Overview of ArcGIS Pro with Lucity

In this session, we'll cover the Lucity ArcGIS Pro add-in.

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Overview

Highlights for version 2019

- Copy and paste a range of new IDs to renumber multiple features at once.
- Split or merge Fiber Optic Cables or Storm Detention Basins.
- Create XY/address points to attach to Requests, Work Orders, or PMs.
- Archive records in Lucity that are deleted from GIS.
- View Update Show in Map Flag results in the Lucity Process Log.

Highlights for version 2019r2

- Quickly find Lucity-linked GIS features in the map by ID.
- View module filters in the map.
- View and create inventory subsets in the map.
- View real-time processing messages in an improved Lucity Process Log.
- Enjoy a seamless user experience in either dark-theme or light-theme.

Requirements

- Lucity Internal Web REST API must be installed and running.
- Lucity Internal Identity Server API must be installed and running.
- Supported versions:

Release Date		6/19	1/19	6/18	1/18	6/17	1/17	7/16	1/16
	Version	2.4	2.3	2.2	2.1	2.0	1.4	1.3	1.2
8/19	2019r2	✓	✗	✗	✗	✗	✗	✗	✗
3/19	2019	✗	✓	✗	✗	✗	✗	✗	✗
8/18	2018r2	✗	✓	✓	✗	✗	✗	✗	✗
2/18	2018	✗	✓	✓	✓	✓	✗	✗	✗
8/17	2017r2	✗	✗	✓	✓	✓	✗	✗	✗
2/17	2017	✗	✗	✗	✗	✗	✓	✓	✓
8/16	2016r2	✗	✗	✗	✗	✗	✗	✓	✓

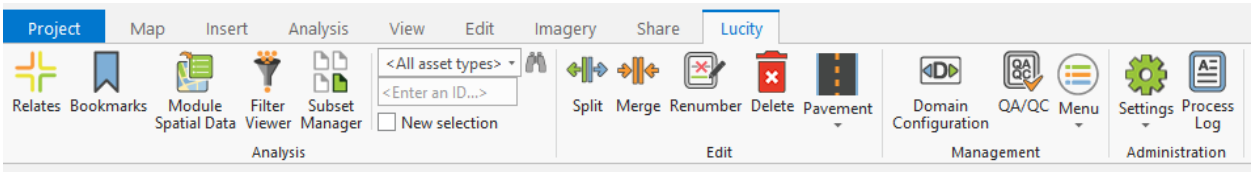
> *Note: With every release so far, no additional Lucity licensing is needed to use the Lucity ArcGIS Pro add-in. This will likely not be the case in the future, as some sort of license will likely be required to use the add-in.*

Installation

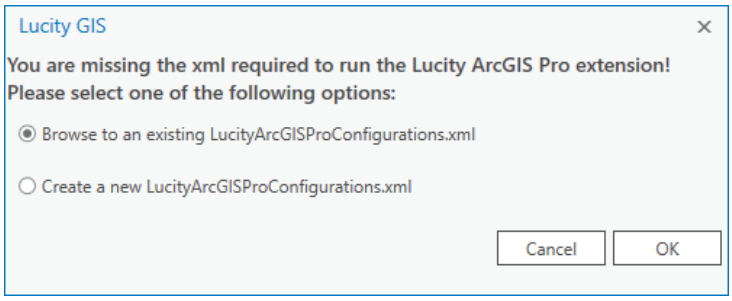
- The extension is provided in the format of an Esri add-in (LucityArcGISPro.esriAddinX)
- The Lucity workstation install will copy the .esriAddinX file to the Lucity desktop bin directory. The workstation install then determines if the workstation has ArcGIS Pro installed by checking the registry for HKLM>SOFTWARE >> Esri >> ArcGISPro. If that directory exists, then it will attempt to register the add-in with ArcGIS Pro.
- The add-in can also be manually installed. A download of the LucityArcGISPro.esriAddinX can be obtained from the Lucity Support site. Simply double-clicking the add-in file will register the add-in with ArcGIS Pro.

Setup/Configuration

When the Lucity ArcGIS Pro add-in is registered with ArcGIS Pro, a new Lucity tab is added to the ArcGIS Pro ribbon. The Lucity tab contains four tool groups: Analysis, Edit, Management, and Administration.



- The Lucity ArcGIS Pro add-in doesn't require any Lucity workstation component to be installed, as the integration with Lucity is done via the Lucity Internal Web REST API. Therefore, before the tools provided with the Lucity ArcGIS Pro add-in can be used, you must do some initial configuration so that the add-in knows the location of the Lucity Internal Web REST API.
- When you attempt to use one of the Lucity ArcGIS Pro tools, the Lucity add-in checks to see if it has been previously configured for use. If not, the following dialog will be displayed:



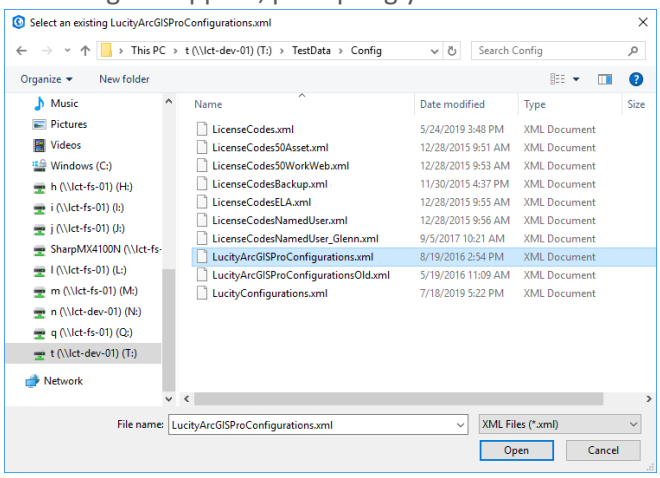
> *Note: Each time the Lucity ArcGIS Pro add-in initializes, it looks for a LUCITY_PROCONFIGDIR registry key in HKEY_CURRENT_USER >> Software >> Lucity >> CurrentVersion. This key contains the path to where the LucityArcGISProConfigurations.xml resides. If the key isn't found or there isn't an .xml at that location, then it will prompt the user to configure ArcGIS Pro for first time use.*

- The Lucity ArcGIS Pro add-in requires a LucityArcGISProConfigurations.xml that contains the Lucity clients and their corresponding Internal Web REST API root URLs. Here's an example of the .xml:

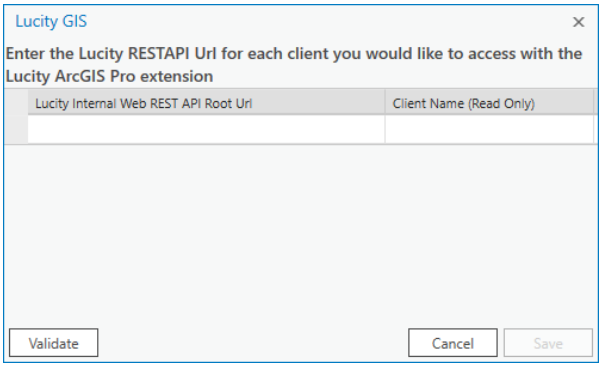
LucityArcGISProConfigurations.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LucityArcGISProConfigurations xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <Configurations>
    <Configuration>
      <ClientName>Master SQL Server Development</ClientName>
      <InternalRESTAPIRootUrl>http://localhost:51596</InternalRESTAPIRootUrl>
    </Configuration>
    <Configuration>
      <ClientName>Replaced Nightly SQL Server</ClientName>
      <InternalRESTAPIRootUrl>http://lct-w2008r2-01/NightlyWebInternalRESTAPI/</InternalRESTAPIRootUrl>
    </Configuration>
  </Configurations>
</LucityArcGISProConfigurations>
```

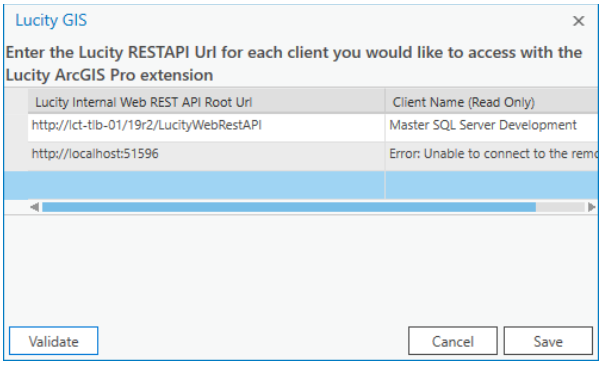
- There are two options: 1) Browse to an existing .xml or 2) create a new one. Ideally, an organization could just create one LucityArcGISProConfigurations.xml, place it on a network share, and configure all end-users to use that single .xml. Alternatively, each user could create their own .xml and have it saved locally.
    - Browse to an existing LucityArcGISProConfiguration.xml- If you select this option, an open file dialog will appear, prompting you to select the existing .xml.



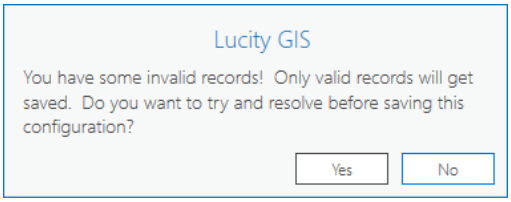
    - Create a new LucityArcGISProConfigurations.xml- This option prompts the user for their Lucity Internal Web REST API URL(s).
        1. Enter the root URL to the **Lucity Internal Web REST API** for each client you wish to have work with the Lucity ArcGIS Pro add-in.



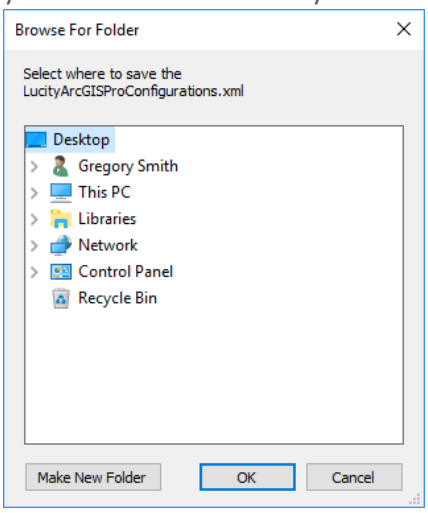
2. **Validate**. You must validate the configuration before saving. This will attempt to connect to the Internal Web REST API using the URL provided. If successful, the **Client Name** field will be populated with the associated name. Otherwise, it will be populated with an error message.



3. **Save**. Once you have configured each desired client and validated, you need to save, which will create the .xml file. If you attempt to save when there are invalid records, then you will receive the following warning:



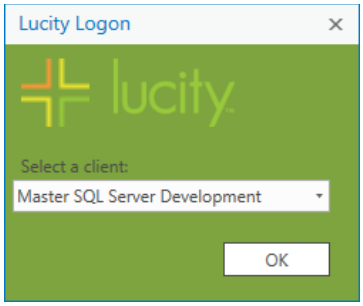
4. Choose location. The following dialog will appear, asking for the location to where you wish to save the newly created LucityArcGISProConfigurations.xml.



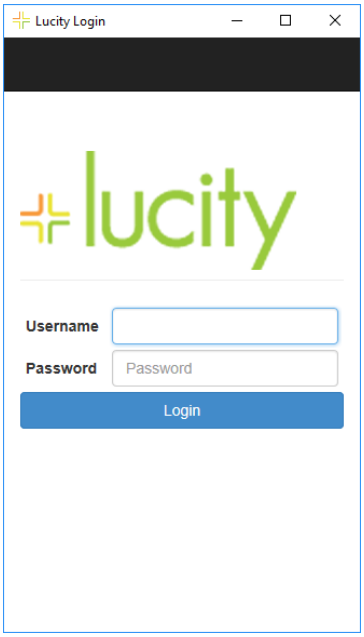
> *Note: If you wish to share the .xml then you would likely want to save it to a shared network location where other users can access it.*

Logon Process

For each ArcGIS Pro session, you will be prompted to log in the first time a Lucity ArcGIS Pro tool is used. If you have more than one Lucity client configured for use, you will receive the following dialog to select which Lucity client to log into.



The Lucity Identity Server is required for logging into the Lucity Internal Web REST API. The following dialog will appear asking for the user's Lucity credentials:



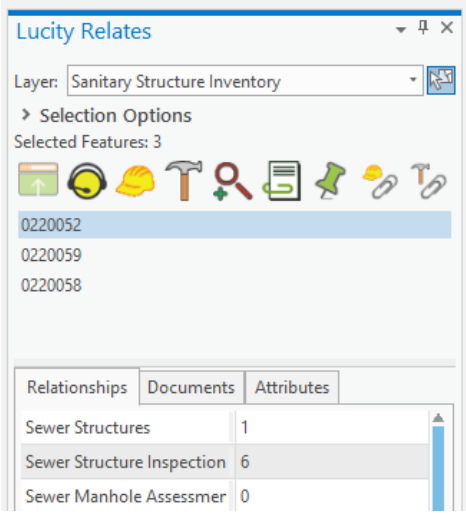
Once logged in, the user can begin using the Lucity ArcGIS Pro tools.

Analysis

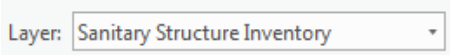
Relates

The Lucity Relates tool is used to view module relationships, manage documents, open related records in Lucity Web, and create Requests, Work Orders, PMs, and Inspections.

When clicked, this tool opens a dockable dialog pane:

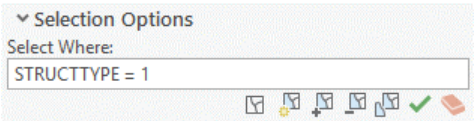


- **Layer**: This is a drop down list of all layers in the map that are linked to Lucity.

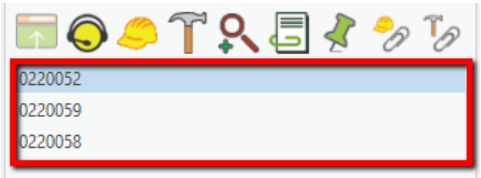


- **Selection Tool**: This changes the active tool to a selection tool, allowing the user to select features from the active layer (the active layer is the one specified in the Layer dropdown).

- **Selection Options:** Additional options for map selection. This includes: selection where clause, clear selection, new selection, add to selection, subtract from selection, select from selection, validate where clause, and clear where clause.

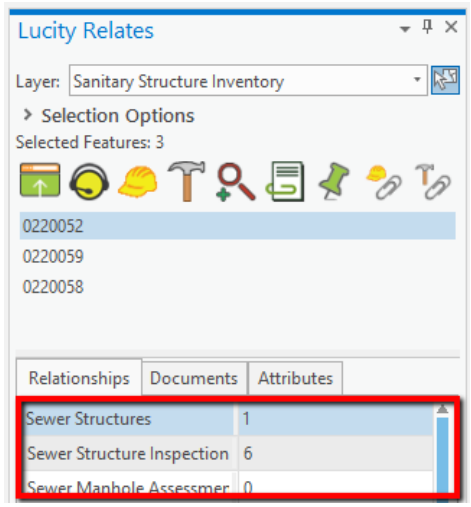


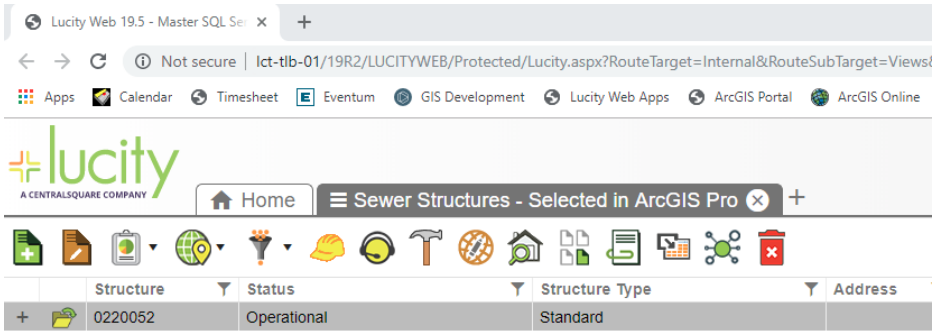
- **Selected features grid**: This is a list of the selected features for the currently selected layer. Selecting one or more records in this list will enable the Lucity tools.



View Record(s) in Lucity Web

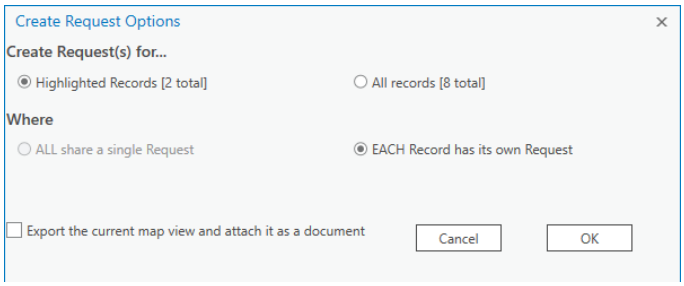
This tool is enabled when a relationship is highlighted in the relationships grid. When clicked, the selected relationship will be opened in Lucity Web.





Create a Lucity Request

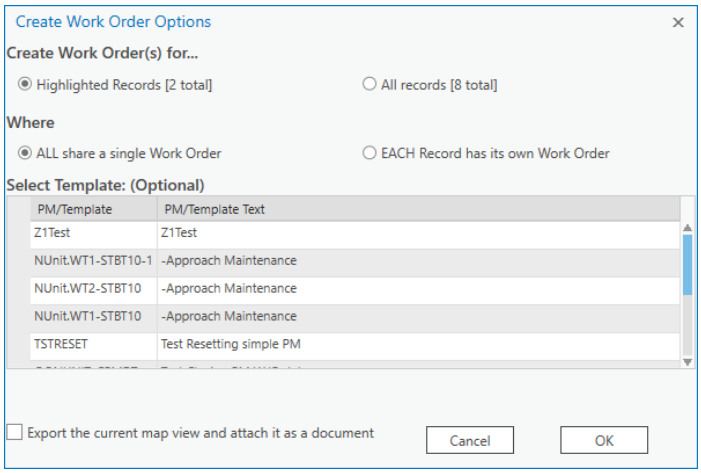
This tool will create a Request (or multiple) using the highlighted feature(s) in the list. When clicked, the following dialog will appear:



1. Select an option to create a Request for just the **highlighted record(s)** or **all records**.
2. (Optional) **Export the current map view and attach it as a document** to the Request. The format of the document is determined by the System Setting under **GIS Desktop** >> **Format for map exports**. If none is specified, then the default is pdf. Supported: bmp, emf, jpeg, pdf, png, tga, and tiff.
3. Specify the desired options and click **OK**. If successful, you will have the option to open the newly created Request in Lucity Web.

Create a Lucity Work Order

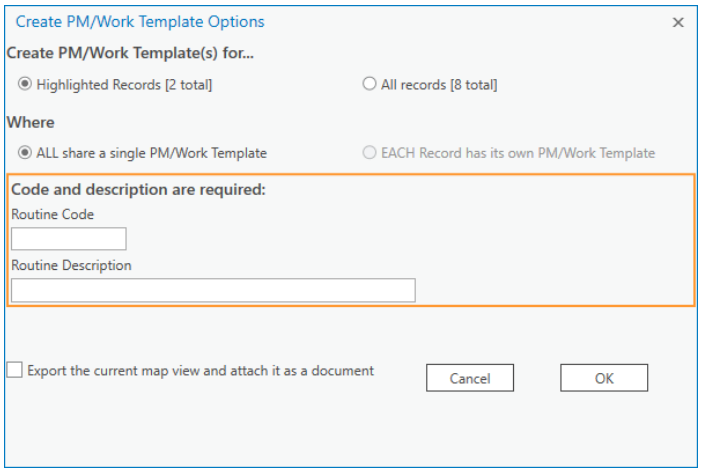
This tool will create a Work Order (or multiple) using the highlighted feature(s) in the list. When clicked you will receive the following dialog:



1. Select an option to create a Work Order for just the **highlighted record(s)** or **all records**.
2. Select an option to add **all assets to a single Work Order** or to **create a separate Work Order for each asset**.
3. (Optional) **Select an existing PM Template** (list based upon the asset type) that should be used when creating the Work Order.
4. (Optional) **Export the current map view and attach it as a document** to the Work Order. The format of the document is determined by the System Setting under **GIS Desktop** >> **Format for map exports**. If none is specified, then the default is pdf. Supported: bmp, emf, jpeg, pdf, png, tga, and tiff.
5. After setting the desired options, click **OK**. If successful, you will have the option to open the newly created Work Order in Lucity Web.

Create a Lucity PM/Work Template

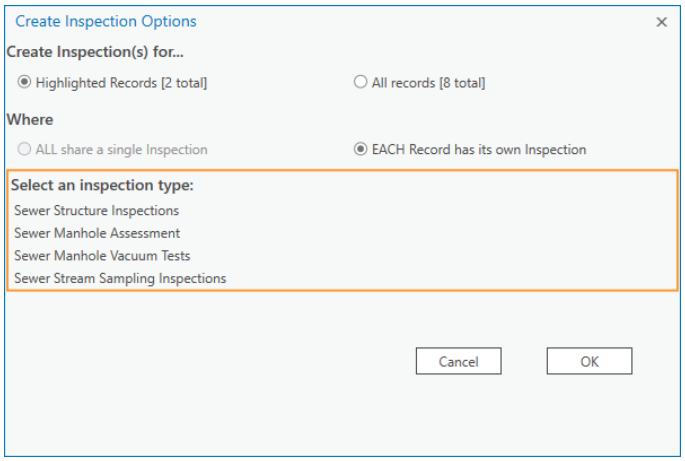
This tool will create a PM/Work Template (or multiple) using the highlighted feature(s) in the list. When clicked, the following dialog will appear:



1. Select an option to create a PM/Work Template for just the **highlighted record(s)** or **all records**.
2. Enter a **Routine Code** and a **Routine Description**. These are required, and the **Routine Code** must be unique.
3. (Optional) **Export the current map view and attach it as a document** to the PM/Work Template. The format of the document is determined by the System Setting under **GIS Desktop** >> **Format for map exports**. If none is specified, then the default is pdf. Supported: bmp, emf, jpeg, pdf, png, tga, and tiff.
4. After setting the desired options, click **OK**. If successful, you will have the option to open the newly created PM/Work Template in Lucity Web.

Create a Lucity Inspection

This tool will create an inspection (or multiple) using the highlighted feature(s) in the list. When clicked, you will receive the following dialog:

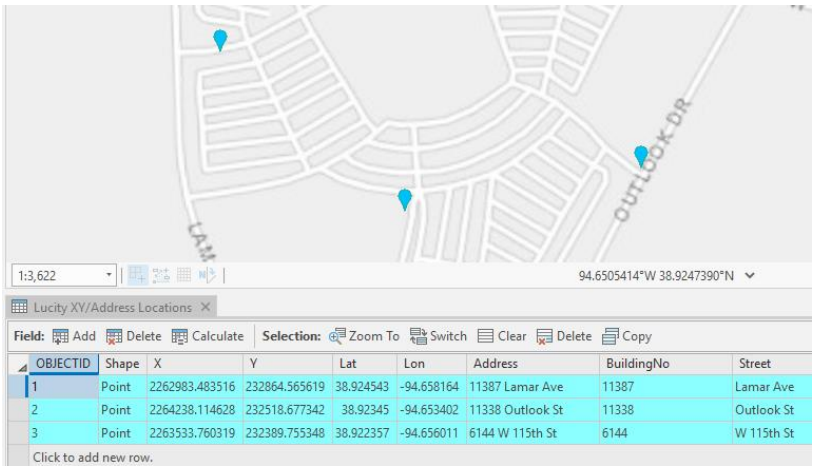


1. Select an option to create the inspection for just the **highlighted record(s)** or **all records**.
2. **Select an inspection type**. The list of inspection types is based on the asset type.

   Note: Some asset types may have only one inspection type, and some may have none.
3. After specifying the desired options, click **OK**. If successful, you will have the option to open the newly created inspection in Lucity Web.

Calculate XY/Address at Point

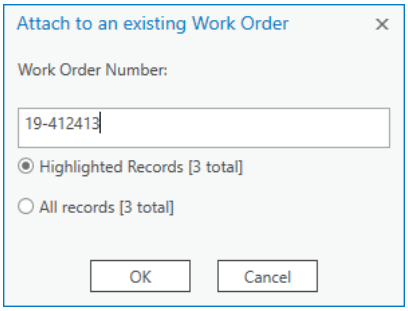
This tool will calculate location information at given click points in the map, including: XY coordinates, latitude/longitude, and address. These features can then be used to create/attach to Requests, Work Orders, or PMs.



- Once the button is clicked, you may digitize as many points as you would like.
- To finish digitizing, click onto a different map tool (i.e. Select Features). A layer called **Lucity XY/Address Locations** will be added to the map.
- Selected features from this layer will show up in the Lucity Relates selected features grid, enabling you to create/attach to Requests, Work Orders, or PMs with the location features.

Attach to an existing Work Order

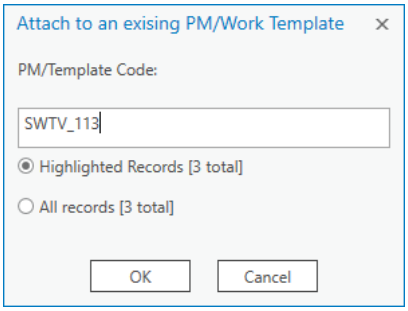
This tool will attach features to an existing Work Order. When clicked, you will receive the following dialog:



- **Work Order Number:** The number of the Work Order to attach features to.
- **Highlighted Records:** All highlighted feature(s) in the list will be attached to the Work Order.
- **All records:** All selected feature(s) in the map will be attached to the Work Order.

Attach to an existing PM/Work Template

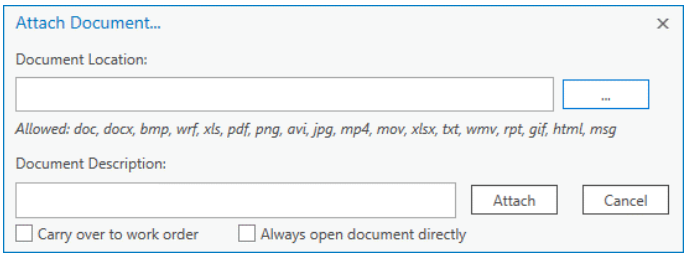
This tool will attach features to an existing PM/Work Template. When clicked, you will receive the following dialog:



- **PM/Template Code:** The code of the PM/Template to attach features to.
- **Highlighted Records:** All highlighted feature(s) in the list will be attached to the PM/Template.
- **All records:** All selected feature(s) in the map will be attached to the PM/Template.

Attach a Document

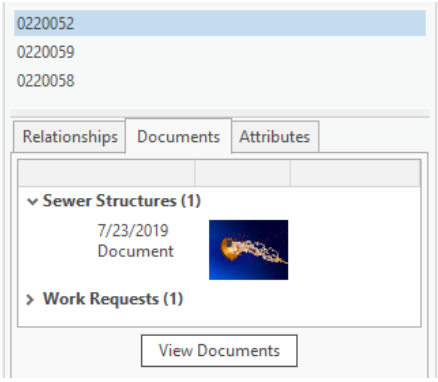
This tool will attach a document to the highlighted feature(s) in the list. When clicked, you will receive the following dialog:



- **Document Location:** This is the path to the document on your local filesystem that you would like to upload. Supported filetypes are shown below the text box.
- **Document Description**: A text description for the document.
- **Carry over to work order:** If checked, the document will be attached to any Work Orders created from the asset.
- **Always open document directly:** If unchecked, the web app will display a link to the document location, rather than opening the document itself.
- Once these options have been set to your desired configuration, click Attach to attach the document.

> *Note: Attaching documents from ArcGIS Pro automatically uploads them to the document server. Associating documents (like you can do in Lucity Web) is not currently supported.*

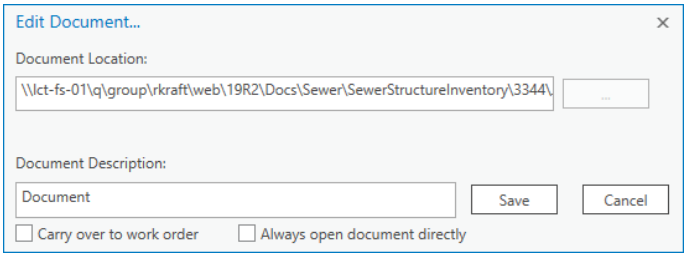
View a Document



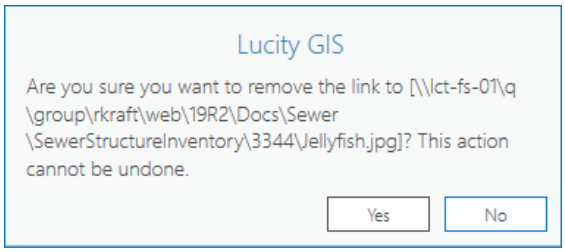
- The **Documents** tab allows you to view all documents for all highlighted features in the list. This includes the feature's module itself, as well as all related modules (Work Orders, Requests, Inspections, etc.).
- Click **View Documents** to load the documents for all highlighted features.
- In the first field, the date the document was uploaded, along with its description, is displayed. In the second field, if the document is an image, a thumbnail is displayed.
- Double-clicking on the document in the list will do one of the following:
    - Open the document with your local machine's default program for whatever filetype the document is, if **Always open document directly** is set to true.
    - Download the document to your local downloads folder, if **Always open document directly** is set to false.

Edit or Delete a document

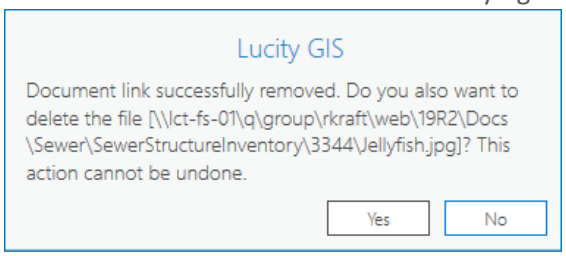
- These tools allow you to edit or delete selected document(s) in the list.
- To edit a document, click the **Edit** button. The following dialog will appear:



  - **Document Location:** This is the read-only path of the document as it exists on the file server. If the document was only associated (not uploaded), then this is not read-only, and can be changed.
  - **Document Description:** A text description for the document.
  - **Carry over to work order:** If checked, the document will be attached to any Work Orders created from the asset.
  - **Always open document directly:** If unchecked, the web app will display a link to the document location, rather than opening the document itself.
  - Once these options have been set to your desired configuration, click **Save**. Results, success or failure, will be written to the Process Log.
- To delete a document, click the **Delete** button. The following dialog will appear:



  - Clicking **Yes** will disassociate the document from the record in whichever module it appears under in the list.
  - If the document can also have its underlying file deleted, then this dialog will appear next:

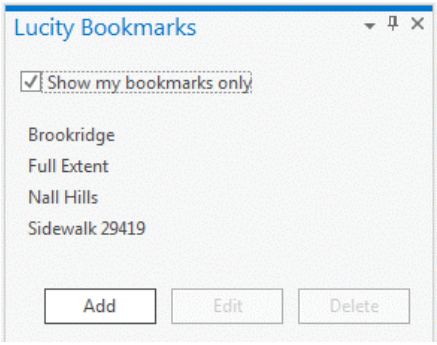


  - Clicking **Yes** will delete the document's underlying file from the file system.

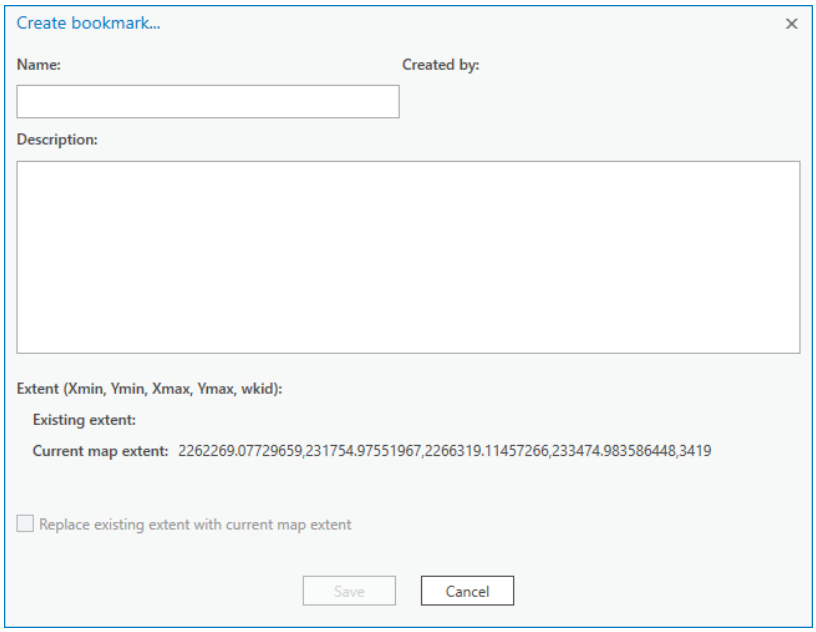
Bookmarks

The Lucity Bookmarks tool is used to view and manage bookmarks shared across the Lucity enterprise.

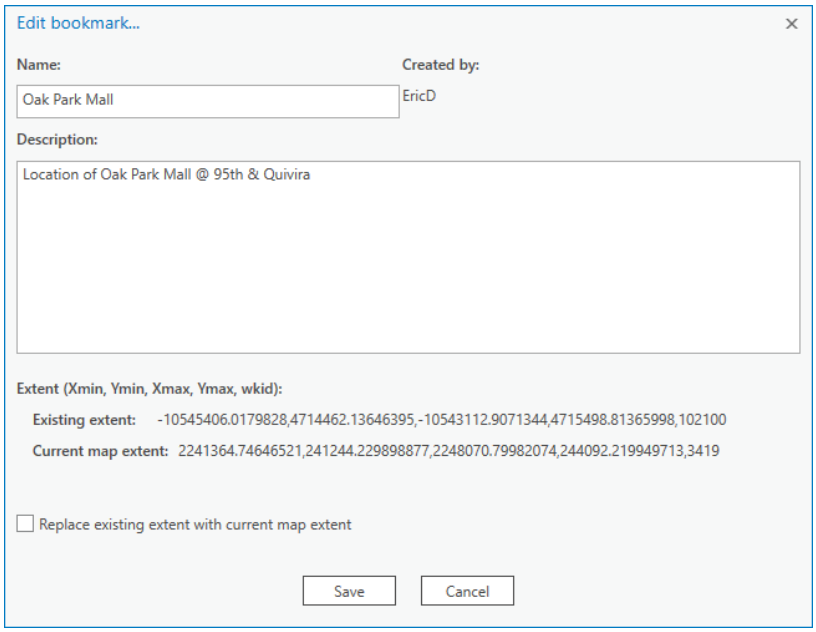
When clicked, this tool opens a dockable dialog pane:



- **Show my bookmarks only**: This filters the list view to show only bookmarks that the current user has created.
- Clicking on any bookmark item in the list will automatically zoom the map extent to that of the selected bookmark.
- Mousing over any bookmark item in the list will show a tooltip with the bookmark's description.
- To add a bookmark, click the **Add** button. The following dialog will appear:
    - **Name:** A unique name for the bookmark.
    - **Created by:** The Lucity user who created the bookmark.
    - **Description:** A text description for the bookmark.
    - **Current map extent:** The current extent of the active map view. This is the extent that will be used to create the bookmark.
    - Once these options have been set to your desired configuration, click **Save**.



- To edit a bookmark, select a bookmark in the list and click the **Edit** button. The following dialog will appear:



  - **Name:** A unique name for the bookmark.
  - **Created by:** The Lucity user who created the bookmark.
  - **Description:** A text description for the bookmark.
  - **Existing Extent:** The current extent of the selected bookmark.
  - **Current map extent:** The current extent of the active map view.
  - **Replace existing extent with current map extent:** Updates the bookmark's extent to that of the current active map view.
  - Once these options have been set to your desired configuration, click **Save**.
- To delete a bookmark, select a bookmark in the list and click the **Delete** button.

Module Spatial Data

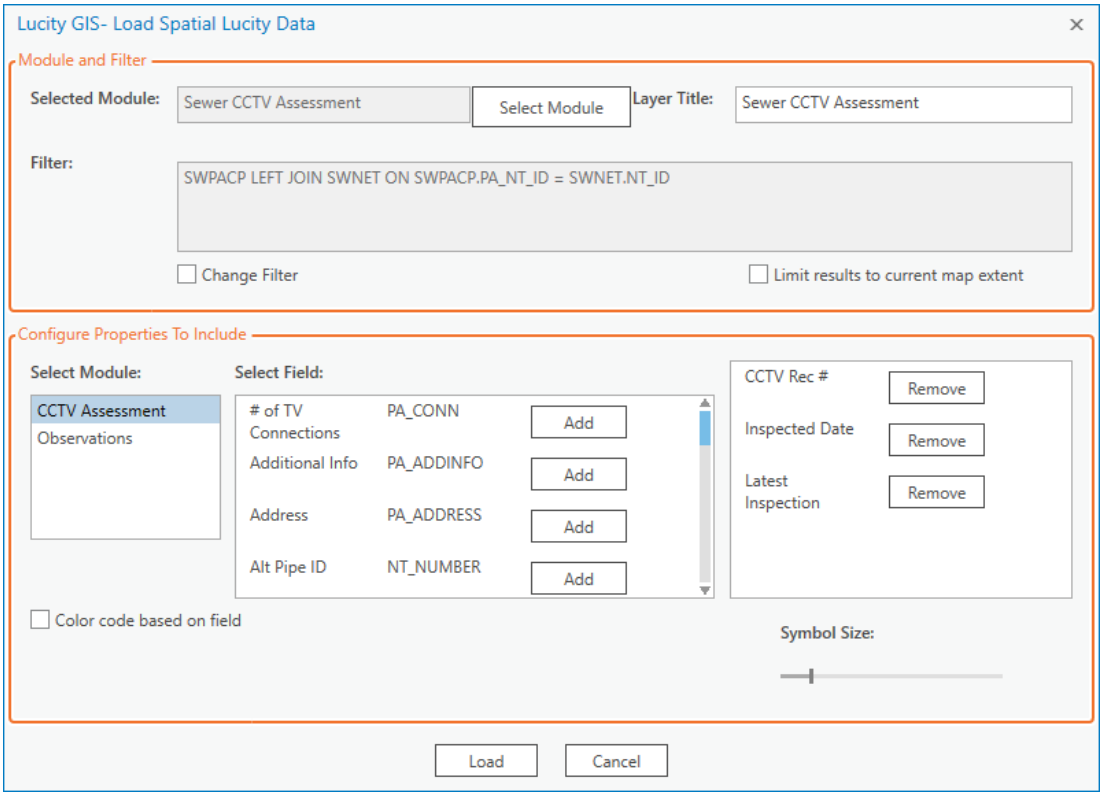
The Lucity Module Spatial Data tool allows a user to display Lucity work data, and some inspection data, in the map.

The Module Spatial Data tool loads spatial work/inspection data into ArcGIS Pro with the following steps:

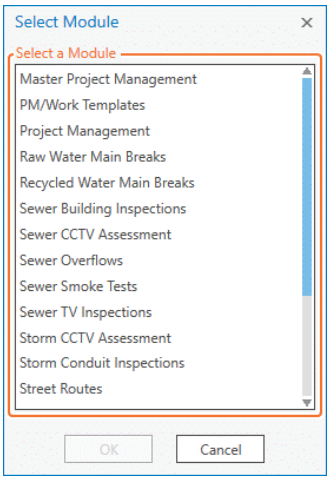
1. Spatial features are returned to ArcGIS Pro from Lucity.
2. *LucityGISTools.gdb* is created in the current Windows user's temp folder, if it doesn't already exist.
3. Feature classes (for each geometry type returned) are created in the *LucityGISTools.gdb*.
4. Fields that the user specified to be included in the results are added to the feature classes.
5. The feature classes are populated with the spatial features from Lucity.
6. The feature classes are added to the current map as layers.

To use the Module Spatial Data Tool:

1. Click the **Module Spatial Data** button. The following dialog will appear:

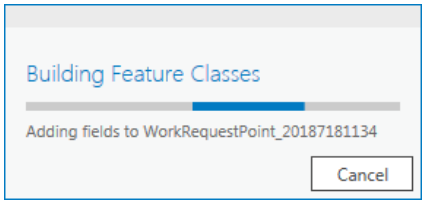


- **Selected Module:** The module to load spatial features for. This is set by clicking the **Select Module** button, which opens the following dialog:

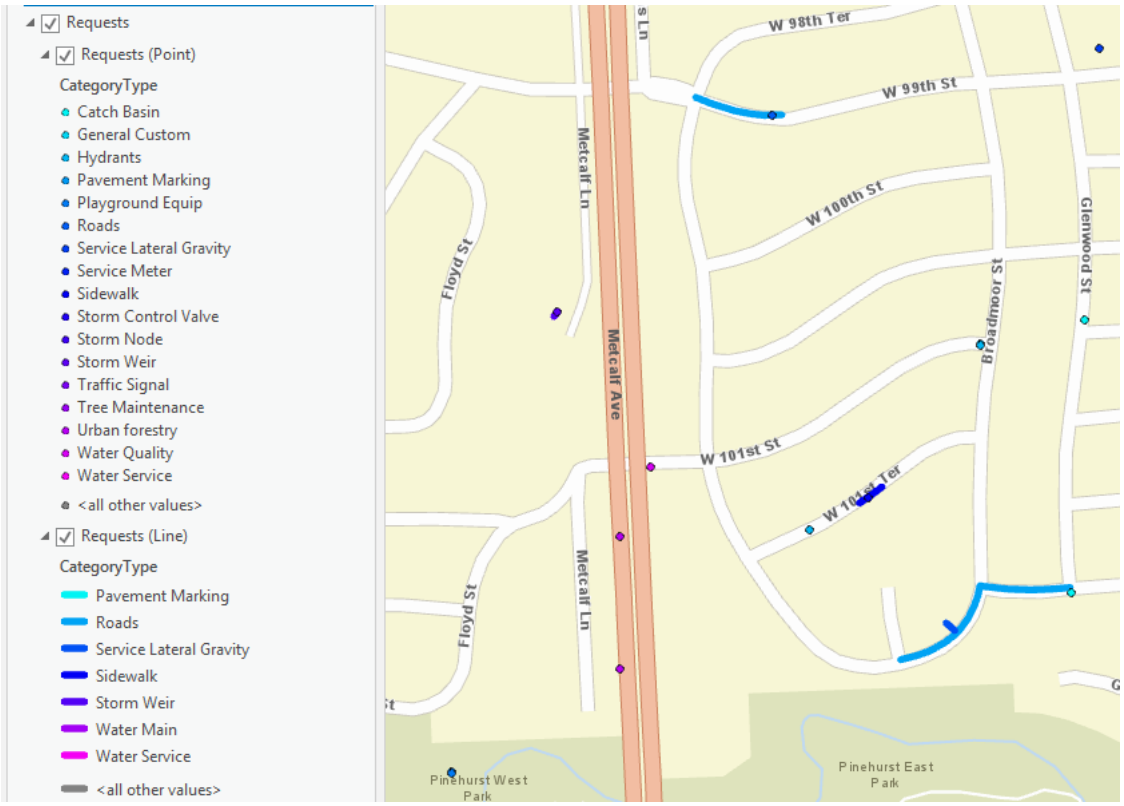


- **Layer Title:** The name to apply to the resulting layer(s) in the map.
- **Filter:** The filter used to retrieve spatial data from the selected module.
- **Change Filter:** Enables the filter textbox so that the user may modify the filter. Also displays a dropdown list of current filters for the selected module.
- **Limit results to current map extent:** Passes a spatial filter to Lucity so that only features within the current map extent will be returned.
- **Select Module:** Controls which fields are shown in the **Select Field** list view. This will either be the parent module, or one of the child modules.
- **Select Field:** Displays a list of all fields in the selected parent or child module selected under the **Select Module** list view. Clicking **Add** will add a field to the far-right list view, which holds fields to be included in the results. Clicking **Remove** from the far-right list view removes the field from the list of fields to be included in the results.
- **Color code based on field:** Indicates that the resulting layers will be symbolized based on unique values of a given field. If checked, the user must specify a field to symbolize on and a color palette to use.
- **Symbol size:** The symbol size for point/line features in the resulting layers. The default is 4.

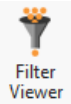
2. Once you have set the options to your desired configuration, click **Load**. While geoprocessing tools are working to create and load feature classes, a cancelable progress indicator is provided:



3. Upon completion, the resulting layer(s) are symbolized and added to the map under a group layer:



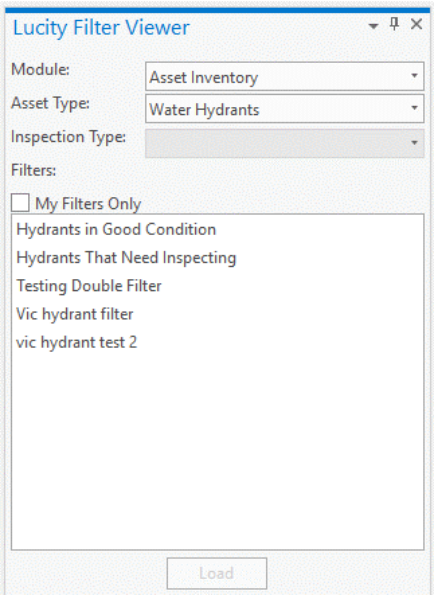
Filter Viewer



The Lucity Filter Viewer tool allows a user to view a filtered set of assets in the map using filters that were saved in Lucity Web.

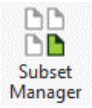
To use the Filter Viewer:

1. Click the **Filter Viewer** button. The following dockable dialog pane will appear:



2. Choose options.
    - **Module:** The module you would like to view filters for. This can be inventory, inspections, Requests, Work Orders, or PMs.
    - **Asset Type:** The inventory type you would like to view filters for.
    - **Inspection Type:** The inspection type you would like to view filters for.
    - **My Filters Only:** Limits the filter list to only those created by the current user.
    - **Filters:** The list of available filters for the selected module. Mousing over items in this list will display the filter's where clause.
3. Click **Load**. The map will select all features in the map that fall within the selected Lucity filter and zoom to them.

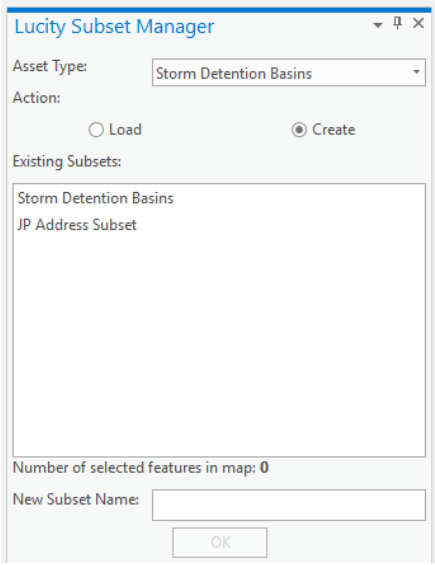
Subset Manager



The Lucity Subset Manager tool allows a user to view or create inventory subsets based on features in the map.

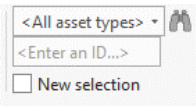
To use the Subset Manager:

1. Click the Subset Manager button. The following dockable dialog pane will appear:



2. Choose options.
    - **Asset Type:** The inventory type to view or create subsets for.
    - **Action:**
        - **Load:** The map will select features that fall within the chosen subset and zoom to them.
        - **Create:** A new subset will be created based on the selected features in the map.
    - **Existing Subsets:** List of current subsets for the selected inventory module.
    - **Number of selected features in map:** Current map selection count for the selected asset type.
    - **New Subset Name:** The name for the new subset to be created.
3. Click **OK**. The chosen subset action (load or create) will be executed.

Find Feature



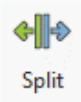
The Lucity Find Feature tool allows a user to quickly find Lucity-linked features in the map based on a Common ID.

To use Find Feature:

1. Choose options.
    - **Asset Type:** A list of asset types in the active map. You can either choose a specific asset type, or have the tool search all asset types in the map.
    - **ID:** The Common ID to search for.
    - **New selection:** The map selection will be cleared before doing the search. If unchecked, then each search will add to the current selection.
2. Execute the search.
    - This can be done either by pressing Enter while the mouse is in the ID text box, or by clicking the **Find Feature** button (binoculars).
    - Resulting features will be selected and zoomed to in the map.

Edit

Split



The Lucity Split tool allows a user to split a Lucity-linked feature in both GIS and Lucity, for several different asset types.

The following asset types are supported by the Lucity Split tool:

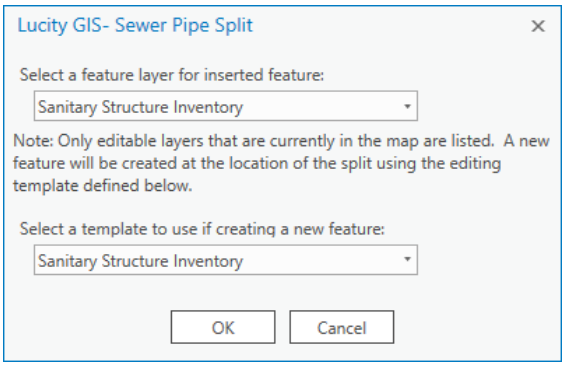
- Sewer Pipes.
- Storm Conduits.
- Water Pipes (Distribution, Raw, Recycled).
- Street Segments.
- Street Subsegments.
- Fiber Optic Cables.
- Storm Detention Basins.

To use the Split tool:

1. Select any single feature in the map that is linked to one of the supported modules, and click the **Split** tool button on the Lucity Toolbar.
2. Determine where you would like to split the feature.
    - For line features, click the point along the line where you would like to split to occur.
    - For point features, digitize a new point in the map where you would like the split to occur.
    - For polygon features, digitize a cutter line across the polygon where you would like the split to occur.

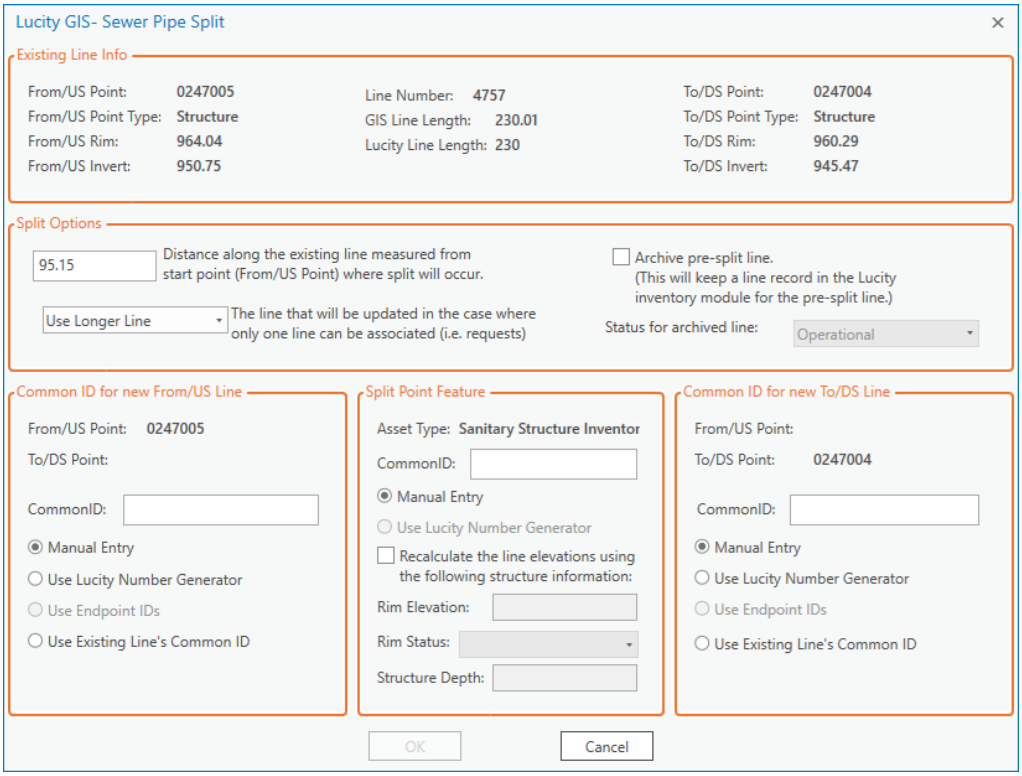
    > *Note: Point and polygon splits are currently only supported for Storm Detention Basins.*

3. For Sewer, Storm, or Water splits, if there was no existing Lucity-linked split point feature at the location where you clicked, you will be prompted to choose an asset type for the new split point feature:



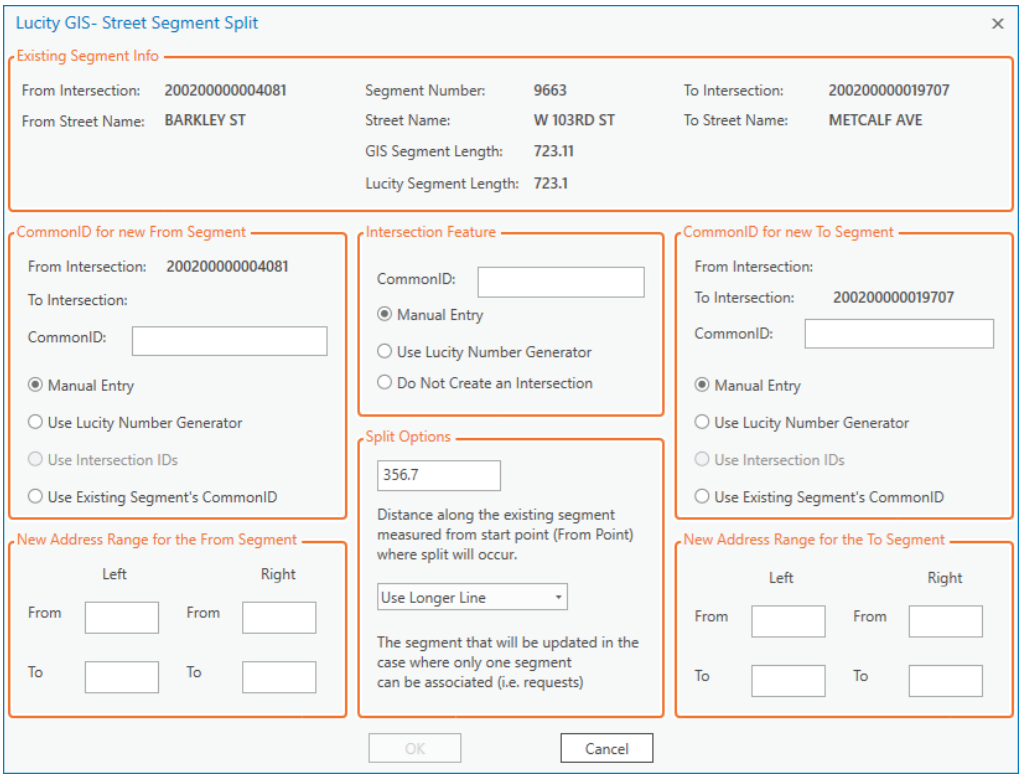
4. The Split Options dialog will display. Set the split options to your desired configuration, click **OK**.
    - The split will be processed first in GIS, and then in Lucity.
    - See the following section for details about each type of split.

Sewer, Storm, Water, and Fiber Optic



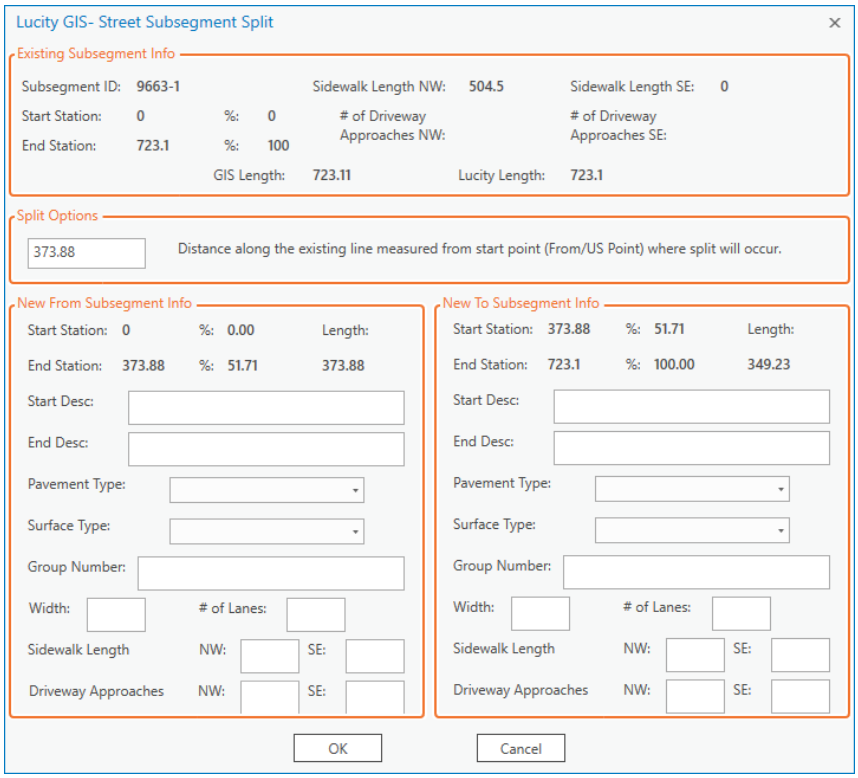
- **Existing Line Info:** This is read-only information for the existing line, upstream structure, and downstream structure.
- **Split Options:** You have the following options: override the split distance calculated based on your click point along the line, set which line will be used where only one relationship can be defined, archive the pre-split line, and set the status for the archived line. If you choose to archive the pre-split line, then it will not be deleted from the inventory module.
- **Common ID for new US/From Line:** You have the option to manually enter a Common ID for the new upstream line, use a Lucity number generator if one is set up, use the endpoint IDs, or use the existing line's Common ID.
- **Split Point Feature:** If there is a new split point feature, you have the option to manually enter a Common ID for the split point feature, or use a Lucity number generator if one is set up. You also have the option to set the new rim information for the split point feature if it is a Sewer or Storm split.
- **Common ID for new DS/To Line:** You have the option to manually enter a Common ID for the new downstream line, use a Lucity number generator if one is set up, use the endpoint IDs, or use the existing line's Common ID.

Street Segment



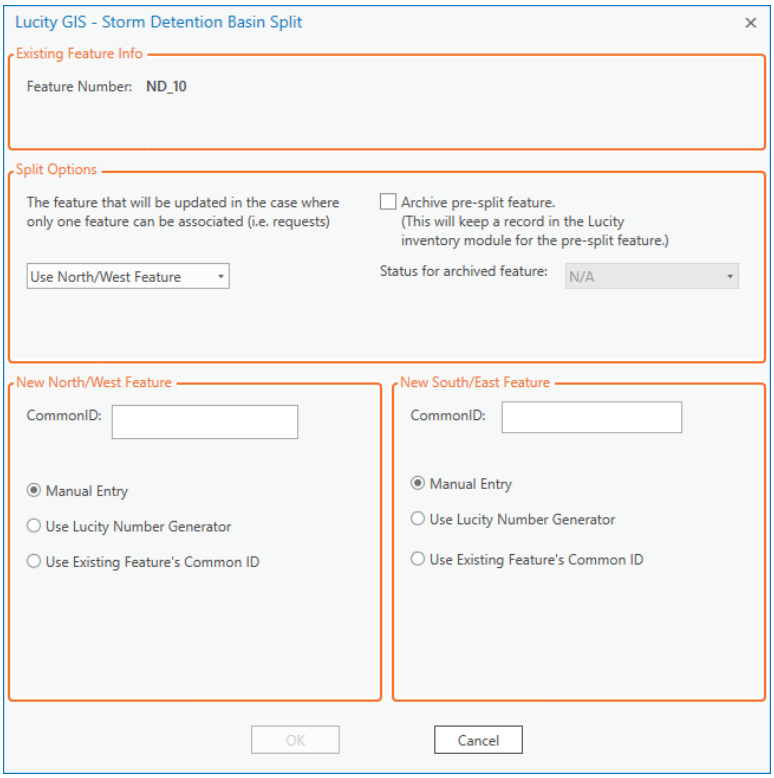
- **Existing Segment Info:** This is read-only information for the existing segment, from-intersection and street, and to-intersection and street.
- **CommonID for new From Segment:** You have the option to manually enter a Common ID for the new from-segment, use a Lucity number generator if one is set up, use the intersection IDs, or use the existing segment's Common ID.
- **Intersection Feature:** If there is a new intersection feature, you have the option to manually enter a Common ID for the intersection feature, use a Lucity number generator if one is set up, or not create an intersection at all.
- **CommonID for new To Segment:** You have the option to manually enter a Common ID for the new to-segment, use a Lucity number generator if one is set up, use the intersection IDs, or use the existing segment's Common ID.
- **New Address Range for the From Segment (optional):** This is the address info for the new from-segment.
- **Split Options:** You have the following options: override the split distance calculated based on your click point along the line, set which segment will be used where only one relationship can be defined, archive the pre-split segment, and set the status for the archived segment. If you choose to archive the pre-split segment, then it will not be deleted from the inventory module.
- **New Address Range for the To Segment (optional):** This is the address info for the new to-segment.

Street Subsegment



- **Existing Subsegment Info:** This is read-only information for the existing subsegment.
- **Split Options:** You have the option to override the split distance calculated based on your click point along the line here.
- **New From Subsegment Info (optional):** These are various fields specific to the subsegment module for the new from-subsegment.
- **New To Subsegment Info (optional):** These are various fields specific to the subsegment module for the new to-subsegment.

Storm Detention Basin



- **Existing Feature Info:** This is the read-only Common ID for the existing feature.
- **Split Options:** You have the following options: set which feature will be used where only one relationship can be defined, archive the pre-split feature, and set the status for the archived feature. If you choose to archive the pre-split feature, then it will not be deleted from the inventory module.
- **New North/West Feature:** You have the option to manually enter a Common ID for the new north/west feature, use a Lucity number generator if one is set up, or use the existing feature's Common ID.
- **New South/East Feature:** You have the option to manually enter a Common ID for the new south/east feature, use a Lucity number generator if one is set up, or use the existing feature's Common ID.

> *Note: North and South are evaluated before East and West. For example, if Feature 1 is Northeast of Feature 2, it will show on the dialog as the North/West feature.*

Merge

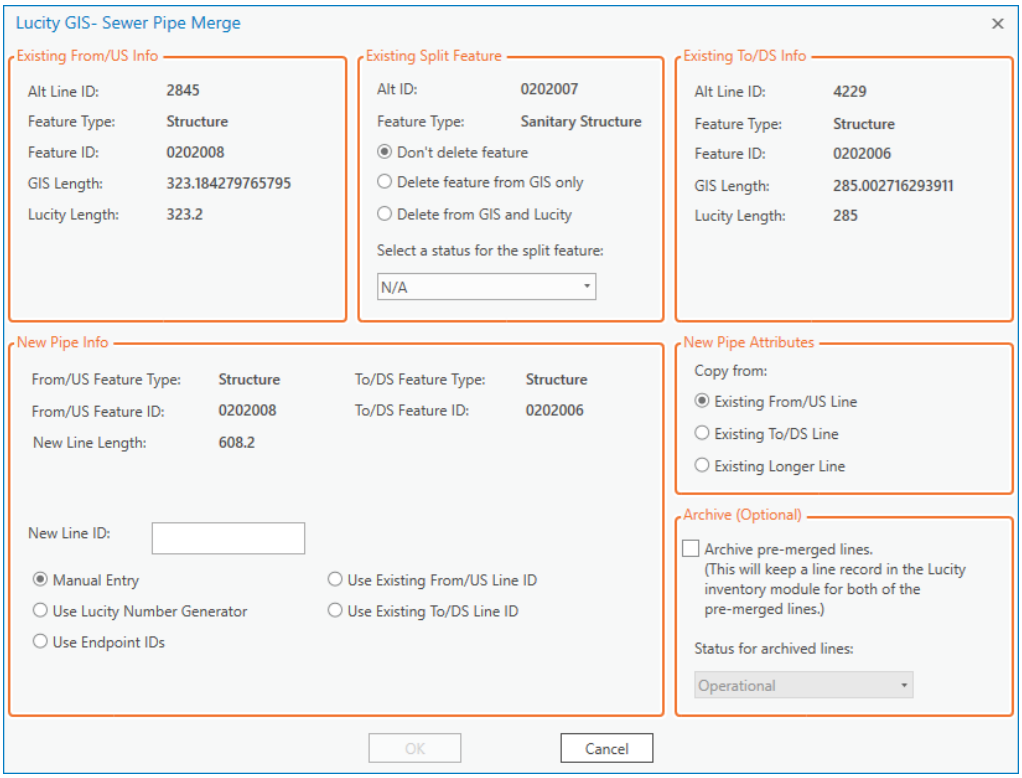
The Lucity Merge tool allows a user to merge two Lucity-linked features in both GIS and Lucity, for several different asset types.

The following asset types are supported by the Lucity Merge tool:

- Sewer Pipes.
- Storm Conduits.
- Water Pipes (Distribution, Raw, Recycled).
- Street Segments.
- Street Subsegments.
- Fiber Optic Cables.
- Storm Detention Basins.

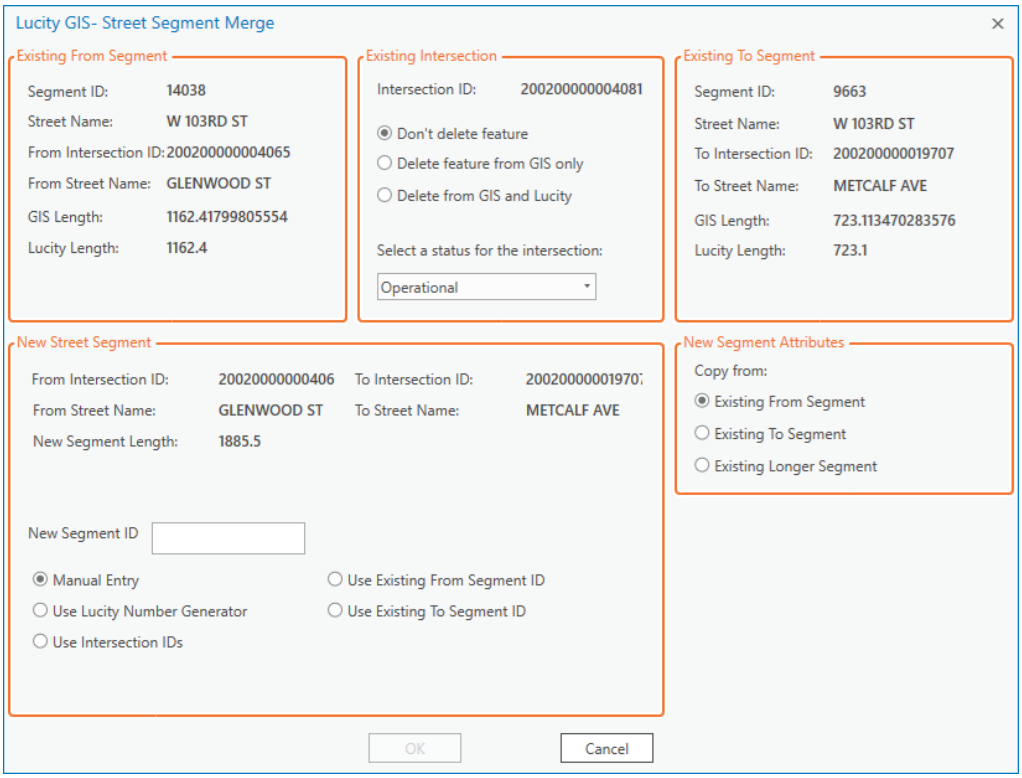
To use the Merge tool:

1. Select any two adjacent features in the map that are linked to one of the supported modules, and click the **Merge** tool button on the Lucity Toolbar.
2. The Merge Options dialog will display. Set the merge options to your desired configuration and click **OK**.
    - The merge will be processed first in GIS, and then in Lucity.
    - See the following section for details about each type of merge.



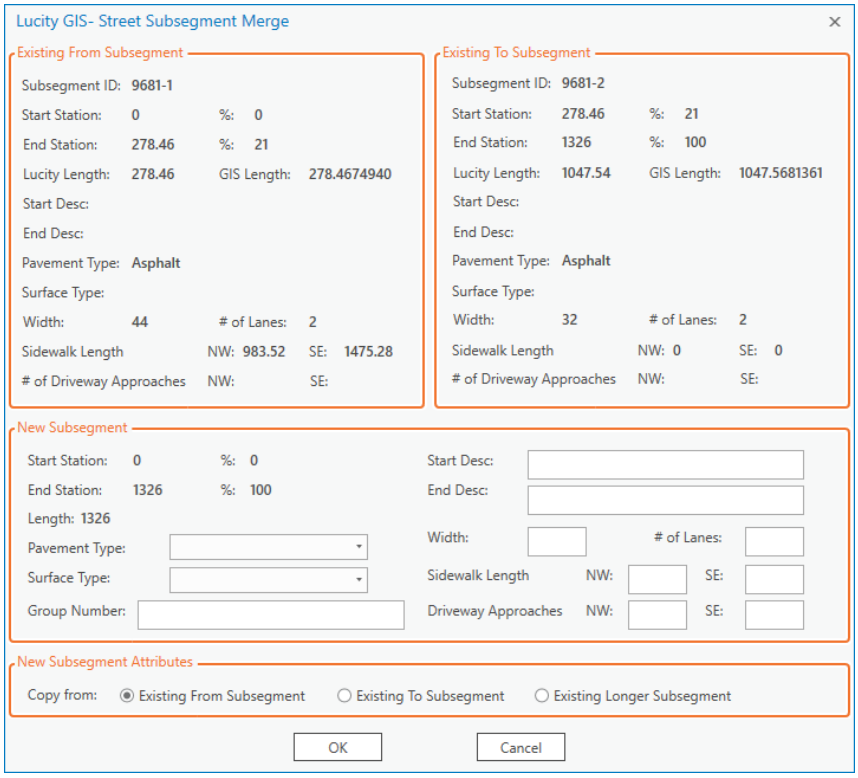
- **Existing From/US Info:** This is read-only information for the existing from- line.
- **Existing Split Feature:** This is read-only information for the existing split feature and you have the option to not delete the feature, delete it from GIS only, or delete it from both GIS and Lucity.
- **Existing To/DS Info:** This is read-only information for the existing to- line.
- **New Pipe Info:** This is read-only information for the new line, and you have the option to manually enter a Common ID for the new line, use a Lucity number generator if one is set up, use the endpoint IDs, use the existing upstream line's Common ID, or use the existing downstream line's Common ID.
- **New Pipe Attributes:** You can choose to copy over the attributes from the pre-merge from-line, pre-merge to-line, or the longer line.
- **Archive (Optional):** Select this option if you wish to maintain a record in the inventory module for both the pre-merge lines. If you select this option, the pre-merge lines will not be deleted from the inventory module.

Street Segment



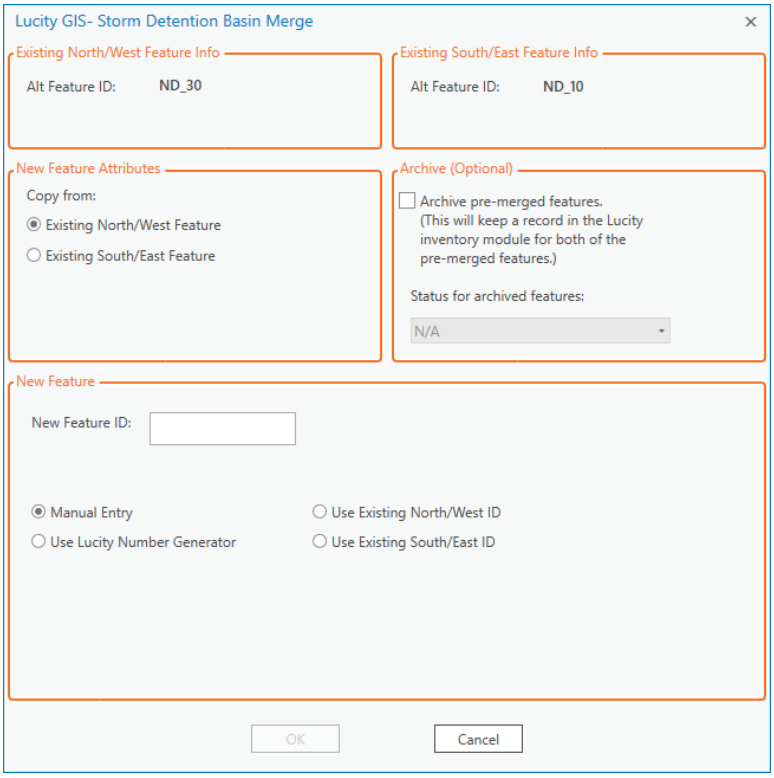
- **Existing From Segment:** This is read-only information for the existing from-segment.
- **Exsting Intersection:** This is read-only information for the existing intersection feature, and you have the option to not delete the feature, delete it from GIS only, or delete it from both GIS and Lucity.
- **Existing To Segment:** This is read-only information for the existing to-segment.
- **New Street Segment:** This is read-only information for the new segment, and you have the option to manually enter a Common ID for the new segment, use a Lucity number generator if one is set up, use the intersection IDs, use the existing from-segment's Common ID, or use the existing to-segment's Common ID.
- **New Segment Attributes:** You can choose to copy over the attributes from the pre-merge from-segment, pre-merge to-segment, or the longer segment.

Street Subsegment



- **Existing From Subsegment:** This is read-only information for the existing from-subsegment.
- **Existing To Subsegment:** This is read-only information for the existing to-subsegment.
- **New Subsegment:** These are various fields specific to the subsegment module for the new merged subsegment.
- **New Subsegment Attributes:** You can choose to copy over the attributes from the pre-merge from-subsegment, the pre-merge to-subsegment, or the longer subsegment.

Storm Detention Basin



- **Existing North/West Feature Info:** This is the read-only Common ID for the existing north/west feature.
- **Existing South/East Feature Info:** This is the read-only Common ID for the existing south/east feature.
- **New Feature Attributes:** You can choose to copy over the attributes from the pre-merge north/west feature, pre-merge south/east feature, or the larger feature (if merging polygon features).
- **Archive (Optional):** Select this option if you wish to maintain a record in the inventory module for both the pre-merged features. If you select this option, the pre-merge features will not be deleted from the inventory module.
- **New Feature:** You have the option to manually enter a Common ID for the new feature, use a Lucity number generator if one is set up, use the existing North/West feature's Common ID, or use the existing South/East feature's Common ID.

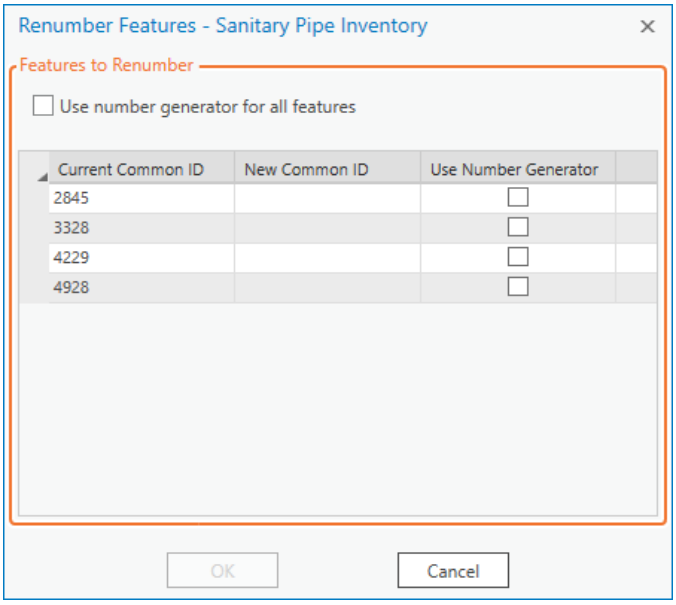
> *Note: North and South are evaluated before East and West. For example, if Feature 1 is Northeast of Feature 2, it will show on the dialog as the North/West feature.*

Renumber

The Lucity Renumber tool allows a user to change the Common IDs of many assets at once, for any inventory type that can be linked to GIS.

To use the Renumber tool:

1. Select the feature(s) in the map that you would like to renumber (these must all be from the same Lucity-linked feature class) and click the **Renumber** tool button on the Lucity Toolbar.
2. The following dialog will appear:

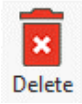


   - **Use number generator for all features:** This option sets the Use Number Generator checkbox for all features in the selection.
   - **Current Common ID:** This is a read-only field that displays the current Common ID for each selected feature. Clicking in this field will zoom and highlight the corresponding asset in the map.
   - **New Common ID:** Enter the new Common ID value here. This is disabled if you are using a number generator for the feature.

     > *Note: You can paste a range of many values into the grid for New Common ID (i.e. from Excel).*

   - **Use Number Generator:** This option tells the program to use a configured number generator to assign the new Common ID to the feature, instead of the user manually entering it.
3. Once you have either set a new Common ID (or opted to use a number generator) for each selected feature, click **OK**. The renumber process will begin.

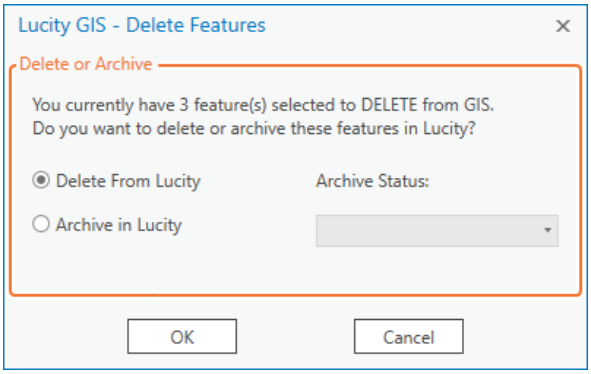
Delete



The Lucity Delete tool allows a user to delete or archive many assets at once, from both GIS and Lucity. The tool can be used on any asset type supported by GIS except Street Subsegments.

To use the Delete tool:

1. Select all features in the map that you wish to delete.
2. Click the **Delete** button. The following dialog will appear:



   - **Delete From Lucity:** The records will be permanently deleted from GIS and Lucity.
   - **Archive in Lucity:** The records will be permanently delete from GIS, but will remain in Lucity. This option is only enabled if all selected features are from the sam feature class.
   - **Archive Status:** The new status in Lucity for the archived records.
3. Click **OK**. The features will be deleted from GIS and either deleted or archived in Lucity, depending on the chosen options.

Pavement

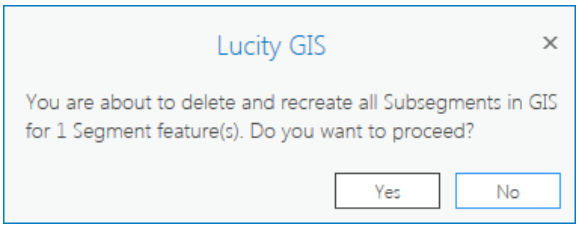
The Lucity Pavement Tools are a group of tools specifically for use against Lucity-linked Street Supersegment and Street Subsegment features in GIS. They include: Recreate Subsegment Feature(s), Link/Unlink Supersegments, Define Supersegments, Dissolve Supersegments, and Generate Supersegments.

Recreate Subsegment Feature(s)

This tool redraws all Subsegments in the map for each selected Street Segment feature, based on the information within Lucity.

To use the Recreate Subsegment Feature(s) tool:

1. Select all Street Segment features in the map for which you would like to recreate Subsegments in GIS.
2. Click the **Recreate Subsegment Feature(s)** button under the **Pavement Tools** dropdown on the Lucity Toolbar. The following dialog will appear:



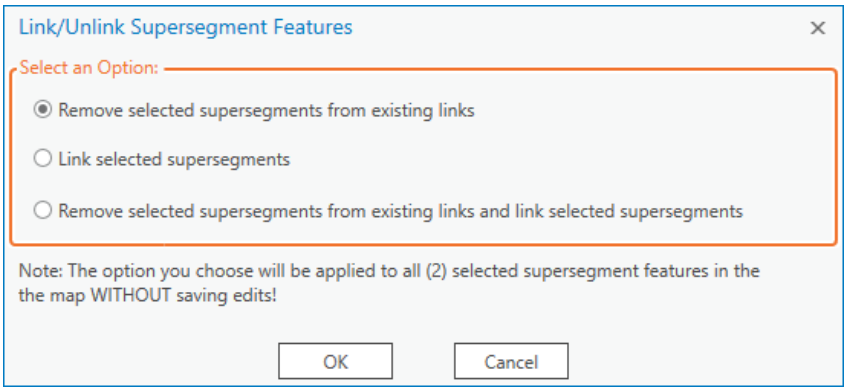
3. Click **Yes**. For each selected Street Segment:
    a. All the Subsegment features that belonged to the Segment are deleted from GIS.
    b. All the Lucity Subsegments that currently belong to the Segment are retrieved.
    c. The Segment's geometry is copied into the Subsegments layer.
    d. This copied geometry is split at each Lucity Subsegment's current End Station distance in until all Subsegments have been drawn again.

Link/Unlink Supersegments

This tool manages links between Supersegments in Lucity, based on selected Supersegment features in the map.

To use the Link/Unlink Supersegments tool:

1. Select all Street Supersegment features in the map for which you would like to modify links.
2. Click the **Link/Unlink Supersegments** button under the **Pavement Tools** dropdown on the Lucity Toolbar. The following dialog will appear:



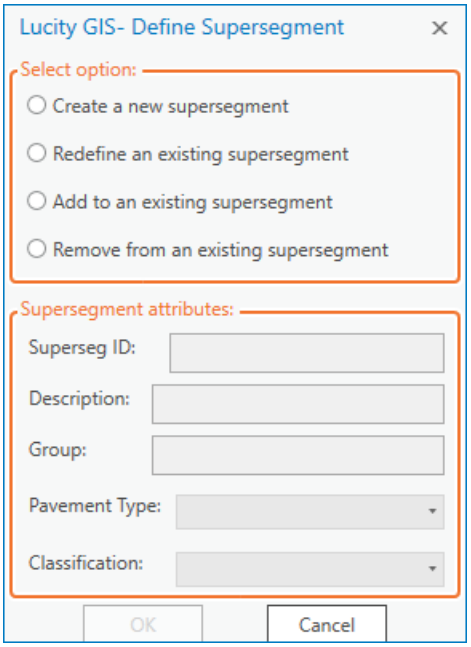
   - **Remove selected supersegments from existing links:** Removes the selected Supersegments from all links with other Supersegments.
   - **Link selected supersegments:** Links the selected Supersegments together. This also links together any Supersegments that are linked to the selected Supersegments.
   - **Remove selected supersegments from existing links and link selected supersegments:** Removes the selected Supersegments from all links with other Supersegments, then links the selected Supersegments together. The resulting group of Supersegments will include only those currently selected.
3. Once you have selected the desired option, click **OK**.

Define Supersegments

This tool defines a Supersegment in GIS and Lucity, based on a group of Selected Subsegment features in the map. A new Supersegment feature is created in GIS to reflect the changes.

To use the Define Supersegments tool:

1. Select all the Subsegment features in the map that you would like to define as a Supersegment.
2. Click the **Define Supersegments** button under the **Pavement Tools** dropdown on the Lucity Toolbar. The following dialog will appear:



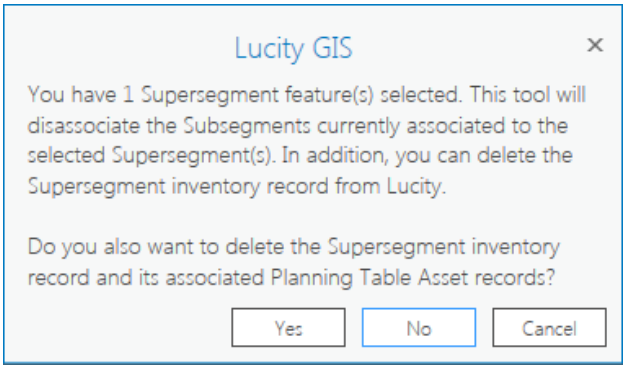
   - **Create a new supersegment:** A brand new Supersegment will be created based on the selected Subsegments.
   - **Redefine an existing supersegment:** An existing Supersegment will be redefined to be based on the selected Subsegments.
   - **Add to an existing supersegment:** The selected Subsegments will be added to an existing Supersegment.
   - **Remove from an existing supersegment:** The selected Subsegments will be removed from the Supersegment that they currently belong to.
   - **Superseg ID:** The Common ID of the Supersegment to define. This is required for all the above options except "Remove from an existing supersegment".
   - **Description:** The new description for the Supersegment.
   - **Group:** The group identifier, if the Supersegment is part of a group of Supersegments.
   - **Pavement Type:** The material that the Supersegment is made up of.
   - **Classification:** The type of street by traffic load.
3. Once you have set the options to your desired configuration, click **OK**.

Dissolve Supersegments

This tool disassociates all Subsegments in Lucity from the selected Supersegment in the map and deletes the Supersegment from GIS.

To use the Dissolve Supersegments tool:

1. Select all the Supersegment(s) in the map that you would like to dissolve.
2. Click the **Dissolve Supersegments** button under the **Pavement Tools** dropdown on the Lucity Toolbar. The following dialog will appear:



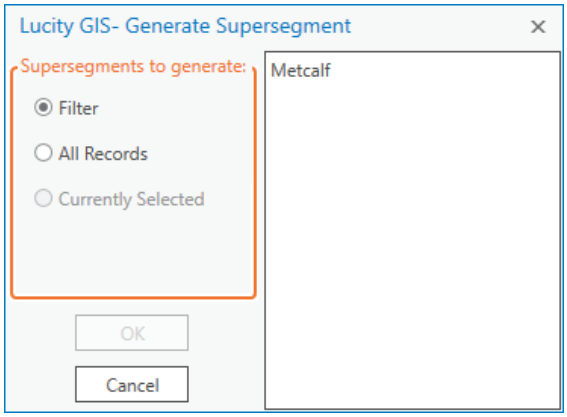
   - **Yes:** All Subsegments will be disassociated from the Supersegment in Lucity, and the Supersegment feature will be deleted from GIS. Additionally, the Supersegment Inventory record, and all its associated Planning Table asset records, will be deleted from Lucity.
   - **No:** All Subsegments will be disassociated from the Supersegment in Lucity, and the Supersegment feature will be deleted from GIS. The Supersegment and all its associated Planning Table Asset records will remain in Lucity.
   - **Cancel:** The Supersegment Dissolve process will be canceled.

Generate Supersegments

This tool creates Supersegment features in GIS based on what is defined in Lucity.

To use the Generate Supersegments tool:

1. Click the **Generate Supersegments** button under the Pavement Tools dropdown on the Lucity Toolbar. The following dialog will appear:

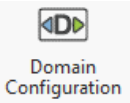


   - **Filter:** Supersegments within a selected Lucity filter will be generated.
   - **All Records:** All records in the Supersegment module will be generated.
   - **Currently Selected:** Only Supersegments selected in the map will be generated. This is disabled if there are no selected Supersegment features.

2. Once you have selected your desired option, click **OK**.

Management

Domain Configuration



The Lucity Domain Configuration tool is used to manage synchronization between GIS domains and their corresponding Lucity picklists or libraries.

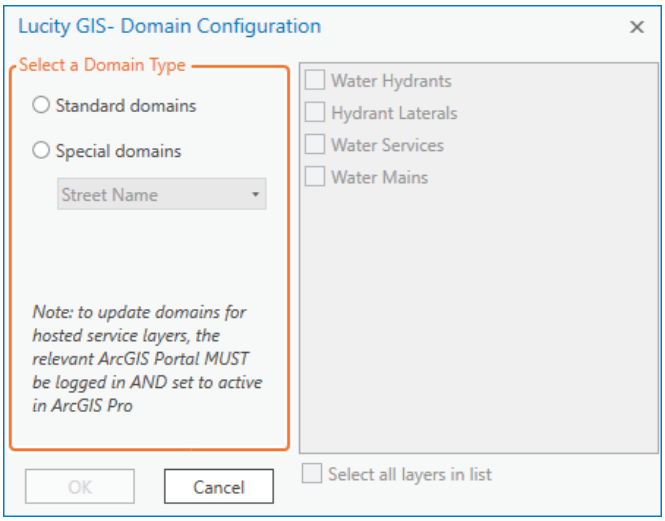
The Lucity Domain Configuration tool can be used to update domains for feature classes and hosted service layers alike. To update hosted service layer domains, the user MUST be logged into the relevant ArcGIS Portal AND have it set as the active Portal in ArcGIS Pro. As of 2018r2, the tool can also be used to sync GIS subtypes with Lucity picklists.

There are two types of GIS domains that Lucity updates:

- **Standard Domains:** These are mapped to a Lucity inventory module's picklist.
- **Special Domains:** These store values from another Lucity module or library. These include Street Name List, Street Light Library, MUTCD (Sign) Library, Tree Library, and Work Category, Maintenance Zone, and Alternate Zone.

To use the Lucity Domain Configuration tool:

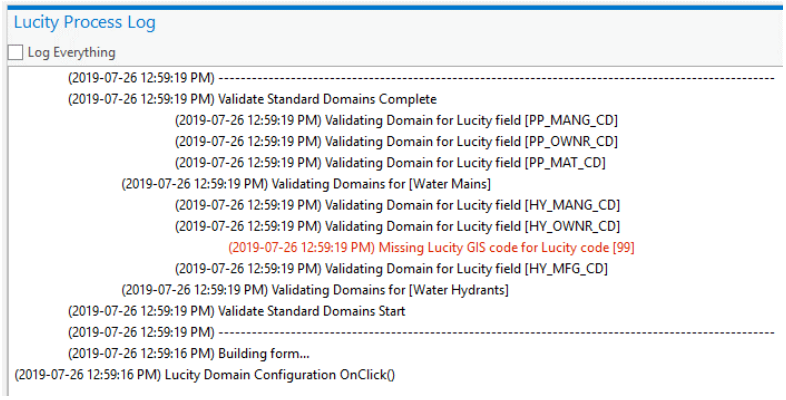
1. Click the **Domain Configuration** button. The following dialog will appear:



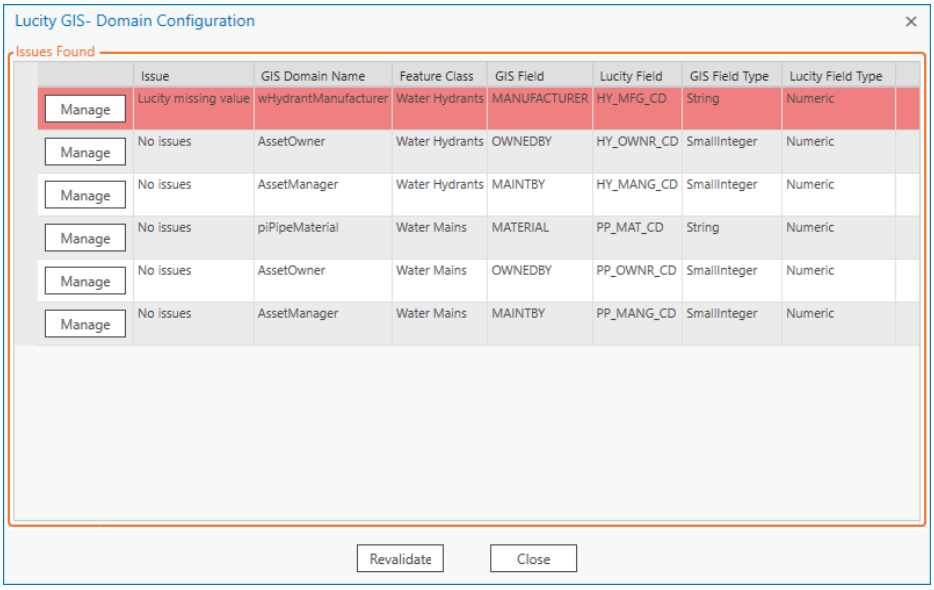
2. Select whether you would like to update **Standard domains** or **Special domains**.
    - Choosing **Standard Domains** requires you to select layers in the right-hand list for which to manage domains.
    - Choosing **Special Domains** requires you to select a type of **Special Domain**.
3. Click **OK**, and another dialog will appear based on your selection. The next section talks about each type of domain update in detail.

Standard Domains

Once the domain validation process begins, the results are written to the Process Log. The tool validates each Lucity-linked domain in each selected layer:



Additionally, a dialog will display with a summary of the validation results. Rows highlighted in red indicate that discrepancies were found between the domain and the corresponding picklist.

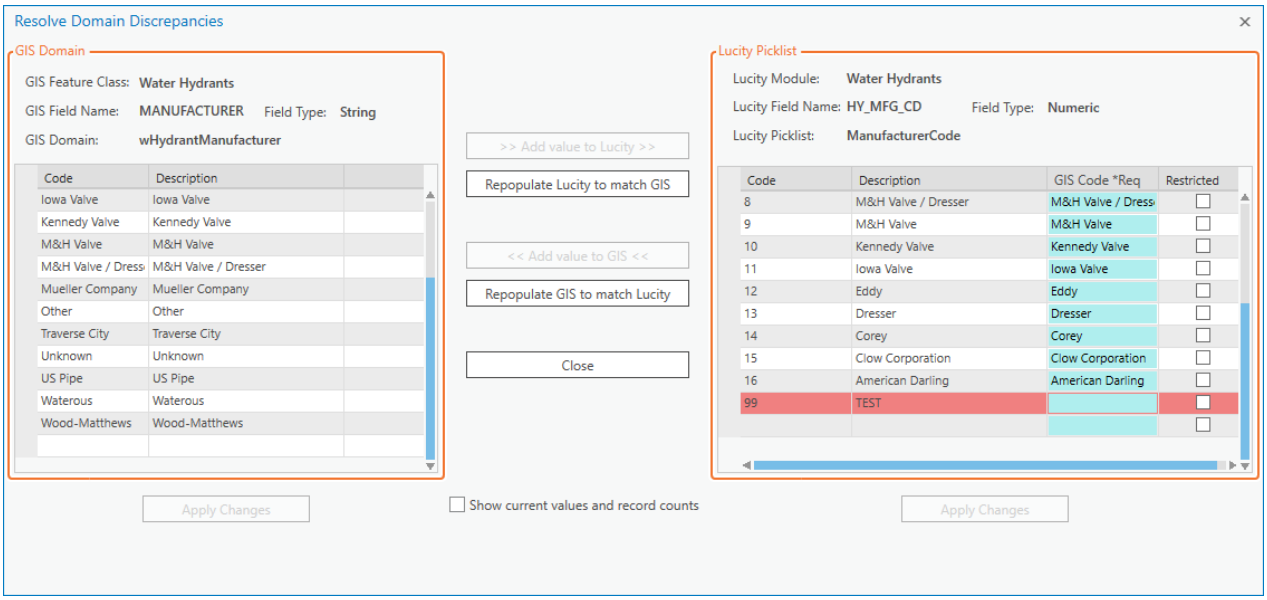


- **Manage:** Opens the Domain Compare dialog to manage the selected domain.
- **Issue:** The discrepancies found between the domain and the picklist.
    - *No Issues:* The domain is in sync with the Lucity picklist.
    - *Missing Domain:* The GIS field has no domain applied to it.
    - *Invalid Type:* The GIS field has a domain, but it is not a coded-value domain.
    - *No Domain values:* The GIS field's domain is empty.
    - *Domain Missing Value:* The domain is missing a coded value that exists in the Lucity picklist.
    - *Lucity Missing Value:* The Lucity picklist is missing a coded value that exists in the GIS domain.

- *Desc Don't Match:* The GIS domain has a type value that is different from that of the corresponding Lucity code value (or vice versa).

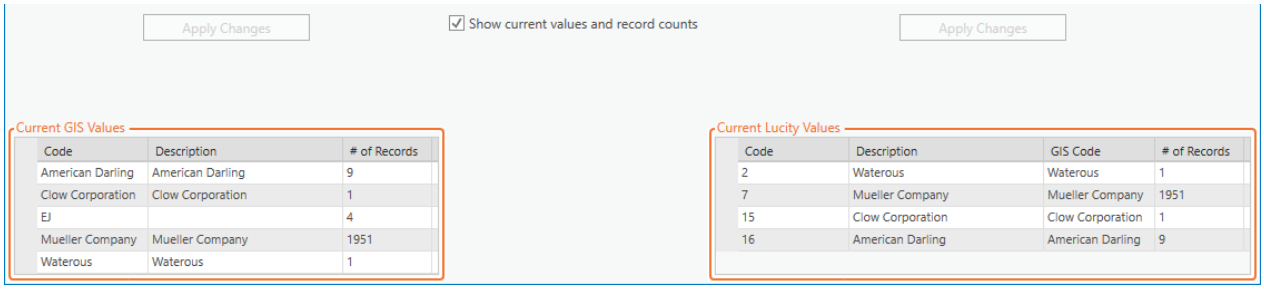
- **GIS Domain Name:** The name of the GIS domain.
- **Feature Class:** The feature class (or layer) name.
- **GIS Field:** The name of the GIS field that is using the domain.
- **Lucity Field:** The name of the Lucity field that the GIS field is mapped to.
- **GIS Field Type:** The data type of the GIS field.
- **Lucity Field Type:** The data type of the Lucity field.
- **Revalidate:** Re-runs the validation. This is useful to do after making changes to the domain and/or picklist.
- **Close:** Closes the dialog.

To resolve discrepancies that are found for a given domain, click **Manage**. The following dialog will appear. Information about the GIS Domain (or Subtype) is shown on the left, and information about the Lucity Picklist is shown on the right. In both top grids, rows that have a discrepancy are highlighted in red.



- **GIS Feature Class:** The feature class (or layer) that the domain is assigned to.
- **GIS Field Name:** The GIS field that uses the domain.
- **Field Type:** The data type of the GIS field.
- **GIS Domain:** The name of the domain.
- **Domain values grid.**

    - **Code:** The coded values for the domain.
    - **Description:** The descriptions for each coded value in the domain.
- **Apply Changes:** Commits the changes to the GIS domain.
- **Add Value to Lucity:** Adds the selected domain value to the Lucity picklist.
- **Repopulate Lucity to match GIS:** Overwrites the entire Lucity picklist with the values from the GIS domain.
- **Add Value to GIS:** Adds the selected picklist value to the GIS domain.
- **Repopulate GIS to Match Lucity:** Overwrites the entire GIS domain with the values from the Lucity picklist.
- **Close:** Closes the dialog.
- **Show current values and record counts:** Expands two more data grids that display how many records in GIS and Lucity are using each domain value or picklist value, respectively.



- **Lucity Module:** The module in Lucity that the feature class (or layer) is linked to.
- **Lucity Field name:** The Lucity field that the GIS field is mapped to.
- **Field Type:** The data type of the Lucity field.
- **Lucity Picklist:** The name of the Lucity picklist.
- **Picklist values grid.**
    - **Code:** The coded values for the picklist.
    - **Description:** The descriptions for each coded value in the picklist.
    - **GIS Code:** The code values that the GIS domain uses.
        - This is required if the data types of the GIS and Lucity fields do not match.
        - These values are used to translate back and forth between GIS and Lucity.
    - **Restricted:** Indicates whether the picklist value is restricted. If it is, then only the GIS Code can be modified.
- **Apply Changes:** Commits the changes to the Lucity picklist.

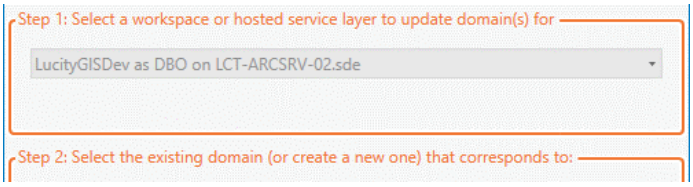
Special Domains

A different dialog will display for each type of **Special Domain** option that is selected. They all have the following two steps:

Step 1: Select a workspace or hosted service layer to update domain(s) for: This is the workspace (file geodatabase, enterprise geodatabase, or hosted service layer) that will take the domain update. This also is used to build the dropdown list(s) of available domains.

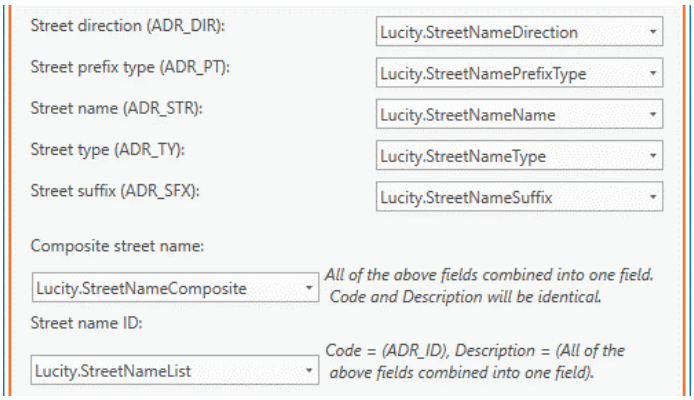
Step 2: Select the existing domain (or create a new one) that corresponds to: For each Lucity field or picklist, the user has a dropdown list of available domains. In that dropdown list, the user must opt to do one of the following:

- Choose an existing domain to update.
- Create a new domain.
- Skip the domain update.



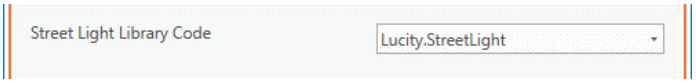
Street Name Domains

- **Street direction (ADR_DIR):** Address direction from the Street List.
    - Code and type are equal.
    - Automatically associated to all fields linked to a Lucity street direction field (*_ADR_DIR).
- **Street prefix type (ADR_PT):** Address prefix type from the Street List.
    - Code and type are equal.
    - Automatically associated to all fields linked to a Lucity street prefix type field (*_ADR_PT).



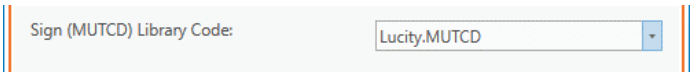
- **Street name (ADR_STR):** Address street name from the Street List.
    - Code and type are equal.
    - Automatically associated to all fields linked to a Lucity street name field (*_ADR_STR).
- **Street type (ADR_TY):** Address street type from the Street List.
    - Code and type are equal.
    - Automatically associated to all fields linked to a Lucity street type field (*_ADR_TY).
- **Street suffix (ADR_SFX):** Address street suffix from the Street List.
    - Code and type are equal.
    - Automatically associated to all fields linked to a Lucity street suffix field (*_ADR_SFX).
- **Composite street name:** All the above fields combined into one field.
    - Code and type are equal.
    - Automatically associated to all fields linked to a Lucity composite street name field (shown in green in GIS/GDB Configuration).
- **Street name ID:** Record number from the Street List.
    - Code is the record number.
    - Type is all the street fields combined into one field.
    - Automatically associated to all fields linked to the Lucity street name ID field (SN_ST_SID, SN_ST1_SID, SN_ST2_SID).

Street Light Domain



- **Street Light Library Code:** Library code and text from the Street Light Library.
    - Code is the library code.
    - Type is the library text.

MUTCD (Street Sign) Domain

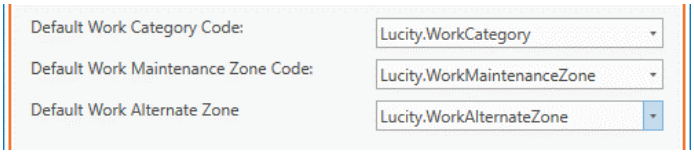


- **Sign (MUTCD) Library Code:** Library code and sign description from the MUTCD Library.
    - Code is the library code.
    - Type is the library code and the sign description, separated by a dash (“-“).

Tree Library Domain

- **Tree Library Code:** Library code and combination of fields from the Tree Library.
    - Code is the library code.
    - Type is defined by the user.
- **Select two Tree Library fields (separated by a dash “-“) to use as the description for this domain:** The user must pick two library fields to use as the domain description.
    - These are separated by a dash (“Field 1 – Field 2”).
    - By default, they are *Common Name* and *Species*.

Work Domains



- **Default Work Category Code:** Category code and description from Work Flow Setup.
    - Code is the category code.
    - Type is the category code and the category description, separated by a dash (“-“).
    - Automatically associated to all fields linked to a Lucity work category code field (*_BR_CD).
- **Default Work Maintenance Zone Code:** Maintenance zone code and description from Work Flow Setup.
    - Code is the maintenance zone code.
    - Type is the maintenance zone code and description, separated by a dash (“-“).
    - Automatically associated to all fields linked to a Lucity work maintenance zone code field (*_MZONE_CD).
- **Default Work Alternate Zone Code:** Alternate zone code and description from Work Flow Setup.
    - Code is the alternate zone code.
    - Type is the alternate zone code and description, separated by a dash (“-“).
    - Automatically associated to all fields linked to a Lucity work alternate zone code field (*_AZONE_CD).

QA/QC

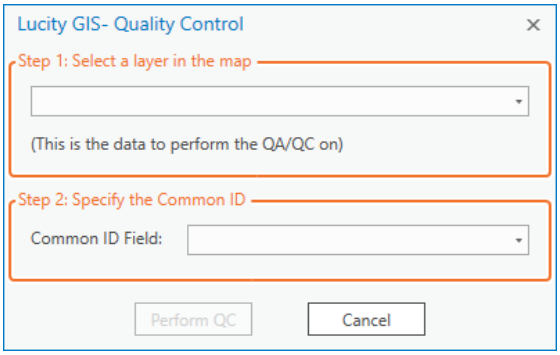
The Lucity QA/QC tool can be used to identify possible problems with GIS data, regardless of whether the layer is linked to Lucity.

The QA/QC tool performs five tests against a given GIS layer, the results of which are written to the Process Log. The tests are:

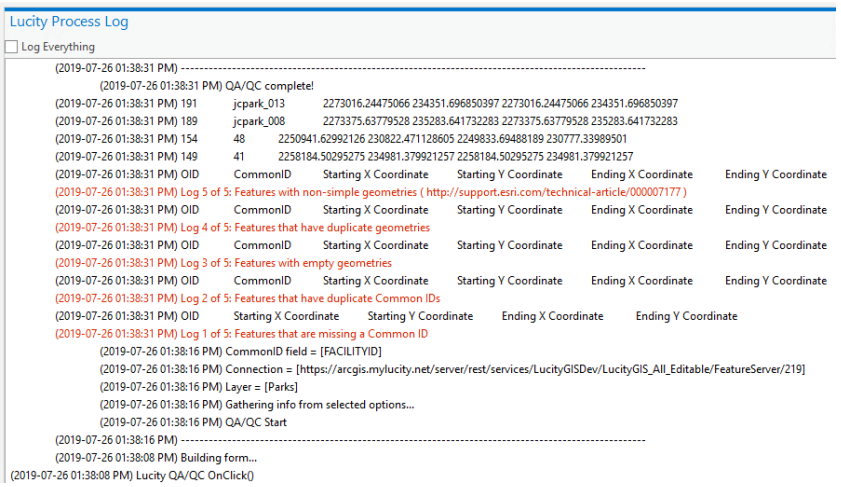
1. Features that are missing a Common ID.
2. Features that have duplicate Common IDs.
3. Features with empty geometries.
4. Features with duplicate geometries.
5. Features with non-simple geometries.

To use the QA/QC tool:

1. Click the **QA/QC** button. The following dialog will appear:
    - **Step 1: Select a layer in the map:** The layer to run QA/QC against. This does not have to be linked to Lucity.
    - **Step 2: Specify the Common ID:** The field in the chosen layer that stores the unique identifier. This is used for some of the QA/QC tests.



2. Once you have set your desired options, click **Perform QC**. The QA/QC process begins, which can be canceled by the user at any time.
3. QA/QC results are written to the Process Log, which can then be exported as a file:



Management Tools Menu

The Management Tools Menu provides 3 tools used to manage/update data in both GIS and Lucity: Force Sync, Update GIS Values, and Update Show in Map Flag.

Force Sync

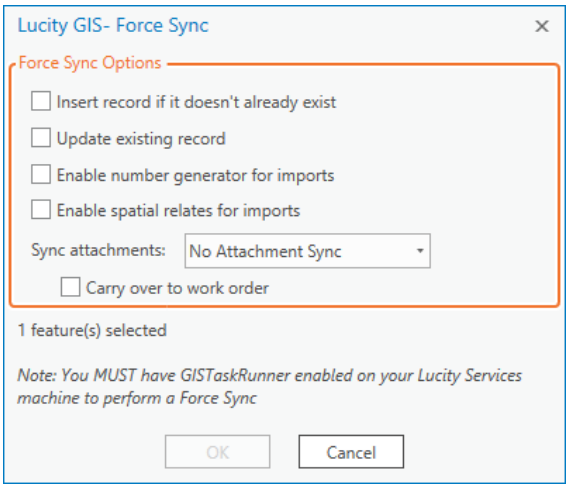
This tool updates the Lucity system with data from the features selected in the map. The tool works by kicking off a temporary GIS sync task on-the-fly, based on what features are selected in the map. The tool can be run against multiple Lucity-linked layers at a time.

Requirements:

1. Lucity Services must be running and GIS Task Runner must be enabled on the Lucity Services machine.
2. The map layers to run Force Sync against must be feature service layers, since the GIS tasks require feature services to run.

To use the Force Sync tool:

1. Select the features in the map that you would like to sync with Lucity and click the **Force Sync** button. The following dialog will appear:

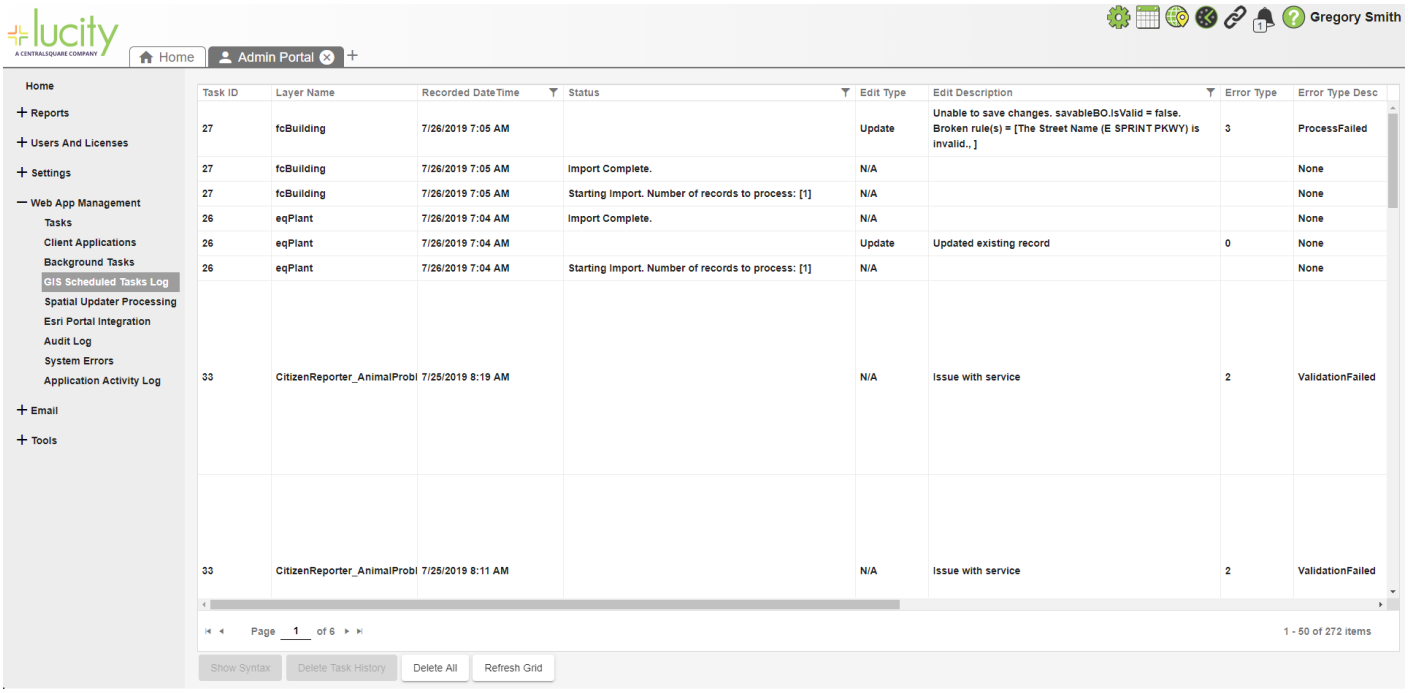


   - **Insert record if it doesn't already exist:** Allows new records to be inserted into Lucity.
   - **Update existing record:** Allows existing records to be updated in Lucity.
   - **Enable number generator for imports:** Number generators will be utilized to assign Common IDs for new records.
   - **Enable spatial relates for imports:** Spatial relationships will be processed during the sync.
   - **Sync attachments:** Options to import GIS attachments as Lucity documents.
     - **No Attachment Sync:** Attachments will be ignored by the GIS task.

- **Attachment Reference:** A link to the attachment will be added as a document for the Lucity record.
- **Attachment Copy:** The attachment will be uploaded to Lucity and then added as a document for the Lucity record.

- **Carry over to work order:** Any attachments synced into Lucity as documents will be copied to Work Orders created from the Lucity record.

2. Once the desired options have been set, click **OK**.
3. A GIS task for the selected records for each layer will be queued up in Lucity and will process automatically the next time the task processor runs. This should take no longer than a few minutes.
4. Since there is no GIS task interface in ArcGIS Pro to view logs, the user can view them in **Lucity Web** under **Admin Portal** >> **Web App Management** >> **GIS Scheduled Tasks Log**:

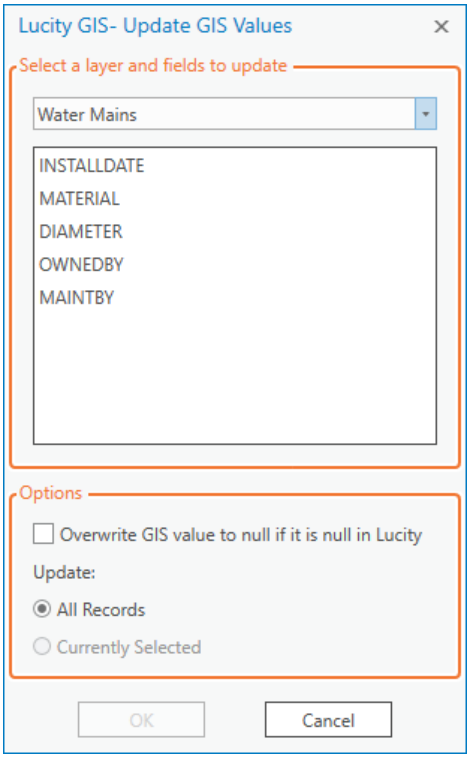


Update GIS Values

This tool updates records in GIS with data from the corresponding Lucity records.

To use the Update GIS Values tool:

1. Click the **Update GIS Values** button. The following dialog will appear:



   - **Select a layer and fields to update:** Choose a Lucity-linked layer in the map from the top dropdown list. Once a layer is chosen, the list box below the dropdown list will be populated with Lucity-linked fields from the layer. Clicking on these fields will add them to the list of fields to be included in the update.
   - **Overwrite GIS value to null if it is null in Lucity:** If checked, if a given value is null in Lucity, then the corresponding GIS record will have its value updated to null. Otherwise, the update for that field will be skipped for that GIS record.
   - **All Records:** All records in the layer will be updated.
   - **Currently Selected:** Only records currently selected in the map from the layer will be processed. This option is only available if the chosen layer has a map selection.

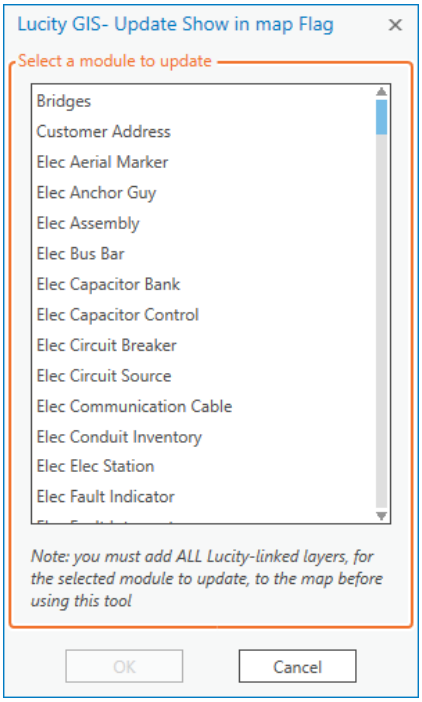
2. Once you have selected the options to your desired configuration, click **OK**. GIS features will be updated with the corresponding Lucity values, and the process can be canceled by the user at any time.

Update Show in Map Flag

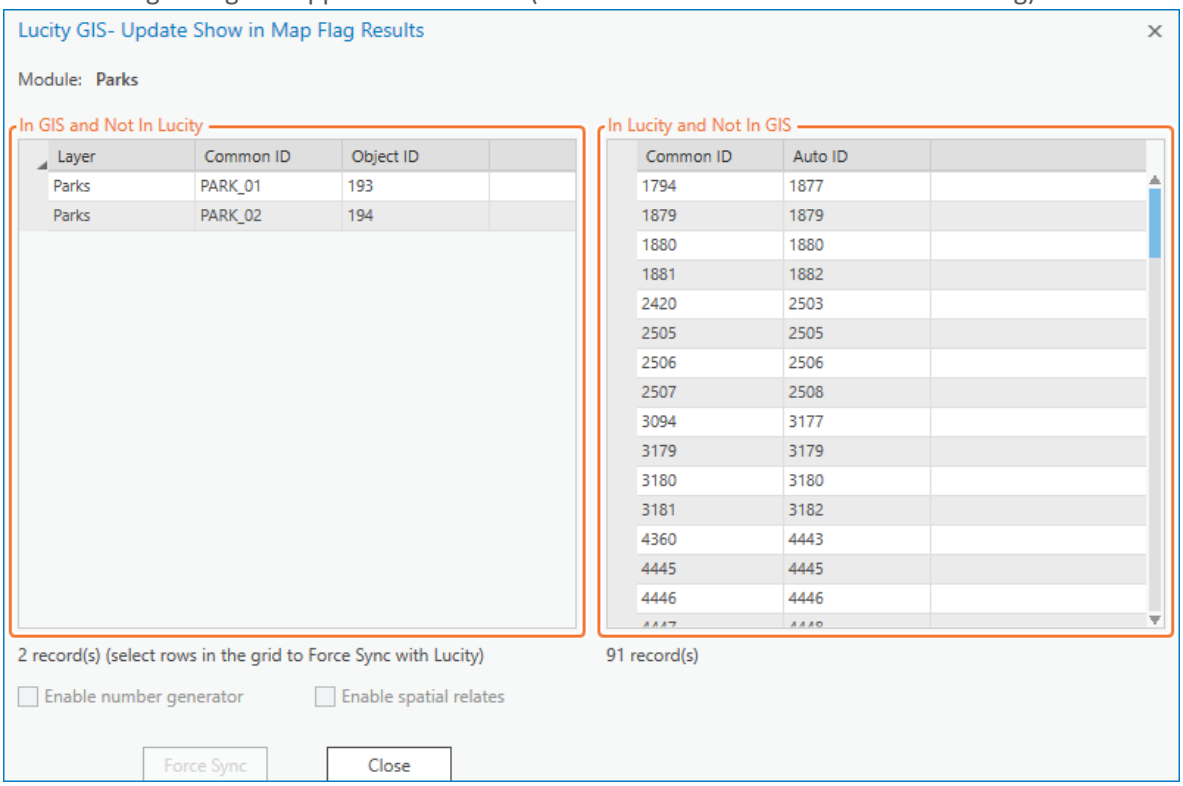
This tool searches for matching features in GIS for each record in a Lucity module and updates the Lucity record's in-map flag based on whether a match is found in GIS.

To use the Update Show in Map Flag tool:

1. Click the **Update Show in Map Flag** button. The following dialog will appear with a list of modules. It is required that all layers linked to the module you select are present in the map.



2. Once you have selected a module, click **OK**. The tool will run and, when processing is complete, the following dialog will appear with results (which are also written to the Process Log):

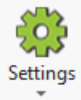


   - **Module:** The Lucity module for which the in-map flag was updated.
   - **In GIS and Not In Lucity:** Records that exist in GIS but have no match in Lucity. Selecting rows in this table will enable force sync options.
     - **Layer:** The GIS layer that the feature belongs to.
     - **Common ID:** The value in the GIS field that is mapped to Lucity's Common ID.
     - **Object ID:** Esri's Object ID for the feature.
   - **In Lucity and Not In GIS:** Records that exist in Lucity but have no match in GIS.
     - **Common ID:** The unique identifier for the Lucity record.
     - **Auto ID:** The record number, or database ID, for the Lucity record.
   - **Enable number generator:** If a force sync is kicked off, the number generator will be utilized to assign Common IDs to new records.
   - **Enable spatial relates:** If a force sync is kicked off, spatial relationships will be processed during the sync.

3. For GIS records that don't exist in Lucity, there is an option to run an import force sync task. To do this, select records in the grid that you would like to import into Lucity, set whether you would like to utilize a number generator or spatial relationships, and click **Force Sync**.

Administration

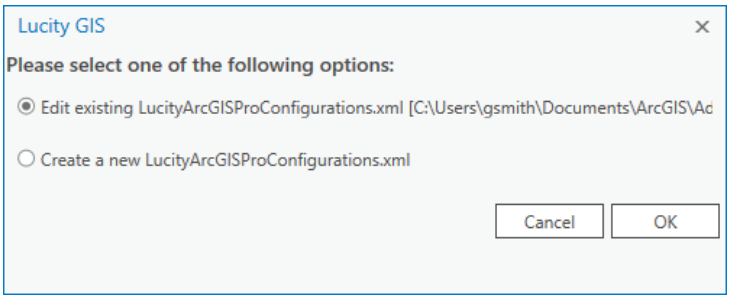
Settings



There are three tools currently under Lucity Settings: Edit Pro Config, About Lucity, and Log Out.

Edit Pro Config

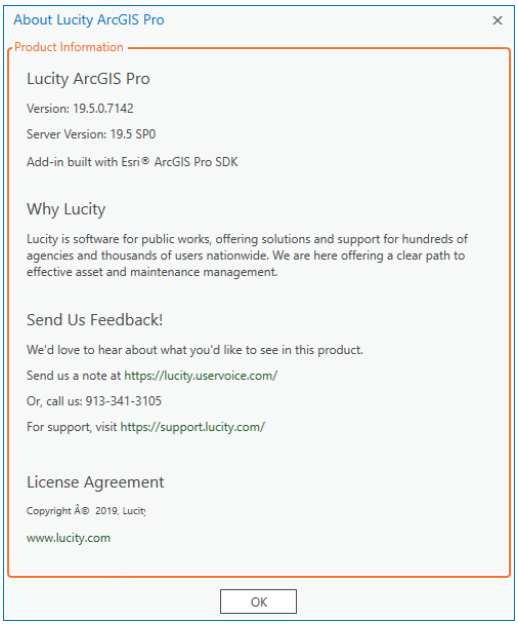
This tool lets you modify the currently configured LucityArcGISProConfigurations.xml or create a new .xml. When clicked, the following dialog will appear:



- Select if you wish to edit the existing .xml or create a new one and click **OK**.
- See the Setup/Configuration section of this session for more details about Edit Pro Config.

About Lucity

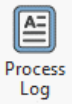
This tool displays a dialog full of product information, including the add-in version, Lucity server version, Lucity contact information, and license agreement.



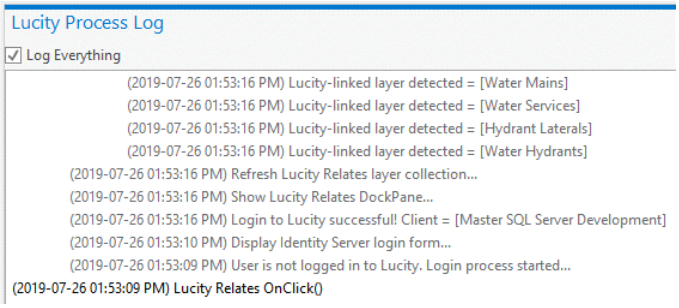
Log Out

This tool logs the user out of the Lucity Internal REST API. This is useful if you are looking to switch Lucity clients without closing completely out of ArcGIS Pro.

Process Log



The Lucity Process Log is a tool to help troubleshoot problems that may arise while using the Lucity ArcGIS Pro add-in. Information is written to the log in real-time, and is color-coded based on the type of logging.

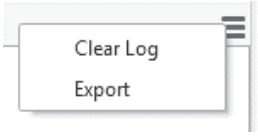


Here is the color-coding convention:

- Black or white lettering – Standard logging.
- Gray lettering – Extra logging (added by checking the Log Everything option).
- Orange lettering – Process warnings.
- Red lettering – Process errors.

> *Note: New log entries are inserted at the top of the list, so that the oldest logs appear at the bottom. This order is reversed when the Process Log is exported.*

There is a menu on the far-right of the Process Log with additional options:



- **Clear Log:** Clears all text currently inside of the Process Log.
- **Export:** Saves the contents of the log to a rich-text (.rtf) file on the user's local machine. This is particularly helpful for Lucity Support, as a user can easily export it and email it to support staff for review.

> *Note: In the event of an ArcGIS Pro crash, if the user is logged into the Lucity add-in, the contents of the log will be automatically exported to the **%APPDATA%\Lucity\Logs** folder.*