

Expanding Map-driven Decision Making for Municipal Infrastructure

An Illinois sewer utility increases productivity and makes better decisions.

Just over the Missouri state line in Illinois lies the City of O'Fallon which is a thriving community that has seen constant and accelerating growth for the past several decades. The City has been fortunate to see building booms that have brought new construction of a half dozen, large neighborhood subdivisions along with a proportionate amount of municipal infrastructure and services necessary to sustain them.

Managing population growth and maintaining acceptable levels of service - while minimizing the total cost of owning, operating, and maintaining city assets - has required the City to think strategically about its information systems. Today, the City of O'Fallon leverages the Cityworks Asset Management software platform to handle all its permitting, work order, and asset management needs. It equally relies on ESRI GIS mapping software and has deployed its own ArcGIS Online web map solution. Recently, decision makers from the City's Public Works Committee decided to extend its Cityworks Work Order management system to the Wastewater District to streamline business processes between the field and the office while providing more intuitive, map-driven methods to infer infrastructure criticality and Consequence of Failure for the City's collection system.

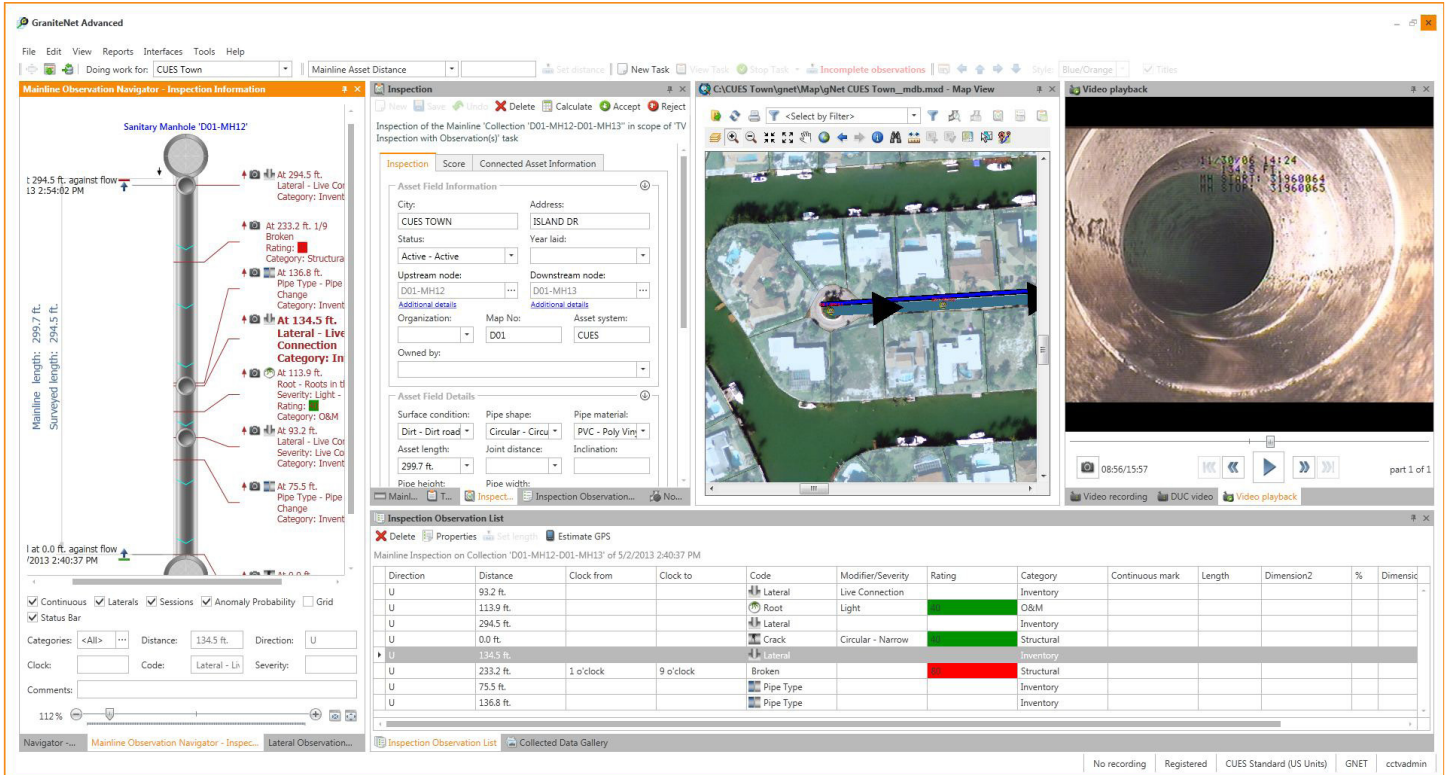
The O'Fallon Sewer Division serves a population base of nearly 30,000 through approximately 8,700 service points spanning approximately 120 miles of sewer main lines and 14 pumping stations. Wastewater and Stormwater condition assessment is a challenging task for any public works department and compliance with the National Pollutant Discharge Elimination System (NPDES) is critical, especially since the City's treated effluent ultimately flows into the Mississippi river.

For the past six years, the City of O'Fallon has been using an industry-leading infrastructure condition assessment software platform from CUES (Orlando, FL). They've successfully integrated their Cityworks 2014 Work Order Management system with the City's new GraniteNet pipeline inspection and data collection software for seamless, bidirectional Work Order integration. It utilizes the Cityworks Work Order Extended Module in conjunction with the GraniteNet Cityworks Interface Module from CUES to deliver the solution which has been live since July of 2016.

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The Cityworks platform extends to the GraniteNet software platform which is used for collecting valuable condition assessment data and video captured from robotic CCTV cameras that allow the City to “see” its infrastructure and monitor its condition over time. The City now has both the spatial and the historical context to proactively improve its project planning and prioritization methodology by classifying the criticality of declining infrastructure and its eventual end-of-useful-life with tools from Cityworks and GraniteNet.

Chad Quinn,
City of O'Fallon's GIS Coordinator



From a work management / business process perspective, the City benefits from significant efficiency gains from the ease and simplicity of distributing tasks and assignments from the Cityworks system out to the field.

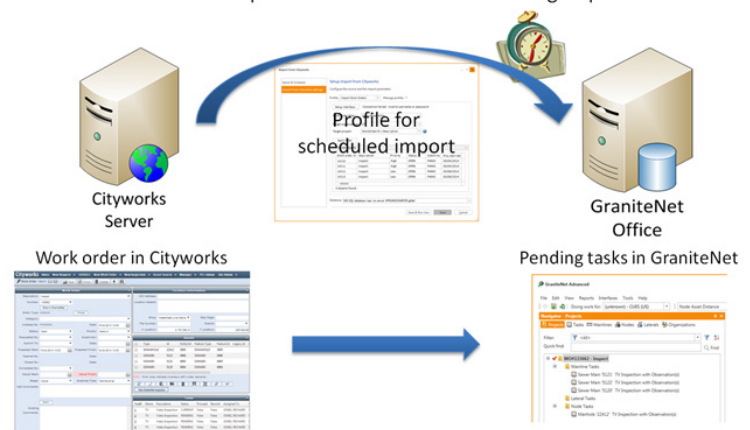
Along with easier task assignment, the City uses embedded Asset Management tools to enable field-execution of preventative maintenance based on the inspection history of its key Infrastructure. Managers use Cityworks to generate Work Orders which are typically sent out through a "Scheduler Module" automatically. Each afternoon, the Cityworks work orders are distributed through the network to GraniteNet and available for the field crews in the morning when they arrive to work.

Tasks range from Mainline TV Inspections, Manhole Inspections, Lateral Service inspections, Jetting, Cleaning, etc.

Virtually any asset (Hydrants, Valves, Lift Stations, etc.) can have a task assigned to it in GraniteNet depending on the people and equipment needed to inspect or maintain the asset.

Import Work Orders

Scheduled import brings planned works orders from Cityworks to GraniteNet office database. A work order is imported to GraniteNet as one or a group of Tasks.



City Wastewater Inspectors collect observations that are automatically scored in GraniteNet which are then converted into Universal Custom Fields inside Cityworks. All mainline sewer inspections are scored with inspection Rating Scores that are generated by the GraniteNet software's enforcement of the National Association of Sewer Service Companies (NASSCO) coding standard called Pipeline Assessment and Certification Program (PACP).



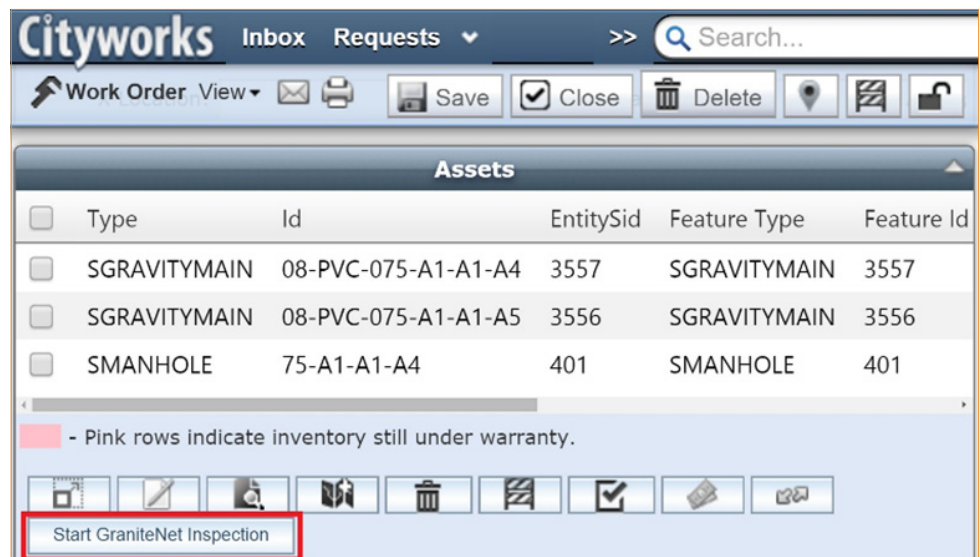
“The Cityworks and GraniteNet integrated solution allows us to better plan for any capital improvement projects or any rehab that needs to be planned and scheduled.”

Chad Quinn, City of O'Fallon's GIS Coordinator

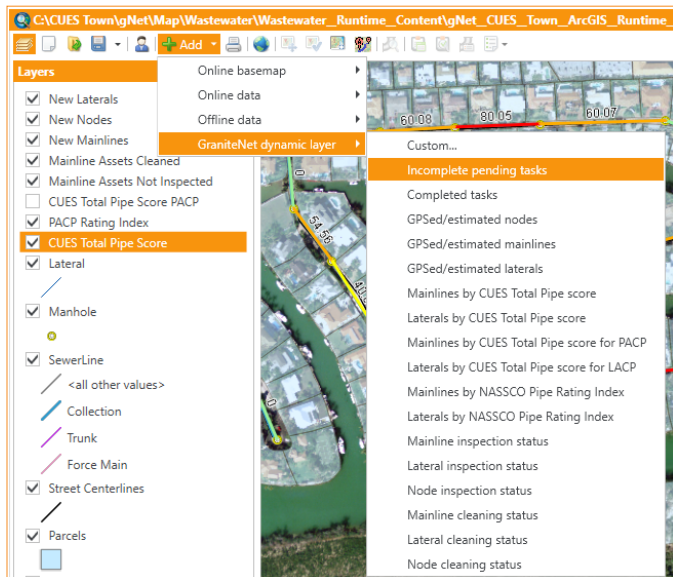
Recently, O'Fallon has begun collecting observations and video with scoring to conform to the NASSCO Lateral Assessment Certification Program (LACP). Rating the infrastructure is done consistently because key condition assessment values can be made mandatory by the city within the GraniteNet application so that the O'Fallon field crews are sure to capture all of the required information to make the complete assessment.

The field Inspectors intuitively click a button in Cityworks which automatically starts the corresponding asset inspection in GraniteNet with all of the attribute data pre-populated. This saves data entry time and virtually eliminates inspecting the wrong asset by mistake.

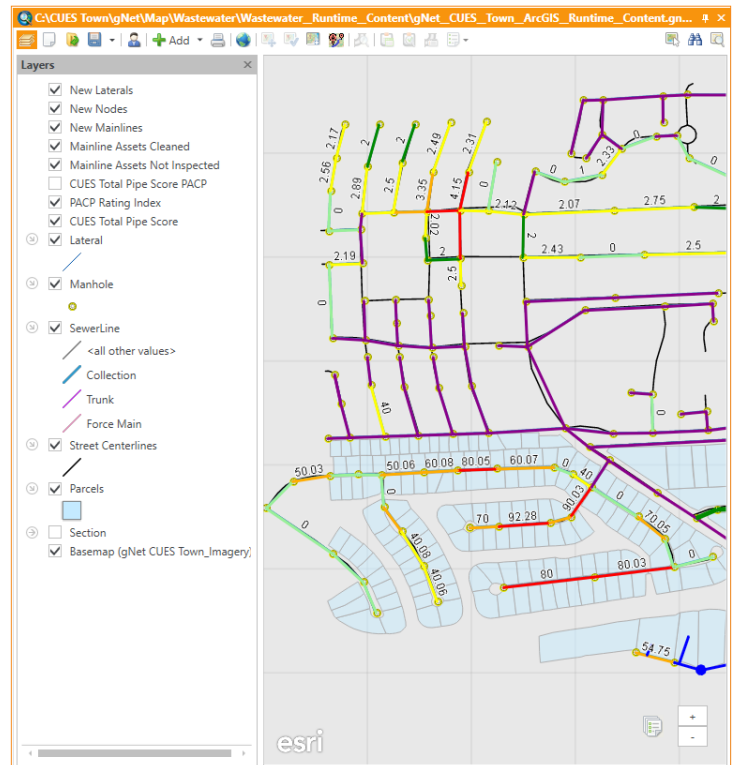
Using a protocol called JSON (Java Script Object Notation), any predefined custom fields specific to each inspection task are seamlessly brought into GraniteNet's inspection details pane for the inspector to view and complete. An embedded widget or “button” allows the user to seamlessly interact between the Cityworks Work Order Panel and the full GraniteNet application.



Additionally, GraniteNet automatically creates dynamic map layers in the GraniteNet map view. Specific observation types can also be converted into map event layers using ESRI tools which are visualized in O'Fallon's operational maps. These layers are powerful because they allow for fast visual review of assets to easily see when they were last inspected, their observations, and their criticality scores.



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Whether it be in the office or out in the field, viewing GraniteNet's data can be accomplished through a variety of Interfaces. A clear example of the benefit of this integration comes in the form of seeing complete data integrity between the maps and the inspection software. The GraniteNet observation points overlay- but do not interfere- with the underlying GIS features. GraniteNet's JSON API ensures that data enters the Cityworks database in a valid and normalized method. All of this precision and data accuracy yields greater efficiency and reduced costs both in the field and back in the office.

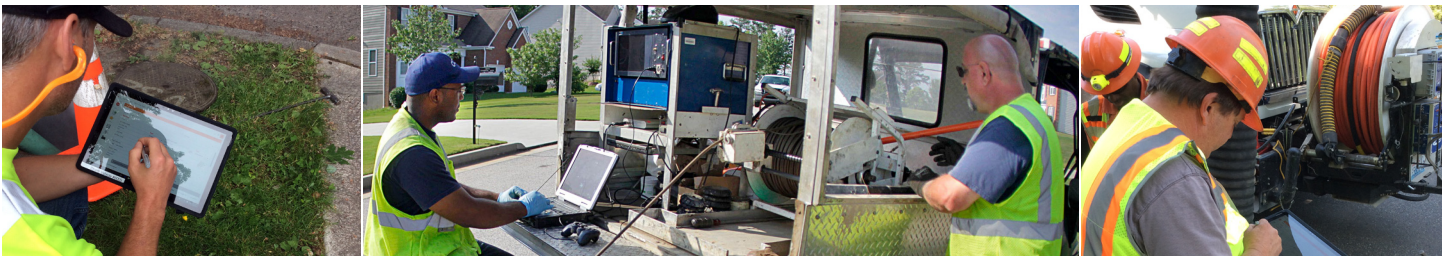
Finally, the completed GraniteNet Inspection Tasks from the field are consolidated in the office and uploaded into Cityworks daily, weekly or monthly.

Export tasks to Cityworks

Scheduled export returns completed tasks to Cityworks in form of Custom Inspections. Status and actual start/finish dates are updated in Cityworks for work orders, tasks, and assets.



The status of the WO is then reviewed, updated, accepted for closure or left open.



Cityworks Inbox Requests >> Search...

Work Order View Save Close Delete

Work Order

Description: Gravity Main CCTV

Number: 40769 **Show in GraniteNet**

Entity Type: SGRAVITYMAIN Change

Category: Preventative Maintenance

Initiated By: CUES, CUES Date: 26.10.2015 11:55

Status: Closed Priority: Medium Low

Requested By: Supervisor: BECKETT, GLENN

Submit To: CUES, CUES Date: 26.10.2015 11:55

Supervisors may add any additional information to the Work Order, such as the amount of time a particular inspection took (time card) or the cost of materials used. Additionally, a “trigger” may be set to initiate a secondary action such as a rehabilitation task to make a point repair or perform an additional Cleaning. This can be incorporated in the process of determining repairs and replacements due to inflow and Infiltration (I & I). Once the WO is closed out and no further edits or changes need to be made to the WO, the job is finished and all of the history is retained for future ‘repair/replace’ decision making.

In conclusion, according to Chad Quinn, O’Fallon’s GIS Coordinator, “using the Integrated GraniteNet, Cityworks/ESRI ArcGIS solution allows field inspectors, engineers and decision makers to make better decisions more intuitively”.

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