Water Asset Management Program
Hillsborough Water and Sewer Commission
Hillsborough, New Hampshire
December 31, 2024

2826

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1. Asset Management Plan Overview

1.1. Introduction

The Hillsborough Water and Sewer Commission (HWSC), located in Hillsborough, NH engaged Underwood Engineers (UE) of Concord, NH to develop an Asset Management Program (AMP) for their water system. This water AMP was funded by a $75,000 American Rescue Plan Act (ARPA) grant provided by the New Hampshire Department of Environmental Services (NHDES).

The following core components are required by the grant unless otherwise noted:

- Vision Statement (optional)
    - A brief statement which communicates what the HWSC intends to accomplish with this AMP.
- Stakeholder Identification
    - Define community stakeholder groups, both internal and external.
- Level of Service (LOS) Matrix
    - What are the HWSC's goals in operating and maintaining the system?
    - Goals should be Specific, Measurable, Attainable, Realistic, Timely, Evaluated, and Re-adjusted (SMARTER).
- Asset Inventory and Condition Assessment
    - What assets does the HWSC own?
    - Which of these assets are able to serve their purpose? Which are not?
    - What is the condition of each asset?
- Criticality
    - Prioritize assets by their probability of failure versus the impact of failure.
- Financial Overview
    - Minimum Life Cycle Cost (Practices) - Estimate costs needed to properly maintain, inspect, repair and, if necessary, replace assets to maintain the desired LOS.
    - Long-Term Funding Strategy (Budget)
        - Review the current operating budget and rate structure.
        - Schedule estimated replacement costs over the life of the assets.
        - Provide a framework for repair or replace decisions.
- Implementation Plan
    - Standard Operating Procedures (SOPs)
    - Staff roles and training.
- Communication Plan
    - Management reporting
    - Public outreach

The estimated costs presented in this AMP typically assume the full replacement of the asset at the end of its estimated useful life. These order of magnitude cost estimates, used in conjunction with project prioritization, are a useful financial planning tool which helps to identify assets that should be evaluated for inclusion in a capital improvement plan (CIP). All dollar values contained within this report are in 2024 dollars.

The decision as to whether full replacement of a given asset is required or whether a repair will suffice will be made during the capital planning process. Inflation and borrowing costs, if applicable, should be taken into consideration at that time. This AMP does not address anticipated expansions or upgrades unless otherwise noted.

The terms ‘horizontal’ and ‘vertical’ are used to characterize assets. Vertical assets are those facilities containing multiple components. A booster pump station, for example, typically includes piping, pumps and motors, control panels, and a building, and is considered a vertical asset. Horizontal assets are typically buried infrastructure such as distribution mains or valves.

1.2. Operation and Functioning of ArcGIS and Related Apps

The HWSC purchased a Basic ArcGIS Pro subscription. The first annual payment was reimbursed through the grant. The subscription includes ArcGIS Pro desktop software, an ArcGIS Online (AGOL) account, and the use of ArcGIS apps. Field Maps, Survey123, Story Maps, and Dashboard apps were used to set up this asset management program.

A summary of the system is provided in **paragraphs 1.2.1. through 1.2.4.** Detailed instructions are provided in **Appendix A**.

1.2.1. Inventory Files

Inventory files were developed by UE based on information provided by the HWSC and were uploaded to the HWSC’s AGOL account. The files can be viewed by field workers in the Field Maps app from a device, such as a tablet or a cellular phone. They can also be viewed and edited from ArcGIS Pro, the desktop software.

The inventory files were developed using the following information.

a) Hydraulic model export - 2020
b) Stantec water system map – 2007
c) Record drawings (WTF, Bridge Street)
d) Tie cards for shut off valves and gate valves.
e) GPS points collected by UE in the field.
f) Initial Lead Service Line Inventory prepared by Hazen & Sawyer – 2024
g) Annual Reports (Information regarding disinfection system upgrades, Bible Hill Tank mixer and sampling building)
h) Historical Aerials (Determine age of Bible Hill Tank)

A full list of files and their current status is provided in **Table 1-1** below.

Table 1-1 Inventory Files and Location

File Name	Description	Location
Hydrants	Point file	HWSC AGOL Account (arcgis.com, My Content, Water System folder)
Valves	Point file	
Water_Mains	Line file	
Hydrant_Services	Line file	
Water_Vertical_Inventory	Table	
Private_Valves	Point file	
Private_Water_Mains	Line file	
Private_Hydrant_Services	Line file	
Private_Hydrants	Point file	
GPS_Points	Point file	
Non_GPS_Point_Valves	Point file	

1.2.2. Inspection and Maintenance Records

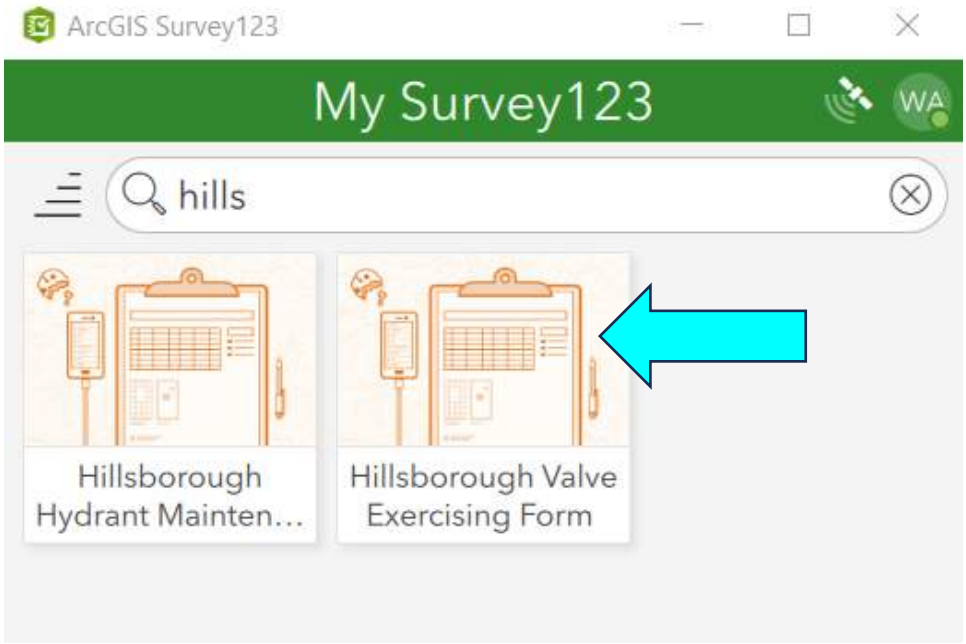
Inspection and maintenance records are tracked using electronic forms created and accessed using Survey123 apps. The components of Survey123 are summarized in **Error! Reference source not found.**below. Training was provided to HWSC staff for the items in white. Training was not provided for the items in gray but can be provided at a later date under a separate contract if desired.

Table 1-2 Survey123 Components

Name	Description	Location
Survey123	App for accessing and filling out electronic forms.	Field device such as a tablet or smart phone. Can be downloaded from the apple store or google play.
Survey123 website	Website where information collected by forms is stored, can be accessed, and edited.	https://survey123.arcgis.com/
Survey123 web app	An app used to make simple Survey123 forms	https://survey123.arcgis.com/surveys Select 'Blank Survey' or 'Template Survey'
Survey123 Connect	A desktop app used by UE to create and publish Survey123 forms	Desktop. Can be downloaded from the Microsoft Store.

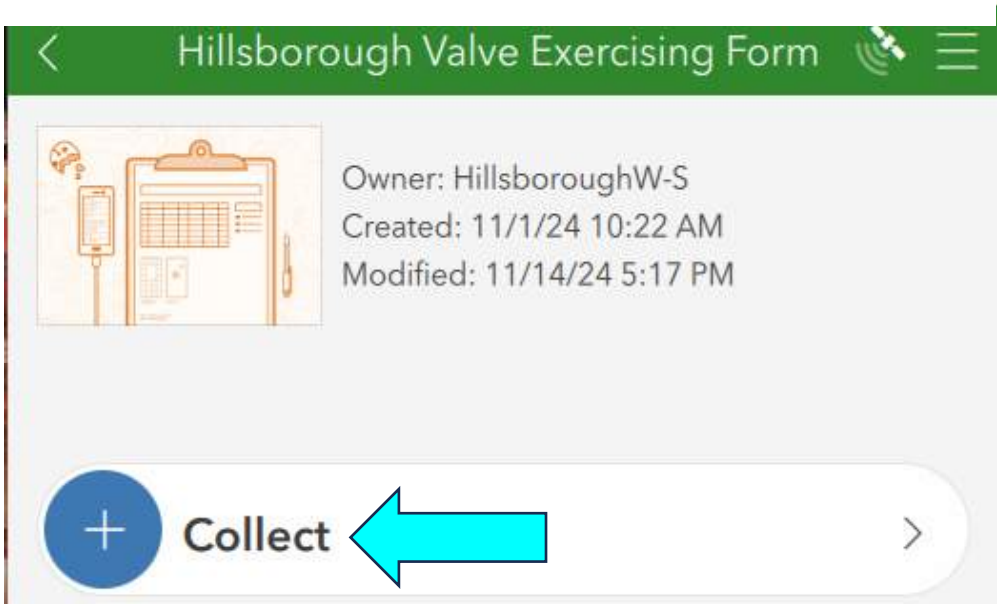
When a field worker opens the Survey123 on their device, they can select a form to begin entering data. In the example below, the valve exercising form has been selected.

Figure 1-1 Select a Survey Form in the Survey123 App



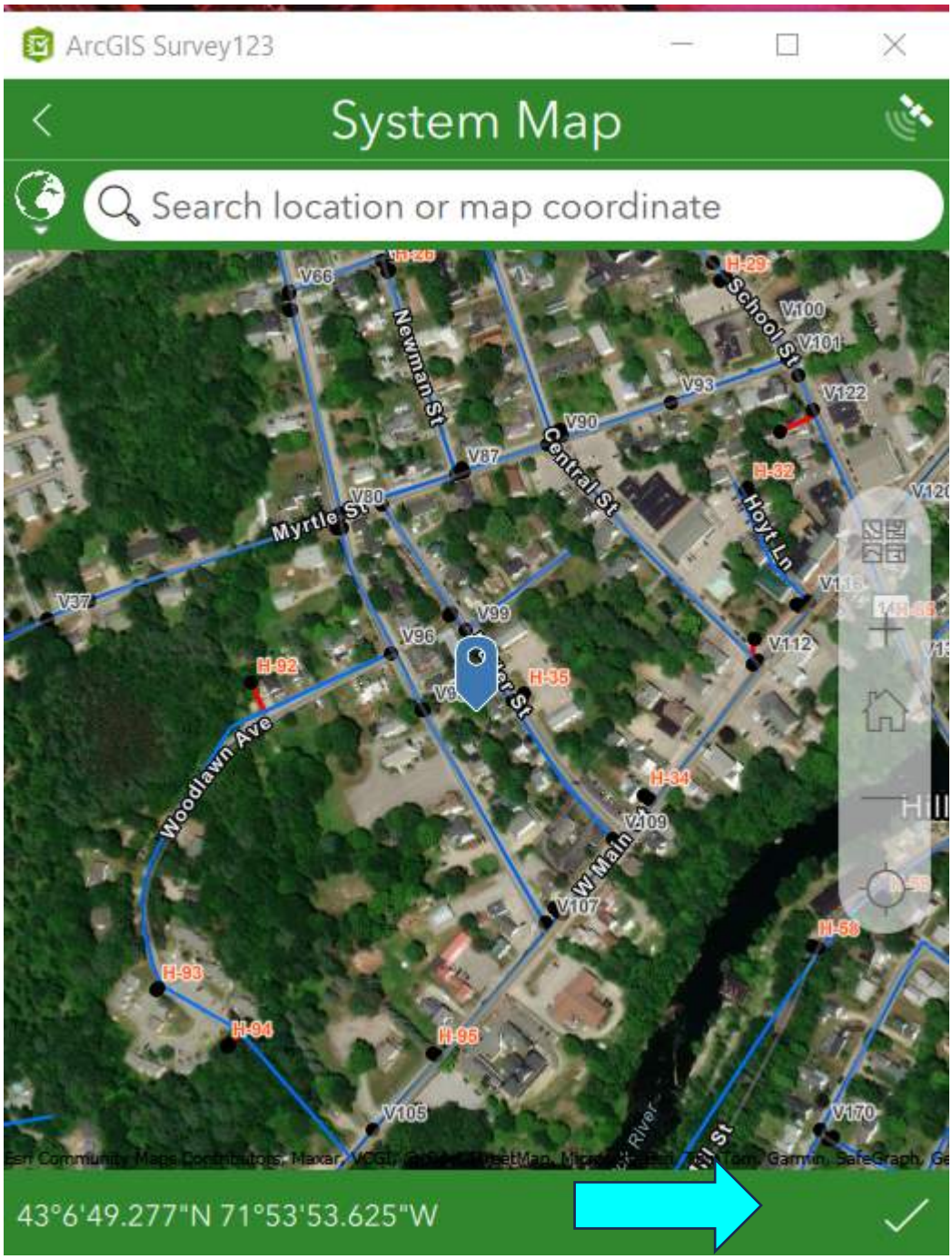
Click “Collect” in Survey123 App to begin entering information.

Figure 1-2 Click “Collect” to Enter Data



The date and time are populated automatically. Select the name of the inspector. Select ‘Other’ to add a name that is not on the list. Select the “System Map” and zoom in on the location of the valve. Click on the check mark in the lower right to set the desired location.

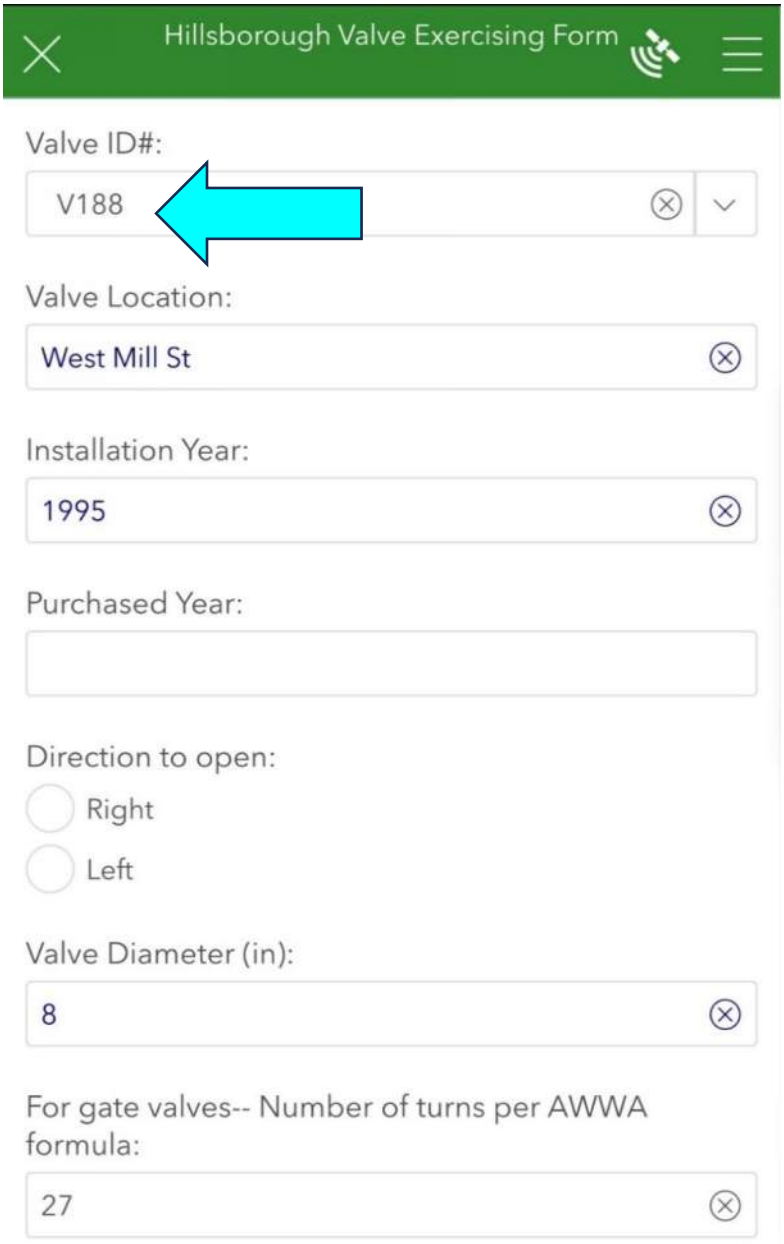
Figure 1-3 Survey123 System Map



This will narrow down the number of valves in the pick list below the map to include only those valves within a 100-foot radius. Selecting a valve from the list will automatically populate several fields in the form such as the location, installation year, diameter, and approximate number of turns based on the AWWA formula.

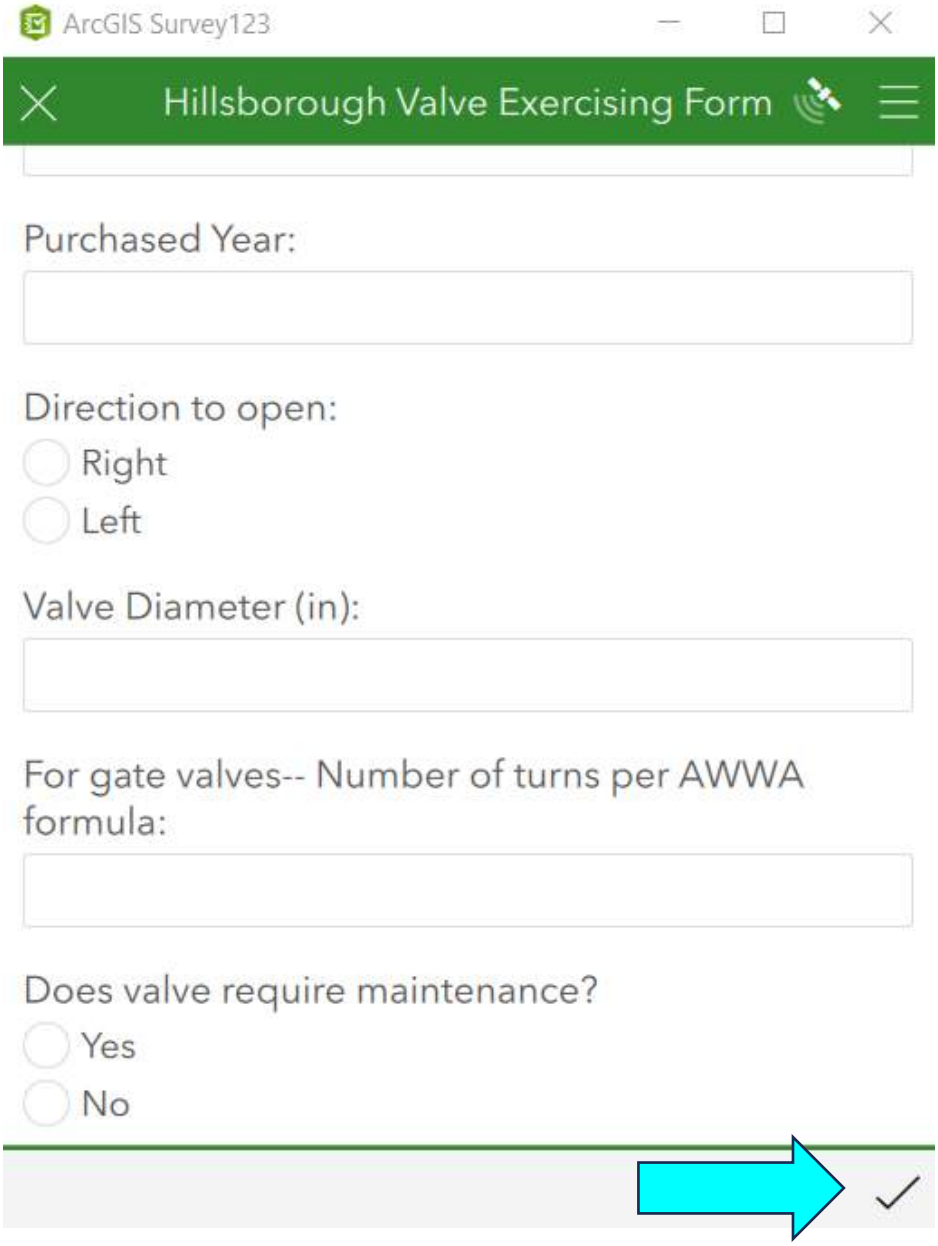
$$(Valve\ Diameter\ x\ 3) + 3$$

Figure 1-4 Select Valve From Drop Down List



The user will be asked if maintenance on the valve is needed or was performed. Additional detail can be provided in a text field below this question. When complete, click on the check mark in the lower right corner.

Figure 1-5 Use Survey123 Form to Record Maintenance Activity



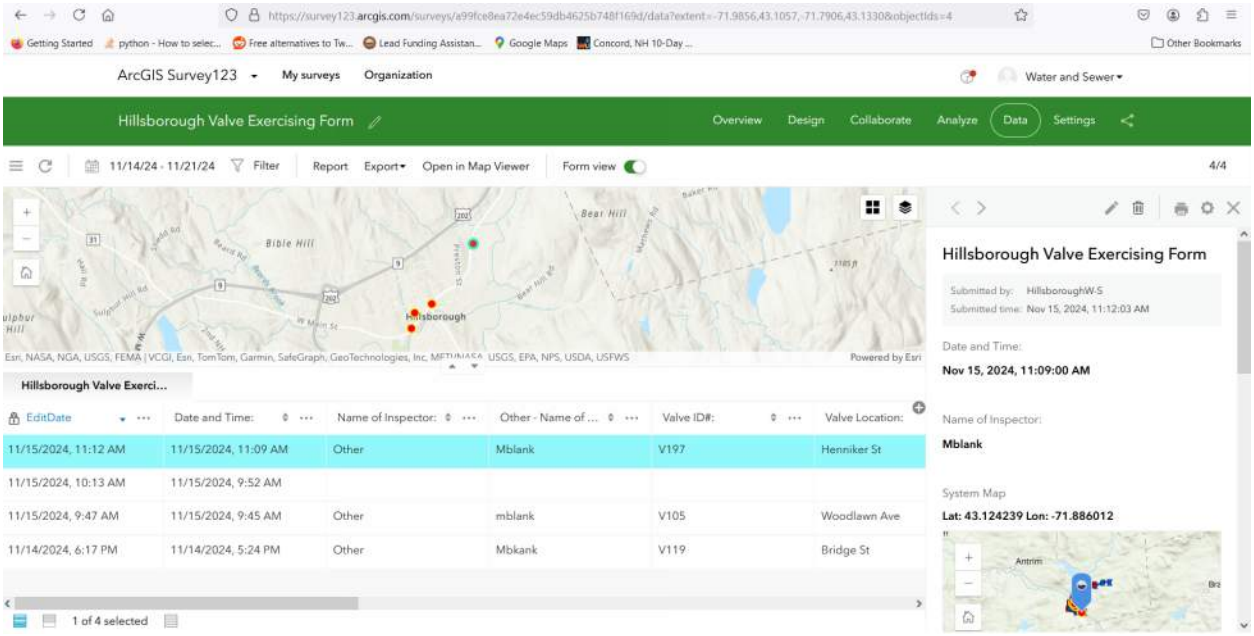
When the survey form is completed, the entry will be stored on a table in the HWSC's AGOL account at survey123.arcgis.com. The data can be edited from there or downloaded in a number of formats, including ArcGIS shapefiles and feature classes, or an Excel spreadsheet.

Survey123 results have also been included in the HWSC's Water system map and can be viewed by users in the field.

The following Survey123 forms have been saved to the HWSC's AGOL account at survey123.arcgis.com.

- Hydrant inspection and flushing form.
- Valve exercise form.

Figure 1-6 View and Edit Data Collected in Survey123



1.2.3. ArcGIS Pro – Inventory File Editing and Financial Planning

While simple edits can be made to the files in AGOL or Field Maps, UE recommends that most editing be done using the desktop software, ArcGIS Pro. ArcGIS Pro has more robust editing capabilities than Field Maps or AGOL. These capabilities can save the user time and eliminate errors.

UE has developed a set of Python tools for the HWSC to use to develop a financial planning spreadsheet using the inventory files. These tools can be run from within ArcGIS Pro. Python has been integrated with ArcGIS software since 2004. The Python tools developed by UE automate repetitive, multi-step tasks related to updating the inventory files and creating the financial planning spreadsheet. These tools have been provided to HWSC and have been saved to the GIS workstation.

Table 1-3 Python Script Tools

Tool Name	Function
000_Check for duplicate Asset ID's	Creates an Excel file containing duplicate asset identifiers, if any.
001_Calculate_Inventory_Fields	Calculates fields within the inventory tables.
004_Update_Replacement_Costs	Updates replacement cost for all assets of the same 'asset type.'
020_Combine inventory files into one table and	Combines all selected inventory files into one geodatabase table. Schedules estimated replacements each year for the first ten years, and each decade for ten decades. These estimates are added as columns to the combined inventory table.
065_Export_to_XLSX_ArcGISPro	Exports the combined inventory table or other selected files to an Excel table in 'xlsx' format. This can also be done using the built in 'Table to Excel' tool. However, the output will be a simple spreadsheet rather than a sortable table.
070_Export_to_XLSX_with_Pivot_ Tables	Exports the combined inventory table to an Excel file, and automatically generates pivot tables and charts. Note that this script includes Python modules which are not

A table detailing each of the fields in the inventory files are provided in **Appendix B**. This table explains the source of the information in each field.

The financial planning spreadsheet is an Excel spreadsheet which includes a combined inventory table of all water system assets, including distribution mains, valves, and components of vertical assets, such as booster pump stations, storage tanks, and treatment facilities. It also includes summary tables and charts, several of which have

been included in this report. Print outs of the summary tables have been provided in **Appendix C**.

1.2.4. Story Maps and Dashboards – Communication and Outreach

As mentioned in **paragraph 1.2.** , the HWSC's ArcGIS subscription also includes access to the Story Map app and the Dashboard app. A Story Map is similar to a PowerPoint presentation. It can be embedded in the HWSC's website and includes interactive elements, such as a map or tables and charts. A Dashboard includes one or more charts or tables, which can be used to summarize information.

The inventory files were used to create Story Maps and dashboards on the HWSC's AGOL account. A 'view' layer was created from the inventory files to provide the public with a simplified and non-editable version of the files in an interactive map. A dashboard, or a set of summary charts and tables was developed as well. The dashboard elements were included in the Story Map.

Screen shots of the Story Map are provided in **Appendix C**.

1.3. Vision Statement, Stakeholder Groups, and Level of Service (LOS) Goals

A Level of Service Workshop was held on September 14, 2023. The HWSC's vision statement was discussed, and stakeholder groups were identified as part of the Level of Service workshop, a set of SMARTER goals were developed. SMARTER goals are defined in **paragraph 1.1.** . See **Appendix E** for the LOS Matrix and Workshop Minutes, and **Section 2** for a more information.

The HWSC provided a revised vision statement in April 2024. The revised vision statement has been incorporated into the LOS Matrix.

1.4. Criticality and Prioritization

To allocate scarce financial and physical resources in an efficient manner, UE recommends a systematic prioritization of assets. This AMP utilizes two parameters to prioritize assets - probability of failure and impact of failure.

Criticality is defined by the probability of failure versus the impact of failure. For example, the probability of failure for an old, cast iron pipe may be high, but its impact of failure on system operation will be low if it affects very few customers or if it is unlikely to cause a health or safety hazard.

Risk score is the probability of failure score multiplied by the impact of failure score. This AMP categorizes assets by their criticality and ranks them by their risk score.

1.4.1. Probability of Failure and Condition Score

The probability of failure is based on numerous factors including age, material, performance, and most importantly, condition. Condition is usually, but not always, correlated with age. Going forward, the HWSC can use the Survey123 forms provided to document the condition of its water system assets.

To initiate the process of prioritizing assets for evaluation, probability of failure was initially surmised based on the age of the asset. Age is a contributing factor in most asset failures; however, it is not always the main factor or the only factor. Therefore, it is important to routinely collect information on asset condition and monitor asset performance and capacity.

Table 1-4 below describes the probability of failure scoring criteria based on the remaining useful life of the asset.

Table 1-4 Probability of Failure Scoring Based on Remaining Useful Life

Probability of Failure Score	Remaining Useful Life
1 – Very Low	>50 years
2 - Low	>20 and <= 50 years
3 - Moderate	>10 and <= 20 years
4 - High	>0 and <= 10 years
5 – Very High	<= 0 years

As more information on the assets is collected, probability of failure scoring will be assigned based on condition, capacity, and performance. Scoring criteria is described in **Table 1-5** below.

Table 1-5 Condition Score

Condition Score	Description
1 – Very Good	Asset is in excellent condition and extremely reliable. No known defects, capacity issues, or recurring maintenance issues.
2 - Good	Asset is in good condition, but sporadic failures are possible. Minor defects or recurring maintenance issues have been noted. There are no known capacity issues.
3 - Moderate	Asset is in fair condition with moderate defects, recurring maintenance issues, or possible capacity issues. More information about the asset is needed. May require more frequent monitoring due to a high impact of failure or recurring operational issues.
4 - Poor	Asset is in poor condition with significant defects or has serious recurring maintenance issues. Capacity and performance issues have been identified. Repair or replacement should be scheduled within one or two years, or as soon as possible.
5 – Very Poor	Asset is likely to fail or has already failed to meet performance requirements. Repair or replacement should be scheduled as soon as possible, preferably within one year.

1.4.2. Impact of Failure

The second parameter to consider in calculating the criticality of an asset is its impact of failure on the system. A failure which could result in an environmental, public health, or safety hazard would have a high impact of failure. On the other hand, a failure which would result in a minor inconvenience to a small number of customers would have a low impact of failure. **Table 1-6** below describes the criteria used in assigning impact of failure scores for each asset.

Table 1-6 Impact of Failure Scoring

Impact of Failure Score	Description	Repair Method and Cost
1 – Very Low Impact of Failure	Affects a small number of customers, little to no risk to health and safety, and little to no risk of environmental damage.	Repair not especially difficult or costly.
2 – Low Impact of Failure	Affects a moderate number of customers, little to no risk to health and safety, and little to no risk of environmental damage.	Repair not especially difficult or costly.
3 – Moderate Impact of Failure	Potential to impact a moderate to large number of customers or a single important customer. Unlikely to affect public health and safety or cause environmental damage.	Moderately difficult and expensive to repair.
4 – High Impact of Failure	Located in a congested area or on a major roadway. Potential to impact a large number of customers. Possible effect on public health and safety and environmental damage.	Difficult and expensive to repair.
5 – Very High Impact of Failure	Potential impact on a large number of customers or an important customer. Probable effect on public health and safety and high potential for environmental damage.	Extremely difficult and expensive to repair.

1.4.3. Criticality and Risk Score

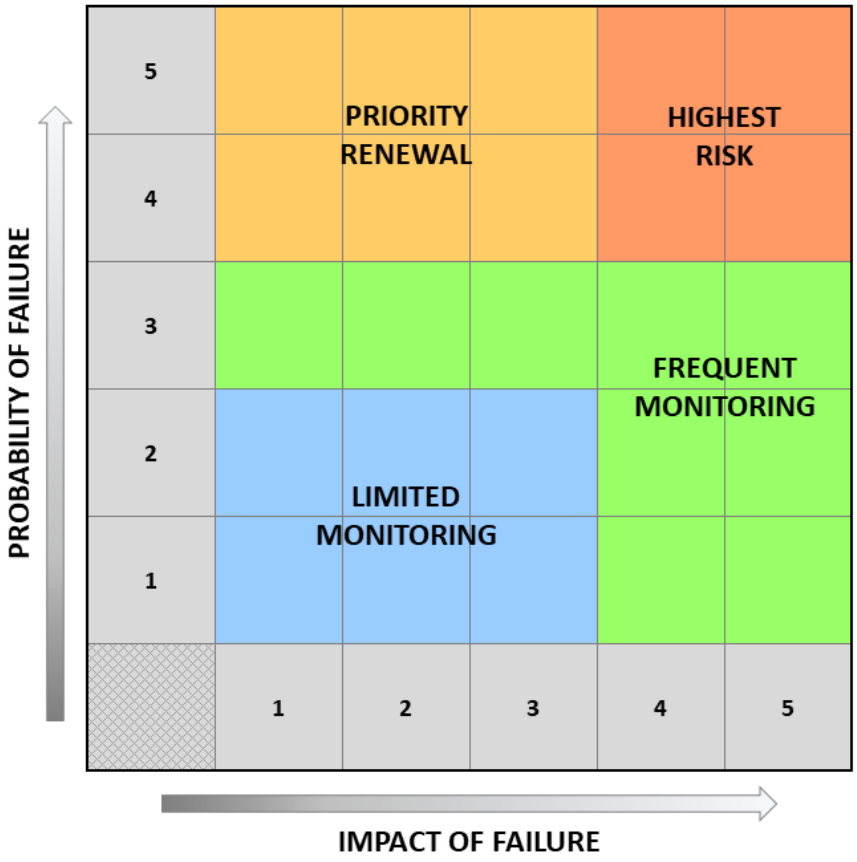
As mentioned in **paragraph 1.4.** , the criticality of an asset is defined as its probability of failure versus its impact of failure. Multiplying the probability of failure by the impact of failure results in a value known as the “risk score.” Criticality is a way to categorize the assets, and risk score is way to rank the assets.

For example, an asset with a probability of failure score of 3 and an impact of failure score of 2 results in a risk score of 6 as 3 x 2 =6, and the criticality rating would be “frequent monitoring.” However, an asset with an impact of failure score of 3 and probability of failure score of 2 would have the same risk score of 6, but the criticality rating would be “limited monitoring.” A brief explanation of the criticality categories is provided **Table 1-7** and the critically matrix is shown in **Figure 1-7**.

Table 1-7 Criticality Descriptions

Criticality Rating	General Description
Highest Risk	High probability of failure and high impact of failure.
Priority Renewal	High probability of failure and low to moderate impact of failure.
Frequent Monitoring	Moderate probability of failure and low to high impact of failure.
Limited Monitoring	Low probability of failure and low to moderate impact of failure.

Figure 1-7 Criticality Matrix



2. Vision Statement, Stakeholder Identification, Level of Service Goals

A Level of Service Workshop was held on September 14, 2023. At that workshop, specific goals for the water system were discussed, stakeholders were identified, and a vision statement was developed.

2.1. Vision Statement

Subsequent to the LOS workshop, the HWSC expanded upon its vision statement for its website. The revised vision statement is provided below.

> Our mission is to provide an uninterrupted, high-quality supply of water to our customers, to collect and treat wastewater, and return clean water to the environment. While fulfilling our mission we strive to:
>
> - Conserve and protect our reliable, high-quality water supply for present and future generations.
> - Meet or surpass public health standards, environmental standards, and support fire protection.
> - Operate, maintain, improve, and manage our water and wastewater infrastructure in a cost-efficient manner.
> - Manage finances to support Commission needs and maintain reasonable water and wastewater rates.
> - Maintain a safe and professional workforce.
> - Understand and respond to customers' expectations for service.

2.2. Stakeholders

The following stakeholders were identified in regard to the HWSC's water system.

- Water System
- Customers
- OSRAM (largest customer)
- Commissioners and staff

2.3. Level of Service Goals

The HWSC's LOS goals are detailed in the LOS Matrix provided in **Appendix D**.

2.4. Recommendations and Next Steps

The HWSC should update the LOS Matrix spreadsheet once per year or as needed. The spreadsheet also includes a tab where future goals can be listed and added to the LOS Matrix later if appropriate.

3. Asset Inventory, Condition Assessment, and Asset Prioritization

3.1. Water System Background

The HWSC water system serves 904 customers within the Town of Hillsborough. The existing source of supply is the Loon Pond reservoir. Water flows by gravity from the reservoir to the slow sand filtration plant, which includes three filter bays. HWSC added filter media in 2023, the first time since the plant was built in 1995.

The disinfection system was upgraded in 2014 to address high disinfection by-products (DBPs). The original sodium hypochlorite system (NaOCl) was replaced with chloramines for primary disinfection and UV for secondary disinfection. Potassium hydroxide (KOH) is used for pH control and zinc orthophosphate is used for corrosion control.

The treated water flows to a clearwell where is it pumped to the Bible Hill Reservoir by a high demand pump. The Bible Hill Reservoir is a one-million-gallon reinforced concrete tank built in the 1990's. Piping improvements were completed in 1999, a mixer was added in 2012, and a sampling building was completed in 2023. At that time, sampling equipment was relocated from the vault to the building.

The distribution system was first installed in the late 1800's. It has been expanded and upgraded since then. A map of the water distribution mains by age is provided in **Appendix G**. HWSC is currently focusing on water distribution system improvements and plans to coordinate water and sewer projects.

Horizontal water system asset quantities are summarized **Table 3-1** below.

Table 3-1 Summary of Horizontal Water Assets by Distribution System

Asset Type	Unit	Quantity
Blowoffs	EA	2
Gate Valves - Hydrant	EA	95
Gate Valves - Water Main	EA	148
Hydrants	EA	122
Hydrant Services	LF	6,369
Service Lines (domestic)	EA	874
Water Mains	LF	131,499

3.2. Description of Estimated Useful Lives

The estimated useful life for each asset type is summarized in **Table 3-2** below.

Table 3-2 Estimated Useful Life for Horizontal Assets

Asset Type	Material	Useful Life	Sum of Quantity
Blowoff	Ductile Iron (DI)	50	2
Gate Valve - Hydrant	Ductile Iron (DI)	50	93
	Cast Iron (CI)	50	2
Gate Valve - Water Main	Ductile Iron (DI)	50	148
Hydrant	Cast Iron (CI)	50	122
Hydrant Service	Ductile Iron (DI)	85	713
	Unknown	75	5,656
Water Main	Cast Iron (CI)	110	81,226
	Ductile Iron (DI)	85	47,078
	Galvanized	50	391
	HDPE	75	681
	Unknown	75	2,123

The useful life of select vertical assets are provided in **Table 2-3** below. A full list is provided in **Appendix F-5**.

Table 3-3 Estimated Useful Life for Select Vertical Assets

Process Number	Process	Asset Type	Useful Life
2.00	Water Treatment - Slow Sand Filtration	Flow Meter	10
		Level Sensor Equipment	20
		Pipe gallery	50
		Raw Water Distribution Header	50
		Sand filter beds and pipe gallery structure	50
		Slow sand filter media	25
		Underdrain	50
		Underdrain Header	50
2.05	Water Treatment - Disinfection	Chloramine Feed Pump	5
		Chloramine Piping & Tubing	5
		UV Control Panel	30
		UV Disinfection Unit	30
		UV Power Distribution Unit	30
3.03	Water Storage	Buried Concrete Tank (1 MG)	50

3.3. Prioritization of Assets

3.3.1. Impact of Failure

The impact of failure score was assigned to each vertical asset based on the importance of its role in the overall system, whether redundancy has been built into the system, and the cost or difficulty of an emergency repair, among other factors.

Table 3-4 Impact of Failure Summary – Vertical Assets

Impact of Failure	Asset Type
5 – Very High	Safety-related components, such as eye washes, platforms, and railings.
4 - High	Control panels and ventilation equipment. Items with no redundancy.
3 - Moderate	Critical components with redundancy such as well pumps.
2 - Low	Structural components with long useful lives. Stand-by generator and related components. Components which are accessible and easily repaired.
1 – Very Low	Components which are peripheral to the functioning of the system, or are very long lived and easily repaired, such as an access drive.

The impact of failure score for horizontal assets was assigned based on the number of people who might be affected by a failure, the potential to negatively affect public health and safety, the potential to impact environmental health, the potential to cause the system to be out of regulatory compliance, or the expense and difficulty of a repair. A map of water distribution mains by impact of failure is provided in **Appendix G-2**.

3.3.2. Probability of Failure and Condition Assessment

Initially, the probability of failure score was calculated for each asset based on its estimated remaining useful life as discussed in **paragraph 1.4.2.** If the system operators assign a condition score of 4 or 5 to an asset, meaning that the asset is in poor or very poor condition, the probability of failure score will be populated with the condition score. The 'replacement year' of the asset will be set to the current year if the condition score is 5 (very poor) or the following year if the condition score is 4 (poor). A map of water distribution mains by probability of failure is provided in **Appendix G-3**.

3.3.3. Criticality and Risk Score

As discussed in **section 1.4.3.** , criticality and risk score are determined by the impact of failure score and the probability of failure score. The highest risk assets, along with their risk scores, are listed in **Table 3-5** and **Table 3-6**. The HWSC's assets are shown in the

scatter plot in Figure 3-1 following the tables. The points have been slightly modified so that they do not overlap, making the chart more readable. A map of water distribution mains by criticality is provided in **Appendix E-4**.

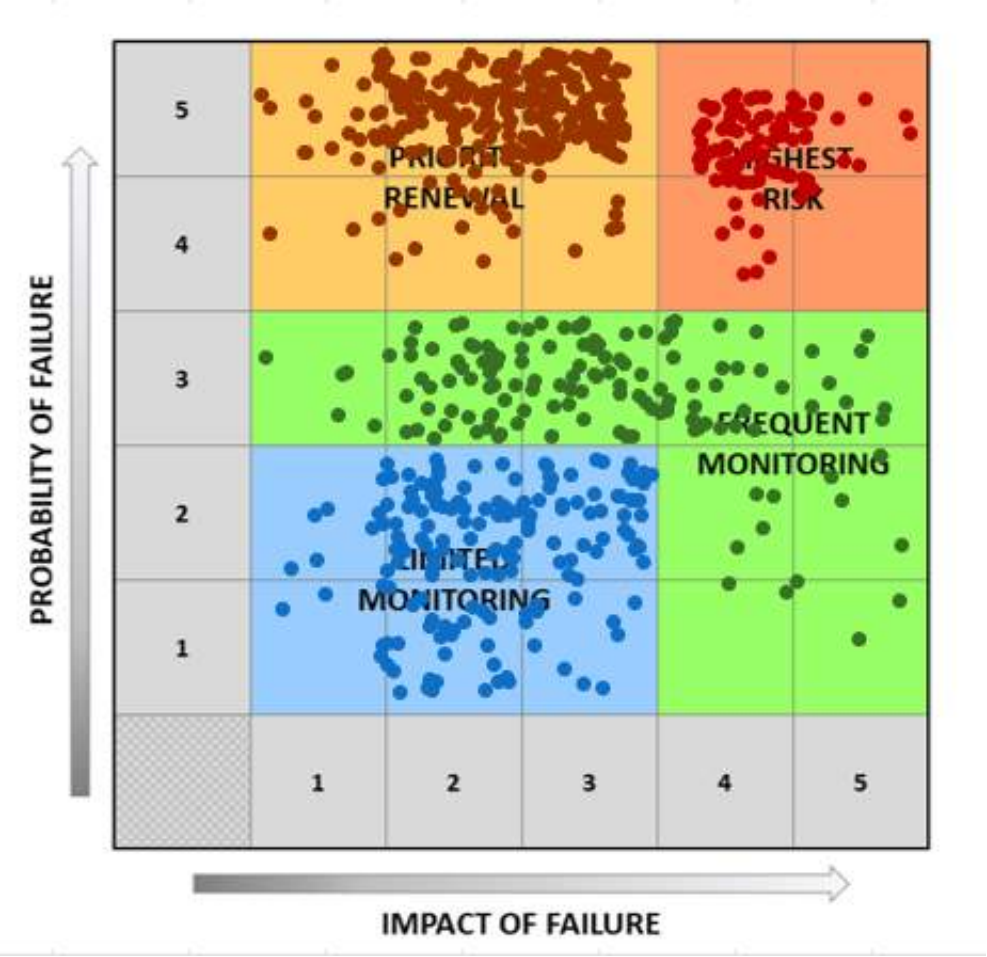
Table 3-5 Summary of Highest Risk Vertical Assets

Risk Score	Asset Description	Year Installed	Useful Life
20	Chloramine Storage and Feed Equipment	2015	5
20	Level Sensing and Control - Floats	1995	20
20	Potassium Hydroxide Storage and Feed Equipment	1995	15
20	Zinc Orthophosphate Storage and Feed Equipment	1995	5
16	Eyewash/Shower	1995	30

Table 3-6 Summary of Highest Risk Horizontal Assets

Location	Water Main (lf)	Gate Valve - Water Main (ea)	Hydrant (ea)	Gate Valve – Hydrant (ea)
Bible Hill Rd	2,327	5		
Butler St			3	3
Central St			2	2
Church St			4	4
Gay Ave			1	1
Henniker St			4	2
Hoyt Ln			1	1
Myrtle St			2	1
Newman St			2	2
Park St			1	1
Pleasant St			1	1
School St			1	1
Walnut St			1	1
West Main St		2	2	2
Woodlawn Ave			3	2

Figure 3-1 Assets by Impact of Failure and Probability of Failure



3.4. Recommendations and Next Steps

HWSC is encouraged to update attributes and populate condition scores in the inventory files based on their field evaluations and asset performance. The current inventory should be considered as a starting point.

4. Financial Overview

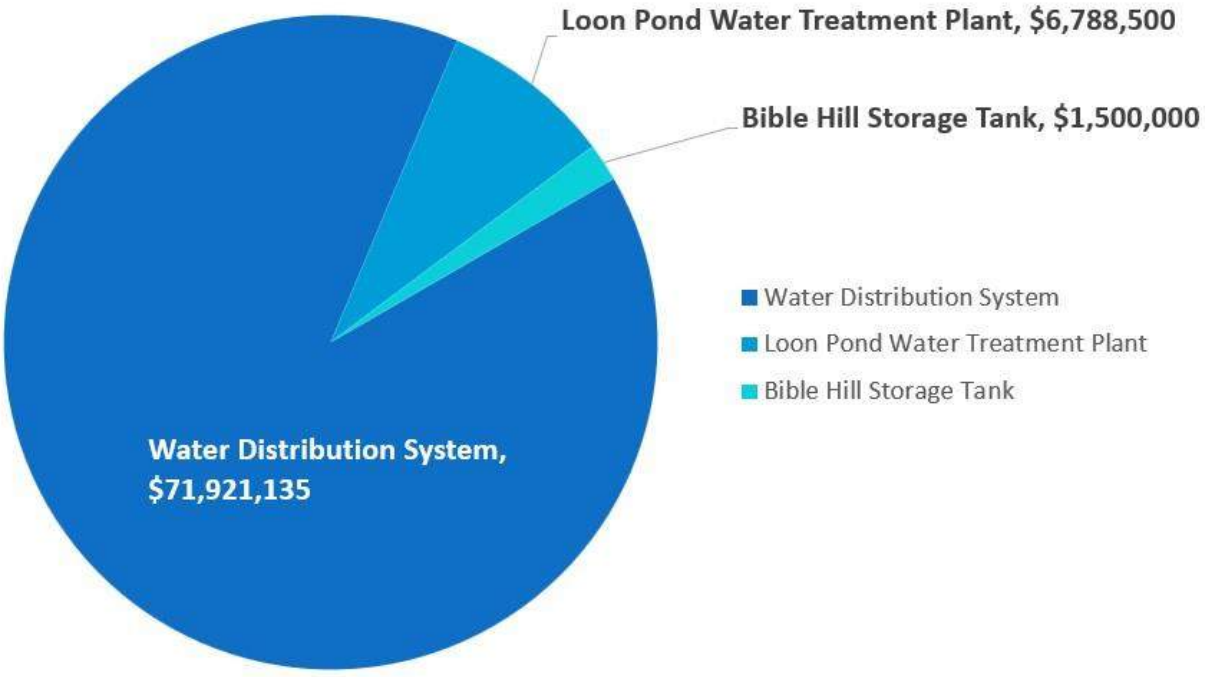
4.1. Current Replacement Value of Assets

It is useful for the HWSC to know the current replacement value of its water assets. This can be used to communicate the value and importance of the water system to the public. The value of fully depreciated assets will not be reflected on the Department's balance sheet.

Table 4-1 Estimated Replacement Cost of Water System Assets (2024 Dollars)

Facility Name or Pressure Zone	Total
Water Distribution System	$71,921,135
Loon Pond Water Treatment Plant	$6,788,500
Bible Hill Storage Tank	$1,500,000
Grand Total	**$80,209,635**

Figure 4-1 Estimated Replacement Cost of Water Assets (2024 dollars)



4.2. Rate Model

HWSC is proactive when it comes to setting rates. Rates are reviewed frequently, and funds are set aside for future needs. Communities sometimes keep rates artificially low by funding only basic operating costs. There are risks associated with this approach.

- If maintenance is deferred, the water system may face an emergency repair that it cannot fund with its own resources. In that case, money for the repair often comes out of the Town's general fund. Repairs or replacements done on an emergency basis are typically 5 to 10 times more expensive than planned repairs or replacements.
- In addition, the Commission may also miss out on grant opportunities for capital projects if it is not positioned to take advantage of them when they are available.
- User fees may require a large, sudden increase to fund system needs. It may be difficult for the water customers to absorb the large increase. Affordability includes anticipating rising costs due to inflation and other factors, setting aside money for emergency repairs, and positioning the community to take advantage of principle forgiveness and grants.

UE notes that the Commission has already developed emergency and capital reserve accounts to plan for future expenditures and funds those accounts annually. Accrued funds in these accounts are used to pay for capital improvements projects and emergency repairs. UE completed a water rate model for the Commission as part of the asset management plan to assist the Commission in continuing to plan for future water system needs. The model inputs include the following information from the Commission:

- Account data
- Water consumption
- Current Rates
- Prior Revenue and current year budget
- Existing debt schedule
- Upcoming capital projects
- Current reserves

This data, along with asset management needs identified in this study, was used to estimate needed rates. The model includes four rate scenarios as follows:

- Base (Rate Setting Sheet 2A): This scenario matches existing revenues to existing expenditures.
- Base + Asset Management (Rate Setting Sheet 2B1): This scenario matches existing revenues to existing expenditures, while adding an additional $303k line item for asset management to the existing budget. The asset management value is based on 50% of the next ten-year replacement cost, minus the cost of the Park &

Whittemore project, divided by ten for an annual cost, and finally subtracting out $137k annually from capital reserve funding already performed by the Commission.

- Base + Asset Management as a $1.52M Loan (Rate Setting Sheet 2B2): This scenario matches existing revenues to existing expenditures, while adding in asset management as a 20-year $1.52M loan (this assumes the $303k calculated above x 5) with a 3.5% interest rate. This is annual payment of $90,432.

- Base + Asset Management + Lead Service Line Inventory (LSLI) Projects: This scenario is intended to match revenues to expenditures, add in $303k annually for asset management, and finally add any additional projects that may result from the Lead Service Line Inventory project currently underway. As this work is still ongoing, not projects have yet been identified, so this scenario will be kept as a placeholder.

These scenarios result in the proposed rate increases and annual bills for an average residential user at 150 gpd and the current rate of $14.17 per 1000 gals as outlined in Table 3-2:

Table 4-2 Summary of Water Rate Model Scenarios

Scenario	20241	2025	2026	2027	2028	2029
Base	35% $776	0% $776	4% $807	4% $839	4% $873	4% $908
Base + Asset Management[2]	35% $776	35% $1,047	4% $1,089	2% $1,111	2% $1,133	2% $1,156
Base + Asset Management Loan[2]	35% $776	0% $776	4% $807	14% $920	4% $957	4% $995
Base + Asset Management + LSLI[2]	35% $776	TBD	TBD	TBD	TBD	TBD

1. Rate increase became effective July 2024.
2. Scenarios show examples of rate impacts when using different methods (i.e., annual savings vs. one time loan) and no principal forgiveness. The scenarios should be refined as the Commission plans for more asset management projects and the percent of principal forgiveness in determined.

The rate model indicates that a 35% rate increase is needed to match existing revenues to existing expenditures. This increase will not fully match revenues to expenditures until 2025 since it only became effective for the third billing cycle of 2024. A 4% annual increase is applied thereafter to keep up with inflation. If the Commission were to fund asset management at $303k annually, this would require another 35% rate increase in 2025 (see scenario 2). This would have a significant impact on rates, so UE outlined an alternative funding option utilizing a $1.52M loan (see scenario 3). This results in a reduced impact to rates. It is noted that no principal forgiveness is assumed for the loan. Based on this year's SRF affordability index, Hillsborough is currently at about 1.5, which would qualify for some principal forgiveness. NHDES is also currently offering 71% principal forgiveness for lead service line replacement projects.

5. Lead Service Line Inventory

A Lead Service Line Inventory (LSLI) was prepared by Hazen and Sawyer for the Hillsborough water system and submitted to NHDES in October 2024 to comply with the EPA's Lead and Copper Rule Revisions (LCRR), and Lead and Copper Rule Improvements (LCRI). The intent of the LSLI effort is to identify and replace any lead or galvanized service lines that have the potential to be a significant contributor to elevated lead levels in drinking water, which is a health risk. Per the LCRI, every Public Water System is required to comply with the following:

- Submit an initial Lead Service Line Inventory to NHDES by: October 16, 2024
- Provide Public Information to customers by: November 15, 2024
- Update Lead Sampling Plan by: October 1, 2027
- Develop a Lead Service Line Replacement Plan (if necessary) by: October 1, 2027
- Summary Results of Lead Service Line Inventory

HWSC staff is currently reviewing the inventory and comparing it to backup documentation to ensure that all available information has been captured and that the inventory is as complete and accurate as possible.

The results of the initial survey are shown in the figures below.

Figure 5-1 System Side Service Line Material Classification

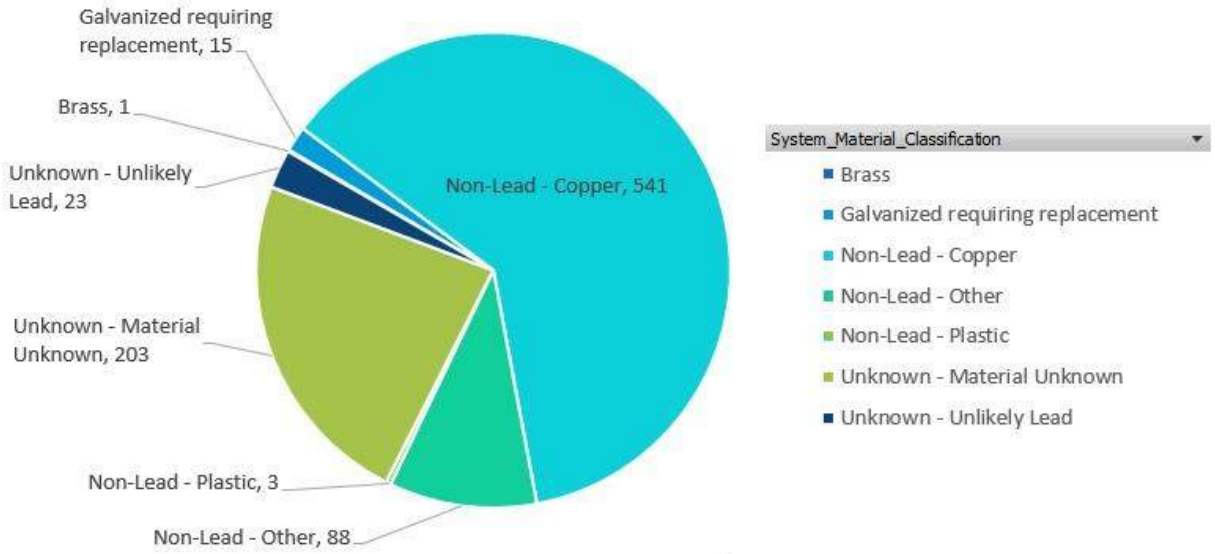


Figure 5-2 Customer Side Service Line Material Classification

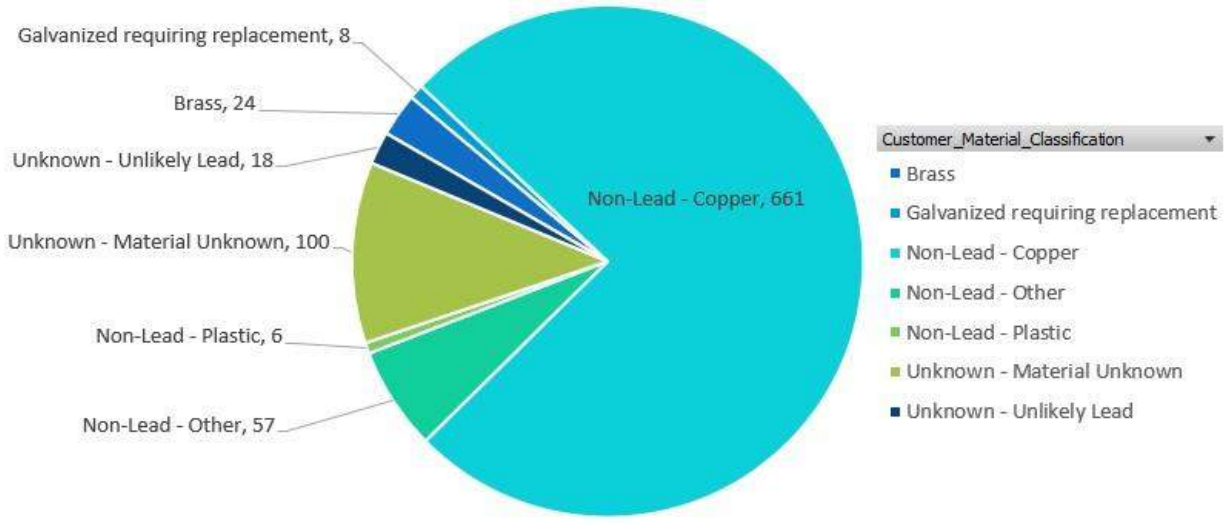
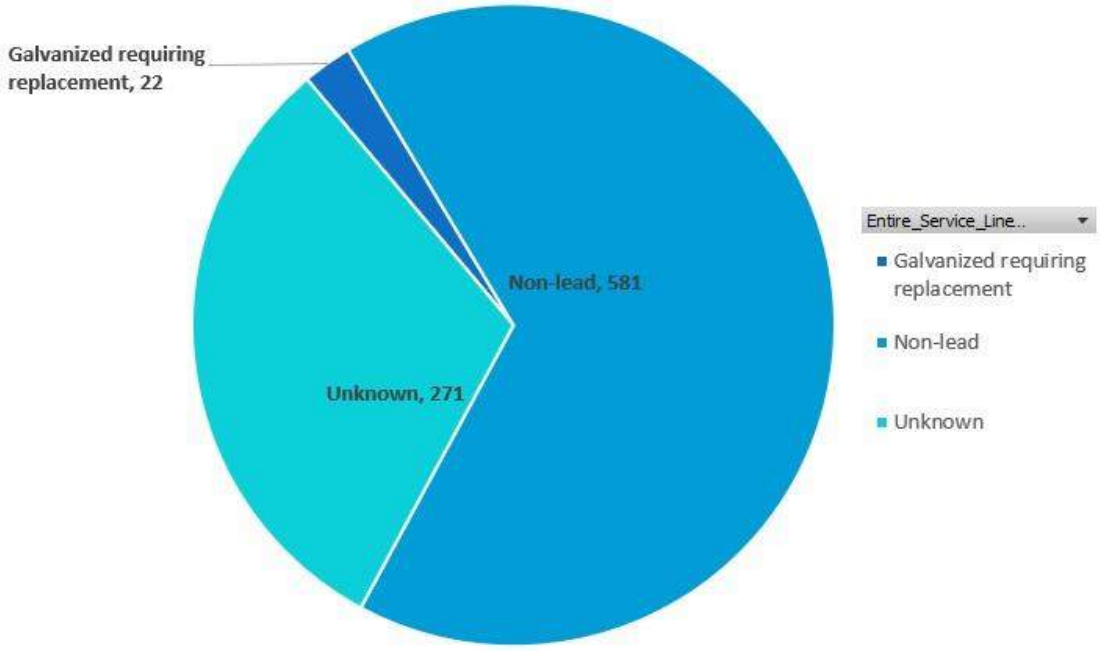


Figure 5-3 Service Line Material Classifications - Entire Combined



6. Implementation Plan

6.1. Implementation Plan Description

As discussed, in **paragraph 1.2.** on **page 6**, the AMP consists of the following components.

- Software and equipment.
  - Workstation to run ArcGIS Pro Desktop software.
  - An ArcGIS Online (AGOL) account where inventory and related files are stored and mapped.
  - Tablets to run apps to be used by field personnel.
    - Field Maps to view maps stored on AGOL.
    - Survey123 to document inspection and maintenance information.
  - Story Maps and Dashboard apps.
    - Used to create and share information with stakeholders.
  - ArcGIS Pro Desktop software.
    - Run Python scripts to recalculate fields in inventory files and export results to the financial planning spreadsheet.
    - Make extensive edits to inventory files.
- LOS Matrix in Excel format.

6.2. Standard Operating Procedures (SOPs)

A print-out of the SOPs has been provided in **Appendix A**. This document has also been provided as a bookmarked pdf file so that HWSC personnel may more easily find the instructions for a particular task.

6.3. Staff Positions and Responsibilities for Implementation and use of AMP

Duties are split between the Administrator and the Water System Operator. The Administrator is responsible for updating and refining the Story Map and Dashboards, as well as updating the inventory files in ArcGIS Pro and running the tools to create the financial planning spreadsheet. The Water System Operator will be responsible for collecting information and entering it into Survey123 forms, checking information collected by other staff, and assisting the Administrator with inventory updates.

6.3.1. Training Completed During AMP Development

UE conducted three staff trainings as part of this asset management program. Each of the trainings is described below.

1. Training Session 1 – Survey123 forms data collection and retrieval.

2. Training Session 2 – ArcGIS Pro editing inventory files and running tools to create financial planning spreadsheet.
3. Training Session 3 – Story Maps and Dashboards. A Story Map about how to make a Story Map may be accessed at this link: https://Story Maps.arcgis.com/stories/fc8b2f5f80624505be41493f6c8e580a

6.3.2. Additional Training Resources

There are courses offered by the University of New Hampshire's Geospatial Technologies Training Center in all aspects of ArcGIS software used in the AMP. A list of those training courses thought to be the most helpful is provided below:

- Introduction to ArcGIS Pro - https://extension.unh.edu/IntroArcGISPro
- ArcGIS Online Backstage Pass - https://extension.unh.edu/resource/arcgis-online-backstage-pass-online-workshop
- Level Up Your ArcGIS Story Maps - https://extension.unh.edu/resource/level-your-arcgis-Story Maps-online-workshop
- ArcGIS Dashboards Tips and Tricks - https://extension.unh.edu/resource/arcgis-dashboards-tips-tricks-online-workshop

6.4. Recommendations and Next Steps

At present, the HWSC has only one Basic ArcGIS license. As they continue to develop the program, it is recommended that they purchase additional Field Worker licenses to separate the field data distribution function from the administrative function.

The HWSC is also encouraged to develop its own Survey123 forms.

6.5. Communication Plan Description

The primary method of communication will be Story Maps. Story Maps can be created in the Story Map app, which is accessible through AGOL. A Story Maps can be thought of as a PowerPoint presentation, but rather than separate slides it is one continuous online document. Dashboards and interactive maps can also be included in the Story Map.

The information used to develop the dashboards and interactive map comes from a non-editable version of the inventory files. On AGOL, the inventory files are hosted feature layers. Non-editable feature views were created from the feature layers and used to create the dashboards and interactive map in the Story Map.

The Story Map can be shared with the public by selecting the 'share with everyone' setting and embedding it in the Hillsborough Water and Sewer Commission website.

For those customers who prefer paper media over digital, a flyer can be created using the tables and charts in the financial planning spreadsheet.

6.6. Recommended Communication Method for Stakeholders

The Story Map is the recommended communication method for stakeholders. The dashboards created for the Story Map can also be used in brochures or flyers, which can be included in customer mailings.

6.7. Proposed Frequency for Communication

The Story Map should be updated yearly at a minimum by office administration.

6.8. Example Communication Format for Stakeholders

Screenshots of the Story Map are provided in **Appendix E**.

6.9. Recommendations and Next Steps

A feature layer of inspection and maintenance activities will be populated as staff uses the Survey123 forms. A non-editable feature view can be created from the feature layer and can be added to Story Map, if desired, to share information about what system operators have accomplished throughout the year.

7. Conclusions and Recommendations

7.1. Asset Management Program

This Water AMP has been funded by a $75,000 ARPA grant provided by NHDES. The HWSC purchased a Basic ArcGIS Pro subscription to help manage its water system assets. The subscription includes ArcGIS Pro desktop software, which can be used to update and revise the inventory files and generate the financial planning spreadsheet.

It also includes an AGOL account where maps and inventory files are stored, and access to apps such as Field Maps, Survey123, Story Maps, and Dashboards. Field Maps allows users in the field to view the system maps on their devices. Survey123 allows users to collect and submit inspection and maintenance information about the system. Story Maps and Dashboards provide a way to summarize and share information about the system with stakeholders.

7.2. Level of Service

A workshop was held on September 14, 2023, to develop a vision statement and formulate goals for the Water and stormwater systems with input from stakeholders.

Minutes from the LOS Workshop as well as a LOS Matrix have been provided in **Appendix F**.

7.3. Asset Inventory and Condition Assessment

The slow sand filter plant and the Bible Hill Reservoir are fairly new, and replacements and upgrades have been completed as needed. The HWSC plans to turn its attention to improving its horizontal water distribution system assets. These assets include water service lines which were inventoried by Hazen and Sawyer. Staff is currently reviewing the inventory and making corrections as needed.

7.4. Financial Overview

A rate model was completed as part of this AMP. HWSC increased rates in accordance with the findings of the model in July 2024.

7.5. Implementation Plan

The operational components of the AMP include a Basic ArcGIS Pro license, an AGOL account with access to the Survey123 app and the Field Maps app. Python script tools have been provided to streamline inventory file updates and produce a financial planning spreadsheet. SOPs for the AMP are provided in **Appendix A**.

7.6. Communication Plan

The HWSC's Basic ArcGIS Pro license also includes access to the Story Map app and the Dashboard app. A Story Map can be compared to a PowerPoint presentation. However, in addition to text and images it can also include interactive maps. The Dashboard app can be used to create charts and tables to summarize data. Dashboards can be embedded in the Story Map.

The HWSC identified stakeholders during the LOS Workshop on September 14, 2023.

APPENDIX A

Standard Operating Procedures

Underwood Engineers

How to Use Your Asset Management Program

November 22, 2024

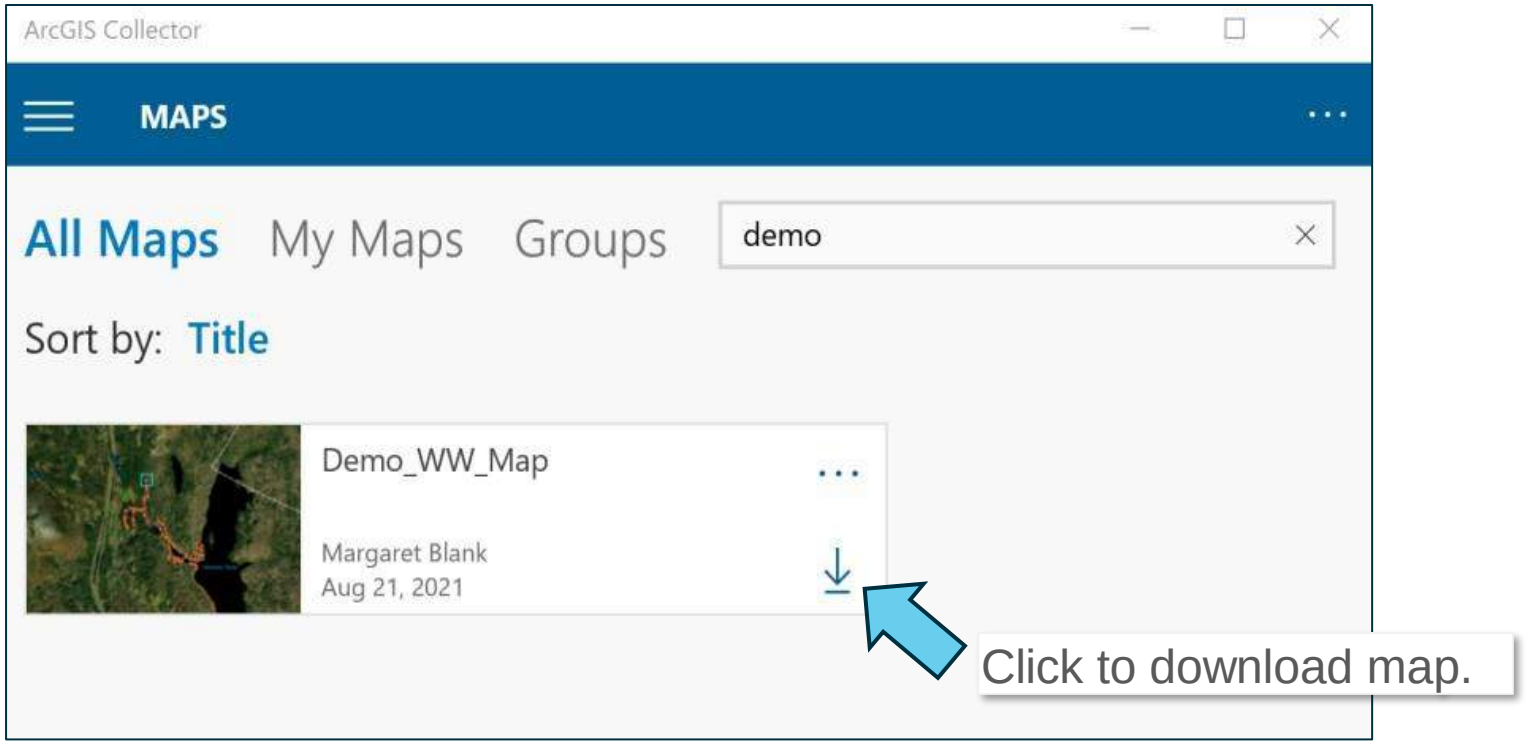
Section 01

ArcGIS Field Apps

ArcGIS Field Apps

ArcGIS Field Maps:

- Download to device for free.
- Login.
- Download map to device.

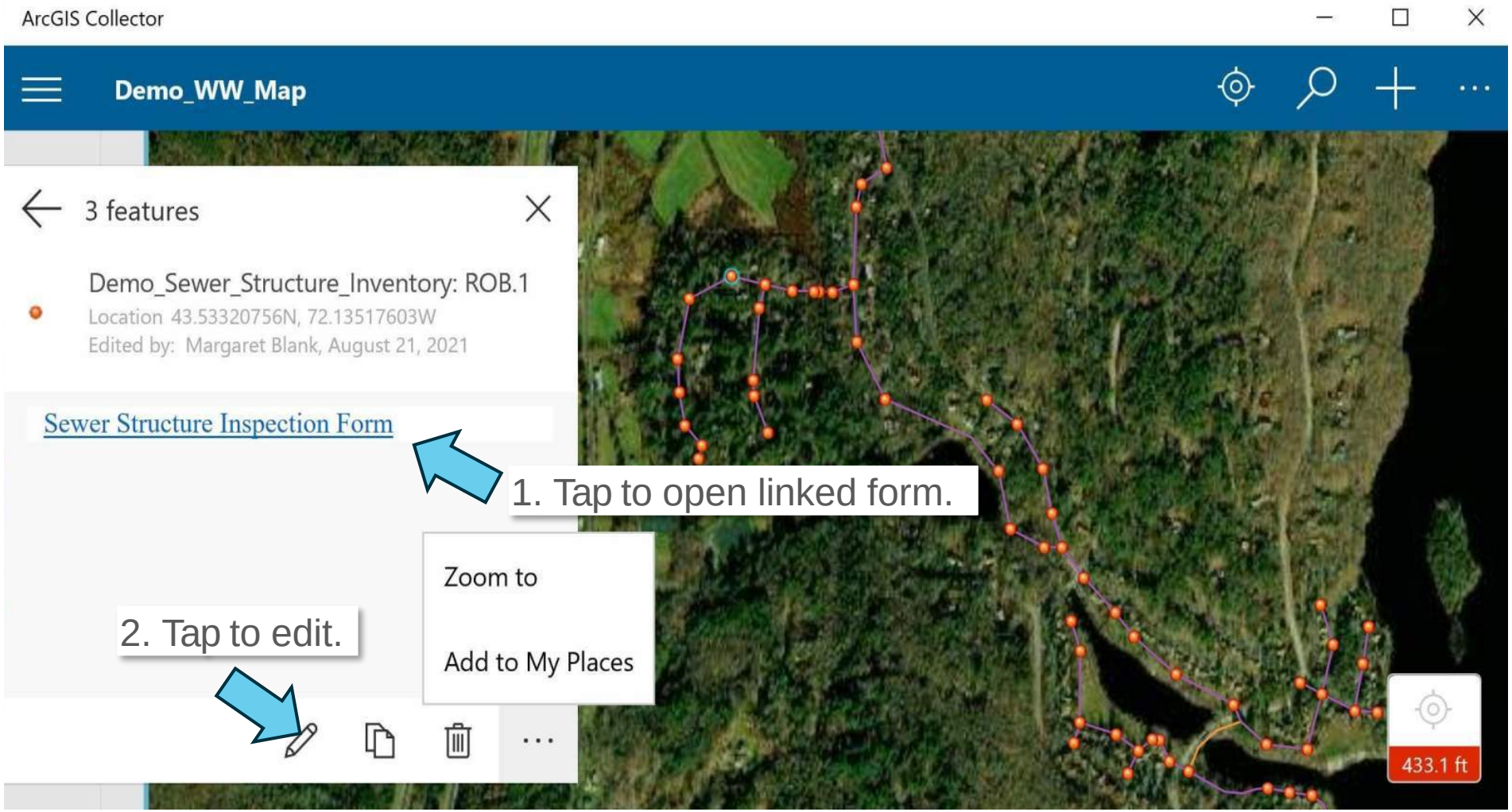


ArcGIS Field Apps

ArcGIS Field Maps:

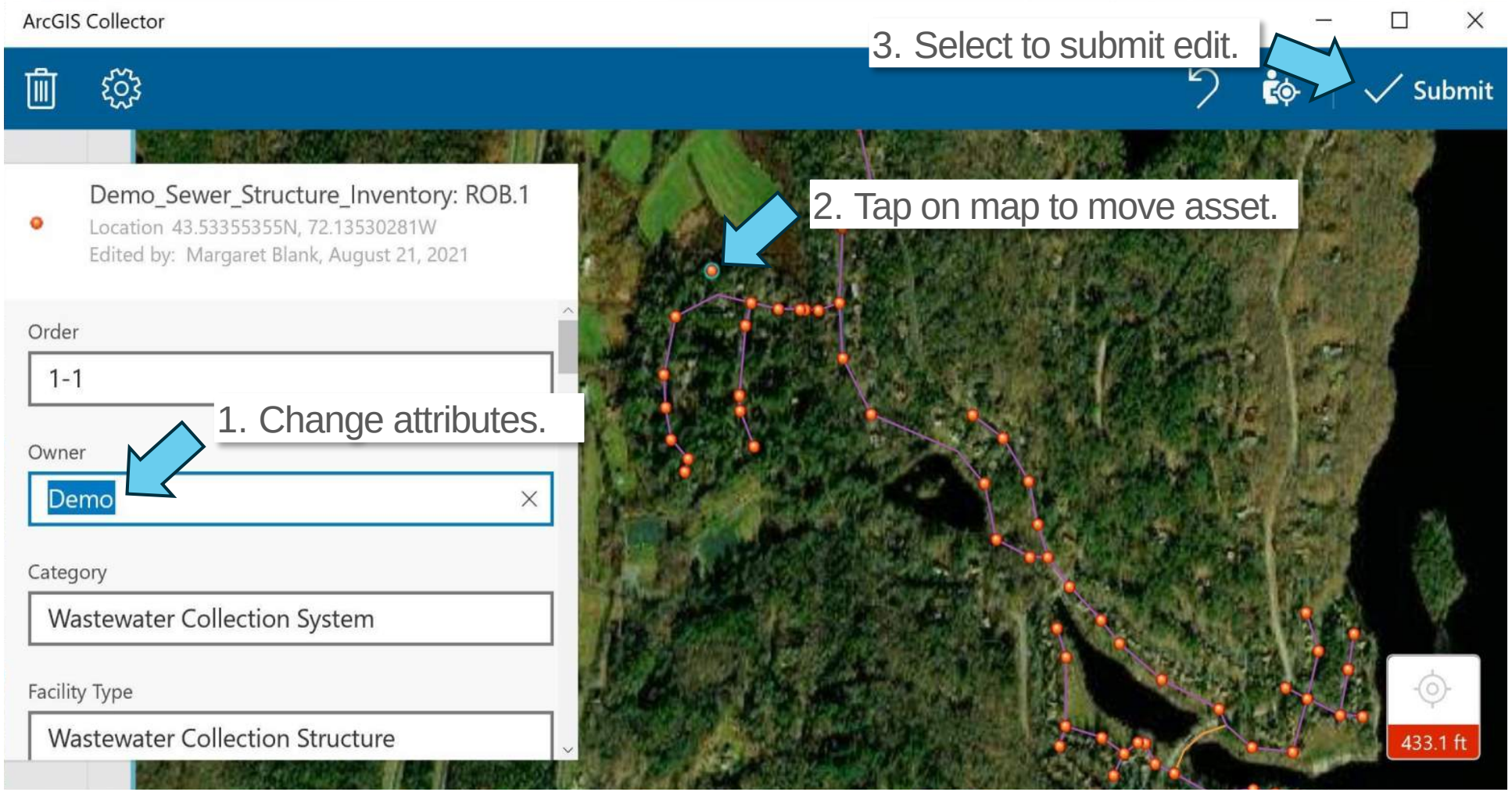
ArcGIS Field Apps

ArcGIS Field Maps:



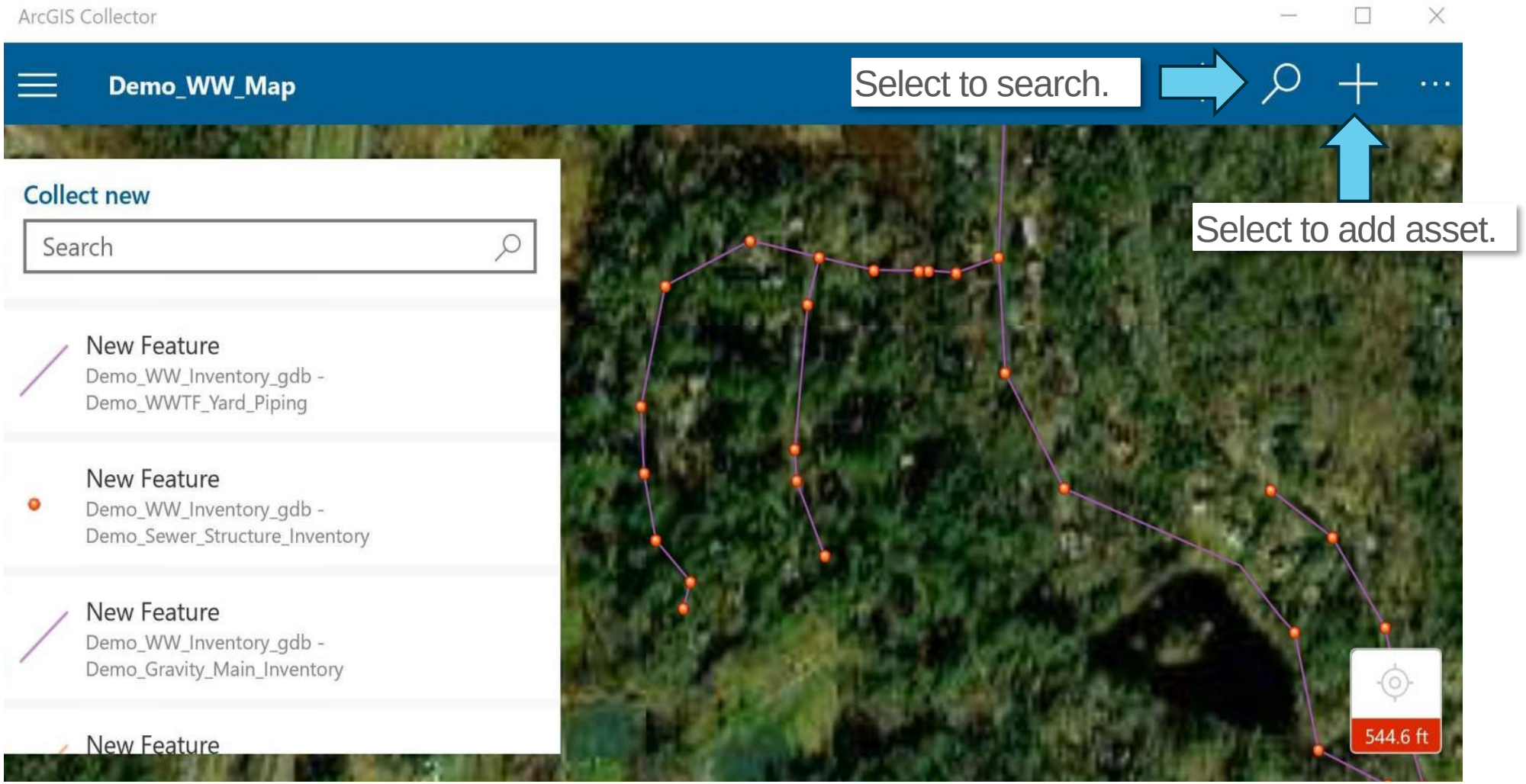
ArcGIS Field Apps

ArcGIS Field Maps:



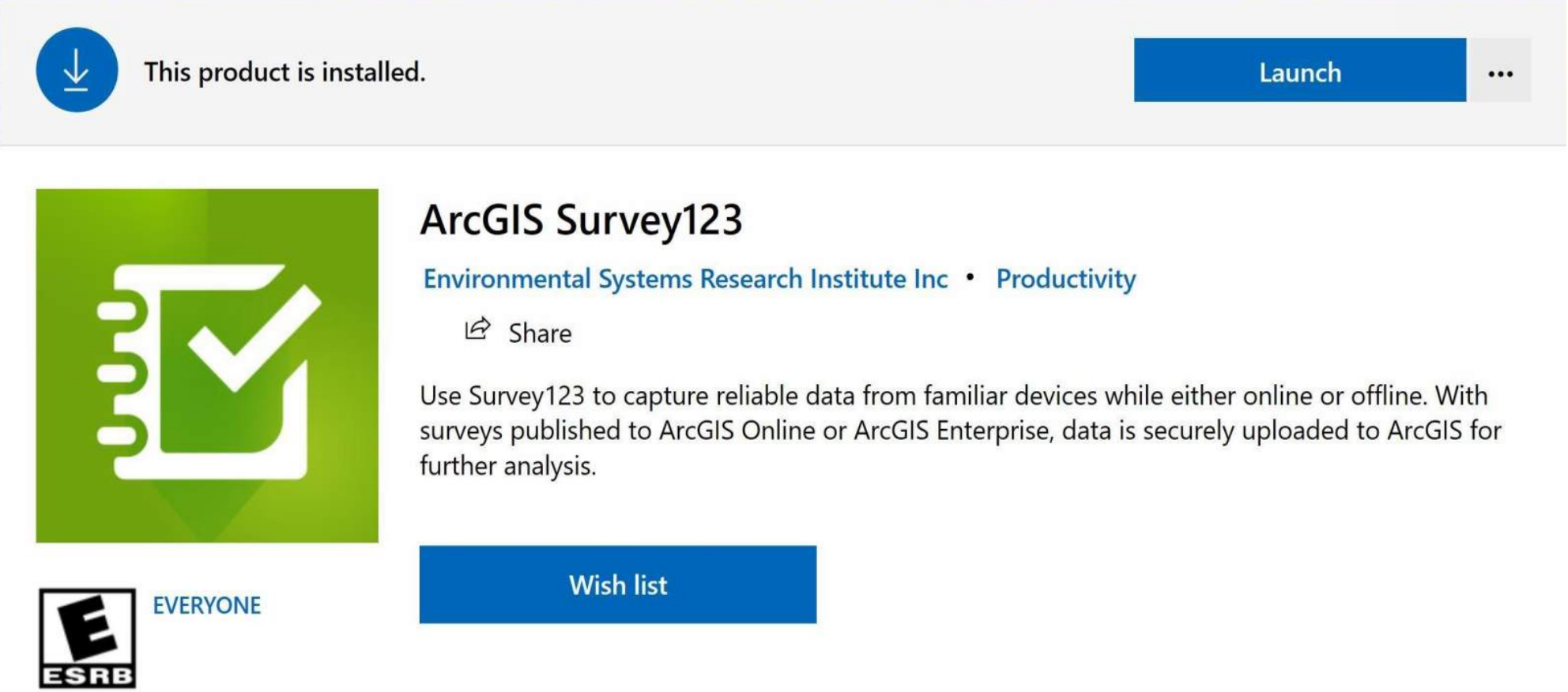
ArcGIS Field Apps

ArcGIS Field Maps:



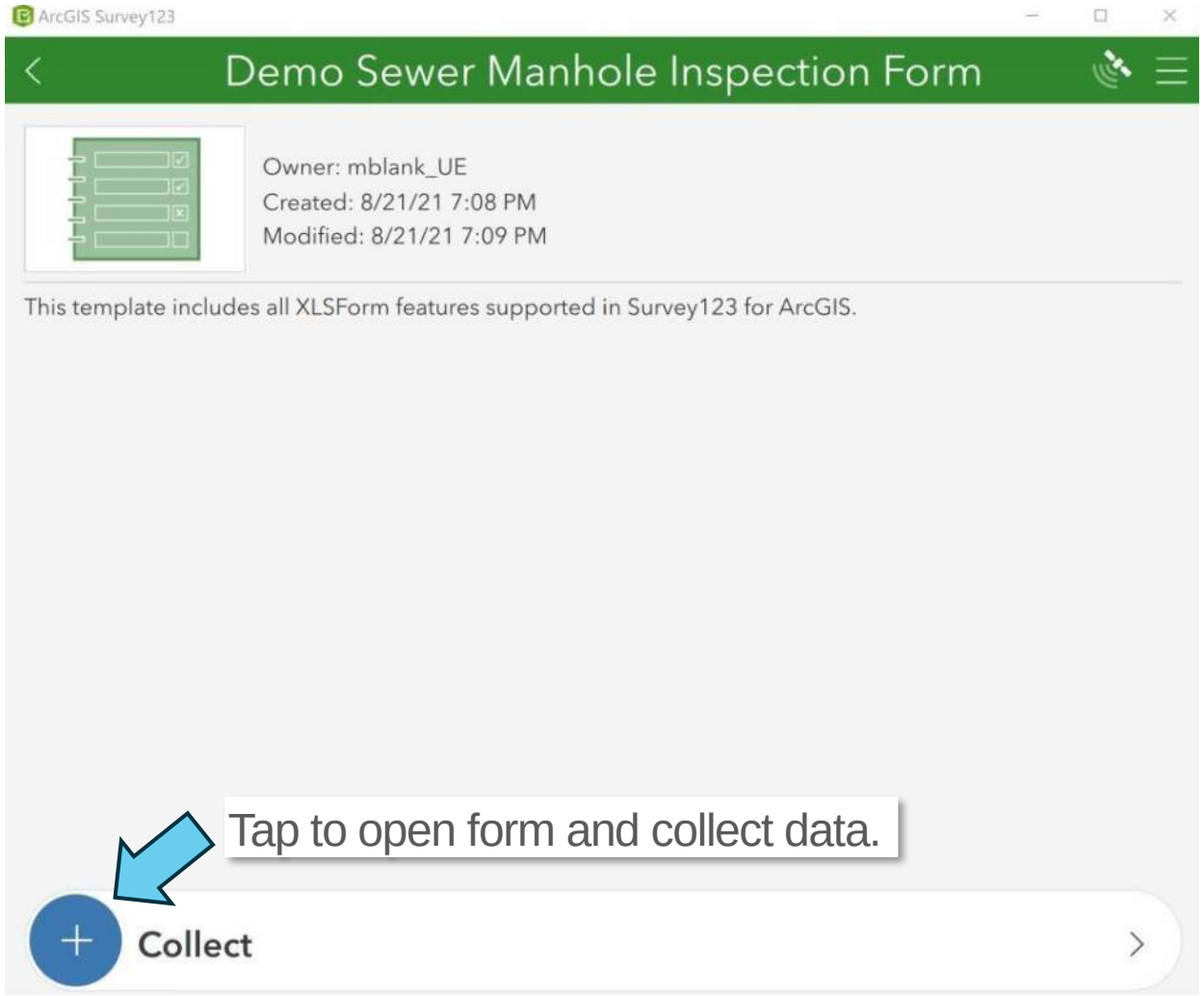
ArcGIS Field Apps

Download and install ArcGIS Survey123:



ArcGIS Field Apps

Download form in Survey123 app:



ArcGIS Field Apps

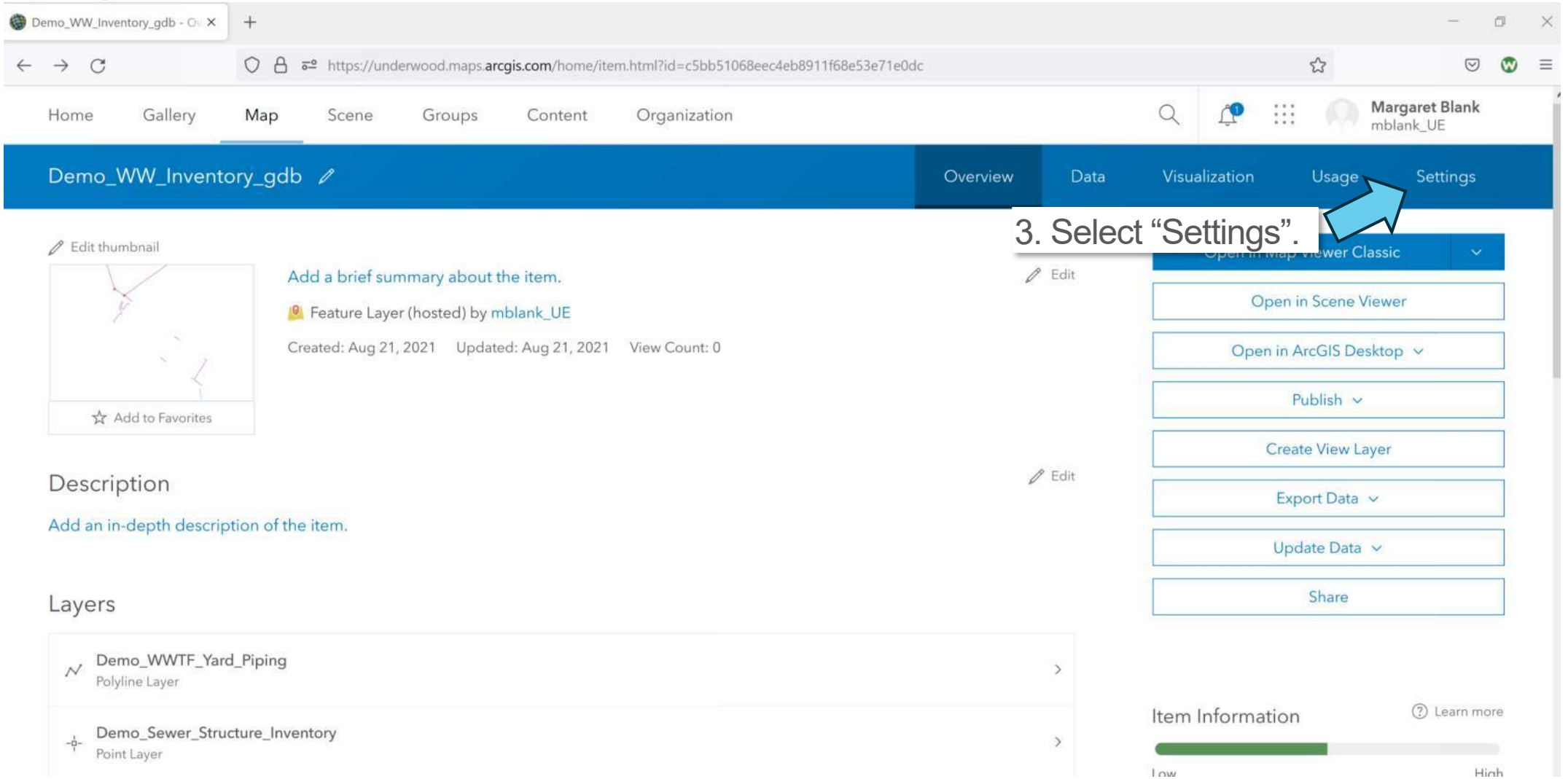
Open, complete, and submit form:

ArcGIS Online

Navigate to ArcGIS Online and log in:

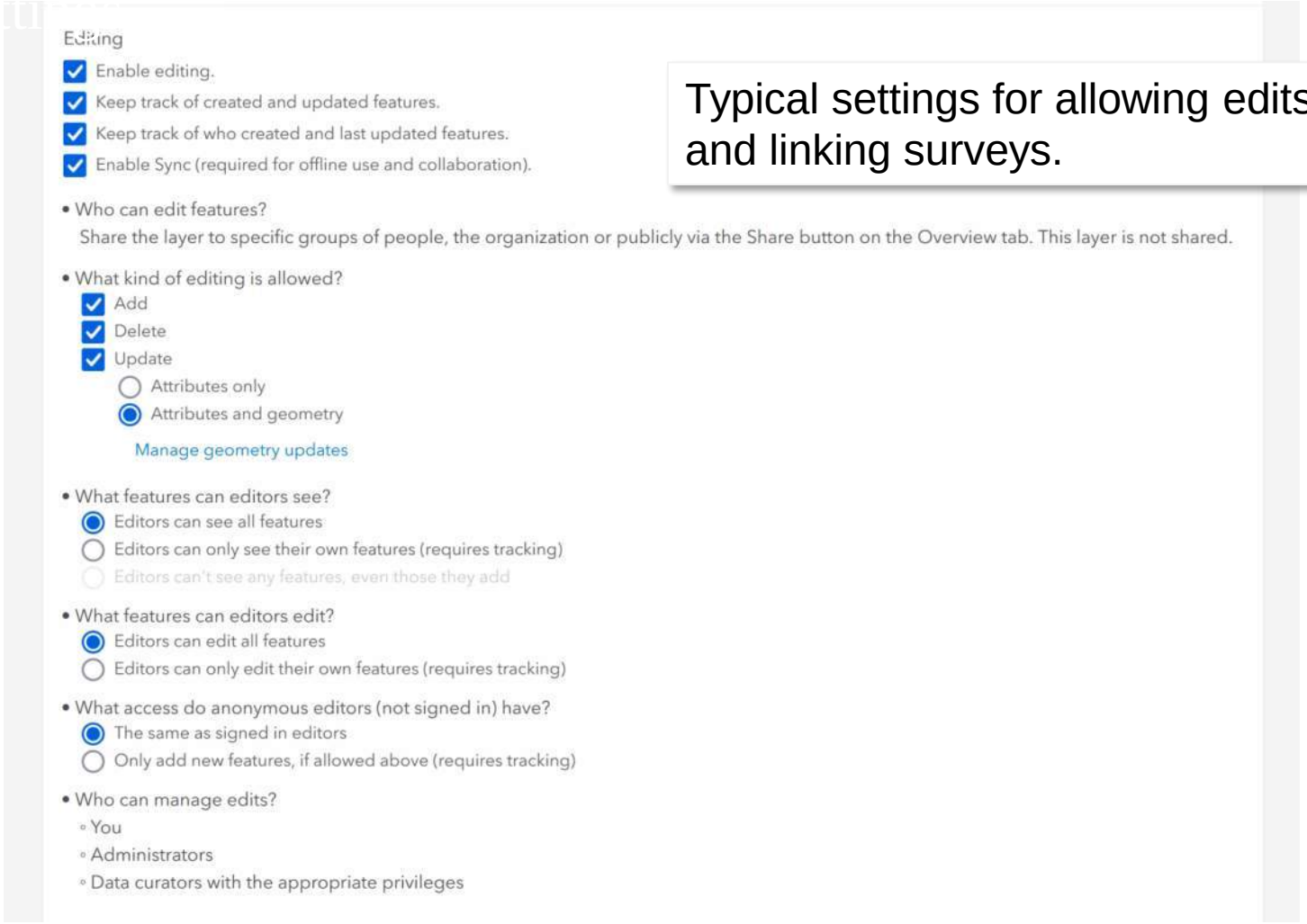
ArcGIS Online

File Settings:



ArcGIS Online

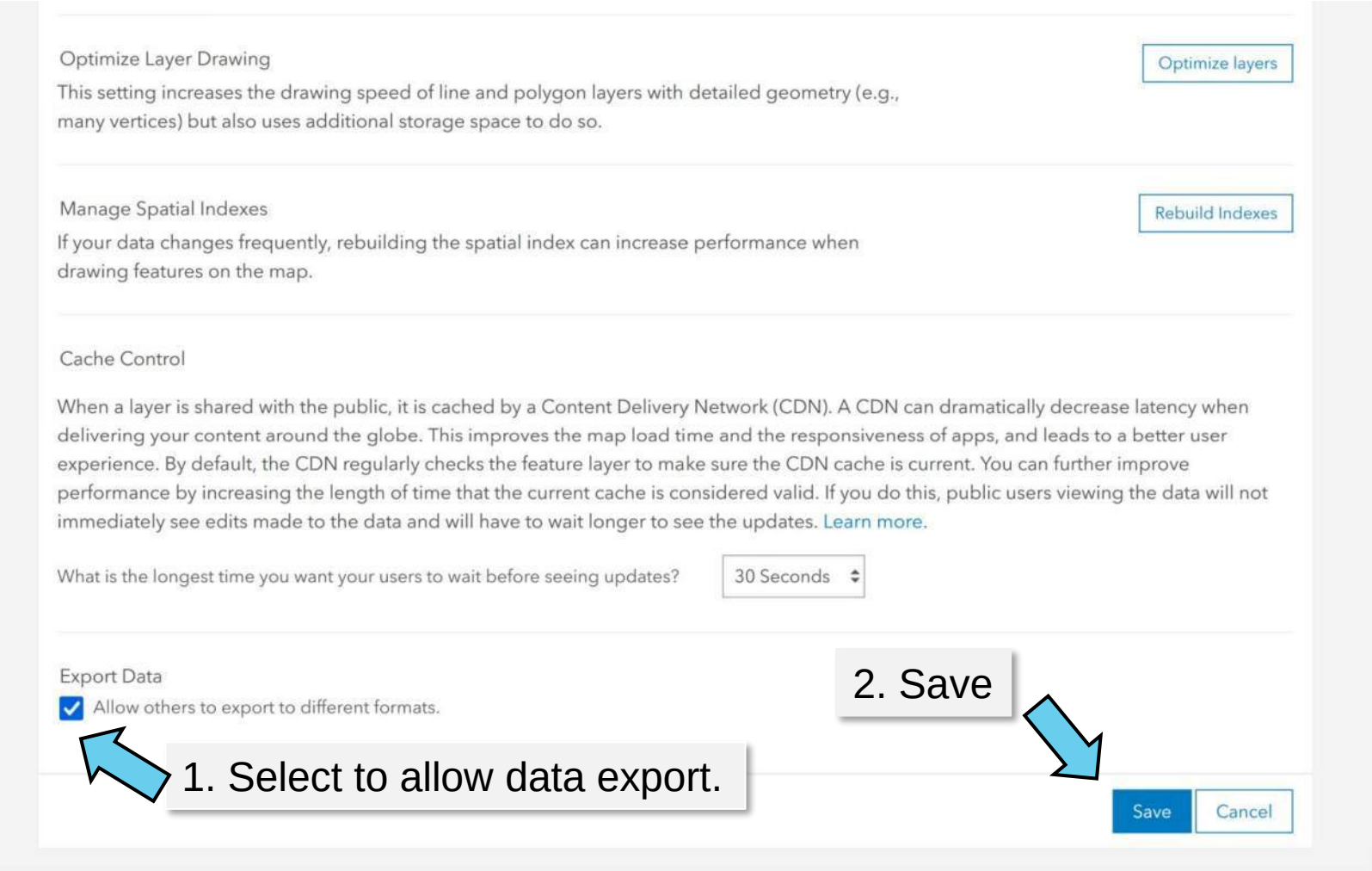
File Settings:



Typical settings for allowing edits in the field and linking surveys.

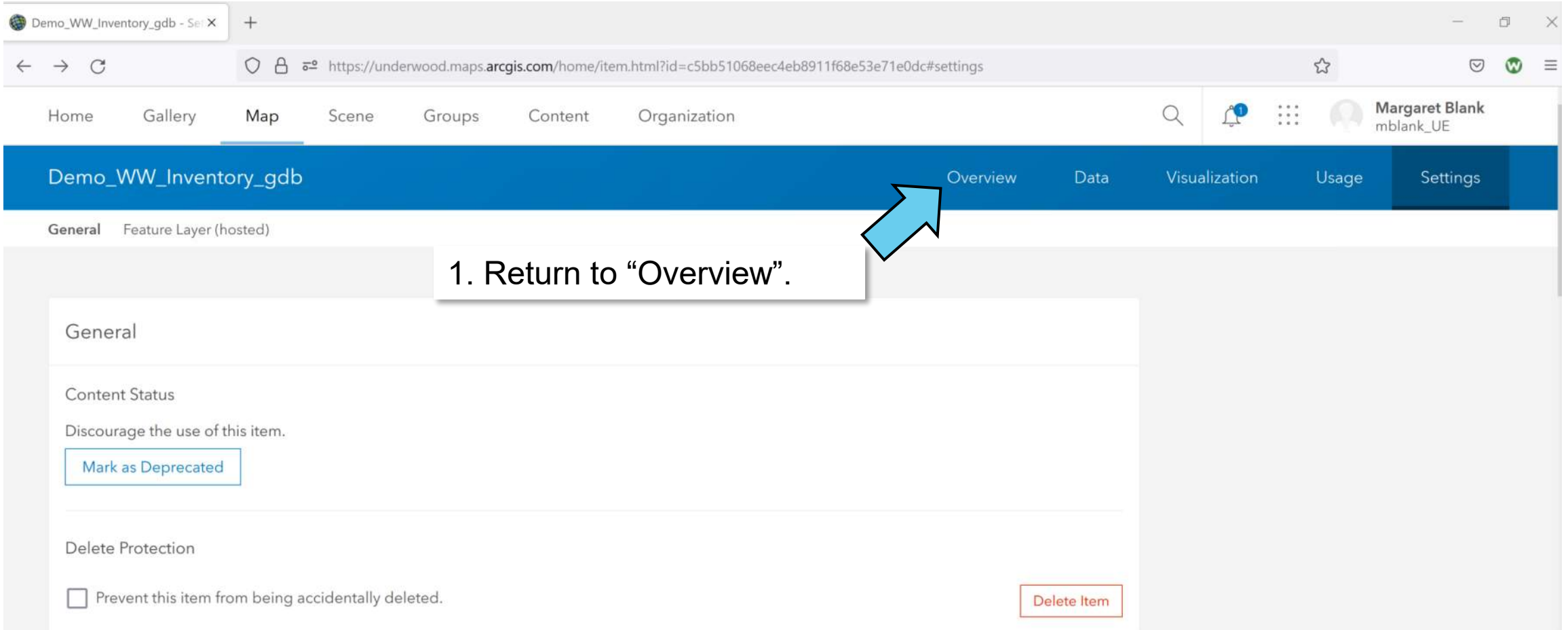
ArcGIS Online

File Settings:



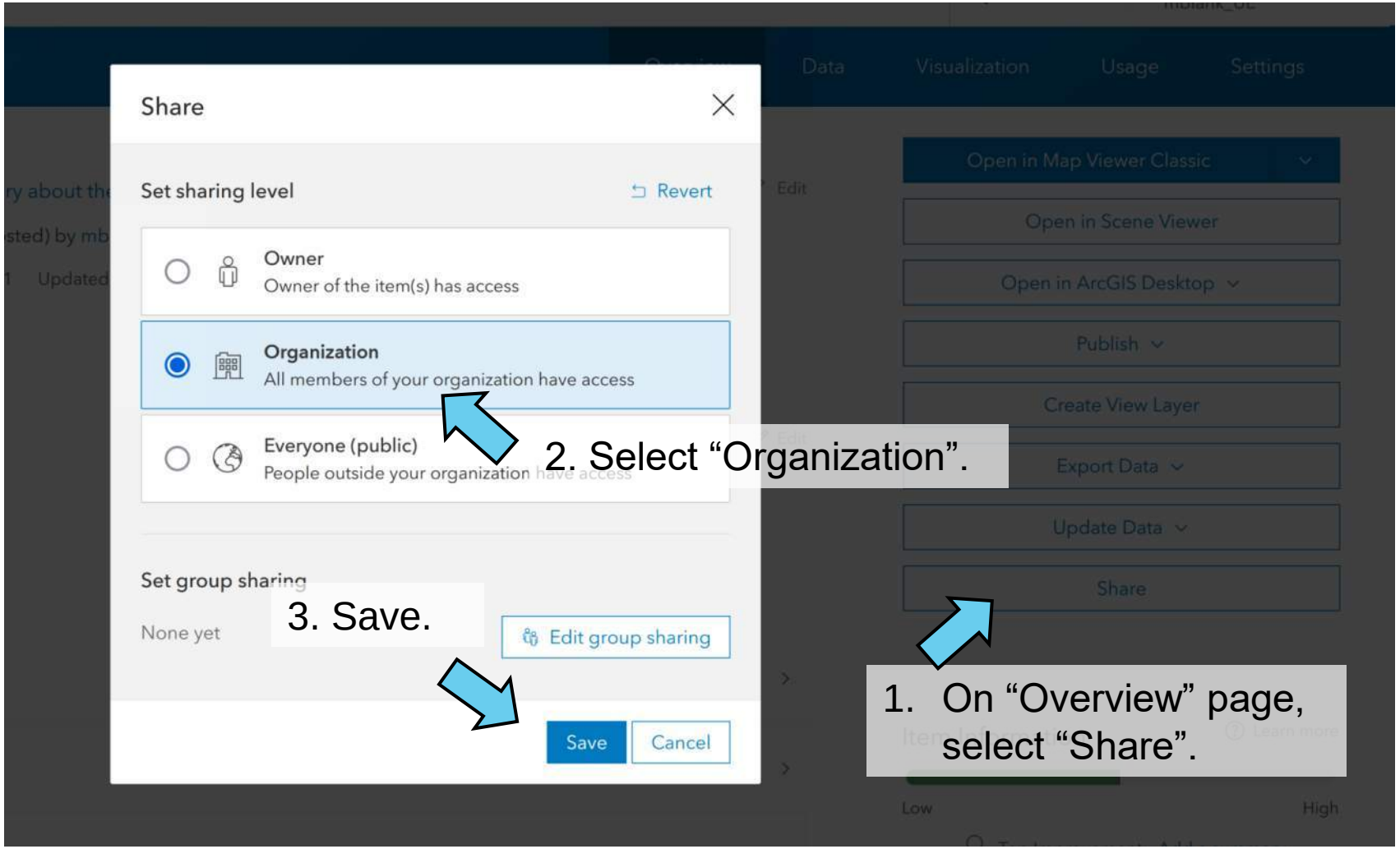
ArcGIS Online

File Settings:



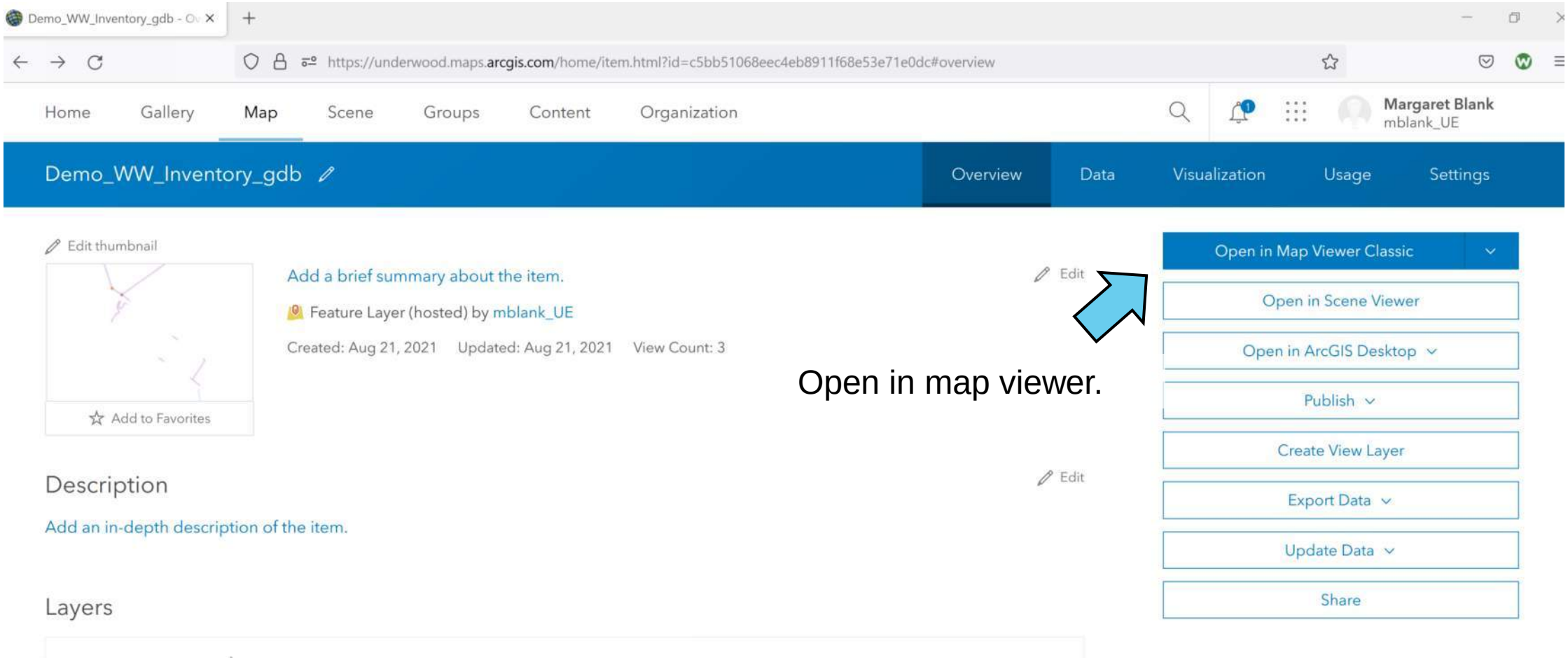
ArcGIS Online

File Settings:



ArcGIS Online

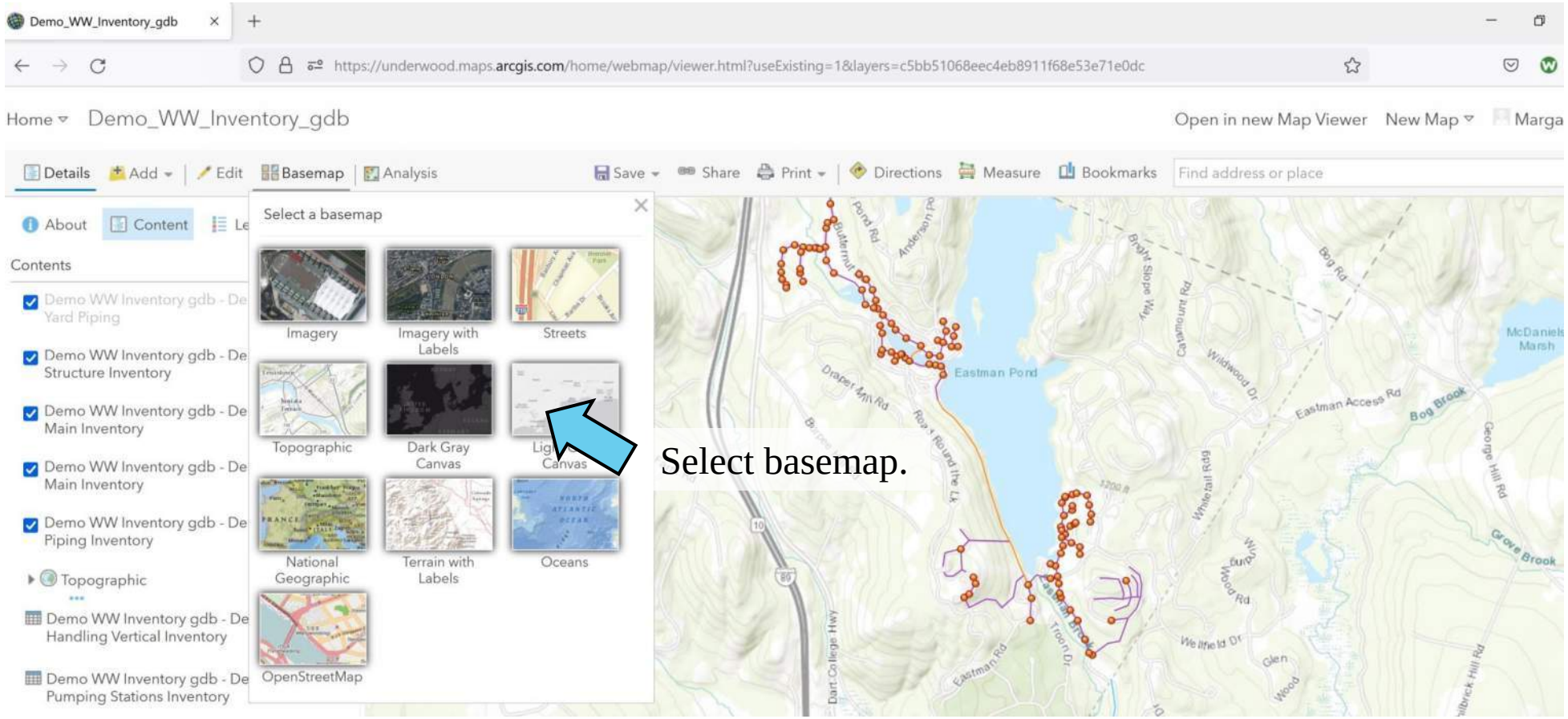
File Settings:



Open in map viewer.

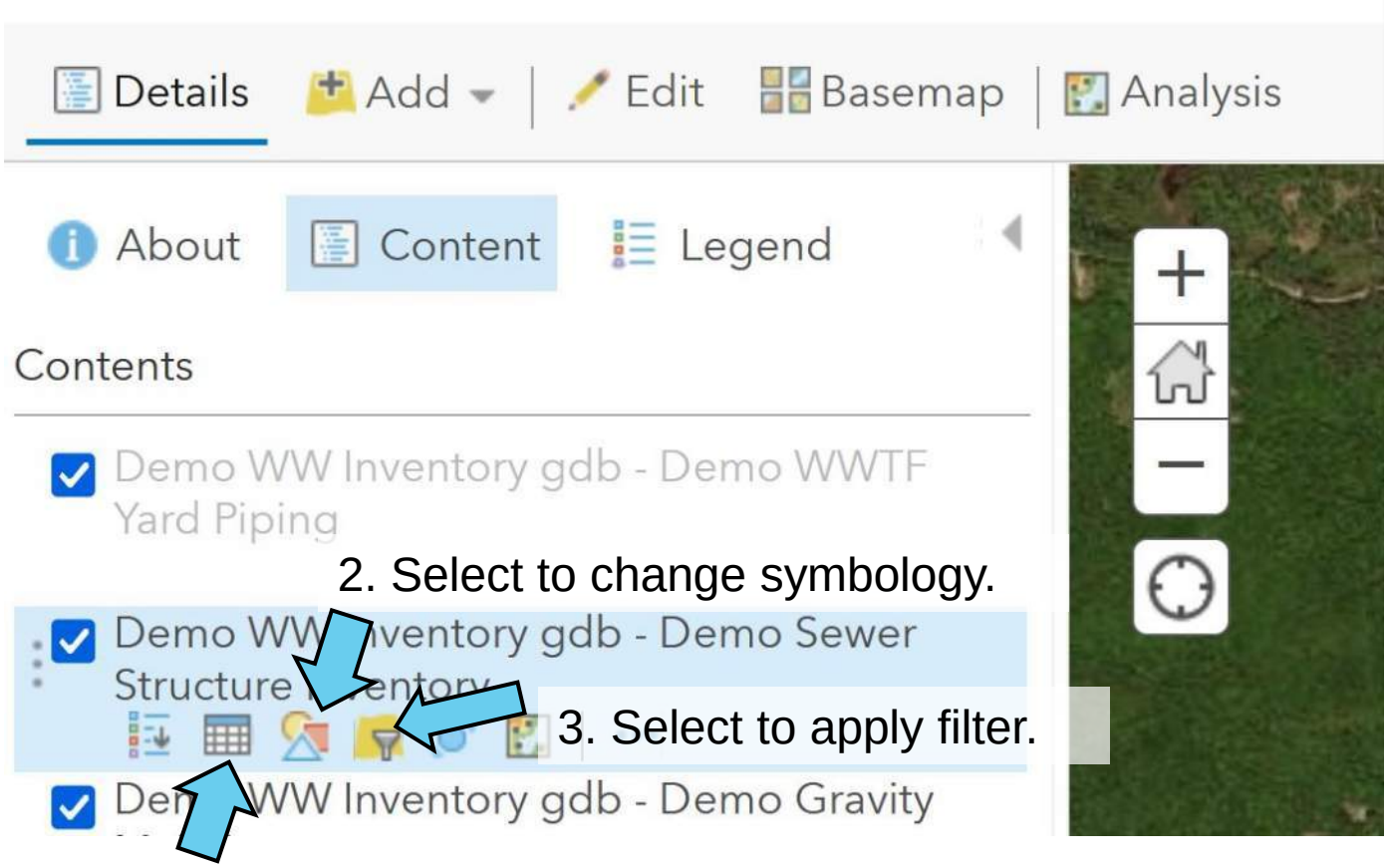
ArcGIS Online

Map Set Up:



ArcGIS Online

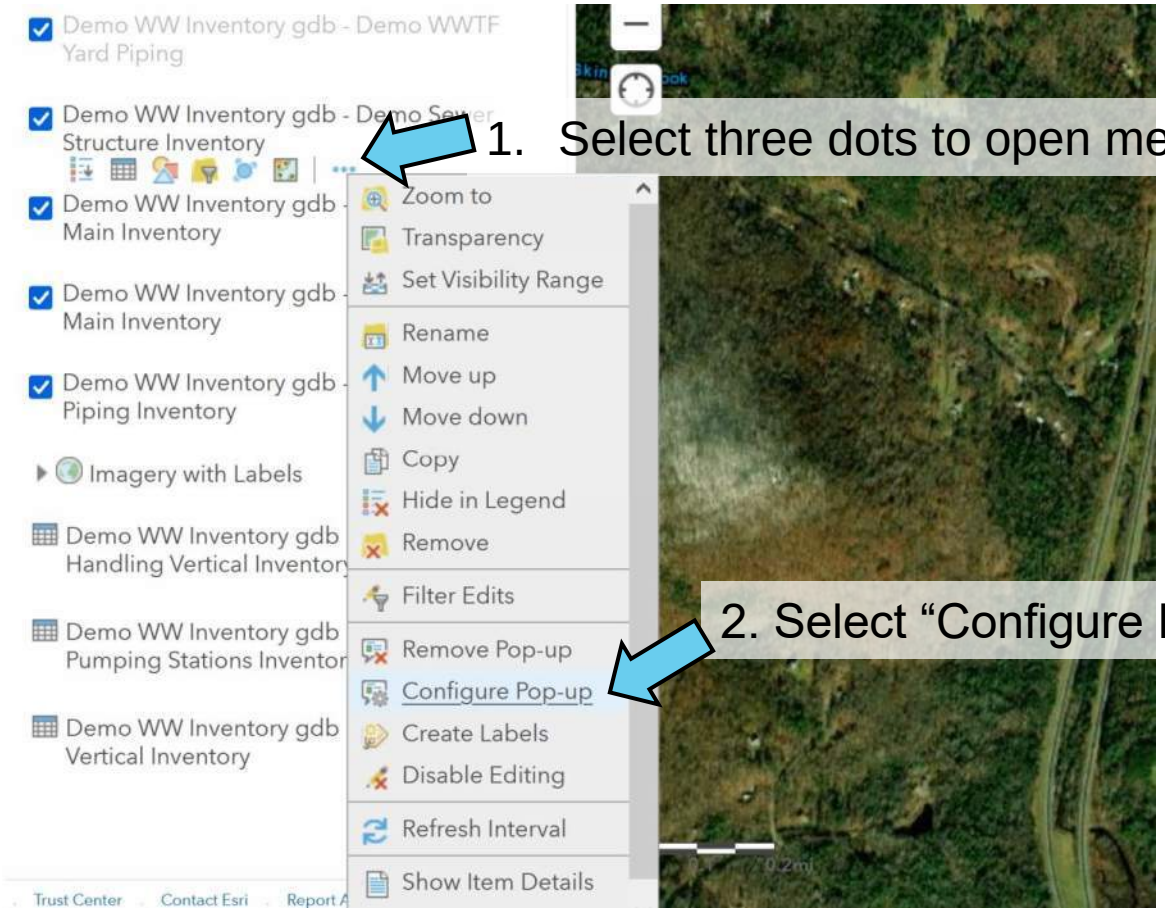
Map Set Up:



1. Select to view attribute table.

ArcGIS Online

Configure Pop-Up Windows:



1. Select three dots to open menu.

2. Select “Configure Pop-up”.

ArcGIS Online

Pop-Up Title:

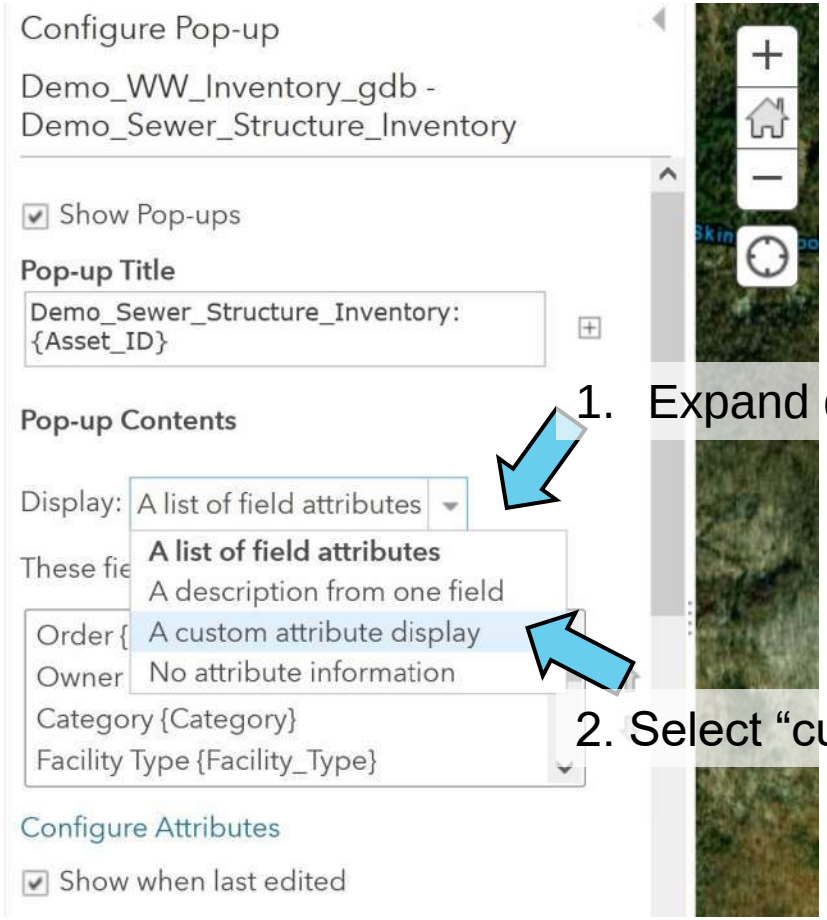
1. Select to expand field list.

2. Pop-up title.

2. Select fields to display in the pop-up title.

ArcGIS Online

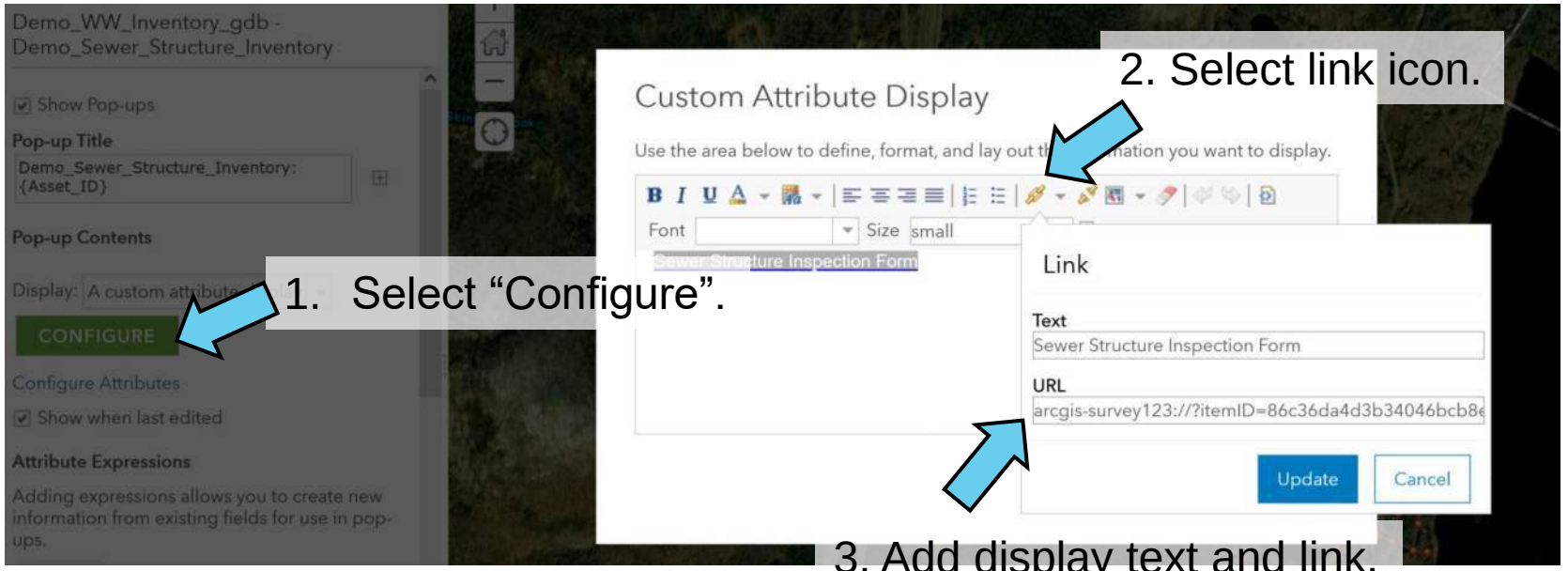
Pop-Up Contents:



1. Expand display selector.
2. Select “custom attribute display” to create a link to a form.

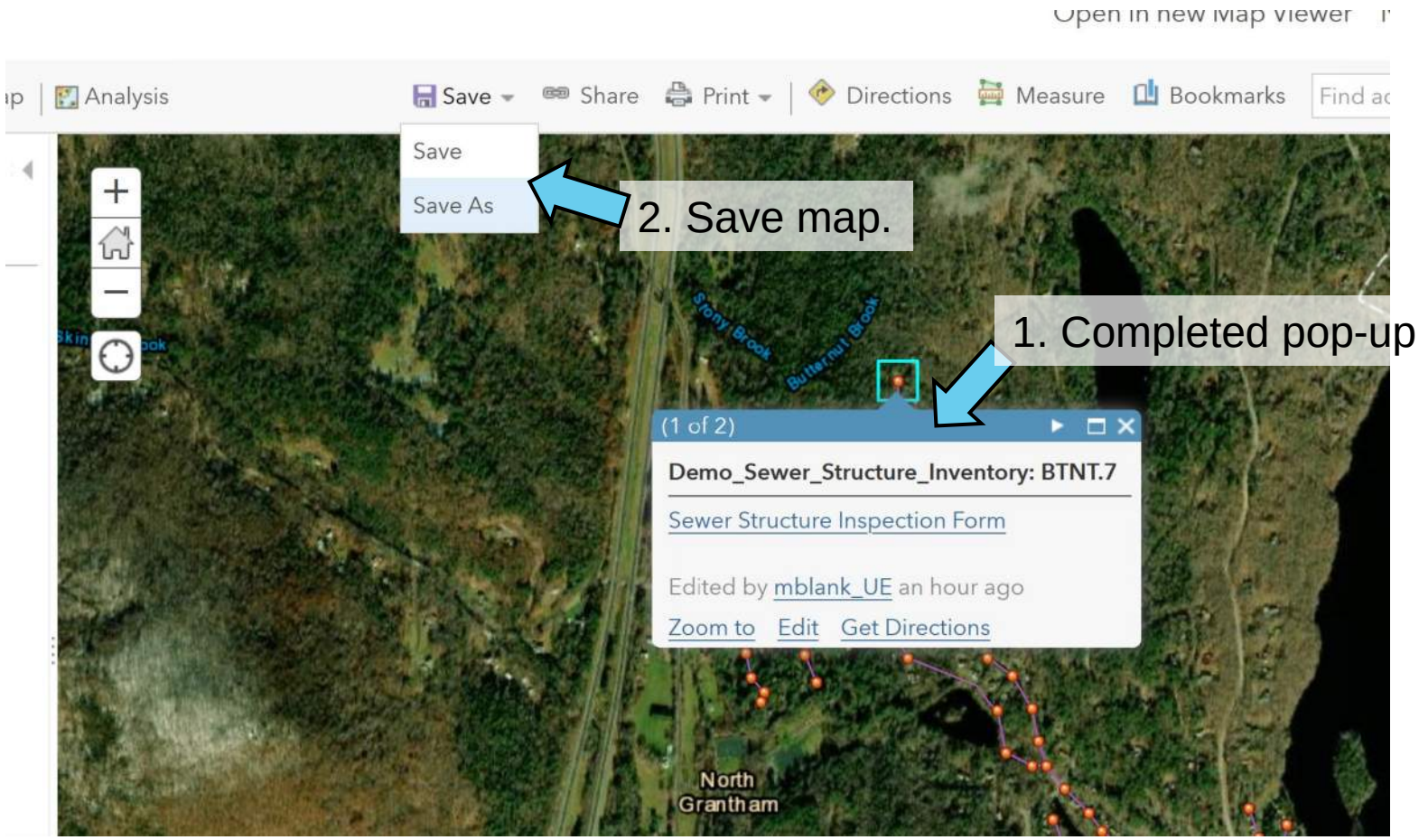
ArcGIS Online

Pop-Up Contents:



ArcGIS Online

Pop-Up Contents:



ArcGIS Online

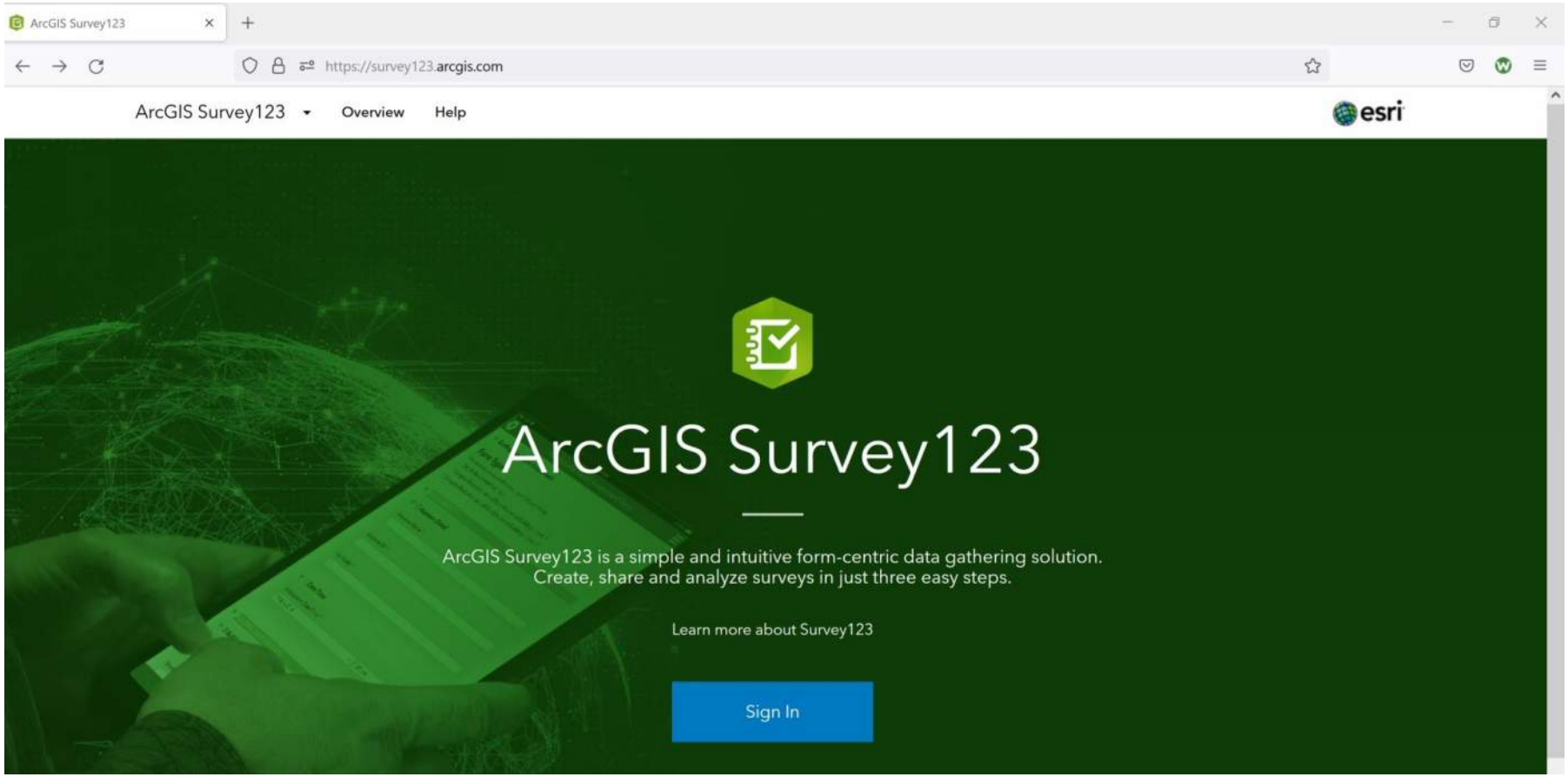
Additional resources.

- ArcGIS Online overview from ESRI Canada: https://www.youtube.com/watch?v=uTwwT86U8bE
- How to make a story map: https://storymaps.arcgis.com/stories/ca65aba2721241a8ab02fee4e3c42e82
- How to create a dashboard:

  https://www.youtube.com/watch?v=8if1f7JHuRM

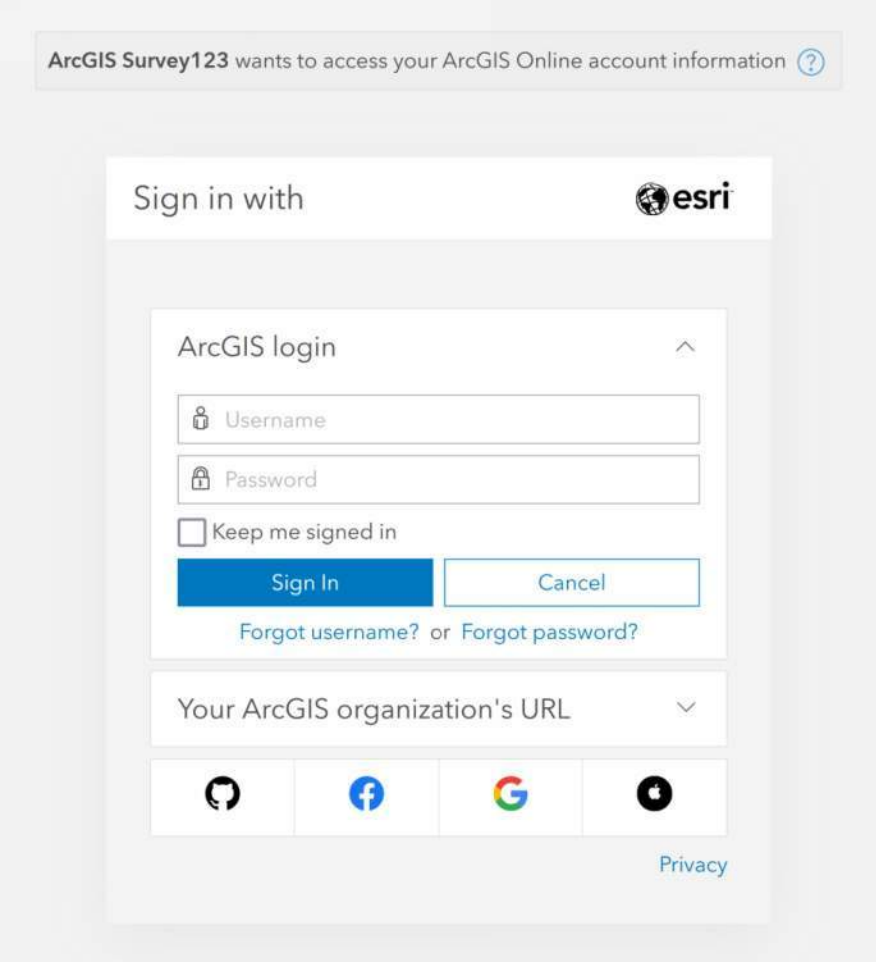
Survey 123 Data

Navigate to survey123.arcgis.com and log in:



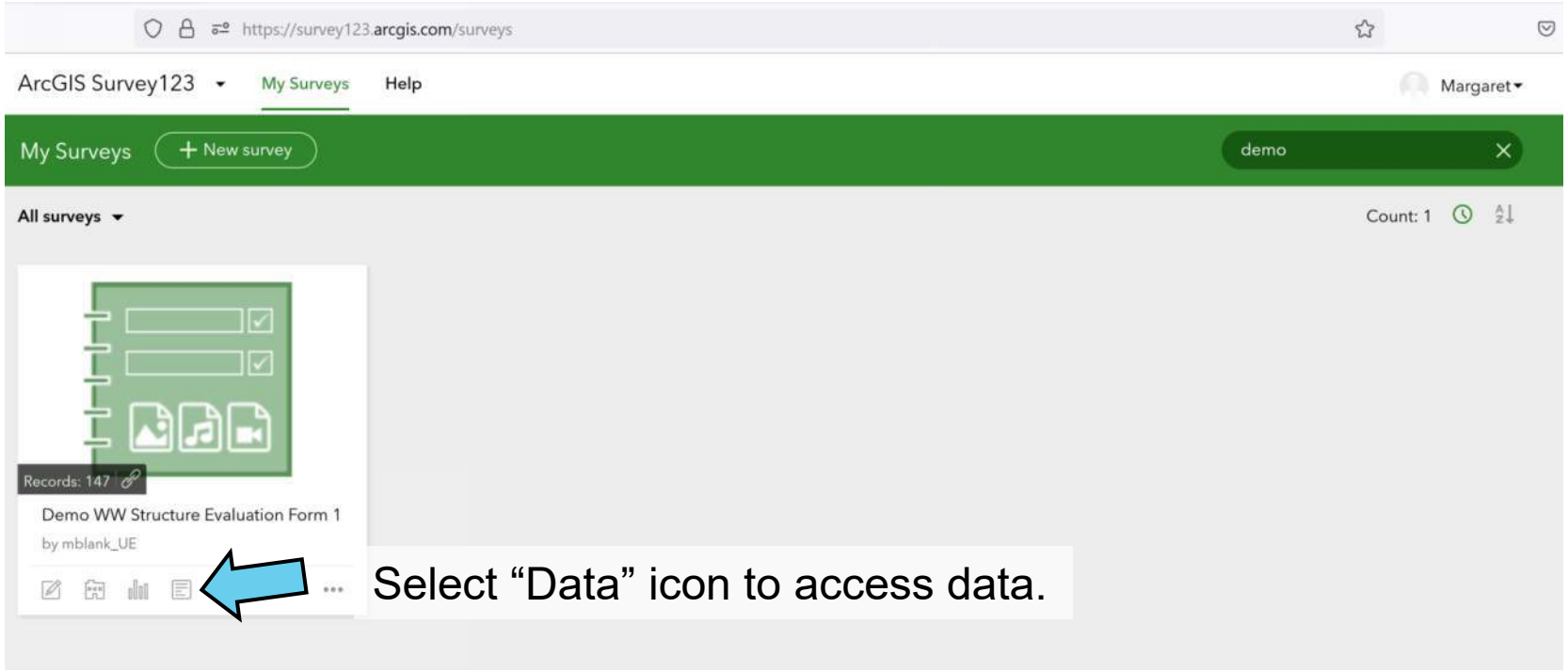
Survey 123 Data

To review and edit data collected using Survey123 forms, navigate to survey123.arcgis.com and log in:



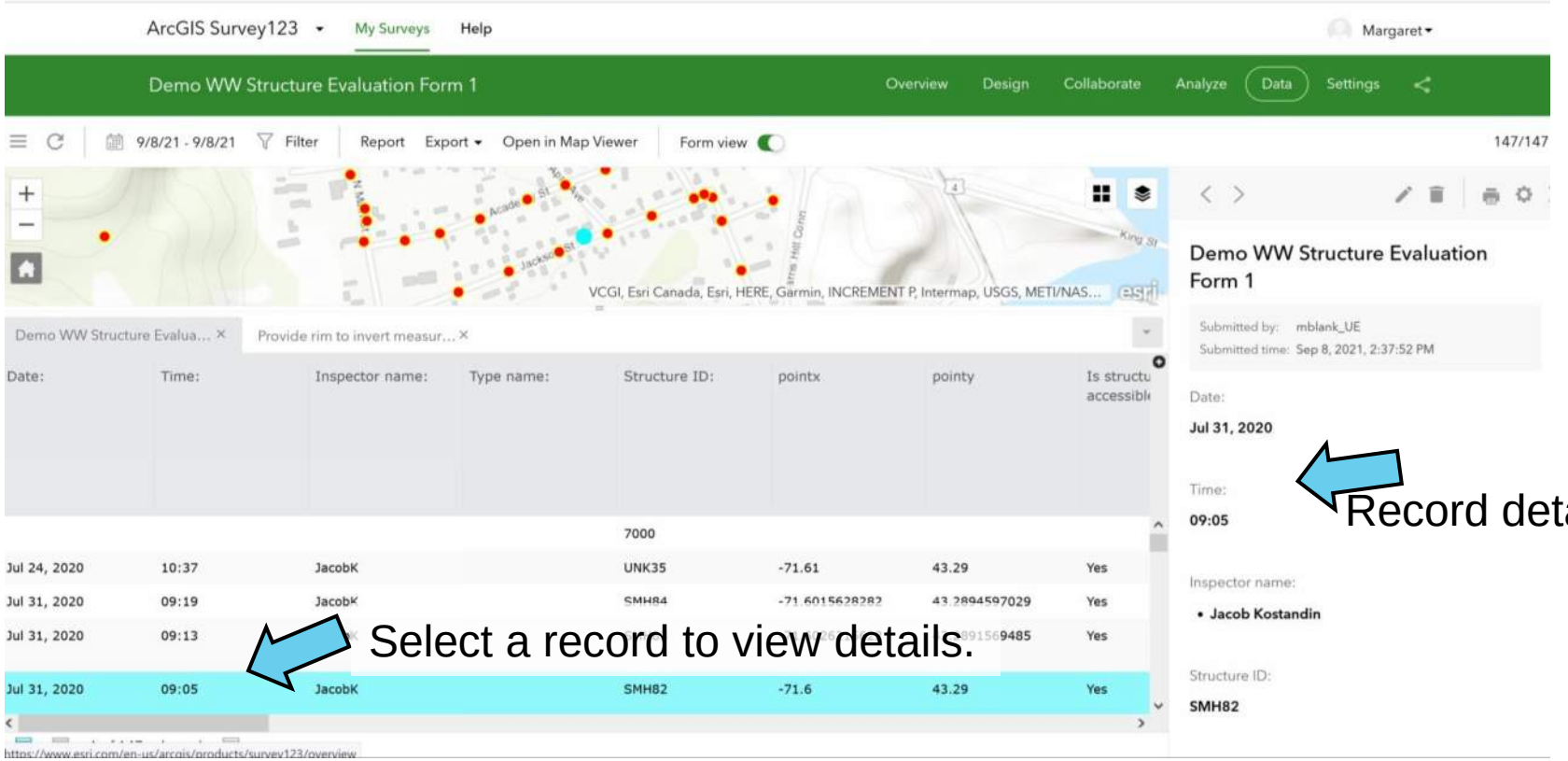
Survey 123 Data

Surveys stored on your account will be displayed under the "My Surveys" tab:



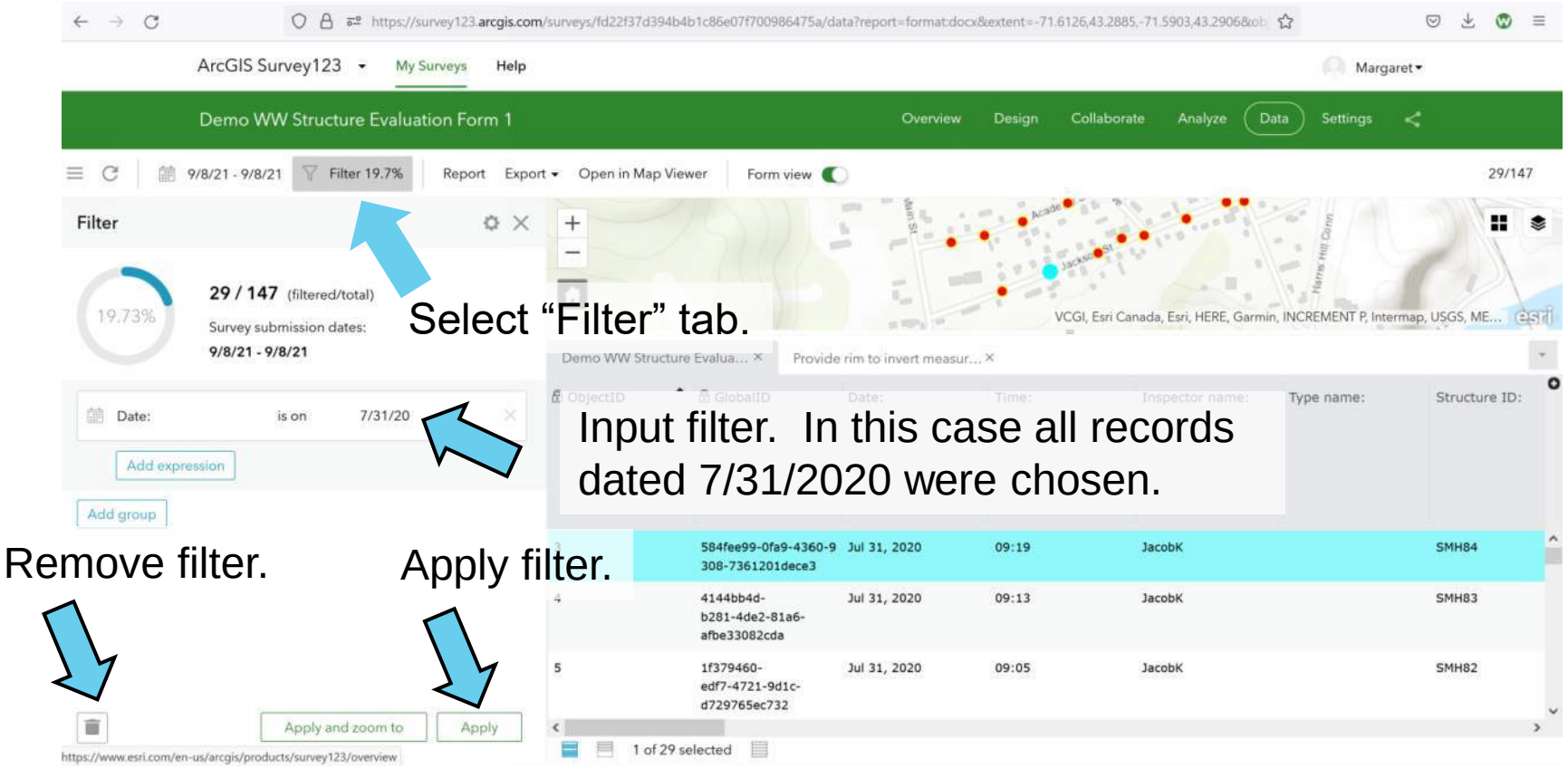
Survey 123 Data

Surveys stored on your account will be displayed:



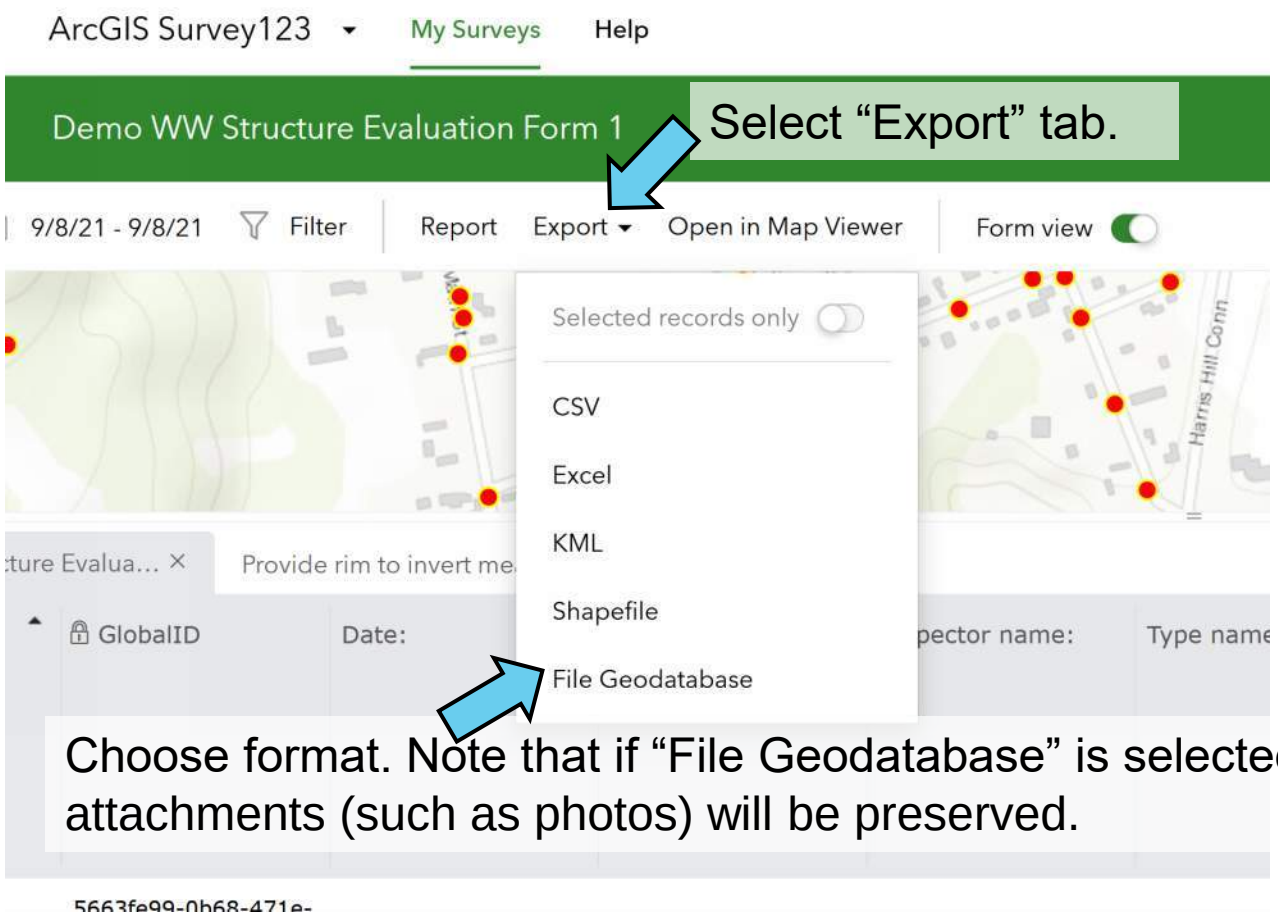
Survey 123 Data

To filter data:



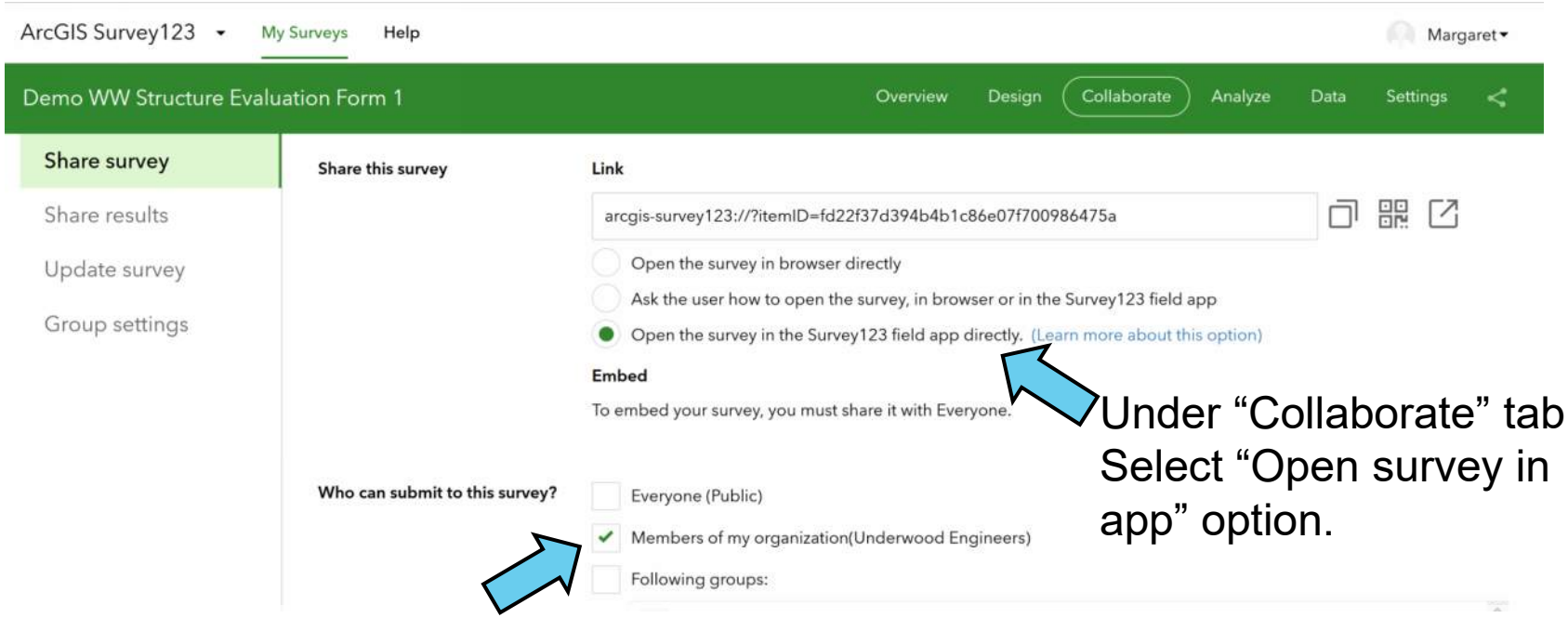
Survey 123 Data

To download data:



Survey 123 Data

Survey settings:



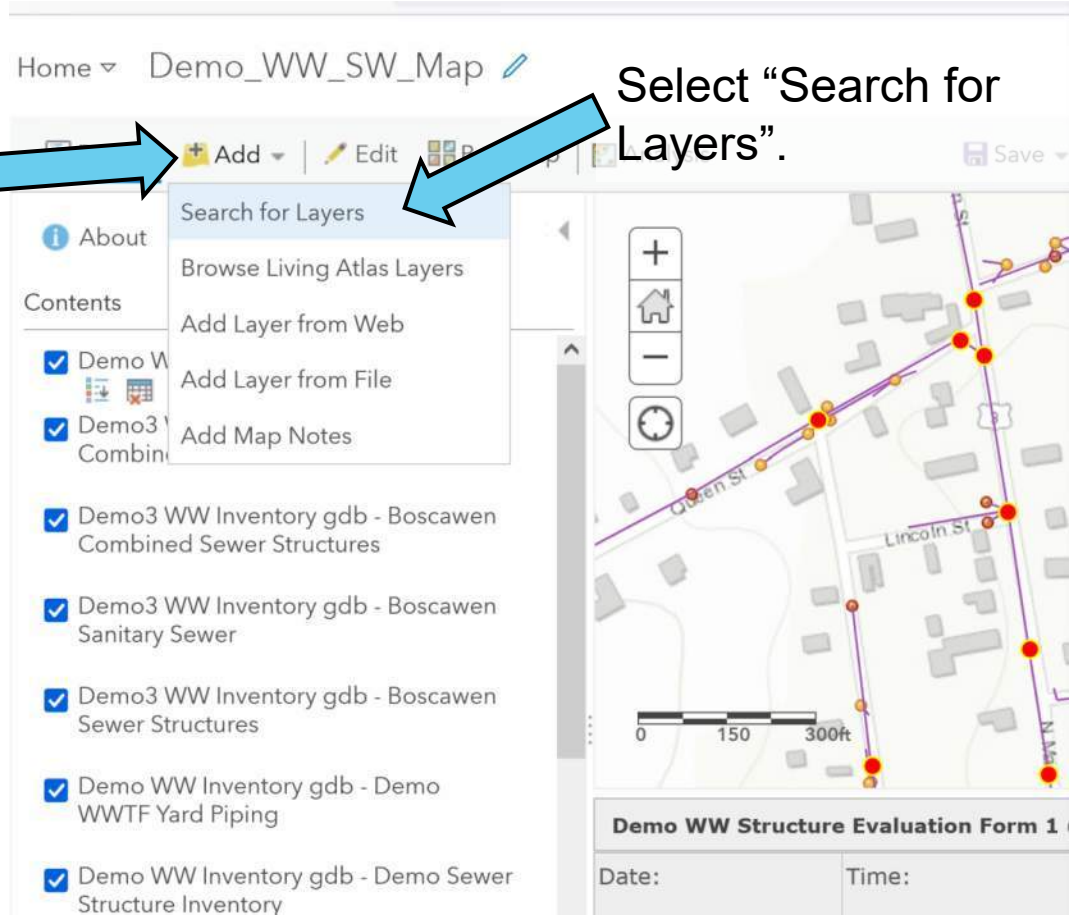
Under “Collaborate” tab, Select “Open survey in app” option.

Share with members of your organization. You may also share with groups or with the public, but sharing with organization members is most typical.

Survey 123 Data

Add survey to map:

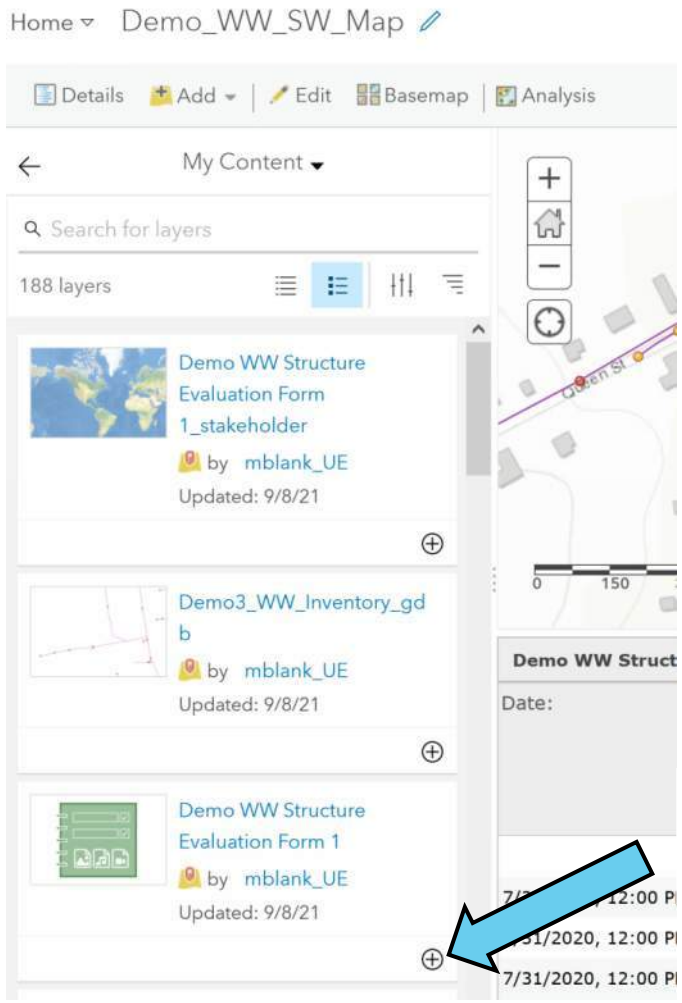
Select map from arcgis.com/My Contents folder. Then select “Add”.



Select “Search for Layers”.

Survey 123 Data

Add survey to map:



Click on + to add item to map.

Survey 123 Data

Additional resources.

How to create a survey form using the web designer.

https://www.youtube.com/watch?v=6lKWzCJIs80

How to create a survey form using desktop app (Survey123 Connect).

https://www.youtube.com/watch?v=1bCdkDOm7KE

Integrate Survey123 with other apps.

https://doc.arcgis.com/en/survey123/reference/integratewithotherapps.htm

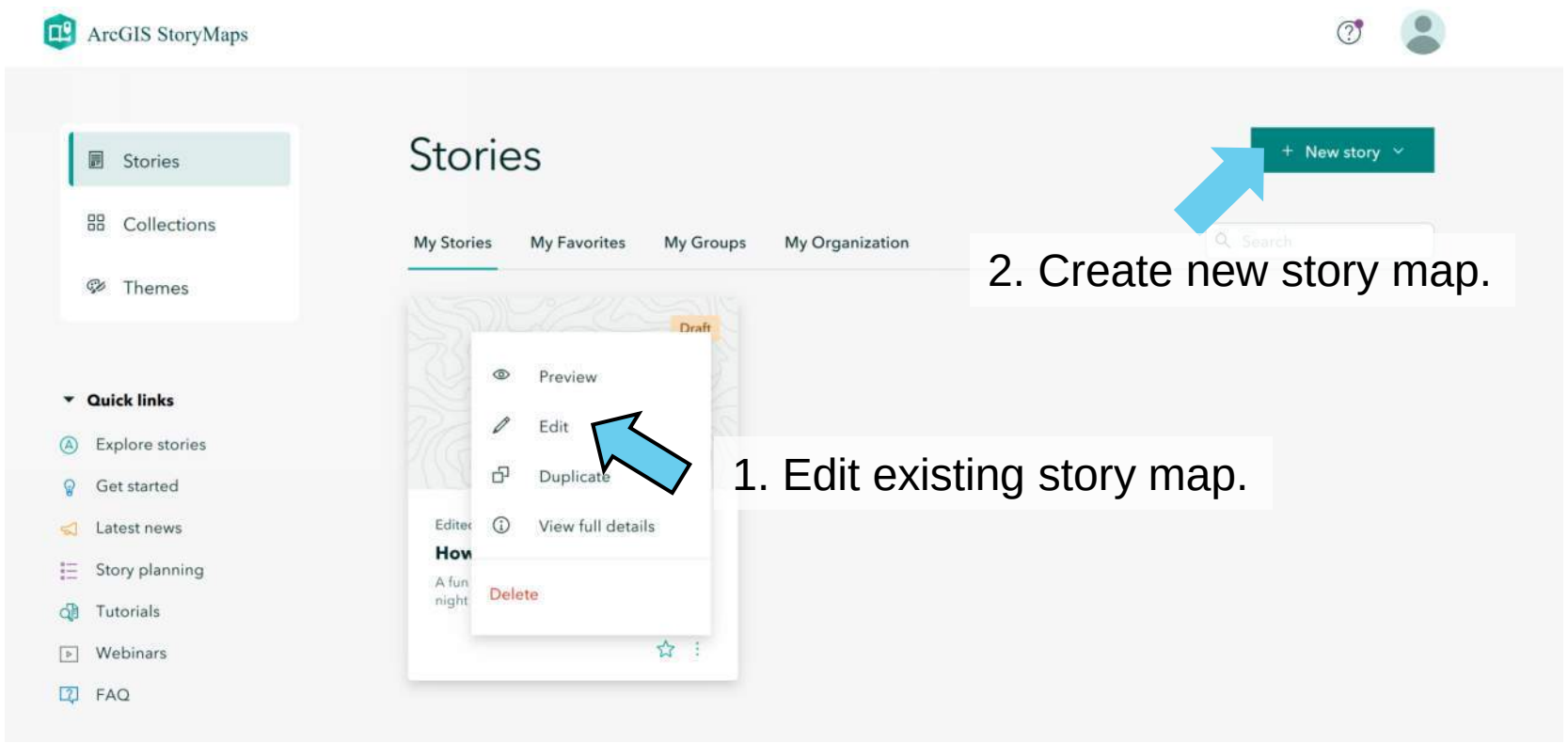
Story Maps

Access story maps:

2. Click “Sign In” and enter username and password.

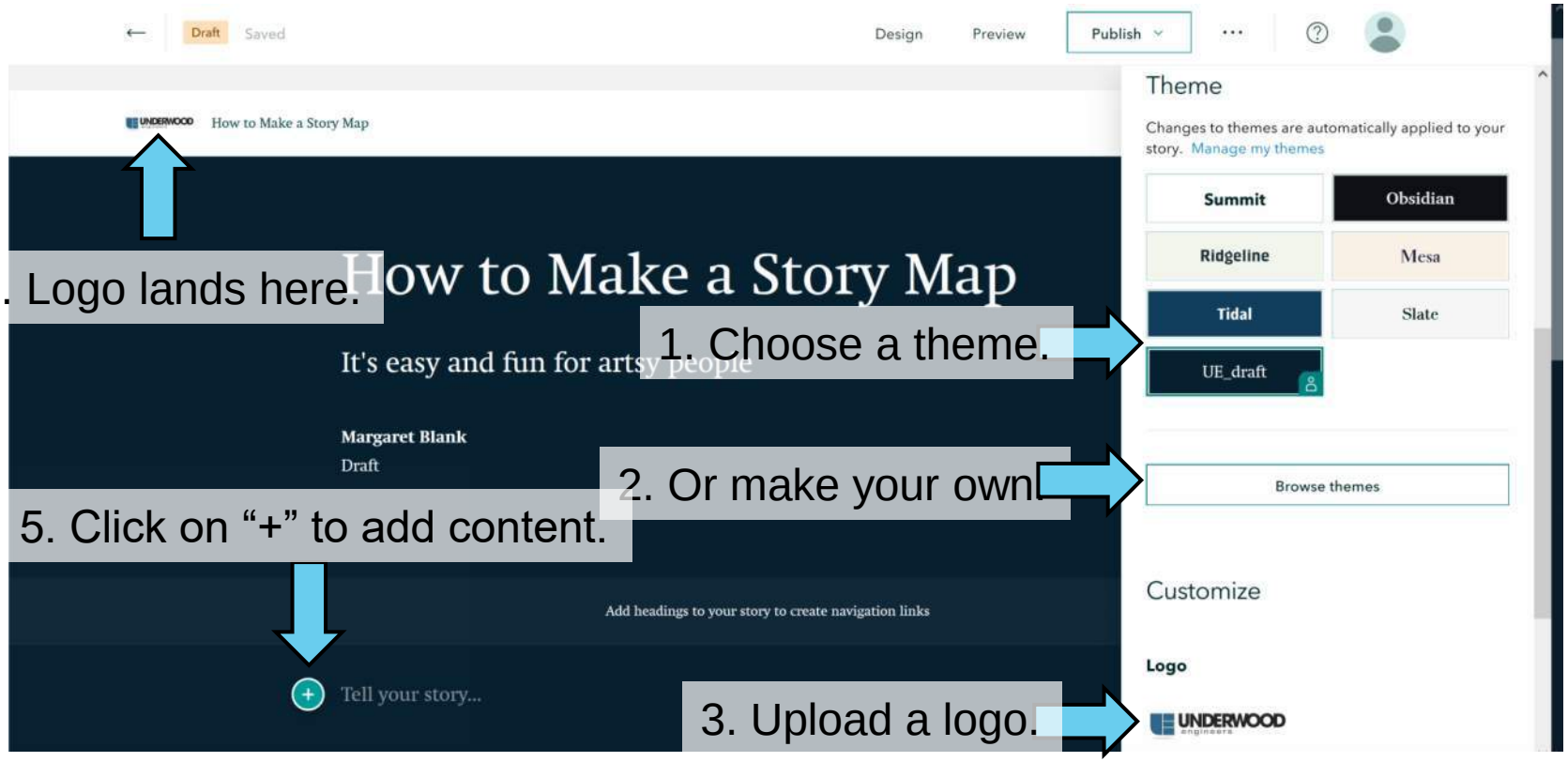
Story Maps

Access story maps:



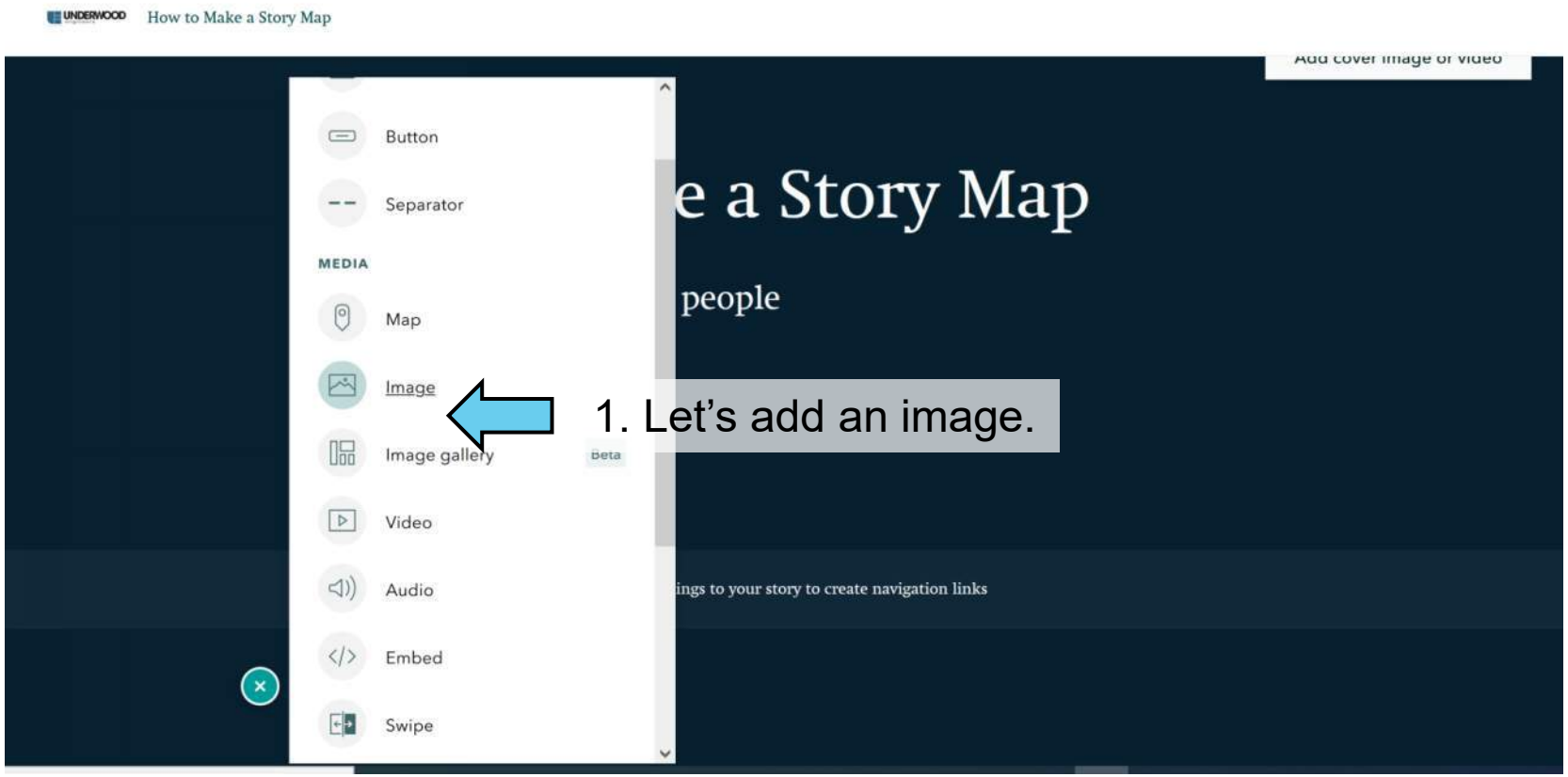
Story Maps

Create new story map:



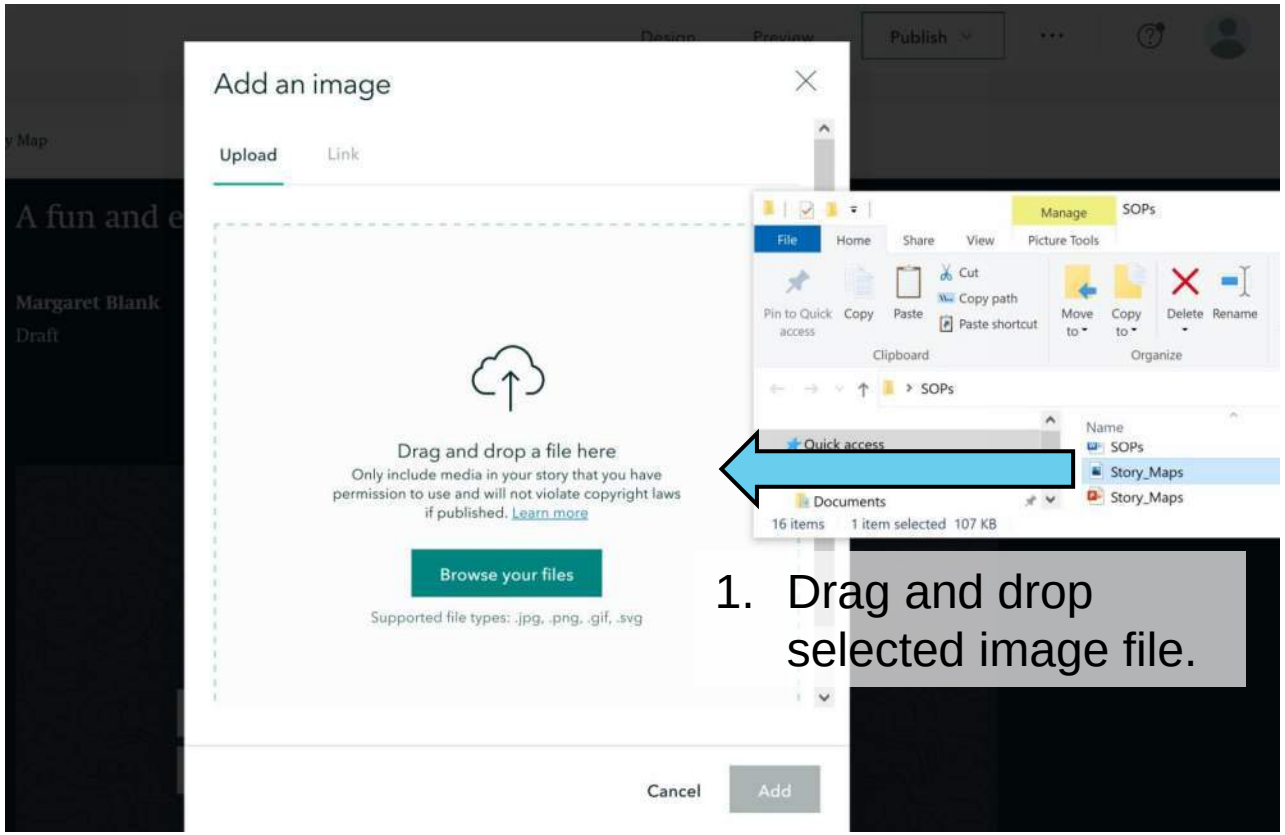
Story Maps

Add content:



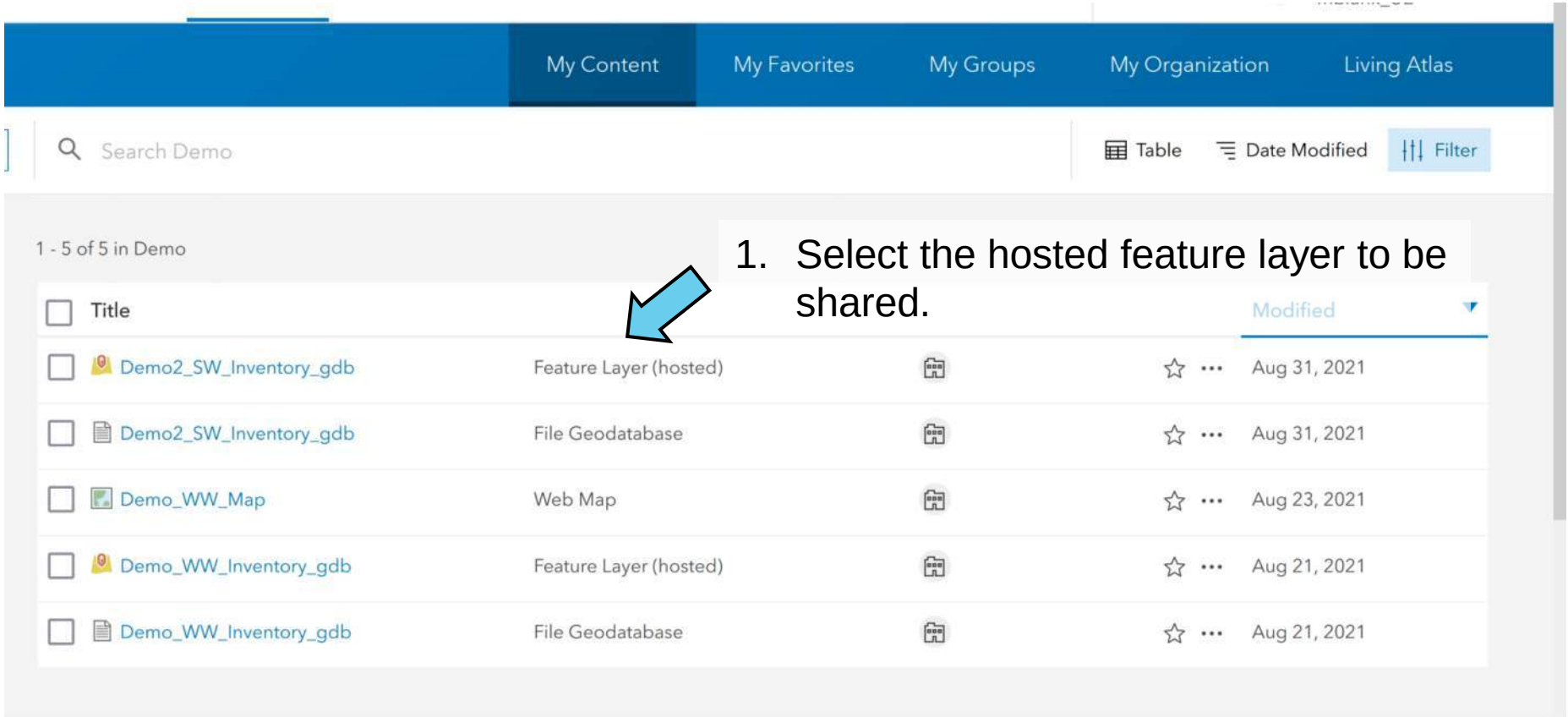
Story Maps

Add image to a story map:



Story Maps

Configure data to share with the public:



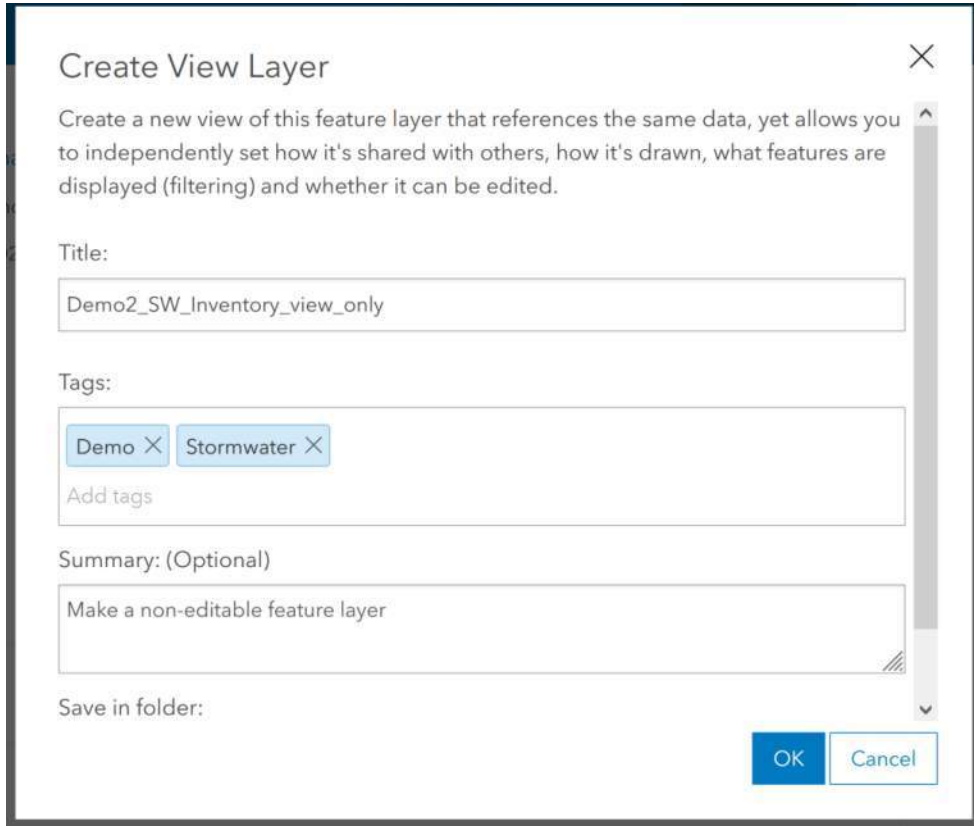
Story Maps

Configure data to share with the public:

1. Select “Create View Layer”.

Story Maps

Configure data to share with the public:

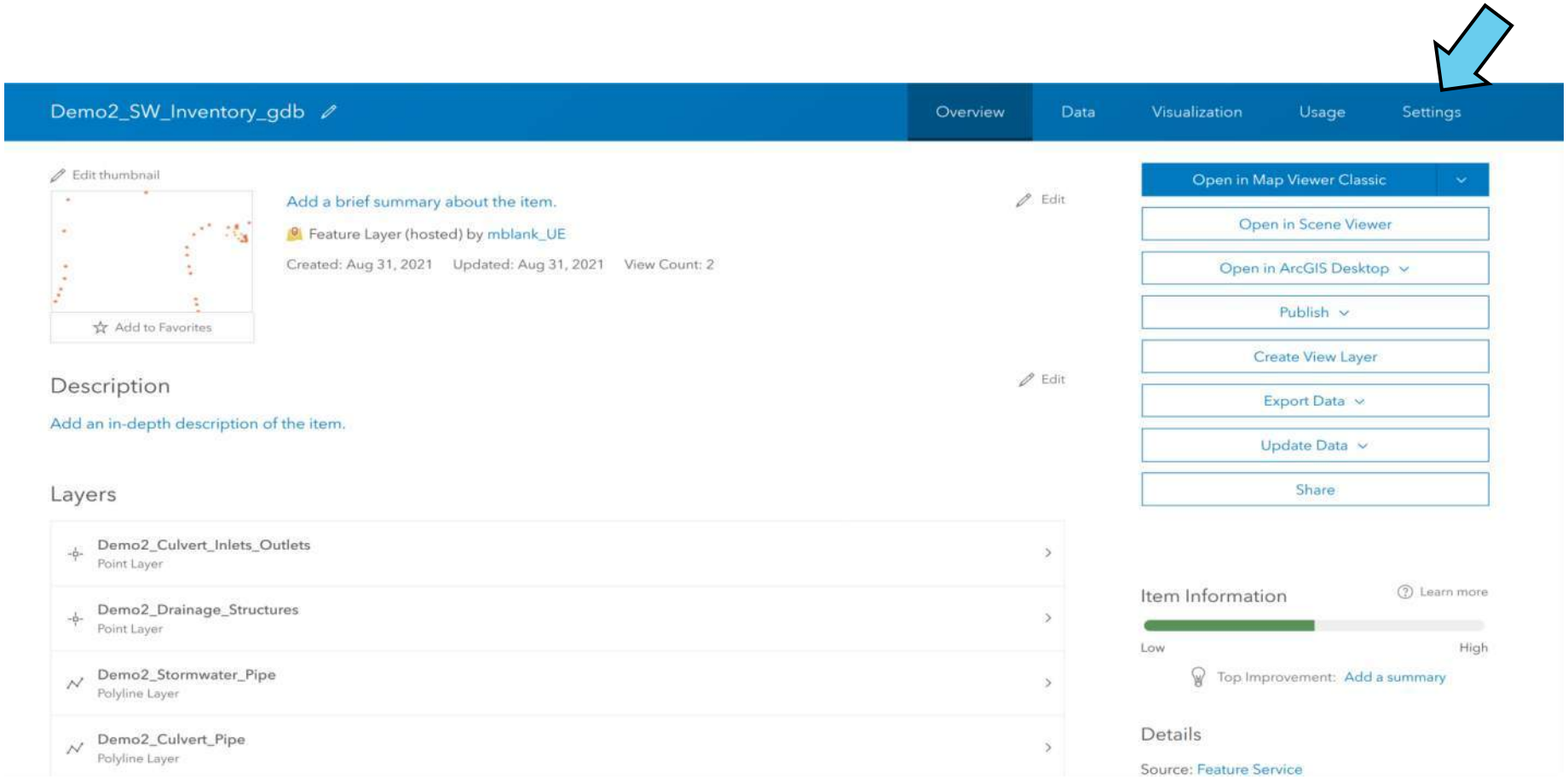


1. Provide a title.
2. Add tags.
3. Include a summary if desired.
4. Select folder.

Story Maps

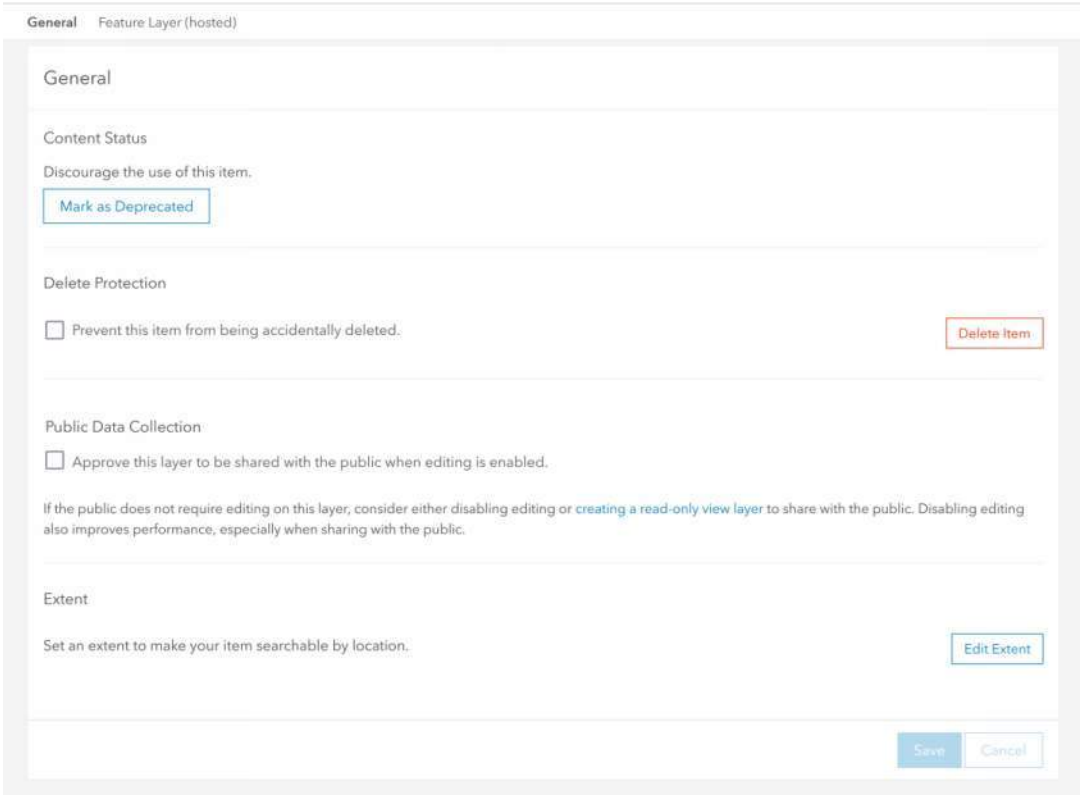
Configure data to share with the public:

1. Select “Settings”.



Story Maps

Configure data to share with the public:

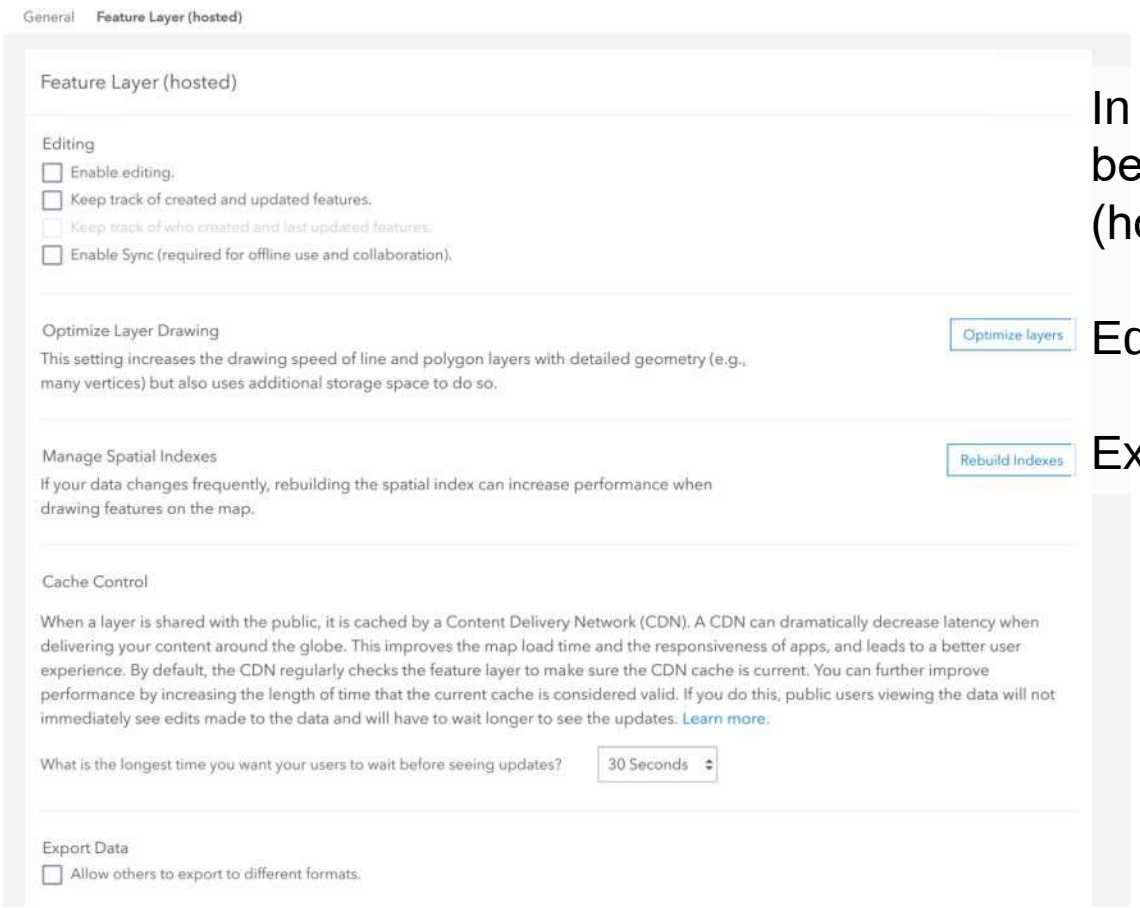


In this case, no changes will be made to “General” default settings.

Layer will not be shared with public when editing is enabled.

Story Maps

Configure data to share with the public:



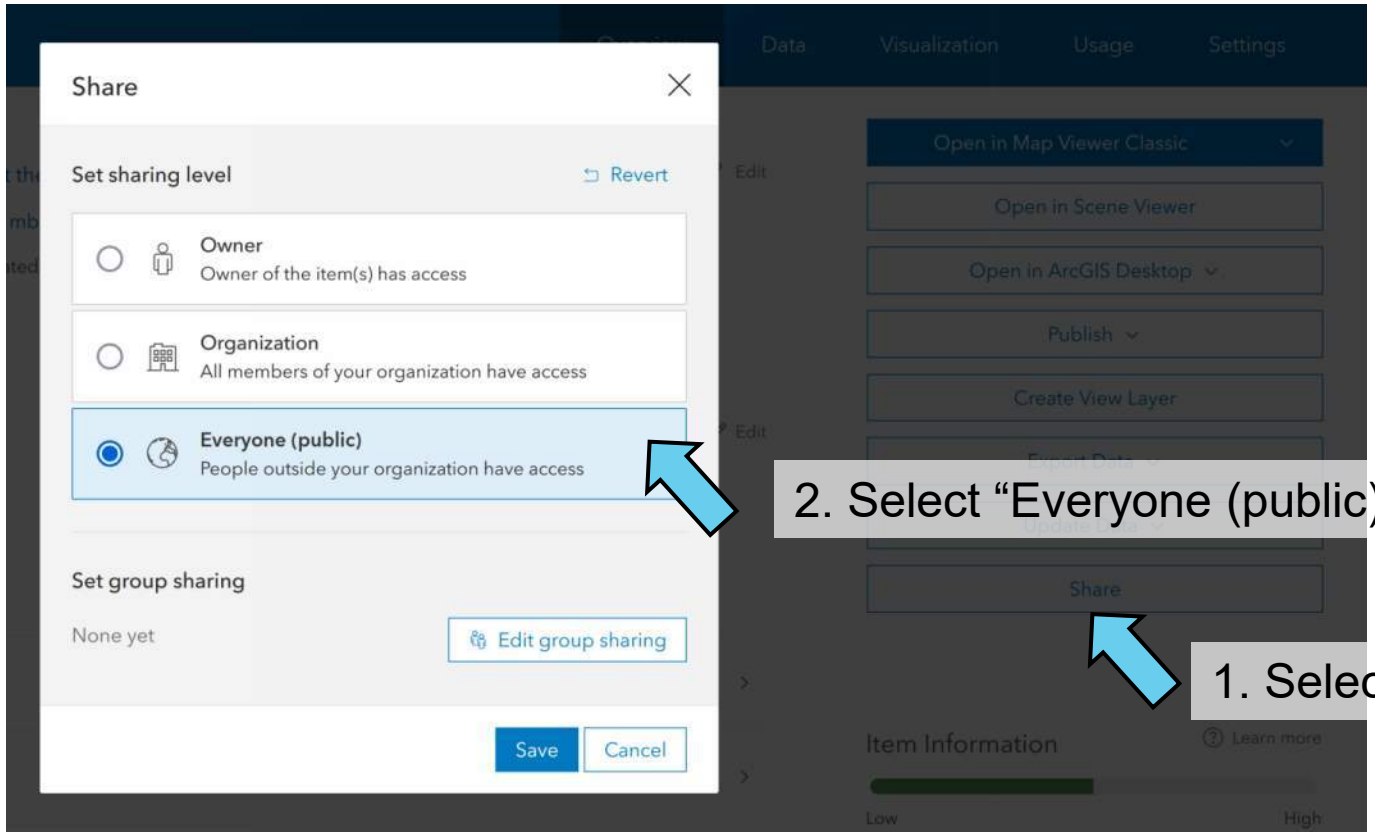
In this case, no changes will be made to “Feature Layer (hosted)” default settings.

Editing is not enabled.

Exporting data is not allowed.

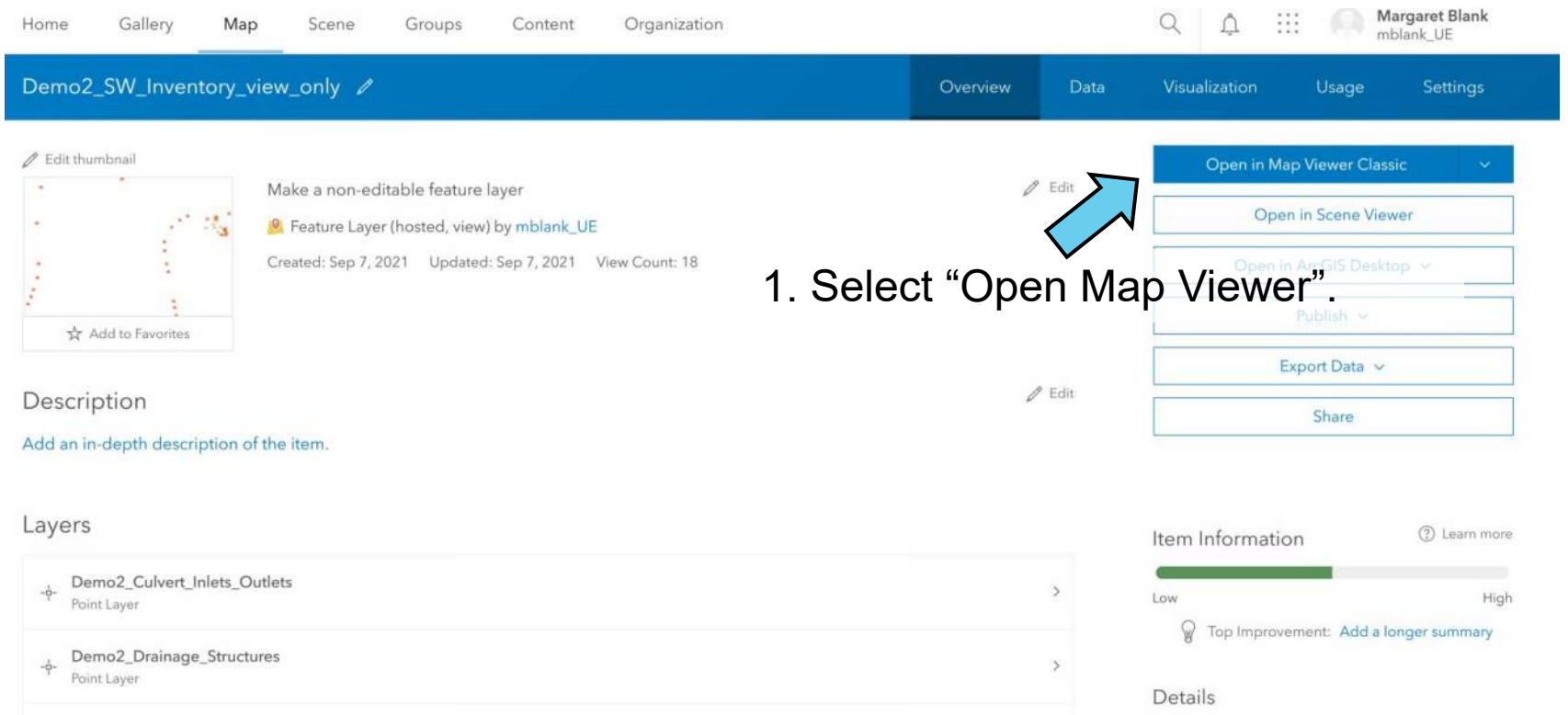
Story Maps

Configure data to share with the public:



Story Maps

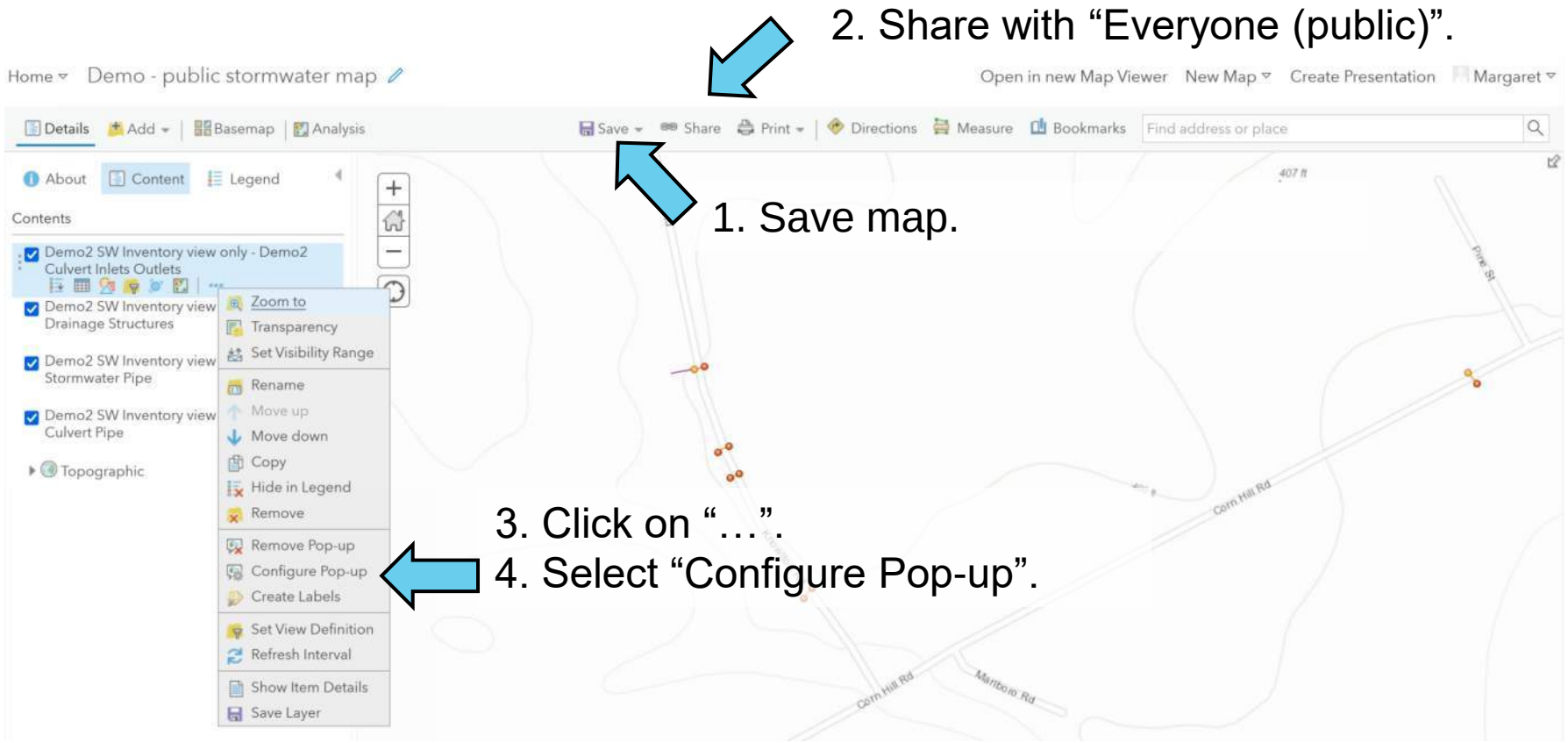
Create a map:



1. Select “Open Map Viewer”.

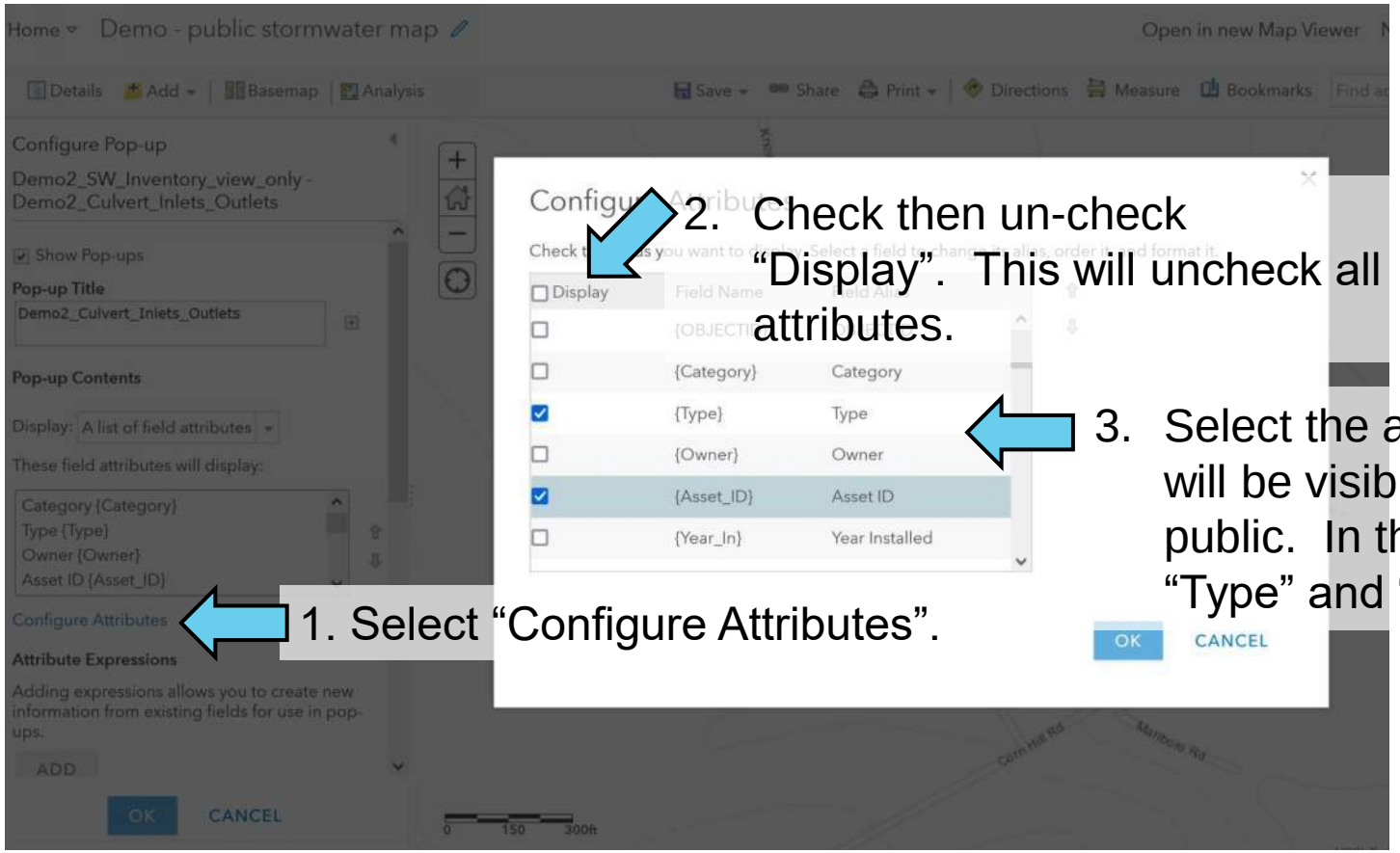
Story Maps

Share map and configure pop-ups:



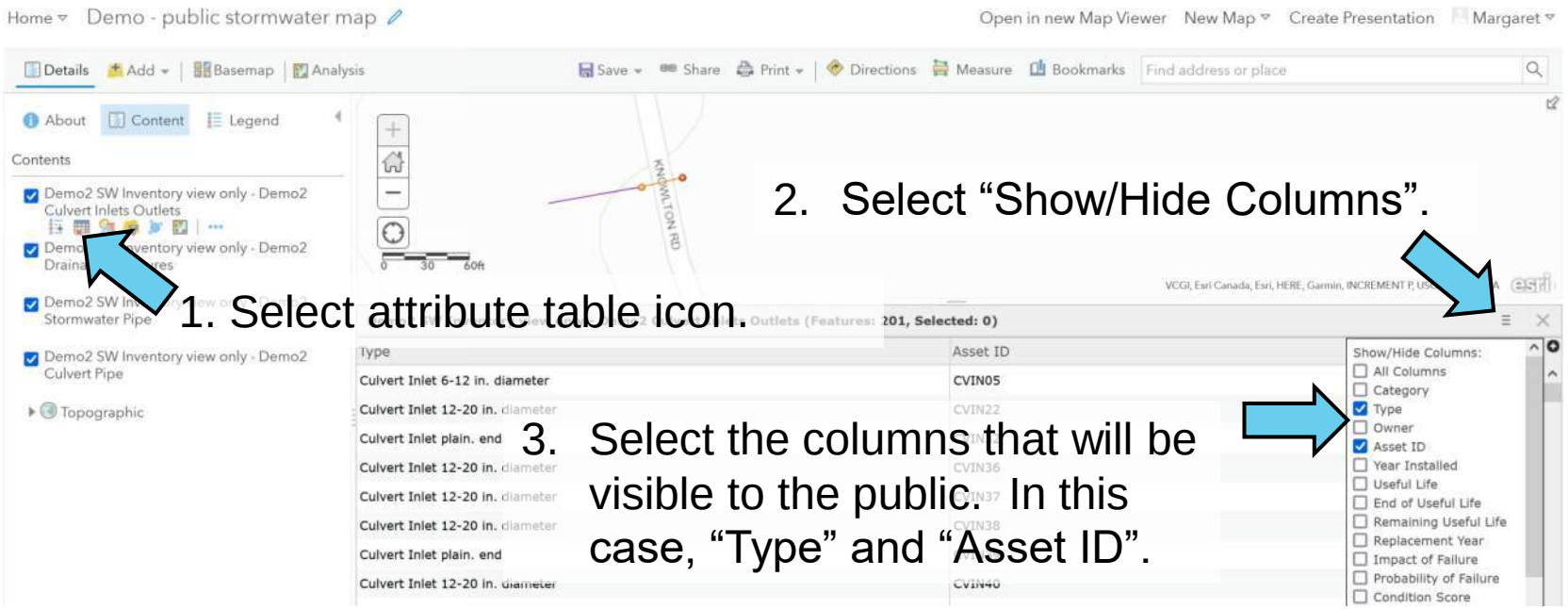
Story Maps

Share map and configure pop-ups:



Story Maps

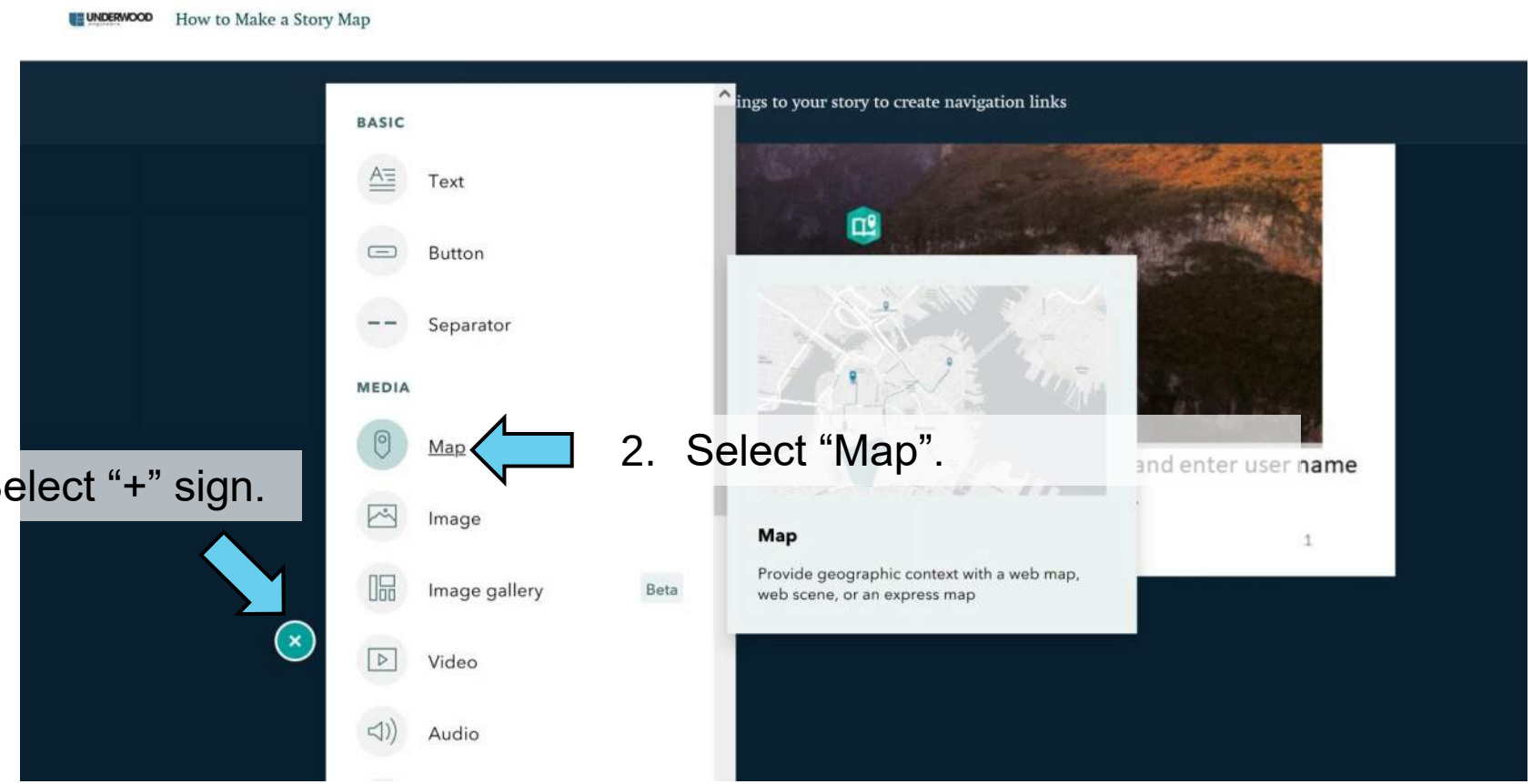
Configure attribute table:



1. Select attribute table icon.
2. Select “Show/Hide Columns”.
3. Select the columns that will be visible to the public. In this case, “Type” and “Asset ID”.

Story Maps

Add map to story:

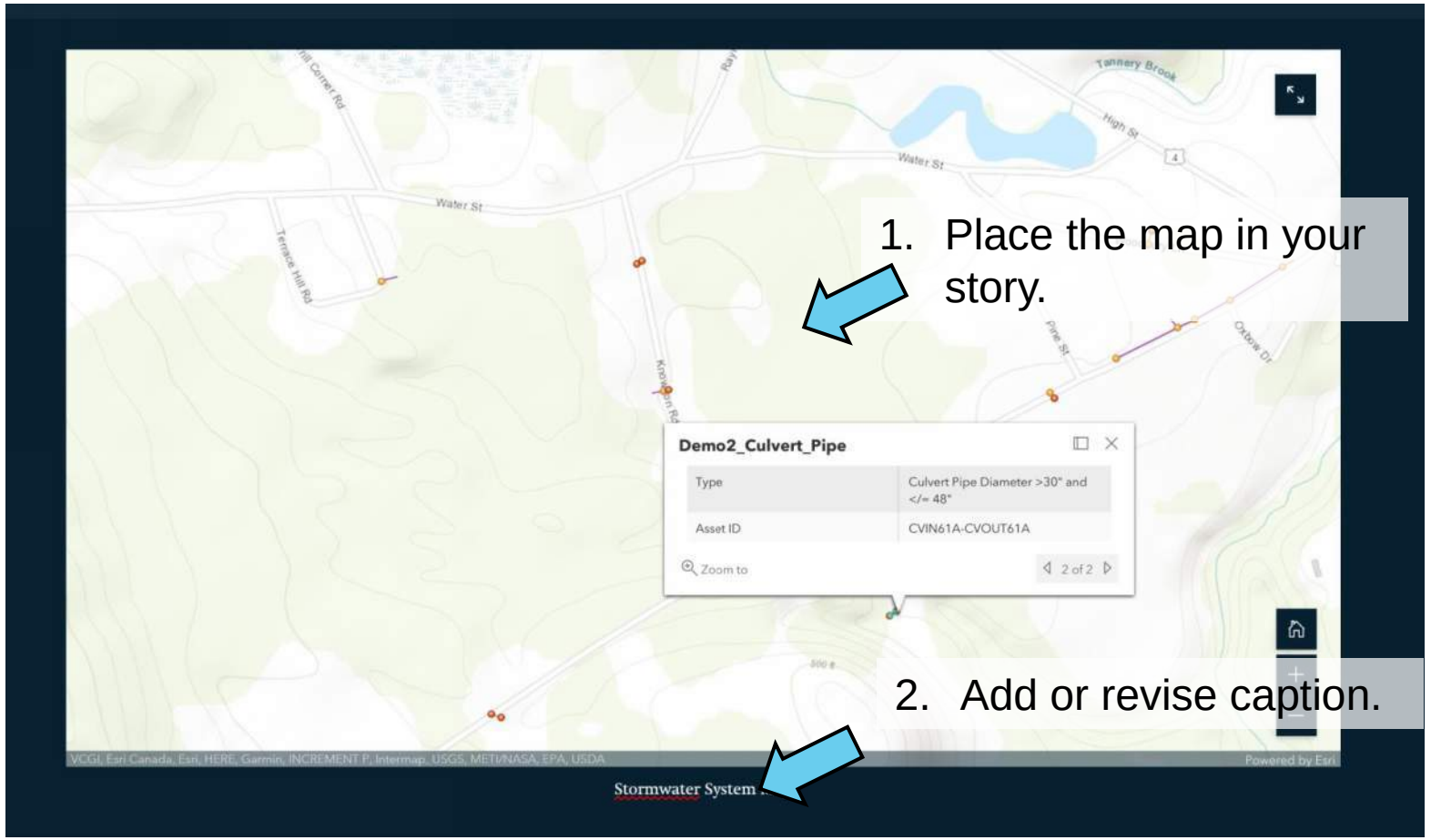


1. Select “+” sign.

2. Select “Map”.

Story Maps

Add map to story:



Additional resources.

UE StoryMap about how to make a StoryMap.

- https://storymaps.arcgis.com/stories/fc8b2f5f80624505be41493f6c8e580a

Ten essential steps for story map success.

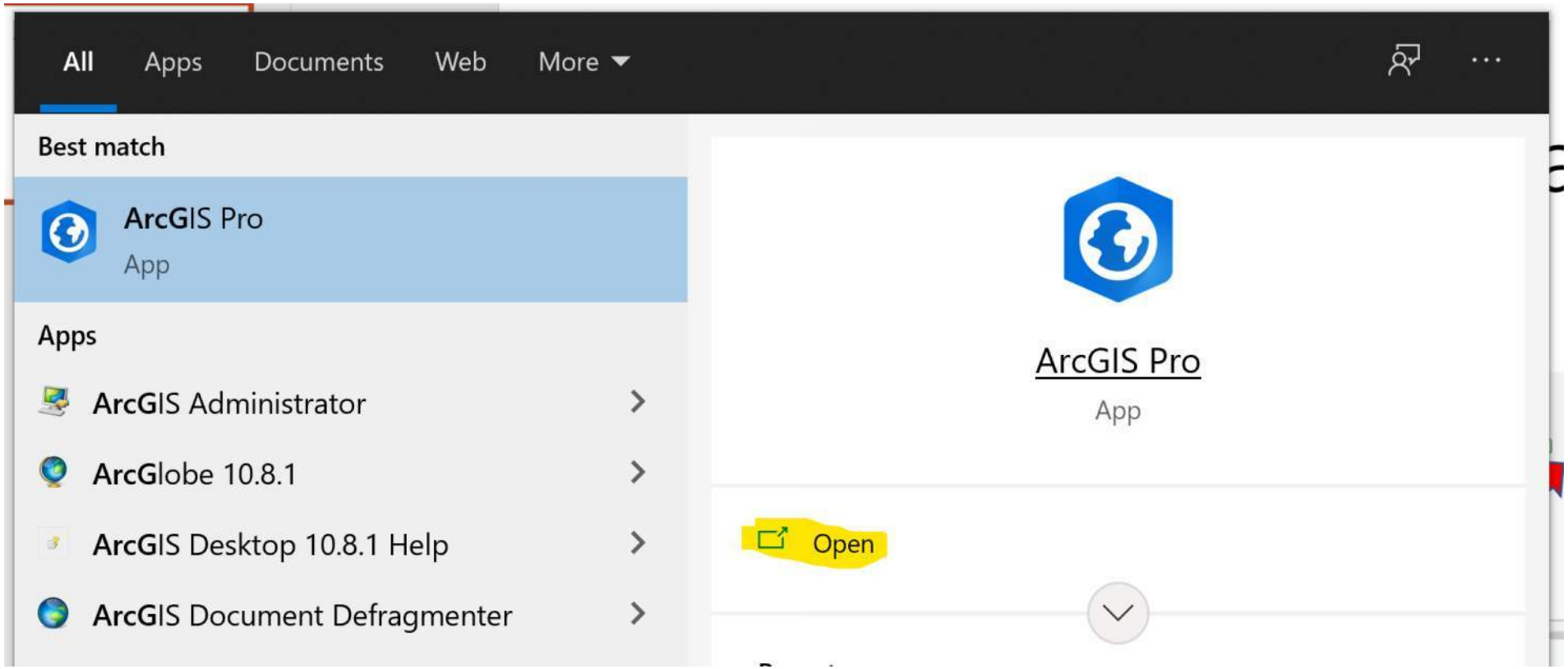
- https://www.esri.com/about/newsroom/arcuser/10-essential-steps-for-story-map-success/

Get started with ArcGIS story maps.

- https://learn.arcgis.com/en/projects/share-the-story-of-an-expedition/

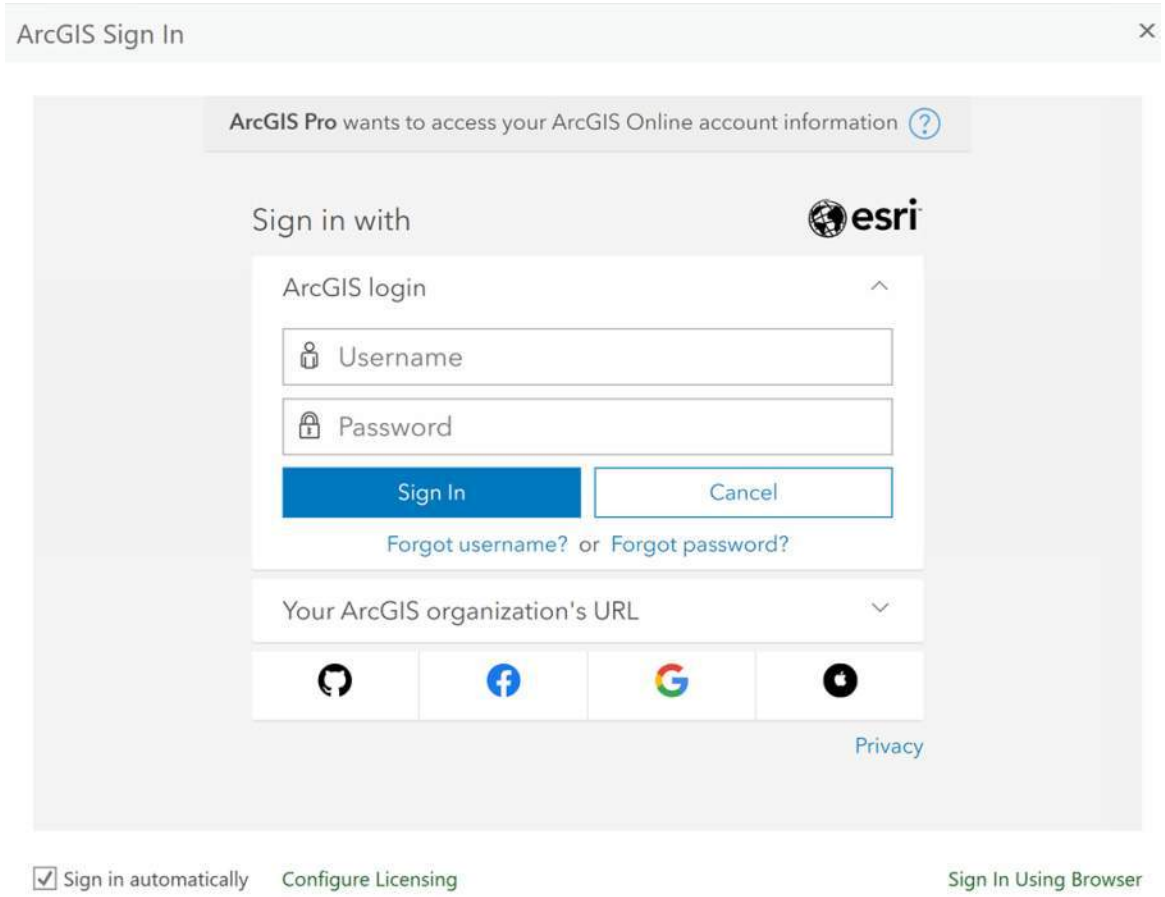
ArcGIS Pro – Getting Started

Type “ArcGIS Pro” in Search Bar. Select “Open”:



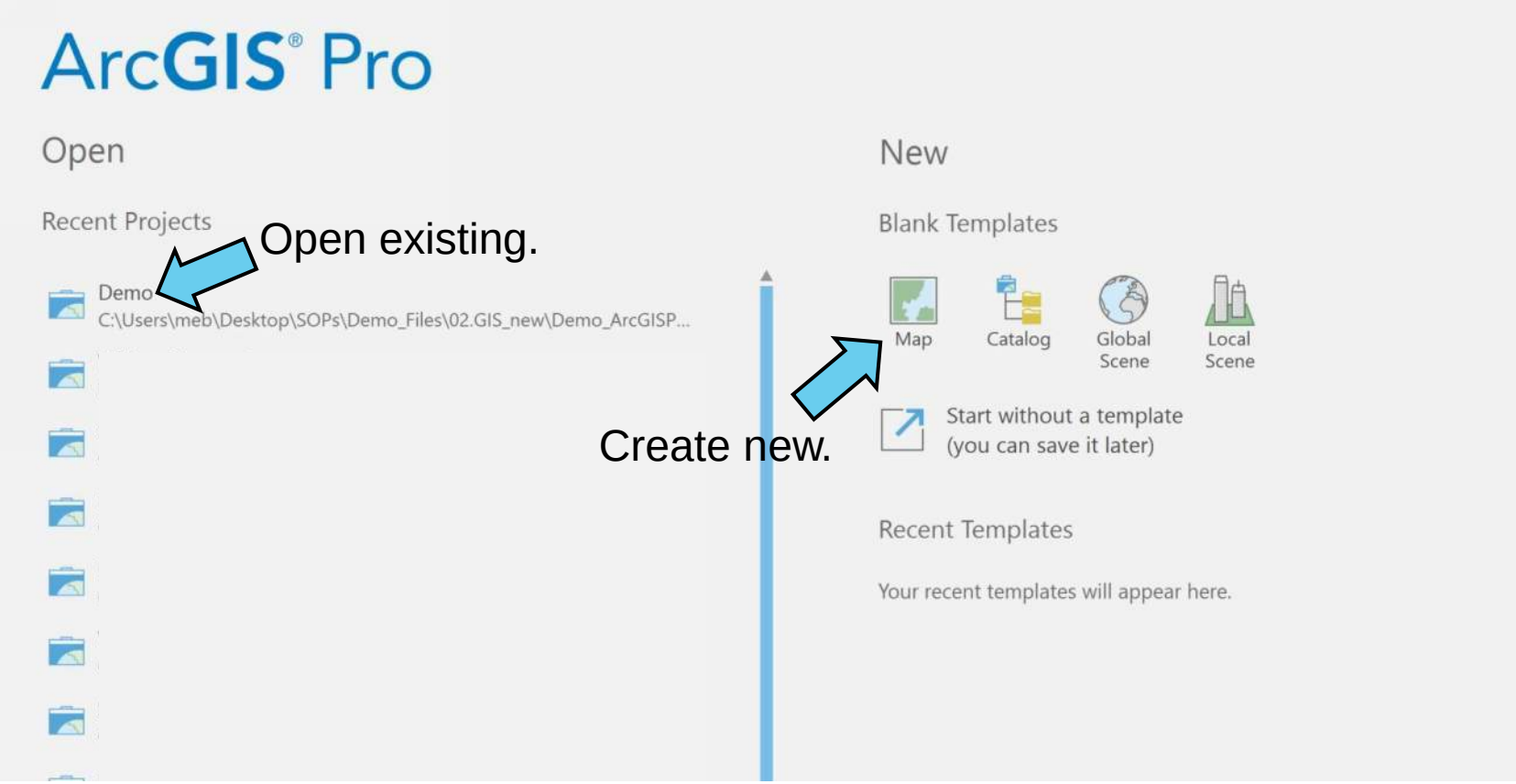
ArcGIS Pro – Getting Started

Log in:



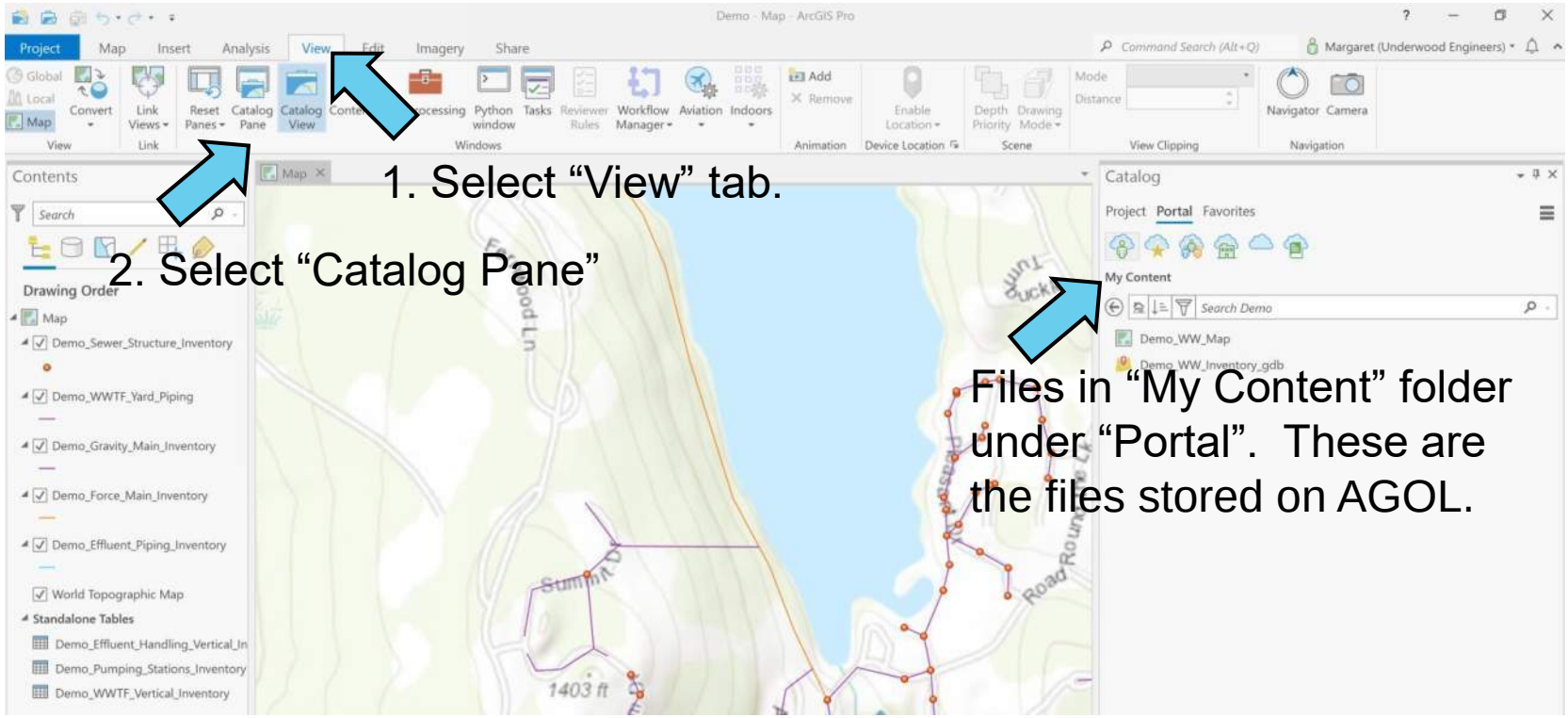
ArcGIS Pro – Getting Started

Open an existing project or create a new one:



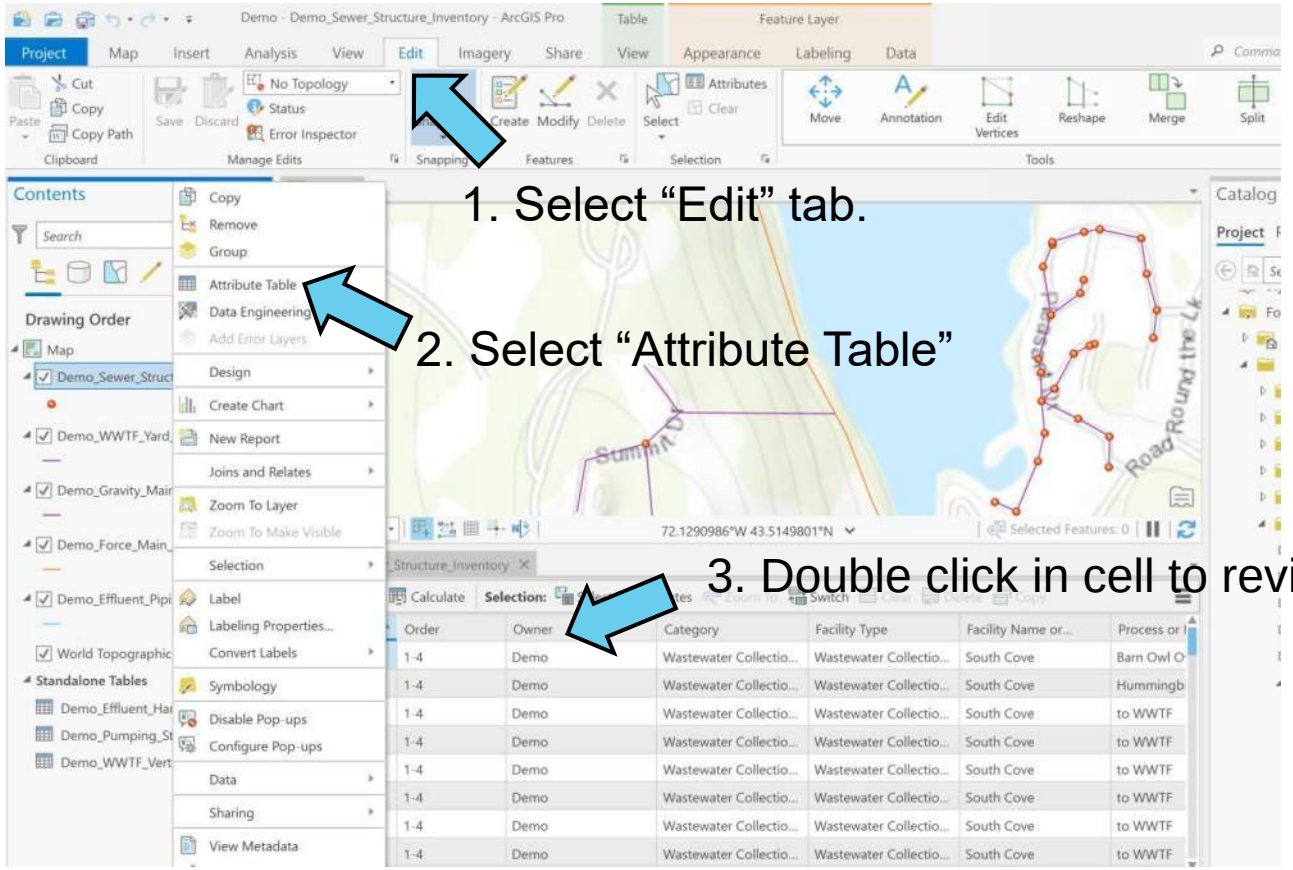
ArcGIS Pro – Getting Started

1. Select “View” tab. 2. Select “Catalog Pane”:



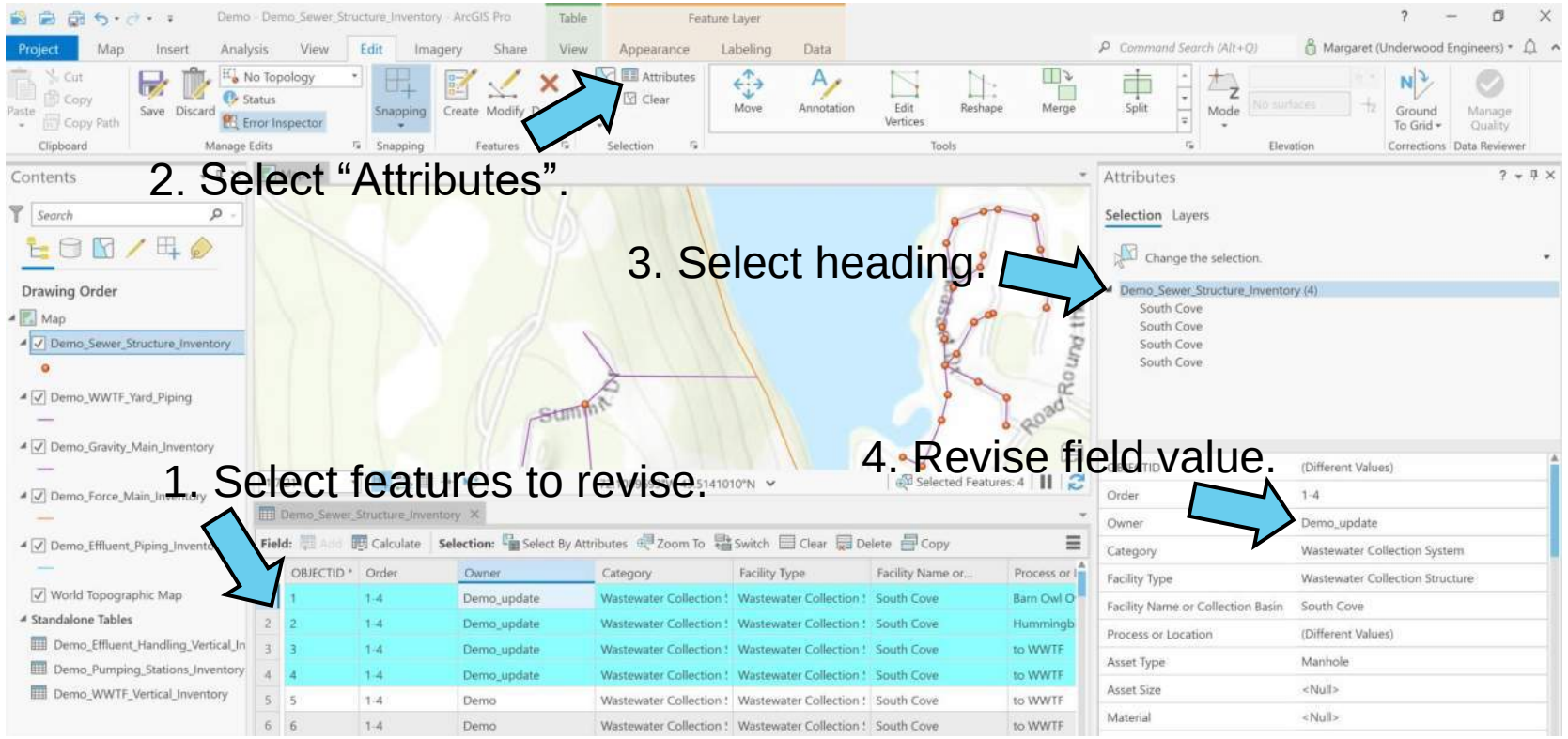
ArcGIS Pro – Getting Started

Edit attributes:



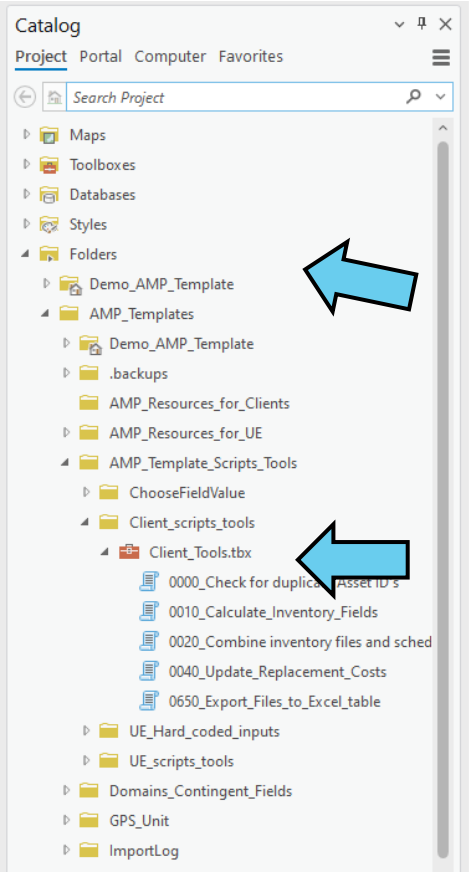
ArcGIS Pro – Getting Started

Edit attributes – same change to multiple records:



ArcGIS Pro – Find Tools

How to Access Python Script Tools:

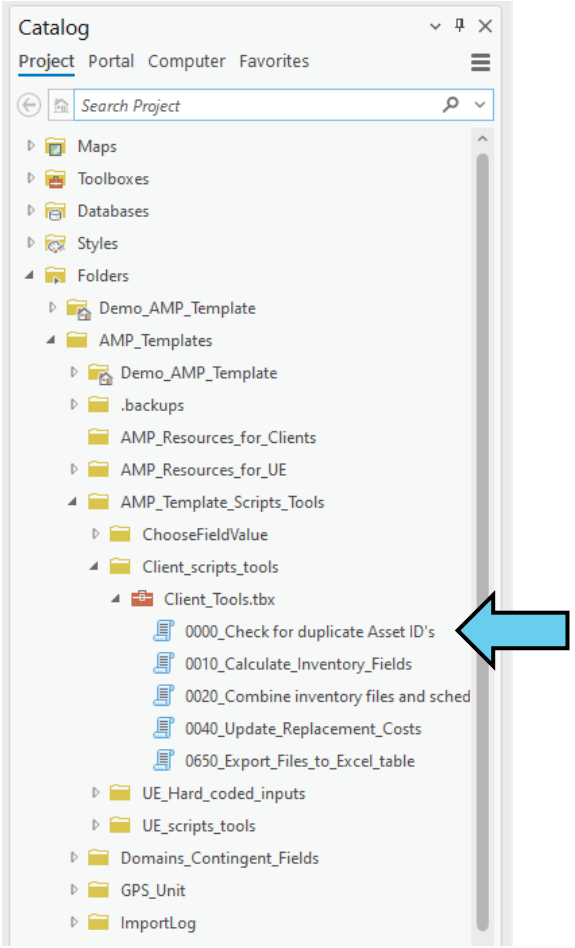


In catalog pane, expand “Folder”, select folder on network or hard drive where tools are stored.

Find and expand toolbox.

ArcGIS Pro – Find Tools

Check for duplicate Asset ID's:

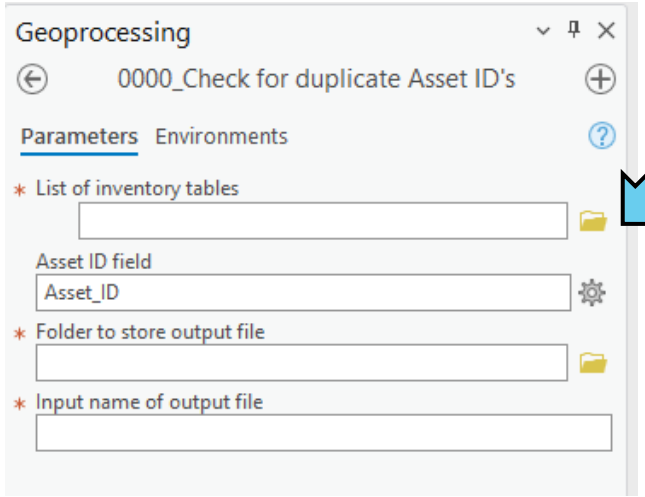


Add tool #070

Double click on 0000_Check for duplicate Asset ID's to open the tool

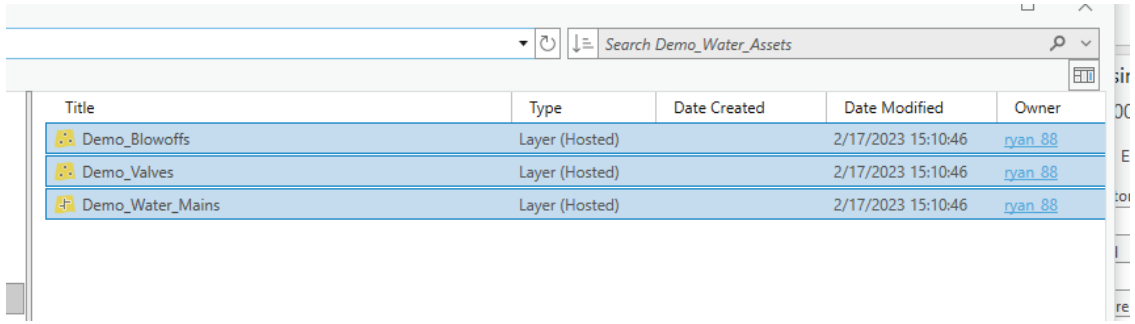
ArcGIS Pro – Run Tools

Check for duplicate Asset ID's:



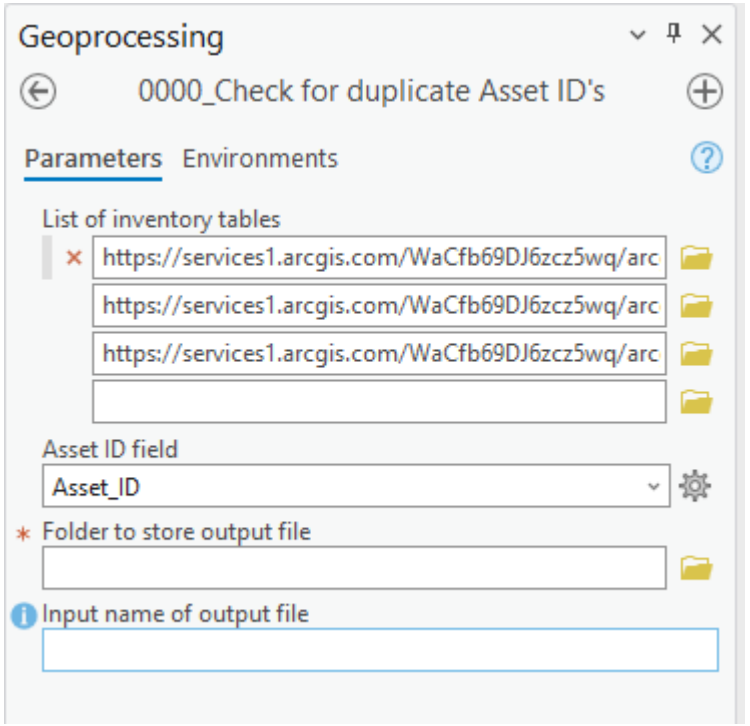
1. Click the folder icon to open the file browser.

2. Navigate to the geodatabase where your inventory files are stored and select all the feature classes. Click "OK" to load them in the tool.



ArcGIS Pro – Run Tools

Check for duplicate Asset ID's:

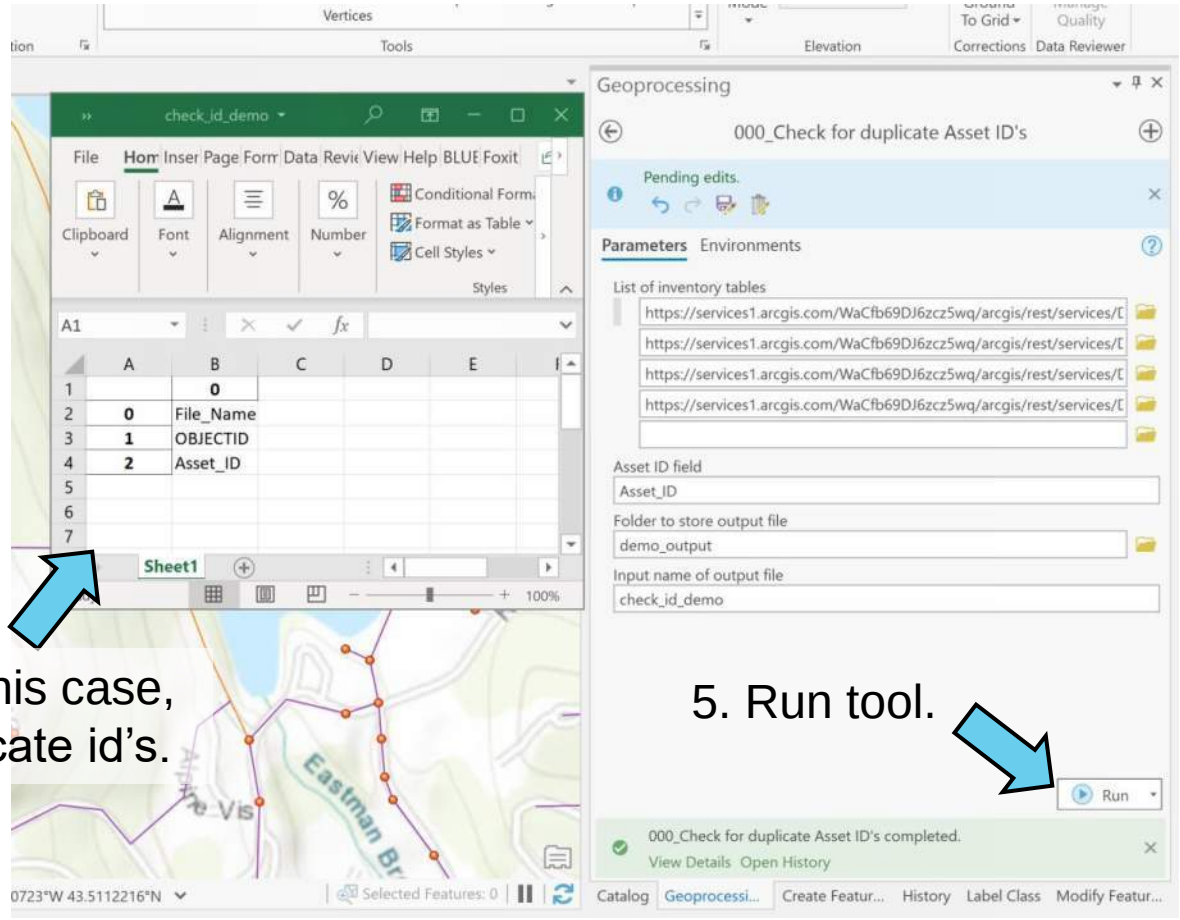


3. Click the folder icon to open the file browser and select a location to store the output excel file.

4. Give the file a name in this box.

ArcGIS Pro – Run Tools

Check for duplicate Asset ID's:



6. Check output. In this case, there are no duplicate id's.

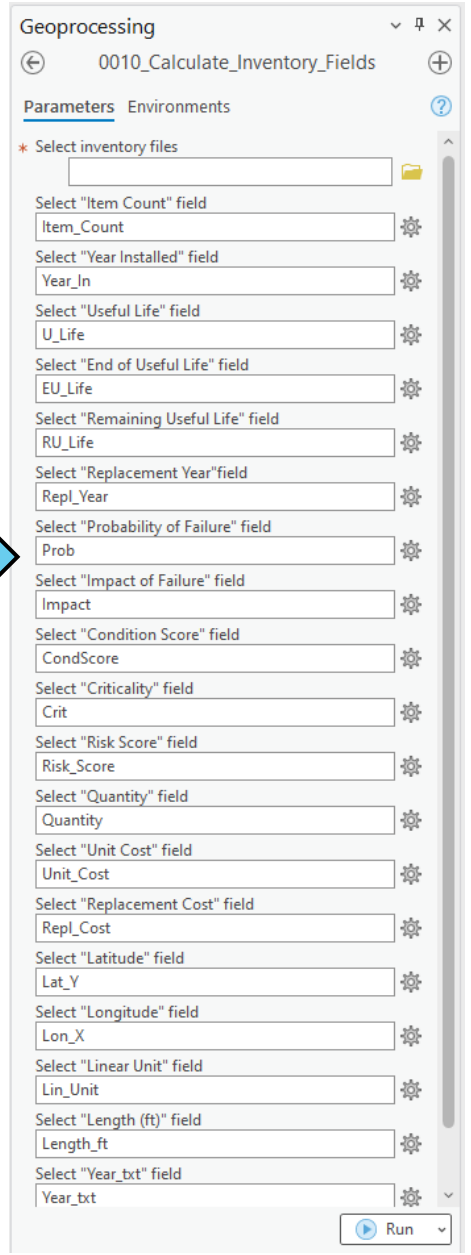
5. Run tool.

ArcGIS Pro – Run Tools

Calculate fields in inventory files:

1. Click the folder icon to open the file browser. Navigate to the geodatabase where all the feature classes are stored and select them.

2. These fields will be input automatically when you open the tool. Leave them as the default selection.

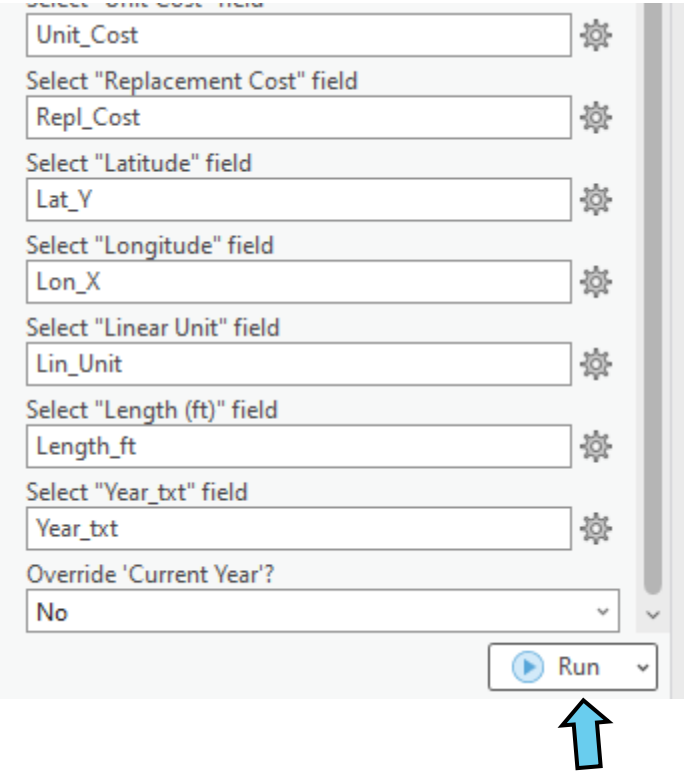


Note. See Appendix A-5 of Wastewater and Stormwater Asset Management Program report for detailed explanation of calculations.

ArcGIS Pro – Run Tools

Calculate fields in inventory files:

3. Note that the “current year” used in the calculations is assumed to be the current year. If you want change the year to explore different cost analyses for the system, select “Yes” and input the desired year.



4. Click “Run” to run the tool and perform the calculations.

ArcGIS Pro – Run Tools

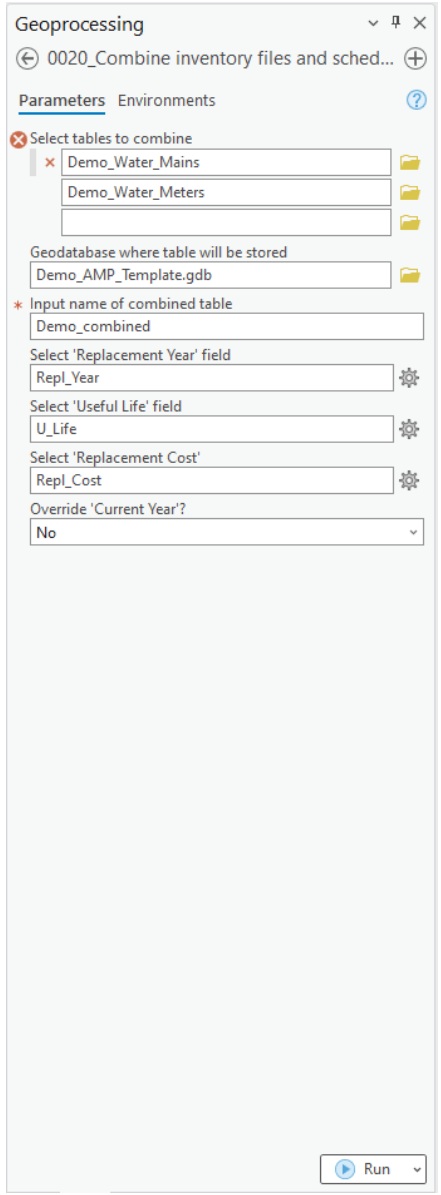
Combine inventory files into one table:

1. Navigate to the geodatabase with the tables you want to combine and select them.

2. Select a geodatabase to store the combined table in. Enter a name for the table.

3. Note that the “current year” used in the calculations is assumed to be the current year. If you want change the year to explore different cost analyses for the system, select “Yes” and input the desired year.

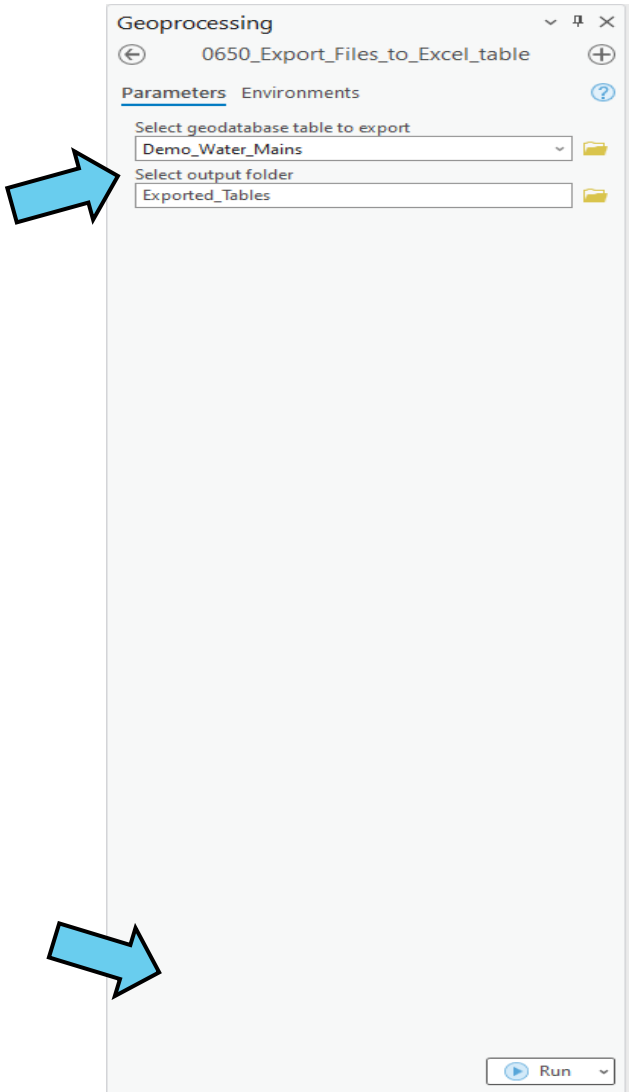
4. Click “Run” to combine the inventory into one table. This tool also calculates replacement costs.



ArcGIS Pro – Run Tools

Export Combined Table to Excel File:

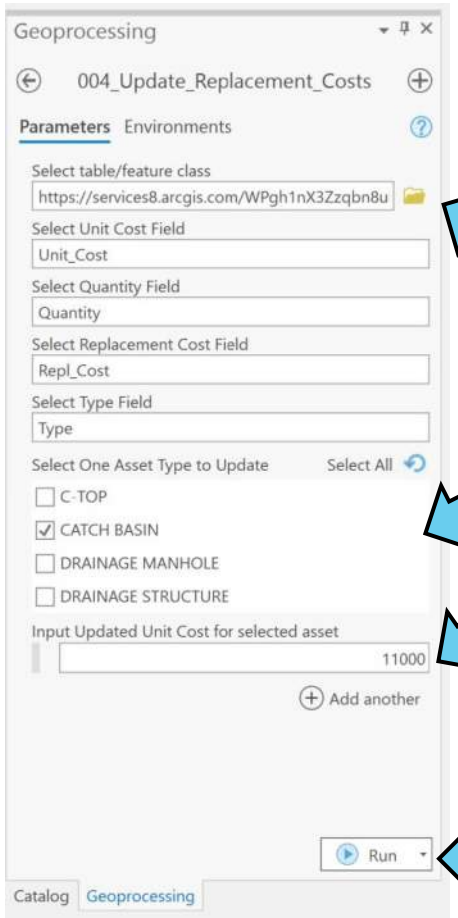
1. Navigate to the geodatabase where you stored the combine inventory table using the previous tool. Select a folder to store the excel file.



2. Click “Run” to export the file. Note that this tool not only converts the table to excel format, but also automatically formats the data in the excel sheet to be in table format. This will allow us to create the Pivot Tables you will see later in this PowerPoint.

ArcGIS Pro – Run Tools

Update Replacement Costs:



If you wish to update the “unit cost” field for a group of assets, you can use this tool to easily enter a new unit cost. This tool also updates the replacement cost at the same time based on the new unit cost.

1. Select the table or feature class containing the asset type you want to update.

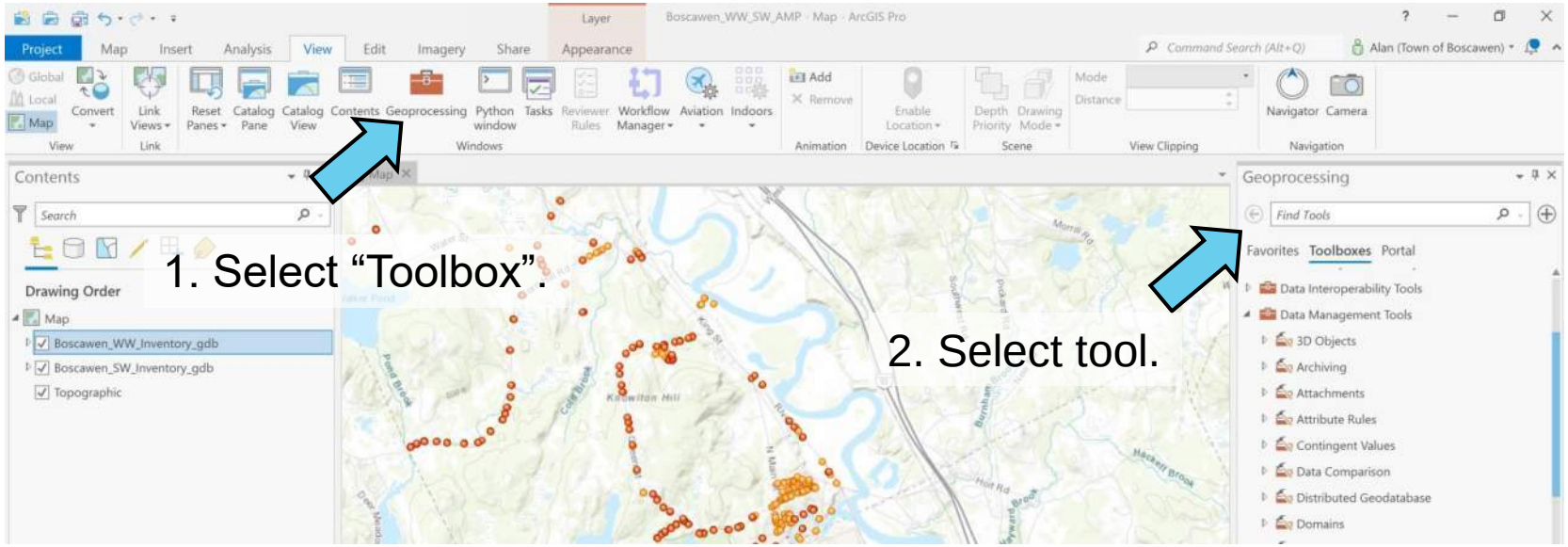
2. Select the asset type you want to update.

3. Enter the new unit cost for the selected asset.

4. Click “Run” to update the table/feature class.

ArcGIS Pro – Find Tools

How to Access Built-In Geoprocessing Tools:

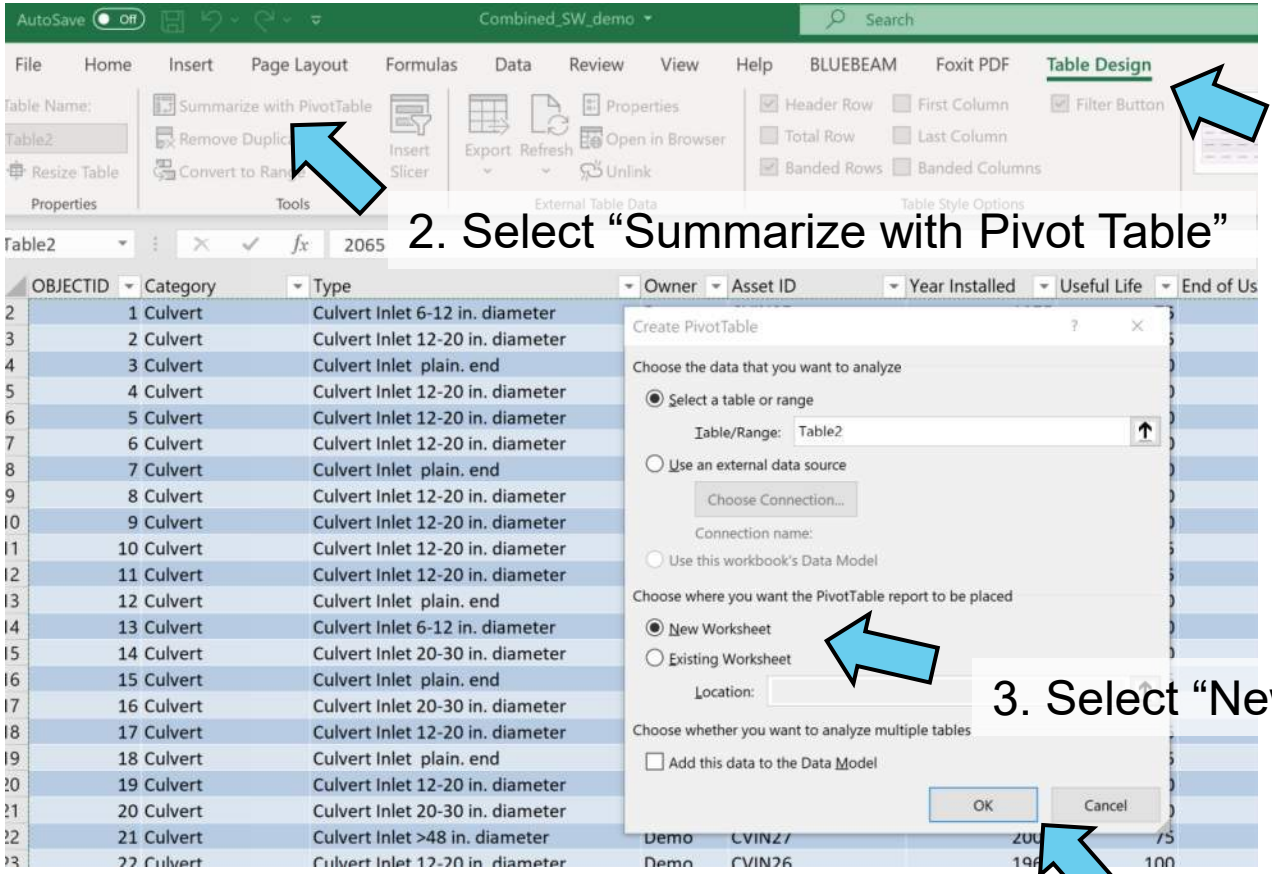


Additional resources on how to use ArcGIS Pro:

- https://www.youtube.com/watch?v=9pbdBOjJaTg
- https://www.youtube.com/watch?v=hjZMFkjuQcc

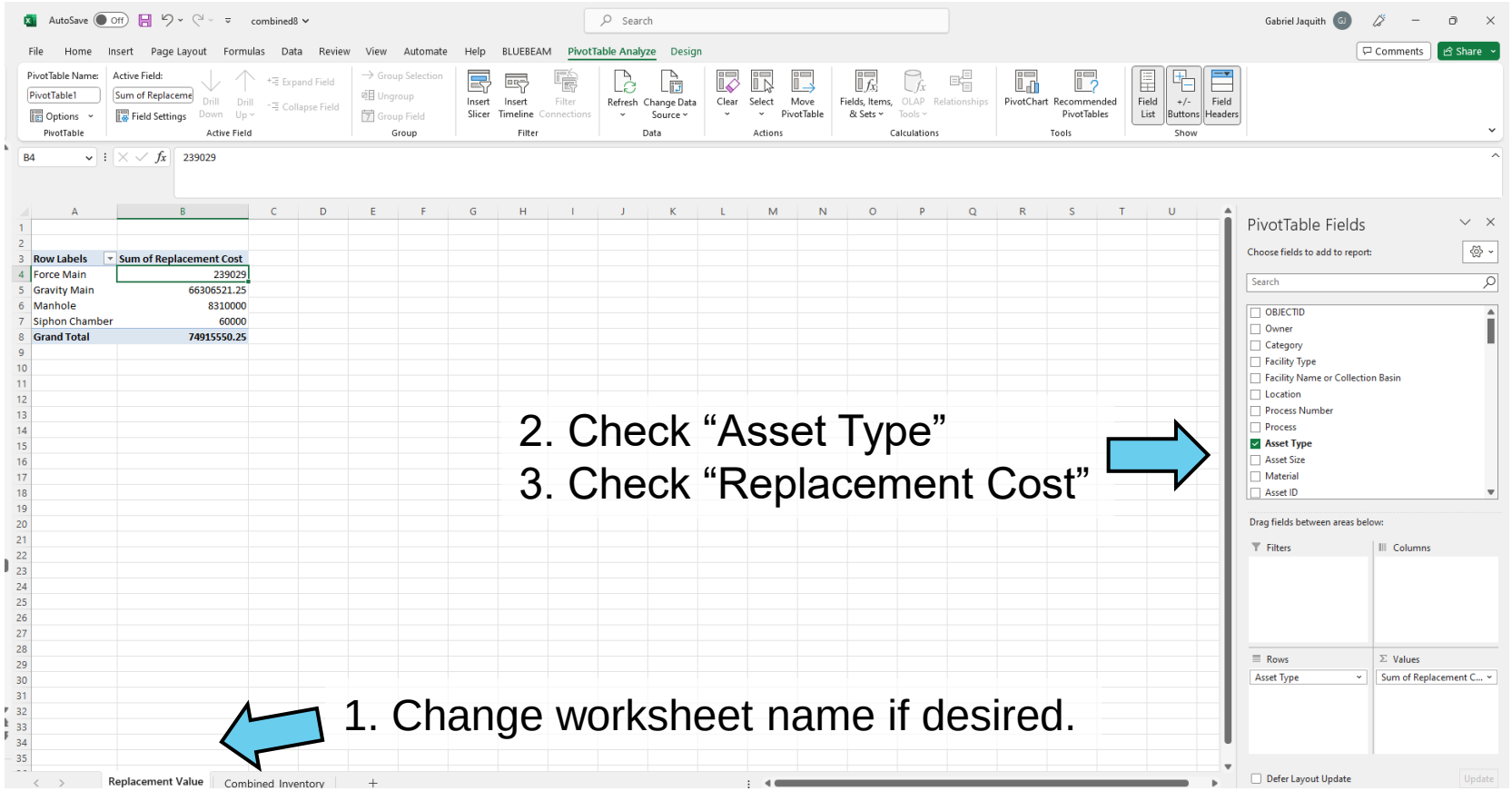
Excel Pivot Tables

Open the combined table created with the export to excel table tool:



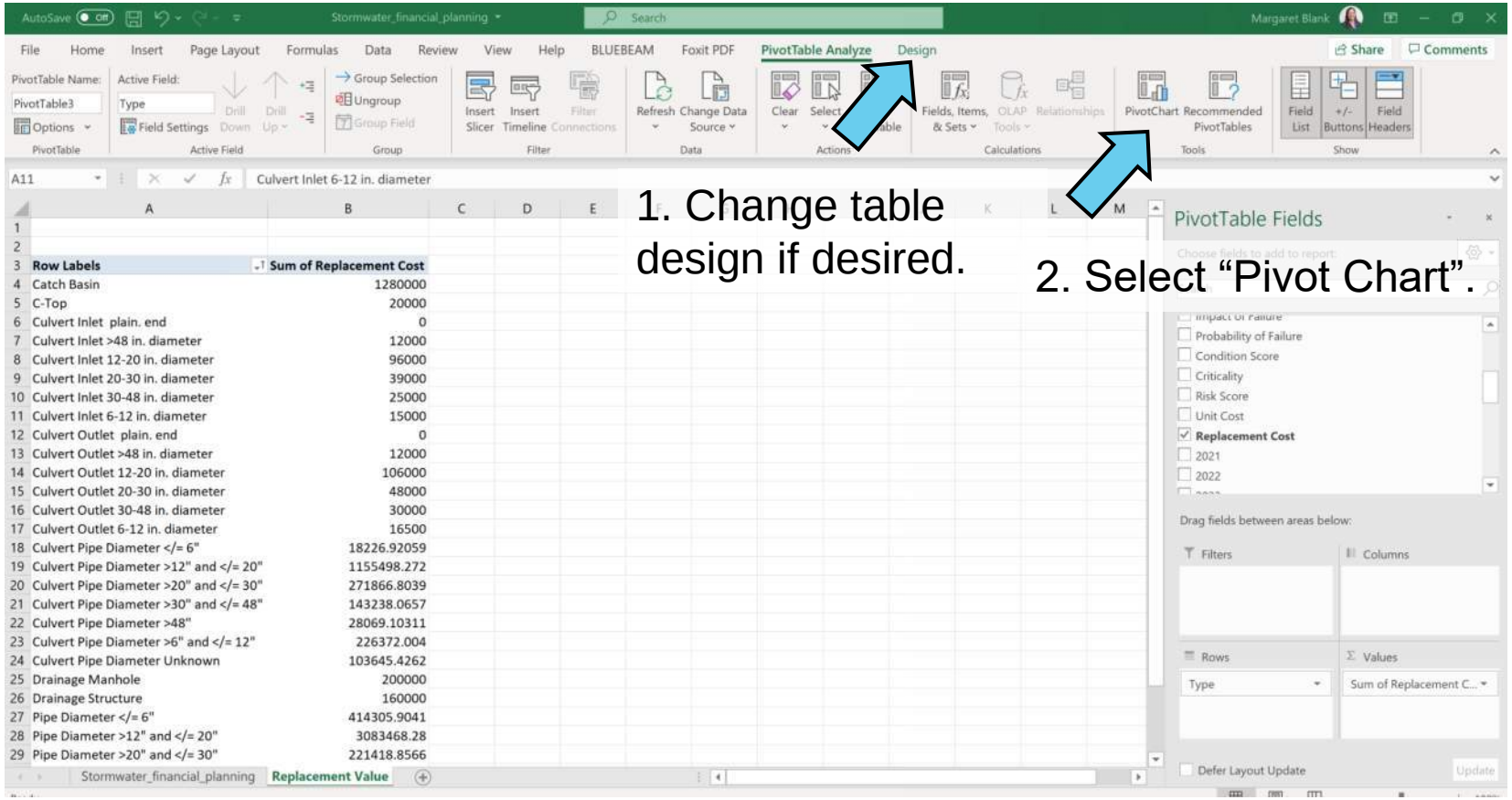
Excel Pivot Tables

Replacement Value and Pie Chart:



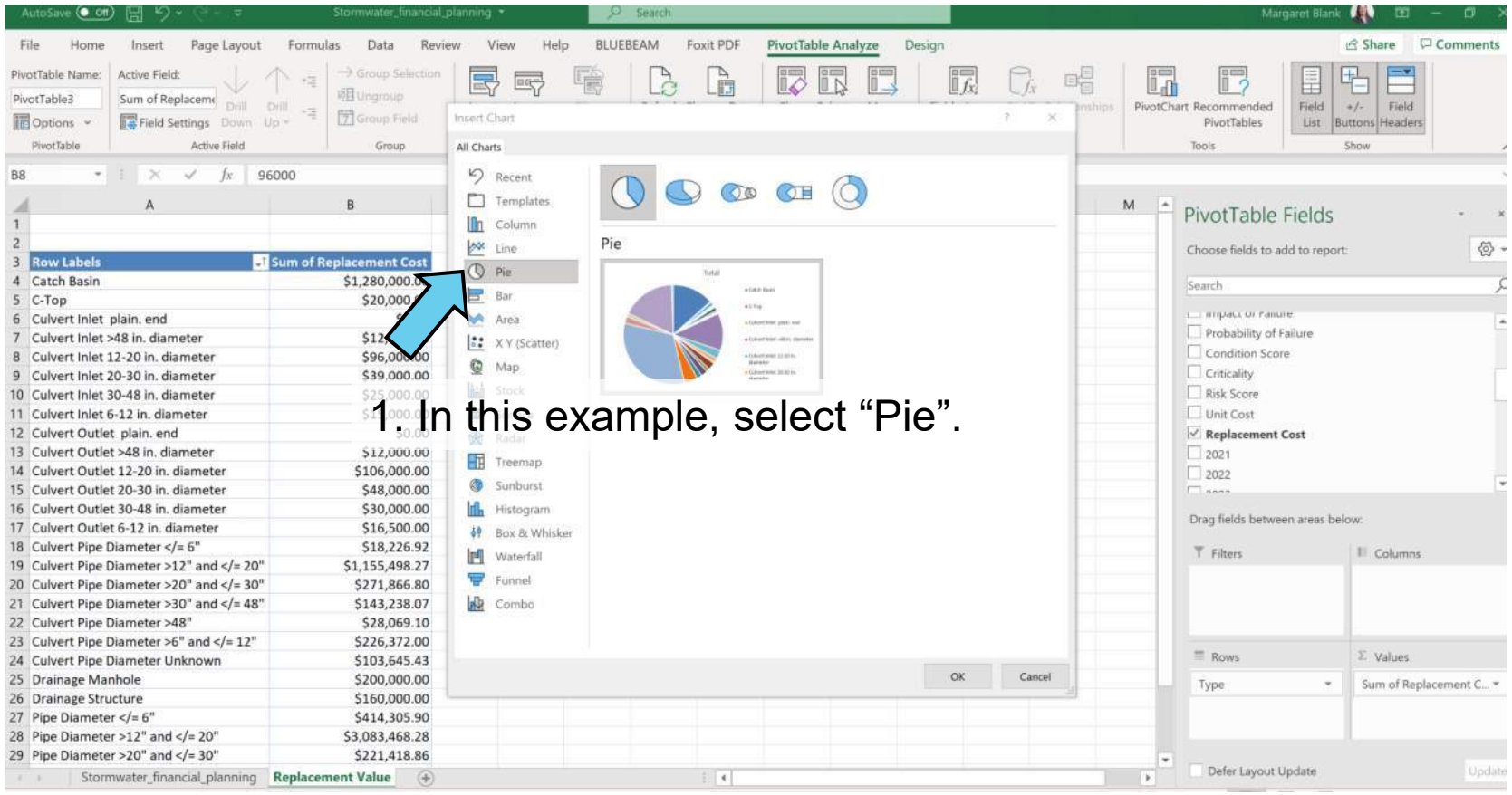
Excel Pivot Tables

Replacement Value and Pie Chart:



Excel Pivot Tables

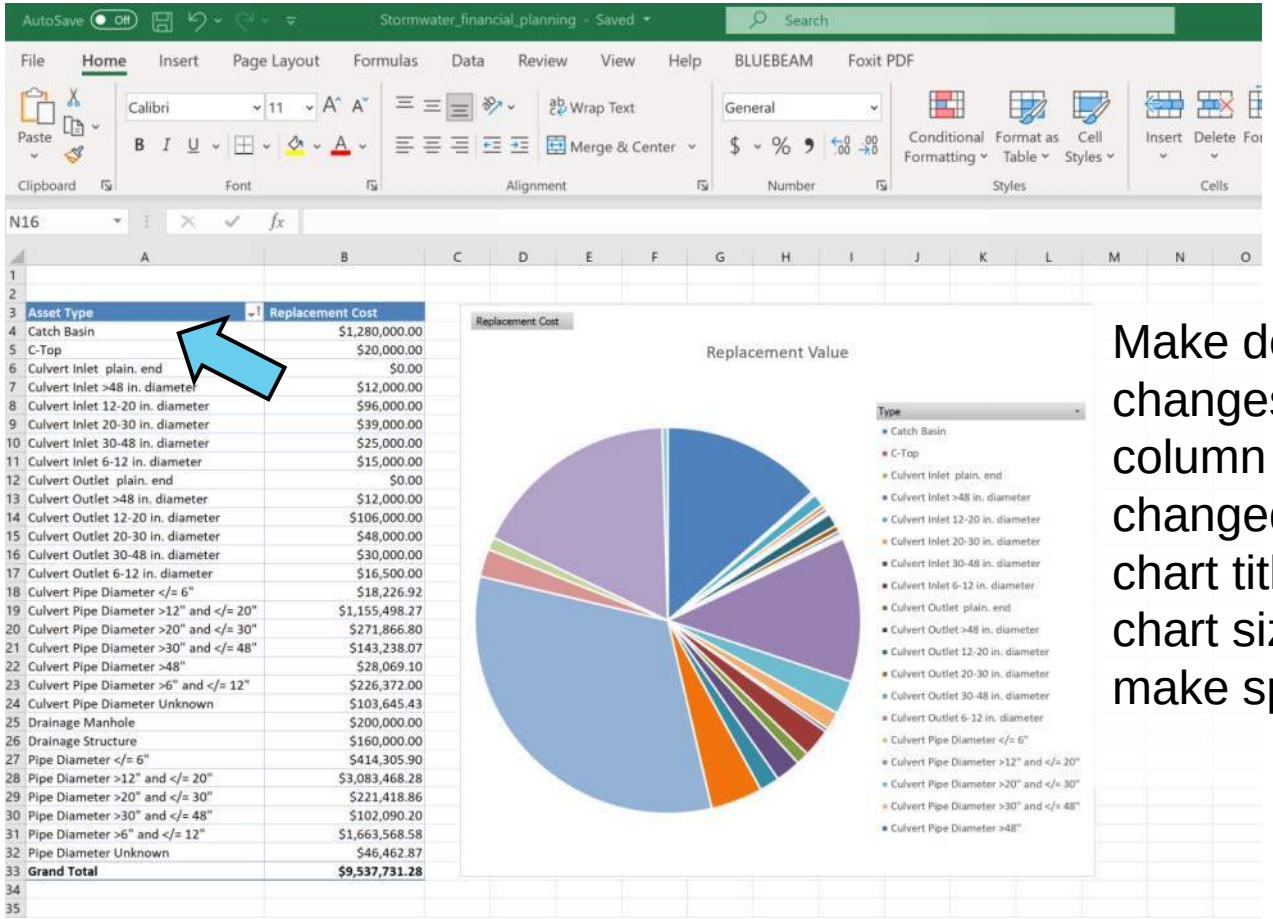
Replacement Value and Pie Chart:



1. In this example, select “Pie”.

Excel Pivot Tables

Replacement Value and Pie Chart:

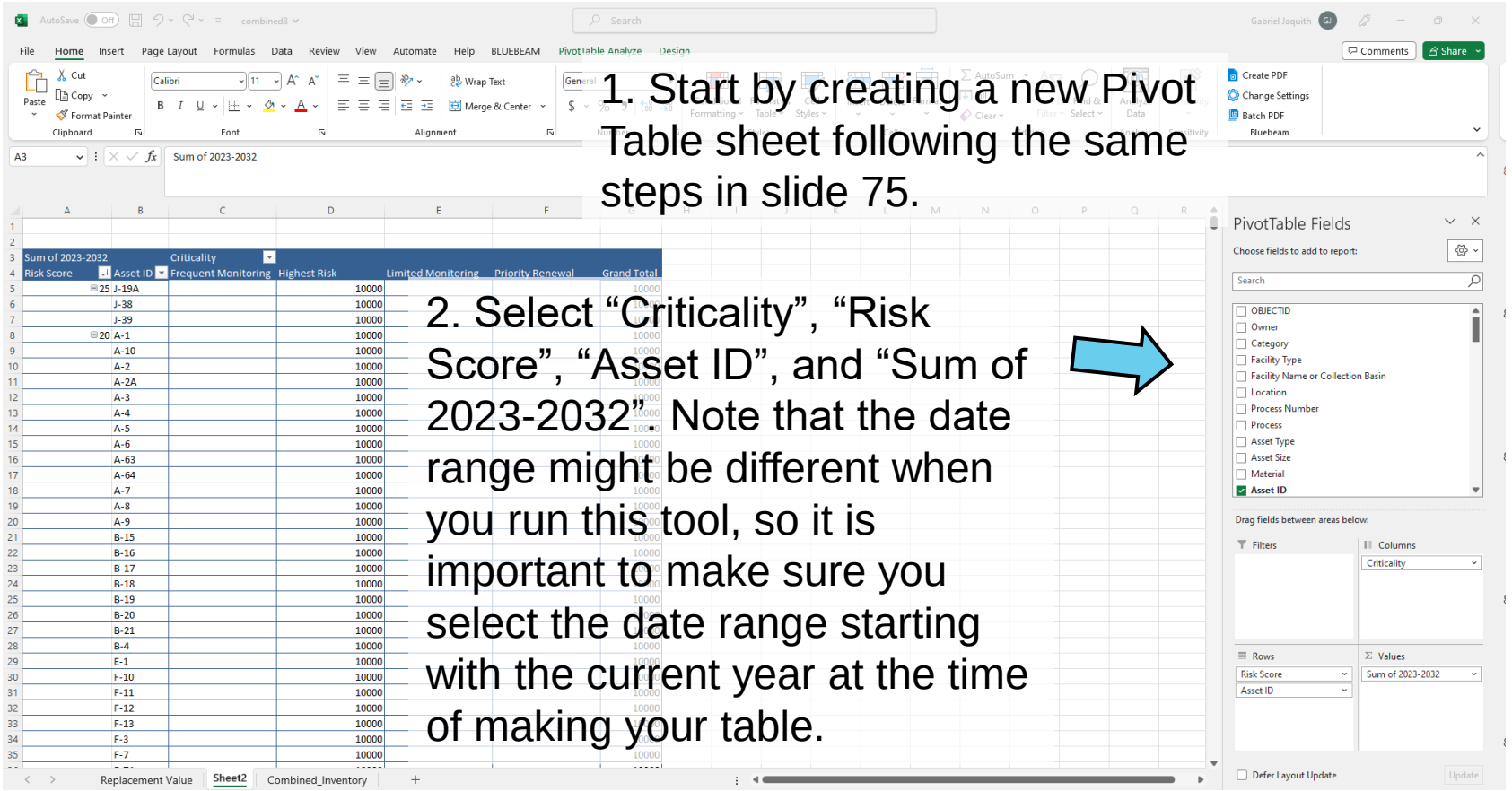


Asset Type	Replacement Cost
Catch Basin	$1,280,000.00
C-Top	$20,000.00
Culvert Inlet plain. end	$0.00
Culvert Inlet >48 in. diameter	$12,000.00
Culvert Inlet 12-20 in. diameter	$96,000.00
Culvert Inlet 20-30 in. diameter	$39,000.00
Culvert Inlet 30-48 in. diameter	$25,000.00
Culvert Inlet 6-12 in. diameter	$15,000.00
Culvert Outlet plain. end	$0.00
Culvert Outlet >48 in. diameter	$12,000.00
Culvert Outlet 12-20 in. diameter	$106,000.00
Culvert Outlet 20-30 in. diameter	$48,000.00
Culvert Outlet 30-48 in. diameter	$30,000.00
Culvert Outlet 6-12 in. diameter	$16,500.00
Culvert Pipe Diameter </= 6"	$18,226.92
Culvert Pipe Diameter >12" and </= 20"	$1,155,498.27
Culvert Pipe Diameter >20" and </= 30"	$271,866.80
Culvert Pipe Diameter >30" and </= 48"	$143,238.07
Culvert Pipe Diameter >48"	$28,069.10
Culvert Pipe Diameter >6" and </= 12"	$226,372.00
Culvert Pipe Diameter Unknown	$103,645.43
Drainage Manhole	$200,000.00
Drainage Structure	$160,000.00
Pipe Diameter </= 6"	$414,305.90
Pipe Diameter >12" and </= 20"	$3,083,468.28
Pipe Diameter >20" and </= 30"	$221,418.86
Pipe Diameter >30" and </= 48"	$102,090.20
Pipe Diameter >6" and </= 12"	$1,663,568.58
Pipe Diameter Unknown	$46,462.87
Grand Total	**$9,537,731.28**

Make desired formatting changes. In this example, column headings were changed,
chart title was changed, and chart size was enlarged to make space for legend.

Excel Pivot Tables

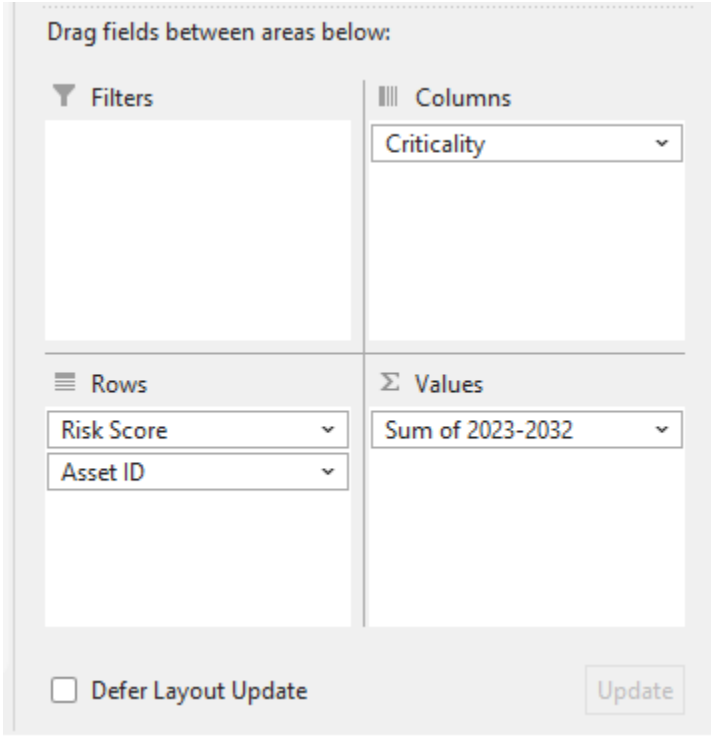
Ten-Year Look Ahead:



Excel Pivot Tables

Ten-Year Look Ahead:

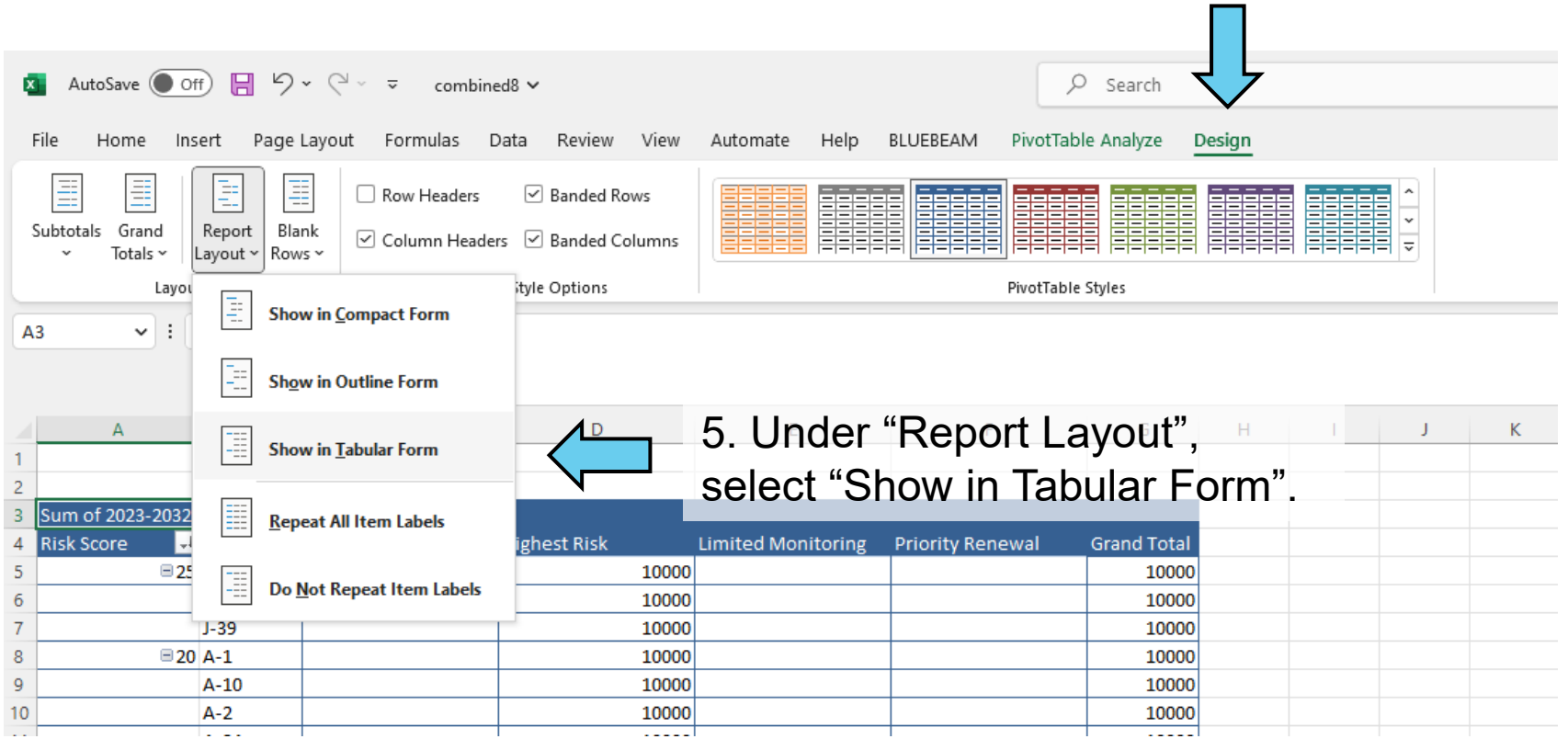
3. In the bottom right-hand side of the excel sheet, you should notice these boxes and they should display all the selections you made in the previous step. You can click and drag each of these selections. Make sure you drag each selection to copy the layout shown in this image.



Excel Pivot Tables

Ten-Year Look Ahead:

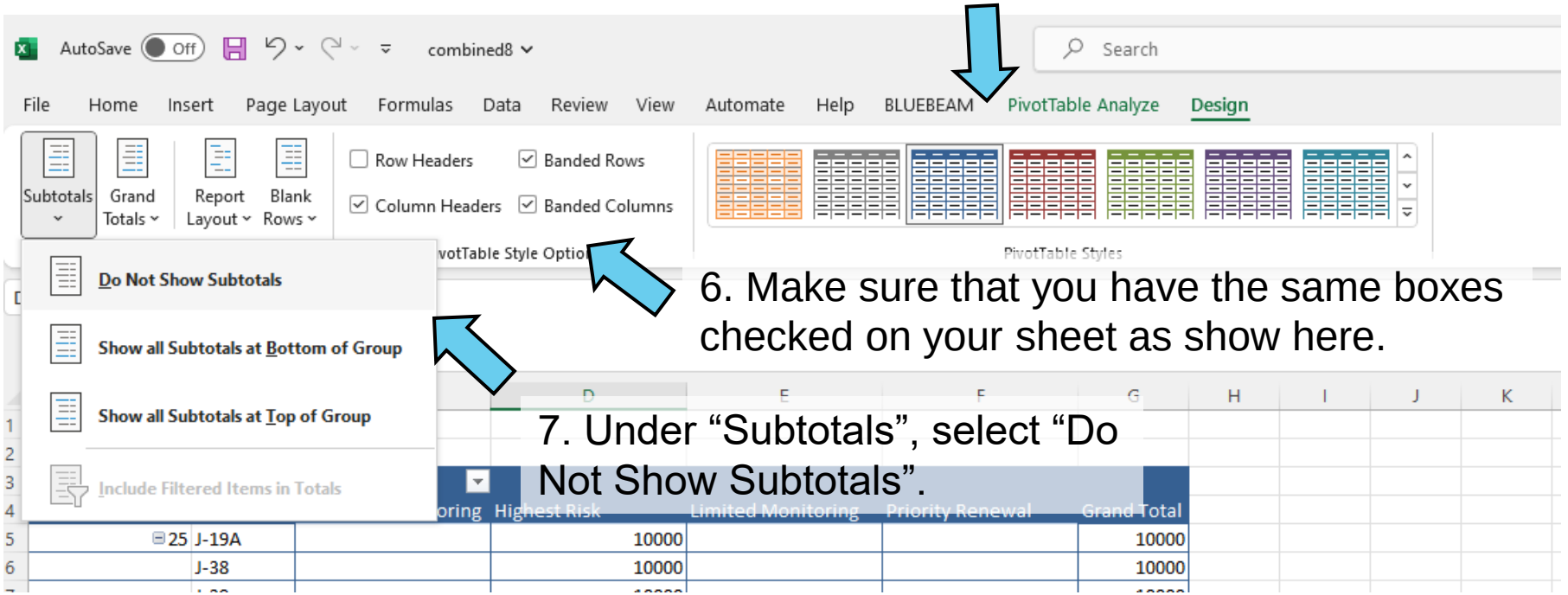
4. Navigate to the “Design” tab.



Excel Pivot Tables

Ten-Year Look Ahead:

Note that you can select a Pivot Table style here. You may pick whichever style you like best.



6. Make sure that you have the same boxes checked on your sheet as show here.

7. Under “Subtotals”, select “Do Not Show Subtotals”.

Excel Pivot Tables

Ten-Year Look Ahead:

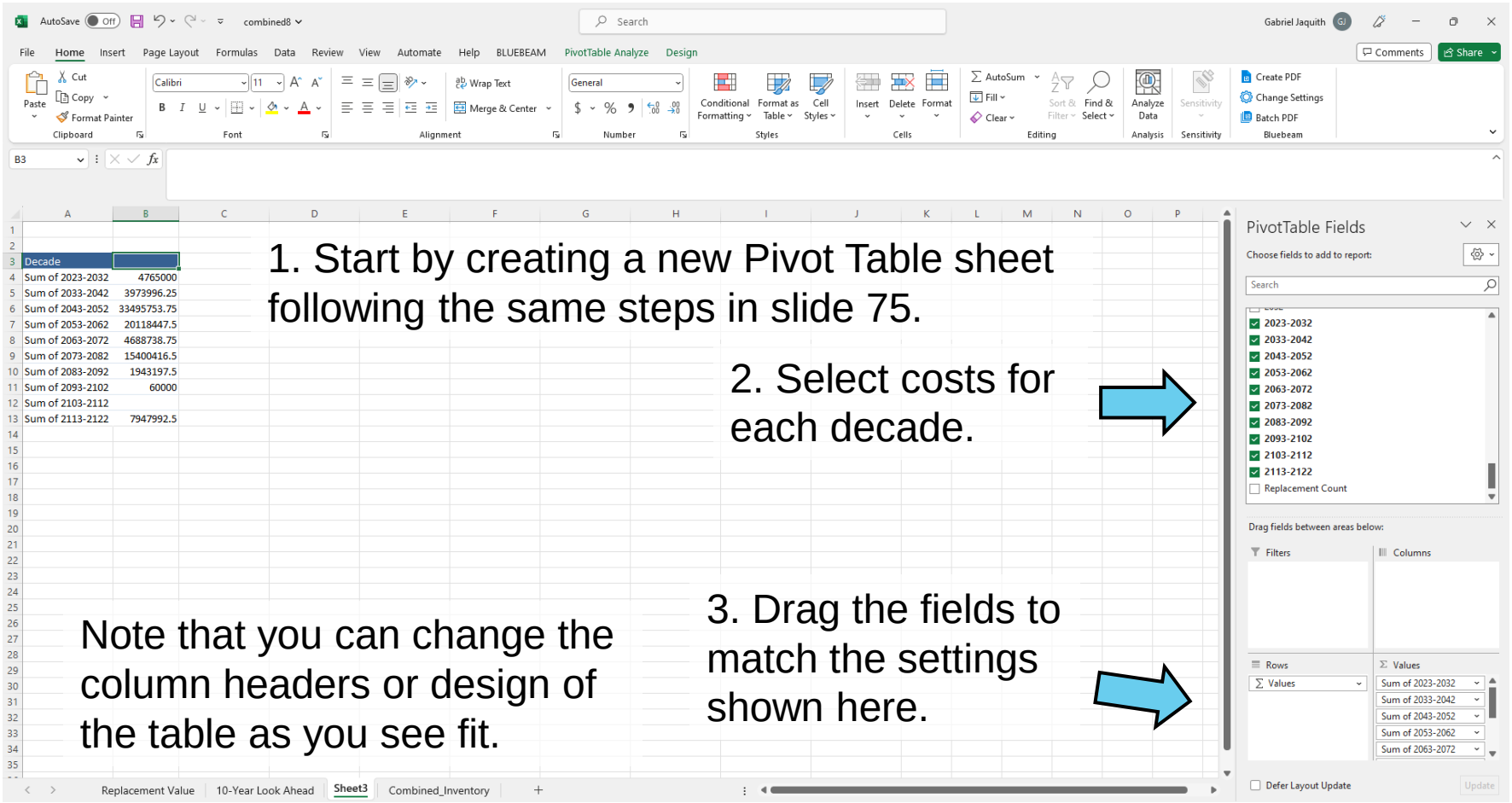
Sum of 2023-2032		Criticality				
Risk Score	Asset ID	Frequent Monitoring	Highest Risk	Limited Monitoring	Priority Renewal	Grand Total
25	J-19A		10000			10000
	J-38		10000			10000
	J-39		10000			10000
20	A-1		10000			10000
	A-10		10000			10000
	A-2		10000			10000
	A-2A		10000			10000
	A-3		10000			10000
	A-4		10000			10000
	A-5		10000			10000
	A-6		10000			10000
	A-63		10000			10000
	A-64		10000			10000
	A-7		10000			10000
	A-8		10000			10000
	A-9		10000			10000
	B-15		10000			10000
	B-16		10000			10000
	B-17		10000			10000
	B-18		10000			10000
	B-19		10000			10000
	B-20		10000			10000
	B-21		10000			10000
	B-4		10000			10000
	E-1		10000			10000
	F-10		10000			10000
	F-11		10000			10000
	F-12		10000			10000
	F-13		10000			10000
	F-3		10000			10000
	F-7		10000			10000

Your table should look like this. You can filter this table using these white tabs in the column headers.

Replacement Value | 10-Year Look Ahead | Combined_Inventory

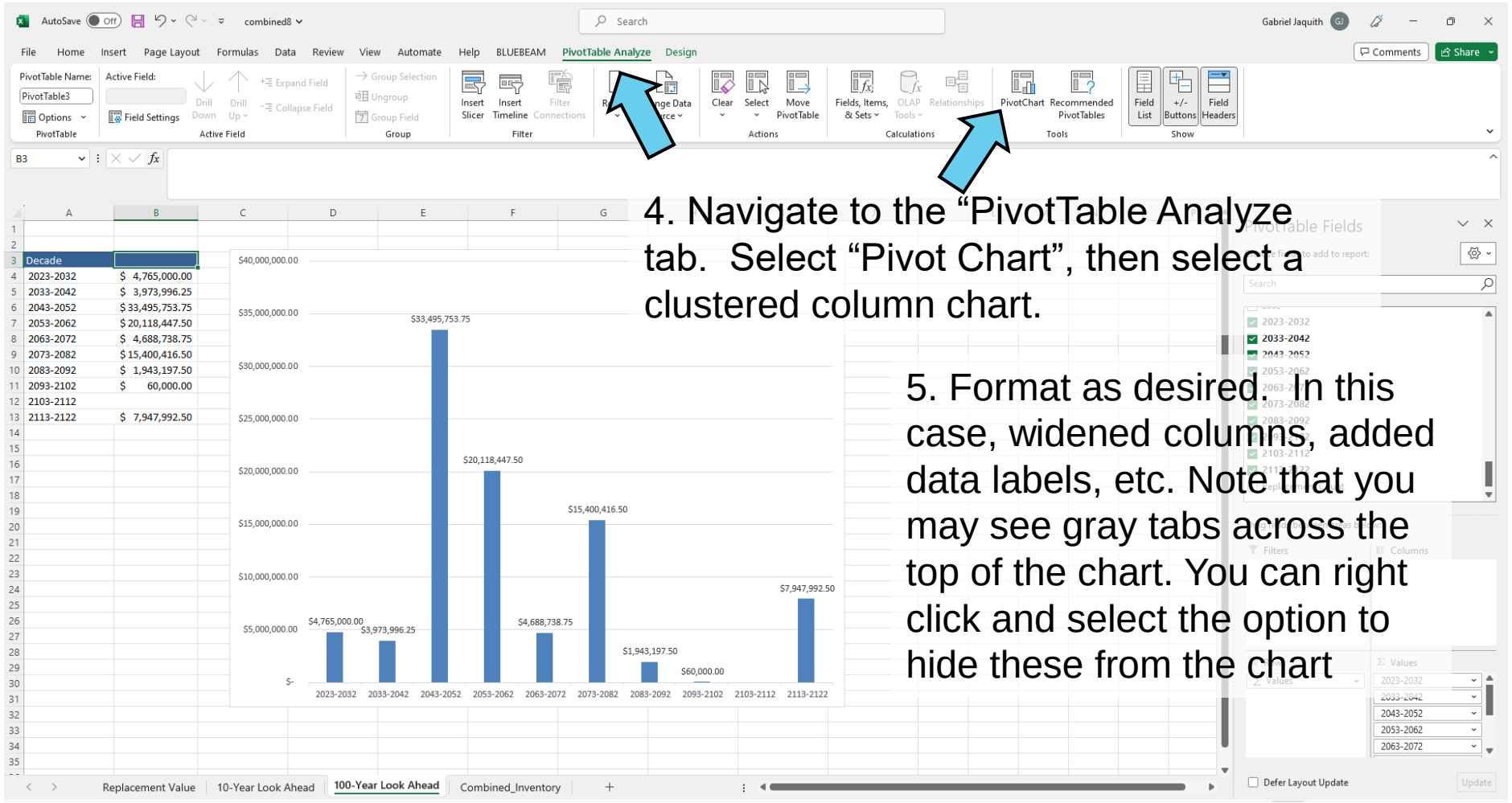
Excel Pivot Tables

One Hundred-Year Look Ahead:



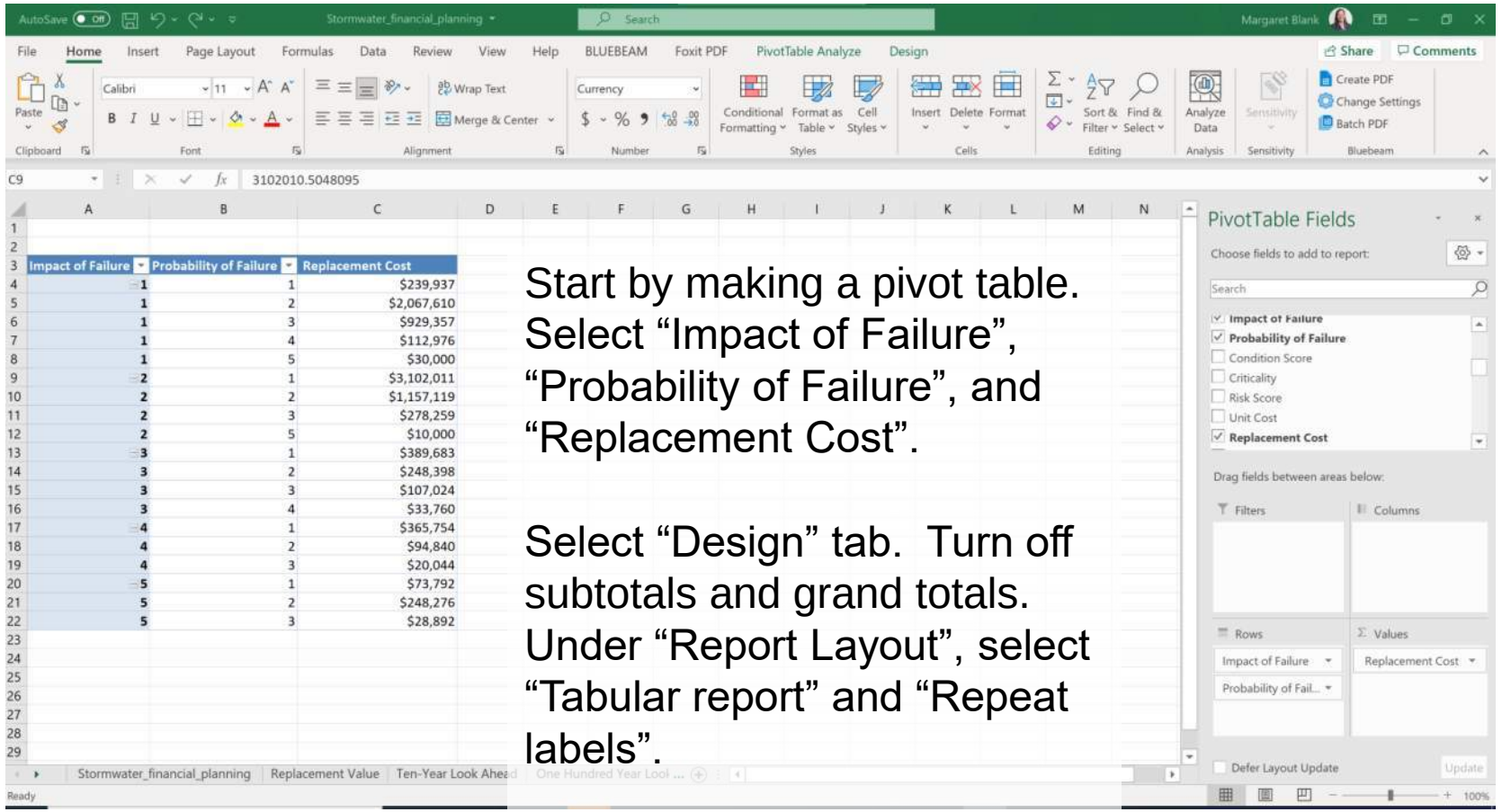
Excel Pivot Tables

One Hundred-Year Look Ahead:



Excel Pivot Tables

Criticality Bubble Chart:



Excel Pivot Tables

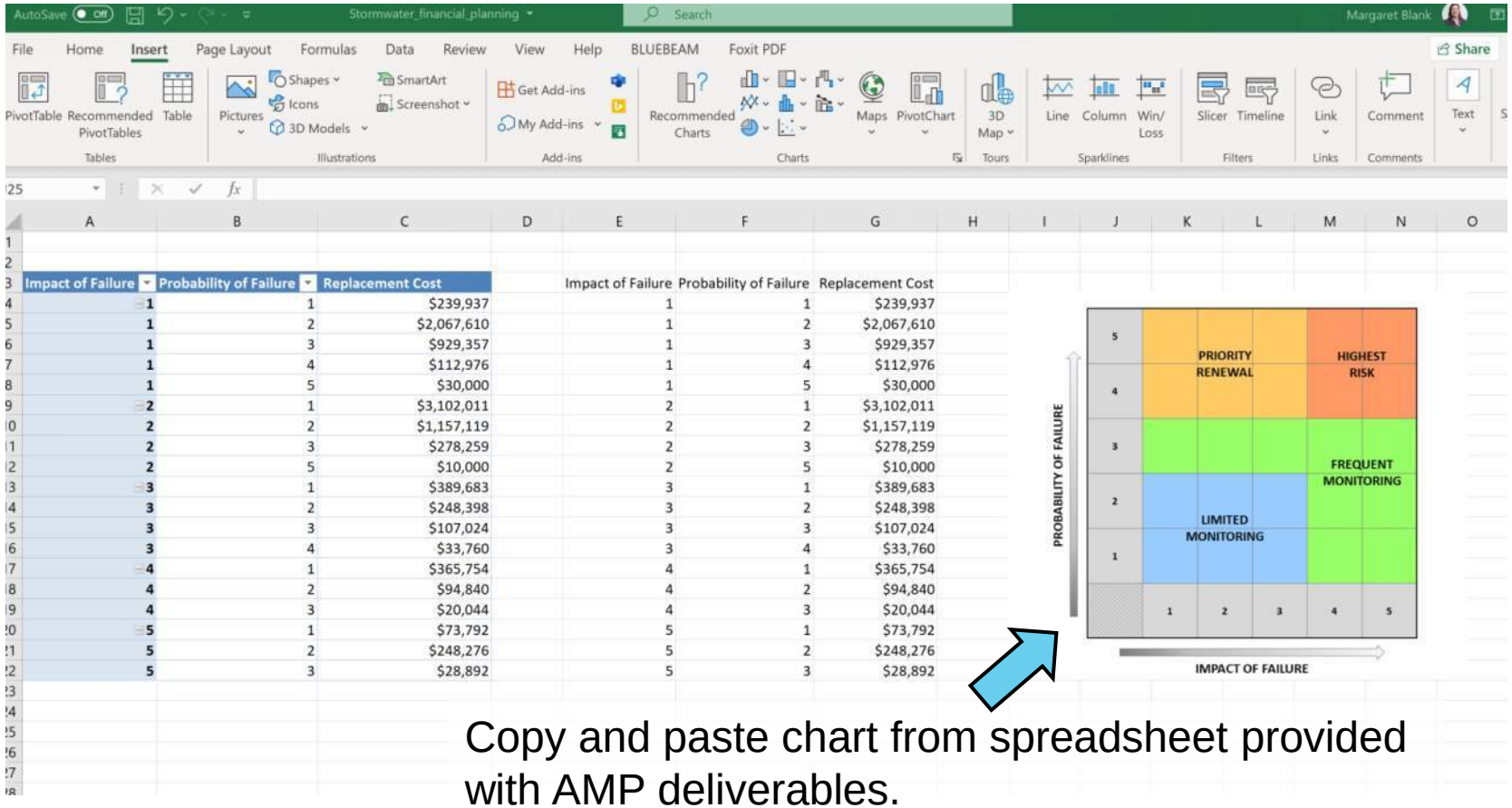
Criticality Bubble Chart:

	A	B	C	D	E	F	G
1							
2							
3	Impact of Failure	Probability of Failure	Replacement Cost		=A3		
4	1	1	$239,937				
5	1	2	$2,067,610				
6	1	3	$929,357				
7	1	4	$112,976				
8	1	5	$30,000				
9	2	1	$3,102,011				
10	2	2	$1,157,119				
11	2	3	$278,259				
12	2	5	$10,000				
13	3	1	$389,683				
14	3	2	$248,398				
15	3	3	$107,024				
16	3	4	$33,760				
17	4	1	$365,754				
18	4	2	$94,840				
19	4	3	$20,044				
20	5	1	$73,792				
21	5	2	$248,276				
22	5	3	$28,892				
23							
24							

Use formulas to populate cells outside of pivot table with pivot table values. [Bubble chart is not an option for pivot tables.]

Excel Pivot Tables

Criticality Bubble Chart:

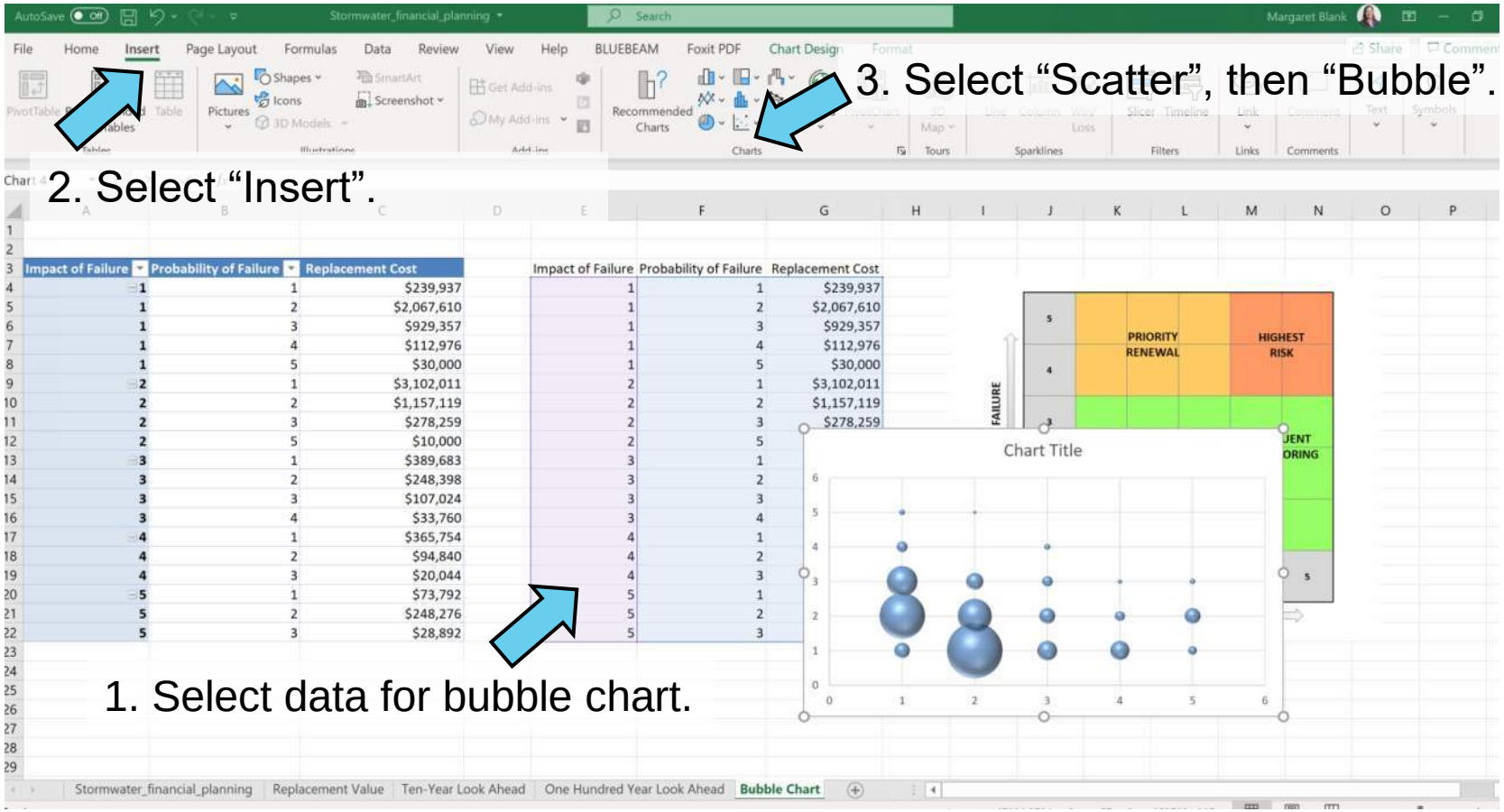


Impact of Failure	Probability of Failure	Replacement Cost
1	1	$239,937
1	2	$2,067,610
1	3	$929,357
1	4	$112,976
1	5	$30,000
2	1	$3,102,011
2	2	$1,157,119
2	3	$278,259
2	5	$10,000
3	1	$389,683
3	2	$248,398
3	3	$107,024
3	4	$33,760
4	1	$365,754
4	2	$94,840
4	3	$20,044
5	1	$73,792
5	2	$248,276
5	3	$28,892

Copy and paste chart from spreadsheet provided with AMP deliverables.

Excel Pivot Tables

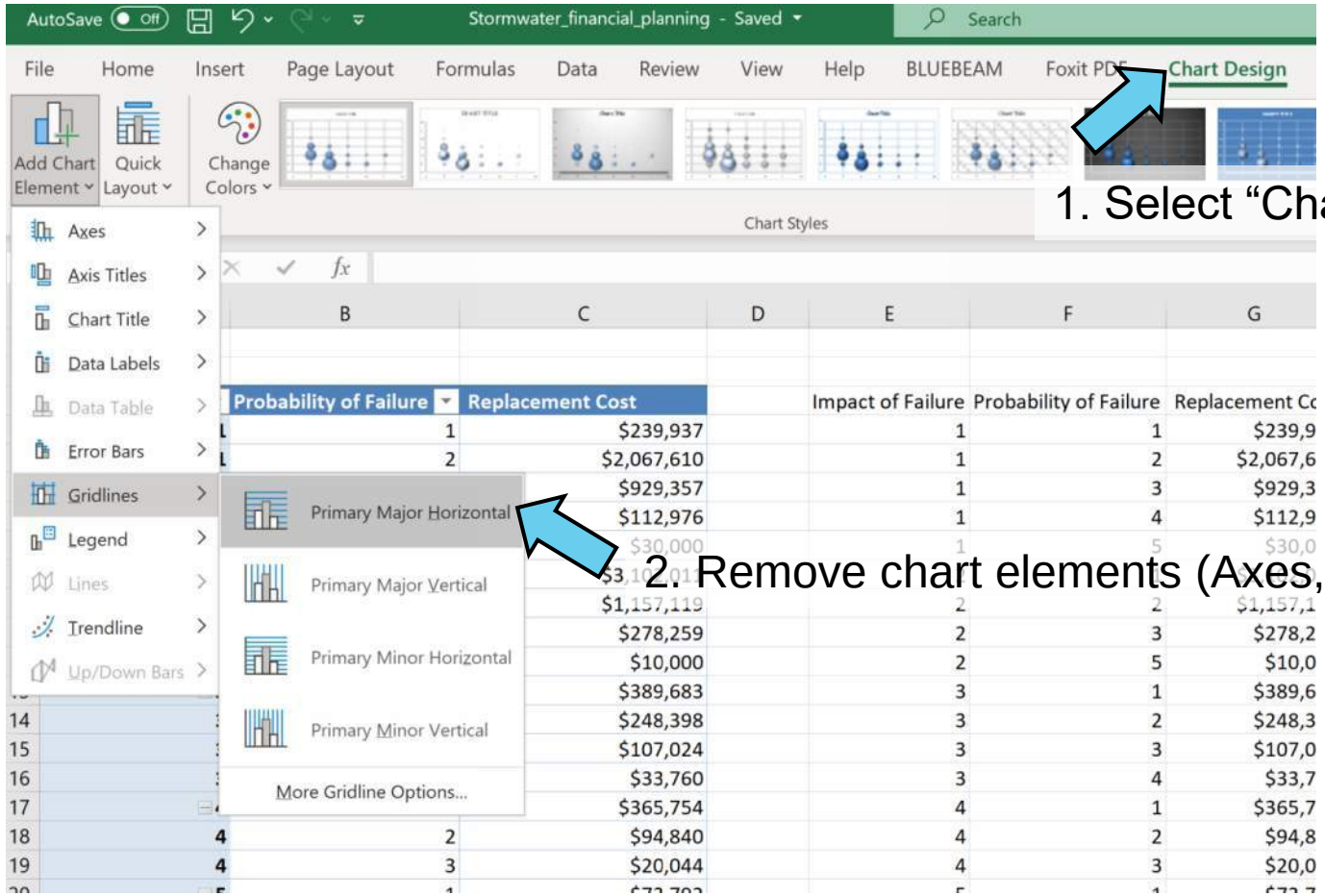
Criticality Bubble Chart:



Impact of Failure	Probability of Failure	Replacement Cost
1	1	$239,937
1	2	$2,067,610
1	3	$929,357
1	4	$112,976
1	5	$30,000
2	1	$3,102,011
2	2	$1,157,119
2	3	$278,259
2	5	$10,000
3	1	$389,683
3	2	$248,398
3	3	$107,024
3	4	$33,760
4	1	$365,754
4	2	$94,840
4	3	$20,044
5	1	$73,792
5	2	$248,276
5	3	$28,892

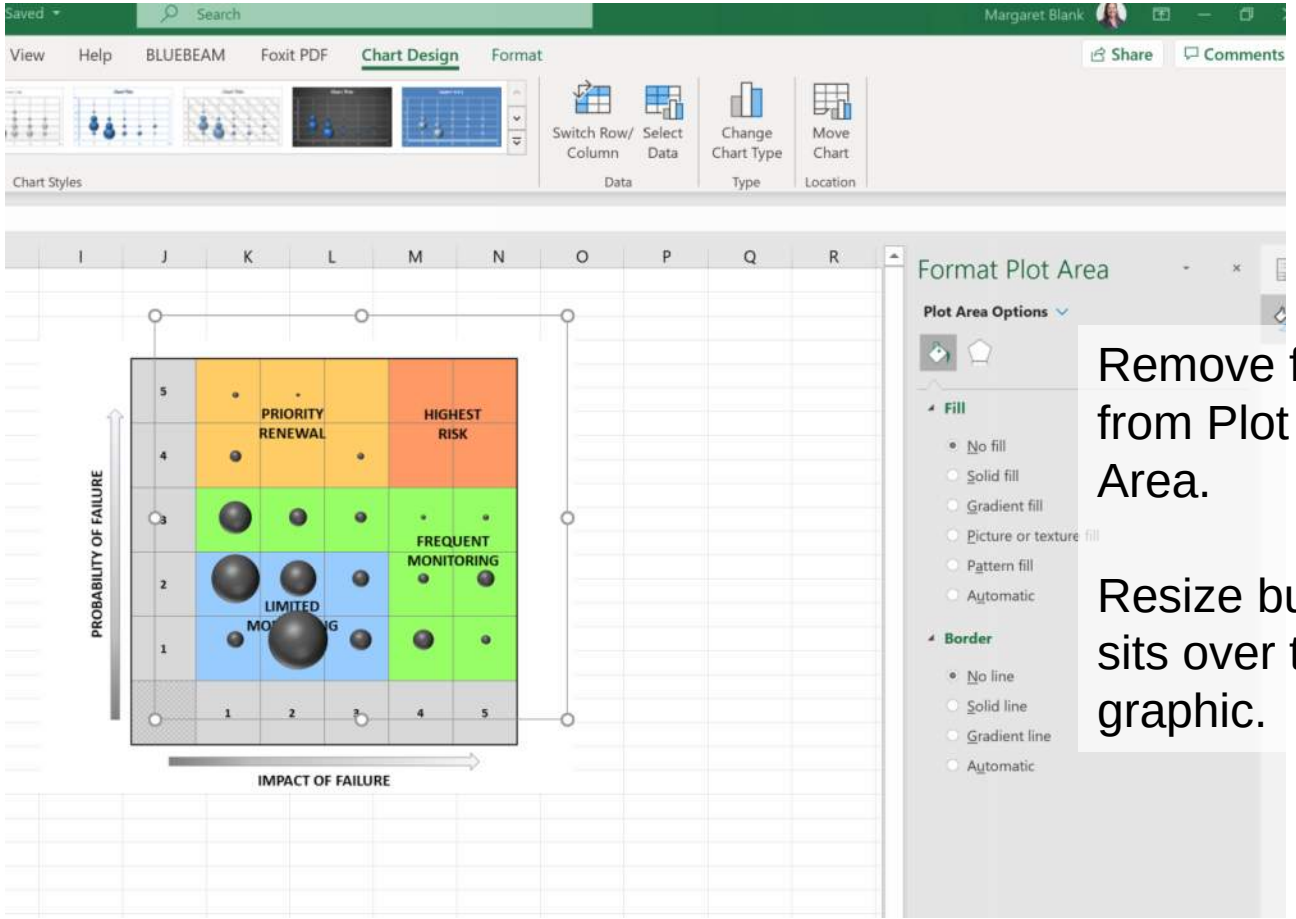
Excel Pivot Tables

Criticality Bubble Chart:



Excel Pivot Tables

Criticality Bubble Chart:

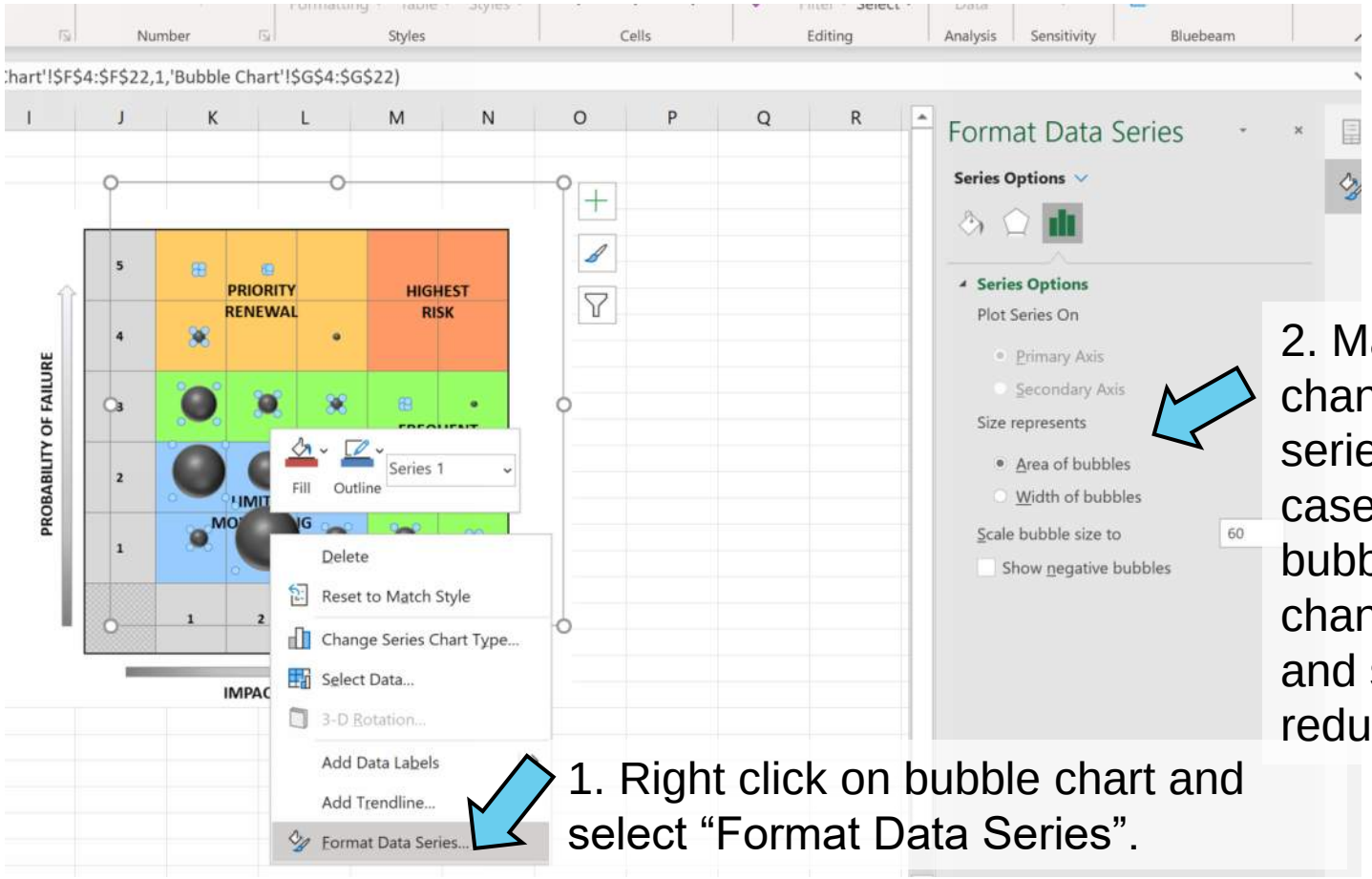


Remove fill and border from Plot Area and Chart Area.

Resize bubble chart so it sits over the criticality graphic.

Excel Pivot Tables

Criticality Bubble Chart:



2. Make desired changes to data series. In this case, color of bubbles was changed to black, and size was reduced to 60%.

1. Right click on bubble chart and select “Format Data Series”.

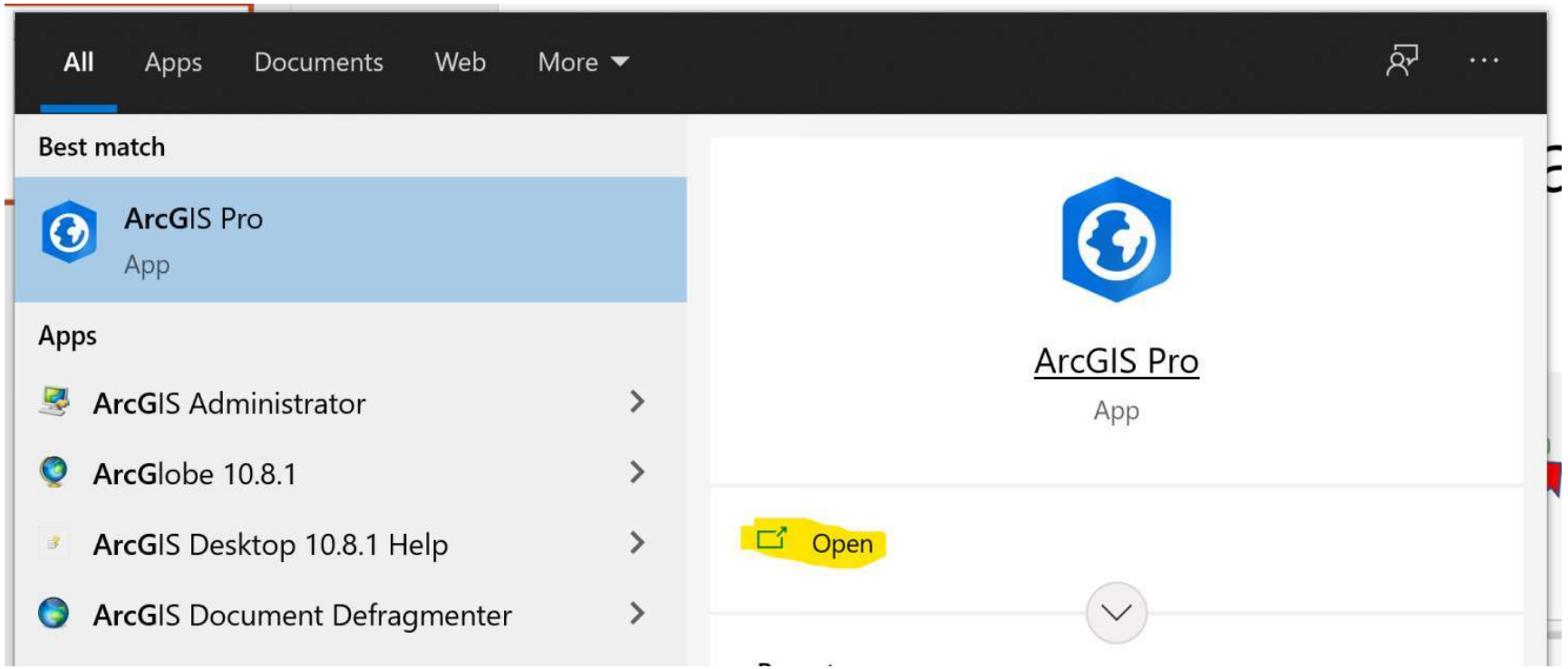
Excel Pivot Tables

Additional Pivot Table Resource

- https://www.youtube.com/watch?v=UsdedFoTA68

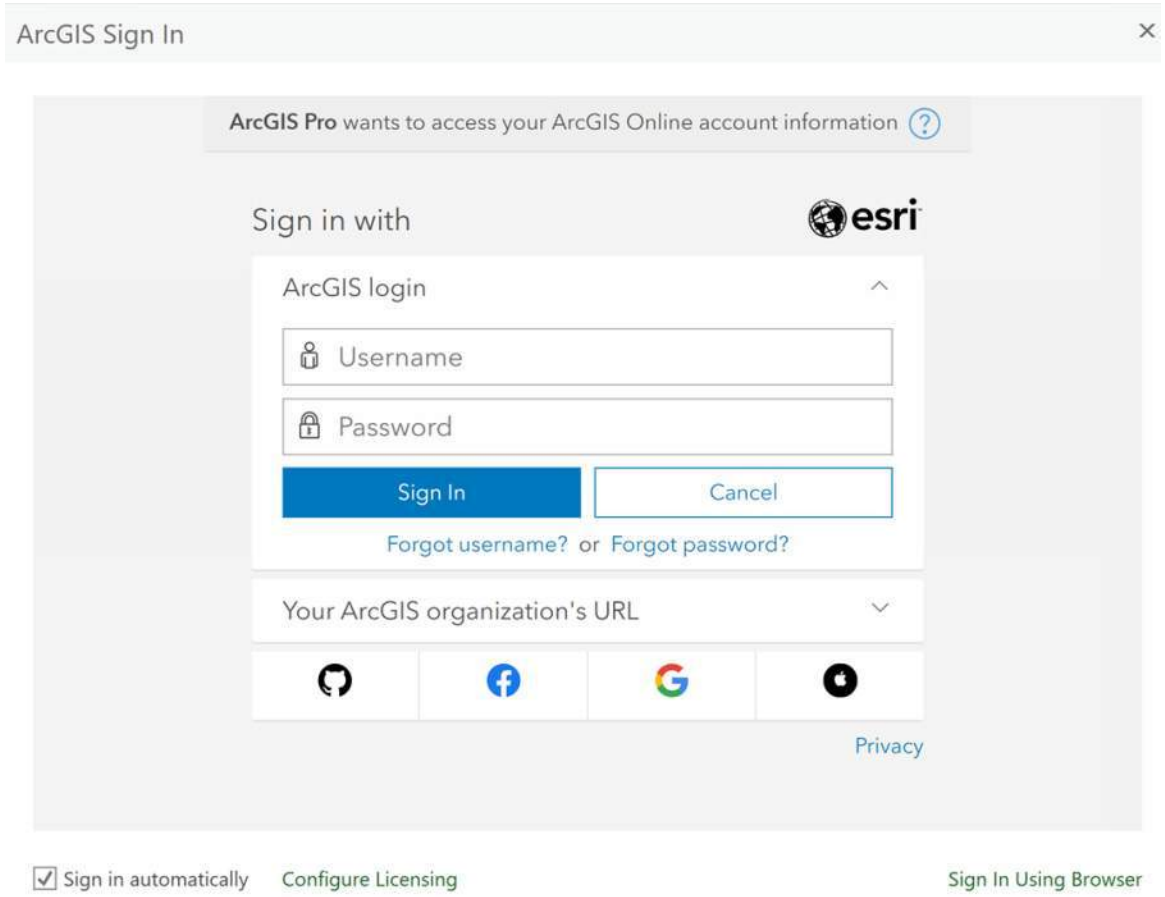
Backup AGOL Files

Type “ArcGIS Pro” in search bar. Select “Open”:



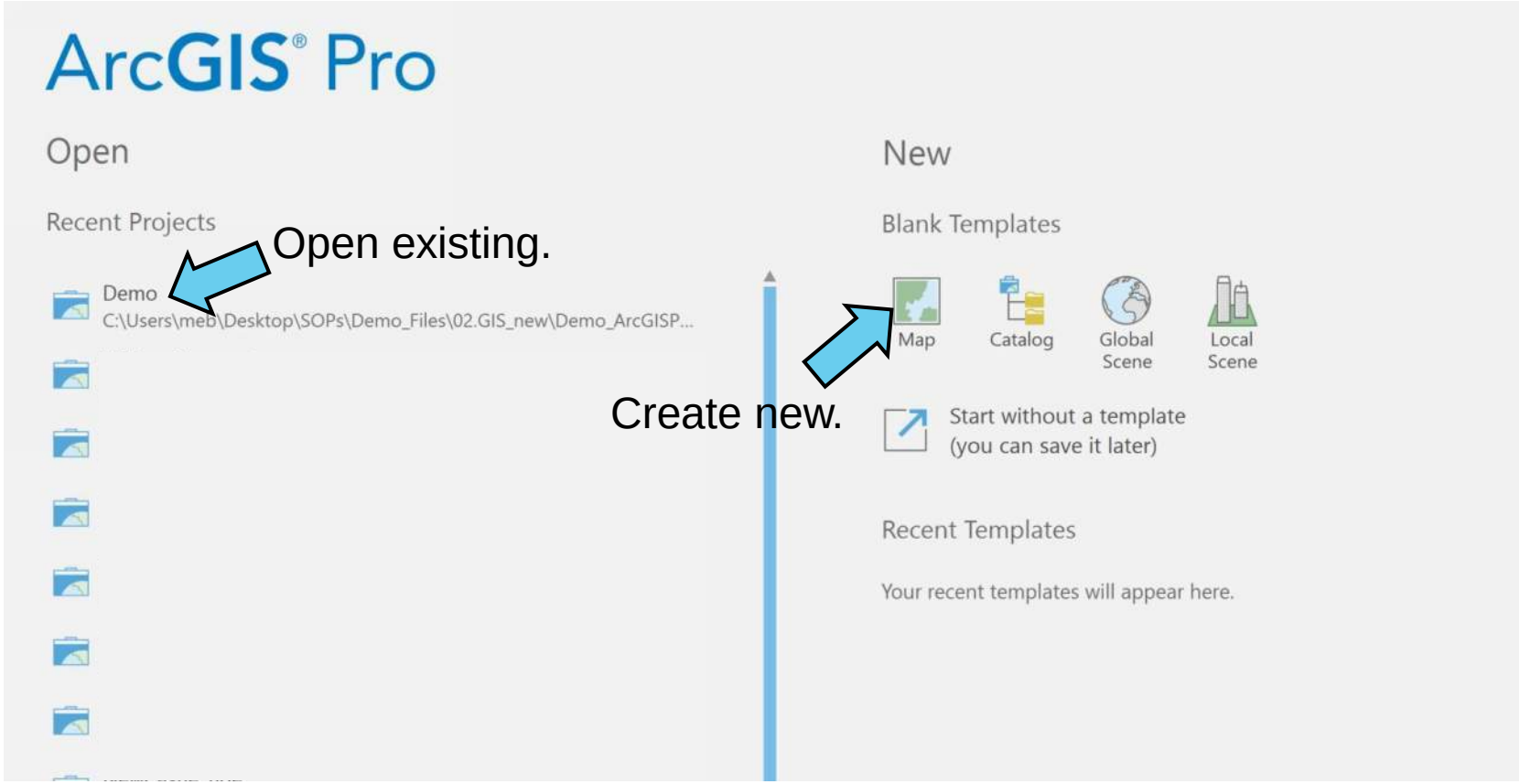
Backup AGOL Files

Log in:



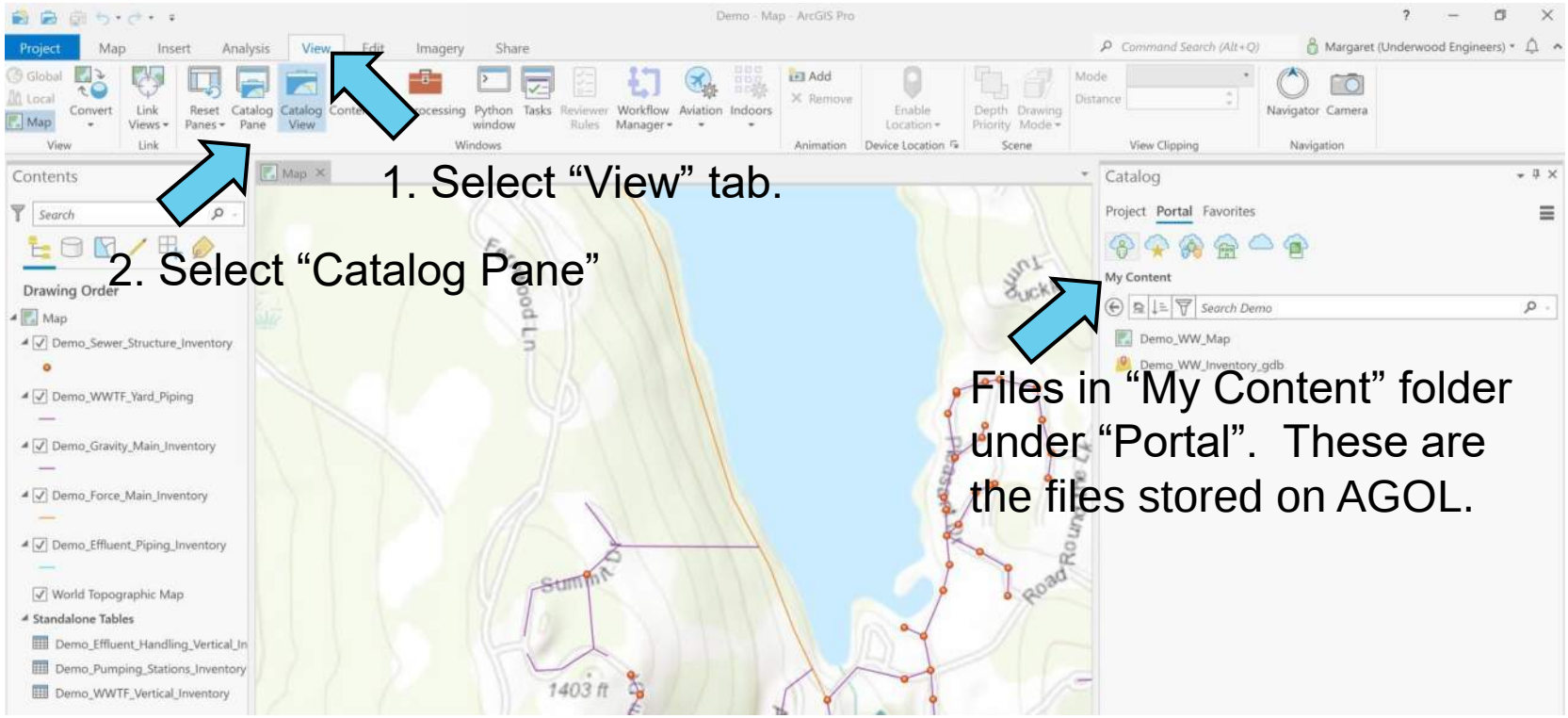
Backup AGOL Files

Open and existing project or create a new one:



Backup AGOL Files

1. Select “View” tab. 2. Select “Catalog Pane”:

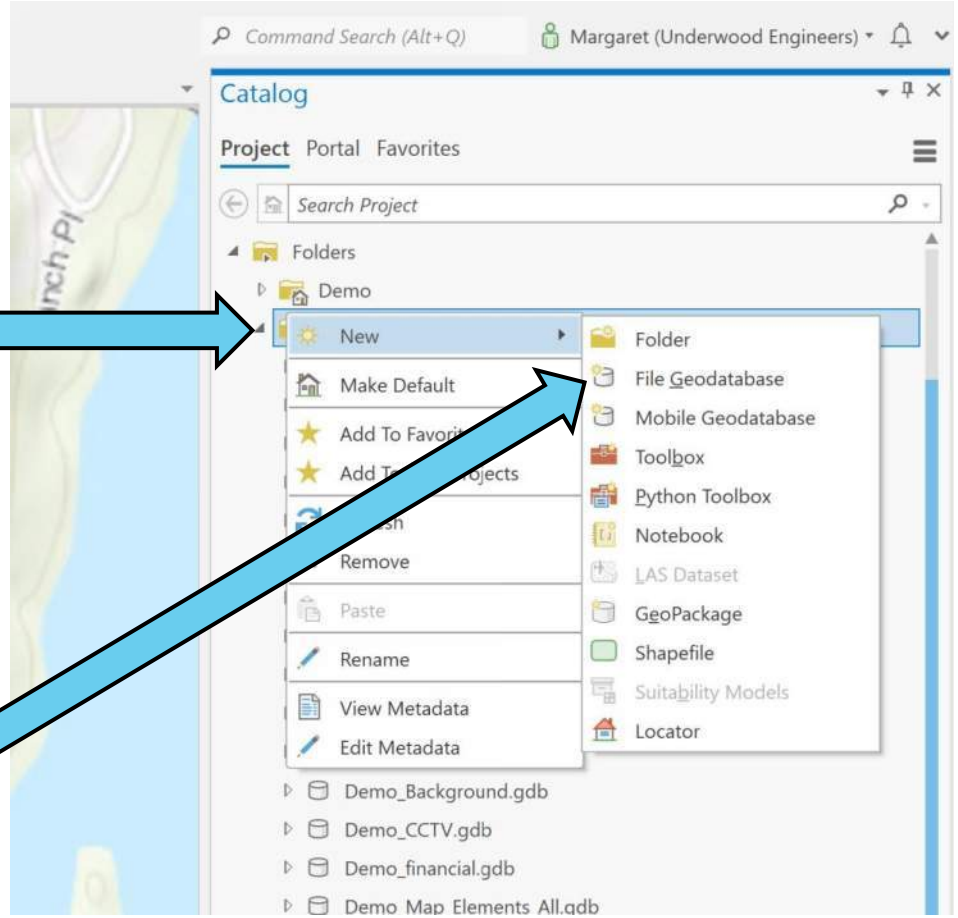


Backup AGOL Files

Select or create a file geodatabase where backups will be stored.

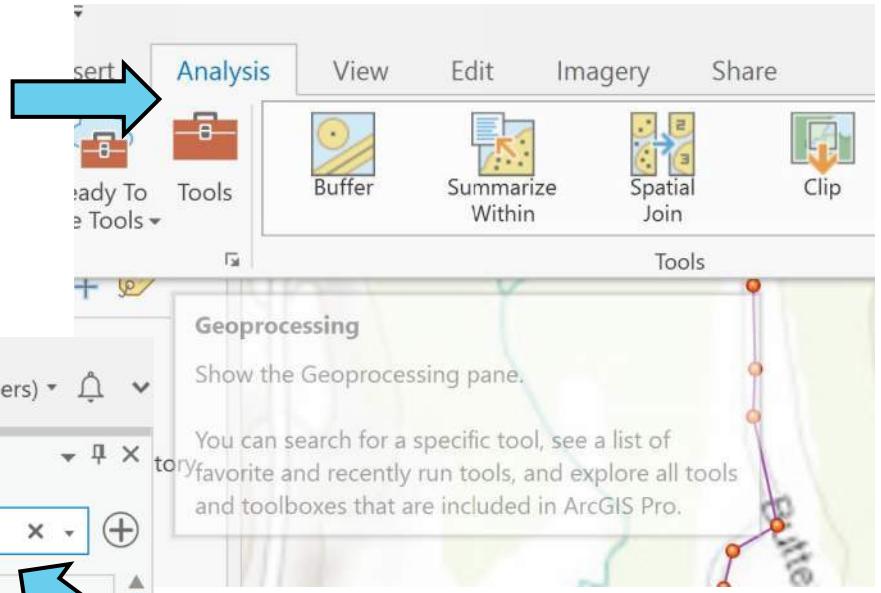
In catalog pane, expand “Folders”, select folder on network
or hard drive where backups will be stored.

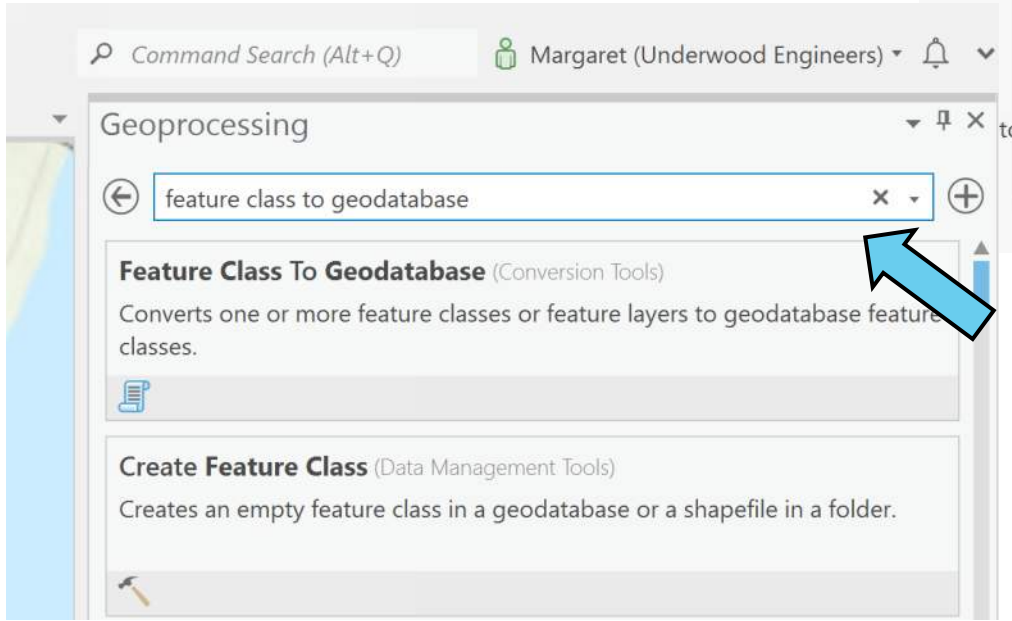
To create a new file geodatabase, right click on the
folder, select “Create New”, select “File geodatabase”,
type name of new database.



Backup AGOL Files

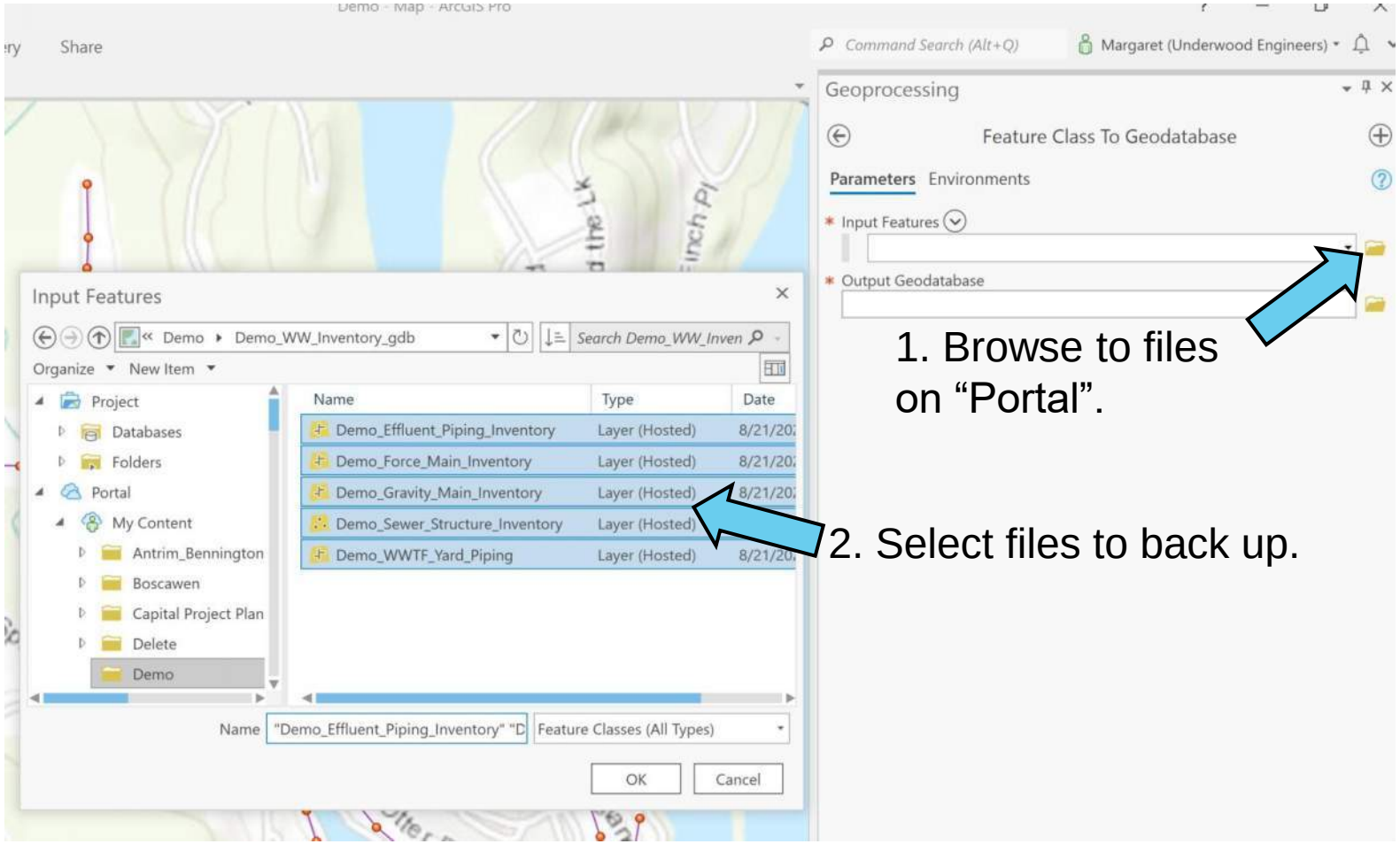
Select “Analysis” tab and then “Tools”.



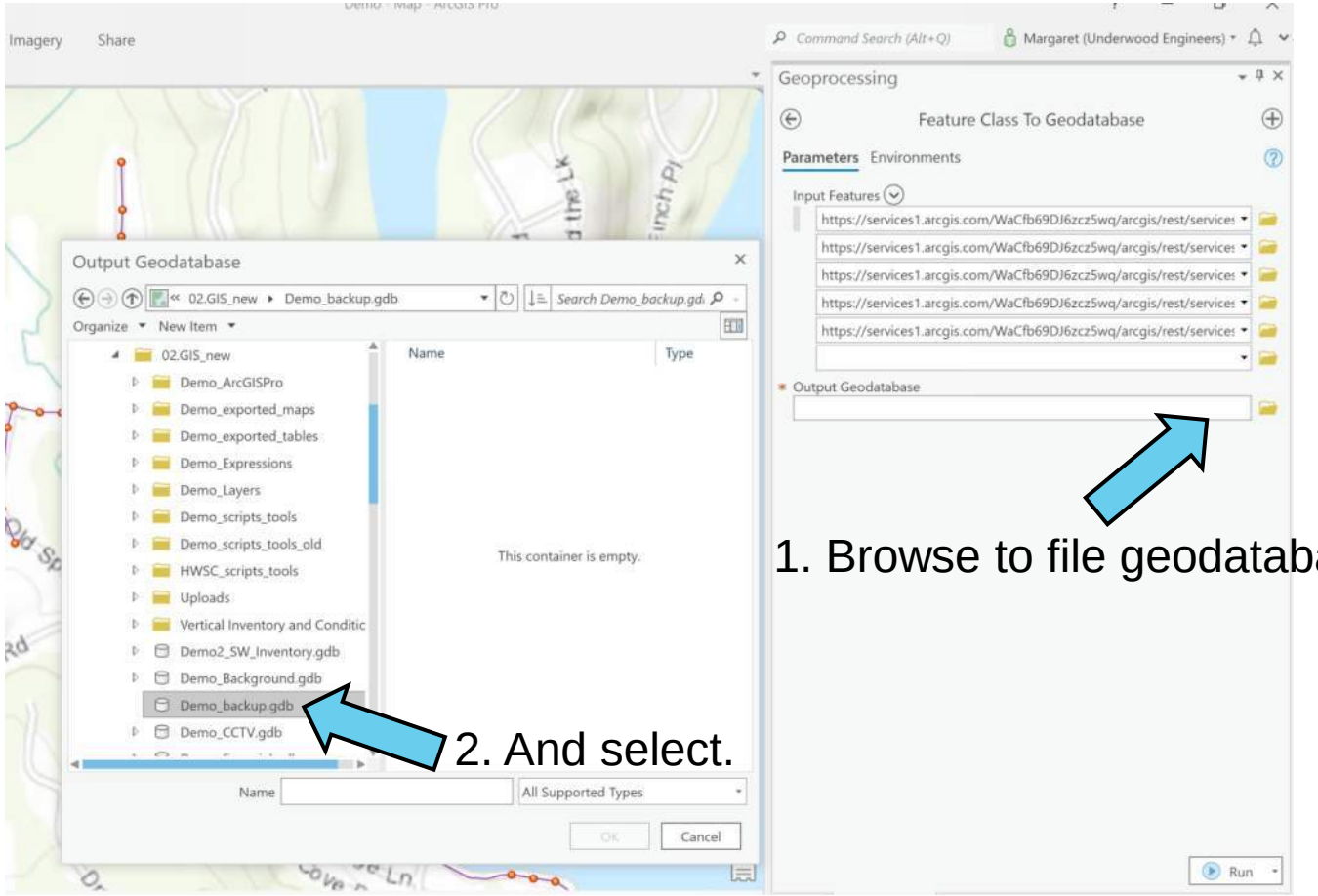


In geoprocessing pane, search “feature class to geodatabase”. Select “Feature Class to Geodatabase” tool.

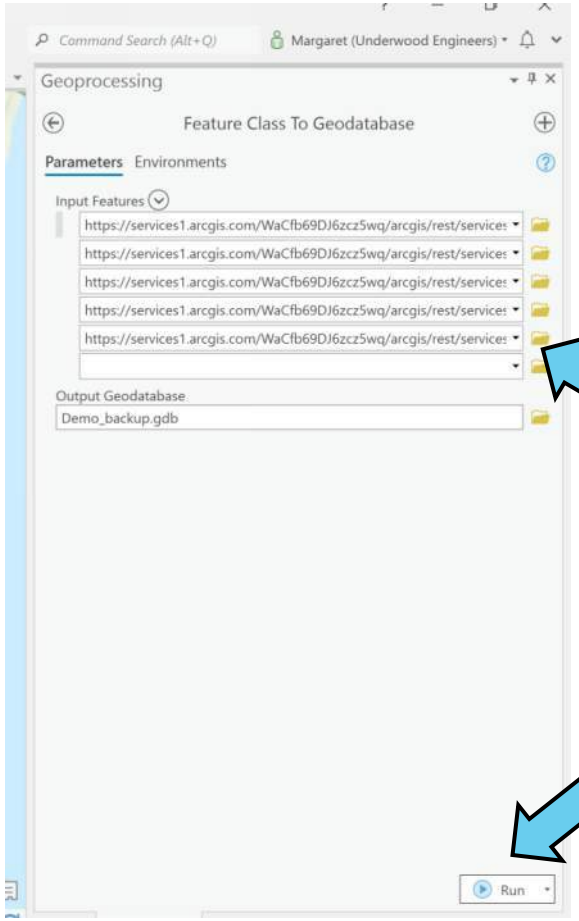
Backup AGOL Files



Backup AGOL Files



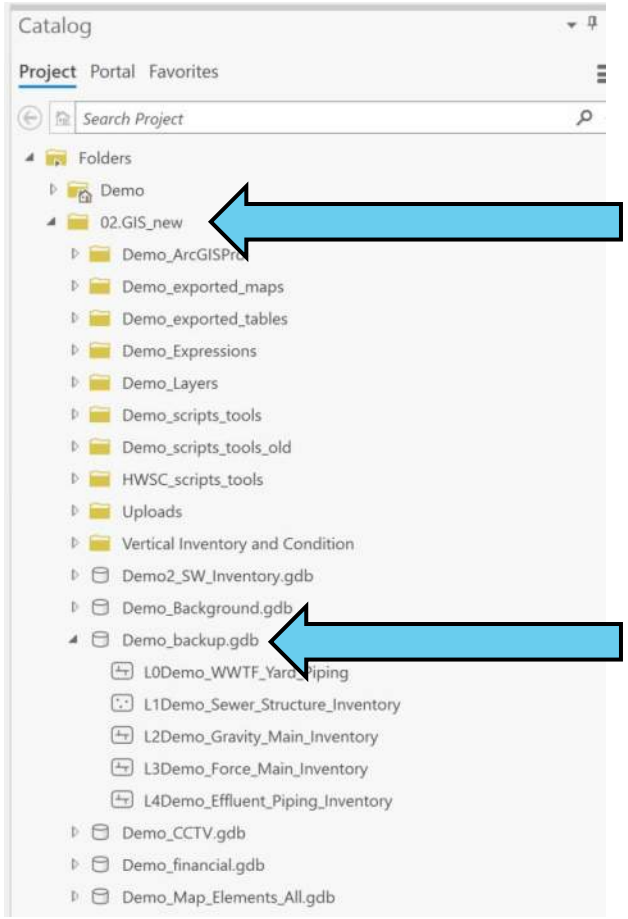
Backup AGOL Files



1. Check to make sure tool is populated correctly.

2. Click run.

Backup AGOL Files



1. Right click on folder where file geodatabase is stored and select “Refresh”.

2. Expand geodatabase to review results.

APPENDIX B

Inventory Field Summary Table

APPENDIX B
Inventory Field Summary Table

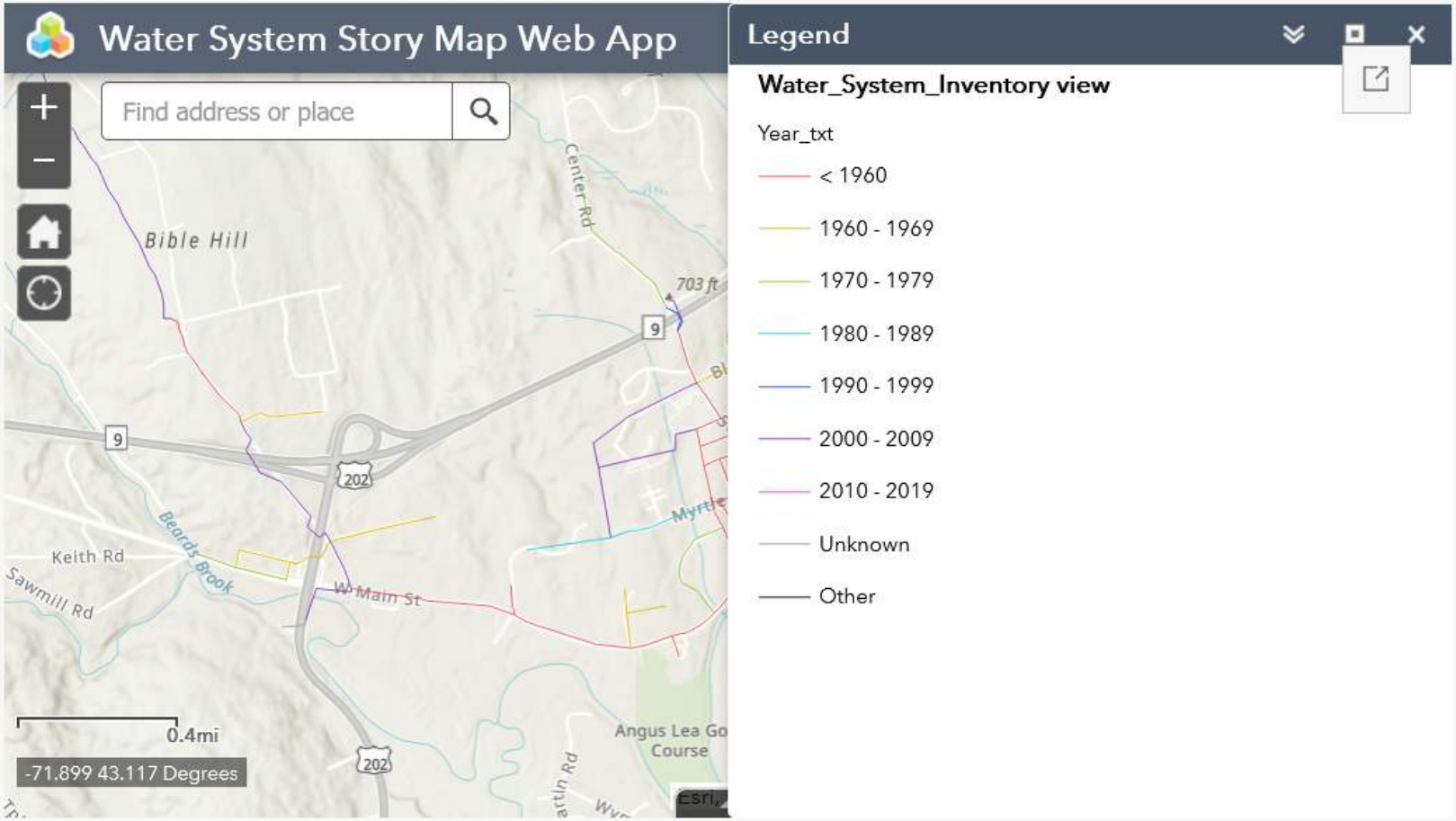
Field	Field Alias	Source	Note
Asset_Category	Category	Assigned by UE	Horizontal or Vertical
Asset_ID	Asset ID	Assigned by UE	
Asset_Size	Asset Size	Assigned by UE	
Asset_Type	Asset Type	Assigned by UE	
CondScore	Condition Score	To be Assigned by Owner	
CreationDate	CreationDate	ESRI	
Creator	Creator	ESRI	
Crit	Criticality	Calculated by Python Script '001_Calculate_inventory_fields_WaterWastewater_1_26_24'	
Diameter	Diameter	Assigned by UE	
DS_	DS_	Assigned by UE	
EditDate	EditDate	ESRI	
Editor	Editor	ESRI	
EU_Life	End of Useful Life	Calculated by Python Script '001_Calculate_inventory_fields_WaterWastewater_1_26_24'	
Facility_Name	Facility Name or Collection Basin	Assigned by UE	
Facility_Type	Facility Type	Assigned by UE	
GlobalID	GlobalID	ESRI	
Impact	Impact of Failure	Assigned by UE	Required for '001_Calculate_inventory_fields_WaterWastewater_1_26_24'
Item_Count	Item Count	Calculated by Python Script '001_Calculate_inventory_fields_WaterWastewater_1_26_24'	
Lat_Y	Latitude	Calculated by Python Script '001_Calculate_inventory_fields_WaterWastewater_1_26_24'	Required to map locations in Survey123
Length_ft	Length_ft	Calculated by Python Script '001_Calculate_inventory_fields_WaterWastewater_1_26_24'	
Lin_Unit	Lin_Unit	Calculated by Python Script '001_Calculate_inventory_fields_WaterWastewater_1_26_24'	
Location	Location	Assigned by UE	
Lon_X	Longitude	Calculated by Python Script '001_Calculate_inventory_fields_WaterWastewater_1_26_24'	Required to map locations in Survey123
Material	Material	Assigned by UE	Required to determine estimated useful life for pipes and structures
Material_Notes	Material_Notes	Assigned by UE	
OBJECTID	OBJECTID	ESRI	
Owner	Owner	Assigned by UE	
Path_Name	Path Name	Assigned by UE	Used to create record drawing file
Prob	Probability of Failure	Calculated by Python Script '001_Calculate_inventory_fields_WaterWastewater_1_26_24'	
Process	Process	Assigned by UE	
Process_Number	Process Number	Assigned by UE	
Quantity	Quantity	Calculated by Python Script '001_Calculate_inventory_fields_WaterWastewater_1_26_24'	
Repl_Cost	Replacement Cost	Calculated by Python Script '001_Calculate_inventory_fields_WaterWastewater_1_26_24'	
Repl_Year	Replacement Year	Calculated by Python Script '001_Calculate_inventory_fields_WaterWastewater_1_26_24'	
Risk_Score	Risk Score	Calculated by Python Script '001_Calculate_inventory_fields_WaterWastewater_1_26_24'	
RU_Life	Remaining Useful Life	Calculated by Python Script '001_Calculate_inventory_fields_WaterWastewater_1_26_24'	
Shape	Shape	ESRI	
Shape_Length	Shape_Length	ESRI	
U_Life	Useful Life	Assigned by UE	Required for '001_Calculate_inventory_fields_WaterWastewater_1_26_24'
UE_Notes	UE_Notes	Assigned by UE	
Unit	Unit	Assigned by UE	
Unit_Cost	Unit Cost	Assigned by UE	Required for '001_Calculate_inventory_fields_WaterWastewater_1_26_24'
US_	US_	Assigned by UE	
Year_In	Year Installed	Calculated by Python Script '001_Calculate_inventory_fields_WaterWastewater_1_26_24'	Required for '001_Calculate_inventory_fields_WaterWastewater_1_26_24'
Year_txt	Year_txt	Calculated by Python Script '001_Calculate_inventory_fields_WaterWastewater_1_26_24'	

APPENDIX C

ArcGIS Online Story Map

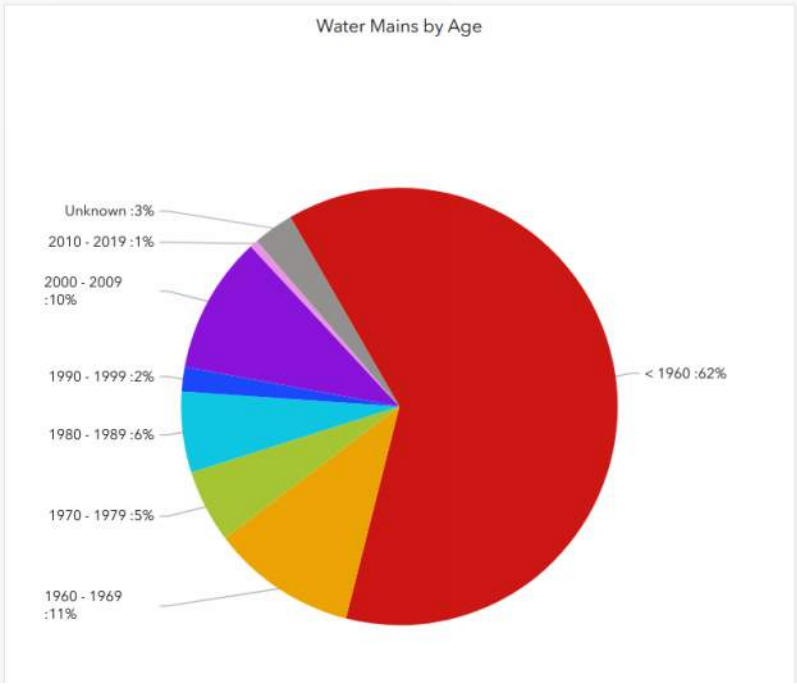

Hillsborough Water and Sewer Commission
Hillsborough Water and Sewer Commission
Water System Asset Management Program
Water and Sewer Administrator
Draft

How old are the water distribution mains in the system?



ArcGIS Web Application

Summary of Water Distribution Mains by Age



Year_txt	OBJECTID
< 1960	104
1960 - 1969	18
1970 - 1979	9
1980 - 1989	10
1990 - 1999	3
2000 - 2009	17
2010 - 2019	1
Unknown	5

APPENDIX D

Level of Service Matrix

APPENDIX D
Level of Service Matrix

Hillsborough Water and Sewer Commission Level of Service Matrix DRAFT

	Vision Statement: Our mission is to provide an uninterrupted, high-quality supply of water to our customers, to collect and treat wastewater, and return clean water to the environment. While fulfilling our mission we strive to: • Conserve and protect our reliable, high-quality water supply for present and future generations • Meet or surpass public health standards, environmental standards, and support fire protection • Operate, maintain, improve and manage our water and wastewater infrastructure in a cost-efficient manner • Manage finances to support Commission needs and maintain reasonable water and wastewater rates • Maintain a safe and professional workforce • Understand and respond to customers' expectations for service
	Stakeholders: Commissioners, customers. OSRAM = large customer.

Category	Overall Objective	Specific Goal	2024 Target	Units/Time	Achieved 2024	Corrective Measures/Comments	2025 Goal
Public Education and Outreach	Communicate the value and importance of water facilities	Update commission website.	1	Yearly			
		Seasonal reminders included in each bill.	2	Yearly			
		Embed AMP story map and/or dashboards.	1	Yearly			
	Provide opportunity for public involvement	Encourage attendance at meetings.	2	Monthly			
	Customer Service	Use Click Fix for complaint handling and customer service.		As needed			
Operation and Maintenance	Distribution System	Watermain flushing, hydrant inspection and flushing, gate valve maintenance	2	Yearly			
	Right of Ways/Easements	Establish schedule for right-of-way and easement maintenance.	1	Yearly			
	Meters and Billing	Meter change to radio	100	Yearly			

Page 1 of 2

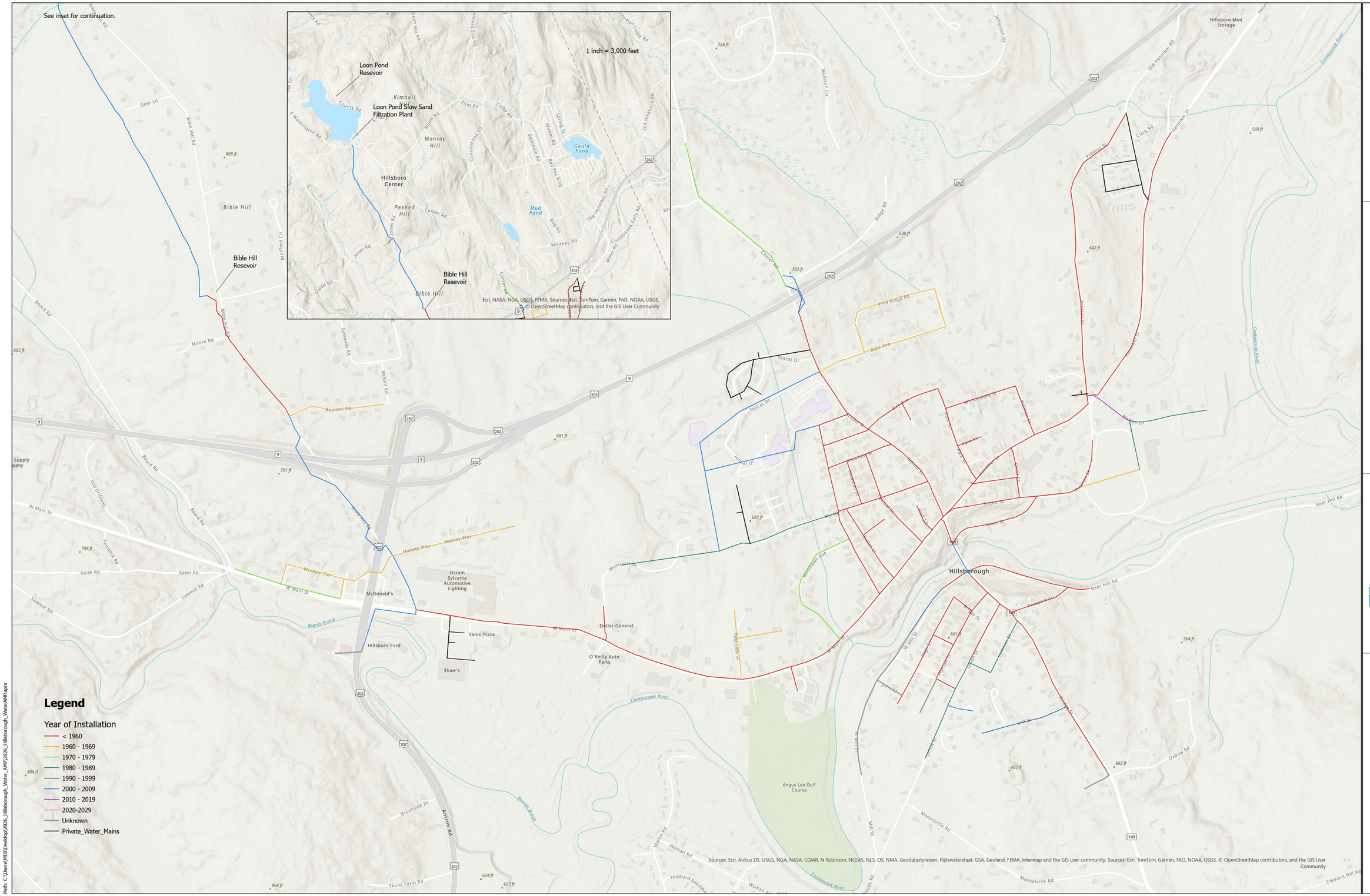
APPENDIX D
Level of Service Matrix

Category	Overall Objective	Specific Goal	2024 Target	Units/Time	Achieved 2024	Corrective Measures/Comments	2025 Goal
Regulatory Compliance	LSLI Inventory	Report	874	Services	Initial inventory completed		Revised sampling locations January 2025
	Emergency Planning	RRA/ERP	1	5 years	Next one due 2026		
	Water Quality Standards	Primary Standards	100%				
		Secondary Standards					
Financial	Determine replacement value of water assets and estimate capital needs	Current dollars	1	Yearly		5-year planning horizon	
	Adequate revenue from water user fees for operating and capital needs.	Water rate study, including fire sprinkler systems	1	3 years			
Staffing	Training and Certification	Job training	December	Annually			
		CEU's for licensed operators					

Page 2 of 2

APPENDIX E

Water System Maps



Path: C:\Users\MER\Desktop\2826_Hillsborough_Water_AMP\2826_Hillsborough_WaterAMP.aprx

APPENDIX E-1
Water Distribution Mains by Year of Installation

N

0 250 500 1,000 1,500 2,000 Feet

1 in= 500ft

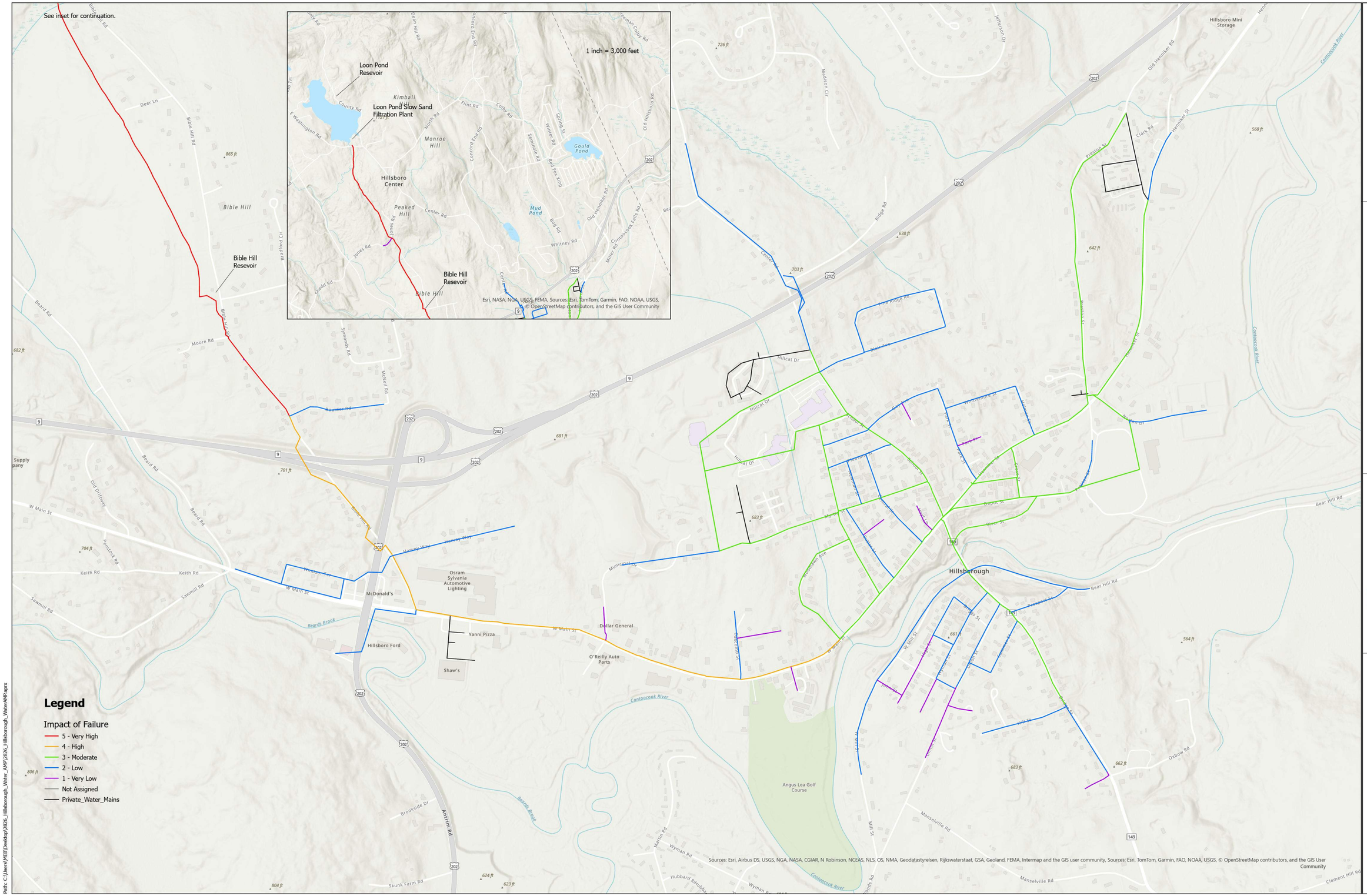
Underwood
99 N. State Street
Concord N.H. 03301
Tel. 603-230-9898
Fax. 603 - 230-9899

25 Vaughan Mall
Portsmouth, N.H. 03801
Tel. 603-436-6192
Fax. 603 - 431-4733

Hillsborough Water and Sewer Commission
Hillsborough, New Hampshire
Water System Asset Management Program

Date: 11/30/2024

Project No. 2826



Path: C:\Users\MEB\Desktop\2826_Hillsborough_Water_AMP\2826_Hillsborough_WaterAMP.aprx

APPENDIX E-2
Water Distribution Mains by Impact of Failure

N

0 250 500 1,000 1,500 2,000 Feet

1 in= 500ft

Underwood
99 N. Slate Street
Concord N.H. 03301
Tel. 603-230-9898
Fax. 603 - 230-9898

25 Vaughan Mall
Portsmouth, N.H. 03801
Tel. 603-436-6192
Fax. 603 - 431-4733

Hillsborough Water and Sewer Commission
Hillsborough, New Hampshire
Water System Asset Management Program

Date: 11/30/2024

Project No. 2826

See inset for continuation.

1 inch = 3,000 feet

Loon Pond Resevoir

Loon Pond Slow Sand Filtration Plant

Bible Hill Resevoir

Bible Hill Resevoir

Esri, NASA, NGA, USGS, FEMA, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Legend

Probability of Failure

- 5 - Very High
- 4 - High
- 3 - Moderate
- 2 - Low
- 1 - Very Low
- Private_Water_Mains

Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Path: C:\Users\MEB\Desktop\2826_Hillsborough_Water_AMP\2826_Hillsborough_WaterAMP.aprx

APPENDIX E-3
Water Distribution Mains by Probability of Failure

N

0 250 500 1,000 1,500 2,000 Feet

1 in= 500ft

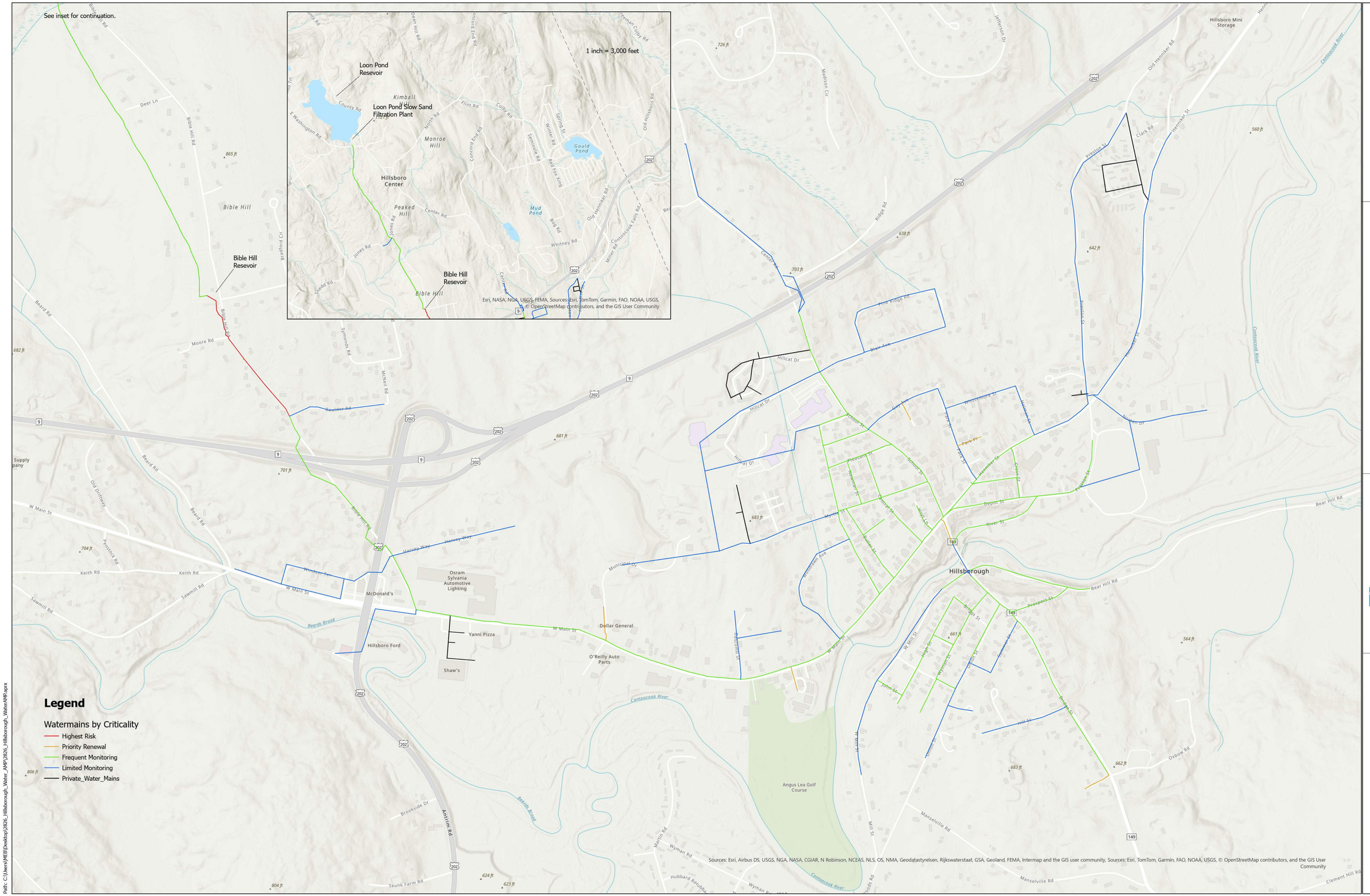
Underwood
99 N. State Street
Concord N.H. 03301
Tel: 603-230-9898
Fax: 603 - 230-9899

25 Vaughan Mall
Portsmouth, N.H. 03801
Tel: 603-436-6192
Fax: 603 - 431-4733

Hillsborough Water and Sewer Commission
Hillsborough, New Hampshire
Water System Asset Management Program

Date: 11/30/2024

Project No. 2826



Path: C:\Users\MEB\Desktop\2826_Hillsborough_Water_AMP\2826_Hillsborough_WaterAMP.aprx

APPENDIX E-4
Water Distribution Mains by Criticality

N

0 250 500 1,000 1,500 2,000 Feet

1 in= 500ft

Underwood
99 N. State Street
Concord N.H. 03301
Tel. 603-230-9898
Fax. 603 - 230-9898

25 Vaughan Mall
Portsmouth, N.H. 03801
Tel. 603-436-6192
Fax. 603 - 431-4733

Hillsborough Water and Sewer Commission
Hillsborough, New Hampshire
Water System Asset Management Program

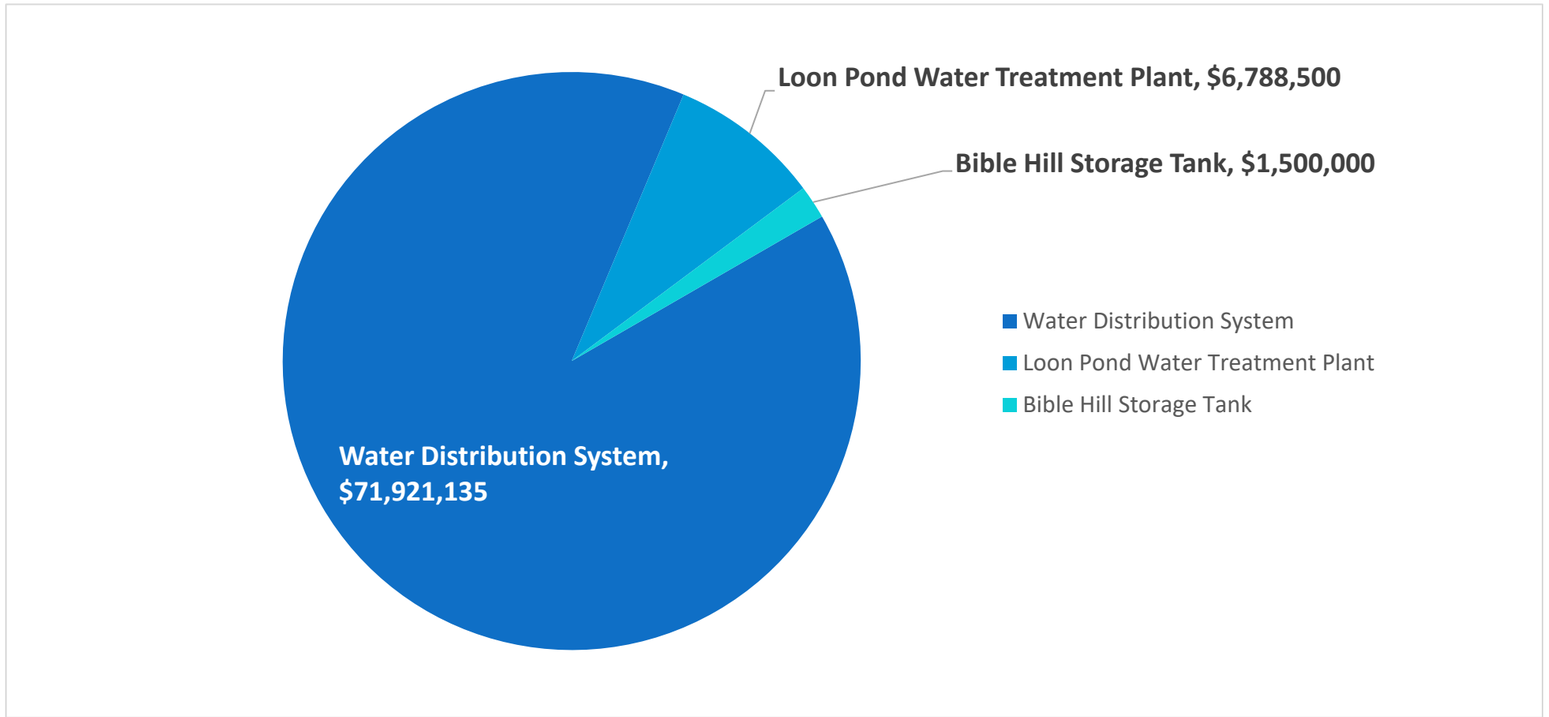
Date: 11/30/2024

Project No. 2826

APPENDIX F

Financial Planning Documents

Sum of Replacement Cost Facility Name or Pressure Zone	Total
Water Distribution System	$71,921,135
Loon Pond Water Treatment Plant	$6,788,500
Bible Hill Storage Tank	$1,500,000
Grand Total	**$80,209,635**



Category	Horizontal

Sum of Replacement Cost Asset Type	Unit Cost	Unit	Total
Blowoff	$3,000	EA	$6,000
Gate Valve - Hydrant	$8,000	EA	$760,000
Gate Valve - Water Main	8000	EA	$1,184,000
Hydrant	$8,500	EA	$1,037,000
Hydrant Service	$500	LF	$3,184,655
Water Main	500	LF	$65,749,480
Grand Total			**$71,921,135**

Category	Vertical

Sum of Replacement Cost		
Process Number	Process	Total
1.02	Raw Water Supply - Surface Water	$18,000
2.00	Water Treatment - Slow Sand Filtration	$1,770,000
2.03	Water Treatment - Corrosion Control	$86,000
2.04	Water Treatment - pH Adjustment	$160,000
2.05	Water Treatment - Disinfection	$325,000
2.06	Water Treatment - Finished Water	$680,000
2.08	Water Treatment - Plant Water	$463,500
3.02	Water Distribution - Storage	$1,500,000
4.01	Monitoring and Control	$222,000
5.01	Building - Structure	$1,650,000
5.02	Building - Electrical	$200,000
5.03	Building - HVAC & Plumbing	$234,000
6.01	Site - Access and Security	$20,000
6.03	Site - Electrical	$480,000
6.05	Site - Fuel Supply	$30,000
7.01	Standby Power	$450,000
Grand Total		**$8,288,500**

Category	Vertical

Sum of Replacement Cost				
Process Number	Process	Asset Type	Unit Cost	Total
1.02	Raw Water Supply - Surface Water	Intake Screen	$18,000	$18,000
2.00	Water Treatment - Slow Sand Filtration	Clearwell	$600,000	$600,000
		Flow Meter	$6,000	$6,000
		Level Sensor Equip	$12,000	$12,000
		Pipe gallery	$90,000	$90,000
		Raw Water Distribu	$30,000	$30,000
		Sand filter beds an	$900,000	$900,000
		Slow sand filter me	$90,000	$90,000
		Underdrain	$30,000	$30,000
		Underdrain Header	$12,000	$12,000
2.03	Water Treatment - Corrosion Control	Eyewash/Shower	$16,000	$16,000
		Zinc Orthophospha	$20,000	$40,000
		Zinc Orthophospha	$30,000	$30,000

APPENDIX F-1
Estimated Replacement Cost

Process Number	Process	Asset Type	Unit Cost	Total
2.04	Water Treatment - pH Adjustment	Potassium Hydroxi	$20,000	$20,000
			$80,000	$80,000
		Potassium Hydroxi	$20,000	$20,000
		Potassium Hydroxi	$20,000	$40,000
2.05	Water Treatment - Disinfection	Chloramine Feed P	$20,000	$40,000
		Chloramine Piping	$60,000	$60,000
		UV Control Panel	$75,000	$75,000
		UV Disinfection Un	$75,000	$75,000
		UV Power Distribut	$75,000	$75,000
2.06	Water Treatment - Finished Water	Clearwell Structure	$600,000	$600,000
		Finish Water Pump	$80,000	$80,000
2.08	Water Treatment - Plant Water	Chloramine Residu	$12,500	$12,500
		Chorine Residual A	$12,500	$12,500
		Plant Water Piping	$300,000	$300,000
		Plant Water Pump	$60,000	$60,000
		Plant Water Pump	$60,000	$60,000
		Plant Water Pump	$18,500	$18,500
3.02	Water Distribution - Storage	Buried Storage Tan	$1,300,000	$1,300,000
		Process Piping & V	$100,000	$100,000
		Sampling Building	$50,000	$50,000
		Storage Tank Mixe	$50,000	$50,000
4.01	Monitoring and Control	Chloramine Analyz	$20,000	$20,000
		Instrumentation D	$150,000	$150,000
		Level Sensing and	$12,000	$12,000
		pH Analyzer	$20,000	$20,000
		Turbidity Analyzer	$20,000	$20,000
5.01	Building - Structure	Asphalt Shingle Ro	$100,000	$100,000
		Concrete Block Wa	$600,000	$600,000
		Concrete Floor Slat	$400,000	$400,000
		Concrete Foundati	$400,000	$400,000
		Wood Roof Trusse	$150,000	$150,000
5.02	Building - Electrical	Building Electrical	$200,000	$200,000
5.03	Building - HVAC & Plumbing	Boiler & Circulatior	$200,000	$200,000
		Exhaust Fan	$20,000	$20,000
		Louver	$14,000	$14,000
6.01	Site - Access and Security	Gravel Parking and	$20,000	$20,000
6.03	Site - Electrical	Buried Conduit anc	$400,000	$400,000
		Site Electrical	$80,000	$80,000
6.05	Site - Fuel Supply	Propane Tank & Su	$30,000	$30,000
7.01	Standby Power	Generator (Propan	$450,000	$450,000
Grand Total				**$8,288,500**

APPENDIX F-2
10 Year Look Ahead

_2024_2033	(All)

Sum of _2024_2033	Criticality		
Risk Score	Highest Risk	Priority Renewal	Grand Total
25	$1,195,430		$1,195,430
20	$1,137,430		$1,137,430
16	$143,780		$143,780
15		$1,797,130	$1,797,130
12		$215,500	$215,500
10		$1,109,440	$1,109,440
8		$416,270	$416,270
5		$799,620	$799,620
4		$336,885	$336,885
Grand Total	**$2,476,640**	**$4,674,845**	**$7,151,485**

_2024_2033	(All)

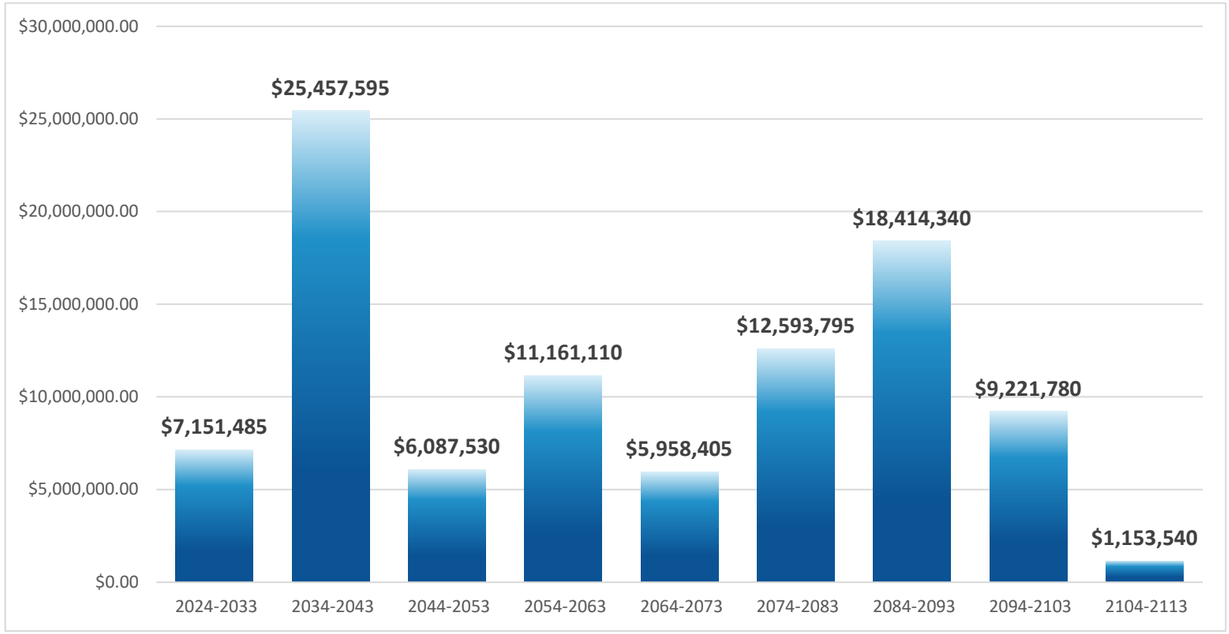
Sum of _2024_2033		Criticality		
Facility Name or Press	Risk Score	Highest Risk	Priority Renewal	Grand Total
Loon Pond Water Tr	20	$367,000		$367,000
	16	$16,000		$16,000
	15		$152,000	$152,000
	12		$150,000	$150,000
	10		$38,500	$38,500
	8		$284,000	$284,000
	5		$6,000	$6,000
Loon Pond Water Treatment Plant T		**$383,000**	**$630,500**	**$1,013,500**
Water Distribution S	25	$1,195,430		$1,195,430
	20	$770,430		$770,430
	16	$127,780		$127,780
	15		$1,645,130	$1,645,130
	12		$65,500	$65,500
	10		$1,070,940	$1,070,940
	8		$132,270	$132,270
	5		$793,620	$793,620
	4		$336,885	$336,885
Water Distribution System Total		**$2,093,640**	**$4,044,345**	**$6,137,985**
Grand Total		**$2,476,640**	**$4,674,845**	**$7,151,485**

APPENDIX F-2
10 Year Look Ahead

_2024_2033	(All)
Category	Vertical

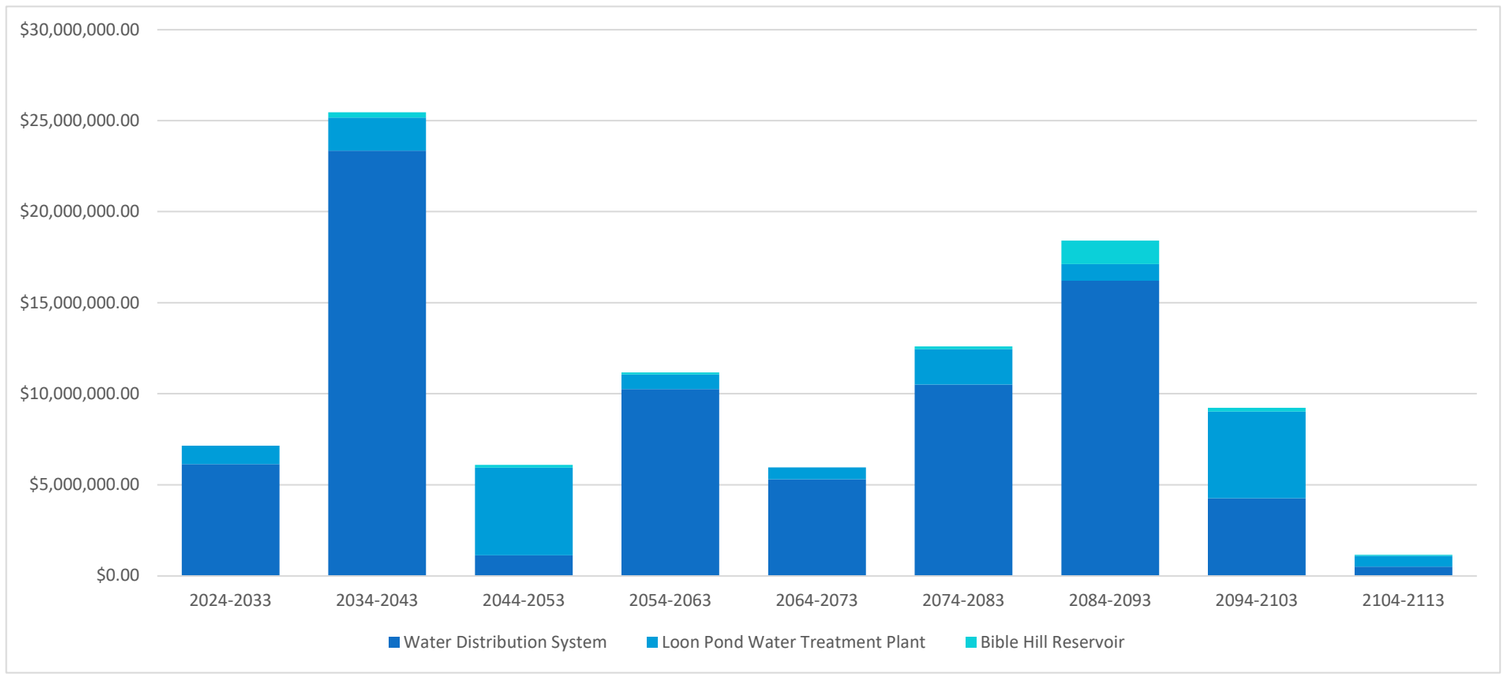
Sum of _2024_2033					Criticality		
Facility Name or Press	Risk Score	Asset Type	Year Installed	Useful Life	Highest Risk	Priority Renewal	Grand Total
Loon Pond Water Tr	20	Chloramine Feed	2015	5	$40,000		$40,000
Loon Pond Water Tr	20	Chloramine Pipin	2015	5	$60,000		$60,000
Loon Pond Water Tr	20	Chloramine Resid	1995	5	$12,500		$12,500
Loon Pond Water Tr	20	Chorine Residual	1995	5	$12,500		$12,500
Loon Pond Water Tr	20	Level Sensing anc	1995	20	$12,000		$12,000
Loon Pond Water Tr	20	Potassium Hydro:	1995	15	$100,000		$100,000
Loon Pond Water Tr	20	Potassium Hydro:	1995	15	$20,000		$20,000
Loon Pond Water Tr	20	Potassium Hydro:	1995	5	$40,000		$40,000
Loon Pond Water Tr	20	Zinc Orthophospł	1995	5	$40,000		$40,000
Loon Pond Water Tr	20	Zinc Orthophospł	1995	5	$30,000		$30,000
Loon Pond Water Tr	16	Eyewash/Shower	1995	30	$16,000		$16,000
Loon Pond Water Tr	15	Chloramine Analy	1995	15		$20,000	$20,000
Loon Pond Water Tr	15	Finish Water Pum	1995	20		$80,000	$80,000
Loon Pond Water Tr	15	Level Sensor Equi	1995	20		$12,000	$12,000
Loon Pond Water Tr	15	pH Analyzer	1995	15		$20,000	$20,000
Loon Pond Water Tr	15	Turbidity Analyze	1995	15		$20,000	$20,000
Loon Pond Water Tr	12	Instrumentation I	1995	30		$150,000	$150,000
Loon Pond Water Tr	10	Gravel Parking an	1995	10		$20,000	$20,000
Loon Pond Water Tr	10	Plant Water Pum	1995	10		$18,500	$18,500
Loon Pond Water Tr	8	Asphalt Shingle R	1995	35		$100,000	$100,000
Loon Pond Water Tr	8	Exhaust Fan	1995	30		$20,000	$20,000
Loon Pond Water Tr	8	Louver	1995	30		$14,000	$14,000
Loon Pond Water Tr	8	Plant Water Pum	1995	30		$60,000	$60,000
Loon Pond Water Tr	8	Plant Water Pum	1995	30		$60,000	$60,000
Loon Pond Water Tr	8	Propane Tank & S	1995	30		$30,000	$30,000
Loon Pond Water Tr	5	Flow Meter	1995	10		$6,000	$6,000
Grand Total					**$383,000**	**$630,500**	**$1,013,500**

Data	Total
2024-2033	$7,151,485.00
2034-2043	$25,457,595.00
2044-2053	$6,087,530.00
2054-2063	$11,161,110.00
2064-2073	$5,958,405.00
2074-2083	$12,593,795.00
2084-2093	$18,414,340.00
2094-2103	$9,221,780.00
2104-2113	$1,153,540.00



APPENDIX F-4
100 Year Look Ahead by Facility

Data	Facility Name or Pressure Zone Water Distribution System	Loon Pond Water Treatment Plant	Bible Hill Reservoir	Grand Total
2024-2033	$6,137,985.00	$1,013,500.00		$7,151,485.00
2034-2043	$23,350,095.00	$1,807,500.00	$300,000.00	$25,457,595.00
2044-2053	$1,127,030.00	$4,810,500.00	$150,000.00	$6,087,530.00
2054-2063	$10,251,610.00	$809,500.00	$100,000.00	$11,161,110.00
2064-2073	$5,294,905.00	$663,500.00		$5,958,405.00
2074-2083	$10,501,295.00	$1,942,500.00	$150,000.00	$12,593,795.00
2084-2093	$16,200,840.00	$913,500.00	$1,300,000.00	$18,414,340.00
2094-2103	$4,260,280.00	$4,761,500.00	$200,000.00	$9,221,780.00
2104-2113	$495,040.00	$608,500.00	$50,000.00	$1,153,540.00
			$2,250,000.00	



APPENDIX F-5
Additional Summary Tables

Category	Horizontal

Asset Type	Unit	Sum of Quantity
Blowoff	EA	2
Gate Valve - Hydrar	EA	95
Gate Valve - Water	EA	148
Hydrant	EA	122
Hydrant Service	LF	6,369
Water Main	LF	131,499

Category	Horizontal

Asset Type	Material	Useful Life	Sum of Quantity	
Blowoff	Ductile Iron	50	2	
Gate Valve - Hydrar	Ductile Iron	50	93	
	-	50	2	
Gate Valve - Water	Ductile Iron	50	148	
Hydrant	-	50	122	
Hydrant Service	DI	85	713	
	Unk	75	5,656	
Water Main	CI	110	81,226	81226.36
	DI	85	47,078	47078.14
	Galv	50	391	390.84
	HDPE	75	681	680.53
	Unk	75	2,123	2123.09
				131498.96

Category	Vertical

Process Number	Process	Asset Type	Useful Life
1.02	Raw Water Supply - Surface Water	Intake Screen	40
2.00	Water Treatment - Slow Sand Filtration	Clearwell	50
2.00	Water Treatment - Slow Sand Filtration	Flow Meter	10
2.00	Water Treatment - Slow Sand Filtration	Level Sensor Equipment	20
2.00	Water Treatment - Slow Sand Filtration	Pipe gallery	50
2.00	Water Treatment - Slow Sand Filtration	Raw Water Distribution Header	50
2.00	Water Treatment - Slow Sand Filtration	Sand filter beds and pipe gallery	50
2.00	Water Treatment - Slow Sand Filtration	Slow sand filter media	25
2.00	Water Treatment - Slow Sand Filtration	Underdrain	50
2.00	Water Treatment - Slow Sand Filtration	Underdrain Header	50

APPENDIX F-5
Additional Summary Tables

Process Number	Process	Asset Type	Useful Life
2.03	Water Treatment - Corrosion Control	Eyewash/Shower	30
2.03	Water Treatment - Corrosion Control	Zinc Orthophosphate Feed Pump	5
2.03	Water Treatment - Corrosion Control	Zinc Orthophosphate Piping & Tu	5
2.04	Water Treatment - pH Adjustment	Potassium Hydroxide Bulk Storag	15
2.04	Water Treatment - pH Adjustment	Potassium Hydroxide Day Tank &	15
2.04	Water Treatment - pH Adjustment	Potassium Hydroxide Feed Pump	5
2.05	Water Treatment - Disinfection	Chloramine Feed Pump	5
2.05	Water Treatment - Disinfection	Chloramine Piping & Tubing	5
2.05	Water Treatment - Disinfection	UV Control Panel	30
2.05	Water Treatment - Disinfection	UV Disinfection Unit	30
2.05	Water Treatment - Disinfection	UV Power Distribution Unit	30
2.06	Water Treatment - Finished Water	Clearwell Structure	50
2.06	Water Treatment - Finished Water	Finish Water Pump & Motor	20
2.08	Water Treatment - Plant Water	Chloramine Residual Sample Pur	5
2.08	Water Treatment - Plant Water	Chorine Residual Analyzer	5
2.08	Water Treatment - Plant Water	Plant Water Piping and Valves	50
2.08	Water Treatment - Plant Water	Plant Water Pump	30
2.08	Water Treatment - Plant Water	Plant Water Pump Motor	30
2.08	Water Treatment - Plant Water	Plant Water Pump VFD	10
3.02	Water Distribution - Storage	Buried Storage Tank	50
3.02	Water Distribution - Storage	Process Piping & Valves	50
3.02	Water Distribution - Storage	Sampling Building	30
3.02	Water Distribution - Storage	Storage Tank Mixer	20
4.01	Monitoring and Control	Chloramine Analyzer	15
4.01	Monitoring and Control	Instrumentation Devices & Wirin	30
4.01	Monitoring and Control	Level Sensing and Control - Float	20
4.01	Monitoring and Control	pH Analyzer	15
4.01	Monitoring and Control	Turbidity Analyzer	15
5.01	Building - Structure	Asphalt Shingle Roof	35
5.01	Building - Structure	Concrete Block Walls	50
5.01	Building - Structure	Concrete Floor Slab	50
5.01	Building - Structure	Concrete Foundation	50
5.01	Building - Structure	Wood Roof Trusses	50
5.02	Building - Electrical	Building Electrical	40
5.03	Building - HVAC & Plumbing	Boiler & Circulation Pump	40
5.03	Building - HVAC & Plumbing	Exhaust Fan	30
5.03	Building - HVAC & Plumbing	Louver	30
6.01	Site - Access and Security	Gravel Parking and Driveway	10
6.03	Site - Electrical	Buried Conduit and Wire	40
6.03	Site - Electrical	Site Electrical	40
6.05	Site - Fuel Supply	Propane Tank & Supply Piping	30
7.01	Standby Power	Generator (Propane)	40

APPENDIX F-5
Additional Summary Tables

Process Number	Process	Asset Type	Useful Life

Category	Vertical

Sum of Item Count		Criticality	
Facility Name or Press	Asset Type	Highest Risk	Priority Renewal
Bible Hill Reservoir	Storage Tank Mixer	1	
Loon Pond Water Tr	Asphalt Shingle Roof		1
Loon Pond Water Tr	Chloramine Analyzer		1
Loon Pond Water Tr	Chloramine Feed Pump	2	
Loon Pond Water Tr	Chloramine Piping & Tubing	1	
Loon Pond Water Tr	Chloramine Residual Sample Pump	1	
Loon Pond Water Tr	Chorine Residual Analyzer	1	
Loon Pond Water Tr	Exhaust Fan		1
Loon Pond Water Tr	Eyewash/Shower	1	
Loon Pond Water Tr	Finish Water Pump & Motor		1
Loon Pond Water Tr	Flow Meter		1
Loon Pond Water Tr	Gravel Parking and Driveway		1
Loon Pond Water Tr	Instrumentation Devices & Wiring		1
Loon Pond Water Tr	Level Sensing and Control - Floats	1	
Loon Pond Water Tr	Level Sensor Equipment		1
Loon Pond Water Tr	Louver		1
Loon Pond Water Tr	pH Analyzer		1
Loon Pond Water Tr	Plant Water Pump		1
Loon Pond Water Tr	Plant Water Pump Motor		1
Loon Pond Water Tr	Plant Water Pump VFD		1
Loon Pond Water Tr	Potassium Hydroxide Bulk Storage Tank	2	
Loon Pond Water Tr	Potassium Hydroxide Day Tank & Containment	1	
Loon Pond Water Tr	Potassium Hydroxide Feed Pump	2	
Loon Pond Water Tr	Propane Tank & Supply Piping		1
Loon Pond Water Tr	Turbidity Analyzer		1
Loon Pond Water Tr	Zinc Orthophosphate Feed Pump	2	
Loon Pond Water Tr	Zinc Orthophosphate Piping & Tubing	1	

Category	Horizontal
Criticality	Highest Risk

Sum of Item Count	Asset Type		
Location	Hydrant	Gate Valve - Hydrant	Grand Total
Church St	4	4	8
Butler St	3	3	6
Henniker St	4	2	6
Woodlawn Ave	3	2	5
Newman St	2	2	4

APPENDIX F-5
Additional Summary Tables

Process Number	Process	Asset Type	Useful Life	
West Main St		2	2	4
Central St		2	2	4
Myrtle St		2	1	3
Walnut St		1	1	2
Hoyt Ln		1	1	2
Gay Ave		1	1	2
Pleasant St		1	1	2
Park St		1	1	2
School St		1	1	2
Grand Total		**28**	**24**	**52**

1. DATA ENTRY - DRAFT

	Prior Data (Actuals)		Current Year (Budget)	Projections				
	2022	2023	2024	2025	2026	2027	2028	2029
1. Account Data								
Total Accounts[1]		903	903	903	903	903	903	903
Sprinkler Units[2]		158	158	158	158	158	158	158
2. Consumption								
Within 7,501-22,500 (per 1,000 gal)		14,449,313	14,449,313	14,449,313	14,449,313	14,449,313	14,449,313	14,449,313
Within 22,501-37,500 (per 1,000 gal)		3,781,970	3,781,970	3,781,970	3,781,970	3,781,970	3,781,970	3,781,970
Within 37,501 and over (per 1,000 gal)		10,464,900	10,464,900	10,464,900	10,464,900	10,464,900	10,464,900	10,464,900
Total		**28,696,183**	**28,696,183**	28,696,183	28,696,183	28,696,183	28,696,183	28,696,183
3. Current Rates								
Fixed								
Total Accounts		$73.50	$73.50	See Rate Setting Sheets				
Sprinklers		$73.50	$73.50	See Rate Setting Sheets				
Variable								
Within 7,501-22,500 (per 1,000 gal)		$11.34	$11.34	See Rate Setting Sheets				
Within 22,501-37,500 (per 1,000 gal)		$12.68	$12.68	See Rate Setting Sheets				
Within 37,501 and over (per 1,000 gal)		$14.01	$14.01	See Rate Setting Sheets				
4. Revenues								
Credit Memos	$7,728	$9,812	$4,385	$4,385	$4,385	$4,385	$4,385	$4,385
Hook Up Fees	$12,500	$10,000	$5,625	$5,625	$5,625	$5,625	$5,625	$5,625
Misc.	$1,195	$3,382	$1,144	$1,144	$1,144	$1,144	$1,144	$1,144
Emerald Lake Water Purchase	$11,455	$325	$0	$0	$0	$0	$0	$0
Checking Account Interest Earned	$1,138	$762	$475	$475	$475	$475	$475	$475
Water Filtration Grant	$12,477	$11,979	$11,979	$0	$0	$0	$0	$0
Voided check (2022 expense)	$0	$1,668	$0	$0	$0	$0	$0	$0
Operating Expense Account Cont.	$0	$100,000	$0	$0	$0	$0	$0	$0
er Asset Management Paid Invoices Reimbursement	$0	$23,677	$0	$0	$0	$0	$0	$0
Current Year Receivables Interest Collected	$1,049	$1,625	$669	$669	$669	$669	$669	$669
Prior Year Receivables Interest Collected	$433	$668	$275	$275	$275	$275	$275	$275
Total Other Revenue	**$47,976**	**$163,897**	**$24,552**	$12,573	$12,573	$12,573	$12,573	$12,573
Prior Year Receivables Collected	$15,531	$28,253		See Rate Setting Sheets				
Lien Warrant	$57,502	$61,212		See Rate Setting Sheets				
Current Year Receivables Collected	$597,492	$583,225		See Rate Setting Sheets				
Total Revenue	**$718,501**	**$836,587**		See Rate Setting Sheets				
5. Operating Expenses								
Emergency CAP Reserve	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000
Sand Replacement CAP Reserve	$30,000	$30,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000
System Improvement CAP Reserve	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000
Line Rehabilitation CAP Reserve	$30,000	$30,000	$127,000	$127,000	$127,000	$127,000	$127,000	$127,000
Bible Hill Reservoir CAP Reserve	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000
Water Shed Protection CAP Reserve	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000
Total Reserves	**$100,000**	**$100,000**	**$168,000**	$168,000	$168,000	$168,000	$168,000	$168,000
O&M	**$383,739**	**$473,546**	**$510,892**	**$688,239**	$722,651	$758,783	$796,723	$836,559
Total	**$483,739**	**$573,546**	**$678,892**	$856,239	$890,651	$926,783	$964,723	$1,004,559
Projected O&M Annual Increase				5%	5%	5%	5%	5%
Other adds								
6. Capital Expenses								
Existing Debt	$215,229	$207,301	$203,700	$51,898	$52,227	$52,553	$52,875	$53,193
Future Debt (Projected)								
Additional Capital Outlay (Reserves)				$0	$0	$0	$0	$0
Projects (from Capital Reserves)[3]				$439,000	$0	$0	$0	$0
Asset Management over next 5 years[4]				$303,000	$303,000	$303,000	$303,000	$303,000
Asset Management over next 5 years (1.52M Loan)[5]						$90,432	$90,432	$90,432
Lead Service Line Inventory (LSLI)				$0	$0	$0	$0	$0
7. Scenarios (Total Expenditures)								
A-Base-Match revenues to expenditures	$698,968	$780,847	$882,592	$908,137	$942,878	$979,337	$1,017,598	$1,057,752
B1-Add Asset Management			$882,592	$1,211,137	$1,245,878	$1,282,336	$1,320,598	$1,360,752
B2-Add Asset Management (1.52M Loan)			$882,592	$908,137	$942,878	$1,069,769	$1,108,030	$1,148,184
C-Add LSLI			$882,592	$1,211,137	$1,245,878	$1,282,336	$1,320,598	$1,360,752

Notes:

[1]Total accounts based on average of all four quarters of 2023 water bills

[2]Sprinkler units per sprinkler charge spreadsheet sent by Penny Griffin 5/16/24

[3]Projects are not added to budget, and are subtracted from reserve funds. 2025 project is Park & Whittemore Infrastructure Improvements

[4]Asset Management is estimated at $440k annually from the AMP less $137k annually from system improvement and line rehab capital reserve fund contributions

[5]Assume $1.52M 20 yr loan with interest rate of 3.5%

2A. RATE SETTING - BASE - DRAFT

Hillsborough Water Rate Analysis

Description	2024 # Users & Consumption	2024 First 9 mo. $	2024 Last 3 mo.	2024 Total	2025 # Users & Consumption	2025 $	2025 Total	2026 # Users & Consumption	2026 $	2026 Total	2027 # Users & Consumption	2027 $	2027 Total	2028 # Users & Consumption	2028 $	2028 Total	2029 # Users & Consumption	2029 $	2029 Total
Sales																			
Unit Charge Annual Increase(%)		INCREASE(%)		35%		INCREASE(%)	0%		INCREASE(%)	4%		INCREASE(%)	4%		INCREASE(%)	4%		INCREASE(%)	4%
Unit Charge (annual)																			
Total Accounts	903	$73.50	$99.23	$288,712	903	$99.23	$358,401	903	$103.19	$372,737	903	$107.32	$387,646	903	$111.61	$403,152	903	$116.08	$419,278
Sprinkler Units	158	$73.50	$99.23	$50,517	158	$99.23	$62,710	158	$103.19	$65,219	158	$107.32	$67,827	158	$111.61	$70,540	158	$116.08	$73,362
TOTAL Unit charge				**$339,228**			**$421,111**			**$437,955**			**$455,474**			**$473,692**			**$492,640**
Variable Charge Annual Increase(%)		INCREASE(%)		35%		INCREASE(%)	0%		INCREASE(%)	4%		INCREASE(%)	4%		INCREASE(%)	4%		INCREASE(%)	4%
Usage Charge (Volumetric)																			
Within 7,501-22,500 (per 1,000 gal)	14,449,313	$11.34	$15.31	$192,530	14,449,313	$15.31	$221,205	14,449,313	$15.92	$230,053	14,449,313	$16.56	$239,255	14,449,313	$17.22	$248,825	14,449,313	$17.91	$258,778
Within 22,501-37,500 (per 1,000 gal)	3,781,970	$12.68	$17.12	$56,348	3,781,970	$17.12	$64,740	3,781,970	$17.80	$67,329	3,781,970	$18.51	$70,023	3,781,970	$19.26	$72,823	3,781,970	$20.03	$75,736
Within 37,501 and over (per 1,000 gal)	10,464,900	$14.01	$18.91	$172,271	10,464,900	$18.91	$197,928	10,464,900	$19.67	$205,845	10,464,900	$20.46	$214,079	10,464,900	$21.28	$222,642	10,464,900	$22.13	$231,548
TOTAL Variable charge	28,696,183			**$421,148**	28,696,183		**$483,872**	28,696,183		**$503,227**	28,696,183		**$523,356**	28,696,183		**$544,290**	28,696,183		**$566,062**
Uncollected charges, % and $	0.0%	*assumed uncollected*		**$0**	0.0%	*assumed uncollected*	**$0**	0.0%	*assumed uncollected*	**$0**	0.0%	*assumed uncollected*	**$0**	0.0%	*assumed uncollected*	**$0**	0.0%	*assumed uncollected*	**$0**
Meter and Usage Net Revenue Subtotal				**$760,376**			**$904,983**			**$941,182**			**$978,830**			**$1,017,983**			**$1,058,702**
Total Annual Increase(%)						INCREASE(%)	19%		INCREASE(%)	4%		INCREASE(%)	4%		INCREASE(%)	4%		INCREASE(%)	4%
Other Water Department Revenue																			
Other Water Department Revenue				**$24,552**			**$12,573**			**$12,573**			**$12,573**			**$12,573**			**$12,573**
Summary				----------			----------			----------			----------			----------			----------
Total Projected Revenues				**$784,929**			**$917,556**			**$953,756**			**$991,403**			**$1,030,556**			**$1,071,275**
Total Projected Expenditures				$882,592			$908,137			$942,878			$979,337			$1,017,598			$1,057,752
Revenues Over (Under) Expenditures[1,2]				**($97,663)**			**$9,419**			**$10,878**			**$12,066**			**$12,958**			**$13,524**
Transfers to Capital Reserve Funds																			
Emergency CAP Reserve				**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**
Sand Replacement CAP Reserve				**$1,000**			**$1,000**			**$1,000**			**$1,000**			**$1,000**			**$1,000**
System Improvement CAP Reserve				**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**
Line Rehabilitation CAP Reserve				**$127,000**			**$127,000**			**$127,000**			**$127,000**			**$127,000**			**$127,000**
Bible Hill Reservoir CAP Reserve				**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**
Water Shed Protection CAP Reserve				**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**
Cumulative Transfer				**$168,000**			**$168,000**			**$168,000**			**$168,000**			**$168,000**			**$168,000**
Transfers from Capital Reserves for CIP				**$0**			**-$439,000**			**$0**			**$0**			**$0**			**$0**
Capital Reserve Funds																			
Emergency CAP Reserve	**$183,313.42**			**$193,313**			**$203,313**			**$213,313**			**$223,313**			**$233,313**			**$243,313**
Sand Replacement CAP Reserve	**$190,966**			**$191,966**			**$192,966**			**$193,966**			**$194,966**			**$195,966**			**$196,966**
System Improvement CAP Reserve	**$128,589**			**$138,589**			**$148,589**			**$158,589**			**$168,589**			**$178,589**			**$188,589**
Water UV Bulb Capital Reserve	**$1,414**			**$1,414**			**$1,414**			**$1,414**			**$1,414**			**$1,414**			**$1,414**
Line Rehabilitation CAP Reserve	**$487,357**			**$614,357**			**$302,357**			**$429,357**			**$556,357**			**$683,357**			**$810,357**
Bible Hill Reservoir CAP Reserve	**$22,634**			**$32,634**			**$42,634**			**$52,634**			**$62,634**			**$72,634**			**$82,634**
Water Shed Protection CAP Reserve	**$45,099**			**$55,099**			**$65,099**			**$75,099**			**$85,099**			**$95,099**			**$105,099**
Unspent Fund Balance	**$860,289**			**$762,626**			**$772,045**			**$782,922**			**$794,989**			**$807,947**			**$821,471**
Cumulative Fund Balance / Reserves	**$1,919,661**			**$1,989,998**			**$1,728,417**			**$1,907,295**			**$2,087,361**			**$2,268,319**			**$2,449,843**
Fixed Revenue %				**43%**			**46%**			**46%**			**46%**			**46%**			**46%**
Sample Bills[3]	**Consumption**		**Annual Bill**		**Consumption**		**Annual Bill**	**Consumption**		**Annual Bill**	**Consumption**		**Annual Bill**	**Consumption**		**Annual Bill**	**Consumption**		**Annual Bill**
Residential low	50		**$294**		50		**$397**	50		**$413**	50		**$429**	50		**$446**	50		**$464**
Residential average	150		**$575**		150		**$776**	150		**$807**	150		**$839**	150		**$873**	150		**$908**
Residential high	250		**$990**		250		**$1,337**	250		**$1,390**	250		**$1,446**	250		**$1,504**	250		**$1,564**

Notes

1. Positive difference means that funds can be added to reserves. Negative means that funds will be drained from reserves.
2. A surplus between revenue and expenditures will be added to the Capital Reserve Fund
3. Assumes equal water consumption throughout each quarter

2B1. RATE SETTING - AMP - DRAFT

Hillsborough Water Rate Analysis

Description	2024 # Users & Consumption	2024 First 9 mo. $	2024 Last 3 mo.	2024 Total	2025 # Users & Consumption	2025 $	2025 Total	2026 # Users & Consumption	2026 $	2026 Total	2027 # Users & Consumption	2027 $	2027 Total	2028 # Users & Consumption	2028 $	2028 Total	2029 # Users & Consumption	2029 $	2029 Total
Sales																			
Unit Charge Annual Increase(%)		INCREASE(%)		35%		INCREASE(%)	35%		INCREASE(%)	4%		INCREASE(%)	2%		INCREASE(%)	2%		INCREASE(%)	2%
Unit Charge (annual)																			
Total Accounts	903	$73.50	$99.23	$288,712	903	$133.95	$483,841	903	$139.31	$503,195	903	$142.10	$513,258	903	$144.94	$523,524	903	$147.84	$533,994
Sprinkler Units	158	$73.50	$99.23	$50,517	158	$133.95	$84,659	158	$139.31	$88,045	158	$142.10	$89,806	158	$144.94	$91,602	158	$147.84	$93,434
TOTAL Unit charge				**$339,228**			**$568,500**			**$591,240**			**$603,064**			**$615,126**			**$627,428**
Variable Charge Annual Increase(%)		INCREASE(%)		35%		INCREASE(%)	35%		INCREASE(%)	4%		INCREASE(%)	2%		INCREASE(%)	2%		INCREASE(%)	2%
Usage Charge (Volumetric)																			
Within 7,501-22,500 (per 1,000 gal)	14,449,313	$11.34	$15.31	$192,530	14,449,313	$20.67	$298,626	14,449,313	$21.49	$310,571	14,449,313	$21.92	$316,783	14,449,313	$22.36	$323,118	14,449,313	$22.81	$329,581
Within 22,501-37,500 (per 1,000 gal)	3,781,970	$12.68	$17.12	$56,348	3,781,970	$23.11	$87,399	3,781,970	$24.03	$90,895	3,781,970	$24.51	$92,713	3,781,970	$25.00	$94,567	3,781,970	$25.50	$96,458
Within 37,501 and over (per 1,000 gal)	10,464,900	$14.01	$18.91	$172,271	10,464,900	$25.53	$267,203	10,464,900	$26.55	$277,891	10,464,900	$27.09	$283,449	10,464,900	$27.63	$289,118	10,464,900	$28.18	$294,900
TOTAL Variable charge	28,696,183			**$421,148**	28,696,183		**$653,227**	28,696,183		**$679,357**	28,696,183		**$692,944**	28,696,183		**$706,803**	28,696,183		**$720,939**
Uncollected charges, % and $	0.0%	*assumed uncollected*		**$0**	0.0%	*assumed uncollected*	**$0**	0.0%	*assumed uncollected*	**$0**	0.0%	*assumed uncollected*	**$0**	0.0%	*assumed uncollected*	**$0**	0.0%	*assumed uncollected*	**$0**
Meter and Usage Net Revenue Subtotal				**$760,376**			**$1,221,727**			**$1,270,596**			**$1,296,008**			**$1,321,928**			**$1,348,367**
Total Annual Increase(%)						INCREASE(%)	61%		INCREASE(%)	4%		INCREASE(%)	2%		INCREASE(%)	2%		INCREASE(%)	2%
Other Water Department Revenue																			
Other Water Department Revenue				**$24,552**			**$12,573**			**$12,573**			**$12,573**			**$12,573**			**$12,573**
Summary				----------			----------			----------			----------			----------			----------
Total Projected Revenues				**$784,929**			**$1,234,300**			**$1,283,169**			**$1,308,581**			**$1,334,502**			**$1,360,940**
Total Projected Expenditures				$882,592			$1,211,137			$1,245,878			$1,282,336			$1,320,598			$1,360,752
Revenues Over (Under) Expenditures[1,2]				**($97,663)**			**$23,163**			**$37,291**			**$26,245**			**$13,904**			**$188**
Transfers to Capital Reserve Funds																			
Emergency CAP Reserve				**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**
Sand Replacement CAP Reserve				**$1,000**			**$1,000**			**$1,000**			**$1,000**			**$1,000**			**$1,000**
System Improvement CAP Reserve				**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**
Line Rehabilitation CAP Reserve				**$127,000**			**$127,000**			**$127,000**			**$127,000**			**$127,000**			**$127,000**
Bible Hill Reservoir CAP Reserve				**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**
Water Shed Protection CAP Reserve				**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**
Cumulative Transfer				**$168,000**			**$168,000**			**$168,000**			**$168,000**			**$168,000**			**$168,000**
Transfers from Capital Reserves for CIP				**$0**			**-$439,000**			**$0**			**$0**			**$0**			**$0**
Capital Reserve Funds																			
Emergency CAP Reserve	**$183,313.42**			**$193,313**			**$203,313**			**$213,313**			**$223,313**			**$233,313**			**$243,313**
Sand Replacement CAP Reserve	**$190,966**			**$191,966**			**$192,966**			**$193,966**			**$194,966**			**$195,966**			**$196,966**
System Improvement CAP Reserve	**$128,589**			**$138,589**			**$148,589**			**$158,589**			**$168,589**			**$178,589**			**$188,589**
Water UV Bulb Capital Reserve	**$1,414**			**$1,414**			**$1,414**			**$1,414**			**$1,414**			**$1,414**			**$1,414**
Line Rehabilitation CAP Reserve	**$487,357**			**$614,357**			**$302,357**			**$429,357**			**$556,357**			**$683,357**			**$810,357**
Bible Hill Reservoir CAP Reserve	**$22,634**			**$32,634**			**$42,634**			**$52,634**			**$62,634**			**$72,634**			**$82,634**
Water Shed Protection CAP Reserve	**$45,099**			**$55,099**			**$65,099**			**$75,099**			**$85,099**			**$95,099**			**$105,099**
Unspent Fund Balance	**$860,289**			**$762,626**			**$785,789**			**$823,080**			**$849,325**			**$863,229**			**$863,417**
Cumulative Fund Balance / Reserves	**$1,919,661**			**$1,989,998**			**$1,742,161**			**$1,947,453**			**$2,141,698**			**$2,323,601**			**$2,491,790**
Fixed Revenue %				**43%**			**46%**			**46%**			**46%**			**46%**			**46%**
Sample Bills[3]	**Consumption**			**Annual Bill**	**Consumption**		**Annual Bill**	**Consumption**		**Annual Bill**	**Consumption**		**Annual Bill**	**Consumption**		**Annual Bill**	**Consumption**		**Annual Bill**
Residential low	50			**$294**	50		**$536**	50		**$557**	50		**$568**	50		**$580**	50		**$591**
Residential average	150			**$575**	150		**$1,047**	150		**$1,089**	150		**$1,111**	150		**$1,133**	150		**$1,156**
Residential high	250			**$990**	250		**$1,805**	250		**$1,877**	250		**$1,914**	250		**$1,953**	250		**$1,992**

Notes

1. Positive difference means that funds can be added to reserves. Negative means that funds will be drained from reserves.
2. A surplus between revenue and expenditures will be added to the Capital Reserve Fund
3. Assumes equal water consumption throughout each quarter

2B2. RATE SETTING - AMP ($1.52M LOAN) - DRAFT

Hillsborough Rate Analysis

Description	2024 # Users & Consumption	2024 First 9 mo. $	2024 Last 3 mo.	2024 Total	2025 # Users & Consumption	2025 $	2025 Total	2026 # Users & Consumption	2026 $	2026 Total	2027 # Users & Consumption	2027 $	2027 Total	2028 # Users & Consumption	2028 $	2028 Total	2029 # Users & Consumption	2029 $	2029 Total
Sales																			
Unit Charge Annual Increase(%)		INCREASE(%)		35%		INCREASE(%)	0%		INCREASE(%)	4%		INCREASE(%)	14%		INCREASE(%)	4%		INCREASE(%)	4%
Unit Charge (annual)																			
Total Accounts	903	$73.50	$99.23	$288,712	903	$99.23	$358,401	903	$103.19	$372,737	903	$117.64	$424,920	903	$122.35	$441,917	903	$127.24	$459,593
Sprinkler Units	158	$73.50	$99.23	$50,517	158	$99.23	$62,710	158	$103.19	$65,219	158	$117.64	$74,349	158	$122.35	$77,323	158	$127.24	$80,416
TOTAL Unit charge				**$339,228**			**$421,111**			**$437,955**			**$499,269**			**$519,240**			**$540,009**
Variable Charge Annual Increase(%)		INCREASE(%)		35%		INCREASE(%)	0%		INCREASE(%)	4%		INCREASE(%)	14%		INCREASE(%)	4%		INCREASE(%)	4%
Usage Charge (Volumetric)																			
Within 7,501-22,500 (per 1,000 gal)	14,449,313	$11.34	$15.31	$192,530	14,449,313	$15.31	$221,205	14,449,313	$15.92	$230,053	14,449,313	$18.15	$262,260	14,449,313	$18.88	$272,750	14,449,313	$19.63	$283,661
Within 22,501-37,500 (per 1,000 gal)	3,781,970	$12.68	$17.12	$56,348	3,781,970	$17.12	$64,740	3,781,970	$17.80	$67,329	3,781,970	$20.30	$76,755	3,781,970	$21.11	$79,826	3,781,970	$21.95	$83,019
Within 37,501 and over (per 1,000 gal)	10,464,900	$14.01	$18.91	$172,271	10,464,900	$18.91	$197,928	10,464,900	$19.67	$205,845	10,464,900	$22.42	$234,663	10,464,900	$23.32	$244,050	10,464,900	$24.25	$253,812
TOTAL Variable charge	28,696,183			**$421,148**	28,696,183		**$483,872**	28,696,183		**$503,227**	28,696,183		**$573,679**	28,696,183		**$596,626**	28,696,183		**$620,491**
Uncollected charges, % and $	0.0%	*assumed uncollected*		**$0**	0.0%	*assumed uncollected*	**$0**	0.0%	*assumed uncollected*	**$0**	0.0%	*assumed uncollected*	**$0**	0.0%	*assumed uncollected*	**$0**	0.0%	*assumed uncollected*	**$0**
Meter and Usage Net Revenue Subtotal				**$760,376**			**$904,983**			**$941,182**			**$1,072,948**			**$1,115,866**			**$1,160,500**
Total Annual Increase(%)						INCREASE(%)	19%		INCREASE(%)	4%		INCREASE(%)	14%		INCREASE(%)	4%		INCREASE(%)	4%
Other Water Department Revenue																			
Other Water Department Revenue				**$24,552**			**$12,573**			**$12,573**			**$12,573**			**$12,573**			**$12,573**
Summary				---			---			---			---			---			---	
Total Projected Revenues				**$784,929**			**$917,556**			**$953,756**			**$1,085,521**			**$1,128,439**			**$1,173,074**
Total Projected Expenditures				$882,592			$908,137			$942,878			$1,069,769			$1,108,030			$1,148,184
Revenues Over (Under) Expenditures[1,2]				**($97,663)**			**$9,419**			**$10,878**			**$15,752**			**$20,409**			**$24,890**
Transfers to Capital Reserve Funds																			
Emergency CAP Reserve				**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**
Sand Replacement CAP Reserve				**$1,000**			**$1,000**			**$1,000**			**$1,000**			**$1,000**			**$1,000**
System Improvement CAP Reserve				**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**
Line Rehabilitation CAP Reserve				**$127,000**			**$127,000**			**$127,000**			**$127,000**			**$127,000**			**$127,000**
Bible Hill Reservoir CAP Reserve				**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**
Water Shed Protection CAP Reserve				**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**
Cumulative Transfer				**$168,000**			**$168,000**			**$168,000**			**$168,000**			**$168,000**			**$168,000**
Transfers from Capital Reserves for CIP				**$0**			**-$439,000**			**$0**			**$0**			**$0**			**$0**
Capital Reserve Funds																			
Emergency CAP Reserve	**$183,313.42**			**$193,313**			**$203,313**			**$213,313**			**$223,313**			**$233,313**			**$243,313**
Sand Replacement CAP Reserve	**$190,966**			**$191,966**			**$192,966**			**$193,966**			**$194,966**			**$195,966**			**$196,966**
System Improvement CAP Reserve	**$128,589**			**$138,589**			**$148,589**			**$158,589**			**$168,589**			**$178,589**			**$188,589**
Water UV Bulb Capital Reserve	**$1,414**			**$1,414**			**$1,414**			**$1,414**			**$1,414**			**$1,414**			**$1,414**
Line Rehabilitation CAP Reserve	**$487,357**			**$614,357**			**$302,357**			**$429,357**			**$556,357**			**$683,357**			**$810,357**
Bible Hill Reservoir CAP Reserve	**$22,634**			**$32,634**			**$42,634**			**$52,634**			**$62,634**			**$72,634**			**$82,634**
Water Shed Protection CAP Reserve	**$45,099**			**$55,099**			**$65,099**			**$75,099**			**$85,099**			**$95,099**			**$105,099**
Unspent Fund Balance	**$860,289**			**$762,626**			**$772,045**			**$782,922**			**$798,675**			**$819,084**			**$843,974**
Cumulative Fund Balance / Reserves	**$1,919,661**			**$1,989,998**			**$1,728,417**			**$1,907,295**			**$2,091,047**			**$2,279,456**			**$2,472,346**
Fixed Revenue %				**43%**			**46%**			**46%**			**46%**			**46%**			**46%**
Sample Bills[3]	**Consumption**		**Annual Bill**		**Consumption**		**Annual Bill**	**Consumption**		**Annual Bill**	**Consumption**		**Annual Bill**	**Consumption**		**Annual Bill**	**Consumption**		**Annual Bill**
Residential low	50		**$294**		50		**$397**	50		**$413**	50		**$471**	50		**$489**	50		**$509**
Residential average	150		**$575**		150		**$776**	150		**$807**	150		**$920**	150		**$957**	150		**$995**
Residential high	250		**$990**		250		**$1,337**	250		**$1,390**	250		**$1,585**	250		**$1,648**	250		**$1,714**

Notes

1. Positive difference means that funds can be added to reserves. Negative means that funds will be drained from reserves.
2. A surplus between revenue and expenditures will be added to the Capital Reserve Fund
3. Assumes equal water consumption throughout each quarter

2C. RATE SETTING - AMP and LSLI - DRAFT

Hillsborough Rate Analysis

Description	2024 # Users & Consumption	2024 First 9 mo. $	2024 Last 3 mo.	2024 Total	2025 # Users & Consumption	2025 $	2025 Total	2026 # Users & Consumption	2026 $	2026 Total	2027 # Users & Consumption	2027 $	2027 Total	2028 # Users & Consumption	2028 $	2028 Total	2029 # Users & Consumption	2029 $	2029 Total
Sales																			
Unit Charge Annual Increase(%)		INCREASE(%)		35%		INCREASE(%)	35%		INCREASE(%)	4%		INCREASE(%)	2%		INCREASE(%)	2%		INCREASE(%)	2%
Unit Charge (annual)																			
Total Accounts	903	$73.50	$99.23	$288,712	903	$133.95	$483,841	903	$139.31	$503,195	903	$142.10	$513,258	903	$144.94	$523,524	903	$147.84	$533,994
Sprinkler Units	158	$73.50	$99.23	$50,517	158	$133.95	$84,659	158	$139.31	$88,045	158	$142.10	$89,806	158	$144.94	$91,602	158	$147.84	$93,434
TOTAL Unit charge				**$339,228**			**$568,500**			**$591,240**			**$603,064**			**$615,126**			**$627,428**
Variable Charge Annual Increase(%)		INCREASE(%)		35%		INCREASE(%)	35%		INCREASE(%)	4%		INCREASE(%)	2%		INCREASE(%)	2%		INCREASE(%)	2%
Usage Charge (Volumetric)																			
Within 7,501-22,500 (per 1,000 gal)	14,449,313	$11.34	$15.31	$192,530	14,449,313	$20.67	$298,626	14,449,313	$21.49	$310,571	14,449,313	$21.92	$316,783	14,449,313	$22.36	$323,118	14,449,313	$22.81	$329,581
Within 22,501-37,500 (per 1,000 gal)	3,781,970	$12.68	$17.12	$56,348	3,781,970	$23.11	$87,399	3,781,970	$24.03	$90,895	3,781,970	$24.51	$92,713	3,781,970	$25.00	$94,567	3,781,970	$25.50	$96,458
Within 37,501 and over (per 1,000 gal)	10,464,900	$14.01	$18.91	$172,271	10,464,900	$25.53	$267,203	10,464,900	$26.55	$277,891	10,464,900	$27.09	$283,449	10,464,900	$27.63	$289,118	10,464,900	$28.18	$294,900
TOTAL Variable charge	28,696,183			**$421,148**	28,696,183		**$653,227**	28,696,183		**$679,357**	28,696,183		**$692,944**	28,696,183		**$706,803**	28,696,183		**$720,939**
Uncollected charges, % and $	0.0%	*assumed uncollected*		**$0**	0.0%	*assumed uncollected*	**$0**	0.0%	*assumed uncollected*	**$0**	0.0%	*assumed uncollected*	**$0**	0.0%	*assumed uncollected*	**$0**	0.0%	*assumed uncollected*	**$0**
Meter and Usage Net Revenue Subtotal				**$760,376**			**$1,221,727**			**$1,270,596**			**$1,296,008**			**$1,321,928**			**$1,348,367**
Total Annual Increase(%)						INCREASE(%)	61%		INCREASE(%)	4%		INCREASE(%)	2%		INCREASE(%)	2%		INCREASE(%)	2%
Other Water Department Revenue																			
Other Water Department Revenue				**$24,552**			**$12,573**			**$12,573**			**$12,573**			**$12,573**			**$12,573**
Summary				----------			----------			----------			----------			----------			----------
Total Projected Revenues				**$784,929**			**$1,234,300**			**$1,283,169**			**$1,308,581**			**$1,334,502**			**$1,360,940**
Total Projected Expenditures				$882,592			$1,211,137			$1,245,878			$1,282,336			$1,320,598			$1,360,752
Revenues Over (Under) Expenditures[1,2]				**($97,663)**			**$23,163**			**$37,291**			**$26,245**			**$13,904**			**$188**
Transfers to Capital Reserve Funds																			
Emergency CAP Reserve				**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**
Sand Replacement CAP Reserve				**$1,000**			**$1,000**			**$1,000**			**$1,000**			**$1,000**			**$1,000**
System Improvement CAP Reserve				**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**
Line Rehabilitation CAP Reserve				**$127,000**			**$127,000**			**$127,000**			**$127,000**			**$127,000**			**$127,000**
Bible Hill Reservoir CAP Reserve				**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**
Water Shed Protection CAP Reserve				**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**			**$10,000**
Cumulative Transfer				**$168,000**			**$168,000**			**$168,000**			**$168,000**			**$168,000**			**$168,000**
Transfers from Capital Reserves for CIP				**$0**			**-$439,000**			**$0**			**$0**			**$0**			**$0**
Capital Reserve Funds																			
Emergency CAP Reserve	**$183,313.42**			**$193,313**			**$203,313**			**$213,313**			**$223,313**			**$233,313**			**$243,313**
Sand Replacement CAP Reserve	**$190,966**			**$191,966**			**$192,966**			**$193,966**			**$194,966**			**$195,966**			**$196,966**
System Improvement CAP Reserve	**$128,589**			**$138,589**			**$148,589**			**$158,589**			**$168,589**			**$178,589**			**$188,589**
Water UV Bulb Capital Reserve	**$1,414**			**$1,414**			**$1,414**			**$1,414**			**$1,414**			**$1,414**			**$1,414**
Line Rehabilitation CAP Reserve	**$487,357**			**$614,357**			**$302,357**			**$429,357**			**$556,357**			**$683,357**			**$810,357**
Bible Hill Reservoir CAP Reserve	**$22,634**			**$32,634**			**$42,634**			**$52,634**			**$62,634**			**$72,634**			**$82,634**
Water Shed Protection CAP Reserve	**$45,099**			**$55,099**			**$65,099**			**$75,099**			**$85,099**			**$95,099**			**$105,099**
Unspent Fund Balance	**$860,289**			**$762,626**			**$785,789**			**$823,080**			**$849,325**			**$863,229**			**$863,417**
Cumulative Fund Balance / Reserves	**$1,919,661**			**$1,989,998**			**$1,742,161**			**$1,947,453**			**$2,141,698**			**$2,323,601**			**$2,491,790**
Fixed Revenue %				**43%**			**46%**			**46%**			**46%**			**46%**			**46%**
Sample Bills[3]	**Consumption**		**Annual Bill**		**Consumption**		**Annual Bill**	**Consumption**		**Annual Bill**	**Consumption**		**Annual Bill**	**Consumption**		**Annual Bill**	**Consumption**		**Annual Bill**
Residential low	50		**$294**		50		**$536**	50		**$557**	50		**$568**	50		**$580**	50		**$591**
Residential average	150		**$575**		150		**$1,047**	150		**$1,089**	150		**$1,111**	150		**$1,133**	150		**$1,156**
Residential high	250		**$990**		250		**$1,805**	250		**$1,877**	250		**$1,914**	250		**$1,953**	250		**$1,992**

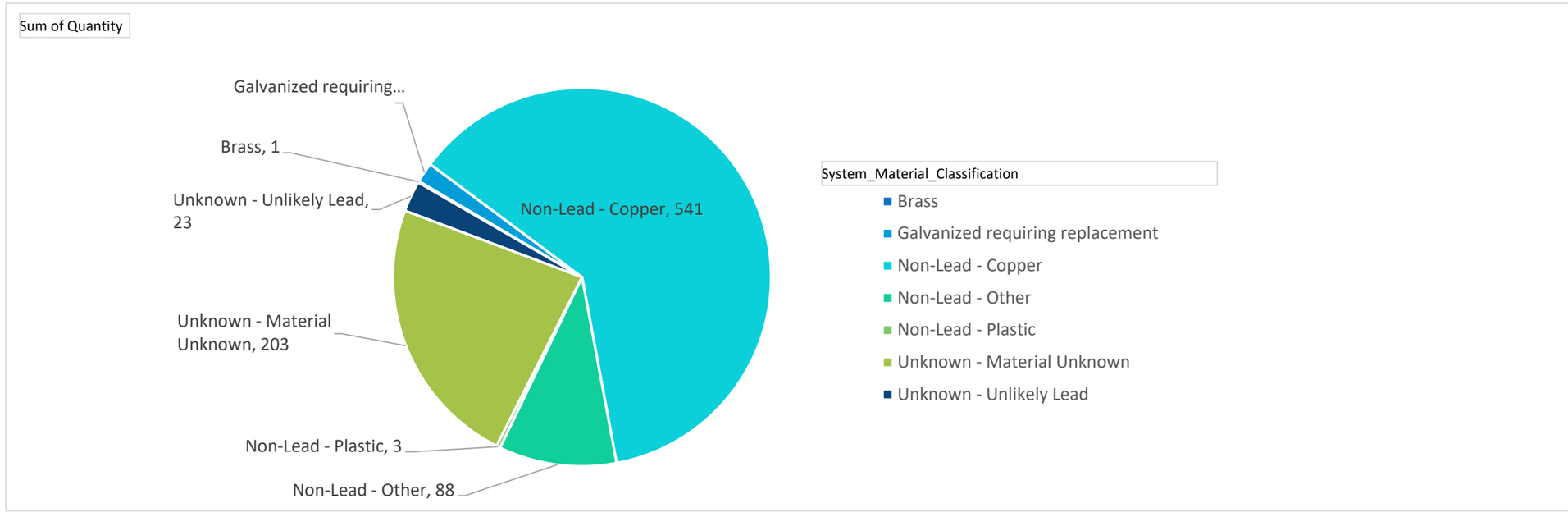
Notes

1. Positive difference means that funds can be added to reserves. Negative means that funds will be drained from reserves.
2. A surplus between revenue and expenditures will be added to the Capital Reserve Fund
3. Assumes equal water consumption throughout each quarter

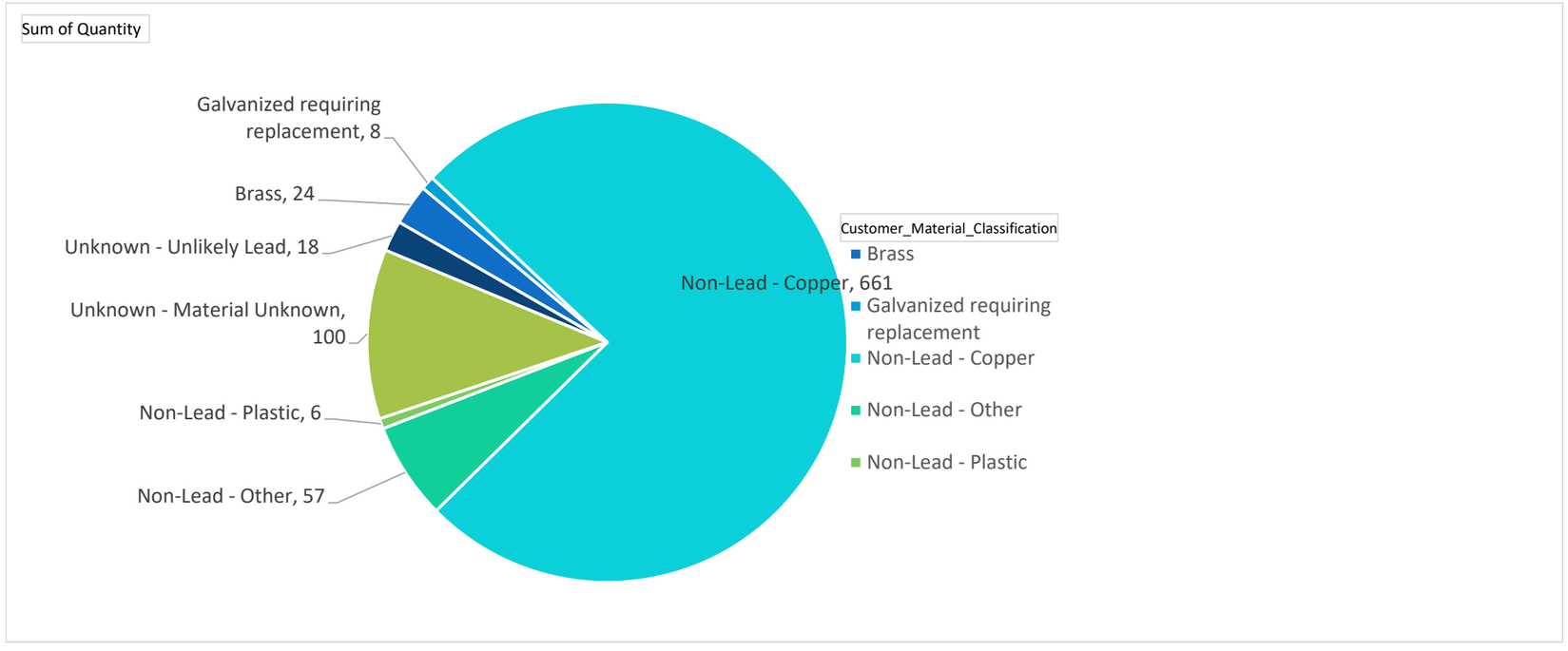
APPENDIX G

Lead Service Line Inventory

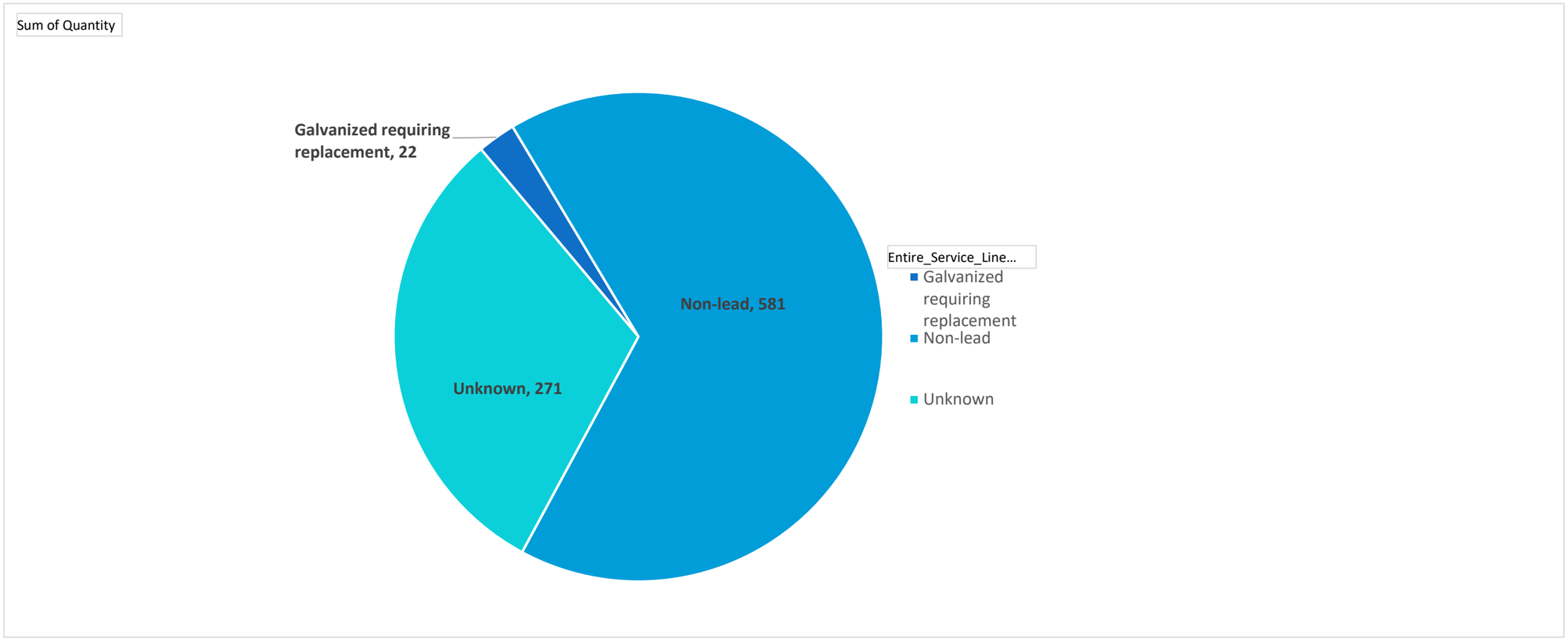
System Side	Sum of Quantity
Brass	1
Galvanized requiring replacement	15
Non-Lead - Copper	541
Non-Lead - Other	88
Non-Lead - Plastic	3
Unknown - Material Unknown	203
Unknown - Unlikely Lead	23
Grand Total	**874**



Customer Side	Sum of Quantity
Brass	24
Galvanized requiring replacement	8
Non-Lead - Copper	661
Non-Lead - Other	57
Non-Lead - Plastic	6
Unknown - Material Unknown	100
Unknown - Unlikely Lead	18
Grand Total	**874**



Entire Service Line	Sum of Quantity
Galvanized requiring replacement	22
Non-lead	581
Unknown	271
Grand Total	**874**



Total_Cost	(Multiple Items)

System_Material_Classification	Customer_Material_Classification	Identification Cost	Replacement Cost	Total_Cost
Galvanized requiring replacement	Galvanized requiring replacement	$0	$20,000	$20,000
Galvanized requiring replacement	Non-Lead - Copper	$0	$280,000	$280,000
Non-Lead - Copper	Galvanized requiring replacement	$0	$120,000	$120,000
Non-Lead - Copper	Unknown - Material Unknown	$6,400	$640,000	$646,400
Non-Lead - Copper	Unknown - Unlikely Lead	$55,000	$220,000	$275,000
Non-Lead - Other	Unknown - Unlikely Lead	$10,000	$40,000	$50,000
Non-Lead - Plastic	Unknown - Unlikely Lead	$5,000	$20,000	$25,000
Unknown - Material Unknown	Brass	$10,000	$40,000	$50,000
Unknown - Material Unknown	Galvanized requiring replacement	$0	$20,000	$20,000
Unknown - Material Unknown	Non-Lead - Copper	$645,000	$2,580,000	$3,225,000
Unknown - Material Unknown	Non-Lead - Plastic	$10,000	$40,000	$50,000
Unknown - Material Unknown	Unknown - Material Unknown	$340,000	$1,360,000	$1,700,000
Unknown - Material Unknown	Unknown - Unlikely Lead	$5,000	$20,000	$25,000
Unknown - Unlikely Lead	Non-Lead - Copper	$100,000	$400,000	$500,000
Unknown - Unlikely Lead	Unknown - Unlikely Lead	$15,000	$60,000	$75,000
Grand Total		**$1,201,400**	**$5,860,000**	**$7,061,400**

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

DRINKING WATER STATE REVOLVING FUND (DWSRF) LEAD SERVICE LINE REPLACEMENT (LSLR) FUNDING

EPA's Lead and Copper Rule Revision (LCRR) requires community (CWS) and non-transient non-community (NTNC) water systems to develop and submit to NHDES a lead service line (LSL) inventory by the federal deadline of October 16, 2024. Through the Bipartisan Infrastructure Law (BIL) Drinking Water State Revolving Loan Fund (DWSRF), funds are available for lead service line replacements (LSLR). For a project or activity to be eligible for funding it must be otherwise DWSRF eligible and be a LSLR project or associated activity directly connected to the replacement of lead service lines.

Who's Eligible?

Community water systems and non-profit, non-community, non-transient water systems.

Principal Forgiveness

71% principal forgiveness for all eligible applicants.

For more information view DWSRF Loan Rates **and visit the** NHDES Lead and Copper Webpage**.**

ELIGIBLE PROJECTS

- Complete removal of lead and galvanized service lines up to the customer meter.
- Removal of lead goosenecks, pigtails and connectors, and replacement with acceptable material.
- Replacement of curb stops and curb stop boxes that are removed as part of full LSLR
- Site restoration (landscaping, sidewalks, driveways, etc.) if the removal was necessary to replace LSL.
- Development / updating of LSLI including locating and mapping LSLs.

How to Apply- NH Online Forms System - Drinking Water Infrastructure Project: Final Application

Applications are accepted any time and no pre-app required.

Questions? Contact NHDES at (603) 271-2315 or dwsrf@des.nh.gov.

DWSRF LSLR ELIGIBLE PROJECTS & ACTIVITIES

Noted in Bipartisan Infrastructure Law SRF Memorandum | US EPA Appendix D "Detailed List of DWSRF Lead Service Line Replacement Project and Activity Examples."

This list is non exhaustive of DWSRF-eligible projects and activities under BIL DWSRF LSLR Capitalization Grants.

For a project or activity to be eligible for funding under this appropriation, it must be otherwise DWSRF eligible and be a LSLR project or associated activity directly connected to the identification, planning, design, and replacement of lead service lines. Any project funded under this appropriation involving the replacement of a lead service line must replace the entire lead service line, not just a portion, unless a portion has already been replaced.

From the DWSRF Infrastructure Fund

- Complete removal of LSL or SL made of galvanized iron or galvanized steel.
- Removal of lead or galvanized gooseneck, pigtails, and connectors.
- Replacement of curb stops, curb stop boxes, and other SL appurtenances that are removed as part of a full LSLR.
- Developing or updating LSL inventories, including locating and mapping LSLs.

From the DWSRF Set-Asides

- Planning and design for LSLR infrastructure projects.
- Developing or updating LSL inventories, including locating and mapping LSLs.
- Providing technical assistance to small PWSs undertaking LSL inventories or construction projects.

How to Apply- **NH Online Forms System - Drinking Water Infrastructure Project: Final Application**

Applications are accepted any time and no pre-app required.

Questions? Contact NHDES at (603) 271-2315 or dwsrf@des.nh.gov.

"SUGGESTED" WARRANT ARTICLE
Enter Meeting Type
STATE OF NEW HAMPSHIRE
Enter Entity Name

Article T-X. Issuance of bonds for the Purpose of Water Infrastructure Improvements to Replace Water System Services Improving Compliance with the Federal Lead and Copper Rule.

To see if the ***NAME OF ENTITY*** will vote to raise and appropriate the sum of ***ENTER BORROW AMOUNT SPELLED OUT*** Dollars and no cents ***ENTER BORROW AMOUNT ($)*** for the purpose of all work needed to identify, engineer, purchase of materials, and replace water system services improving compliance with the Federal Lead and Copper Rule. Such sum to be raised by the issuance of Bonds or Notes not to exceed ***ENTER BORROW AMOUNT ($)*** under, and in compliance with, the provisions of the Municipal Finance Act (NH RSA 33:1 et seq., as amended) and to authorize the ***ENTER NAME OF GOVERNING BODY*** to issue and negotiate such bonds or notes and to determine the date, term of payment, and rate of interest thereon. Further, to take such other actions as may be necessary to effect the issuance, negotiation, sale and delivery of such bonds or notes as shall be in the best interest of the ***ENTER NAME OF ENTITY***, ***ENTER NAME OF CITY/TOWN IF NOT A MUNICIPALITY***, NH. And to further authorize the ***NAME OF GOVERNING BODY*** to apply for, accept and expend unanticipated money from the state, federal or other governmental unit or a private source which becomes available pursuant to RSA 31:95-b for the same or similar purposes of this article.

Voter's Guide/Notes:

It is anticipated but not guaranteed that the ***NAME OF ENTITY*** will receive up to ***ENTER AMOUNT ($ or %) OF ANTICIPATED PRINCIPAL FORGIVENESS*** in principal forgiveness from the State Revolving Fund loan program.

NOTE: This is a sample only. Final warrant articles should be reviewed by local counsel and the NH Department of Revenue Administration (NHDRA).