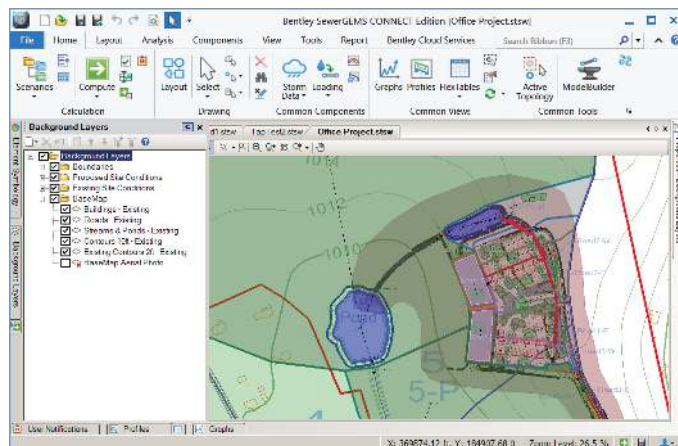# OpenFlows™ SewerGEMS®

Urban Sanitary and Combined Sewer Modeling

Efficiently build, load, edit, run, and understand your sewer models. OpenFlows SewerGEMS helps to streamline the modeling process, leaving you more time to improve existing networks and cost effectively develop new networks.

OpenFlows SewerGEMS can be used from within OpenRoads™, OpenSite®, OpenRail™ Designer, MicroStation®, AutoCAD, ArcGIS Pro, ArcMap, or as a stand-alone application.

HYDRAULIC MODELING OF SEWER, STORMWATER, AND COMBINED SYSTEMS

OpenFlows SewerGEMS enables you to produce optimal urban sewer planning and overflow remediation analysis designs in an easy-to-use environment. Design and operate sanitary or combined conveyance sewer systems with built-in hydraulics and hydrology capabilities, as well as dry-and wet-weather flow calculation methods. Better understand surface flooding depth and velocity, flood hazard, and inundation times with the user-friendly 1D/2D hydraulic analysis capability.

SUPERIOR INTEROPERABILITY

Model within several platforms while accessing a single, shared project data source.

STREAMLINED MODEL BUILDING

Leverage geospatial data, CAD drawings, databases, and spreadsheets to the model-building process. Connect with virtually any digital data format by creating and synchronizing database connections and geospatial links. Use drawing and connectivity review tools to help guarantee a hydraulically coherent model.

WASTEWATER AND STORMWATER LOADING ALLOCATION AND ESTIMATION

Access and customize the comprehensive dry-weather unit load engineering library with its numerous typical unit loads based on population, area, count, and discharge. Input and save an unlimited number of flow patterns to accurately model flow changes over the course of a day.

EASY MODEL MANAGEMENT WITH SCENARIOS

Configure, evaluate, visualize, and compare an unlimited number of scenarios within a single file. Evaluate strategies for design, operations, sanitary loading, and network topology to improve your decision-making.

MULTIPLE SOLVERS

Better understand 2D surface flooding and its interaction with 1D hydraulic structures with 1D/2D hydraulic analysis. Perform dynamic 1D analysis using the Saint-Venant equations, which can account for storage effects within structures and quantify overflows. Use the GVF-Convex solver to analyze peak flows, automatically design storm sewers, or perform extended-period simulations with convex routing of hydrographs.

PLATFORM COMPATIBILITY

Whether you are a designer, engineer, project manager, or operator, you need to work in an environment that integrates data across multiple platforms with the power of real-time analysis. Modeling teams can leverage the skills of engineers from different departments, and engineers can reduce learning time by choosing the environment they already know and provide results that can be visualized on multiple platforms.

SYSTEM REQUIREMENTS

MINIMUM: 720 x 480 resolution, Windows 8.1 or higher, 8 GB RAM

RECOMMENDED: 1920 x 1080 resolution, Windows 10, 16 GB RAM

PLATFORM REQUIREMENTS: Stand-alone application and runs within ArcGIS Pro, ArcMap, MicroStation, AutoCAD, OpenRoads, OpenSite, and OpenRail Designer. See: Platform Compatibility

OpenFlows SewerGEMS At-A-Glance

INTERFACE AND GRAPHICAL EDITING

- Includes stand-alone Windows interface
- Runs within ArcGIS Pro or ArcMap (with Esri license)
- Runs within OpenRoads Designer, OpenSite, OpenRail Designer (with Civil license)
- Runs within MicroStation (with MicroStation license)
- Runs within AutoCAD (with AutoCAD license)
- Dynamic elevation updates from terrain models
- Ribbon interface
- Unlimited undo and redo
- Element morph, split, and reconnect
- Merge nodes in close proximity tool
- Automatic element labeling
- Element prototypes
- Multiple background file layer support
- Bing Maps, image file, CAD, and GIS backgrounds

INTEROPERABILITY AND MODEL BUILDING

- Automated catchment delineation
- Automated NRCS Curve Number and Rational "c" weighting from land use polygons
- Automatic elevation assignment and update using terrain model
- Automatic sanitary load allocation from geospatial data (for example, land use), flow monitors and/or property connections
- Seed files for new model templates
- Model building and synchronization with Shapefiles, Geodatabases, Geometric Networks, SDE, spreadsheets, databases, and ODBC connections
- Oracle Locator and Oracle Spatial data connection
- Creation of model elements from CAD drawings
- GIS-ID property to associate model and GIS elements that may not be one-to-one
- SCADAConnect for live system data connections
- Unified file format with OpenFlows SewerCAD®, OpenFlows CivilStorm®, and OpenFlows StormCAD®
- Import/export of InRoads® Storm and Sanitary files
- Import of MX Drainage files

HYDRAULICS AND OPERATIONS

- 1D/2D hydraulic analysis for surface flood modeling
- Two available solvers for the full set of 1D St. Venant equations: Implicit dynamic and Explicit dynamic (EPA-SWMM)
- Gradually varied flow/convex solver included (OpenFlows SewerCAD solver)
- Gradually varied flow/rational solver included (OpenFlows StormCAD solver)
- Extended period simulations
- Steady-state simulation, including peak flow

- Long-term continuous simulation
- Critical storm analysis
- Energy cost analysis
- Automatic constraint-based design of gravity systems
- V-shaped and parabolic gutters
- Culvert headwalls with SWMM and HDS-5 culvert support
- Control structures (weirs, orifices, depth-flow curve)
- Air valves for high points in force mains
- SCADA signal element
- Low-impact development controls
- Ability to model individual property connections, taps, and laterals
- Evaporation definition
- Aquifer simulation
- Pollution analysis with optional definition of land use categories and surface characteristics
- Hydrogen sulfide formation
- Rule-based controls
- Tractive stress calculation
- HEC-22 inlet capacity and node headloss calculations
- Variable-speed pumps
- Totalizing flow meters

RESULTS PRESENTATION

- Grid Browser for visualizing 2D surface input and output data
- ArcGIS Pro and ArcMap visualization (with Esri license)
- Thematic mapping
- Dynamic, multiparameter, and multiscenario graphing
- Dynamic profiling
- Advanced tabular reporting with FlexTables
- Property-based color coding, symbology, and annotation
- Engineering profile annotation tables
- Custom reports
- Animation AVI creation
- Gutter cross section viewer

MODEL MANAGEMENT

- Tracking of model changes by user, date, and element
- Custom data fields with user-assigned or formula-based values
- Unlimited scenarios and alternatives
- Scenario comparison
- Tabular reports with global edit, sort, and filter
- Statistical analysis
- Customizable engineering libraries
- Dynamic and static selection sets
- Orphan node and dead-end pipe queries
- Sub-model management
- Surface flow path tracing from terrain
- ProjectWise® integration