



WaterCAD

Water Distribution Modeling and Management

WaterCAD is an easy-to-use hydraulic and water quality modeling application for water distribution systems. Utilities, municipalities, and engineering firms trust WaterCAD as a reliable, resource-saving, decision-support tool for their water infrastructure.

From fire flow and constituent concentration analyses, to energy cost management and pump modeling, WaterCAD helps engineers and utilities analyze, design, and optimize water distribution systems.

Interoperability

Out of the box, WaterCAD users can employ this product as a stand-alone application or work from within MicroStation, while an additional integration option lets them model from within AutoCAD. Regardless of the platform used, WaterCAD maintains a single set of modeling files for true interoperability across platforms.

The stand-alone interface offers unparalleled versatility with easy-to-use model layout tools, multiple background support, conversion utilities from CAD, GIS, and databases, and unlimited undo and redo layout. WaterCAD can open WaterGEMS and HAMMER models seamlessly, including those created within ArcGIS.

When modeling from within MicroStation, users can enjoy a geospatial and engineering design environment with unrivaled visualization and publishing tools. AutoCAD users can also add the ability to run WaterCAD models from within AutoCAD to build and lay out models with engineering precision within an environment in which they are already comfortable.

Streamlined Model Building

The LoadBuilder and TRex geospatial modules – included with WaterCAD at no additional cost – help engineers allocate water demands and node elevations based on geospatial data found in shapefiles, DEMs, and even CAD drawings, avoiding potential manual-input mistakes and speeding up the model-building process.

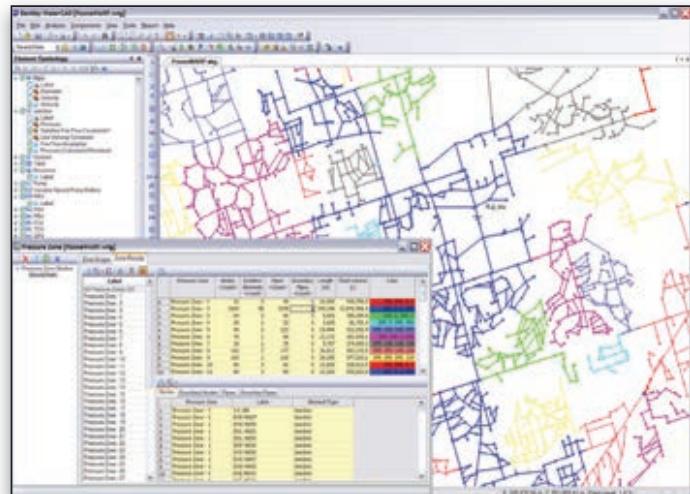
WaterCAD users can also use CAD drawings to directly create hydraulically connected models; import topology and data from GIS; and create persistent, bidirectional connections between shapefiles, databases, spreadsheets, and the WaterCAD model.

Water Quality Modeling

The built-in water quality features help WaterCAD users perform constituent, water age, tank mixing, and source trace analysis to develop comprehensive chlorination schedules, simulate emergency contamination events, visualize zones of influence for different water sources, and improve turbidity, taste, and odor by identifying water blending problems in the system.

Fire Flow Analysis

Using the Fire Flow Navigator, WaterCAD users can quickly and accurately establish the ability of their network to provide protection against fires. WaterCAD simultaneously models multiple fire flow events evaluating flows and pressures across the entire system.



The Pressure Zone Manager automates the process of identifying the multiple pressure zones of a water distribution system and their characteristics.

Flushing Simulations

The Flushing Simulation tool helps utilities and municipalities plan, analyze, and optimize flushing programs to control and improve water quality in their water distribution systems. WaterCAD users can perform both conventional and unidirectional flushing (UDF) simulations, as well as multiple flushing runs across multiple areas.

Criticality Analysis and Operations Modeling

The Criticality Analysis Center is a comprehensive utility to identify critical assets in water distribution infrastructure, and evaluate the risk associated with their failure. Also, by using rule-based operational controls, variable-speed pumping (VSP), and pressure-dependent demands (PDD), engineers can find operational bottlenecks, minimize energy consumption, and model real-time operations to improve system performance.

Comprehensive Scenario Management

WaterCAD Scenario Management Center gives engineers full control to configure, run, evaluate, visualize, and compare an unlimited number of what-if scenarios within a single file.

Engineers can easily make decisions by comparing unlimited scenarios, analyzing rehabilitation alternatives for multiple planning horizons, evaluating pump operation strategies, or flushing alternatives for emergency contamination events.

System Requirements

Refer to the 'Installation Requirements' section of WaterCAD's ReadMe file:

www.bentley.com/WaterCAD-Spec

Platform pre-requirements:

WaterCAD runs without platform restrictions as a stand-alone application. It can also run from within AutoCAD and MicroStation. The requirements are also available in WaterCAD's ReadMe file.

Find out about Bentley at: www.bentley.com

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WaterCAD At-A-Glance

Interface and Graphical Editing

- Stand-alone application
- Ability to run from within MicroStation
- Ability to run from within AutoCAD (WaterCAD for AutoCAD license required)
- (Consider WaterGEMS to model from within ArcGIS)
- Seamless compatibility with WaterGEMS
- Unlimited undo and redo
- Element morphing, splitting, and reconnection
- Merge nodes in close proximity tool
- Automatic element labeling
- Scaled, schematic, and hybrid environments
- Element prototypes
- Aerial view and dynamic zooming
- Named views library
- Multiple background-layer support
- Image, CAD, and GIS background support

Hydraulics, Operations, and Water Quality

- Steady-state simulation
- Extended-period simulation
- Constituent-concentration analysis
- Multi-species water quality analysis
- Source tracing
- Tank-mixing analysis
- Water-age analysis
- Water quality batch run
- Criticality analysis
- Fire-flow analysis
- Rule-based or logical controls
- Variable-speed pumping, with option to use APEX (Automatic Parameter Estimation eXtension)
- Leakage and sprinkler modeling
- Pressure-dependent demands
- Valve modeling
- System head curves
- Scenario modeling-based unidirectional flushing
- Air release valve element
- Top Fill Tank element
- Combination pump curves
- Carbon emission calculation

Model Building and Data Connection

- Shapefile, DXF file, spreadsheet, database, and ODBC connections
- Oracle spatial support
- GIS-ID property to maintain associations between records in the data source/GIS and elements in the model
- Graphical SCADA element
- Customer Meter element

- Automatic demand allocation from geospatial data
- Geospatial demand allocation from customer meters
- Demand allocation from lump-sum geospatial data
- Geospatial-based water consumption projection
- Daily, weekly, monthly, and superimposed patterns
- Unaccounted for water and leakage estimation
- Composite demands global edition
- Area, count, discharge, and population-based loading
- Pipe length-based demand loading
- Elevation extraction from DEM, TIN, and shapefiles
- Elevation extraction from CAD drawings and surfaces
- User-data extensions, including formula based

Model Management

- Unlimited scenarios and alternatives
- Comprehensive scenario management
- Tree-based scenario and alternative management
- Global attribute tabular edition
- Scenario and alternative inheritance properties
- Pressure zone management
- Sorting and persistent filtering on tabular reports
- Statistical analysis from tabular reports
- Personalizable engineering libraries
- Dynamic and static selection sets
- Local and global engineering units management
- Sub-model management
- Drawing review tools for connectivity consistency
- Automatic topology review
- Orphaned nodes and dead-end pipes queries
- Support of ProjectWise/ProjectWise Geospatial Management

Results Presentation

- Thematic mapping
- Dynamic, multi-parameter, and multi-scenario graphing
- Scenario and element comparison
- Shapefile contouring
- Advance profiling
- Advanced tabular reporting with FlexTables
- Property-based annotation, color coding and symbology
- Creation of Google Earth (KML) files
- Publishing of i-models in 2D or 3D, including to Bentley Map Mobile

Energy Management

- Energy cost analysis