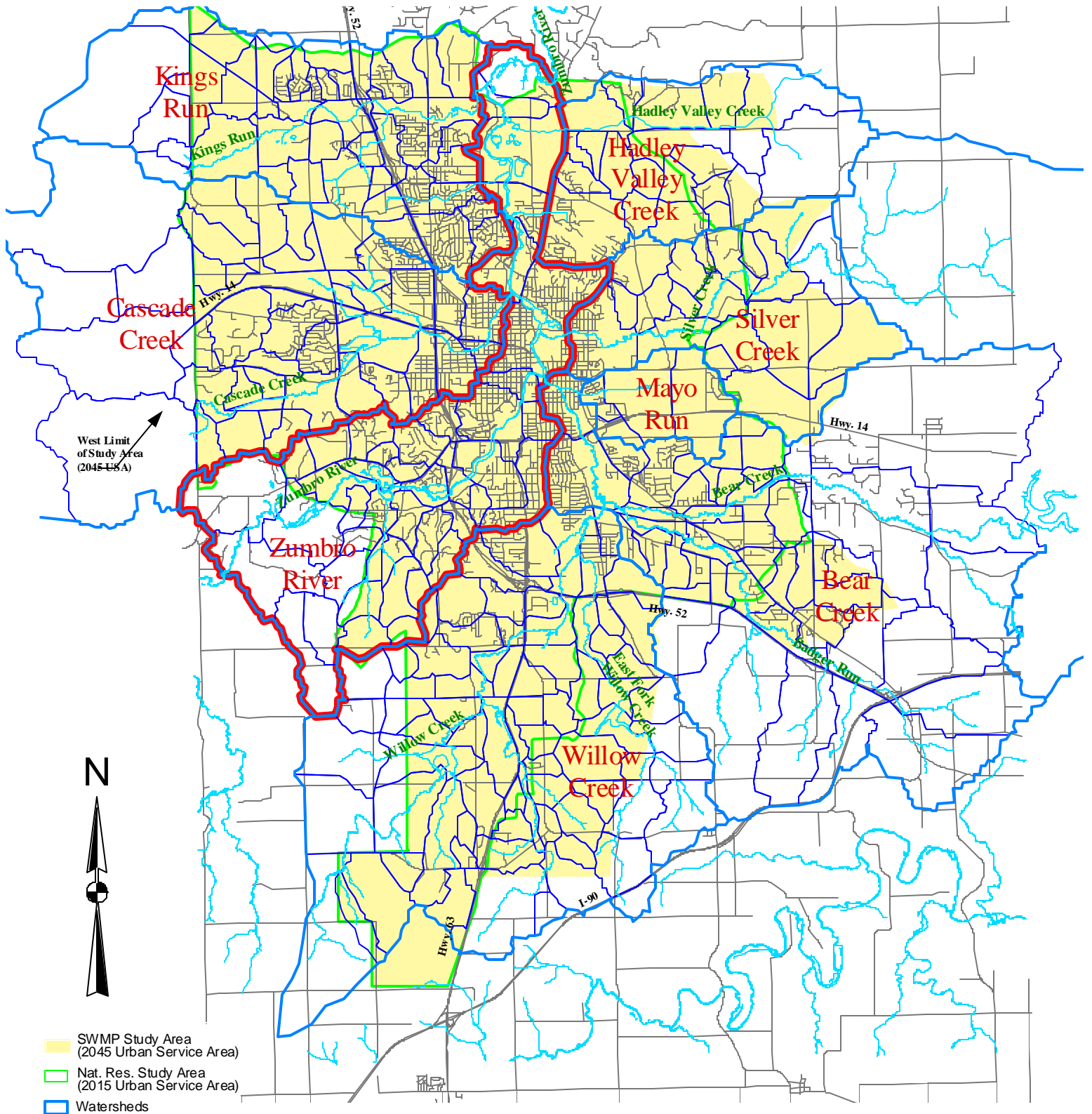


# LOCATION MAP

ROCHESTER, MINNESOTA  
 SURFACE WATER MANAGEMENT PLAN

FIGURE 1-1





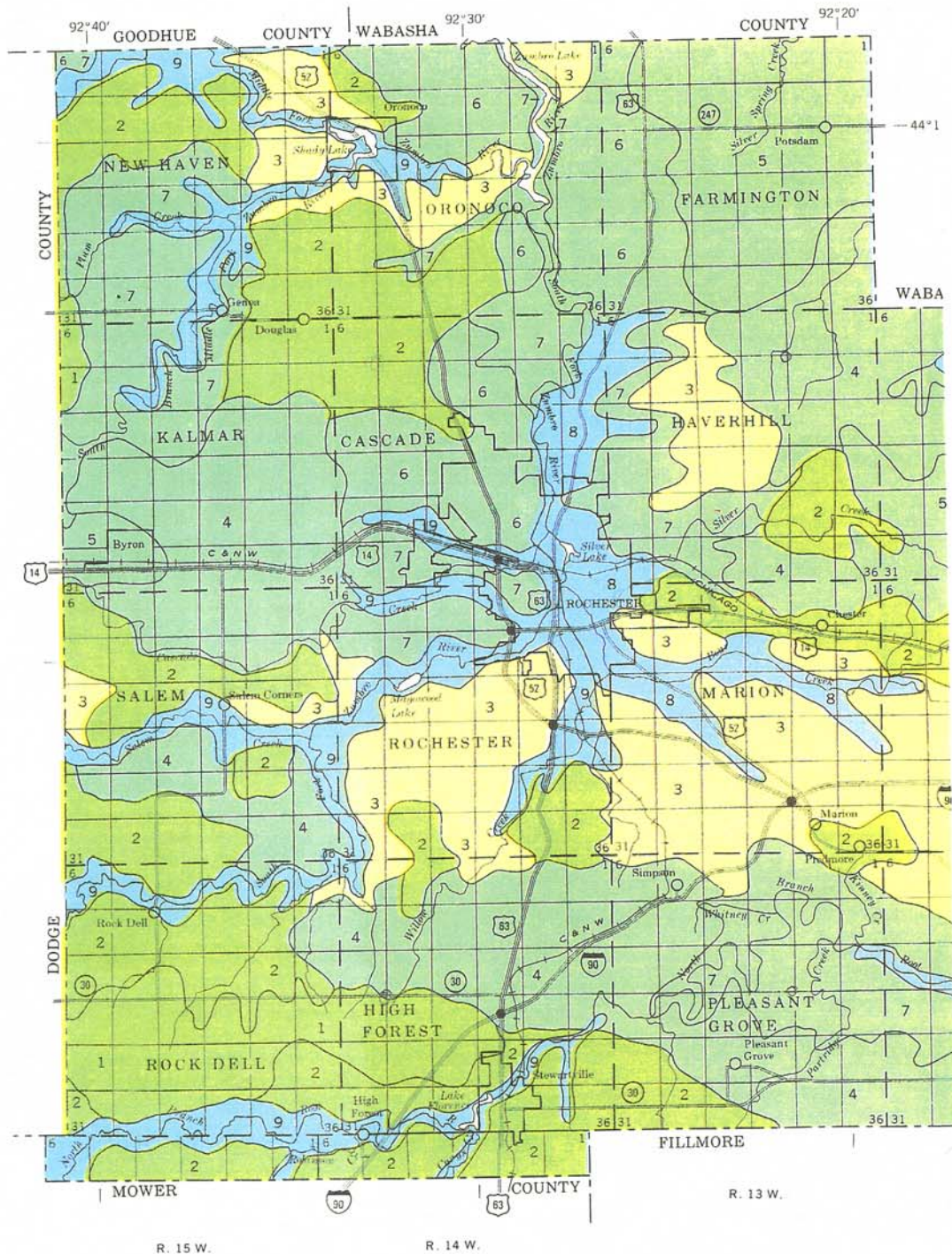
# SWMP STUDY AREA MAP

ROCHESTER, MINNESOTA

SURFACE WATER MANAGEMENT PLAN

FIGURE 3-1





LEGEND:

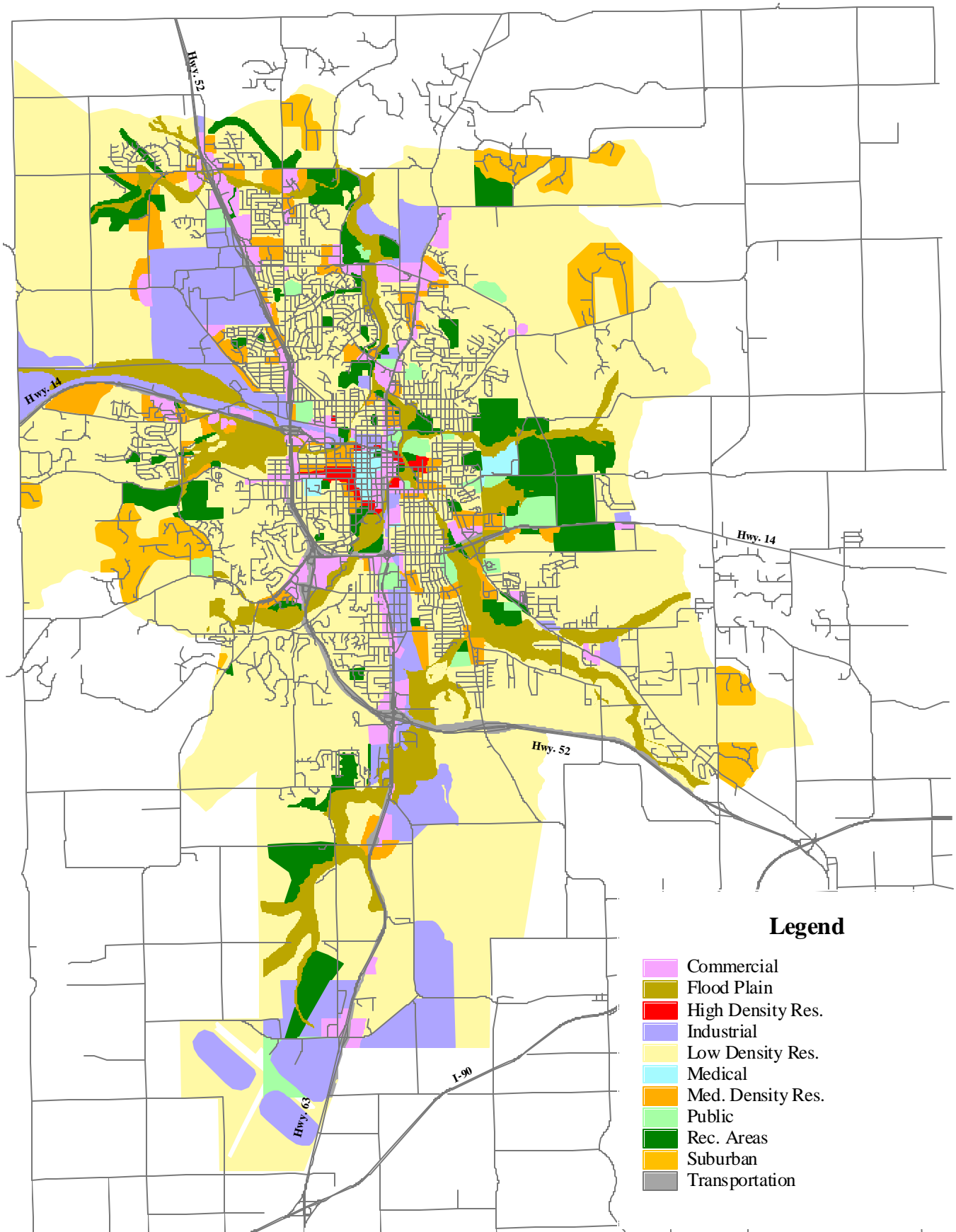
- |   |   |   |  |
|---|---|---|--|
| 1 | Readlyn—Maxfield—Kenyon association     | 6 | Timula—Port Byron association                |
| 2 | Racine—Floyde—Maxfield association      | 7 | Mt. Carroll—Marlean—Arenzville association   |
| 3 | Rockton—Channahon—Atkinson association  | 8 | Dickinson—Plainfield—Kalmarville association |
| 4 | Mt. Carroll—Otter—Joy association       | 9 | Waukee—Radford—Spillville association        |
| 5 | Port Byron—Lindstrom—Garwin association |   |  |

GENERAL SOIL GROUPS

ROCHESTER, MINNESOTA  
 SURFACE WATER MANAGEMENT PLAN

FIGURE 3-2





**Legend**

- Commercial
- Flood Plain
- High Density Res.
- Industrial
- Low Density Res.
- Medical
- Med. Density Res.
- Public
- Rec. Areas
- Suburban
- Transportation

**PROJECTED CITY LAND USE FOR SWMP STUDY AREA**

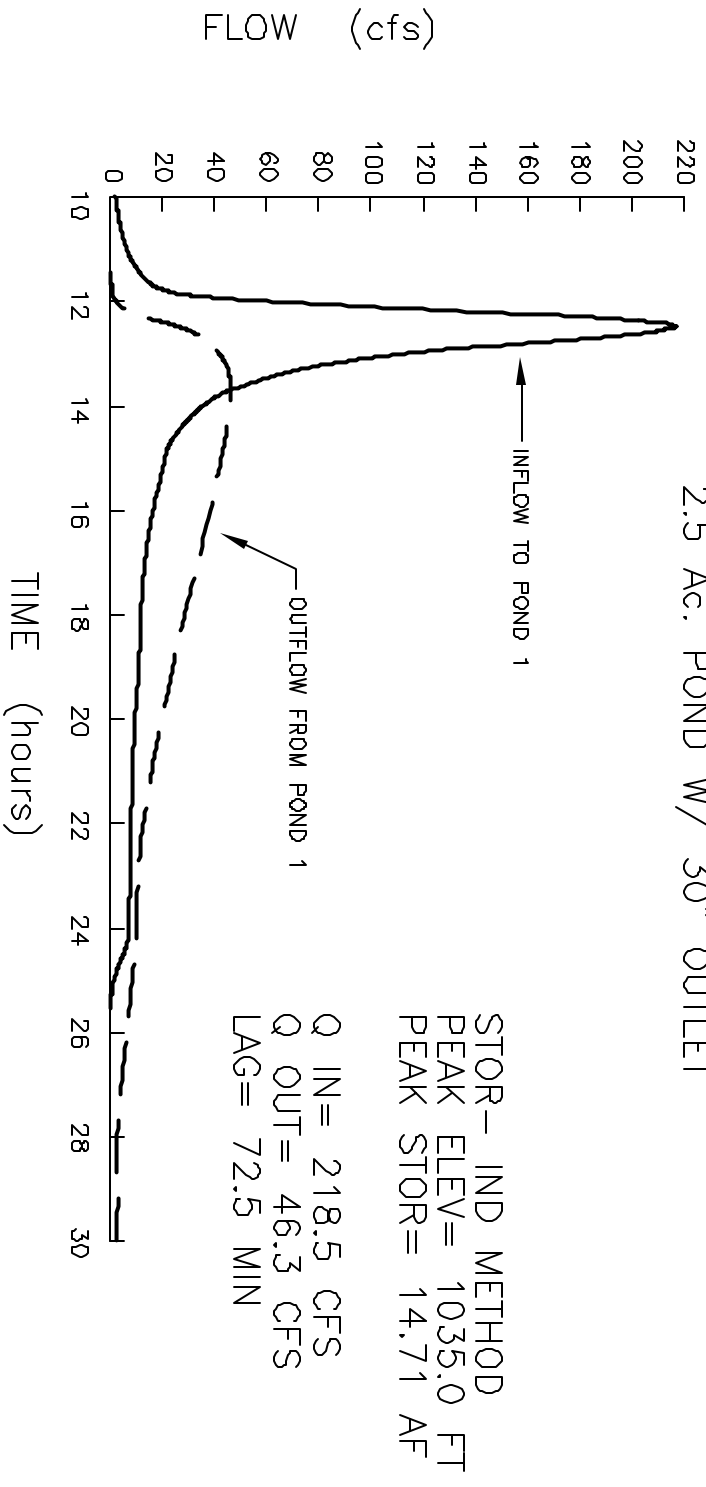
ROCHESTER, MINNESOTA

FIGURE 3-3

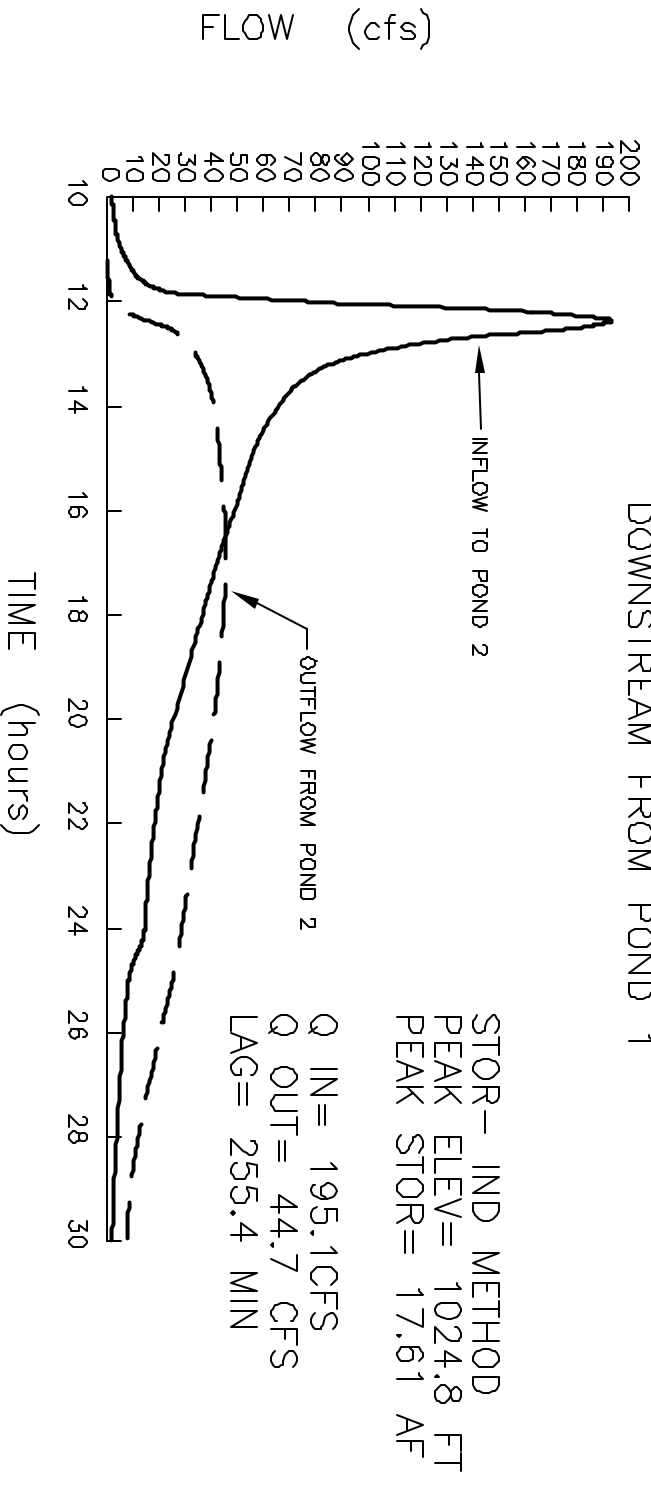
SURFACE WATER MANAGEMENT PLAN



POND 1 INFLOW AND OUTFLOW  
2.5 Ac. POND W/ 30" OUTLET



POND 2 INFLOW AND OUTFLOW  
DOWNSTREAM FROM POND 1

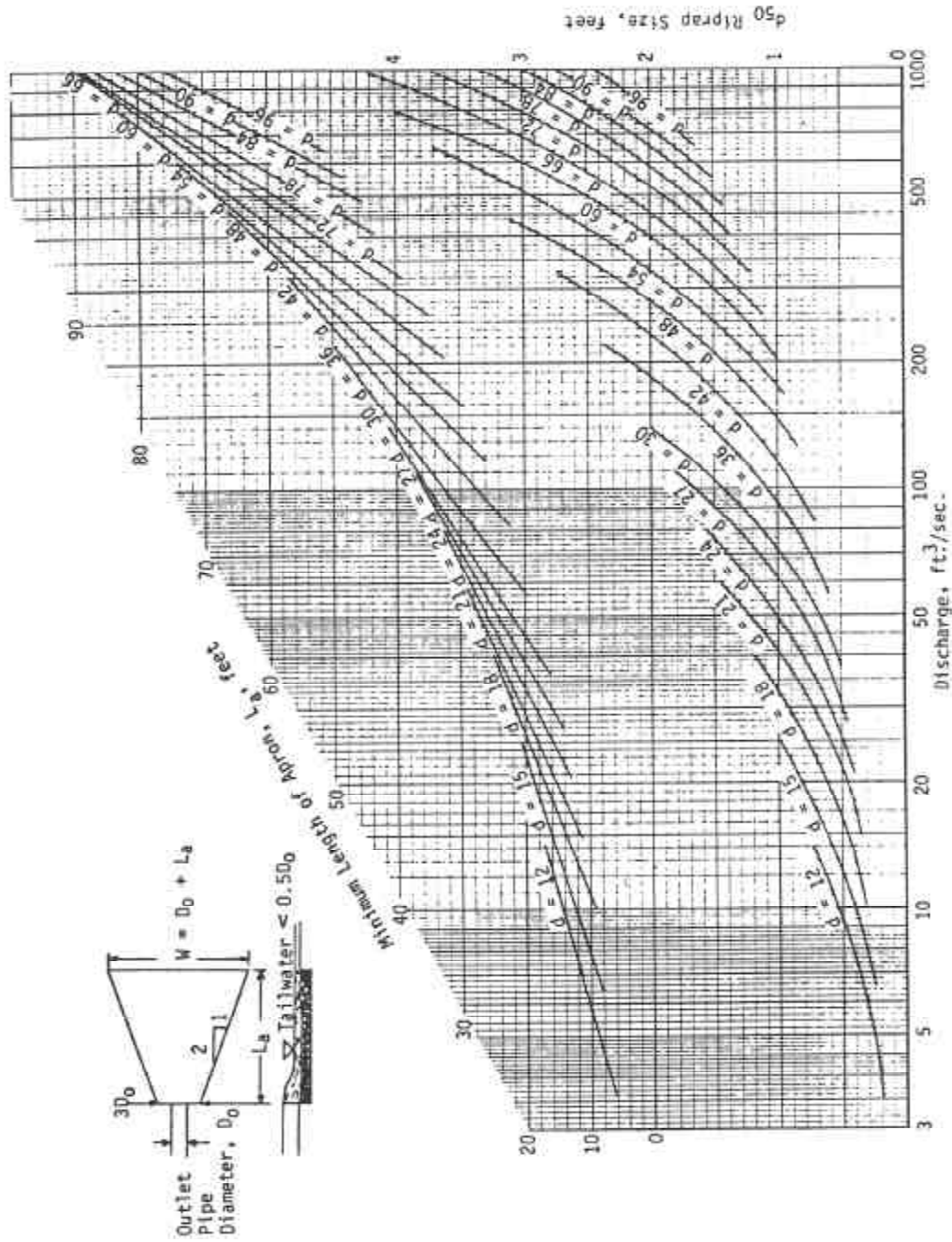


TYPICAL POND INFLOW AND OUTFLOW HYDROGRAPHS

ROCHESTER, MINNESOTA  
SURFACE WATER MANAGEMENT PLAN

FIGURE 5-1





SOURCE: MPCA 1989



DESIGN OF OUTLET PROTECTION FROM A ROUND PIPE FLOWING FULL  
 MINIMUM TAILWATER CONDITION ( $T_w < 0.5$  DIAMETER)

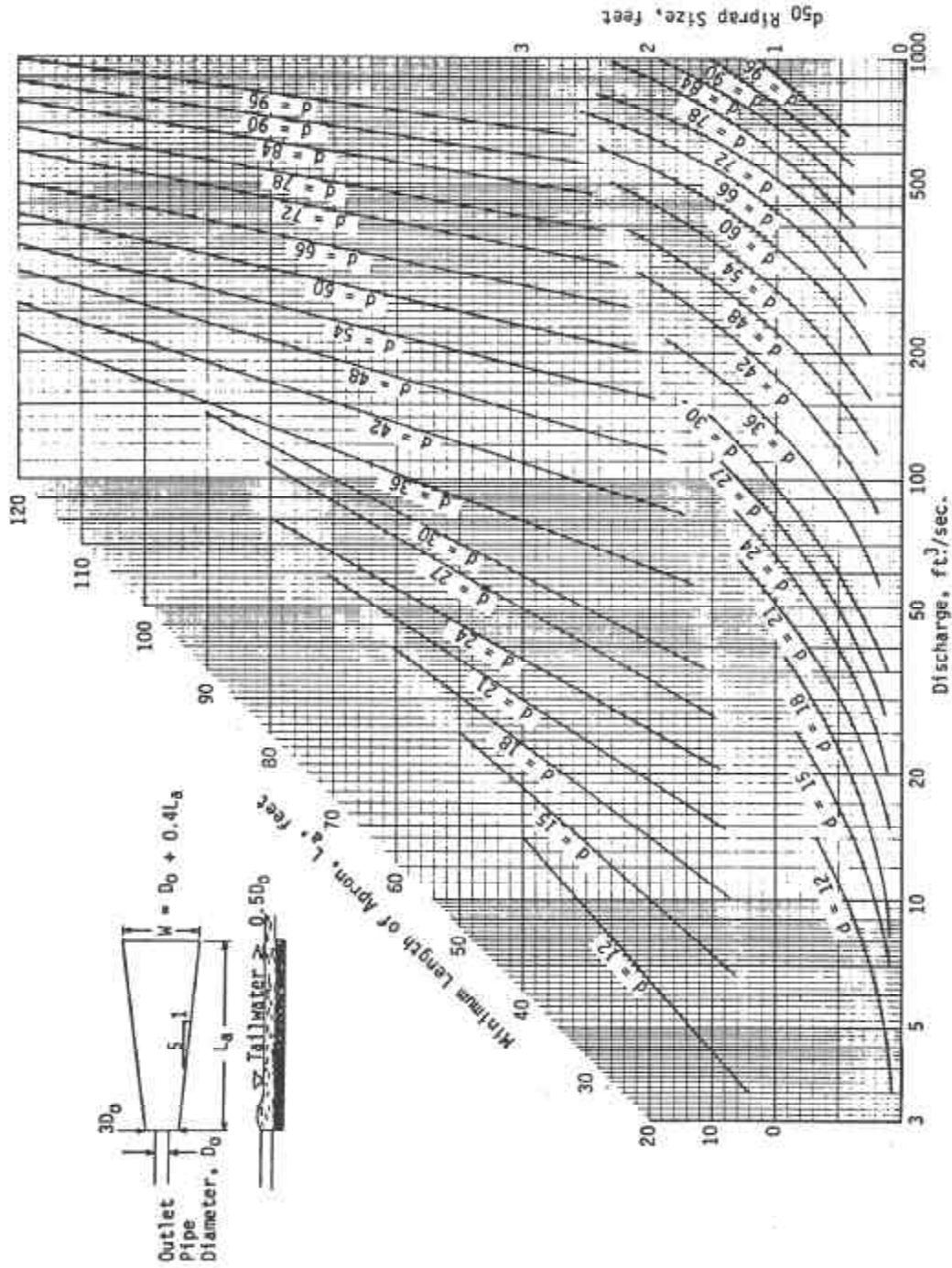
FIGURE 5-2

ROCHESTER, MINNESOTA  
 SURFACE WATER MANAGEMENT PLAN

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HDC



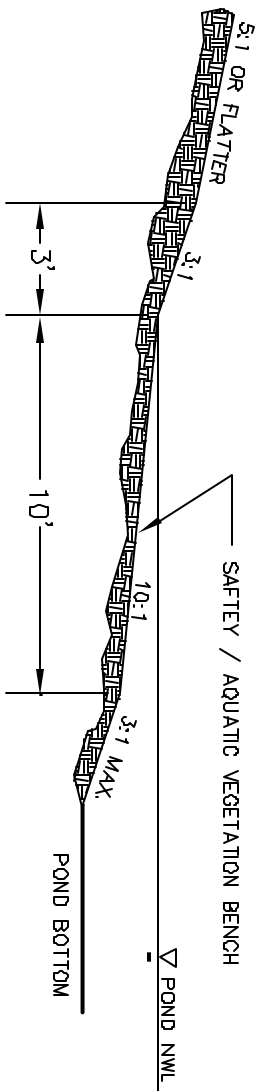
SOURCE: MPCA 1989



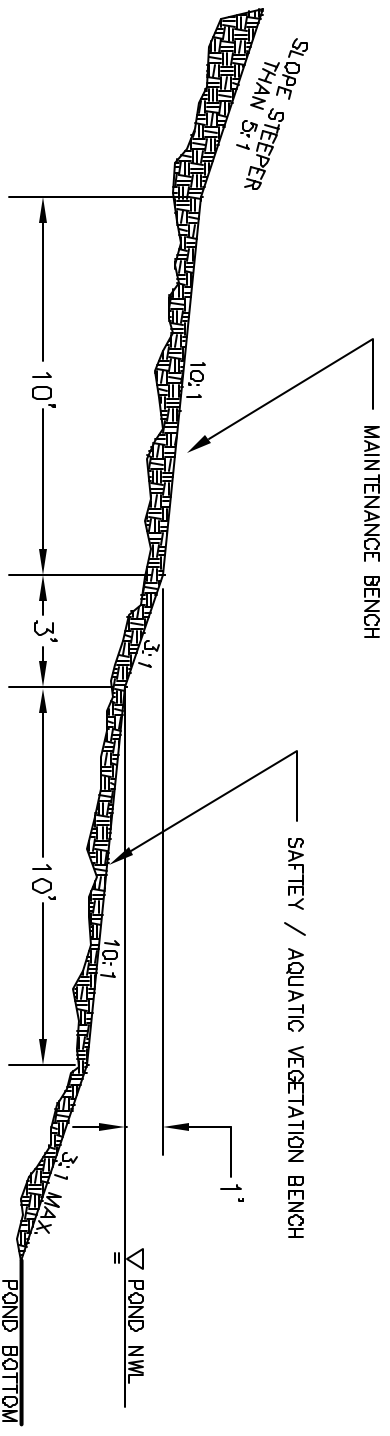
DESIGN OF OUTLET PROTECTION FROM A ROUND PIPE FLOWING FULL  
 MAXIMUM TAILWATER CONDITION ( $T_w \geq 0.5$  DIAMETER)

FIGURE 5-3

ROCHESTER, MINNESOTA  
 SURFACE WATER MANAGEMENT PLAN



TYPICAL BASIN PROFILE FOR  
SIDE SLOPES OF 5:1 OR FLATTER



TYPICAL BASIN PROFILE FOR  
SIDE SLOPES OF STEEPER THAN 5:1

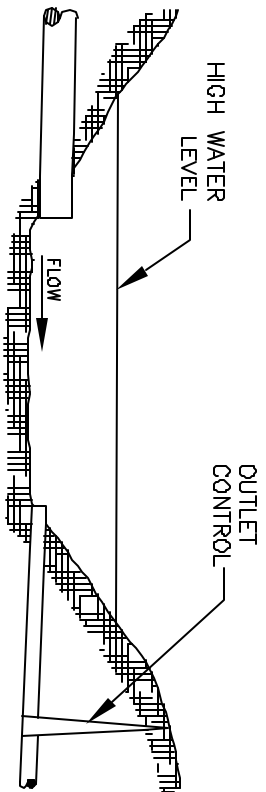
## STORMWATER BASIN SIDE SLOPE PROFILES

ROCHESTER, MINNESOTA  
SURFACE WATER MANAGEMENT PLAN

FIGURE 5-4

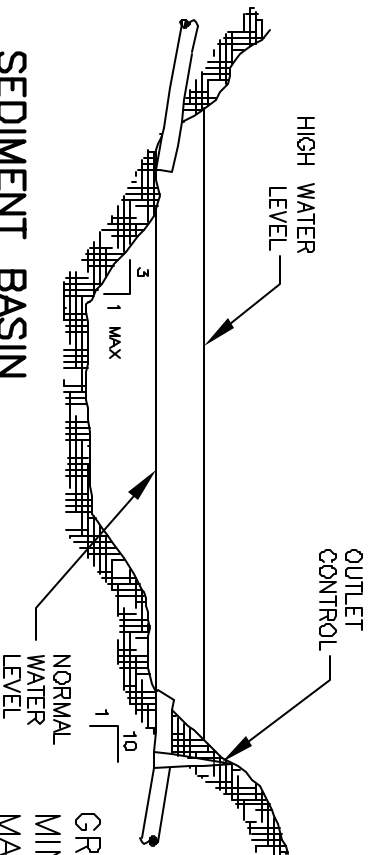






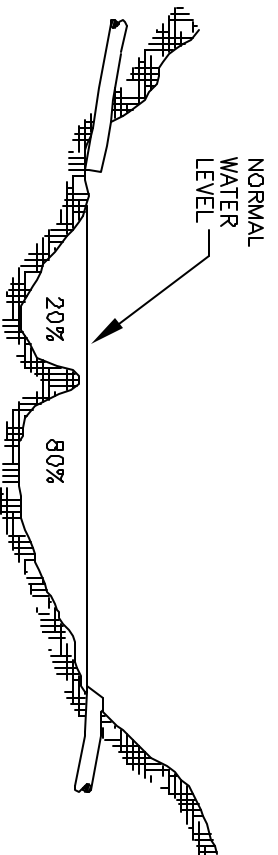
TEMPORARY PONDING WITH GRAVITY CONTROLLED OUTLET, POND NORMALLY DRY.

### RATE CONTROL BASIN



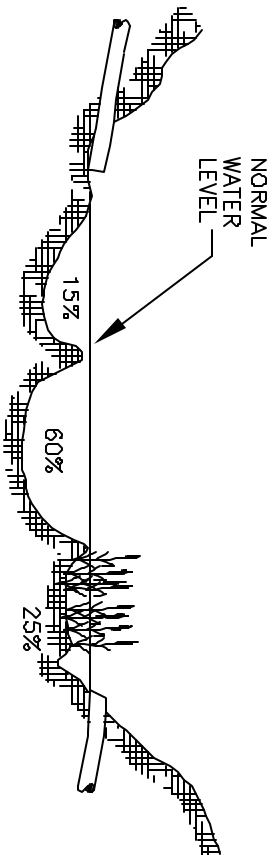
PERMANANT POND WITH STORAGE OBTAINED FROM WATER LEVEL VARIANCE. GRAVITY CONTROLLED OUTLET. MINIMUM DEPTH = 4' MAXIMUM DEPTH = 10'

### SEDIMENT BASIN



PERMANANT POND WITH SEDIMENT FORBAY FOR SEDIMENT ACCUMULATION AND MAINTENANCE.

### NUTRIENT REMOVAL BASIN



PERMANANT POND WITH MULTIPLE CELLS INCLUDING A SHALLOW, HIGHLY VEGETATED WETLAND CELL.

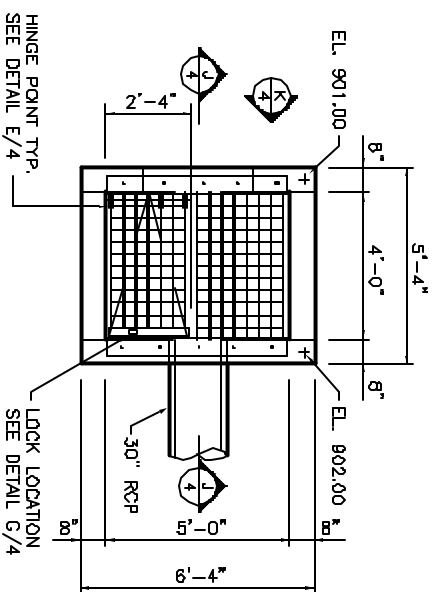
### VEGETATIVE FILTER BASIN

## POND TYPES

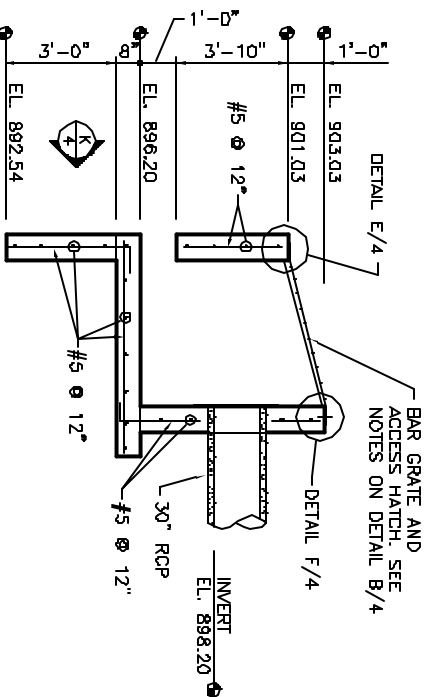
ROCHESTER, MINNESOTA  
SURFACE WATER MANAGEMENT PLAN

FIGURE 6-2

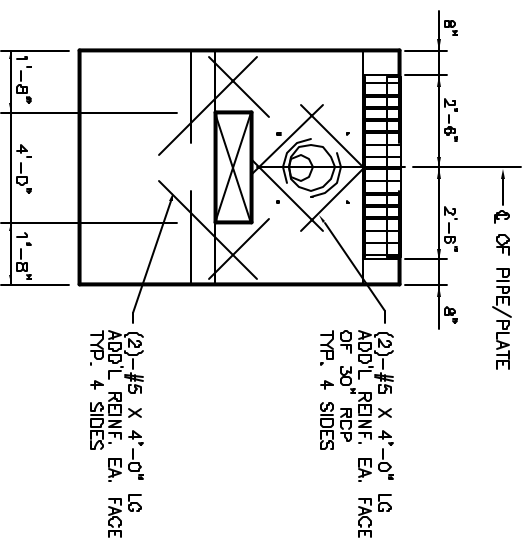




**H** **TOP PLAN** (OUTLET STRUCTURE)  
SCALE: 3/8"=1'-0"



**J** **SECTION**  
SCALE: 3/8"=1'-0"



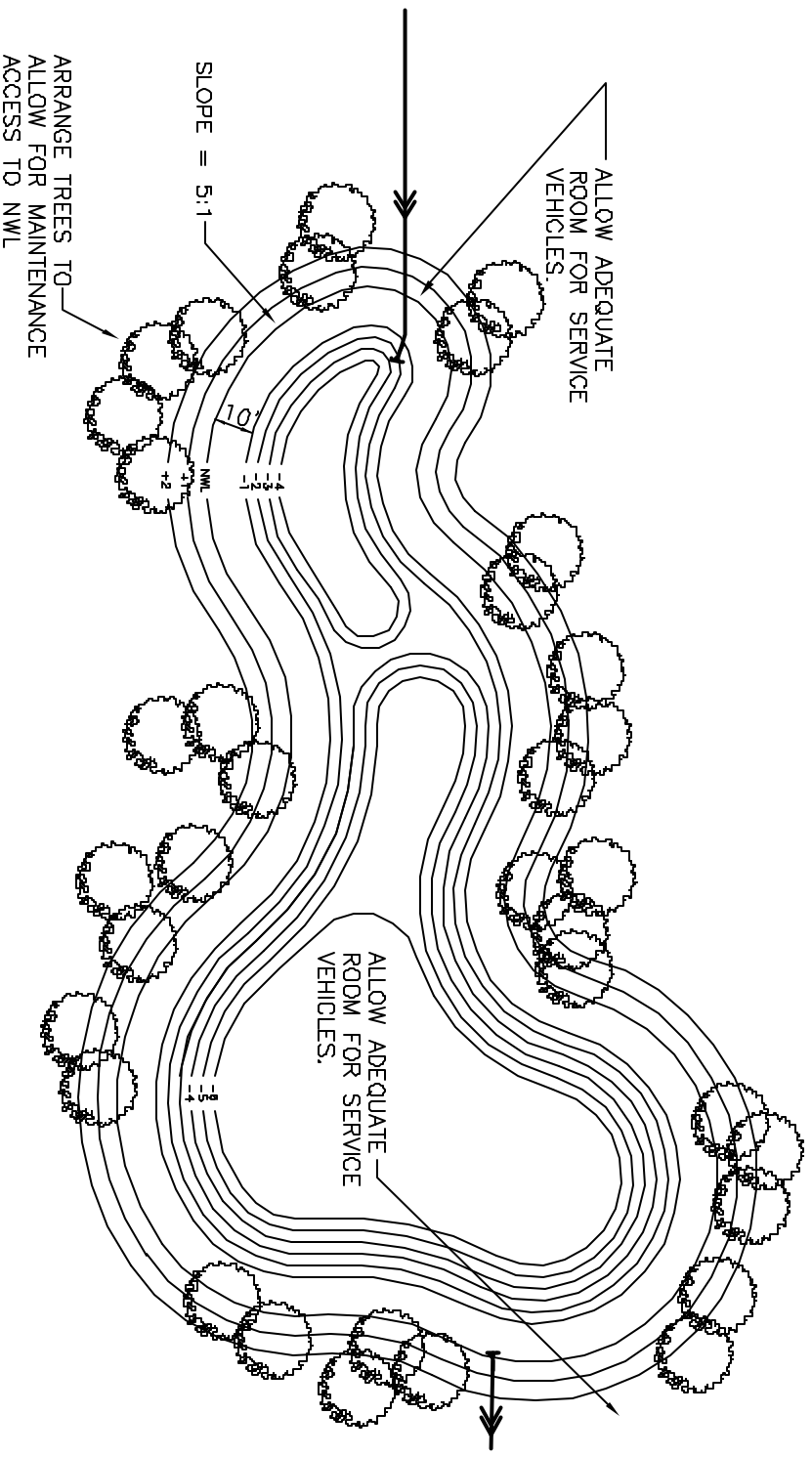
**K** **ELEVATION**  
SCALE: 3/8"=1'-0"

# FREE FLOW SKIMMER WITH RESTRICTED OUTLET

ROCHESTER, MINNESOTA  
SURFACE WATER MANAGEMENT PLAN

FIGURE 6-3





POND PLANTINGS

COMMON NAME	SCIENTIFIC NAME	DEPTH OF PLANTING (FT)	PLANTING RATE (ROOTSTOCK/POND ACREAGE)
RIVER BULRUSH	<i>Scirpus fluviatilis</i>	0.0-3.0	200
SOFTSTEM BULRUSH	<i>Scirpus validus</i>	0.5-3.0	300
BUR-REED	<i>Sparganium eurycarpum</i>	0.0-1.0	200
BROAD-LEAVED ARROWHEAD	<i>Sagittaria latifolia</i>	0.0-2.5	100
HARDSTEM BULRUSH	<i>Scirpus acutus</i>	2.0-3.0	200
TOTAL			1000

NOTE: INDIVIDUAL SPECIES SHOULD BE GROUPED IN CLUMPS OF 3-5 PLANTS WITH 1.0 FOOT SPACING.

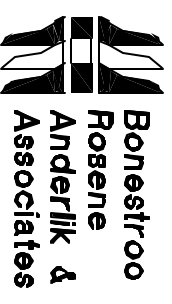
FOR UPLAND SEEDING BETWEEN THE NWL AND HWL USE MNDOT SEED MIX 25A.  
 FOLLOW MNDOT SEEDING PROCEDURES FOR NATIVE GRASS SEEDING.

TYPICAL NUTRIENT REMOVAL BASIN DESIGN

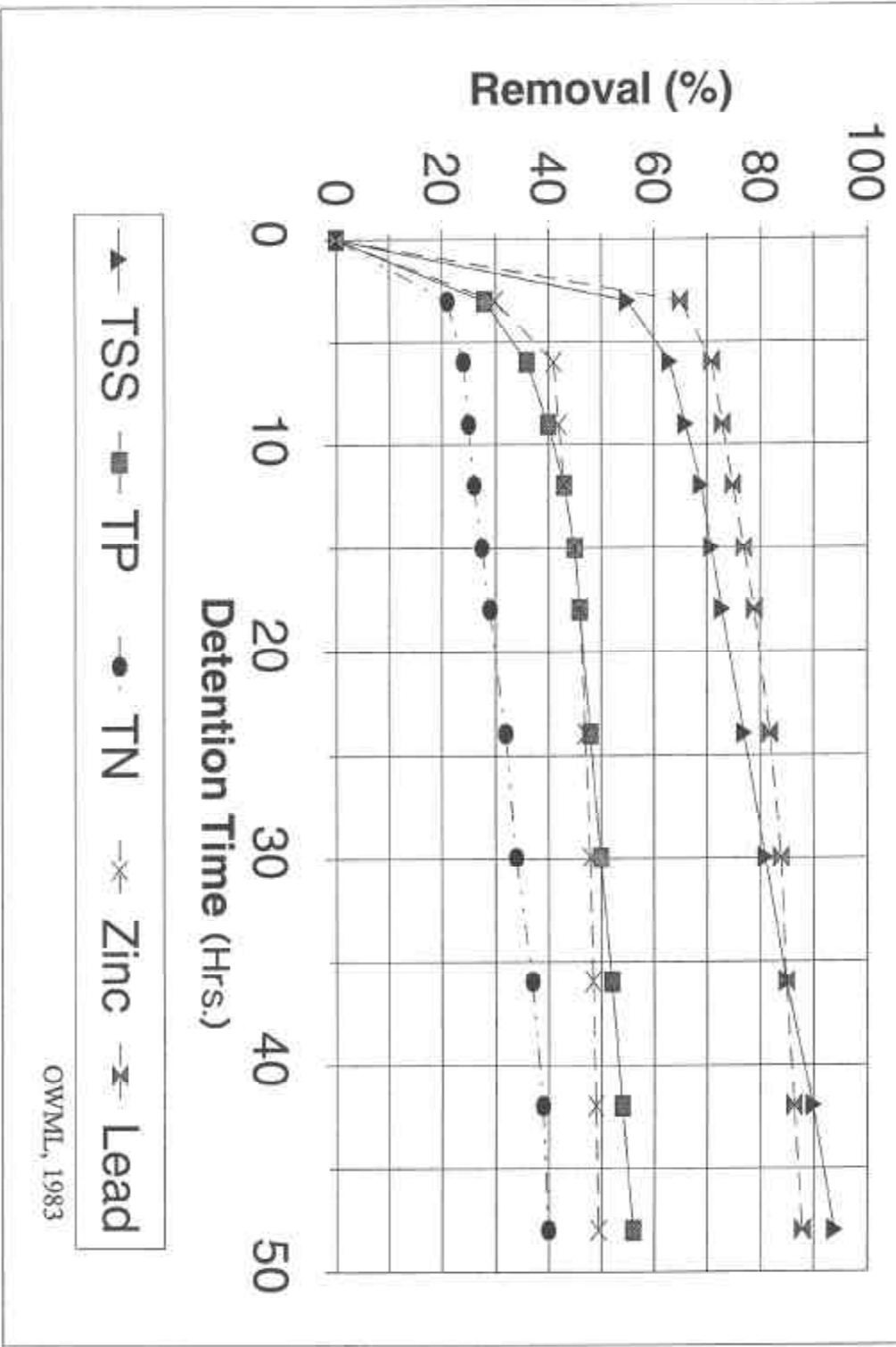
ROCHESTER, MINNESOTA

SURFACE WATER MANAGEMENT PLAN

FIGURE 6-4



# Pollutant Removal vs. Detention Time



OWML, 1983

## POLLUTANT REMOVAL

ROCHESTER, MINNESOTA

SURFACE WATER MANAGEMENT PLAN

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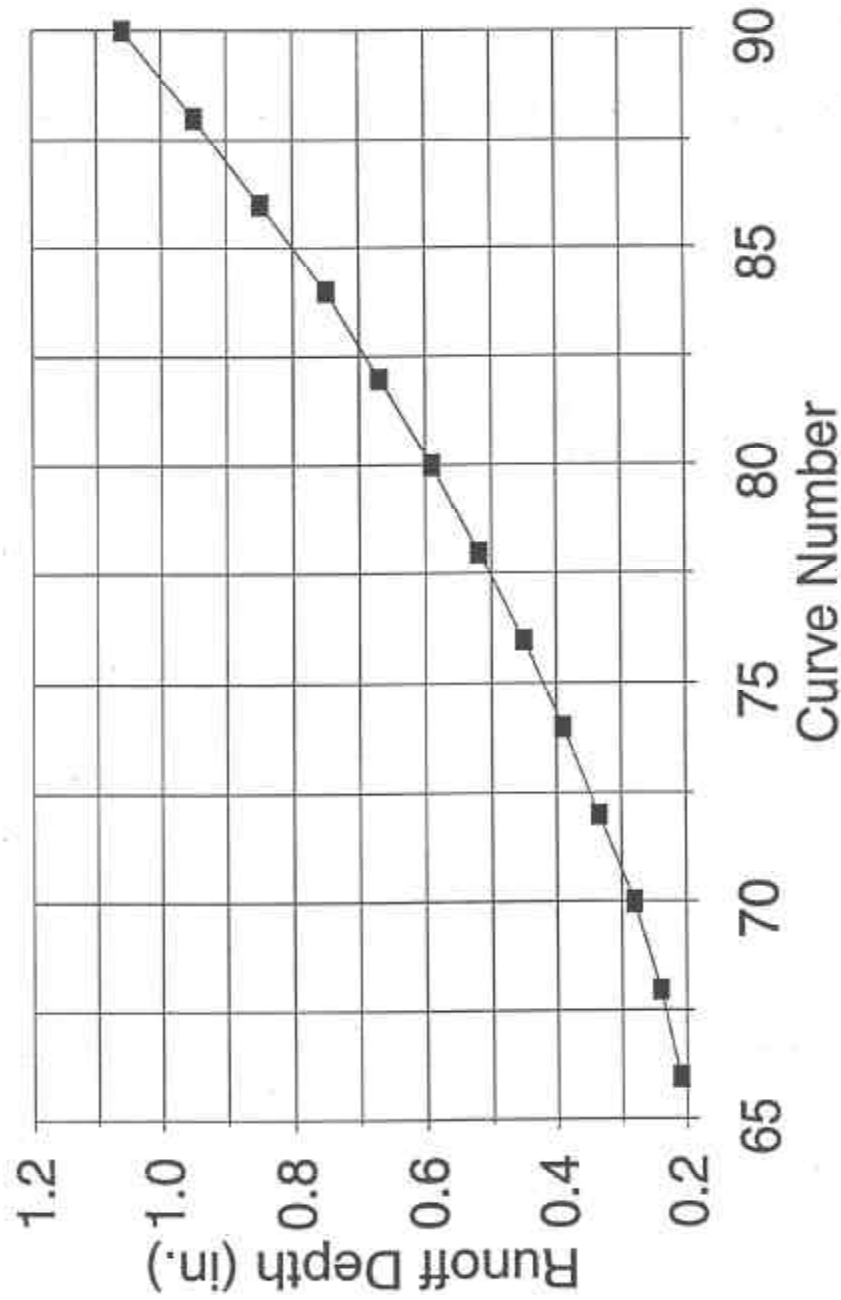
FIGURE 6-4

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HDC



# 1.8 inch, 6-hour Runoff Depth



1.8 INCH, 6-HOUR RUNOFF DEPTH

ROCHESTER, MINNESOTA

SURFACE WATER MANAGEMENT PLAN

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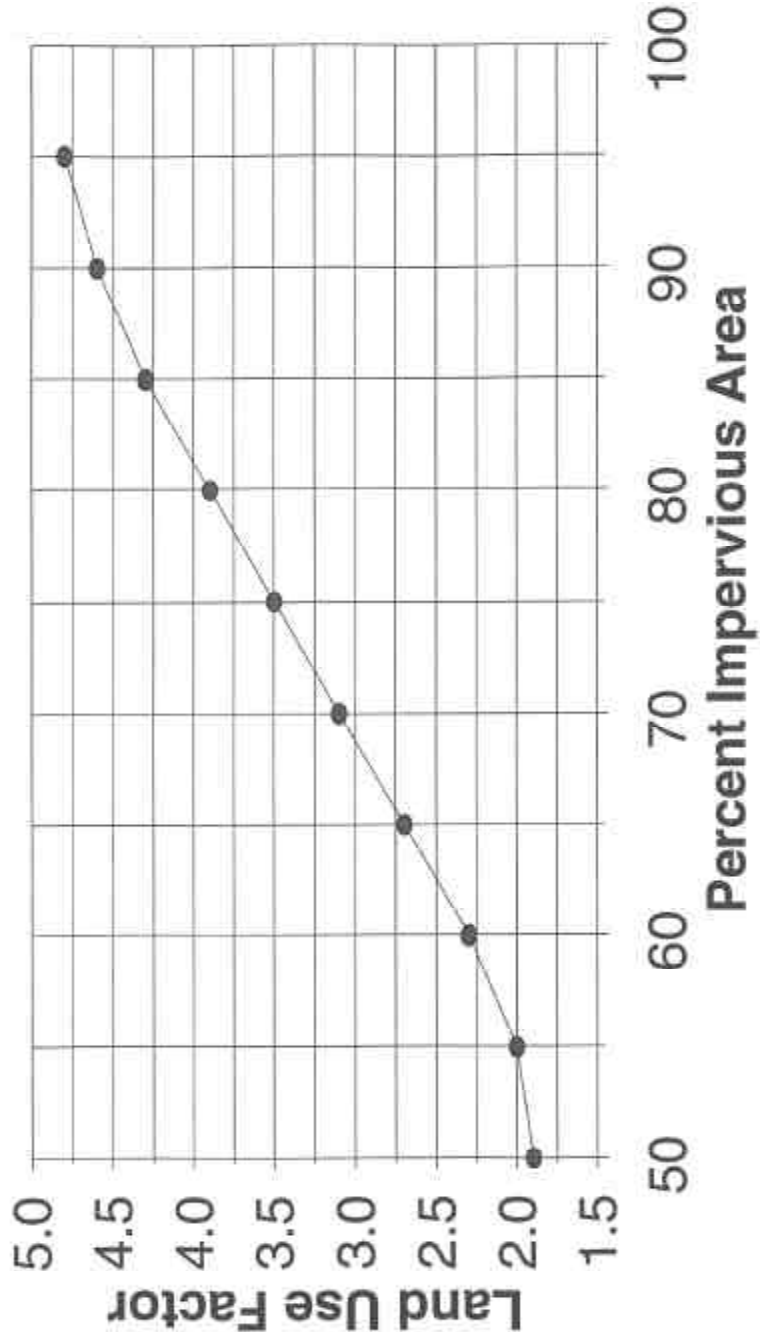
36306

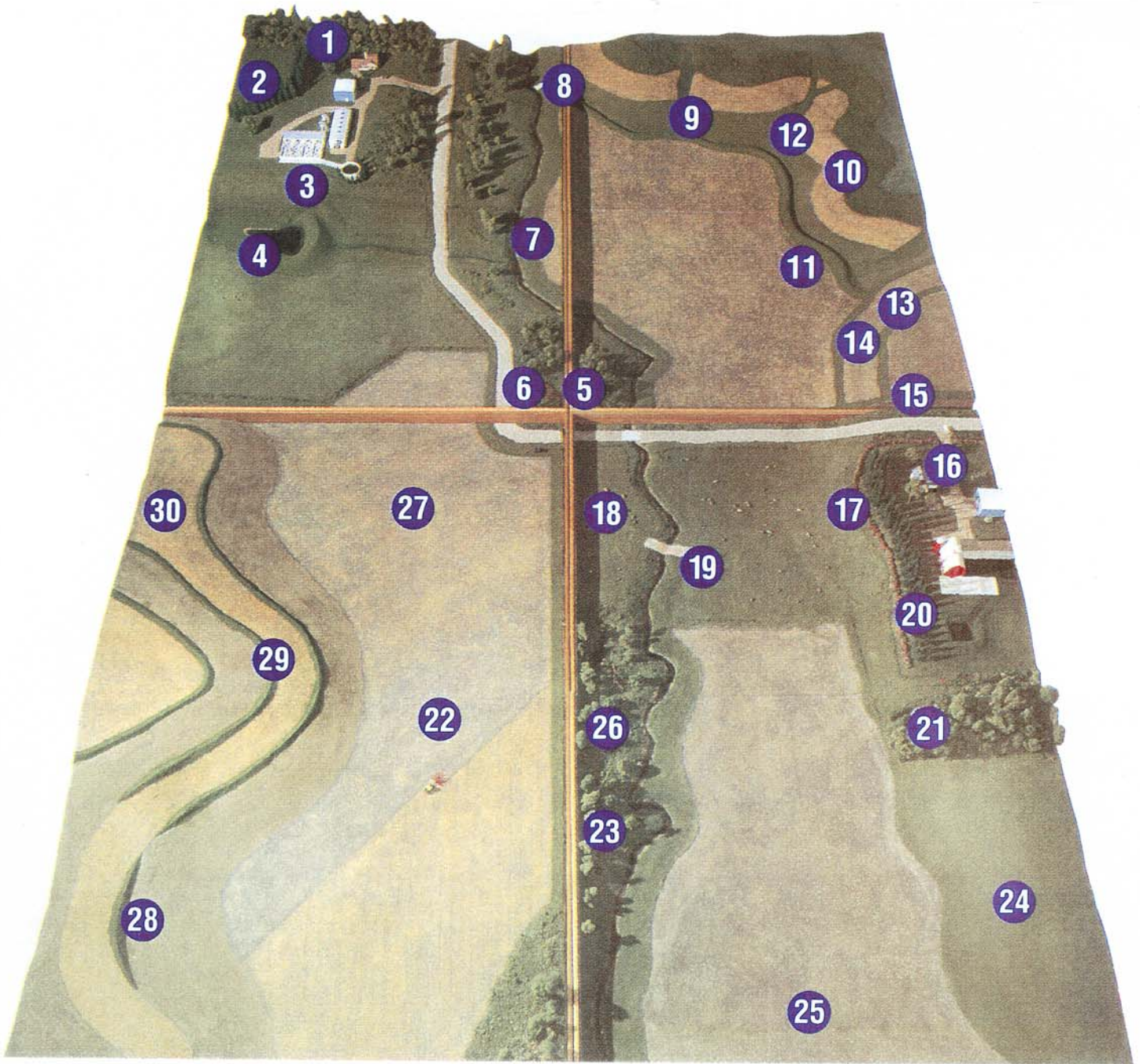
HDG.

FIGURE 6-5



# Land Use Factor Commercial - Industrial Development





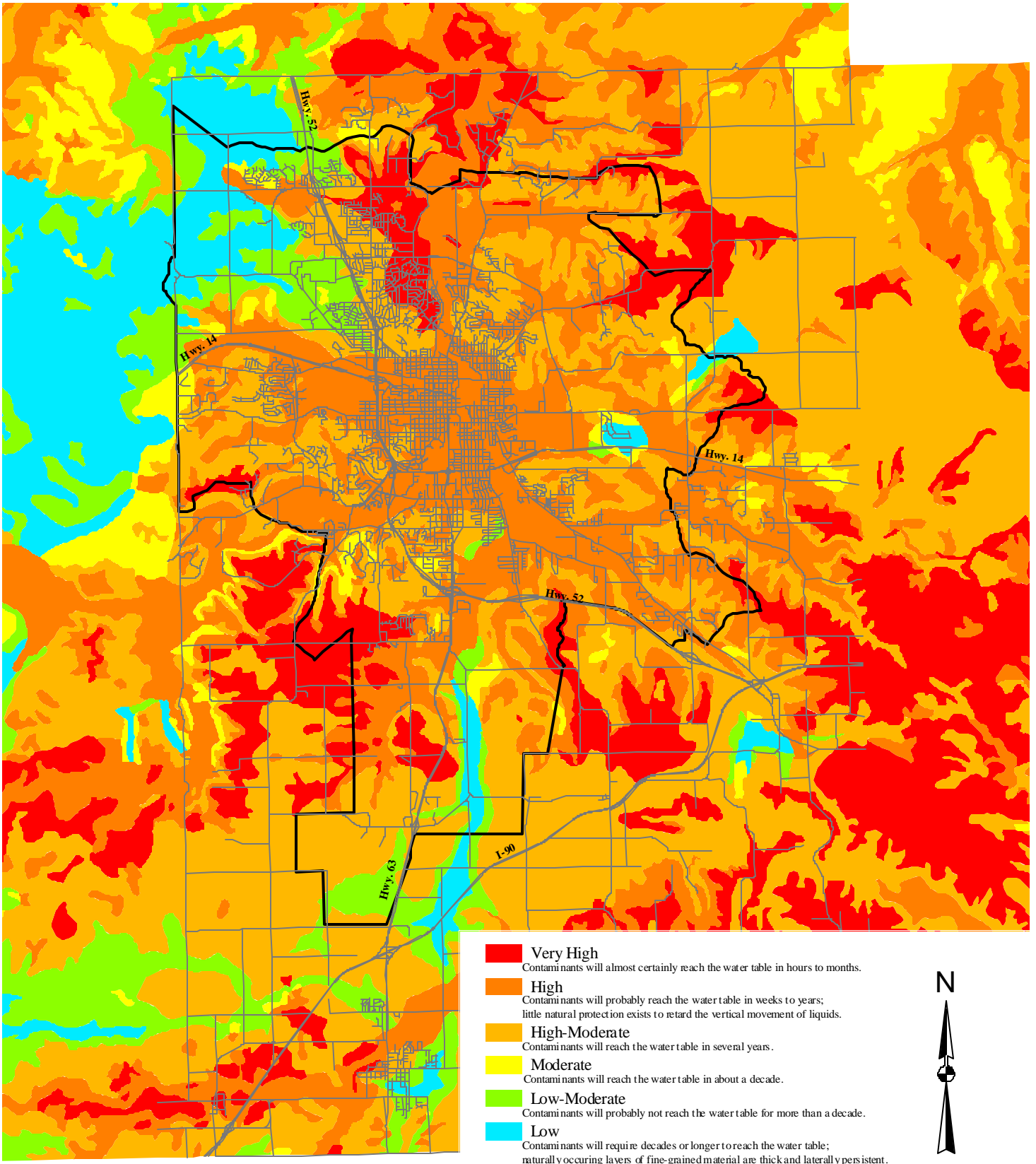
SOURCE: USDA/NRCS, 1994

AGRICULTURAL MANAGEMENT PRACTICES

ROCHESTER, MINNESOTA  
 SURFACE WATER MANAGEMENT PLAN

FIGURE 9-1





**SENSITIVITY OF THE GROUND-WATER SYSTEM TO POLLUTION**

**ROCHESTER, MINNESOTA  
SURFACE WATER MANAGEMENT PLAN**

**FIGURE 10-1**

COUNTY ATLAS SERIES  
ATLAS C-3, PLATE 6 OF 9

BY: BRUCE M. OLSEN & HOWARD C. HOBBS 1988





# STORMWATER BASIN - ANNUAL INSPECTION FORM

## City of Rochester

Pond Name: \_\_\_\_\_ Number: \_\_\_\_\_  
 Location: \_\_\_\_\_ Data Collector: \_\_\_\_\_

Date: \_\_\_\_\_  
 Time: \_\_\_\_\_

### STRUCTURAL

Pond Outlet - Description (material, config, size, location)

Comments \_\_\_\_\_

Primary Outlet: \_\_\_\_\_

Clear of obstructions, partially blocked, blocked \_\_\_\_\_

Emergency Outlet: \_\_\_\_\_

Clear of obstructions; partially blocked, blocked \_\_\_\_\_

Skimmer Device: \_\_\_\_\_

Clear of obstructions, partially blocked, blocked \_\_\_\_\_

Pond Inlet(s) - Description (material, config, size, location)

Sedimentation

Energy dissipation

Erosion at Inlet

Comments

Inlet 1: \_\_\_\_\_

None, Light, Heavy    None, Rip Rap, Other    None, Light, Heavy \_\_\_\_\_

Inlet 2: \_\_\_\_\_

None, Light, Heavy    None, Rip Rap, Other    None, Light, Heavy \_\_\_\_\_

Inlet 3: \_\_\_\_\_

None, Light, Heavy    None, Rip Rap, Other    None, Light, Heavy \_\_\_\_\_

Pond Water Levels -

Design

Recorded

Appears above average

Appears below average

Evidence of persistent Change

Comments

NWL \_\_\_\_\_

Yes, No    Yes, No    Yes, No    Yes, No    Yes, No    \_\_\_\_\_

HWL \_\_\_\_\_

Yes, No    Yes, No    Yes, No    Yes, No    Yes, No    \_\_\_\_\_

Estimated wet volume lost to sedimentation \_\_\_\_\_ Attach copy of As-Built grading plan

### BASIN INSPECTION FORM

ROCHESTER, MINNESOTA

SURFACE WATER MANAGEMENT PLAN

FIGURE 1.1-1c

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5/15/97

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H0G



**ENVIRONMENTAL**

Evidence of Dumping: Yes, No \_\_\_\_\_ If yes, circle material: yard/garden waste, construction debris, hazardous, other \_\_\_\_\_  
 Scent disk Reading \_\_\_\_\_  
 Oil Sheen Yes, No \_\_\_\_\_  
 Water Color: Bright Green, Faint Green, Clear, Faint Brown, Brown \_\_\_\_\_  
 Evidence of Algal blooms: Yes, No, If yes, circle one: Light, Medium, Dense \_\_\_\_\_  
 Dry Weather Inflow: Yes, No, If yes, does flow have odor or color? \_\_\_\_\_ Grab Sample Taken? \_\_\_\_\_  
 Weather period: Describe weather period one week before sampling include relative temperatures, rainfall, etc. \_\_\_\_\_

Pond Grab Sample Taken: \_\_\_\_\_ Circle Type of Analysis: TSS TP TKN Ortho P Metals \_\_\_\_\_

Vegetation communities present

Emergent: present, non-present? if present, species or number of species observed: \_\_\_\_\_  
 Submergent: present, non-present? if present, species or number of species observed: \_\_\_\_\_  
 Floating Leaf: present, non-present? if present, species or number of species observed: \_\_\_\_\_  
 Exotics: present, non-present? if present, check those found and circle density \_\_\_\_\_  
 \_\_\_\_\_ Reed Canary Grass High Medium Low  
 \_\_\_\_\_ Purple Loosestrife High Medium Low  
 \_\_\_\_\_ Common Buckhorn High Medium Low  
 \_\_\_\_\_ Eurasian Milfoil High Medium Low  
 \_\_\_\_\_ Other \_\_\_\_\_ High Medium Low

**WILDLIFE - check those present**

	Evidence	# of Species Present	Abundance	Comments
Amphibians	Visual, audible, other _____	_____	Many, moderate, few	_____
Reptiles	Visual, audible, other _____	_____	Many, moderate, few	_____
Water Birds	Visual, audible, other _____	_____	Many, moderate, few	_____
Mammals	Visual, audible, other _____	_____	Many, moderate, few	_____
Insects	Evidence of: Dragon flies, Damselflies, Mosquitos, Waterbugs Abundance of: many, mod, few many, mod, few many, mod, few many, mod, few	_____	_____	_____

**BASIN INSPECTION FORM**

ROCHESTER, MINNESOTA  
 SURFACE WATER MANAGEMENT PLAN

FIGURE 11-1b

