What is HYDINFRA?

HYDINFRA

is Mn/DOT's

Hydraulic Infrastructure Database

HYDINFRA's Purpose:

Manage Information about Mn/DOT's

Storm Drainage System

HYDINFRA *(structural)* Features

- Pipes
- Structures
- Special Structures
- SPCDs (Stormwater Pollution Control Devices)
- Ponds
- Ditches

HYDINFRA *Virtual* Features

- Outfall/Infall
- Illicit Discharge

HYDINFRA and MS4

- Ponds and SPCDs (Stormwater Pollution Control Devices) for Water Quality Treatment

- Outfall/Infall and Illicit Discharge

allows stormwater tracking to occur.

HYDINFRA Features

Pipes

Pipes

- Box Culverts
- Round
- Arch
- Elliptical
- Other

Structures

- Catch Basins
- Manholes
- Drop Inlets

Structure: Catchbasins

Drop Inlet with Stool Grate

Drop Inlet “ankle buster”

Structure: Manhole (look for near solid cover)

Is water meant to flow into grate?

Manhole vs Catchbasin or Drop Inlet

Special Structures

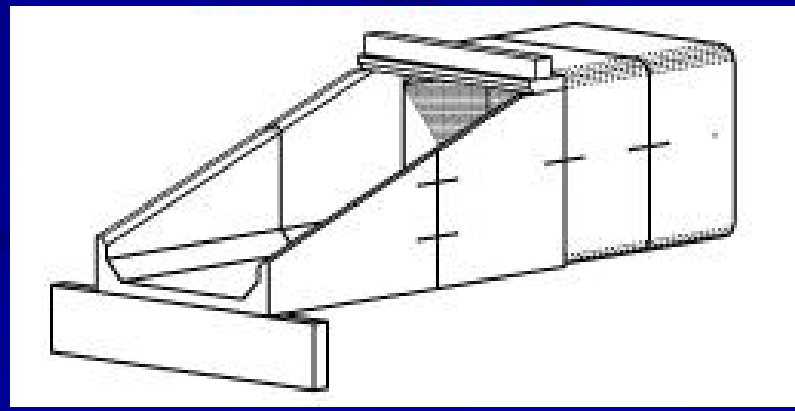
- Aprons
- Slotted Drain
- Headwalls
- Reducers, Increasers
- Things that don’t fit in the other feature categories

Special Structure -- Headwall

Aprons, Riprap

Special Structure: Trash Grate (non-standard)

Special Structure: Wingwall vs Box End Section



Special Structure: Mitered Safety Apron

Special Structure: Apron

Flared Apron withTrash Grate

New Feature:

POND

Pond

WestwoodWQ 21SEP05

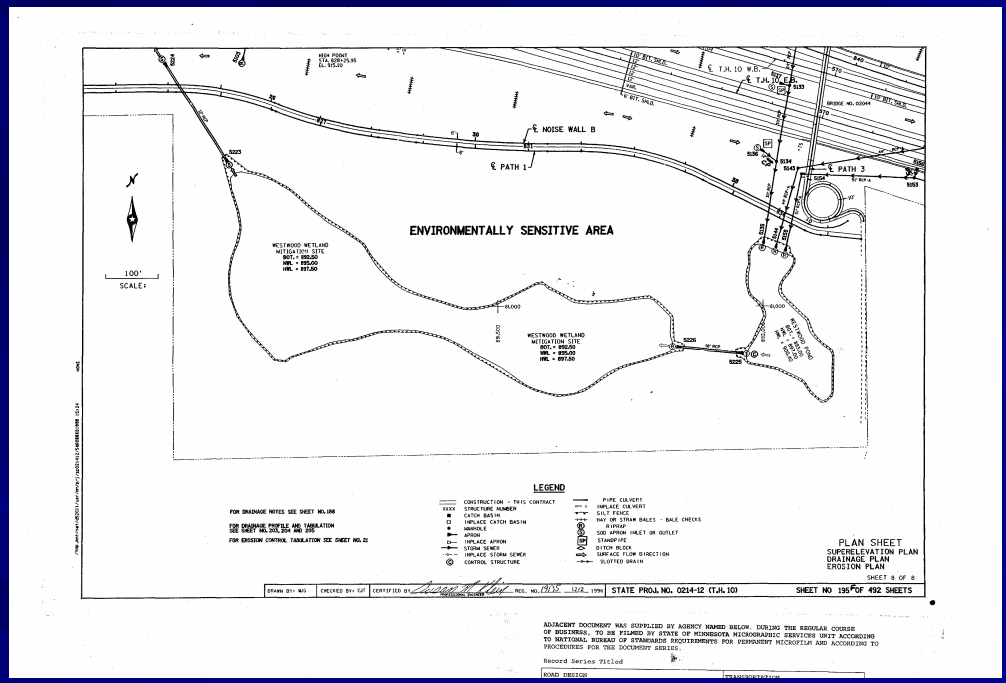
Ponds may be dry

WestwoodWet 2nd Cell Wetland
21SEP05

Pond Outlet Design

- Wet
- Dry
- Infiltration
- Unknown

Need Construction Plans to do the Pond or SPCD Inventory:



- Outlet Design
- NWL
- HWL100
- Pond Bottom
- Pond Area
- And more

New Feature:

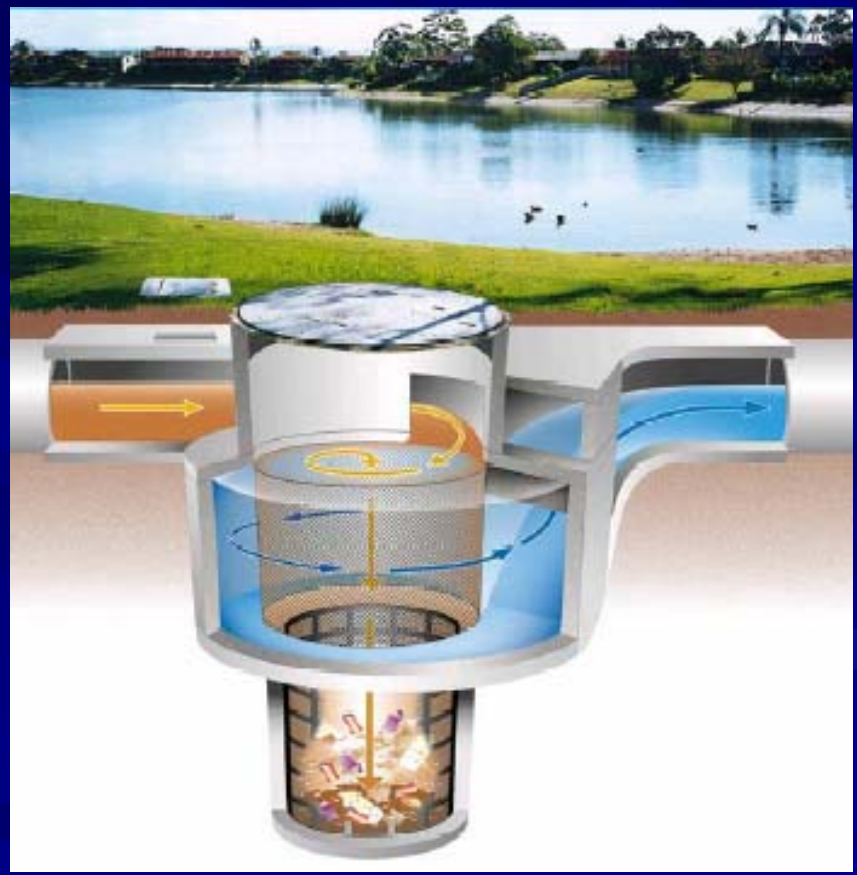
SPCD

Stormwater Pollution Control Device

SPCD Types

- Separator
- Grit Chamber
- Skimmer
- Filter
- Other

Separator



Example: Swirl Chamber

Grit Chamber

- Baffled box

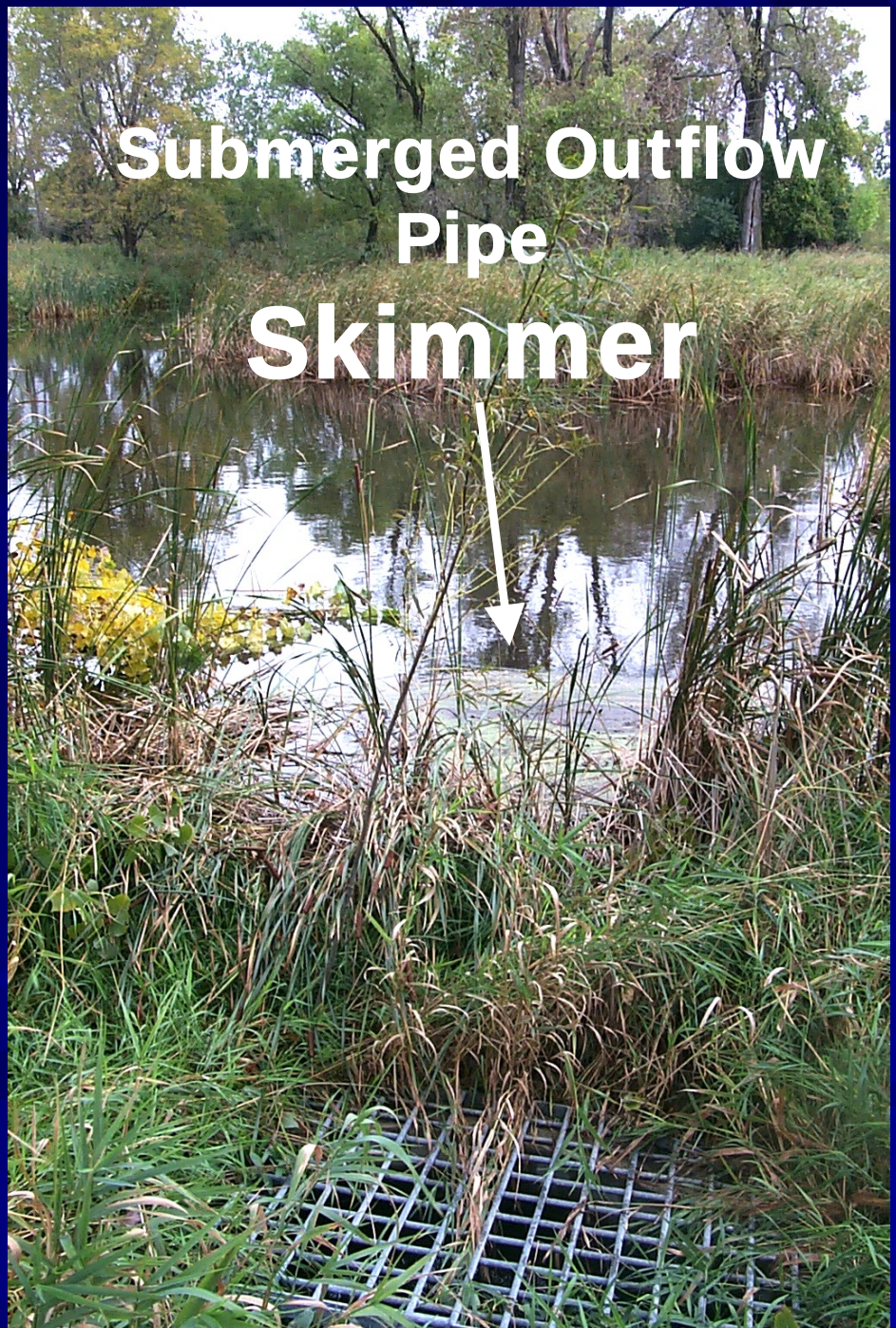
Example:
Wooden Skimmer

21SEP05

22SEP05

WestwoodWQ Pond Outlet Skimmer

I35W & Co10 Wetland



22SEP05

Filter

Example: Permanent Floating Silt Curtain

Ditch

- Ditch Feature not normally collected
- Ditch Feature was added to connect drainage systems
- Can be used to track ditch maintenance

Ditch

Each Feature has an:

- Inventory
- Inspection
- Activity

Pond Inventory Attributes Define the Physical Pond:

- Outlet Design – Wet, Dry or Other
- Number of Cells
- Treatment Capabilities – Sed, Chem, Peak Reduction, etc
- Pond Lining Material
- NWL, HWL, Bottom Elevation
- Surface Area
- Drainage Easement or Wetland Credit
- And more

Pond Inspection Attributes Describe the Condition:

- Condition Rating
- Flags –
  - Clean Sediment
  - Clean Debris
  - Repair Embankment
  - Repair Erosion
  - Restore Infiltration
  - Inflows Clear and Functioning
  - Outfall Clear and Functioning
- Sediment % Full

Pond Activity Attributes Describe Maintenance Done and Changes Over Time:

- Sediment Cleaned
- Debris Removed
- Embankment Repaired
- Erosion Repaired
- Lining Repaired
- Erosion Mat Placed
- Weeds Removed
- And more

“Maintenance Activity”

- Data Dictionary for Maintenance Work – MaintAct.ddf
- Captures repair or maintenance to a Feature
- Can be used for MS4 record keeping

GPS Data Dictionaries

- New Features are collected with NewFeat.ddf
- Features previously collected are re-inspected with ExistFeat.ddf
- Maintenance Activities are recorded with MaintAct.ddf

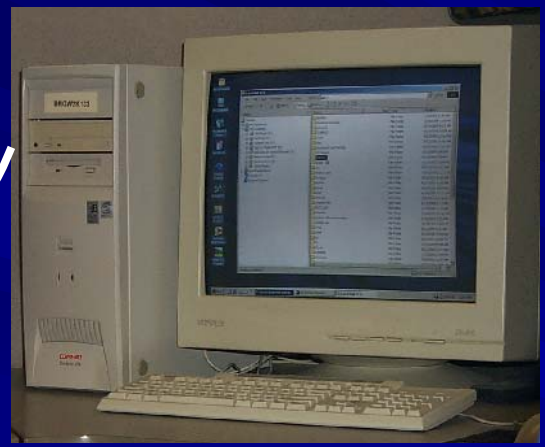
How it’s done

Inspector Collects Data with GPS

Input Data:

Transfer GPS files to PC

Export Data to hif format

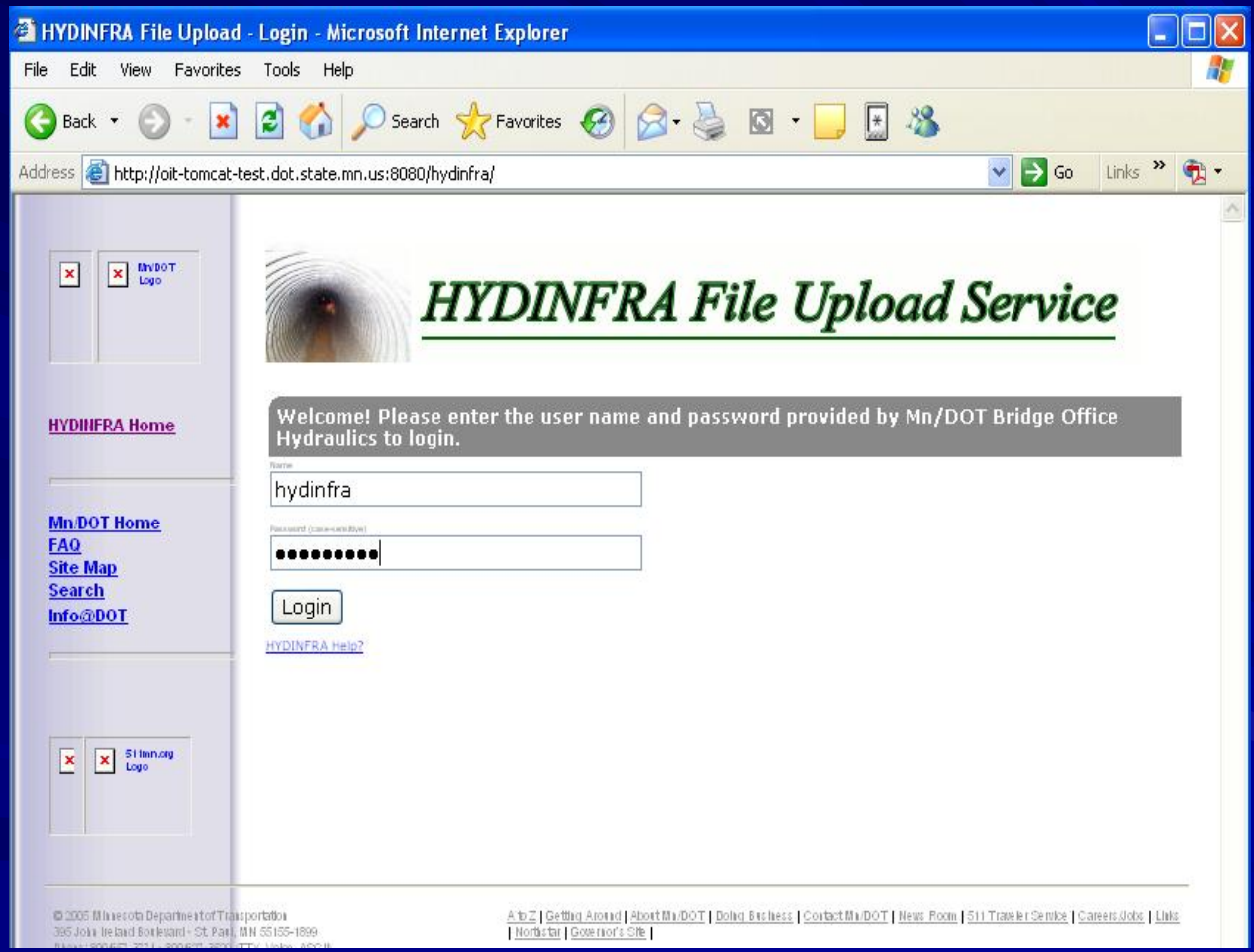


Upload Data from Website

HYDINFRA Database

Oracle Server

HYDINFRA Online Data Upload



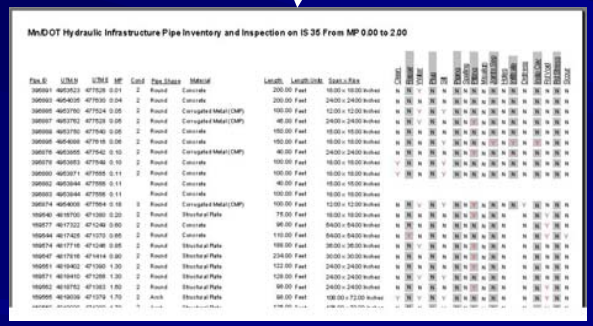
Using HYDINFRA Data

HYDINFRA
Database

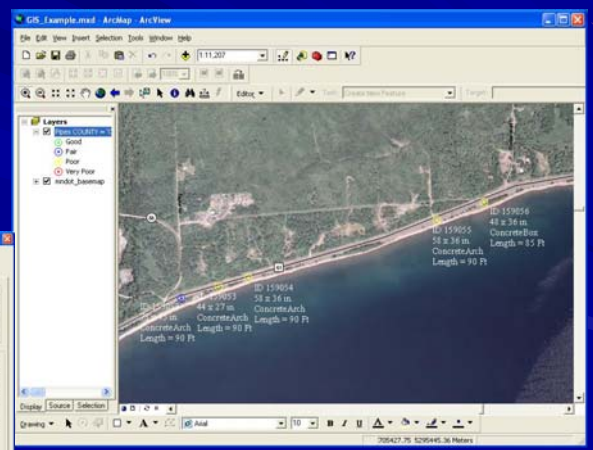
Oracle Server

Data Access Methods

Forms



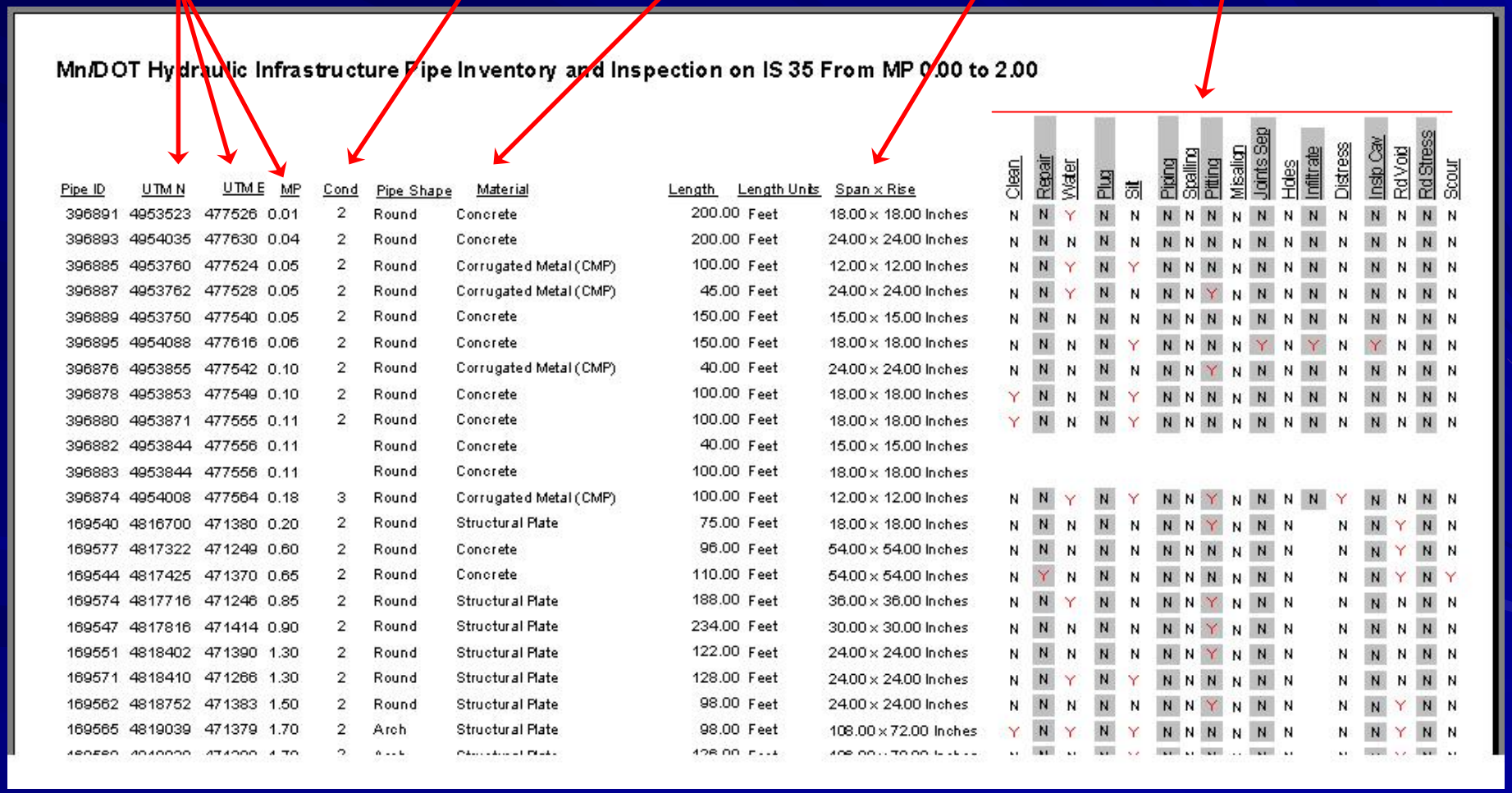
Reports



ArcGIS

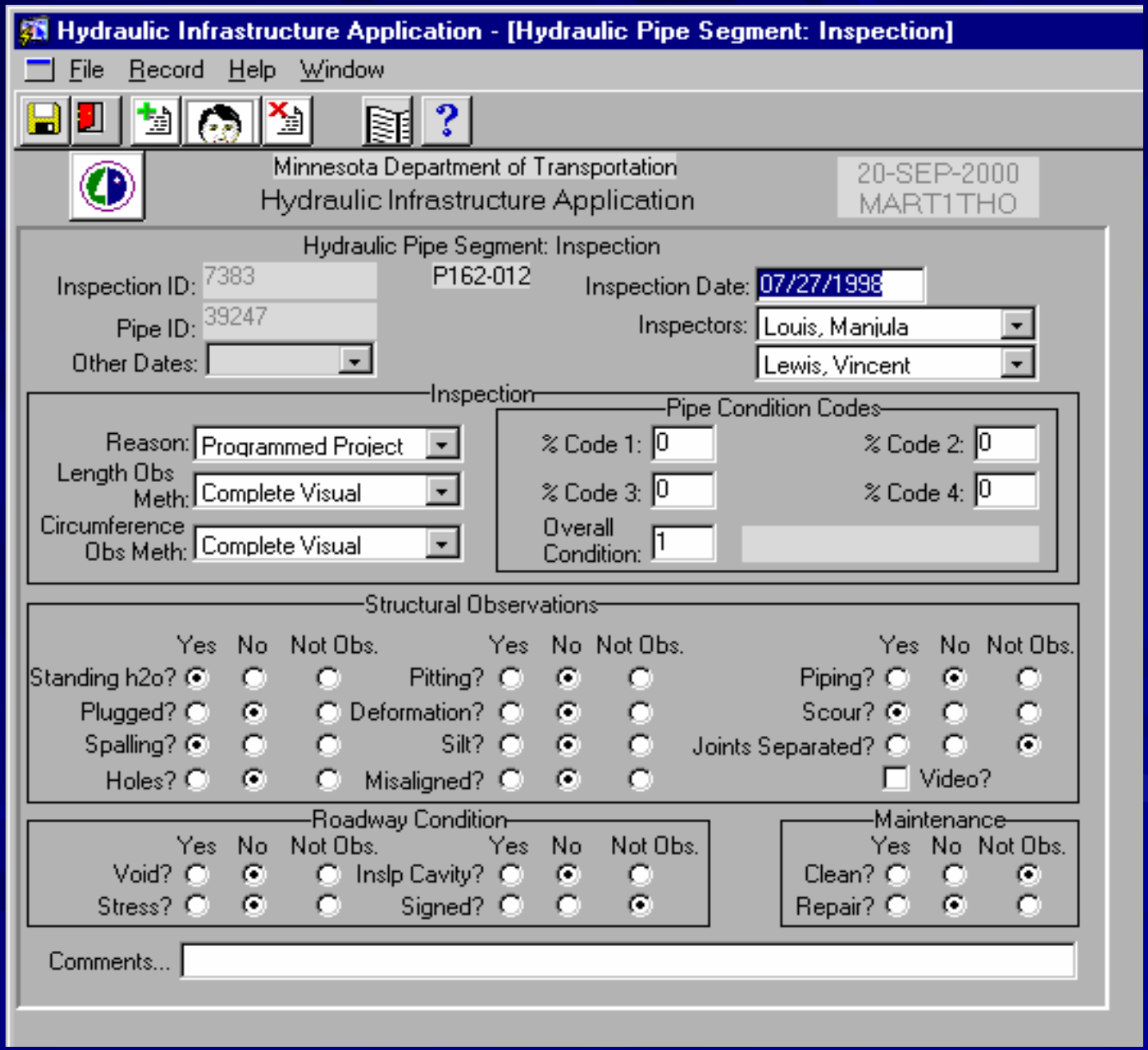
Pipe Inventory & Inspection Crystal Reports

Location Condition Material Size Flags

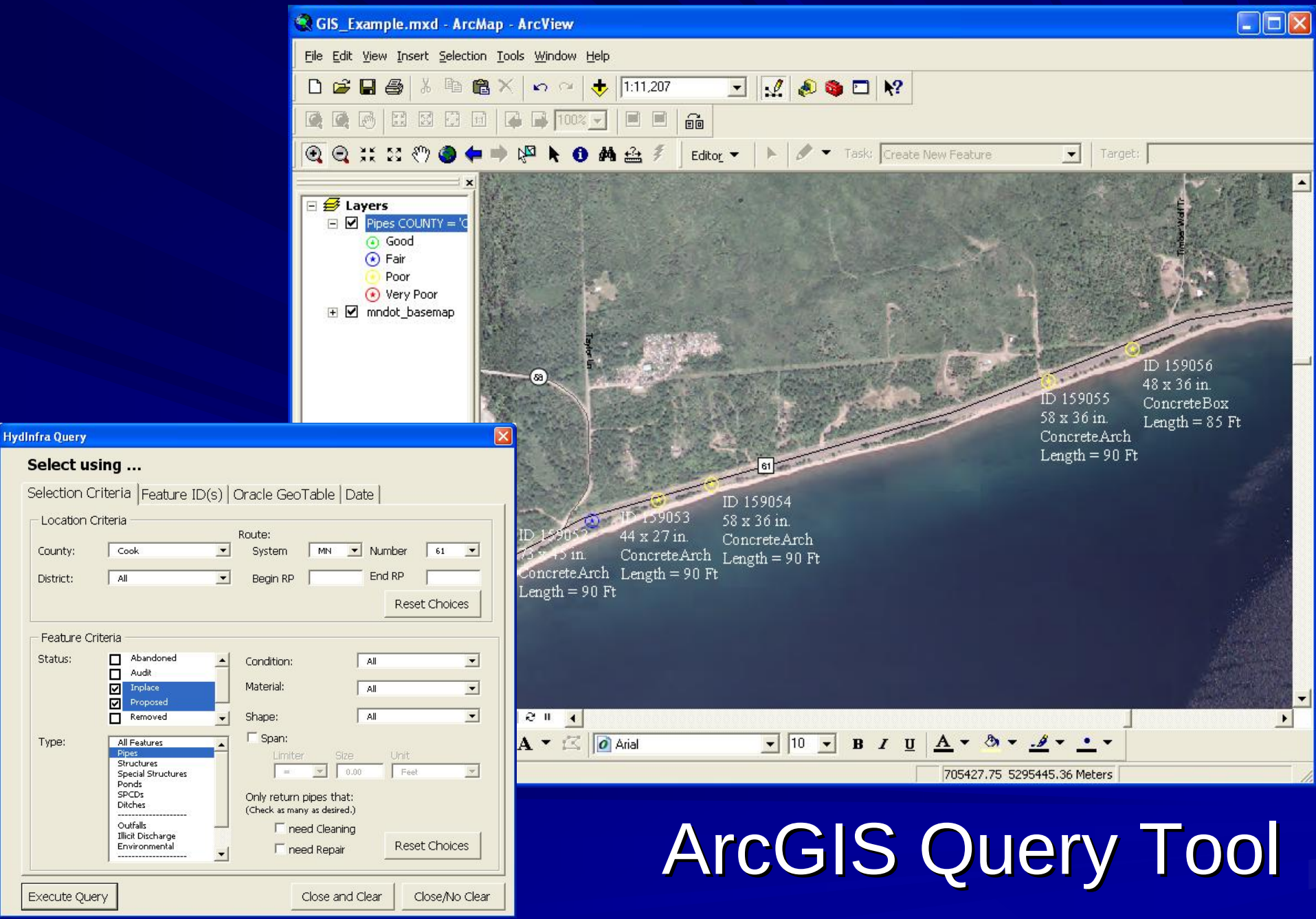


Mn/DOT Hydraulic Infrastructure Pipe Inventory and Inspection on IS 35 From MP 0.00 to 2.00

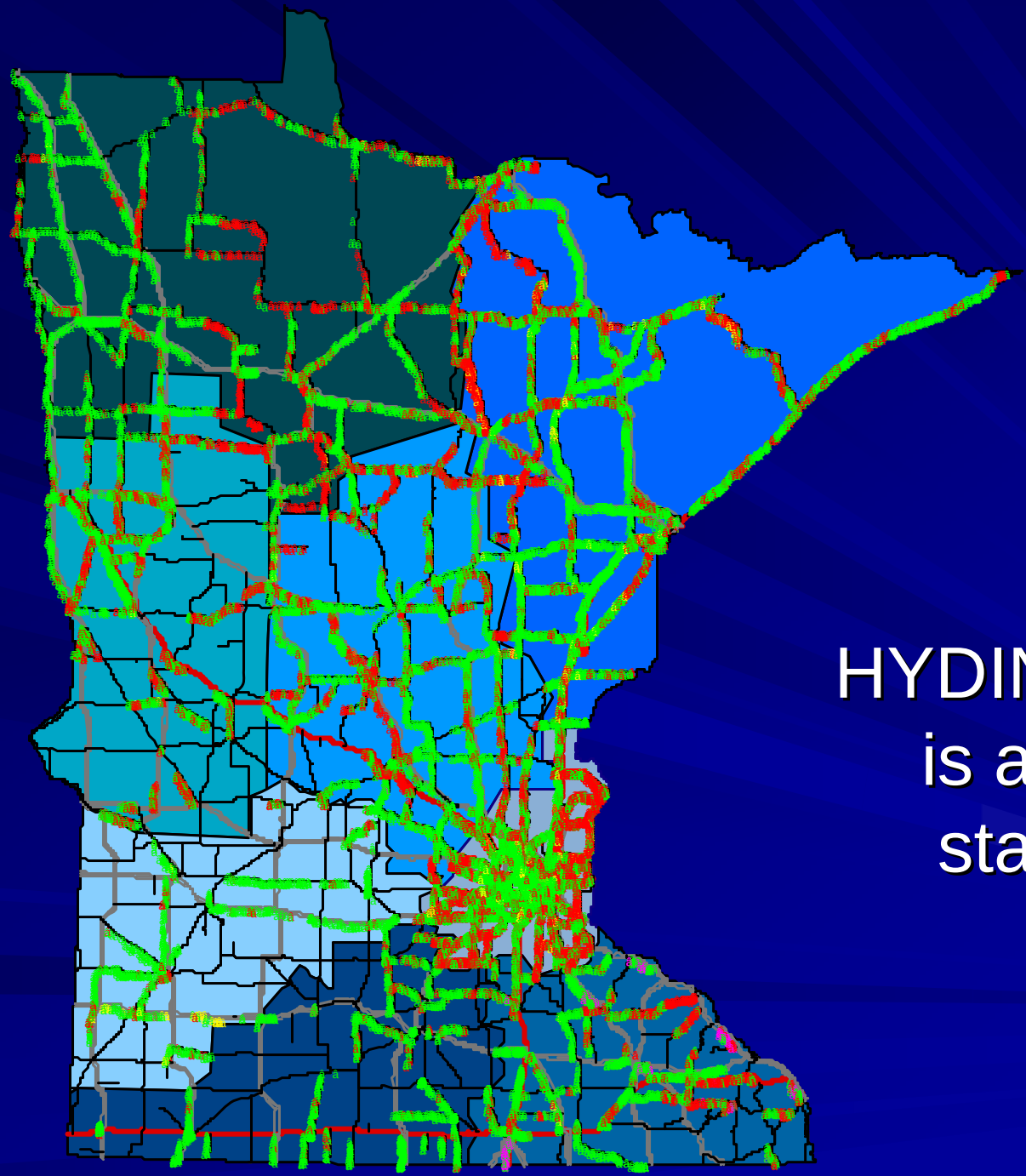
Pipe ID	UTM N	UTM E	MP	Cond	Pipe Shape	Material	Length	Length Units	Span x Rise	Clean	Repair	Water	Plug	Silt	Piping	Spalling	Pitting	Misalign	Joints Sep	Holes	Infiltrate	Distress	Insp Cav	Rd Void	Rd Stress	Scour
396891	4953523	477526	0.01	2	Round	Concrete	200.00	Feet	18.00 x 18.00 Inches	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N
396893	4954035	477630	0.04	2	Round	Concrete	200.00	Feet	24.00 x 24.00 Inches	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
396885	4953760	477524	0.05	2	Round	Corrugated Metal (CMP)	100.00	Feet	12.00 x 12.00 Inches	N	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N
396887	4953762	477528	0.05	2	Round	Corrugated Metal (CMP)	45.00	Feet	24.00 x 24.00 Inches	N	N	Y	N	N	N	N	Y	N	N	N	N	N	N	N	N	N
396889	4953750	477540	0.05	2	Round	Concrete	150.00	Feet	15.00 x 15.00 Inches	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
396895	4954088	477616	0.06	2	Round	Concrete	150.00	Feet	18.00 x 18.00 Inches	N	N	N	N	Y	N	N	N	N	Y	N	Y	N	Y	N	N	N
396876	4953855	477542	0.10	2	Round	Corrugated Metal (CMP)	40.00	Feet	24.00 x 24.00 Inches	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N
396878	4953853	477549	0.10	2	Round	Concrete	100.00	Feet	18.00 x 18.00 Inches	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N
396880	4953871	477555	0.11	2	Round	Concrete	100.00	Feet	18.00 x 18.00 Inches	Y	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N
396882	4953844	477556	0.11		Round	Concrete	40.00	Feet	15.00 x 15.00 Inches																	
396883	4953844	477556	0.11		Round	Concrete	100.00	Feet	18.00 x 18.00 Inches																	
396874	4954008	477564	0.18	3	Round	Corrugated Metal (CMP)	100.00	Feet	12.00 x 12.00 Inches	N	N	Y	N	Y	N	N	Y	N	N	N	N	Y	N	N	N	N
169540	4816700	471380	0.20	2	Round	Structural Plate	75.00	Feet	18.00 x 18.00 Inches	N	N	N	N	N	N	N	Y	N	N	N		N	N	Y	N	N
169577	4817322	471249	0.60	2	Round	Concrete	96.00	Feet	54.00 x 54.00 Inches	N	N	N	N	N	N	N	N	N	N	N		N	N	Y	N	N
169544	4817425	471370	0.65	2	Round	Concrete	110.00	Feet	54.00 x 54.00 Inches	N	Y	N	N	N	N	N	N	N	N	N		N	N	Y	N	Y
169574	4817716	471246	0.85	2	Round	Structural Plate	188.00	Feet	36.00 x 36.00 Inches	N	N	Y	N	N	N	N	Y	N	N	N		N	N	N	N	N
169547	4817816	471414	0.90	2	Round	Structural Plate	234.00	Feet	30.00 x 30.00 Inches	N	N	N	N	N	N	N	Y	N	N	N		N	N	N	N	N
169551	4818402	471390	1.30	2	Round	Structural Plate	122.00	Feet	24.00 x 24.00 Inches	N	N	N	N	N	N	N	Y	N	N	N		N	N	N	N	N
169571	4818410	471266	1.30	2	Round	Structural Plate	128.00	Feet	24.00 x 24.00 Inches	N	N	Y	N	Y	N	N	N	N	N	N		N	N	N	N	N
169562	4818752	471383	1.50	2	Round	Structural Plate	98.00	Feet	24.00 x 24.00 Inches	N	N	N	N	N	N	N	Y	N	N	N		N	N	Y	N	N
169565	4819039	471379	1.70	2	Arch	Structural Plate	98.00	Feet	108.00 x 72.00 Inches	Y	N	Y	N	Y	N	N	N	N	N	N		N	N	Y	N	N



Oracle Forms



ArcGIS Query Tool



HYDINFRA data is available statewide.

End