

To: Tom Shockley – WDNR NHAL SF Forest Supervisor

From: Colleen Matula – WDNR Forest Ecologist/Silviculturist

Date: 5-4-2021

Re: Silviculture and Basal Area Analysis of Hodge Podge Timber Sale - Riparian Mgt Zone

Background

The NHAL SF Hodge Podge timber sale along Whitney Lake in Boulder Junction was visited on May 4, 2021. A “walk through” in the matrix of the timber sale was conducted and then random basal area plots were taken in the riparian management zone (RMZ) of the timber sale area. Before the visit, 22 random basal area plots were generated on a timber sale Avenza map (one plot was inadvertently missed in the field). Basal area (10BAF), tree species and general comments were documented at each plot within the RMZ. The walk through in the matrix of the stand included observations of regeneration and the applied silviculture system. (map and plot notes attached).

Findings

Based on my analysis of the 21 plots, the basal area ranged from 50 to 200 square feet of basal area per acre. One plot of the 21 was 50 sq. ft./acre and one plot was 200 sq. ft. / acre but the average basal area of the total plots was 94 square feet per acre within the RMZ. If I omit the higher outlier basal area of 200 sq. ft. then the average is at 85 sq. ft./acre of basal area. Most of the basal area consisted of saw log red oak but white birch, red and white pine, balsam fir, red and sugar maple, and ironwood were present. Only one plot fell below the target minimum basal area for the RMZ (60 sq. ft/acre). This plot consisting of 50 sq. ft/acre comprised of red oak, balsam fir and red maple (which was not counted because it is designated for harvest in this area).

The “walk through” in the matrix of the timber sale area appeared to have higher basal area than how a typical overstory removal is defined in the WDNR Silviculture Handbook. The residual marking appeared to fit the criteria of either seed tree or in some cases a shelterwood system where basal areas of 40-60 sq. ft. were noted. However, more plots through the matrix would be warranted if the silviculture system would be changed in the 2460 timber sale prescription.

An additional note, this timber sale area had a very good representation of advanced red oak regeneration throughout the stand in a high deer density area. This might have triggered the Forester’s decision to prescribe an overstory removal method to release the advanced regeneration. Red oak regeneration ranged from < 1 ft. to 6 feet in height throughout the area. This is unusual for a high deer density area. Possible theories could be the variable slope and topography throughout and/or a hard winter a couple years ago impacting deer densities in this area.

Discussion

The NHAL SF Hodge Podge timber sale on Whitney Lake is a wonderful and diverse area with unusual abundance of red oak regeneration in a high deer density area. The basal area overall within the RMZ meets the target basal area minimum cited in the WDNR Best Management Practices for Water Quality manual and then some. The RMZ also meets the manual’s criteria of having residual, larger diameter trees and long- lived species where appropriate and available.

Field Data Collection at Whitney Lake Hodge Podge Timber Sale 5/4/21					
Residual Basal Area in 100' RMZ					
Plot Number	Species				Residual Basal Area
2	OR				80
3	OR(60), MR(20)				80
4	OR(70), MR(10)				80
5	OR(90)				90
6	OR(20), MR(10), BW(30)				60
7	OR(90), MR(30)				120
8	OR(20), MR(60), PW(10)				90
9	OR(70), MR(20), BW(10)				100
10	OR(60), MR(20), BW(20)				100
11	OR(70), MR(10), BW(10)				90
12	OR(40), F(10)				50
13	OR(60), BW(20), F(10), IR(10)				100
14	OR(50), BW(10), F(10)				70
15	OR(40), BW(30), F(50)				120
16	OR(10), BW(20), PW(10), PR(50), F(20)				110
17	OR(60), MR(10), PW(20), F(20)				120
18	OR(20), MR(30), BW(30), PW(10), PR(10)				100
19	OR(30), BW(20), F(30)				80
20	OR(20), BW(10), PW(20), F(10)				60
21	OR(10), PW(20), PR(60)				90
22	PW(40), PR(160)				200
				Avg. BA	94.7619

NHAL RMZ, Inventory, 2021

Overstory Data	
cluster	Over basal area (sq.ft./ac.)
2	80.0
3	80.0
4	80.0
5	90.0
6	60.0
7	120.0
8	90.0
9	100.0
10	100.0
11	90.0
12	50.0
13	100.0
14	70.0
15	120.0
16	110.0
17	110.0
18	100.0
19	80.0
20	60.0
21	90.0
22	200.0
Minimum	50.0
Maximum	200.0
Mean	94.3
Variance	945.7
Standard deviation	30.8
Standard error	6.7
Percent error	14.9
CI mean lower limit	80.3

CI mean upper limit	108.3
clusters for w/in 15%	21
clusters for w/in 10%	47

Confidence Interval = 95

Degrees of freedom = 20

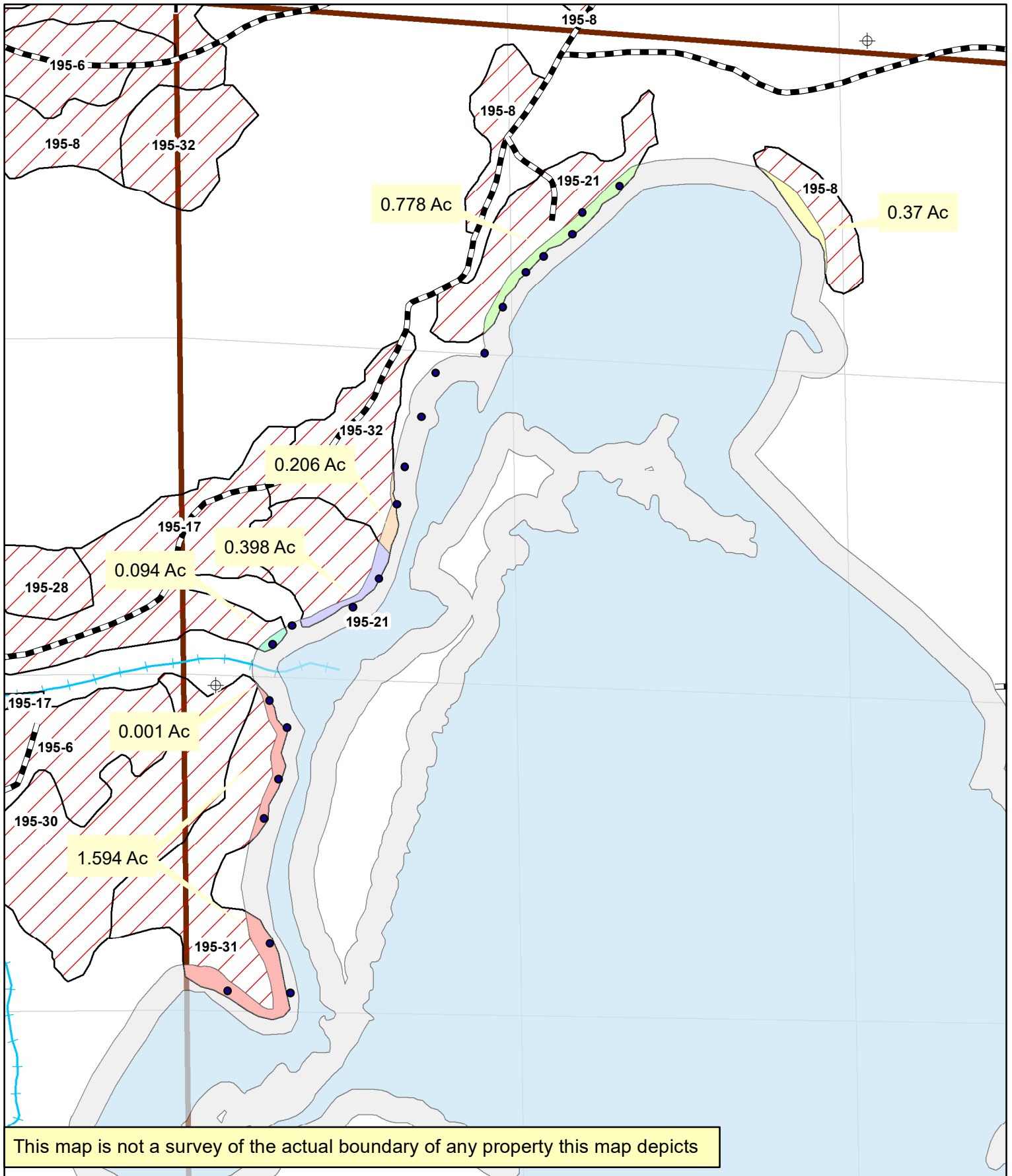
t-value = 2.086

Interpretation of confidence interval values: Examine the column for Overstory Basal Area.

The sampling estimates with 95% confidence that the true mean lies between 80.3 and 108.3.

Under similar conditions, about 95% of repeated samples in this stand (using the same number of plot clusters) will contain the true mean. If the variation between the existing sample plot clusters is representative of the whole stand, twenty one are required to ensure that the calculated mean is within 15 percent of the true mean with 95 percent confidence.

Hodge Podge: 100-Foot Buffer Intersection



This map is not a survey of the actual boundary of any property this map depicts

