tags	Bridge
Eagle Timing Restriction	Optional Pre-Haul Maintenance	Timber Type Change	Gate
Leave Tree Area	Optional Reconstruction	Leave Tree Tags	Rock Pit
Hazard Abatement	Required Construction	Right of Way Tags	4x4 Trails
Bog	Required Pre-Haul Maintenance	Take / Removal Trees	
Riparian Management Zone	Required Reconstruction	Flag Line	
Forested Wetland	Proposed Landing	Streams	
Wetland Management Zone			

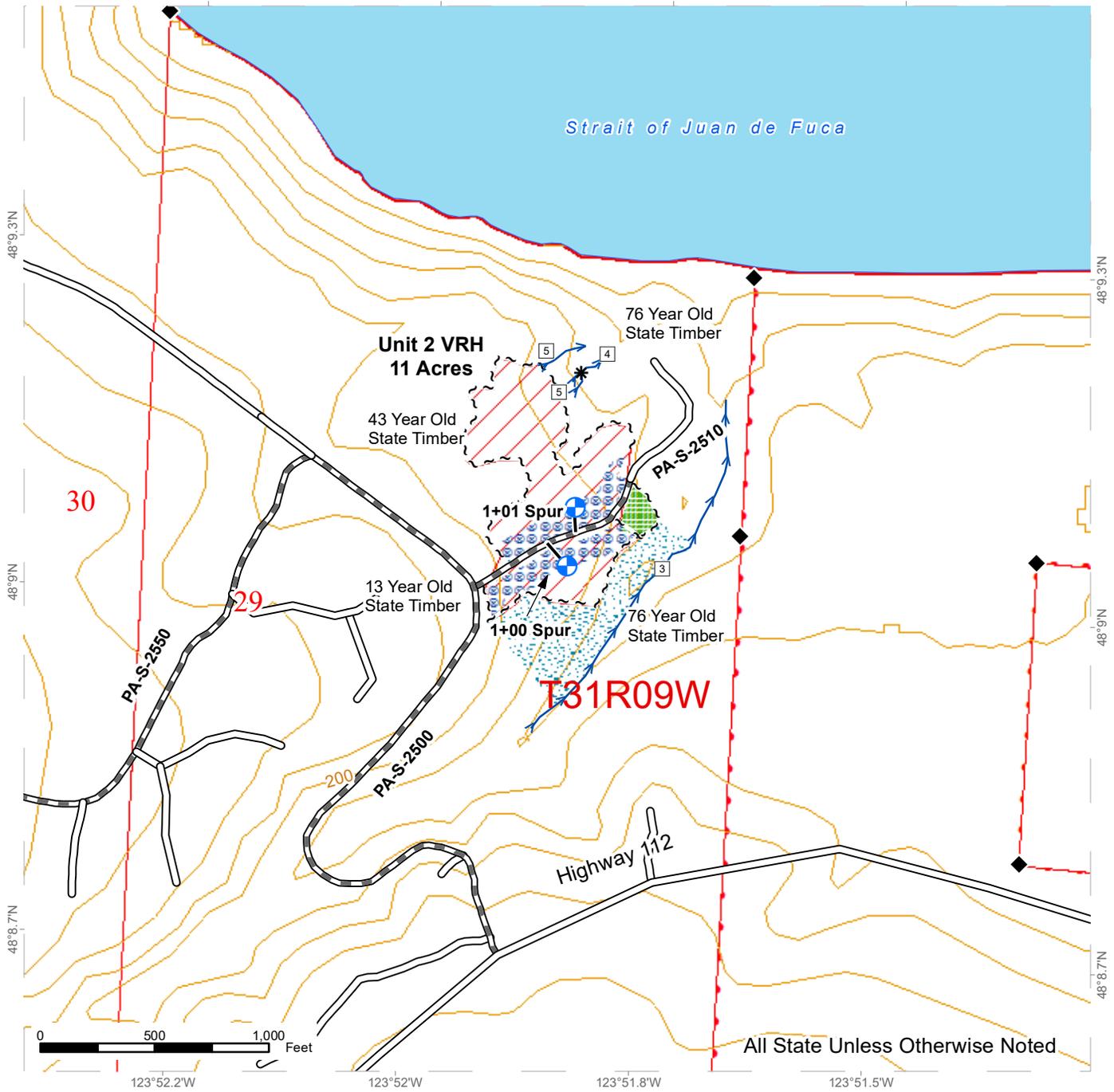


# LOGGING PLAN MAP

**SALE NAME:** SOUTH CHICAGO  
**AGREEMENT#:** 30-099255  
**TOWNSHIP(S):** T31R8W, T31R9W, T30R9W  
**TRUST(S):** Common School and Indemnity (3), State Forest Transfer (1)

**REGION:** Olympic Region  
**COUNTY(S):** Clallam  
**ELEVATION RGE:** 40'-920'

123°52.2'W      123°52'W      123°51.8'W      123°51.5'W



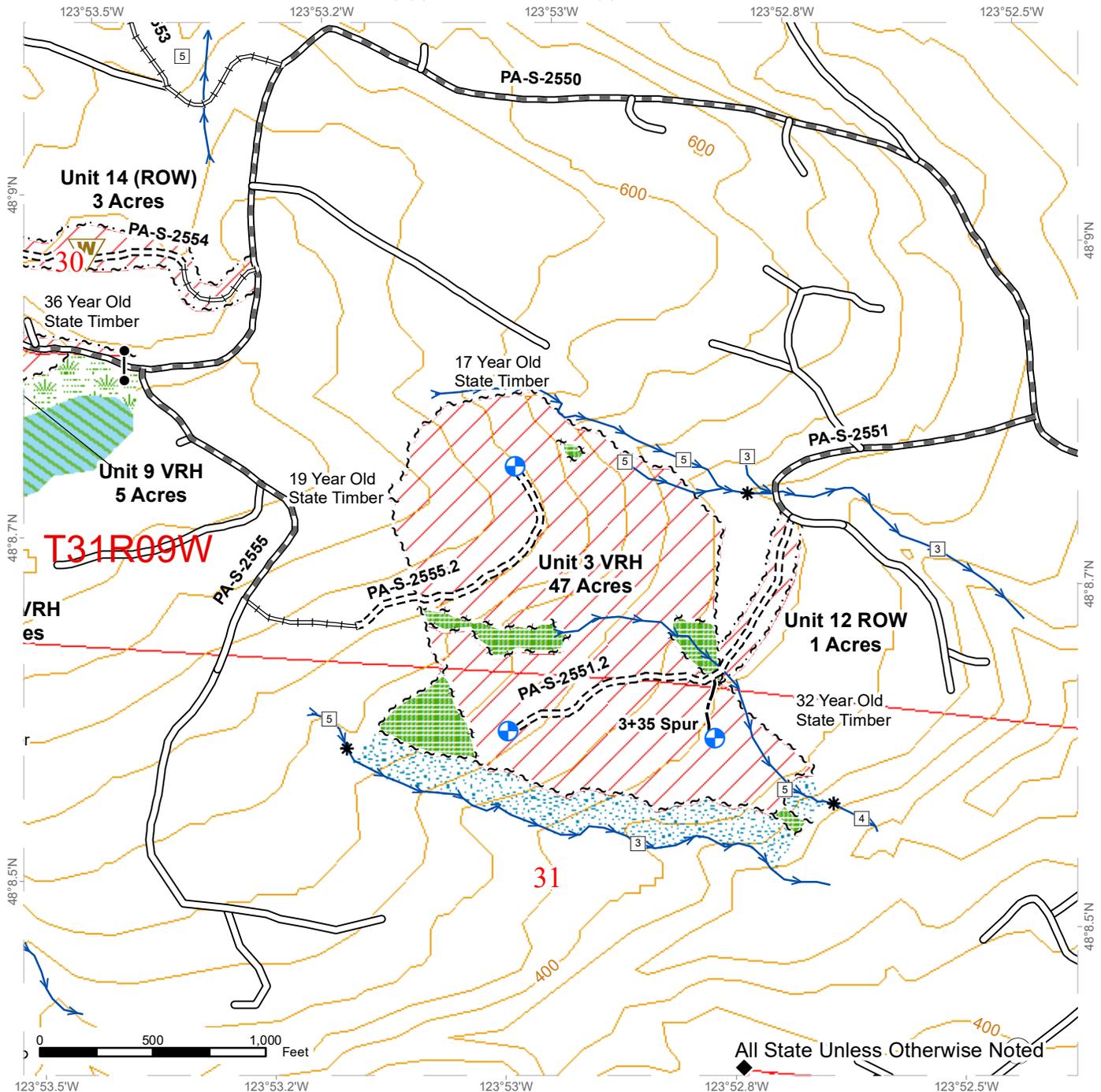
All State Unless Otherwise Noted

Ground	Open Water	Waste Area	Stream Type
Cable	Existing Road	Sale Boundary Tags	Stream Type Break
No Harvest Eagle Buffer	Optional Construction	Timber Type Change	Bridge
Eagle Timing Restriction	Optional Pre-Haul Maintenance	Leave Tree Tags	Gate
Leave Tree Area	Optional Reconstruction	Right of Way Tags	Rock Pit
Hazard Abatement	Required Construction	Take / Removal Trees	4x4 Trails
Bog	Required Pre-Haul Maintenance	Flag Line	
Riparian Management Zone	Required Reconstruction	Streams	
Forested Wetland	Proposed Landing		
Wetland Management Zone			

# LOGGING PLAN MAP

**SALE NAME:** SOUTH CHICAGO  
**AGREEMENT#:** 30-099255  
**TOWNSHIP(S):** T31R8W, T31R9W, T30R9W  
**TRUST(S):** Common School and Indemnity (3), State Forest Transfer (1)

**REGION:** Olympic Region  
**COUNTY(S):** Clallam  
**ELEVATION RGE:** 40'-920'

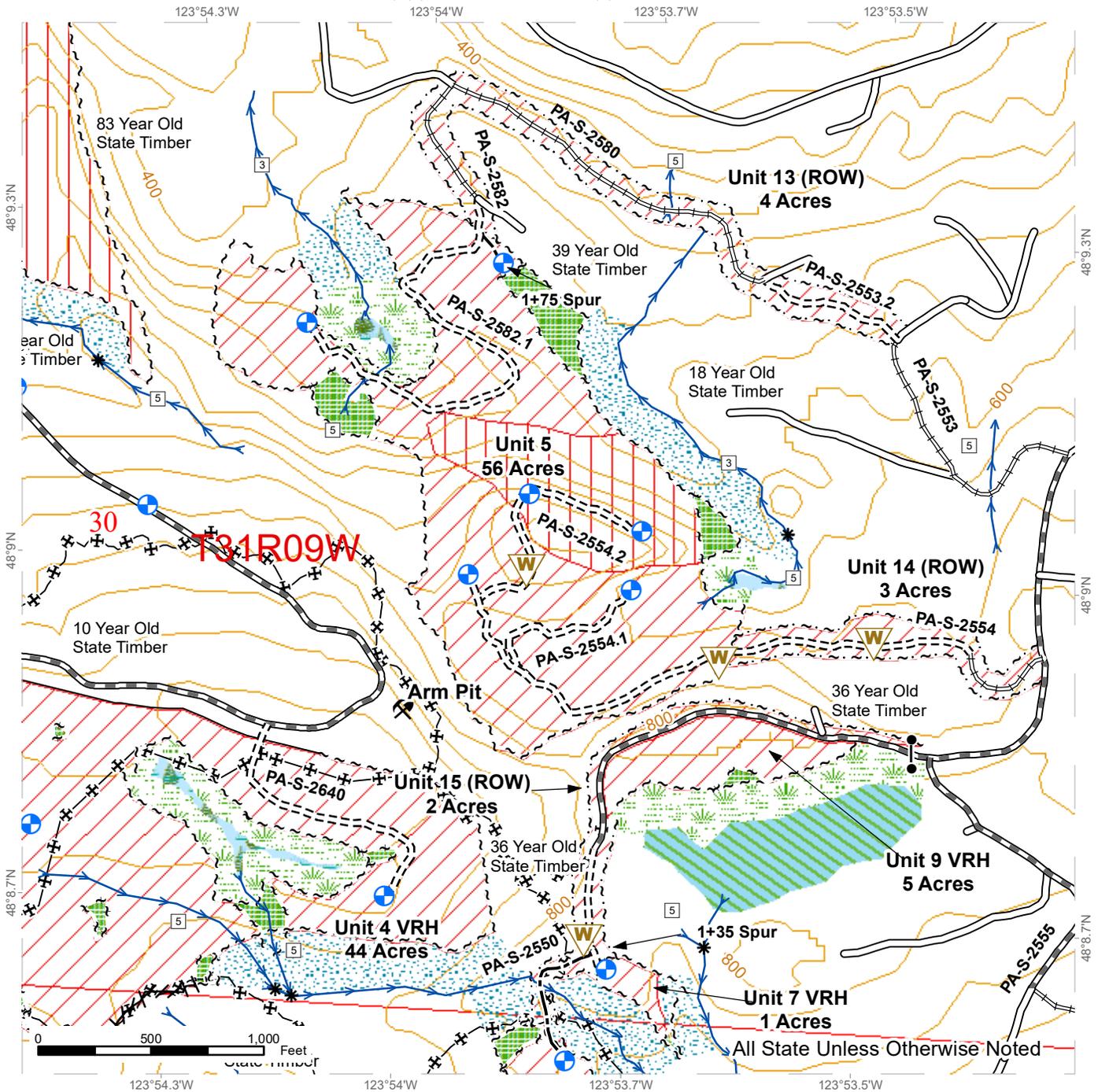


Ground	Open Water	Waste Area	Stream Type
Cable	Existing Road	Sale Boundary Tags	Stream Type Break
No Harvest Eagle Buffer	Optional Construction	Timber Type Change	Bridge
Eagle Timing Restriction	Optional Pre-Haul Maintenance	Leave Tree Tags	Gate
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Bog	Required Pre-Haul Maintenance	Flag Line	
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Wetland Management Zone			

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**COUNTY(S):** Clallam  
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Ground	Open Water	Waste Area	Stream Type
Cable	Existing Road	Sale Boundary Tags	Stream Type Break
No Harvest Eagle Buffer	Optional Construction	Timber Type Change	Survey Monument
Eagle Timing Restriction	Optional Pre-Haul Maintenance	Leave Tree Tags	Bridge
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Bog	Required Pre-Haul Maintenance	Flag Line	4x4 Trails
Riparian Management Zone	Required Reconstruction	Streams	
Forested Wetland	Proposed Landing		
Wetland Management Zone			

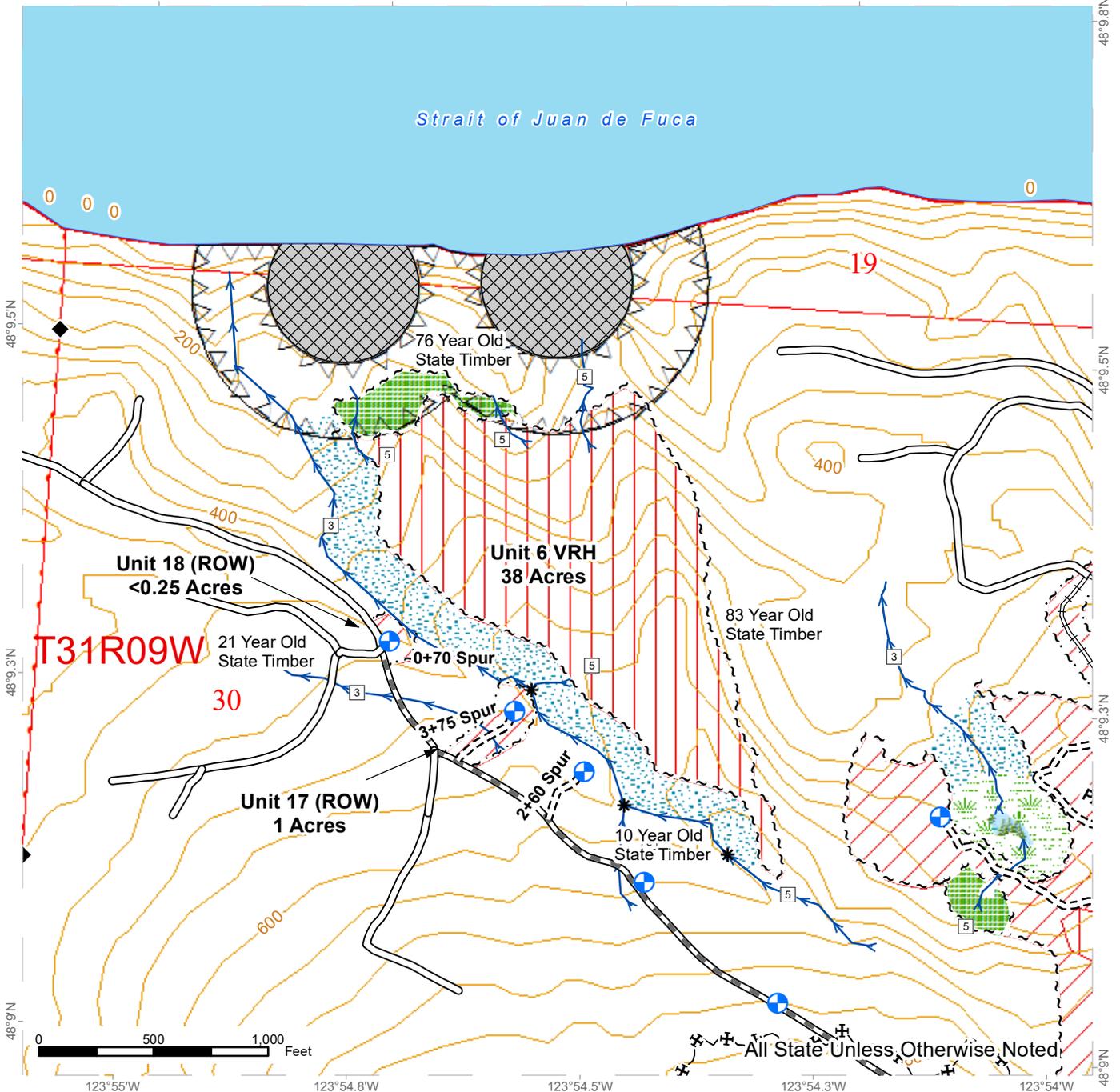


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**SALE NAME:** SOUTH CHICAGO  
**AGREEMENT#:** 30-099255  
**TOWNSHIP(S):** T31R8W, T31R9W, T30R9W  
**TRUST(S):** Common School and Indemnity (3), State Forest Transfer (1)

**REGION:** Olympic Region  
**COUNTY(S):** Clallam  
**ELEVATION RGE:** 40'-920'

123°55'W      123°54.8'W      123°54.5'W      123°54.3'W



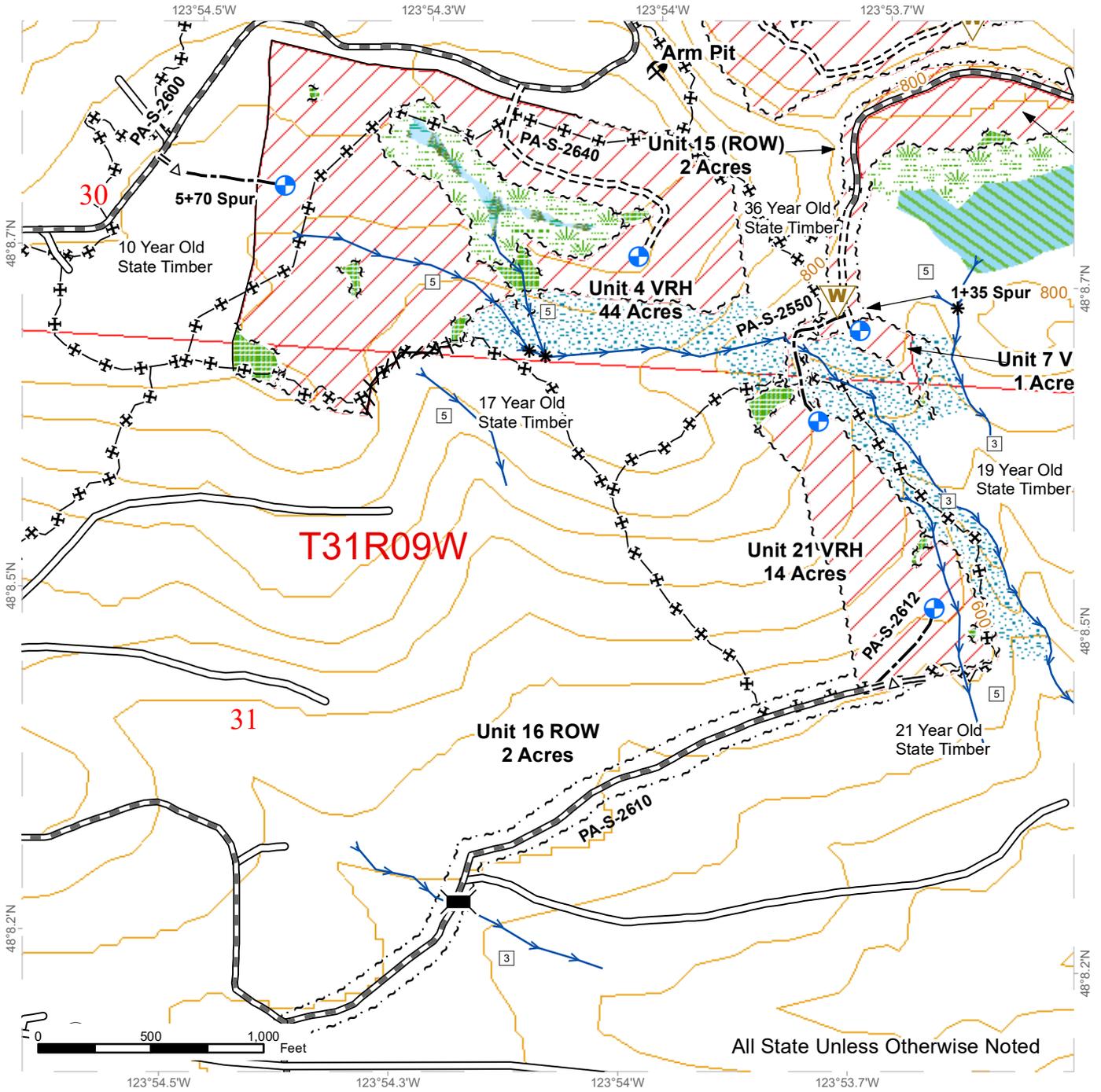
Ground	Open Water	Waste Area	Stream Type
Cable	Existing Road	Sale Boundary Tags	Stream Type Break
No Harvest Eagle Buffer	Optional Construction	Leave Tree Tags	Bridge
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Bog	Required Pre-Haul Maintenance	Streams	
Riparian Management Zone	Required Reconstruction		
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Wetland Management Zone			



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**TOWNSHIP(S):** T31R8W, T31R9W, T30R9W  
**UNIT(S):** Pool and Indemnity (3), State Forest Transfer (1)

**REGION:** Olympic Region  
**COUNTY(S):** Clallam  
**ELEVATION RGE:** 40'-920'



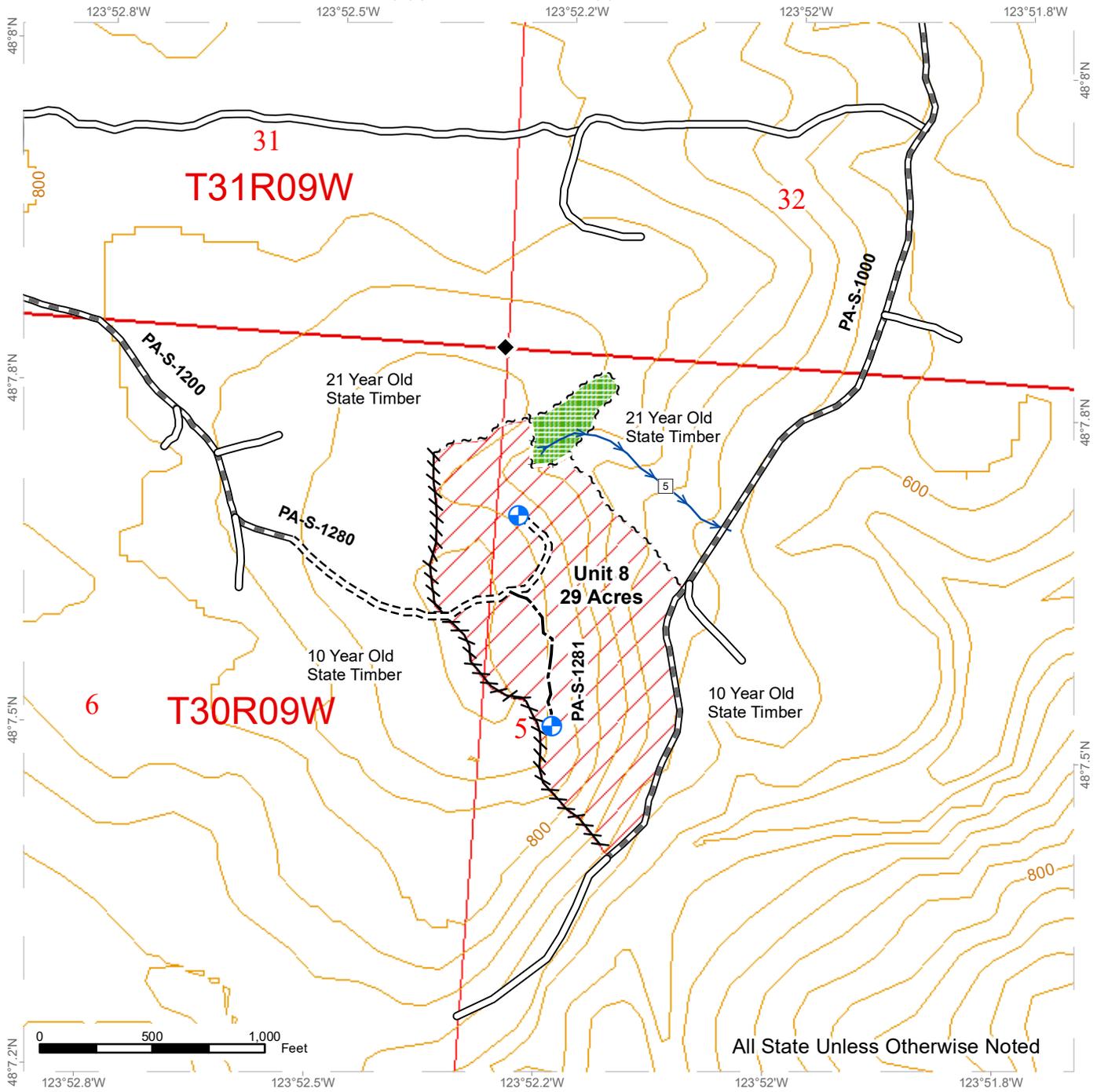
All State Unless Otherwise Noted

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Cable	Existing Road	Sale Boundary Tags	Stream Type Break
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Eagle Timing Restriction	Optional Pre-Haul Maintenance	Leave Tree Tags	Bridge
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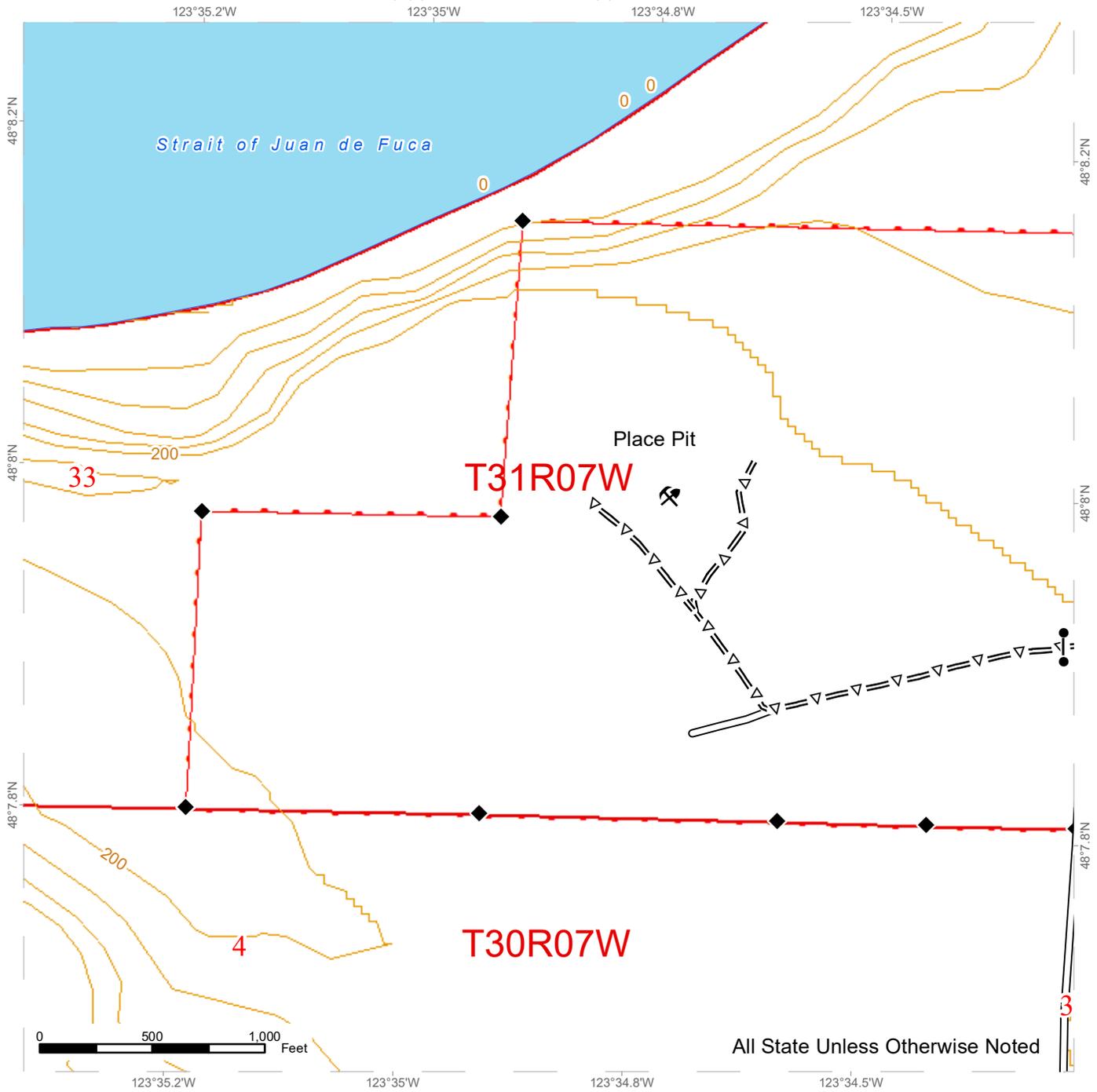
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Wetland Management Zone			



WASHINGTON STATE DEPARTMENT OF  
**NATURAL RESOURCES**

**DOCUMENT INFORMATION**  
**US Forest Service Easement**

**Application No:** 55-095367  
**Region:** Olympic  
**County:** Clallam  
**Grantee:** WA State Department of Natural Resources  
**Grantor:** US Forest Service

**Description**

<b>Portions of:</b>	<b>Sec</b>	<b>Twp</b>	<b>Rge</b>	<b>Trust</b>	<b>GIS Parcel #</b>
Gov. Lots 6, 7, 8, 9, 11, 12 and 26	6	30	9W	State Forest Transfer	(01) 5692
Gov. Lots 21, 28, 29	31	31	9W	State Forest Transfer	(01) 5725

**Special Notations**

Easement granted under umbrella of Cost Share Agreement for Olympic National Forest (see also 92-084236).

Easement is moot as DNR has owned the subject property since 1937, well before easement was executed. Document may have been attempt to relinquish USFS's rights to the road.

**Title Examiner:** Beth Hughes

**Date:** March 14, 2017

Proofread by: \_\_\_\_\_ Date: \_\_\_\_\_

EASEMENT

THIS EASEMENT, dated this 9 day of March, 1971, from the United States of America, acting by and through the Forest Service, Department of Agriculture, hereinafter called "Grantor," to Department of Natural Resources, an agency of the State of Washington, hereinafter called "Grantee,"

WITNESSETH:

WHEREAS, Grantee has applied for a grant of an easement under the Act of October 13, 1964 (78 Stat. 1089, 16 USC 532-538), for a road over certain lands or assignable easements owned by the United States in the County of Clallam, State of Washington and administered by the Forest Service, Department of Agriculture.

NOW THEREFORE, Grantor, for and in consideration of reciprocal rights-of-way received by Grantor, does hereby grant to Grantee, its successors and assigns, and to successors in interest to any lands now owned or hereafter acquired by Grantee (hereinafter collectively referred to as "Grantee"), subject to existing easements and valid rights, a perpetual easement for a road along and across a strip of land, hereinafter defined as the "premises," over and across the following described lands in the County of Clallam, State of Washington:

A strip of land 100 feet in width traversing the following described real property:

Lots 6, 7, 8, 9, 11, 12 and 26 in Section 6, Township 30 North, Range 9 West, Willamette Meridian and Lots 21, 28 and 29, Section 31, Township 31 North, Range 9 West, Willamette Meridian.

The word "premises" when used herein means said strip of land whether or not there is an existing road located thereon. Except where it is defined more specifically, the word "road" shall mean roads now existing or hereafter constructed on the premises or any segment of such roads.

The location of said premises is shown approximately on Exhibit B attached hereto.

Said "premises" shall be 50 feet on each side of the centerline with such additional width as required for accommodation and protection of cuts and fills. If the road is located substantially as described herein, the centerline of said road as constructed is hereby deemed accepted by Grantor and Grantee as the true centerline of the premises granted. If any subsequent survey of the road shows that any portion of the road, although located substantially as described, crosses lands of the Grantor not described

herein, the easement shall be amended to include the additional lands traversed; if any land described herein is not traversed by the road as constructed, the easement traversing the same shall be terminated in the manner hereinafter provided.

This grant is made subject to the following terms, provisions, and conditions applicable to Grantee, its permittees, contractors, assignees, and successors in interest:

- A. Except as hereinafter limited, Grantee shall have the right to use the road on the premises without cost for all purposes deemed necessary or desirable by Grantee in connection with the protection, administration, management, and utilization of Grantee's lands or resources, now or hereafter owned or controlled, subject to such traffic-control regulations and rules as Grantor may reasonably impose upon or require of other users of the road without reducing the rights herein granted. Grantee shall have the right to construct, reconstruct, and maintain roads within the premises.

Grantee's right to use the road shall include, but shall not be limited to, use for the purpose of operating and moving specialized logging vehicles and other equipment subject to the following limitations:

Subject to compliance with legal maximum dimensions and weights of motor vehicles imposed by State law on comparable public roads or highways: Provided, That gross weights of equipment or vehicles shall not exceed the capacity of bridges and other structures, and Provided further, That cleated equipment shall not be used on surfaced roads.

- B. Grantee shall comply with all applicable State and Federal laws, Executive Orders, and Federal rules and regulations, except that no present or future administrative rules or regulations shall reduce the rights herein expressly granted.
- C. Grantee shall have the right to charge and to enforce collections from purchasers of timber or other materials when removed from Grantor's lands over the road at such rate per unit of material hauled, or at such higher rate as may be approved by the Regional Forester, as set forth in Olympic National Forest Road Right-of-Way Construction and Use Agreement dated September 23, 1968, until such time as the amounts paid by such means or by credits received from Grantor shall total the amount set forth in said agreement. Timber or other materials hauled by Grantee from lands of the Grantor shall be regarded as though hauled by someone else.

- D. Grantee shall have the right to cut timber upon the premises to the extent necessary for constructing, reconstructing, and maintaining the road. Timber so cut shall, unless otherwise agreed to, be cut into logs of lengths specified by the timber owner and decked along the road for disposal by the owner of such timber.
- E. The costs of road maintenance shall be allocated on the basis of respective uses of the road.

During the periods when either party uses the road or Grantor permits use of the road by others for hauling of timber or other materials, the party so using or permitting such use will perform or cause to be performed, or contribute or cause to be contributed that share of maintenance occasioned by such use of the road.

On any road maintained by Grantee, Grantee shall have the right to charge purchasers of National Forest timber and other commercial haulers, or to recover from available deposits held by the Grantor for such purchasers or haulers, reasonable maintenance charges based on the ratio that said hauling bears to the total hauling on such road. Grantor shall prohibit noncommercial use unless provision is made by Grantor or by the noncommercial users to bear proportionate maintenance costs.

- F. Grantee shall have the right to require any user of the road for commercial or heavy hauling purposes to post security guaranteeing performance of such user's obligations with respect to maintenance of the road and with respect to payment of any charges hereinabove stated as payable to Grantee for use of the road: Provided, the amount of such security shall be limited to the amount reasonably necessary to secure such payment as approved by the Regional Forester.

This easement is granted subject to the following reservations by Grantor, for itself, its permittees, contractors, and assignees:

- 1. The right to use the road for all purposes deemed necessary or desirable by Grantor in connection with the protection, administration, management, and utilization of Grantor's lands or resources; now or hereafter owned or controlled, subject to the limitations herein contained, and subject to such traffic-control regulations and rules as Grantor may reasonably impose upon or require of other users of the road without reducing the rights herein granted to Grantee: Provided, That all use by the public

for purposes of access to or from Grantor's lands shall be controlled by Grantor so as not unreasonably to interfere with use of the road by Grantee or to cause the Grantee to bear a share of the cost of maintenance greater than Grantee's use bears to all use of the road.

2. The right alone to extend rights and privileges for use of the premises to other Government Departments and Agencies, States, and local subdivisions thereof, and to other users including members of the public except users of lands or resources owned or controlled by Grantee or its successors: Provided, That such additional use also shall be controlled by Grantor so as not unreasonably to interfere with use of the road by Grantee or to cause the Grantee to bear a share of the cost of maintenance greater than Grantee's use bears to all use of the road.
3. The right to cross and recross the premises and road at any place by any reasonable means and for any purpose in such manner as will not unreasonably interfere with use of the road.
4. The right to all timber now or hereafter growing on the premises, subject to Grantee's right to cut such timber as hereinbefore provided.

Provided that so long as the Olympic National Forest Road Right-of-Way Construction and Use Agreement dated September 23, 1968, remains in full force and effect, the terms and conditions thereof shall govern all aspects of use of the premises, including, but not limited to construction, reconstruction, and maintenance of the road and the allocation and payment of costs thereof.

The Chief, Forest Service may terminate this easement, or any segment thereof, (1) by consent of the Grantee, (2) by condemnation, or (3) after a five (5) year period of nonuse, by a determination to cancel after notification and opportunity for hearing as prescribed by law; provided the easement, or segment thereof, shall not be terminated for nonuse so long as the road, or segment thereof, is being preserved for prospective future use.

IN WITNESS WHEREOF, the Grantor, by its Regional Forester, Forest Service, has executed this easement (pursuant to the act above-mentioned, the Delegation of Authority and Assignment of Functions by the Secretary of Agriculture dated November 27, 1964, 29 Fed. Reg. 16210, the Delegation of Authority by the Chief, Forest Service, dated September 30, 1963, 28 Fed. Reg. 10828, and the Delegation of Authority by the Deputy Chief, Forest Service, dated April 16, 1965, 30 Fed. Reg. 5647, the provisions of which have been complied with), on the day and year first above-written.

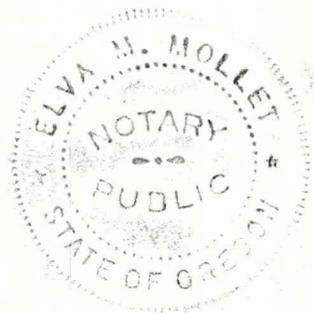
UNITED STATES OF AMERICA

By *Paul S. Huntington*  
Regional Forester  
Forest Service  
Department of Agriculture

State of *Oregon* )  
County of *Multnomah* ) ss.

On this day personally appeared before me \_\_\_\_\_  
*Chas. A. Connaughton*,  
to me known to be the identical individual described in and who executed the within and foregoing instrument and acknowledged to me that he signed and executed the same as his free and voluntary act and deed, for the uses and purposes therein mentioned.

Given under my hand and seal this *9* day of *March*, 1970.



*Elva M. Mollet*  
Notary Public in and for the State of  
*Oregon*  
Residing at *Portland*  
My commission expires *10/20/74*

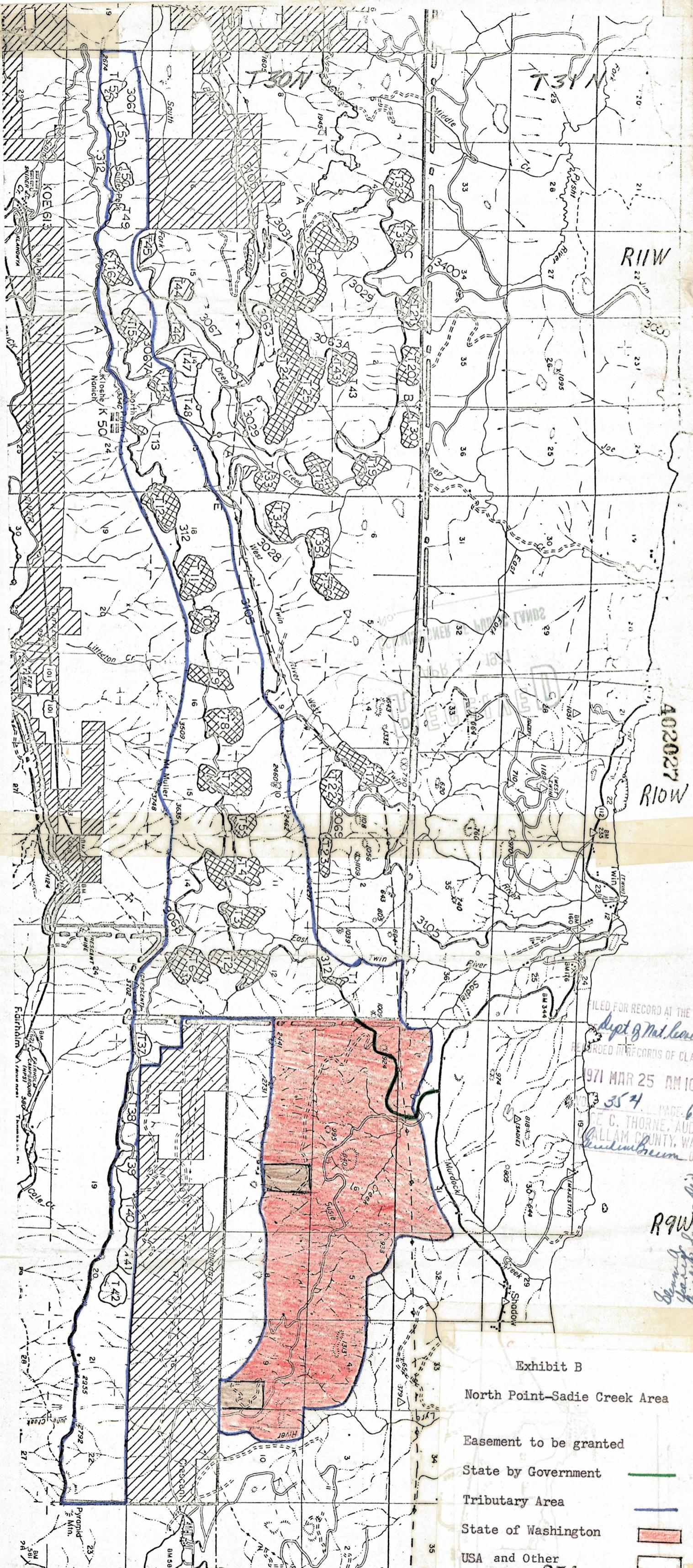


Exhibit B

North Point-Sadie Creek Area

- Easement to be granted —
- State by Government —
- Tributary Area
- State of Washington
- USA and Other
- Third Party

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 Dept of Nat. Resources  
 RECORDED IN RECORDS OF CLALLAM COUNTY  
 1971 MAR 25 AM 10:30  
 354 PAGE 62  
 C. THORNE, AUDITOR  
 CLALLAM COUNTY, WASH  
*Shudobrum*

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*Shudobrum*

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FILED FOR RECORD AT THE REC

DEPT OF NAT. RESOURCES

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1971 MAR 25 AM 10:30

354 PAGE 62

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CLALLAM COUNTY, WASH

*Shudobrum*

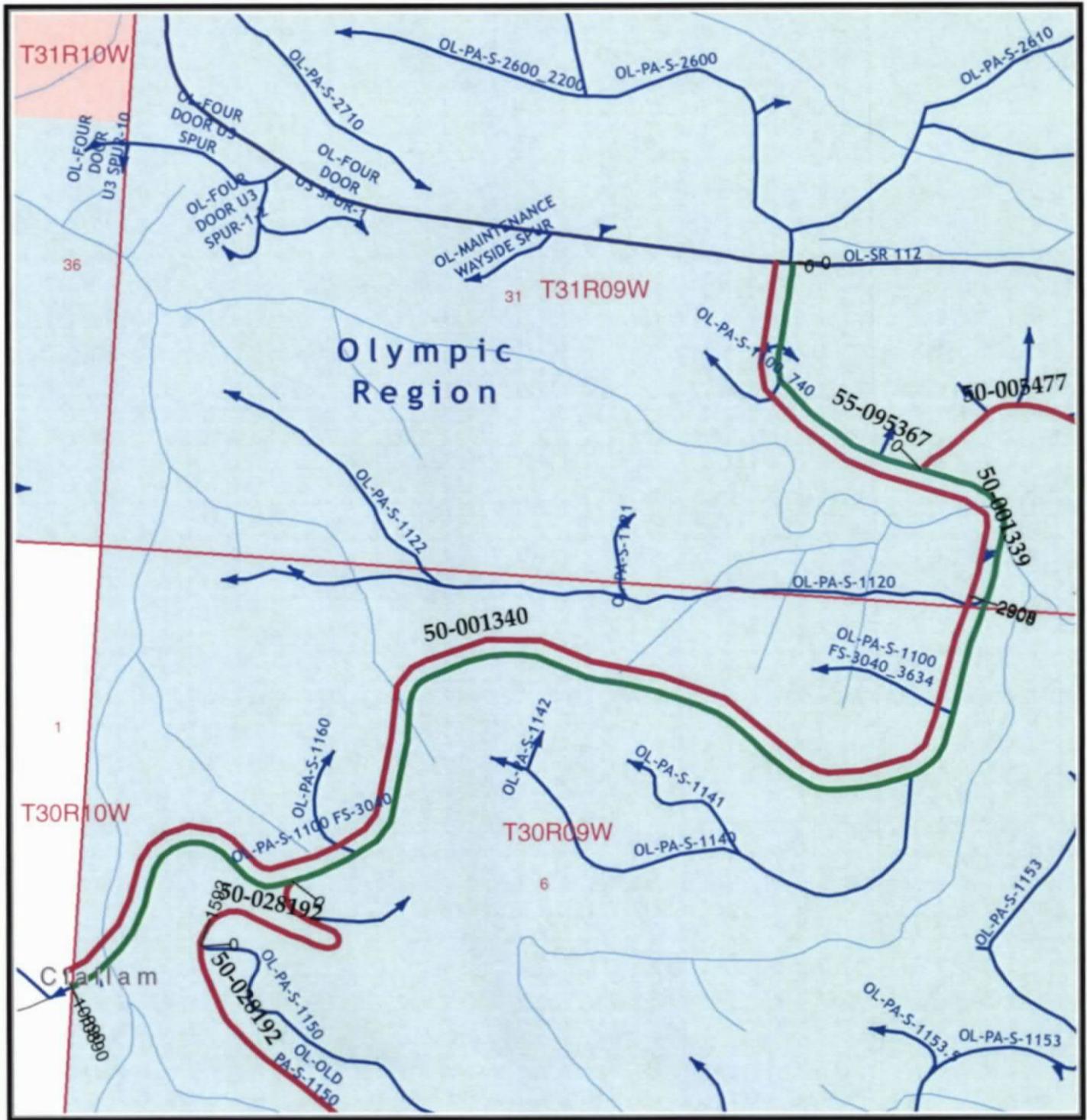
R9W

*Shudobrum*

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- Tributary Area
- State of Washington
- USA and Other
- Third Party



**REGIS Right of Way Events Grant Codes**

- 1: Acquired by DNR
- 2: Granted to Other
- 3: Merged in Title

**DNR Routes**

- Route Direction

**Roads by USGS Class**

- 1: Primary Highway/All-Weather/Hard Surface
- 2: Secondary Highway/All-Weather/Hard Surface
- 3: Light-Duty Road/All-Weather/Improved
- 4: Unimproved Road/Fair or Dry Weather
- - - - 5: 4 wheel drive

**DNR-Managed Lands**

- Granted Trust Lands
- Forest Board Trust Lands
- NAP / NRCA
- Other DNR-Managed Lands