



Water Utility Management

Client

Department of Environmental
Protection

Location

Montgomery County, MD, USA

Stormwater Maintenance Program and Stormwater Utility Implementation Study

Project Highlights

- Conducted interviews and organizational assessments with 23 municipalities and eight County agencies
- Facilitated focus group workshops evaluating policy issues for implementing stormwater funding
- Successfully shepherded stormwater utility policy and ordinance development
- Developed stormwater BMP maintenance cost estimating tool
- Developed draft ordinances and guidance documents
- Developed user documentation for rate models and billing system

Project Description

CH2M HILL assisted Montgomery County, Maryland to develop a proactive stormwater facility maintenance program and stormwater utility. CH2M HILL supported the County when it chose to adopt a stormwater maintenance transfer program whereby the County would assume responsibility for maintenance of privately owned stormwater management facilities (BMPs and drainage systems). The study included six main components:

- Evaluated organizational options
- Defined program needs (goals, inventory, condition assessment, resource needs)
- Evaluated revenue options, focusing on stormwater user charges based on impervious area
- Implemented stormwater utility, including developing a rate model to assess different policy options, developing an ordinance, facilitating focus groups and presentations to County Council, and development of public information materials
- Developed a billing system for assessment of charges for over 260,000 properties countywide, integrated with the County's real estate billing system with user charges as a line item
- Developed a web GIS application to facilitate customer service with review of impervious area information and digital orthophotography

The objective of the initial phase of the project was to develop organization, financial, and level of service recommendations for efficient maintenance of stormwater storage and conveyance facilities in the County, including incorporated municipalities and privately owned facilities within the County that are interested in participating in a Countywide program. The study included the following tasks:

- Analyzing impacts on municipalities, special taxing districts, and county agencies
- Mapping impervious surfaces in the county
- Proposing a rate structure
- Recommending a billing mechanism
- Storm drain conveyance inspection
- Refining maintenance cost estimates
- Developing a public education and information program



For this fast track project, CH2M HILL conducted alternative analyses, coordinated among 23 municipalities and eight agencies, and developed a unique cost estimating model to forecast stormwater maintenance activities (an innovative model that did not previously exist).

In a related effort, CH2M HILL updated the County's impervious area data layers in GIS, including both residential and non residential parcels, to allow analyses of potential stormwater user charge mechanisms. A stormwater user charge financial model was developed to evaluate alternative rate structures and to evaluate policy options, such as how to treat agricultural property, and whether to provide exemptions or credits for religious institutions. CH2M HILL facilitated focus group meetings of County staff to evaluate policy options related to the user charge mechanism. The focus team represented the diverse range of County agencies affected by the development of a stormwater charge mechanism (e.g., the finance department, agricultural services, engineering, and environmental protection). Policy papers that provided context from other locations and Montgomery County specific impacts were developed and provided to focus team members to aid the discussion of policy issues. These policy papers were then amended as the focus group was led to consensus on each issue and decisions were made. This effort culminated in the County passing an ordinance creating a Water Quality Protection Charge (WQPC), implementing a stormwater utility to fund the stormwater facility maintenance program.

In a separate task, CH2M HILL developed a CCTV Inspection Manual and conducted field inspections of a sample set of storm drains in Montgomery County, from which an Inspection and Condition Assessment Report was produced. The condition assessment allowed cost data to be generated for planning the County's long term rehabilitation and replacement program for storm drains.

In addition, CH2M HILL developed a Public Education Program, including development of fact sheets and presentation materials to be used to educate different stakeholder groups on the importance of stormwater facility maintenance.

As a final step, CH2M HILL completed the development of the custom billing system software application that the City successfully used to issue the first



round of bills in July 2002. The Application is a stand alone system and is comprised of toolbars and graphic user interfaces (GUI). The application is used to perform a set of functions related to the WQPC billing system including:

- System/Database Administration
- Exporting data
- Importing data
- Calculating charges
- Generating reports

The application consists of modules and interfaces that perform the identified functions. These include integration with the County's Assessment Database, and with the County's GIS property and impervious databases. The WQPC system includes a database system based on Microsoft SQL Server 2000 and a software application written in Visual Basic.

To support customer service functions of the billing system, CH2M HILL developed a Web GIS application. The purpose of the Web GIS application browses impervious area information, such as building and parking lot boundaries, in a geographic map image format when there are issues raised by a WQPC customer for a specific property. It resides on a County Internet web site to support the Water Quality Protection Charge program. The Web GIS application uses the following software components:

- Web Server Microsoft Internet Information Server (IIS) version 5.0
- Web Pages HTML, Javascripts, and Microsoft Active Server Page (ASP)
- Web GIS Server ESRI ArcIMS version 3.1
- GIS Data Server ESRI ArcSDE version 8.1
- WQPC Database Server Microsoft SQL Server 2000