AFNWA Asset Management Plan

Atlantic First Nations Water Authority

Thursday, December 2nd, 2021

DILLON CONSULTING

Outline

AFNWA Asset Management Plans

- Meet the Team
  - Dillon Staff Introductions
- AFNWA Asset Management Plan Project (JD)
  - Introduction and Purpose of the Project
  - Timeline of Events
  - Asset Management Framework
  - Asset Management Plan Reports
- Community Site Visits (RD)
  - Asset Condition Assessment Surveys
  - Environmental Risk Assessment Monitoring
  - Operational Surveys
  - Drinking Water Well Investigations/ Video
- Dillon's Asset Analysis Tool (AU)
  - Inputs and Outputs
  - Tool Logic and Lifecycle Replacement Projects
- The Capital Prioritization Process (JD)
  - Identify, Prioritize, Schedule
  - Workshop Exercise #1
- Aggregate 10-Year Capital Plan (AFNWA – JL, MO)
- GIS Mapping of Water and Wastewater Systems (JD)

Break 10:30am

Lunch 12:00pm

Meet the Team

Ryan Dunbar, P.Eng.

- Project Manager
- Member of KFN

Julie DiCicco, P.Eng.

- Project Coordinator
- Asset Management Lead

Taylor McNeill, EIT

- Asset Management
- Framework and Roadmap

Austen Underhill, EIT

- Asset Analyst
- On-Site Support

Asset Management Plan Project

Introduction, Purpose, and Final Reporting

AFNWA Asset Management Plan Project

- The Atlantic First Nations Water Authority (AFNWA) has partnered with Dillon Consulting Limited to develop Asset Management Plans for each participating community of the AFNWA to support the full lifecycle of physical assets that support the delivery of water and wastewater services.

- The Asset Management Plans include:
  - An asset inventory for community water and wastewater infrastructure;
  - The condition, expected useful life, and estimated replacement costs of the assets;
  - Current performance of the water and wastewater systems;
  - Current and future levels of service provided;
  - Lifecycle and risk assessment strategy to help proactivity for maintenance, repairs and capital investments; and
  - 10-year Capital Plan required to meet the target level of service.

Timeline of Events

April — Asset Management Plan Framework

Completed an industry best practice review, finalized an AMP Framework, and recommended business processes to support initial AMP development and periodic updates.

May — Asset Hierarchy

Developed an asset hierarchy specific to water and wastewater infrastructure. This hierarchy lead to the generation of tailored condition assessment surveys for field staff, accessible via handheld tablet.

June — Commenced Community Site Visits

Dillon field staff began to visit participating communities in Atlantic Canada to complete the asset condition assessments. The assessments focused on complex assets such as treatment facilities and reservoirs.

July — Asset Management Plan Template

A draft Asset Management Plan (AMP) was generated, prompting discussions between Dillon and AFNWA and leading to a finalized AMP template.

August — Risk Workshops

Dillon and AFNWA held two workshops to discuss risk in relation to water and wastewater assets, highlighting risk factors such as condition, performance, climate change, importance in the overall delivery of service, and impact on the community.

September — Operational Surveys

Dillon staff began to visit participating communities to complete operational surveys to locate and record information on water and wastewater networks, manholes, buried valves, and hydrants. Staff used GPS survey equipment to capture locations of appurtenances within centimeters of accuracy.

October — GIS Mapping

Dillon used GPS data retrieved during the operational surveys and acquired background information for each community to develop first generation maps of community water and wastewater networks in a geographical information system software (GIS).

November — 10-year Capital Plans

Dillon developed 10-year capital plans for each participating community resulting in a capital prioritization aggregate list that will serve as the basis of the funding requests from Indigenous Services Canada (ISC).

December — Operator Workshop

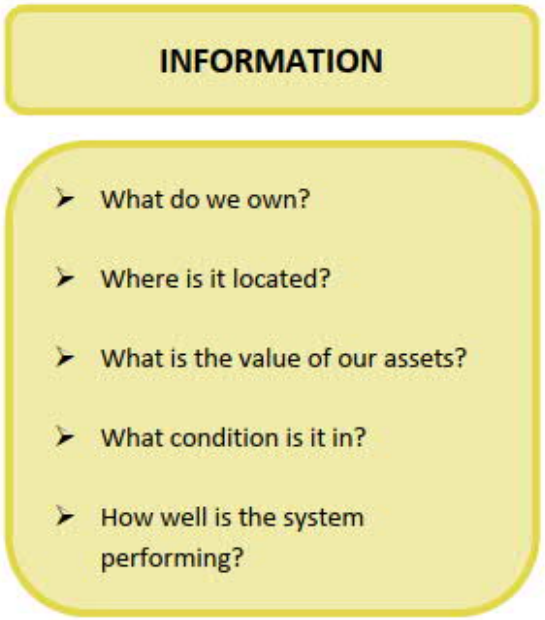
Dillon and AFNWA are looking to provide an overview and report on the initial findings of the project, including the 10-year Capital Plan and seek to incorporate your feedback.

Asset Management Framework

ATLANTIC FIRST NATIONS WATER AUTHORITY INC.

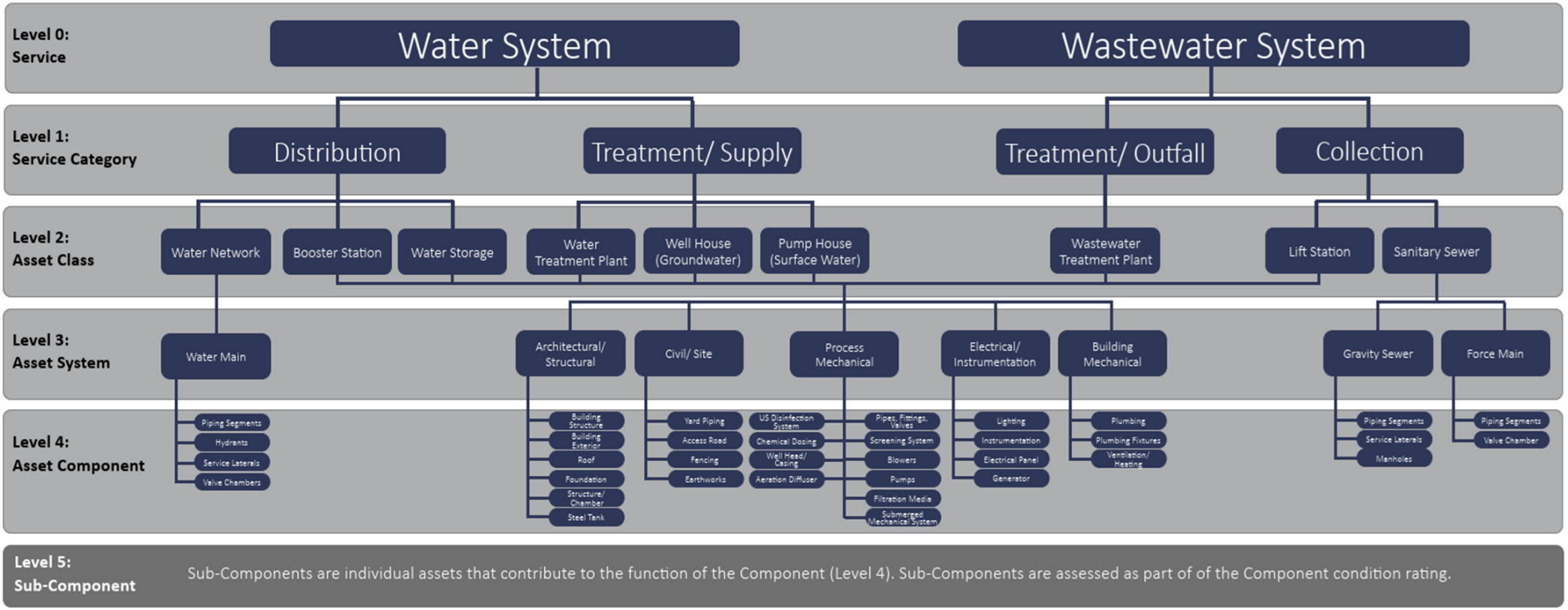
DILLON CONSULTING

Asset Management Framework - Information



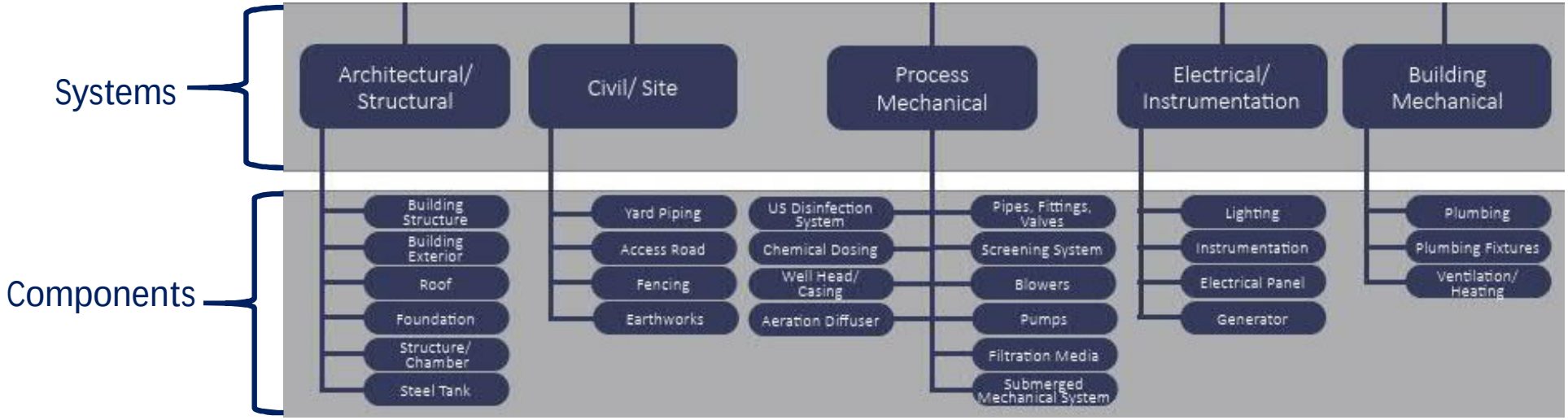
- The Information Pillar provides direction and guidance on collecting, storing, and using water and wastewater asset information
- This pillar outlines the:
  - Data inventory (data structure, storage, and management);
  - Condition (condition assessment/ operational survey methodology, expected useful lives of assets); and,
  - System performance (current performance of assets):
    - Wastewater Environmental Risk Assessments.
    - Drinking Water GUDI Assessments.

Finalized Asset Hierarchy



Finalized Asset Hierarchy

- Complex Assets have multiple components, typically divided into these Asset Systems:



- Linear Assets have a fewer components and only 1 asset system, such as piping segments:
  - Water Main
  - Gravity Main
  - Force Main

Asset Management Framework – Lifecycle Process

- The Lifecycle Process Pillar includes direction and guidance on the operations and maintenance of water and wastewater systems, as well as the overall asset management strategy.
- This pillar includes information on:
  - Current and target Level of Service (LOS);
  - Risk assessment; and
  - Lifecycle strategy, including capital prioritization strategy.

Asset Management Framework – Lifecycle Process

- Level of Service (LOS) can be looked at from two perspectives:
  - The Community LOS: The Level of Service expected by the community residents; and,
  - The Technical LOS: The Level of Service expected from the assets or systems (performance standards).
- We have developed target LOS for water and wastewater:

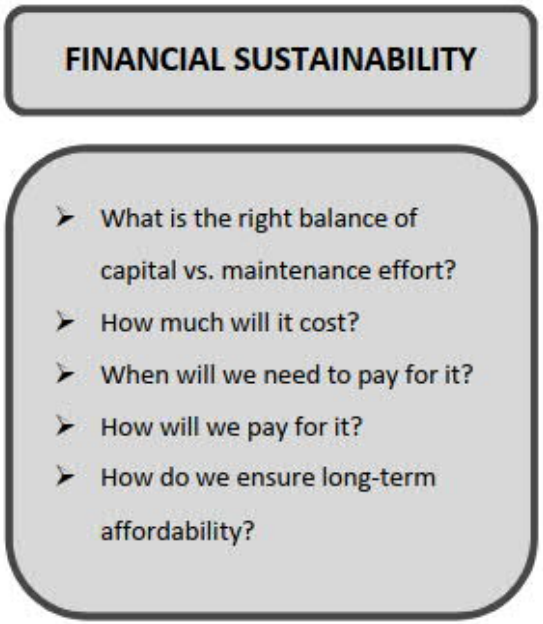
Water Treatment

- Quality: Clean drinking water, no bad taste/ odour.
- Quantity: System is capable of supplying the quantity of water required to community.
- Reliability: Treatment is reliable, no or fewer drinking water advisories.

Wastewater Treatment

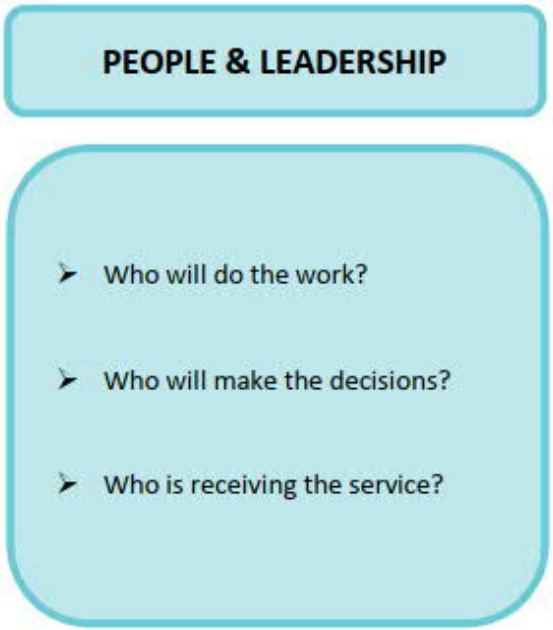
- Environmental Acceptability: Wastewater is treated and discharges to receiving environment, no pollution/ odour.
- Capacity: System has the capacity to treat wastewater generated from community, no sewer discharges, backups, overflows.

Asset Management Framework – Financial Sustainability



- The Financial Sustainability Pillar provides direction and guidance on the financial aspects of the Asset Management System, including:
  - Capital plans;
  - Organization business plan; and,
  - Funding requirements

Asset Management Framework – People & Leadership

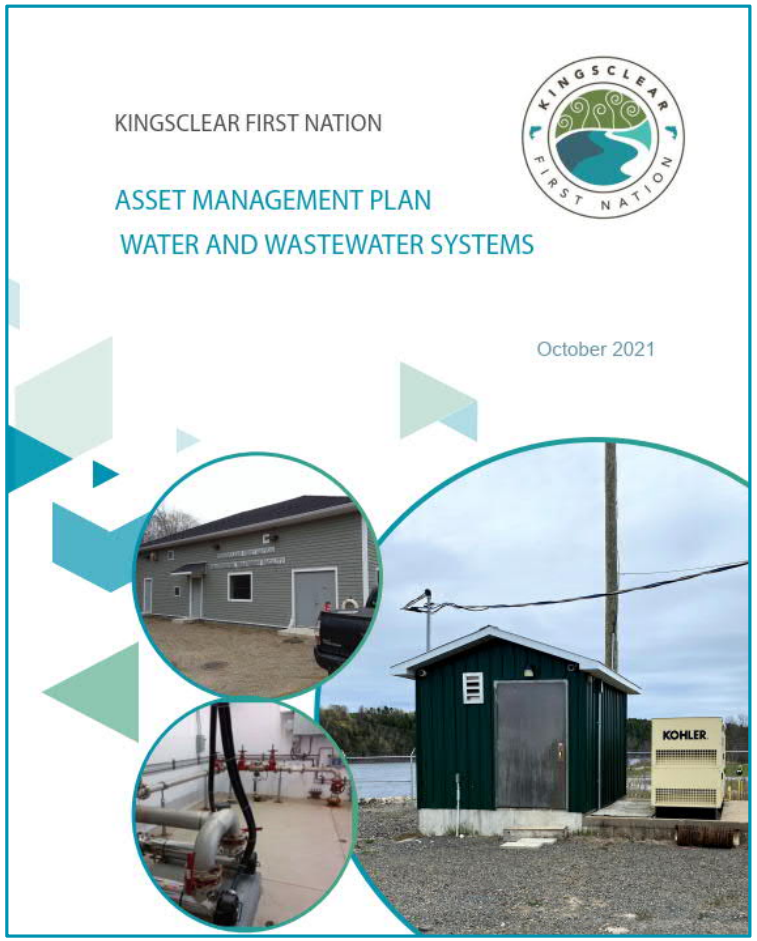


- The People & Leadership pillar presents the individuals that are involved in the AFNWA Asset Management System and outlines the main responsibilities and expectations to allow for effective asset management implementation of:
  - AFNWA staff;
  - AFNWA Board of Directors;
  - Communities; and,
  - Elder Advisory Committee.

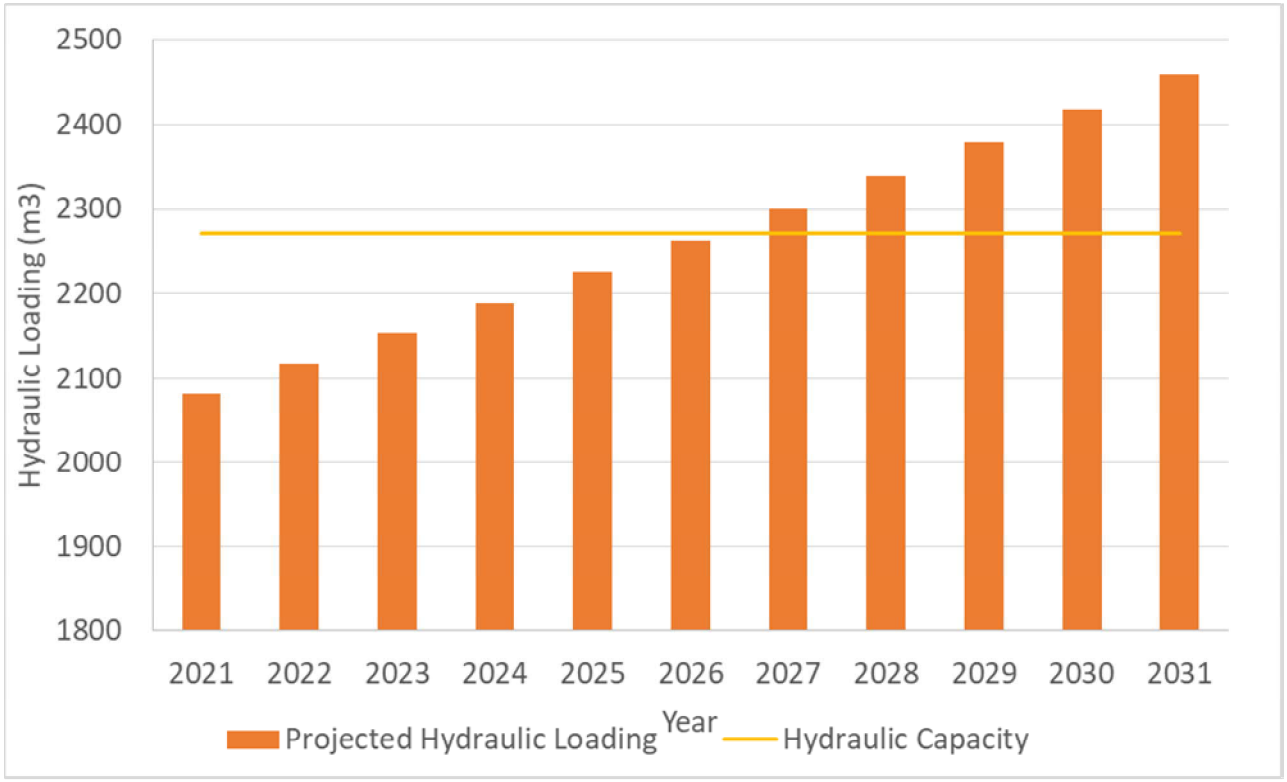
Asset Management Plan Report

The Asset Management Plan Report contains information on:

- Community population projections;
- State of local infrastructure;
  - Asset hierarchy;
  - Asset inventory;
  - Asset condition; and,
  - System performance
- Level of service;
- Risk assessment;
- Lifecycle strategy, including capital prioritization; and,
- 10-Year capital plan.



Asset Management Plan Report – Growth Projections



- Historical population data from the Indigenous and Northern Statistics (INSTAT) branch of Indigenous Services Canada (ISC) was obtained to help calculate a population growth rate.
- This information was used to help determine hydraulic and organic loading in the lagoon or other wastewater treatment system by using a wastewater generation rate of 340L/Person/Day.

Community Site Visits

Condition Assessments and Sampling

Community Site Visits

Asset Condition Assessment Survey

Survey123 for ArcGIS

Wastewater Sampling for ERA*

* Environmental Risk Assessments

Operational Survey

ArcGIS® Field Maps

Drinking Water Well Assessment*

* Groundwater Under Direct Influence (GUDI) Assessments

ATLANTIC FIRST NATIONS WATER AUTHORITY INC.

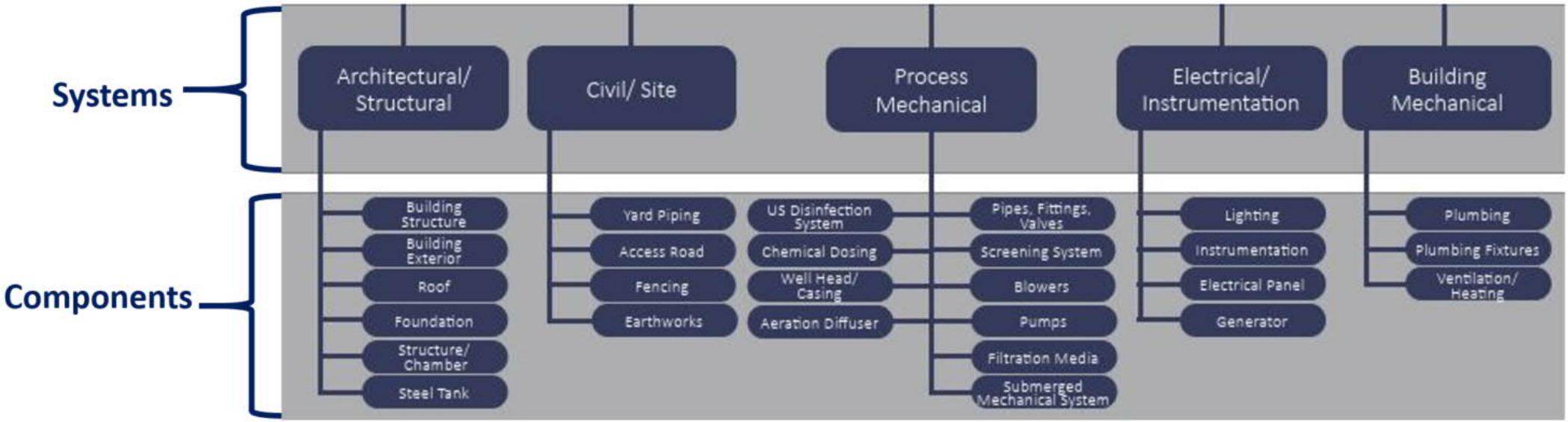
DILLON CONSULTING

Asset Condition Assessment Surveys

- Update past assessments:
  - 3 years since last assessments by CBCL/ Others;
  - Collecting different information to determine asset conditions;
  - What new assets have been commissioned/ decommissioned in the last 3 years?
- Generate detailed asset inventories for each community
  - What complex assets exist?
  - What are their components? Sub-components?
  - Important costing information such as size, material, quantity
  - Notes regarding performance, maintenance requirements
- Generate data for Dillon's Asset Analysis Tool
  - Assign condition ratings at the asset component level
- Generate Asset Cards

Asset Condition Assessment Surveys

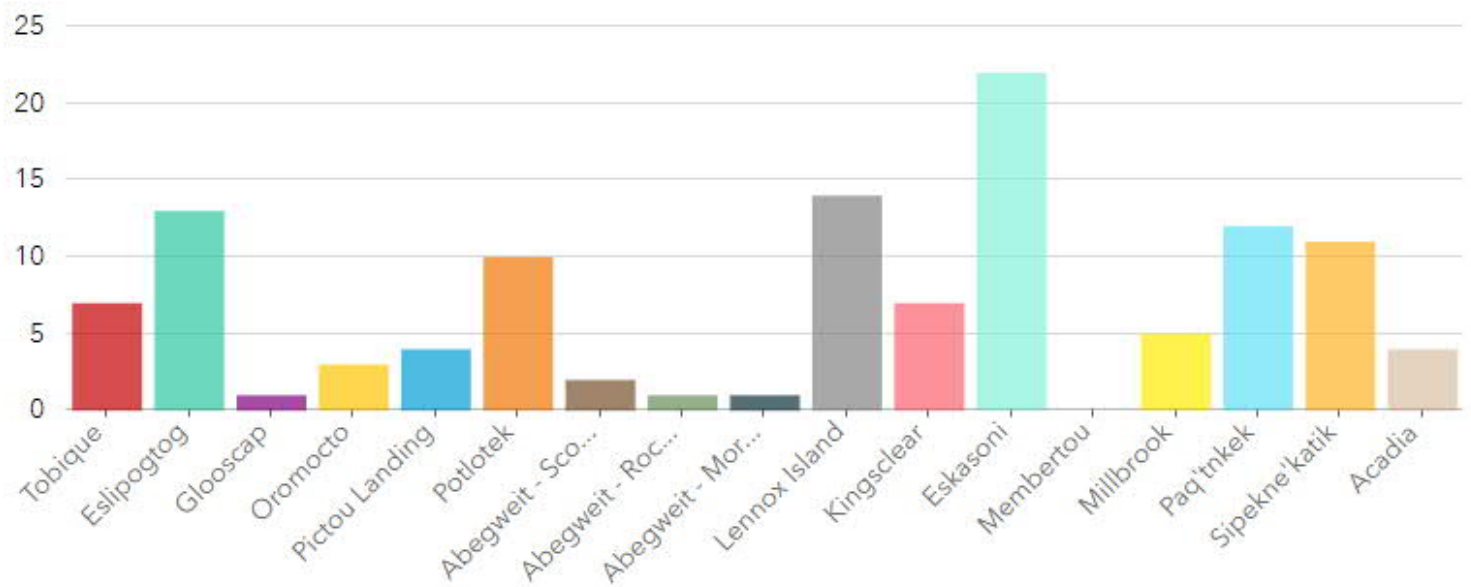
- Assets are a collection of systems, systems are a collection of asset components that are similar in purpose and functionality as they relate to the asset.
- The purpose of the Asset Condition Assessment was to assign a condition at the COMPONENT level



Dillon's Asset Analysis Tool

Asset Condition Assessment Surveys

- The Survey was completed using Survey123, which is an ESRI app that connects to ArcGIS.
- Overall, a total of 144 surveys were completed across 15 communities (one for each complex asset).



Dillon's Asset Analysis Tool

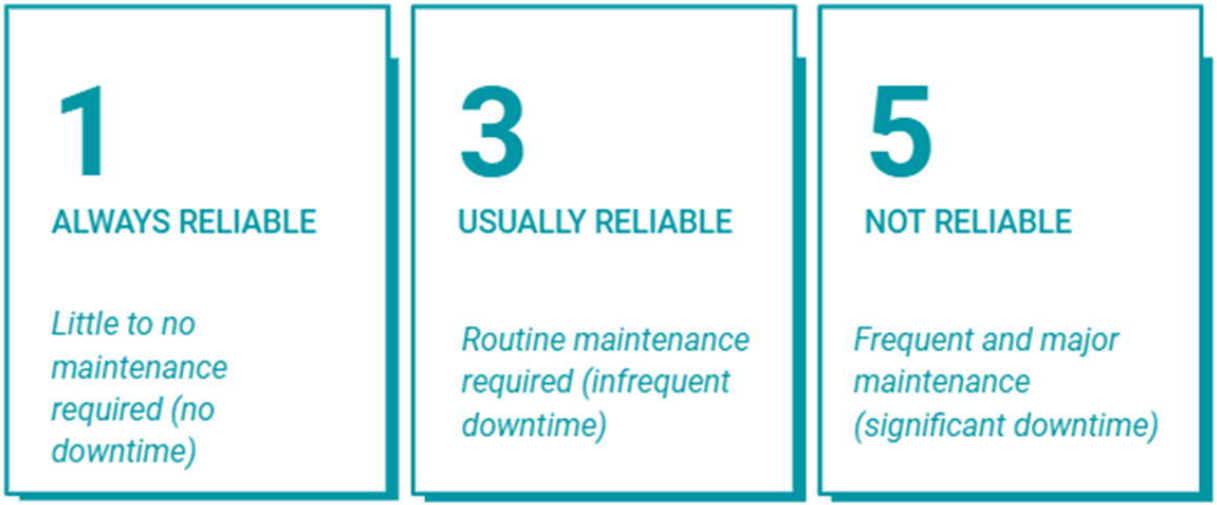
Asset Condition Assessment Surveys

- Each asset component was assigned a condition scores ranging from 1-5 as presented below, along with brief descriptors:

1	2	3	4	5
VERY GOOD	GOOD	FAIR	POOR	VERY POOR
Almost as good as new.	*Requires some minor repairs.*	*Signs of wear and tear, still in good condition.*	*Concerns that it might fail. Significant repairs required.*	*Reached end of life. Needs replacement. Failure imminent.*

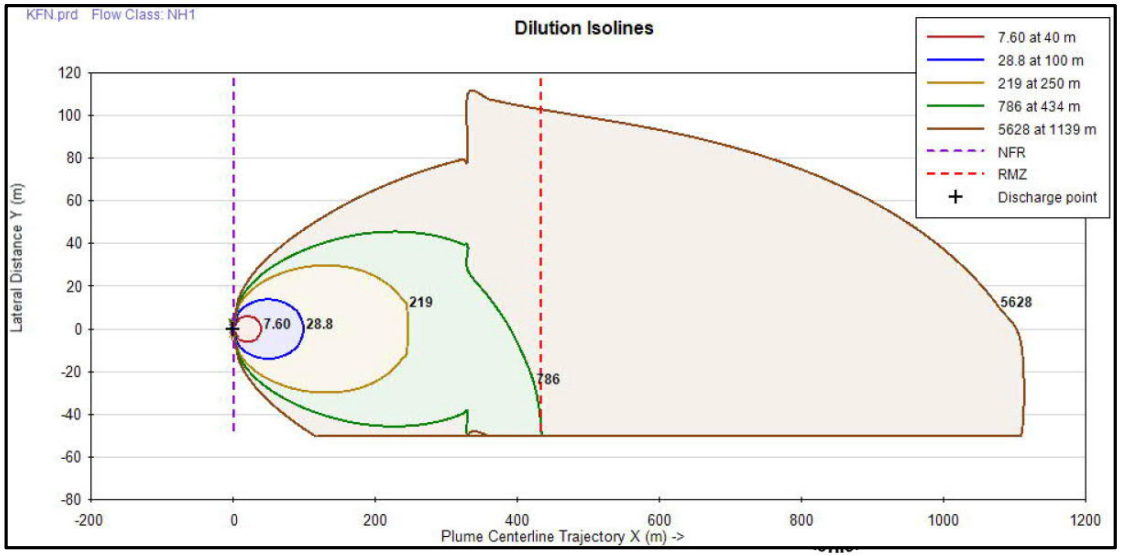
Asset Condition Assessment Surveys

- Performance scores were also assigned to record operational concerns.
- Asset components were assigned a scored of 1, 3 or 5 as presented below, along with brief descriptors:



Wastewater Sampling for Environmental Risk Assessment

- The purpose of an Environmental Risk Assessment (ERA) is to assess the receiving environment (i.e., discharge stream, river) to determine proper Effluent Discharge Objectives (EDO).
- Dillon completed three (3) rounds of quarterly sampling on the wastewater effluent: Spring, Summer, and Fall
- Dillon completed one (1) round of sampling in the receiving environment: Summer or Fall (depending on the site);
- Modelling software was used to understand the impact of the wastewater effluent on the receiving environment and establish appropriate EDOs to minimally impact the receiving environment based on its designated water uses.



AFNWA Asset Management Plans

Wastewater Sampling for Environmental Risk Assessment

AFNWA Asset Management Plans

- In the context of Asset Management Planning, this study was useful to help identify wastewater treatment upgrades required to meet the proposed EDOs.
- Currently, wastewater treatment facilities are subject to Wastewater System Effluent Regulations (WSER), but the AFNWA would like to better understand the treatment capacity of community systems and treat to the EDOs in the context of the environment.
- These assessments were completed on nine (9) communities:
  - Elsipogtog First Nation
  - Eskasoni First Nation
  - Kingsclear First Nation
  - Lennox Island First Nation
  - Paqtnkek Mi'kmaw Nation
  - Pictou Landing First Nation
  - Potlotek First Nation
  - Sipekne'katik First Nation
  - Tobique First Nation

ATLANTIC FIRST NATIONS WATER AUTHORITY INC.

DILLON CONSULTING

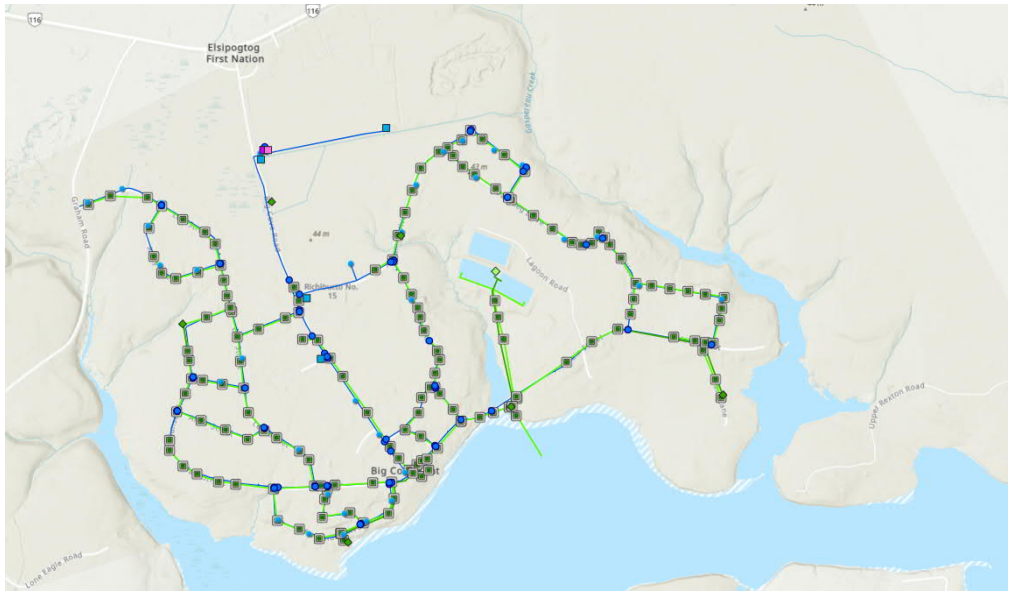
Operational Survey

- There were many benefits to completing an operational survey:
  - Collect GPS data on distribution and collection system assets, such as:
    - Water distribution valves;
    - Fire hydrants;
    - Collection system manholes;
    - Collection system valves/ chambers (i.e., air release valves);
  - Identify any repairs required on the above-noted assets;
  - Convert the data collected into a GIS Map using the Field Maps application.

ArcGIS® Field Maps

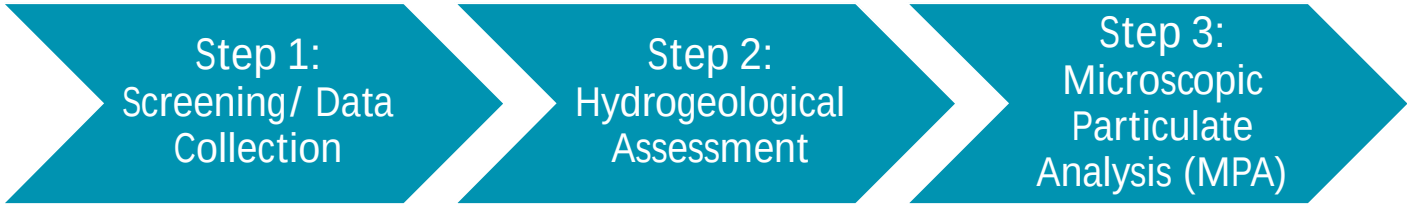
Operational Survey

- The Operational Survey also served as an opportunity to collect any missing information from the past two site visits (Condition Assessment and Wastewater Sampling for ERA)
- Thank you!



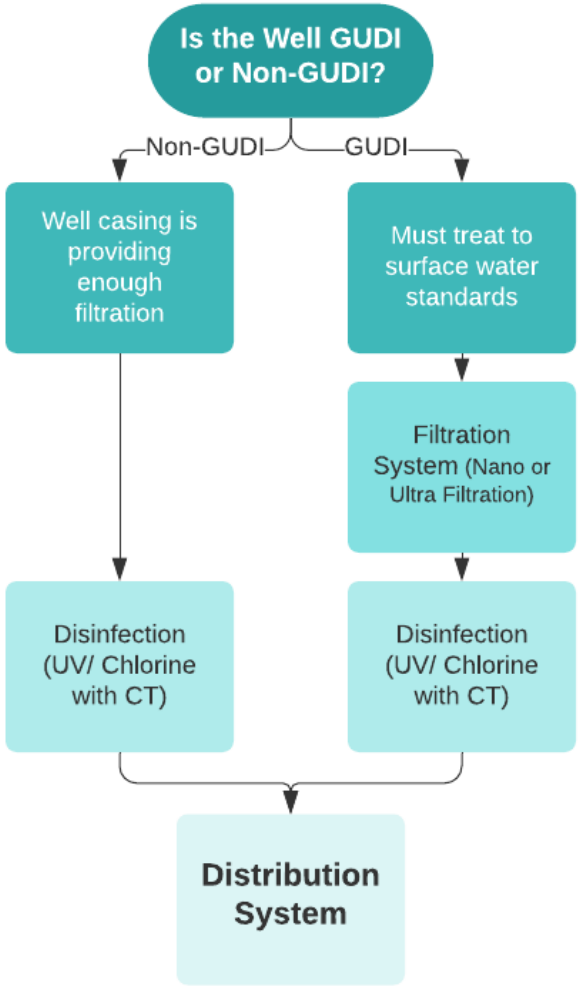
Drinking Water Well Assessment

- Groundwater Under Direct Influence (GUDI) assessments were included in the scope of this project to determine the relationship between surface water and groundwater wells used as drinking water supply. GUDI assessments typically follow:



- Unfortunately due to the lack of available background information (specifically: well construction data and water quality data over the last 3 years), Dillon had to complete well video inspections and a series of site visits to confirm information.
- These video inspections were able to confirm some wells as non-GUDI, but some videos were inconclusive, therefore wells were required to move forward in the assessment.

Drinking Water Well Assessment



- The purpose of these assessments in the context of the Asset Management Plan is to identify if further upgrades to the water treatment facility are required.
- Following this very simplified flowchart, if the well is deemed GUDI, a full filtration system must be introduced into the treatment facility to meet Canadian Drinking Water Guidelines.
- This is in addition to treatment for inorganics (such as Manganese and Iron) which are also required to be removed in Non-GUDI wells.

Dillon's Asset Analysis Tool

Condition-based asset component replacement projections

Dillon’s Asset Analysis Tool

- Developed internally by Dillon
- Excel-based analysis tool
- Employed on a variety of Asset Management Projects

Dillon's Asset Analysis Tool

- Up to 4 Asset Analysis Tool files for each community

Water

Water Assets Portfolio (Complex)
- Water Treatment Plants
- Well Houses/Pump Houses
- Pressure Release Valves
- Booster Stations
- Water Reservoirs

Water Assets Portfolio (Linear)
- Water Mains
- Hydrants
- Gate Valves

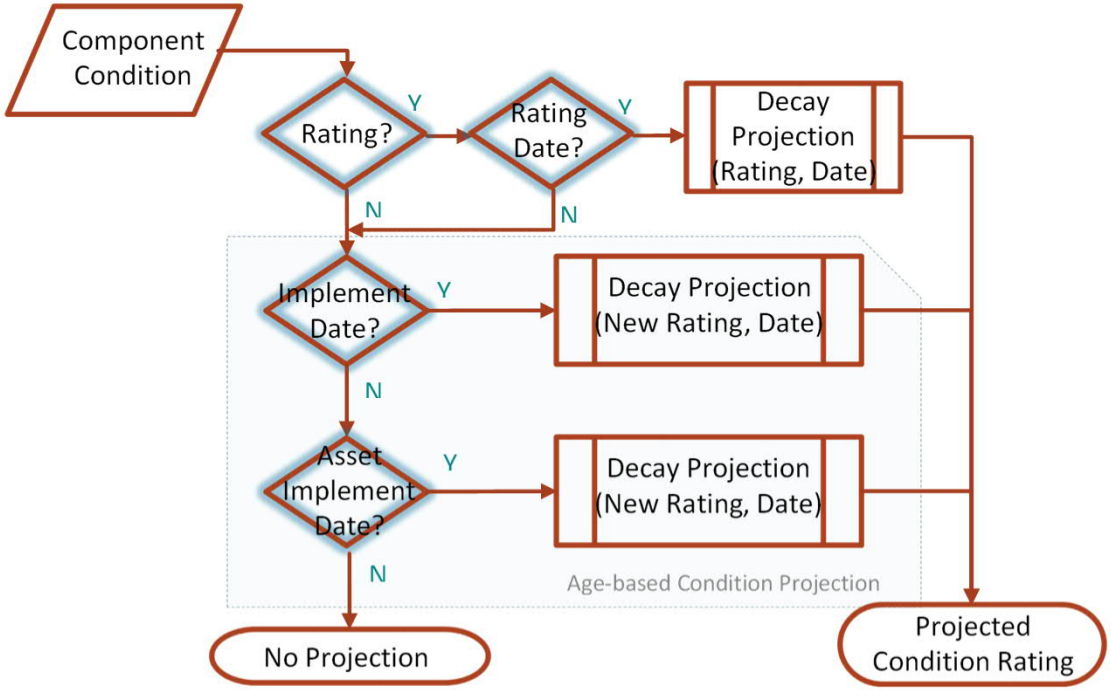
Wastewater

Wastewater Assets Portfolio (Complex)
- Wastewater Treatment Plants
- Lift Stations
- Lagoons

Wastewater Assets Portfolio (Linear)
- Force Main
- Gravity Sewer
- Sanitary Manholes

Dillon's Asset Analysis Tool

- In the Asset Analysis Tool, asset components decay from the LAST KNOWN component condition and follow the assigned decay curve:



Dillon's Asset Analysis Tool

ID	System	Condition Weight	Value Weight
CS	Civil / Site	2.0	2.0
PM	Process Mechanical	10.0	10.0
BM	Building Mechanical	5.0	7.5
EI	Electrical / Instrumentation	5.0	5.0
AS	Architectural / Structural	10.0	10.0

Overall Asset Condition

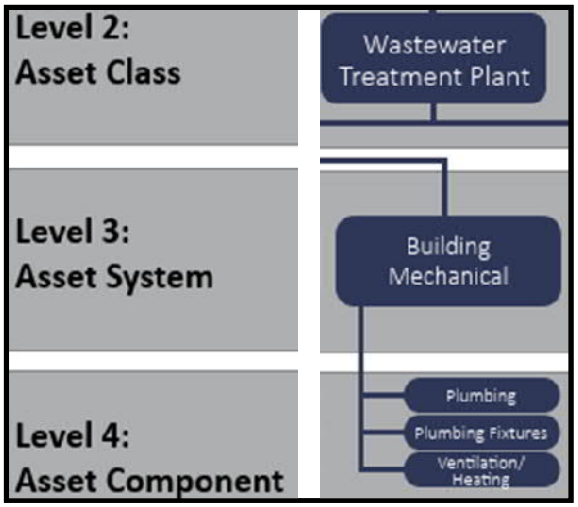
Condition Weights
(Bottom-Up Approach)

- We apply a condition rating or calculate an age-based condition for each asset component
- We assign condition weights at the component level and at the asset system level to calculate the overall asset condition

Value Weights
(Top-Down Approach)

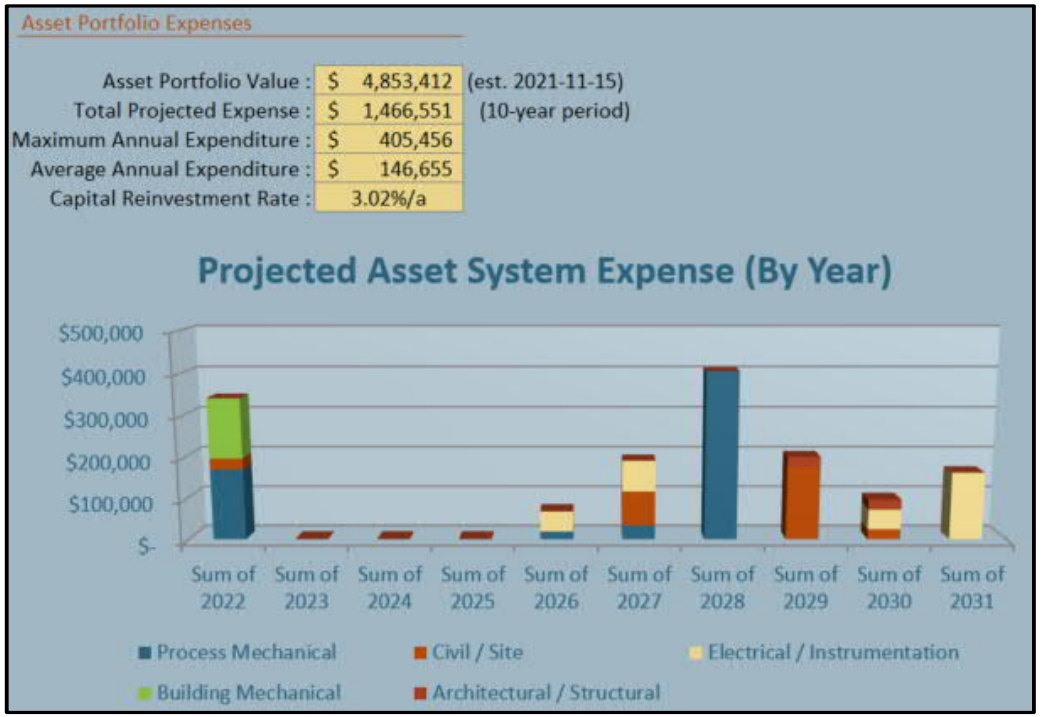
- We assign an estimated replacement cost for the entire asset (known construction cost + inflation or 2021 estimate)
- We assign value weights at the system level and then again at the component level to calculate a replacement cost to asset components

Lifecycle Replacement Expenses



Dillon's Asset Analysis Tool

- Using the last known condition, decay curves, estimated asset replacement costs, and expected useful life, the Asset Analysis Tool provides a suggested replacement schedule, complete with expected cost for each component.
- This is used as the basis for the 10-Year Capital Plans.



Dillon's Asset Analysis Tool

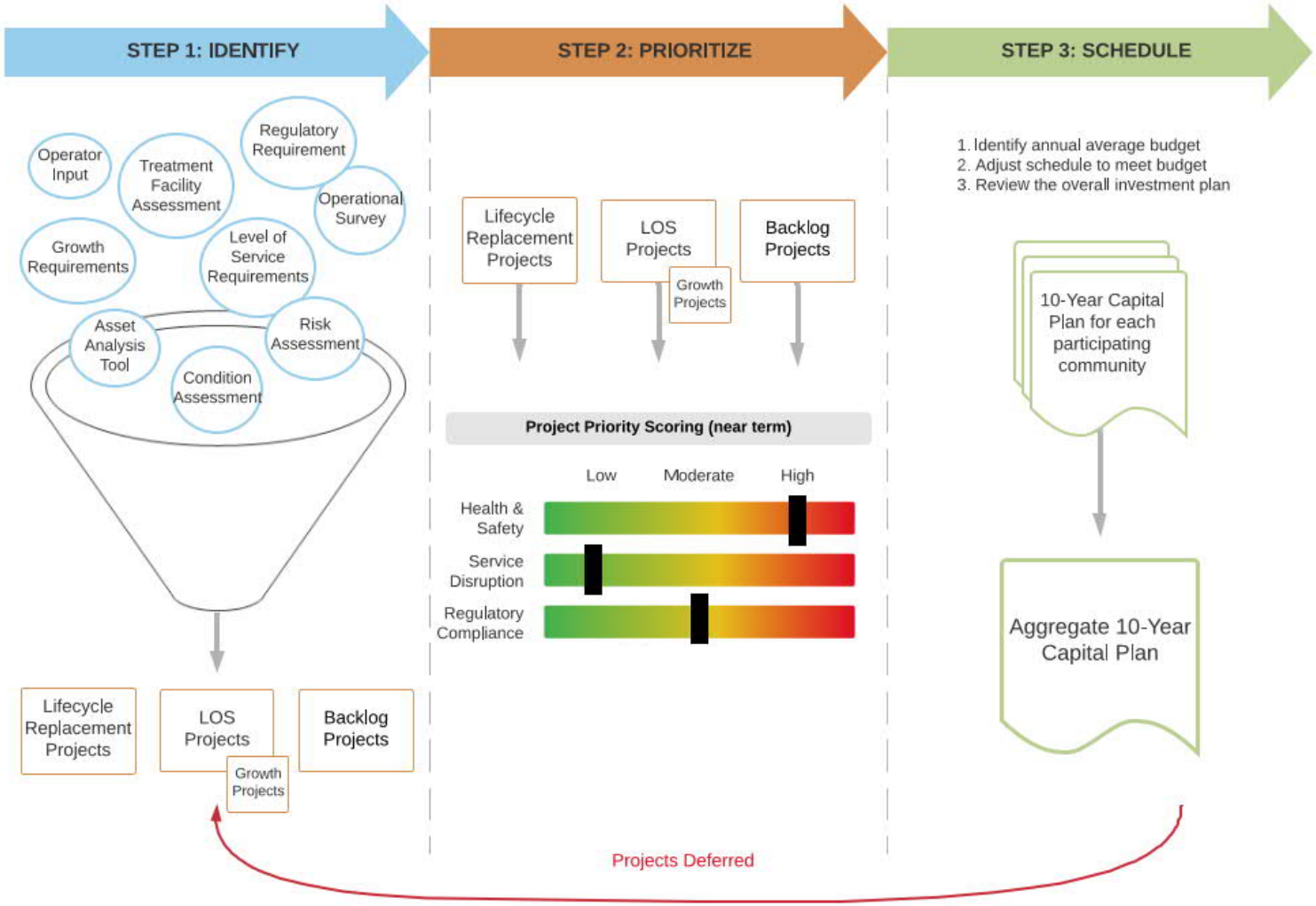
In Summary

- The Asset Analysis Tool employs decay curves to estimate the next replacement date for an asset component, and proportions an associated capital expenditure from the asset's estimated overall replacement cost.
- Condition weights influence how asset component conditions are used to create the overall asset condition.
- Value weights determine what proportion of the estimated asset replacement cost gets allocated to each asset component.
- The Asset Analysis Tool will always consider the last known condition of an asset component, allowing the user to update the projections based on the most up-to-date information.
- The Asset Analysis Tool is the main source of identifying Lifecycle Replacement Projects in the 10-Year Capital Plans.

The Capital Prioritization Process

Condition-based asset component replacement projections

The Capital Prioritization Process



The Capital Prioritization Process - Definitions

Capital Expenditures (CAPEX):

- The expenditure exceeds $5,000 and the asset has a life span of greater than one year.
- The expenditure extends the useful life or improves existing assets beyond the original condition.

Operational Expenditures (OPEX)

- The expenditure is considered a repair, does not fall in the CAPEX definition, and is captured in the operating budget.

The Capital Prioritization Process - Definitions

Lifecycle Replacement Projects:

- Capital projects identified based on condition, asset lifecycle, and expected useful life.
- Typically compiled from the Asset Analysis Tool.

Level of Service (LOS) Projects:

- Capital projects required to meet either current or target LOS.
- Could include monitoring programs, upgrades to improve system performance, etc.

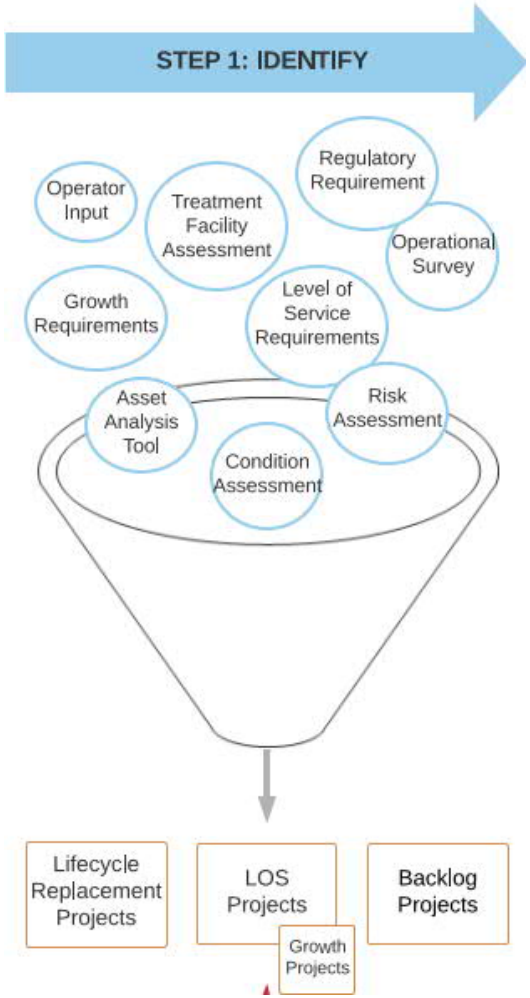
Growth Projects (subset of LOS Projects):

- *Capital projects identified to meet population growth or economic development needs.*
- *Can include items such as aeration upgrades in the lagoon due to anticipated population growth.*

Backlog Projects:

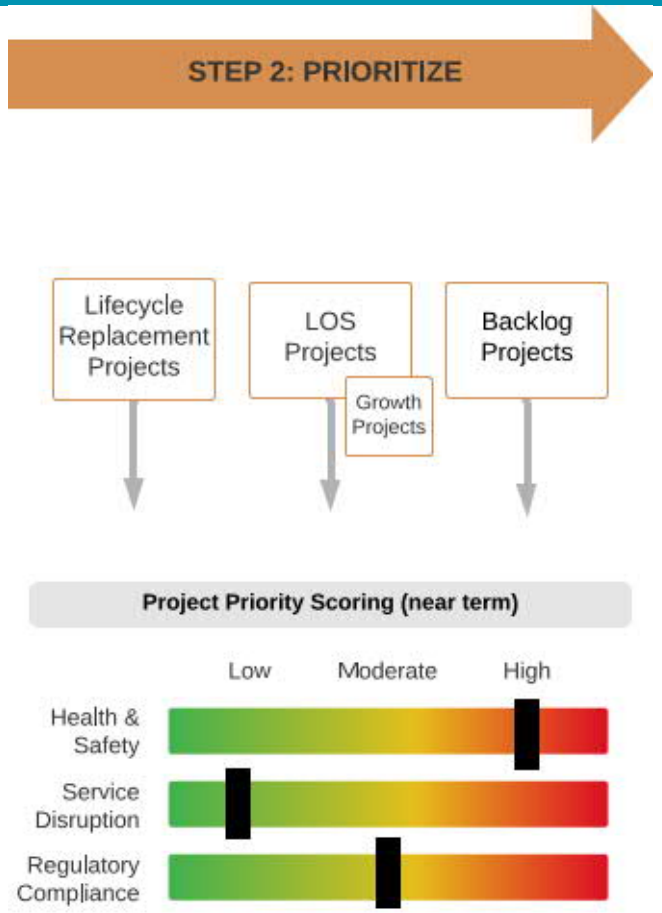
- Capital projects to address risk-based metrics identified as part of the community site visits.

The Capital Prioritization Process – Step 1: Identify



- In Step 1, all known information completed as part of this project was compiled to form a large list of potentials projects and asset replacements.
- Earlier in the presentation, we discussed some of the inputs. One input we have not covered is the Risk Assessment, which considers:
  - Asset Condition (using the 1 to 5 scale);
  - System Performance (using the 1, 3, and 5 scale);
  - Climate change factors;
  - Consequence of the impact in the event the asset fails; and,
  - Importance of the asset to the delivery of water and wastewater services.
- The initial list of potential projects are divided into the four (4) project categories.

The Capital Prioritization Process – Step 2: Prioritize



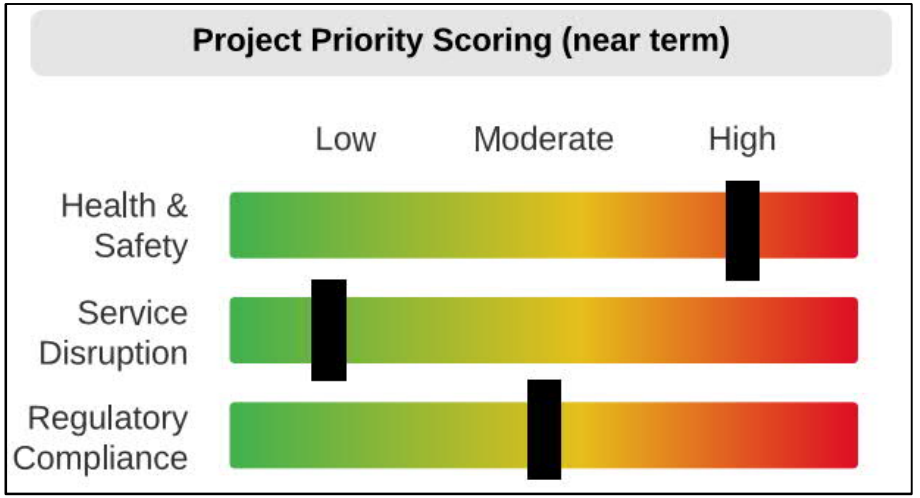
- Once the initial list of projects has been compiled, the projects must be prioritized to determine an order of execution
- This is also required because many projects are missing suggested start years. These projects are moved to the "near-term" for prioritization;
  - For this project, near-term = 2022-2024.
- The purpose of priority scoring is to look at all projects in the near-term to make sure that the order of execution of projects makes sense

The Capital Prioritization Process – Step 2: Prioritize

Priority Scoring for Near-Term Projects

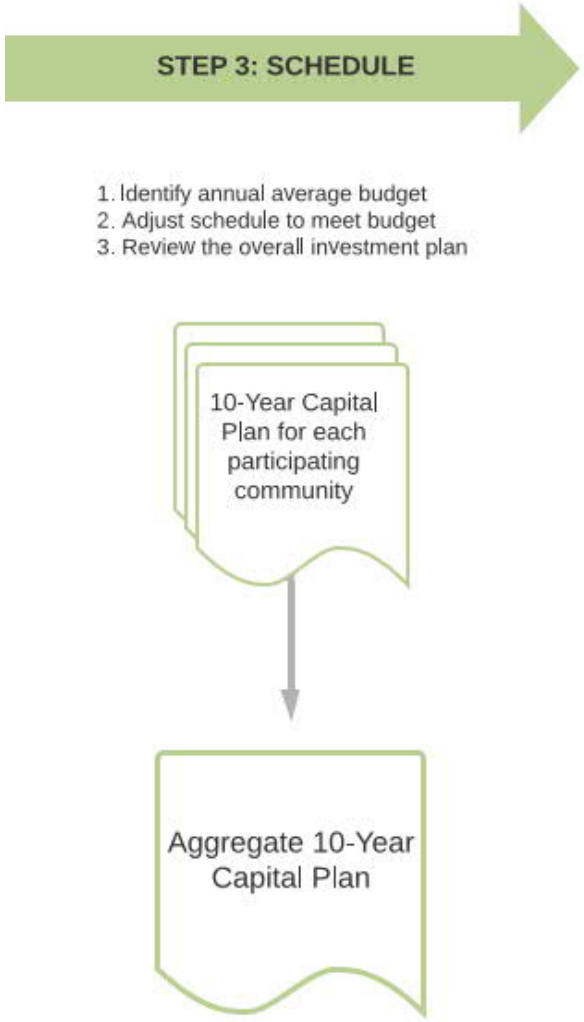
The priority scoring can be divided into three categories for consideration:

- Health and Safety: A measure of how the projects will reduce or eliminate a hazard, or address safety issues. May be driven by current Occupational Health and Safety (OHS) standards, input from operators, and site visit observations.
- Service Disruption: A measure of how a project will reduce the risk of service failure or disruption. This will consider the importance of the asset, the severity of the problem or issue, and input from the operators.
- Regulatory Compliance: A measure of how a project will help meet or exceed regulatory requirements, such as the Canadian Drinking Water Guidelines, or the Wastewater System Effluent Regulations (WSER).



*More details during Workshop Exercise.

The Capital Prioritization Process – Step 3: Schedule



- The scheduling step helps select projects against external constraints (i.e. budget limits, ability to get the project to tender, seasonal considerations, etc.)
- Activities may include:
  - Identifying annual average investment required over the next 10 years for all projects;
  - Generating the lifecycle replacement schedule of projects; and,
  - Reviewing the overall capital projects for all communities and identifying regional similarities that can be combined.

Workshop Exercise

Sample Prioritization Exercise

Workshop Exercise

- We will now split up into smaller groups (virtual attendees as well) and complete the priority scoring exercise.
- Using the priority scoring criteria table, read the 10 project descriptions and assign a score to each of the categories:
  - Health ad Safety
  - Service Disruption
  - Regulatory Compliance
- The purpose of this exercise is to calibrate the scale.

	HIGH	MODERATE	LOW
Health and Safety	**20 Points** The project eliminates the immediate health, safety, or environmental risk.	**15 Points** The project reduces the immediate health, safety, or environmental risk, or investigates cause (studies).	**10 Points** The project reduces the immediate health, safety, or environmental risk, but can be delayed without negative impact.
Service Disruption	**15 Points** The asset has failed or failure is imminent. The project reinstates a service.	**10 Points** The asset is functional, however is operating below standard. The project would improve the level of service.	**5 Points** The asset is functional and does not directly impact level of service.
Regulatory Compliance (Drinking water guidelines, Wastewater effluent requirements)	**10 Points** The system is not in regulatory compliance. The project will bring it back into compliance.	**5 Points** The system is not in regulatory compliance. The project helps to bring it back into compliance.	**3 Points** The system is in regulatory compliance. The project does not affect compliance.
Total Points	**45 Points**	**30 Points**	**18 Points**

Workshop Exercise - Example

Project: Increase aeration in the second cell of the lagoon.

Description: The wastewater treatment lagoon is not meeting regulatory compliance and a study confirmed that additional aeration would improve treatment, but may not fully eliminate the environmental risk. The project involves adding a new aeration header and diffusers, and adding a new blower to the blower building.

Categories	HIGH	MODERATE	LOW	N /A	Results
Health and Safety	20 Points	15 Points	10 Points	0 Points	
Service Disruption	15 Points	10 Points	5 Points	0 Points	
Regulatory Compliance	10 Points	5 Points	3 Points	0 Points	
				Total Points	

	HIGH	MODERATE	LOW
Health and Safety	**20 Points** The project eliminates the immediate health, safety, or environmental risk.	**15 Points** The project reduces the immediate health, safety, or environmental risk, or investigates cause (studies).	**10 Points** The project reduces the immediate health, safety, or environmental risk, but can be delayed without negative impact.
Service Disruption	**15 Points** The asset has failed or failure is imminent. The project reinstates a service.	**10 Points** The asset is functional, however is operating below standard. The project would improve the level of service.	**5 Points** The asset is functional and does not directly impact level of service.
Regulatory Compliance (Drinking water guidelines, Wastewater effluent requirements)	**10 Points** The system is not in regulatory compliance. The project will bring it back into compliance.	**5 Points** The system is not in regulatory compliance. The project helps to bring it back into compliance.	**3 Points** The system is in regulatory compliance. The project does not affect compliance.
Total Points	**45 Points**	**30 Points**	**18 Points**

Capital Projects Update

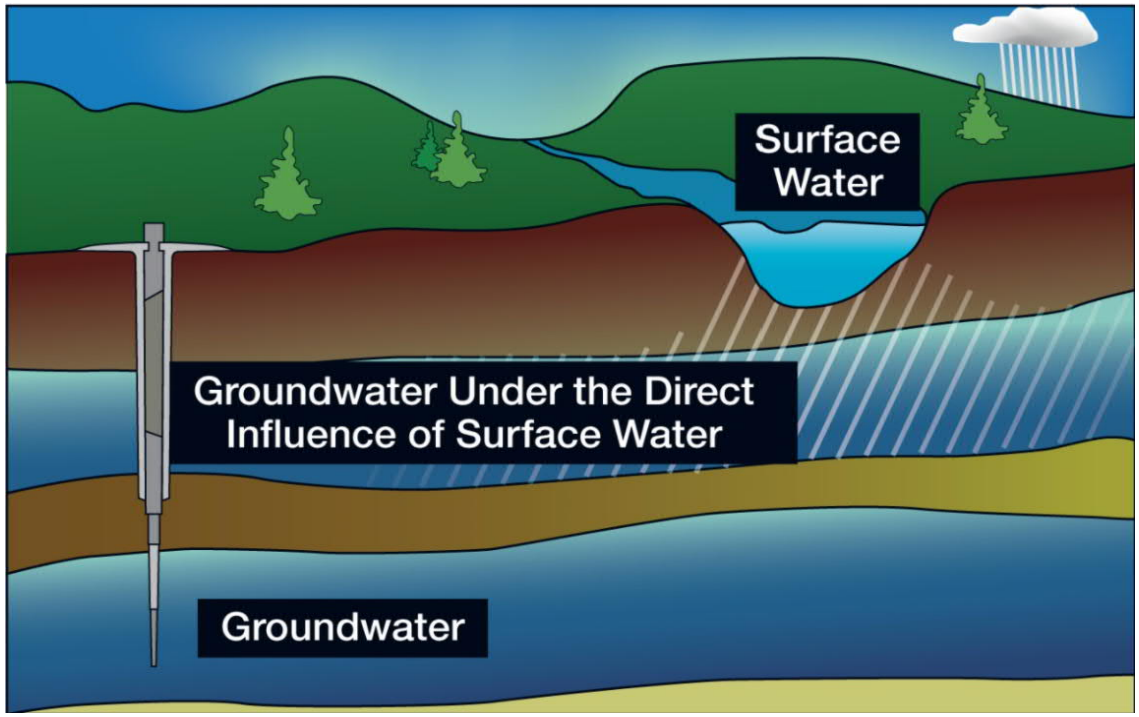
Operators Workshop
December 2, 2021
John Lam, Manager of Engineering
Mohamed Osman, Project Engineer

10-Year Capital Plan

- Over 1,000 projects were identified
- Drivers for projects
  - Environmental compliance (WSER and ERA)
  - Drinking water quality
  - Renewal based on condition or age
    - Buried infrastructure based solely on age
    - Start dates adjusted for other parameters
- Duplicate projects deleted
  - Ongoing
  - Future development

10-Year Capital Plan

- Special projects
  - Projects related to GUDI
  - Projects related to ERA

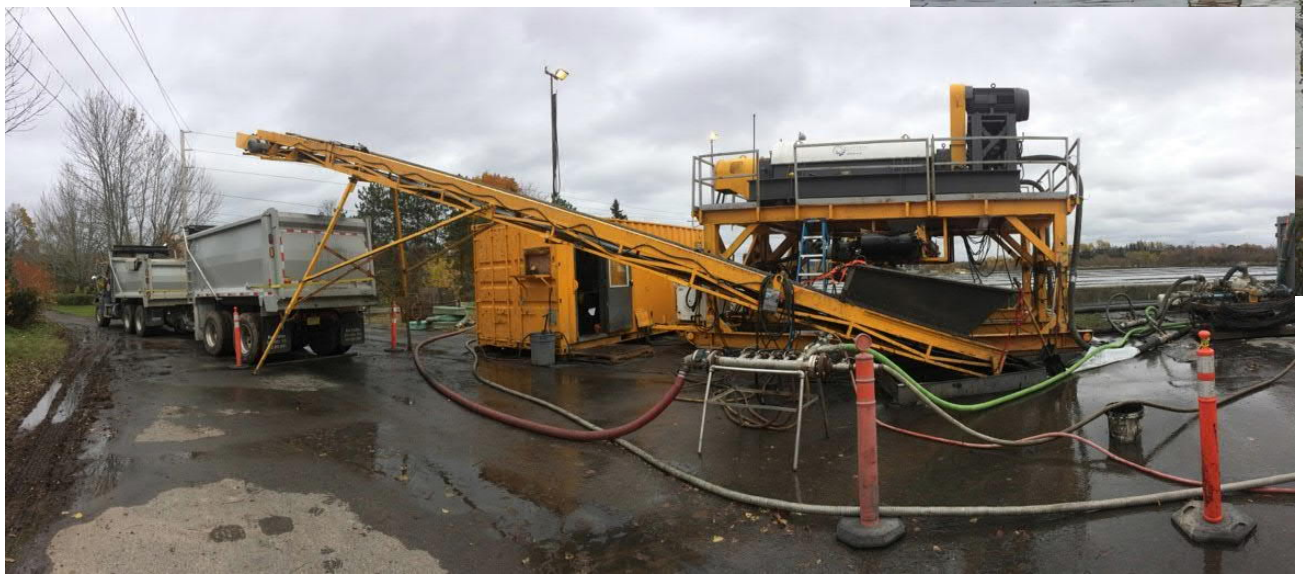


10-Year Capital Plan

- Additional projects
  - Hydraulic modeling
  - Integrated resource plans
  - Reservoir inspections
  - Master meter program

10-Year Capital Plan

- Lagoon projects
  - Sludge depth survey
  - Biosolids - lagoon cleanout



Managing Asset Data

- How many lift stations does AFNWA have in all participating communities?

Managing Asset Data

Using Excel sheet to create different data levels

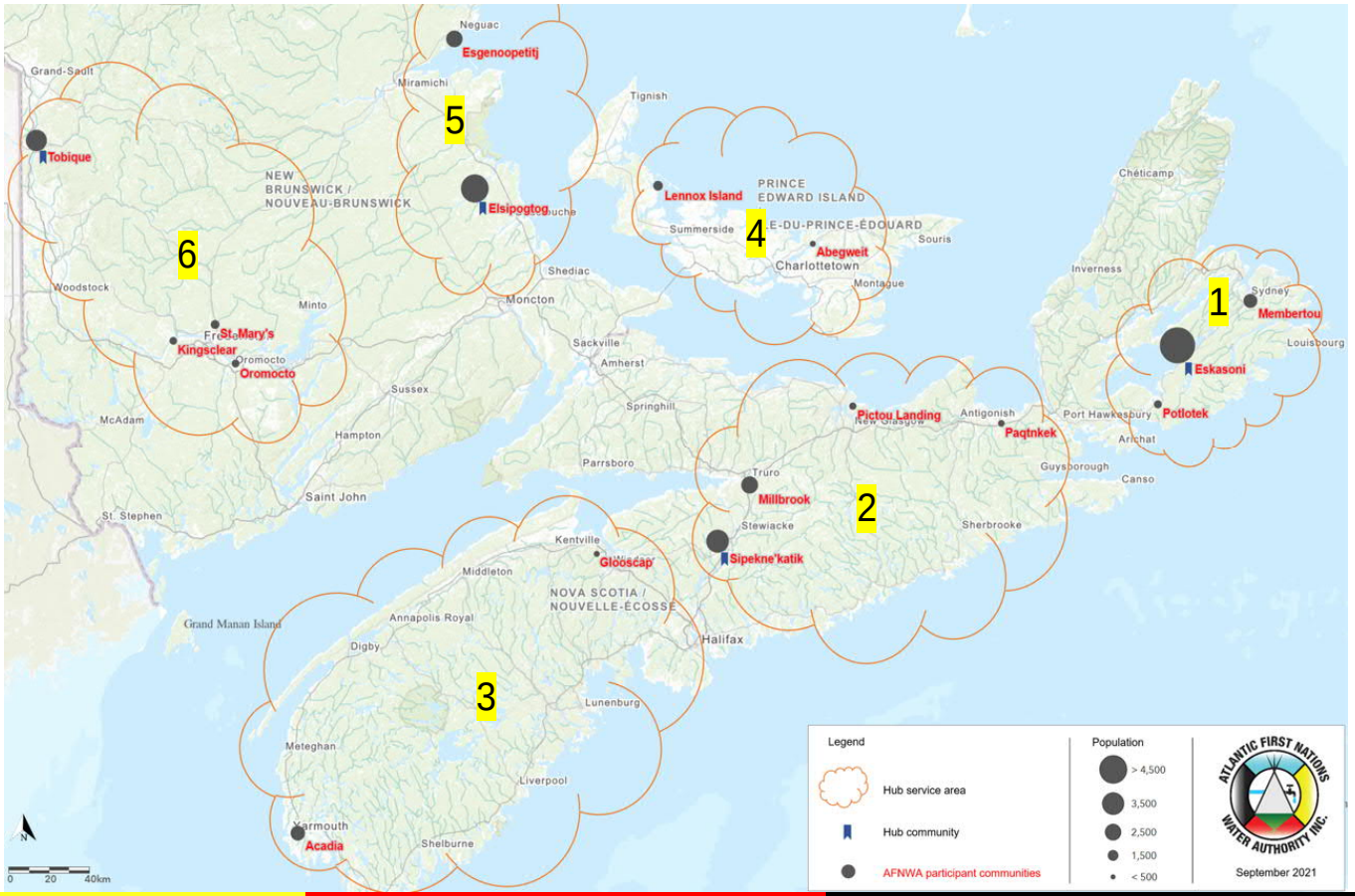
- Service area number
- Community code
- Site number
  - Subsite number
- Asset system
- Component

Asset Code

6KC-3.W1-PM.Well

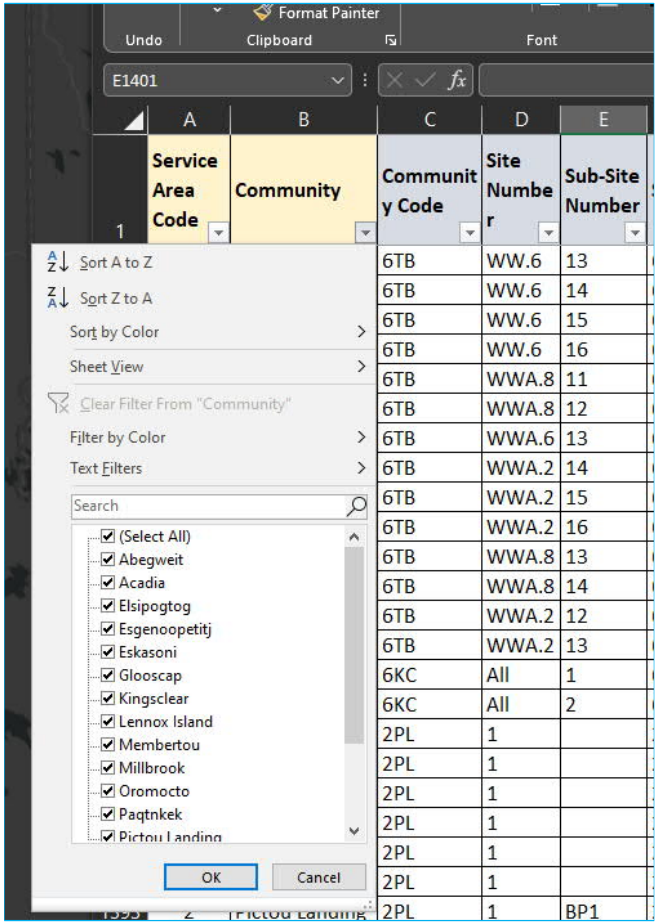
Managing Asset Data

- Service area number
- Community code
- Site number
- Asset system
- Component



- Service area number
- Community code
- Site number
- Asset system
- Component

Service Area Code	First Nation Community	Community Code
1	Eskasoni	1EK
1	Membertou	1MU
1	Potlotek	1PL
2	Millbrook	2MK
2	Paqtnkek	2PQ
2	Pictou Landing	2PL
2	Sipekne'katik - Indian Brook	2SKIB
2	Sipekne'katik - New Ross	2SKNR
3	Acadia - Yarmouth	3ACYM
3	Glooscap	3GC
4	Lennox Island	4LI
4	Abegweit - Scotchfort	4ABSF
4	Abegweit - Rocky Point	4ABRP
4	Abegweit - Morell	4ABMR
5	Elsipogtog	5EL
5	Esgenoopetitj	5EG
6	Kingsclear	6KC
6	Oromocto	6OM
6	St. Mary's	6SM
6	Tobique	6TB

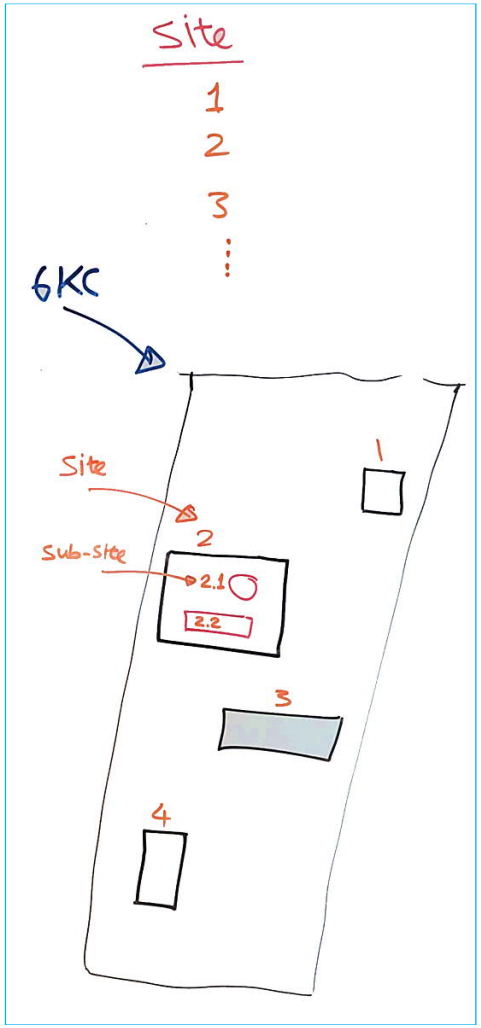


Managing Asset Data

- Service area number
- Community code
- Site number
- Asset system
- Component

Community	Sit Nu	Asset Class		Site Address	Category
Eskasoni		Water Main		143 Spencers Lane	Water Treatment/Supply
Eskasoni		Water Main Appurtenances		End of Arena Road	Water Treatment/Supply
Eskasoni		Reservoir	tio	Sugar Maple Lane	Water Distribution
Eskasoni		Pressure Reducing System		Top of Lakeview Drive	Water Storage
Eskasoni		Booster Station		Top of Lakeview Drive	Water Storage
Eskasoni		Water Tower	r	Top of Cedar Lane near 141 7	Water Storage
Eskasoni		Sanitary Sewer		4716 Shore Road	Water Distribution
Eskasoni		Sanitary Sewer Appurtenances	y	Across from 4850 Shore Road	Wastewater Treatment
Eskasoni		Force Main		Beacon Hill Court	Wastewater Collection
Eskasoni		Lift Station		212 Castle Bay Rd	Wastewater Collection
Eskasoni		Water Treatment Facility		53 Richard Ave	Wastewater Collection
		Well System			
		Wastewater Treatment Facility			

- Service area number
- Community code
- Site number
  - Subsite number
- Asset system
- Component



6KC-3.W1-PM.Well

- Service area number
- Community code
- Site number
- Asset system
- Component

Asset System - Complex Assets

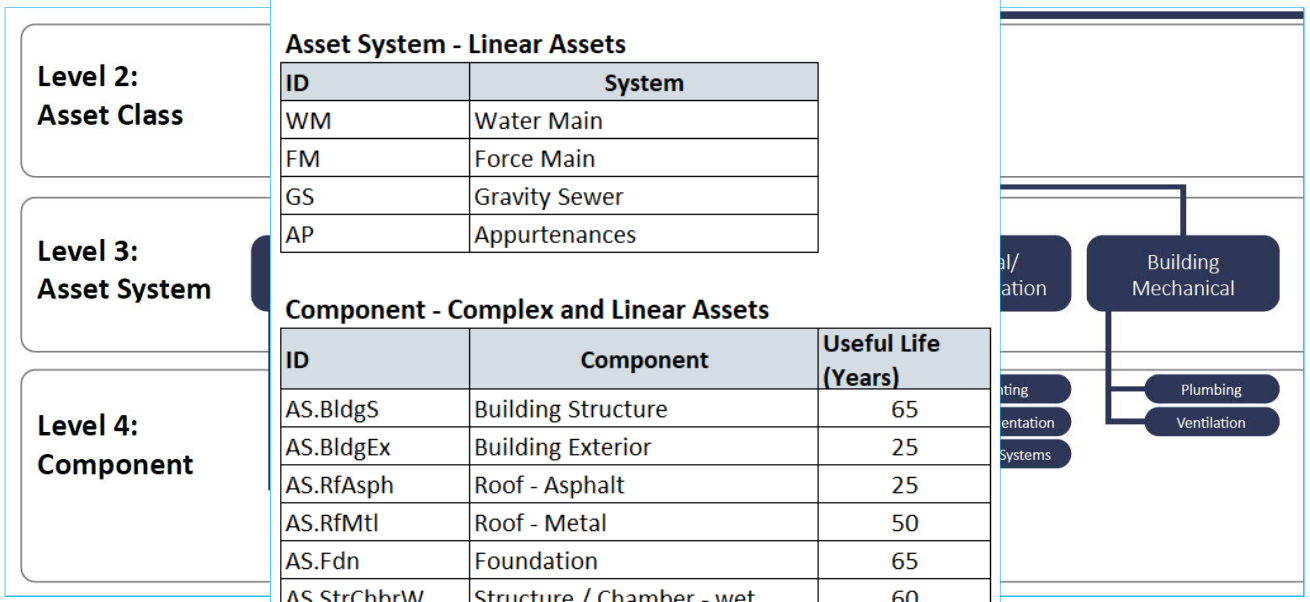
ID	System
CS	Civil / Site
PM	Process Mechanical
BM	Building Mechanical
EI	Electrical / Instrumentation
AS	Architectural / Structural

Asset System - Linear Assets

ID	System
WM	Water Main
FM	Force Main
GS	Gravity Sewer
AP	Appurtenances

Component - Complex and Linear Assets

ID	Component	Useful Life (Years)
AS.BldgS	Building Structure	65
AS.BldgEx	Building Exterior	25
AS.RfAsph	Roof - Asphalt	25
AS.RfMtl	Roof - Metal	50
AS.Fdn	Foundation	65
AS.StrChbrW	Structure / Chamber - wet	60
AS.StrCbrD	Structure / Chamber - dry	70
AS.StlTk	Steel Tank / Structural Steel	40
CS.YrdP	Yard Piping	60
CS.RdGrav	Access Road - Gravel	15
CS.RdAsph	Access Road - Asphalt	25



- Service area number
- Community code
- Site number
  - Subsite number
- Asset system
- Component

Asset Code

6KC-3.W1-PM.Well

Service Area Code	Community	Community Code	Site Number	Subsite Number	Service Category	Asset Class	Location	Component	Component ID	Asset Code
6	Kingsclear	6KC	1	1	Water Supply/ Treatment	Water Treatment Facility		Generator	EI.Gen	6KC-1.1-EI.Gen
6	Kingsclear	6KC	1	1	Water Supply/ Treatment	Water Treatment Facility	WTB	Instrumentation	EI.Inst	6KC-1.1-EI.Inst
6	Kingsclear	6KC	1	1	Water Supply/ Treatment	Water Treatment Facility		Fencing	CS.Fenc	6KC-1.1-CS.Fenc
6	Kingsclear	6KC	1	1	Water Supply/ Treatment	Water Treatment Facility		Access Road - Gravel	CS.RdGrav	6KC-1.1-CS.RdGrav
6	Kingsclear	6KC	1	2	Water Supply/ Treatment	Water Treatment Facility	Storage Shed	Roof - Metal	AS.RfMtl	6KC-1.2-AS.RfMtl
6	Kingsclear	6KC	1	2	Water Supply/ Treatment	Water Treatment Facility	Storage Shed	Foundation	AS.Fdn	6KC-1.2-AS.Fdn
6	Kingsclear	6KC	1	2	Water Supply/ Treatment	Water Treatment Facility	Storage Shed	Building Exterior	AS.BldgEx	6KC-1.2-AS.BldgEx
6	Kingsclear	6KC	1	2	Water Supply/ Treatment	Water Treatment Facility	Storage Shed	Building Structure	AS.BldgS	6KC-1.2-AS.BldgS
6	**Kingsclear**	**6KC**	**3**	**W1**	**Water Supply/ Treatment**	**Well System**	**Well 1**	**Well Head / Casing**	**PM.Well**	**6KC-3.W1-PM.Well**
6	Kingsclear	6KC	3	W1.P1	Water Supply/ Treatment	Well System	Well 1 - Pump 1	Pump - Submersible	PM.Psub	6KC-3.W1.P1-PM.Psub
6	Kingsclear	6KC	3	W1.P2	Water Supply/ Treatment	Well System	Well 1 - Pump 2	Pump - Submersible	PM.Psub	6KC-3.W1.P2-PM.Psub
6	Kingsclear	6KC	3	W2	Water Supply/ Treatment	Well System	Well 2	Well Head / Casing	PM.Well	6KC-3.W2-PM.Well
6	Kingsclear	6KC	3	W2.P1	Water Supply/ Treatment	Well System	Well 2 - Pump 1	Pump - Submersible	PM.Psub	6KC-3.W2.P1-PM.Psub
6	Kingsclear	6KC	3	W2.P2	Water Supply/ Treatment	Well System	Well 2 - Pump 2	Pump - Submersible	PM.Psub	6KC-3.W2.P2-PM.Psub

Managing Asset Data

- Thank you!
- Questions or comments?

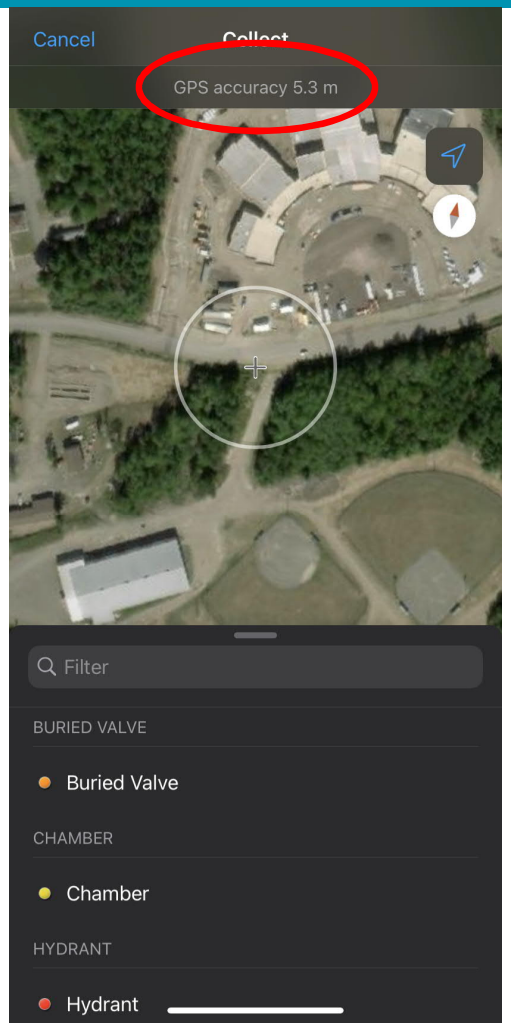
GIS Map Demonstration

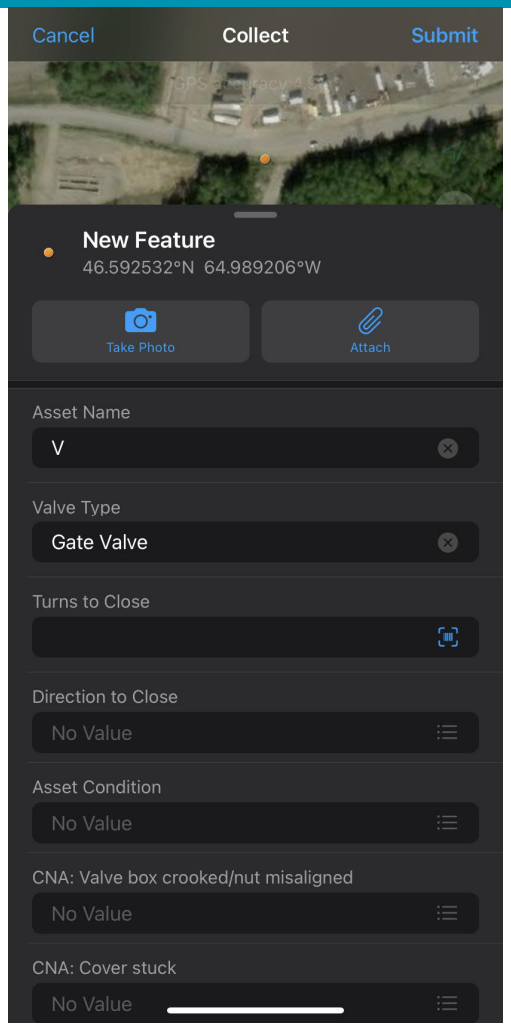
Demonstration of First Generation Water and Wastewater GIS Map

GIS Mapping – Sources of Information

- The first generation GIS Maps were created using the following information:
  - ACRS reports conducted every 3 years;
  - CBCL past assessments and reports (2011 and 2018);
  - MGI Limited reports on sanitary systems (early 2000's); and,
  - Engineering drawings or as-built documents collected from the community.
- Once the background information was compiled, Dillon field teams were able to confirm information, specifically regarding installation years, previous upgrades completed, and piping materials with the operators;
- Finally, the Operational Survey was useful in locating, tagging, and recording the location of appurtenances (i.e., manholes, valves, etc.)

GIS Mapping – ArcGIS FieldMaps Application





- The FieldMaps application uses the GPS capabilities on a phone or tablet.
- To collect "features" click on which feature you want to collect, and a survey will pop up asking things such as:
  - Asset Name;
  - Direction of Turns;
  - Number of Turns to close;
  - Repair information/ comments.

- The GPS accuracy through this app is between 1-10m;
- We used a High Accuracy GPS (+/- 50mm) to correct the points after we collected them in the field.

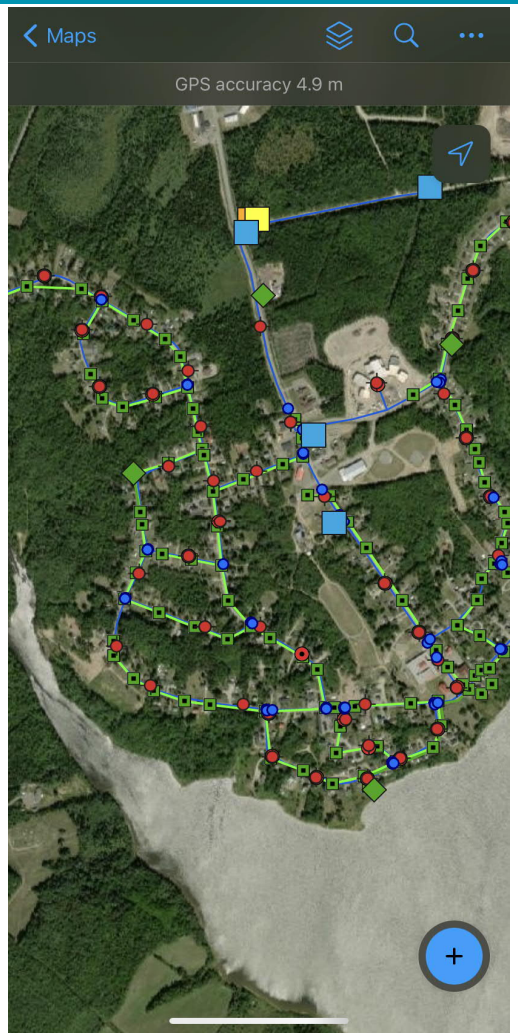
ATLANTIC FIRST NATIONS WATER AUTHORITY INC.

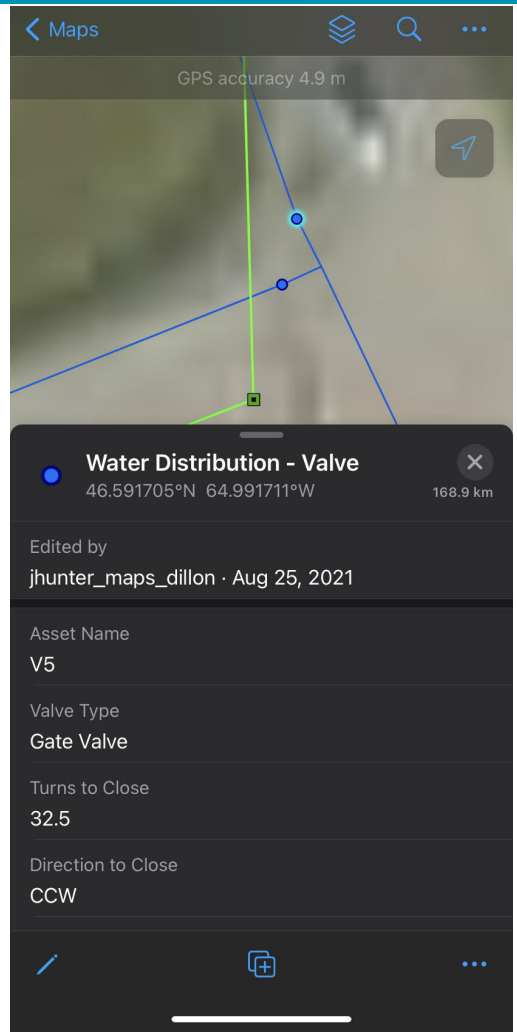
DILLON CONSULTING

GIS Mapping – ArcGIS FieldMaps Application

- Now that the information has been collected, the FieldMaps application will look a bit different.
- You can click on features and edit the information in the field (i.e., asset name, repair information, etc.)

***Do not click "Update Point" as this will correct the location of the point, and you will lose the accuracy collected with the GPS unit.*





GIS Map Demonstration

GIS Map Demonstration