



**Create an Intelligent AutoCAD Infrastructure Map to help you  
Meet the New Federal Government Reporting Requirements  
It can be done quickly for a reasonable cost – we can help**

**GASB 34** State and local governments in the U.S. invest an estimated **\$150 billion** annually in the construction and improvement of capital assets, including infrastructure assets like roads, bridges, dams, water systems and sewer systems. These expenditures are significant, representing **more than 10 percent** of the funds spent by those governments. Much of this infrastructure investment is financed by borrowing—selling municipal bonds and using the proceeds to pay for construction.

The need for public accountability arises when such sums are spent and when current and future generations are committed to repay such debts. **The public wants to know** how much governments spend on infrastructure construction and how much they borrow to finance it. The public wants to know if government officials subsequently are caring for the infrastructure they have built with public resources.

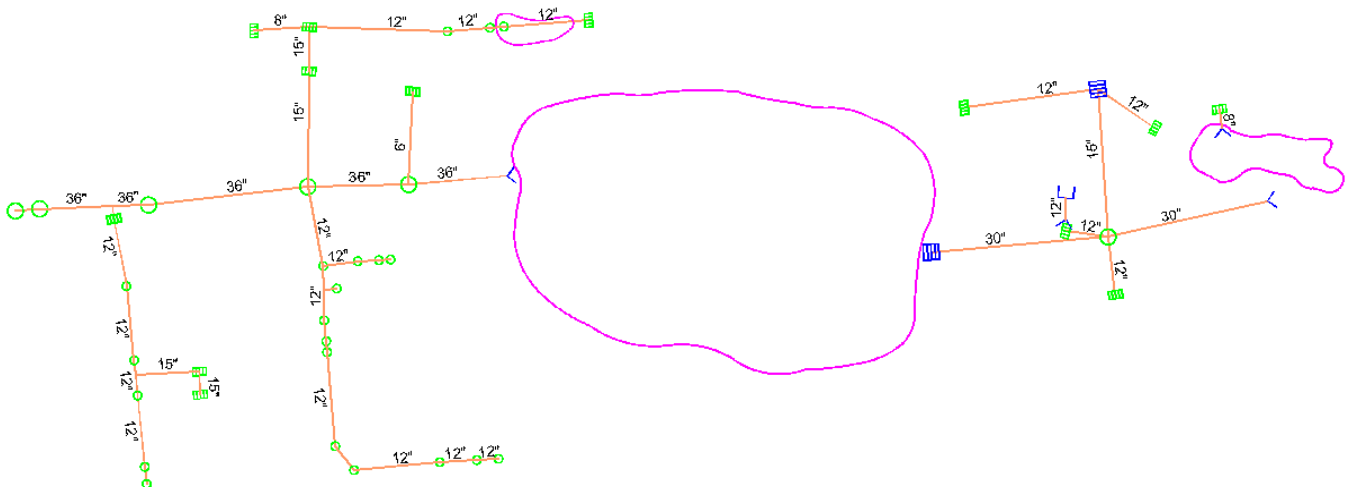
**The most significant pronouncement in the history of financial reporting** requirements for the more than 84,000 state and local governments in the United States was issued in June 1999 when the Governmental Accounting Standards Board (GASB) unanimously approved Statement No. 34 (GASB 34). Among its many new provisions, GASB 34 required that state and local governments begin to report on the value of their infrastructure assets, including roads, bridges, water and sewer facilities, and dams.

Governments with total annual revenues of \$10 million or more are required to apply the GASB 34 Statement beginning with fiscal years ending after **June 15, 2003**. (see additional information sheet)

**NPDES** Storm runoff is major source of pollution to surface water. Runoff from certain sources is subject to regulation by the federal **Clean Water Act's National Pollutant Discharge Elimination System (NPDES)** program, when such runoff is discharged directly to surface water.

The Storm Water **Phase II Final Rule** requires operators of smaller municipal separate storm sewer systems in urbanized areas and operators of small construction sites (1-5 acres), to implement programs and practices to control polluted storm water runoff through the use of NPDES permits. The Phase II Final Rule set a **deadline of no later than March 10, 2003** for all ISTEA-exempted municipally operated industrial activities to obtain permit coverage. (see the additional information sheet attached)

**The Storm Sewer System Map** - is meant to demonstrate a basic awareness of the intake and discharge areas of the system. It is needed to help determine the extent of discharged dry weather flows, the possible sources of the dry weather flows, and the particular waterbodies these flows may be affecting.



**The EPA** recommends collecting all existing information on outfall locations (review records, drainage maps, storm drain maps), and then conducting field surveys to verify locations. It may be necessary to walk the stream banks and shorelines for visual observation.

## CMOM

Sanitary sewer collection systems perform the critical task of collecting sewage and other wastewater from places where people live, work, and recreate, and transport it to the treatment facility for proper treatment and disposal. A combination of factors has resulted in releases of untreated sewage from some parts of the collection systems before it reaches treatment facilities, known as **sanitary sewer overflows**. The untreated sewage from these overflows can contaminate our waters, causing serious water quality problems and threatening drinking water supplies and fish and shellfish.

The EPA estimates that there are **at least 40,000 overflows of sanitary sewers** each year (prohibited under the Clean Water Act since 1972). Municipal wastewater treatment plants that discharge are currently required to comply with National (NPDES) permits, but most **satellite sewage collection systems do not** current have NPDES permits.

**The EPA is proposing revisions** to the NPDES permit regulations. The EPA signed a Notice of Proposed Rulemaking on **January 4, 2001**, which clarifies the NPDES permitting for collection systems. The proposed **CMOM** legislation (Capacity Assurance, Management, Operation, and Maintenance) is currently under review by the Federal Office of Management and Budget (OMB) and is expected to be entered into the Federal Register within the next few months. **Once enacted, all collection system owners will be required to obtain NPDES permits** and develop CMOM plans for their system. **Satellite systems** (those that send their wastewater to a regional authority) **will also be required to obtain permits**.

Documentation will be required, and reported annually, in order to apply for an NPDES permit. To avoid hefty fines, **the CMOM plan should include a complete inventory of sewer system assets** (a system map) and a plan to maintain the map.

### ***What do all of these Federal Requirements have in common?***

- An Accurate, Current Infrastructure Map -

**TCI has over 15 years of Municipal Utility Mapping experience.** Our specialty is the production of intelligent utility maps and our **MapTools** product line includes many tools to automate the process. We can help you produce accurate, current infrastructure maps from practically any source material.

#### **Intelligent Utility Maps – Object Data provides a simple, elegant solution**

Our primary production tool is AutoCAD Map and one of its most useful features is **Object Data**. This feature allows any map entity (lines, text, block inserts, etc) to be associated with tabluar data (tables of text, numbers and points). This is similar to the way a GIS associates external database information with graphical map objects. One big difference is that Object Data is stored as a part of the AutoCAD drawing.

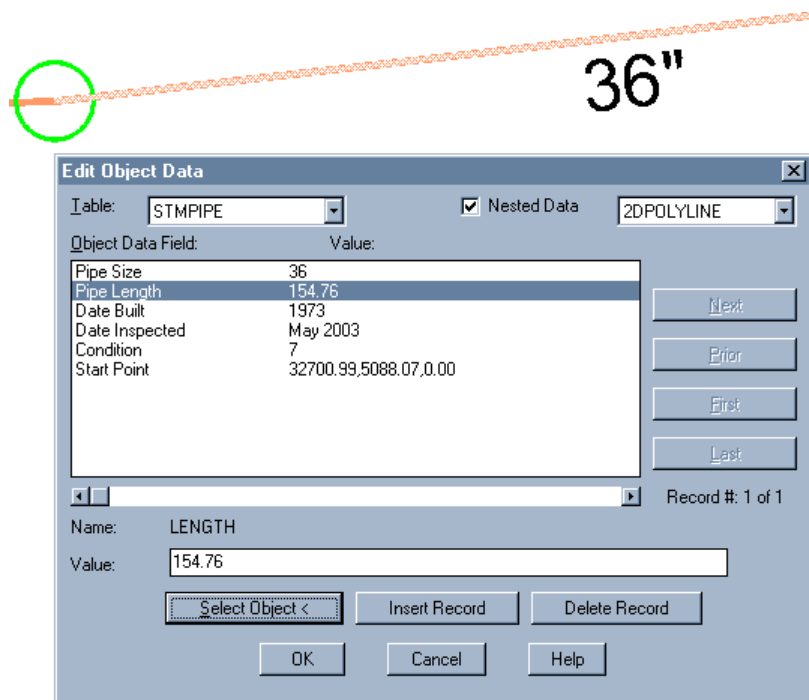
#### **MapTools makes the assignment of Object Data to map elements fast and simple.**

In this example, the linework represents storm sewer pipes. MapTools can automatically calculate **Pipe Length** and assigns the value to an Object Data field for every pipe in the drawing with a single automated operation.

**Pipe Size** can also be automatically assigned using MapTools operations keyed on map element properties. In this case, layer names were used to identify pipe sizes so a single operation can assign pipe size to an Object Data field. We could use any of the other properties like: Color or linetype, depending on drawing format.

**Detention Pond Areas** can likewise be automatically calculated and assigned.

Map elements can also have a **location value** assigned to an Object Data field, such as the start point for pipes or the Insertion Point for Blocks.

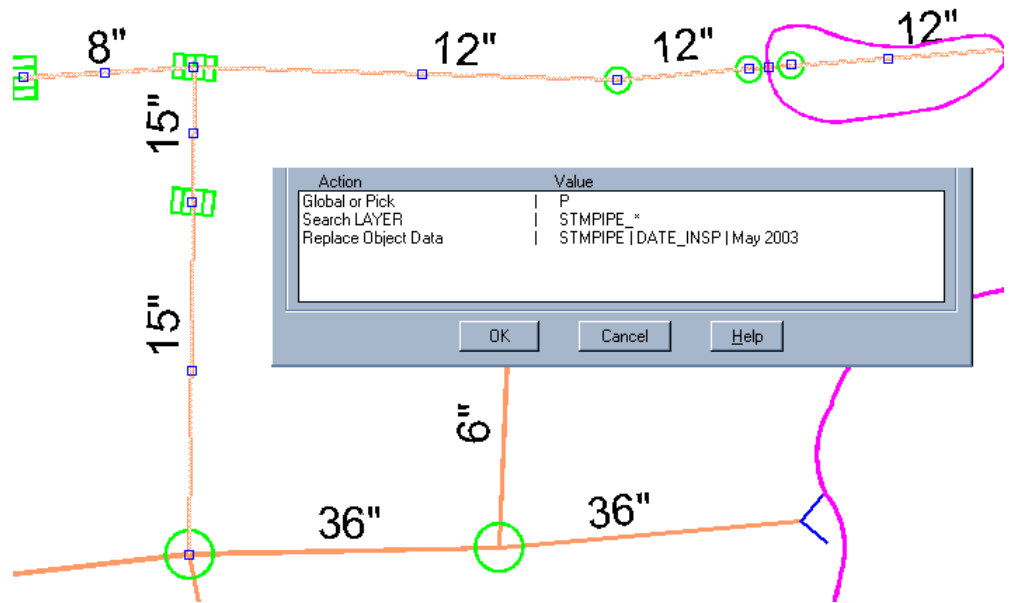


**Semi-automated MapTools operations assign Date Built, Date Inspected and Condition fields.**

The operator enters any Selection Criteria (in this case Layer Name is limited to only those starting with STMPIPE), an Object Data field value is defined (DATE\_INSP in this case) and then the operator selects all map elements that share that value.

MapTools assigns the Object Data is to selected map elements automatically.

This semi-automated approach can really speed up the assignment of information to map elements.



**All of the Inventory Data required for GASB 34 can be stored as Object Data**

The diagram shows a pipe network with diameters of 8", 12", 15", 36", and 12". Three 'Edit Object Data' dialog boxes are overlaid on the map, each showing data for a different object type:

- Pipe Data:** Table with fields: Pipe Size (36), Pipe Length (97.41), Date Built (1973), Date Inspected (May 2003), Condition (7), Start Point (32854.77,5105.49,0.00).
- Point Feature Data:** Table with fields: Feature Type (MH), Location Point (32952.15,5107.65,0.00), Date Built (1973), Date Inspected (May 2003), Condition (8).
- Detention Features:** Table with fields: Detention Area (90498.56), Start Point (33194.90,5195.71,0.00), Date Built (1982), Date Inspected (May 2003), Condition (9), Type (POND).

Navigation buttons (Next, Prior, First, Last) and a 'Record #: 1 of 3' indicator are visible on the right side of the dialog boxes.

# Use your Infrastructure Map to generate GASB 34 documentation

## Export the Object Data from AutoCAD Map and Import it directly into Excel

Once your Infrastructure maps are complete and current (all features are represented and have Object Data attached), you can export it using AutoCAD Map. This process creates database files that are directly usable by Excel, with all Object Data fields becoming Excel columns.

The screenshot shows three tables in an Excel spreadsheet. The first table is titled "Storm Sewer Pipes" and has columns for PIPE SIZE, LENGTH, DATE\_BUILT, DATE\_INSP, and CONDITION. The second table is titled "Storm Sewer Point Features" and has columns for TYPE, LOCATION, DATE\_BUILT, DATE\_INSP, and CONDITION. The third table is titled "Storm Sewer Detention Features" and has columns for AREA, DATE\_BUILT, DATE\_INSP, CONDITION, and TYPE.

	A	B	C	D	E
1	PIPE SIZE	LENGTH	DATE_BUILT	DATE_INSP	CONDITION
2	12	20.946	1973	May 2003	7
3	8	18.881	1973	May 2003	7
4	12	82.132	1973	May 2003	7
5	15	42.316	1973	May 2003	7
6	12	66.713			

	A	B	C	D	E
1	TYPE	LOCATION	DATE_BUILT	DATE_INSP	CONDITION
2	CB	33617.48,5199.13,0,00	1988	May 2003	8
3	MH	33456.66,5042.82,0,00	1988	May 2003	8
4	OUTLET	33781.15,5091.80,0,00	1994	May 2003	8
5	OUTLET	33047.15,5115.88,0,00	1995	May 2003	8
6	INLET	33586.32,5073.80,0,00	1992	May 2003	8
7	OUTLET				

	A	C	D	E	F
1	AREA	DATE_BUILT	DATE_INSP	CONDITION	TYPE
2	90498.562	1982	May 2003	9	POND
3	1604.847	1982	May 2003	9	SWALE
4	5712.575	1982	May 2003	9	SWALE

## Complete the GASB 34 documentation using Excel

Since GASB 34 requires the assignment of value to all infrastructure elements, the next step is to make these assignments. You will need to determine the correct costs assumptions to use for your situation. The following example uses the same cost assumptions that the City of Wilsonville, Oregon used in their GASB 34 filing ( see: [http://www.ci.wilsonville.or.us/departments/admin\\_serv/finance/gasb34/](http://www.ci.wilsonville.or.us/departments/admin_serv/finance/gasb34/) ).

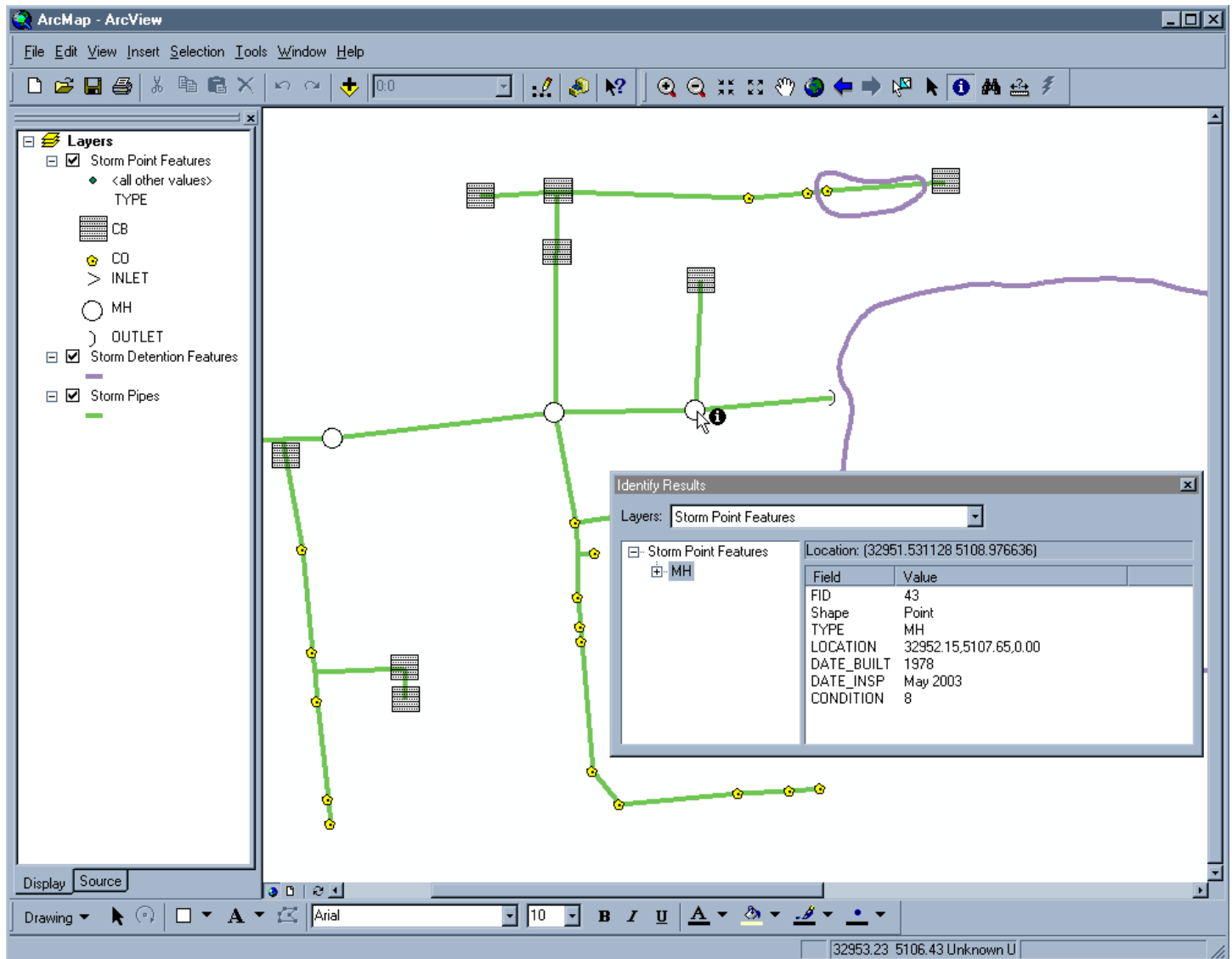
The assumption used for pipe cost are: \$7.50 per inch of pipe diameter \* length of pipe.

The assumption used for Depreciated Cost is: Pipe Cost \* ( condition / 10 )

	A	B	C	D	G	I
1	PIPE SIZE	LENGTH	Cost Per Foot	Segment Cost	CONDITION	Depreciated Value
2	12	20.946	\$90.00	\$1,885.15	7	\$1,319.61
3	8	18.881	\$60.00	\$1,132.86	8	\$906.29
4	12	82.132	\$90.00	\$7,391.91	6	\$4,435.14
5	15	42.316	\$112.50	\$4,760.55	6	\$2,856.33
6	12	66.713	\$90.00	\$6,004.18	8	\$4,803.35
45	12	130.182	\$90.00	\$11,716.36	10	\$11,716.36
46	15	61.817	\$112.50	\$6,954.40	8	\$5,563.52
47	15	22.163	\$112.50	\$2,493.39	7	\$1,745.37
48						
49	TOTAL			\$375,162.44		\$277,999.77

# Use your Intelligent AutoCAD Infrastructure Map in Arc/Info

AutoCAD Map can directly write ESRI Shape Files that will contain all of the information stored in Object Data. Here we see the example map in ArcView - ArcMap v8.1. With a few simple configuration changes, we have an equivalent ArcMap Document with all attribute data.



**Let TCI help you complete and maintain your Infrastructure Maps**

**We have over 15 years of Infrastructure Mapping Experience.**

**Our specialty is fast turnaround, intelligent municipal infrastructure maps.**

**We can build and maintain maps in both AutoCAD and ESRI formats.**

**To get a free evaluation and quotation - Call 1-800-291-7533 today.**

## Supplemental GASB 34 and NPDES Information

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**GASB 34** provides **wide latitude** in how infrastructure assets must be reported. However, for state and local governments to comply, it may take significant efforts to define appropriate policies, develop consistent methodologies, deploy asset management systems, and assemble necessary documentation.

The infrastructure reporting requirements of GASB 34 are intended to **provide public accountability** over the costs and financing of public investments in infrastructure, such as roads, bridges, water and sewer facilities, and dams. Beyond the general public's interest in ensuring that infrastructure is properly maintained, GASB cites the needs of public finance firms, individual investors, and bond rating agencies that assess the credit worthiness of governments when considering public-financing opportunities.

For infrastructure financed by borrowing, such as municipal bonds or general obligation bonds, there is potential value to the investment community in understanding that the government is capable of servicing the debt and properly caring for the infrastructure asset, once built.

For other infrastructure paid for by various user fees and taxes, the general public and those paying the user fees and taxes want to ensure that what they are paying for will provide lasting service.

The requirements of Statement 34 are effective in three phases based on a government's total annual revenues (based on the first fiscal year ending after June 15, 1999), as follows:

Governments with total annual revenues **of \$100 million or more** will apply the Statement beginning with fiscal years ending **after June 15, 2002**.

Governments with total annual revenues of **\$10 million or more**, but less than \$100 million, will apply the Statement beginning with fiscal years ending after **June 15, 2003**.

Governments with total annual revenues **below \$10 million** will apply the Statement beginning with fiscal years ending after **June 15, 2004**.

### **GASB 34 provides two ways to assess the value of your community's public works assets:**

- The depreciation method is the simplest but has its drawbacks. This method does not account for maintenance efforts of repair and upgrading infrastructure, which can add value. It does not account for expenses and the effect they have on the useful life of the facility. It only reports past costs.
- The modified valuation method presents a clearer picture and offers communities the opportunity to report actual costs incurred each year to maintain and preserve the quality of their assets to include predictive maintenance, repair, restoration, and replacement components. Three guidelines must be followed to achieve this method:
  1. Maintain a current inventory of all infrastructure assets.
  2. Establish a condition rating to evaluate and report on the current condition of all assets at least every three years.
  3. Estimate annual costs to maintain and preserve infrastructure assets

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### **The National Pollutant Discharge Elimination System (NPDES) permit**

**Phase I** of the EPA storm water program was promulgated in 1990 under the Clean Water Act. Phase I relies on National Pollutant Discharge Elimination System (NPDES) permit coverage to address storm water runoff from:

- "large" **municipal separate storm sewer systems (MS4s)**
- construction activity disturbing 5 acres or more
- ten categories of industrial activities

The Storm Water **Phase II Final Rule** is the next step in EPA's effort to preserve, protect, and improve the Nation's water resources from polluted storm water runoff, it requires operators of **smaller MS4s** in urbanized areas and operators of small construction sites (1-5 acres), to implement programs and practices to control polluted storm water runoff through the use of NPDES permits.

Congress delayed the permitting deadline for these facilities to allow small municipalities additional time to comply with NPDES requirements. The Phase II Final Rule ended this temporary exemption from permitting and set a deadline of no later than **March 10, 2003** for all ISTEA-exempted municipally operated industrial activities to obtain permit coverage. Therefore, after March 2003, all industrial operations, construction projects and municipal storm sewer systems must comply with the NPDES storm water permit requirements, regardless of whether the activity is publicly or privately owned.

#### **Storm Water Phase II Final Rule**

##### **Illicit Discharge Detection and Elimination Minimum Control Measure**

What Is Required? This program must include the following:

- A storm sewer system map, showing the location of all outfalls and the names and location of all waters of the United States that receive discharges from those outfalls;
- Through an ordinance, or other regulatory mechanism, a prohibition on non-storm water discharges into the MS4, and appropriate enforcement procedures and actions;
- A plan to detect and address non-storm water discharges, including illegal dumping, into the MS4;
- The education of public employees, businesses, and the general public about the hazards associated with illegal discharges and improper disposal of waste; and
- The determination of appropriate best management practices (BMPs) and measurable goals for this minimum control measure.

##### **What are the Penalties for Noncompliance?**

The NPDES permit that the operator of a regulated small MS4 is required to obtain is federally enforceable, thus subjecting the permittee to potential enforcement actions and penalties by the NPDES permitting authority if the permittee does not fully comply with application or permit requirements. This federal enforceability also includes the right for interested parties to sue under the citizen suit provision (section 405) of the Clean Water Act.

Source of information: US Environmental Protection Agency - Fact Sheet 2.5 and Fact Sheet 2.9