Info360 Connect

What is Info360 Connect?

With Info360 Connect, InfoWater Pro is capable of pulling in real-time data from an Info360 Connect Server, and comparing the observed data and the modeled parameters within the graph control.

This page contains content on the following areas:

- Info360 Connect
- Data Channel Tab
- Gap Analysis
- Updatable Channel Tab
- Pattern Channel Tab

Basic Workflow

To set up a live connection between Info360 Connect and the local InfoWater Pro model, follow these steps:

1. Open the Info360 Connect located in the InfoWater Command Center from the the Exchange drop-down menu.
2. Add a server connection by providing the Info360 Connect URL with a login.
3. Connect the elements in the model to the real time data using the Data Channel Mapping tool.
4. Calculate and import patterns directly from Info360 Connect data using the Pattern Channel tool.
5. Perform Info360 Connect hydraulic runs that update from Info360 Connect boundary conditions.
6. Compare Model Results with the Real Time Data by using the Reference Graph tool in the Output Report Manager.
7. The Gap Analysis tool can be used to visualize how accurately the model results match the measured Info360 Connect data.
8. Export InfoWater Pro model results to Info360 Connect using the Updatable Channel tool.

Info360 Connect

This is the Data Channel Mapping tab in the External Data Connect dialog box used to build the mapping of the elements in the model to real time data:
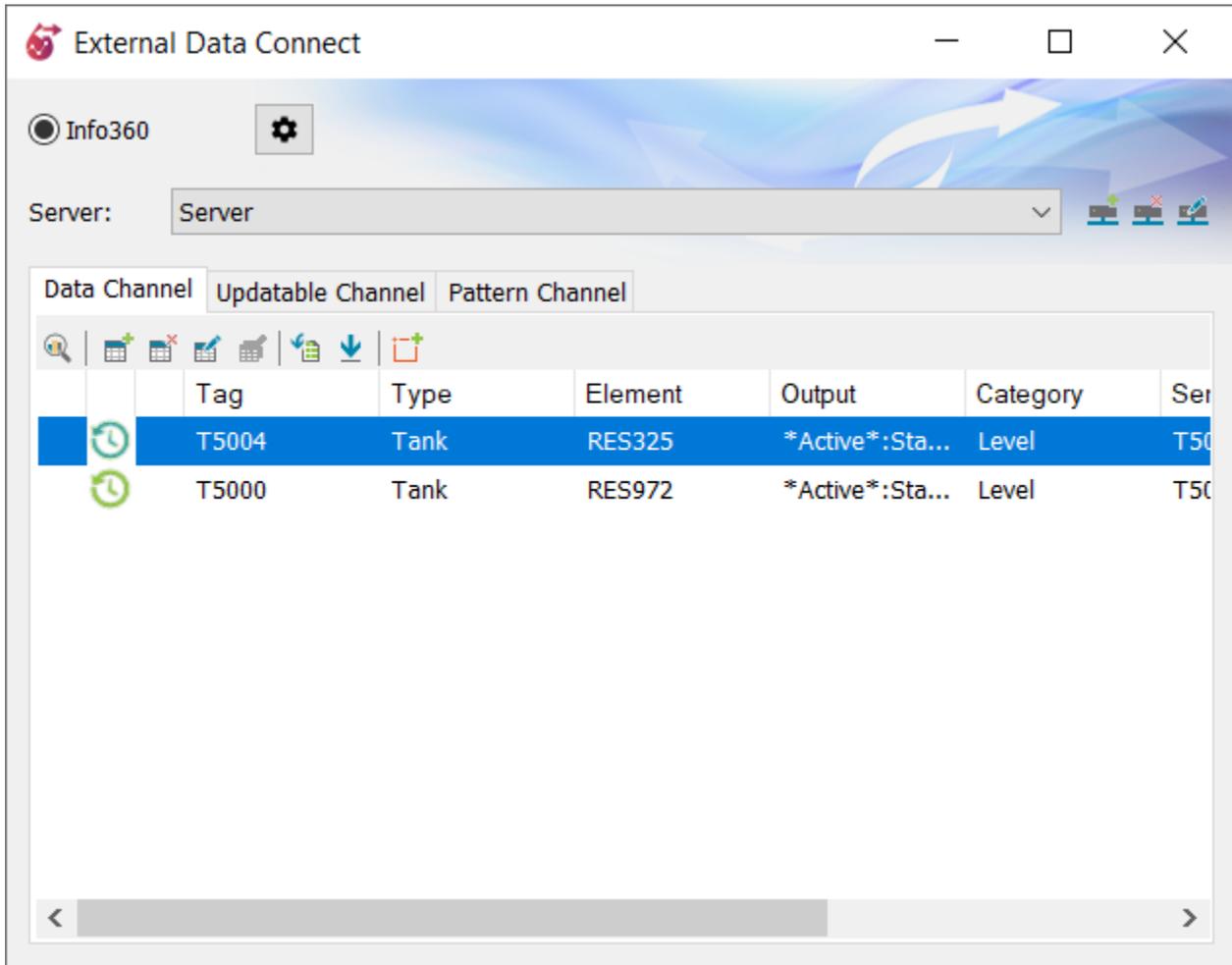
Sampling Interval

You can define a sampling interval from the **Settings** dialog box. Click on the **Settings** ⚙ button from the External Data Connect dialog box (see above) to edit the Sampling Interval field. Specify from 1 to 60 minutes as your sampling interval time, as shown below.
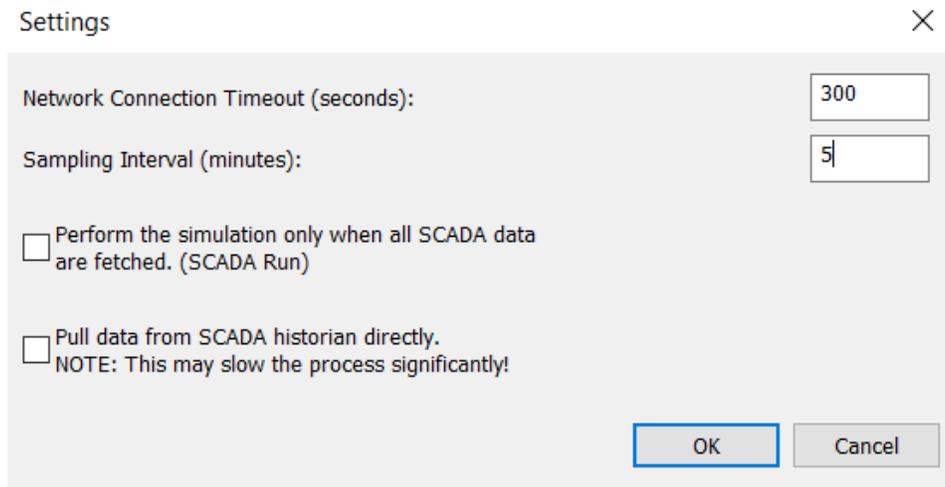
Data Channel Tab

This is the Data Channel Mapping dialog box used to create and modify a map between the model element and real time data:

Data Channel Mapping

Mapping Name Tag: T5004

Model Element

Type: Tank   Element: RES325   <

SCADA Sensor

Server: Server   +

Channel: Tank Level   Sensor: T5004   ...

☑ Result Reference

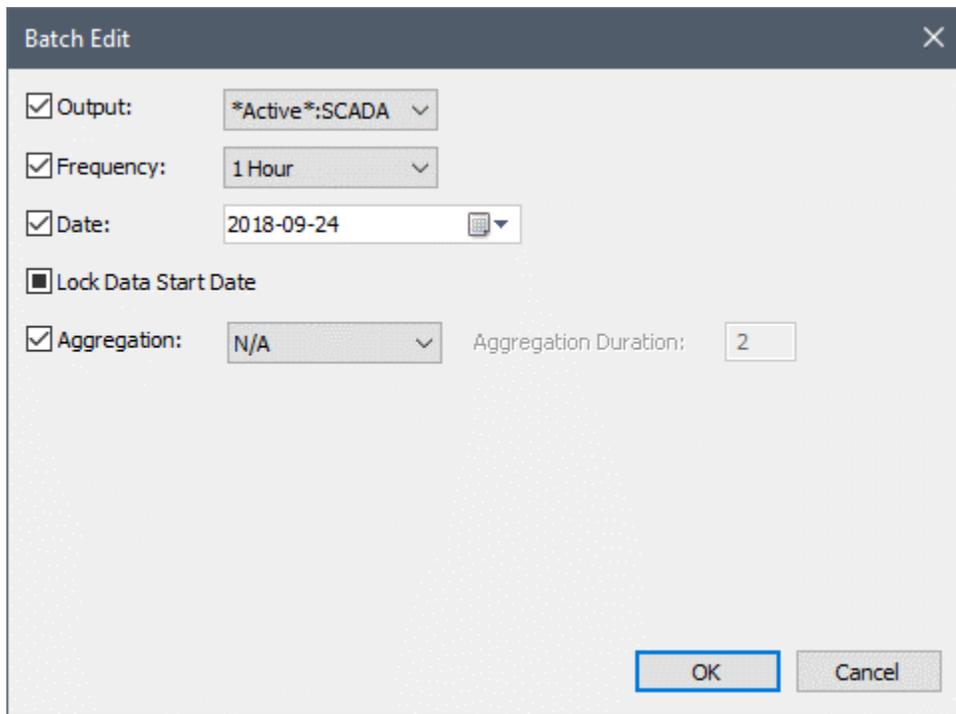Data Start Date: 2020-01-21   Data Frequency: 1 Hour

☐ Lock Start Date

Aggregation: N/A   Aggr Duration: 2

Output Source: *Active*:Standard   Result Category: Level

☐ SCADA Run

Control Settings...   Measurement Settings...

OK   Cancel

Gap Analysis

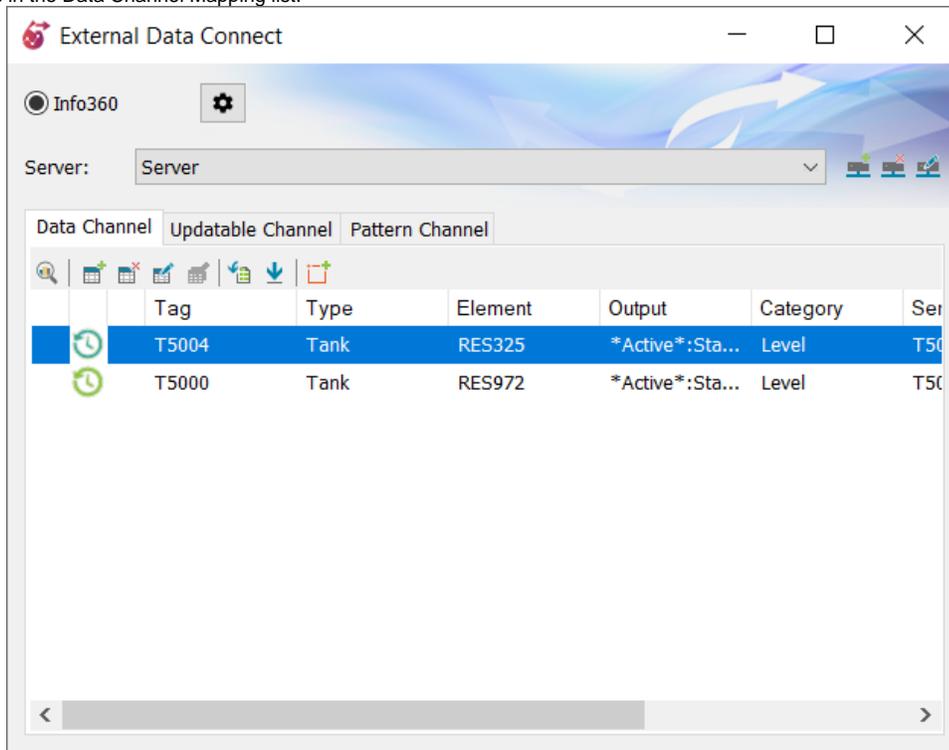The Gap Analysis tool allows you to visualize how accurately the model results match the measured SCADA data.

The following steps show you how to set up the Gap Analysis.

1. Select the sensors in the Data Channel Mapping list.

2. Select the **Gap Analysis** tool .
3. The Gap Analysis window opens and the results are organized based on category (results) type. From the drop-down box select the category type.

4. Select the row header to highlight the sensor of interest.

	Tag	Type	Element	Output	Sensor	Date	Min (ft)	Max (ft)	Avg (ft)	Std Dev (ft)	RMSD (ft)	Min (%)	Max (%)	Avg (%)	Std Dev (%)	NRMSD (%)
	"Summary"						7.500000	9.400024	8.450012	0.950012	8.503248	750.000000	940.002441	inf	11.242732	-0.000000
1	T5004	Tank	RES325	"Active" Standard	T5004.Tank Level	2020-01-21	7.500000	7.500000	7.500000	0.000000	7.500000	750.000000	750.000000	inf	0.000000	-0.000000
2	T5000	Tank	RES972	"Active" Standard	T5000.Tank Level	2020-01-21	9.400024	9.400024	9.400024	0.000000	9.400024	940.002441	940.002441	inf	0.000000	-0.000000

5. You can also view a time series table which shows the difference between model simulation data and measured sensor data by clicking on the **Ga p Report** button. Select your rows and click on the **Gap Report** button.

Gap Report - T5000

	Time	Tag	Modeled	Measured	Difference
1	00:00:00	T5000	18.500000	81.330000	-62.830000
2	01:00:00	T5000	25.000000	87.620000	-62.620000
3	02:00:00	T5000	25.000000	93.030000	-68.030000
4	03:00:00	T5000	23.858383	94.560000	-70.701617
5	04:00:00	T5000	23.213776	92.730000	-69.516224
6	05:00:00	T5000	19.121597	91.090000	-71.968403
7	06:00:00	T5000	13.500000	89.740000	-76.240000
8	07:00:00	T5000	13.500000	88.030000	-74.530000
9	08:00:00	T5000	13.500000	85.880000	-72.380000
10	09:00:00	T5000	13.500000	84.100000	-70.600000
11	10:00:00	T5000	15.803909	82.230000	-66.426091
12	11:00:00	T5000	23.092926	79.770000	-56.677074
13	12:00:00	T5000	25.000000	77.120000	-52.120000
14	13:00:00	T5000	25.000000	82.940000	-57.940000
15	14:00:00	T5000	25.000000	88.920000	-63.920000
16	15:00:00	T5000	25.000000	94.990000	-69.990000
17	16:00:00	T5000	25.000000	94.160000	-69.160000
18	17:00:00	T5000	25.000000	92.810000	-67.810000
19	18:00:00	T5000	24.587723	91.130000	-66.542277
20	19:00:00	T5000	25.000000	89.630000	-64.630000
21	20:00:00	T5000	21.380768	87.680000	-66.299232
22	21:00:00	T5000	24.012497	85.480000	-61.467503
23	22:00:00	T5000	25.000000	83.670000	-58.670000
24	23:00:00	T5000	25.000000	81.470000	-56.470000
25	24:00:00	T5000	25.000000	79.640000	-54.640000

6. You can compare model simulation and measured sensor data by using the comparison graph. Click on the **Comparison Graph** button to open up the Comparison Graph tab.
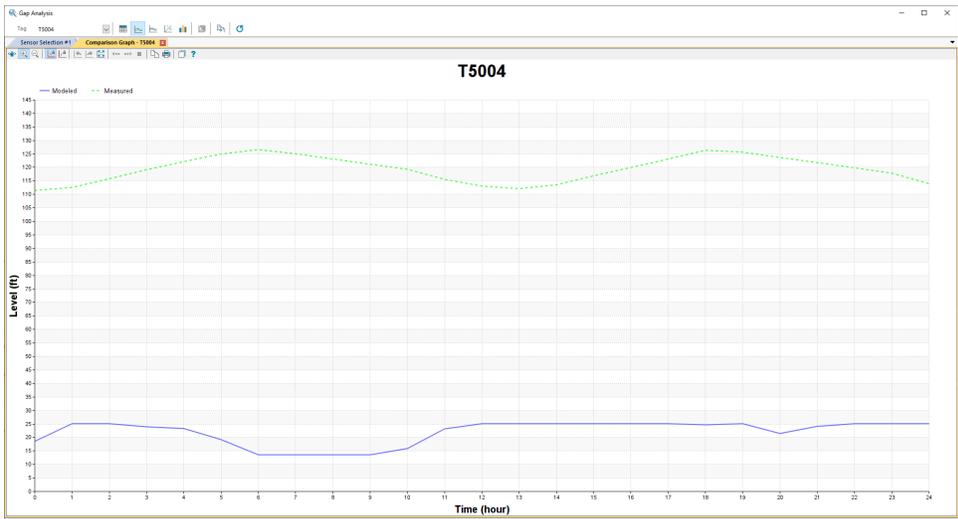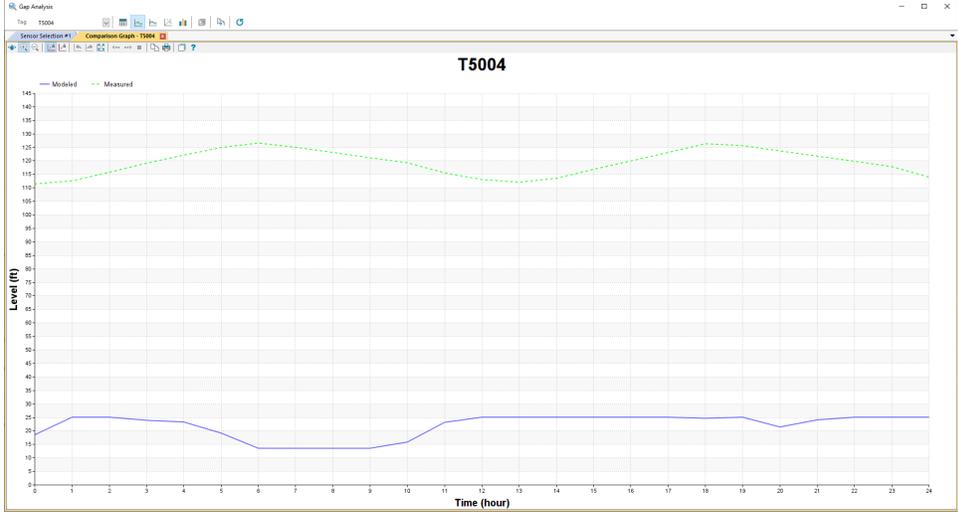
7. You can create a comparison of multiple mappings of the difference between model simulation and sensor data with Gap Graph tool. Click on the

**Gap Graph** _____ button to view a Gap Graph.

8. You can create a scattered plot with the Comparison Correlation tool. **Note**: The x-axis represents sensor data and the y-axis represents

simulation data. Click on the **Comparison Correlation** _____ button to create a Comparison Correlation.
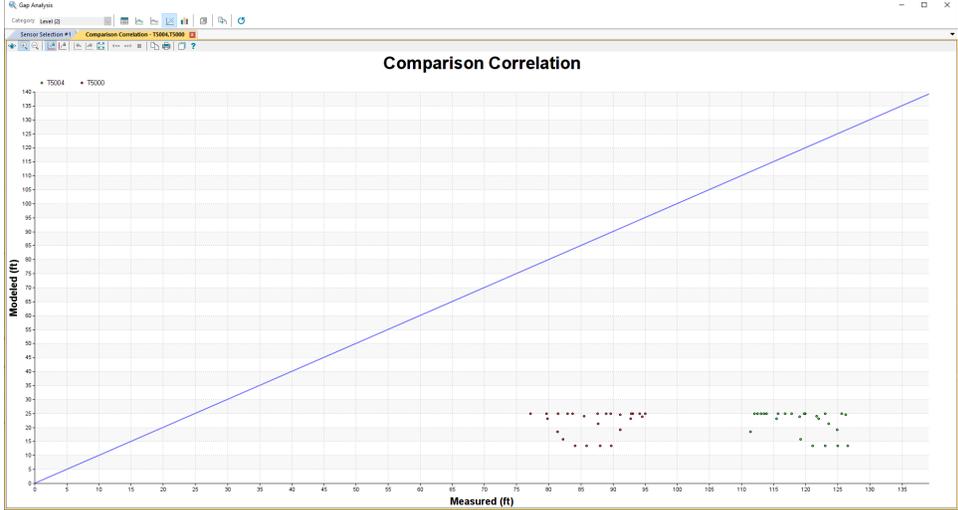
9. You can create a bar chart that shows the statistical information of the gap difference (minimum, maximum, standard deviation, average, and

RMSD) with the Gap Statistic tool. Click on the **Gap Statistic** _____ button to view it.
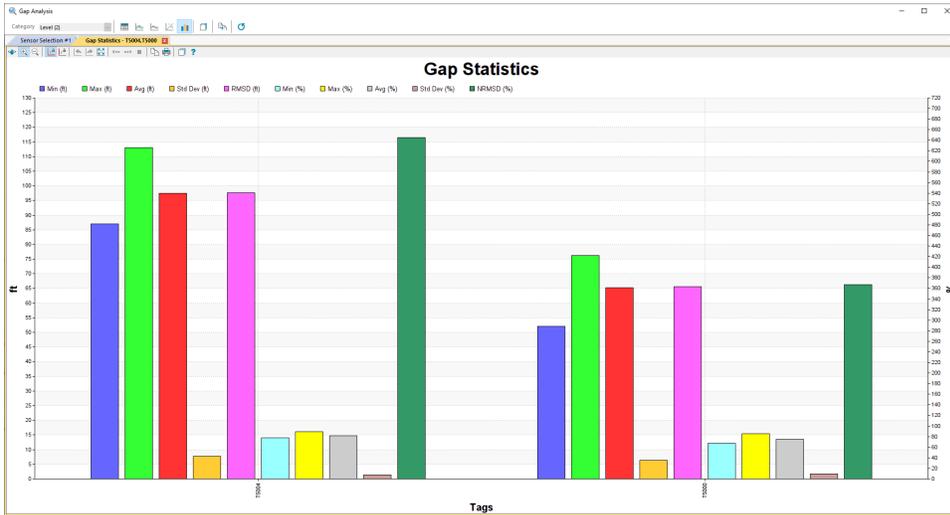
Updatable Channel Tab

This is the Updatable Channel tab used to create a relationship to a model element (such as a tank) and its real time data.

Pattern Channel Tab

The Pattern Channel tab is used to map a Info360 Connect Pattern to a Pattern within InfoWater Pro. The date range in which the pattern is calculated can be modified for up-to-date SCADA conditions, and data can be imported and viewed directly before applying to a Run.

You will need to import your CSV file into Info360 Connect by clicking on the **Import** button from Pattern tab in the External Data Connect dialog box.

Please view the following sample CSV file and make sure to use the correct formatting before you import:
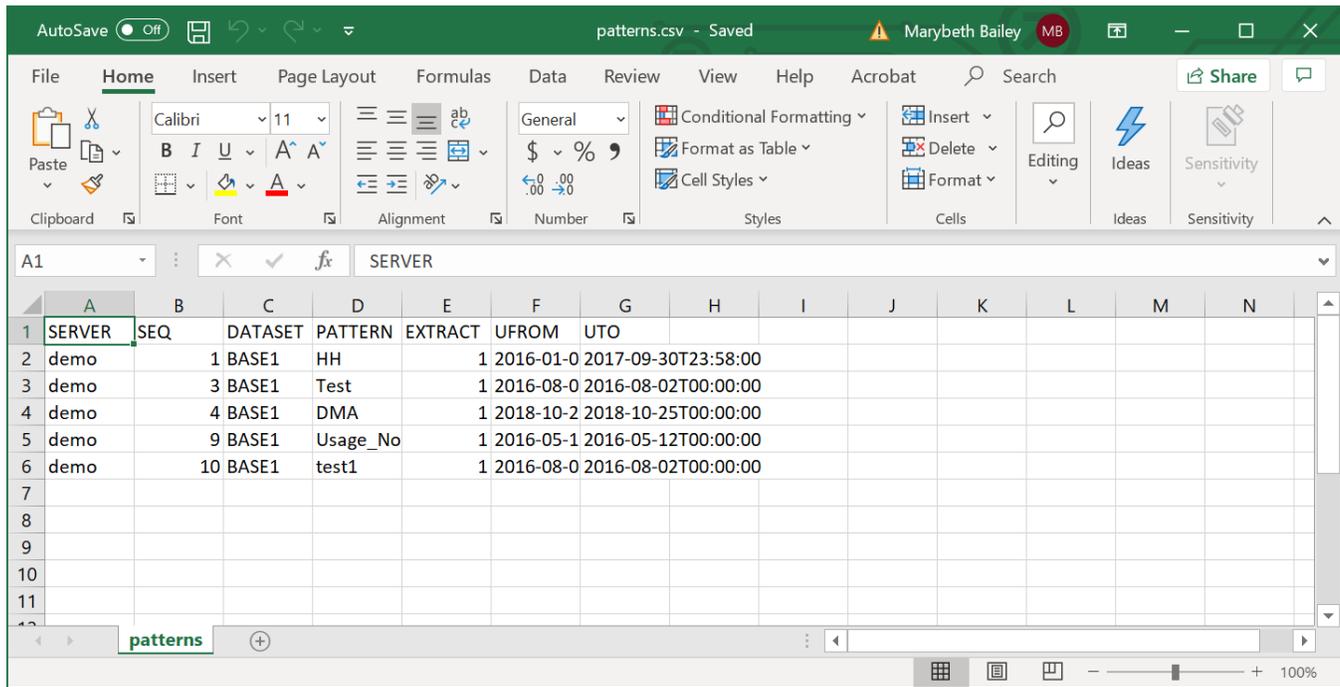
CSV fields:

SERVER - The server name in Info360 Connect.

SEQ - The UUID of the pattern in Info360 server.

DATASET - The name of the pattern dataset in InfoWater Pro.

PATTERN - The name of the pattern in InfoWater Pro.

EXTRACT -The extraction method for the Info360 pattern. (0: user defined; 1: server default; 2: fixed duration; 3: fixed start date)

UFROM - The start date time defined by user.

UTO - The end date time defined by user.

Once you import your data into Info360, your information from your CSV file should appear in the Pattern Channel as shown below.

Buttons:

 - Preview the selected pattern after it has been imported into InfoWater Pro.

  - **Add** or **Delete** pattern. The **Add** button will prompt for a selection of an existing Pattern in Info360 Connect and then append a row in the table.

 - **Batch edit** the selected patterns. This tool is used for modifying the time window over which the pattern is extracted from Info360 Connect.

 - **Import** the selected CSV file into Info360 Connect. This tool is used for importing data from your CSV file into the Pattern tab (see above).

 - **Refresh** fields from Info360 Connect. This tool will update all the grayed-out fields which are based on Info360 Connect (e.g., SW Pattern Name, Sensors, Server Extraction), so if changes are made in Info360 Connect they will be brought over.

 - **Update** all specified InfoWater Pro Patterns from Info360 Connect based on the settings in the table.

Table Fields

Model Dataset – Select the InfoWater Pattern dataset to be used for SCADA data. If desired, SCADA Run scenarios can be set up to use a separate copy of Patterns based on SCADA data rather than the Base set of pattern data used in other runs. Alternatively, all Patterns can exist in one dataset with different names, while Demand and Control datasets call upon specific patterns in different scenarios.

Model Pattern – Select the InfoWater Pattern that will store the SCADA data.

Extraction Method – See below table:

Extraction Method	Description
0: User Defined	When selected, you can manually assign a date range for extraction using the User Extraction field in the table.
1: Server Default	This option maintains the same time window that is defined in Info360 Connect.
2: Fixed Duration	This option takes the total duration from Info360 Connect (e.g., 7 days) and creates a time window that extends to the current time. For example, if Info360 Connect is set to 4/1/2018 to 4/7/2018 and the current date is 10/1/2018, then this option creates a window from 9/25/2018 to 10/1/2018.

3: Fixed Start Date	This option creates a time window from the start time specified in Info360 Connect until the current clock time on the computer.

SW Pattern Name – [Defined in Info360 Connect] The name of the pattern in Info360 Connect.

Pattern Type – [Defined in Info360 Connect] This specifies the data interval used in creating the pattern. Example Pattern types are Hourly, 15 Minutes, and 5 Minutes.

Sensors - [Defined in Info360 Connect] This lists the sensors in Info360 Connect used to generate the Pattern.

Server Extraction – [Defined in Info360 Connect] This shows the time window used in Info360 Connect to define the pattern.

User Extraction – Click on this field to manually enter a custom date range that will be used for extracting data from Info360 Connect into the InfoWater Pro pattern. Be sure to select "0: User Defined" as the Extraction Method explained above.

Last Extraction – This read-only field shows the date range last used to pull pattern data.

Pattern Description – [Defined in Info360 Connect] This shows the description associated with the pattern in Info360 Connect.