**Orchard 2013 THP**

Area: 390 acres.

Silviculture Prescription: Single tree selection with some tanoak and eucalyptus removal. Trees will be selected for harvest throughout the range of diameter classes. This harvest entry will favor the retention of faster growing, dominant redwoods while reducing competition between codominant conifers and releasing submerchantable redwood and Douglas-fir. Tanoak will be cut where they are in close proximity to conifer harvest trees and there is a potential to release residual conifer trees. Eucalyptus found within the harvest area will be treated as part of long term control efforts. Native trees will be retained if they have old growth characteristics as described in the forest management plan.

| Preharvest Basal Area | | Post Harvest Basal Area | |
|---|---|---|---|
| Conifer: | 259 | Conifer: | 170 - 190 |
| Hardwood: | 24 | Hardwood: | 17 - 20 |

Harvesting Systems: Approximately 73% of the timber harvest area will be cable yarded and the balance will be tractor yarded.

Location/Topography

The THP is located in the Caspar Creek and Mitchell Creek Planning Watersheds which drain into the Pacific Ocean. The THP area is approximately 4 miles east of Caspar, CA. The legal description of the harvest area is Sections 3 and 10, Township 17 North, Range 17 West, Mount Diablo Baseline and Meridian. The elevation ranges from 120 to 880 feet above sea level. The slopes range from flat to 85%. The landform is characterized by a flat marine terrace that drops off abruptly into Caspar Creek. Ancient landslides have created small benches on steeper portions of the harvest area. There is little evidence of active slides. Contiguous slopes less than 40% will be yarded with ground-based equipment. The timber harvest area has a southern and eastern aspect.

Vegetation and Stand Conditions

The harvest area is site 2 and site 3 timberland. The overstory is dominated by coast redwood, Douglas-fir, grand fir, and pockets of tanoak. Western hemlock and Bishop pine are each minor overstory species. The understory is generally well stocked Douglas-fir, redwood, grand fir and tanoak poles and saplings. Blue gum (eucalyptus) planted as a windbreak around the historic orchard site has spread into the surrounding timbered areas. Sawlog and pole sized blue gum are found individually and in small groups near the orchard site and recent blue gum reproduction can be found encroaching into the adjacent conifer stands. Snags and cull trees are relatively rare and large woody debris is scarce. Evergreen huckleberry and salal are the dominant brush species. French broom and Jubata grass are found along some of the access roads and landings.

The entire harvest area was initially logged from 1860s-1890s using animal and steam yarding systems to skid logs to the creek bottoms. Splash dams were used to transport the logs downstream to the mill at the mouth of Caspar Creek. The orchard site was established on the relatively flat terrace and operated from the late 1800's to the 1940's. It encompassed approximately 60 acres. An even aged stand predominantly stocked with 60 year-old Douglas-fir now occupies a majority of the orchard site. Two small plantations are located on the orchard site and occupied by sapling and small pole sized Douglas-fir. These plantations were established on areas previously used for experimental seed orchards.

The area generally south and east of the orchard was harvested using a heavy selection silviculture in 1967 using tractors. During this harvest approximately 50 percent of the volume was removed along with most of the residual old growth trees. This area has a fairly even distribution of conifers from sapling to large sawlog size. The oldest trees are generally 120 to 150 years old. Growth has slowed on many of the trees. Relatively few trees show signs of decay.

Watershed and Stream Conditions

The northeast portion of the plan is adjacent to the North Fork Caspar Creek in the Caspar Creek planning watershed. Approximately 13 acres are located in the Mitchell Creek planning watershed. Within these planning watersheds, Coho Salmon are listed as endangered, and Chinook salmon and steelhead trout are listed as threatened by the California Department of Fish and Game; both Coho salmon and steelhead trout use Caspar Creek for spawning. Considerable disturbance of the inner gorge and channel areas occurred in the Caspar drainage before management by the State of California. Early clearcut harvest activities resulted in extensive excavation in watercourses. Substantial impacts were caused by the use of splash dams to transport logs. Tractor logging in the 1960's generally avoided the live streams, but skid trails were sometimes located in seasonal watercourses and swales. Some roads constructed near watercourses for these later harvests have contributed to stream degradation and these have recently been the focus of significant rehabilitation or abandonment efforts.

Planned Silviculture

The primary objective of this project is to move the stand closer to full regulation (all age stand) by encouraging the creation of a new age class of redwood and Douglas-fir trees without shifting the species mix to more shade tolerant species. The residual stand will maintain a component of large, old trees. The secondary objective of this project is to limit the spread of eucalyptus within the stands adjacent to the historic orchard site. Eucalyptus is an invasive species that has the potential to exploit openings created by disturbance. This species is also a fire hazard because it is highly flammable and the burning bark can float long distances to cause spot fires. Single tree selection will be implemented throughout the timber harvest area. Approximately 25% - 35% of the conifer basal area will be removed in the more heavily stocked portions of the timber harvest area. Conifers starting to show signs of disease and clumps of tanoak will be removed from the areas with lighter stocking. All eucalyptus larger that 6" dbh will be felled. Eucalyptus stumps will be treated to prevent sprouting. The eucalyptus treatment will be performed on about 75 acres.

This harvest will target conifer trees showing signs of disease or slowed growth. Redwoods will be the favored leave trees. Redwood clumps will be thinned from below and codominant trees will be spaced so that their crowns are not touching. Slower growing Douglas-fir, grand fir, hemlock, Bishop pine, tanoak, eucalyptus and an occasional dominant redwood will be harvested to release existing conifer regeneration and to encourage redwood stump sprouts. Areas adjacent to roads will be left with more canopy cover to reduce the spread of invasive species. Larger, decadent native trees will be retained for snag recruitment in areas with less than one 30"+ dbh snag per acre.

This project area was previously planned for harvest as part of a timber sale in 1995. Group selection was the proposed silviculture for the 1995 project. Garlon 3A (Triclopyr-Amine) and Garlon 4 (Triclopyr-Ester) were proposed for frill treatment and foliar applications on the eucalyptus. Concerns regarding the herbicide treatment and, to a lesser extent, the silviculture resulted in the modification of the plan and the exclusion of the current harvest area.

This project will differ from the 1995 project by the method and approach to eucalyptus management and the less intensive silvicultural treatment. This project will also treat the eucalyptus in a significantly smaller area than that proposed in the 1995. Imazypr, Glyphosate and manual treatments will be demonstrated as methods for controlling the eucalyptus. This demonstration will be part of a long term Integrated Pest Management Plan that will control eucalyptus with ecologically based methods consistent with the JDSF Forest Management Plan. Results from this demonstration will help guide the future treatment of adjacent areas containing eucalyptus.

Demonstration and Research Values

- Harvesting to promote multiple age classes without shifting the species mix toward hardwoods and more tolerant conifer species or depending on herbicides.
- Controlling the spread of invasive species by maintaining more canopy cover adjacent to roads and power lines.
- Controlling the spread of eucalyptus using minimal amounts of lower toxicity herbicides.

- Encouraging the development of late seral stand characteristics in older second growth stands.

Watercourse Protection

The Class I and class II watercourse protection zones will be managed to create late seral forest characteristics.

- Class I Water Lake Protection Zone (WLPZ) is 150 feet. There will be no harvesting within 30' of the watercourse transition line with the exception of trees within the cable corridors and trees that threaten worker safety. From 30' to 100' there will be 80% canopy retention. From 100' to 150' feet there will be 70% canopy retention. There will be a minimum of 240 sq. ft. conifer basal area/acre retention and the 13 largest conifers per 330 feet of stream channel.
- Class II WLPZ is 100 feet wide. There will be no harvesting within 30' of the watercourse transition line with the exception of trees within the cable corridors and trees that threaten worker safety. There will a minimum of 240 sq. ft. of conifer basal area/acre retained with 10 of the largest conifers per 330 feet of stream channel (13 for large class II streams within 1000' of a class 1 stream).
- Class III watercourses will have a 30' (slopes less than or equal to 30%) or 50' (slopes greater than 30%) equipment exclusion zone where ground based equipment will be utilized. Except for the necessary removal of trees for safe cable yarding operations, no harvest of non-sprouting species will occur in the channel area.

Springs and Seeps

- Natural springs and seeps that may provide habitat for non-fish aquatic species are provided the same protection as class II watercourses.
- Springs and seeps that do not meet the above criteria will be protected with a 50' WLPZ where slopes are less than or equal to 30%. They will be protected with a 75' WLPZ where slopes are greater than 30%.

Roads

The existing road system was designed to accommodate the historic orchard and the tractor logging in the 1960's. The road that runs along Caspar Creek has been recently upgraded with new culverts and a rocked running surface. This road will be used only for administrative traffic. There is evidence of erosion on some of the roads located around the historic orchard and on the ridge tops leading into Caspar Creek. Much of this erosion is the result of poor design and both illegal and legal recreational use prior to the closure of these roads. Slopes over 40% that were previously tractor logged will be harvested using a cable yarder during this entry. Spur roads will be extended from the existing road system on the upper terrace to the break in slope providing access to suitable yarding landings. Existing road drainage problems will be repaired prior to log hauling and all roads will be locked or blocked following the completion of timber operations to prevent further erosion and illegal dumping.

Recreational Consideration

- There are no campgrounds on or near the project area.
- Hiking, biking, horseback riding, mushroom collecting, hunting and shooting are the most common recreation activities on the project area.
- All designated trails will remain open and usable following the completion of the timber sale.
- Roads located on the project area are closed to public vehicle access.
- For public safety, area closed signs will be posted during the conduct of timber operations. These signs will be posted at all points where the roads enter the area of timber operations.

Aesthetic Considerations

- Vehicle access is restricted in and around the entire project area. Hikers, bikers and equestrians frequently use the network of roads and trails within the area. The most visibly disturbed portions of the plan area will be the cable corridors. These areas will green up quickly following harvest.
- The project is adjacent to JDSF road 500. No harvesting will be done within 50' of the surface of the roadway. Most of the harvest area is difficult to see from this roadway because of the topography.

Marbled Murrelet

An assessment by the JDSF Senior Biologist revealed that there is no suitable marbled murrelet habitat on or adjacent to the harvest area. The closest suitable habitat is located approximately 1/3 mile to the south. The closest murrelet detection is located over 2 miles southwest of the timber harvest area (in Russian Gulch State Park). No marbled murrelet surveys are planned for this project.

Northern Spotted Owl

The timber harvest area contains suitable habitat for Northern Spotted Owls (NSO) (*Strix occidentalis caurina).* Activity center (AC) MEN 585 is located within the project boundary, near the southeast corner of the harvest area. A 100 acre no-cut core area will be retained for this AC. There is one other valid NSO AC within the 1.3 mile assessment area of the plan; MEN 165. Northern Spotted Owls surveys will be conducted as required by protocol and appropriate buffer will be provided if NSO are found.

Invasive Weeds

Blue gum eucalyptus, Jubata grass and French broom are the invasive weeds found within the timber harvest area. Jubata grass and French broom are found generally around the roads and landings. Trees providing shade to these openings will be retained unless they are a threat to safety or an operational impediment. The eucalyptus is found throughout the forested areas adjacent to the historic orchard site. Plant treatment and conservative harvest around the eucalyptus areas will help prevent the spread of this species.

Rare Plants

**No** rare plants have been recorded in or adjacent to the harvest area. Rare plant surveys are planned for the spring of 2012 and will be completed prior to the submission of the timber harvesting plan. Any rare plants discovered with a CNPS listing of 2 or lower will receive protection.

# Orchard THP

## Preliminary Map

Section 3 & 10
T17N R17W MDB&M
USGS 7.5 min Quadrangle:
Mathison Peak 1991

Entire THP:
- Selection Silviculture
- Site Class II / III

Contour Interval = 40'

Tractor Yarding
(all other areas Cable Yarding)

High EHR
(all other areas Moderate EHR)

Map Point
Gate
Existing Landing
Unstable Area
Spring / Seep
NSO Activity Center

Watercourse Class Transition
Class II L 1,000' Transition
Class I Watercourse
(salmonoid spawning & rearing habitat)
Class II L Watercourse
Class II S Watercourse
Class III Watercourse

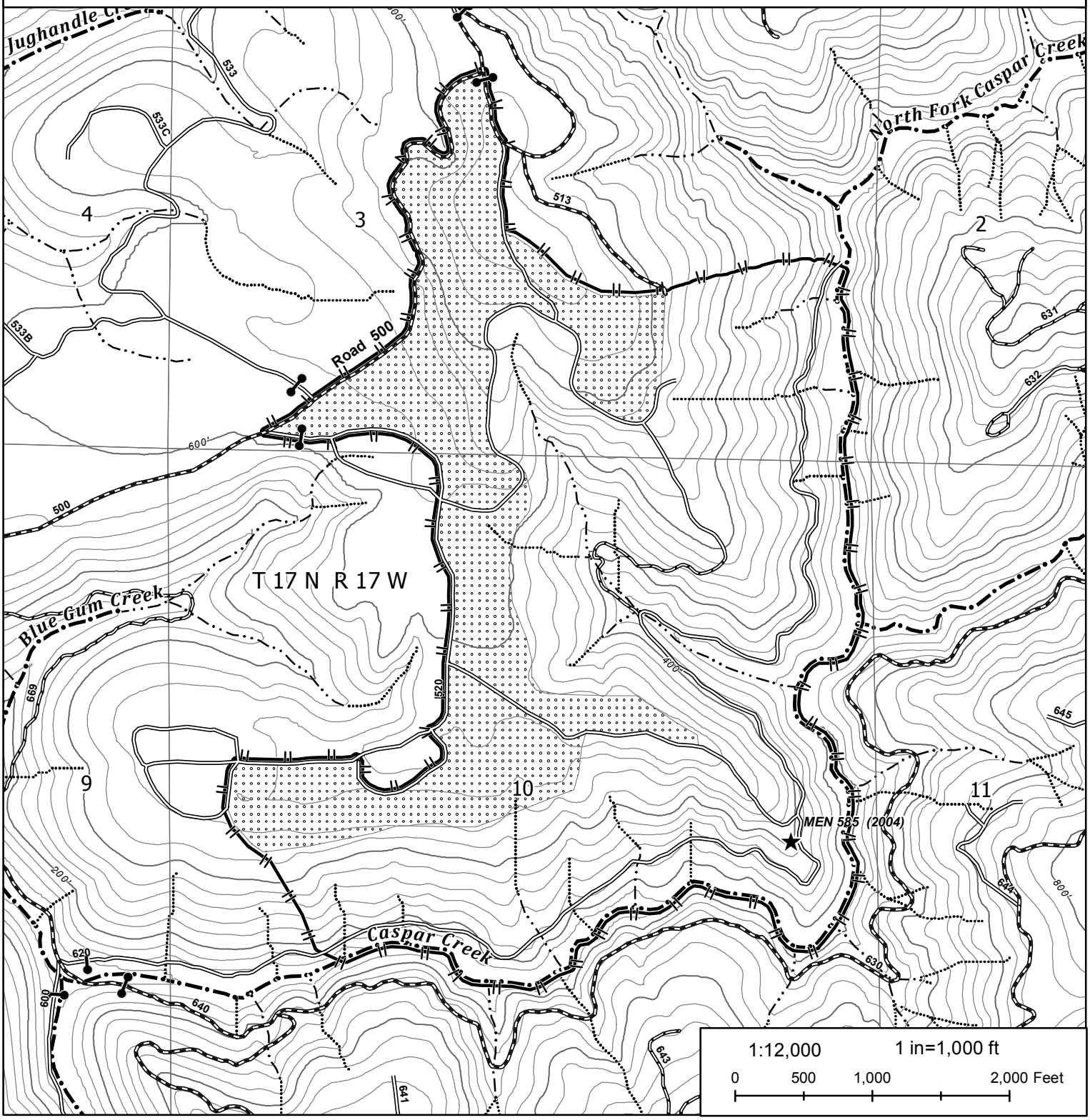
THP Boundary
Utility Line
Existing Permanent Road
Existing Seasonal Road
Existing Temporary Road
Road > 200' & >15% Grade

NOTE: Permanent and seasonal roads considered "public"

JACKSON DEMONSTRATION STATE FOREST

3/26/2012 Headley

**DRAFT VERSION: Not all symbology included in map detail. Legend & map elements are subject to additions & removals.**



# UNIT (FRI) Summary Report Orchard 2013 for trees >=11 DBH

| SPECIES | TPA | TPA SE | BA | BA SE | QMD | BF Vol./Acre Gross | BF Gross SE | BF Vol./Acre Net | CF Vol./Acre | CF Vol SE |
|---|---|---|---|---|---|---|---|---|---|---|
| Young Redwood | 68.7 | 10.50 | 177.6 | 20.90 | 21.8 | 32,961.6 | 4,164.9 | 32,656.9 | 5,934.7 | 727.39 |
| Young Douglas-fir | 19.5 | 4.68 | 57.6 | 11.96 | 23.3 | 17,343.7 | 3,940.4 | 15,824.6 | 2,819.0 | 622.15 |
| Old Growth Redwood | 0.7 | 0.62 | 3.5 | 2.60 | 30.1 | 811.4 | 580.7 | 659.9 | 128.7 | 91.87 |
| Old Growth Douglas-fir | 0.1 | 0.00 | 1.2 | 0.00 | 50.0 | 461.9 | 0.0 | 461.9 | 64.4 | 0.00 |
| Grand Fir | 3.3 | 2.16 | 8.2 | 6.04 | 21.3 | 2,644.4 | 2,066.4 | 2,622.0 | 398.0 | 303.80 |
| Bishop Pine | 1.9 | 1.36 | 5.9 | 4.18 | 23.6 | 1,131.9 | 802.8 | 1,113.0 | 201.1 | 142.55 |
| Other Conifers | 0.9 | 0.00 | 1.2 | 0.00 | 15.7 | 119.0 | 0.0 | 119.0 | 27.7 | 0.00 |
| Tanoak | 17.5 | 5.57 | 22.4 | 7.00 | 15.3 | 1,229.6 | 395.3 | 0.0 | 479.0 | 151.92 |
| **Conifer** | 95.1 | 10.65 | 255.3 | 25.22 | 22.2 | 55,474.1 | 6,929.5 | 53,457.3 | 9,573.6 | 1,098.23 |
| **Hardwood** | 17.5 | 5.57 | 22.4 | 7.00 | 15.3 | 1,229.6 | 395.3 | | 479.0 | 151.92 |
| **Grand Total** | 112.7 | 10.86 | 277.6 | 24.06 | 21.3 | 56,703.7 | 6,831.2 | | 10,052.6 | 1,064.05 |

Orchard THP with revised boundary

2005 FRI Height equations and 1989 Calibrated Volume equations used

# of Plots included: 34

# FRI Stand Table (Average Stems per Acre) Orchard 2013

34 plots

| | DBH | Young RW | Old RW | Young D-fir | Old D-Fir | Grand Fir | Western Hemlock | Bishop Pine | Other conifers | **Conifer Subtotal** | TO | Other Hardwood | **TOTAL** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 6 | 24.0 | | 7.1 | | | | | | 31.1 | 57.6 | | 88.7 |
| | 8 | 10.1 | | 6.5 | | | | | | 16.6 | 6.7 | | 23.4 |
| | 10 | 10.6 | | 2.3 | | 2.2 | | | | 15.2 | 4.3 | | 19.5 |
| **Subtotal** | | 44.7 | | 16.0 | | 2.2 | | | | 62.9 | 68.6 | | 131.5 |
| | 12 | 16.5 | | 1.5 | | 1.6 | | | | 19.6 | 7.6 | | 27.2 |
| | 14 | 12.2 | | 2.4 | | | | | | 14.6 | 4.4 | | 19.0 |
| | 16 | 6.7 | | 5.1 | | | | | 0.9 | 12.7 | 0.8 | | 13.5 |
| **Subtotal** | | 35.4 | | 9.0 | | 1.6 | | | 0.9 | 46.9 | 12.8 | | 59.7 |
| | 18 | 4.0 | | 1.3 | | | | | | 5.3 | 3.4 | | 8.7 |
| | 20 | 7.0 | | 1.0 | | | | | | 8.0 | 0.5 | | 8.5 |
| | 22 | 4.5 | 0.4 | 0.9 | | 0.4 | | 1.3 | | 7.6 | 0.4 | | 8.0 |
| **Subtotal** | | 15.4 | 0.4 | 3.3 | | 0.4 | | 1.3 | | 20.9 | 4.4 | | 25.3 |
| | 24 | 3.3 | | 1.1 | | 0.4 | | | | 4.8 | | | 4.8 |
| | 26 | 1.9 | | 1.9 | | | | 0.6 | | 4.5 | 0.3 | | 4.8 |
| | 28 | 2.7 | | 0.6 | | 0.3 | | | | 3.6 | | | 3.6 |
| **Subtotal** | | 8.0 | | 3.6 | | 0.7 | | 0.6 | | 12.8 | 0.3 | | 13.2 |
| | 30 | 2.9 | | 0.7 | | 0.5 | | | | 4.1 | | | 4.1 |
| | 32 | 1.7 | | 1.1 | | | | | | 2.8 | | | 2.8 |
| | 34 | 1.5 | | 1.3 | | 0.2 | | | | 3.0 | | | 3.0 |
| **Subtotal** | | 6.1 | | 3.1 | | 0.7 | | | | 9.8 | | | 9.8 |
| | 36 | 2.2 | 0.2 | 0.3 | | | | | | 2.7 | | | 2.7 |
| | 38 | 0.6 | | 0.5 | | | | | | 1.1 | | | 1.1 |
| | 40 | 0.7 | | 0.3 | | | | | | 0.9 | | | 0.9 |
| **Subtotal** | | 3.5 | 0.2 | 1.1 | | | | | | 4.7 | | | 4.7 |
| | 42 | 0.6 | | 0.1 | | | | | | 0.7 | | | 0.7 |
| | 44 | 0.2 | | | | | | | | 0.2 | | | 0.2 |
| | 46 | 0.4 | 0.1 | 0.2 | | | | | | 0.7 | | | 0.7 |
| **Subtotal** | | 1.2 | 0.1 | 0.3 | | | | | | 1.7 | | | 1.7 |
| | 48+ | 0.8 | | | 0.1 | | | | | 0.8 | 0.1 | | 0.9 |
| **Subtotal** | | 0.8 | | | 0.1 | | | | | 0.8 | 0.1 | | 0.9 |
| **TOTAL** | | 115.0 | 0.7 | 36.3 | 0.1 | 5.6 | 0.0 | 1.9 | 0.9 | | 86.2 | 0.0 | 246.7 |
| | | | | | | | | **Conifer Total** | | 160.5 | | | |