



Design and Construction

CH2M HILL understands wastewater collection system behavior related to rehabilitation requirements. Our design alternatives provide cost-effective and lasting conclusions to our condition assessment and I/I studies. For example, we know that the appropriate method for manhole rehabilitation or replacement eliminates costly and unnecessary system reconstruction that occurs with conventional methods. We offer innovative design of new or extended collection systems, as well as rehabilitation and trenchless methods for existing systems. Surveying and construction observation round out our design services.

- Cost-effectiveness analysis
- Manhole and line rehabilitation
- Trenchless versus traditional rehabilitation
- Rehabilitation scheduling
- Construction observation
- Pre-construction and post-rehabilitation certification



CH2M HILL is a nationally recognized team of wastewater conveyance specialists and proven innovators in planning and implementing improvements to sanitary sewer infrastructure. We see that every client develops the most cost-effective and sensible program to service their wastewater flows and meet current and future regulations and guidelines. This is the principle reason for our success in completing more than 400 sanitary sewer master plans and studies. CH2M HILL provides a complete package of services, resources, and technical expertise to meet all aspects of wet-weather and wastewater needs.

Wastewater Conveyance Assessment Solutions Through Innovative and Efficient Approaches

Solutions Without Boundaries

800-684-5899

Visit us at www.ch2mhill.com

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Wastewater Conveyance Condition Assessment Solutions



CH2M HILL provides consulting and engineering services in all phases of wastewater collection system diagnostics, rehabilitation, and compliance. We specialize in providing assessment, evaluation, design, and construction management services for separated and combined sanitary sewers. The CH2M HILL team comprises leading engineers, technologists, and field and GIS technicians. We have evaluated more than 400 municipal sewer systems throughout the United States and Canada. Our reputation for quality production, customer service, and on-time, budget-wise performance demonstrates CH2M HILL's commitment to excellence.

Regulatory Compliance

Municipalities are proactively aligning their sanitary sewer improvement projects to meet regulatory programs such as California's Sewer Management Plan (SSMP). CH2M HILL has consistently addressed management, operations, and maintenance of sanitary sewer infrastructure from an environmentally responsible and compliant viewpoint. This has established us as experts in the area of federal and state compliance. Our core services reduce and manage inflow and infiltration (I/I), SSO events, and wet-weather backups to help solve compliance issues.

- I/I management services
- Peak flow capacity analysis
- SSO reduction
- Pump station analysis
- Budgeting and prioritizing services
- System location, inventory, GIS mapping
- Public education and notification programs
- Field service training
- Operation and maintenance management tools
- Asset management tools

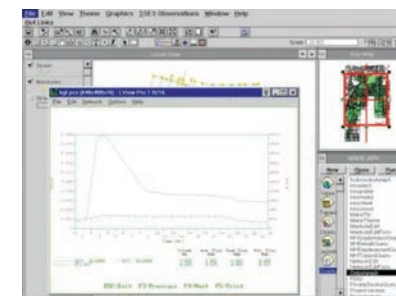


Condition Assessment and I/I Studies

As a specialist in conveyance condition assessment or sanitary sewer evaluation studies, CH2M HILL knows that the key step to cost-effectively rehabilitating sanitary collection systems is to locate and quantify the asset defects, and reduce I/I sources. Our field technicians are skilled at carrying out tailored field inspections to find condition and I/I defects. We compile and score inspection data using CH2M HILL's SCREAM™ Condition Assessment asset management database software. Our public relations programs use project specific websites to post daily crew locations and general information. Our proven methods help restore collection system integrity and significantly reduce I/I.

- Flow monitoring programs: we provide a wide range of long- and short-term flow monitoring using our extensive inventory of metering equipment.
- Manhole and visual pipe inspections: we conduct comprehensive manhole inspections and visually inspect incoming and outgoing lines to identify I/I sources, structural defects, and maintenance issues. Our technicians photograph, document, and rate system defects and related problems. SCREAM™ Manhole aggregates and scores the defects and quantifies the I/I at the push of a button without labor intensive evaluations.
- Smoke testing: we use state-of-the-art equipment to force non-toxic smoke through sanitary sewers to locate both public and private defects in lines. SCREAM™ Smoke & Dye numerically scores each manhole, sewer, and service lateral defect using the same numerical scale as manhole and CCTV inspections.
- Building inspections: our technicians conduct public and private building inspections to pinpoint unwanted I/I connections to the collection system. SCREAM™ Building aggregates the building I/I defect score with the service lateral score.

- CCTV: we use closed-circuit television observation SCREAM™ CCTV scores, in conjunction with visual pipe and smoke testing inspection SCREAM™ scores to prioritize structural conditions and verify defects or I/I connection sources.
- Dyed-water confirmation: our technicians validate and quantify suspected I/I sources by introducing and observing non-toxic dyed-water flow through the suspected I/I source.



Hydraulic Modeling

The CH2M HILL hydraulic modeling team is nationally recognized for their expertise. Our hydraulic model is a tool essential to assessing the performance of your wastewater collection system and developing successful capital improvement programs.

- Hydraulic modeling: we create a customized model to analyze I/I, sanitary sewer defects, and system performance under dry- and wet-weather flow conditions, with different scenarios for cost-effectively addressing capacity issues, reducing I/I, and rehabilitating the system. Our firm is experienced in using state-of-the-art modeling programs, including InfoWorks® (unlimited node license), MWHSOft®, XP-SWMM®, SewerCAD®, Pipedream®, and more.
- Flow monitoring: this includes rain and flow monitoring programs, as well as dry- and wet-weather flow pattern quantification.
- Analysis: we provide capacity, defect flow, I/I quantification and reduction analysis, and capacity enhancement alternative evaluation.

Master Planning

CH2M HILL prepares successful master plans by accurately depicting existing wastewater flow characteristics and performance. Our hydraulic modeling experts build on this framework, outlining future wastewater flows and needs to provide you with a complete, cost-effective planning tool.

- GPS services
- Facility planning
- GIS mapping
- Financial estimating
- Capital improvement phasing
- Projected growth analysis



Operations and Maintenance

CH2M HILL tailors an operations and maintenance (O&M) plan to work effectively for you for years after a condition assessment or design project is completed. Pipedream® consolidates collection system data into one package. Users can see how a change to one system component affects another. This allows departments to schedule maintenance activities, allocate costs simultaneously, and streamline operations.

- O&M software—Pipedream®
- Maintenance scheduling
- Work order generation and dispatch
- Flexible work codes and cost codes
- Maintenance and repair monitoring
- Condition assessment and hydraulic model updates
- Asset management
- Regulatory compliance

