xylem
Let's Solve Water

User manual
XA00071-03

HydroSphere™

User Manual For Account Administrators, Technicians, and Data Reviewers

YSI
xylem

HydroSphere™

The information contained in this manual is subject to change without notice.

Effort has been made to make the information in this manual complete, accurate, and current.

The manufacturer shall not be held responsible for errors or omissions in this manual.

Consult ysi.com/HydroSphere for the most up-to-date version of this manual.

Technical Support

If you need any assistance, please contact the follow groups:

YSI Customer Support (Account Setup / Billing)

(858) 564-2432

hydrosphere@xylem.com

YSI Technical Support

(800) 765-4974 for customers in the U.S. or (937) 767-7241

ysi.info@xylem.com

Aanderaa Customer Support (Technical and Billing)

+47 55 60 48 71

Aanderaa.support@xylem.com

This is an Interactive Document

When viewing this document as an Adobe™ PDF, hovering your cursor over certain phrases will bring up the finger-point icon. Clicking elements of the Table of Contents, website URLs, or references to certain sections will take you automatically to those locations.

Safety Information

Please read this entire manual before setting up or using this software. Pay attention to all precautionary statements. Do not use this software in any manner other than that specified in this manual.

Table of Contents

1. Product Description

1.1 – Introduction

HydroSphere™ is a cloud-based web application that supports the Storm 3, YSIT-1 GOES Radio Satellite Transmitter, Campbell push data loggers, HydroRIG and HydroRIG+ (remote intelligent gateway), as well as Aanderaa's Real Time Collector. A variety of sensors can be attached to these data logging devices, which then transmit sensor data via cellular or satellite telemetry to HydroSphere servers for display to the end user. The HydroSphere application is supported in the following browsers:

- Edge, latest version
- Chrome, latest version
- Firefox, latest version
- Safari, latest version

1.2 – Features

- Simple user interface to view data, assess environmental conditions, and make quick, data-based decisions
- Custom data dashboards to view real-time field data at a glance, using tables, graphs, and other widgets
- Multiple data download options:
  - Manual CSV file download
  - Automatic, scheduled email of CSV files
  - Automatic, scheduled download to an external server via SCP, SFTP, or HydroLINK API data transfer
- Parameter-based Smart Alarms with custom escalation pathways to send notifications via email and text messages
- External contact creation to send alarm notifications and data exports to users without HydroSphere account access
- Access to the most recent two years of data for all sites, with no maximum sampling frequency
- All features are available standard with an active HydroSphere account

1.3 – Common Icons

Icon	Name	Description
	Required Entry	A red asterisk to the right of any field label means that an entry is required.
	Multiple options	Provides more options (e.g. edit, delete, etc.).
	Slider button	Allows you to disable and enable certain functions.
	Single User or Contact	Indicates a single user or single contact. Refer to Definitions for more information.
	User Group or Contact Group	Indicates a user group or contact group. Refer to Definitions for more information.
	Email	Allows you to select notifications via email to their profile email address.
	Text message	Allows you to select notifications via text message to their profile telephone number.
	Trash can	Allows you to delete items.

Icon	Name	Description
	Page navigation	Go to the first page.
	Page navigation	Go back one page.
	Page navigation	Go to the last page.
	Page navigation	Go forward one page.
	Calendar	Displays a pop-up calendar for entering specific dates into date fields.
	Drag and Drop	Clicking this icon will allow you to change the order of certain items.
	Information	Displays additional information.
	Edit	Displays editable fields.
	Configure	Configures parameter inputs to dashboards.

1.4 – Definitions

Contact	A contact is someone who will receive notifications or reports assigned to them by a HydroSphere user. A contact is not a HydroSphere user and does not have login privileges for HydroSphere. Refer to Create New Contact for more information.
Contact Group	Create groups of contacts who have common report and notification needs. You can then specify which reports and notifications are sent to the group saving time by not having to assign these reports and notifications to multiple individual contacts. Refer to Create New Contact Group for more information.
Network	Networks are groups of sites that usually have common characteristics such as close geographical proximity. Networks ease the administrative management of these groups of sites. Refer to Create New Network for more information.
Remote server	A remote server is a server that belongs to the customer which allows SFTP or SCP connections. The server can be configured on HydroSphere for automatic scheduled data exports to be directly delivered to it. Refer to Add a New Remote Server for more information.
User Group	Create groups of users who have common report and notification needs. You can then specify which reports and notifications are sent to the group saving time by not having to assign these reports and notifications to multiple individual users. Refer to Create New User Group for more information.
User Roles	A user is someone who has HydroSphere login privileges and will have access to HydroSphere components as described below. Refer to Create New User for more information.

User Role	Access
Xylem Administrator	Full access to all HydroSphere customer and user accounts but no access to account level networks, sites, reports, alarms, contacts, and remote servers.
Account Administrator	Full access to their organization and user accounts as well as networks, sites, reports, alarms, contacts, and remote servers.
Technician	Full access to their own user account information as well as account level networks, sites, reports, alarms, contacts, and remote servers.
Data Reviewer	Full access to their own user account information and Read Only access to account level information (e.g. sites, alarms, etc.).
Guest	Read Only access to site data. Can receive alarm notifications. Cannot download site data or view/edit account or site settings.

1.5 – User Authorization

Account list

User Action	Xylem Administrator	Account Administrator	Technician	Data Reviewer	Guest
View List of Accounts	✓	–	–	–	–
Creating New Account	✓	–	–	–	–
Editing Account Critical Info	✓	–	–	–	–
Editing Account Contact Info	✓	✓	–	–	–
Delete Account	✓	–	–	–	–
Request Subscription Renewal	✓	✓	–	–	–

Users

User Action	Xylem Administrator	Account Administrator	Technician	Data Reviewer	Guest
View Account Users	✓	✓	✓	–	–
Creating Account Users	✓	✓	–	–	–
Editing User Email & Role	✓	✓	–	–	–
Editing Username & Phone	✓	✓	✓	✓	–
Delete User	✓	✓	–	–	–

Data export

User Action	Xylem Administrator	Account Administrator	Technician	Data Reviewer	Guest
View Data Export Templates	–	✓	✓	✓	–
Create / Edit	–	✓	✓	–	–
Delete	–	✓	–	–	–

Contacts

User Action	Xylem Administrator	Account Administrator	Technician	Data Reviewer	Guest
View Contacts / Groups	–	✓	✓	✓	–
Create / Edit	–	✓	✓	–	–
Delete	–	✓	–	–	–

Remote servers

User Action	Xylem Administrator	Account Administrator	Technician	Data Reviewer	Guest
View Remote Servers	–	✓	✓	✓	–
Create / Edit	–	✓	✓	–	–
Delete	–	✓	–	–	–

Alarms

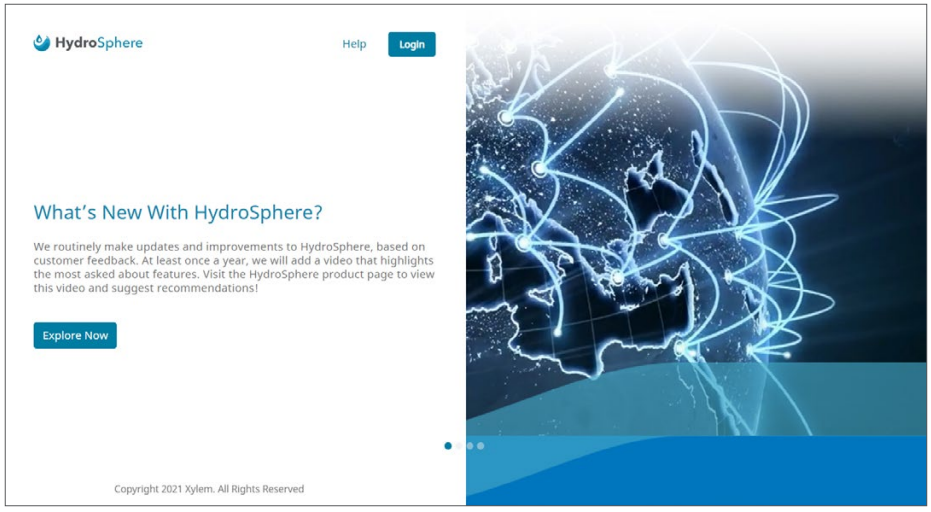
User Action	Xylem Administrator	Account Administrator	Technician	Data Reviewer	Guest
View Alarms	–	✓	✓	✓	✓
Create / Edit	–	✓	✓	–	–
Delete	–	✓	–	–	–

Network /Site

User Action	Xylem Administrator	Account Administrator	Technician	Data Reviewer	Guest
View Network- Site	–	✓	✓	✓	✓
Create/Edit	–	✓	✓	–	–
Delete	–	✓	–	–	–

2. Operations

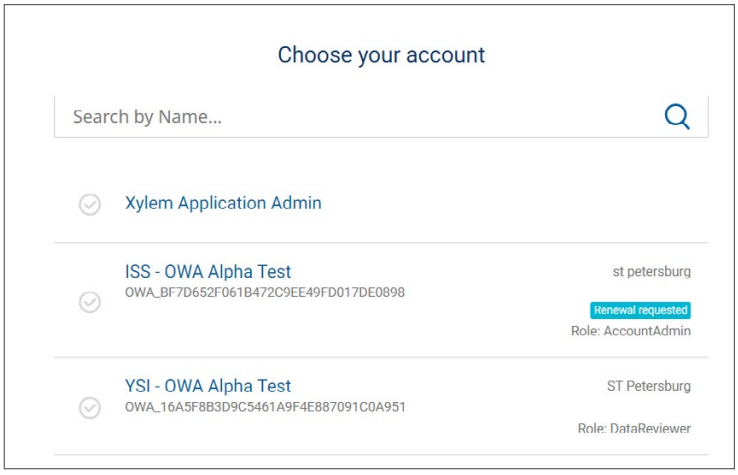
2.1 – Start the Application



1. Start the HydroSphere application at https://cloud.xylem.com/hydrosphere/.
2. Click the Login button.
3. Type the username and password to login.
4. Click login.

   Note: HydroSphere will automatically log off after 15 minutes of inactivity.
5. If you have access to more than one account, click the account to be accessed via the display below.

   *Note: New users will receive an email with a **Verify Email Address** link. Clicking this link is required to complete* the user account setup process. The link remains active for 24 hours. If the link times out, click **Forgot Password?** and follow the instructions.



   The username is the user's email address.

   The password must contain at least:

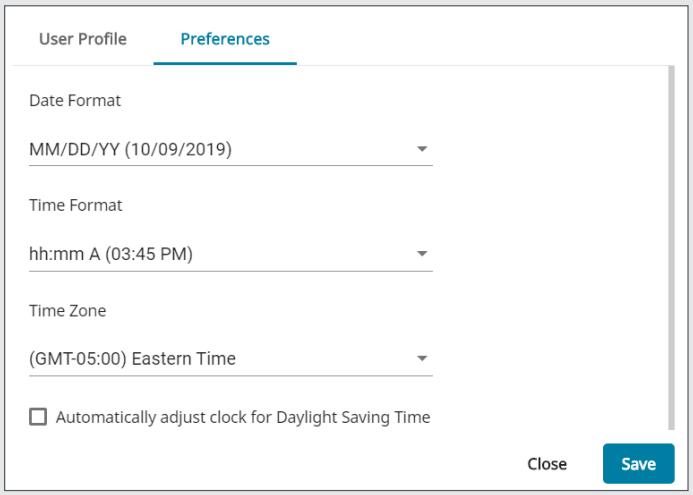
   - Twelve characters
   - One upper-case letter
   - One lower-case letter
   - One number
   - One special character (e.g. !@#$%^&*)
   - More than 2 identical characters in a row are not allowed (e.g. 111)

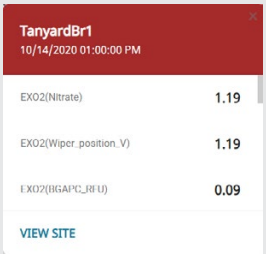
   To change the password, click **Forgot Password**.

2.2 – Homepage

After logging in, you will be presented with the HydroSphere Homepage.

#	Icon	Name	Description
1		Display Labels	This icon will display or hide the labels for the icons on the left side of the Homepage.
2		Page Loading Progress Indicator	A green bar at the top of the page will move from left to right to show page loading progress.
3	OWQ Projects	Account Access	If you have access to more than one account,you can change which account you are viewing by clicking the down arrow on the right side of the icon and selecting which a different account.
4		Multiple Applications	If you have access to Xylem applications other than HydroSphere, those applications will be displayed when this icon is clicked allowing for seamless transition between applications.
5	C	User Profile and Preferences	***User Profile*** - Displays the following user profile information: • Name • Email • Phone • Last Logged In • Edit • Download The **Edit** button will allow the editing of Name and Phone Number. The **Download** button will download the user profile information to a .txt file. Deleting users from being displayed in HydroSphere can be done on the User Accounts page. Refer to User Accounts for more information. *Note: Because HydroSphere user accounts are tied to an email address, if a user needs to change their email address, a new account must be created and the old account deleted. For a user account to be permanently deleted from HydroSphere, the Account Administrator must contact the Xylem Administrator.*

#	Icon	Name	Description
5	C	User Profile and Preferences **(continued)**	***Preferences*** – Allows you to select Date and Time formats, adjust the time zone and adjust for Daylight Savings Time.  *Note: If the data loggers used for a HydroSphere account are set to Universal Time Coordinated (UTC) / Greenwich Mean Time (GMT), each user in the account should set the Time Zone to 'GMT+00:00 GMT (no daylight saving)' to ensure the time and data in Chart and Table View display properly.* If the data loggers used for a HydroSphere account are set to local time, each user in the account should set the Time Zone to the correct local time zone to ensure the time and data in Chart and Table View display properly. *Note: If 'Automatically adjust clock for Daylight Saving Time' is checked, the local time will automatically adjust for areas that observe DST on the appropriate dates.*
6	N/A	Public URL	Each account will be assigned a public web site (access via the Public URL) that can be shared with external customers giving those customers Read Only access to site data. Clicking the copy icon (⧉) will copy the pubic URL to the clipboard for pasting in other locations. Refer to Public Web Site for more information.
7		Geographic Display	Site geographic location and device details will be displayed.
8		Sensor Display	Sensor details will be displayed in tabular format.

#	Icon	Name	Description
9		Network/Site Display	This icon is only visible to Account Admins. Provides additional site and sensor details. Sites that have been deleted will be labeled as Inactive. These sites can be reactivated by contacting Tech Support. Results under the Communication column include: Not Enabled – The site is not activated or the Missing Communications Alerts for this site are not enabled. Communication Active - The site is activated, the Missing Communications Alerts for this site are enabled, and communications from the site data logger are being received. No Communication - The site is activated, the Missing Communications Alerts for this site are enabled, and communications from the site data logger are not being received. *Note: HydroRIG does not currently support Missing Communications Alerts.* *Note: The site can be activated and deactivated by using the slider in the Activate/Deactivate column. Data will not be received for deactivated sites.*
10	⊕ Create New	Create New	Clicking the **Create New** icon displays the following options: **User** - For more information, refer to Create New User. This is only visible to Account Admins. **Site** - For more information, refer to Create New Site. **Network** - For more information, refer to Create New Network.
11	Search site...	Search Bar	Clicking on the search bar will show all account site names. Clicking on a site name will bring up that site's data. Refer to Homepage Site Information for more information.
12		Site Label/Water Drop Toggle	Allows you to select the map display of a site label ( ) or a water drop ( ). Water drops are defaulted blue. Refer to Create New Alarm for more information on changing the color of the drop.
13	TanyardBr1	Site Icon	Clicking the Site icon on the map will display the site's most recently received data. Refer to Homepage Site Information for more information. The red water drop and red data header indicate that an alarm has been triggered and is still active. Refer to Create New Alarm for more information on changing the color of the drop and header. *Note: The dashboard auto refreshes every 10 seconds so any triggered alarm will change the color of the water drop and data header within 10 seconds.* 
14	+ −	Zoom In / Zoom Out	Lets you zoom the map display in and out.

Homepage Site Information

Homepage site information can be viewed two ways:

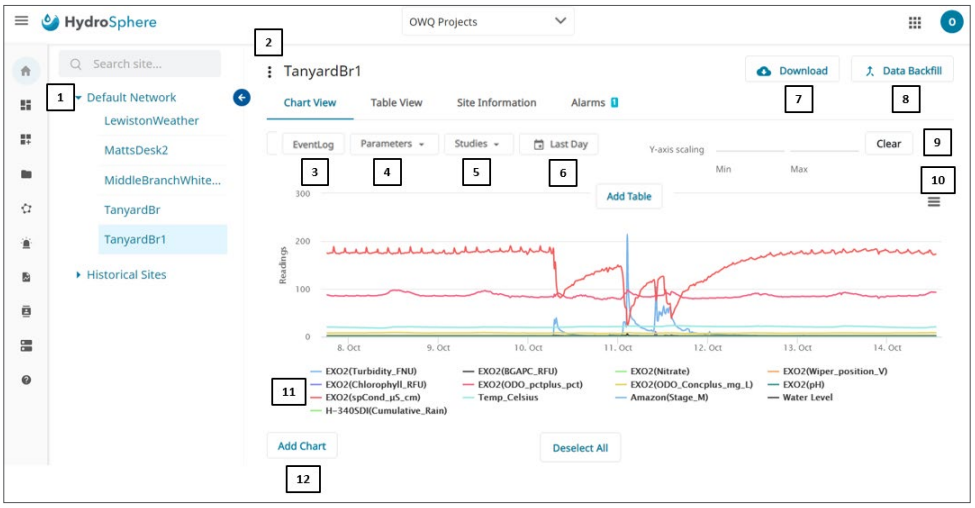
1. Clicking on the dashboard search bar will show all account site names. Clicking on a site name will display the site's data.
2. Clicking on the site map icon ( ) or water drop ( ) will display the most recently received sensor data and the View Site link. Clicking on the View Site link will display the site's data.

Four pages are available for viewing site data; Chart View, Table View, Site Information, and Alarms. These pages are described below.

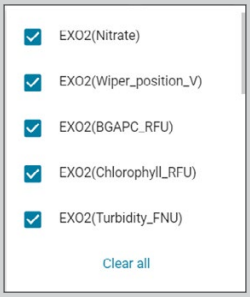
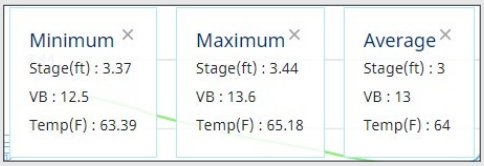
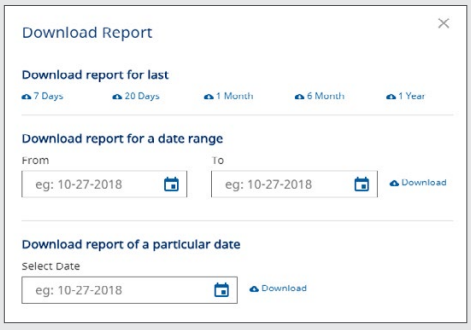
Chart View

Chart View presents sensor data in a graphical format.

Note: Up to one year of data can be displayed on a chart or widget at once, to prevent excessive loading times.



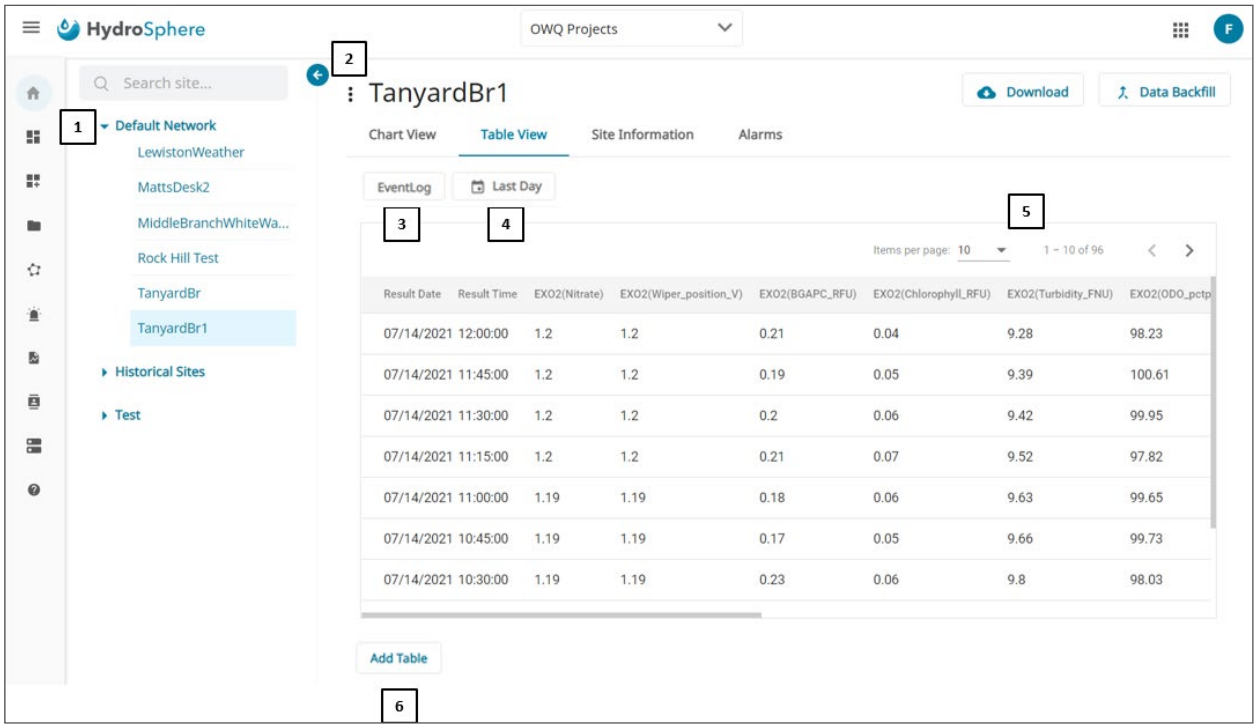
#	Name	Description
1	Networks	Networks are groups of sites. Refer to Create New Network for more information. Clicking the ← and → icons will collapse and expand the Networks panel.
2	Multiple Option Icon	Clicking the ⋮ icon will display the following options: **Edit** – Allows you to edit the site information details described in Create New Site. ***Pause/Record - Start or stop/pause the site recording of the data stream.***
3	EventLog	*Note: You will only see this button if you have a Campbell data logger using polled communications.* Clicking this button will display the available Campbell file names for display in the chart. To display any of the other files in a separate chart, see the Add Chart item below.

#	Name	Description
4	Parameters	Clicking on the caret (⌄) to the right of the Parameters label will provide a list of all parameters available for display. All parameters listed can be selected for display on a single chart. For example: 
5	Studies	Clicking the caret (⌄) to the right of the Studies label will provide the following display options: Minimum, Maximum, and Average. The displays will be present in the format below. 
6	Duration	Clicking this button will provide a list of available time durations for displaying site data: • Last Day • Last Week • Last Month • Last Year • Custom Range
7	Download	Download allows you to create and download site data reports. Select data for: • A set period of time. Click the appropriate icon (7 days, 20 days, 1 month, 6 months, or 1 year). • A date range. Enter the From and To date using the calendar icon and click **Download**. • A specific date. Enter the specific date using the calendar icon (📅) and click **Download**. A .csv file will download to the your desktop. 
8	Data Backfill	Refer to Backfill for more information.

#	Name	Description
9	Y-axis scaling	If you wish to adjust the chart Y-axis scaling, a Minimum and Maximum Y-axis value can be entered. Clicking the **Clear** button will return the Y-axis scaling to its original values.
10	Print/Download	Clicking the ☰ icon will display the following options for printing and downloading charts: • View in Full Screen • Print Chart • Download PNG image • Download JPEG image • Download PDF document • Download SVG vector image
11	Parameter Selection	Individual parameters can be selected to display or hide by clicking on the parameter name. Hovering over the parameter name will highlight the parameter on the chart. All parameters can be hidden by clicking the **Deselect All** button. When clicked, the **Deselect All** button will become the **Select All** button. Clicking the **Select All** button will select all parameters for display on the chart.
12	Add Chart	Clicking **Add Chart** will add a chart below any charts already displayed. This will allow the user to display additional parameters and durations. Up to 3 charts can be displayed.

Table View

Table View presents sensor data in a tabular format.



#	Name	Description
1	Networks	Networks are groups of sites. Refer to Create New Network for more information. Clicking the ◀ and ▶ icons will collapse and expand the Networks panel.
2	Multiple Option Icon	Clicking the ⋮ icon will display the following options: **Edit** – Allows you to edit the site information details described in Create New Site. **Pause/Record - Start or stop/pause the site recording of the data stream.**
3	EventLog	*Note: You will only see this button if you have a Campbell data logger using polled communications.* Clicking this button will display the available Campbell file names for display in the table. To display any of the other files in a separate table, see the Add Table item below.
6	Duration	Clicking this button will provide a list of available time durations for displaying site data: • Last Day • Last Week • Last Month • Last Year • Custom Range
4	Show Entries	Clicking the caret (⌄) to the right of Show Entries will provide the below list of available entries that will be displayed per page: 10, 25, 50, 100

#	Name	Description
5	Pagination	Allows user to select the number of data lines to display on each page and navigate from page to page within the table.
6	Add Table	*Note: You will only see this button if you have a Campbell data logger using polled communications.* Clicking this button will add a table so additional Campbell files can be displayed.

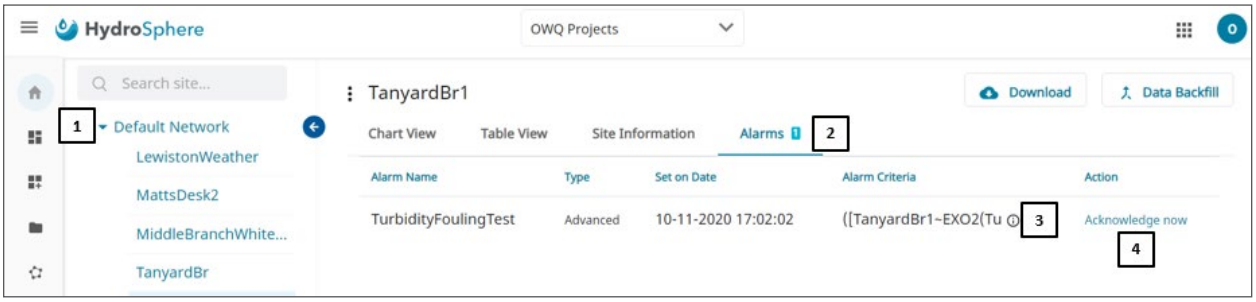
Site Information

The Site Information page provides read only site information. To edit the site information, click the Edit Icon to the left of the Site Name (⋮).

#	Name	Description
1	Advanced Options / Delete Site	Clicking the caret (⌄) to the right of Advanced Options will provide access to the Delete Site option and customer support contact information. *Note: In order to delete a site, the site must first be Unpaired from the data logger or RTU (Remote Terminal Unit).*

Alarms

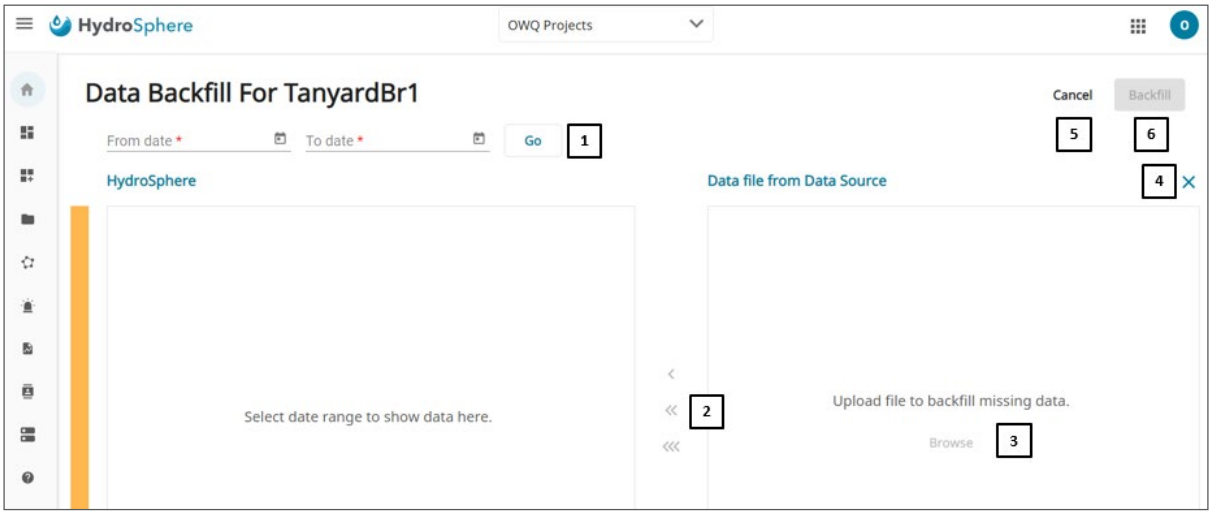
The Alarms page will show you what alarms have activated and need to be acknowledged.
Refer to Create New Alarm for more information.



#	Name	Description
1	Networks	Networks are groups of sites. Refer to Create New Network for more information. Clicking the ← and → icons will collapse and expand the Networks panel.
2	Alarms Tab	The Alarms Tab will also include the number of active alarm notifications (2) that need to be Acknowledged. Refer to Create New Alarm for more information.
3	Informational	Hovering the cursor over the informational icon (ⓘ) will show the complete Alarm expression.
4	Acknowledge Now	Clicking **Acknowledge Now** will display the following pop up window. The Acknowledge notes are optional. Clicking **OK** will Acknowledge the alarm and remove it from this list of activated alarms.

Backfill

If any data is missing from HydroSphere, you can backfill the data using the following procedures.



#	Name	Description
1	Date Range	From and To Date Range for selecting HydroSphere Data. Clicking the calendar icon ( ) will display a pop-up calendar for selecting dates. Clicking **GO** will display the HydroSphere sensor data within the dates specified. *Note: The date range entered must be no more than 90 days.*
2	Data Transfer Icons	See explanation in next table below.
3	Browse	Search for and upload a backfill (.csv) file from their computer. See the correct file format on the next page.
4	X	Allows you to delete uploaded backfill data.
5	Cancel	Clicking the **Cancel** button will exit from the Backfill page.
6	Backfill	When the Backfill button turns blue, all backfill requirements have been met. Clicking the blue **Backfill** button will upload the backfill data into HydroSphere.

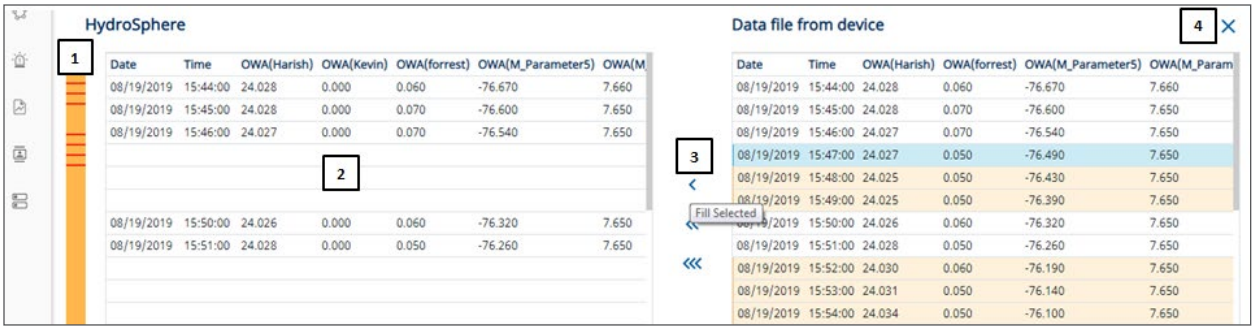
To backfill data

1. Enter a From and To Date.
2. Click **GO**. Sensor data will auto populate the HydroSphere Data field.
3. Click **Browse**. A window will open allowing you to select backfill data from their computer or other storage device.
4. Click **Open**.
5. Click **Backfill**.

Below is the correct format for a backfill .csv file. Note the header in row one. This header can be any text. Also, note the date and time formats.

WaterLOG Storm Log File - SiteID: SemCo_SC2_test Serial#: 19G428 Firmware: v1.4.8					
Date	Time	Amazon (Stage)	Stage_M (StageM)	EXO2 (Temp_C)	EXO (spCond_uS_cm)
11/4/2019	0:00:00	2.76	0.84	14.27	181.13
11/4/2019	0:15:00	2.76	0.84	14.22	181.39

The display will look like below after all data has been imported to the Backfill page.



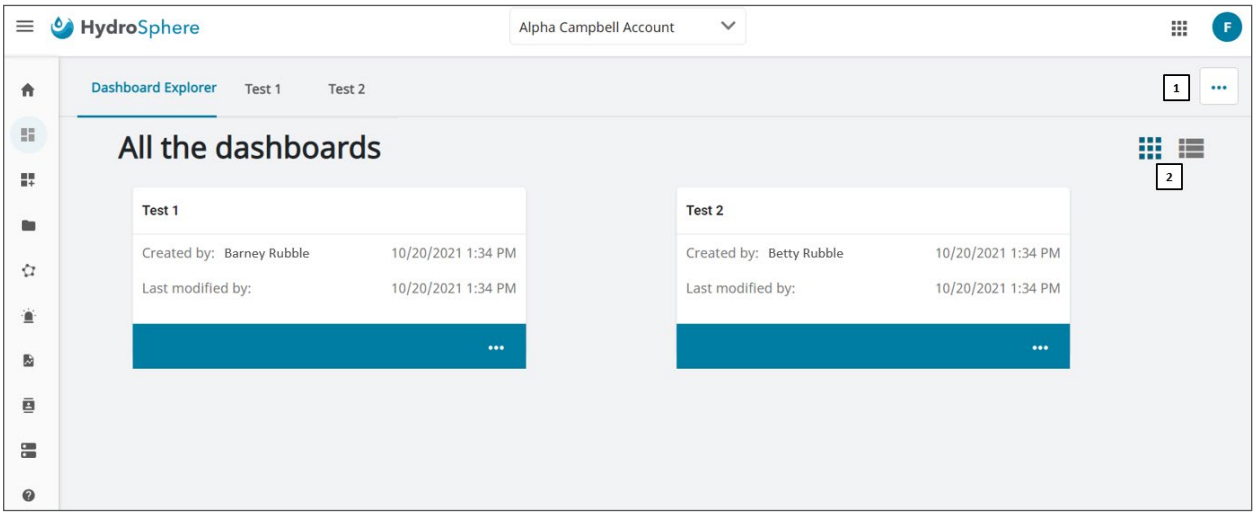
#	Name	Description
1	Data Gap Indicator	The orange bar is representative of all the HydroSphere data. The red line represents the gaps in HydroSphere data. Clicking on a red line will take you to the represented gap.
2	Data Gaps	Gaps in the HydroSphere data are indicated by blank lines. The appropriate backfill data lines are the highlighted lines to the right of the gaps.
3	Data Transfer Icons	< One arrow will transfer one selected line of missing data from the backfill data list to the HydroSphere data list. « Two arrows will transfer the selected group of lines of missing data from the backfill data list to the HydroSphere data list (i.e. in the screen shot above, the 3 highlighted lines would transfer). ««« Three arrows will transfer all missing lines of data from the backfill data list to the HydroSphere data list.
4	X	Allows you to delete uploaded backfill data.

2.3 – Customizable Dashboards

Build dashboards to continuously monitor your sensor data.

My Dashboards

The My Dashboards page will display all account dashboards that were created in Dashboard Builder (refer to Dashboard Builder for more information).



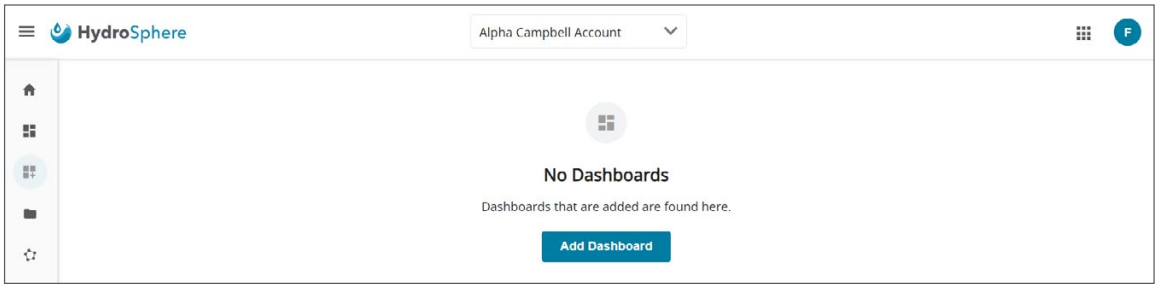
#	Name	Description
1	Dashboard Tab Options	When dashboards are opened, they are added to the tabs at the top of the page. Clicking the Tab Option button will display the following options. **Close Shown DB Tab** – Will close the displayed dashboard from the tab layout. **Close All DB Tabs** – Will close all tabs.
2	Dashboard List Format	Display dashboards in a grid or list.

Dashboard Builder

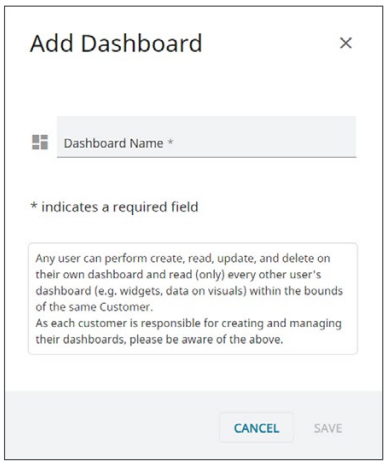
Dashboard Builder allows you to build customized dashboards so your water quality data can be easily and quickly viewed.

Dashboards

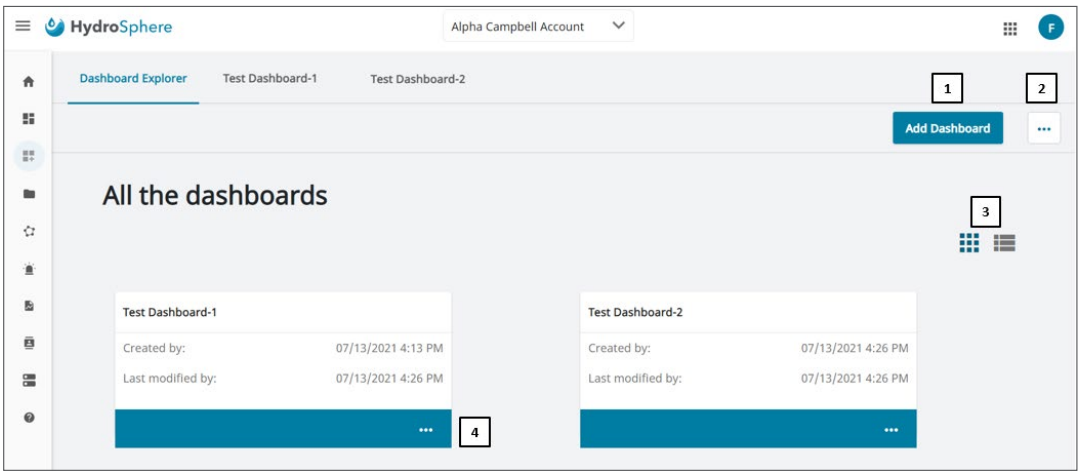
When the Dashboard Builder icon is clicked, if no dashboards have been created, you will see the page below.



Clicking **Add Dashboard** will allow you to create a new dashboard by entering the dashboard name in the window below and clicking **Save**.

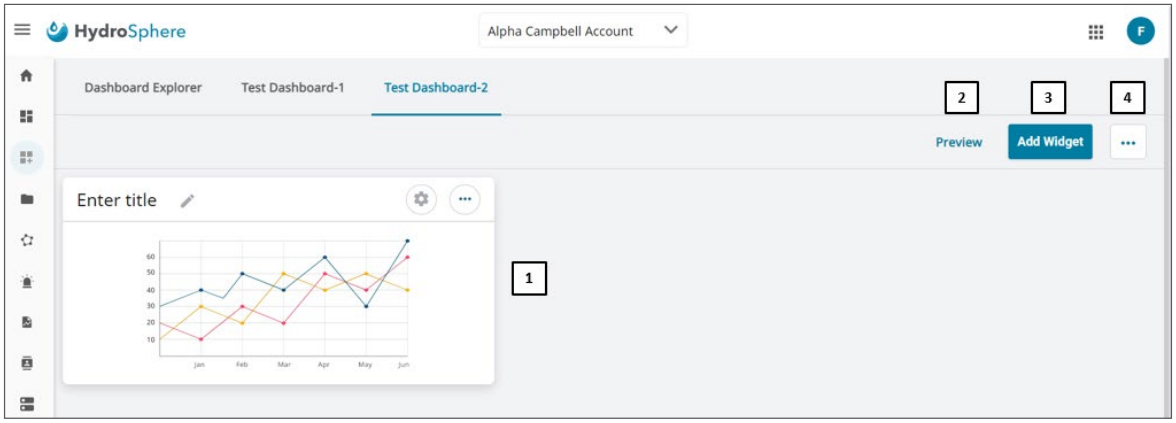


When the Dashboard Explorer icon is clicked, if dashboards have already been created, you will see the dashboards listed on the page below.



#	Name	Description
1	Add Dashboard	The **Add Dashboard** button will allow you to create a new dashboard via the Add Dashboard window discussed above.
2	Dashboard Tab Options	When dashboards are opened, they are added to the tabs at the top of the page. Clicking the ••• button will display the following options. **Save DB Tab Layout** – Will save the tab layout as displayed. **Close All DB Tabs** – Will close all tabs. The saved tab layout will be unaffected.
3	Dashboard List Format	Users can choose to display their dashboards in a grid or list.
4	Multiple Options Icon	Clicking the ••• icon will allow you to perform the following functions. **Open** – Open the dashboard in the Edit page. **Rename** – Change the name of the dashboard. **Duplicate** – Copy the dashboard and give it a new name. **Delete** – Delete the dashboard.

Creating Dashboards



#	Name	Description
1	Dashboard Icons	Double clicking an icon will display the dashboard in the Edit mode.
2	Preview	Clicking **Preview** will display the dashboard as built populated with actual data. See Widgets for more information.
3	Add Widget	Clicking **Add Widget** will allow you to drag and drop available widgets onto the dashboard. See Widgets for more information.
4	Multiple Options	Clicking the ••• icon will allow you to perform the following functions. **Save** – Saves the dashboard. **Save as** – Saves the dashboard under a new name. **Close** – Closes the dashboard without saving. **Save DB Tab Layout** – Will save the tab layout as displayed. **Close Shown DB Tab** – Will close the currently viewed tab. The saved tab layout will be unaffected. **Close All DB Tabs** – Will close all tabs. The saved tab layout will be unaffected.

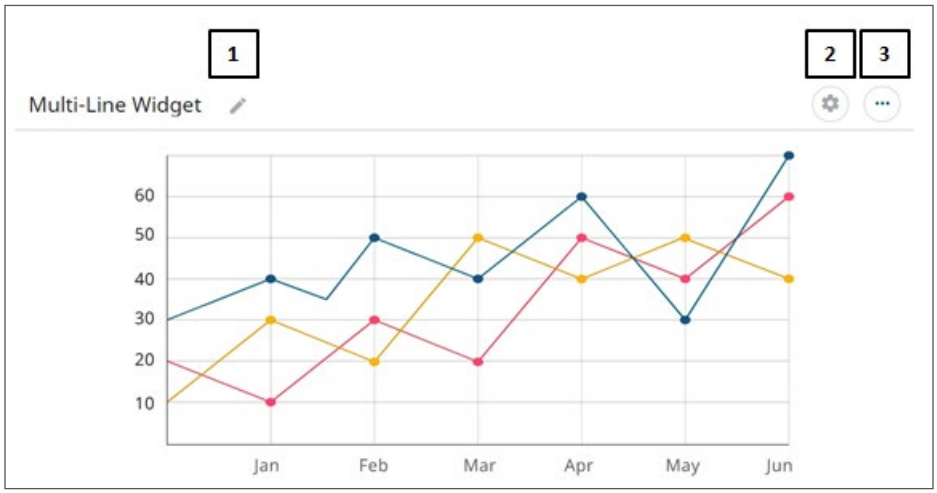
Widgets

Users have the option of adding seven different widgets to their dashboards.

Each dashboard can contain up to twenty-five widgets.

Note: Each widget can be moved and reordered by dragging and dropping. The widgets can be resized by grabbing and dragging the widget's lower right corner.

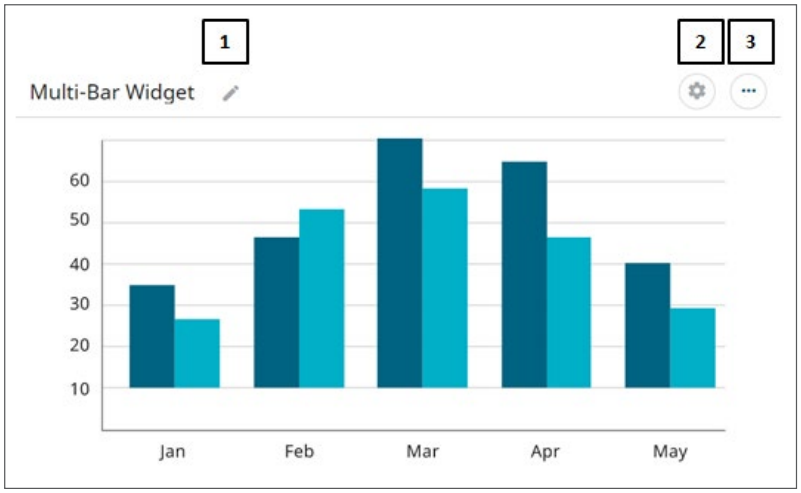
Multi-Line Widget



#	Name	Description
1	Widget Settings	Clicking the **Edit** button will display the following options for modifying the multi-line widget settings. • Title – Change the name of the widget. • Title Font Style – Font options are normal, italic, bold, bold/italic. • Title Color – A color pallet is provided to change the title color. • Line Direction – Lines can be displayed vertically or horizontally. • Line Color – A color pallet is provided for each line title color. • Time Range – Parameters can be displayed 1 hour, 3 hours, 12 hours, 1 day, 3 days, 1 week, 2 weeks, 1 month, 2 months • Decimal Places – Data display options are x., x.x, x.xx, or x.xxx. • Axis Scale – Scale options are auto (scale is set based on the parameters), manual (scale is set manually by the user), or preferred (if value exceeds manually set scale, scale will revert to auto) • Line Label Text – Label options are Observed Property, Datastream Name, or Datastream Description. • Line Label Position – Options are right or bottom. • Show Value Per Line • Show Details on Hover • Show the UoM on the axis • Unit of Measurement – If data streams with the same unit are selected, use the dropdown to change the unit displayed, and HydroSphere will calculate the conversion (i.e. ft to m, mg/L to µg/L, etc.)

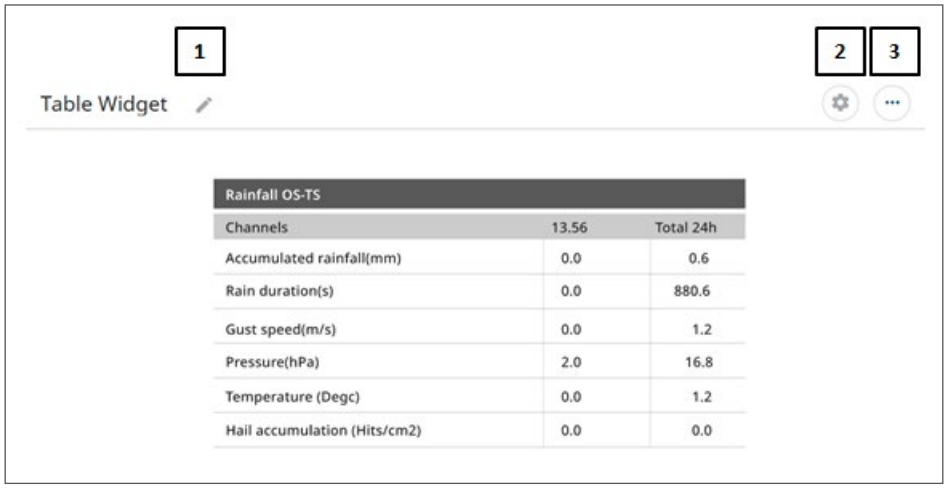
#	Name	Description
2	Configure Widget	See Configure Widget for more information.
3	Multiple Options	Clicking the ••• icon will allow you to perform the following functions. **Delete** – Delete the widget. **Duplicate** – Create a copy of the widget. The new widget will be named Copy of <Widget Title>.

Multi-Bar Widget



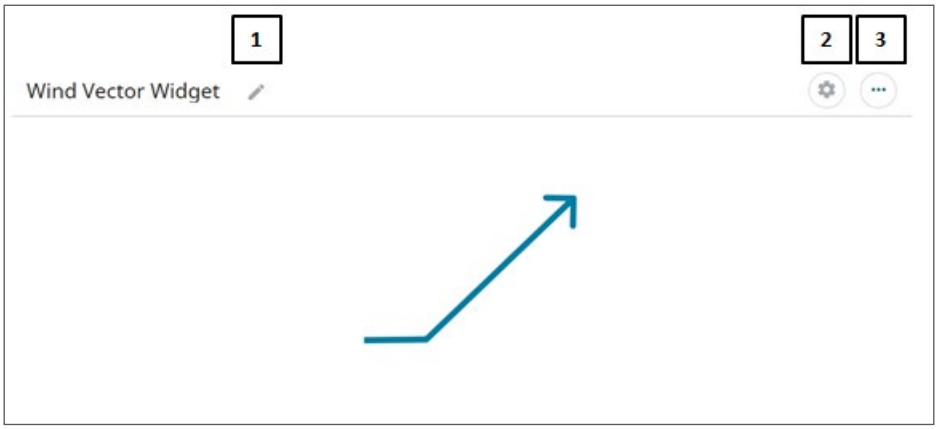
#	Name	Description
1	Widget Settings	The following options is available for modifying widgets. • Title – Change the name of the widget. • Title Font Style – Font options are normal, italic, bold, bold/italic. • Title Color – A color pallet is provided to change the title color. • Show the value per bar • Show the UoM on the axis • Bar direction – vertical, horizontal • Decimal places – x., x.x, x.xx, x.xxx • Axis scale – auto, manual • Bar label text – Observed Property, Datastream Name, Datastream Description • Bar label orientation • Unit of Measurement – If data streams with the same unit are selected, use the dropdown to change the unit displayed, and HydroSphere will calculate the conversion (i.e. ft to m, mg/L to µg/L, etc.)
2	Configure Widget	See Configure Widget for more information.
3	Multiple Options	Clicking the ••• icon will allow you to perform the following functions. **Delete** – Delete the widget. **Duplicate** – Create a copy of the widget. The new widget will be named Copy of <Widget Title>.

Table Widget



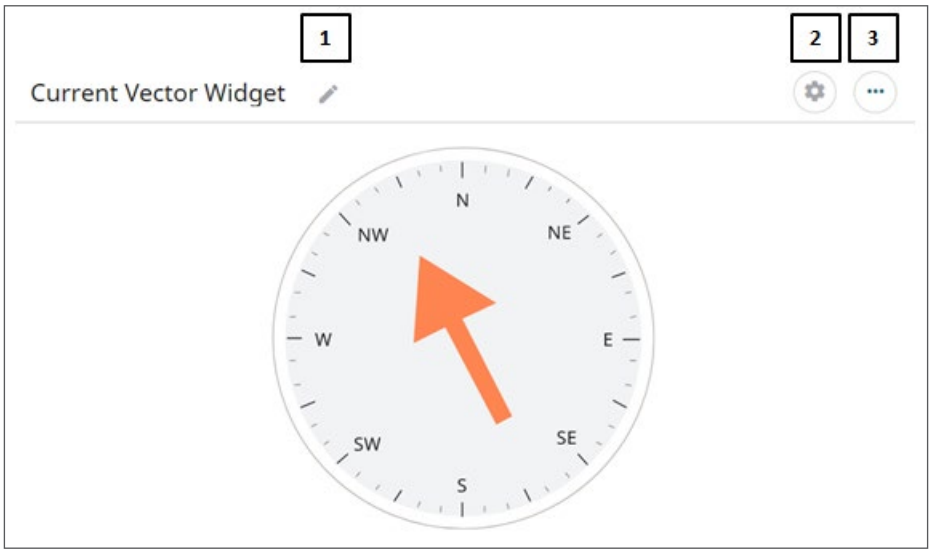
#	Name	Description
1	Widget Settings	Clicking the **Edit** button will display the following options for modifying the widget settings. • Title – Change the name of the widget. • Title Font Style – Font options are normal, italic, bold, bold/italic. • Title Color – A color pallet is provided to change the title color. • Decimal places – x., x.x, x.xx, x.xxx • Unit of Measurement – Use the dropdown next to each row to change the unit displayed, and HydroSphere will calculate the conversion (i.e. ft to m, mg/L to µg/L, etc.) • Row label text – Observed Property, Datastream Name, Datastream Description • Add Calculated Columns – Interval – 1m, 15m, 1h, 3h, 12h, 1d, 1w, 30d • Aggregation – Min, Max, Avg
2	Configure Widget	See Configure Widget for more information.
3	Multiple Options	Clicking the ••• icon will allow you to perform the following functions. **Delete** – Delete the widget. **Duplicate** – Create a copy of the widget. The new widget will be named Copy of <Widget Title>.

Wind Vector Widget



#	Name	Description
1	Widget Settings	Clicking the **Edit** button will display the following options for modifying the widget settings. • Title – Change the name of the widget. • Title Font Style – Font options are normal, italic, bold, bold/italic. • Title Color – A color pallet is provided to change the title color. • Show the direction • Show the speed • Show gust row • Vector Color • Vector Head Style – arrow, diamond, dot, line • Decimal places – x., x.x, x.xx, x.xxx • Speed or gust UoM – Change the unit of measurement to be displayed
2	Configure Widget	See Configure Widget for more information.
3	Multiple Options	Clicking the ••• icon will allow you to perform the following functions. **Delete** – Delete the widget. **Duplicate** – Create a copy of the widget. The new widget will be named Copy of <Widget Title>.

Current Vector Widget

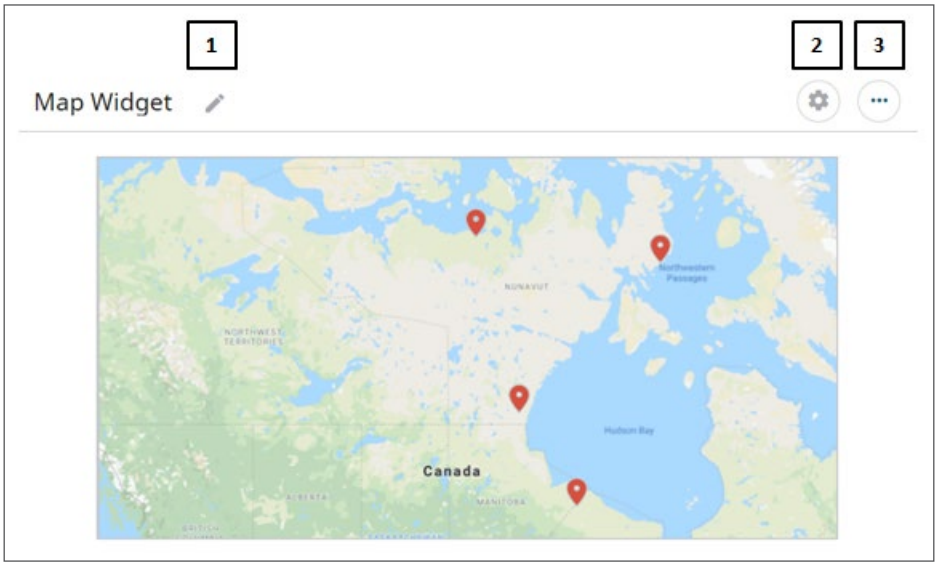


#	Name	Description
1	Widget Settings	Clicking the **Edit** button will display the following options for modifying the widget settings. • Title – Change the name of the widget. • Title Font Style – Font options are normal, italic, bold, bold/italic. • Title Color – A color pallet is provided to change the title color. • Vector Head Style – arrow1, triangle, arrow2, chevron • Vector Color • Decimal places – x., x.x, x.xx, x.xxx • Speed UoM – Change the unit of measurement to be displayed
2	Configure Widget	See Configure Widget for more information.
3	Multiple Options	Clicking the ••• icon will allow you to perform the following functions. **Delete** – Delete the widget. **Duplicate** – Create a copy of the widget. The new widget will be named Copy of <Widget Title>.

Wave Vector Widget

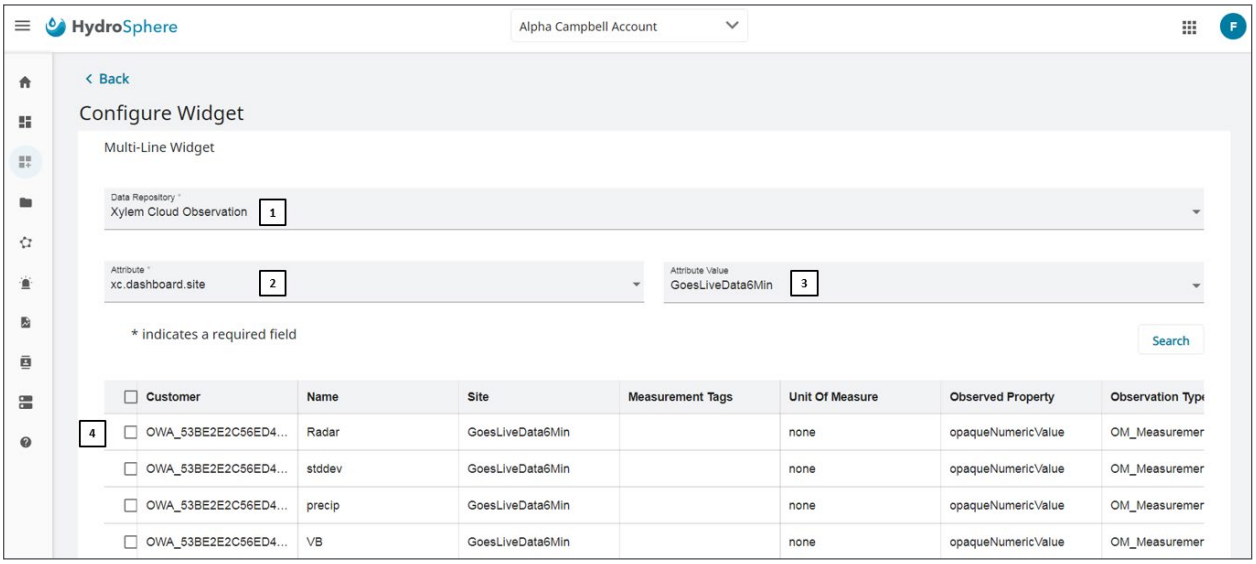
#	Name	Description
1	Widget Settings	Clicking the **Edit** button will display the following options for modifying the widget settings. • Title – Change the name of the widget. • Title Font Style – Font options are normal, italic, bold, bold/italic. • Title Color – A color pallet is provided to change the title color. • Vector Head Style – arrow1, triangle, arrow2, chevron • Vector Color • Decimal places – x., x.x, x.xx, x.xxx • Height UoM – Change the unit of measurement to be displayed • Show the direction • Show period Row • Show signif. height • Show max. height
2	Configure Widget	See Configure Widget for more information.
3	Multiple Options	Clicking the ••• icon will allow you to perform the following functions. **Delete** – Delete the widget. **Duplicate** – Create a copy of the widget. The new widget will be named Copy of <Widget Title>.

Map Vector

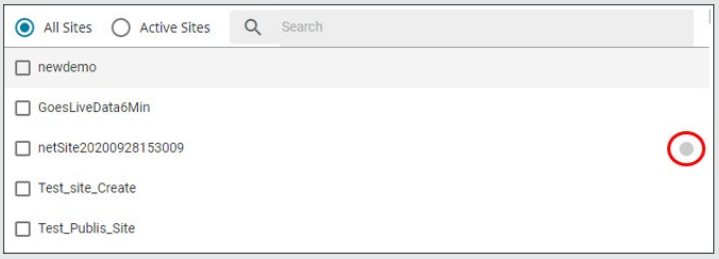


#	Name	Description
1	Widget Settings	Clicking the **Edit** button will display the following options for modifying the widget settings. • Title – Change the name of the widget. • Title Font Style – Font options are normal, italic, bold, bold/italic. • Title Color – A color pallet is provided to change the title color. • Site Pin Style • Site Pin Color • Location details on hover
2	Configure Widget	See Configure Widget for more information.
3	Multiple Options	Clicking the ••• icon will allow you to perform the following functions. **Delete** – Delete the widget. **Duplicate** – Create a copy of the widget. The new widget will be named Copy of <Widget Title>.

Configure Widget



Select the source of data and specific parameters to display on the widget by using the following functions.

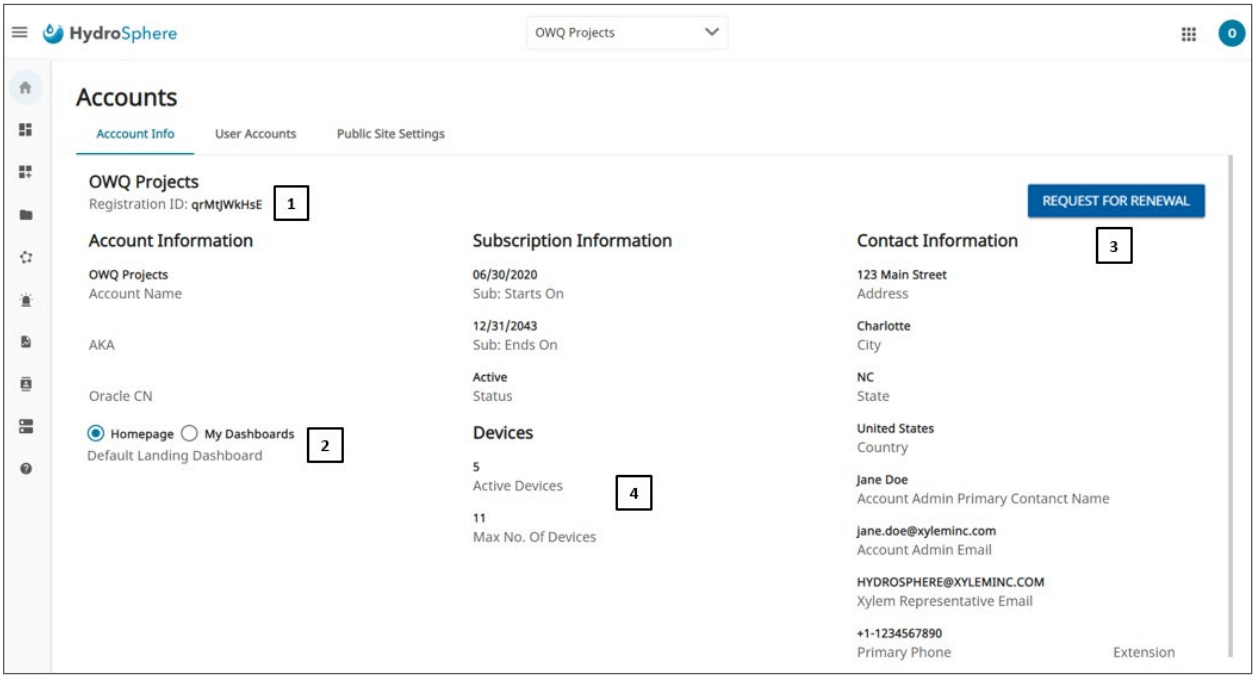
#	Name	Description
1	Data Repository	The database from which the data will be pulled, defaulted to Xylem Cloud Observation.
2	Attribute	The general category of the data to be displayed, defaulted to Site.
3	Attribute Value	The list of available options based on the Attribute field value. For example, if Site is selected in the Attribute field then all sites associated with that account will displayed. Sites with a gray dot are inactive sites. 
4	Parameter selection	Based on the Attribute Value selected, the list of parameters available to display on the widget.

2.4 – Accounts

Three pages are available for Account Info; Account Info, User Accounts, and Public Site Settings. These pages are described below.

Account Info

Read-only account details are displayed on the Account Info page.



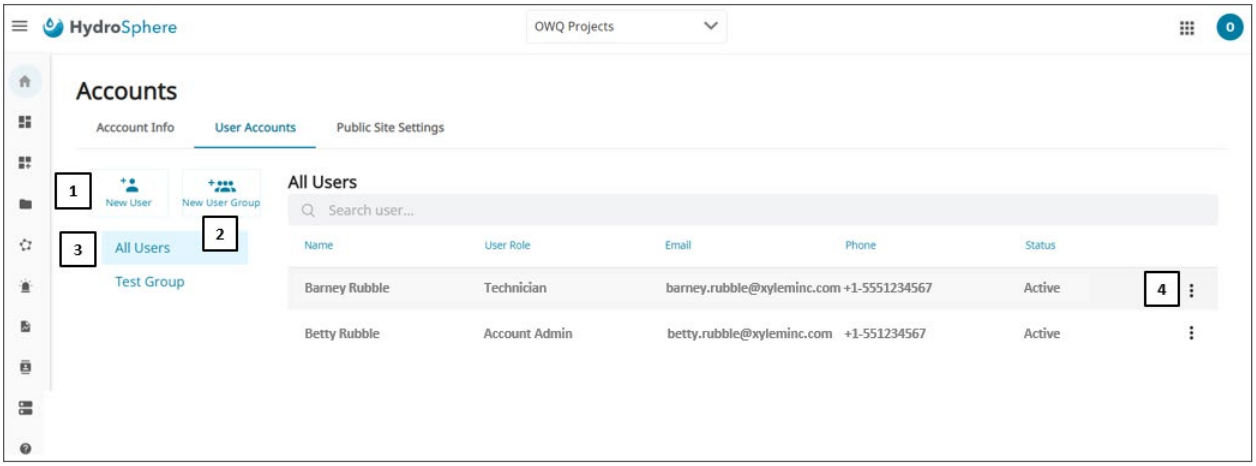
#	Name	Description
1	Registration ID	The Registration ID will be used to connect data loggers. Refer to Data Setup - Cellular for more information.
2	Default Landing Dashboard	Allows the Account Admin to select which page account users will land on when they log into HydroSphere.
3	Request for Renewal	When the account subscription is within 60 days of expiration, the Request For Renewal button will display. Clicking the **Request for Renewal** button will initiate the renewal process. Once the button has been clicked, it will change to **RENEWAL REQUESTED**. *Note: The **Request for Renewal** button is only visible to Account Administrators.*
4	Devices	This section will show the maximum number of data devices allowed for your account and the number of data devices actually connected to HydroSphere. *Note: If an increase if the maximum number of data devices is required, please contact Customer Service at hydrosphere@xylem.com.*

User Accounts

Note: The User Accounts section is only visible to Account Administrators.

There is no limit to the number of users that can be added to each account.

New Users and User Groups can be created using this page. Refer to Definitions for a discussion on User Groups.

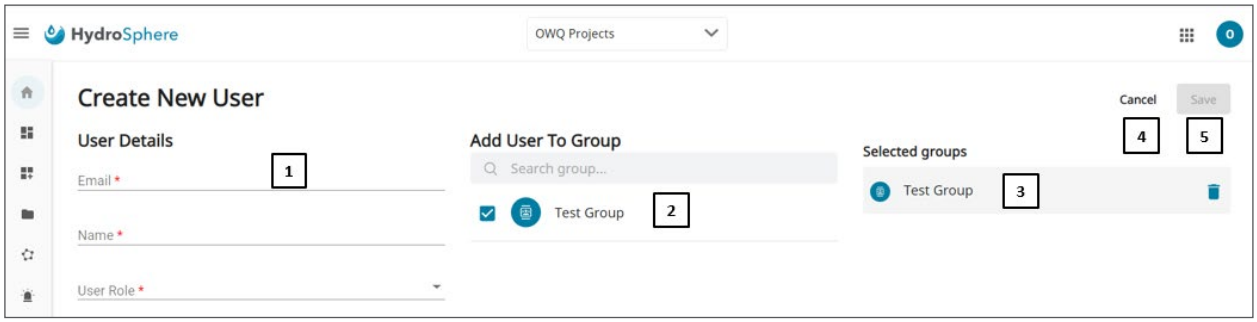


#	Name	Description
1	New User	Create a new user. Refer to Create New User for more information.
2	New User Group	Create a new user group. Refer to Create New User Group for more information.
3	Groups	Displays the user groups created for this account.
4	Multiple Options	For the All Users group, clicking the ⋮ icon will display the following options: **Edit** – Edit user account details described in Create New User. **Delete** – Deletes the user account. If a user group is being viewed, clicking the ⋮ icon will display the following options: **Edit** – Edit user account details described in Create New User. **Delete from Group** – Deletes the user from the group but will not delete the user account.

Create New User

Note: The User Accounts section is only visible to Account Administrators.

Clicking the ⊕ Create New and **USER** buttons on the dashboard will display the same page.



#	Name	Description
1	User Details	A red asterisk (*) indicates a required field. The User Role drop down presents three options: AccountAdmin, DataReviewer, and Technician. Refer to Definitions for more information on user roles.
2	Add User to Group	All user groups created for this account will be displayed. Users can be added to one or more user groups by clicking on the check box to the left of the user group name. Refer to Create New User Group for more information.
3	Selected Groups	User groups that have been checked in the Add User to Group section will display here. The user group can be disassociated from the user by clicking the trash can (🗑). This will not delete the user account or the user group.
4	Cancel	Clicking the **Cancel** button will exit from the Create New User page.
5	Save	When the **Save** button turns blue, all new user requirements have been met. Clicking the blue **Save** button will save the new user to HydroSphere.

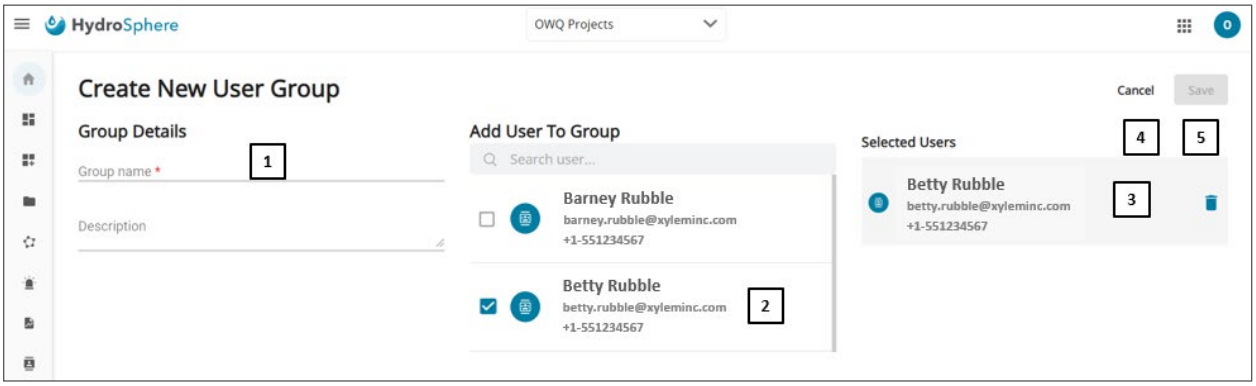
To create a new user

1. Enter the user's Email address, Name, User Role, Country Code, and Phone number.
2. If the user is to be assigned to a user group, click the box to the left of each appropriate user group.
3. Click **Save**.

Create New User Group

Note: The User Accounts section is only visible to Account Administrators.

Create groups of users to assign common alarm notification and data export requirements, saving time by not having to assign these notifications and exports to multiple individual users.



#	Name	Description
1	Group Details	A red asterisk (*) indicates a required field.
2	Add User to Group	All users created for this account will be displayed. Users can be added to the newly created user group by clicking on the check box to the left of the user's name. Refer to Create New User for more information.
3	Selected Groups	Users that have been checked in the Add User to Group section will display here. The user can be deleted from the group by clicking the trash can (🗑). This will not delete the user account or the user group.
4	Cancel	Clicking the **Cancel** button will exit the user from the Create New User Group page.
5	Save	When the **Save** button turns blue, all new user group requirements have been met. Clicking the blue **Save** button will save the new user group to HydroSphere.

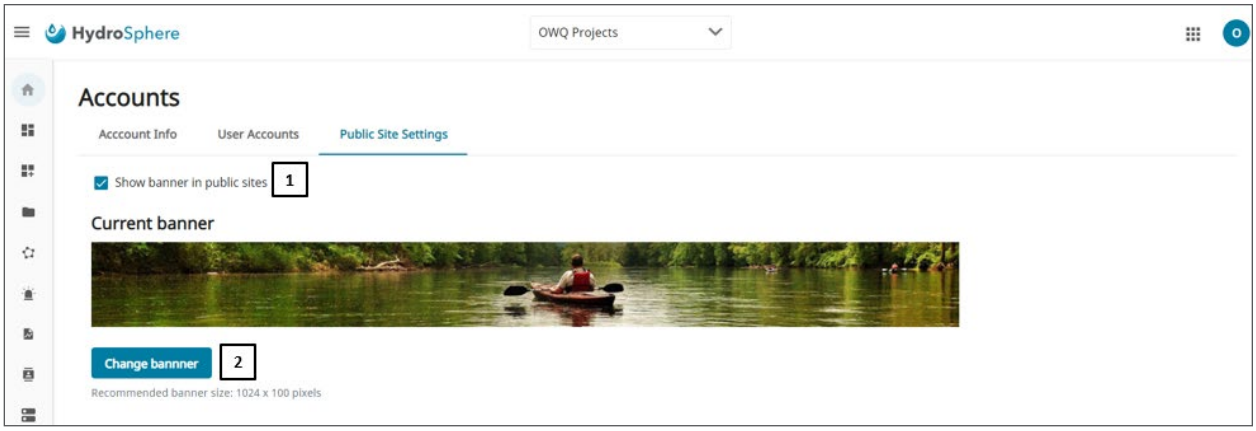
To create a new user group

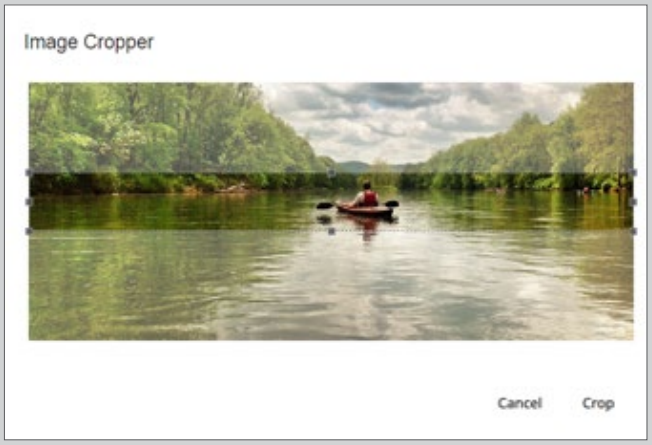
1. Enter a user group name.
2. Optional – add a user group description.
3. Click the box to the left of each user to be added to the user group.
4. Click **Save**.

Public Site Settings

Note: The Public Site Settings section is only visible to Account Administrators.

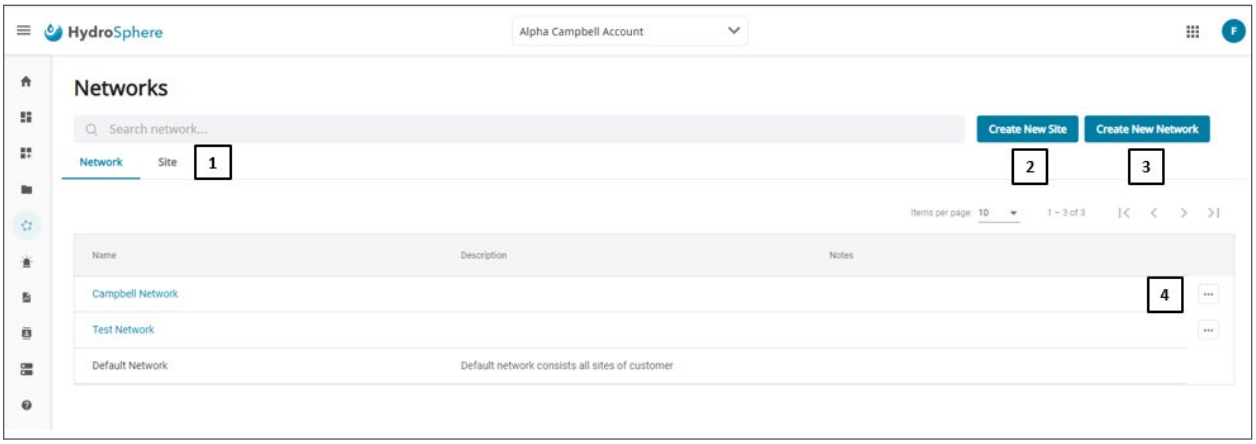
You can customize the banner that is displayed on the Public Web Site.
Refer to Public Web Site for more information.



#	Name	Description
1	Show banner in public site	Checking this box will display the Current banner on the public web site.
2	Change Banner	Allows you to search their computer or other storage device for a photo file format (jpg, png, etc.) to be used as a public web site banner. *Note: The required banner size is 1024 x 100 pixels.* When uploading a file, the photo will open in an image cropper that will assist the user in cropping the photo to the 1024 x 100 requirement. 

2.5 – Networks

Networks are groups of sites that may have common characteristics such as close geographical proximity. Networks ease the administrative management of these groups of sites.



#	Name	Description
1	Networks/Sites	Selecting the appropriate tab will list all networks or sites.
2	Create New Site	Allows you to create a new site. Refer to Create New Site for more information.
3	Create New Network	Allows you to create a new network. Refer to Create New Network for more information.
4	Multiple Options	Clicking ••• will display the following options: **Edit** – Allows you to edit Network details described in Create New Network. **Delete** – Deletes the Network.

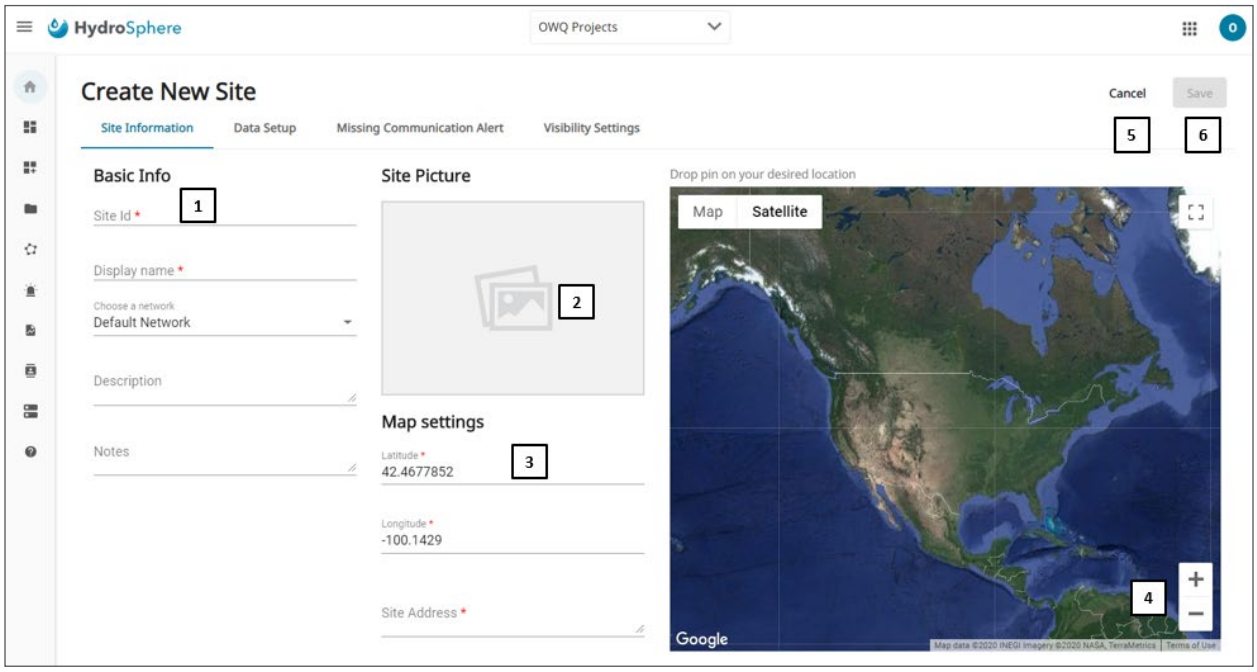
Create New Site

Note: This section details the process of creating a new site from the Networks tab or the Homepage in order to receive data from a satellite transmitter, Storm3, Aanderaa Real Time collector, or Campbell data logger. Creating a site for connecting and claiming an RTU (i.e. HydroRIG) in Easy Manager follows a new process. See Easy Manager for more information.

Four pages are available for creating new sites; Site Information, Data Setup, Missing Communications Alert, and Visibility Settings. These pages are described below.

Site Information

Clicking the ⊕ Create New and **SITE** buttons on the dashboard will display the same page.



#	Name	Description
1	Basic Info	A red asterisk (*) indicates a required field. *Note: Spaces and special characters are not allowed in the SiteID field.*
2	Site Picture	When the cursor is hovered over the Site Picture box, the display will change to read **Add A Picture**.  Clicking **Add A Picture** will allow you to browse their computer or other storage device for a photo file format (jpg, png, etc.).

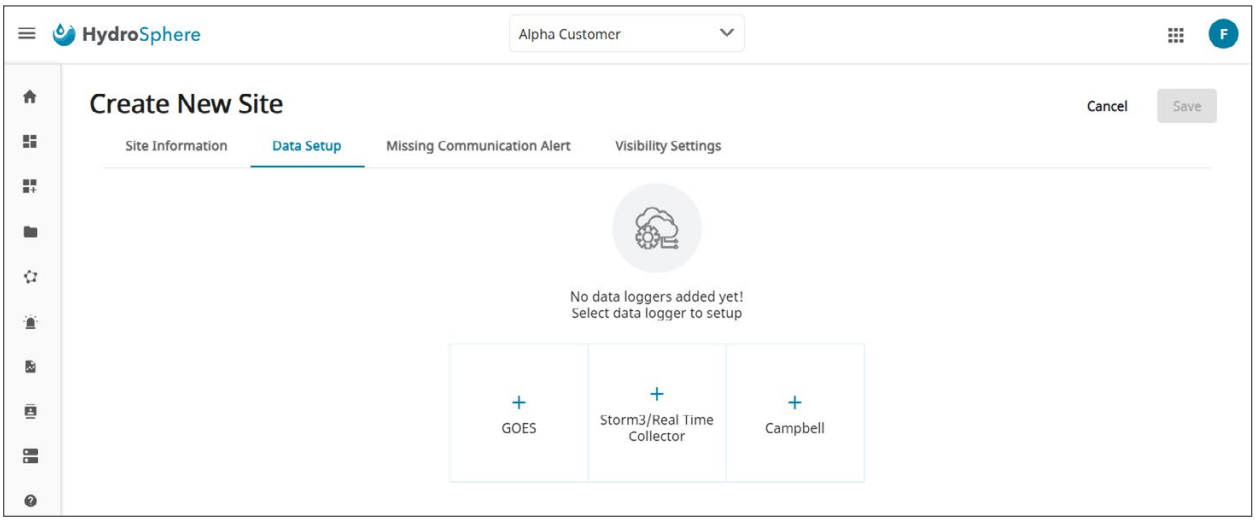
#	Name	Description
2	Site Picture **(continued)**	When a photo has been selected, it will display in a photo cropper allowing you to crop the photo to best fit the space available.  Clicking **Crop** will insert the photo into Site Picture.
3	Map Settings	The site location can be entered in two ways: 1. Manually enter Latitude, Longitude, and Address. The map pin ( ) will relocate to the entered position. 2. Position the map pin ( ). Double clicking on the map will reposition the map pin to the cursor location. The Latitude, Longitude, and Address fields will automatically populate based on the new position of the map pin. *Note: Google Chrome users may see a 'Know your location' pop up message on any page where Google maps data is displayed (map and/or lat/long).* On the Edit Site page, if **Allow** is clicked, the map pin and site location will change to your location. Be sure to click **Block** when on the Edit Site page to prevent the site location from moving.
4	Zoom In / Zoom Out	Zoom the map display in and out.
5	Cancel	Clicking the **Cancel** button will exit from the New Site page.
6	Save	When the **Save** button turns blue, all new site requirements have been met. Clicking the blue **Save** button will save the new site to HydroSphere.

To create a new site – Step 1

1. Enter a Site ID and Display Name.
2. Choose a network.
3. Optional – add a site description and notes.
4. Optional – Upload a site photo.
5. Enter the site location by entering the latitude, longitude, and site address or use the map pin.
6. Click **Save**.

Data Setup – Data Source Selection

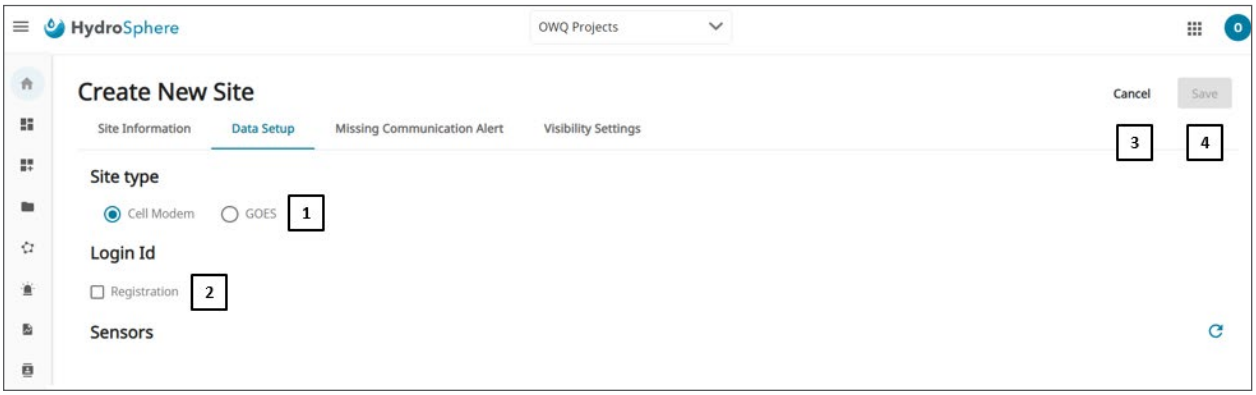
Select the data sources to connect to HydroSphere on this page by clicking the appropriate button.

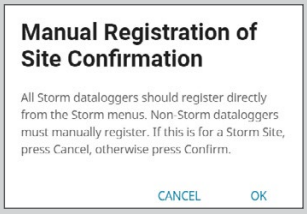
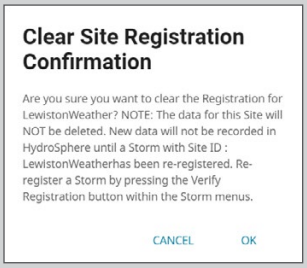


Data Setup – Storm 3 Cellular or Campbell (Push Mode)

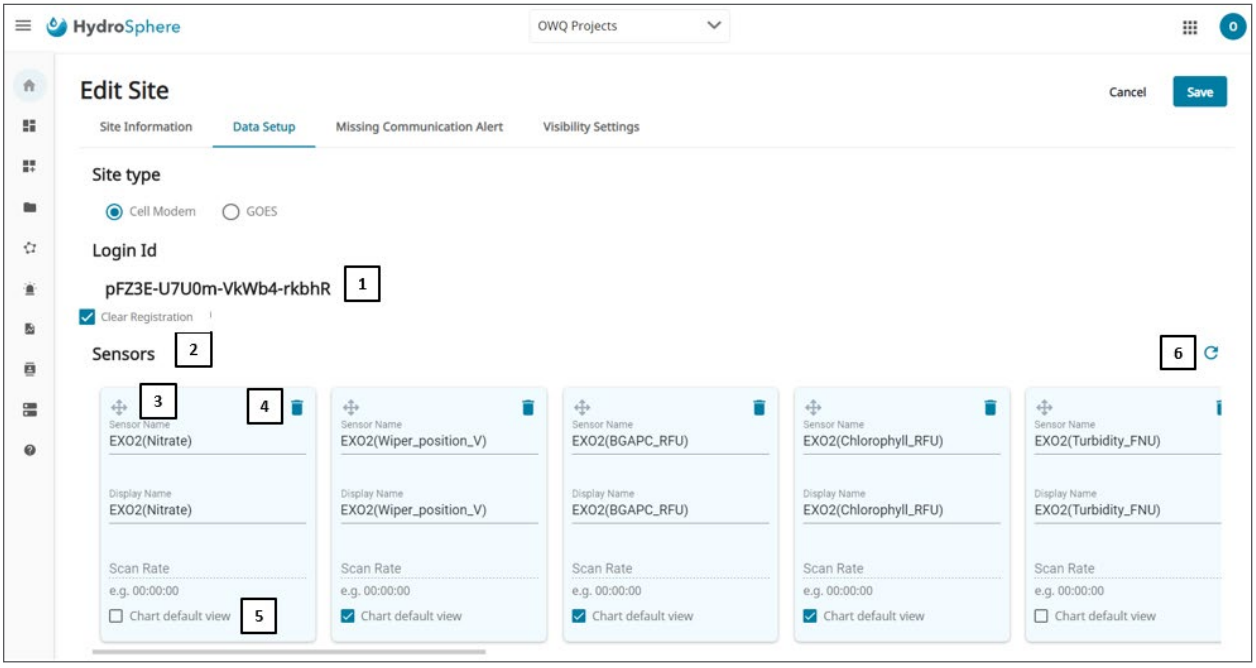
Customers with Storm 3 and Campbell (push mode) data loggers will use these procedures to connect with their data loggers and sensors.

Before connection to the data loggers, the Data Setup page will look like the screen below.



#	Name	Description
1	Site Type	Two site type options are presented: **Cell Modem** – For Storm 3 and Campbell data loggers. **GOES** – For Geostationary Operational Environmental Satellite users.
2	Register	Campbell data logger users – Checking this box will display the following message. After clicking save, the Login ID will be displayed below the Login ID label.  Storm 3 data logger users – The Login ID will be created, and the Register checkbox will automatically be checked when the site is created in the WaterLOG app. After the data logger has been registered, if you need to clear the registration (to remove or change the data logger), unchecking the Register box will display the following message.  *Note: The Registration ID can be found on the Accounts/Accounts Info page.*
3	Cancel	Clicking the **Cancel** button will exit from the New Site page.
4	Save	When the **Save** button turns blue, all new site requirements have been met. Clicking the blue Save button will save the new site to HydroSphere.

After connection to the data logger, the Data Setup page will look like the screen below.



#	Name	Description
1	Login ID	The Login ID for connecting data loggers will be displayed. To clear the registration, uncheck this box.
2	Sensors	When site data loggers are connected, the associated sensors will be displayed.
3	Reorder Icon	The sensors can be reordered by clicking on the drag and drop icon (✥) and moving the sensor to a new position. *Note: Parameter order for Chart View, Table View, Geographical Dashboard Site popup, and downloaded data will mimic the order of the sensor tiles on the Data Setup page.*
4	Delete Icon	The trash can (🗑) will delete the sensor from the Sensors list.
5	Chart Default View	Checking the Chart Default View box will set the Chart View default parameters (see Chart View for more information).
6	Refresh Icon	Clicking the Refresh Icon (↻) will request an update of newly added / removed sensors. This refresh will not affect normal data transmissions. *Note: If, after initial setup, any changes are made to the sensor configuration in the data logger, you will need to either Re-deploy and re-map the data logger to HS OR Click on Refresh Icon*

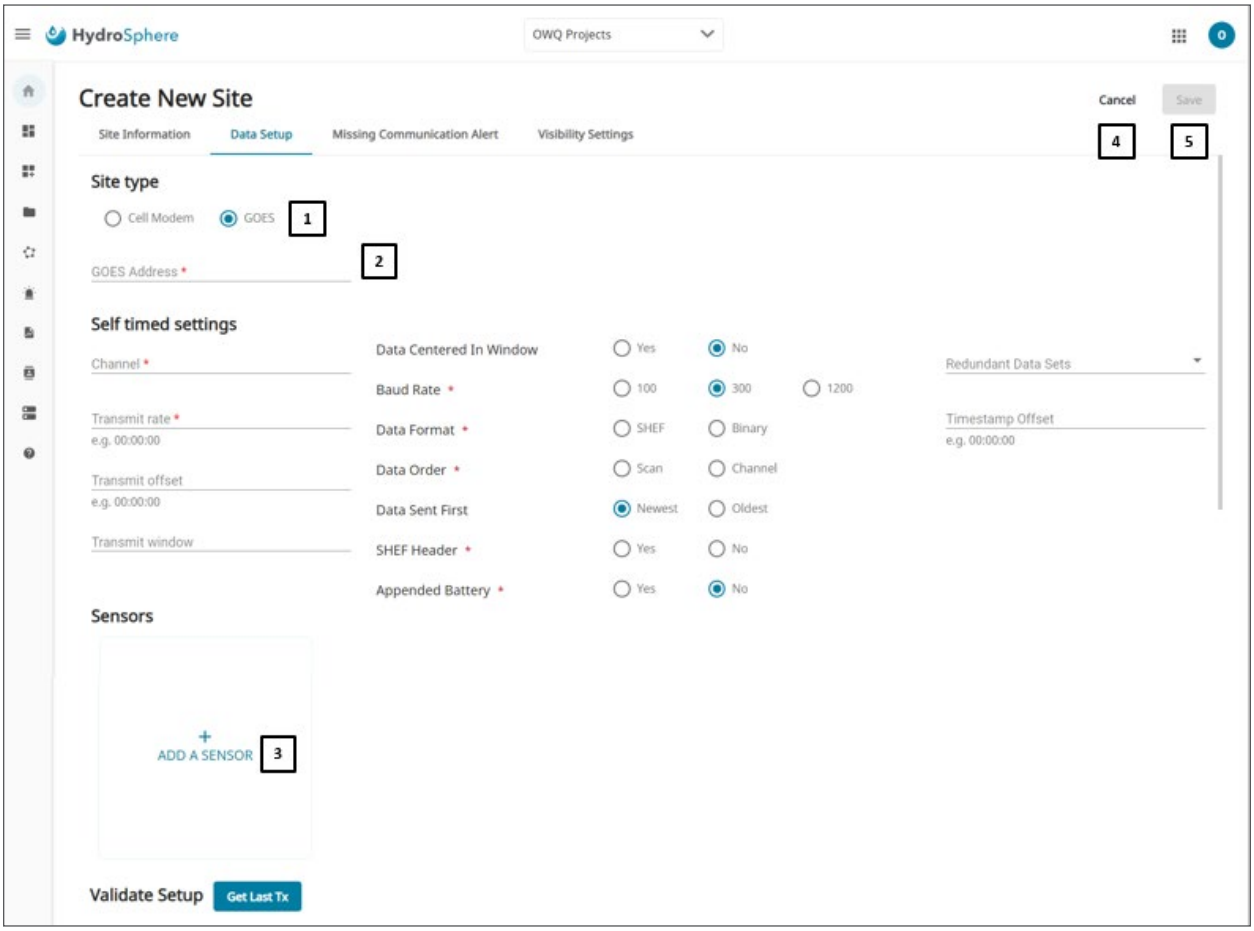
To create a new site – Step 2A: Connecting a Storm 3 Cellular or Campbell (Push Mode) data logger

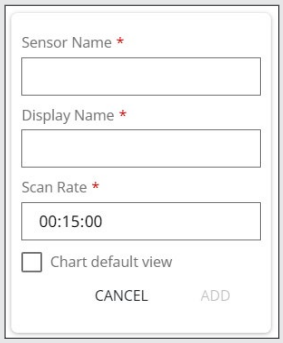
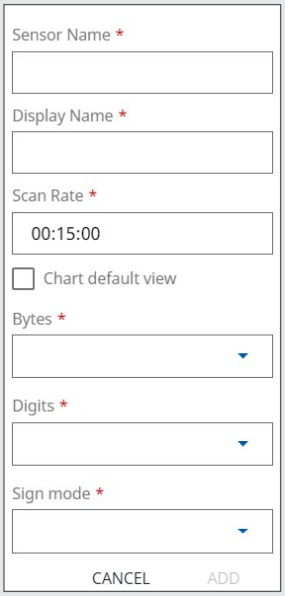
1. Click the **Storm 3 Cellular/Campbell (Push Mode)** button on the initial Data Setup page.
2. Click the **Cellular Modem** radio button.
3. Click the check mark next to Register if using a Storm 3 data logger. Otherwise, leave Register unchecked.
4. Click **Save**.
5. Follow the normal procedures for connecting a cellular data logger.
6. Verify that the sensors are displayed on the Data Setup page.
7. Optional – reorder the sensors as needed.
8. Click **Save**.

Data Setup – Storm 3 GOES or WaterLOG GOES

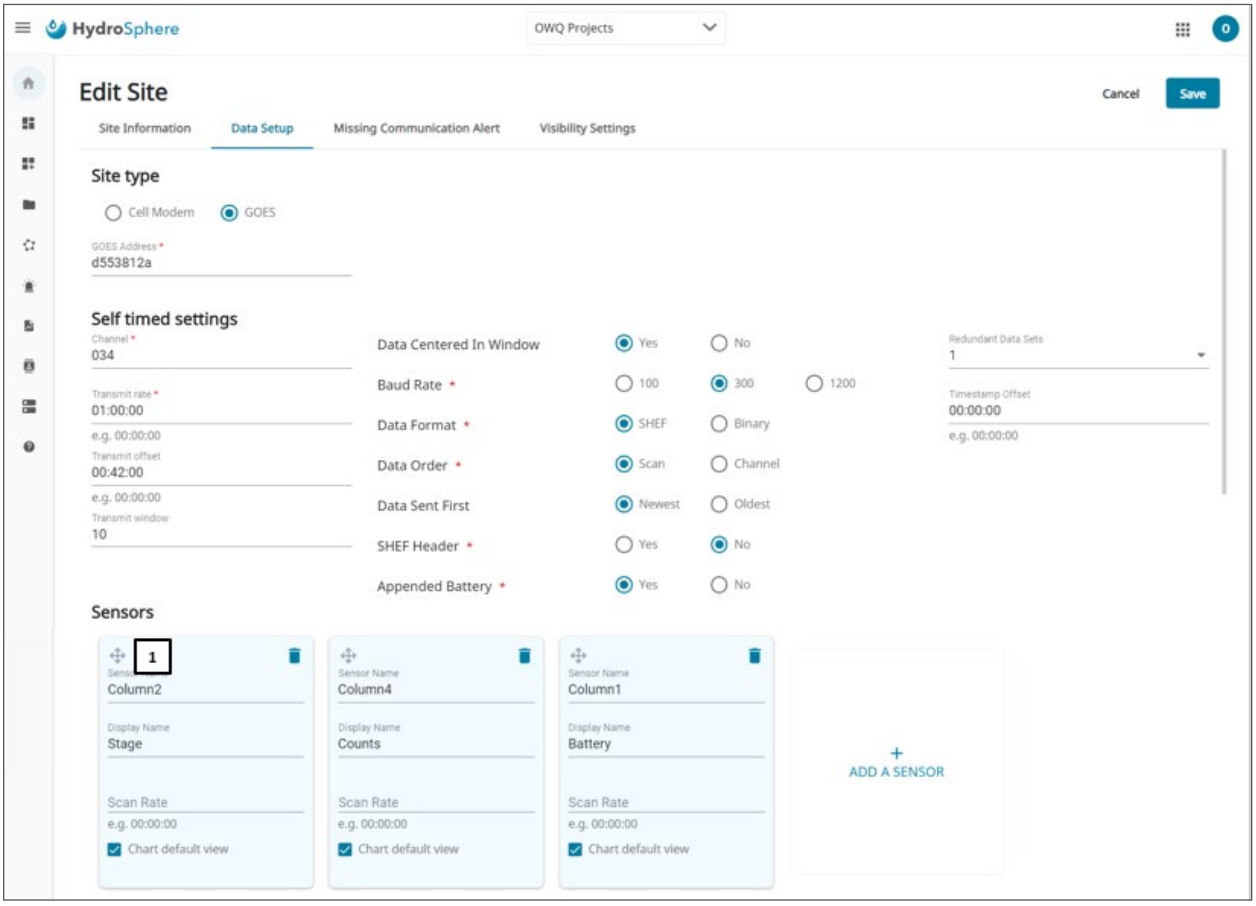
Customers who use GOES will use these procedures to connect their data loggers.

Before connection to the data loggers, the Data Setup page will look like the screen below.



#	Name	Description
1	Site Type	Two site type options are presented: • Cell Modem – For Storm 3 and Campbell data loggers. • GOES – For Geostationary Operational Environmental Satellite users.
2	GOES Information	The GOES address and Self Timed Settings will either be provided by NOAA or can be found on the data logger.
3	Add A Sensors	Clicking **Add A Sensor** will provide two displays based on which Data Format radio button is checked. This information can be found on the data logger. SHEF  Binary  Clicking the **Chart Default View** box will allow you to set the default parameters viewed on the Chart View (refer to Chart View for more information). Up to 3 sensors can be selected.
4	Cancel	Clicking the **Cancel** button will exit from the Data Setup page.
5	Save	When the **Save** button turns blue, all data setup requirements have been met. Clicking the blue **Save** button will save the data setup information to HydroSphere.

After connection to the data loggers, the Data Setup page will look like the screen below.



#	Name	Description
1	Reorder Icon	The sensors can be reordered by clicking on the drag and drop icon (✥) and moving the sensor to a new position. *Note: If the sensor order is changed in the data logger, ensure the sensor order in HydroSphere matches the new order by using the reorder icons to prevent data mismatch.*
2	Get Last Tx	If after clicking the **Get Last Tx** button, telemetry data populates the Get Last Tx text box, you will know that connection with the data logger is successful and that GOES setup has been validated.

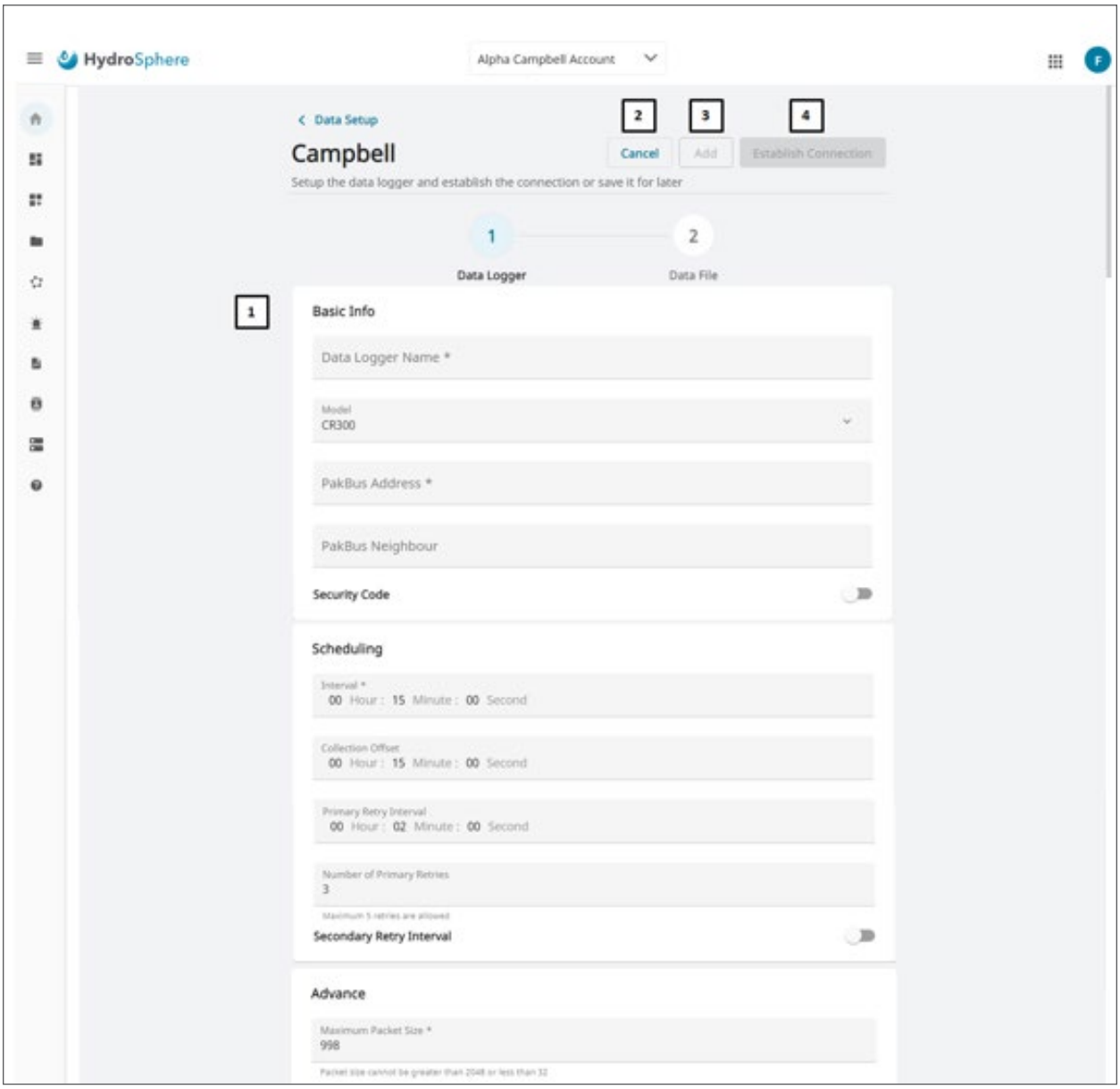
To create a new site – Step 2B: Connecting a Storm 3 GOES or WaterLOG GOES data logger

1. Click the **Storm 3 GOES /WaterLOG GOES** button on the initial Data Setup page.
2. Click the **GOES** radio button.
3. Enter the required GOES information.
4. Click **Add a Sensor** and enter the required sensor information.
5. Click the **Get Last Tx** button.
6. Click **Save**.

Data Setup – Campbell (Polled Mode)

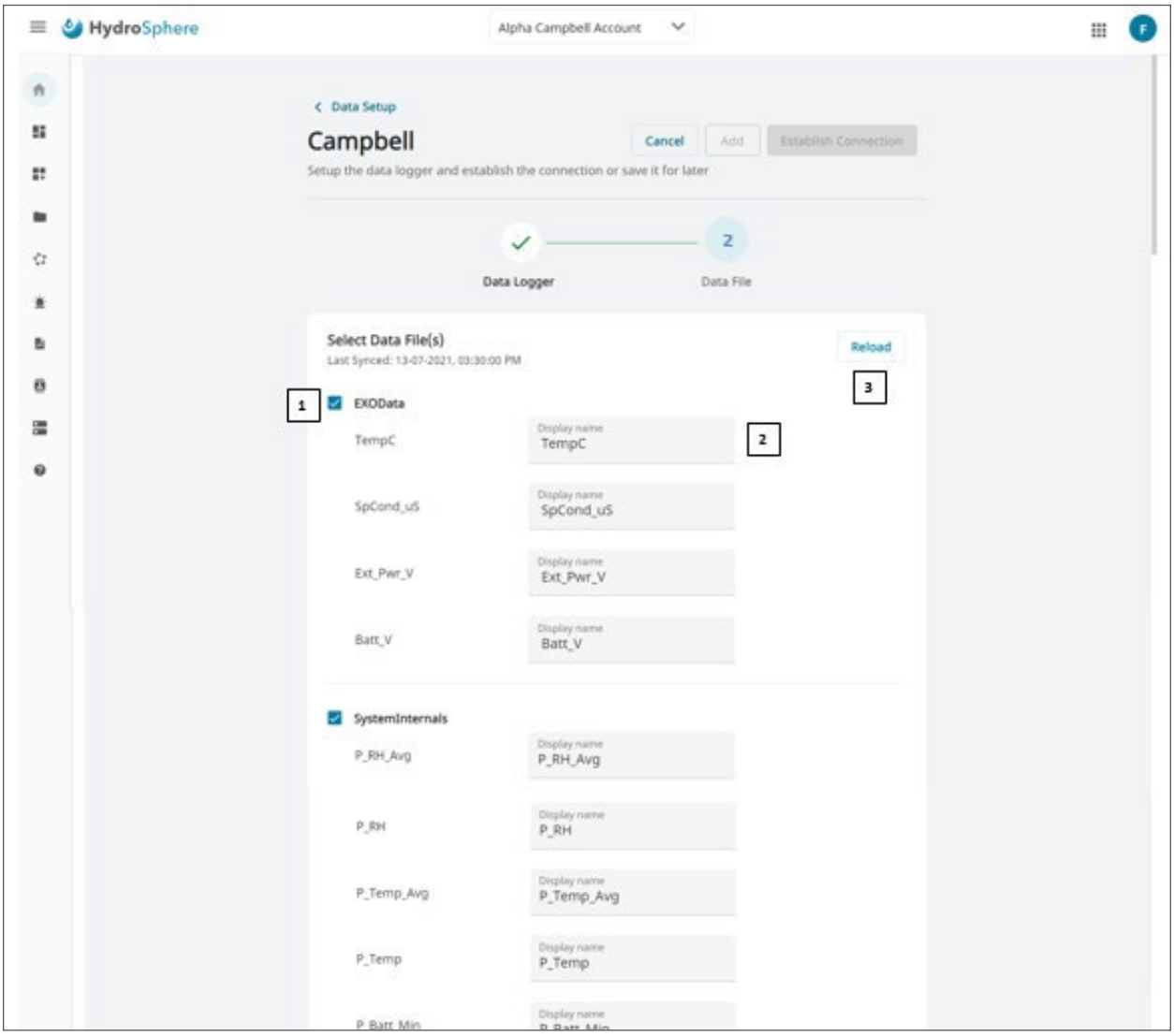
Customers who use Campbell will use these procedures to connect with their data loggers and sensors.

Before connection to the data loggers, the Data Setup page will look like the screen below.



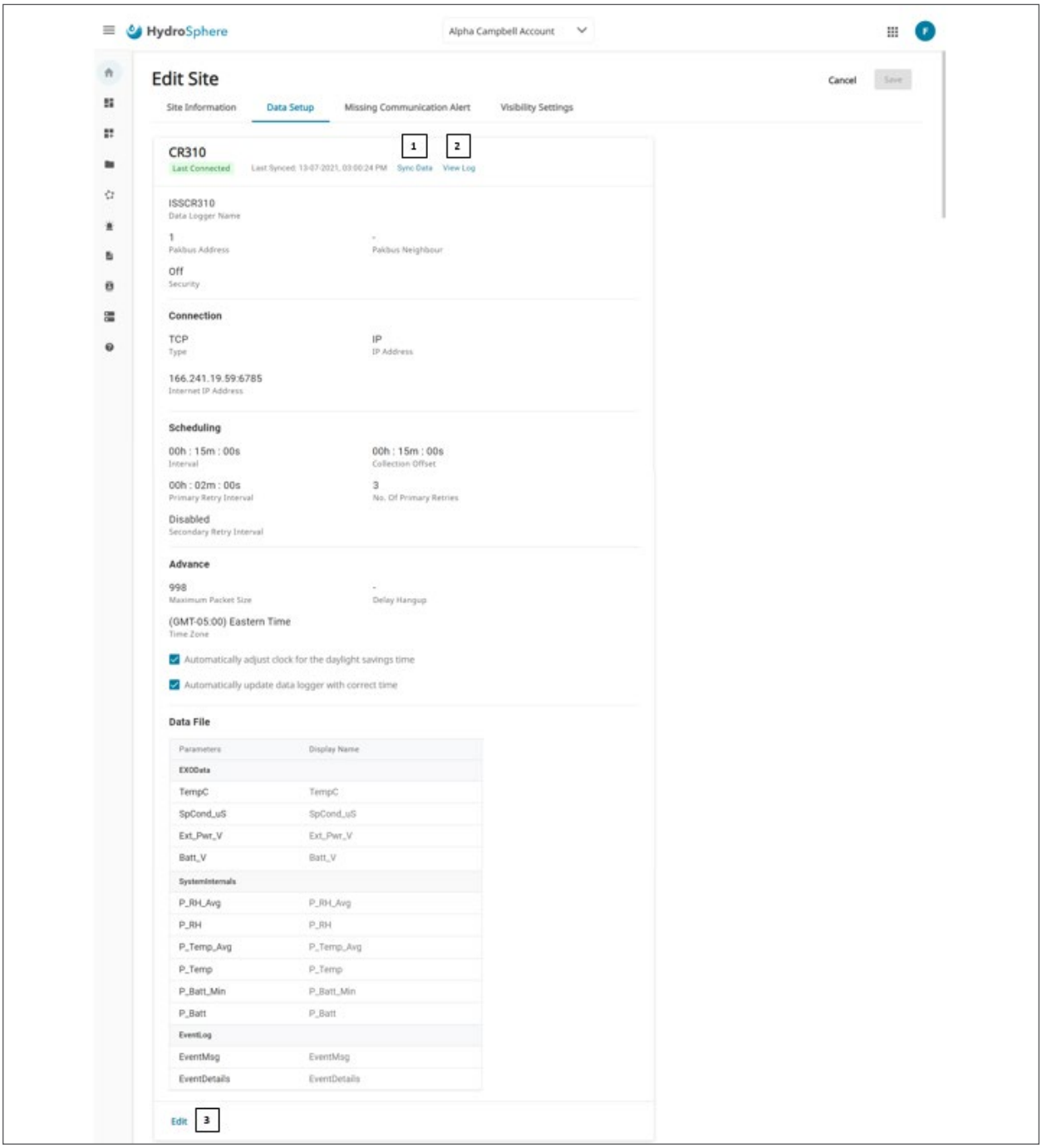
#	Name	Description
1	Campbell Info	Enter pertinent data logger information in these fields.
2	Cancel	Clicking the **Cancel** button will cancel the operation and return you to the Data Setup page.
3	Add	Clicking **Add** will save the entered information without establishing a connection with the data logger. Clicking **Edit** on the Status page will allow you to establish connection.
4	Establish Connection	Clicking **Establish Connection** will initiate the connection with the Campbell data logger.

Once the connection has been established, the Data File page below will display.



#	Name	Description
1	Data File Checkbox	You can select which Campbell data files will be loaded into HydroSphere and available for download and display in Chart and Table View by clicking the checkbox next to the appropriate data file name.
2	Display Name	The parameter display name can be changed by entering a new name in this field.
3	Reload	Clicking the **Cancel** button will cancel the operation and return you to the Data Setup page.

The Status page is displayed below.



#	Name	Description
1	Sync Data	Clicking **Sync Data** will resync the communications between HydroSphere and the data logger.
2	View Log	The View Log window will show the connection status each time HydroSphere tried to connect to the data logger.
3	Edit	Clicking **Edit** will allow you to edit the Data Logger and Data File pages.

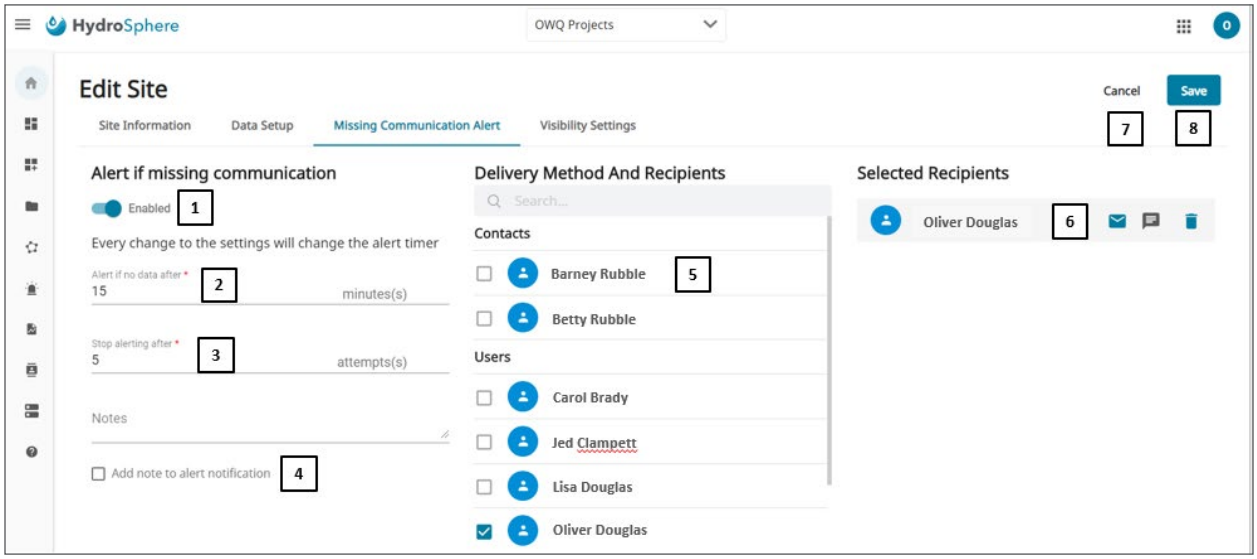
To create a new site – Step 2C: Connecting a Campbell (Polled Mode) data logger

1. Click the **Campbell (Polled Mode)** button on the initial Data Setup page.
2. Enter the appropriate data in the Campbell Info fields.
3. Click the **Establish Connection** Button.
4. Select the data files to be available for download and display.
5. Click **Save**.

Missing Communications Alert

A missing communications alert will inform select users when communications to a specific site has been interrupted for a user specified amount of time.

Note: Sites created in Easy Manager for pairing to an RTU/HydroRIG do not currently support Missing Communications Alerts.



#	Name	Description
1	Enable Slider	This slider will allow you to Enable and Disable the Missing Communications Alert. When clicked, the slider will change between **Enabled** and **Disabled**.
2	Alert Time	You can specify the length of time in minutes after communication interruption the Missing Communication Alert will be sent. A red asterisk (*) indicates a required field. *Note: To account for processing time, set the Alert time for no less than 5 minutes more than the transmit rate of the data logger (e.g. if the transmit rate is 15 minutes, the Alert Time should be no less than 20 minutes).*
3	Alert Attempts	You can specify the number of times an alert will be sent before stopping alert transmission. Communication restoration will stop any further alerts. A red asterisk (*) indicates a required field.
4	Add Note to Alert Notification	You can add a note to the email and text alert notification by checking this box. Any verbiage added to the Note field will then be included with all notifications for this alert.

#	Name	Description
5	Delivery Method and Recipients	All users, user groups, contacts, and contact groups created for this account will be displayed. Selected users, user groups, contacts, and contact groups will receive enabled missing communication alerts. Refer to Create New User, Create New User Group, Create New Contact, and Create New Contact Group for more information.
6	Selected Recipients	Users, user groups, contacts and contact groups that have been checked in the Delivery Method and Recipient section will display here. If the email icon (✉) is clicked, the recipient will receive alerts via email to their profile email address. If the text message icon (💬) is clicked, the recipient will receive alerts via text message to their profile phone number. The recipient can be removed from the list by clicking the trash can (🗑). This will not delete the user account or the missing communication alert.
7	Cancel	Clicking the **Cancel** button will exit from the Missing Communication Alert page.
8	Save	When the **Save** button turns blue, all new missing communication alert requirements have been met. Clicking the blue **Save** button will save the missing communication alert to HydroSphere.

To create a missing communication alert

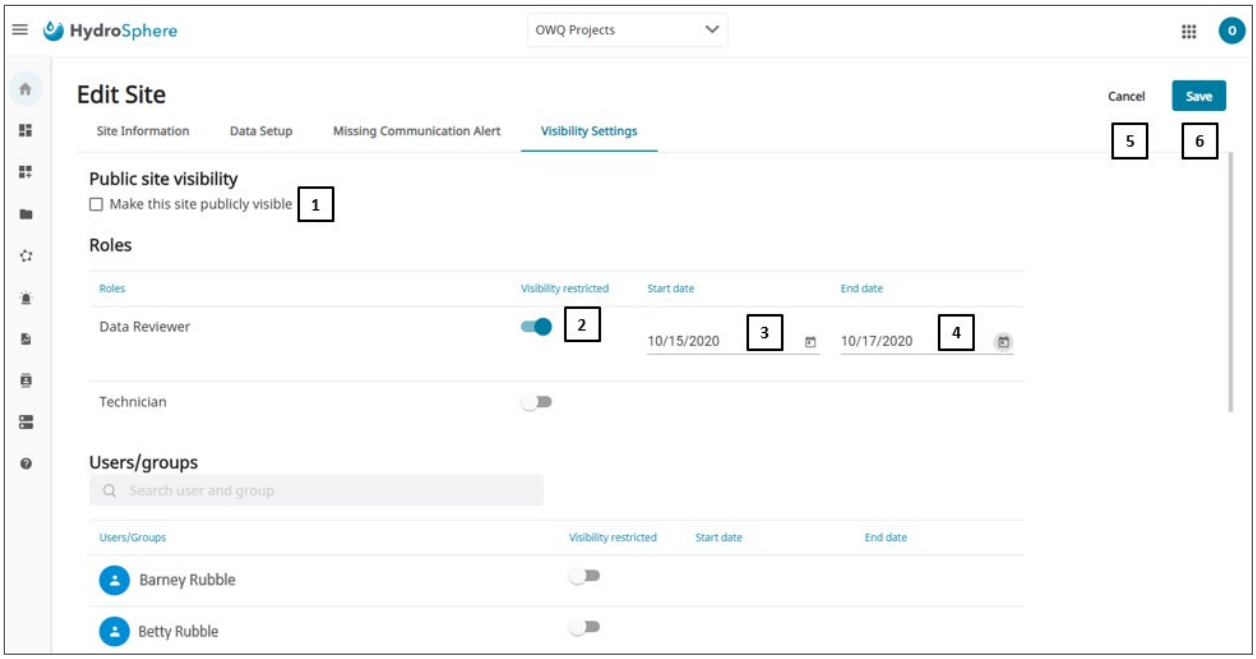
1. Click the slider to select **Disabled** or **Enabled**.
2. Enter the Alert Time and Alert Attempts.
3. Select the recipients.
4. Click **Save**.

Visibility Settings

Note: The Visibility Settings section is only visible to Account Administrators.

Note: Public site visibility for sites created in Easy Manager can be toggled in the Dashboard Explorer settings. See Easy Manager for more information.

This function allows the Account Administrator to select which user, user role, or user group can and cannot view a specific site for a specified period of time.



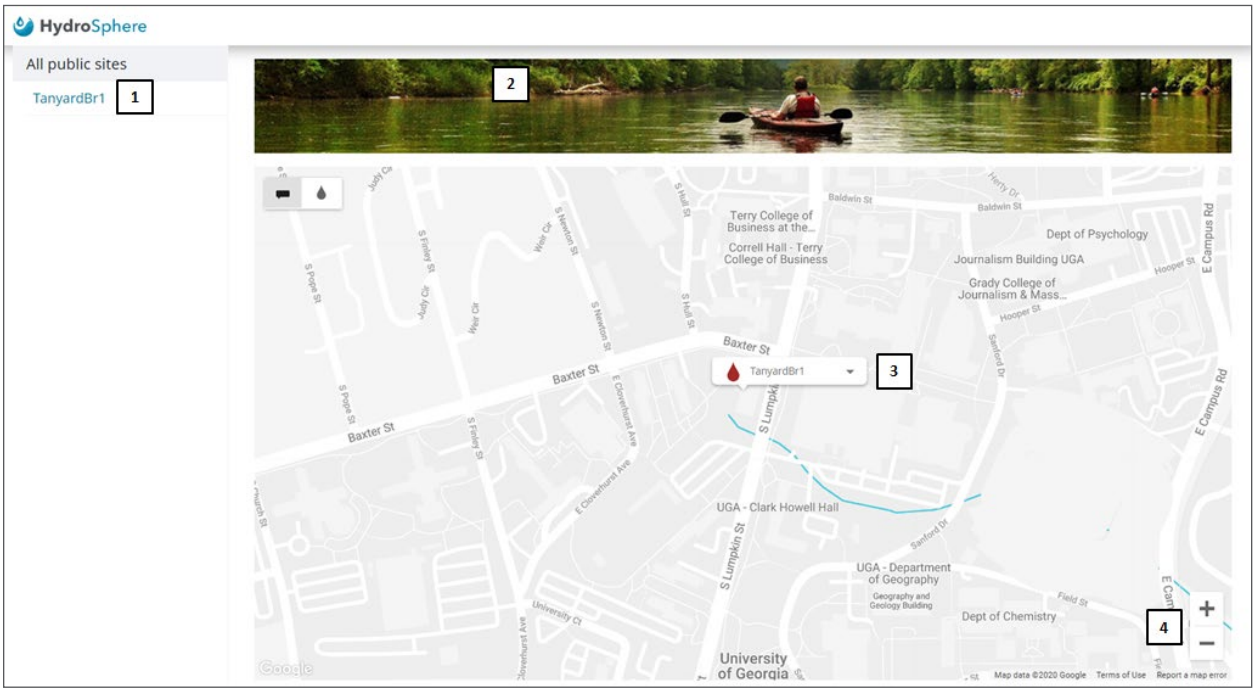
#	Name	Description
1	Public Site Visibility	Checking this box will make this site visible on the Public URL. Refer to Public Web Site for more information. *Note: If this box is checked, all information below this line on the web page will not be displayed.*
2	Visibility Restricted Slider	When clicked, the slider will change between ● **Disabled** visibility is not restricted and ● **Enabled** visibility restricted for this selected user roles, users, or user groups for the dates specified below.
3	Start Date	The date the restricted visibility will start. Clicking the calendar icon ( ) will display a pop-up calendar for selecting dates.
4	End Date	The date the restricted visibility will end. Clicking the calendar icon ( ) will display a pop-up calendar for selecting dates.
5	Cancel	Clicking the **Cancel** button will exit from the Visibility Restriction page.
6	Save	When the **Save** button turns blue, all visibility setting requirements have been met. Clicking the blue **Save** button will save the visibility settings to HydroSphere.

Public Web Site

Each account will be assigned a public URL that can be shared with external customers giving those customers read only access to site data. Four pages are available to Public Web Site users: Dashboard, Chart View, Table View, and Site Information. These pages are described below.

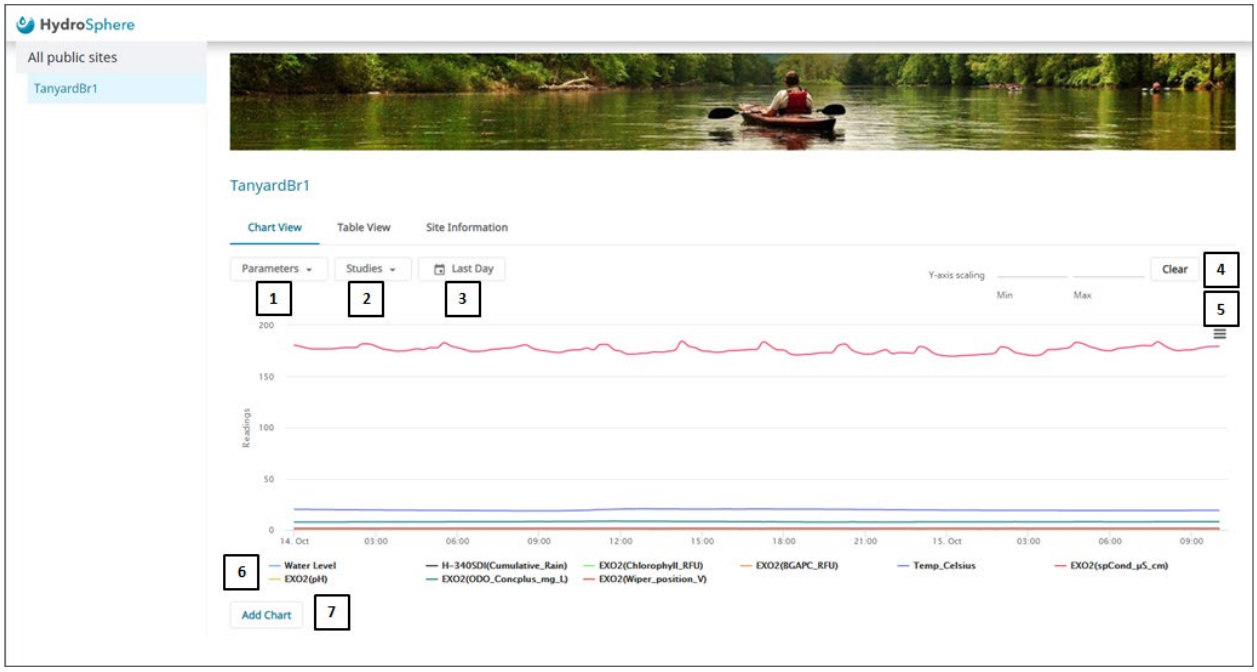
Note: Please see Public Visibility (RTU Sites) for information on setting up a public view of HydroRIG/RTU site data.

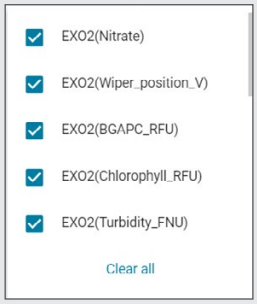
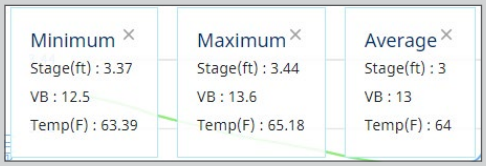
Dashboard



#	Name	Description
1	Sites	Listing of all sites that have been tagged for public display. Refer to Visibility Settings for more information.
2	Customizable Banner	Refer to Public Site Settings for information on how to customize the banner.
3	Site Icon	Clicking the Site icon on the map will display the site's most recently received data. Clicking **View Site** will display the Chart View discussed in the next section.
4	Zoom In / Zoom Out	Lets you zoom the map display in and out.

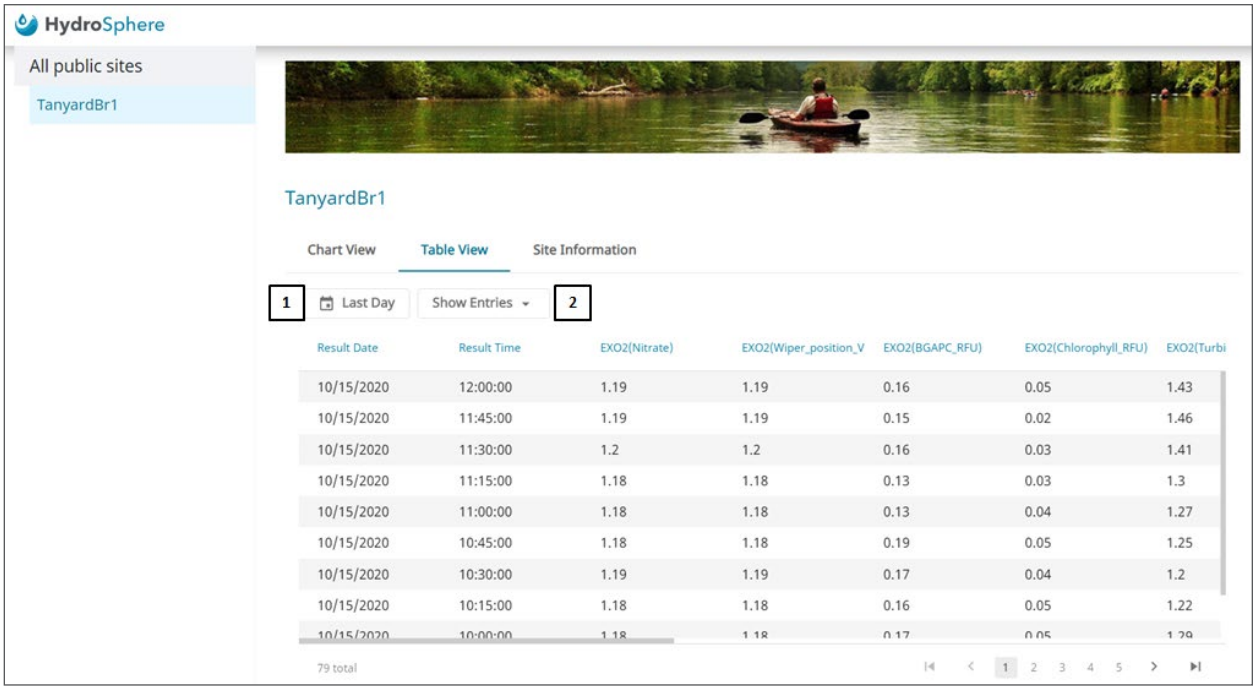
Chart View



#	Name	Description
1	Parameters	Clicking on the caret (⌄) to the right of the Parameters label will provide you with a list of all parameters available for display. All parameters listed can be selected for display on a single chart. For example: 
2	Studies	Clicking the caret (⌄) to the right of the Studies label will provide you with the following display options: Minimum, Maximum, and Average. The displays will be present in the format below. 

#	Name	Description
3	Duration	Clicking this button will provide you with a list of available time durations for displaying site data: • Last Day • Last Week • Last Month • Last Year • Custom Range
4	Y-axis scaling	If you wish to adjust the chart Y-axis scaling, a Minimum and Maximum Y-axis value can be entered. Clicking the **Clear** button will return the Y-axis scaling to its original values.
5	Print/Download	Clicking the ☰ icon will display the following options for printing and downloading charts: • View in Full Screen • Print Chart • Download PNG image • Download JPEG image • Download PDF document • Download SVG vector image
6	Add Chart	Clicking **Add Chart** will add a chart below any charts already displayed. This will allow the user to display additional parameters and durations. Up to 3 charts can be displayed.

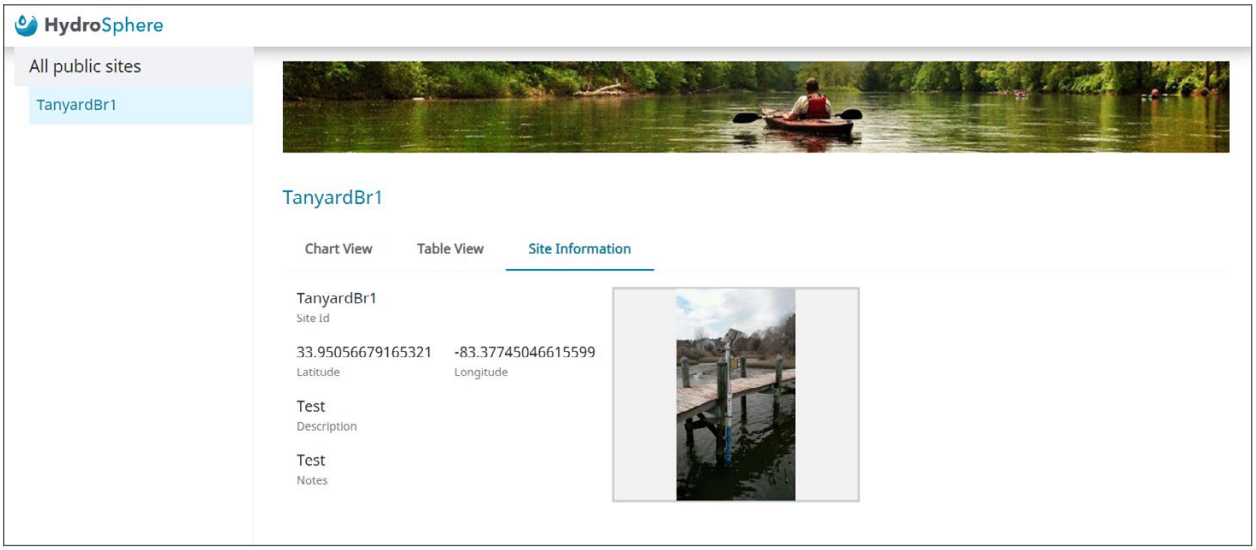
Table View



#	Name	Description
1	Duration	Clicking this button will provide you with a list of available time durations for displaying site data: •Last Day •Last Week •Last Month •Last Year • Custom Range
2	Show Entries	Clicking the caret (⌄) to the right of Show Entries will provide you with the below list of available entries that will be displayed per page: 10, 25, 50, 100

Site Information

The Site Information page provides read only site information.



To set up a Public Web Site

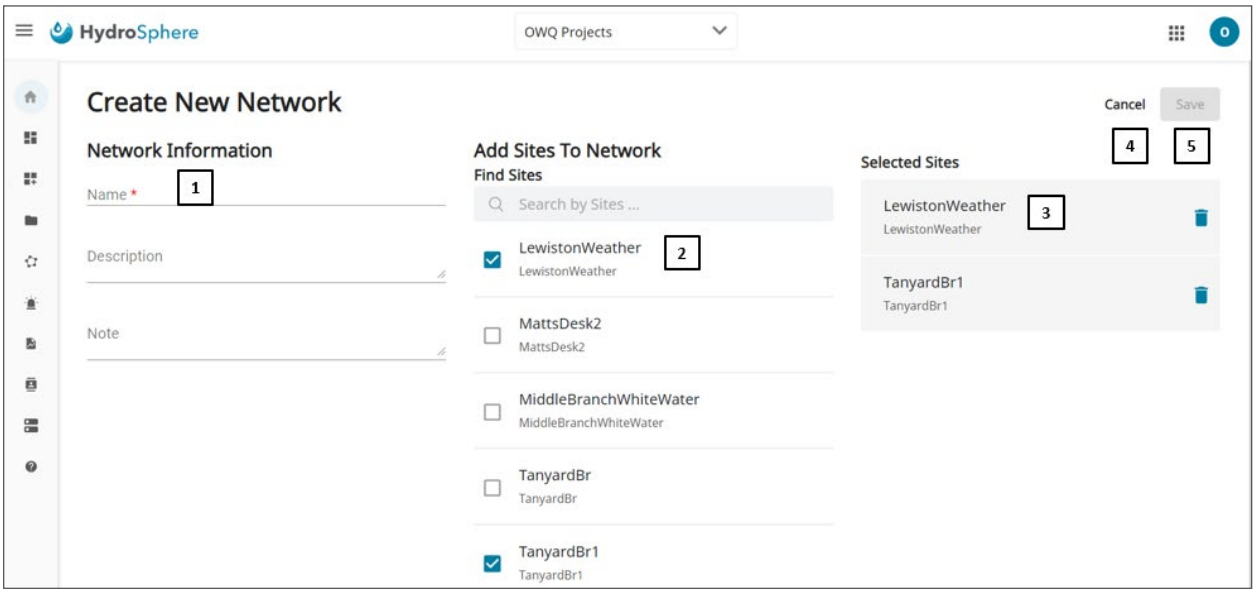
1. For each site to be displayed on the Public Web Site, check the Public Site Visibility box on the Visibility Settings page. See Visibility Settings for more information.

   Note: For sites created in Easy Manager, public visibility can be toggled in Dashboard Explorer. See Easy Manager for more information.

2. To customize the banner, see Public Site Settings.
3. Share the Public URL with those interested in the site data.

Create New Network

Clicking the ⊕ Create New and **NETWORK** buttons on the dashboard will display the same page.



#	Name	Description
1	Network Information	A red asterisk (*) indicates a required field.
2	Add Sites to Network	All sites created for this account will be displayed. Sites can be added to the newly created network by clicking on the check box to the left of the site name. Refer to Create New Site for more information.
3	Selected Sites	Sites that have been checked in the Add Sites to Network section will display here. The site can be deleted from the network by clicking the trash can (🗑). This will not delete the site.
4	Cancel	Clicking the **Cancel** button will exit from the Create New Networks page.
5	Save	When the **Save** button turns blue all new network requirements have been met. Clicking the blue **Save** button will save the new network to HydroSphere.

To create a new network

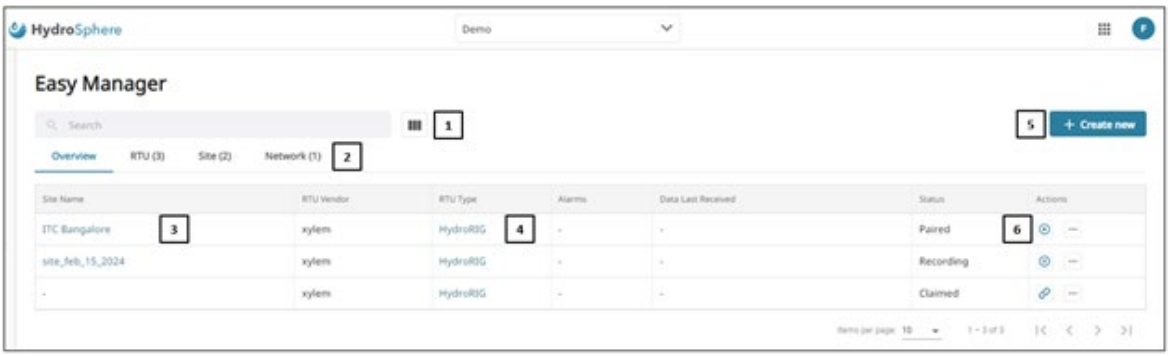
1. Enter a network name.
2. Optional – add a description and notes.
3. Click the box to the left of each site to be added to the network.
4. Click **Save**.

2.6 – HydroRIG & Remote Terminal Units (RTU)

Advanced RTUs include Xylem's HydroRIG (Remote Intelligent Gateway) and EDGE Gateway (xGW). Apply the following instructions to Connect and Claim RTUs and send data from your sensors to HydroSphere.

Easy Manager

Manage your RTUs (Remote Terminal Unit) using Easy Manager, which can be found in the side bar.



#	Name	Description
1	Column Selector	Select which columns to display. Options include: • Site Name • RTU Vendor • RTU Type • Alarms • Data Last Received • Status
2	Easy Manager Details	Each tab displays specific RTU, Site, or Network details.
3	Site Page Link	Clicking the site name will take you to the Site page. See Homepage Site Information for more information.
4	RTU Link	Clicking the RTU name will display the Instrument Library page for the selected RTU. See Instrument Library for more information.
5	Create New	Allow you to create a new Network (see Create New Network), add a new Site (see Add Site), or claim a new RTU (see Claim RTU).
6	Actions	The following table lists the actions that can be taken for each listed site

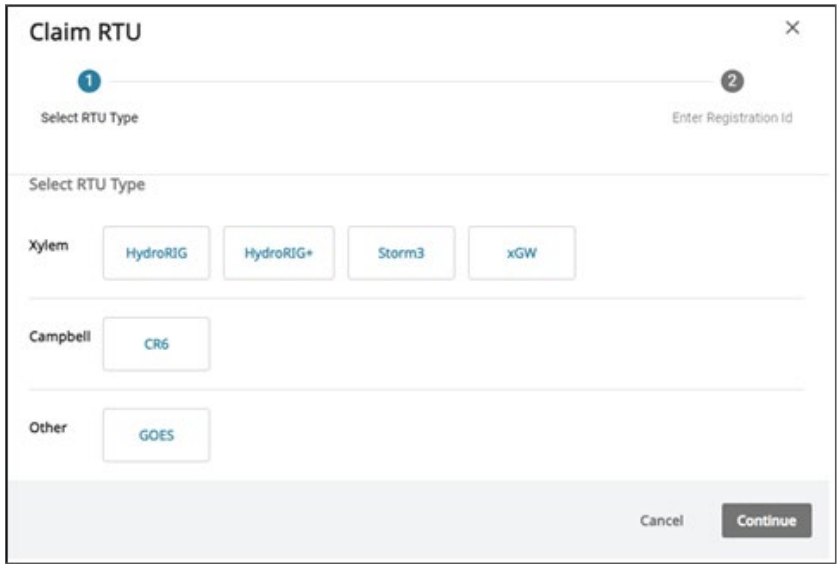
Status	Meaning	Actions
Claimed	An RTU has been claimed and is now available to pair to a site.	• Clicking the icon will display a series of windows to pair an RTU to the site. • Clicking the icon will display an option to Release Ownership of the RTU if the RTU is not needed or is to be paired to another site.
Paired	An RTU has been paired to the Site.	• Clicking the icon will begin recording data. • Clicking the icon will display options to Unpair or Edit the site.
Unpaired	A previously paired RTU has unpaired from the Site.	• Clicking the icon will display a series of windows to re-pair an RTU to the site. • Clicking the icon will display the option to edit the site.
Recording	An RTU has been paired to the site and data is being recorded.	• Clicking the icon will pause data recording. • Clicking the icon will display options to Unpair the RTU or to configure the device. See Config File Manager for more information.
Paused	Data recording has been paused.	• Clicking the icon will resume data recording. • Clicking the icon will display options to Unpair the RTU or to configure the device. See Config File Manager for more information.

Claim RTU

To claim a new HydroRIG/RTU:

1. Click +Create new.
2. Click Claim RTU.
3. Select your RTU type.
4. Click Continue.

Note: Selecting Storm3, Campbell, or GOES will send the user to a different page than described below. See Create New Site for more information.

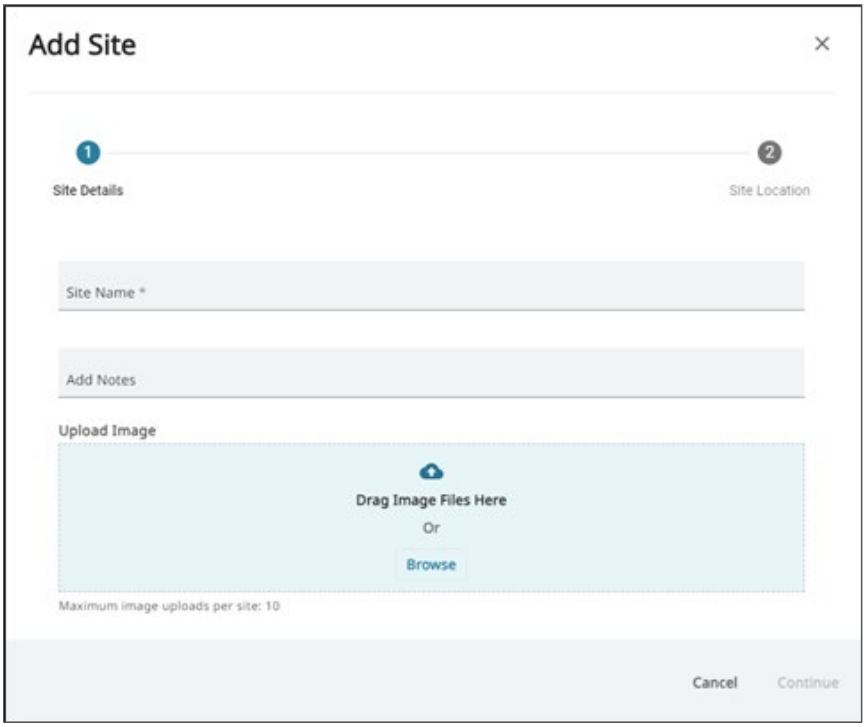


5. Follow the instructions to complete the Claiming process. For example, the screen below asks for the Registration ID provided with a HydroRIG.
6. Click Register.

Add Site

To add a new site:

1. Click +Create new.
2. Click Site.



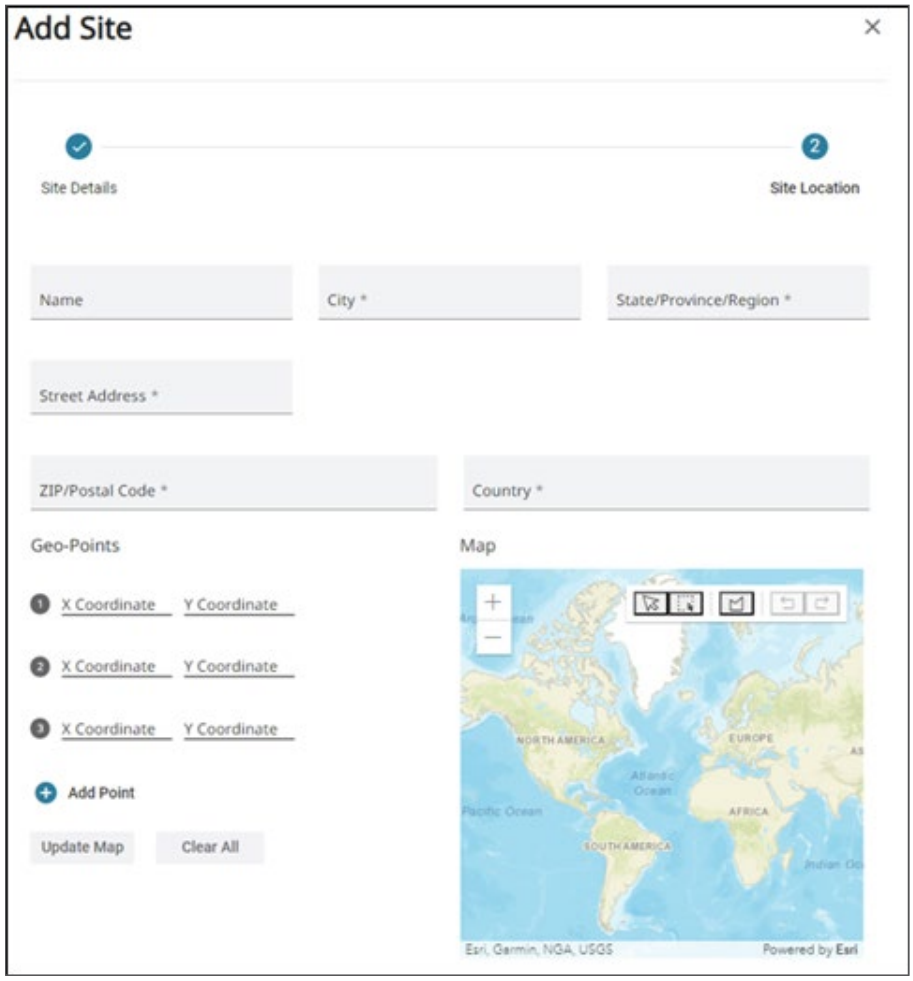
3. Enter a site name.

   Optional: Add notes.

   Optional: Upload an image.

4. Click Continue.
5. Enter the site address and Latitude / Longitude.

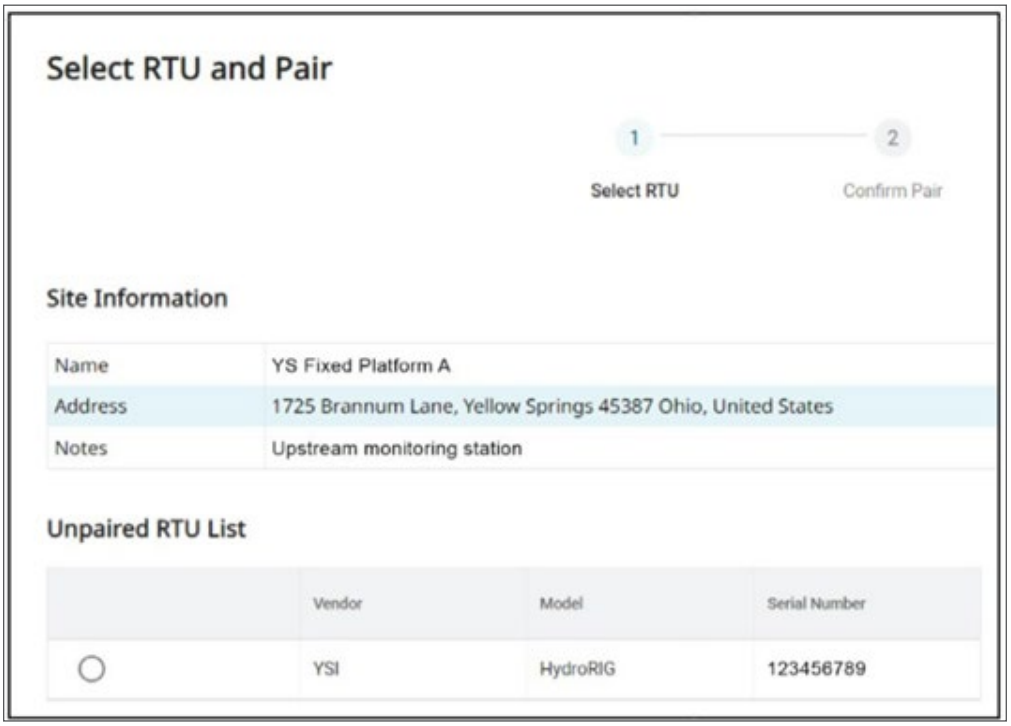
Note: Clicking the  *icon on the map will allow the user to click the site location on the map. This will autofill the address and lat/long fields.*



Pair RTU to a Site

To pair a registered RTU to a site:

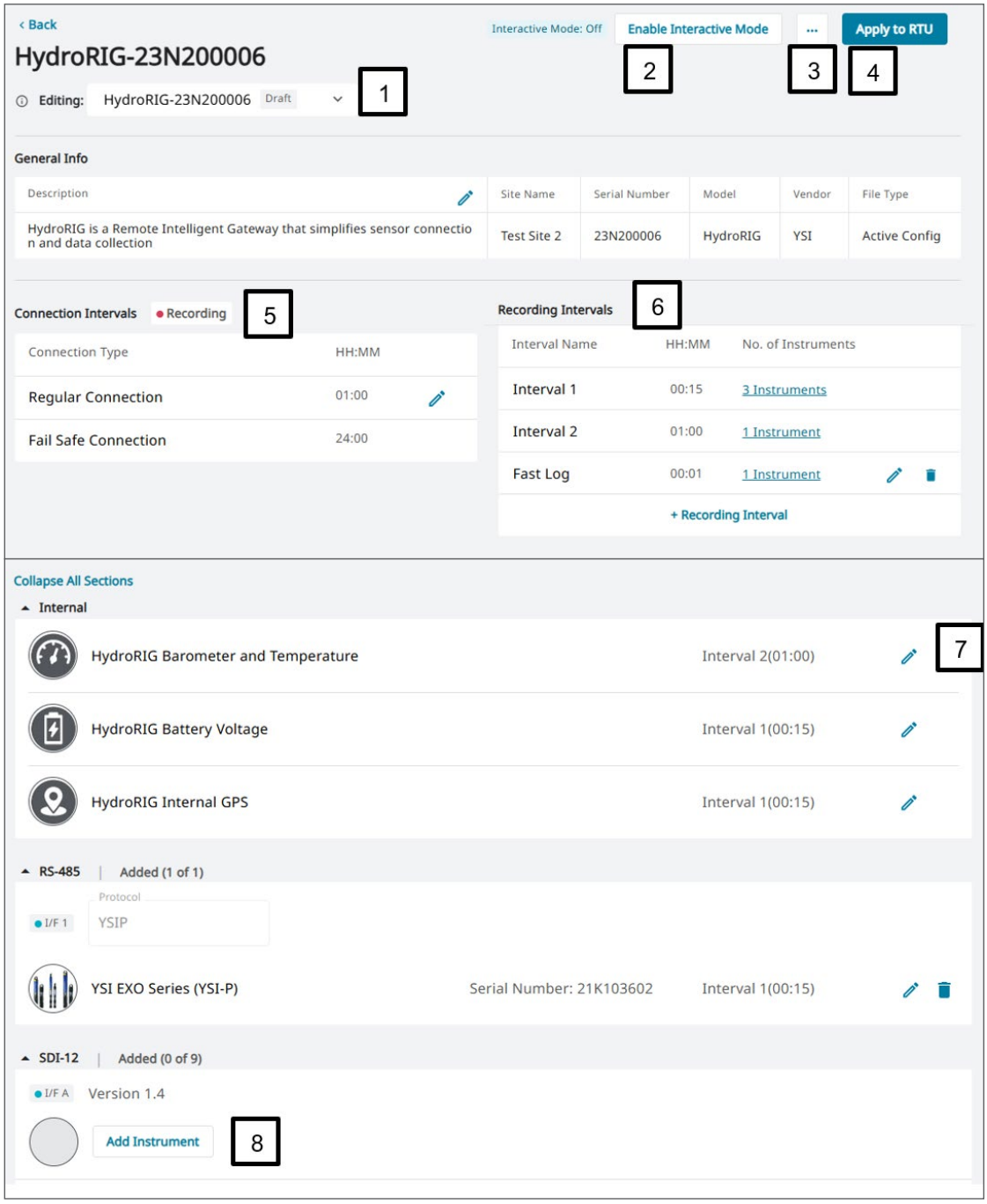
1. Click the link icon in the Actions column of either an existing site or the newly registered RTU to pair a site with the RTU. See Add Site to create a new site.
2. Select your RTU or site from the Unpaired list to pair.



Note: For xGW, HydroSphere will generate an RTU Verification PIN used in the local xGW user interface. Select Simple or Advanced.

Device Configuration

By clicking on the File Name of your device in Easy Manager, you can view the configuration file that is currently installed, modify the current file or a previously installed file, and change the file that is applied to the RTU. The config file can also be accessed and edited through the Config File Manager tab.

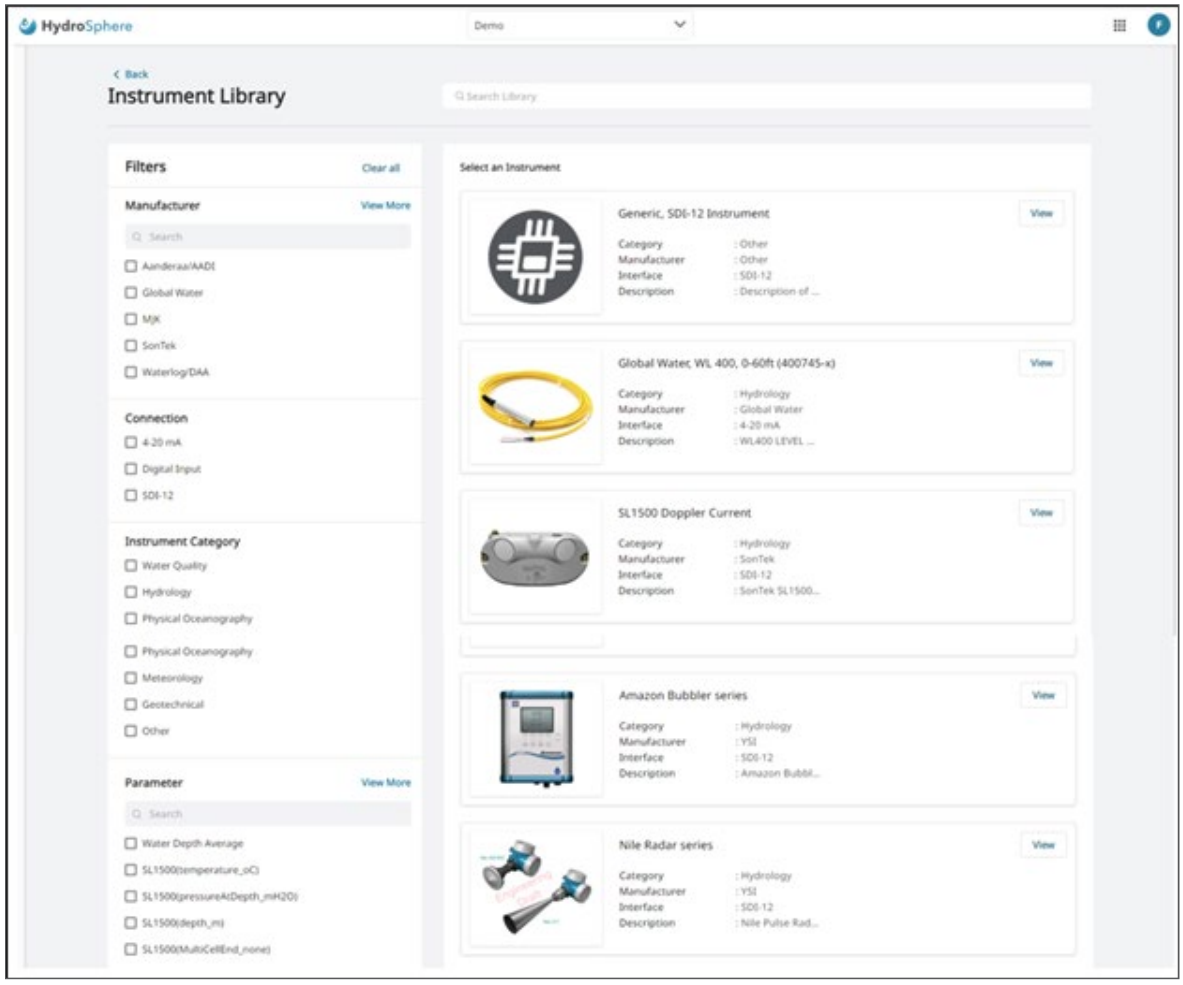


#	Name	Description
1	Configuration Version	Shows the configuration versions available for an indicated RTU. Version descriptors include: • Draft – Configuration edits have been made but have not been sent to the RTU. • Pending – A Draft version has been sent to the RTU. HydroSphere is waiting for confirmation from the RTU that the update has successfully taken place. The status will be Pending until the RTU makes a Regular Connection with HydroSphere or Interactive Mode is enabled. • Installed – The version currently installed on the RTU. • Previous – When an Installed version is overwritten by a Pending version, the previously Installed version is saved as Previous.
2	Enable Interactive Mode	Allows for instant config file upload to the RTU rather than waiting for the next regular connection interval. See Interactive Mode.
3		Rename – Allows you to type a new name for the current configuration file. Browse Instrument Library – Will display in view-only all preconfigured instrument files available for use with an RTU.
4	Apply to RTU	Clicking this button will send the device configuration file to the RTU and overwrite the existing configuration file. If settings have been changed and saved, but not applied to the RTU, the file status will be 'Draft.'
5	Connection Intervals	Two default connections: Regular (1-hr) and Fail-Safe (24-hr) The Regular Connection is the interval at which the RTU connects to HydroSphere to send data or receive config file updates. The default connection interval is hourly. *Note: Connection Intervals are determined based on the time of the last connection, meaning connection intervals will be different across multiple RTUs and sites, allowing for staggered data uploads to avoid overloading the server with many uploads at one time.* Click the edit button on the Regular Connection field to change the interval at which the RTU connects to HydroSphere. This can be helpful to ensure data populates as intended in your HydroSphere site before leaving the field site after sensor deployment or regular maintenance. The minimum connection interval is 5 minutes. The Fail-Safe connection is not editable and occurs every 24 hours to ensure system connectivity.
6	Recording Intervals	The interval at which HydroRIG records data from the internal and connected sensors. The default intervals are 15 minutes and 1 hour. Custom intervals can be added by clicking + Recording Interval. All available recording intervals will be displayed in the Recording Interval dropdown in each instrument configuration page. *Note: Recording Intervals are determined based on the hour (e.g. 12:00, 12:15, etc.).*
7		Edit the device or external instrument configuration. Save changes made in each page.
8	Add Instrument	Configure each external sensor connected to the RTU by selecting the appropriate input signal and adjusting the sensor settings.

Instrument Library

Users can view all pre-set instruments and generic instruments available for use with their RTU.

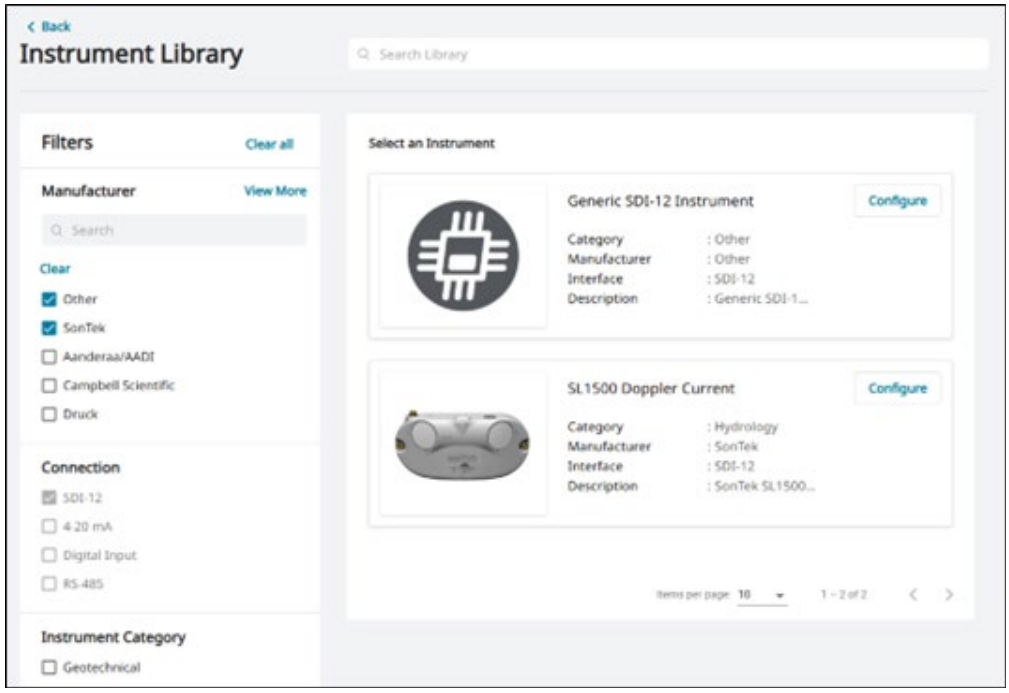
Note: Accessing the Instrument Library through the Browse Instrument Library button is view-only and sensors cannot be added to the configuration file.



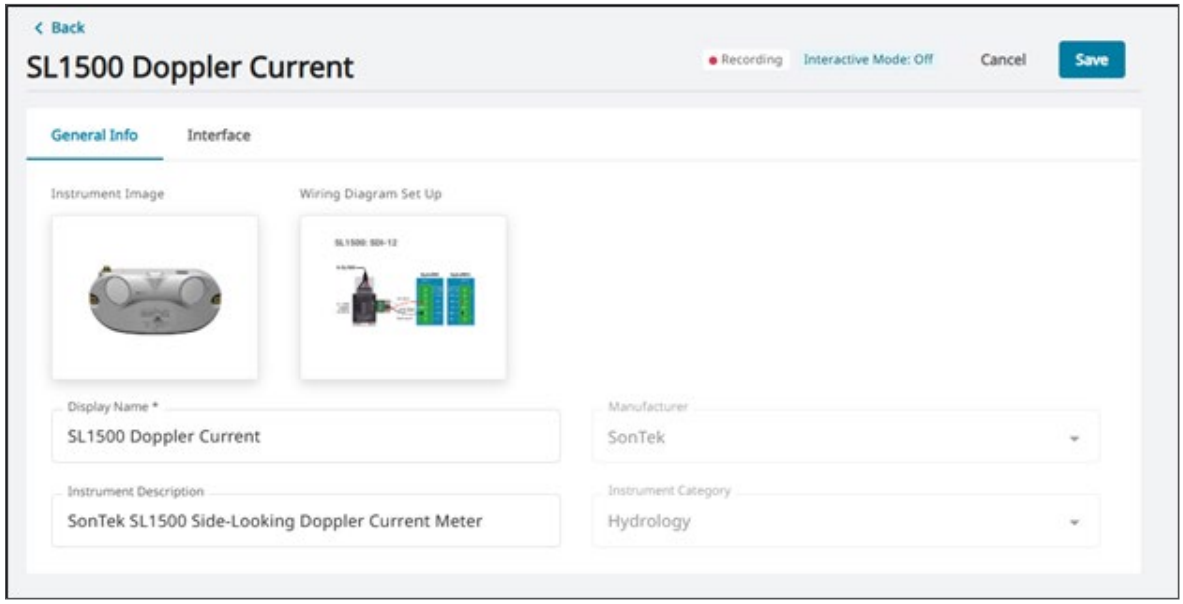
To add an instrument to the RTU configuration file:

1. Select Add Instrument under the appropriate sensor output signal (RS-485, SDI-12, etc) in the Device Configuration page (See Section 2.6.1.4).

2. The Instrument Library can be filtered using the check boxes on the left side of the page.
3. Select an instrument to start with a pre-configured settings file, or select a Generic device to configure an instrument that is not included in the Instrument Library. Select Configure next to an instrument to add a sensor to the configuration file.

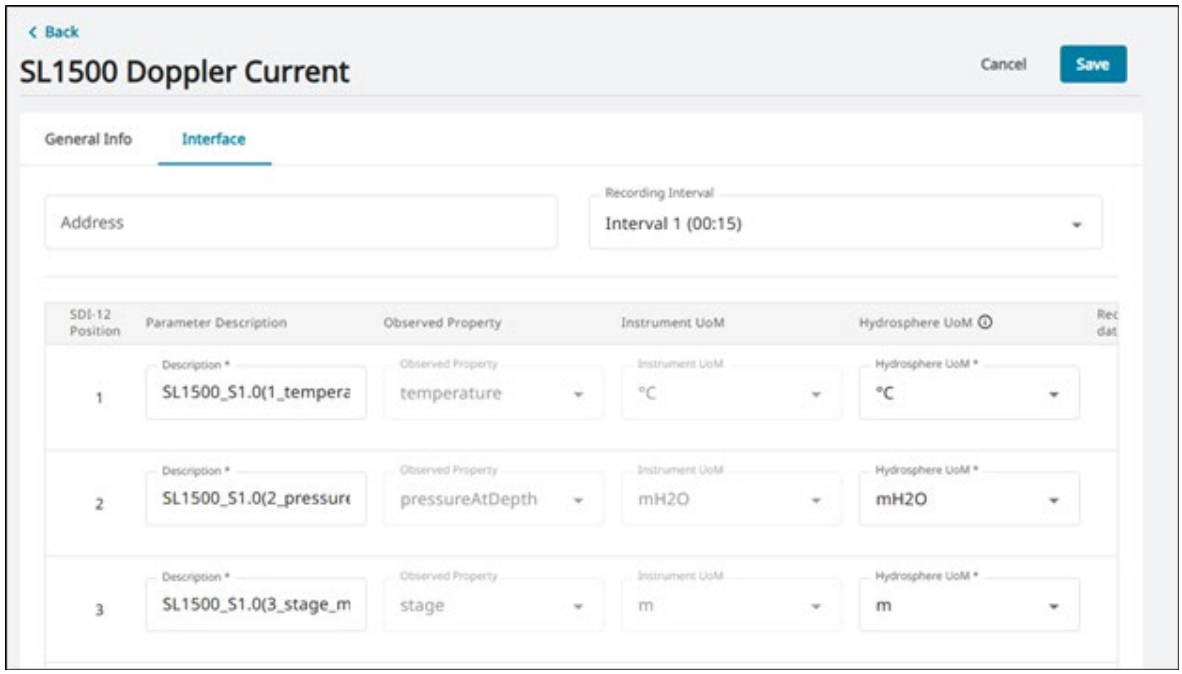


4. HydroSphere will display more information in the General Info tab, including the HydroRIG and HydroRIG+ wiring diagrams, instrument image and name, manufacturer, description, and category. The display name and description can be edited as desired.



5. The Interface tab will vary depending on the selected instrument and will display configurable settings specific to the instrument or signal type.

   For example, analog (4-20) sensors will have a field for samples per interval, and digital pulse tipping bucket rain gauges will have a field for the amount of water per tip.



Note: HydroRIG does not support multi-parameter analog sensors; only one sensor parameter can be received from the analog connection.

6. Select the Recording Interval, or the interval at which HydroRIG will retrieve data from the sensor, in the Interface menu using the dropdown. A new Recording Interval can be defined in the main configuration file page (see Device Configuration).
7. Review the pre-populated parameters in the table, or manually enter the sensor parameters. Change Parameter Descriptions as needed, select the Observed Property and Units of Measure (UoM), and check or uncheck parameters to be recorded to the site using the Record to Data FIle column.

   Note: See EXO Sonde Configuration and Parameter Descriptions for more information on the auto-discovery feature for populating sensor parameters for EXO Sondes and SDI-12 devices.
8. Click Save after making all the necessary changes to the instrument configuration.
9. Click Apply to RTU to push the updated settings to the RTU/HydroRIG. The configuration file status will be Pending until the next Regular Connection, or will immediately become Active if the HydroRIG is in Interactive Mode.

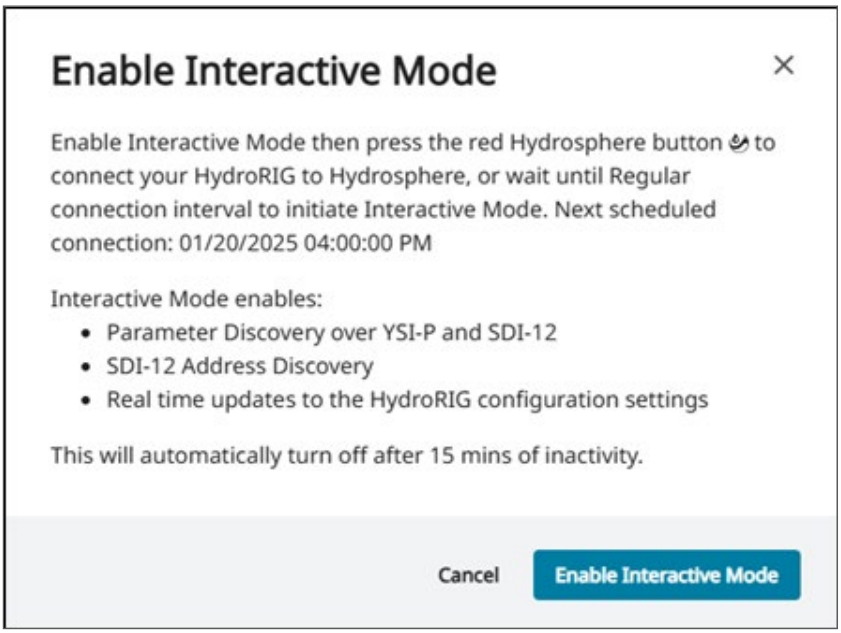
Note: If you need to connect additional sensors to an Active configuration file, after wiring the new sensors to the system, power cycle HydroRIG to discover and add them to your configuration file, then click Save and Apply to RTU for the updated file to be pushed to HydroRIG at the next Regular Connection interval.

Interactive Mode

HydroRIG connects to HydroSphere at the Regular Connection interval (every hour by default) to send data and update sensor configuration templates. If you want to immediately push an updated configuration file or automatically discover sensors or parameters (auto-discovery) via SDI-12 and YSIP (EXO Sondes), you can enable Interactive Mode.

In Interactive Mode, HydroRIG actively connects to HydroSphere. To enable:

1. In HydroSphere, navigate to Easy Manager, select the RTU tab, and click your RTU Serial Number
2. On the top right, click Enable Interactive Mode



3. Verify the information in the popup window and click the Enable Interactive Mode" button
4. Press the red Wake/Sensor Pair Button on the HydroRIG within 2 minutes
5. Interactive Mode will remain enabled until disabled or after 15 minutes of inactivity

While enabled, HydroSphere will display a lightning bolt symbol next to the File Name to indicate that Interactive Mode is enabled, which increases the power draw of the system.

EXO Sonde Configuration

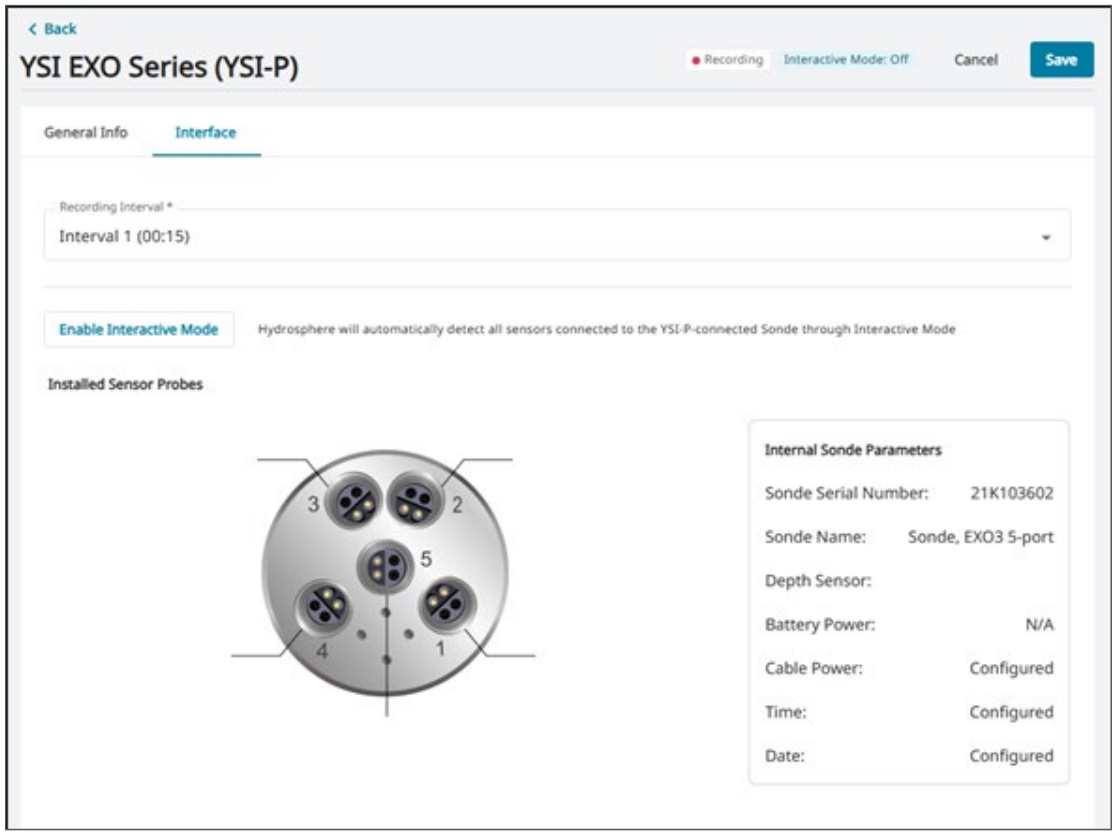
EXO Sondes can be connected to HydroRIG either via the RS-485 (using YSIP, the native, proprietary sonde output signal) or the SDI-12 port. To quickly configure the sonde settings in the configuration file, the sonde parameter output can be automatically populated in the configuration file.

Note: The sonde deployment settings must still be configured in Kor Software before connecting to HydroRIG. We recommend using the 'Sample and Hold' logging mode. See the EXO User Manual for more information.

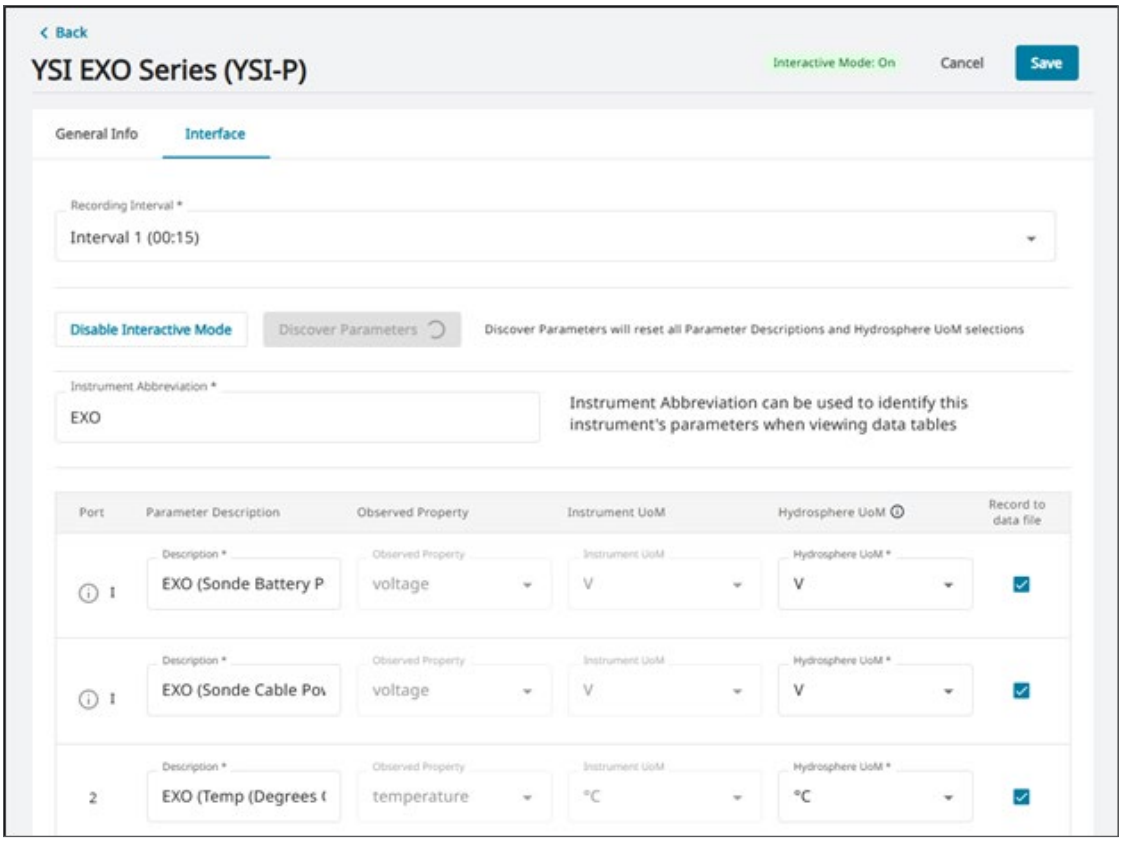
YSIP via RS-485

1. When HydroRIG is in Interactive Mode, and an EXO sonde is wired to the RS-485 port, click the **Discover Parameters** button in the config file to automatically populate the parameter list.

   Interactive Mode can also be enabled from the Interface tab by clicking the Enable Interactive Mode button.



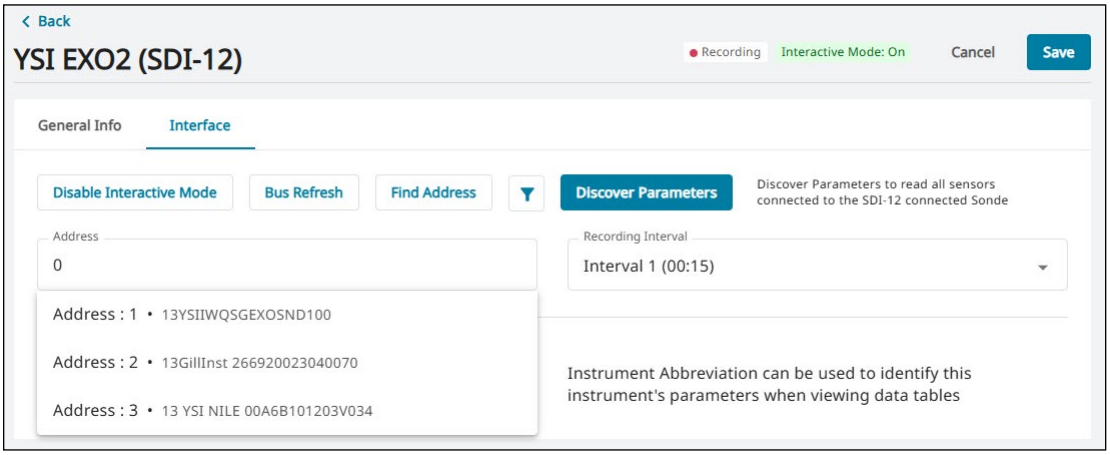
2. When connected via RS-485/YSIP, all available sensor parameters that are sent from the sonde will populate in the parameter list. Select the parameters to be displayed in HydroSphere by checking the boxes in the **Record to Data File** column.



SDI-12

1. When HydroRIG is in Interactive Mode, click **Find Address** to search for available SDI-12 devices, and choose the instrument to configure from the Address list. The Find Address feature is also available for connecting and configuring other SDI-12 devices.

   Note: When using Interactive Mode to auto-discover an EXO Sonde address via SDI-12, any connected EXO Sonde will display the same identifier string. If connecting multiple EXOs, connect and discover one at a time, or keep note of the address assigned to each.



2. Click the **Discover Parameters** button in the config file to automatically populate the sonde parameter list. The SDI-12 parameters as configured in the Deployment menu of Kor Software will populate.
3. The **Instrument Abbreviation** field can be used to identify each instrument's parameters when viewing data dashboards. The default Instrument Abbreviation is populated during parameter discovery. The Instrument Abbreviation can be manually altered, and changes will reflect in the Parameter Descriptions.

   For example, unique Instrument Abbreviations can be used to differentiate between parameters reported by multiple EXO Sondes connected via SDI-12 or up to 3 sondes connected via RS-485/YSIP (native, proprietary EXO signal) on HydroRIG+.

   Note: Clicking Discover Parameters after manually changing the Parameter Description will reset it to the default description.
4. If changes are made to sonde's SDI-12 parameter output during configuration, click the Bus Refresh button to refresh the SDI-12 connection, then click Discover Parameters again to populate the new parameter list. This refresh step also applies when making changes during configuration of other SDI-12 devices.

Parameter Descriptions

Instruments that communicate using "bus" signals, such as SDI-12, can communicate additional signal information to HydroRIG, which is displayed in the Parameter Description field.

Unique identifier strings that precede the parameter name are displayed after using the auto-discovery feature by clicking Discover Parameters while in Interactive Mode. These unique strings are helpful to identify multiple instruments connected via SDI-12 or RS-485 (if using a HydroRIG+, which has three RS-485 ports).

The nomenclature for the identifier strings are as follows:

YSIP via RS-485

The EXO Sonde YSIP signal can communicate additional information, including the port number of a sensor installed in the sonde.

<Instrument Abbreviation>_<Interface Abbreviation><Interface Number>(p<Port Number>_<Parameter Name>_<Unit of Measure>)

Example:

- <Instrument Abbrev> = EXO
- <Interface Abbrev> = 4 (for RS-485)
- <Interface Number> = 1
- <Port Number> = 1

= EXO_41(p1Dissolved Oxygen_mg/L)

Note: "pI" indicates internal instrument parameters.

Note: The default Instrument Abbreviation for EXO Sondes will populate during auto-discovery as "EXO" regardless of what sonde model is connected via RS-485. There is only one RS-485 port on HydroRIG, and multiple EXO's connected via the three RS-485 ports on HydroRIG+ are differentiated by the interface number (1, 2, or 3).

SDI-12

The following parameter identifier string nomenclature applies to all sensors connected via SDI-12. Auto-discovery can be used to populate the instrument address and sensor parameters by clicking Discover Parameters while in Interactive Mode.

<Instrument Abbreviation>_<Interface Abbreviation><Interface Number>.<SDI-12 Address> (<SDI-12 Position>_<Parameter Name>_<Unit of Measure>)

Example:

- <Instrument Abbrev> = EXO1
- <Interface Abbrev> = S (for SDI-12)
- <Interface Number> = 1
- <SDI-12 Address> = 0

= EXO1_S1.0(Dissolved Oxygen_mg/L)

Note: The EXO model number will be populated in the Instrument Abbreviation field during parameter discovery ("EXO1," EXO2," or "EXO3").

Note: "x" is used in place of the SDI12 Address in the parameter description string before the address is entered or discovered.

Note: The Interface Number is always 1 for SDI-12 sensors because there is only one SDI-12 terminal on HydroRIG and HydroRIG+; however, up to 9 sensors can be connected at once and recognized in HydroSphere.

Note: "Not a property" means the discovered parameter is a reported property in the SDI-12 output, but it is not supported in HydroSphere and is therefore not being recorded.

Switched 12V Power

Some instruments feature three options for configuring sensor power. On HydroRIG or HydroRIG+, a sensor can be powered by the 'BAT' terminal which provides constant power, by the 's12' terminal for switched power, or by an external power source.

Some sensors, like the YSI EXO Sonde, feature low power modes to reduce power consumption and enter a sleep state between sampling intervals; however not all sensors have this ability. Switched power can be used to lower sensor power consumption by turning off power between recording intervals, such as for analog/4-20 or digital pulse sensors that can be powered before taking a measurement.

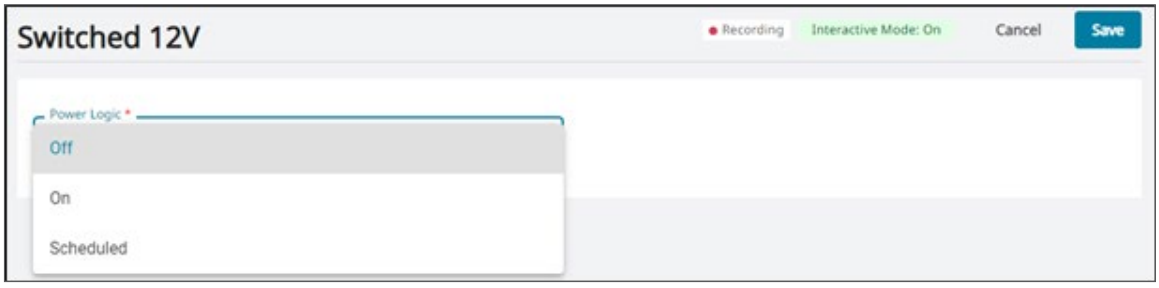
Note: Configuring Switched 12V in the configuration file will affect all of the s12 terminals. The chosen settings will dictate the power for all sensors connected to the s12 terminal of each port.

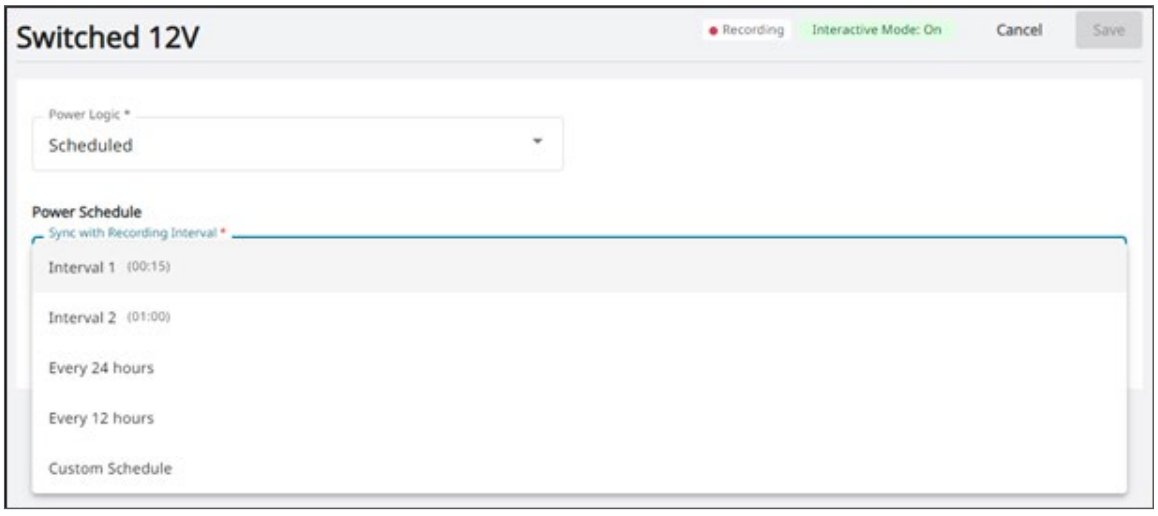
To configure switched power in Easy Manager or Config File Manager:

1. Select the configuration file to edit
2. Select Configure in the Switched 12V menu, the last section on the page

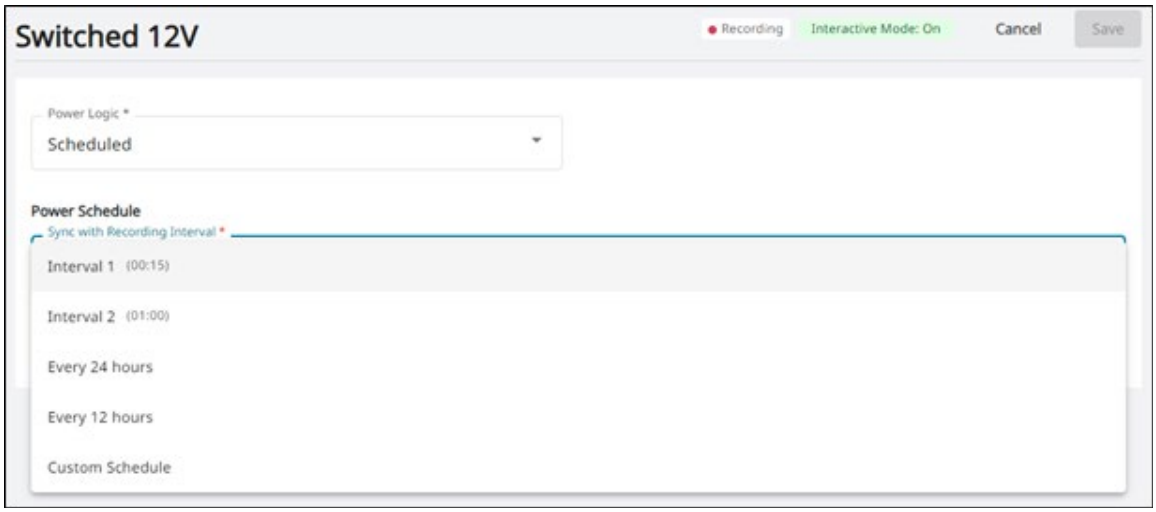
3. Select Off, On, or Scheduled from the Power Logic dropdown.

   If Off is selected, power will be turned off to all s12 terminals. If On is selected, all s12 terminals will receive continuous power. If Scheduled is selected, sensors wired to the s12 terminal will be powered at the chosen Recording Interval in the Instrument Configuration.





4. Advanced Options includes the option to set a Power On Duration to coincide with the scheduled power interval to specify the amount of time the sensor will be powered.



Apply to RTU

Click Apply to RTU to send the updated configuration file to the HydroRIG/RTU at the next Regular Connection interval. Alternatively, enable Interactive Mode to immediately send the configuration file (See Interactive Mode).

Start Recording

Once the configuration file has been saved and applied to the RTU, click the Play button next to your RTU in Easy Manager to start recording data to your HydroSphere site.

The status will change from Paired (or Paused if data was previously recorded) to Recording.

Data will be relayed to HydroSphere at the Regular Connection interval (default is hourly). Edit the Regular Connection field for more frequent data transfer from the RTU to HydroSphere (See Device Configuration).

All the data enabled in the Active configuration file will be included in the data stream sent to HydroSphere. See Homepage and Customizable Dashboards to see how your real-time data can be displayed.

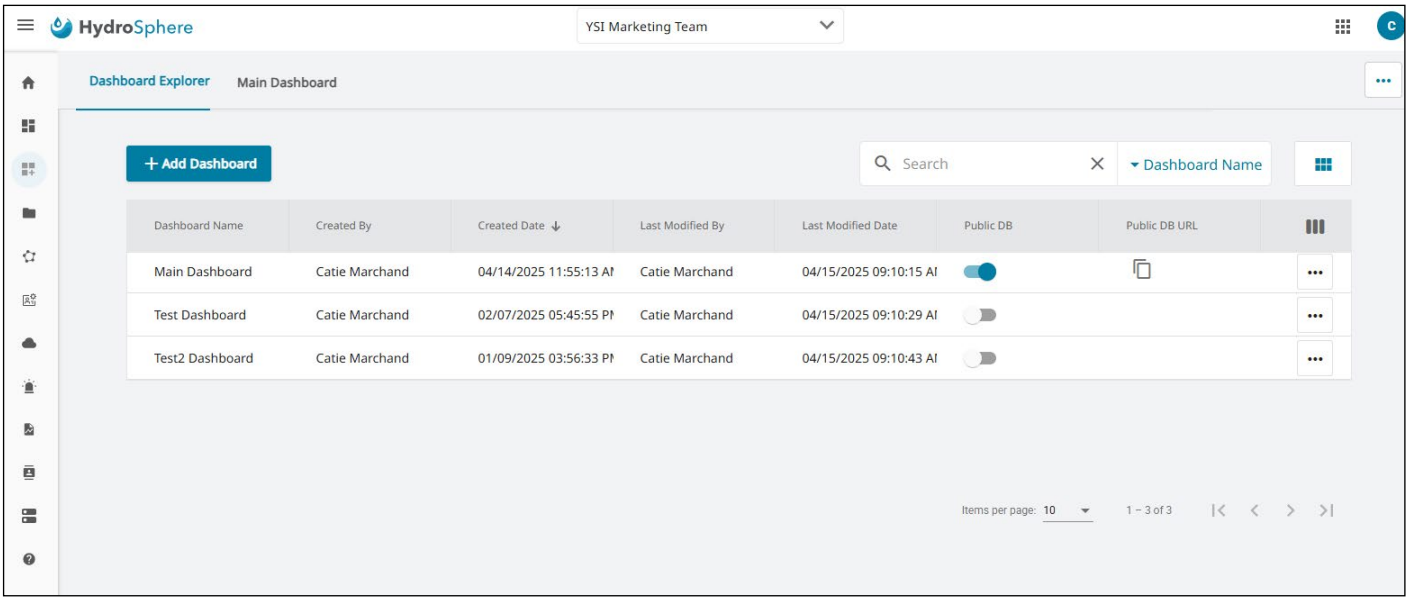
Public Visibility (RTU Sites)

HydroRIG/RTU sites created in Easy Manager are managed differently than 'legacy' sites created from the Homepage or Networks that are connected to a traditional data logger or satellite transmitter. For legacy sites, please see Visibility Settings.

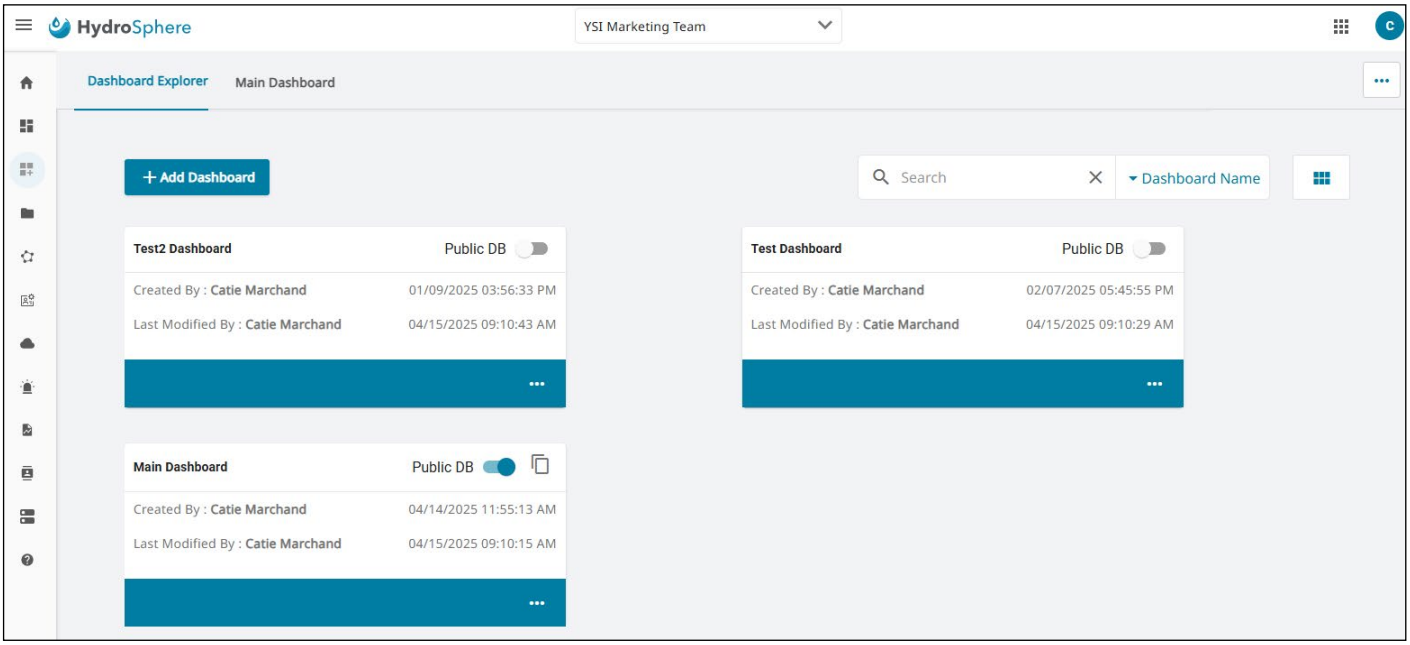
To set the public visibility of data collected by a HydroRIG site:

1. Navigate to Dashboard Explorer and create a dashboard for the site data you wish to share publicly. See Customizable Dashboards for more information.
2. In List view or Table view, select the Public DB toggle to turn on public visibility
3. Click to copy the webpage URL to share the public dashboard.

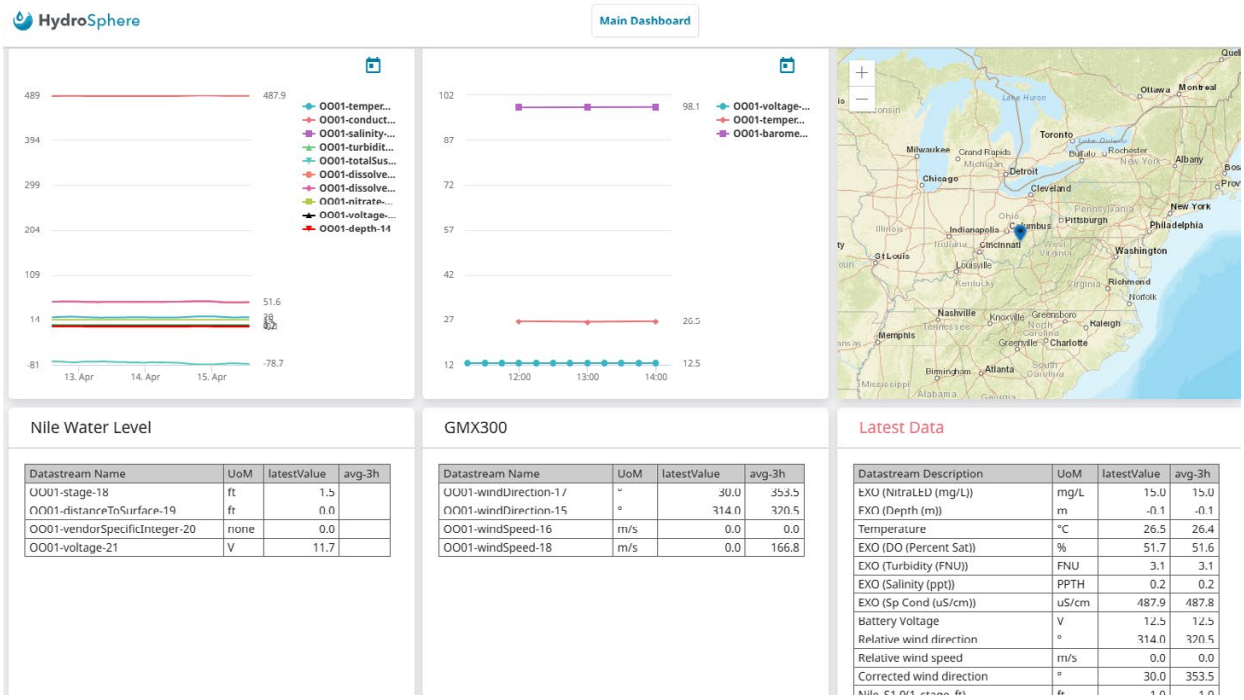
Table View:



Tile View:



Example of a public dashboard:



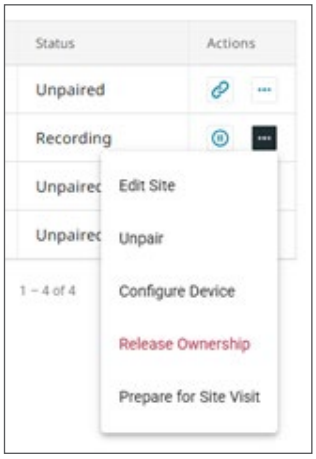
Datastream Name	UoM	latestValue	avg-3h
OO01-stage-18	ft	1.5	
OO01-distanceToSurface-19	ft	0.0	
OO01-vendorSpecificInteger-20	none	0.0	
OO01-voltage-21	V	11.7	

Datastream Name	UoM	latestValue	avg-3h
OO01-windDirection-17	°	30.0	353.5
OO01-windDirection-15	°	314.0	320.5
OO01-windSpeed-16	m/s	0.0	0.0
OO01-windSpeed-18	m/s	0.0	166.8

Datastream Description	UoM	latestValue	avg-3h
EXO (NitraLED (mg/L))	mg/L	15.0	15.0
EXO (Depth (m))	m	-0.1	-0.1
Temperature	°C	26.5	26.4
EXO (DO (Percent Sat))	%	51.7	51.6
EXO (Turbidity (FNU))	FNU	3.1	3.1
EXO (Salinity (ppt))	PPTH	0.2	0.2
EXO (Sp Cond (uS/cm))	uS/cm	487.9	487.8
Battery Voltage	V	12.5	12.5
Relative wind direction	°	314.0	320.5
Relative wind speed	m/s	0.0	0.0
Corrected wind direction	°	30.0	353.5
Nile S1 0/1 stage ft)	ft	1.0	1.0

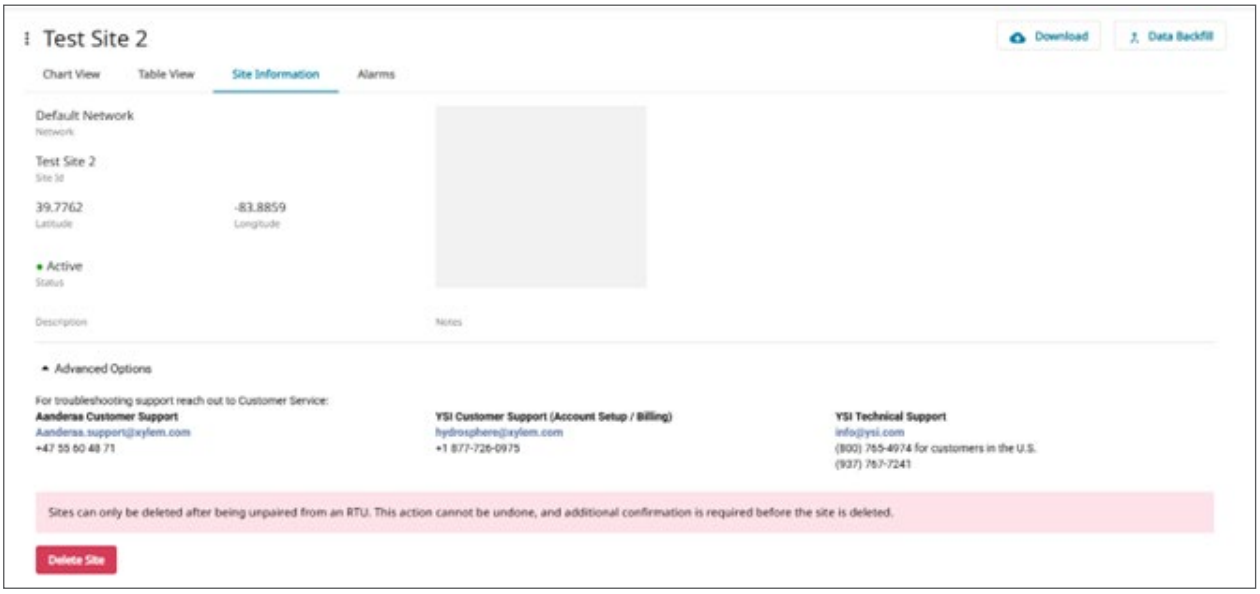
Delete Sites

To delete a site, the site must first be unpaired from all data loggers and RTUs.



1. To unpair a site, navigate to Easy Manager and select Unpair from the Actions column of the site you wish to delete.
2. Once the site Status is Unpaired, navigate to the Site View by clicking the site name.
3. Select the Site Information tab, then click the Advanced dropdown.
4. Click Delete Site to permanently delete the site and all associated data.

Note: Deleting a site will permanently delete all of the data that has been stored in HydroSphere under that site name. Only delete sites that either have no associated data, or sites with data that are no longer needed.



#	Name	Description
1	Advanced Options / Delete Site	Clicking the caret (⌄) to the right of Advanced Options will provide access to the Delete Site option and customer support contact information. *Note: In order to delete a site, the site must first be Unpaired from the data logger or RTU (Remote Terminal Unit).*

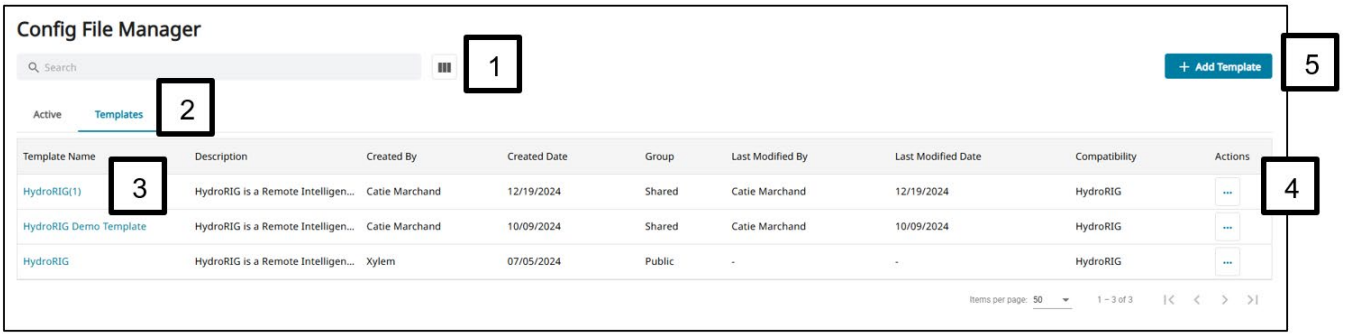
Config File Manager

In the Config File Manager tab, users can manage and edit configuration files on active RTUs as well as create configuration file templates for use on multiple RTUs.

If the user selects Release Ownership on an RTU/HydroRIG, the active file and drafts associated with the RTU will be erased from Easy Manager. Config File Manager can be used to save Templates that can be edited and applied to RTUs repeatedly, and they will be maintained in HydroSphere even if the RTU is released from ownership or if the file is no longer Active.

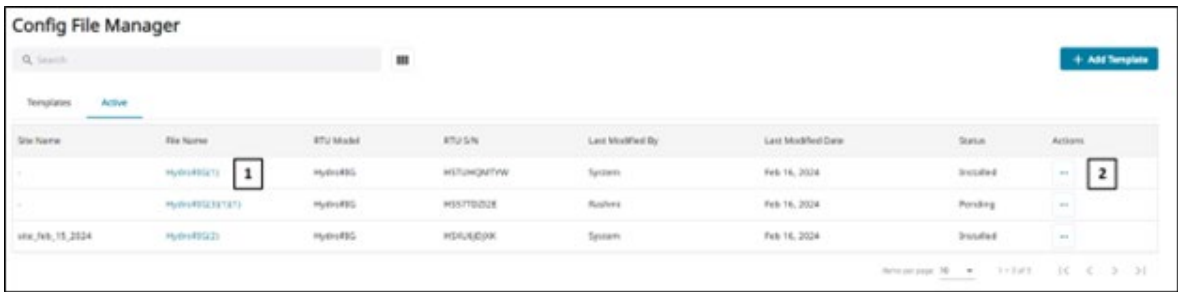
The process to edit a Template or Active file in Config File Manager is identical to working in Easy Manager. Please refer to Easy Manager.

Templates Tab



#	Name	Description
1	Column Selector	Select which columns to display. Options include: • Template name • Description • Created by • Created date • Group • Last modified by • Last modified date • RTU compatibility
2	Active / Templates Tabs	The Active tab shows the config files currently installed on the registered RTUs and can be used to make edits to the installed file. The Templates tab is used to manage all config file templates.
3	Template Name	Click the template name to delete, rename, copy, or edit; or apply the template to an RTU.
4	Actions	When in the Templates tab, options include Edit, Rename, Duplicate, Appy to RTU, and Delete.
5	+Add Template	Create a device configuration template to upload to one or multiple RTUs. See Device Configuration for more information.

Active Tab

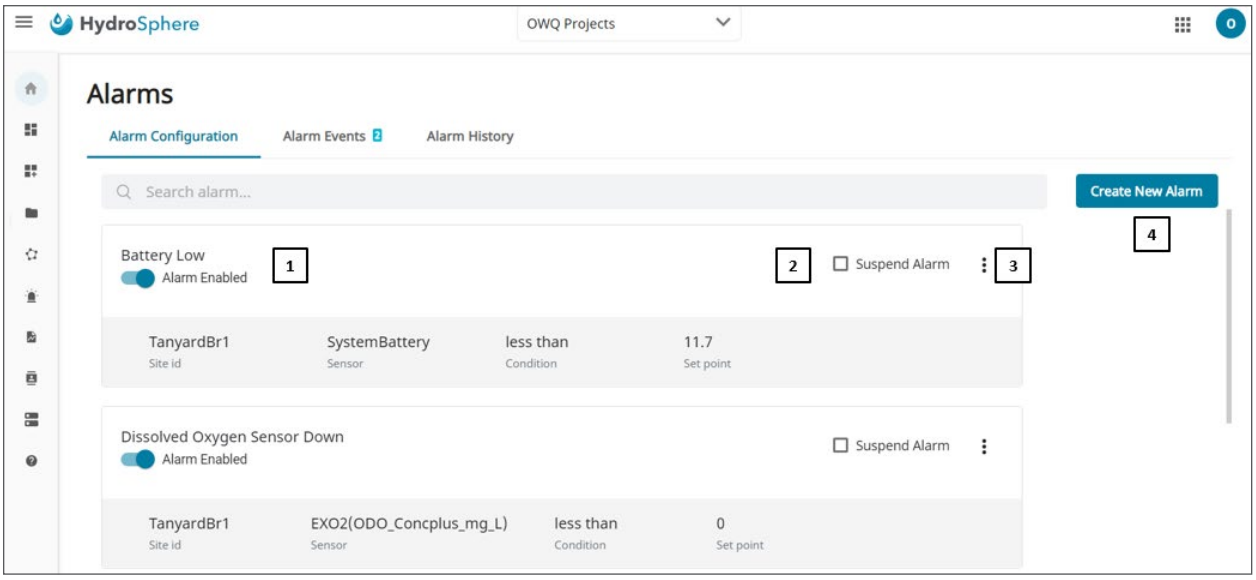


#	Name	Description
1	File Name	Click the file name to display the configuration file currently installed on an RTU to create a template of the installed config file or make edits.
2	Actions	Options include Edit, Rename, Create Template, Apply New Config File (applies a new config file to the selected RTU), Download CBOR File, Download JSON File, and Factory Reset.

2.7 – Alarms

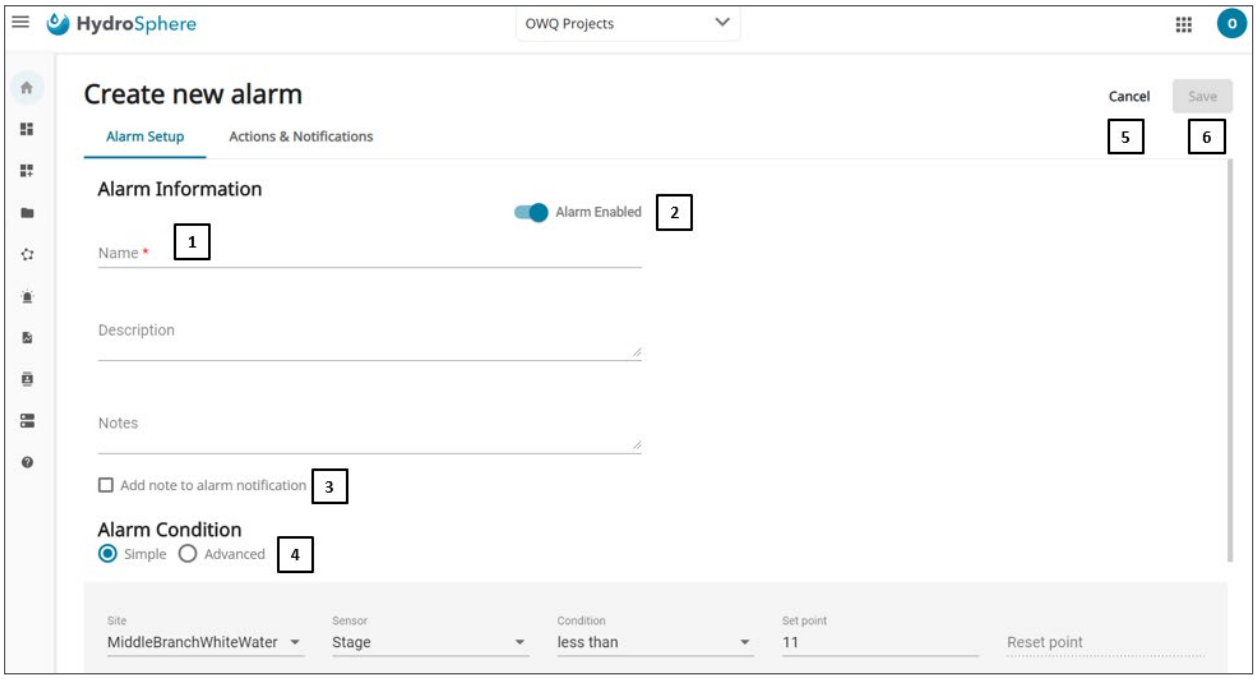
Users can create alarms that will send notifications via email and text message when selected site sensors meet certain measurement criteria. Three pages are available for Alarms; Alarm Configuration, Alarm Events, and Alarm History. These pages are described below.

Alarm Configuration



#	Name	Description
1	Alarm Name	Displays the created alarms. When clicked, the slider will change between ● **Disabled** and ● **Enabled**.
2	Suspend Alarm	See Suspending Alarms for more information *Note: Suspend Alarm will only be visible if the alarm is Enabled.*
3	Multiple Options	Clicking the ⋮ will display the following options: **Edit** – Allows the user to edit alarm details described in Create New Alarm. **Delete** – Deletes the alarm. **Alarm History** – Displays the history for the selected alarm. See Alarm History for more information.
4	Create New Alarm	See Create New Alarm for more information.

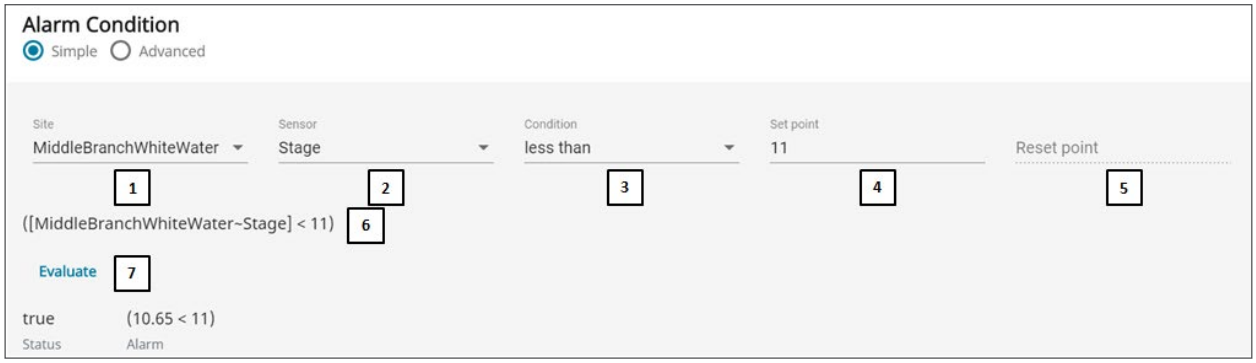
Create New Alarm – Alarm Setup



#	Name	Description
1	Alarm Information	A red asterisk (*) indicates a required field.
2	Disable / Enable Slider	The alarm can be disabled and enabled by clicking on the slider. When clicked, the slider will change between ● **Disabled** and ● **Enabled**.
3	Alarm Condition	Refer to the sections after this table for an explanation of Simple Alarms and Advanced Alarms.
4	Add note to alarm notification	You can add a note to the email and text alarm notification by checking this box. Any verbiage added to the **Note** field will then be included with all notifications for this alarm.
5	Cancel	Clicking the **Cancel** button will exit from the Create New Alarm page.
6	Save	When the **Save** button turns blue, all new alarm requirements have been met. Clicking the blue **Save** button will save the new alarm to HydroSphere.

Simple Alarms

A simple alarm contains only one alarm condition (e.g. temperature greater than 70°F).



#	Name	Description
1	Site	Dropdown containing all of the sites created for this account.
2	Sensor	Dropdown containing all of the sensors associated with the selected site.
3	Condition	The condition required to trigger the alarm. Refer to Alarm Conditions Explained for more on Conditions.
4 & 5		Alarm conditions including the first **[4]** and second **[5]** parameter are explained at Alarm Conditions Explained.
6	Formula	The site, sensor, condition, set point, and reset point written as a mathematical formula.
7	Evaluate	Clicking **EVALUATE** will cause the alarm condition to run using the most recently collected data and return the result based on the conditions and parameters at the time of the evaluation. A sample of an evaluation based on the conditions in the screen shot above would be: false — Status ((65.59 < 32) || (false && (65.59 < 36))) — Debug The Status is false because the current temperature reading of 65.59°F is greater than the set point of 32°F.

Advanced Alarms

An Advanced Alarm contains multiple alarm conditions (up to 3 AND/OR conditions (e.g. temperature greater than 70°F AND pH less than 7). Create new alarms using either the template method or by writing their own formulaic code. Both methods are discussed below.

#	Name	Description
1	Template	Create a new alarm using the template method. Items 2-8 below apply to the template method.
2	Site	Dropdown containing all of the sites create for this account.
3	Sensor	Dropdown containing all of the sensors associated with the selected site.
4	Condition	The condition required to trigger the alarm. Refer to Alarm Conditions Explained for more on Conditions.
5&6		Alarm conditions including the first **[5]** and second **[6]** parameter are explained at Alarm Conditions Explained.
7	Operator	This dropdown provides you with the options of **AND/OR** when adding additional conditions to the newly created alarm.
8	Add One More Condition	A total of 3 conditions can be used with Advanced Alarms. Clicking **Add One More Condition** will display one more **AND/OR** operator dropdown and fields to enter one more each site, sensor, condition, etc. Two conditions are always displayed. If the 3rd condition is displayed, it can be removed by clicking the trash can (🗑).
9	Code	Create a new alarm by writing your own formulaic code. Item 10 below applies to the code method. *Note: Available mathematical expressions are listed in Advanced Code Mathematical Expressions.*
10	Code Field	If using the code method, you can type a formulaic code in this field.

#	Name	Description
11	Evaluate	Clicking **EVALUATE** will cause the alarm condition to run using the most recently collected data and return the result based on the conditions and parameters at the time of the evaluation. A sample of an evaluation based on the conditions in the screen shot above would be: false (((65.59 < 32) || (false && (65.59 < 36)))&&(3.54 > 10)) Status Debug The Status is false because the current temperature reading of 65.59°F is greater than the set point of 32°F and the current stage is 3.54 feet is less than the set point of 10 feet.

Alarm Conditions Explained

Condition	First Entry	Second Entry	The alarm will activate when...
Less Than	Set Point	N/A	The measured sensor value is less than the Set Point. **Example:** Set Point = 10°C Any measured value less than 10°C will activate the alarm.
Less Than with Reset	Set Point	Reset Point	The measured sensor value is less than the Set Point. The alarm will terminate when the measured value rises above the Reset Point. **Example:** Set Point = 10°C | Reset Point = 12°C Any measured value less than 10°C will activate the alarm. When the measured value rises above 12°C, the alarm will terminate.
Less Than (Samples)	Set Point	# of Samples	The X number of most recent measured sensor values (# of Samples) are less than the Set Point. **Example:** Set Point = 10°C | # of Samples = 3 The alarm will activate when the 3 most recent measured values are less than 10°C.
Greater Than	Set Point	N/A	The measured sensor value is greater than the Set Point. **Example:** Set Point = 10°C Any measured value greater than 10°C will activate the alarm.
Greater Than with Reset	Set Point	Reset Point	The measured sensor value is greater than the Set Point. The alarm will terminate when the measured value drops below the Reset Point. **Example:** Set Point = 10°C | Reset Point = 8°C Any measured value greater than 10°C will activate the alarm. When the measured value drops below 8°C, the alarm will terminate.

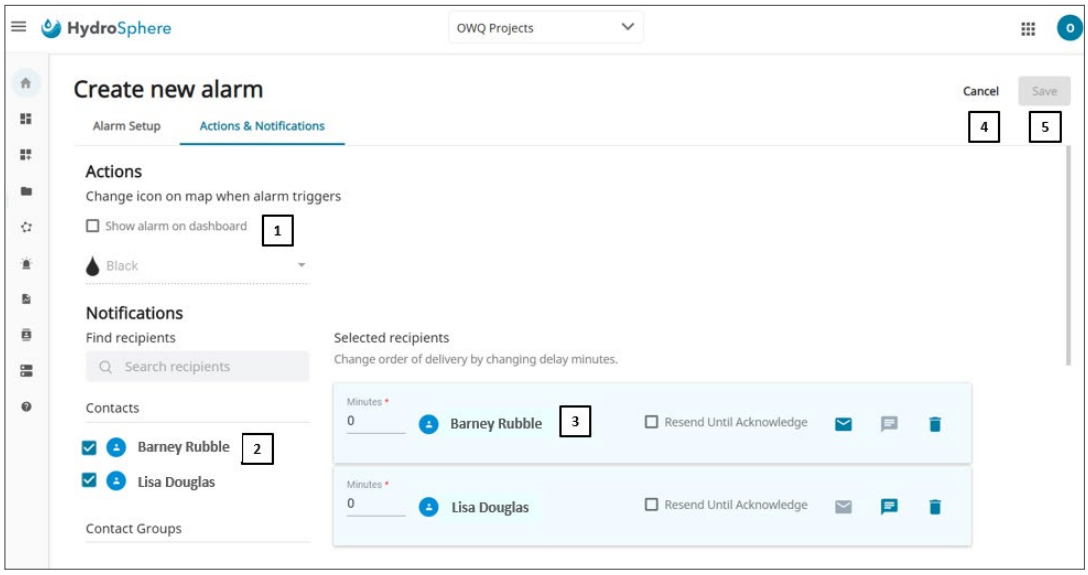
Condition	First Entry	Second Entry	The alarm will activate when...
Greater Than (Samples)	Set Point	# of Samples	The X number of most recent measured sensor values (# of Samples) are greater than the Set Point. **Example:** Set Point = 10°C | # of Samples = 3 The alarm will activate when the 3 most recent measured values are greater than 10°C.
Low Value	Threshold	# of Samples	The most recent measured sensor value is less than the average of the X number of most recent measured sensor values (# of Samples). An offset (Threshold) can be subtracted from the average of the X number of most recent measured sensor values (# of Samples). The Threshold can be negative. **Example:** Threshold = 1°C | # of Samples = 3 | Sample 1 = 9°C | Sample 2 = 10°C | Sample 3 = 12°C The alarm will activate when Sample 1 (9°C) is less than the average of all three samples ((9°C + 10°C + 12°C)/3 = 10.33°C) minus the Threshold (1°C): 10.33°C – 1°C = 9.33°C.
High Value	Threshold	# of Samples	The most recent measured sensor value is greater than the average of the X number of most recent measured sensor values (# of Samples). An offset (Threshold) can be added to the average of the X number of most recent measured sensor values (# of Samples). The Threshold can be negative. **Example:** Threshold = 1°C | # of Samples = 3 | Sample 1 = 12°C | Sample 2 = 10°C | Sample 3 = 9°C The alarm will activate when Sample 1 (12°C) is greater than the average of all three samples ((12°C + 10°C + 9°C)/3 = 10.33°C) plus the Threshold (1°C): 10.33°C + 1°C = 11.33°C
Low Percentage	Percentage	# of Samples	The most recent measured sensor value is less than the average of the X number of most recent measured sensor values (# of Samples). An offset (Percentage) can be subtracted. The offset is calculated by multiplying the Percentage and the average of the X number of most recent measured sensor values (# of Samples). The Percentage can be negative. **Example:** Percentage = 0.01 | # of Samples = 3 | Sample 1 = 9°C | Sample 2 = 10°C | Sample 3 = 12°C The alarm will activate when Sample 1 (9°C) is less than the average of all three samples ((9°C + 10°C + 12°C)/3 = 10.33°C) minus the Percentage ((9°C + 10°C + 12°C)*0.01 = 0.31°C): 10.33°C – 0.31°C = 10.02°C
High Percentage	Percentage	# of Samples	The most recent measured sensor value is greater than the average of the X number of most recent measured sensor values (# of Samples). An offset (Percentage) can be added. The offset is calculated by multiplying the Percentage and the average of the X number of most recent measured sensor values (# of Samples). The Percentage can be negative. **Example:** Percentage = 0.01 | # of Samples = 3 | Sample 1 = 12°C | Sample 2 = 10°C | Sample 3 = 9°C The alarm will activate when Sample 1 (12°C) is greater than the average of all three samples ((12°C + 10°C + 9°C)/3 = 10.33°C) plus the Percentage ((12°C + 10°C + 9°C)*0.01 = 0.31°C): 10.33°C + 0.31°C = 10.64°C

Condition	First Entry	Second Entry	The alarm will activate when...
Magnitude Decreasing	Threshold	# of Samples	The most recent measured sensor value is less than the highest value of X number of most recent sensor values (# of Samples). An offset (Threshold) can be subtracted from the highest value. The Threshold can be negative. **Example:** Threshold = 1.0°C | # of Samples = 3 | Sample 1 = 12°C | Sample 2 = 11°C | Sample 3 = 14°C The alarm will activate when Sample 1 (12°C) is less than the highest value sample (14°C) minus the Threshold: 14°C - 1°C = 13°C
Magnitude Increasing	Threshold	# of Samples	The most recent measured sensor value is greater than the lowest value of X number of most recent sensor values (# of Samples). An offset (Threshold) can be added to the lowest value. The Threshold can be negative. **Example:** Threshold = 1.0°C | # of Samples = 3 | Sample 1 = 14°C | Sample 2 = 11°C | Sample 3 = 12°C The alarm will activate when Sample 1 (14°C) is greater than the lowest sample (12°C) plus the Threshold: 12°C + 1°C = 13°C

Advanced Code Mathematical Expressions

ABS(x)	Return the absolute value of the number x
ACOS(x)	Returns the arccosine of x, in radians
ACOSH(x)	Returns the hyperbolic cosine of x
ASIN(x)	Returns the arcsine of x, in radians
ASINH(x)	Returns the hyperbolic arcsine of x
ATAN(x)	Returns the arctangent of x as a numeric value between -PI/2 and PI/2 radians
ATAN2(x,y)	Returns the arctangent of the quotient of its arguments
ATANH(x)	Returns the arctangent of x as a numeric value between -PI/2 and PI/2 radians
CBRT(x)	Return the cubic root of the number x
CEIL(x)	Round the number x upward to its nearest integer
COS(x)	Returns the cosine of x (x is in radians)
COSH(x)	Returns the hyperbolic cosine of x
EXP(x)	Returns the value of Ex
FLOOR(x)	Round the number x downward to its nearest integer
LOG(x)	The natural logarithm of the number x
POW(x,y)	The value of the number x to the power of y
RANDOM(x)	Returns a random number between 0 and 1
ROUND(x)	Round the number x to the nearest integer
SIN(x)	Returns the sine of x (x is in radians)
SINH(x)	Returns the hyperbolic sine of x
SQRT(x)	Return the square root of the number x
TAN(x)	Returns the tangent of an angle
TANH(x)	Returns the hyperbolic tangent of a number
TRUNC(x)	Returns the integer part of a number (x)

Create New Alarm – Action & Notification



#	Name	Description
1	Change icon on map when alarm triggers	You can elect to have the site label or water drop on the dashboard change color in response to triggered alarms by checking the '**Show alarm on dashboard**' box and selecting a color from the dropdown. Color options are: Black, Green, Red Brown, Orange, White Gray, Purple, Yellow
2	Recipients	All users, user groups, contacts, and contact groups, created for this account will be displayed. Selected users, user groups, contacts, and contact groups will receive enabled alarm notifications. Refer to Create New User, Create New User Group, Create New Contact, and Create New Contact Group for more information.
3	Selected Recipients	Users, user groups, contacts, and contact groups that have been checked in the Recipients section will display here. Order of delivery to recipients can be set via the minutes delay field. Default is 0 minutes. The delay function allows escalation of the alarm notification if the alarm is not acknowledged in a set amount of time. First responders should have a 0 minute delay. Backup responders should have an increasing delay allowing them to receive the alarm after an appropriate delay if not acknowledged already. When an alarm triggers, one notification will be sent until the alarm is acknowledged. If you would like to receive notifications every 15 minutes until the alarm is acknowledged, check the '**Resend Until Acknowledged**' box. Notification delivery options are email (✉) and/or text (💬). The recipient can be removed from the list by clicking the trash can (🗑). This will not delete the contact's account or the alarm.
4	Cancel	Clicking the **Cancel** button will exit from the Notification page.
5	Save	When the **Save** button turns blue, all new notification requirements have been met. Clicking the blue **Save** button will save the notification details to HydroSphere.

To Create a New Alarm

On the Alarm Setup page

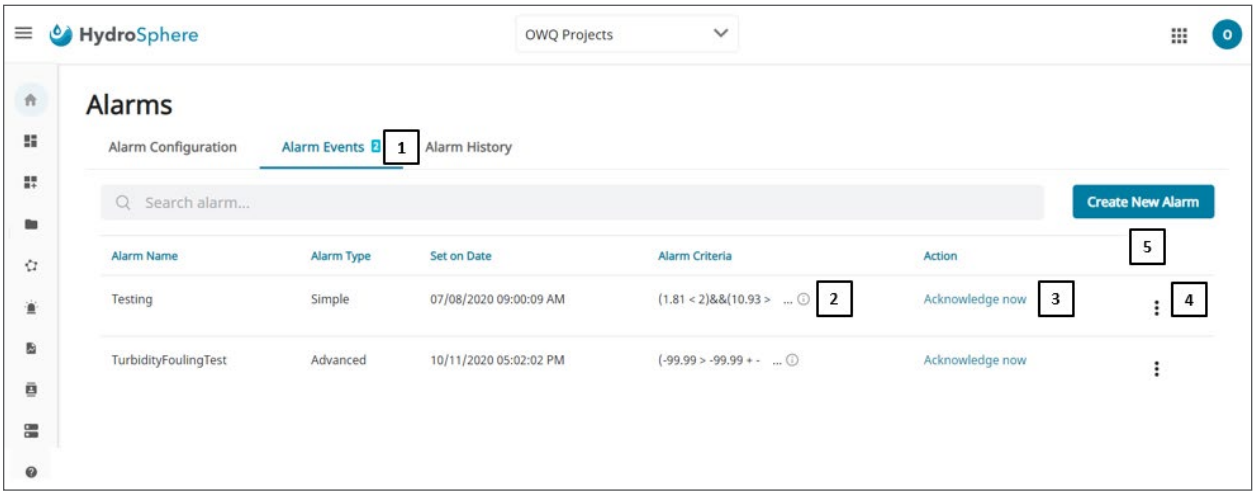
1. Click the slider to select **Disabled** or **Enabled**.
2. Enter an alarm name.
3. Optional – add a description and notes.
4. Select **Simple** or **Advanced**.
5. Build the alarm conditions.
6. Click **Save**.

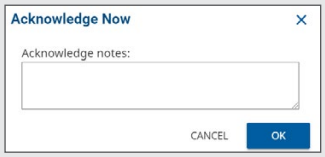
On the Notification page

1. Select the water drop color to be displayed on the dashboard if the alarm activates.
2. Click the box to the left of each contact or contact group to receive the alarm notification.
3. Enter the notification delay minutes for each recipient.
4. Click **Save**.

Alarm Events

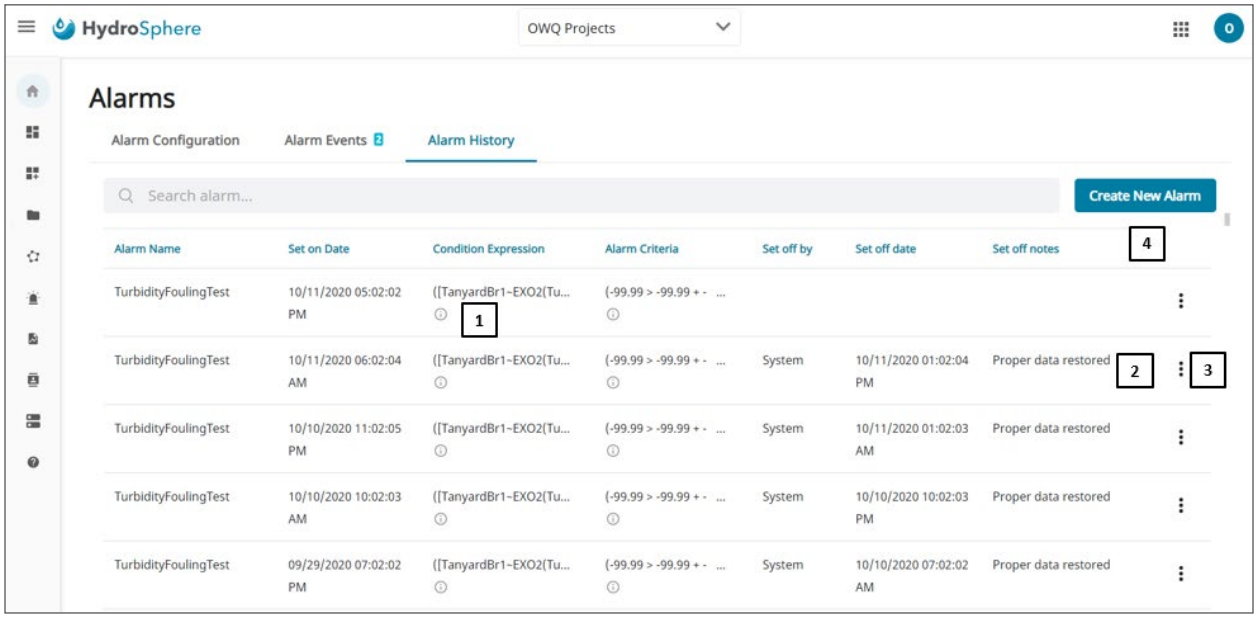
The Alarm Events page will show you what alarms have activated and need to be acknowledged.



#	Name	Description
1	Alarm Events Tab	The number display (2) indicates how many alarms are currently triggered.
2	Informational	Hovering the cursor over the informational icon (ⓘ) will show the complete Alarm expression.
3	Acknowledge Now	Clicking **Acknowledge Now** will produce the following pop up window.  The Acknowledge notes are optional. Clicking **OK** will Acknowledge the alarm and remove it from this list of activated alarms.
4	Alarm Edit	Clicking on the Alarm name will allow you to edit the alarm information and alarm conditions. Refer to Create New Alarm or more information.
5	Create New Alarm	Refer to Create New Alarm for more information.

Alarm History

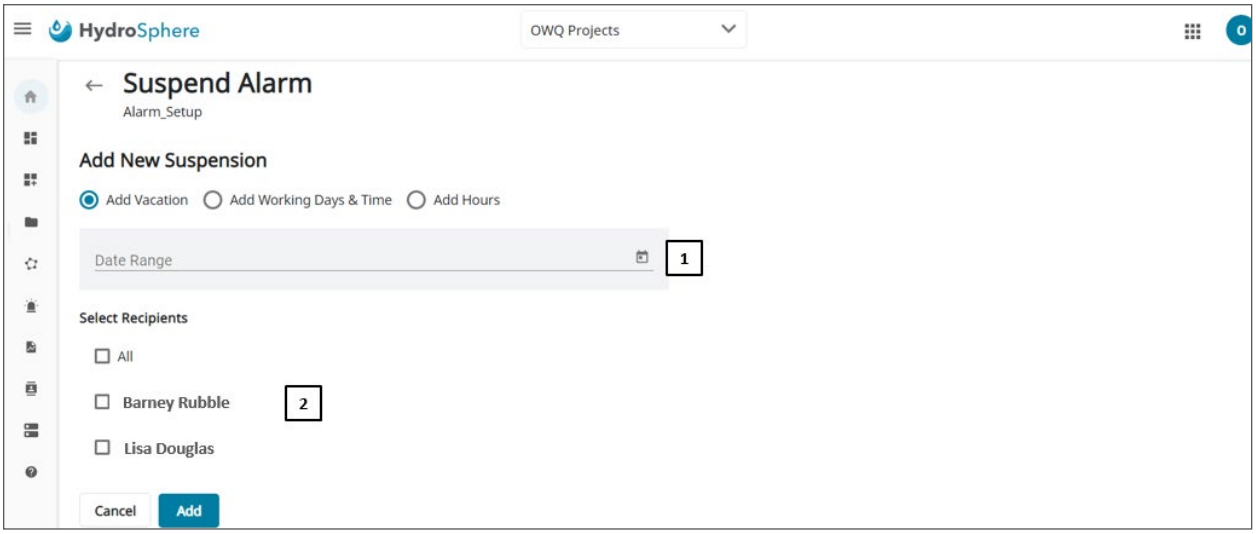
The Alarm History page will display the history for all alarms created for this account.



#	Name	Description
1	Informational	Hovering the cursor over the informational icon (ⓘ) will show the complete Alarm expression.
2	Alarm Edit	Clicking on the Alarm name will allow you to edit the alarm information and alarm conditions. Refer to Create New Alarm for more information.
3	Set off notes	Note entered when acknowledging the alarm will display here.
4	Create New Alarm	Refer to Create New Alarm for more information.

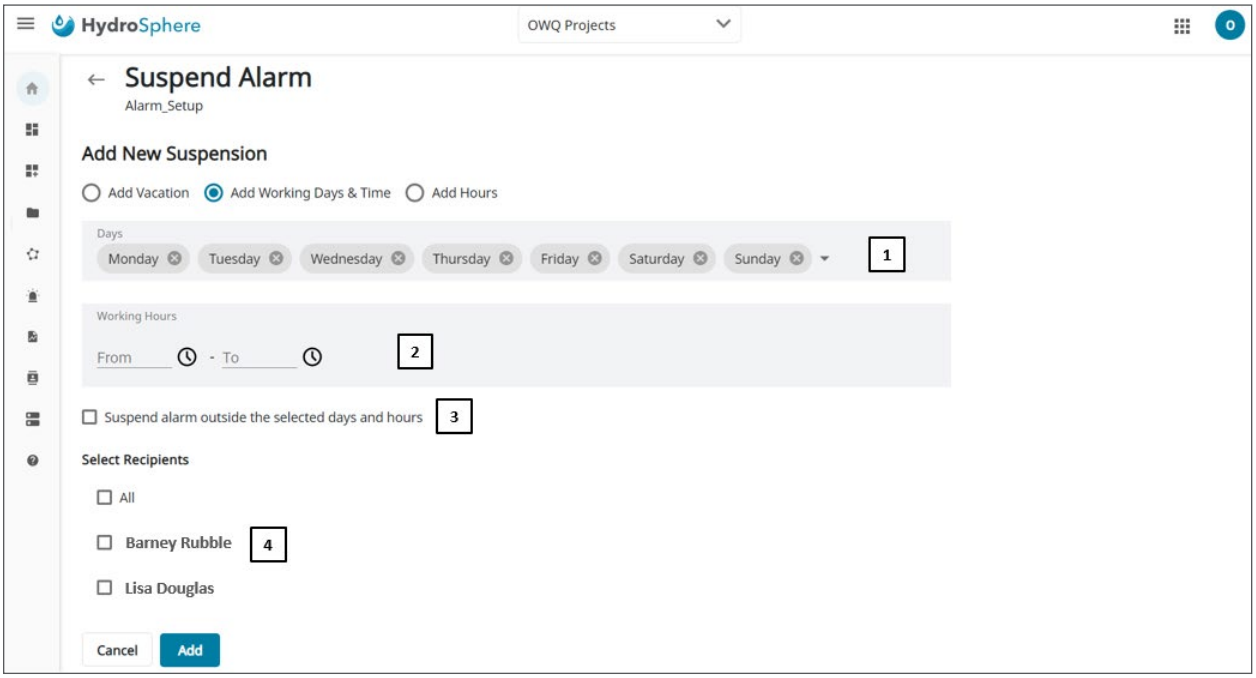
Suspending Alarms

Add Vacation allows you to suspend the alarm for set dates.



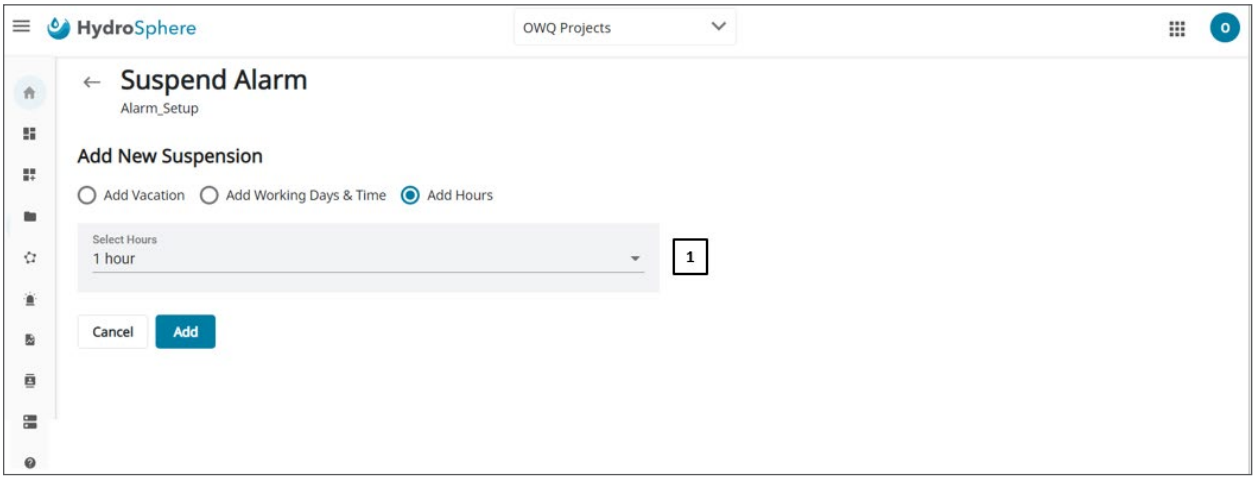
#	Name	Description
1	Date Range	Displays a calendar so you can select the start and end dates of the alarm suspension.
2	Select Recipient	Allows you to select which recipients to which this alarm suspension will apply.

Add Working Days & Time will suspend the alarm for select days and time.



#	Name	Description
1	Days	Allows you to select which days the alarm will be suspended.
2	Working Hours	Allows you to select which hours the alarm will be suspended.
3	Suspend alarm outside the selected days and hours	If you would like to have the alarm suspended during the days and hours outside of what is selected, check this box. This will allow you to set the workdays and hours (e.g. Mon-Fri 7am-4pm) and then suspend the alarms for users not on call after hours.
4	Select Recipients	Allows you to select which recipients to which this alarm suspension will apply.

Add Hours will suspend the alarm for all users for a set period of time.

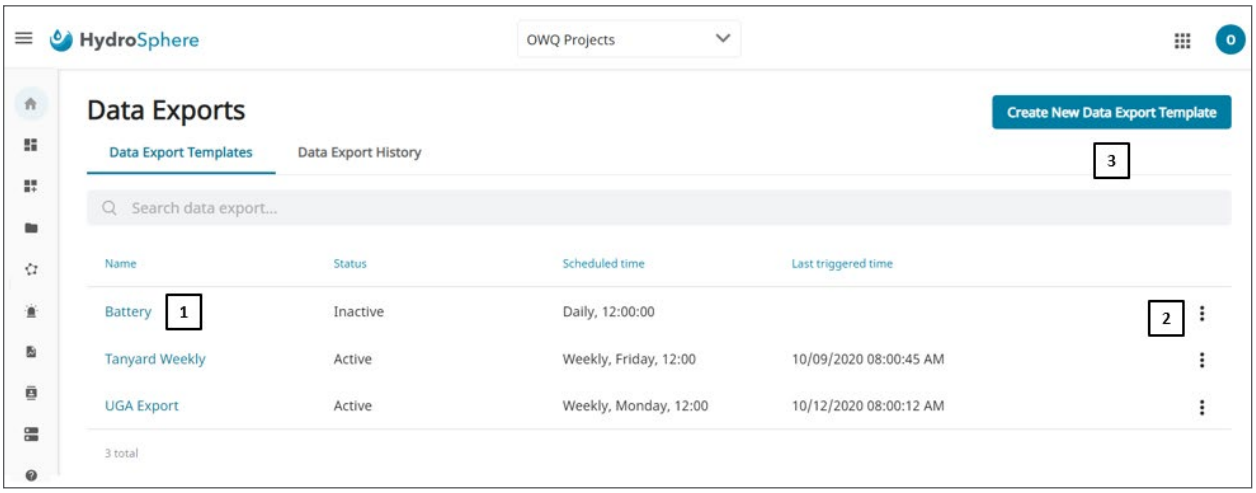


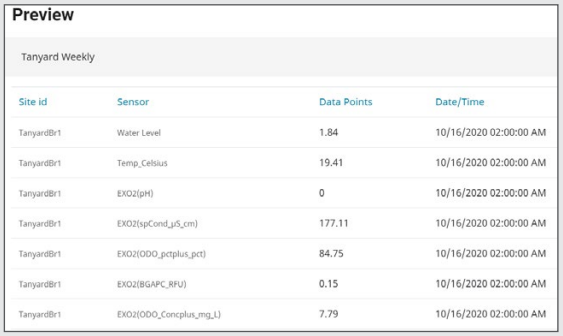
#	Name	Description
1	Select Hours	Allows you to select the number of hours the alarm will be suspended. Options are: 1 hour, 3 hours, 6 hours, 9 hours, or 12 hours. *Note: The **Add Hours** alarm suspension will apply to all alarm recipients.*

2.8 – Data Exports

Data exports allow you to setup and schedule recurring data downloads.

Data Export Templates

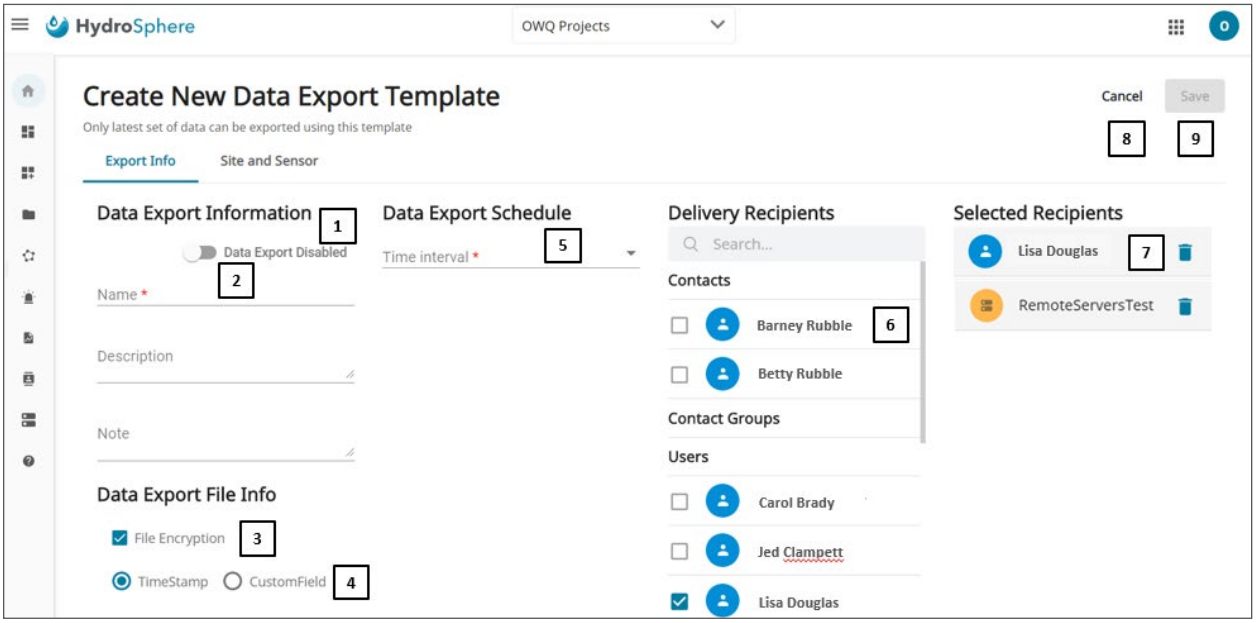


#	Name	Description
1	Preview	Clicking on the Report name will display a preview of the report that includes the most recent sensor data. Refer to Create New Data Export Template for more information. 
2	Multiple Options	Clicking the ⋮ will display the following options: **Preview** – Displays the same report preview described above. **Edit** – Allows you to edit Data Export details described in Create New Data Export Template. **Delete** – Deletes the Data Export Template.
3	Create New Data Export Template	Refer to Create New Data Export Template for more information.

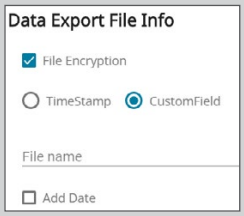
Create New Data Export Template

Two pages are available to create a new data export template; Export Info and Site and Sensor. These pages are described below.

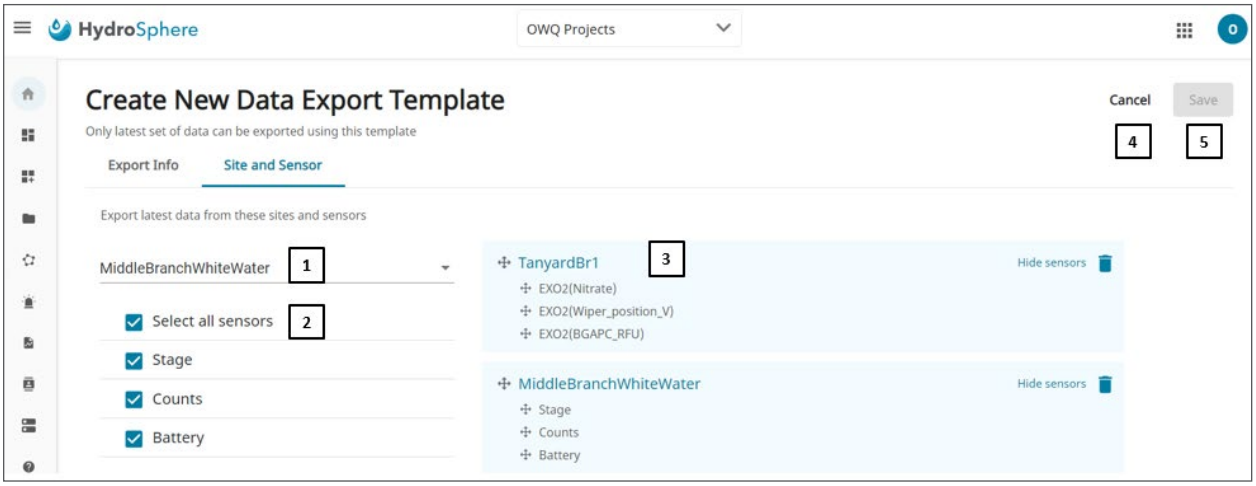
Export Info



#	Name	Description
1	Disable / Enable Slider	The data report can be disabled and enabled by clicking on the slider ( ).
2	Data Export Information	A red asterisk (*) indicates a required field.
3	File Encryption	If the File Encryption box is checked, the recipients will receive 2 emails. One of the emails will contain a link to an encrypted zipped .csv file. The other email will contain a password. An unzipping program such as 7-Zip (https://www.7-zip.org/download.html) will be needed to unzip the encrypted files. The password will be required when the .csv file is opened. *Note: The hyperlink is active for 24 hours and is a one-time use link. If the link becomes inactive due to time out or previous use, the data export can be resent by using the Resend function on the Data Export History page. Refer to Data Export History for more information.* If the File Encryption box is not checked, the unencrypted data .csv file will be attached to an email.

#	Name	Description
4	Data File Name	**Timestamp** will name the file the Unix timestamp at the time of file creation. **Custom Field** provides you with the free text field below. Checking the **Add Date** box will add the date the data export file is sent to the **Custom Field** File name. 
5	Data Export Schedule	Users have six options for scheduling Data Export report generation: • Every 15 minutes (:05, :20, :35, and :50 each hour) • Every 30 minutes (:05 and :35 each hour) • Hourly (:05 each hour) • Daily (user selects the time in 5 minute increments) • Weekly (user selects day of the week and the time in 5 minute increments) • Monthly (user selects day of the month and the time in 5 minute increments) *Note: The first time the data export is run, the report will contain all collected data. Subsequent data exports will only contain the data collected since the previous report.*
6	Delivery Recipients and Servers	All users, user groups, contacts, contact groups, and remote servers created for this account will be displayed. Selected users, user groups, contacts, contact groups, and remote servers will receive enabled data exports files. Refer to Create New User, Create New User Group, Create New Contact, Create New Contact Group, and Add New Remote Server for more information.
7	Selected Recipients	Users, user groups, contacts, contact groups, and remote servers that have been checked in the Delivery Recipients and Servers section will display here. The recipient or server can be removed from the list by clicking the trash can (🗑). This will not delete the recipient, server, or data export template.
8	Cancel	Clicking the **Cancel** button will exit from the Export Info page.
9	Save	When the **Save** button turns blue, all new export info requirements have been met. Clicking the blue **Save** button will save the new export info to HydroSphere.

Site and Sensor



#	Name	Description
1	Site Dropdown	This dropdown list will display all of the sites created for this account.
2	Sensor Selection	Checking the box to the left of the sensor will include that sensor in the data export.
3	Included Site and Sensors	Once a site and sensors have been selected, they will display in this area. Site and sensor order can be changed by clicking the drag and drop icon (✣) and moving the site or sensor to a new location. The site can be removed from the list by clicking the trash can (🗑). This will not delete the site, sensor, or data export template.
4	Cancel	Clicking the **Cancel** button will exit from the Site and Sensor page.
5	Save	When the **Save** button turns blue, all new site and sensor requirements have been met. Clicking the blue **Save** button will save the new site and sensor data to HydroSphere.

To Create a New Data Export Template

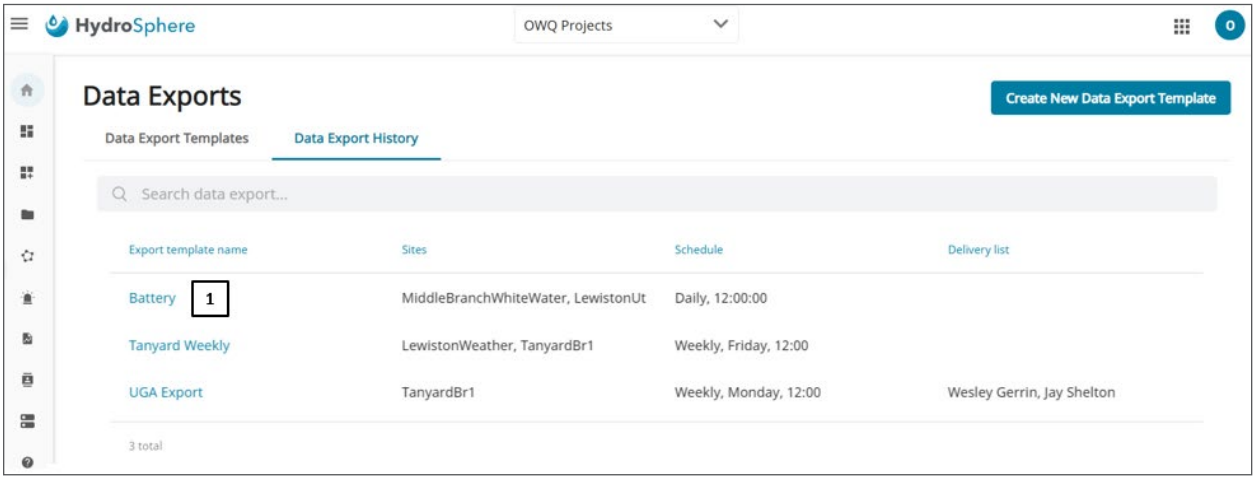
On the Export Info page

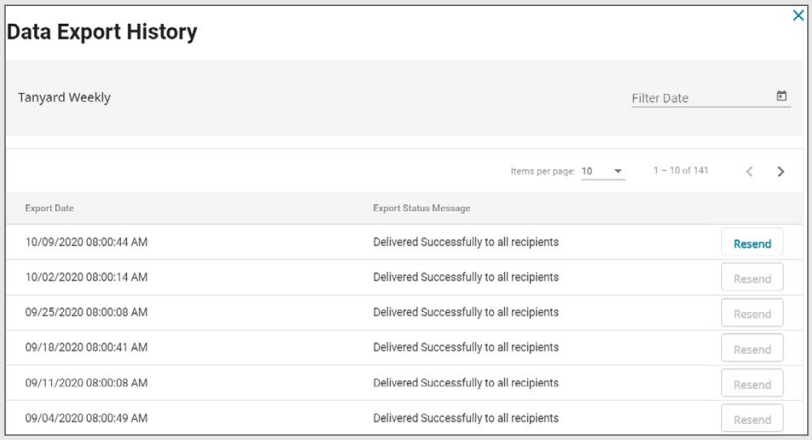
1. Click the slider to select **Disabled** or **Enabled**.
2. Enter a data export name.
3. Optional – add a description and notes.
4. Select a time interval.
5. Click the box to the left of each user, user group, contact, contact group, or remote server to receive the data export.
6. Click **Save**.

On the Site and Sensor page

1. Click the Site dropdown and click on the site to be added to the template.
2. Click on the box to the left of each sensor to be added to the template.
3. Repeat Steps 8 and 9 for additional sites and sensors.
4. Reorder the sites and sensors as appropriate.
5. Click Save.

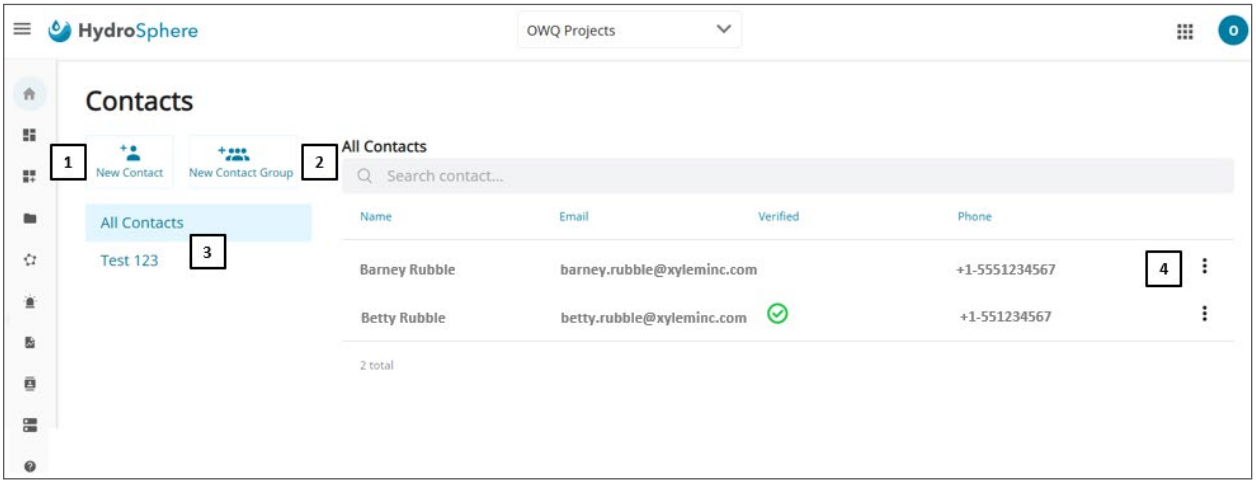
Data Export History



#	Name	Description
1	Preview	Clicking on the Report name will display data export history (example below) which shows the date and status message for each sent report for this specific data export. Refer to Create New Data Export Template for more information.  *Note: Encrypted Data Exports are downloaded by recipients via a hyperlink included in a Data Export email. The data file is password protected. The hyperlink is active for 24 hours and is a one-time use link.* If the link becomes inactive due to time out or previous use, the data export can be resent by clicking the **Resend** button. The **Resend** option is available for any data export sent in the previous 14 days. Refer to Create New Data Export Template for more information.

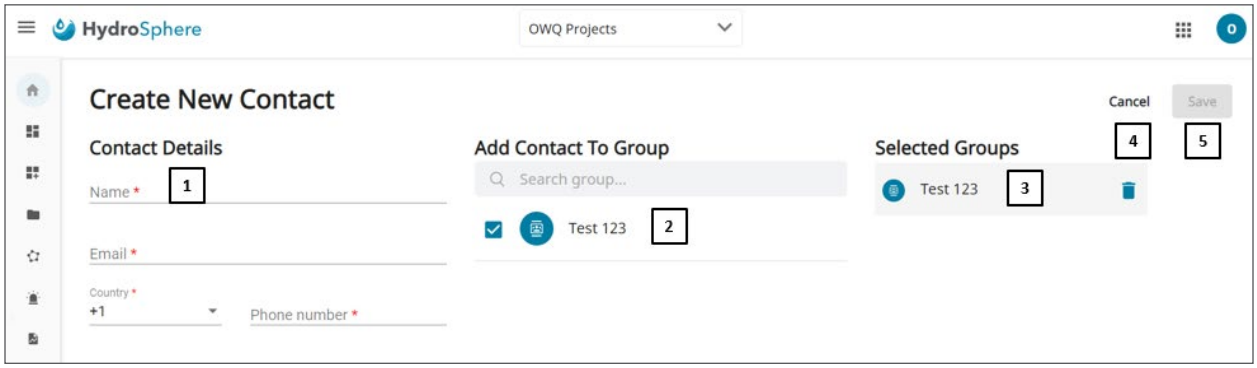
2.9 – Contacts

A contact is someone who will receive notifications or data exports assigned to them by a HydroSphere user. A contact is not a HydroSphere user and does not have login privileges for HydroSphere.



#	Name	Description
1	New Contact	Allows you to create a new contact. Refer to Create New Contact for more information.
2	New Contact Group	Allows you to create a new user group. Refer to Create New Contact Group for more information.
3	Groups	Displays the Contact Groups created for this account.
4	Multiple Options	For the All Contact group, clicking the ⋮ icon will display the following options: **Edit** – Allows you to edit contact details described in Create New Contact. **Delete Contact** – Deletes the contact. If a contact group is being viewed, clicking the ⋮ icon will display the following options: **Edit** – Allows you to edit contact details described in Create New Contact. **Delete from Group** – Deletes the contact from the contact group but will not delete the user account.

Create New Contact



#	Name	Description
1	Contact Details	A red asterisk (*) indicates a required field.
2	Add Contact to Group	All contact groups created for this account will be displayed. Contacts can be added to one or more contact groups by clicking on the check box to the left of the Contact Group name. Refer to Create New Contact Group for more information.
3	Selected Groups	Contact Groups that have been checked in the Add Contact to Group section will display here. The Contact Group can be disassociated from the user by clicking the trash can ( ). This will not delete the contact or the Contact Group.
4	Cancel	Clicking the **Cancel** button will exit from the Create New Contact page.
5	Save	When the **Save** button turns blue, all new contact requirements have been met. Clicking the blue **Save** button will save the new contact to HydroSphere.

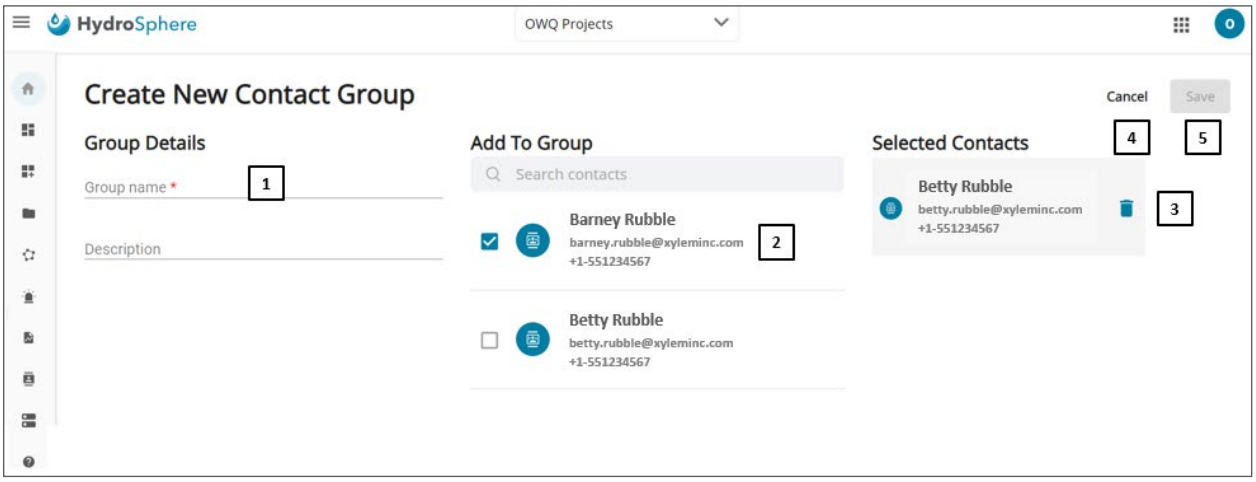
To create a new contact

1. Enter the contact's Name, Email address, Country Code, and Phone number.
2. If the contact is to be assigned to a contact group, click the box to the left of each appropriate contact group.
3. Click **Save**.

*Note: New contacts will receive an email with a **Verify Email Address** link. Clicking this link is required to complete the contact setup process. The link remains active for 24 hours.*

Create New Contact Group

A contact group is a group of contacts who have common notification and data export needs. Notifications and exports can be sent to the contact group saving time by not having to assign these items to multiple individual contacts.



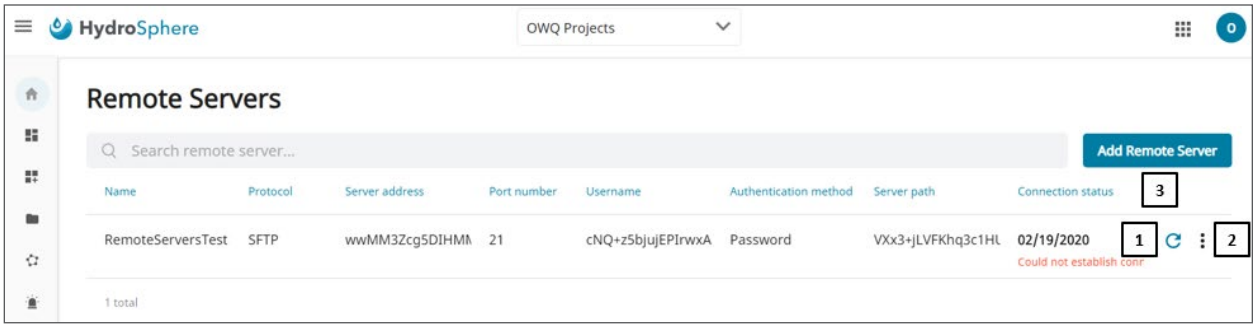
#	Name	Description
1	Group Details	A red asterisk (*) indicates a required field.
2	Add to Group	All contacts created for this account will be displayed. Contacts can be added to the newly added contact group by clicking on the check box to the left of the contact name. Refer to Create New Contact for more information.
3	Selected Contacts	Contacts that have been checked in the Add to Group section will display here. The contact can be deleted from the contact group by clicking the trash can ( ). This will not delete the contact or the contact group.
4	Cancel	Clicking the **Cancel** button will exit from the Create New Contact Group page.
5	Save	When the **Save** button turns blue, all new contact group requirements have been met. Clicking the blue **Save** button will save the new contact group to HydroSphere.

To create a new contact group

1. Enter a user group name.
2. Optional – add a user group description.
3. Click the box to the left of each contact to be added to the contact group.
4. Click **Save**.

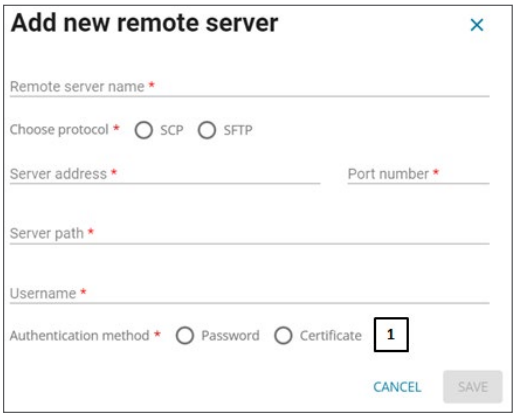
2.10 – Remote Servers

Data exports can be sent directly to a remote server for migration to other applications.



#	Name	Description
1	Connection Test Icon	Clicking the Connection Test Icon (↻) will test the communication connection with the remote server and display the date and time the connection was verified. "Connection verified on" is displayed if test is successful. "Could not establish connection" is displayed if test unsuccessful. *Note: A short verification message will be placed on the server each time the communication connection is verified.*
2	Multiple Options	Clicking the ⋮ icon will display the following options: **Edit** - Allows you to edit the remote server details described in Add New Remote Server. **Delete** – Deletes the remote server.
3	Add Remote Server	See Add New Remote Server for more information.

Add New Remote Server



#	Name	Description
1	Authentication Method	Two options are available for authenticating the server: **Password** – A text box will appear for entering the password. **Certificate** – A window will open allowing you to select a certificate from their computer or other storage device.

Adding a New Remote Server

1. Enter server name.
2. Choose SCP or SFTP protocol.
3. Enter Server Address, Port Number, Server Path, and Username.
4. Choose the Authentication Method.
5. Click **Save**.

Note: A short verification message will be placed on the server when the communication connection is established.

HydroLINK API

HydroSphere has the ability to use an Application Programming Interface (API) to transfer data to another web-based platform or database to view and manage site data.

Please reach out to hydrosphere@xylem.com for assistance setting up a HydroLINK API transfer.

2.11 – My HydroSphere

Note: The My HydroSphere section is only visible to Technicians and is NOT visible to Account Administrators or Data Reviewers.

Each My HydroSphere page (My sites, My networks, My Alarms, and My Data Exports) will allow the Technicians to see only the items that they created. Each page will give the Technician the option to edit any item by clicking on the ⋮ icon to the right of each item and to also create new items.

2.12 – Help

Clicking the Help icon (ⓘ) will access:

a. This HydroSphere user manual

b. HydroSphere training videos

c. Cybersecurity technical notes

For account assistance or questions, please contact hydrosphere@xylem.com.

Xylem |'zīləm|

1) The tissue in plants that brings water upward from the roots;
2) a leading global water technology company.

We're a global team unified in a common purpose: creating advanced technology solutions to the world's water challenges. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. Our products and services move, treat, analyze, monitor and return water to the environment, in public utility, industrial, residential and commercial building services settings. Xylem also provides a leading portfolio of smart metering, network technologies and advanced analytics solutions for water, electric and gas utilities. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise with a strong focus on developing comprehensive, sustainable solutions.

For more information on how Xylem can help you, go to www.xylem.com

YSI Incorporated
1725 Brannum Lane
Yellow Springs, OH 45387

Tel +1.937.767.7241
Email ysi.info@xylem.com
YSI.com

XA00071-03 0525

xylem
Let's Solve Water