

Autodesk®

Solutions for Environmental Engineering

Engineering a better environment



Better Engineering, Faster

Design and deliver environmental engineering projects better, faster, and more economically.

Timmons Group

Timmons Group, a U.S.-based civil engineering firm, uses AutoCAD® Civil 3D® software for environmental engineering projects, including a stream restoration project in Chesterfield County, Virginia. To complete the environmental-permitting process for a land development project, Timmons Group needed to mitigate the development's impact on nearby stream channels.

Timmons Group used AutoCAD Civil 3D to draw sections of the stream and create assemblies representing key features such as riffles, pools, thalwegs, banks, and floodplains. From this preliminary work, the design team created a precise corridor model of the proposed stream channel and used it for volumetric analysis. Using the model-based environment, they were able to more quickly evaluate the water flow for multiple what-if scenarios and find the option that minimized environmental impact, improved stream hydrology, and restored habitats for local flora and fauna.

AutoCAD Civil 3D allows for a smoother transition between plan, production, and construction. When bidding begins, Timmons Group will further utilize data from the AutoCAD Civil 3D model to communicate important project information to the specialty contractors and to support GPS-controlled construction equipment. Says Hoen, "Once construction begins, we will be able to work together more efficiently—minimizing unrealistic change orders."

A Rising Tide

Now, more than ever, the environmental engineering industry is simultaneously faced with tremendous opportunities and challenges. Governments around the world are funding environmental projects at an unprecedented rate, especially those related to water resources. Along with an increasing volume of projects, environmental engineering professionals are challenged with meeting stringent regulations while balancing demands for more sustainable designs. The influx of available funding adds pressure to deliver high-quality projects faster, more economically, and with greater accountability.



Autodesk offers a comprehensive portfolio of tools for water resources engineering, site remediation, and solid waste engineering projects to help you work more efficiently, collaboratively, and competitively.



Solutions for Every Part of the Project Lifecycle

Autodesk environmental engineering solutions support the complete project lifecycle, helping you to more rapidly explore design alternatives, shorten production time, deliver high-quality and consistent construction documentation, and gain stakeholder approvals. Using a model-centric approach, design and drafting remain synchronized throughout the process, helping to reduce errors and omissions. Perform geospatial and stormwater analysis without ever leaving the design software, allowing you to better understand the impact of design changes. Use models for construction and operations, and deliver projects faster and with lower construction costs.



It's About the Environment

Growing environmental concerns require environmental engineering projects to minimize waste and maximize sustainability. As new regulations and incentives are established, more opportunities for services such as green stormwater management, stream restoration, wetlands creation, and other innovative water resources projects will emerge. In order to meet these demands, project planning must take into account many disparate factors, from the first stage of the design process. Autodesk's detailed analysis and communication tools can help you integrate sustainable design considerations into the design process.

A Comprehensive Lifecycle Solution

Autodesk solutions for environmental engineering empower teams to better collaborate throughout the full design and engineering lifecycle.

Gain a competitive edge and minimize redundancy by using precise model data to create innovative designs, more accurately visualize appearance, and better simulate real-world performance, ultimately delivering projects faster and more cost-effectively.

Streamline Data-Gathering Tasks

Forget the paper maps and tedious data aggregation. Whether you're gathering data on flood mapping, terrain, land cover, wetlands locations, soil types, or watersheds, Autodesk software enables you to put it all together in one place. More easily integrate data from different coordinate systems and sources—including geospatial databases—for site analysis, to help save time and reduce errors.



Use Conceptual Design Data Downstream

Help streamline project development by iterating more quickly through preliminary design options, then use the data in conceptual design models for analysis and validation of project requirements before detailed design work begins. Once a design option has been decided upon, data developed in the conceptual design phase can be seamlessly carried over into the detailed design and construction planning phases.

Perform Integrated Analysis

Autodesk's tools for environmental engineering help you integrate design and analysis. Using the information-rich model, you can perform stormwater analysis, including storm sewer design, detention pond sizing, and culvert analysis, right within the design software for a better assessment of project performance.

Manage Design Changes More Easily

Using a model-centric process facilitated by Autodesk's environmental solutions, changes made in one area of the design are reflected throughout the entire model. Design and drafting are synchronized so annotations and labels are automatically and immediately updated when related design elements change. The result is less tedious work, and projects that stay on schedule and on budget.



Improve Project Collaboration

Using Autodesk's building information modeling (BIM) tools for environmental engineering, project team members stay coordinated by working with a single source of project information. Real-time data management options provided within the design software automatically synchronize all changes to design elements in the project model, helping team members collaborate.

Tell Your Story

Effectively communicating design intent and creating documentation for the environmental review and approval process can be a daunting task. Autodesk solutions provide a powerful portfolio of products that allow project team members to use geospatial data to create colorful, easier-to-understand maps and exhibits for environmental reports. 3D models can be aggregated with data from other sources at any stage of the design process to review designs and facilitate communication with team members and stakeholders. Use photorealistic visualizations and cinema-quality fly-throughs to visualize the completed project and assess its impact on the surrounding environment before construction begins.



Integrate Design and Construction

When your project moves into construction, employ the power of BIM to help reduce errors and omissions in the field. The data model created and updated in detailed design can be used directly during construction. Final 3D models can be delivered directly to the contractor for automated machine guidance. Integrate data from multiple sources, including existing road, utility, water, and storm sewer locations, to detect potential clashes and problems earlier.



Maintain Data through Operations, Maintenance, and Asset Management

Make better decisions in the future by populating geospatial databases and asset management systems with as-built model information, thereby continuing the lifecycle of your valuable design data. Instead of starting over, the next project continues from the last.

Autodesk Portfolio for Environmental Engineering

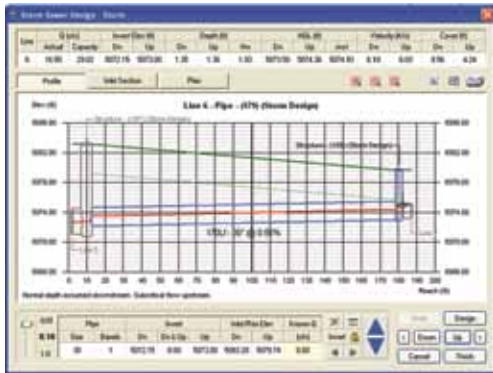
Increase productivity, stay coordinated throughout projects, and deliver better results.

Autodesk has a comprehensive solutions portfolio for environmental engineering that supports the entire project lifecycle—from conceptual design and planning through construction, operations, and asset management.

Design and Documentation

AutoCAD Civil 3D

AutoCAD® Civil 3D® software—a powerful building information modeling solution for civil engineering—helps project teams design, analyze, and deliver environmental engineering projects faster, with improved accuracy and greater accountability. Integrated stormwater and geospatial analysis helps civil engineers better understand project performance.

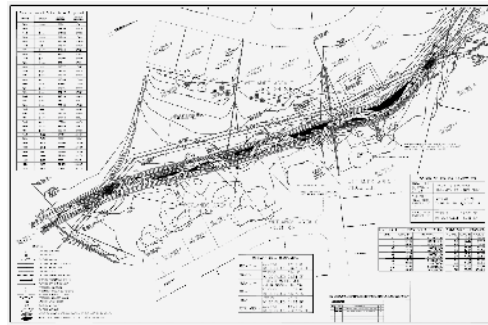


AutoCAD Civil

AutoCAD® Civil software—the version of AutoCAD® software for civil engineering design and construction documentation—helps technicians, drafters, and surveyors effectively design and document environmental engineering products.

AutoCAD

Use AutoCAD® software for a wide range of environmental engineering tasks, from conceptual design to drafting and detailing. AutoCAD propels day-to-day drafting forward with features that help increase speed and accuracy while saving time.



AutoCAD LT

Built for drafting, AutoCAD LT® software helps boost productivity by helping you more accurately and efficiently detail, document, and share environmental project drawings using the DWG file format.

AutoCAD Map 3D software

AutoCAD® Map 3D software enables environmental project team members to directly access, edit, visualize, and analyze a broad variety of CAD and spatial data in a familiar AutoCAD environment. Share information with a larger audience beyond the CAD or GIS departments to optimize designs faster.

Visualization and Simulation

Autodesk 3ds Max Design

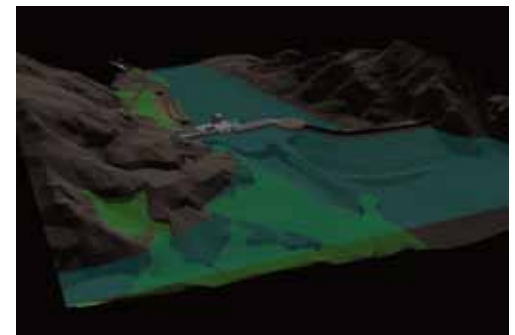
Autodesk® 3ds Max® Design software helps users create more realistic, accurate visualizations so that team members, government agencies, and community stakeholders can better assess design intent and environmental impact before construction begins.

Autodesk Impression

Autodesk® Impression software provides the tools to help users create presentation-ready graphics straight from CAD drawings.

Autodesk Navisworks Manage

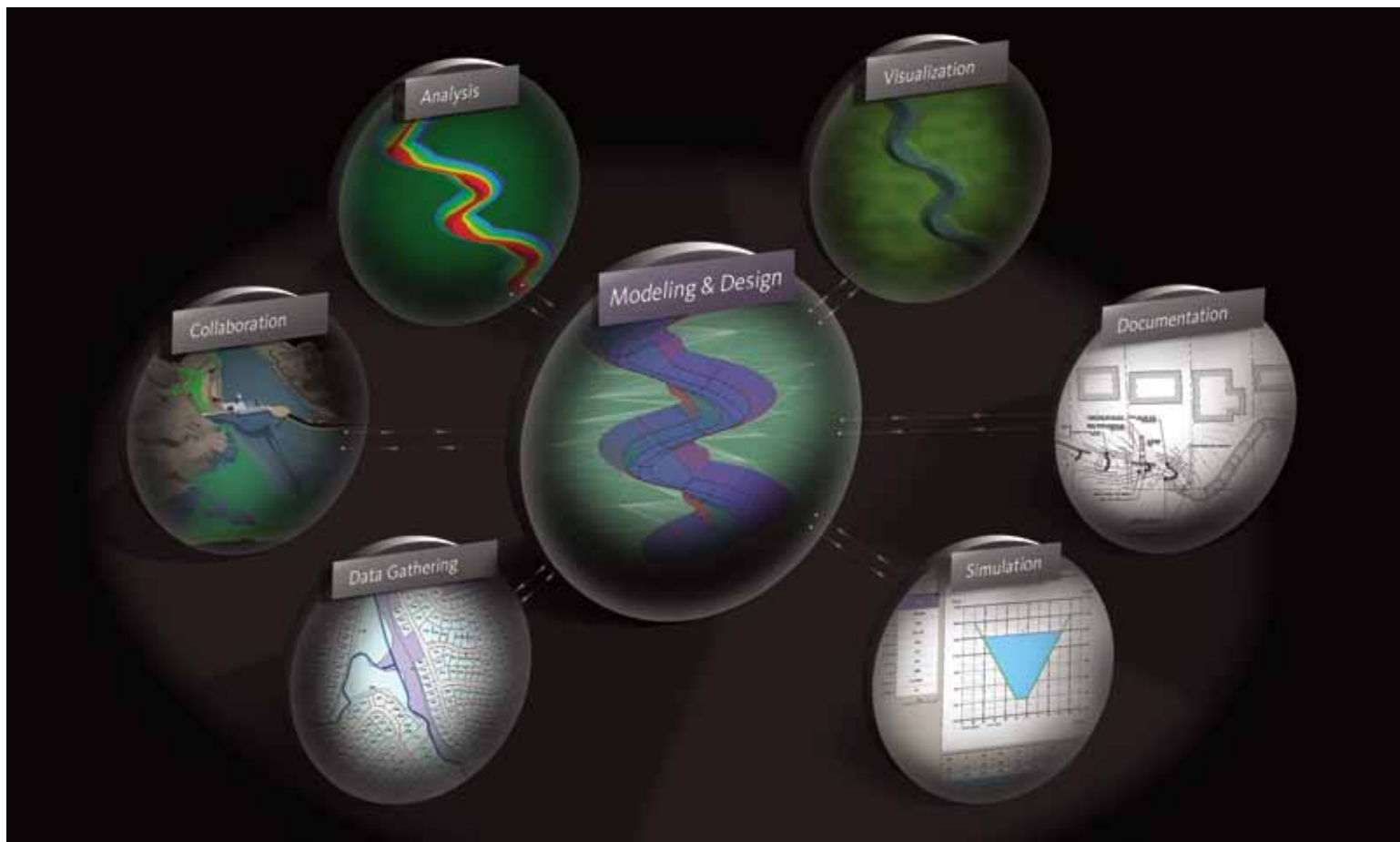
Autodesk® Navisworks® Manage software is a comprehensive real-time design review solution for BIM. Users can aggregate design data to visualize projects, simulate scheduling, and identify interferences in order to help gain insight and predictability while improving productivity and quality.



Collaboration

Autodesk® Buzzsaw® software helps manage communication with on-demand collaborative project management tools that enable construction managers to more successfully execute projects based on timely decisions and accurate information.

Building Information Modeling for Environmental Projects



Innovative approaches to designing and building environmental projects can confront the challenges facing the environmental engineering industry.

The global environmental engineering community is transitioning from traditional business processes and exploring new methods and technologies for project delivery, such as BIM.

Using a BIM solution, environmental projects can be designed for optimal performance, constructed with improved coordination and maintained with confidence.

Improve Operational Efficiency

BIM has been used for a number of years in the building industry, leading to tremendous gains in efficiency and quality. But the principles of BIM apply to everything in the built environment—including environmental engineering projects. BIM is an integrated workflow that allows engineers and builders to explore projects digitally before they are built. With BIM, coordinated, reliable information is used throughout the process to design innovative projects, more accurately visualize appearance for better communication, and simulate real-world performance to better understand cost, scheduling, and environmental impact.

Go with the Flow

Autodesk environmental engineering solutions enable a powerful BIM process to help design and build environmental projects better, faster, and more cost-effectively. By utilizing the data-rich, precise design model, project teams can evaluate what-if scenarios earlier in the design process, optimize project performance, perform stormwater analysis for more sustainable designs, generate quantity takeoff calculations, create 3D visualizations, and plan construction execution.

When we decided to move to AutoCAD Civil 3D, we did so with the expectation of efficiency gains and consistency for all our design services. The software has certainly proved itself in that regard. We now use the time that we save with AutoCAD Civil 3D to create a better design and deliver a better product to our client.

—Jon Rizzo
Project Engineer
Langan Engineering & Environmental Services

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Access specialists worldwide who can provide product expertise, a deep understanding of your industry, and value that extends beyond your software purchase. To purchase AutoCAD Civil 3D software and the other Autodesk solutions for environmental engineering, contact an Autodesk Premier Solutions Provider or Autodesk Authorized Reseller. Locate a reseller near you at www.autodesk.com/reseller.

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