WDSC 422 Lab 12 – Assignment
Harvest Planning for A University Forest Tract
Harvesting Forest Products, Fall Semester 2009

Attached are maps for a portion of the West Virginia University Research Forest in Monongalia County, West Virginia. A timber sale is being considered for a 52 acre-tract marked on the map which is located approximately 15 miles northeast of Morgantown, WV (see attached maps).

To reach the tract, you first proceed east on I-68 to Coopers Rock Exit. Turn Left off of exit towards University Forest. Turn Right at stop sign onto route 73. Turn into the University forest on Sand Springs road. Follow Sand Springs road until you reach the Westvaco Center/University Sawmill. You will pull off the road on your right just passed University sawmill.

The area is primarily on a northeast-facing slope with an average slope of about 15-25%. The predominant species for this area are yellow-poplar, red oak, and black cherry. A pre-sale cruise has been performed on the tract (attached Tables 1 and 2).

Provide your client a relatively detailed harvest plan for this timber sale. Please note and consider the following points:

(1) Study the topo maps, identify boundaries and SMZs, and find out soil types and conditions.

(2) Make sure you know where the current roads are located and accurately reflect their location on any maps you create or new skid trails or plans you suggest.

(3) Current access to the tract is through the road mentioned previously. Give consideration to oncoming traffic.

(4) All operations must comply fully with the 2009 version of West Virginia Best Management Practice Guidelines for Controlling Soil Erosion and Water Siltation.

(5) What maintenance, if any, will the access road leading to the existing road require for use. If used, what maintenance will skid roads on the tract require?

(6) Recommend the type of harvest you would conduct in the tract based on the cruising data, a visual reconnaissance, and your own judgment.

(7) Suggest where you would place any logging decks and the direction of skidding to each deck.

(8) If possible, using GIS to create a map of the site that includes locations of all skid roads, landings, and haul roads that will be needed to harvest the site. You need to measure the distances of skid and haul roads. If assuming the landing is ¼-acre in size, calculate the costs of road and landing construction based on the unit building costs listed in Table 3.

(9) Using the first quarter of year 2008 stumpage prices for Region 2 in West Virginia (attached Table 4), calculate the value of timber removed from the stand by species on tract base, and the grand total. You can find the most current stumpage report in West Virginia at http://ahc.caf.wvu.edu/index.php?option=com_wrapper&Itemid=134.

(10) Using the harvesting costs in Table 5 to compute the logging costs for the two commonly used systems in the region by species on tract base and the grand total including the trucking and hauling costs.

(11) Complete a Timber Operation Notification Form (attached) pertaining to the harvest on this site.

Please provide me a detailed report that outlines a harvesting plan for this tract with selected attachments. Please consider each of the steps in Shaffer's publication on harvest planning. If you wish to use GIS, you could contact Mr. Mike Boyce for the topo and boundary files at mboyce@wvu.edu. This report is due at the beginning of lab next week.

Table 1. Inventory of merchantable volume by species (Total Tract).

DBH	BFV/A	BA/A	TPA	CDS/A	$CDS	$MBF
6	0	3.7	18.86	0.7	5.75	0
7	0	2.22	8.31	0.49	4.03	0
8	0	1.48	4.24	0.36	2.96	0
9	0	2.22	5.03	0.58	4.75	0
10	0	5.93	10.86	1.62	13.34	0
11	78.74	5.93	8.98	1.69	13.89	9.45
12	335.58	11.85	15.09	3.49	28.72	62.44
13	344.24	7.41	8.04	2.25	18.46	84.92

Table 2. Inventory Summary by Species (Per Acre).

Species	DBH	BFV/A	BA/A	TPA	CDS/A	$CDS/A	$MBF/A	TOTAL DOYLE BFV
YP	17	7053.69	67.41	45.66	22.37	183.86	1058.05	455668.374
RO	16	2401.54	31.85	29.2	10.24	84.19	840.54	155139.484
BC	15	1190.97	17.78	15.45	5.68	46.68	416.84	76936.662
CO	13	616.39	11.11	12.06	3.44	28.24	61.64	39818.794
RM	14	501.38	9.63	12.09	2.94	24.19	75.21	32389.148
SB	9	114.52	6.67	16.71	1.73	14.25	11.45	7397.992
WO	18	274.7	4.44	3.29	1.46	12.01	54.94	17745.62
SA	7	0	2.22	4.84	0.59	4.87	0	0
CU	15	120.32	2.22	3.35	0.65	5.34	18.05	7772.672
HI	16	39.2	0.74	0.53	0.24	1.97	3.92	2532.32
WA	16	60.26	0.74	0.53	0.24	1.97	15.06	3892.796
BO	12	18.93	0.74	0.94	0.22	1.79	1.89	1222.878
Total	**14**	**12391.89**	**155.56**	**144.65**	**49.8**	**409.36**	**2557.59**	**800516.74**

Table 3. Building costs of skid road, haul road, and landing.

	Unit cost
Skid road	$1000/mile
Haul road	$1500/mile
Landing	$500 per ¼-acre

Table 4. 2008 Quarter 1 Stumpage Prices.
(All Prices are based on Doyle Log Scale.)

Species	$/MBF
Walnut	40
White Oak	243
Red Oak	233
Other Oak	141
Black Cherry	596
Hard (Sugar) Maple	288
Soft (Red) Maple	163
Ash	134
Yellow Poplar	120
Basswood	114
Hickory	71
White Pine	70
Other Pine	0.00
Other Hardwood	87
Lump Sum Sale	
	$/ton
Pulpwood	3

Table 5. Harvesting costs.

Harvesting systems	Unit cost ($/MBF)
Manual (chainsaw and cable skidder)	30
Mechanized (feller-buncher and grapple skidder)	50
Trucking and hauling (100 miles)	65

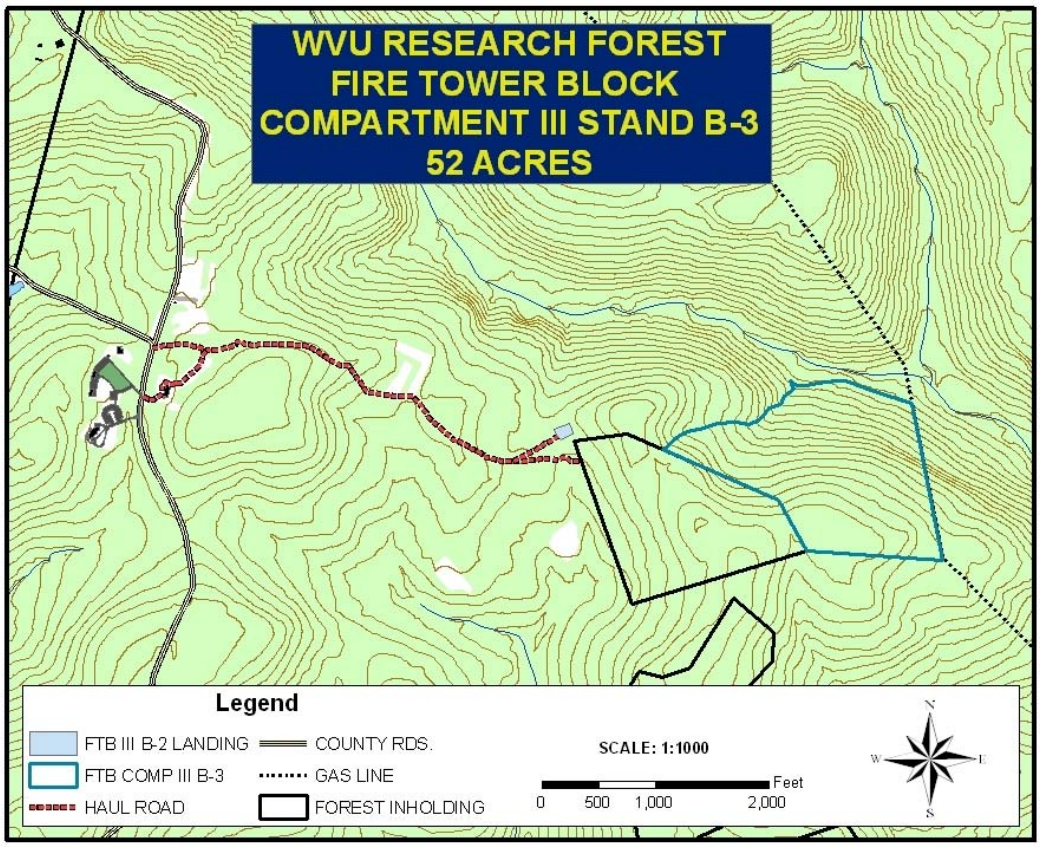

Figure 1. Topographic map of the tract and WVU Research Forest.

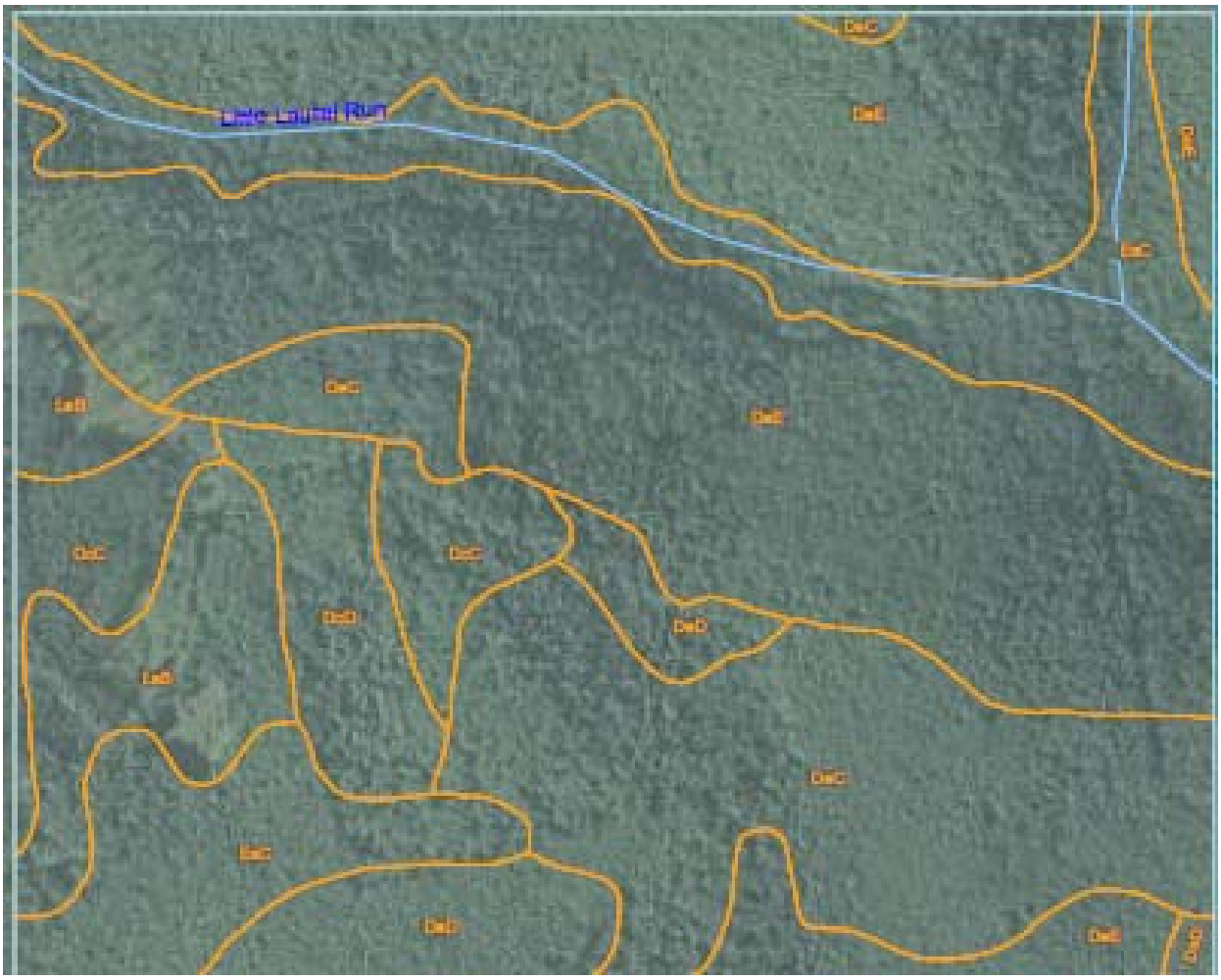

Figure 2. Soil map.