

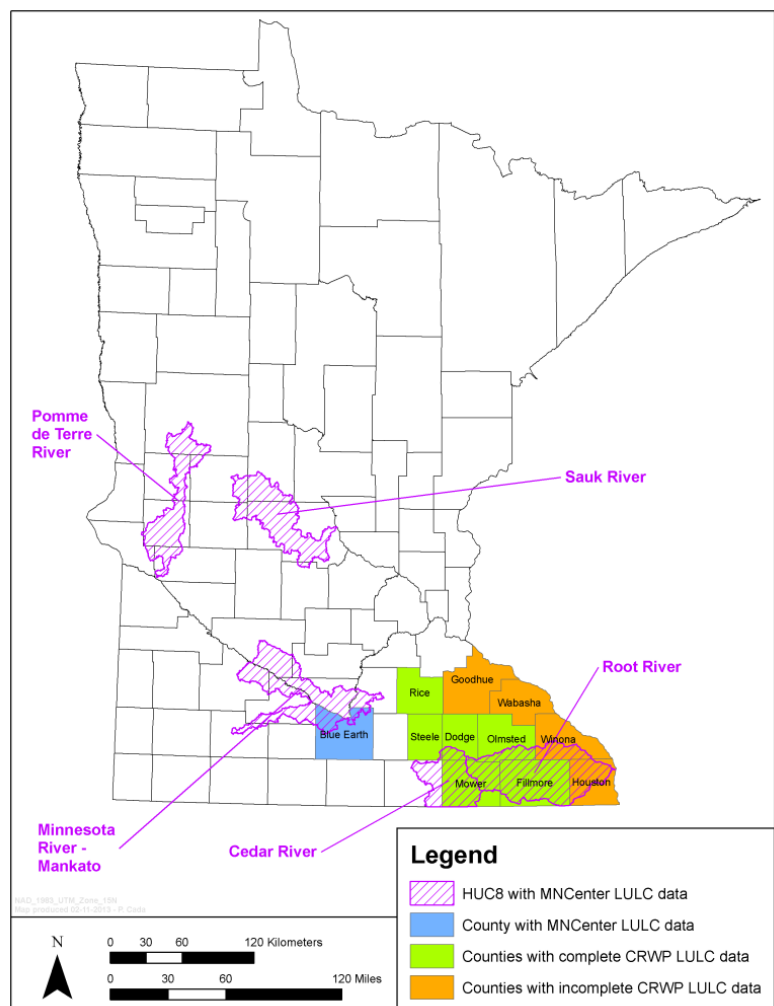
# Appendix A: Statewide Buffer Analysis

Existing data on the presence of perennial vegetation in riparian areas are available from the Minnesota Center for Environmental Advocacy (MNCenter) and the Cannon River Watershed Partnership (CRWP) (Figure A-1). These data were used to calibrate an analysis of riparian vegetation using the 2012 Cropland Data Layer (CDL). The MnCenter and CRWP data were not able to be used directly because not all streams were evaluated and the buffer evaluated ranged from 50 – 300 feet.

Five geospatial (GIS) data sets served as the foundation of the statewide riparian buffer analysis:

1. The 8-digit Hydrologic Unit Code (HUC8) watershed boundaries provided as part of Minnesota Department of Natural Resources (MNDNR) “Level 08 (All Catchments)”
2. MNDNR 24K resolution stream GIS polylines
3. MNDNR Public Waters Inventory (PWI) Watercourse Delineations
4. Land Cover - Minnesota Land Cover Classification System (MLCCS)
5. The 2012 CDL 30-meter gridded coverage as provided by the USDA’s National Agricultural Statistics Service (NASS)

An initial analysis was conducted to compare riparian buffer land use and land cover (LULC) mapping outputs using high-resolution aerial imagery (MnCenter and CRWP data) to a GIS-based approach employing a lower-resolution, state-wide LULC dataset (2012 CDL).



**Figure A-1. Available high resolution data on riparian buffer vegetation**

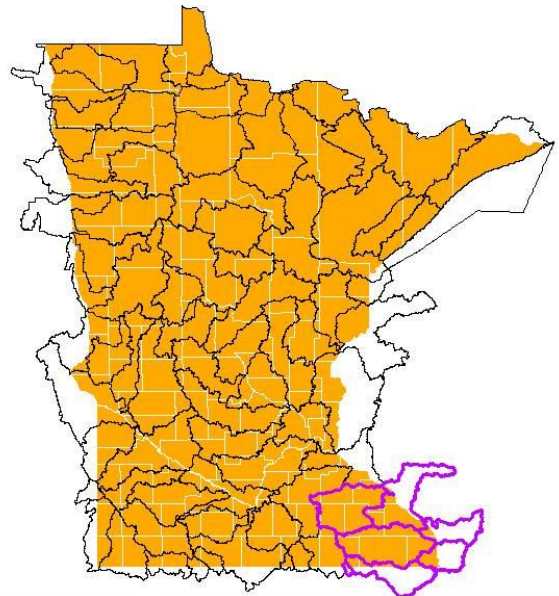
The MnCenter data applied to a 50-foot riparian buffer of MNDNR's PWI stream polyline dataset with the exception of the Root River HUC8 which included data a 300-foot riparian buffer of the PWI dataset. The CRWP mapping outputs were all done for a 300-foot riparian buffer of the PWI dataset. Note that neither of the datasets applied to the DNR 24K streams, which is the basis of the Strategy buffer recommendations.

The area of perennial vegetation within the MnCenter and CRWP 50- and 300-foot buffers was extracted from the 2012 CDL. The following vegetation types were assumed to be perennial:

- Other Hay/Non Alfalfa
- Clovers/Wildflowers
- Sod/Grass Seed
- Switchgrass
- Fallow/Idle Cropland
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrubland
- Grassland/Herbaceous
- Woody Wetlands
- Herbaceous Wetlands

A comparison of the MnCenter and CRWP data versus the CDL derived data are presented in Table A-1. An adjustment factor is provided based on this comparison for CDL data. A 30-meter riparian buffer from the MNDNR 24k resolution stream polyline dataset was then created, as described in Chapter 5 and the area of perennial vegetation in the buffer was tabulated by HUC8.

The first of the Average Adjustment Factors from Table A-1 (1.326) was used to modify (i.e., increase) the percent of the buffer in perennial vegetation which was derived from the 2012 CDL for the 30-meter buffer. This adjustment applied to all HUC8s with the exception of those HUC8s identified in Figure A-2 for which the second average adjustment factor (0.932) was applied. The Existing Adoption Rate, presented in Figure A-3, is based on the adjusted percent of the buffer that is in existing perennial vegetation. The assumptions applied in this analysis are rudimentary; however the analysis represents the best available data at the time of this analysis.

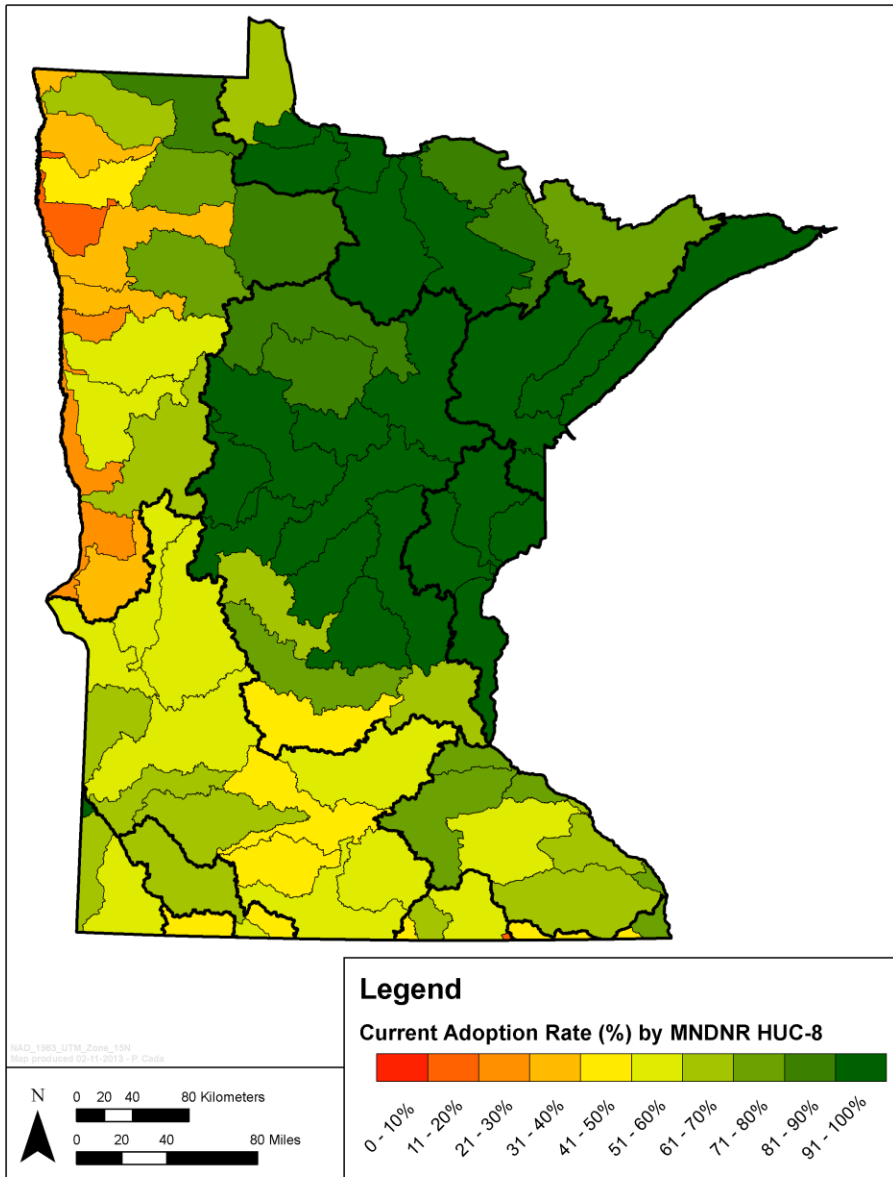


**Figure A-2. An adjustment factor of 0.932 was applied to the HUC8s in purple**

**Table A-1. Buffer comparison results. Percentages represent percent of all land in the buffered area (agricultural and other lands).**

Mapped Area (HUC8 or County)	High Resolution Data Source	Date of Imagery Used	Percent of Riparian Buffer Considered Perennially Vegetated		CDL 2012	Adjustment Factor	Average Adj. Factor
			Buffer Analysis Width (ft)	MNCenter/ CRWP Results			
Sauk River	MNCenter	2010	50	84.07	62.73	1.34	1.326
Pomme de Terre River	MNCenter	2010	50	87.97	65.74	1.34	
Minnesota River - Mankato	MNCenter	2010	50	83.00	47.54	1.75	
Root River	MNCenter	2009	300	76.14	75.00	1.02	
Cedar River	MNCenter	2009	50	77.30	72.59	1.06	
Blue Earth County	MNCenter	2009	50	88.30	60.74	1.45	
Mower County	CRWP	2009	50	82.20	79.19	1.04	0.932
Rice County	CRWP	2009	50	59.60	65.32	0.91	
Steele County	CRWP	2009	50	74.76	78.43	0.95	
Dodge County	CRWP	2009	50	80.81	78.34	1.03	
Olmsted County	CRWP	2009	50	77.51	82.84	0.94	
Fillmore County	CRWP	2009	50	59.28	82.41	0.72	
<i>Goodhue County**</i>	<i>CRWP</i>	<i>2009</i>	<i>50</i>	<i>88.12</i>	<i>72.78</i>	<i>1.21</i>	<i>Not Used</i>
<i>Wabasha County**</i>	<i>CRWP</i>	<i>2009</i>	<i>50</i>	<i>66.70</i>	<i>65.61</i>	<i>1.02</i>	
<i>Houston County**</i>	<i>CRWP</i>	<i>2009</i>	<i>50</i>	<i>61.58</i>	<i>75.81</i>	<i>0.81</i>	
<i>Winona County**</i>	<i>CRWP</i>	<i>2009</i>	<i>50</i>	<i>81.84</i>	<i>79.83</i>	<i>1.03</i>	

\*\* = missing buffered areas along River/State Boundary



**Figure A-3. Existing buffer adoption rate.**