Minocqua-Kawaguesaga Lakes Protection Association

Lake Watershed Water Quality Management Plan

I. Grants
II. Land Use & Growth
III. Pollutants
IV. Existing BMPs
V. Future BMPs
VI. BMPs - General

Cedar corporation
Menomonie, Wisconsin

June 7, 2005

PROJECTS

USGS STUDY – 2003
Funded in Part (60%) by the USGS and MKLPA (completed)

- Evaluate water quality, determined increasing nutrient load

LAKE MANAGEMENT PLANNING -- PHASE 1
Funded in Part (75%) by WDNR and MKLPA (in process)

- Delineate water sheds local to the lakes
- Define sub watersheds within the local area watershed
- Compare existing and future planned land use
- Complete hydraulic quantity and water quality study for runoff water
- Evaluate existing runoff water Best Management Practices
- Determine size of Future BMP's in various watersheds
- Evaluate current and proposed ordinances for storm water erosion control, long term storm water management, and fertilizer controls

PROJECTS

AQUATIC INVASIVE SPECIES –

EARLY DETECTION AND RAPID RESPONSE GRANTS (in process)

Funded in part by WDNR (50%), Town of Minocqua, and MKLPA

- Sprayed ~24 acres in Minocqua/Kawaguesaga this past month for Eurasian Water Milfoil

LAKE MANAGEMENT PLANNING – PHASE 2 proposed (grant app in process)

To be funded in part by the DNR, the USGS, and MKLPA

- USGS to conduct 2 year water quantity study of water entering and leaving Minocqua/Kawaguesaga Lakes
- Evaluate ground water contributions (quality and quantity) to the lakes
- Conduct a lake community survey to evaluate perspectives of residents and visitors to the lakes
- Compile a Lake Watershed Management Plan that incorporates all existing and past evaluations and presents recommendations for implementation of water quality improvement projects

PROJECTS

AQUATIC PLANT MANAGEMENT PLAN (future 2005/2006 LMP)

To be funded by WDNR (75%) and MKLPA

- Determine the species, location, and percentage of plants both native and invasive in Minocqua/Kawaguesaga Lakes
- Develop a control plan to manage the aquatic plants, particularly invasive species

WATER QUALITY IMPLEMENTATION PROJECTS

(future to be determined)

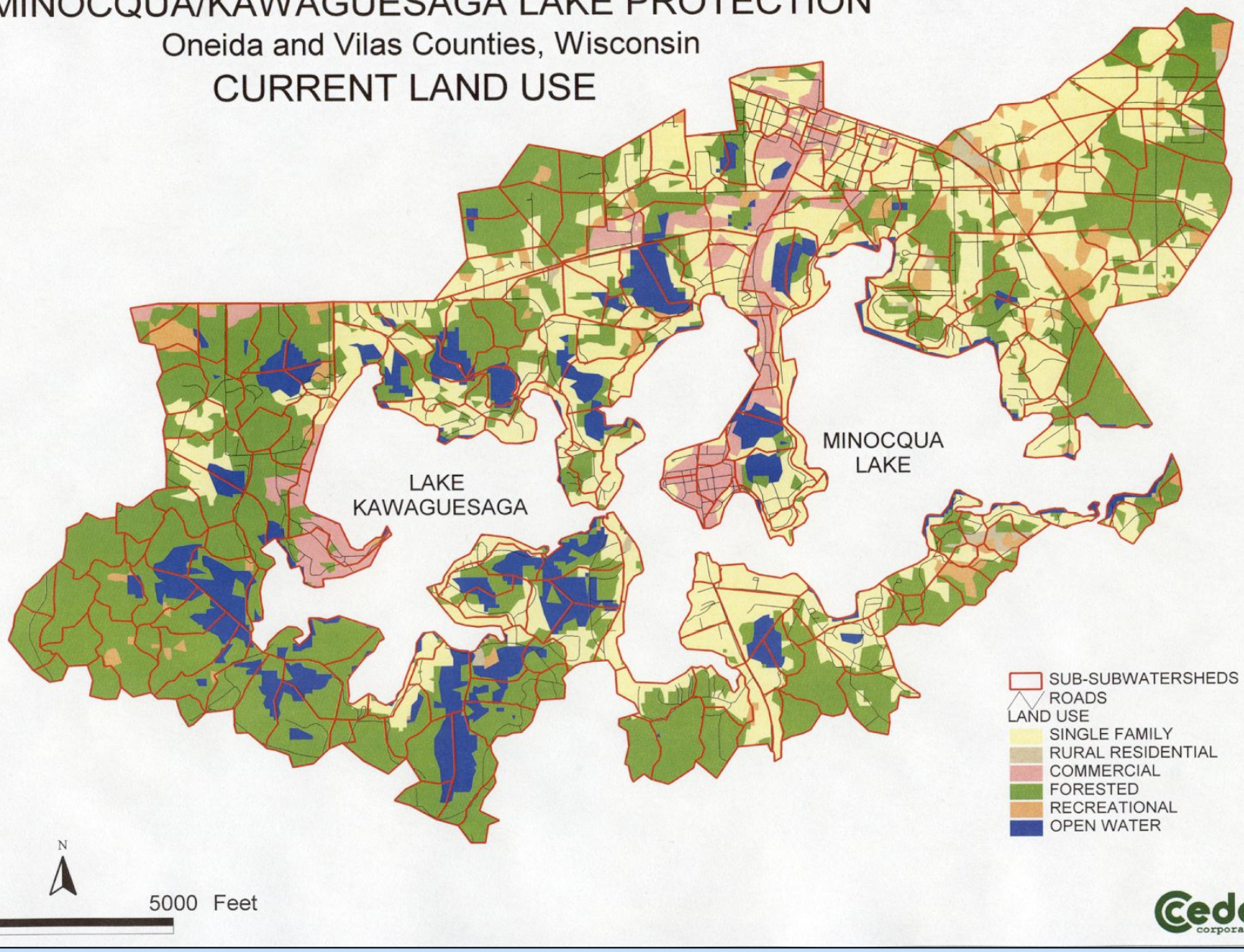
To be funded by WDNR (75%) MKLPA and others

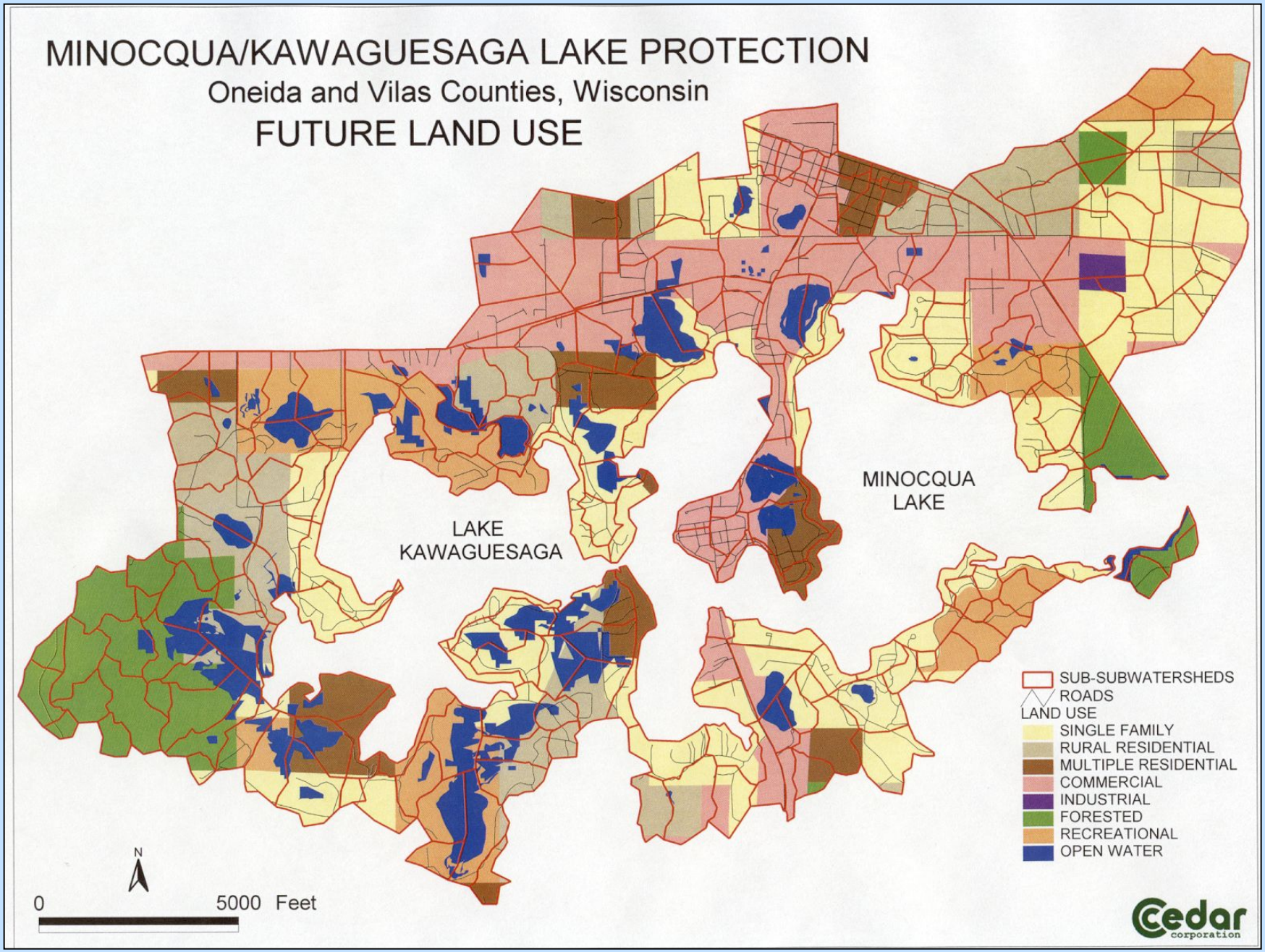
- Develop feasibility studies; design plans; prepare bidding documents and construction specifications; provide construction coordination and supervision.

MINOCQUA/KAWAGUESAGA LAKE PROTECTION

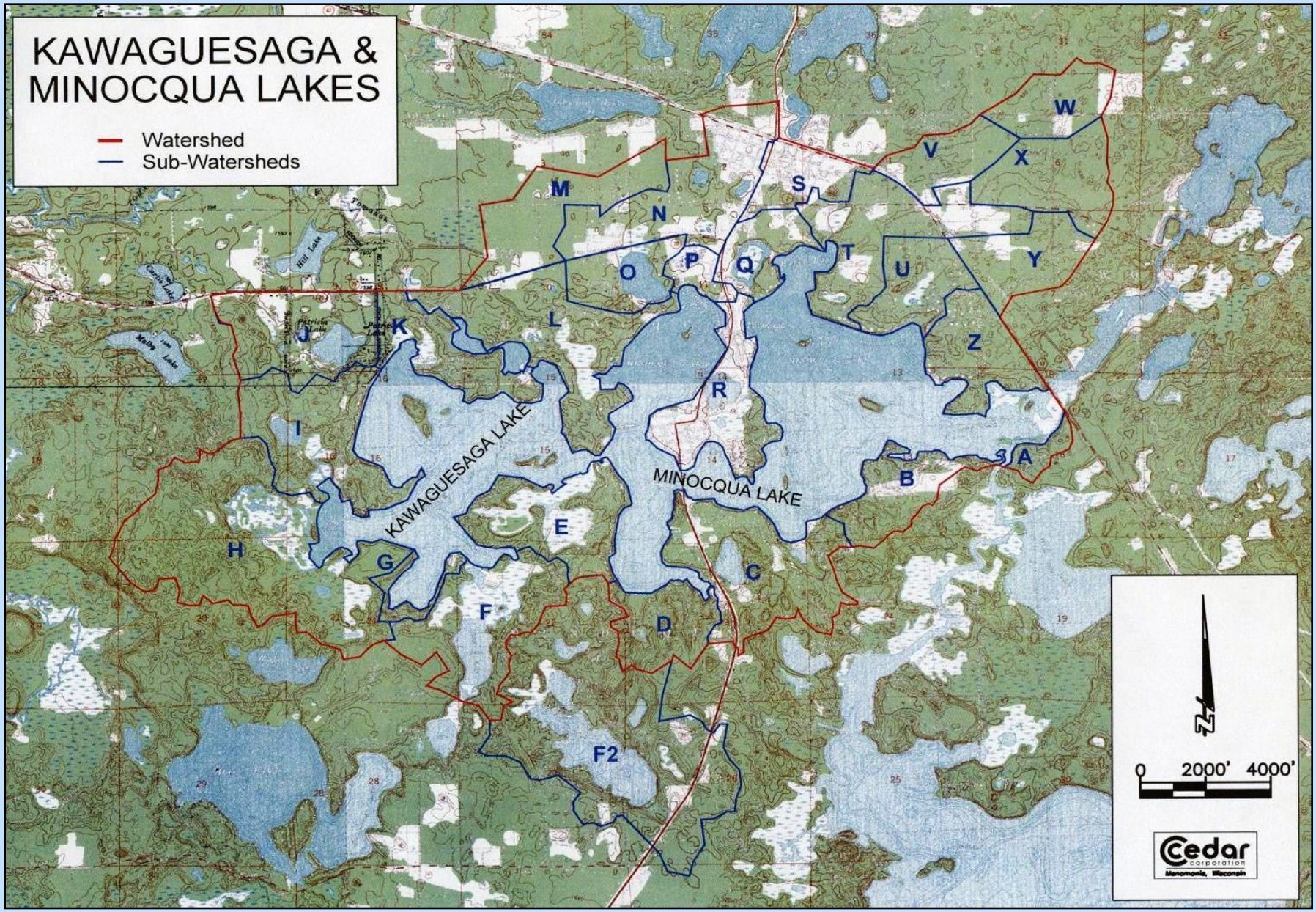
Oneida and Vilas Counties, Wisconsin

CURRENT LAND USE

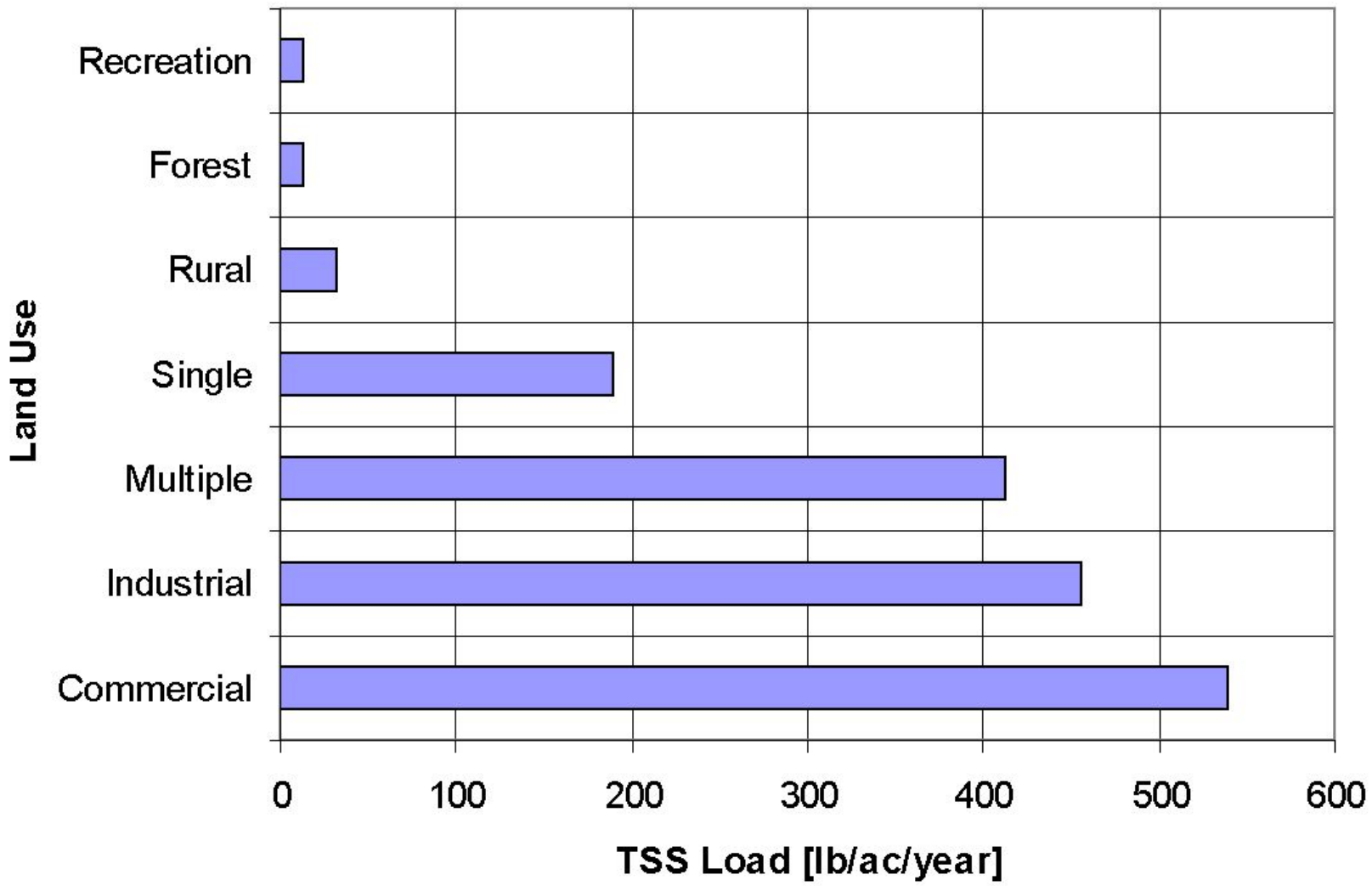



MINOCQUA/KAWAGUESAGA LAKE PROTECTION
Oneida and Vilas Counties, Wisconsin
FUTURE LAND USE
LAKE KAWAGUESAGA
MINOCQUA LAKE
SUB-SUBWATERSHEDS
ROADS
LAND USE
SINGLE FAMILY
RURAL RESIDENTIAL
MULTIPLE RESIDENTIAL
COMMERCIAL
INDUSTRIAL
FORESTED
RECREATIONAL
OPEN WATER
N
0
5000 Feet
Cedar corporation

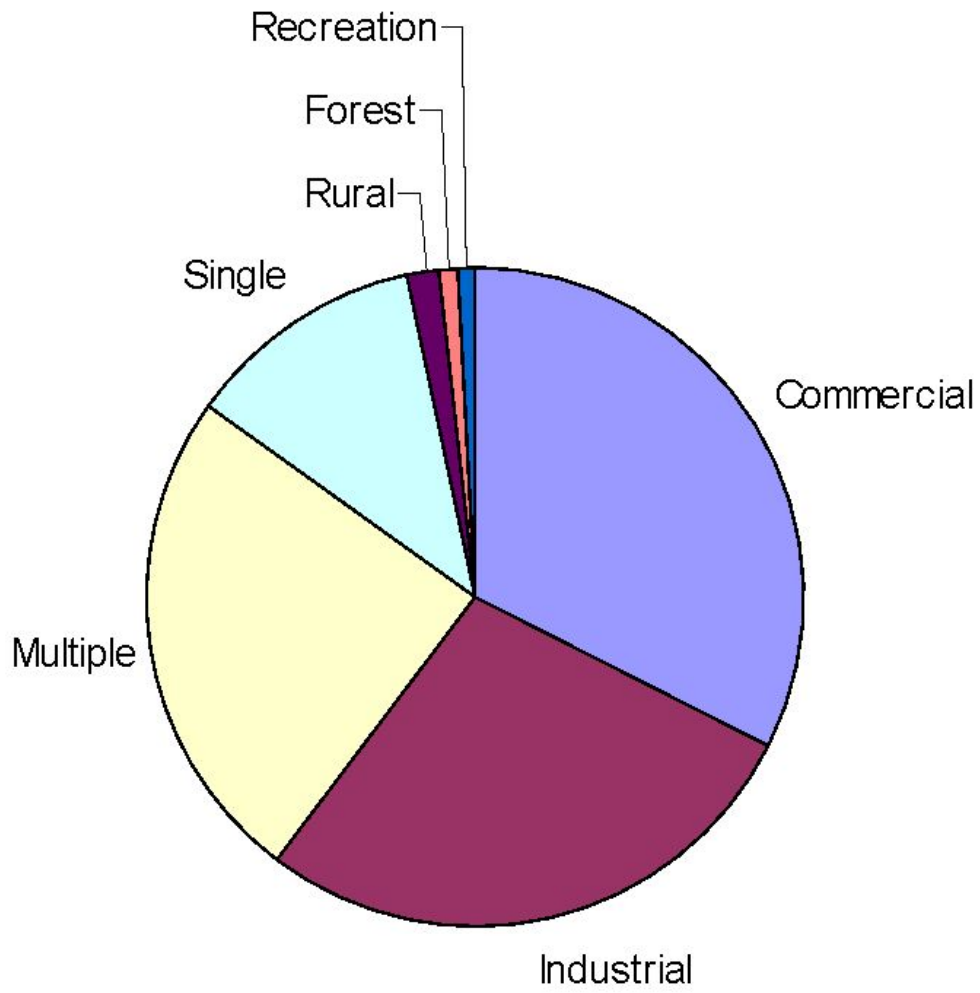
LOCAL LAKE WATERSHEDS



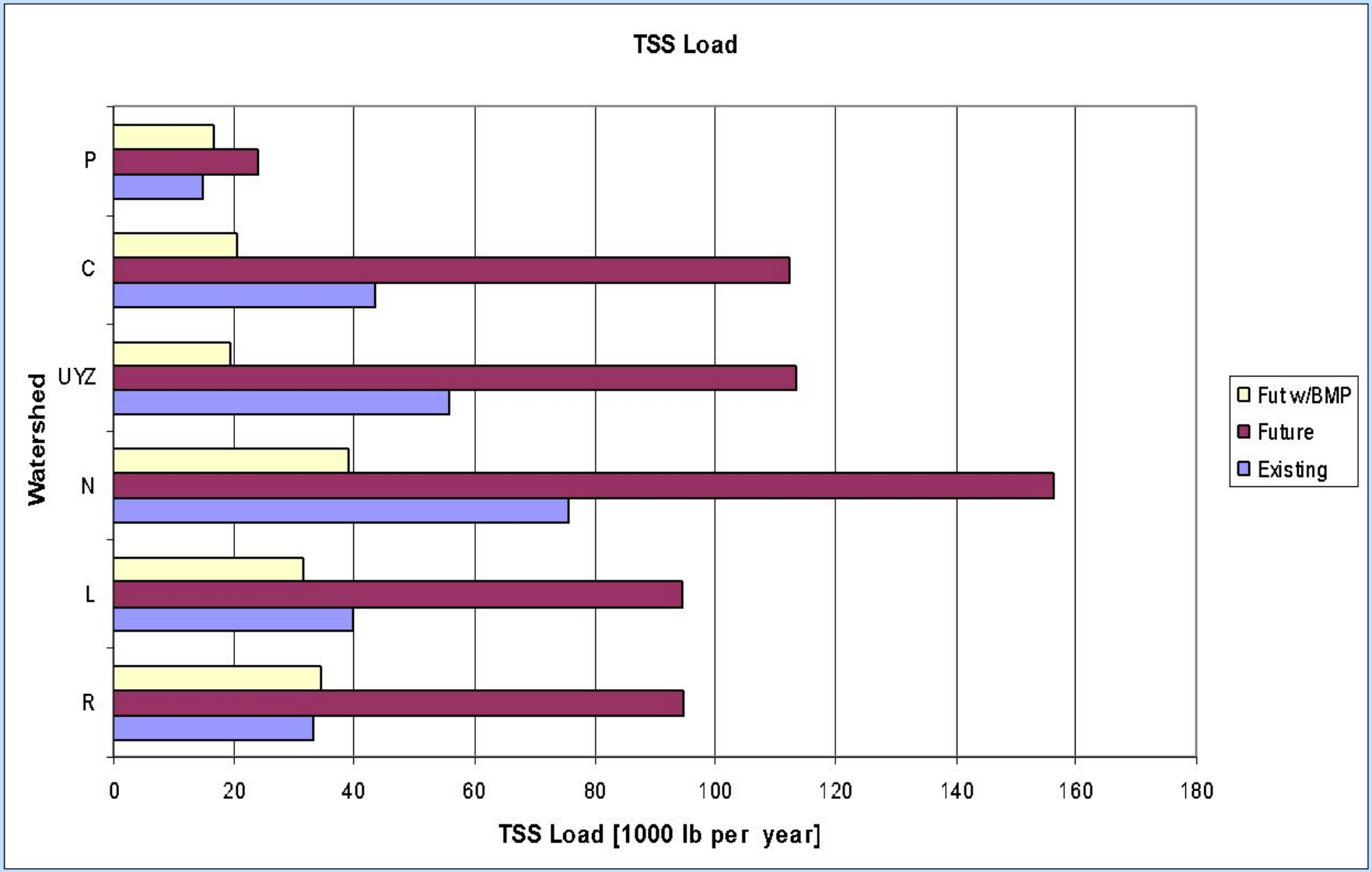
Soils: HSG A
Rainfall: Avg. Ann.
Area: 1 ac

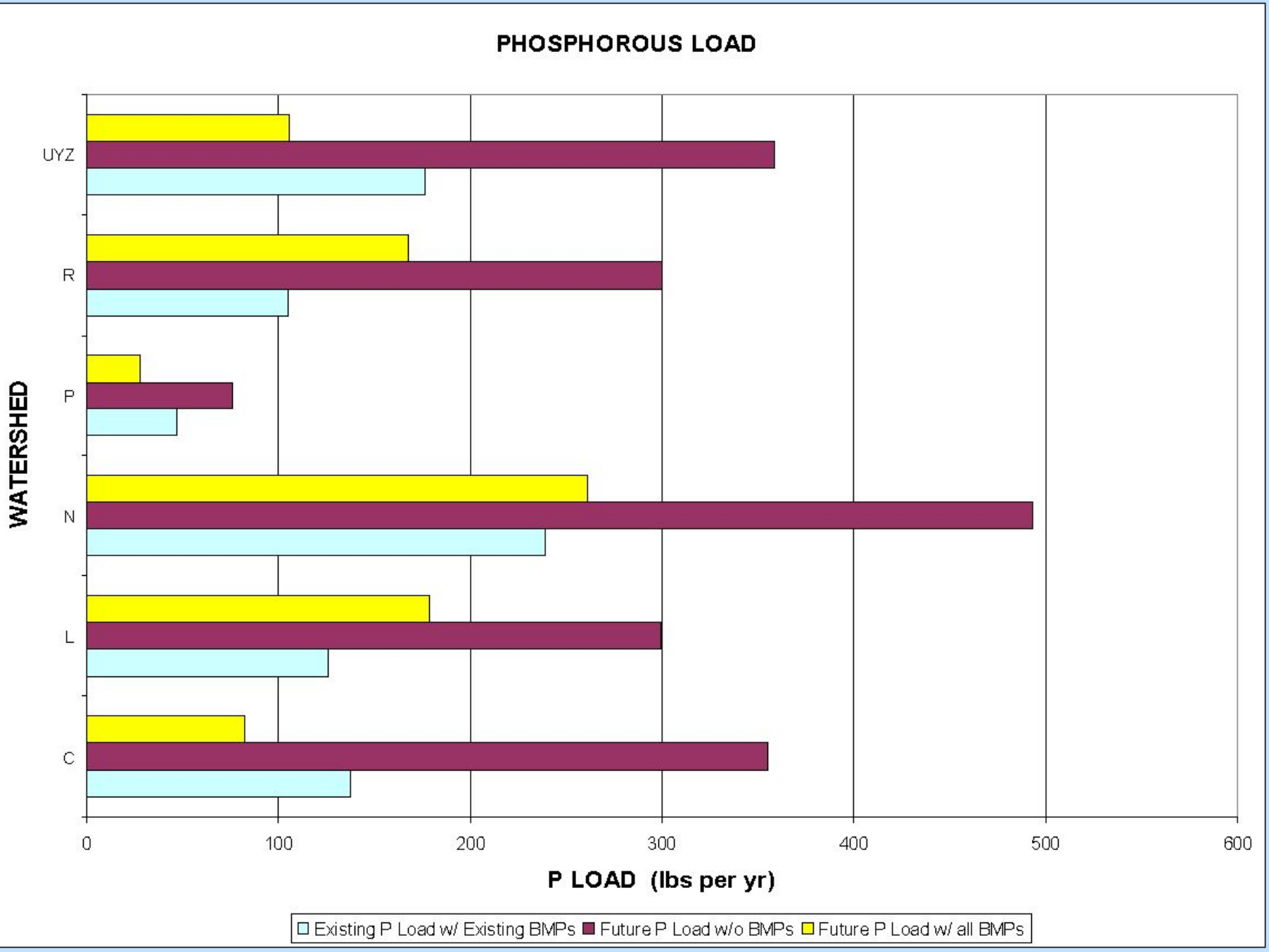


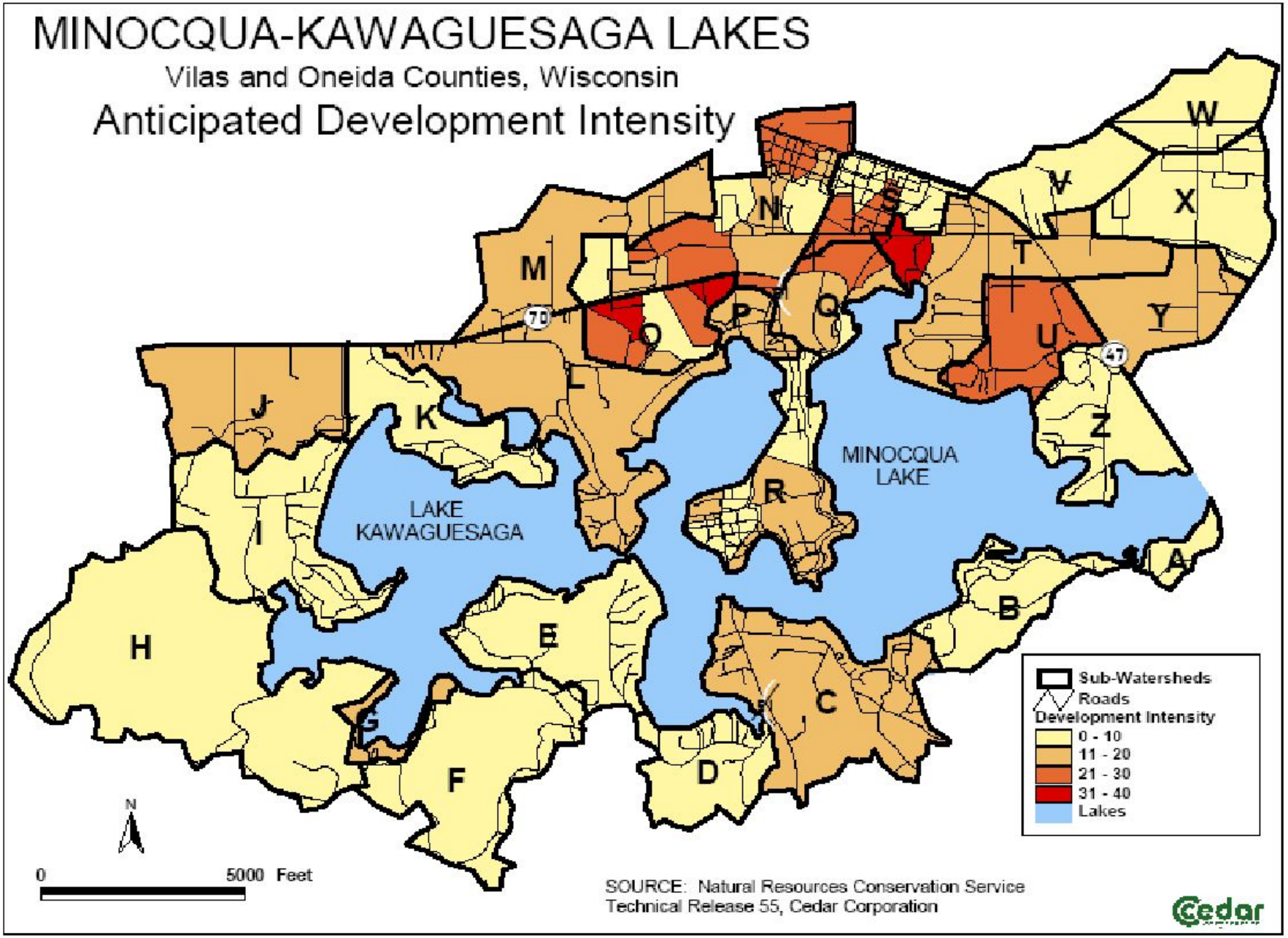
Soils: HSG A
Rainfall: Avg. Ann.
Area: 1 ac

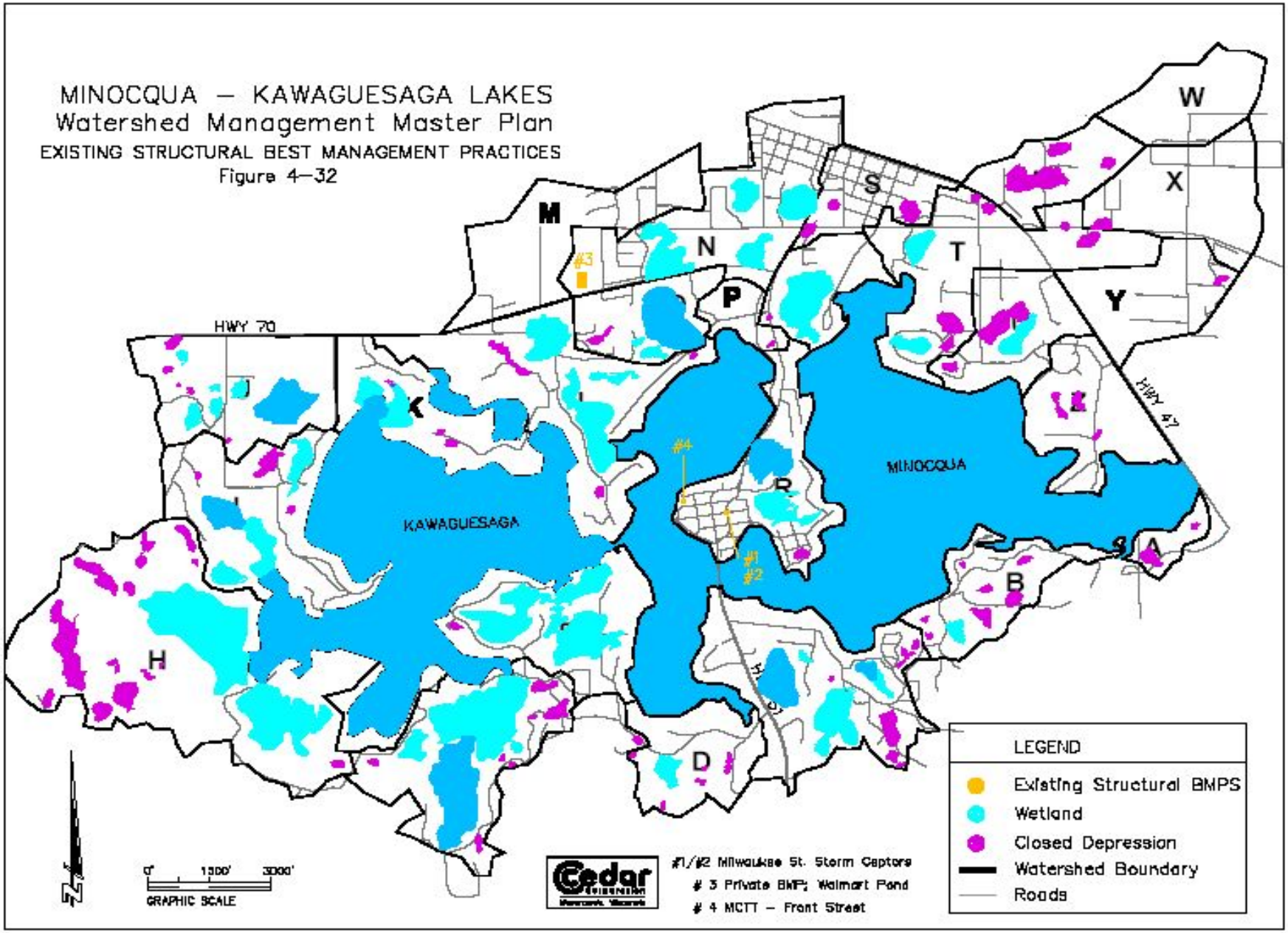


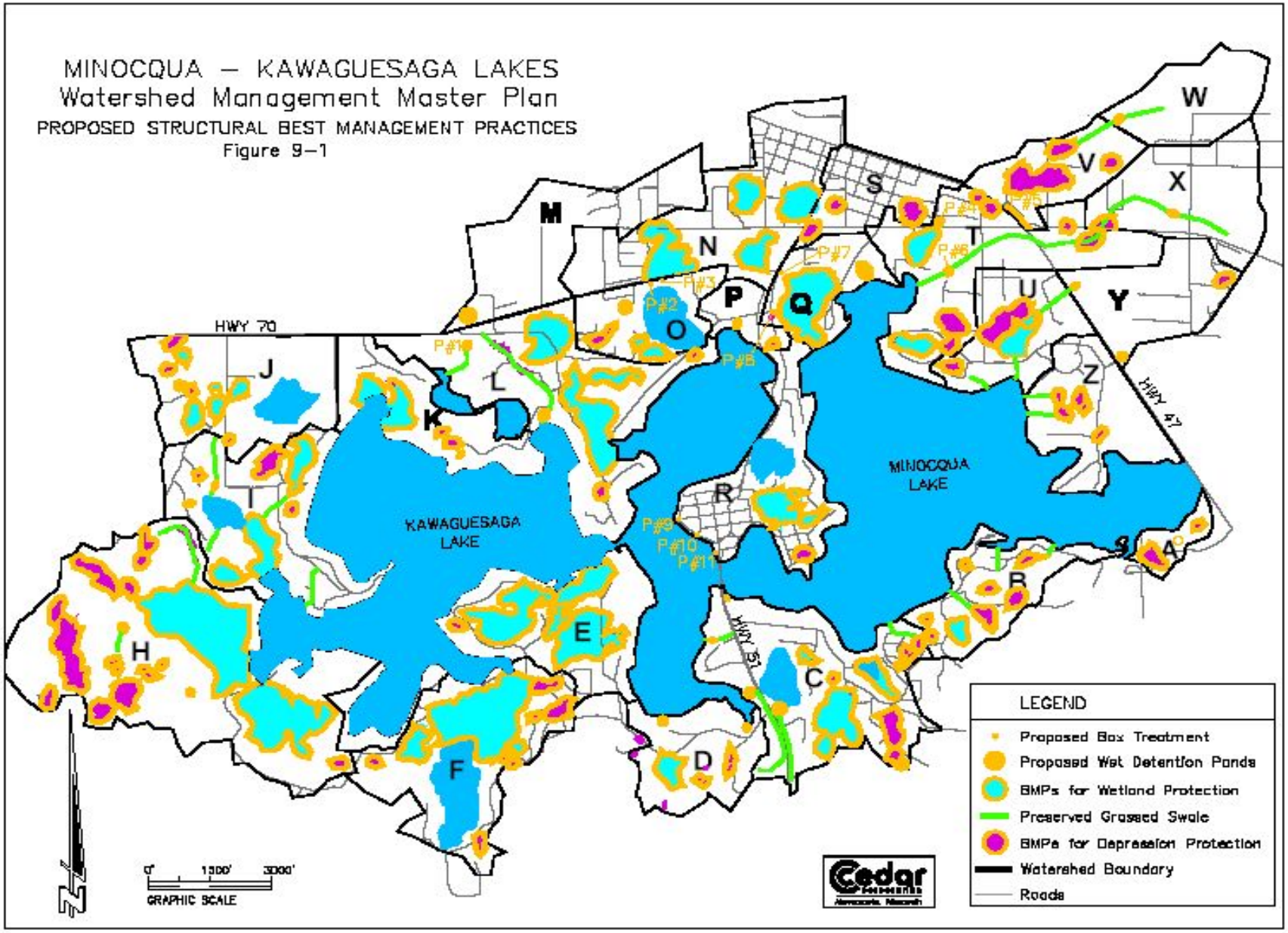
TSS Load for Different Land Uses


TSS Load
Watershed
P
C
UYZ
N
L
R
0
20
40
60
80
100
120
140
160
180
TSS Load [1000 lb per year]
Fut w/BMP
Future
Existing


PHOSPHOROUS LOAD
WATERSHED
UYZ
R
P
N
L
C
0
100
200
300
400
500
600
P LOAD (lbs per yr)
Existing P Load w/ Existing BMPs
Future P Load w/o BMPs
Future P Load w/ all BMPs


MINOCQUA-KAWAGUESAGA LAKES
Vilas and Oneida Counties, Wisconsin
Anticipated Development Intensity
LAKE KAWAGUESAGA
MINOCQUA LAKE
70
47
Sub-Watersheds
Roads
Development Intensity
0 - 10
11 - 20
21 - 30
31 - 40
Lakes
N
0
5000 Feet
SOURCE: Natural Resources Conservation Service
Technical Release 55, Cedar Corporation
Cedar


MINOCQUA – KAWAGUESAGA LAKES
Watershed Management Master Plan
EXISTING STRUCTURAL BEST MANAGEMENT PRACTICES
Figure 4–32
HWY 70
HWY 47
KAWAGUESAGA
MINOCQUA
#1
#2
#3
#4
W
X
Y
M
N
S
T
P
K
R
B
H
D
GRAPHIC SCALE
0'
1500'
3000'
Cedar Corporation
#1/#2 Milwaukee St. Storm Captors
3 Private BMP; Walmart Pond
4 MCTT – Front Street
LEGEND
Existing Structural BMPS
Wetland
Closed Depression
Watershed Boundary
Roads


MINOCQUA – KAWAGUESAGA LAKES
Watershed Management Master Plan
PROPOSED STRUCTURAL BEST MANAGEMENT PRACTICES
Figure 9–1
HWY 70
HWY 51
HWY 47
KAWAGUESAGA LAKE
MINOCQUA LAKE
P#1
P#2
P#3
P#4
P#5
P#6
P#7
P#8
P#9
P#10
P#11
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
Q
R
S
T
U
V
W
X
Y
Z
0'
1500'
3000'
GRAPHIC SCALE
LEGEND
Proposed Box Treatment
Proposed Wet Detention Ponds
BMPs for Wetland Protection
Preserved Grassed Swale
BMPs for Depression Protection
Watershed Boundary
Roads
Cedar Corporation

BEST MANAGEMENT PRACTICES

STRUCTURAL

- Wet detention sediment basins,
- Constructed wetlands,
- Infiltration basins,
- Infiltration trenches,
- Dry detention/retention basins,
- Storm sewer inlet sumps,
- Riprap,
- Gabions,
- Construction of grassed channels and drainage ways,
- Silt fence,
- Water quality pre-treatment box structure,
- Stone weeper berms,
- Straw bales and silt fence.

NON- STRUCTURAL

- Street sweeping,
- Catch basin control on winter streets,
- Leaf and lawn waste control,
- Fertilizer and pesticide application control,
- Hazardous waste and spill prevention program,
- Pet and farm animal waste control,
- Construction site erosion control regulations and enforcement,
- Storm water management planning education,
- Ordinances,
- Land use planning

ORDINANCE REVIEW

- On site Construction Erosion Control
- Post Construction Surface Water Runoff Management
- Fertilizer Control

Runoff Water Management and Sediment Erosion Control

NOT THIS…

BUT THIS!!

Fertilizer Control

NOT THIS…

BUT THIS!!