

Pre-Operations Report

Operation Name: Clay Tunnel

Legal: Portions of sections 20, 21, 28, and 29, T3N, R7W, W.M., Tillamook County

Management Basin: Lower Nehalem

Table 1. Operation Areas, Types and Acres

Area	Type of Operation	Gross Acres	Net Acres ¹
1	PC – Moderate	224	196
2	MC	84	84
3	PC – Moderate	28	14
4	MC	36	34
Total		372	328

1. The net acres are based on orthophotos, GIS, and GPS. Exclude roads, stream buffers, reserve area and non-required thinning areas.

I. PHYSICAL DESCRIPTION OF OPERATION AREA:

The sale areas are on predominately northeast aspects and are south of Clay Creek Road. The slope is generally less than 60% with breaks exceeding 80% along the edges of Clay Creek. The sale areas encompass Clay Creek and several of its perennial tributaries. Elevations range from 600 to 1700 feet. The soil is primarily Killam with Rye along the bottom of the Clay Creek draw.

II. CURRENT STAND CONDITION:

Table 2. Stand Inventory Information³

Area	Prescription	Stand ID ¹	Species	Age	DBH	BA	TPA	SDI	Net Acres ²
1	PC	415	DF	70	21.9	206	79	46%	196
1	PC	Target ³	DF	70	22.2	156	58	35%	196
2	MC	416	RA/DF	70	18.7	157	82	50% ⁴	84
3	PC	417	DF/RA	70	18	235	133	57%	14
3	PC	Target ³	DF	70	23.5	133	44	29%	14
4	MC	418	RA/DF	70	16.5	203	136	68% ⁴	34

1. The source of stand inventory information is from cruise plots taken in 2008.

2. The net acres are based on orthophotos, GIS, and GPS and exclude roads, and stream buffers, reserve area and non-required thinning areas. Modified clear cut acres are not contiguous and do not exceed 120 acres.

3. These numbers are based on plot data taken to this point and final numbers may differ significantly. The directive for minor and major modifications will be followed for further review.

4. Stand Density Index for Red Alder.

The western half of the Clay Tunnel sale burned in the Salmonberry Fires of 1945. Area 1 was replanted with Douglas-fir in 1963-1964. The rest of the

burned area regenerated naturally into a Douglas-fir stand. Area 1 was precommercially thinned in 1978 then commercially thinned in 1997 to a target of 150 ft² basal area (Thin Clay 1994). The unburned area is currently a stand of red alder with clumps of Douglas-fir.

See Table 2 for specific stand data.

Area 1: Douglas-fir and a minor component of western hemlock serve as the dominant species in this stand. The understory has western hemlock natural regeneration in scattered clumps persisting in openings in the stand. Some of the western hemlock regeneration is advanced and is becoming an intermediate component of the canopy. There is a smaller regeneration component of Douglas-fir and red alder occurring in some openings and along road sides of the area.

The eastern half of the stand was commercially thinned in 1996 to a target basal area of 150 sq feet (Thin Clay 1994). Parts of the area were in the 2001 sale Claymore. However, the area included was a non-required thin area and few trees were harvested. The southern most part of the area was planted in 1963-1964 and commercially thinned in the late 1970's.

The Douglas-fir is healthy but the canopy is starting to close. Live crown ratios range from 40-65%. The western hemlock regeneration ranges from 1 – 15 feet tall.

Areas 2 & 4: The areas burned in the 1945 Salmonberry Fire.

These areas are comprised of red alder stand with clumps of Douglas-fir. The Douglas-fir grows in clumps. The red alder has slowed in height growth and is over-topped by the Douglas-fir by 30-50 feet. The understory has a mix of vine maple, salmonberry, Oregon grape, and sword fern. There are few understory trees present.

Area 3: This area is a 28 acre strip that borders Clay Creek. The forest type and history is the same as Area 2. The area boundaries are along the slope breaks formed by Clay Creek.

III. DESIRED STAND CONDITION and VISION:

Table 3. Stand Structure Information

Area	Stand ID	Current	Post Harvest ¹	Desired Future	Net Acres
1	415	UDS	UDS	GEN	196
2	416	UDS	REG	GEN	84
3	417	UDS	UDS	GEN	14
4	418	UDS	REG	GEN	34

1. The stand is expected to develop into this condition in the five to ten years after this operation is completed except in REG stands which occur after harvest.

See Section IV: Proposed Management Prescription for more information on Green Tree, Down Wood, and Snag Strategies during operation. Also refer to Landscape Design in the Summary document for more information on strategies to move the district toward Desired Future Condition goals.

Clay Creek- Salmonberry River Landscape View:

The Salmonberry River landscape in the vicinity of Clay Creek is of mixed ownership including Private-Industrial, State, and private landowners. Much of the area burned in the Salmonberry Fires of 1945. The landscape is a patchwork of managed forestland in various stages of stand development. The stands are comprised of red alder, Douglas-fir, and western hemlock.

Clay Tunnel Sale Areas: The desired future condition for all areas is general (GEN).

Short Term Vision:

Area 1: To manage stand density by removing intermediate and codominant trees. The residual trees will have more growing space to maintain high live crown ratios and remain on a productive pathway.

Areas 2 & 4: The regeneration harvests will remove the Douglas-fir and the slow growing alder, improving stand health. Residual trees will add decadence and legacy structure through time by providing future down wood, snags, and legacy trees. The area will be reforested with a mixture of conifer species: western hemlock, SNC tolerant Douglas-fir, and western redcedar.

Area 3: The partial cut will manage stand density along the slope breaks of Clay Creek. Residual trees will be kept on a productive pathway and increase in size.

Long Term Vision:

Area 1: Following density management, the stand will remain on a productive pathway. Stand density and growth rate will be checked 10 years after density management. The stand will likely be harvested in 10 – 15 years. Decadent structure and down wood will be left following final harvest.

Areas 2 & 4: The sale areas will be reforested with a mix of SNC resistant Douglas-fir, western hemlock, western redcedar, and noble fir. Some red alder will naturally regenerate and remain a component of the stand. The plantations will be precommercially thinned in 10-15 years. A commercial thin will likely occur in 35 to 40 years. Following the thin, the stands will be managed for production until final harvest.

Area 3: The residual trees will serve as an overstory and add decadent structure to the new cohort. Density management will maintain high live crown ratios and encourage layering of the stand. The residual trees will help shade Clay Creek and serve as a source of large down wood for the stream. These trees will also be a source for large hard snags for wildlife.

IV. PROPOSED MANAGEMENT PRESCRIPTION:

The prescriptions described below are based on the current stand condition such as overall tree and stand growth, species mix, stand density, and stand health.

Partial Cut

Area 1

Prescription: The Douglas-fir in this area will be thinned from below to 120-130 square feet of basal area (35% SDI). All other species will be reserved for diversity.

Snags: The 2008 cruise indicates 8 snags per acre (4 in decay classes 1 and 2). Logging damage and natural processes will create additional snags. Current snags will be retained on site.

Down Wood: The existing down wood will be left in the sale areas and additional down wood will be created during this harvest operation. Down wood creation will be completed by bucking and leaving obvious defect from felled Douglas-fir. Residual trees will serve as a source for down wood over time.

Pathway: This area will be reduced to 35% SDI (average basal area of all species 155 ft²) which will make the best use of growing space for the residual trees. The biggest and most vigorous trees will be retained. This will ensure rapid growth and keep the stand on a productive path.

Area 2

Prescription: Merchantable alder and Douglas-fir will be harvested. All other conifer and hardwood species will be reserved. Approximately 5 trees per acre will be left in sale area.

Snags: The 2008 cruise indicates 6 snags per acre (1 in decay classes 1 & 2). One snag per acre will be created. Current snags will be retained on site.

Down Wood: The existing down wood will be left in the sale areas and additional down wood will be created during this harvest operation. Down wood creation will be completed by bucking and leaving obvious defect from felled Douglas-fir. Residual trees will serve as a source for down wood over time.

Pathway: This area will be reforested with a mix of conifer species. The stand will be precommercially thinned in 10 - 15 years after planting. The stand will be commercially thinned when it reaches 35 - 40 years of age. This will ensure rapid growth and maximize growing space and resources for residual trees.

Area 3

Prescription: Merchantable Douglas-fir and red alder will be thinned from below to 120-140 square feet of basal area (30% SDI). All other species will be reserved for diversity.

Snags: The 2008 cruise indicates 17 snags per acre (8 in decay classes 1 & 2). No additional snags will be created.

Down Wood: The existing down wood will be left in the sale areas and additional down wood will be created during this harvest operation. Down wood creation will be completed by bucking and leaving obvious defect from felled Douglas-fir. Residual trees will serve as a source for down wood over time.

Pathway: The density management will take the stand down to 130 square feet of basal area per acre (30% SDI). The residual trees will increase in height and diameter. The trees will provide shade for Clay Creek and a source for down wood.

Area 4

Prescription: Merchantable alder and Douglas-fir will be harvested. All other conifer and hardwood species will be reserved. Approximately 5 trees per acre will be left in sale area.

Snags: The 2008 cruise indicates 10 snags per acre (4 in decay classes 1 & 2). No additional snags will be created. One snag per acre will be created. Current snags will be retained on site.

Down Wood: The existing down wood will be left in the sale areas and additional down wood will be created during this harvest operation. Down wood creation

will be completed by bucking and leaving obvious defect from felled Douglas-fir. Residual trees will serve as a source for down wood over time.

Pathway: This area will be reforested with a mix of conifer species. The stand will be precommercially thinned in 10 - 15 years after planting. The stand will be commercially thinned when it reaches 35 - 40 years of age. This will ensure rapid growth and maximize growing space and resources for residual trees.

V. ESTIMATED TIMBER AND REVENUE INFORMATION:

Table 4. Timber and Revenue

Ownership		Sale Type	
BOF	CSL	Cash	Recovery
100%	%	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Planned Quarter:		1	

	Conifer	Hardwood	Total
Net Volume (MBF)	4135	1044	5179
Stumpage Value (\$/MBF)*	\$98.30	\$200	
Estimated Gross Value	\$406,475	\$208,800	\$615,275
		Project Costs:	\$36,205
		Estimated Net Value:	\$579,070

**Combined Douglas-fir and hemlock stumpage values based on harvest type.*

VI. HARVESTING AND ACCESS CONSIDERATIONS:

All areas are accessed via Sibley, North Side, and Clay Creek Roads. These are currently all weather, crushed rock roads. See maps for specific road locations and conditions.

Approximately 0.55 miles of existing surfaced road will be improved which includes grading and spot rocking.

Approximately 0.35 miles of road will be constructed to reach parts south of Clay Creek in Area 3. These roads will be blocked following harvest.

The operation will be 85% cable yarding.

Table 5. Transportation Planning Summary (Miles)⁴

Activity	Mainline	Collector	Rocked Spur ¹	Dirt Spur ¹
Construct				0.35
Improve			0.55	
Maintain ²			1.06	
Close/Block ³				0.35
Vacate ³				

1. Additional roads may be built by the operator at the time of harvest and will be approved by the State through the Operations Plan. These will be short dead end spurs and closed or blocked after harvest. 2. All roads accessing the sale area will be maintained during the life of the timber sale contract. Maintenance miles in the table are those roads not being constructed or improved. 3. Roads not closed/blocked or vacated at the end of the sale will be reviewed for closure after reforestation is established. 4. The numbers in this table reflect planned Project Work associated with the sale.

VII. AQUATIC RESOURCES AND WATER QUALITY:

Clay Creek and four perennial streams are within sale boundaries. The Salmonberry River is adjacent to the East of the sale boundary. Clay Creek and two of the four perennial tributaries are assumed to be Type F streams. These streams and their tributaries will be reviewed and protected appropriately based on topography, slope, and landslide potential.

The Oregon Department of Fish and Wildlife (ODFW) have been requested to complete stream surveys before sale layout begins. Streams of unknown status will be treated as Type F until surveys are completed to verify fish presence and use.

Stream buffers within or adjacent to harvest unit boundaries will be managed according to *Forest Management Plan* Riparian Strategies. The riparian areas will be reviewed during sale layout for current stand conditions and/or operational constraints for implementing FMP strategies. Some of the strategies are described below.

A 170 foot riparian management area is established on all Type F streams. Management is allowed beyond 25 feet in the “inner zone.” The goal for harvesting within 100 feet (inner zone) of Type F streams is to achieve mature forest condition in a timely manner. Management in the inner zone will result in larger diameter trees in a shorter time frame than if no harvesting were to take place. All snags and downed wood will be maintained. The vision and pathway for achieving mature forest condition in the Inner Zone will follow the description for Area 1. Once mature forest condition is achieved there will be no management in the Inner Zone of Type F streams.

A 25 foot no-harvest buffer will be established along the small perennial Type N streams. Small Type N streams can influence stream temperature of

downstream fish-bearing streams. Sufficient trees will be retained within 500 feet of the confluence with Type F streams to achieve 80% shade over streams.

Riparian management areas result in leave trees adjacent to the stream which protect stream temperature, provide nutrients, protect stream banks, and eventually provide wood to improve fish habitat.

Refer to Aquatic Resource Protection Strategies in the Summary document for information on in the "in stream work period" road work and stream improvement projects.

VIII. T&E SPECIES CONSIDERATIONS:

The sale was reviewed by the Northwest Area Biologist for potentially suitable habitat for marbled murrelets and northern spotted owls. Surveys are not required for marbled murrelets due to the absence of potentially suitable habitat. Surveys are required for northern spotted owls because of potential habitat within or adjacent to the sale area. Surveys for northern spotted owls have been conducted during the 2008 survey season and will be conducted during the 2009 survey season. All northern spotted owl surveys are conducted in accordance with USFWS endorsed protocol.

T & E Plant species: The sale areas were checked against the Oregon Natural Heritage Program (ONHP) database of known threatened or endangered listed plant locations as well as local records in the Land Management Classification System (LMCS). No listed plants were identified within or adjacent to the sale areas.

Streams in this sale are in the headwaters of the Salmonberry River; a tributary in the Nehalem basin. As of March 2008, coastal coho salmon are listed as threatened for the Oregon Coast. The riparian and aquatic strategies combined with road and harvest practices described in this Annual Operations Plan and our Northwest Oregon State Forests Management Plan (FMP) are designed to minimize impacts and or restore aquatic habitats that influence aquatic species.

IX. SLOPE STABILITY AND GEOTECHNICAL ISSUES:

This assessment is based on USGS 1:24,000 topographic maps and available geologic maps. There are high landslide hazard locations throughout the sale area. Area 1 drains to the Salmonberry River and Clay Creek. Area 2 drains to Clay Creek. The risk of landslides delivering to these streams from the sale area is moderate. Portions of the sale area appear to be located on large, deep-seated landslide landforms. The geotechnical specialist will be consulted if evidence of recent landslide activity is identified during sale layout.

X. RECREATION RESOURCES:

The sale areas are designated as Non Motorized in the *Tillamook State Forest Comprehensive Recreation Plan* (1993). This sale has been reviewed by the District Recreation Coordinator. Recreational use common to this area includes hunting and camping.

XI. CULTURAL RESOURCES:

There is an abandoned steam donkey wooden sled and steel bracing located in the SW ¼ NE ¼, Section 29, T3N, R7W. The purchaser will be required to protect these items.

XII. SCENIC RESOURCES:

The sale areas have a visual classification of Level 3, low sensitivity. Management activity dominates the landscape. Private landowners and the state have recently conducted regeneration harvests throughout the landscape.

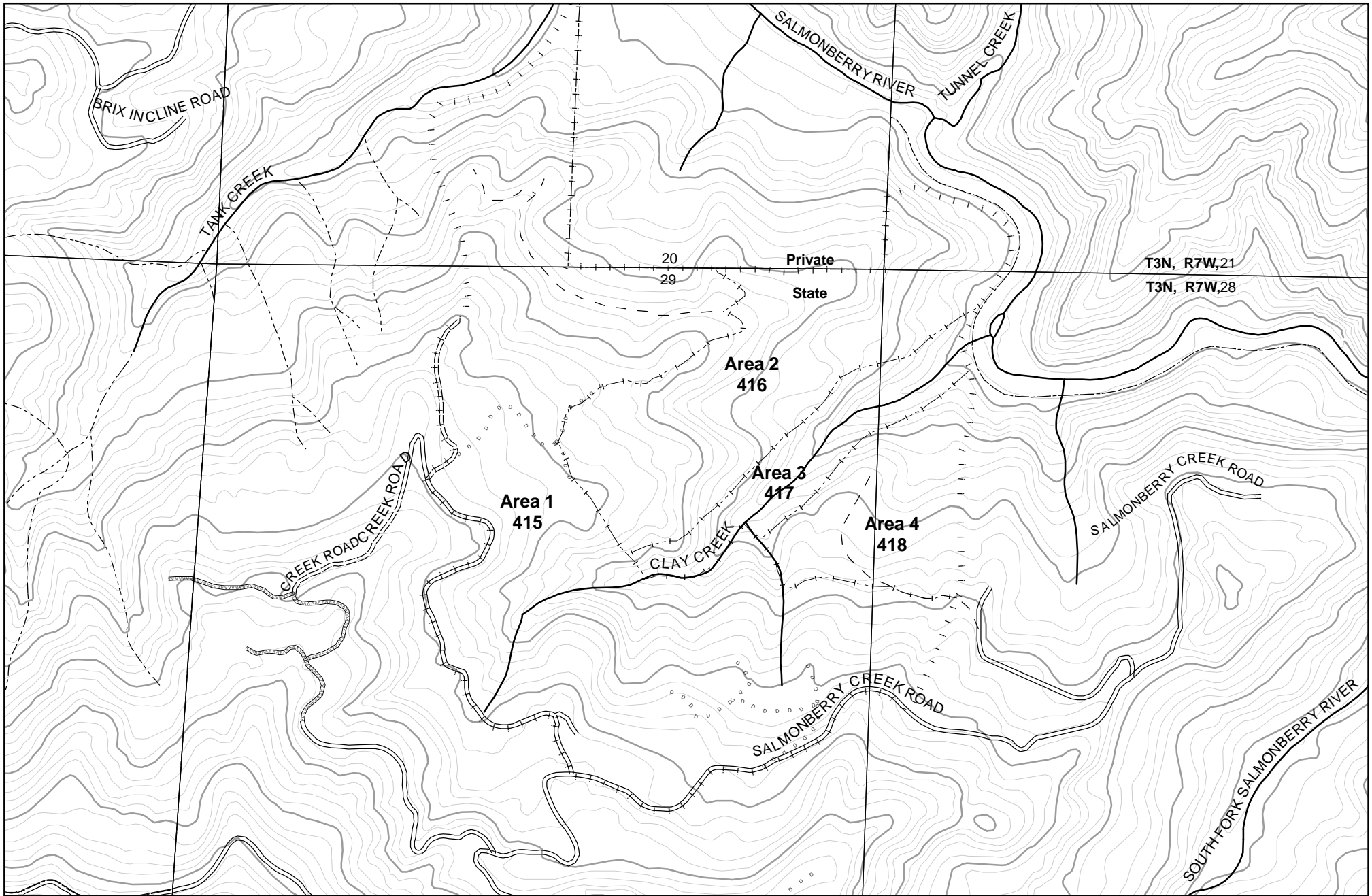
XIII. OTHER RESOURCE CONSIDERATIONS:

The northern boundary of the sale is adjacent to private property. The property line has been surveyed and identified in the field.

XIV. LAND MANAGEMENT CLASSIFICATION SUMMARY:

The sale area contains Focused and Special Aquatic Habitat and Special Operationally Limited. See Section VII, Aquatic Resources and Water Quality, and Section IX, Slope Stability and Geotechnical Issues for the management guidelines to be utilized.

Boundary lines depicted on Attachment C are approximate; exact locations and site specific management activities will be determined during the sale preparation process.

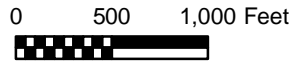


Contour Interval 40'

- | | |
|--------------------------------|-------------------------|
| - - - Area boundary | --- Abandoned road |
| - - Sale boundary | o o o Blocked road |
| - - - Ownership boundary | - - - Road construction |
| — Perennial Type-F stream* | — County road |
| - - - Perennial Type-N stream* | ∴ Transmission line |
| --- Unsurfaced road | |
| — Surfaced road | |
| — State/Federal highway | |

3

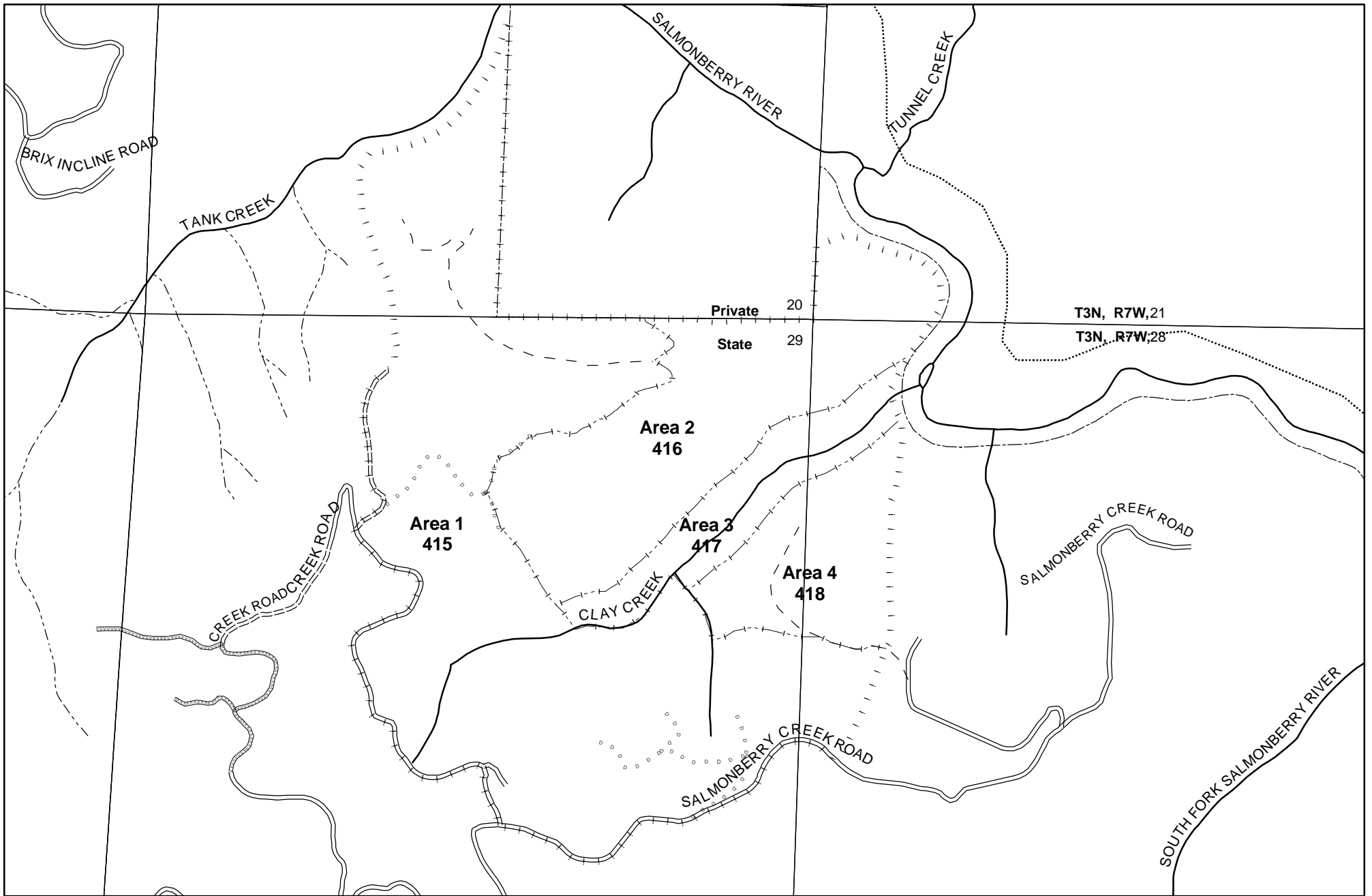
**Clay Tunnel
-- Topography --
2010 SALE PLAN
TILLAMOOK DISTRICT**
Portions of Sections 20, 21, 28 and 29
T3N, R7W, W.M.,
Tillamook County, Oregon



*Streams of unknown fish presence are not shown but will be surveyed prior to the sale

Tillamook District GIS
3/20/2009
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Area	Type of Operation
1	Partial Cut
2	Modified Clearcut
3	Partial Cut
4	Modified Clearcut

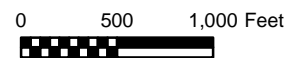


Desired future condition

- Layered
- Older forest

- Area boundary
- Sale boundary
- Ownership boundary
- Perennial Type-F stream*
- Perennial Type-N stream*
- Unsurfaced road
- Surfaced road
- State/Federal highway

- Abandoned road
- Blocked road
- Road construction
- County road
- Transmission line
- OHV trail
- Non-motorized trail



3

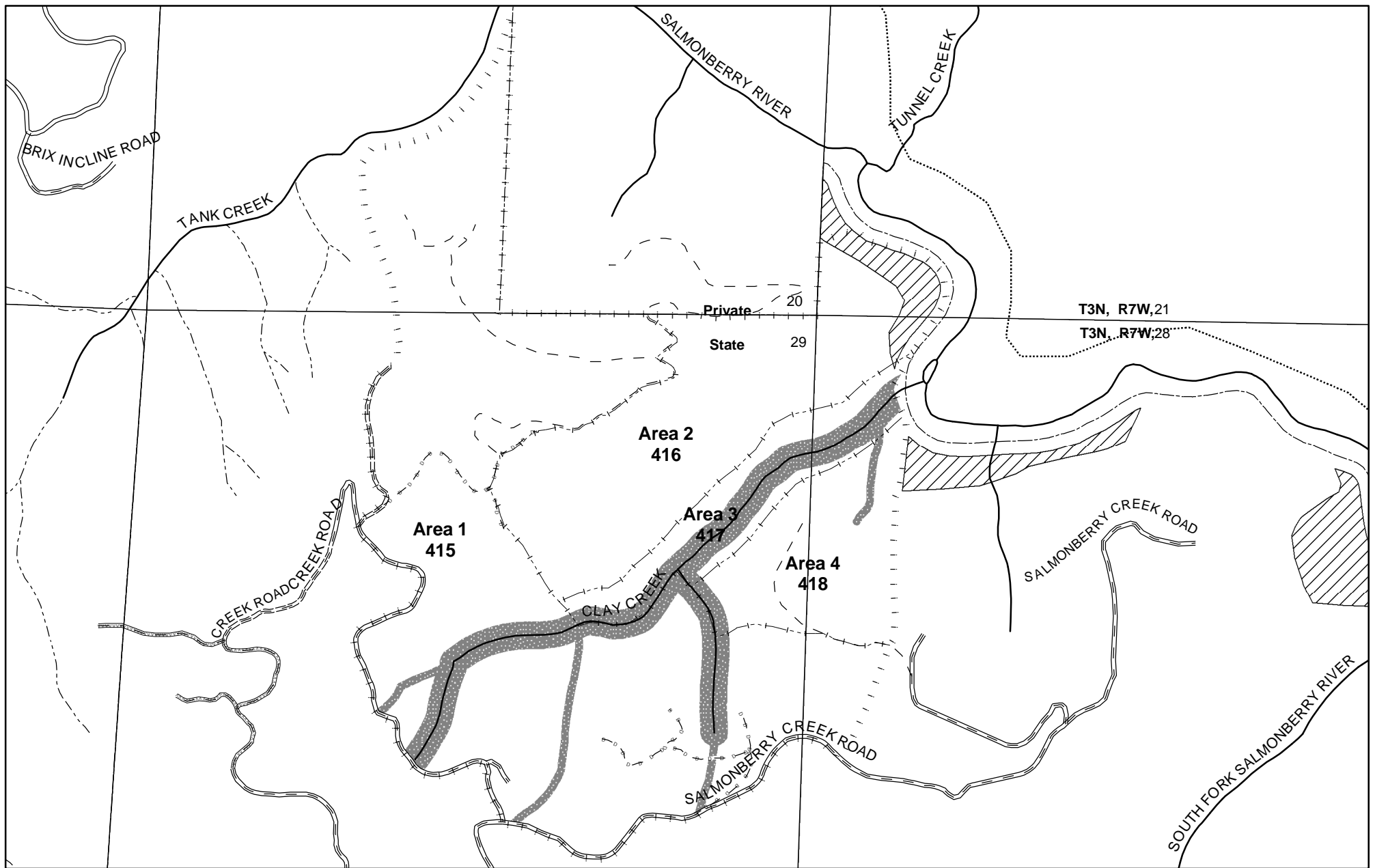
Clay tunnel
-- Current and Future Condition --
2010 SALE PLAN
TILLAMOOK DISTRICT
 Portions of Sections 20, 21, 28 and 29
 T3N, R7W, W.M.,
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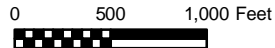
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- Area boundary
- Sale boundary
- Ownership boundary
- Perennial Type-F stream*
- Perennial Type-N stream*
- Unsurfaced road
- Surfaced road
- State/Federal highway
- Abandoned road
- □ □ Blocked road
- Road construction
- County road
- ; ; Transmission line
- ~~~~~ OHV trail
- Non-motorized trail



3

-- Key Resources/Operationally Limited --

2010 SALE PLAN

TILLAMOOK DISTRICT

Portions of Sections 20, 21, 28 and 29

T3N, R7W, W.M.,

Tillamook County, Oregon

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Tillamook District GIS
6/20/2009

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