Timberlake Ranch Subdivision Forest Stewardship Plan

Prepared by: Thomas Marks Contract Forester October 2019

Timberlake Ranch Subdivision
Forest Stewardship Plan

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Section I. Overall Property Information

Landowner Contact Information

Name: Timberlake Ranch Landowners Association (Attn: Steve Wills, President and Architectural Review)

Address: TRLA Board, HC61 Box 767, Ramah, NM 87321

Phone #: (505) 783 2457

Tree Farm NUMBER: N/A

Email Address: mailto:trlapresident@gmail.com

County: McKinley and Cibola

Project Description:

Legal Description: Timberlake Ranch covers approximately 7,000 acres in both Cibola and McKinley County. There are five subdivisions: Cloh Chin Toh, Timberlake (Cibola) Unit 1, Timberlake (Cibola) Unit 2, McKinley Units 1-10 and Timberlake South. There are a total of 743 lots of varying size from 5 to 14 acres. As of May 2019, Timberlake property owners (562) reside in 30 states and one foreign country (Switzerland). The top three states that property owners reside are New Mexico (40%), Arizona (38%) and California (7%). There are 164 residences in Timberlake Ranch. Of these, 83 are full time residents, 23 part-time residents, and 58 considered recreational. Additionally, of the 164 residences, 2 are rentals, 6 are for sale and 1 is bank owned. 7 new residences are under construction.

Timberlake Ranch Common Land: there are five parcels of land in Cibola County for a total of 333 acres. This includes the horse pasture, 100' narrow strip running north of it, Field and Stream, and Lot 74 in Cloh Chin Toh Subdivision along with TCC Ranch House and surrounding acreage. In McKinley County, there are 10 parcels totaling 912 acres. This includes land north and south of the Lake, a strip of land going north and south on which the bathhouse sits, and the area along the cliffs to the west of McKinley Units 1-10. For purposes of this plan and convenience of describing locations within the total subdivision, I have chosen to combine the property plat maps into three major groupings. These are:

Subdivision	Legal Description	Approx. Acres
Timberlake North	T11N, R16W, Partial Sections: 1,2,3,11,12,14; Full Section: 13, New Mexico Meridian T11N, R15W, Partial Sections: 7 & 18, New Mexico Meridian	3,829
Timberlake South	T11N, R15W, Partial Sections: 19 & 30, New Mexico Meridian	205
Cloh Chin Toh	T11N, R15W, Partial Sections: 29 & 31, New Mexico Meridian	668

Centroids of Each Subdivision:

Timberlake N		Timberlake S		Cloh Chin Toh	
Latitude	35°11'42.58"N	**Latitude**	35° 9'40.63"N	**Latitude**	35° 8'49.55"N
Longitude	108°29'13.88"W	**Longitude**	108°27'34.53"W	**Longitude**	108°26'20.52"W

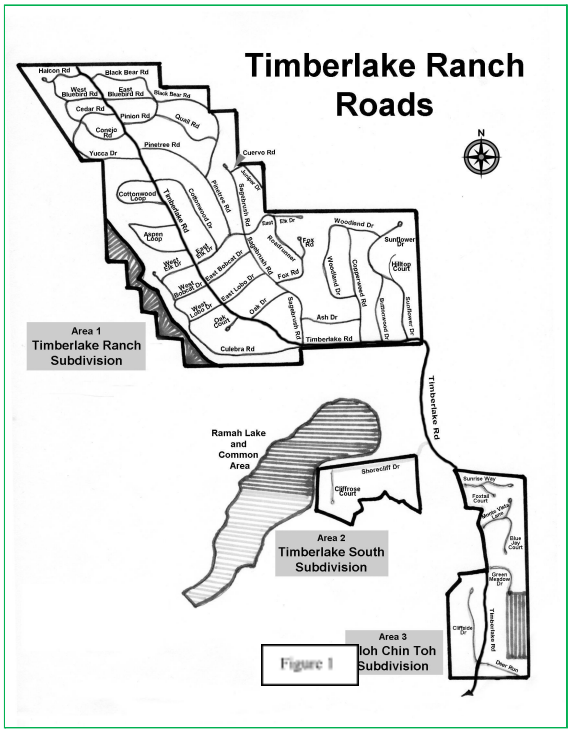
Acreage / Range in Elevation: Approximately 4,702 Acres / 6,980 - 7,360 feet MSL

The acreages listed are derived from Google Earth Pro and are the acres that were sampled for Basal Area (BA) and Trees per Acre (TPA). Roads, Common Areas, and the property around the Lake are not a part of the acres listed.

Ownership Description and History

The Timberlake Ranch Subdivision lies within McKinley and Cibola County, NM (Figure 1). The eastern most portion of Timberlake N, all of Timberlake S and Cloh Chin Toh Subdivisions lie wholly in Cibola County. This includes:

- Timberlake N - T11N, R15W, Sections: 7 & 18, NMM — Partial
- Timberlake S - T11N, R15W, Sections: 19 & 30, NMM — Partial
- Cloh Chin Toh - T11N, R15W, Sections: 29 & 31, NMM — Partial



The remaining Timberlake N Subdivision lies in McKinley County. This includes T11N, R16W, and partial Sections: 1, 2, 3, 11, 12, 14 and all of Section 13, New Mexico Meridian

The Timberlake Ranch Subdivision lies on the west slope of the Zuni Mountains of west-central New Mexico. The Zunis are in the southern part of the Colorado Plateau physiographic province. The Basin and Ranges province is to the south. The Zunis and surrounding ranges receive both winter snow and summer monsoonal rain, but their southerly location relative to the jet stream makes this a semi-arid to arid region. Surface water is rare.

The Timberlake Ranch Subdivision is located along the Cibola National Forest Boundary on the east property boundary of Timberlake N. A majority of the water drainages found in the Subdivision flow out of the National Forest and through Timberlake N into Ramah Lake.

The town of Ramah, NM is located approximately one mile SW from the center of Ramah Lake. Established in 1876, Ramah was one of fifty locations in the New Mexico Territory settled, under the direction of Brigham Young, by Mormon pioneers and is one of only three that remain today. Ramah was originally settled for the purpose of missionary work to be carried out within the Zuni and Navajo communities. Many of the original stone houses are still standing and are a testament to the hard work and skill of Ramah's early founders. One such building has been restored and preserved as a museum to display the heritage of the valley's past.

Ramah Lake was built by these same pioneers in order to farm the surrounding area, which receives moderate rainfall on a yearly basis. The lake relies on snow fall and spring run-off to sustain its water levels (Wikipedia, October, 2019).

There is a rich history of the area that has left archeological evidence (historic or pre-historic) found throughout the subdivisions.

Landowner goals and objectives

Goal 1 - develop a comprehensive property map in Google Earth (Figure 2) showing existing roads, approximate property line locations, property ownership lots and delineate existing timber types and sample to determine stocking levels that include Basal Area and Trees per Acre. This goal will become the "existing condition" within the Stewardship Plan and provide a planning baseline for future forest management and treatment objectives on individual properties and Subdivision common areas.

Google Earth is a computer program that renders a 3D representation of Earth based on satellite imagery. The program maps the Earth by superimposing satellite images, aerial photography, and GIS data onto a 3D globe, allowing users to see cities and landscapes from various angles.

Google Earth is intended for home and personal use and is currently free. This product has many features, including displaying satellite and aerial imagery, a growing set of layers of mappable data, the ability to display third party data, tools for creating new data, and the ability to import GPS data.

Objective 1.1 - identify timber type strata based on basal area and trees per acre tree densities to help determine property lot thinning priorities.

Objective 1.2 – sample individual timber types to determine average BA and TPA. Develop a multiple year management plan.

Objective 1.3 - review existing roads and drainages; recommend best management practices and maintenance procedures to limit actual or potential erosion.

Goal 2 – Perform forest treatments that increase forest health benefits while reducing the risk of catastrophic stand replacement fires.

Objective 2.1 - Review existing and future Subdivision areas for dwarf mistletoe infestations and include recommendations in thinning guidelines to reduce infestations.

Objective 2.2 - Review existing and future Subdivision areas for any other disease or insect infestation and make a priority for treatment.

Objective 2.3 - Review overall landscape for any lingering effects of recent drought. Where feasible, modify thinning guidelines.

Goal 3 - Perform forest treatments that enhance wildlife habitat by enhancing and increasing the available grass, forbs and shrubs in the Subdivision.

Objective 3.1 - Where feasible, perform thinning and utilize the slash to add to the herbaceous and grass ground cover, providing for wildlife grazing and browse.

Objective 3.2 - Increase the quality of the habitat as measured by the presence of indicator species such as Merriam's wild turkey (Meleagris galapavo) population.

Objective 3.3 - Explore opportunities to develop additional water sources for the use of wildlife in the Subdivision.

Goal 4 – Provide for appropriate wildfire protection in a fire adapted ecosystem.

Objective 4.1 – Reduce forest densities which in turn reduce the risk of crown and total stand replacement fires.

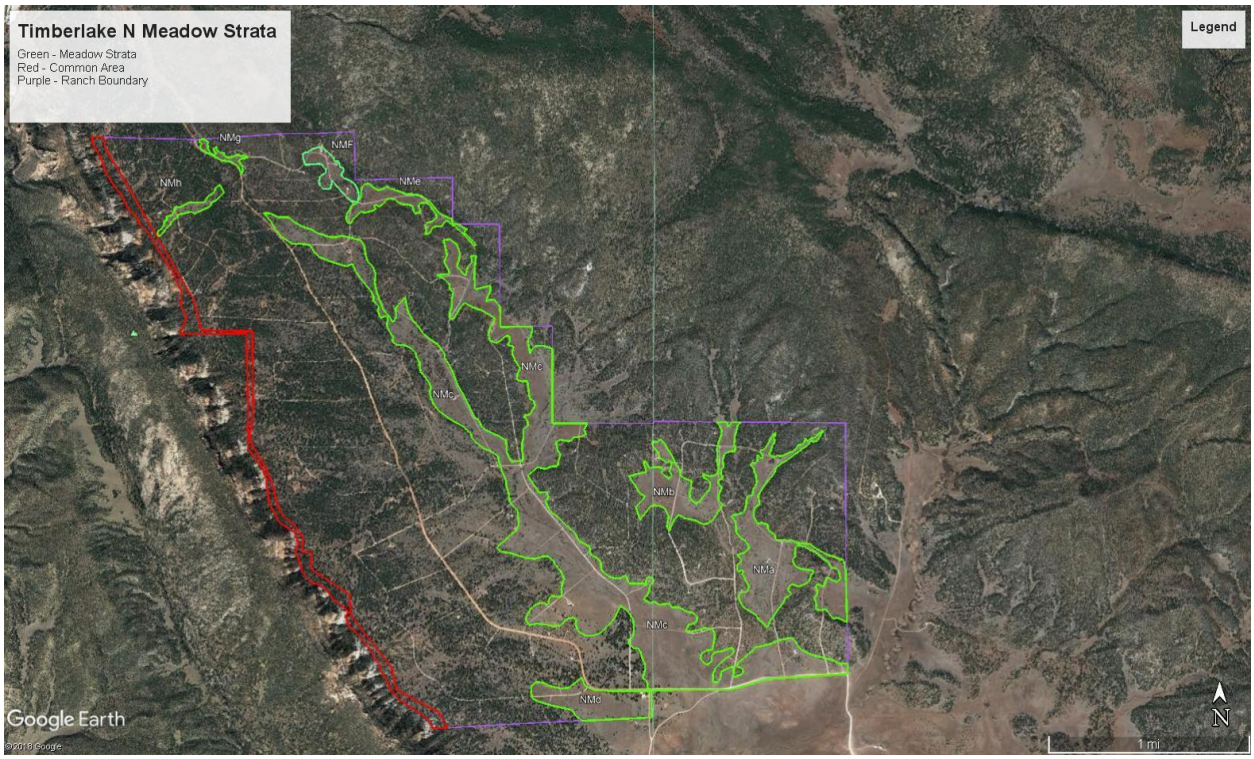
Objective 4.2 – Where practicable, treat dead and down trees to reduce the build-up of excessive ground fuel loads caused by the die-off of large pinyon and ponderosa pine by successive years of drought effects.

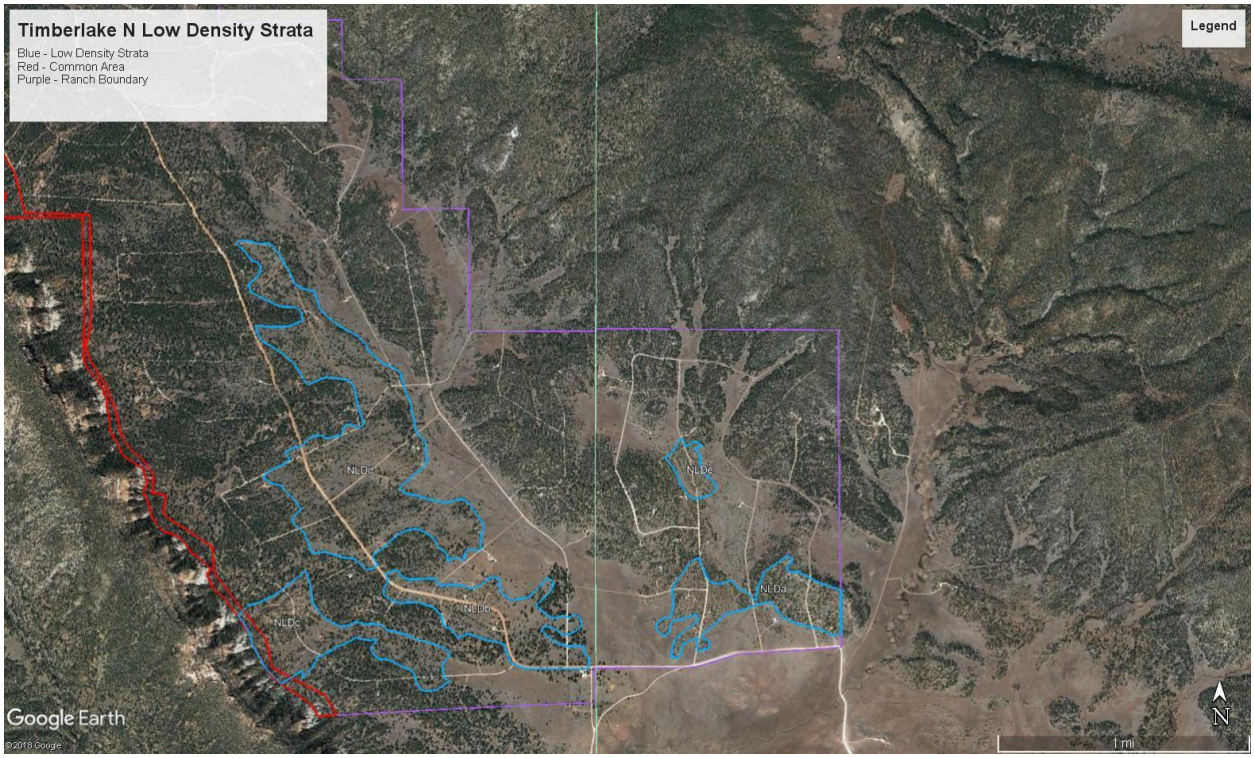
Objective 4.3 – Look at the feasibility of implementing a fuel break (restoration thinning) in the cliff common area to the west of the Timberlake N Subdivision.

Objective 4.4 - Look at the feasibility of prescribed fire and pile burning in the Subdivision.

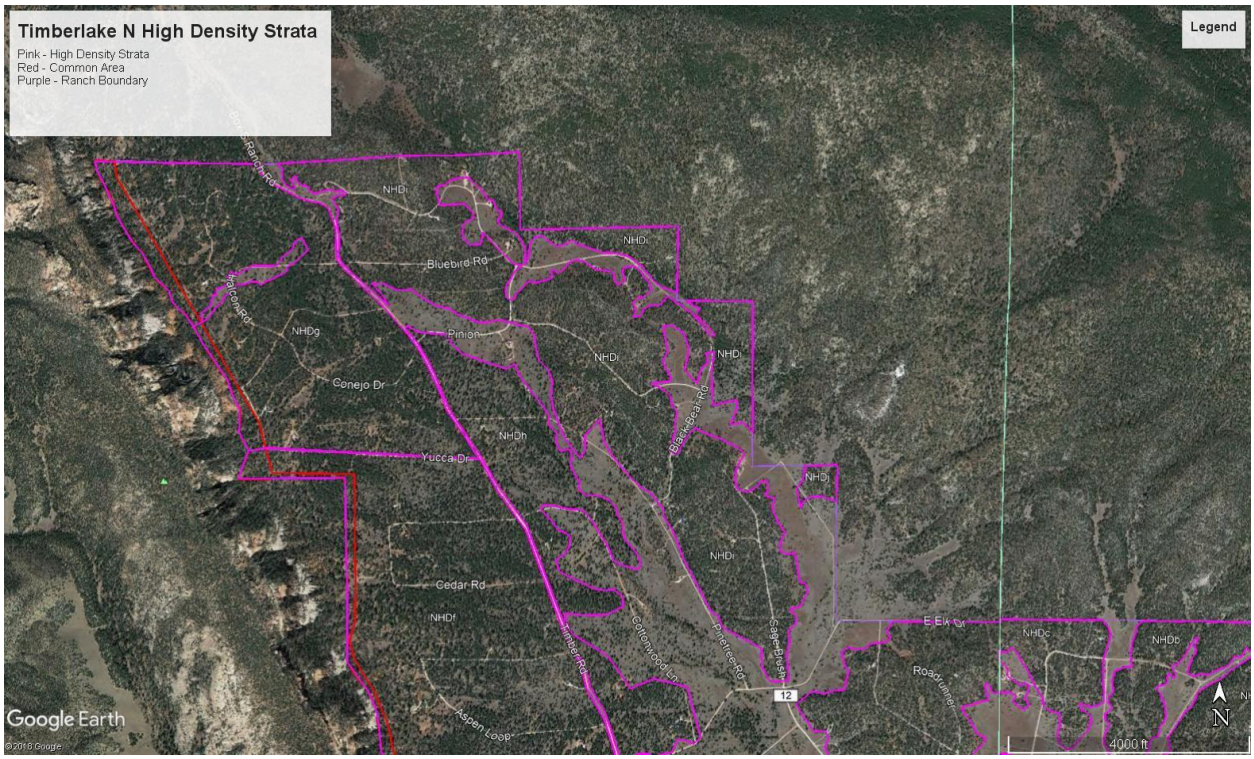
Timberlake Ranch Subdivision
Forest Stewardship Plan
Google Earth – Subdivision Timber Type Strata

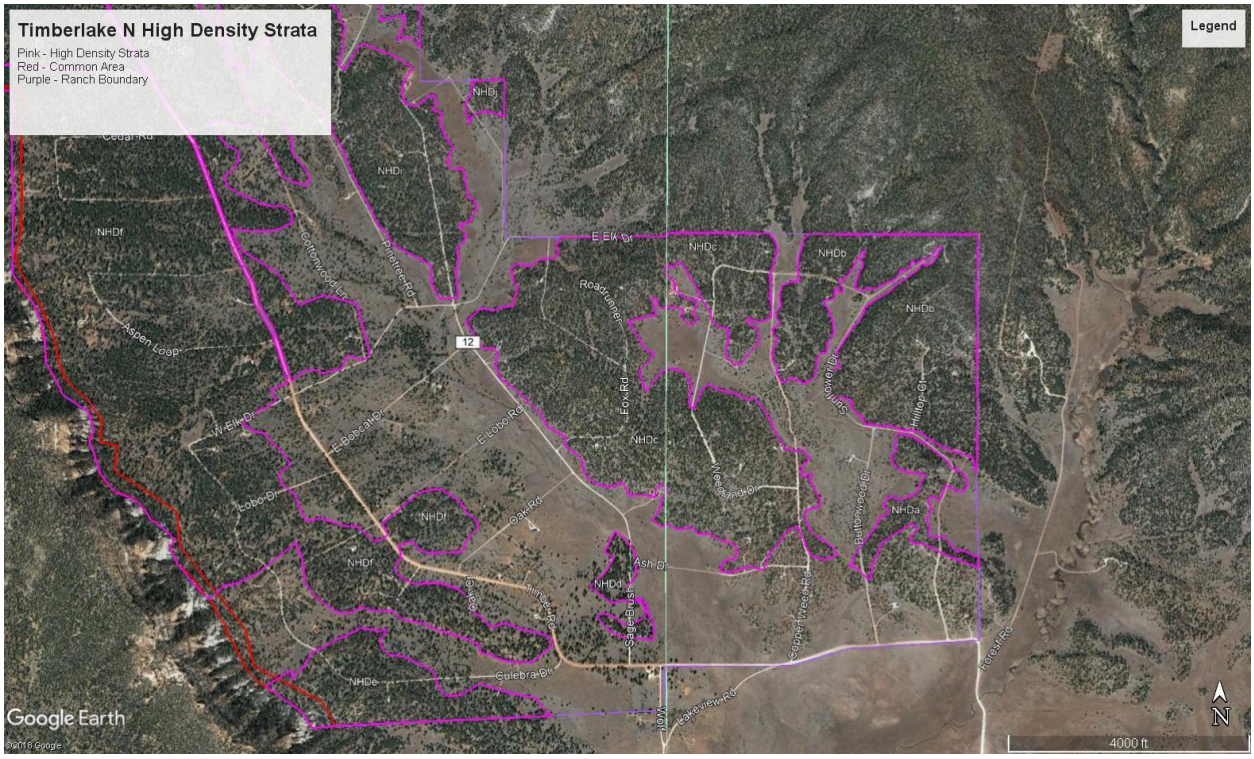
Timberlake N Subdivision





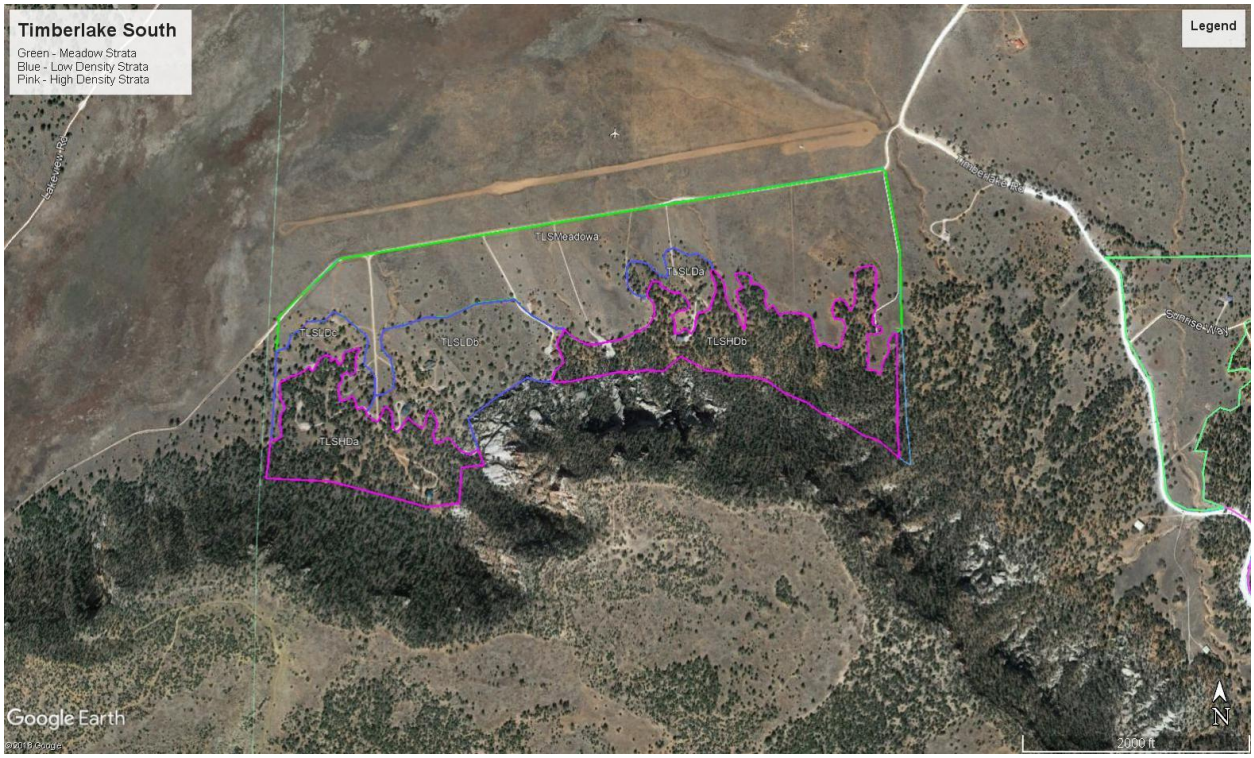
Timberlake Ranch Subdivision
Forest Stewardship Plan



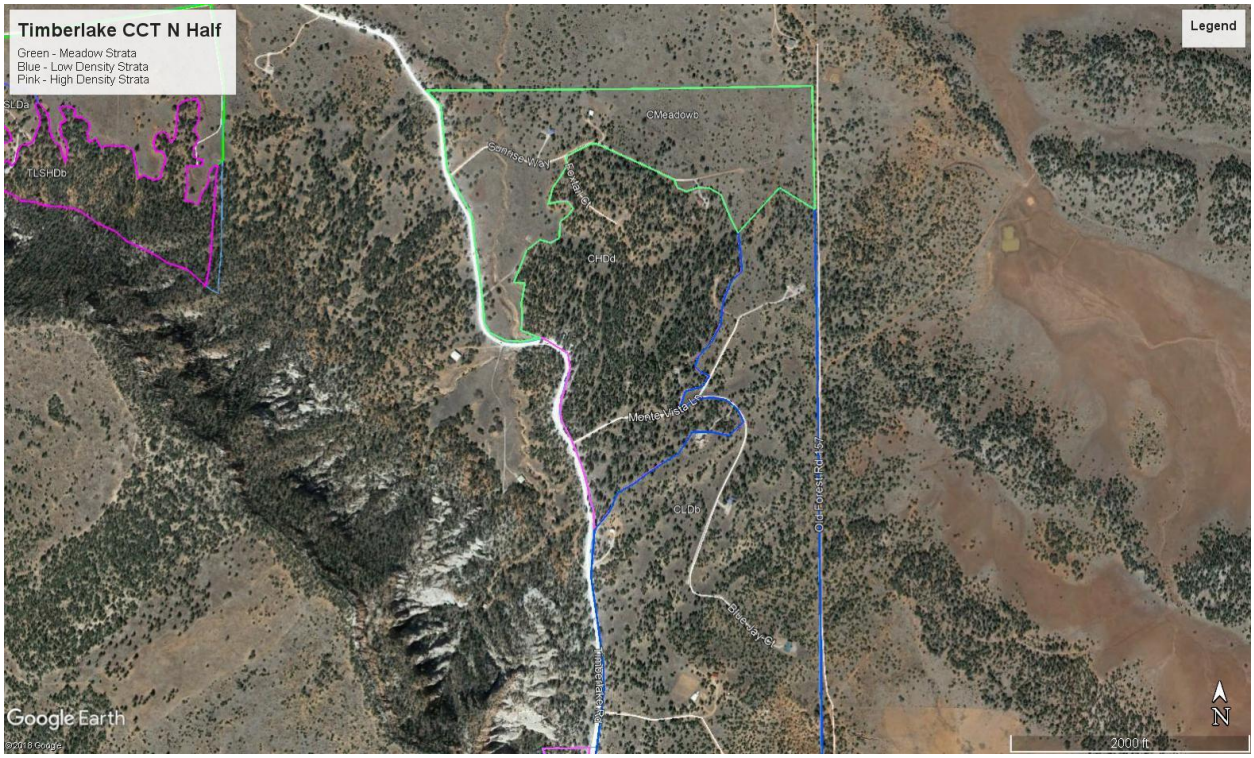


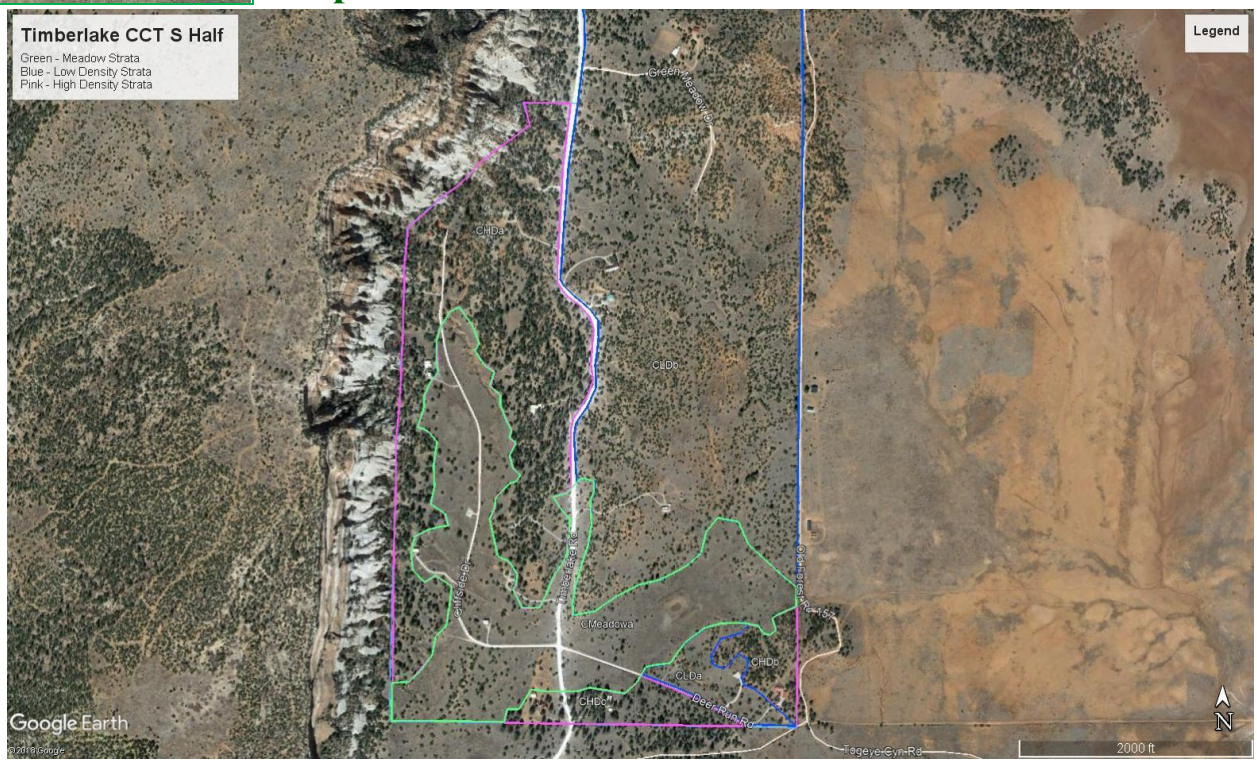
Timberlake Ranch Subdivision
Forest Stewardship Plan

Timberlake S Subdivision



Cloh Chin Toh Subdivision





Section II. Resource Descriptions

The property is characterized by two different forest types: The woodlands forest is characterized by pinyon pine (*Pinus edulis*), one-seed juniper (*Juniperus monosperma*), Rocky Mountain juniper (*Juniperus scopulorum*) and Ponderosa pine (*Pinus ponderosa*) and Gamble oak (*Quercus gambelii*) shrubs found mostly in drainages and northern aspects. The Ponderosa pine forest is characterized by both pure and mixed species of Ponderosa pine (*Pinus ponderosa*), Gamble oak (*Quercus gambelii*) in mott and shrub form, small numbers of alligator juniper (*Juniperus deppeana*) and invading one-seed juniper and Rocky Mountain Juniper.

The more pure stands of Ponderosa pine are found in Timberlake N Subdivision along the western cliffs and in the north part of Cloh Chin Toh Subdivision on a northerly aspect. Further to the east, the timber type changes to a woodlands forest mostly due to a rain shadow effect until the elevation raises again in the Zuni Mountains where there is a transition to Ponderosa pine which is known to be the most abundant tree in the west. "Ponderosa Pine is an indicator of the Transition Zone, a mid- elevation region where the aridity of the grassland and the shrubby desert yields to a cooler and moisture climate". (Ecology of Western Forests; 150)

Lightning Struck Ponderosa pine in Meadow

Decadent Oak Mott with large nesting cavities

Fish & Wildlife Habitat & Key Species

The following examples of species commonly found on the property come from personal observation and a database query using the http://bison-m.org/ internet site for Cibola and McKinley Counties. Complete lists can be found in the Appendix E under Fish and Wildlife Habitat Reports for both Counties.

American kestrel

Characteristic tree species found in this habitat type are ponderosa pine, (*Pinus ponderosa*); one seed juniper, (*Juniperus monosperma*); Rocky Mountain juniper, (*Juniperus scopulorum*); alligator juniper, (*Juniperus deppeana*); and Gamble oak, (*Quercus gambelii*).

Characteristic shrub species include big sagebrush, (*Artemisia tridentata*); apache plume (*Fallugia paradoxa*); four-winged saltbush, (*Atriplex canescens*); rubber rabbit brush (*Ericameria nauseosa*) and cliffrose, (*Purshia stansburiana*). Characteristic herbaceous species include Indian paintbrush, (*Castilleja miniata*); golden aster, (*Heterotheca villosa*); New Mexico thistle, (*Cirsium neomexicanum*). Grasses include blue grama, (*Bouteloua gracilis*); side oats grama, (*Bouteloua curtipenendula*); prairie junegrass, (*Koeleria macrantha*); and cheat grass, (*Bromus tectorum*).

Gray Squirrel

The above mentioned species are indicative of healthy woodlands and ponderosa pine habitat. The quality of the habitat is also measured by the presence of indicator species. These are the wildlife species whose presence is indicative of a healthy habitat. Some of the indicator animal species for this habitat type are as follows.

Birds:
American Kestrel *(Faclo sparverius)*
Bushtit *(Psaltrparus minimus)*
Flammulated Owl *(Otus flammeolus)*
Clark's Nutcracker *(Nucifraga columbiana)*
Black Chinned Hummingbird *(Archilochus alexandri)*
Scrub Jay *(Aphelocoma coerulescens)*
Turkey Vulture *(Cathartes aura)*
Chipping Sparrow *(Spizella passerina)*
Red Tailed Hawk *(Buteo jamaicensis)*
Northern goshawk *(Accipiter gentilis)*
Common Raven *(Corvus* corax)
Golden Eagle *(Aquila* chrysaetos)
Great Horned Owl *(Bubo virginianus)*
Evening Grosbeak *(Cocothraustes hornemanni)*

Mammals:
Gray Squirrel *(Sciurus griseus)*
Colorado Chipmunk *(Eutamias spp.)*
Ringtail *(Bassariscus astutus)*
Coyote *(Canus latrans)*
Spotted Skunk *(Spilogale putorius)*
Mule Deer *(Odocoileus hemionus)*
Mountain Lion *(Felis concolor)*
Mountain Cottontail *(Sylvilagus nuttallii)*
Black Bear *(Ursus americanus)*
Elk *(Cervus Canadensis)*
Black-tailed jackrabbit *(Lepus californicus)*

Reptiles:
Sonoran Gopher Snake *(Pituophis catenifer affinis)*
Western Diamondback Rattlesnake *(Crotalus atrox)*
Prairie Rattlesnake *(Crotalus viridis)*
Texas Horned Lizard *(Phrynosoma Cornutum)*
Southwestern Fence Lizard *(Sceloporus Cowlesi)*

Gophersnake *(Pituophis catenifer)*

Threatened, Endangered, & State Sensitive Species

There are ten species identified as threatened or endangered that are potentially found in this habitat type:

1. The Bald Eagle, *Haliaetus leucocephalus*, is considered to be highly likely to be found in this habitat.
2. The Spotted Bat, *Euderma maculatum*, may inhabit this area “less than regularly.”
3. The Peregrine Falcon, *Falco peregrinus tundrius,* may be found in this habitat type.
4. The Least Tern, *Sternula antillarum,* may be found in this habitat type.
5. The Yellow-Billed Cuckoo *Coccyzus americanus* occidentalis, may be found in this habitat type.
6. The Mexican spotted owl, *Strix occidentalis* Variety *lucida*, may be found in this habitat type.
7. Costa's Hummingbird, *Calypte* costae, may be found in this habitat type.
8. The Grey Vireo, *Vireo vicinior*, may be found in this area less than regularly.
9. The Zuni Bluehead Sucker *Catostomus discobolus yarrowi,* may be found in this habitat type.
10. The Southwestern Willow Flycatcher *Catostomus disobolus yarrowi,* may also be found in this habitat type.

Elk

There are four threatened and endangered plant species that may be found in the area. These include:

- Sweet britton and rose, *(Coryphantha missouriensis)*
- Zuni fleabane, *(Erigeron rhizonathus)*
- Wrights pincushion cactus, *(Mammillaria wrightii)*
- Small Flower Devils Claw, *(Sclerocactus parviflorus)*

Rare Plants

A comprehensive list of New Mexico Rare plants that are located in Cibola and McKinley Counties along with more descriptions can be found at the following web site. http://nmrareplants.unm.edu/. Below is the list of these plants by scientific name.

McKinley County

Gooddings Onion	*Allium gooddingii*
Chuska milkvetch	*Astragalus chuskanus*
Clifford's milkvetch	*Astragalus cliffordii*
Heil's milkvetch	*Astragalus heilii*
Chaco milkvetch	*Astragalus micromerius*
Zuni milkvetch	*Astragalus missouriensis var. accumbens*
Naturita milkvetch	*Astragalus naturitensis*
Acoma fleabane	*Erigeron acomanus*
Zuni fleabane	*Erigeron rhizomatus*
Sivinski's fleabane	*Erigeron sivinskii*
Clipped wild buckwheat	*Eriogonum lachnogynum var. colobum*
Sarah's wild buckwheat	*Eriogonum lachnogynum var. sarahiae*
Threadleaf blazingstar	*Mentzelia filifolia*
Tough muhly, Navajo muhly	*Muhlenbergia arsenei*
Navajo bladderpod	*Physaria navajoensis*
Parish's alkali grass	*Puccinellia parishii*
Clifford's groundsel	*Senecio cliffordii*

Cibola County

Zuni milkvetch	*Astragalus missouriensis var. accumbens*
Acoma fleabane	*Erigeron acomanus*
Pecos sunflower	*Helianthus paradoxus*
Lost sunflower	*Helianthus praetermissus*
Todilto stickleaf	*Mentzelia todiltoensis*
Cinders phacelia	*Phacelia serrata*
Yeso twinpod	*Physaria newberryi*
Parish's alkali grass	*Puccinellia parishii*
Laguna fame flower	*Talinum brevifolium*

See Appendix A for a specific description for each of the above species. Although they reside within the county they may or may not be present in the Subdivisions.

Timberlake Ranch Subdivision
Forest Stewardship Plan
Soil and Water Resources

Three custom soil survey reports were developed using the online tools provided by the Natural Resource Conservation Service (NRCS) website for this plan. All three full soil reports are included in Appendix B of this plan. The area used in the query was larger than the property so as to include information on potential off site impacts that activities may have on surrounding soils. There is a lack of soil data on National Forest which is to the east. Generally the National Forests use a Terrestrial Ecosystem Survey (TES) that is a different type of data than the soil survey information provided in this section.

Timberlake North Subdivision

Cibola County

There are 3 soil types found in and around the project area as follows:

- Soil 1 – 515 Rock outcrop-Vessilla-Mion complex, 3 to 55 percent slopes. Rock outcrop: 45 percent Mion and similar soils: 20 percent Vessilla and similar soils: 20 percent Minor components: 15 percent. Mean annual precipitation: 10 to 16 inches.
- Soil 2 – 560 Flugle-Teco association, 1 to 8 percent slopes. Flugle and similar soils: 50 percent Teco and similar soils: 30 percent Minor components: 20 percent. Mean annual precipitation: 10 to 16 inches.
- Soil 3 – 586 Venadito-Teco association, 0 to 10 percent slopes. Venadito and similar soils: 60 percent Teco and similar soils: 25 percent Minor components: 15 percent. Mean annual precipitation: 10 to 16 inches

McKinley County

There are 7 soil types found in and around the project area as follows:

- Soil 1 – 308 Fikel-Venzuni complex, 1 to 6 percent slopes. Fikel and similar soils: 50 percent Venzuni and similar soils: 40 percent Minor components: 10 percent. Mean annual precipitation: 13 to 16 inches.
- Soil 2 – 310 Parkelei sandy loam, 1 to 8 percent slopes. Parkelei and similar soils: 80 percent Minor components: 20 percent. Mean annual precipitation: 13 to 16 inches.
- Soil 3 - 345 Rock outcrop-Tuces complex, 20 to 70 percent slopes. Tuces and similar soils: 40 percent Rock outcrop: 40 percent Minor components: 20 percent. Mean annual precipitation: 13 to 16 inches.
- Soil 4 – 409 Rauster-Rock outcrop complex, 5 to 35 percent slopes. Rauster and similar soils: 60 percent Rock outcrop: 30 percent Minor components: 10 percent. Mean annual precipitation: 16 to 20 inches.
- Soil 5 – 414 Zunalei-Corzuni loamy fine sands, 2 to 10 percent slope. Zunalei and similar soils: 50 percent Corzuni and similar soils: 40 percent Minor components: 10 percent. Mean annual precipitation: 16 to 20 inches.
- Soil 6 – 416 Rock outcrop-Bluesky complex, 5 to 80 percent slopes. Rock outcrop: 70 percent Bluesky and similar soils: 20 percent Minor components: 10 percent. Mean annual precipitation: 16 to 20 inches.
- Soil 7 – 419 Fortwingate-Cinnadale-Rock outcrop complex, 5 to 45 percent slopes. Fortwingate and similar soils: 35 percent Cinnadale and similar soils: 30 percent Rock outcrop: 20 percent Minor components: 15 percent. Mean annual precipitation: 16 to 20 inches.

Timberlake South Subdivision

Cibola County – All
There are 3 soil types found in and around the project area as follows:

- Soil 1 – 515 Rock outcrop - Vessilla-Mion complex, 3 to 55 percent slopes. Rock outcrop: 45 percent Mion and similar soils: 20 percent Vessilla and similar soils: 20 percent Minor components: 15 percent. Mean annual precipitation: 10 to 16 inches.
- Soil 2 – 555 Pinitos-Ribera sandy loams, 1 to 10 percent slopes. Pinitos and similar soils: 50 percent Ribera and similar soils: 30 percent Minor components: 20 percent. Mean annual precipitation: 12 to 16 inches.
- Soil 3 – 560 Flugle-Teco association, 1 to 8 percent slopes. Flugle and similar soils: 50 percent Teco and similar soils: 30 percent Minor components: 20 percent. Mean annual precipitation: 10 to 16 inches.

Cloh Chin Toh Subdivision
Cibola County – All
There are 9 soil types found in and around the project area as follows:

- Soil 1 – 282 Cebolleta cobbly loam, 2 to 10 percent slopes, very stony. Cebolleta and similar soils: 80 percent Minor components: 20 percent. Mean annual precipitation: 16 to 24 inches.
- Soil 2 – 505 Flugle-Goesling loamy fine sands, 1 to 8 percent slopes. Flugle and similar soils: 55 percent Goesling and similar soils: 25 percent Minor components: 20 percent. Mean annual precipitation: 10 to 16 inches.
- Soil 3 – 515 Rock outcrop-Vessilla-Mion complex, 3 to 55 percent slopes. Rock outcrop: 45 percent Mion and similar soils: 20 percent Vessilla and similar soils: 20 percent Minor components: 15 percent. Mean annual precipitation: 10 to 16 inches.
- Soil 4 – 555 Pinitos-Ribera sandy loams, 1 to 10 percent slopes. Pinitos and similar soils: 50 percent Ribera and similar soils: 30 percent Minor components: 20 percent. Mean annual precipitation: 12 to 16 inches.
- Soil 5 – 560 Flugle-Teco association, 1 to 8 percent slopes. Flugle and similar soils: 50 percent Teco and similar soils: 30 percent Minor components: 20 percent. Mean annual precipitation: 10 to 16 inches.
- Soil 6 – 561 Flugle-Quintana complex, 2 to 15 percent slopes. Flugle and similar soils: 45 percent Quintana and similar soils: 35 percent Minor components: 20 percent. Mean annual precipitation: 10 to 16 inches.
- Soil 7 – 582 Kenray fine sand, 3 to 15 percent slopes. Kenray and similar soils: 80 percent Minor components: 20 percent. Mean annual precipitation: 14 to 22 inches.
- Soil 8 – 585 Moncha silt loam, 2 to 10 percent slopes. Moncha and similar soils: 85 percent Minor components: 15 percent. Mean annual precipitation: 10 to 16 inches.
- Soil 9 – 620 Aparejo-Venadito complex, 1 to 5 percent slopes. Aparejo and similar soils: 50 percent Venadito and similar soils: 35 percent Minor components: 15 percent. Mean annual precipitation: 10 to 16 inches.

The soil types listed above are defined as woodland forest that are primarily used for wildlife habitat, cattle grazing and wood products. When projects are designed on these soils, referencing Appendix B of this document is recommended.

See the full soil report in Appendix B for more technical information or visit: https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm.

Recreation and Resources

Aesthetic

The recreational uses on the property are numerous. The Timberlake Subdivision has the following recreational activities to name a few:

- Horseback riding
- Easy access to the Cibola National Forest
- Hiking
- ATV/UTV riding
- The Subdivision has an airstrip and hosts a once-a-year aviation event
- A ranch house and library (common area) for events and quiet time

The cliffs are a spectacular backdrop for the residents of Timberlake.

Panoramic view of the cliffs looking north from the southern shore of Ramah Lake

Roads and Access

This approximately 7,000 acre subdivided Ranch is located in both Cibola and McKinley County. It is nestled in a valley surrounded by the Cibola National Forest. There are five named subdivisions within the Ranch: Cloh Chin Toh, Timberlake (Cibola) Unit 1, Timberlake (Cibola) Unit 2, Mckinley Units 1-10, and Timberlake South totaling 743 lots of varying size from 5 to 14 acres. Coming from Grants, NM, the property is accessed by turning off I-40 at Exit 81 (south) onto Highway 53 toward San Rafael. Continue 51 miles until reaching Timberlake Road which is approximately 1 mile south of Ramah, NM (Note, road sign at the intersection of Highway 53

and Timberlake Road reads Canyon Road). Turn right on Timberlake Road and continue east approximately 3 miles until reaching the main gate of Timberlake Ranch Subdivision. Continue on for approximately 5 more miles until reaching the Firehouse which is located on the north side of Ramah Reservoir. The Firehouse is the approximate center of the Ranch.

The main access into the Subdivision is on an improved gravel road that has a stretch of approximately 1 mile that does not have a graveled surface that quickly turns to mud and ruts after a rain or snow storm.

The Subdivision provides road maintenance and grading during the year that includes re-rocking road surfaces and culvert clean-out. A majority of the roads within the Subdivision were built with two drainages ditches; one on either side which serves to remove and drain water quickly from the road surface. I saw little evidence of erosion (sedimentation) from the road system network.

Section III. Timber Inventory and Forest Resource Assessment

A timber inventory and resource reconnaissance was conducted on the property by New Mexico State Forestry Contractor Thomas Marks. His complete report can be found in Appendix C of this plan.

Google Earth was used as a primary mapping tool to divide the three Subdivisions into timber type strata defined by: Meadow - little or no tree stocking, Low Density - low to medium tree stocking and High Density - medium to high tree stocking. Tree stocking is defined as the number of trees that exist on an acre of land. Using the guideline of one plot per every 10 acres on the High Density strata, one plot for every 20 acres on Low Density strata and 1 plot for every 30 acres the Meadow strata, a sampling design was developed to plan a total number of plots of 355. Using the criteria of a plot falling close to an existing occupied house (fenced or gated), I ended up deleting 69 plots total for all subdivisions. My final sample was 286 plots for all subdivisions with the majority located in the High Density strata for all Subdivisions.

Timber (forest tree species) is measured in Square feet of Basal Area per acre.

Basal area (BA) is a measurement of the amount of tree area in square feet per acre that exist on the land. An acre consists of 43,560 square feet so a BA of 60 ft² (example) per acre of trees is what should exist.

Basal area measurement is used in a variety of ways when applying forestry concepts to a stand of trees. One way is to compare the stocking to an "ideal or target" stocking level so the forester can calculate how many trees to remove.

Different ideal stocking levels can be used to accomplish different forest goals such as the best stocking for fire safety or the optimal timber production stocking level; getting big trees in the shortest period of time while keeping an optimal number of trees in the stand.

A landowner should set management goals and use this information as a basis to make informed decisions about the management of the forest.

A 10 BAF (Basal Area Factor) prism was used to collect variable plot information. Plot "In" trees were placed into 2 inch diameter classes and recorded by species. The forestry measurement of basal area is the amount of square feet (ft²) of a tree per acre. Basal area is derived from a diameter measurement; for non-commercial woodland species, the diameter measurement is taken and recorded as "diameter at root collar". For commercial species such as

Ponderosa pine, the diameter measurement is taken and recorded as "diameter at breast height or 4.5 ft from ground level. Typically in woodland forests, a rule of thumb is to achieve 40-60 ft² basal area per acre. A healthy Ponderosa pine forest is usually between 40-70 ft² BA depending on age and site quality conditions. This allows trees on average to grow at they're optimal rate but more importantly, to be able to withstand a fire without the fire spreading into the tree crowns.

The 37 strata measured in the Reconnaissance and Cruise Report provides an average BA and TPA for all species:

Timberlake North

Strata	BA	TPA
Meadow	34.45	11.60
Low Density	67.57	75.37
High Density	113.19	151.61

Timberlake South

Strata	BA	TPA
Meadow	16.67	60.61
Low Density	36.67	48.74
High Density	100.34	105.88

Cloh Chin Toh

Strata	BA	TPA
Meadow	38.34	11.81
Low Density	50.00	62.25
High Density	84.17	101.90

See Reconnaissance and Cruise Report Appendix C for individual strata BA and TPA totals. Trees per acre are derived from a calculation that combines basal area and tree diameter at breast height (DBH) or diameter at root collar (DRC) for each size class by species. The same basal area calculations for smaller trees will show more trees per acre.

While Google Earth was used to stratify timber types by tree density based on photo interpretation, on-the-ground reconnaissance showed the average Timberlake N Meadow strata were primarily open areas or meadows along drainage courses that contained some trees at an average of 34.45 ft² BA. Timberlake S Meadow strata averaged 16.67 ft² BA while Cloh Chin Toh Meadow strata averaged 38.34 ft² BA.

The average Timberlake N Low Density strata that primarily border meadow areas averaged 67.57 ft² BA. Timberlake S Low Density strata averaged 36.37 ft² BA while Cloh Chin Toh Low Density strata averaged 50.00 ft² BA.

All High Density strata's average BA was consistently high for all Subdivisions. This is evidence of overstocking or too many trees per acre that occupy the site. Timberlake N High Density strata averaged 113.19 ft² BA. Timberlake S High Density strata averaged 100.34 ft² BA while Cloh Chin Toh High Density strata averaged 84.17 ft² BA.

A complete set of data analysis by strata and species is located in Appendix C. The recommendations section of this plan will give recommendations for timber treatments on the Subdivision.

Section IV. Forest Protection

Forest Insects

Forest insects are defined as forest pests that will in some way degrade the overall plant health of the forest. Primary insects discussed will be those that attack tree species.

Bark Beetles: This is a common problem in New Mexico. Various species of bark beetle uses weakened trees to complete its life cycle, killing the tree as a byproduct. Trees weakened by environmental factors such as drought or intense competitions with other trees are most susceptible to bark beetle attack. Bark beetles carve a gallery in the cambium in which "girdles" the tree making it impossible to feed itself. By the time signs of attack present themselves the tree is dead. Prevention is making the trees healthy and vigorous so that the trees would be able to defend itself from attack. Trees do this by "pitching out" where trees emit sap that overwhelms the attacking insects.

Ips Gallery

Roundheaded and Flatheaded wood borer: The round headed and flat headed wood borer attack recently cut or dead or dying trees. This process, while not necessarily a detriment to the forest, can serve to damage harvested trees left in the forest too long. These borers are most prominent after fires. They may also spread into vigas located in structures in the area. The best prevention to sustaining large populations of these borers is to ensure dead wood is removed and wood piles are dried out by solarizing the piles and eliminating breeding habitat found in the moist area between the bark and wood of logs. Solarizing is the process of placing plastic over freshly cut firewood in order to kill wood borers so they will not spread to healthy trees.

Western Cedar Borer: This is considered an aggressive pest of juniper in New Mexico. These insects will attack and seriously injure juniper trees by making larval galleries in the stem of the tree. There is no practical control or prevention known at this time.

Twig Beetles: These are frequent pests of pines in New Mexico. They attack storm damaged and shaded out twigs and branches. Fading branches through the crown can identify twig beetle attacks. They can have 2-4 generations per year. Pruning can help with control and keeping trees vigorous will help with prevention of serious damage from attack.

Forest Disease

Forest diseases may be a problem that affects the health of plants in the forest. Diseases include parasitic plants, fungi, and bacteria. Forest diseases may impact forest systems by degrading productivity and health of the forest. Below are lists of the

most likely forest diseases that will be found in this area with descriptions of potential effects to the system.

Dwarf Mistletoe: The most common forest disease found in forest systems in this area. Mistletoes are parasitic plants that may kill their hosts over time. Essential water and nutrients are diverted from the host plant to the mistletoe thus depriving the host of needed food that may end up killing the host. Dwarf mistletoes, found on conifers, are species specific that means that each species of dwarf mistletoe will only infest one species of conifer and cannot spread between species. Dwarf mistletoes, unlike true mistletoes, spread by shooting their berries up to 30 feet. Dwarf mistletoes may be controlled through silvicultural means by removing infected trees from the overstory. Trees should not be thinned in mistletoe infected areas as this would serve to increase the spread of the disease.

True Mistletoe: Infects juniper species in New Mexico. True mistletoe attacks trees by "stealing" essential water and nutrients from the host trees. True mistletoe is spread by birds therefore there are no silvicultural controls. Pruning can be somewhat effective.

True Mistletoe found on Juniper (True Mistletoes are NOT considered aggressive pathogens)

Dwarf Mistletoe found on Ponderosa Pine. This is considered the "Most damaging disease of Ponderosa pine in the southwest."

Fire

Much of the data collected on the property was stand densities (see timber section). While overall fuel loading for the site is important to fire behavior, tree densities in this case will be the primary factor of fire on the landscape. As a general rule, tree densities over an average of 50 Square feet per acre of BA have an increasing hazard potential resulting in torching (individual or small pockets of tree crowns igniting during a fire) or crowning where all tree crowns in a stand carrying the fire. This general rule of thumb varies by specific instance for different tree species. An average tree density of 60 ft² per acre in Ponderosa pine is optimal for individual tree growth and overall stand productivity while minimizing hazard potential.

Old yellow-bark P
cat face (fire dama
and lightning scar.

Timberlake Ranch Subdivision
Forest Stewardship Plan

Fuel hazard directly relates to the amount of fuel available to burn in a fire. The fuel hazard on the property is estimated at moderate to heavy at the present time. The fuel hazard also addresses the arrangement of the fuel, i.e. the position the fuel is in relation to other fuels.

Fuel hazards need to be addressed on the property in the higher density stands by treating the amount and arrangement of fuels.

The Subdivision has two forest types: a predominately pinyon pine/one seed juniper woodland forest type and a Ponderosa pine forest type. Stocking rates were below average in all Meadow and Low Density Strata while above average to exceedingly high for all High Density strata stands in the three Subdivisions. In addition, between 10-25% of older (larger) overstory trees in some strata primarily located on the east side of Timberlake N have recently died and are rotting and falling over adding to ground fuel hazards. now

Recently dead pinyon pine has rotted and fallen over. This condition exists in several areas

Overstory Ponderosa pines dying from drought related effects

Overstory pinyon pines dying from drought related effects

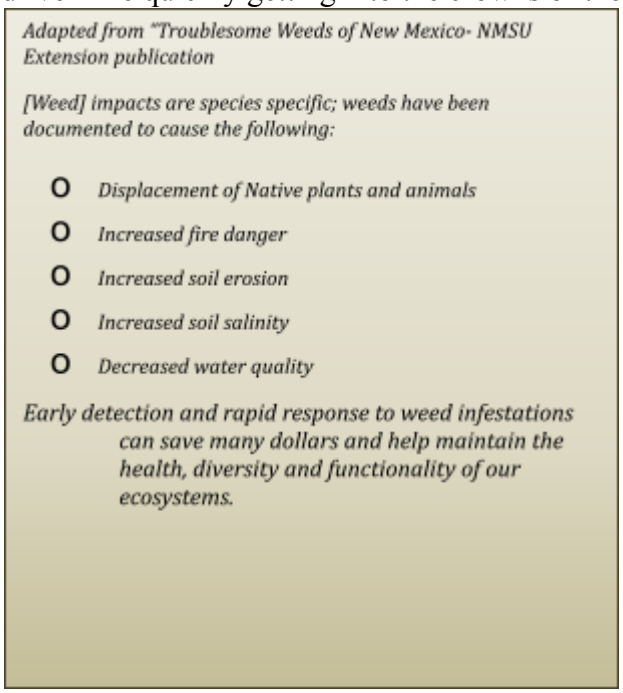
Fire risk addresses the potential ignition sources for the area. Ignitions may be both human and natural caused. Human ignitions may be from neighboring homes, debris or prescribed burning, or other unforeseen person caused accidents. Lightning can cause natural ignitions but not all lightning struck trees cause fires. According to Mary Jo Wallen (resident of Timberlake N Subdivision), the small fire shown in the two pictures to the right were caused by lines arcing on a windy day. This fire was located along the Timberlake N Subdivision common area also known as the Cliffs or Hogback. The fire burned hot as shown in the pictures. Fortunately, fire suppression crews were able to stop the fire's advance before the fire could spread into the surrounding tree crowns.

A stand-replacing fire is usually of high HYPERLINK "javascript:void(0);" fire-line intensity and may be a HYPERLINK "javascript:void(0);" crown fire but is characterized more by its effect on vegetation than the physical character of the fire. For example, a stand of thin-barked subalpine fir could be killed by basal girdling from a low-intensity fire, yet this would constitute a stand-replacing fire. Because a stand-replacing fire kills most or all of the trees in the stand, it is defined as a HYPERLINK "javascript:void(0);" high-severity fire. *Firewords, 2019*

I observed evidence of fire char on old stumps and down logs located throughout Timberlake Ranch. I also came across evidence of another recent small 2 acre fire east of Timberlake Lane about midway in Timberlake N Subdivision.

My interpretation of all the recent fire evidence and overstocked stands found in both forest types on the Timberlake Ranch leads me to rate the High Density strata in the Woodlands forest type as Moderate and the High Density strata in the Ponderosa pine forest type as High Fire Risk.

This is based on the likelihood of a wind-driven fire quickly getting into the crowns of these stands and becoming a stand replacement fire.



Noxious Weeds and Trees

The following is a list of the noxious weeds identified for McKinley and Cibola County. There are 3 classes of noxious weeds. These are termed class A, B, & C weeds. As defined by the NMSU cooperative extension services publication New Mexico's Invasive Weeds, Class A weeds are not native to ecosystem and have limited distribution within the state are placed in this class. Preventing new infestations and eliminating infestations are the highest priority as species in this class are not presently found in the state but are an threatening to invade. Class B weeds are not native to the ecosystem and are presently limited to particular areas within the state. Preventing new infestations should be a priority for weeds in this class. Class C weeds are also not native to the state yet are widespread throughout the state. They require long-term treatment in order to effectively control these populations. Below is a list of noxious weeds to be concerned within each county. See Appendix E for Troublesome Weeds of New Mexico.

McKinley County

Class A:

Common Name	Scientific Name
Spotted knapweed	*Asteraceae*
Scotch thistle	*Onopordum canthium*
Hoary cress	*Brassicaceae*
Camelthorn	*Alhagi maurorum*
Canada thistle	*Cirsium arvense*
Diffuse knapweed	*Centaurea diffusa*
Dalmatian toadflax	*Linaria dalmatica*
Yellow starthistle	*Centaurea solstitialis*

Class C:

Poison hemlock	*Conium maculatum*
Perennial pepperweed	*Lepidium latifolium*
Halogeton	*Halogeton glomeratus*
Musk thistle	*Carduus nutans*
Russian knapweed	*Acroptilon repens*
Chicory	*Cichorium intybus*

Class C:

Saltcedar	*Tamarix spp*
Russian olive	*Elaeagnus angustifolia*
Cheatgrass	*Bromus tectorum*
Siberian elm	*Ulmus pumila*
Jointed goat grass	*Aegilops cylindrica*

Cibola County

Class A:

Common Name	Scientific Name
Spotted knapweed	*Centaurea biebersteinii*
Scotch thistle	*Onopordum acanthium*
Hoary cress	*Cardaria spp.*
Camelthorn	*Alhagi maurorum*

Class B:

Perennial pepperweed	*Lepidium latifolium*
African rue	*Peganum harmala*
Musk thistle	*Carduus nutans*
Russian knapweed	*Acroptilon repens*

Class C:

Saltcedar	*Tamarix spp.*
Russian olive	*Elaeagnus angustifolia*
Cheatgrass	*Bromus tectorum*
Siberian elm	*Ulmus pumila*

Field bindweed *Convolvulus arvensis*

Heritage Resources

A database search was performed through the State Historic Preservation Office website. No surveyed sites were found and recorded by the State Historic Preservation Office within any of the Subdivisions where thinning activities will take place; see map and site descriptions in Appendix D.

A cultural site is defined as a historic (50 years or older) to prehistoric (Older than recorded history). Any sites found on the property should be regarded with care and all caution should be taken to avoid destruction of the site. Should a site be found and prior to any management (thinning) activities in and around the sites, they will first be identified on the ground, boundaries will be flagged and the sites will be protected by avoidance. Contact the State Historic Preservation Office or your local State Forester for advice on how to proceed with projects in any known or suspected location of a site.

Appropriate measures must be taken to avoid disturbing any sites during management activities, especially where federal dollars are spent.

Section V. Forest Management Recommendations

The New Mexico Statewide Resources Assessment, Strategy and Response Plan intends to guide long-term Forestry Division management, but as importantly, to provide useful information to our many partners who work together to create and maintain sustainable forests and their many benefits.

Google Earth Pro is a computer program that renders a 3D representation of Earth based on satellite imagery. The program maps the Earth by superimposing satellite images, aerial photography, and GIS data onto a 3D globe, allowing users to see cities and landscapes from various angles.

Google Earth is intended for home and personal use and is currently free. This product has many features, including displaying satellite and aerial imagery, a growing set of layers of mappable data, the ability to display third party data, tools for creating new data, and the ability to import GPS data. *Google Earth Pro Website, 2019*

http://www.emnrd.state.nm.us/SFD/statewideassessment.html

The four primary landowner objectives are relisted below with corresponding recommendations by the author of the plan.

Goal 1 - develop a comprehensive property map in Google Earth showing existing roads, approximate property line locations, property ownership lots and delineate existing timber types and sample to determine stocking levels that include Basal Area and Trees per Acre.

Timberlake Ranch Subdivision
Forest Stewardship Plan

This goal will become the "existing condition" within the Stewardship Plan and provide a planning baseline for future forest management and treatment objectives on individual properties and Subdivision common areas.

Objective 1.1 - *identify timber type strata based on basal area and trees per acre tree densities to help determine property lot thinning priorities.*

I used Google Earth Pro as my primary geographic mapping tool to identify and define 37 strata by meadow openings, low density and high density tree stocking levels (see Google Earth screen shots starting on Page 7). Tree stocking is defined as the number of trees that exist on an acre of land. I used the following assumptions in defining strata:

- Potential strata had to be 5 acres or more.
- I transferred all boundary shape files to the software program Garmin Basecamp to locate cruise plot locations.
- The majority of plots were in the N Subdivision in high density strata. These were located on an approximate 500'x 500'grid for each plot point.
- All plots have an assigned unique strata code and number.
- All plot location GPS coordinates were transferred to my handheld GPSMap64. I navigated to each plot location with an accuracy of +/- 10 feet. This allowed unbiased plot locations.
- I deleted any plot that fell close to existing occupied houses (fenced and gated) or located on properties that had been previously thinned.
- I applied an offset typically 66 or 132' for plots that fell on roads, or overly steep areas.

A benefit of Cruise by Stratification allows property owners to identify which stratum a property is located in and to look up the average BA and TPA that was sampled. This allows a user to quickly determine if a property may or may not require thinning. New Mexico State Foresters will further access individual properties with an additional site specific evaluation of the property

Objective 1.2 – *sample individual timber types to determine average BA and TPA. Consider Developing a multiple year management plan.*

The number of plots planned totaled 355 and number of plots cruised totaled 286 for all strata. Using the criteria of a plot falling to close to an existing occupied house (fenced or gated), I ended up deleting 69 plots total for all subdivisions.

Variable radius plot sampling, also known as point sampling, is a technique to use for fast, efficient cruising. Variable radius plots provide a quick estimate of basal area that can be calculated into trees per acre.

Basal area is determined by using a precisely ground glass prism that is calibrated to determine "in" and "out" trees based on the predetermined angle or diopter. A 3 diopter angle also called a 10 Basal Area Factor (BAF) mathematically calculates each in tree on a per acre basis. Thus, 5 in trees x 10BAF = 50ft² of BA. All in trees are recorded on each plot by tree species and tree diameter at Diameter at Breast Height (DBH - 4.5' above ground level) for commercial species

and Diameter at Root Collar (DRC) for woodland species. New Mexico Foresters compile and analyze tree data information to determine which species by diameter class are more desirable to leave or cut.

Subdivision Strata Cruise Summary Tables are located in the Reconnaissance and Cruise Report Appendix C page 11. These tables exhibit all individual strata BA and TPA averages and totals.

Developing a Management Plan - The Timberlake Ranch Subdivision should consider a multi-year plan with the objectives of lessening fire risks by considering the implementation of the following resource management recommendations:

1. **Management Recommendation, Partnerships** – The Timberlake Ranch Subdivision should consider entering into a partnership with NM State Forestry and the USDA Forest Service to propose a project to improve wildlife habitat and forest health within the acres of ponderosa pine, mountain meadow, and pinyon-juniper forest communities through thinning and prescribe burning on National Forest Lands common to the Timberlake Ranch Subdivision property boundary. Negotiate with the Cibola National Forest to have this project added to their Schedule of Proposed Actions which contains a list of proposed actions that will begin or are currently undergoing environmental analysis and documentation.

2. **Management Recommendation, Reduce Fire and Safety Risks**
    a. Ramah Lake serves as a fire break along with the short grasses and other vegetation found around the reservoir and old Ranch House area. Consider a small offset disk plow, mastication or prescribed burning treatments to keep larger vegetation (big sage and rubber rabbit brush) under control. There are several properties along the Timberlake South reservoir front that appear to have disked they're properties into manageable (less risk of fire) grasslands.

    b. I'm concerned about the heavy ground fuels found in Togeye Canyon where Timberlake road is located from Highway 53 to the front gate of Timberlake Ranch. This road is the only way in or out of the Ranch and the heavy fuel loads (large decadent vegetation) along the road pose a safety risk to Ranch property owners (as well as emergency personnel) trying to escape should a fire break out in the canyon. The road right of way is located through several property ownerships including BIA, Private and BLM. Depending on the weather and condition of the road surface, Cibola County blades this road twice a year. Consider Identifying property owners and petition to seek vegetation management options to masticate plow or burn portions of the large decadent vegetation found between the road and the cliffs to the north of Timberlake road to create a safety zone for vehicle traffic in the event of a fire emergency. An alternative to this is to consider plowing (offset disk or grader) road side bare soil strips once a year to provide safe passage for vehicles should a fire occur in the canyon if the right of way easement width allows access.

Objective 1.3 - *review existing roads and drainages; recommend best management practices and maintenance procedures to limit actual or potential erosion.*

The Subdivision provides road maintenance and grading during the year that includes re-rocking road surfaces and culvert clean-out. A majority of the roads within the Subdivision were built with two drainages ditches; one on either side which serves to remove and drain water quickly from the road surface. I saw little evidence of erosion from the main road system network.

I did notice several private lot drive-ways that were built on overly steep slopes without ditches, lead-outs or rolling water bars that all served to channel water off of the road as quickly as possible before the water can channel into faster flows that cut down into the road surface and cause road surface wash outs.

Management Recommendation - Access roads that are incised can cause water to channel directly down the road resulting in gullying and washouts. As practicable, ensure the road has: 1) drainage lead outs, 2) rolling dips on sustained grades, 3) out-sloping and 4) water bars installed as outlined in the New Mexico Forest Practices Guidelines commonly referred to as Best Management Practices (BMP). More information about BMPs can be found at: **http://www.emnrd.state.nm.us/SFD/ForestMgt/ForestMgt.html**

Goal 2 – Perform forest treatments that increase forest health benefits while reducing the risk of catastrophic stand replacement fires.

Objective 2.1 - *Review existing and future Subdivision areas for dwarf mistletoe infestations and include recommendations in thinning guidelines to reduce infestations.*

My cruise only picked up a few areas with light dwarf mistletoe infestations.

Management Recommendation – include dwarf mistletoe identification and removal for all species in all future thinning prescriptions.

Objective 2.2 - *Review existing and future Subdivision areas for any other disease or insect infestation and make a priority for treatment.*

My reconnaissance showed an initial large tree die-off particularly in the larger pinyon and Ponderosa pine several years ago within the areas that are primarily a woodlands forest type. In these and other areas, I observed many larger Ponderosa and pinyon pine that have died this year (brown foliage). On closer inspection, I did not observe bark beetle infestation nor could I pin-point the actual cause of death other than lingering drought related reasons.

Objective 2.3 - *Review overall landscape for any lingering effects of recent drought. Where feasible, modify thinning guidelines.*

Ongoing drought effects are evident in the northeast portion of Timberlake North and on south aspects of Timberlake CCT. The trees that died during that event are now falling over creating significant amounts of ground fuels in some areas.

Management Recommendations: Modify as appropriate; thinning Rx's to reflect on-going effects of drought. Treat (buck and stack, chipping or mastication) all dead and down trees to manage large woody debris ground fuel loads in future contracts.

Because there is a lack of an understory component in some areas, I believe there is an increased risk of potential sheet erosion for areas yet to be identified. Sheet erosion is the process of rain drops moving soil particles downhill which can remove several inches of soil over a period of time or sometimes in a single event. This usually happens after vegetation is removed and there is nothing in the way to prevent rain drops from striking the surface of the ground. This potential can be mitigated through modified treatment guidelines.

Management Recommendations: On slopes of 15% or greater, leave larger long-logs in cross slope configuration to create soil check dams. Require chips to be fully dispersed (less thick over larger areas) in areas that lack ground cover. Consider moving and dispersing chips in more lightly stocked areas that have higher than normal erosion potential. On steeper slopes that have erosion potential, consider treating slash with a lop and scatter of no more than 24" height from ground level were appropriate.

Goal 3 - Perform forest treatments that enhance wildlife habitat by enhancing and increasing the available grass, forbs and shrubs in the Subdivision.

Objective 3.1 - *Where feasible, perform thinning and utilize the slash to add to the herbaceous and grass ground cover, providing for wildlife grazing and browse.*

Management Recommendation: Consider leaving lop and scatter slash in some of the common areas steeper slopes if thinned. Consider pile burning on properties to return nutrients back to the soil but to also spur native grasses and forbs to become established.

Objective 3.2 - *Increase the quality of the habitat as measured by the presence of indicator species such as Merriam's wild turkey (Meleagris galapavo) population.*

Look at the feasibility of prescribed fire or pile burning. With fire adapted ecosystems the role of wildfire is essential to the proper function of the landscape. However, concerns arise when these ecosystems also contain human values and influence.

Management Recommendation:

- The Subdivision should consider prescribed fire in the common areas and around Ramah Lake as weather conditions and comfort levels allow.
- Snags play a role in providing roosting trees, bird cavity nesting, and woodpecker habitat. My reconnaissance showed a majority of dead trees that I came across were being cut for firewood. I understand not wanting a dead tree (snag) near a house but I would encourage owners to leave large dead trees that are located away from any structures or roads.

Objective 3.3 - *Explore opportunities to develop additional water sources for the use of wildlife in the Subdivision.*

I came across a few lots where property owners had installed wildlife drinkers (water source). One property had installed a tank which was still holding water in September. There is a small

population of deer that utilizes much of the unused (absentee property owners) portion of the Subdivision. Elk utilize the valley in the late fall and early spring. While the Lake provides one water source, other small water sources could benefit wildlife that stay in the area.

Management Recommendation: The Subdivision should consider looking for locations to build wildlife drinkers and tanks.

Goal 4 – Provide for appropriate wildfire protection in a fire adapted ecosystem.

Objective 4.1 – *Reduce forest densities which in turn reduce the risk of crown and total stand replacement fires.*

Management Recommendation - Reduce forest densities in key areas which in turn reduce the risk of crown and total stand replacement fires. Forest thinning to more productive stocking levels is a viable alternative to keep the forest within its natural range of variability. The phrase "natural range of variability" is the current buzz phrase noting that forest ecosystems are never stagnant and have only one true state of existence. The overall forested landscape in a natural condition should have all age and size classes of trees; a mixture of cover and forage areas; areas to gather water and areas that provide shelter. Both stands of trees and wide open meadows provide some measure of this diversity. When planning specific areas to be thinned, consider the surrounding conditions both on the property as well as neighboring property. **Not every acre needs to provide all things to reach all goals.** This is a common mistake made with the practice of forestry. The more general the planning or fewer number of objectives, the better the results.

Objective 4.2 – *Where practicable, treat dead and down trees to reduce the build-up of excessive ground fuel loads caused by the die-off of large pinyon and ponderosa pine by successive years of drought effects.*

Management Recommendation - Where practicable, treat scattered dead and down trees to reduce the build-up of excessive ground fuel loads caused by the die-off of ponderosa pine by previous infestations of bark beetles and successive years of drought effects. There are several small patches of dead, dying and down timber in the east side of Timberlake N and on south aspects of other areas caused by the recent and on-going draught. I recommend buck and pile, pile burning or chipping.

Objective 4.3 – *Look at the feasibility of implementing a fuel break (restoration thinning) in the cliff common area to the west of the Timberlake N Subdivision.*

Management Recommendation - Consider a fuel break or restoration thin along the western cliffs in the 80 acre common area. The thin should extend to the northern property boundary and to the reservoir on the south boundary. Thinning should occur on slopes up to 35%. Consider pile burning or lop and scatter strategies to encourage nutrient recycling or to enhance grass and forbs that maybe lacking on some aspects.

Objective 4.4 - *Look at the feasibility of prescribed fire and pile burning in the Subdivision.*

There is a general reluctance to burn piles or to burn larger areas known as prescribed fire. Too many incidences of burning on windy days with low humidity that allowed a small fire to

become a large escaped wildfire are far too common. However, if certain precautions are taken, Pile burning can be done effectively and safely. In Appendix H, a Colorado State Forest Service Prescribed Fire and Pile Burning Guidelines reference is included.

The Subdivision is currently transporting woody debris (slash) to a central burn area near the Ranch House. From a safety perspective, all burning is concentrated in one low risk area which is burned at the end of the year. From a cost and efficiency perspective, hauling slash is costly and time consuming. From a smoke release perspective, one large release of smoke and particulate matter occurs over 2-4 days. If the atmospheric conditions are not right for smoke dispersal, air pollution can linger for days if a inversion layer is present. It may make sense for the Subdivision to haul slash to a central burn area but the cost could be prohibitive to require individual land owners to do the same.

Management Recommendation - Consider permitting individual land owners to build and burn piles of slash under the supervision of the Fire Official. By following the guidelines in Appendix H, and approving burn days, slash can be successfully burned in shorter duration release events. If the Subdivision wants to consider prescribed fire in the common areas as previously suggested, contact New Mexico State Forestry for more information.

APPROVAL SHEET

FOREST STEWARDSHIP PLAN

I have read the attached Forest Management Plan and find that the document will provide assistance in accomplishing the goals and objectives that I have for my property. It is my intention to implement the plan recommendations to the best of my ability, as time and circumstances permit.

_____

Landowner (Timberlake Ranch Subdivision Representative) Date

_____

Planner (Thomas Marks) Date

_____

Reviewer ( ) Date

_____

Approved By:
District Forester (Todd Haines) Date

Appendix A

Fish & Wildlife Habitat & Key Species Including TES Species found in Cibola and McKinley Counties

Select Rare Plants are noted in this appendix. Those that may not be mentioned or others that are added after the completion of this plan can be found at the following link: http://nmrareplants.unm.edu/

Appendix B

Custom Soil Reports for Timberlake N, Timberlake S and CCT Subdivisions

The following Soil survey information was prepared online through the Natural Resource Conservation Service Web Site. This is a custom survey for this property. It includes information on the surrounding properties.

Appendix C

Timber Reconnaissance and Cruise Report

The following report is a timber inventory and forest resource assessment summary which includes analysis of the raw data from the timber inventory taken on the property. This data was used to provide recommendations for the thinning on the property along with a reference for other practices.

Appendix D

Heritage Reports

The following are heritage site reports downloaded from the State Historic Preservation Office website (SHiPO).

Appendix E

Troublesome Weeds of New Mexico

The following Brochure is found at:

http://www.nmda.nmsu.edu/wp-content/uploads/2012/04/troublesome_weeds_nm.pdf website.

Appendix F

Colorado State Forestry Pile Burning Guidelines

This booklet is designed to be used as a basic introductory guide by private landowners, land managers, governmental entities and fire agency personnel in the proper planning and construction of piles with the overall intent of creating safe and cost-effective pile burning projects. Pile burning is but one of many methods utilized to remove vegetation/forest debris, also known as "slash". The Booklet can be found at: https://www.co.grand.co.us/DocumentCenter/View/5641/CO-Pile-Construction-Guide-Ver__03_26_15?bidId=