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TRAINING GUIDE

What's New in Lucity GIS for 2016 and 2016r2

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What's New in Lucity GIS for 2016 and 2016r2

In this session, we'll introduce you to new Lucity GIS tools available since ACT 2015r2.

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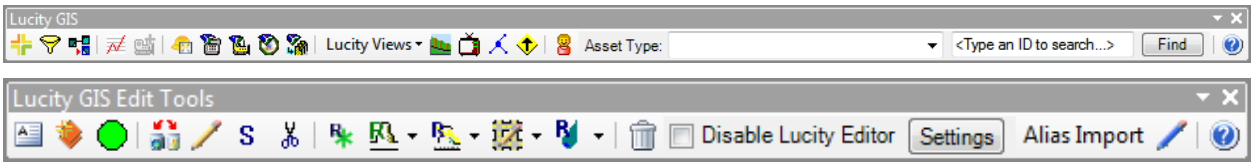
ArcMap Changes



Tools added or modified for 2016

Button	Name	Description
	Lucity Editor Extension	• New prompt warning user that a record in Lucity already exists with the asset ID they assigned. • Supports new default field values (as defined in Geodatabase Configuration tool).
	Water Edit Tools	All water tools (renumber, split, and merge) now work with raw and recycled water features.
Settings	**User Settings**	New setting to disable the warning prompt that the asset ID entered already exists in Lucity.
	TV Observations Tool	New option to filter results based on a severity rating.
	Show in Map	Updated logic to support showing locations of construction records, work permit, water flushing routes, meter devices and AMRs in map.

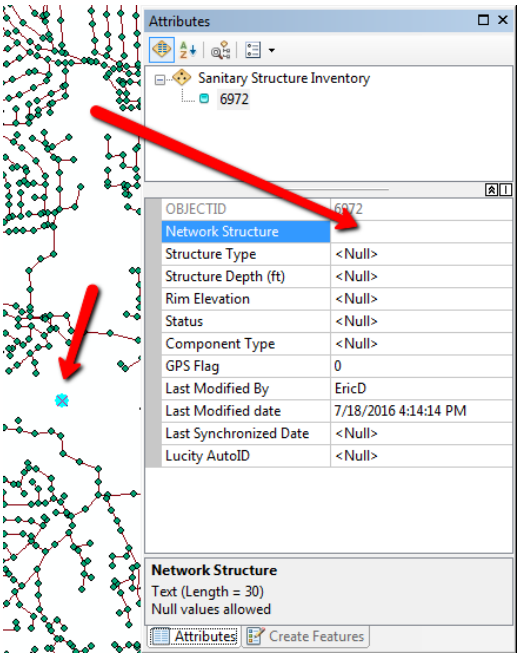
Tools added or modified for 2016r2

Button	Name	Description
	Add Lucity Layers	New tool that adds Lucity configured feature classes to the map.
	Lucity Renumber	New generic renumber tool. Can be used on nearly 50 assets types that currently don't have a renumber tool.
	Sewer Renumber	Tool now works for an additional 7 sewer inventory modules.
	Storm Renumber	Tool now works for an additional 2 storm inventory modules.
	Street Renumber	Tool now works for an additional 49 street inventory modules.
	Show in Map	Updated logic to support showing locations of FOG, IPT, and BMP assets using associated pipes, laterals, and structures.

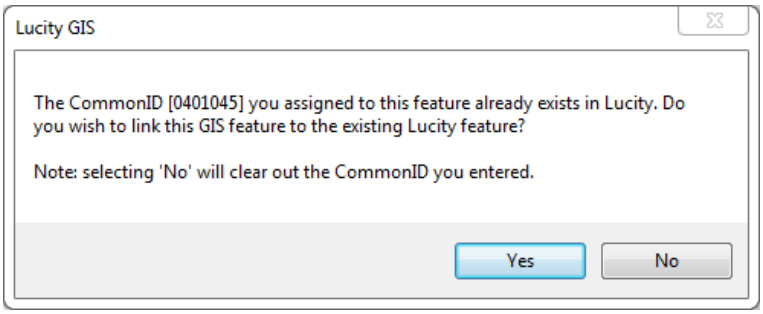
Edits to an Asset's Common ID Field

During an ArcMap edit session with the Lucity extension enabled, if edits are made to the common ID field for an asset, the Lucity extension checks if the value entered already exists in Lucity, and if so, prompts the user with a warning indicating the value entered is not unique.

1. Create a new feature, or edit an existing one.
    a. Note: There are obviously multiple ways to update an attribute for a feature. Any method should work given the common ID field value is actually modified.
2. Edit the common ID field. This is the field in your feature class that contains a unique user defined value (manhole number, hydrant number, etc).



3. Once the common ID value has been changed, the Lucity extension will determine if the newly entered common ID already exists in Lucity. Note: Depending on the method you are using to update the value, you may need to click off the field for the edit to register.
4. If the value entered already exists in Lucity a prompt similar to the following will appear:



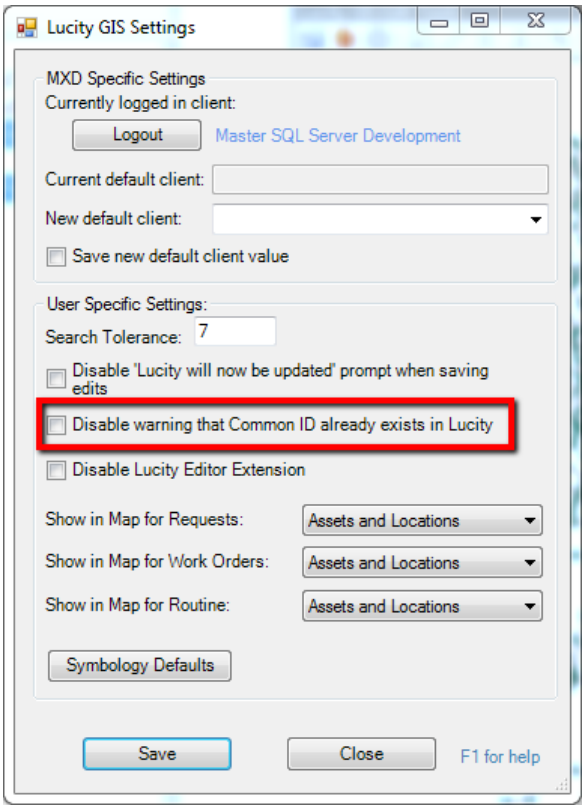
5. Select Yes or No. Yes, indicates you want to link the existing Lucity feature to this GIS feature. No, will clear out the common ID field.

Disabling the duplicate CommonID prompt

With the 2016 release, there was an added validation during the ArcMap edit session that warns the user if they assigned a CommonID to an asset that already exists in Lucity. This validation is enabled by default, there may be certain situation in which you wish to disable this functionality.

1. On the ArcMap edit toolbar, click the Lucity Settings button.

2. On the Lucity GIS Settings dialog, check the *Disable warning that Common ID already exists in Lucity* option.



3. Click Save. You will need to restart your ArcMap session for the changes to take effect.

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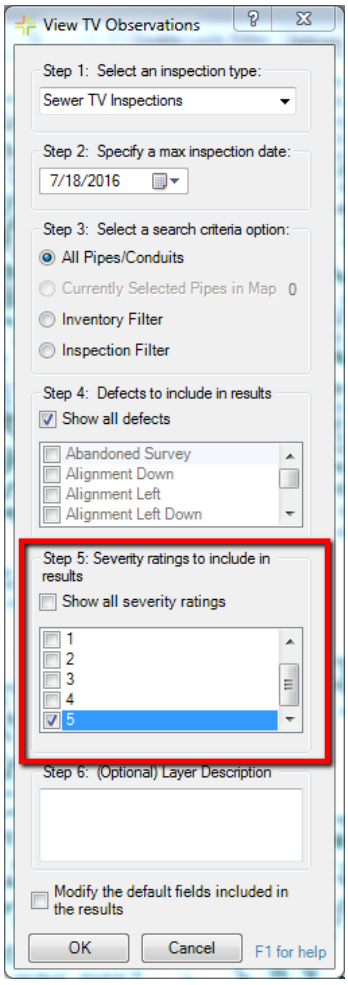
TV Observation Tool

With the 2016 release, there was a new option added to filter the results based upon a severity rating.

1. On the Lucity analyst toolbar, click the TV Observation tool. The following form will be displayed.



2. There is now a section (step 5 on form) that allows you to filter the results based on severity rating.
    a. Note: The default is to include all severity ratings. Unchecking that box will allow you to specify which ratings should be included in the result.

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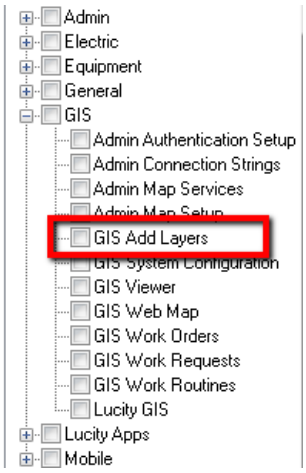
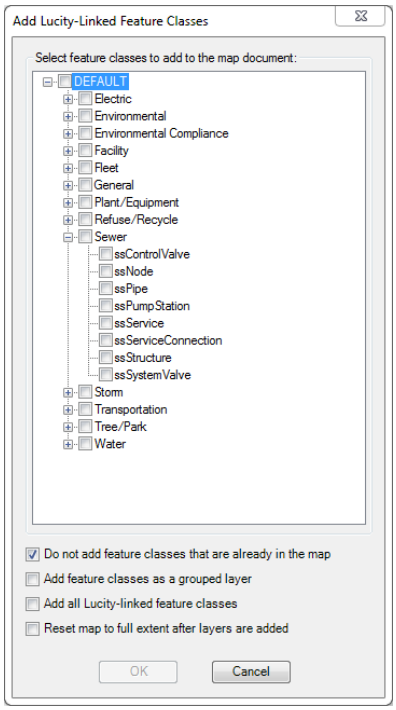
Add Lucity Layers

This is a new tool with version 2016r2. The purpose of this tool is to easily add Lucity linked feature classes to the map. It uses the connection information to your geodatabase as it is listed in the GIS Connection Strings module in the Lucity Administration Tool.

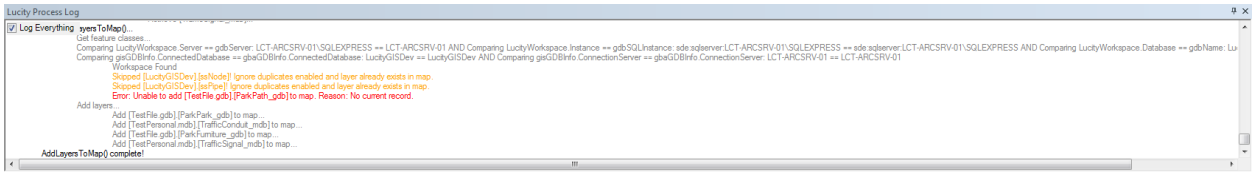
Note: This tool does require explicit permissions to use. The user must have the *GIS Add Layers* permission enabled in order to use this tool. This is due to the fact that based upon the connection properties defined in GIS Connection Strings, the layers added in the map may be editable.



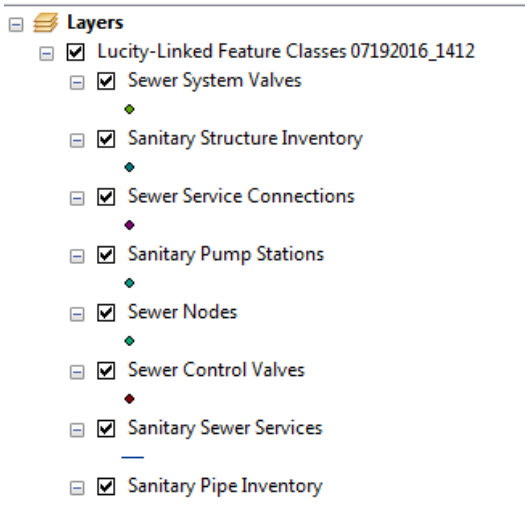
1. To add a Lucity linked layer to the map, click the Add Lucity Layers tool. It may take a bit for the form to load as it is pulling all Lucity linked information for each configured workspace. A dialog similar to the following will appear;



2. The displayed form contains a tree view with the configured workspaces listed. Currently, only enterprise (sde), file (.gdb), and personal (.mdb) geodatabases are supported with this tool.
3. Select the layer(s) you wish to add to the map.
    a. Note: layers are grouped by asset type
4. Check any desired options
    a. *Do not add feature classes that are already in the map*- This option is checked by default and prevents you adding duplicate layers in the map.
    b. *Add feature classes as a grouped layer*- This option will add a single grouped layer containing all the selected feature classes, to help keep the layers added to the map organized.
    c. *Add all Lucity-linked feature classes*- This option will add all feature classes from each workspace that is shown on the form. While it is possible to add everything from one workspace by simply checking that workspace's node, this setting will apply that to every workspace configured.
        i. *Note*: Depending on the amount of feature classes configured with Lucity, this option may take a while to process.
    d. *Reset map to full extent after layers are added*- This option will reset the map's extent after the layers have been loaded.
5. Click OK. As the layers are being added to the map, the Lucity process log will show the progress of the tool and provide messages of any warning or errors.



6. Once complete, the layers will appear in the table of contents in the map document.

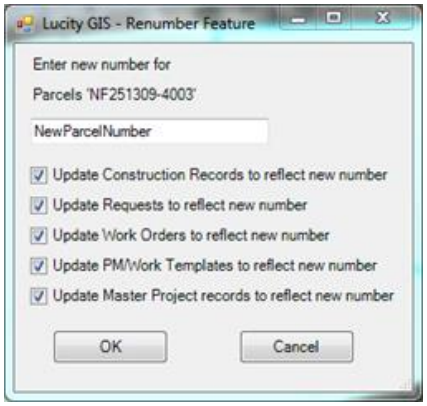


Lucity Renumber

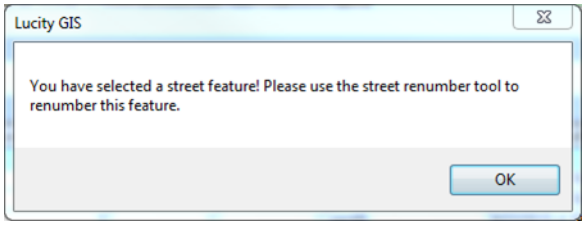
This is a new tool with version 2016r2 that renumbers any asset type not handled by the sewer, storm, street, or water renumber tools. This tool will renumber an asset from most any inventory module in these programs:

- **General**: Custom, Customer Address, Parcels
- **Environmental**: Survey Sites
- **Tree/Park**: Art, Courts, Equipment, Fence, Fields, Furniture/Amenities, Irrigation Controllers, Irrigation Node, Irrigation Pipes, Irrigation Valves, Landscaping, Lights, Meters, Modular Equipment, Parking Lots, Paths, Playground, Pool Appurtenances, Pool Site, Pools, Refuse, Structures, Parks, Trees
- **Plant/Equip**: Equipment, Plant, Plant Process
- **Facility**: Building Asset, Buildings, Door, Floor, Floor Asset, Floor Sections, Furnishing, Irrigation Controllers, Irrigation Nodes, Irrigation Pipes, Irrigation Valves, Roof, Roof Asset, Room, Room Asset, Site, Site Asset
- **Refuse/Recycling**: Solid Waste

1. To renumber an asset, first select the asset in the map, then click the Lucity Renumber tool. The following dialog will appear.



Note: If an asset was selected that isn't supported by the tool, a message similar to the following with appear.



2. Select the desired options on the Renumber Feature form and click OK.

Lucity Sewer, Storm, Street Renumber

These existing renumber tools have been modified so they work with additional asset types. Support has been added for the following asset types:

- **Sewer**: FOG Extractor, FOG Facility, IPT Facility, IPT Monitoring Point, Service Connections, Pipes, Structures
- **Storm**: Weir, Detention Basins
- Street: Bridges, ITS Anti-Icing Equipment, ITS Anti-Icing Pump Houses, ITS Automated Gates, ITS Camera Location, ITS Dynamic Message Sign, ITS Kiosk, ITS Portable Dynamic Message Sign, ITS Sensor, ITS Weather Station, Mast Arms, ROW Bus Stops, ROW Curbs, ROW Fences, ROW Guardrails, ROW Medians, ROW Pavement Markings, ROW Railroad Crossings, ROW Sidewalks, ROW Steps, ROW Walls, Sign Inventory, Signal Controllers, Signal Heads, Auxiliary Equipment, Cabinets, Conductors, Conduits, Fiberoptic, Furniture, Junction Boxes, Landscape Areas, Light Circuits, Light Controllers, Main Lines, Meter Boxes, Parking Lot, Parking Stalls, Preempt Signals, Ramp, Road, Road Asset, Road Attribute, Road Ramp, Road Segment, Signals, Snowshoes, Traffic Detectors, Trails

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ArcCatalog Changes

Tools added or modified for 2016

Name	Description
GIS Integration Summary Report	New report in Geodatabase Configuration Tool that provides a summary of a feature class and/or geodatabase configuration with Lucity
Update Work Maintenance Zone Domain	New domain tool to create and associate a Lucity work maintenance zone domain
Update Work Alternate Zone Domain	New domain tool to create and associate a Lucity work alternate zone domain
Add/Remove Attribute Indexes	New tool to create attribute indexes for fields in Lucity linked feature classes
Show Current Values and Record Counts	New option within the Domain Discrepancies form to show the current field values with counts for the Lucity and GIS field.
Default Field Values	New option within the GIS field mapping grid to specify a default value that should be used whenever the feature is synced with Lucity

Tools added or modified for 2016r2

Name	Description
Number Generator- Validate Next Number	New tool to validate a number generator's next number to ensure that the number won't create a duplicate and suggest the next number to use based upon existing values.
Field Lookup- Only show unmapped fields	New option on the Field Lookup form to only show fields that are currently not mapped to Lucity.
Number Generator and Spatial Relationships- Related Feature class	The related feature class field for number generators and spatial relationships is now a drop down list.
Geodatabase Edit Map Service	The edit map service field for a geodatabase is now a drop down list.

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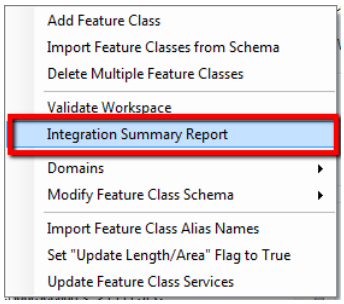
Integration Summary Report

At version 2016 we introduced a new report that summarizes all aspects of the GIS integration with Lucity. This report can be ran against the geodatabase or individual feature classes. The report will provide all information regarding the feature class integration with Lucity (feature class field mappings, associated workspaces, feature class aliases, number generators, spatial relationships, and scheduled tasks).

1. To run the report, select a geodatabase or feature class node in the Geodatabase Configuration Tool.
2. Right-click on the node and select Integration Summary Report.



3. The tool will immediately begin to run the report.
    a. Note: Each feature class summary will appear on its own page, so if you run the report against the entire geodatabase, the report will be multiple pages. The following page is an example of a report for a single feature class:

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GIS Feature Class Report - pkTree

7/20/2016
2:53 pm

Feature Class Name: pkTree
Common ID Field: FACILITYID
Lucity AutoID Field: LucityAutoID
Display Field: FACILITYID

Lucity Table: TREE
In Lucity Flag:
Last Modified Date: LastModDate
Last Modified By: LastModBy
Last Synchronized Date: LastSynDate

Associated Aliases
Tree

Always Update Length/Area Field: ☑
Disable Feature Class: ☐

Edit Service Name: LucityGIS_GISTasks_Editable
Edit Service URL: http://lct-arcsrv-01:6080/arcgis/rest/services/LucityGISDev/LucityGIS_GISTasks_Editable/MapServer

Associated Workspaces

Name	Update	Replica	Edit URL
DEFAULT	☑	☐	http://lct-arcsrv-01:6080/arcgis/rest/services/LucityGISDev/LucityGIS_All_Editable/FeatureServer

Fields

Feature Class Field	Lucity Field	Required	Unique	Lucity Code/Type	Property Name	Lookup
COMMONNAME	TR_COMMON	0	0			☐
CONDITION	TR_COND_CD	0	0	TR_COND_TY		☐
DESIGNATION	TR_DESIGCD	0	0	TR_DESIGTY		☐
GPSFLAG	TR_GPS	0	0			☐
FACILITYID	TR_NUM	1	1			☐
PARKLUCITYID	TR_PK_ID	0	0			☐
STREETLUCITYID	TR_SN_ID	0	0			☐
STATUS	TR_STAT_CD	0	0	TR_STAT_TY		☐
TREETYPE	TR_TYPE_CD	0	0	TR_TYPE_TY		☐

Number Generators

Field Name to Update	Related Feature Class	Related FC Field	Related FC Service	Width	Seperator
FACILITYID				3	_

Prefix for Number	*Next Available Number*
TR	*8*

Spatial Relationships

Type	Field Name to Update	Related Feature Class	Related FC Field	Related FC Service	Distance Value	No Over Not-Null	Overwrite w/Null
Is Within a Distance of	STREETLUCITYID	stSegment	LucityAutoID		40.00	☐	☐
Intersects	PARKLUCITYID	pkPark	LucityAutoID		0	☐	☐
Reverse Geocode					150.00	☐	☐

Scheduled Tasks

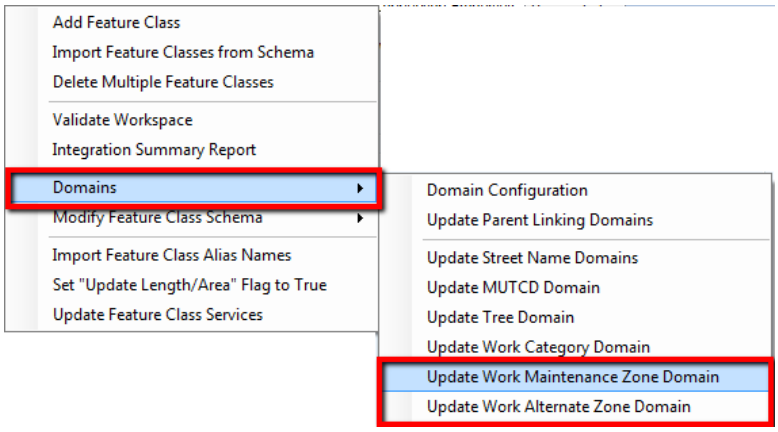
Type: 2 Sync-GIS to Lucity
Disabled: ☑
Where Clause: FACILITYID IS NULL
Only process records modified since last run: ☐
Last Edited Date Time Field:
Insert record if it doesn't already exist: ☑
Enable number generator for imports: ☑
Enable spatial relates for imports: ☐
Update existing record: ☑
Delete previous inspection(s) for asset: ☐

Scheduling
Frequency: 1 Hours
Last Run Date Time: 5/31/2016 5:23:07PM
Next Run Date Time: 5/31/2016 6:23:07PM
Last Sync Start: 5/31/2016 5:23:07PM
Last Sync End: 5/31/2016 5:23:07PM **Last Sync had error?** ☐

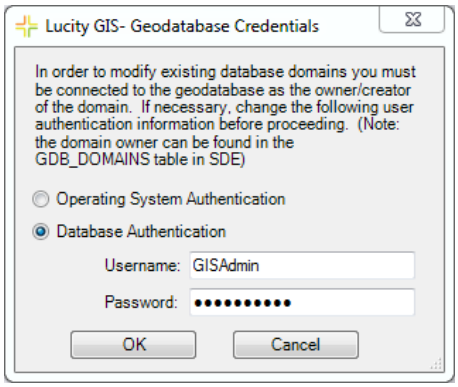
Update Work Maintenance and Alternate Zone Domains

Fields in the geodatabase that are linked to Lucity fields storing the Maintenance Zone or Alternate Zone should contain a GIS domain that stores a list of all possible zones. When this tool is run, it will not only create/update the GIS domain but it will also link that GIS domain to any feature class field that is linked to a Lucity Maintenance Zone or Alternate Zone field.

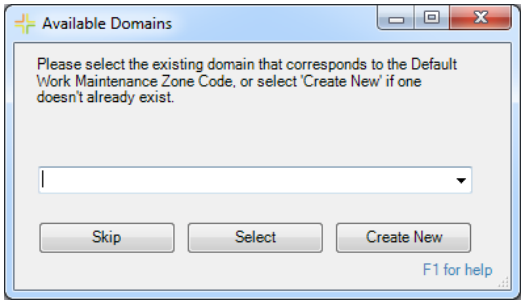
1. To update Work Maintenance Domains in the GIS, select the desired geodatabase node in the Geodatabase Configuration Tool.
2. Right-click on the node and select Domains>>Update Work Maintenance Zone Domain.



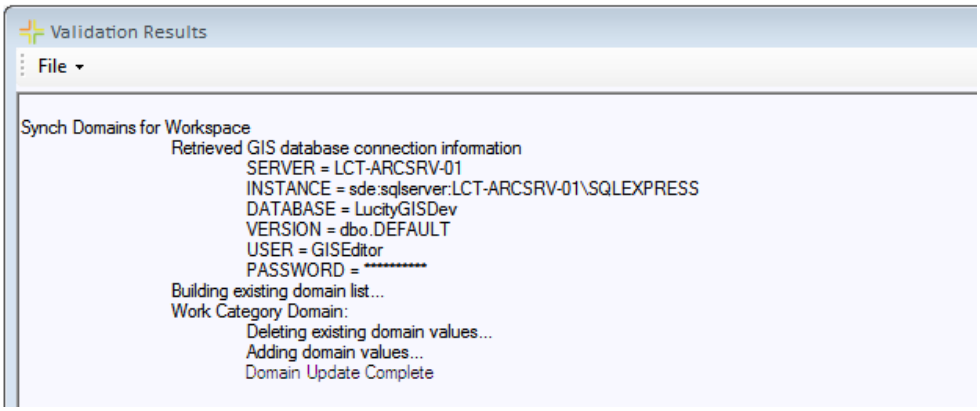
3. The following prompt will appear asking the user to login as the domain owner. Domains within a geodatabase can only be edited by the original creator (domain owner). Often, not even system admin accounts can edit a domain if they weren't used to create it. Make an authentication choice and enter username/password if needed. Click OK.



4. The following message will appear prompting for the Work Maintenance Zone domain.



5. Click Skip, Select, or Create New.
6. The domain will be created (or updated) and the validation screen will appear. When this tool is run the domain is automatically associated to any feature class field that is linked to a Maintenance Zone field in Lucity.
7. The results will be shown in a validation window similar to the following:



The same process can be done for the Work Alternate Zone domain

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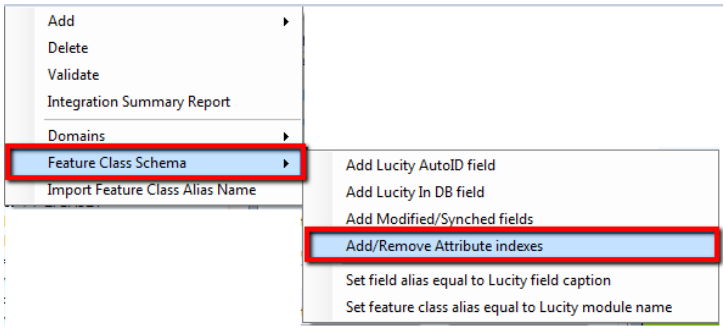
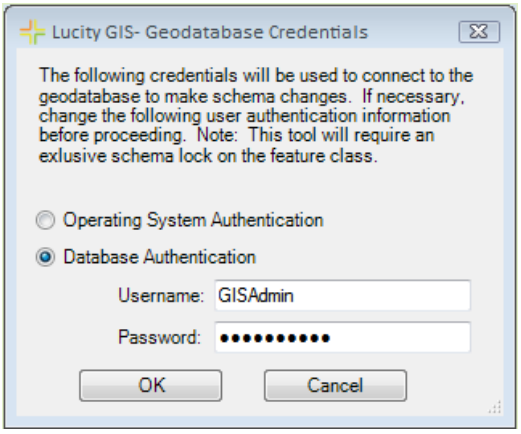
Add or Remove Attribute Index

This tool can be used to create an attribute index on any feature class field. Attribute indexes help improve performance especially when created on fields that are actively used by the Lucity GIS integration such as the FacilityID and LucityAutoID fields.

1. To add/remove indexes, select the desired geodatabase or feature class node in the Geodatabase Configuration Tool.
2. Right-click on the node and select Feature Class Schema>>Add/Remove Attribute Indexes



3. The following login screen will appear. It is prompting for a geodatabase admin user name and password. This user must have permissions to create and/or delete indexes in your geodatabase. Make an authentication choice and enter if username and password if needed. Click OK.



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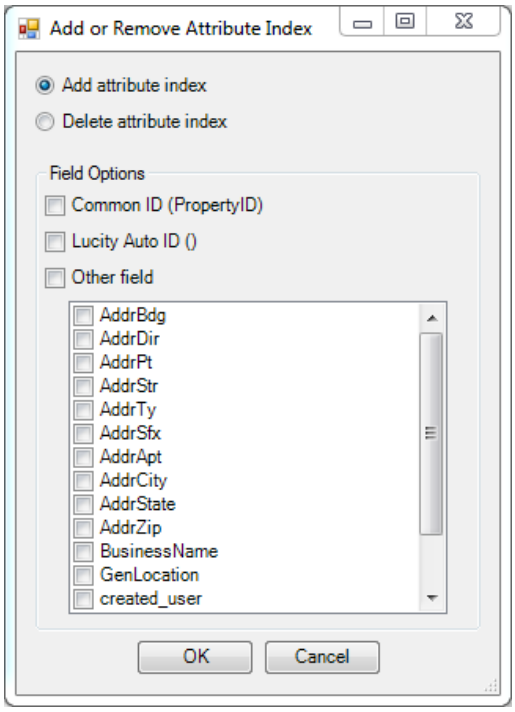
4. The Add or Remove Attribute Index screen will appear:



5. Fill out the form and click OK to run
    a. Select whether you want to Add or Delete an index.
    b. Select which fields you want to create an index for.
        i. The Common ID and Lucity Auto ID options will show the associated field name in parenthesis (if a GIS field has been mapped to the Lucity field).
6. The results will be displayed in a validation window.

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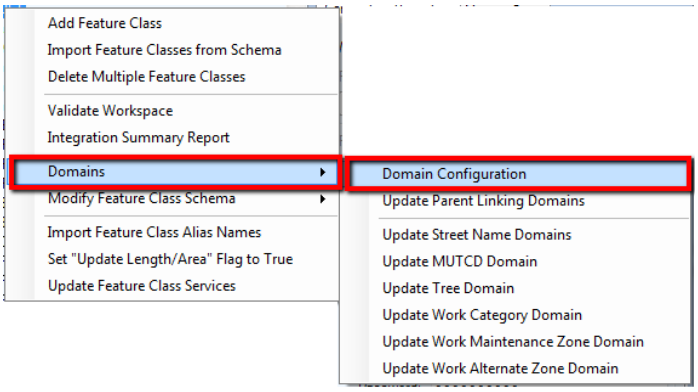
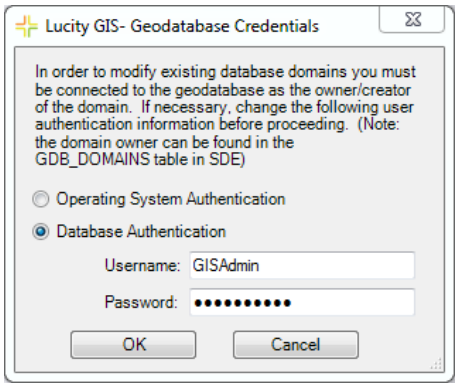
Default Field Values- Show Current Values and Record Counts

There is a new option available on the Domain Discrepancies form that allows you to see what values are currently being used in the GIS and Lucity field for a domain. This could serve as a valuable Q/A tool, and also helpful when making changes to existing domains to determine if certain values are being used or not.

1. To view the current domain values and counts for a field, select the desired geodatabase or feature class node in the Geodatabase Configuration Tool.
2. Right-click on the node and select Domains>>Domain Configuration



3. The following prompt will appear asking the user to login as the domain owner. Domains within a geodatabase can only be edited by the original creator (domain owner). Often, not even system admin accounts can edit a domain if they weren't used to create it. Make an authentication choice and enter username/password if needed. Click OK.



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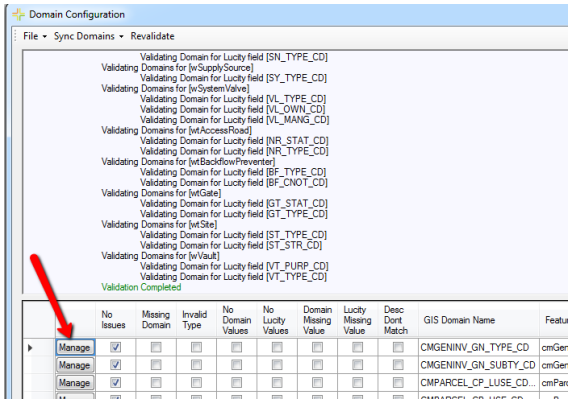
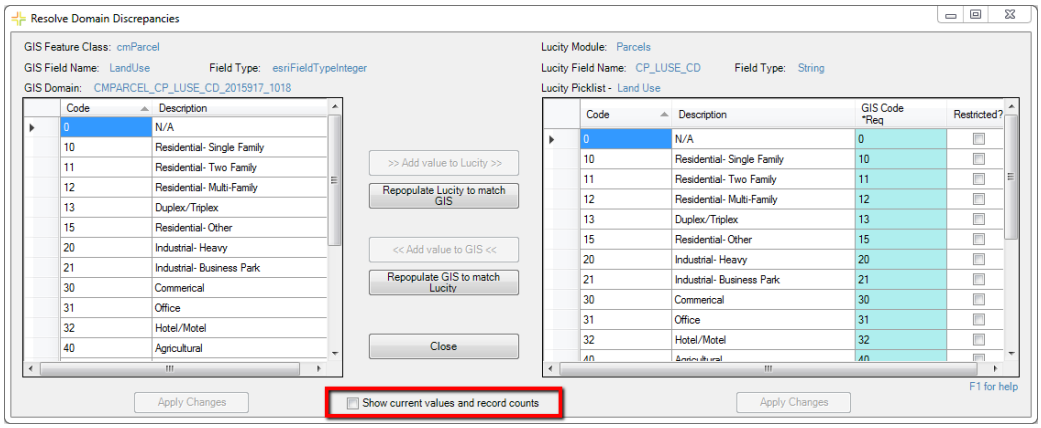
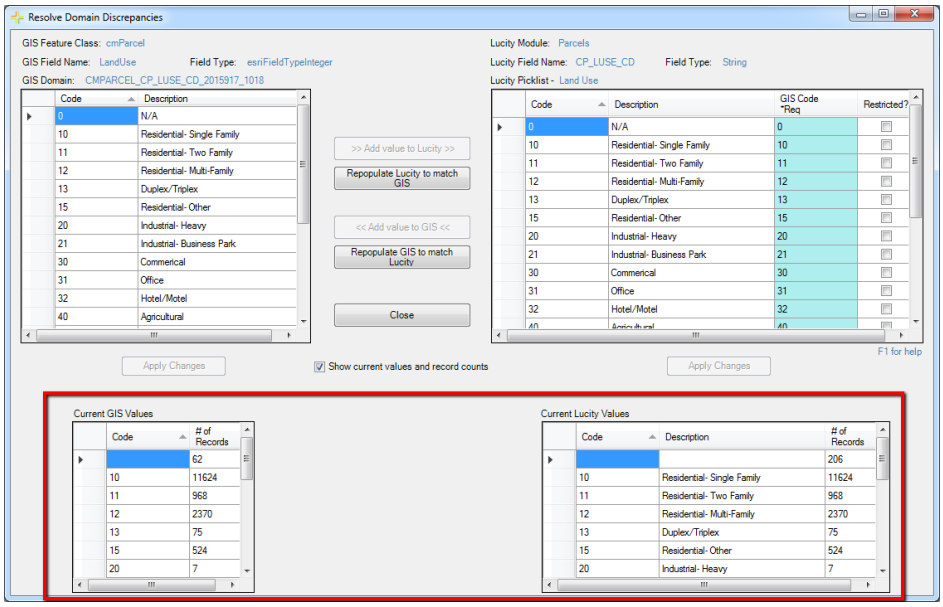
4. The Domain Configuration form will load showing the list of domains for the given geodatabase or feature class.



5. Click Manage on the domain you are interested in. This will open the Resolve Domain Discrepancies form.



6. On the Resolve Domain Discrepancies form check the *Show current values and record counts*. This will cause the form to expand showing a grid of all the current values in the GIS and Lucity fields along with a record count .

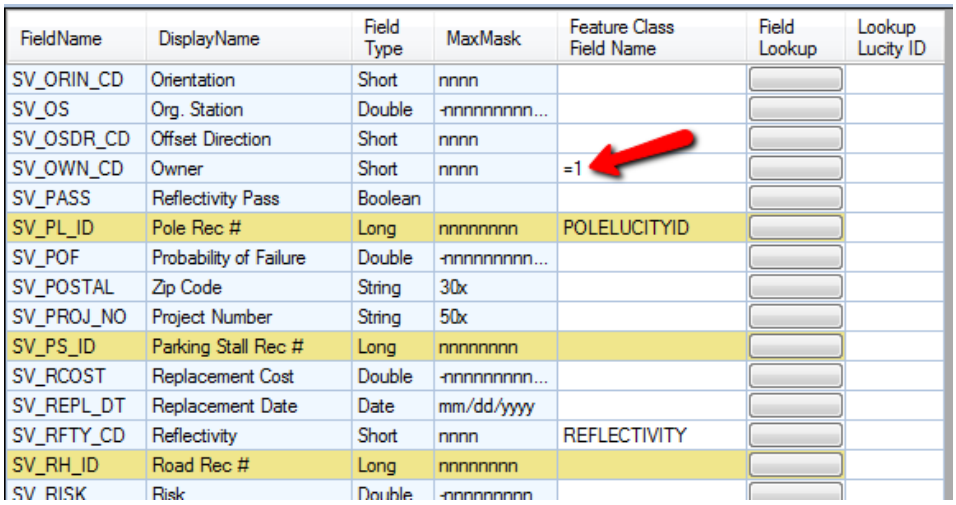


Default Field Values

Starting with version 2016 you can specify a field value that should always be used when synching a GIS feature to Lucity. This would be helpful in situations where there is a field in Lucity that you want to populate/update whenever a GIS feature is synced without having to have the value come from a GIS field.

A situation in which this functionality would be beneficial, say you have two GIS feature classes for sewer pipes: one for force mains, the other for gravity mains. You have both these feature classes mapped to the Lucity sewer pipe inventory module, and there is a LineType field in Lucity that you want to use to indicate if it is a Force Main or Gravity Main. Instead of requiring that you have a field in each of your pipe feature classes indicating the LineType, you can simply configure the system so anytime a feature from the Force Main feature class is synched with Lucity the Lucity LineType will be set to ForceMain and vice versa for the Gravity Main feature class.

1. To configure default values for feature class field mappings, select the desired feature class node in the Geodatabase Configuration Tool.
2. In the field mapping grid for the desired field, simply enter the default value you would like to use proceeded by an equal sign '='.



FieldName	DisplayName	Field Type	MaxMask	Feature Class Field Name	Field Lookup	Lookup Lucity ID
SV_ORIN_CD	Orientation	Short	nnnn			
SV_OS	Org. Station	Double	-nnnnnnnnn...			
SV_OSDR_CD	Offset Direction	Short	nnnn			
SV_OWN_CD	Owner	Short	nnnn	=1		
SV_PASS	Reflectivity Pass	Boolean				
SV_PL_ID	Pole Rec #	Long	nnnnnnnn	POLELUCITYID		
SV_POF	Probability of Failure	Double	-nnnnnnnnn...			
SV_POSTAL	Zip Code	String	30x			
SV_PROJ_NO	Project Number	String	50x			
SV_PS_ID	Parking Stall Rec #	Long	nnnnnnnn			
SV_RCOST	Replacement Cost	Double	-nnnnnnnnn...			
SV_REPL_DT	Replacement Date	Date	mm/dd/yyyy			
SV_RFTY_CD	Reflectivity	Short	nnnn	REFLECTIVITY		
SV_RH_ID	Road Rec #	Long	nnnnnnnn			
SV_RISK	Risk	Double	-nnnnnnnnn			

   a. Default values should not contain quotes. It should simply be in the format of =DefaultValue. The Lucity extension will determine the field type and enclose a string value in quotes if needed.

   b. Default Values are not supported for composite fields (fields listed in green), commonID fields (fields listed in red), or the LucityAutoID field (fields listed in pink). Any other field and field type is supported (short int, long int, Boolean, dates, strings, etc.).

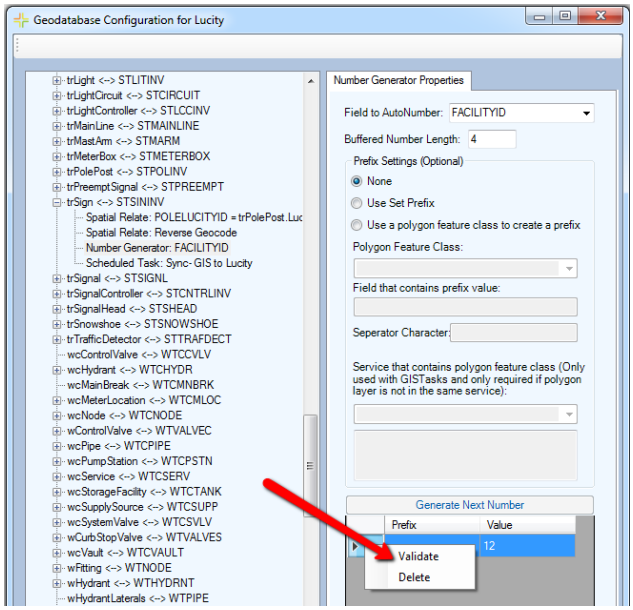
   c. There is no validation done when setting a default value to verify it is of the proper data format. However, if they run the validation tool against the feature class, it will attempt to validate the default value and it's compatibility with the field data type.

   d. Default Values are used during an ArcMap sync process (both insert and updates) and GIS Scheduled Tasks.

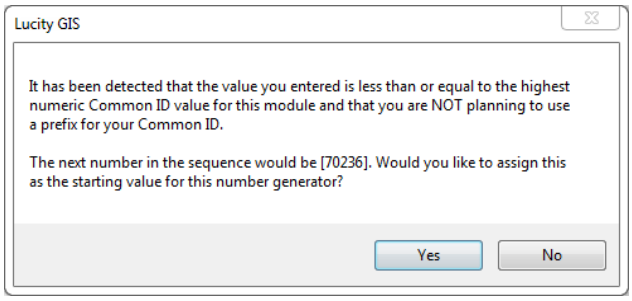
Number Generator- Validate Next Number

At version 2016r2 we introduced a new report that summarizes all aspects of the GIS integration with Lucity. This report can be ran against the geodatabase or individual feature classes. The report will provide all information regarding the feature class integration with Lucity (feature class field mappings, associated workspaces, feature class aliases, number generators, spatial relationships, and scheduled tasks).

1. To validate the next number, select the number generator node for the desired feature class in the Geodatabase Configuration Tool.
2. On the Number Generator Properties tab, right-click on the next number row in the bottom grid and select Validate.

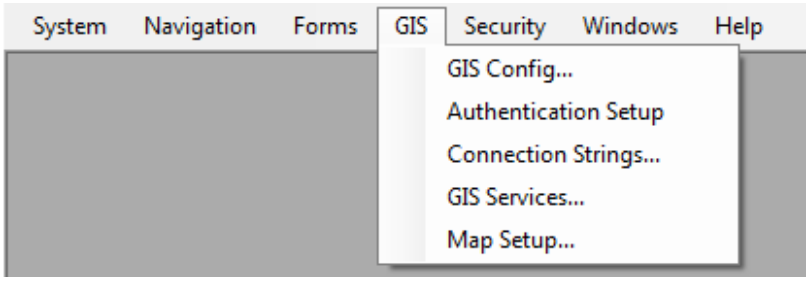


3. The validation will run and calculate what the next possible number would be based upon the current values are for all record in the Lucity module.
4. If the next suggested value is different than what is currently set for the next value, the user will receive a prompt informing the user of the conflict.



   a. Yes- will change the next number to the suggested value.
   b. No- will keep the current next number value. Note: Not changing the next number may result in duplicate GIS features when new records are added in GIS.

Lucity Administration Tool Changes



Tools added or modified for 2016r2 (no changes in 2016)

Name	Description
GIS Config	• Changes to support use for non-AGOL services. SaaS clients that have a local SDE. • Adds ability to manually validate and run GIS Scheduled Tasks
Authentication Setup	New tool to specify user credentials used for accessing secure web services
Connection Strings	Removed edit map service url, username, password fields. Instead there is a new inking field to map services
GIS Services	• Renamed Map Services menu to GIS Services • Removed service credential fields (username/password) and instead provides a drop down to associate an Authentication Setup • Removed *Disable Client Caching* property. This is no longer used. • Removed *Is Titled* property. Instead this is determined programmatically via the service metadata at runtime. • Added *Is Base Map Mobile* property. This is used to indicate if the service can be used as a base map on mobile web maps. • Added ability to set the default base map and default base map for mobile on GIS Services form instead of in System Settings. • Enforces *Require Logon* property to be TRUE for AGOL services • Added a Utility Service tab. This tab is used to specify the geocoding, geometry, and routing services used with Lucity. Secured services are now supported for these types. • Added a Work Zone tab. This tab is used to specify the service information for work maintenance zones and work alternate zones, which used to be configured in System Settings.
Map Setup	Modified form to support changes to geocoding services

System Settings	• Removed GIS Routing tab. These settings are now configured in GIS Services. • Removed Work Zones tab. These settings are now configured in GIS Services. • Removed *Default Base Map Name* setting in GIS Web tab. This setting is now configured in GIS Services. • Removed *Flag indicating that geocoding services are still ArcGIS 10.1* setting in GIS Web tab. This setting is no longer used. • Added a *Preload GIS caches to speed initial map load* setting to GIS Web tab. It is recommended this setting be set to TRUE. This causes the maps and map services to load when the web app first starts. • Removed *URL for Geocoding Service or URL to parcel layer in map service* setting in GIS Web tab. This setting is no longer used. Instead if the setting prior to 16r2 was referring to a geocoding service that information is now stored in GIS Services. If the setting was referring to an address layer that is now stored in a new setting. • Added a *URL for address layer in map service* setting in GIS Web tab. This indicates if an address layer should be used instead of a geocoding service to locate addresses in map. • Removed *URL for Geometry Service* system setting in GIS Web tab. This setting is now configured in GIS Services.

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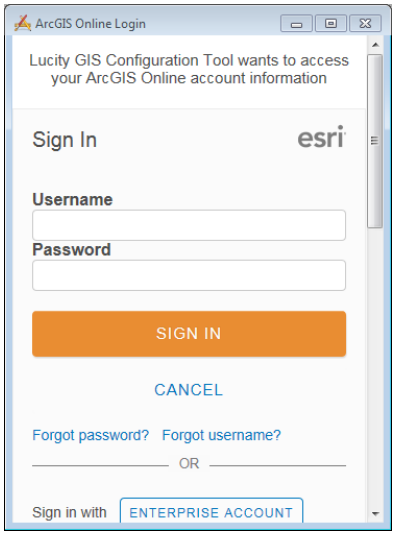
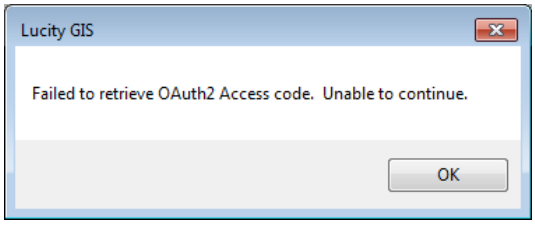
GIS Config

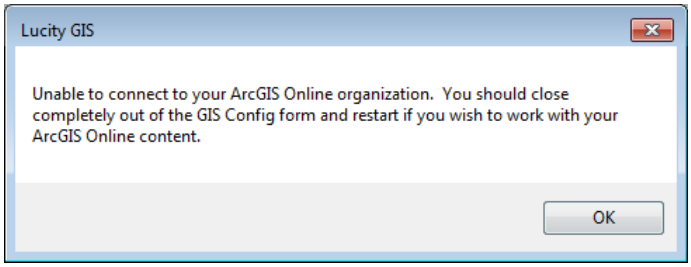
The GIS Config tool in the Lucity Administration Tool can be used to configure ArcGIS Online services with Lucity. With 16r2 the tool has been modified so it can also be used to configure local ArcGIS Server services for Lucity Cloud clients. This is necessary for Lucity Cloud clients because they won't have access to our ArcGIS Desktop extension and thus can't run the Geodatabase Configuration Tool in ArcCatalog which is the current way to configure ArcGIS Server services with Lucity.

To use the GIS Config tool to configure ArcGIS Server services, the following steps can be taken:

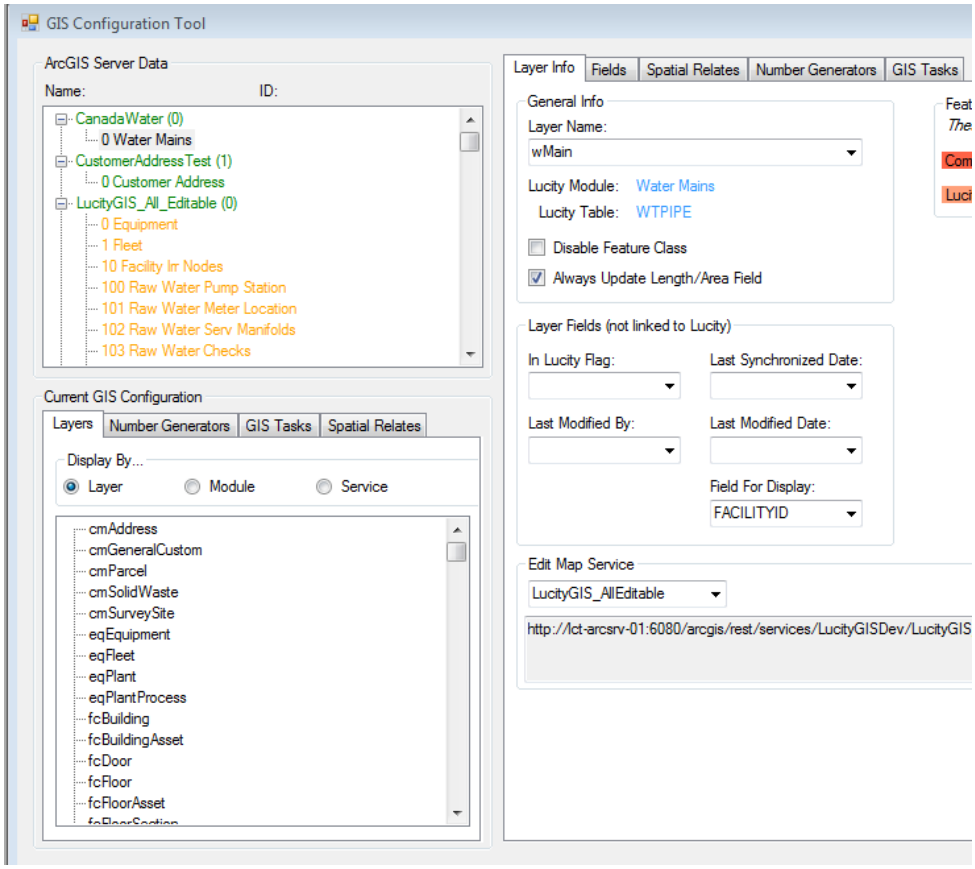
1. Setup an edit map service in Lucity Administration's GIS Services. This service would be the default for all Lucity to GIS updates.
2. Setup a GIS Connection record in the Lucity Administration tool. Be sure to specify the service created in the previous step as the associated edit map service.
3. Launch the GIS Config tool in UI Admin. Cancel out of the prompt asking to login to your ArcGIS Online account.







4. After bypassing the AGOL account login, and clicking OK on the prompts that followed the GIS Config form will load.



   a. The ArcGIS Server Data list box will contain all the services currently configured with Lucity that have the same root url as the service associated with the default geodatabase in GIS Connection strings (this is the service defined in step 1). Note: We only support a single sde geodatabase configuration with Lucity Cloud (there should only be one record in GIS Connection Strings that has the database type as "SDE").

   b. Expanding the service node will list all layers that are part of that service.

      i. Layers in green indicate that is the default service for that layer.

      ii. Layers in orange indicate that the layer is configured with Lucity, but that is not the default service for the layer.

      iii. Layers in black indicate the layer is not configured with Lucity.

      iv. Example: A layer such as Equipment may be included in multiple services, but there can only be one service that is defined as the default service for a given layer. The default service will typically be the service associated to the GIS Connection String record. However, this can be overwritten by changing the Edit Map Service on the Layer Info tab for the selected layer.

   c. Note: Service information cannot be updated via the GIS Config tool. Changes must be made via GIS Services in the Lucity Administration tool.

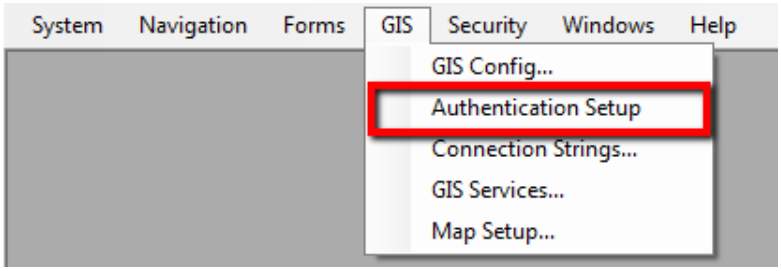
Authentication Setup

With 16r2, some major steps were taking to centralize and optimize the securing of credentials used for GIS web services. As part of this effort, a new menu option was created in the Lucity Administration tool to handle creating and updating credential information for secured services.

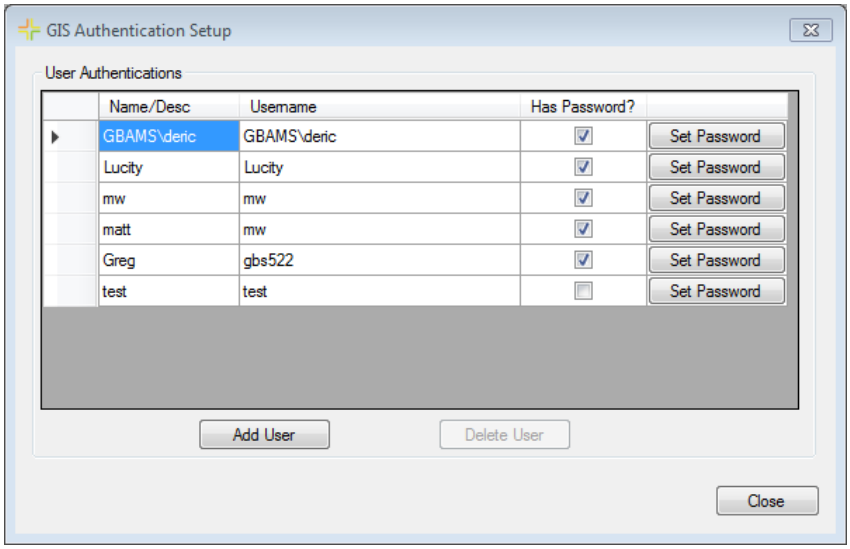
The 16r2 conversion will convert all username and password information that was previously located throughout the system in places such as Map Services and GIS Connection String into this new Authentication Setup module.

To add/edit/delete user authentications:

- Select Authentication Setup under the GIS menu in the Lucity Administration tool.



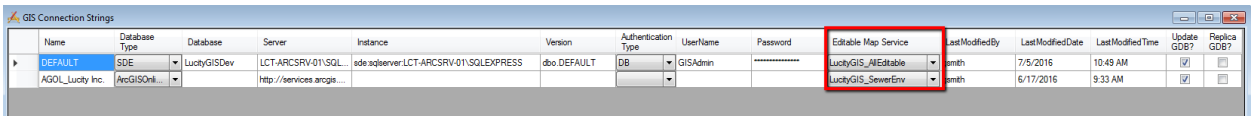
- The GIS Authentication Setup form will appear.



  - Name/Desc: This is a user defined value used to identify the credential. This is the value that will be visible from other forms when associating the credential to a service.
  - Username: This is the username portion of the credential
  - Has Password?: For enhanced security, passwords are no longer accessible to the user. This field indicates if the password has been previously provided. If it is not checked, then Lucity is unaware of the password and the user would need to set the password.
  - Set Password: This button will prompt the user to specify the password.
    - Note: Lucity does not show passwords, so if the current password value is ever in question the user will just need to re-enter the password.

Connection Strings

Some behind the scenes changes were made with 16r2 on how the edit map service and associated credentials are stored in the Lucity database resulting in some changes on the GIS Connection Strings form.



- The Edit Map Service field is now a drop down showing all previously configured GIS Service records. If you wish to configure an edit map service to work with a geodatabase connection, you first need to configure the service in GIS Services, then it will be available in the drop down selection.
- The Edit Map Service credential information (username and password) fields have been removed. Instead these credentials are associated to the service in GIS Services.

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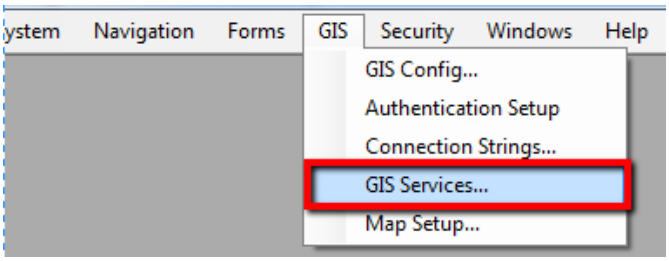
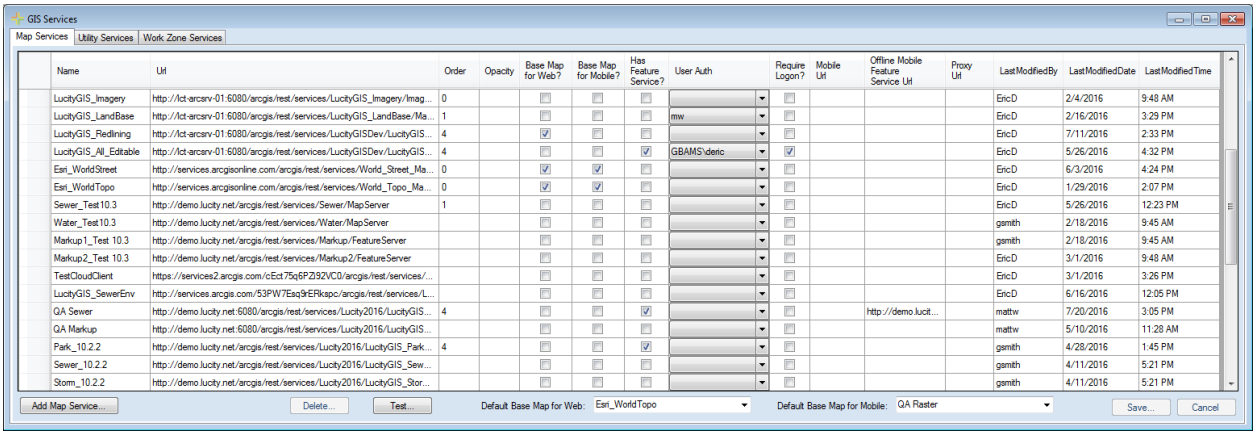
GIS Services

Changes were made in version 2016 to better centralize the configuration for services consumed by the Lucity GIS integration. The menu item, Map Services, was renamed to GIS Services as a result since this tool is now used to configure not only map services but geocoding, geometry, routing, along with some miscellaneous services.

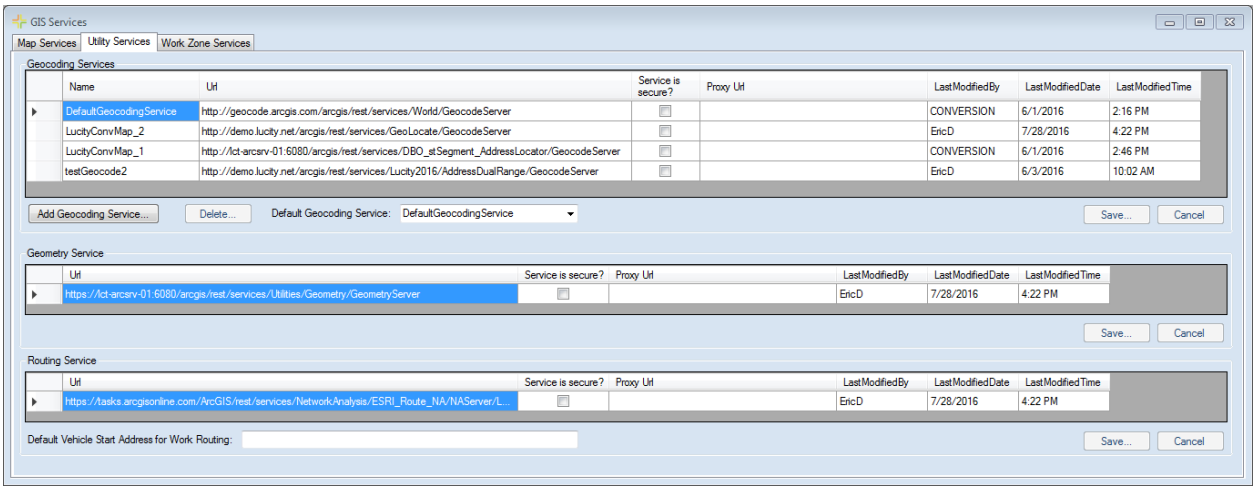


Map Services tab



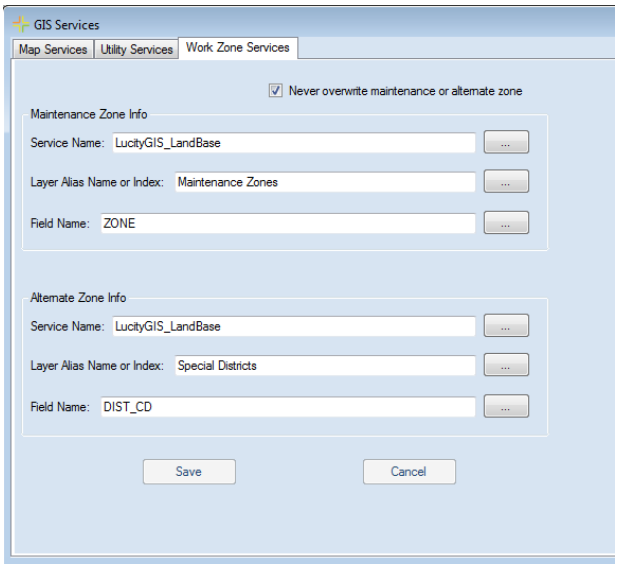
- The service credential information (username and password) fields have been removed. Instead these credentials are setup in the new Authentication Setup module and associated to the service with the User Auth dropdown field.
- Removed *Disable Client Caching* property. This is no longer used
- Removed *Is Tiled* Property. This is now determined programmatically via the service metadata at runtime.
- Added *Is Base Map Mobile* property. This is used to indicate if the service can be used as a base map on mobile web maps.
- Enforces *Require Logon* property to be true for all AGOL services.
- New dropdown fields at the bottom of the page to set the default base map and default mobile base map system settings.

Utility Services tab



- Geocoding Services- New centralized location for storing all the geocoding services that can be used with Lucity.
    a. **Name**: This is a user defined description used to identify the service.
    b. **Url**: This is the url to the geocoding service.
    c. **Service is Secure?**: This indicates if the geocoding service is secure. If this property is TRUE, then any application using the geocoding service will dynamically obtain the credentials by finding the first GIS Map Service record with the same root url as the geocoding service and has user credentials defined.
    d. **Proxy Url**: The proxy url for the geocoding service (optional).
    e. **Default Geocoding Service**: This is the system setting indicating the geocoding service to be used by default.
- Geometry Service
    a. **Url**: This is the url to the geometry service.
    b. **Service is Secure?**: This indicates if the geometry service is secure. If this property is TRUE, then any application using the geometry service will dynamically obtain the credentials by finding the first GIS Map Service record with the same root url as the geometry service and has user credentials defined.
    c. **Proxy Url**: The proxy url for the geometry service (optional).
- Routing Service
    a. **Url**: This is the url to the routing service.
    b. **Service is Secure?**: This indicates if the routing service is secure. If this property is TRUE, then any application using the routing service will dynamically obtain the credentials by finding the first GIS Map Service record with the same root url as the routing service and has user credentials defined.
    c. **Proxy Url**: The proxy url for the routing service (optional).

Work Zone Services tab



- These settings control how the Lucity Work program functions when assigning maintenance zones to Requests and Work Orders. Prior to version 2016r2 these settings were found in the System Settings>>Work Zones tab.
- Maintenance Zone Info
    a. **Service Name**: The name of the map service that contains the maintenance zone layer. User the lookup button to select from the services already configured with Lucity.
    b. **Layer Index or Alias Name**: The name of the maintenance zone layer in the map service. Use the lookup button to select the layer from the associated service.
    c. **Field Name**: The name of the field that contains the maintenance zone id in the maintenance zone layer. User the lookup button to select the field from the associated layer.
- Alternate Zone Info
    a. **Service Name**: The name of the map service that contains the alternate zone layer. User the lookup button to select from the services already configured with Lucity.
    b. **Layer Index or Alias Name**: The name of the alternate zone layer in the map service. Use the lookup button to select the layer from the associated service.
    c. **Field Name**: The name of the field that contains the alternate zone id in the alternate zone layer. User the lookup button to select the field from the associated layer.

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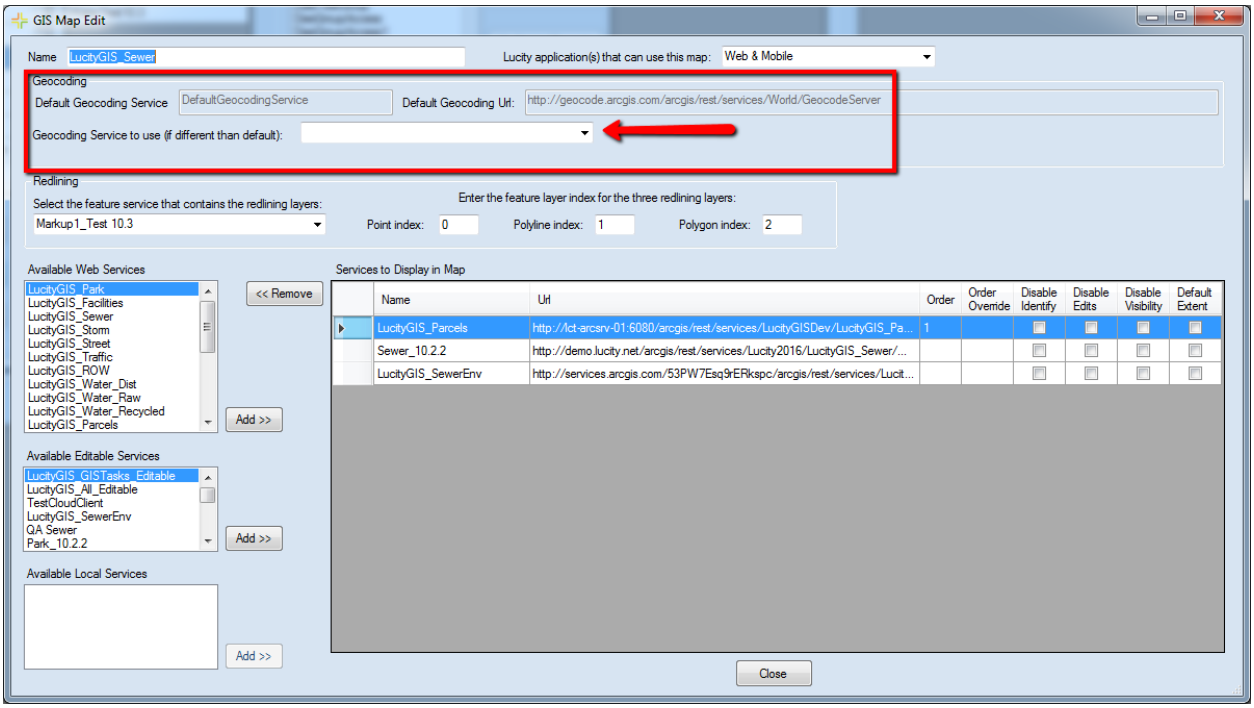
Map Setup

A small change was made in the GIS Map Edit form on how to specify an alternate geocoding service to use with a map.



- By default, when you create a new map setup record, the map will use the default geocoding service. In some situations you may want a particular map to use an alternate geocoding service, to do this, simply select another geocoding service from the dropdown list. Note: You must first setup the alternate geocoding service on the GIS Services form under the Utility Service tab.

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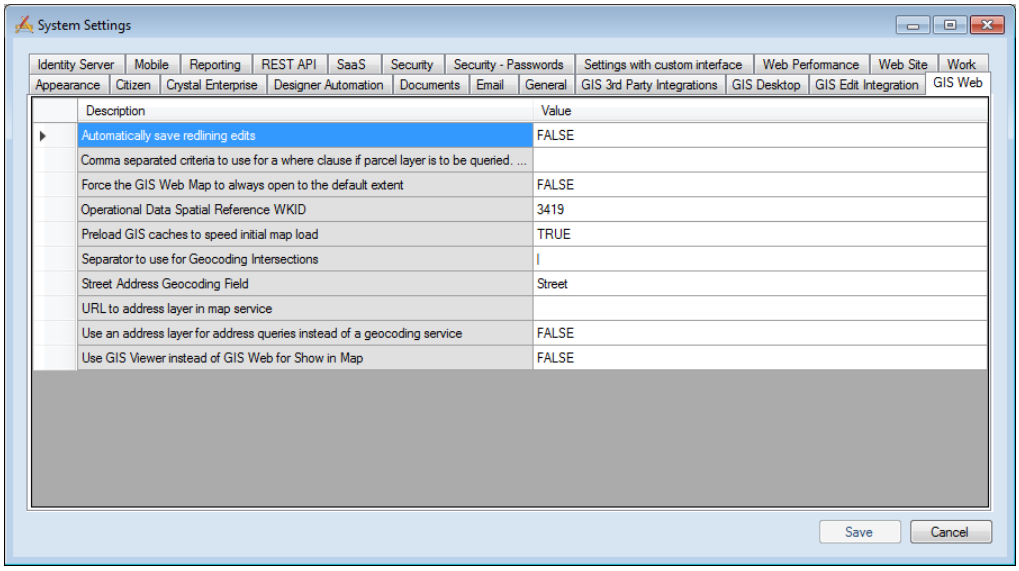
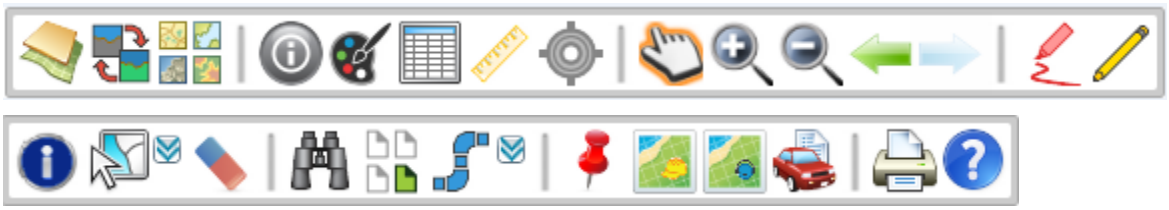
System Settings

A small change was made in the GIS Map Edit form on how to specify an alternate geocoding service to use with a map.



- Removed GIS Routing tab. These settings are now configured in GIS Services.
- Removed Work Zones tab. These settings are now configured in GIS Services.
- Removed *Default Base Map Name* setting in GIS Web tab. This setting is now configured in GIS Services.
- Removed *Flag indicating that geocoding services are still ArcGIS 10.1* setting in GIS Web tab. This setting is no longer used.
- Added a *Preload GIS caches to speed initial map load* setting to GIS Web tab. It is recommended this setting be set to TRUE. This causes the maps and map services to load when the web app first starts.
- Removed *URL for Geocoding Service or URL to parcel layer in map service* setting in GIS Web tab. This setting is no longer used. Instead if the setting prior to 16r2 was referring to a geocoding service that information is now stored in GIS Services. If the setting was referring to an address layer that is now stored in a new setting.
- Added a *URL for address layer in map service* setting in GIS Web tab. This indicates if an address layer should be used instead of a geocoding service to locate addresses in map.
- Removed *URL for Geometry Service* system setting in GIS Web tab. This setting is now configured in GIS Services.

Lucity Web Map Changes



Tools added or modified for 2016r2 (no changes for 2016)

Button	Name	Description
	Water Valve Isolation Trace Tool	• New option to include meter set locations in results • New option to include a list of affected customers in results • Option to generate email notifications to affected customers in results

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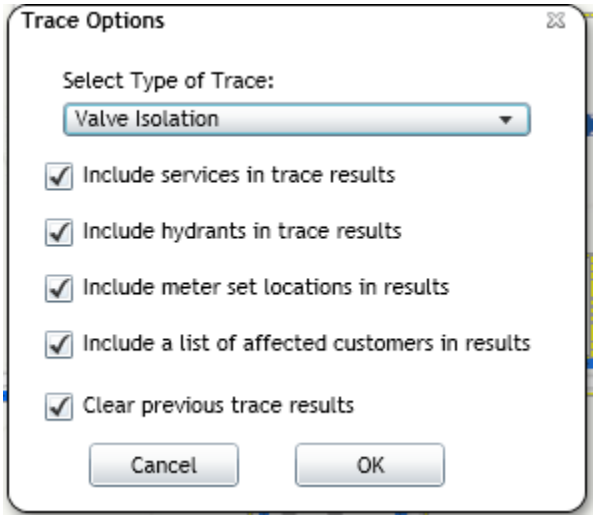
Valve Isolation Trace Tool

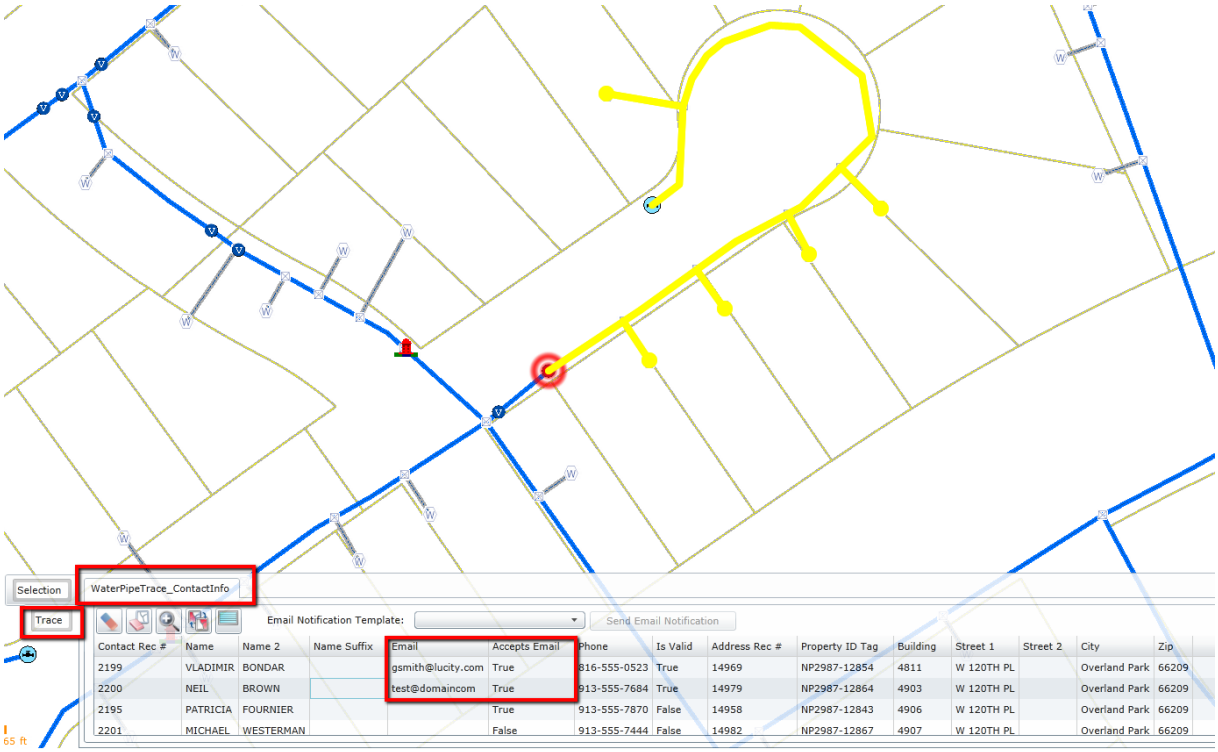
This trace tool has been enhanced for version 2016r2 to include meter set locations in results. It also provides a new option to include a list of affected customers in results along with the ability to send an email notification to these customers.

Water Valve Isolation Trace



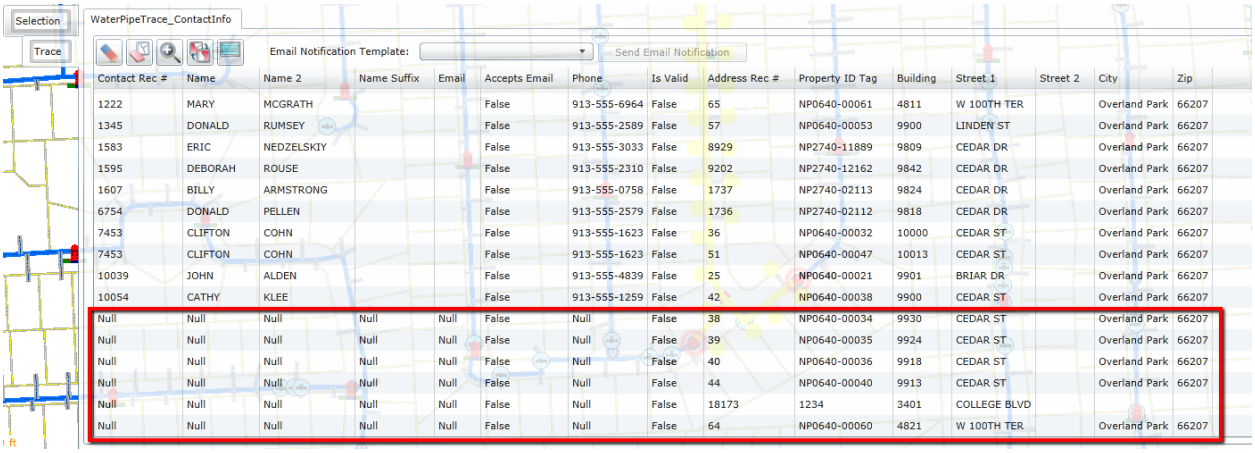
- The valve isolation trace gives the user the option to include services, hydrants, meter set locations, and affected customers in the results. In order for the hydrants, services, and meter sets to be included, the asset record in Lucity must have the related pipe ID field populated.
- Affected customers:
    - Customer contacts are returned if the contact is associated to an address that runs along the trace result. Addresses are determined by the following:
        1. The address associated to the water pipe
        2. The address associated to the service lateral
        3. The address associated to the meter set location
    - Note: Addresses will still be calculated even if *Include Services* and *Include Meter Set Location* options were not checked.
    - It is required that the *Clear previous trace results* be checked for a user to include affected customers in the results.

- Once an address is determined, the tool then obtains the Lucity contacts associated

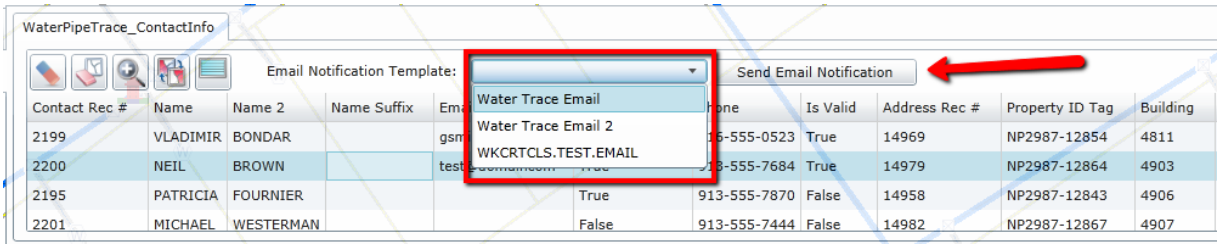


with that address.

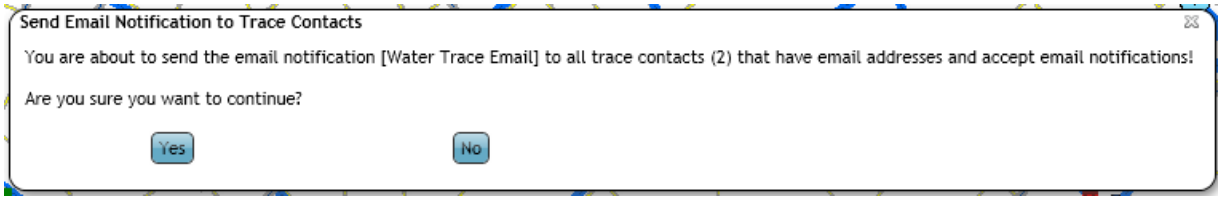
- Trace Results:
  - The results will now include a Trace selection menu with a WaterPipeTrace_ContactInfo tab
  - The main purpose of the contact information being returned, is to provide a new tool that sends a given email notification to all contacts that have an email associated and accept email notifications.
    - The notification must be of type “Email” (1) and of module “Customer Address” (32).



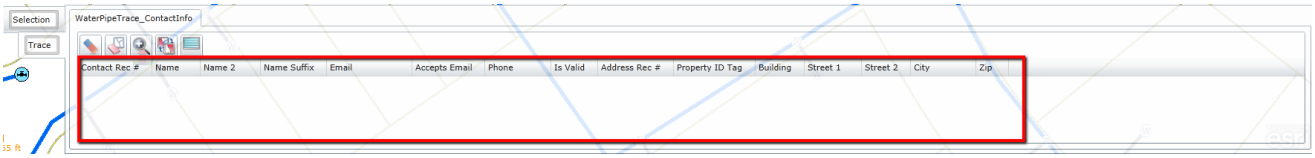
- If no contact information can be found for an address, the address information will still appear in the contact grid. This is to inform the user of addresses affected by the trace that don't have contact information, in the event a separate means of contact is required.



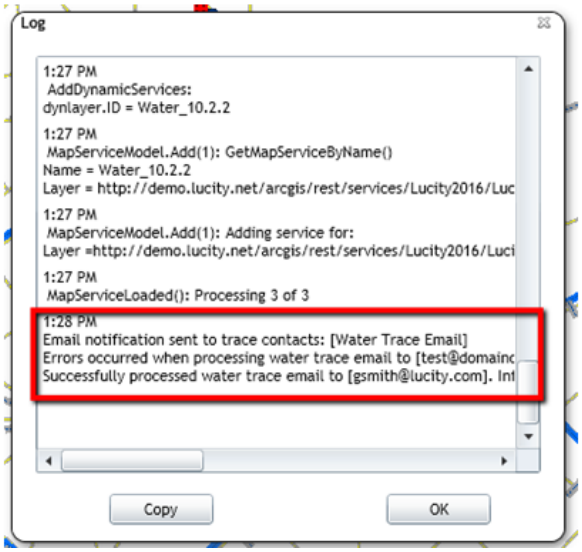
- To send an email notification to all the valid trace contacts (contacts that have an email and accept email notifications), the user simply chooses a notification from the dropdown list an clicks "Send Email Notification". The user will receive a prompt similar to the following to confirm they want to send out notifications.

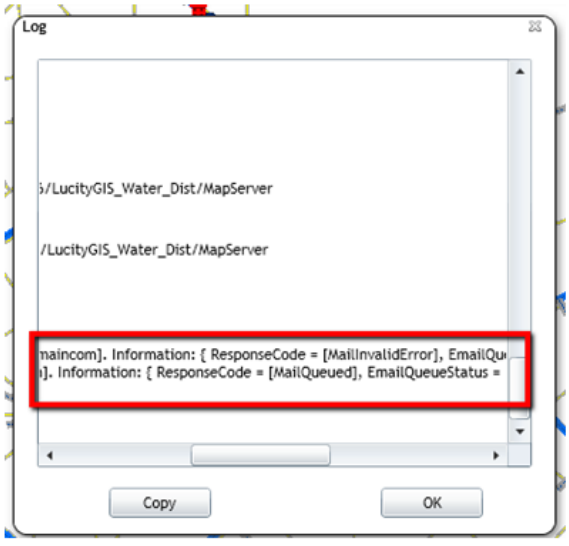


- Once processed, a window will appear letting the user know if any errors occurred and the trace layer and email controls are cleared from the attribute window.

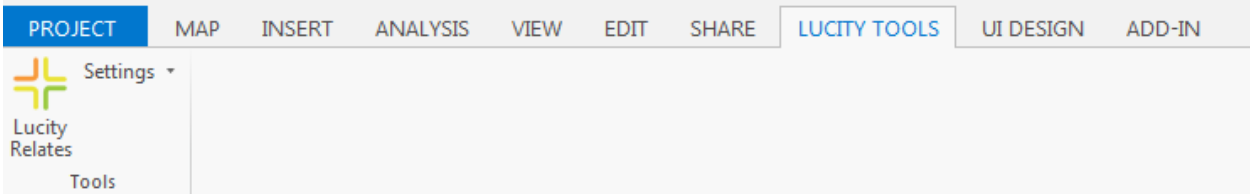


- All results, regardless of success or failure, are written to the local log in the map.

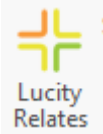
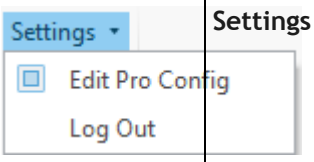




ArcGIS Pro



Tools added or modified for 2016r2

Button	Name	Description
	**Lucity Relates**	• New option to include meter set locations in results • New option to include a list of affected customers in results • Option to generate email notifications to affected customers in results
	**Settings**	• Edit Pro Config- this tool will let you modify the currently configured LucityArcGISProConfigurations.xml or create a new one • Log Out- this will log you out of the Lucity system, allowing you to log into a different Lucity client.

Lucity Relates

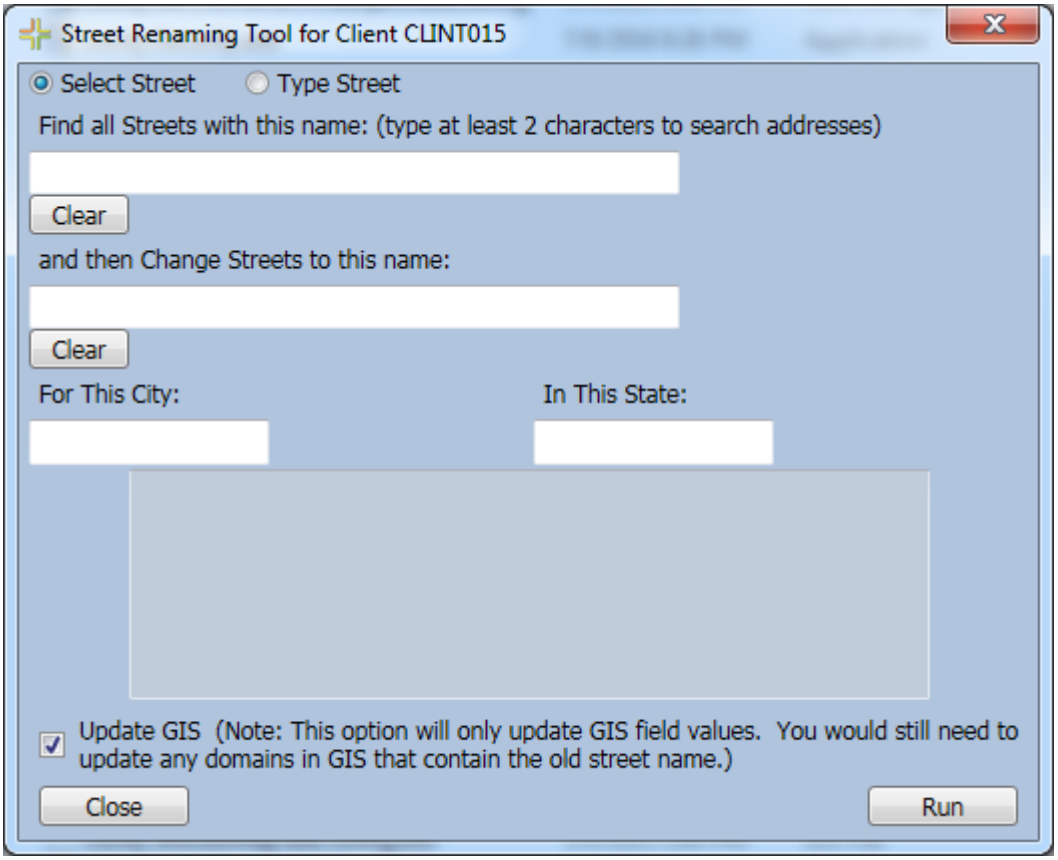
The Lucity Relates tool in ArcGIS Pro provides some basic functionality in this first release at 2016r2:

- View relationship record counts for selected asset(s).
- Open related record(s) in Lucity web.
- Create request(s) against selected asset(s).
- Create work order(s) against selected asset(s).
- Create pm/work template(s) against selected asset(s).
- Create inspection(s) against selected asset(s).

Other changes

Street Rename Tool

The street rename tool (Lucity.StreetRenamingTool.exe) found in Lucity\bin directory or workstation install has been modified with an “Update GIS” option added at 16r2.



- If the GIS Update option is turned on then when an asset inventory record’s street name is modified the update will also persist to the associated GIS feature.
- This will slow the street rename process, due to the fact is having to also connect to and update the geodatabase.
- This will not update associated domains. For example, if renaming a street from ‘MAINE’ to ‘MAIN’ the street name domain in GIS would also need to be updated to handle this change. Users can manually update their GIS domains using a variety of Esri tools, or after they update the Lucity Street Name domain, they can run the Update Street Name Domains tool in the Lucity Geodatabase Configuration tool in ArcCatalog.

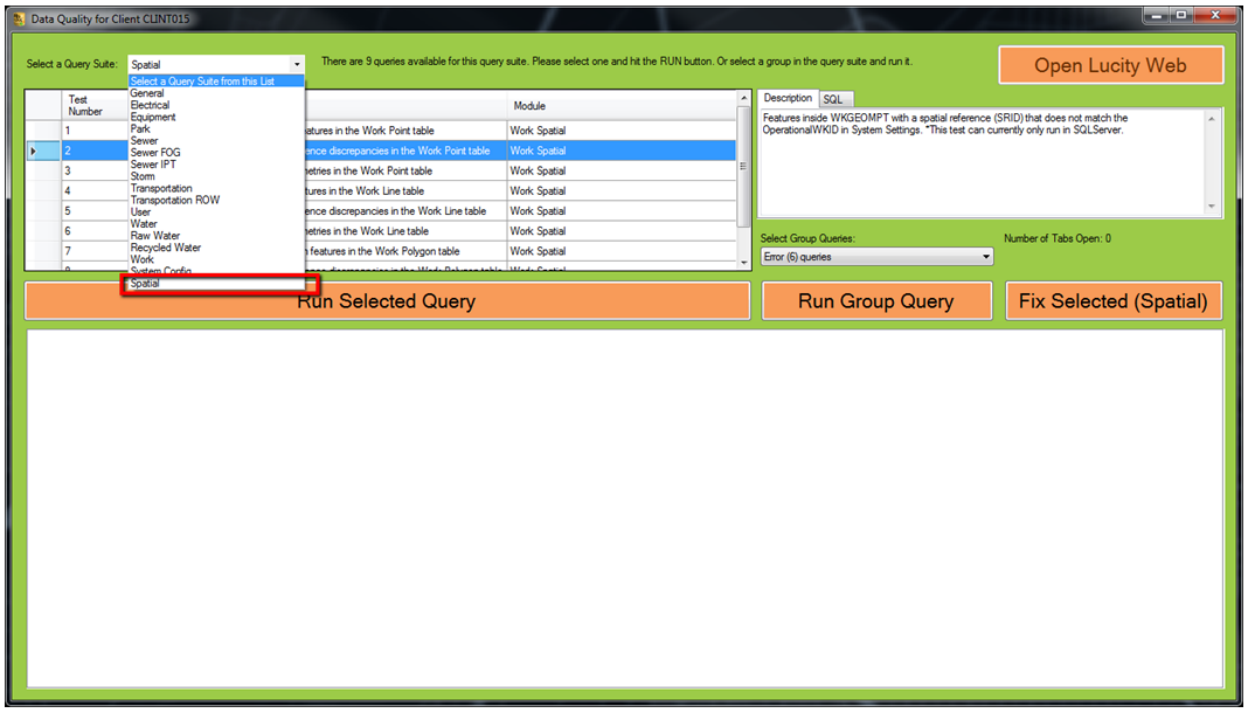
Data Quality Tool

The Lucity Data Quality Services Tool (DQS) was modified in 2016r2 so there is now an option to run queries on the work spatial tables. In addition, there is an option to fix the issues found. Note: This functionality is currently only available for SQL Server database clients.

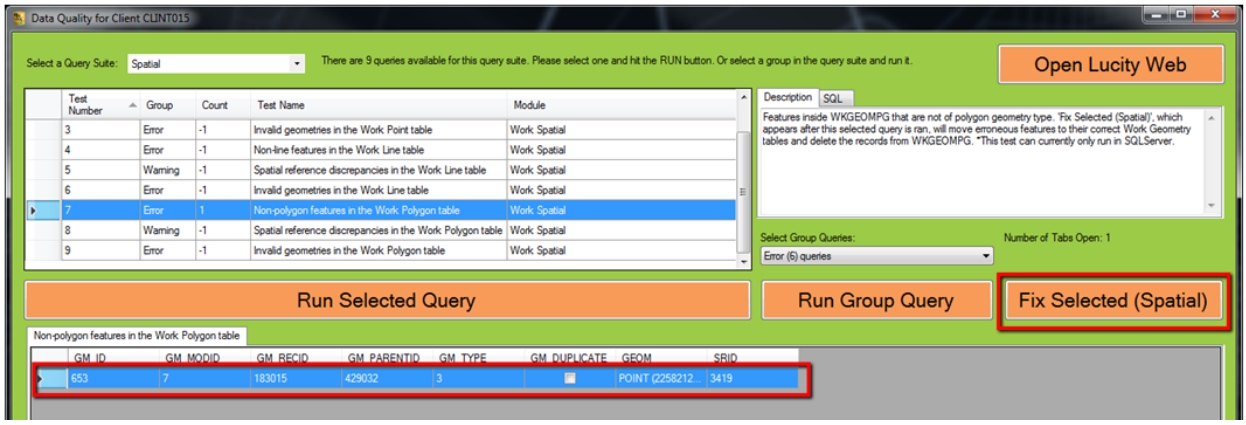
The DQS tool queries the Lucity spatial tables (WKGEOMPT, WKGEOMLN, WKGEOMPG) for the following data problems:

- Features of a different geometry type than what is supposed to be in the table (i.i. points in the polygon table).
    - This is marked as an error because this will cause problems with functionality.
- Features where the spatial reference does not match that of the Operational WKID as listed in Lucity system settings.
    - This is marked as a warning because this may impact certain functionality.
- Features that have invalid geometry (i.e. lines that intersect themselves, incomplete polygons, multiple vertices on top of each other, etc.).
    - This is marked as an error because this will cause problems with functionality.

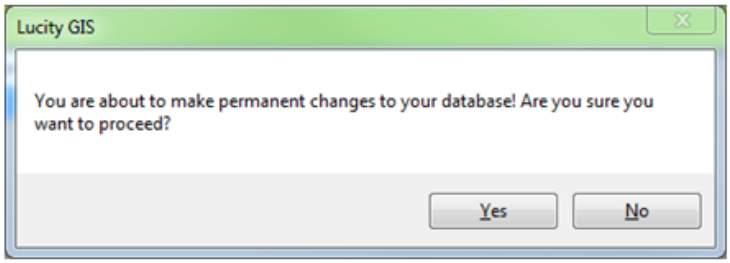
The queries are in a new query suite titled “Spatial” and work the same way as other queries in the program:



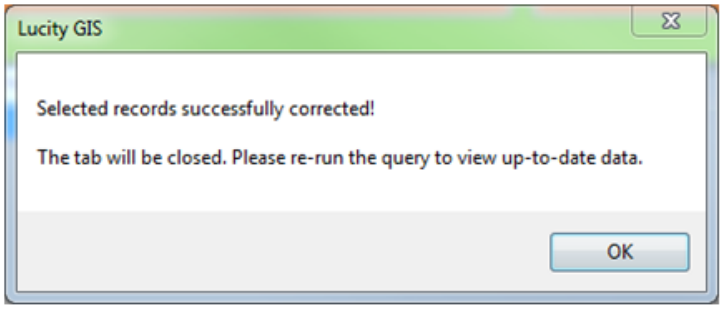
Once the query has been ran, if it is a query for incorrect geometry types, then a button appears to fix the selected records in the bottom grid:



1. When the Fix Selected (Spatial) button is clicked, the following prompt will appear confirming that the user wants to proceed to correct the data.



2. After clicking “Yes”, the invalid geometry record will be inserted to the correct geometry table and will be deleted from the current geometry table. After the fix is complete, a prompt similar to the following will appear informing the user of the results of the correction:



Notes:_____

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