

# CARLSON HYDROLOGY 2009

## Key Features

### General

- **Built on AutoCAD:** Runs in AutoCAD versions 2009 to 2000 as well as AutoCAD Map, LandDesktop and Civil3D and on IntelliCAD 6.4
- **Project Setup:** Flexible data storage methods
- **Drawing Cleanup:** Fix common drafting errors
- **Drafting Enhancements:** Handy tools for working in AutoCAD such as Join Nearest, Shrinkwrap Entities, Polyline Utilities, Drawing Inspector, Layer Inspector and Twist Screen
- **Data Compatibility:** Supports industry standard LandXML and scores of specific data conversions

### Surfaces

- **Build Surfaces:** By triangulation or rectangular grids
- **Contouring:** One step triangulate and contour from 3D entities as well as contouring from surface files
- **Slope Analysis:** Label and report surface slopes at selected points and slope zone analysis

### Watersheds

- **Watershed Analysis:** Watershed delineation, ponding analysis, and real-time inspector for flows and drainage areas
- **Runoff Tracking:** Draws 3D flow lines that follow the surface model
- **Peak Flow:** Calculate peak flow by various methods from runoff parameters of storm event, drainage area, time of concentration and runoff coefficients
- **Hydrographs:** Route hydrographs from multiple watersheds through ponds and channels using TR-20

### Hydraulic Structures

- **Pond Sizing and Design:** Detention pond sizing, bench and valley pond design, stage-storage calculation and graphs
- **Spillway, Weir, Orifice, Culvert, Channel Design:** Routines to design the dimensions and flows for structures plus reports and drafting for them
- **Multiple Outlet Design:** Combines orifices, weirs, drop pipes, culverts and user-defined outlets to design the overall stage-discharge
- **Stage-Storage and Stage-Discharge:** Routines to input, edit, report and draw



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## Key Features of Carlson Hydrology 2009 – Continued

### Sewer Networks

- **Define Inlets, Structures, Pipes, Storm Events:** Setup libraries with parameters for these network components
- **Layout Structures and Pipes:** Place structures and set pipe connections
- **DTM-Based Runoff:** Calculates drainage area, time of concentration and weighted runoff coefficient from inlet location on surface model. DTM also used to figure minimum cover for pipes
- **Analyze Flow:** Calculate inlet intercepted and bypass flows, gutter spread and depth, pipe flow depth and velocity, and hydraulic and energy grade lines
- **Size Pipes and Set Inverts:** Apply flow analysis to have program set pipe size and/or invert elevations
- **Collision Conflicts Check:** Reports any collisions between networks within specified tolerance
- **Draw Sewer Network:** Draw structures and pipes in plan view, in 3D using 3D Faces and in profiles

### Companion Programs

- **Carlson SurvCE:** Data collection for Windows CE and Pocket PC
- **Carlson Field:** Take Carlson and AutoCAD to the field for data collection and stakeout with total stations and GPS
- **Carlson Takeoff:** Construction Estimating for earthworks, subgrades, material quantities, strata quantities and trench networks
- **Carlson Point Clouds:** Process laser scan data to generate models, breaklines and points
- **Carlson Natural Regrade:** Design stable land surfaces that follow natural hydrologic and geomorphology principles
- **Carlson Geology:** Models drillholes and strata structures and attributes



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