March 16th thru 18th, 2021 Wetland Restoration Training

Minnesota Technical Training and Certification Program

Homework Assignment No. 1

A landowner in Jackson county is interested in enrolling a large portion of their property into a conservation program and restore drained wetlands.

Wetlands within the site are excessively drained by subsurface tile and also a couple of shallow surface ditches. The landowner has pretty good tile maps of the property and the maps indicate two tile lines enter the property from the neighbor's land to the north. Not included in conservation project is an area of the owner's land to the north of the building site. This area is also tile drained.

Immediately to the west and northwest of the site is a US Fish and Wildlife Service Waterfowl Production Area.

The landowner would like as many wetland areas restored as possible but is concerned about future maintenance and wants as few outlet structures as possible. The landowner is also concerned about the north neighbor's incoming tile system as well as his own tiled lands north of the building site. The owner has also expressed concern of possible flood impacts to the township road in the project's southwest corner as this area has been impacted in the past by flood water runoff from the site.

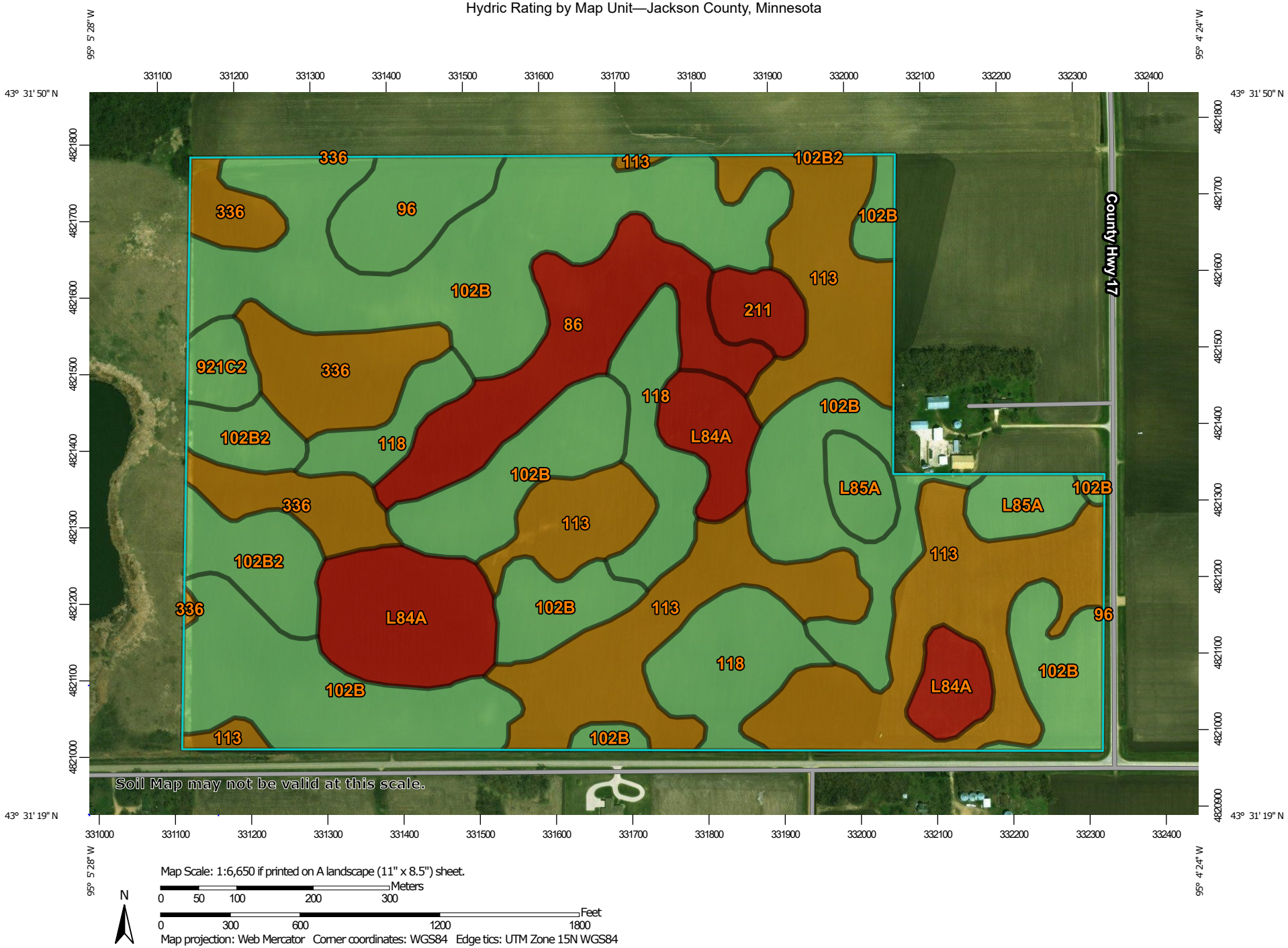
Included for reference are:

- Aerial photo of the site.
- Web Soil Survey - Hydric soils map and soils listing.
- LiDAR derived contour map of the site displaying locations of all known tile lines, sizes of pertinent tile and measured depths of select existing tile intakes within the site.
- Watershed map of several identified subcatchments and depth grid map of the site using the ArcGIS Watershed Tools application.

Homework assignment. On the provided contour map identify the following:

1. Locations and elevations of planned wetlands restorations and associated restoration strategies to accomplish them.
2. Identification of potential concerns or special investigation or design needs for specific areas of the project.
3. Strategies to protect incoming tile drainage from north neighbor as well as the owner's land north of the building site.
4. Type of outlets (if any) suggested for the planned wetlands. Determine if any of these outlets are able to be designed using the design tables as part of MN EFH 13.
5. Determine if other restoration strategies might be considered to help with the restorations and improve wildlife habitat.


500th Ave
4
715th St
17
N
1000 ft
Google Earth
Image USDA Farm Service Agency



Map Scale: 1:6,650 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 300 600 1200 1800

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
86	Canisteo clay loam, 0 to 2 percent slopes	100	13.6	6.7%
96	Collinwood silty clay loam, 1 to 3 percent slopes	10	5.7	2.8%
102B	Clarion loam, 2 to 6 percent slopes	5	71.4	35.1%
102B2	Clarion loam, 2 to 6 percent slopes, moderately eroded	5	8.2	4.0%
113	Webster clay loam, 0 to 2 percent slopes	95	46.1	22.6%
118	Crippin loam, 1 to 3 percent slopes	10	17.3	8.5%
211	Lura silty clay, 0 to 1 percent slopes	100	2.9	1.4%
336	Delft clay loam, 0 to 2 percent slopes	95	14.3	7.0%
921C2	Clarion-Storden complex, 6 to 10 percent slopes, moderately eroded	5	2.3	1.1%
L84A	Glencoe clay loam, 0 to 1 percent slopes	100	16.4	8.1%
L85A	Nicollet clay loam, 1 to 3 percent slopes	10	5.4	2.6%
Totals for Area of Interest			**203.5**	**100.0%**

GROUND ELEV. = 1429.2
TILE FLOW LINE MEASURED DOWN 2.8 FEET

GROUND ELEV. = 1443.4
TILE FLOW LINE MEASURED DOWN 3.6 FEET

12" TILE INTAKE ELEV. = 1411.9
TILE FLOW LINE MEASURED DOWN 4.1 FEET

EXISTING 24" CULVERT

USFWS PROPERTY

USFWS PROPERTY

6" TILE

6" TILE

5" TILE

5" TILE

8" TILE

8" TILE

12" TILE

CSAH # 17

CSAH # 4

LEGEND

- EXISTING TILE
- EXISTING PRIVATE DITCH
- EXISTING TREELINE
- EXISTING INTAKES
- APPROXIMATE PROPERTY LINE
- PROPOSED EASEMENT LINE

N

0 400 800

SCALE (IN FEET)

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE: .

LIC. NO. .

BWSR

MARCH 2021 WETLAND RESTORATION TRAINING

HOMEWORK ASSIGNMENT #1

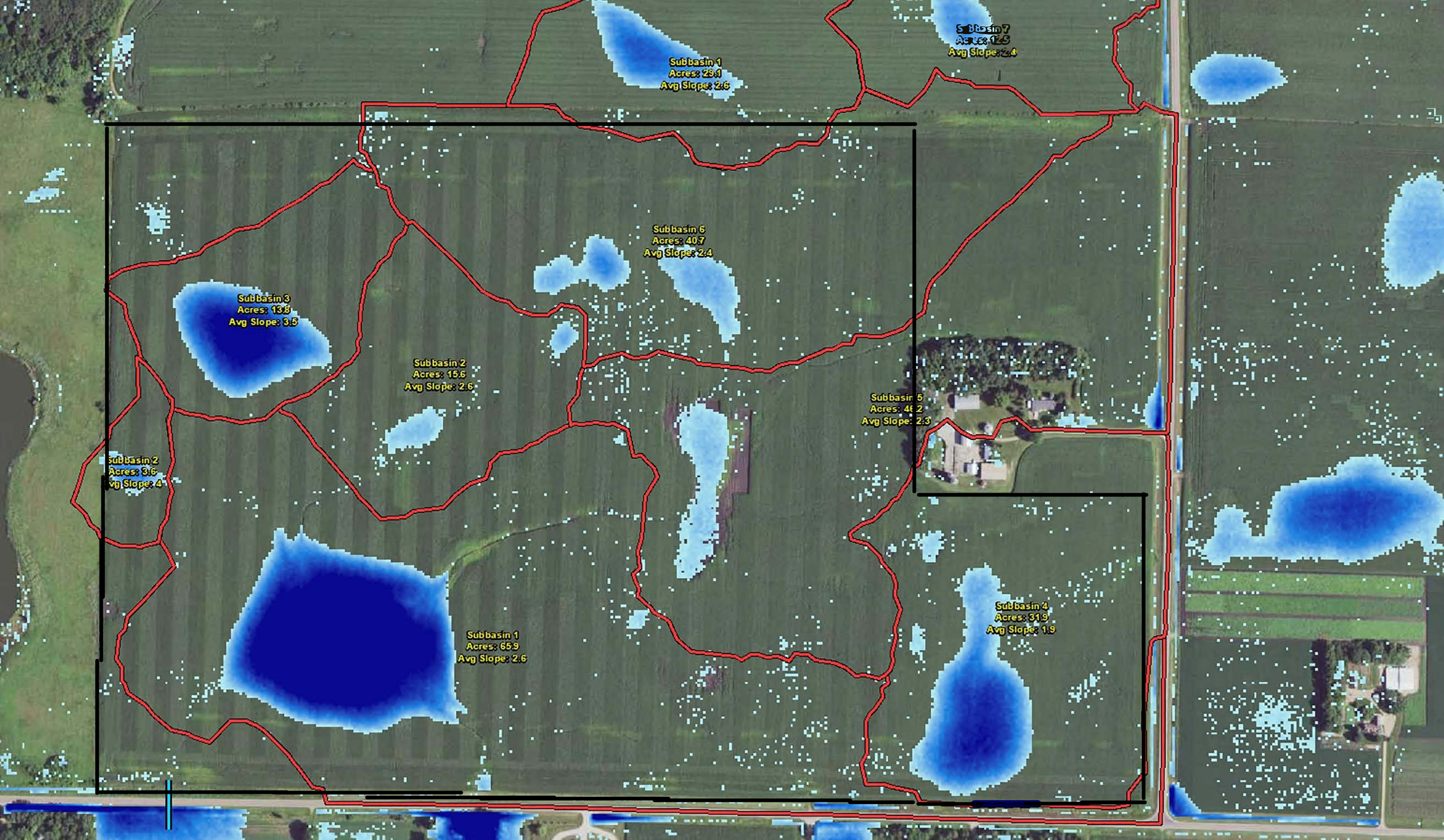
PRELIMINARY CONCEPT PLAN

PROJECT #:

SHEET NO.
1 OF 1

PLOT DATE: 3/11/2021 4:34 PM C:\Users\sdoyle\Desktop\March Training\DRKK 2.dwg


Subbasin 1
Acres: 29.1
Avg Slope: 2.6
Subbasin 7
Acres: 12.5
Avg Slope: 2.4
Subbasin 6
Acres: 40.7
Avg Slope: 2.4
Subbasin 3
Acres: 13.8
Avg Slope: 3.5
Subbasin 2
Acres: 15.6
Avg Slope: 2.6
Subbasin 5
Acres: 46.2
Avg Slope: 2.3
Subbasin 2
Acres: 3.6
Avg Slope: 4
Subbasin 1
Acres: 65.9
Avg Slope: 2.6
Subbasin 4
Acres: 31.9
Avg Slope: 1.9


Subbasin 1
Acres: 29.1
Avg Slope: 2.6
Subbasin 7
Acres: 12.5
Avg Slope: 2.4
Subbasin 6
Acres: 40.7
Avg Slope: 2.4
Subbasin 3
Acres: 13.8
Avg Slope: 3.5
Subbasin 2
Acres: 15.6
Avg Slope: 2.6
Subbasin 5
Acres: 48.2
Avg Slope: 2.3
Subbasin 2
Acres: 3.6
Avg Slope: 4
Subbasin 1
Acres: 65.9
Avg Slope: 2.6
Subbasin 4
Acres: 31.9
Avg Slope: 1.9