LAW-X 5.0
Leakage Analysis Workshop
User's Guide

Notice

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Contents

About this Guide

Thank you for purchasing the LAW-X software. This guide provides setup and operating instructions to get you up and running as soon as possible.

Purpose and scope

The purpose of this guide is to help you successfully use the product features and capabilities. Additionally, this guide provides a complete description of the VIAVI warranty, services, and repair information.

Assumptions

This guide is intended for novice, intermediate, and experienced users who want to use the product effectively and efficiently. We are assuming that you have basic computer and mouse/track ball experience and are familiar with basic telecommunication concepts and terminology.

Technical assistance

If you require technical assistance, call 1-844-GO-VIAVI / 1.844.468.4284.

Outside US: +1-855-275-5378

Email: **Trilithic.support@viavisolutions.com**

For the latest TAC information, visit

https://support.viavisolutions.com

https://www.viavisolutions.com/en/services-and-support/support/technical-assistance

1

Introduction

This chapter provides an introduction to LAW-X, including the following:

About LAW-X

In today's competitive broadband industry,
maintaining network performance for return path services is critical for success. Minimizing labor costs to mitigate ingress and ensure system integrity can be a formidable challenge.

By automating the leakage management process, the VIAVI Seeker leakage management system and integrated LAW-X™ provide a unique way to minimize maintenance costs and maximize efficiency.

The integrated solution enables system operators to find and fix leaks quickly, minimize technicians' time, quickly assess network leakage integrity, and gauge the effectiveness of leakage maintenance efforts.

Automated Leakage Management

The system consists of LAW-X, vehicle-mounted Seeker family leakage meters, GPS receivers, and mobile communications adapters (MCAs), which collect leakage location and level information without interrupting the driver's routine.

When technicians are done for the day, they can manually upload the data via USB connection or connect to a designated WiFi hotspot and the leakage location data is automatically uploaded to LAW-X. The server plots the data and marks the leakage source locations as push pins on a map—all automatically.

Then LAW-X automatically assigns and e-mails the repair work orders to the responsible technicians, they upload
the pre- and post-repair snapshots, the server closes out the work orders, and the push pins disappear from the map (a patented algorithm automatically corrects logged leaks to reflect the FCC-prescribed equivalent
10-foot measurement).

The system is also scalable which enables operators to increase the level of automation as the deployment of field equipment reaches an appropriate coverage of the system geography.

Web-Based Program Interface

A familiar, intuitive interface allows users to mouse-over leaks (displayed as push-pins) to display additional data. Clicking on the push-pin will display complete details for the selected leak.

Efficient data management is accomplished through the leak list, which is displayed in a sortable table format. From this displayed leak list, a leakage containment supervisor can select specific leaks and create work orders, while the plant manager can sort leaks by field strength and logistically assign work orders to repair technicians.

The hybrid aerial/map option simplifies the correlation of leak information to the physical address and GPS latitude/longitude, all through a familiar user interface. This helps technicians efficiently and quickly repair leaks.

After the technician indicates that the leak has been repaired, LAW-X closes out the work orders and removes the push-pins from the map. This automated process reduces the time to repair leaks and ultimately saves you money.

Software Server and Support Options

VIAVI offers a variety of options for implementing LAW-X. LAW-X SaaS provides a complete, managed, comprehensive solution that allows you to focus on building business—not network infrastructure—saving you time and money in up-front costs and ongoing hardware support. With this option, your server will always be at the latest version with all bug fixes and security patches applied.

LAW-X can also be licensed to run on customer-provided physical or virtual servers. Under this model annual software maintenance and support contracts are available to enable access to software updates, live TAC support, and API for XPERTrak integration.

Key features

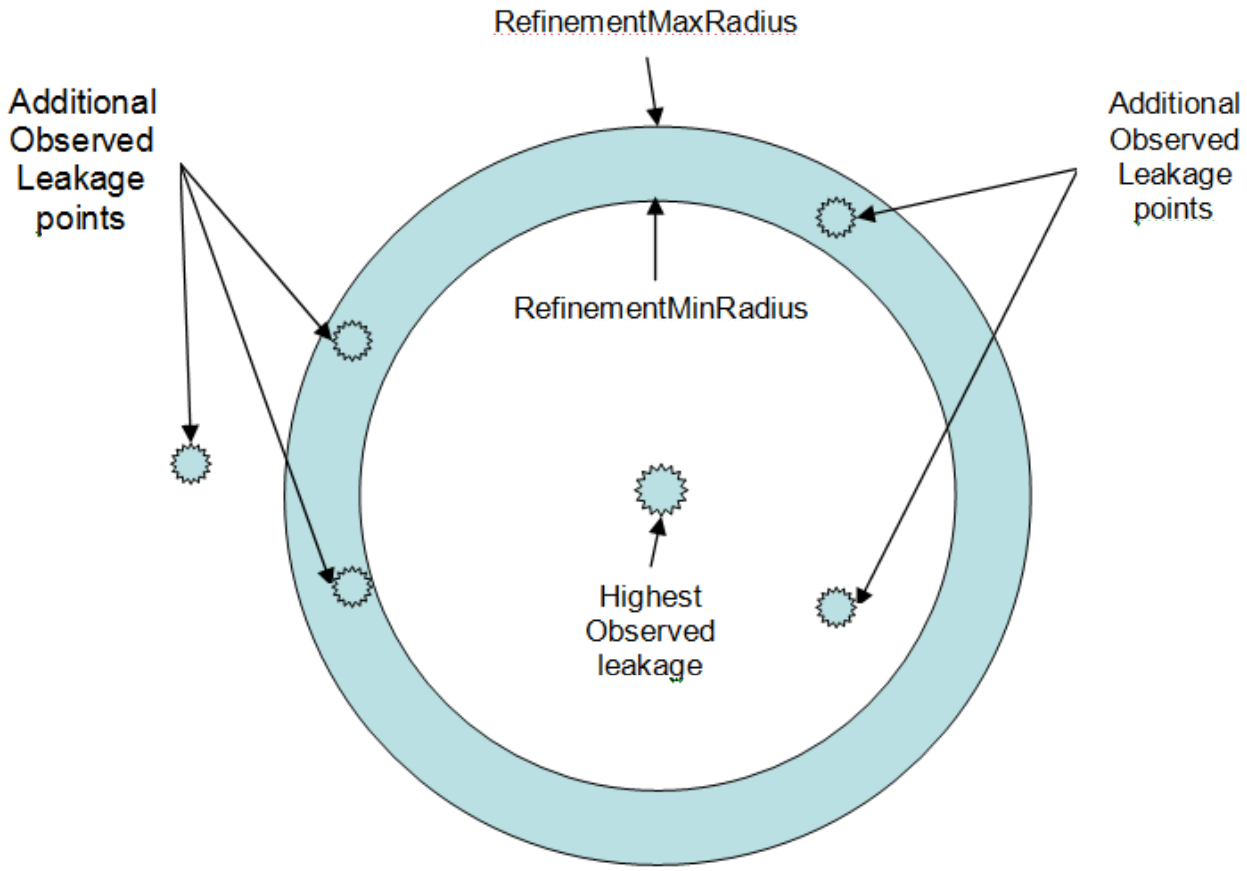
- Automated data collection, leak mapping, and work order management for improved productivity and efficiency
- Continuously updated database and map for analysis and decision making
- Automated leak location and amplitude notation to find and prioritize leaks faster
- XPERTrak integration improves PNM system effectiveness and correlates detected leaks with QoE impact
- Process automation for improved network integrity and simpler governmental compliance

Leakage Refinement Methodology

When LAW-X processes all of the raw uncorrected data points that it has at the time of leakage refinement, there will be several leakage observations within the same area. LAW-X uses a number of administrative configuration parameters to help the user customize the behavior of the refinement algorithm.

Once LAW-X finds the highest observed leakage value in a particular area, it will look a minimum distance away from that point for additional supporting points that will be considered to be the same leak observed from a different location. This parameter is called "RefinementMinRadius" and forms the inner ring of the refinement donut as seen below.

LAW-X will also limit points for further refinement to those no further away from the highest level than a maximum distance defined by the system parameter called "RefinementMaxRadius" which defines the outer rim of the donut as seen below. Only the observed points in the donut will be used to generate the composite leakage point seen on the map in combination with the high point.



After refinement has occurred and the new composite points are placed upon the map, LAW-X will place a fence around each of the composite points appropriate to the level of the new points on the map. These fences are defined by the following system configuration parameters:

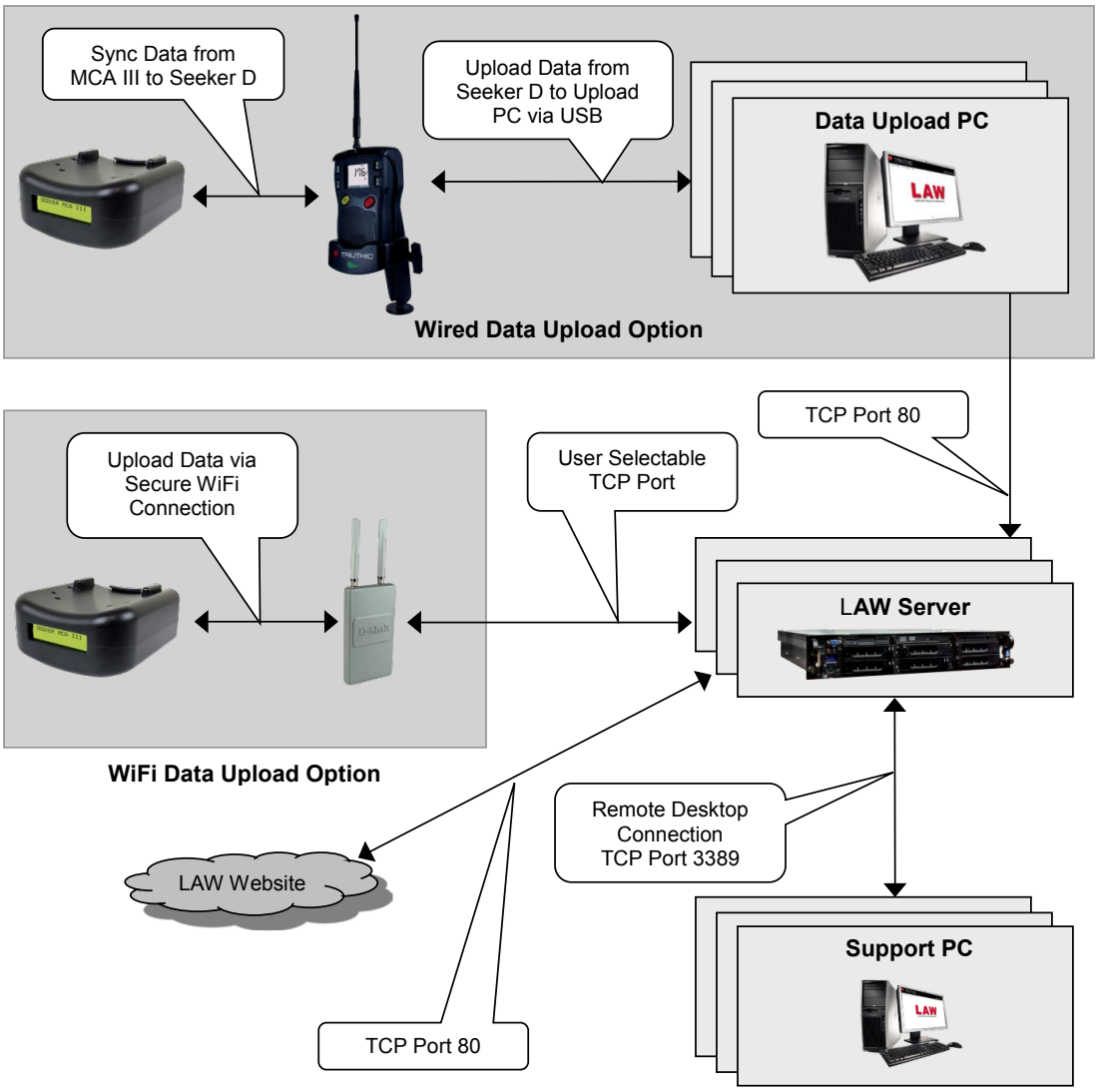
Tier Level	Minimum Level	Ring Radius
Tier 1	400+	400
Tier 2	100–400	300
Tier 3	50–100	200
Tier 4	20–50	160
Tier 5	<20	80

These tiers define gradually increasing rings of area ownership associated with a particular leak. Generally larger Tier distances will ensure that a particular leak will not be put on the map more than once. Additionally, if you are utilizing the auto-closure feature of LAW-X, the tier distances are used to define the region in which the MCA and GPS must be located at the time the meter is re-docked after taking leakage snapshots in order for the snapshots to be associated with that leak.

Tier 5 must have the lowest leakage value, and Tier 1 must have the highest value. Tier 2 down to Tier 5 all act in the same way, and will see if the leak is greater than or equal to the leakage value but less than the next higher tier and post a keep out perimeter around those leaks equal to the distance for the tier in which the leak falls.

Communication Ports and Protocols

Using LAW-X with the Seeker, Seeker D, or Seeker X and Seeker MCA, MCA II, or MCA III



LAW-X Software Setup Checklist

The following checklist assumes that the LAW-X software has been installed on the server, an instance has been created, and that the initial login menu can be reached via the web page.

Also, this is merely a progress checklist suggesting the steps to be taken in the initial setup, and the order in which the steps should be performed.

1. Set up users – Administration menu, Manage Users
2. Set up communities – Administration menu, Community Definition
3. Enter configuration settings – Administration menu, Configuration
4. Assign users to communities – Administration menu, Manage Users
5. Schedule a batch process – Administration menu, Batch schedule
6. Configure Seekers and MCAs – (Seeker and Seeker D use Seeker Setup Software, the Seeker X uses StrataSync through the Mobile Tech app)
7. Perform the rideout and then upload leakage data – Web upoad from Mobile Tech app X Link feature for Seeker X, Wi-Fi from Seeker MCA, MCA II, MCA III, or manual upload from Seeker.
8. Check to ensure leaks are populated and work orders were generated – LAW-X, Leakage Map and Data (may have to wait 6 hours from initial upload for batch processing, batch runs 4 times a day).

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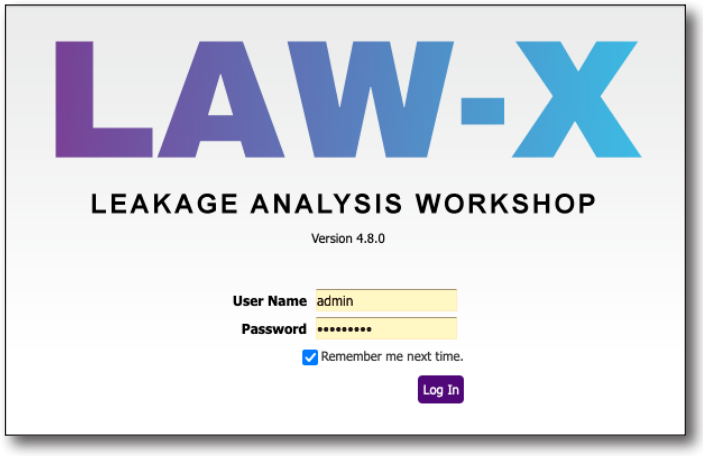
Quick Tour

This chapter provides an overview of LAW-X and its key features, including the following:

Connecting to LAW-X



Welcome to LAW-X! To bring up the LAW-X login screen from your browser, type in the URL provided to you by VIAVI when your LAW-X site was created.

This typically consists of the LAW-X machine's DNS name and LAW-X instance name combined in the form of a URL.

Your LAW-X administrator may have already created a browser bookmark and user account for you.

Enter your Username and Password, then select the **Log In** button.

The default login for a new install is:

User: admin

Password: viavi

The LAW-X **Main menu** will be displayed.

Note: If you need help logging in, contact your LAW-X administrator.

LAW-X Main menu

LAW-X Main menu

1. **Send Meter Data –** Allows you to upload meter data to the VIAVI server without logging in
2. **Quick Search –** Use arrows to choose **Work Order** or **Leak**, then enter the leak or work order ID into the box and click the arrow button
3. **Current screen –** Name of the current screen
4. **Sign Out** – Signs you out of LAW-X

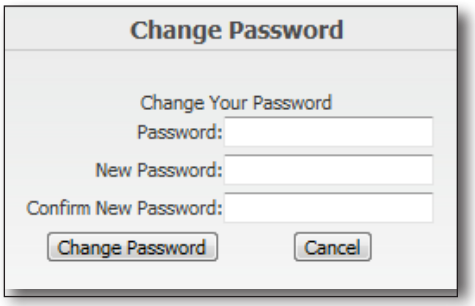
Initial Configuration

When using LAW-X for the first time, perform the following tasks in order to properly configure the system.

- Once you are logged in as administrator for the first time, change your password.
- Create login accounts for all users. See *"Manage Users" on page 212* for more information on how to create user accounts.
- Create communities for the system and assign users to these communities. See *"Community Definition" on page 160* for more information on how to define communities and assign users to these communities.
- Define the leakage refinement configuration parameters. See *"Community Definition" on page 160* for more information on how to define leakage refinement parameters.
- Inform LAW-X users of the web address and their login information. See the *"Connecting to LAW-X" on page 22* for more information on logging into individual user accounts for the first time. See the *"Changing Your Password" on page 25* for more information on changing user passwords.

Changing Your Password

Your system administrator can reset your password to the system default.



1. Notify the administrator to reset your password.
2. Log in using your user name and the default password: **viavi**.
3. The **Change Your Password** screen will appear as shown in the figure below, prompting you to change your password. In the **Password** field, enter **viavi** as the default password.
4. Choose a new password and enter that password into the **New Password** field. Enter the new password once again into the **Confirm New Password** field.
5. Select the **Change Password** to confirm. The system will display the message "Change Password Complete. Your password has been changed!" confirming the update.
6. Select **Continue** to log in to LAW-X.

NOTE:

Passwords are case-sensitive and the system default password can be changed to a user-defined default password as described in "DefaultPassword" on page 197

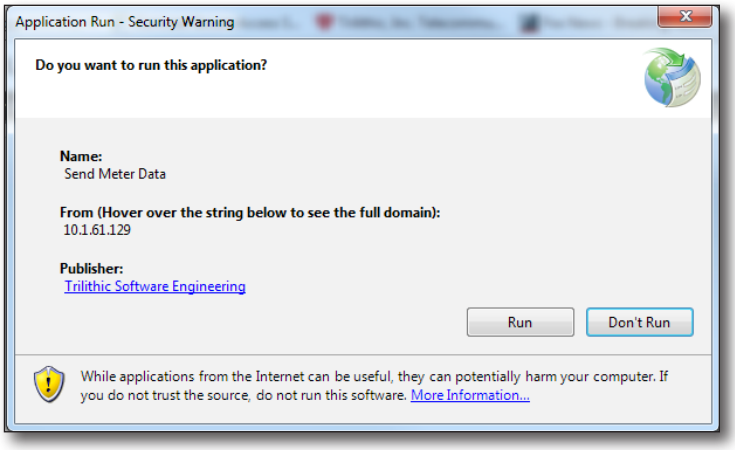
Send Meter Data

LAW-X allows for the upload of leakage data directly from each Seeker leakage detector.

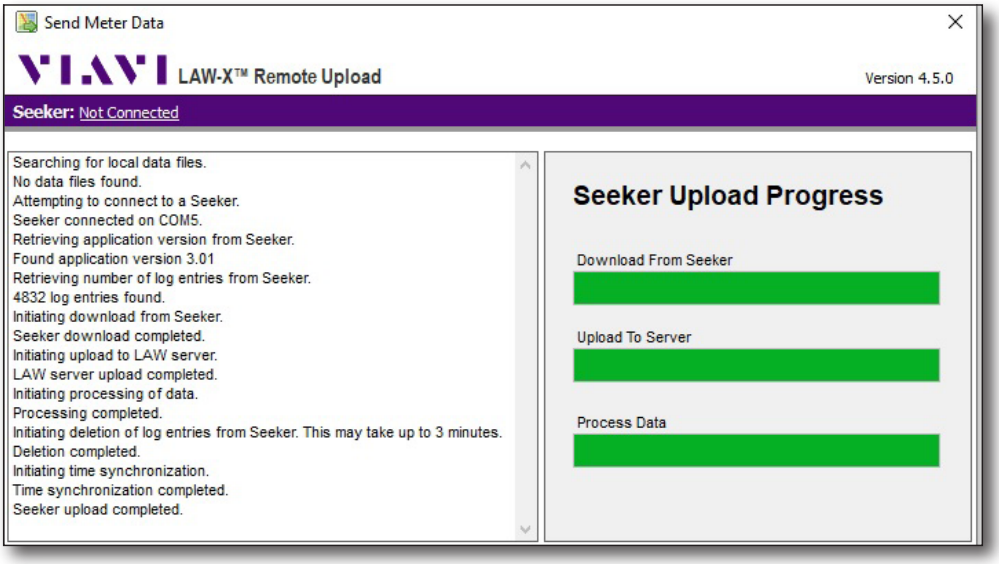
Once this data has been uploaded, the leakage data will be displayed through the **Leakage Map & Data** screen, and can be assigned to work orders or viewed through LAW-X's reporting tools.

To get started, you'll need to first transfer the data from the MCA III to the Seeker meter. To do this, press the **SNAPSHOT** camera button on the Seeker meter until you see "sync" on the display. When finished, "done" is displayed.

Finally, connect the meter to the computer via USB, then click **Send Meter Data.** A security window may appear (depending on the web browser's security settings), as shown here. Select **Run** to start the application.

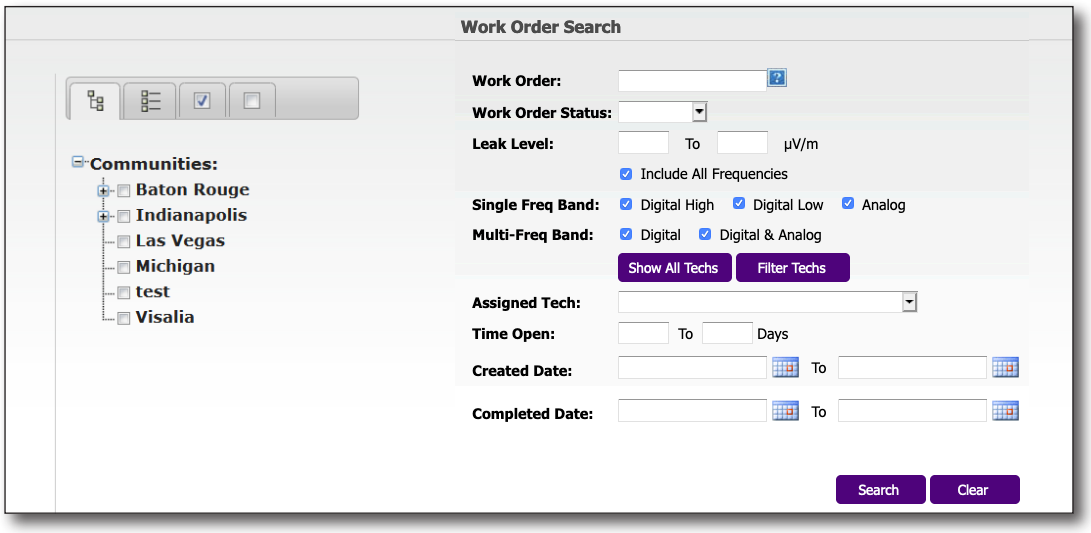


The **LAW-X Remote Upload Application** window will appear. When the meter data has been loaded into LAW-X, it will show how many files/records have been uploaded into LAW-X, as shown here.

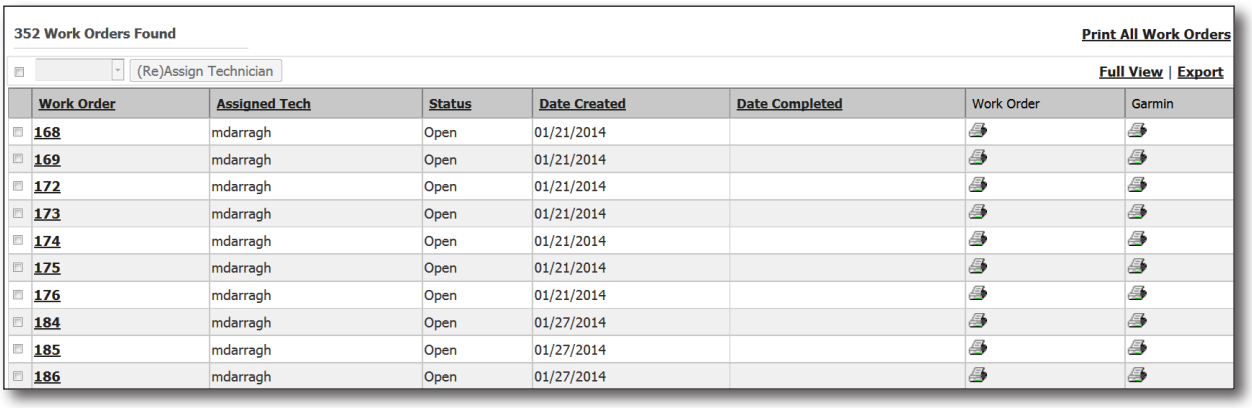


Work Order Search

The **Work Order Search** menu allows you to search for work orders, based on the criteria chosen.



1. Enter the relevant search data and select **Search**. The results are displayed below. You can aslo select **Clear** to clear all text fields



Work Order	Assigned Tech	Status	Date Created	Date Completed	Work Order	Garmin
168	mdarragh	Open	01/21/2014			
169	mdarragh	Open	01/21/2014			
172	mdarragh	Open	01/21/2014			
173	mdarragh	Open	01/21/2014			
174	mdarragh	Open	01/21/2014			
175	mdarragh	Open	01/21/2014			
176	mdarragh	Open	01/21/2014			
184	mdarragh	Open	01/27/2014			
185	mdarragh	Open	01/27/2014			
186	mdarragh	Open	01/27/2014			

2. You can choose from the following filtering options:
    - **Choose Full or Paged View** – Select the **Full View** link to view a scrolling view of the results or select the **Paged View** link to view a multi-page view of the work orders.
    - **Review Work Order Details** – To review details of a work order from the search results, click on the corresponding **Work Order ID** link in the table.

- **Assign or Reassign Work Orders to Technicians** – To reassign a work order to a new technician from the search results, select the checkbox next the each **Work Order ID** in the table or select the checkbox at the top of the table to select all of the work orders. Then, select the new technician from the dropdown box at the top of the table and select the **(Re)Assign Technician** button.
- **Print a Work Order Report** – To print a single Work Order Report, in the "Work Order" column click the  icon located in the row corresponding to the desired work order. You can print all of the work orders by simply selecting the **Print All Work Orders** link.
- **Export Garmin Data** – To export Garmin navigation data, in the "Garmin" column click the  icon located in the row corresponding to the desired work order.
- **Export** – To export all of the work order data, select the **Export** link.

NOTE:

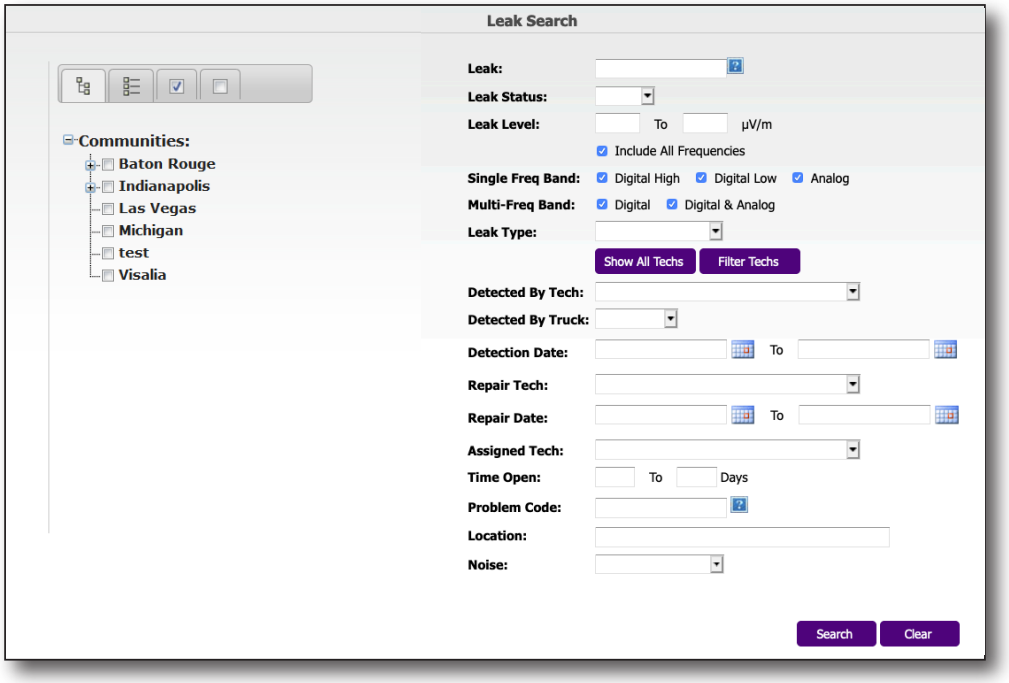
You can specify a range of work orders. Separate work orders in a range with a hyphen, separate multiple work orders or ranges with commas.

For example, entering the range "2345, 2347–2350" will return work orders 2345, 2347, 2348, 2349, and 2350.

To search from a specific work order to all subsequent work orders, enter the work order with a hyphen. For example, "1111-" returns work order 1111 and all that follow.

Leak Search

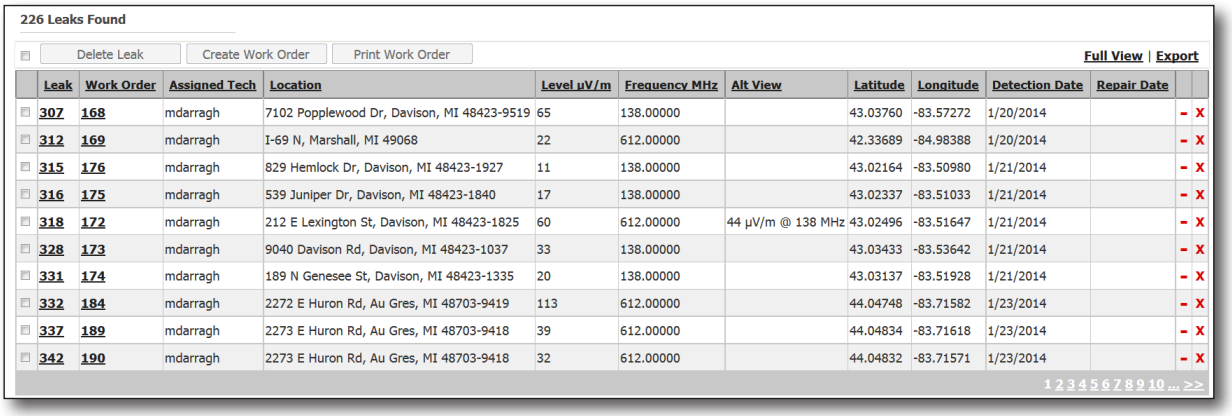
The **Leak Search** menu allows you to search for leaks, based on the criteria chosen.



1. Enter the relevant search data and select **Search**. The results are displayed below. You can aslo select **Clear** to clear all text fields.

   Leaks assigned to a **Work Order** will be associated with a **Work Order ID** number.

2. Click the **Leak** or **Work Order ID** link to view details about the selected leak or work order.



226 Leaks Found

Delete Leak | Create Work Order | Print Work Order | Full View | Export

Leak	Work Order	Assigned Tech	Location	Level µV/m	Frequency MHz	Alt View	Latitude	Longitude	Detection Date	Repair Date	
307	168	mdarragh	7102 Popplewood Dr, Davison, MI 48423-9519	65	138.00000		43.03760	-83.57272	1/20/2014		- X
312	169	mdarragh	I-69 N, Marshall, MI 49068	22	612.00000		42.33689	-84.98388	1/20/2014		- X
315	176	mdarragh	829 Hemlock Dr, Davison, MI 48423-1927	11	138.00000		43.02164	-83.50980	1/21/2014		- X
316	175	mdarragh	539 Juniper Dr, Davison, MI 48423-1840	17	138.00000		43.02337	-83.51033	1/21/2014		- X
318	172	mdarragh	212 E Lexington St, Davison, MI 48423-1825	60	612.00000	44 µV/m @ 138 MHz	43.02496	-83.51647	1/21/2014		- X
328	173	mdarragh	9040 Davison Rd, Davison, MI 48423-1037	33	138.00000		43.03433	-83.53642	1/21/2014		- X
331	174	mdarragh	189 N Genesee St, Davison, MI 48423-1335	20	138.00000		43.03137	-83.51928	1/21/2014		- X
332	184	mdarragh	2272 E Huron Rd, Au Gres, MI 48703-9419	113	612.00000		44.04748	-83.71582	1/23/2014		- X
337	189	mdarragh	2273 E Huron Rd, Au Gres, MI 48703-9418	39	612.00000		44.04834	-83.71618	1/23/2014		- X
342	190	mdarragh	2273 E Huron Rd, Au Gres, MI 48703-9418	32	612.00000		44.04832	-83.71571	1/23/2014		- X

1 2 3 4 5 6 7 8 9 10 ... >>

3. You can choose from the following filtering options:
    - **Choose Full or Paged View** – Select the **Full View** link to view a scrolling view of the results or select the **Paged View** link to view a multi-page view of the leaks.
    - **Delete Leaks** – To delete a leak, select the checkbox next the each **Leak ID** in the table or select the checkbox at the top of the table to select all of the leaks. Then, select the **Delete Leak** button.
    - **Create Work Orders** – To create a new work order, select the checkbox next any **Leak ID** in the table that is not currently assigned a work order. Then, select the **Create Work Order** button.
    - **Print Work Order Reports** – To print a Work Order Report from the search results, select the checkbox next the each **Work Order ID** in the table or select the checkbox at the top of the table to select all of the work orders. Then, select the **Print Work Order** button.
    - **Remove Leak from Work Order** – To remove a leak from a work order, click the red "-" in the right-most column next to the corresponding **Leak** that will be removed. A confirmation window will appear, select the **OK** button to remove the leak from the work order or select the **Cancel** button to exit without removing the leak.
    - **Export** – To export all of the leak data, select the **Export** link.

NOTE:

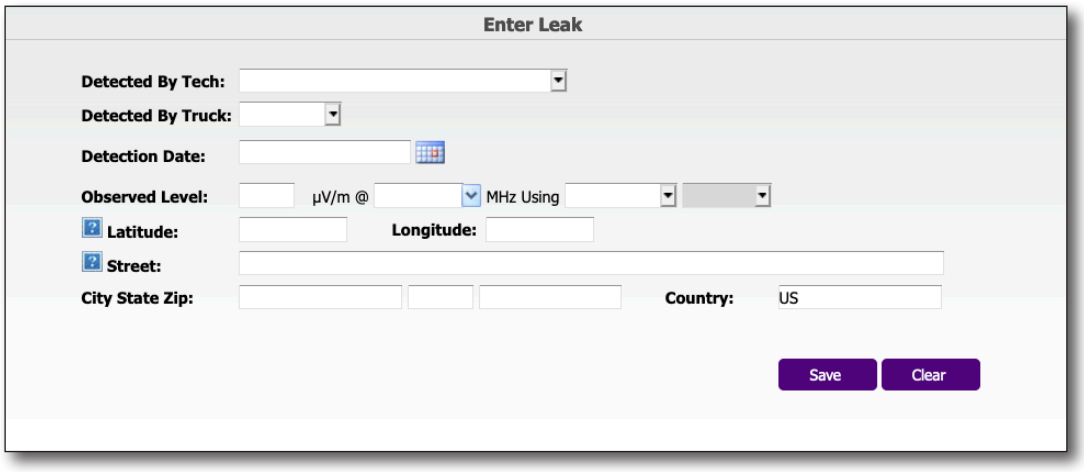
You can specify a range of leaks. Separate leaks in a range with a hyphen, separate multiple leaks or ranges with commas.

For example, entering the range "2345, 2347–2350" will return leaks 2345, 2347, 2348, 2349, and 2350.

To search from a specific leak to all subsequent leaks, enter the leak with a hyphen. For example, "1111-" returns leak 1111 and all that follow.

Enter Leak

The **Enter Leak** menu allows you to manually enter leaks.



NOTE:

This feature is useful for systems with legacy leakage detectors that cannot automatically sync to LAW-X.

Enter the leak detail using the following information:

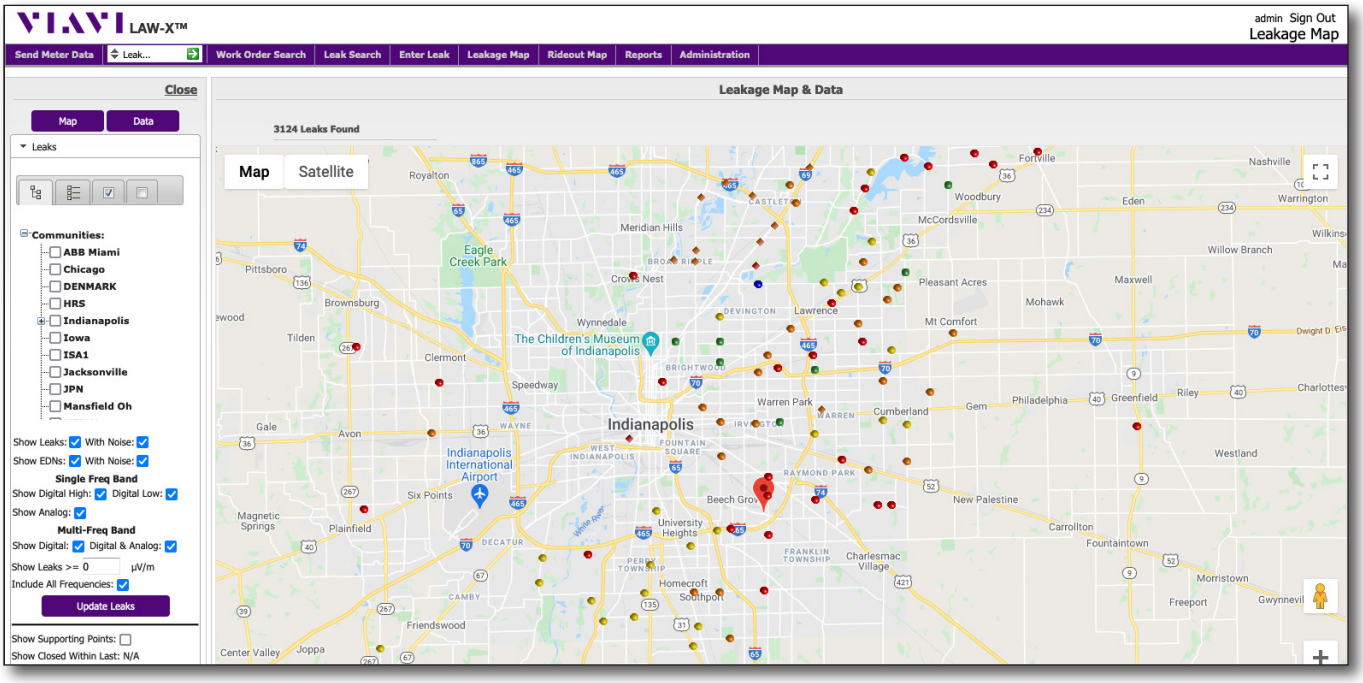
- **Detected By Tech** – This identifies the technician that located the leak.
- **Detected By Truck** – This identifies the truck that located the leak.
- **Detection Date** – The date and time that the leak was reported. Choose the date of the leak on the calendar by directly selecting the date the leak occurred.
- **Observed Level** – This is the measured frequency and field strength of the leak, in µV/m, as well as the meter and signal type used.
- **Latitude and Logitude**
- **Street** – The street address of the leak.
- **City State Zip**
- **Country**

When finished editing the leak, select **Save** to save the changes or **Clear** to start over.

The new leak should be visible on the interactive map as well as on the **Leak** list located at the bottom of the **Leakage Map & Data** menu.

Leakage Map & Data

The **Leakage Map & Data** menu allows you to view leaks on an interactive map.



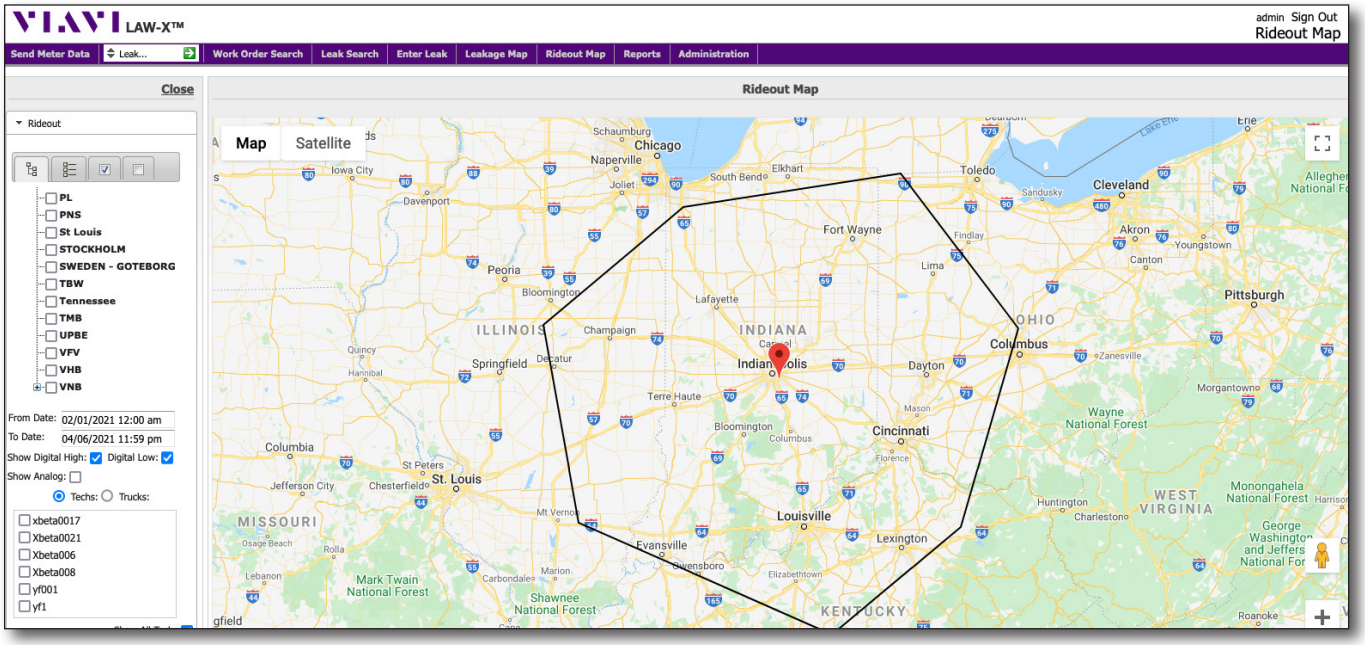
The map display preferences can be changed, leaks can be viewed/deleted, and work orders can be manually viewed/created/printed using the **Leakage Map & Data**.

NOTE:

For more detailed information about using the interactive map, see "Leakage Map and Data" on page 37.

Rideout Map

The **Rideout Map** menu allows you to view the rideout path of technicians and trucks on an interactive map.



The map display preferences can be changed, techs/trucks paths can be displayed, and maps can be printed using the **Rideout Map**.

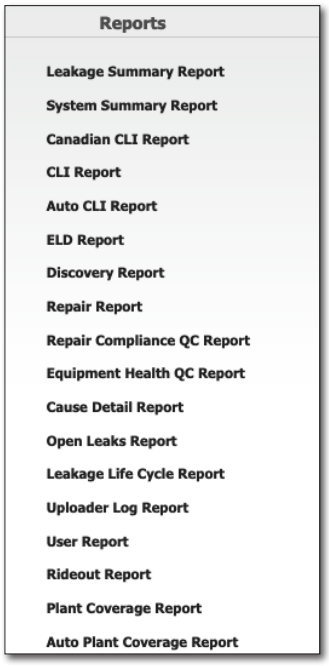
NOTE:

For more detailed information about using the rideout map, see "Rideout Map" on page 63.

Reports

The **Reports** menu allows you to create reports using LAW-X. Hovering over **Reports** displays the dropdown menu.

When you click **Reports**, the full **Reports** menu is also displayed, as shown here.



Once the type of report has been selected, a prompt for report criteria will be displayed. After entering the search criteria, LAW-X will create a report that can be viewed, printed, and/or saved.

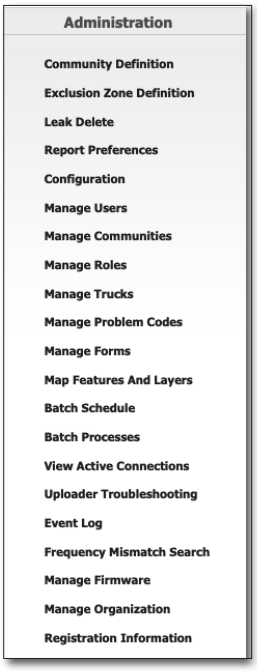
NOTE:

For more detailed information about creating reports, see "Reports" on page 77.

Administration

The **Administration** menu allows you to perform numerous administrator functions in LAW-X. Hovering over the **Administration** link will display a quick access dropdown menu..

When you click **Administration**, the full **Administration** menu is also displayed, as shown here.



NOTE:

The API Configuration link is only available if the currently logged-in user has account privileges for the API.

NOTE:

For more detailed information about changing administrative settings, see "Administration" on page 157.

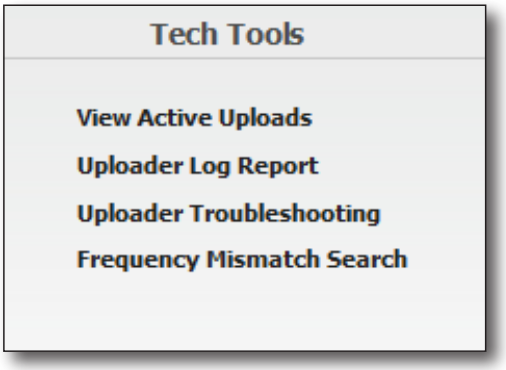
Tech Tools

The **Tech Tools** menu allows you to view information and reports associated to your own account and community visibility. Hovering over **Tech Tools** displays the dropdown menu.

NOTE:

The Tech Tools menu only appears in the Main menu if the user does not have administrator rights. This provides them with basic LAW-X troubleshooting tools for their own data.

When you click **Tech Tools**, the full **Tech Tools** menu is also displayed, as shown here.



3

Leakage Map and Data

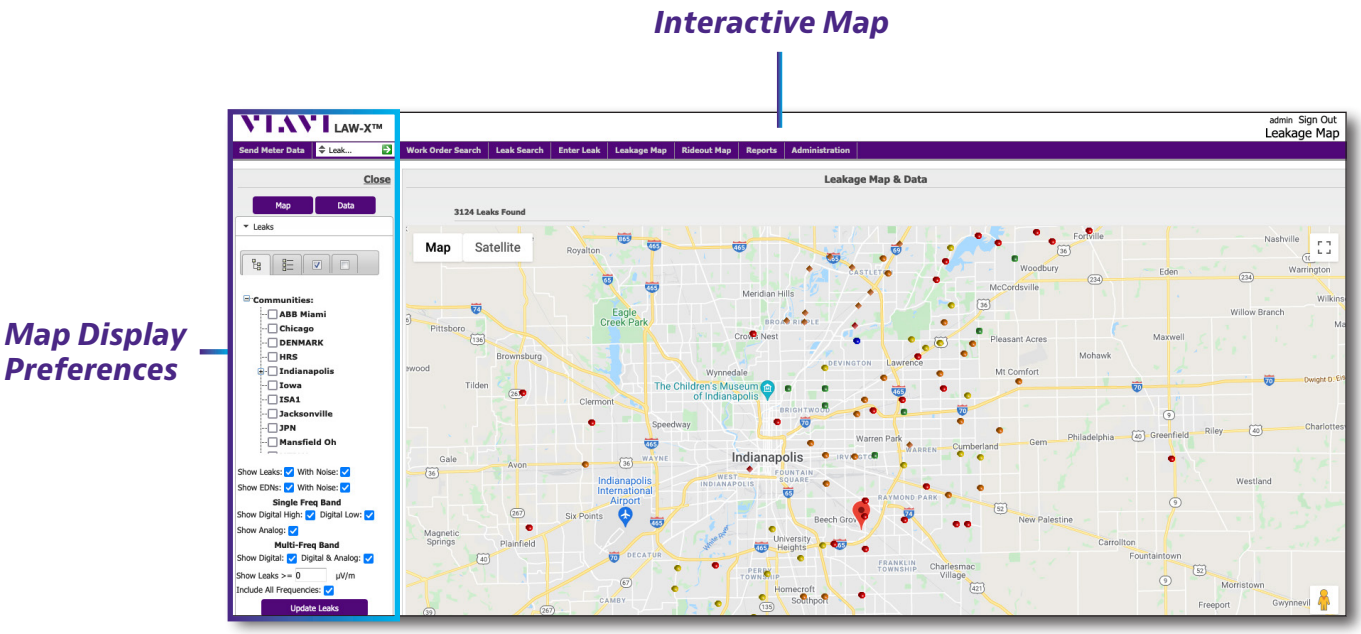
This chapter provides an overview of the Leakage Map, including the following:

Overview

The **Leakage Map & Data** menu allows you to view a variety of leakage map and data information, including the following:

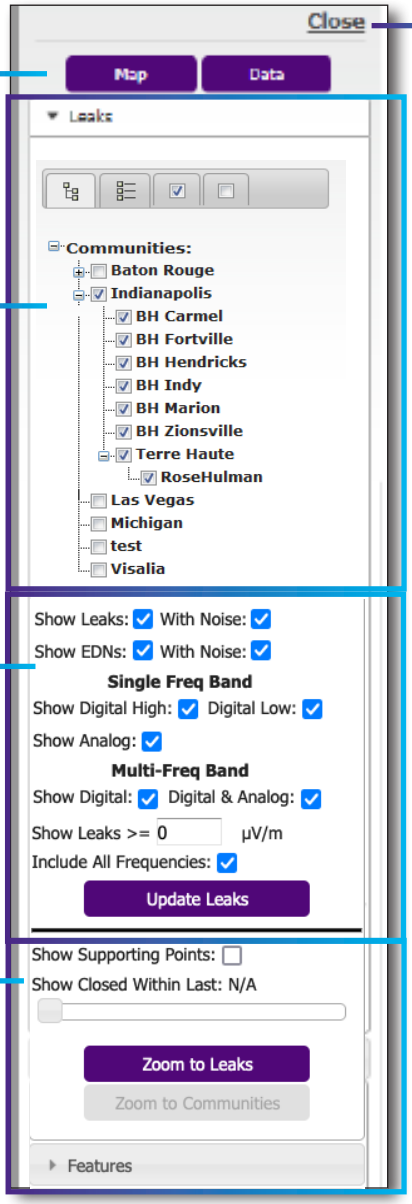
- View leak points and leak details on an interactive map
- Change the map data preferences
- Change the map display preferences
- View the work order table, which shows relevant leak details
- Choose leaks to include in a new work order
- Delete leaks from their respective communities

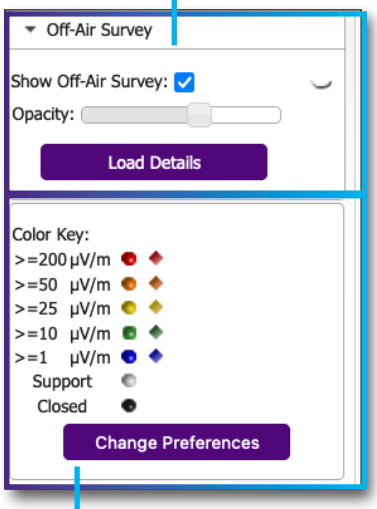
To enter the Leakage Map function, select the **Leakage Map** link from the **Main** menu. Key areas of the **Leakage Map & Data** menu are shown in the following figure.



Map Display Preferences

The **Map Display Preferences** are settings that determine what information is included on the map and how it is viewed. The **Map Display Preferences** menu is shown in the following figure.





Close/Open

Displays or hides the menu

Map/Data

Displays the leakage map or data table

Community tree

Displays the name of the actively selected community and all configured communities

Leak prefs

Enter the minimum leakage level visible and show/hide leaks, noise and EDNs on the interactive map

Map view

This area controls the preferences applied to the current map view

Off-air survey

Displays the off-air survey on the map

Color key

Set up leakage ranges with colors for easy referencing on the map

Community Tree

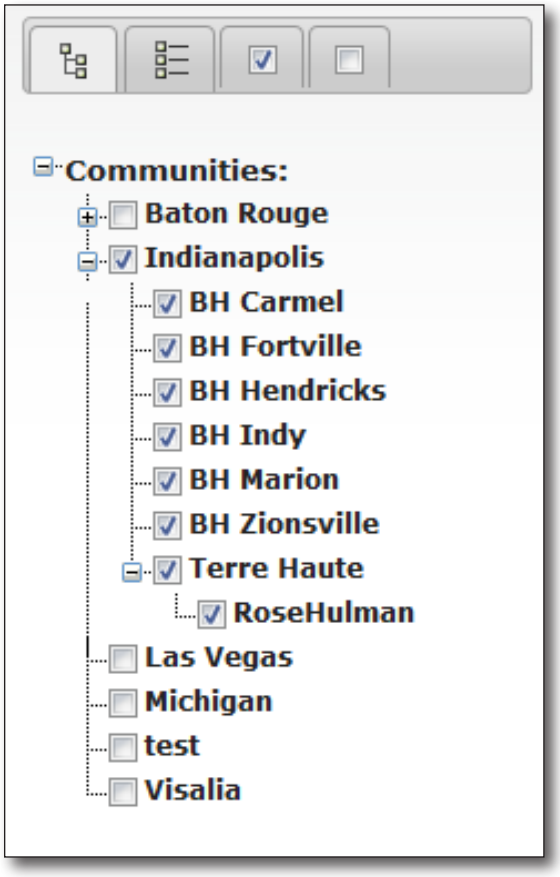
The Community Tree is used to display and navigate all of the configured communities within LAW-X. The community visibility can be limited in the user account by an administration user. Community visibility is given in the user account by selecting the checkbox next to the community name for each community in the tree.

The **Communities** level of the tree is the default parent of all communities created within LAW-X and will always be displayed. When this level of the tree is selected, the Home Base location will be displayed on the communities map view.

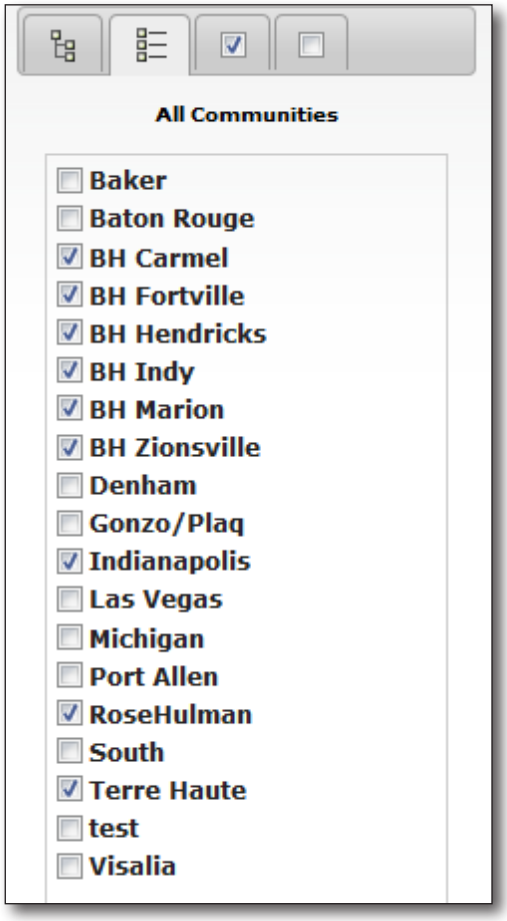
All parent communities that include children communities will be displayed with a +/- symbol to the left of its name.

Select the communities to view on the map as follows:

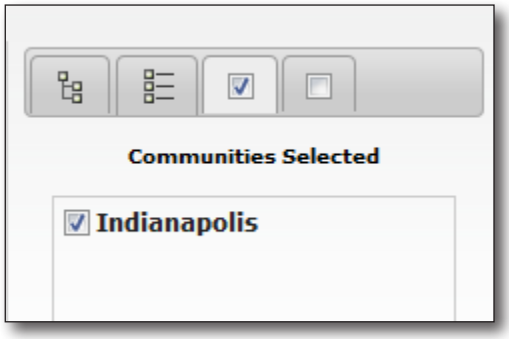
- **Communities Tab** – This tab displays all of the configured communities. Select communities using the following methods:
    - Use the +/- symbol to the left of parent communities to show/hide child communities.
    - To choose a single community, select the checkbox next to each community name and select the **Update Leaks** button or select the name of the community to automatically show that community's leaks and data.
    - To choose a parent community and all of its children, select the name of the community itself.



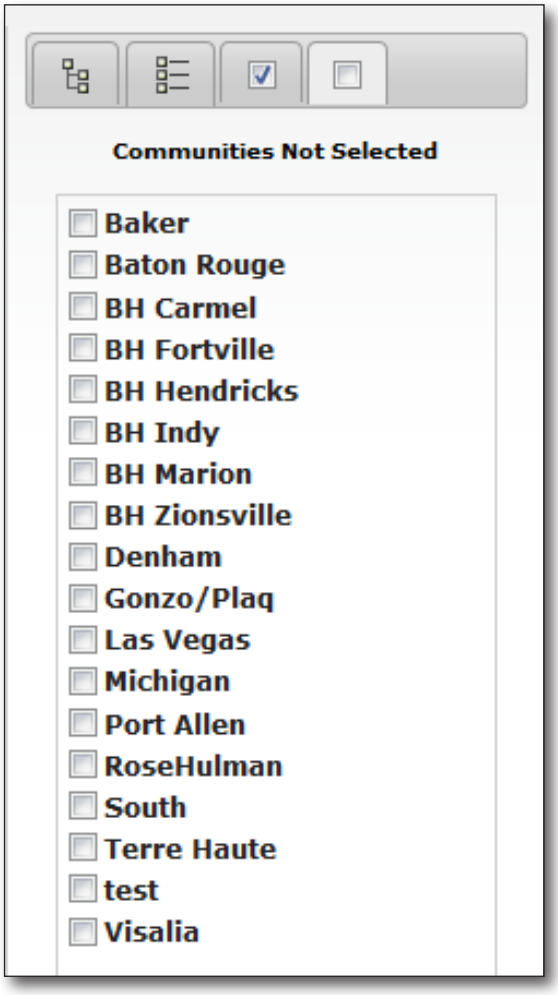
- **All Communities Tab** – This tab is used to display all of the available communities in alphanumeric order and easily remove any unwanted communities. To deselect communities, uncheck the checkbox next to the community name.



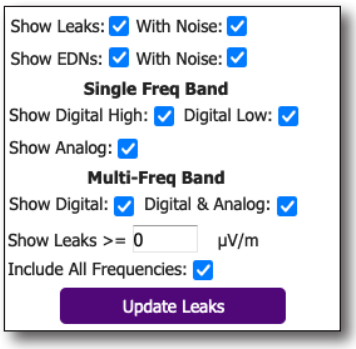
- **Communities Selected Tab** – This tab is used to display all of the selected communities in alphanumeric order and easily remove any unwanted communities. To remove unwanted communities, select the checkbox next to the community name.



- **Communities Not Selected Tab** – This tab is used to display all of the unselected communities in alphanumeric order and easily add additional communities. To add additional communities, select the checkbox next to the community name.



Leak Preferences



This area is used to control which types of leakage data to display on the map. After making any changes to these preferences, select the **Update Leaks** button to automatically update the map to reflect these changes. The following controls are available:

Leaks

Leaks can be displayed by selecting either or both of the following options:

- **Show Leaks** – This is used to display leaks on the map which do not include noise.
- **With Noise** – This is used to display leaks on the map which include noise.

EDNs

Early Detection Notifications (EDNs) can be displayed by selecting either or both of the following options:

- **Show EDNs** – This is used to display EDNs on the map which do not include noise.
- **With Noise** – This is used to display EDNs on the map which include noise.

Single-Frequency Band

Single frequency band leaks can be displayed by selecting either or all of the following options:

- **Show Digital High** – This is used to display digital high-band frequency leaks on the map.
- **Digital Low** – This is used to display digital low-band frequency leaks on the map.
- **Show Analog** – This is used to display analog frequency leaks on the map.

Multi-Frequency Band

Multi-frequency band leaks can be displayed by selecting either or both of the following options:

- **Show Digital** – This is used to display leaks detected in both digital high and low frequency bands on the map.
- **Show Digital & Analog** – This is used to display leaks detected in both digital (high and low) and analog frequency bands on the map.

Minimum Leak Level

To change the minimum level of leakage visible on the map, enter the desired leakage level in the **Show Leaks >=** text field.

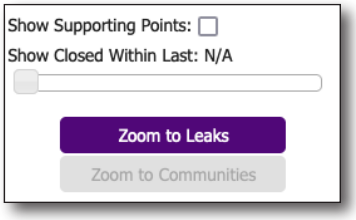
Include All Frequencies

This is used to display levels detected at all frequencies on the map.

Map View Preferences

This area is used to control how the map is displayed.

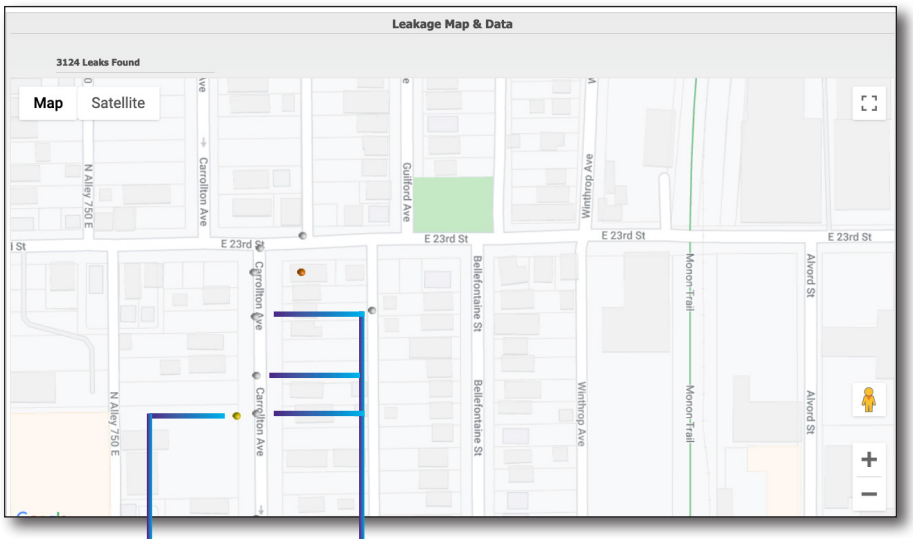
Show Supporting Points



Supporting points are used to indicate the position of the points used to generate the composite leak point. They give the user an indication of the leakage conditions around the leak area and where a technician might expect to start hearing the leak as he approaches the area.

Depending on the conditions surrounding the leak in question, there may not be supporting points for all leak points. When they are visible on the map, they will generally be in close proximity to the leak point. Zoom in on the leak point to view the supporting points, if they apply.

To view supporting points, select the **Show Supporting Points** checkbox. The map will then update to show the location of the points as shown below.



Leak Point

Composite leak point established from the surrounding supporting points

Supporting Points

Points used to make a composite leak point

NOTE:

When a leak has no supporting points, the raw meter value is used to display the leak. The raw meter value is not corrected to indicate the distance from the meter to the leak.

Zoom to Leaks

Select this button to zoom the map in or out to display the leaks residing within the selected communities.

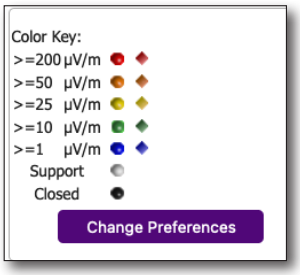
Zoom to Communities

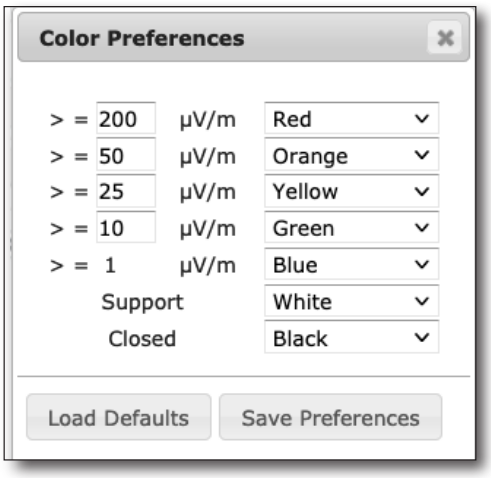
Select this button to zoom the map in or out to display the selected communities.

Color Key Preferences

To change the assignment of the map pin colors in relation to leakage value perform the following steps.

1. Select the **Change Preferences** button. The **Setup Preferences** window will appear in a separate window.
2. Enter the desired leakage values and select a color from the corresponding dropdown menu.
3. Select the **Save Preferences** button to save the settings or select the **Load Defaults** button to revert to the default settings.





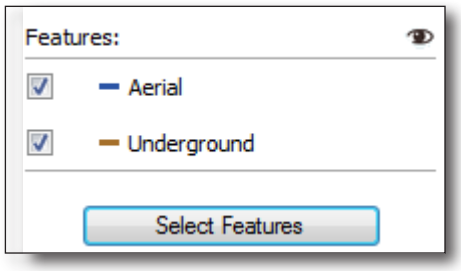
NOTE:

A different color selection for each value should be chosen. Any values changed here will affect any corresponding reports.

To return to the original settings, select the Load Defaults button.

Select Features

Select this button to show map features on the map. In the pop-up window, choose the feature types you would like to see: aerial, underground, etc.



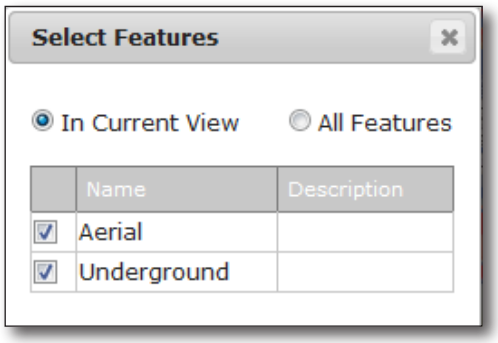
In this example, the features are color coded as follows:

- Blue – Aerial
- Brown – Underground

NOTE:

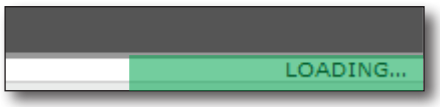
To setup and import map features, see "Map Features and Layers" on page 247.

You can also choose whether you want to view features that apply to the current view or all features. Click **OK** to confirm.



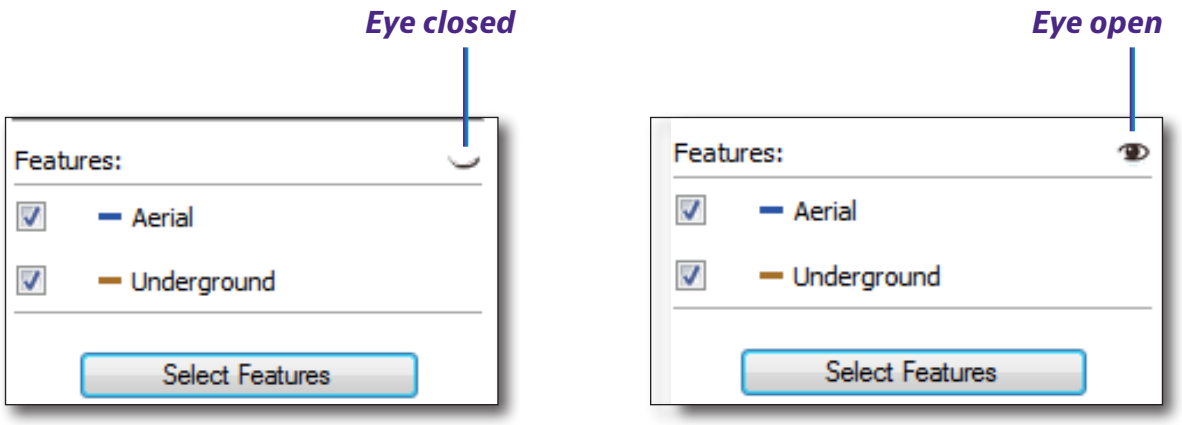
The map will begin redrawing, and depending on how much data has been collected, this may take some time.

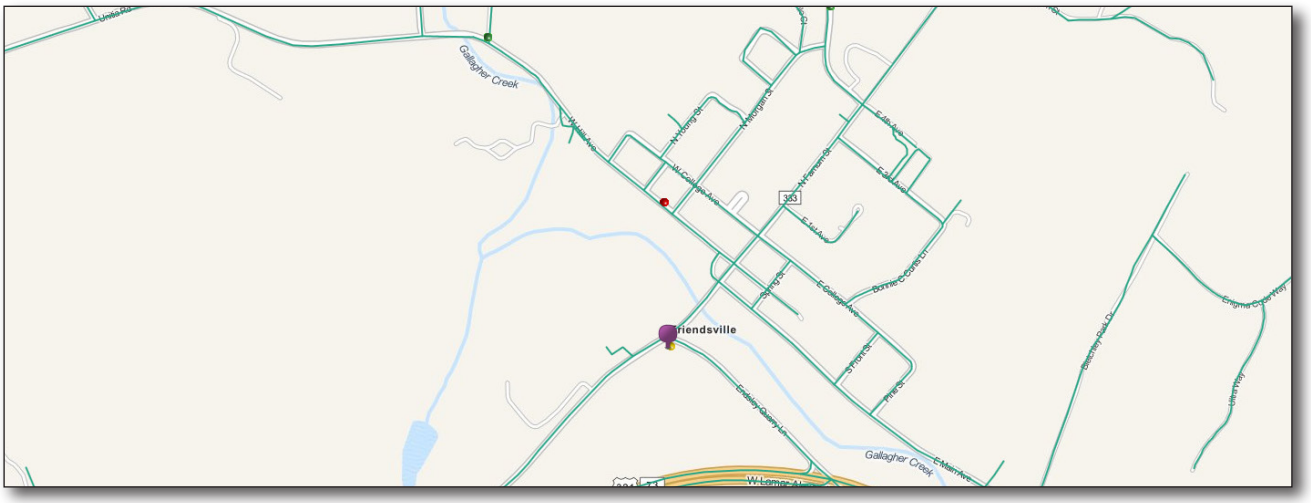
A loading status bar will appear in the top right corner as it loads.



If zoomed out too far, you will see a closed eye icon next to the **Features** section of the map view preferences (and the map features will not be loaded).

As you zoom in, the eye icon will open, indicating you are zoomed in enough to show the map features detail.





Leakage map, including map features

Map Display Options

Depending on the map view you want to use and the detail, you can use the following views.

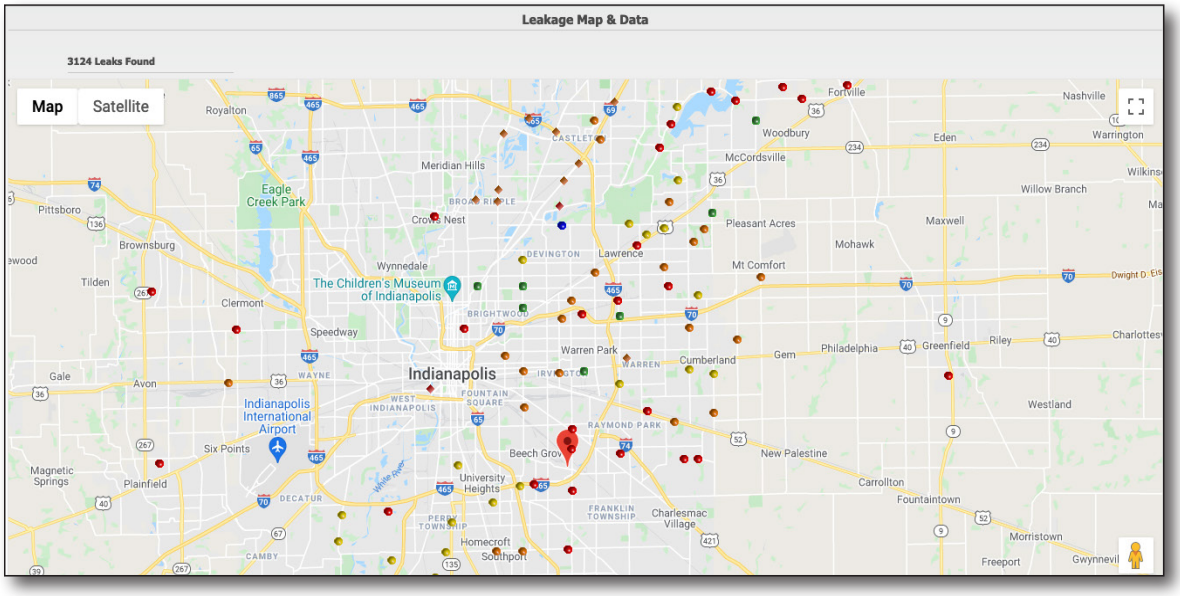
- **Map** – Displays the names of major highways, streets, and towns. Select **Terrain** from the dropdown to toggle the terrain or building views.
- **Satellite** – Displays the area as viewed via satellite photography. Select **Labels** from the dropdown to include streets names and other information.

NOTE:

There is an annual subscription renewal for the LAW-X application. The subscription provides monthly automatic map updates and is necessary for the map operation of LAW-X.

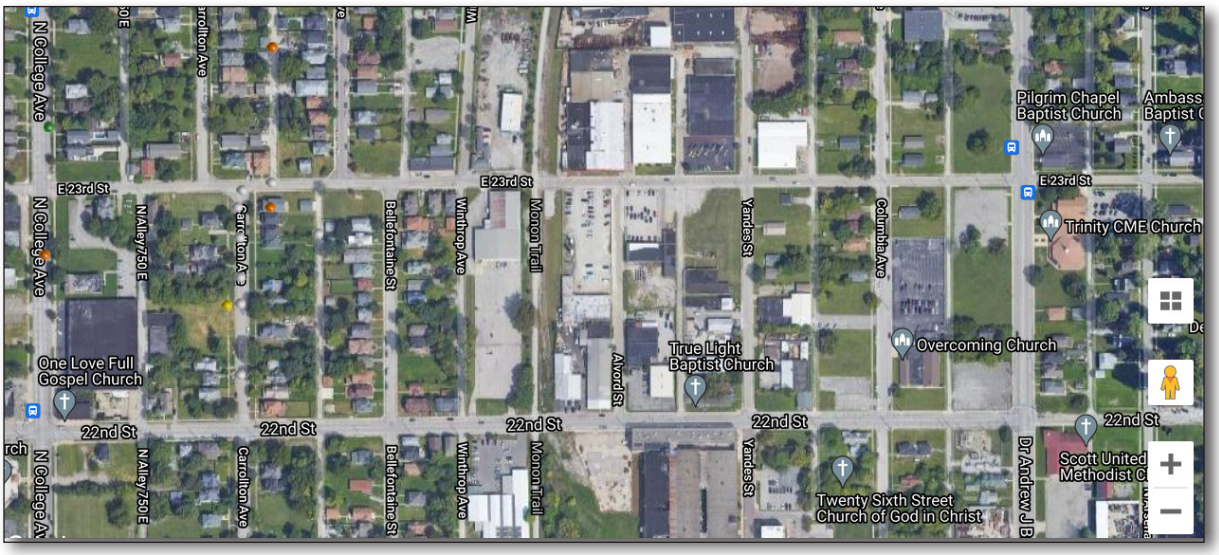
Map

The **Map** view shows major highways, streets, and towns surrounding the specified area, as shown below.



Satellite

The **Satellite** view allows the map to be viewed as seen from a satellite photography perspective, as shown below.



Map Tools

The features in this section are tools that help LAW-X users interact with the map.

Navigation

Click and drag the hand icon to move the map.

Full screen

Toggles full screen or window views.

Tilt

Click to tilt or rotate the map in satellite mode.

NOTE:

Not all zoom levels will be available in satellite mode.

Pegman

Drag the pegman onto the map to enter street view.

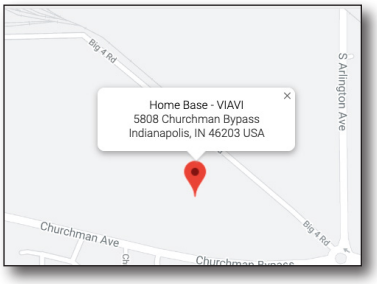
Zoom

The zoom function enables users to view the map closer or farther away and/or to navigate in a different direction on the map.

Use the +/– icons to zoom in or out on a specific area of the map. You can also use the mouse wheel to zoom, point your mouse where you want to zoom.

Home Base

The map pin indicates where home base is located on the map. The location of the home base is defined in *"Configuration" on page 193.*

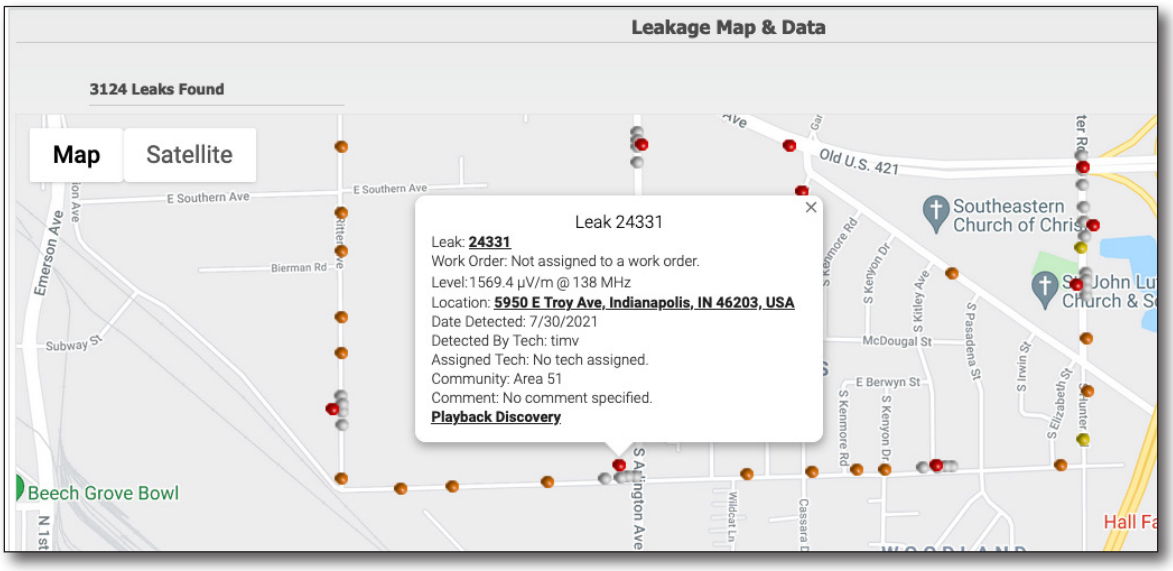


Leak ID

Leak points are established as automatic or manual leak entries. All map views identify leak points by color based on leak level.

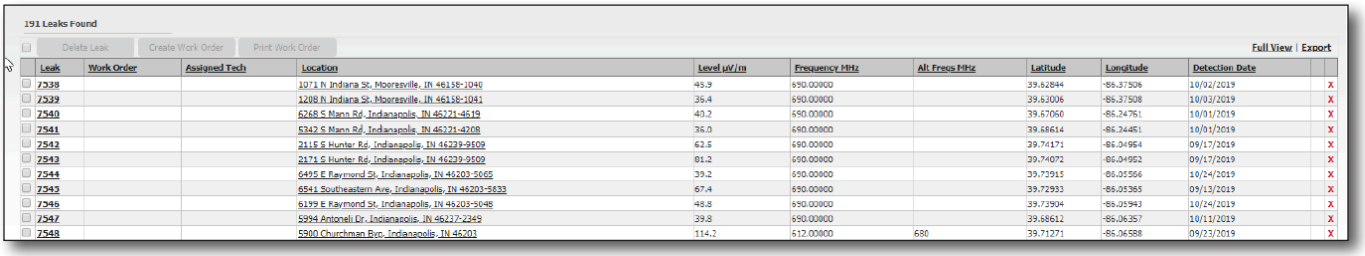
Click any of the colored icons on the map to see the information for that leak point.

Hover over the icon to view the leak ID, or in the case where you are zoomed out far enough, you can see the number of leaks for that area. You can also zoom to a particular leak for further inspection.



Leak Management

When leaks are displayed on the map, the total number of leaks found in a selected community will be displayed along with a leak table that displays the details of each leak as shown in the following image:



191 Leaks Found

Delete Leak | Create Work Order | Print Work Order | Full View | Export

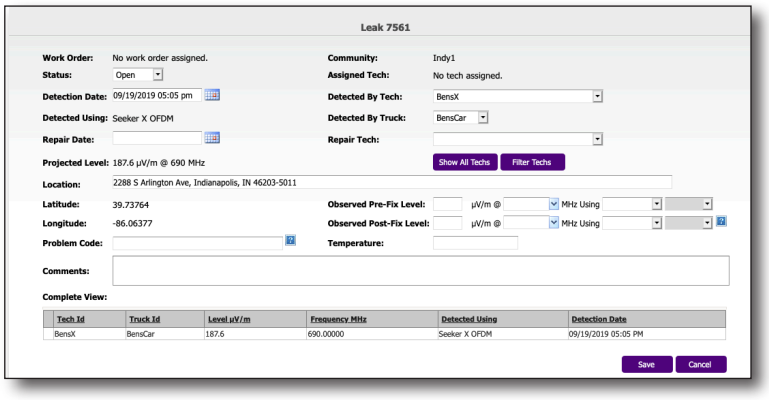
Leak	Work Order	Assigned Tech	Location	Level µV/m	Frequency MHz	Alt Freqs MHz	Latitude	Longitude	Detection Date	
7538			1071 N Indiana St, Mooresville, IN 46158-1040	45.9	690.00000		39.62844	-86.37506	10/02/2019	X
7539			1208 N Indiana St, Mooresville, IN 46158-1041	36.4	690.00000		39.63006	-86.37508	10/03/2019	X
7540			6268 S Mann Rd, Indianapolis, IN 46221-4619	40.2	690.00000		39.67060	-86.24761	10/01/2019	X
7541			5342 S Mann Rd, Indianapolis, IN 46221-4208	36.0	690.00000		39.68614	-86.24451	10/01/2019	X
7542			2115 S Hunter Rd, Indianapolis, IN 46239-9509	62.5	690.00000		39.74171	-86.04954	09/17/2019	X
7543			2171 S Hunter Rd, Indianapolis, IN 46239-9509	81.2	690.00000		39.74072	-86.04952	09/17/2019	X
7544			6495 E Raymond St, Indianapolis, IN 46203-5065	39.2	690.00000		39.73915	-86.05556	10/24/2019	X
7545			6541 Southeastern Ave, Indianapolis, IN 46203-5833	67.4	690.00000		39.72933	-86.05365	09/13/2019	X
7546			6199 E Raymond St, Indianapolis, IN 46203-5048	48.8	690.00000		39.73904	-86.05943	10/24/2019	X
7547			5994 Antonelli Dr, Indianapolis, IN 46237-2349	39.8	690.00000		39.68612	-86.06357	10/11/2019	X
7548			5900 Churchman Byp, Indianapolis, IN 46203	114.2	612.00000	680	39.71271	-86.06588	09/23/2019	X

The number of leaks found and the leaks that show up in the table below the map is based on the selected communities in the tree and leak display preferences. The following information is displayed within the Leak Table:

- **Leak** – Identification number that is automatically assigned to the leak when it was created
- **Work Order** – Identification number that is automatically assigned to the work order when it was created
- **Assigned Tech** – Name of the technician that was assigned to the respective work order
- **Location** – Street address (reverse geocoded) where the leak was located
- **Level** – Estimated level of the leak at the location
- **Frequency** – Frequency of the leak
- **Alt Freqs MHz** – If a leak level is detected at other frequencies, those frequencies are shown here.
- **Latitude** – Latitude at the location of the leak
- **Longitude** – Longitude at the location of the leak
- **Detection Date** – Date that the leak was identified
- **Repair Date** – Date the leak was repaired (if applicable, and only shown for closed leaks)

Leak Details

When you select the **Leak** number link from the **Leak Table** or **Work Order** menu, the **Leak Details** screen is displayed. This screen displays the details of each leak as shown in the image to the right.



After making any changes to the leak details, select the **Save** button to save the changes or select the **Cancel** button to discard the changes.

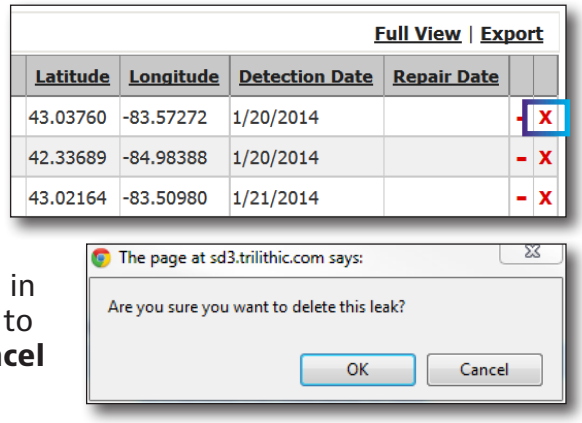
The following information is displayed and can be edited from within the **Leak Details**:

- **Status** – Used to mark a leak Open or Closed.
- **Assigned Tech** – Name of technician assigned to the leak, this field cannot be edited from this screen.
- **Detection Date** – Date and time the leak was detected.
- **Detected Using** – Device type used to detect the leak.
- **Detected by Tech** – Name of the technician that identified the leak.
- **Detected by Truck** – Name of the truck that identified the leak.
- **Repair Date** – Date and time that the leak was closed. If left blank, this space auto fills the computer date and time when the leak is closed.
- **Repair Tech** – Name of technician assigned to fix the leak. If left blank, this space auto fills with the name of the assigned technician when the leak is closed.
- **Location** – Street address (reverse geocoded) at the point where the leak was detected. Due to the inaccuracies of reverse geocoding it is recommended to use the latitude and longitude (dot on the map) provided to find the leak location.
- **Latitude and Longitude**
- **Projected Level** – Projected level of the leak after refinement. This field cannot be edited.
- **Complete View** – If a leak level is detected at other frequencies, the details of these other frequencies will be shown here.
- **Observed Pre-Fix Level** – Observed level of the leak as properly measured by the FCC's prescribed method prior to fixing the leak.
- **Observed Post-Fix Level** – Observed level of the leak as properly measured by the FCC's prescribed method after fixing the leak.

- **Problem Code** – Problem code entered to describe the leak. Choose from the dropdown box or enter the code.
- **Temperature** – Ambient air temperature measured where the leak was detected.
- **Comments** – Comments from the technician assigned to the leak.

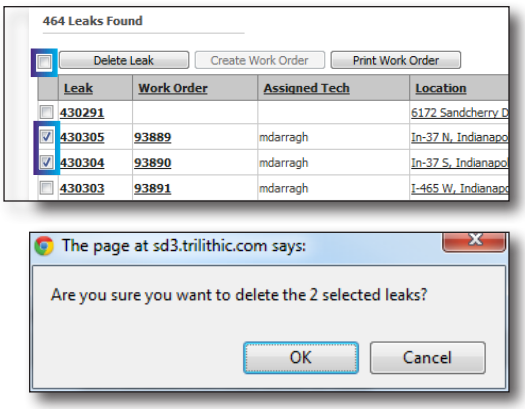
Delete a Single Leak from LAW-X

1. From the **Leak Table** or **Work Order** screen, click the red "X" in the right-most column next to the corresponding **Leak** that will be removed, or select the checkbox in the left column which corresponds to the leak to be deleted, then click the **Delete Leak** button.
2. A confirmation window will appear as shown in the image to the right. Select the **OK** button to delete the leak from LAW-X or select the **Cancel** button to exit without deleting the leak.



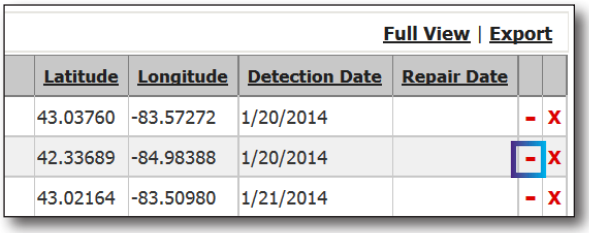
Delete Multiple Leaks from LAW-X

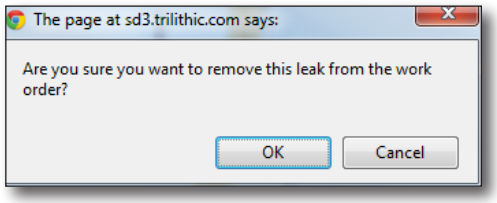
1. From the **Leak Table** or **Work Order** menu, select the checkbox that corresponds to each leak to be deleted or select the checkbox at the top of the column to select all leaks.
2. Select the **Delete Leak** button to delete the leaks.
3. A confirmation window will appear to confirm the deletion operation. Select the **OK** button to delete the leaks from LAW-X or select the **Cancel** button to exit without deleting the leaks.



Remove a Leak from a Work Order

1. From the **Leak Table** or **Work Order** screen, click the red "-" in the right-most column next to the corresponding **Leak** that will be removed.
2. A confirmation window will appear as shown in the image to the right. Select the **OK** button to remove the leak from the work order or select the **Cancel** button to exit without removing the leak.





NOTE:

If viewing the Work Order menu and the work order contains only one leak, the Leakage Map & Data menu will appear after the leak has been deleted from the work order.

NOTE:

Removing a leak from a work order does NOT delete the leak from the system. The leak will appear on the Leakage Map & Data menu with only a red "X" in the right-most column. The leak can now be assigned to a new work order.

NOTE:

For information on saving or printing work orders, see the Work Order Management section later in this chapter.

Work Order Management

After a leak is created in LAW-X, a work order can be issued either manually or automatically for the repairs. LAW-X is designed to allow technicians to use their time as efficiently as possible. Leaks display on the map showing the leak size as well as the location, which allows multiple leaks in the same vicinity to be assigned to one technician, on one work order. This section will describe how to perform the following tasks:

- Automatic work order generation
- Viewing work order details
- Manually creating work orders
- Assign/unassign work order to/from technician
- View and print a work order report
- Remove a leak from a work order
- Delete a single or multiple leaks from LAW-X
- Export Garmin navigation data

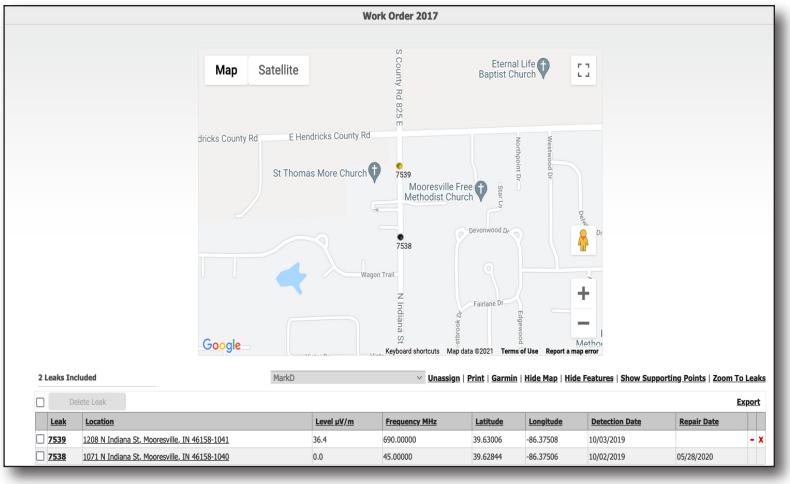
Automatic Work Order Generation

LAW-X can be set up to automatically assign work orders based on the location of the leaks. For additional information about how to automatically assign work orders, see *"Configuration" on page 193*.

Work Order Details

When you select the **Work Order** number link from the **Leak Table**, the **Work Order** screen is displayed. This screen displays a map and the details of each leak in the work order as shown in the image to the right.

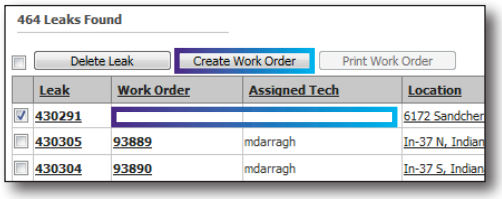
After making any changes to the work order, select the **Save** button to save the changes or select the **Cancel** button to discard the changes.



Manually Create a New Work Order

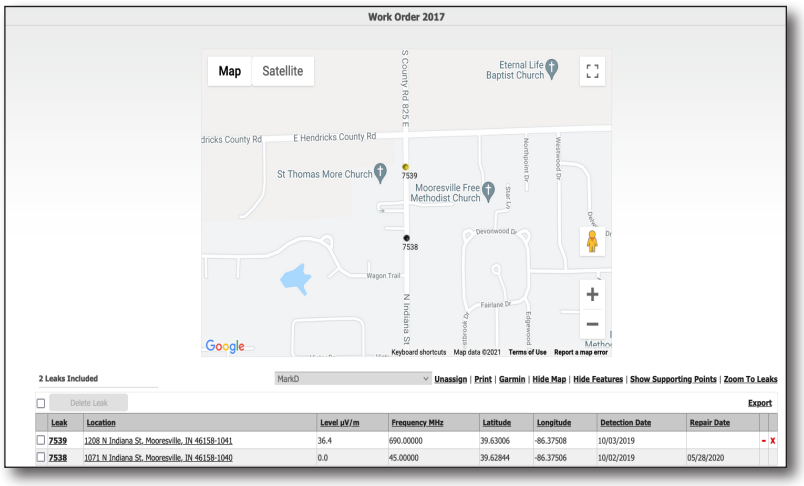
To create a work order for a leak that is not currently assigned to a work order, perform the following steps:

1. Leaks that are not currently assigned to a work order will not display a work order number in the work order column. The image to the right is an example of how a leak that has not been assigned to a work order will appear.



2. Select the checkbox to the left of the **Leak** name and then select the **Create Work Order** button.

3. The **Work Order** menu will appear as shown in the image to the right.



NOTE:

Another way to find leaks that have not been assigned to a work order is to sort the table by Work Order ID. This can be done by clicking the Work Order heading at the top of the table. Leaks without a Work Order ID (if any) will be located at the top of the table.

NOTE:

Multiple leaks can be added to a work order at the same time by selecting the checkboxes that correspond with the leaks to be included on the work order.

Assign Technician to Work Order

1. From the **Work Order** menu, use the dropdown box to the left of the **Assign** link to choose the technician.

2. Select the **Assign** link to assign the work order to the selected technician.
3. The work order menu will refresh with the name of the technician grayed out and a new **Unassign** link. This indicates that this technician has been assigned to the work order.

Unassign Technician from Work Order

1. Select the **Unassign** link to unassign the selected technician from the work order.

2. The work order menu will refresh to show the technician dropdown and the **Unassign** link. This indicates that this technician has been unassigned from the work order.

NOTE:

For information on deleting or removing leaks, see the Leak Management section earlier in this chapter.

Viewing, Saving, and Printing Work Orders

The print function allows work orders to be viewed, saved, or printed.

> ***NOTE:***
>
> ***For more information on changing work order report preferences, see "Report Preferences" on page 189.***

1. The print function can be accessed in either of the following ways:
   - From the **Leakage Map & Data** menu, select the desired work order by clicking on the corresponding **Work Order ID** link. The **Work Order** menu will appear. From the **Work Order** menu, click the **Print** link.
   - From the **Leakage Map & Data** menu, print multiple work orders at the same time by selecting the checkbox next to the desired work orders and then select the **Print Work Order** button.
   - From the **Work Order Search** and **Leak Search** menus, click the **Print Work Order** button.
2. After a brief delay, the work order report will appear on the screen in a separate window. The file can be printed and/or saved as a PDF file. The following figure is an example of a work order report.

VIAVI Solutions Inc.

Work Order 2017

Work Order	2017		
Leak	7539		
Location	1208 N Indiana St, Mooresville, IN 46158-1041 (39.63006/-86.37508)		
Community	Indy 1		
Detection Date	10/3/2019 7:04:28 AM	**Repair Date**	
Level	36.4 µV/m @ 690 MHz	**Street Level**	36.4 µV/m @ 690 MHz
Alternate View			
Problem/Code		**Observed Pre-Fix Level**	
Temperature		**Observed Post-Fix Level**	
Assigned Tech	MarkD		
Comment			

8/31/2021 11:49:51 AM VIAVI LAW™ Page 1 of 2

Garmin POI Export

The Garmin export function allows Garmin™ POI (point of interest) loader compatible files to be created, which are related to a specific work order.

1. From the **Work Order** screen, click the **Garmin** link.
2. LAW-X will create a CSV file for export to a Garmin navigation device. The **File Download** window will appear; select the **Save** button to save the file, or click the **Open** button to view the contents of the file.

NOTE:

With the Garmin POI loader (available from Garmin's website), leakage information can be loaded into a portable Garmin GPS device, or any other compatible mobile navigation device for turn by turn instructions directly to the leaks.

4

Rideout Map

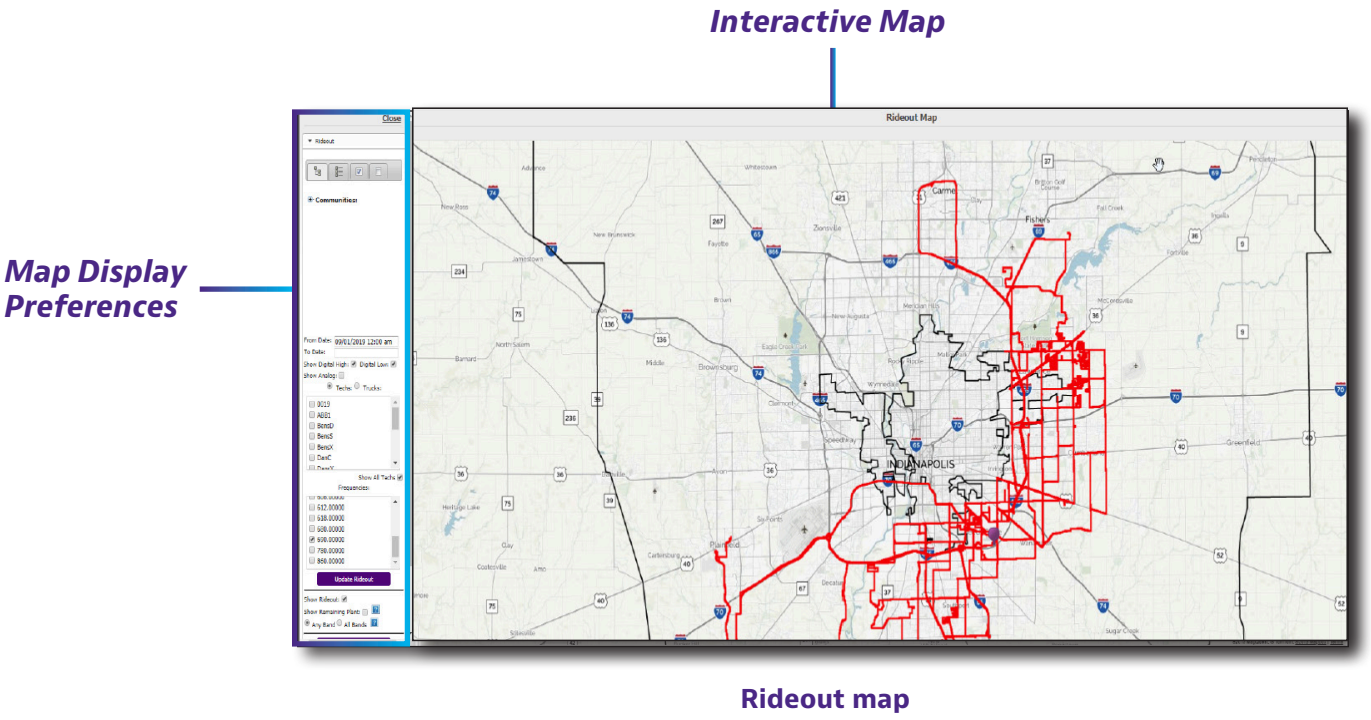
This chapter provides an overview of the Rideout Map, including the following:

Overview

The **Rideout Map** menu allows you to view a variety of rideout map and data information, including the following:

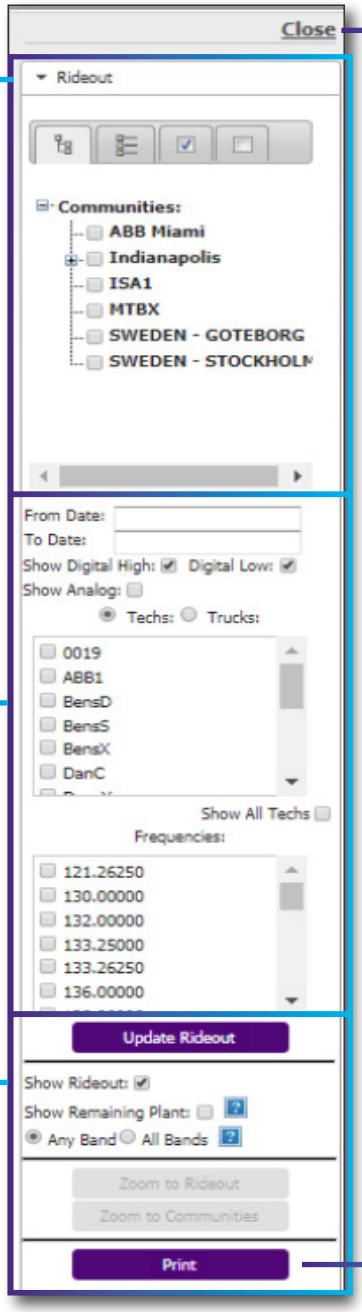
- View specific leakage rideouts on an interactive map
- Change the map data preferences
- Change the map display preferences

To enter the Rideout function, select the **Rideout Map** link from the **Main** menu. Key areas of the **Rideout Map** menu are shown below.



Map Display Preferences

The **Map Display Preferences** are settings that determine what information is included on the map and how it is viewed. The **Map Display Preferences** menu is shown in the following figure.



Community Tree

Displays the name of the actively selected community and all configured communities

Click to hide or expand

Close/Open Preferences

Displays or hides the menu

Rideout Display Preferences

Enter from/to dates and select which technicians or trucks to display on the rideout map

Map View

This area controls the preferences applied to the current map view

Print

Prints the current map view

Community Tree

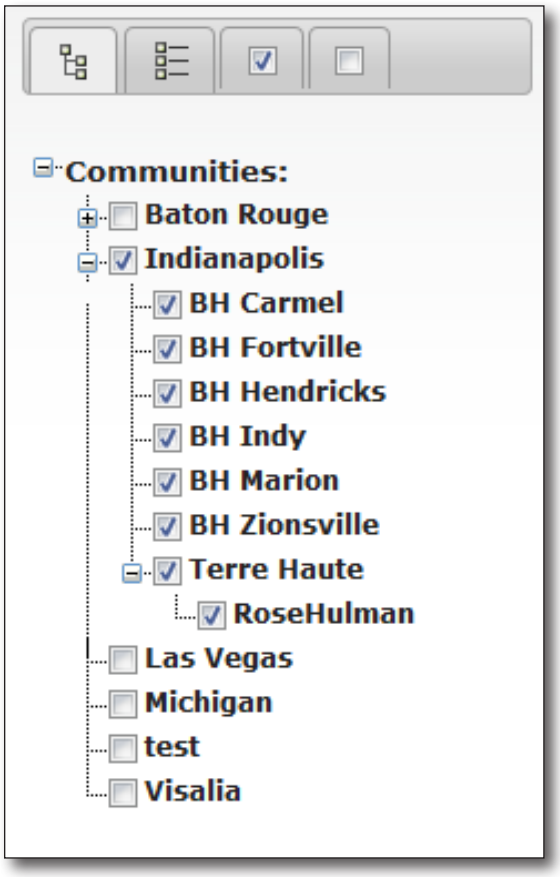
The Community Tree is used to display and navigate all of the configured communities within LAW-X. The community visibility can be limited in the user account by an administration user. Community visibility is given in the user account by selecting the checkbox next to the community name for each community in the tree.

The **Communities** level of the tree is the default parent of all communities created within LAW-X and will always be displayed. When this level of the tree is selected, the Home Base location will be displayed on the communities map view.

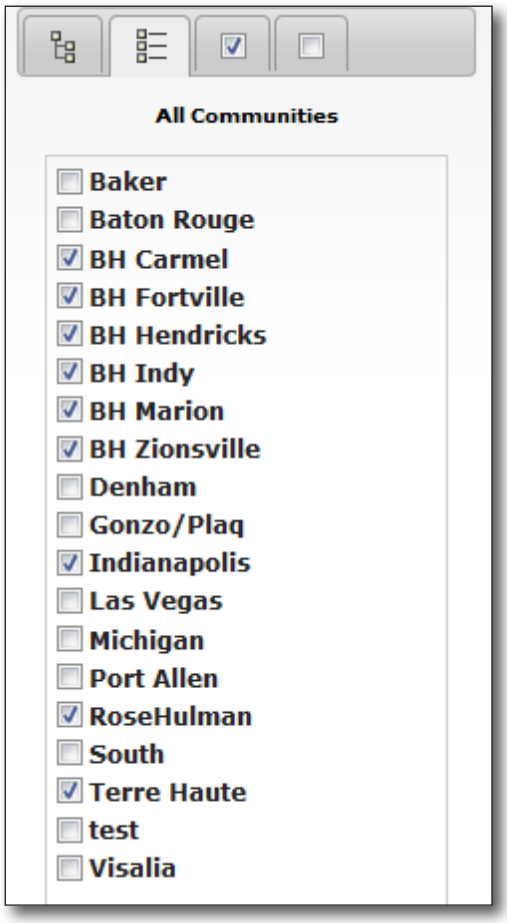
All parent communities that include children communities will be displayed with a +/- symbol to the left of its name.

Select the communities to view on the map as follows:

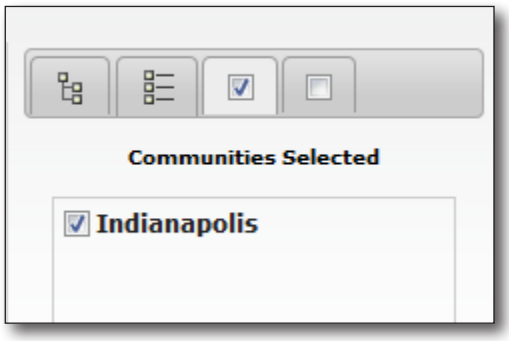
- **Communities Tab** – This tab displays all of the configured communities. Select communities using the following methods:
  - Use the +/- symbol to the left of parent communities to show/hide child communities.
  - To choose a single community, select the checkbox next to each community name and select the **Update Rideout** button.
  - To choose a parent community and all of its children, select the name of the community itself.



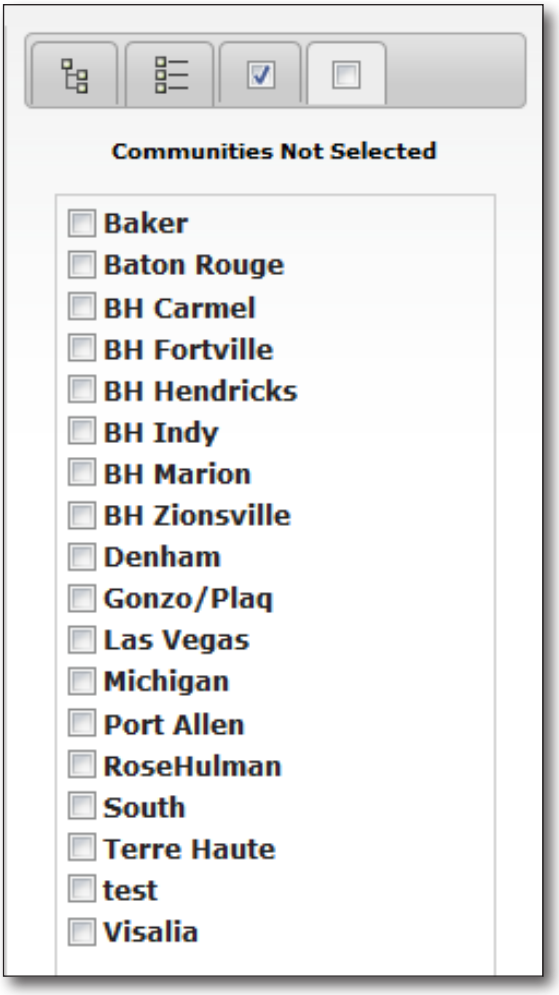
- **All Communities Tab** – This tab is used to display all of the available communities in alphanumeric order and easily remove any unwanted communities. To deselect communities, uncheck the checkbox next to the community name.



- **Communities Selected Tab** – This tab is used to display all of the selected communities in alphanumeric order and easily remove any unwanted communities. To remove unwanted communities, select the checkbox next to the community name.



- **Communities Not Selected Tab** – This tab is used to display all of the unselected communities in alphanumeric order and easily add additional communities. To add additional communities, select the checkbox next to the community name.

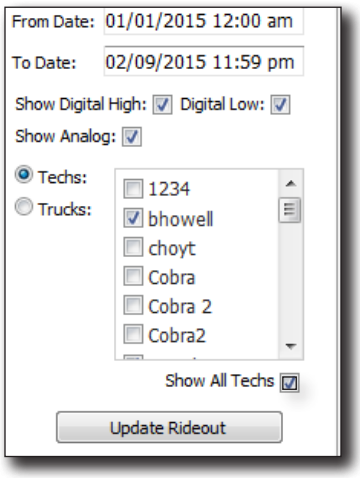


Rideout Preferences

This area is used to control which rideouts to display on the map. After making any changes to these preferences, select the **Update Rideout** button to automatically update the map to reflect these changes. The following controls are available:

Date

Enter the from and to dates for the desired rideouts.



Techs/Trucks

Select either of the following options:

- **Techs** – Used to select the technicians to display on the rideout map
- **Trucks** – Used to select the trucks to display on the rideout map

> ***NOTE:***
>
> ***To show all available rideouts, make sure to uncheck any individual tech checkboxes. Otherwise, to show a specific tech rideout, check the box for that tech. Then select Update Rideout.***

Frequency Bands

Leakage rideout frequencies can be displayed by selecting either or all of the following options:

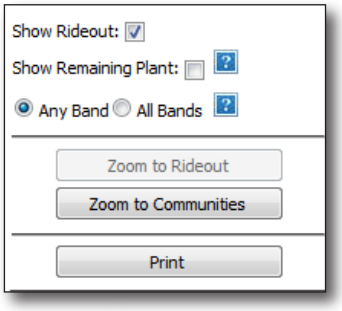
- **Show Digital High** – Used to display digital high-band frequency rideouts on the map
- **Digital Low** – Used to display digital low-band frequency rideouts on the map
- **Show Analog** – Used to display analog frequency rideouts on the map

Map View Preferences

This area is used to control how the map is displayed.

Rideout Detail

Leakage rideout detail can be displayed by selecting either or all of the following options:



- **Show Rideout** – Shows rideout detail on the map
- **Show Remaining Plant** – Shows areas of plant not covered by the specified rideout.
    - If the Any Band option is selected, the plant is considered covered if any of the selected frequency bands have driven in the area.
    - If the All Bands option is selected, the plant is considered covered if all the selected frequency bands have driven in the area.
- **Any Band** – Shows the rideout for any of the selected frequency bands.
- **All Bands** – Shows the rideout for all of the selected frequency bands.

Zoom to Rideout

Select this button to zoom the map in or out to display the rideouts residing within the selected community.

Zoom to Communities

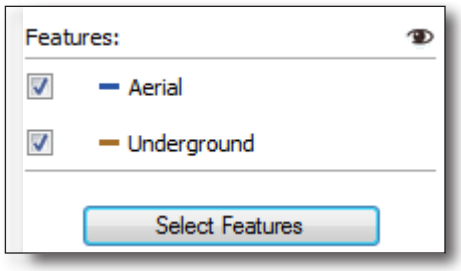
Select this button to zoom the map in or out to display the selected communities.

Print

Select this button to print the map.

Select Features

Select this button to show map features on the map. In the pop-up window, choose the feature types you would like to see: aerial, underground, etc.



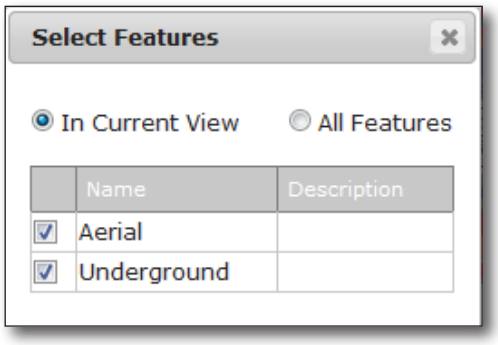
In this example, the features are color coded as follows:

- Blue – Aerial
- Brown – Underground

NOTE:

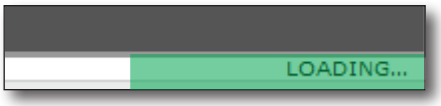
To setup and import map features, see "Map Features and Layers" on page 247

You can also choose whether you want to view features that apply to the current view or all features. Click **OK** to confirm.



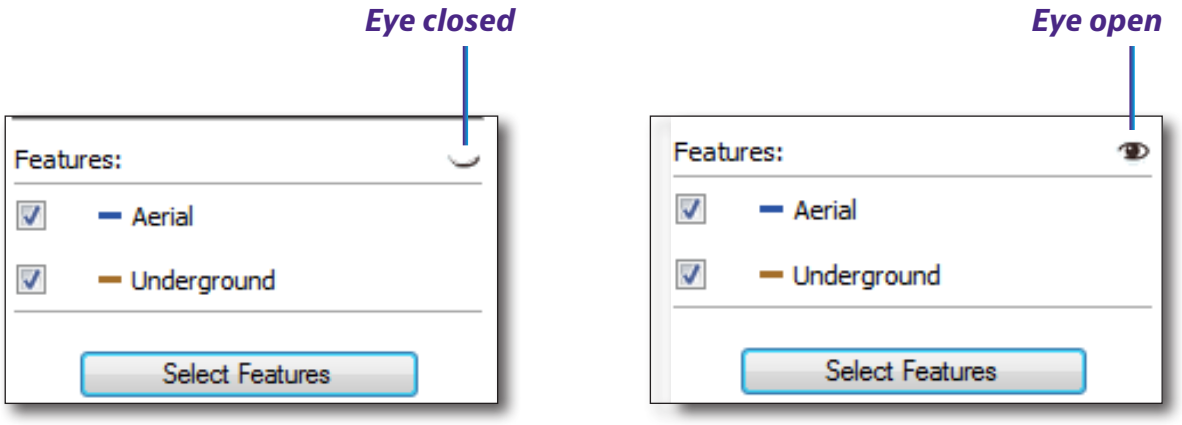
The map will begin redrawing, and depending on how much data has been collected, this may take some time.

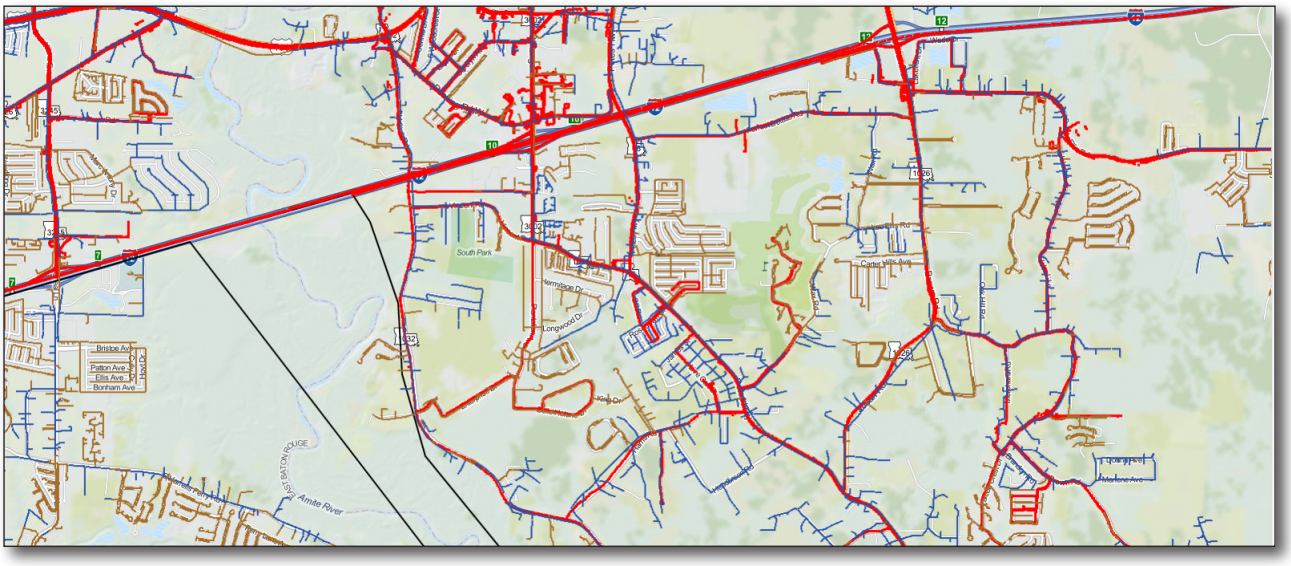
A loading status bar will appear in the top right corner as it loads.



If zoomed out too far, you will see a closed eye icon next to the **Features** section of the map view preferences (and the map features will not be loaded).

As you zoom in, the eye icon will open, indicating you are zoomed in enough to show the map features detail.





Rideout map, including map features

Map Display Options

Depending on the map view you want to use and the detail, you can use the following views.

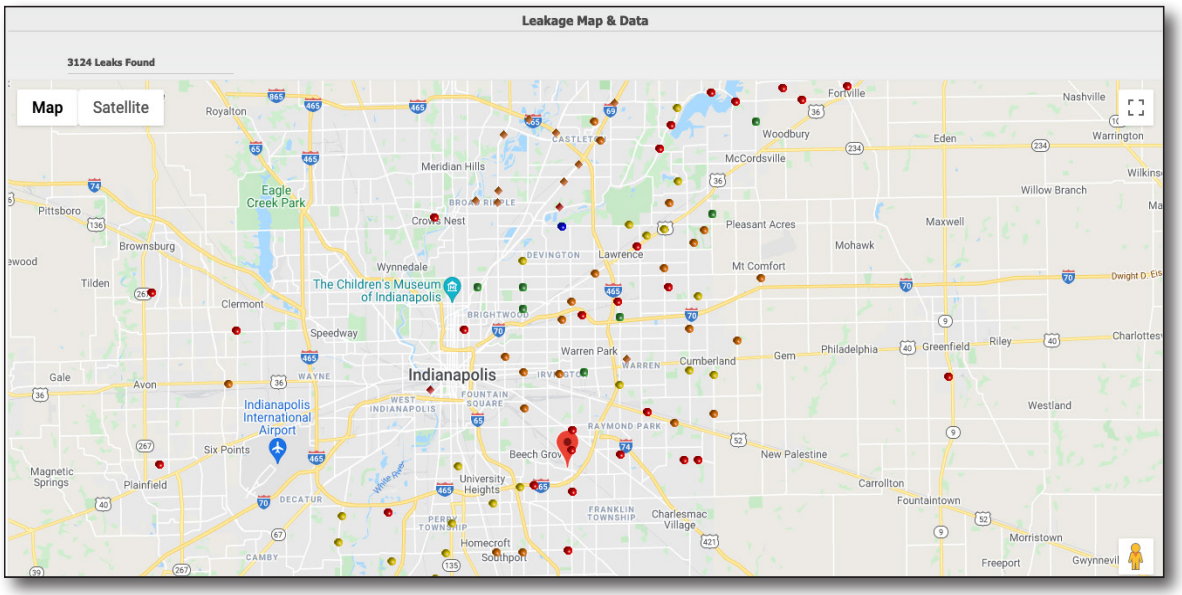
- **Map** – Displays the names of major highways, streets, and towns. Select **Terrain** from the dropdown to toggle the terrain or building views.
- **Satellite** – Displays the area as viewed via satellite photography. Select **Labels** from the dropdown to include streets names and other information.

NOTE:

There is an annual subscription renewal for the LAW-X application. The subscription provides monthly automatic map updates and is necessary for the map operation of LAW-X.

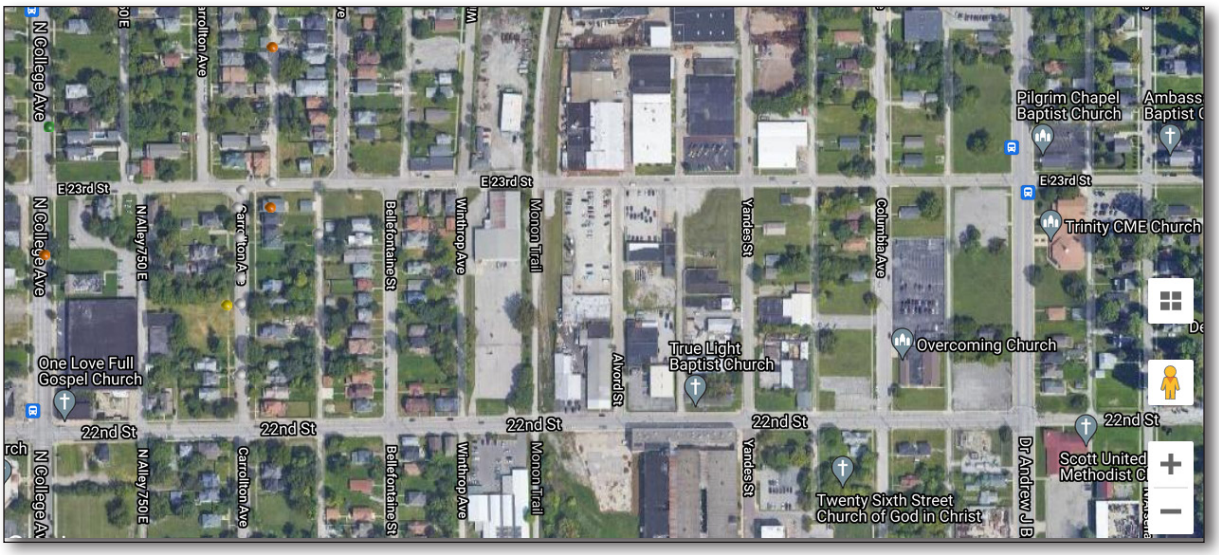
Map

The **Map** view shows major highways, streets, and towns surrounding the specified area, as shown below.



Satellite

The **Satellite** view allows the map to be viewed as seen from a satellite photography perspective, as shown below.



Map Tools

The features in this section are tools that help LAW users interact with the map.

Navigation

Click and drag the hand icon to move the map.

Full screen

Toggles full screen or window views.

Tilt

Click to tilt or rotate the map in satellite mode.

NOTE:

Not all zoom levels will be available in satellite mode.

Pegman

Drag the pegman onto the map to enter street view.

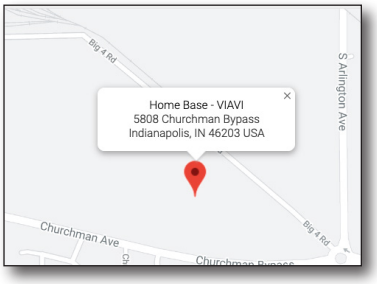
Zoom

The zoom function enables users to view the map closer or farther away and/or to navigate in a different direction on the map.

Use the +/– icons to zoom in or out on a specific area of the map. You can also use the mouse wheel to zoom, point your mouse where you want to zoom.

Home Base

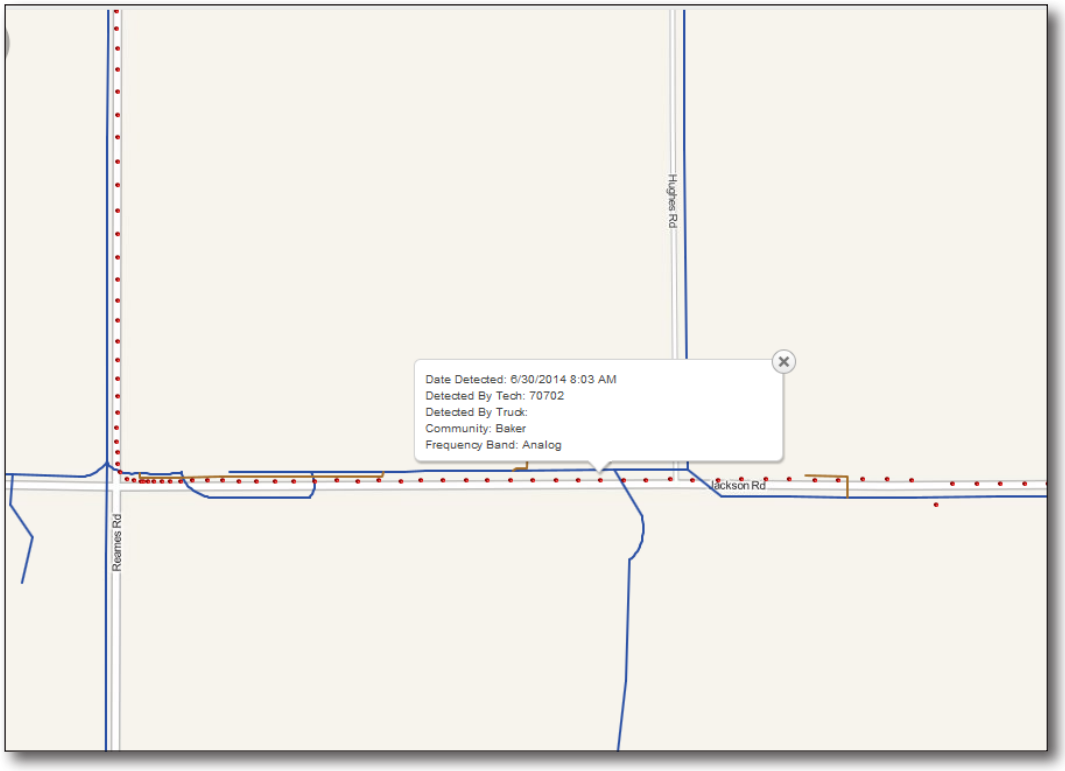
The map pin indicates where home base is located on the map. The location of the home base is defined in *"Configuration" on page 193.*



Rideout Points

Rideout points are gathered automatically during rideouts and are identified by red dots on the rideout map.

Hover your mouse over a rideout point to see the date/time for that rideout point. Click the rideout point for a detailed view. The following figure shows an example of how the information might be displayed after clicking a rideout point.



NOTE:

If rideout points are squares and are not clickable, the detailed view is not available. Make your search more specific or zoom into the map to see details.

5

Reports

This chapter provides an overview of the Reports feature, including the following:

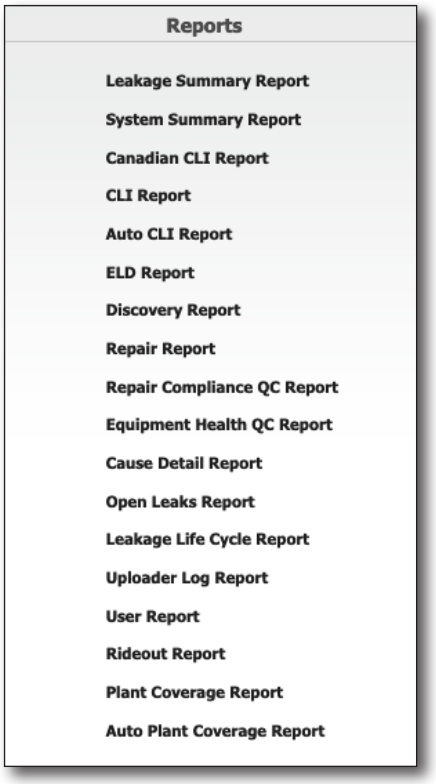
Overview

The reports available in the LAW-X application are very useful tools that will assist in the analysis of leakage data. These reports present details in a comprehensive fashion based on the options chosen for the report.

The **Reports** menu allows you to create reports in LAW-X. Hovering over the **Reports** link will display a quick access dropdown menu as shown in the following figure.

You can also hover over the reports to see a description.

After clicking the **Reports** link, the **Reports** page will appear as shown here.



Choose the report to view by clicking the link to the desired report's link (reports are generated immediately, with the exceptions of the **Rideout, Discovery, and Plant Coverage** reports, which must be computed before being emailed).

NOTE:

When generating a report from LAW-X, the report output is displayed in a pop-up window. Some web browsers will not allow pop-up windows to be displayed. Check the web browser's settings and if necessary, set the browser to allow pop-up windows.

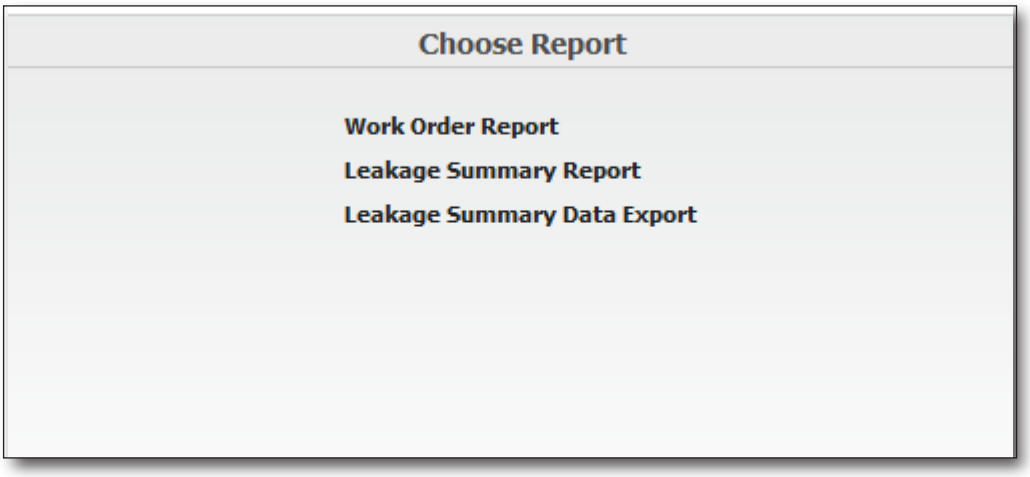
NOTE:

When selecting communities for each report, selecting the checkbox corresponding to the root level community does not select all subsequent communities. To select the root level community and all subcommunities, click on the text name for the root level community.

Changing Report Preferences

To change report preferences, perform the following steps.

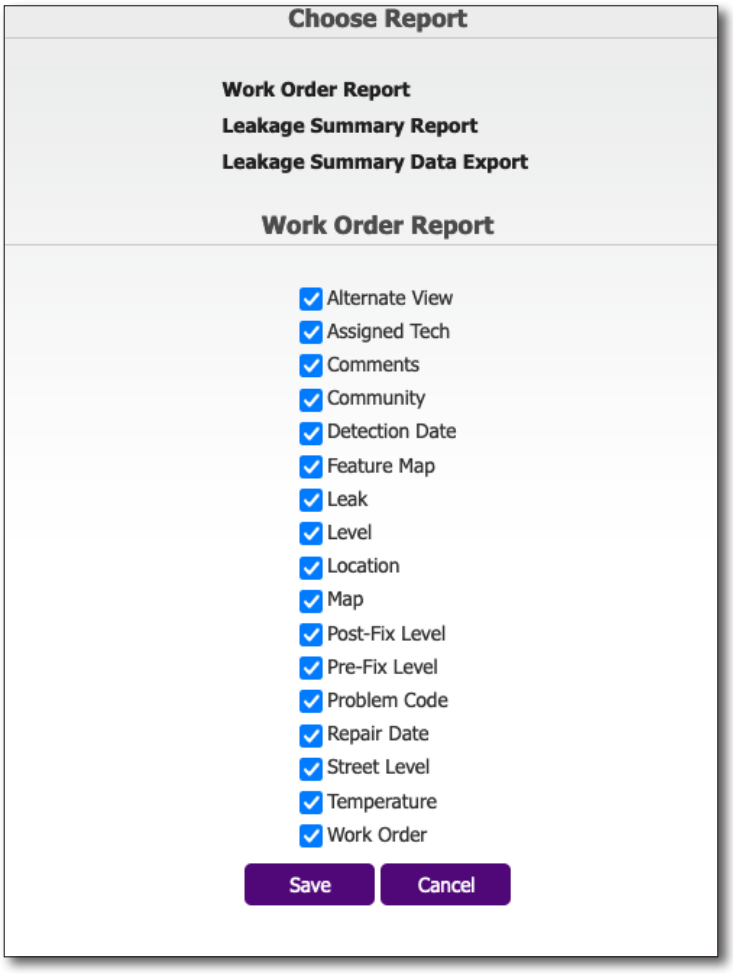
1. From the **Administration** menu, click the **Report Preferences** link. Or hover over Administration tab with your cursor then click Report Preferences from the dropdown menu that appears. The **Choose Report** menu appears as shown here.
2. Select the desired report by clicking the link for the report.



NOTE:

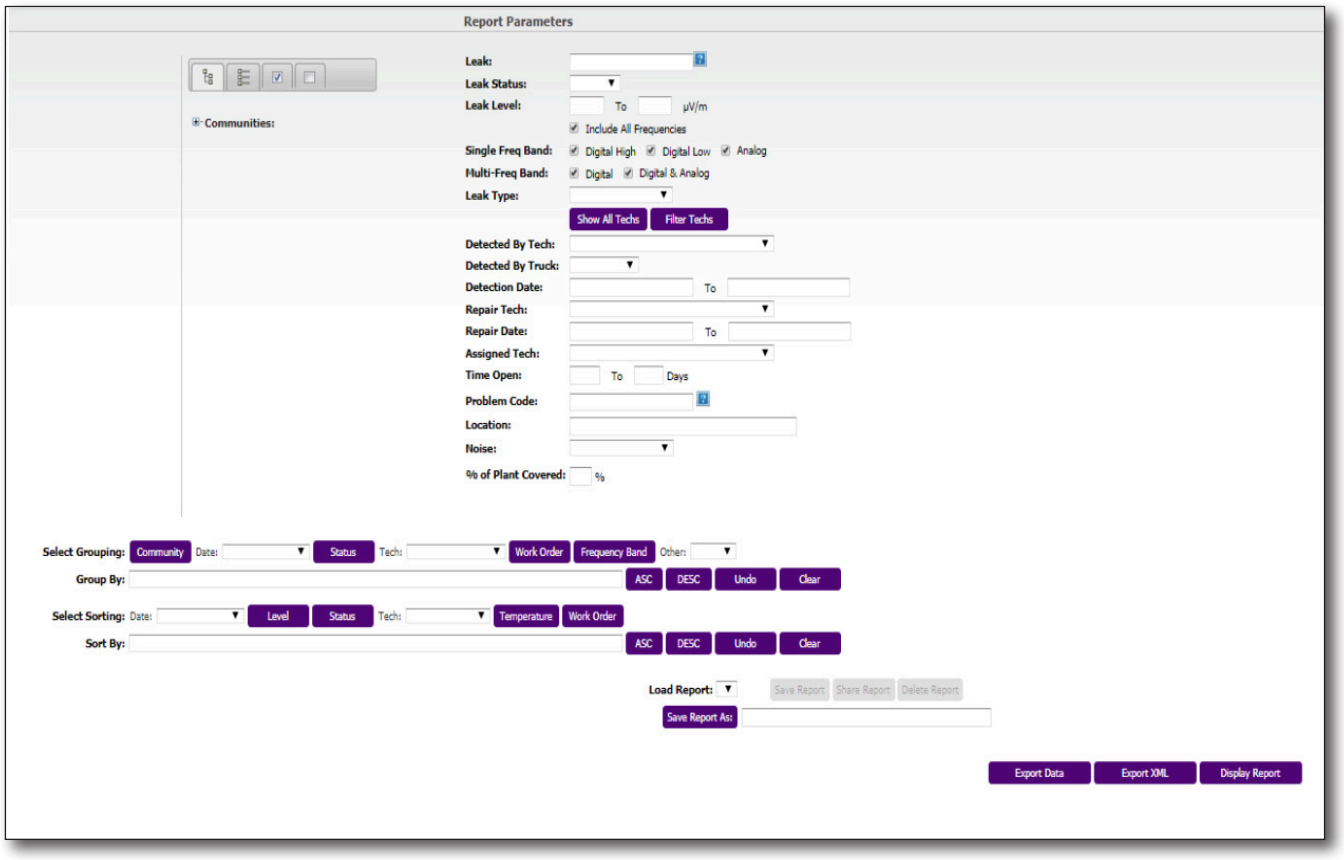
If a report other than the default is chosen, the menu will refresh to display the options which are specific to that report.

3. Choose the options to report by selecting the corresponding checkbox, as shown in the following figure. The system defaults to include all options in the report. To remove an option from the report, deselect the checkbox next to the corresponding option.
4. Select the **Save** button when finished or select the **Cancel** button to discard any changes.



Leakage Summary Report

The Leakage Summary Report is a complete list of mapped leaks. The report displays all detected leaks, within the parameters the user sets up for the report. After clicking the **Leakage Summary Report** link, the **Report Parameters** menu will appear as shown below.



To view the report, enter the following parameters:

- **Communities** – This is the community in which the leak occurs. To choose a community, select the corresponding checkbox(es) from the list. To select a branch of the tree, click on the community name instead of the checkbox.
- **Leak** – Use this field to specify the range of leaks to search by leak record ID. Separate leaks within a range with a hyphen (-), and separate multiple leaks or multiple ranges with a comma (,).

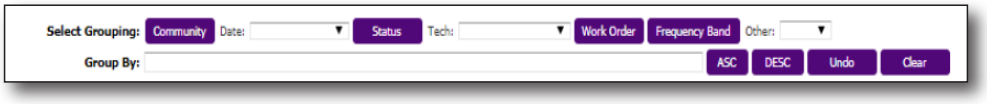
- **Leak Status** – This identifies the status of the leak: open or closed. To set the status, select the dropdown arrow and select the status from the list. If the **Status** field is left blank, LAW-X will assume that all **open** and **closed** leaks are selected.
- **Leak Level** – This is the minimum and maximum strength of the leak, in the selected unit of measure, µV/m, dBµV/m, or dBµV.
- **Include All Frequencie**s – This includes all detected frequencies.
- **Single Frequency Band** – This is used to display leaks detected in a single frequency band only.
- **Multi-Frequency Band** – This is used to display leaks detected in multiple frequency bands only.
- **Leak Type** – From the dropdown menu, select whether you would like to exclude EDNs or include only EDNs.
- **Detected by Tech** – This identifies the technician that located the leak.
- **Detected by Truck** – This identifies the truck that located the leak.
- **Detection Date** – This is the date on which the leak was observed. To search within a date range, click the date fields. Choose the beginning and ending dates for the leak from the calendars that appear.

NOTE:

If the beginning Detection Date field is left blank, LAW-X will automatically select the date on which the first leak was detected. If the ending Detection Date (To field) is left blank, LAW-X will automatically select the present date for the closing date range in which to generate the Leakage Summary Report.

- **Repair Tech** – Name of technician assigned to fix the leak
- **Repair Date** – This is the date on which the leak was closed. To search within a date range, click the **Repair Date** fields. Choose the beginning and ending dates for the leak on the calendars that appear.
- **Assigned Tech** – This is the technician that the leak is assigned to.
- **Time Open** – This is the number of days that the leak has been open.
- **Problem Code** – This is the problem code assigned to the particular leak.
- **Location** – This is the street address of the leak.
- **Noise** – Select from the dropdown menu whether you want to exclude noise from the report or include only noise.
- **% Of Plant Covered** – This is an estimate of how much territory within the plant has been covered.

Select Grouping



Once the report parameters have been selected, use any of the following options to adjust the grouping for the report:

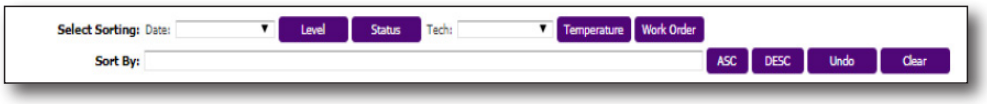
- Select the **Community** button to group the leaks by community.
- Select the **Date** dropdown box to group the leaks by either detection or repair date.
- Select the **Status** button to group the leaks by open/closed status.
- Select the **Tech** dropdown box to group the leaks by the technician that either assigned, detected, or repaired the leak.
- Select the **Work Order** button to group the leaks by work order.
- Select the **Frequency Band** button to group leaks by frequency band.

All the grouping functions can be selected for a report and each one can be sorted individually. However, the sort setting must be applied to the current grouping function before the next grouping function is added. Select the **ASC** or **DESC** buttons to sort the current grouping function in ascending or descending order.

The **Group By** field will display the selected grouping functions and sort settings in the order in which they were added. Any of the grouping functions that include sort settings will be followed by the text “ASC” or “DESC” and each grouping function will be separated by the text “then” to indicate the order of the groupings that are displayed.

Select the **Undo** button to step backward through your changes or select the **Clear** button to remove all grouping functions and their sort settings.

Select Sorting



Once the report parameters have been selected, use any of the following options to adjust the sorting for the report:

- Select the **Date** dropdown box to sort the leaks by either detection or repair date.
- Select the **Level** button to sort the leaks by level.
- Select the **Status** button to sort the leaks by open/closed status.
- Select the **Tech** dropdown box to sort the leaks by the technician that either assigned, detected, or repaired the leak.
- Select the **Temperature** button to sort the leaks by temperature.
- Select the **Work Order** button to sort the leaks by work order.

All five sorting functions can be selected for a report and each one can be sorted individually. However, the sort setting must be applied to the current sorting function before the next sorting function is added. Select the **ASC** or **DESC** buttons to sort the current sorting function in ascending or descending order.

The **Sort By** field will display the selected sorting functions and sort settings in the order in which they were added. Any of the sorting functions that include sort settings will be followed by the text “ASC” or “DESC” and each sorting function will be separated by the text “then” to indicate the order of the sortings that are displayed.

Select the **Undo** button to step backward through your changes or select the **Clear** button to remove all sorting functions and their sort settings.

Saving a New Report

Once the report settings have been selected, enter a name for the report to the right of the **Save Report As** button and then select the **Save Report As** button. The report settings will be saved for future use.

Loading an Existing Report

To load an existing report, select the name of the report from the **Load Report** dropdown box and the selected report settings will be displayed.

Share an Existing Report

Once an existing report has been loaded, select the **Share Report** button to share the report with other report users. Select the **Stop Sharing** button to disable sharing with other report users.

Delete an Existing Report

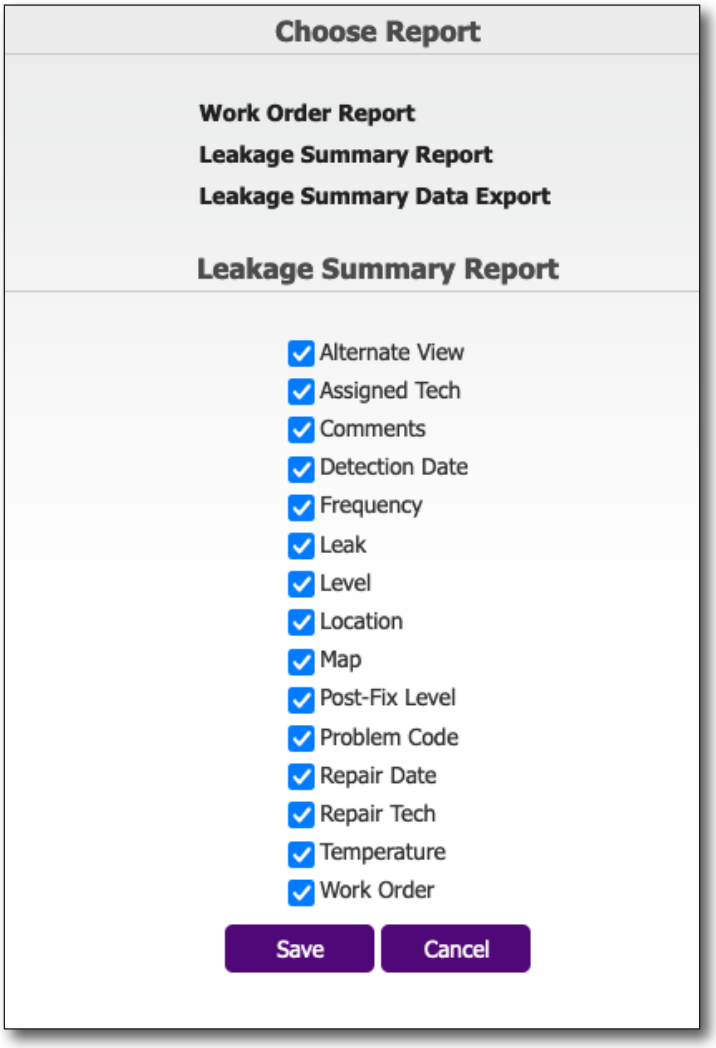
Once an existing report has been loaded, select the **Delete Report** button to delete the report. A confirmation window will be displayed, select the **OK** button to delete the report or select the **Cancel** button to exit without deleting the report.

Viewing Report

Once the report parameters have been selected, perform any of the following steps to view the report:

- Select the **Display Report** button to open the report as a PDF file in a separate window. At this point, the file can be saved or printed.

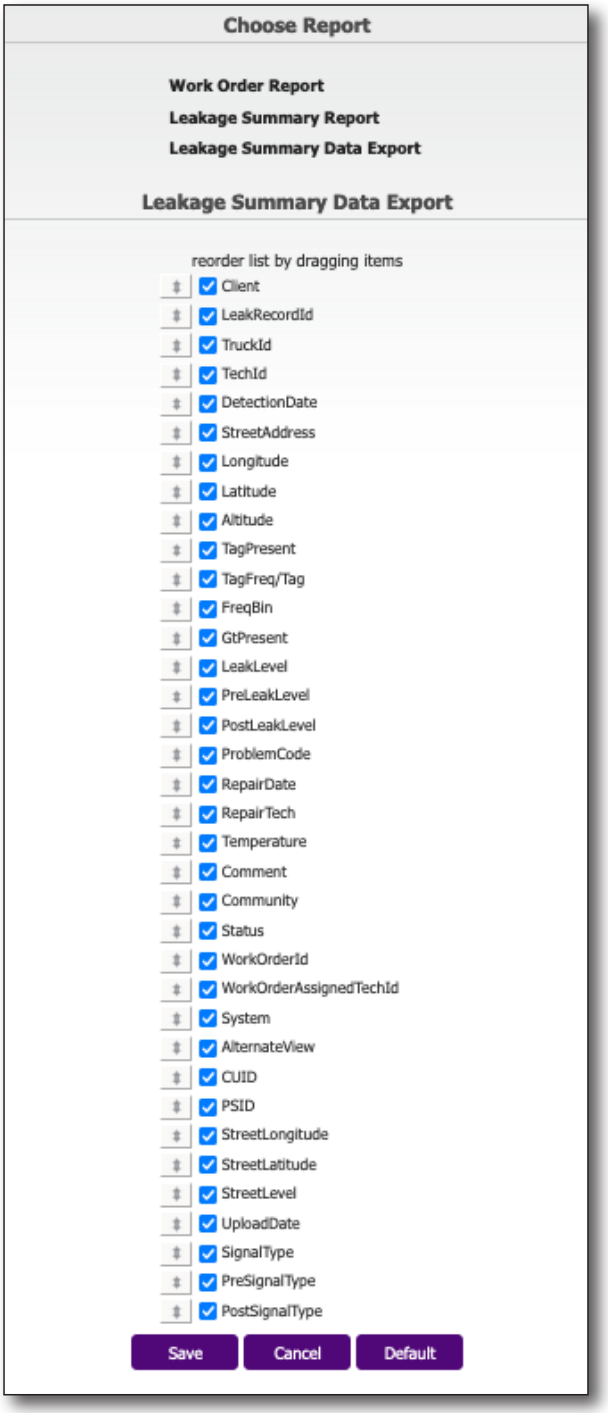
  You can adjust the report preferences from the **Adminstration** menu. Select **Report Preferences** and then **Leakage Summary Report**. Select **Save** when finished.



- Select the **Export Data** button to export the report as a comma separated values (CSV) file.

  You can adjust the data export preferences from the **Adminstration** menu. Select **Report Preferences** and then **Leakage Summary Data Export**. Select **Save** when finished.

- Select the **Export XML** button to export the report as a extensible markup language (XML) file.



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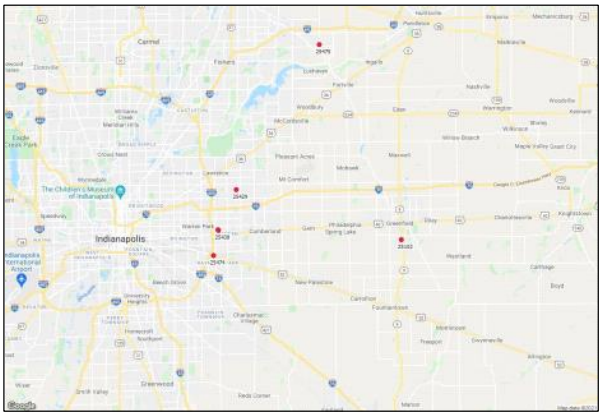
Leakage Summary Report

Leak:	[undefined]		
Leak Status:	[undefined]		
Leak Level:	50	**To:**	[undefined]
Include Alt Views:	True		
Single Freq Band:	Digital High, Digital Low, Analog		
Multi-Freq Band:	Digital, Digital & Analog		
Leak Type:	[undefined]		
Detected By Tech:	[undefined]		
Detected By Truck:	[undefined]		
Detection Date:	08/01/2021	**To:**	08/31/2021
Repair Tech:	[undefined]		
Repair Date:	[undefined]	**To:**	[undefined]
Assigned Tech:	[undefined]		
Time Open:	[undefined]	**To:**	[undefined]
Problem Code:	[undefined]		
Location:	[undefined]		
Noise:	[undefined]		
System:	[undefined]		
Communities:	Indy1		
Total Leaks:	8		

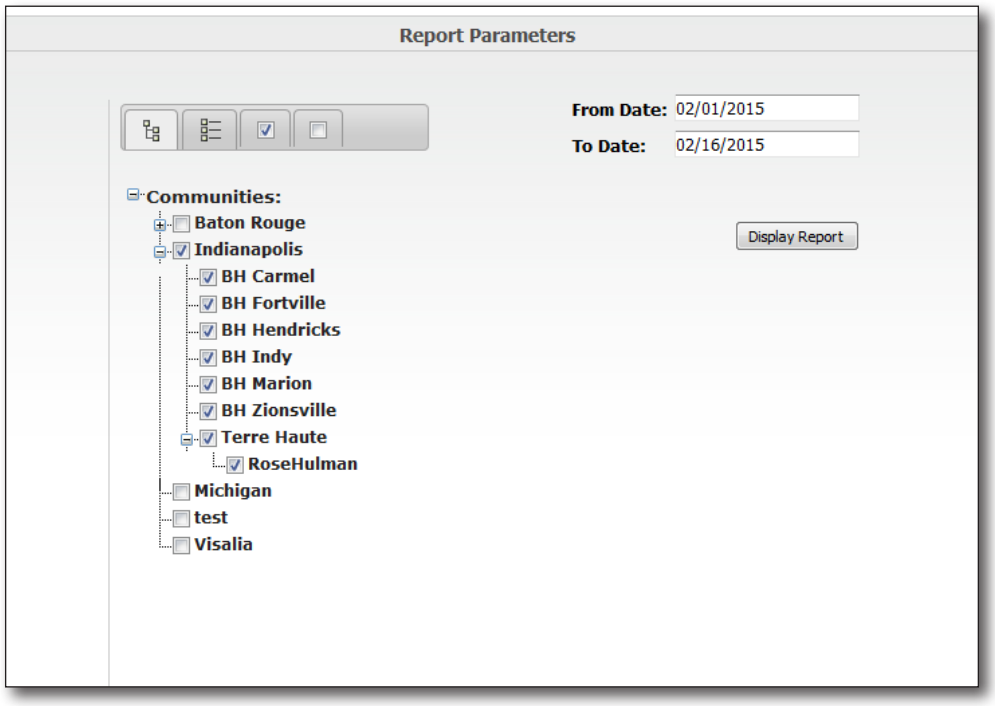


Leak	Work Order	Assigned Tech	Level	Post	Frequency	Detection Date	Repair Date	Repair Tech
Location						Alternate View		Problem Code
Temp	Comment							
24662	2624	mdarragh	245.0	200.0	138.00000	8/4/2021 8:07:00 PM	8/9/2021 10:06:00 PM	ryanS
1514 Bruner Dr, Greenfield, IN 46140, USA (39.76736/-85.76722)								
25100	2636	mdarragh	52.9		148.00000	8/9/2021 8:06:00 AM		
332 N Devon Ave, Indianapolis, IN 46219, USA (39.77778/-86.02162)								
25101	2637	mdarragh	1234.0		1220.00000	8/9/2021 9:29:00 PM		
1518 Bruner Dr, Greenfield, IN 46140, USA (39.76722/-85.76732)								
25102	2638	mdarragh	555.0		555.00000	8/9/2021 10:32:00 PM		
1514 Bruner Dr, Greenfield, IN 46140, USA (39.76736/-85.76722)								
25429	2647	mdarragh	125.0		138.00000	8/12/2021 2:34:00 PM		
9730 E Park Davis Dr, Indianapolis, IN 46235, USA (39.82040/-85.99632)								
25438	2655	mdarragh	69.3			8/16/2021 3:31:00 PM		
315 N Devon Ave, Indianapolis, IN 46219, USA (39.77731/-86.02091)								
25474			53.7		690.00000	8/21/2021 11:04:52 AM		
7855 Brookville Rd, Indianapolis, IN 46239, USA (39.75021/-86.02772)								
25475			57.8		690.00000	8/21/2021 6:55:26 PM		
15779 Hawkswood Ln, Fishers, IN 46037, USA (39.97472/-85.88102)								

Sample Leakage Summary report

System Summary Report

The System Summary Report provides a tally of active leaks in the selected communities. A leak is considered active if it was either detected or repaired during the time frame specified or it remained open after the time frame specified. Totals are provided, as well as, counts per leak level category grouped by community.



To view the report, enter the following report parameters:

- **Communities** – This is the community in which the report will be generated. To choose a community, select the corresponding checkbox(es) from the list.
- **From Date** – This is the starting date of the system summary report.
- **To Date** – This is the end date of the system summary report.

Select the **Display Report** button to open the report as a PDF file in a separate window. At this point, the file can be saved or printed.

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System Summary Report

From Date: 08/01/2021
To Date: 08/31/2021
Communities: Indy1
Total Leaks: 436
Total Leaks Detected: 18
Total Leaks Repaired: 8
Total Open Leaks: 428

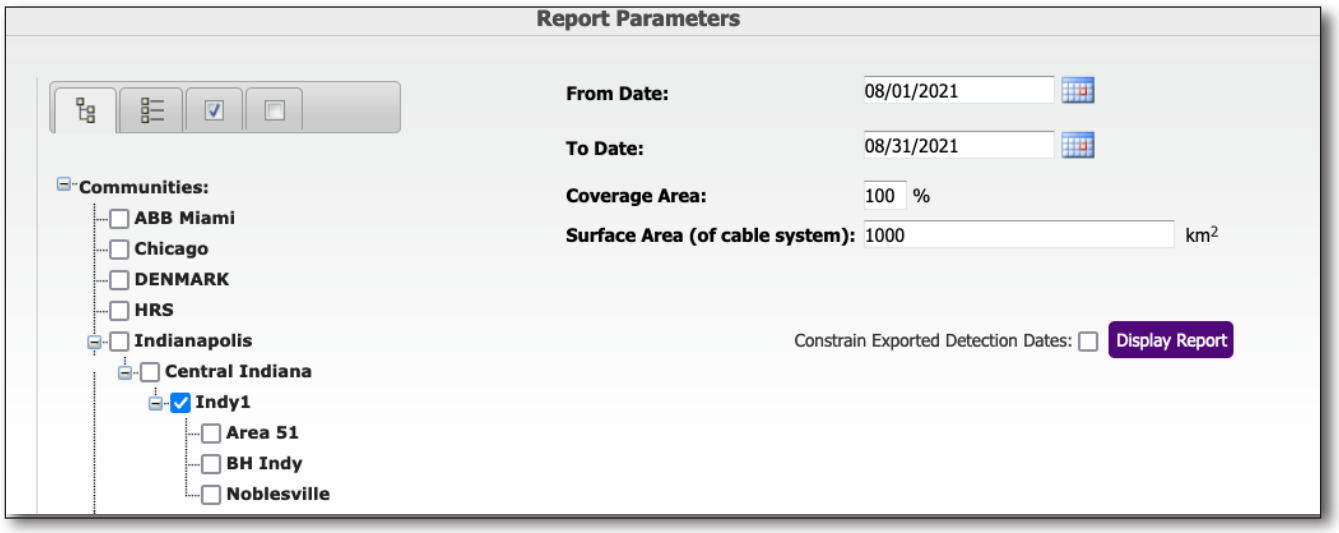
Total Communities: 1
Total Detected Leaks Repaired: 5
Total Previously Detected Leaks Repaired: 3

	Leaks Detected	Detected Leaks Repaired	Previously Detected Leaks Repaired	All Leaks Repaired	Open Leaks
Indy1					
200+	3	1	2	3	122
50+	5	0	1	1	127
25+	4	1	0	1	151
10+	4	2	0	2	21
1+	0	0	0	0	1
<1	2	1	0	1	6
Total	18	5	3	8	428

Sample System Summary report

Canadian CLI Report

The Canadian Cumulative Leakage Index (CLI) Report is generated based on operating rules set forth by Industry Canada. This function is to be used to generate leakage reports for cable systems in Canada. After clicking the **Canadian CLI Report** link, the **Report Parameters** menu will appear as shown in the following figure.



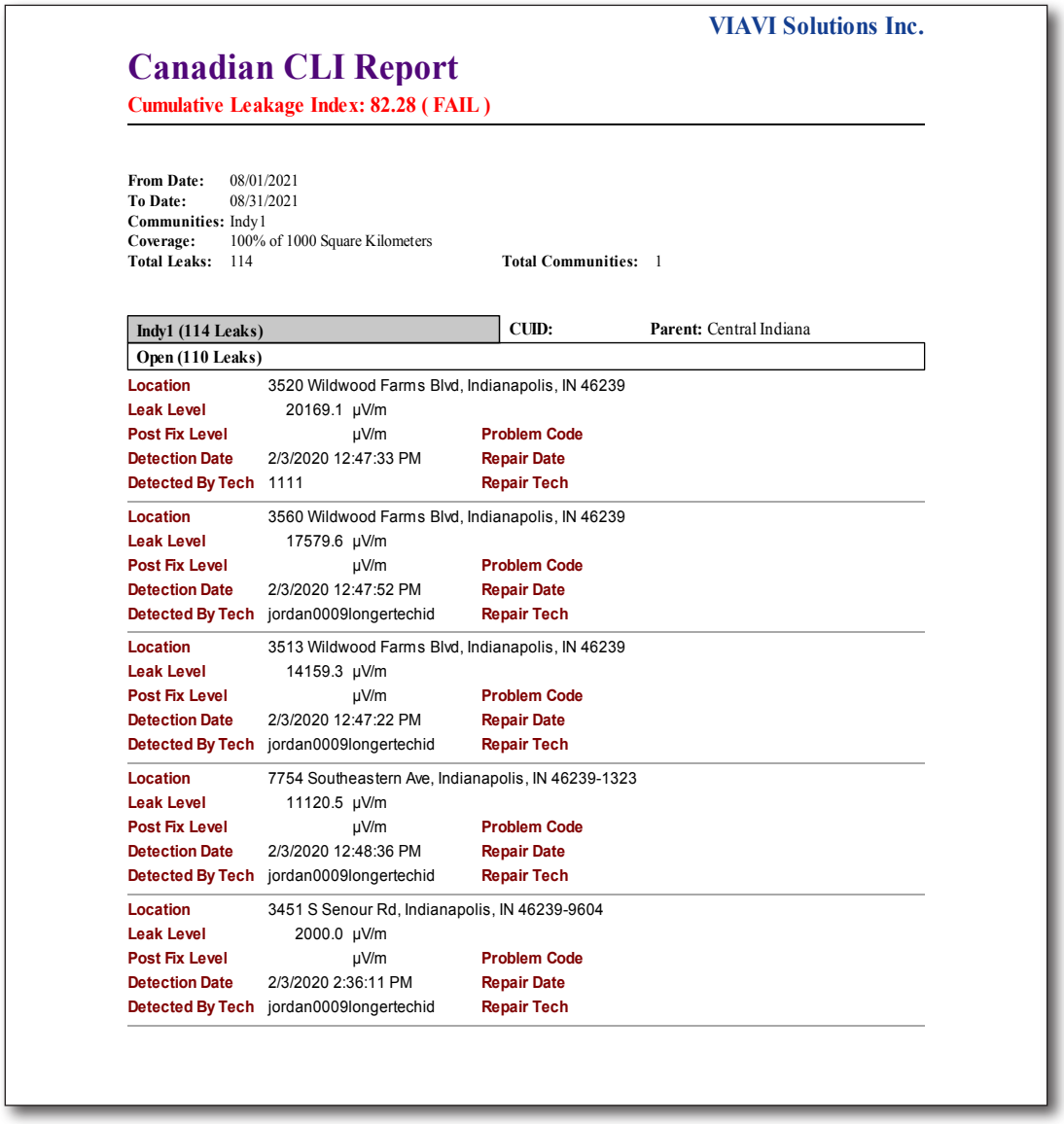
To view the report, enter the following report parameters:

- **Communities** – This is the community in which the Canadian CLI Report will be generated. To choose a community, select the corresponding checkbox(es) from the list.
- **From Date** – This is the beginning date of the CLI Report.
- **To Date** – This is the end date of the CLI Report.
- **Coverage Area** – This is the percentage of the cable system coverage area.
- **Surface Area of Cable System** – This is the number of square kilometers that the cable network covers.
- **Constrain Exported Detection Dates** – The exported data will be adjusted so that all Detection Dates are within the specified From and To dates..

Once the report parameters have been chosen, select the **Display Report** button. The report will open as a PDF file in a separate window. At this point, the file can be saved or printed.

NOTE:

If the From Date: field is left blank, LAW-X will automatically select the date on which the first leak was detected. If the To Date: field is left blank, LAW-X will automatically select the present date for the closing date range in which to generate the Canadian CLI Report.



VIAVI Solutions Inc.

Canadian CLI Report

Cumulative Leakage Index: 82.28 (FAIL)

From Date: 08/01/2021
To Date: 08/31/2021
Communities: Indy1
Coverage: 100% of 1000 Square Kilometers
Total Leaks: 114 **Total Communities:** 1

Indy1 (114 Leaks)	**CUID:**	**Parent:** Central Indiana
Open (110 Leaks)		

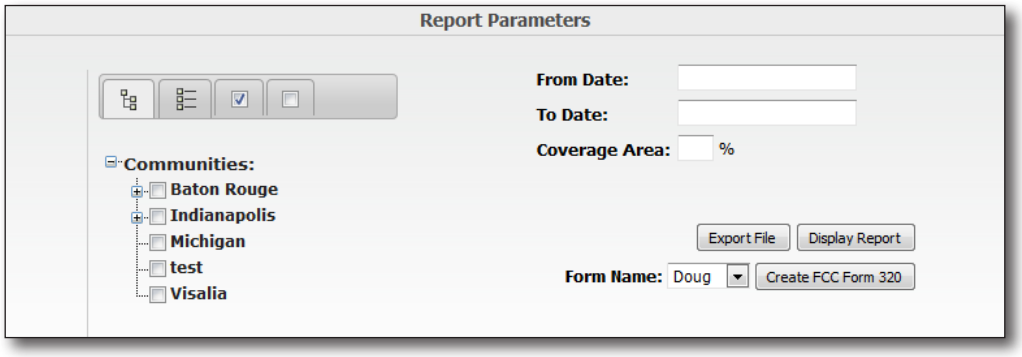
Location	3520 Wildwood Farms Blvd, Indianapolis, IN 46239		
Leak Level	20169.1 µV/m		
Post Fix Level	µV/m	**Problem Code**	
Detection Date	2/3/2020 12:47:33 PM	**Repair Date**	
Detected By Tech	1111	**Repair Tech**	
Location	3560 Wildwood Farms Blvd, Indianapolis, IN 46239		
Leak Level	17579.6 µV/m		
Post Fix Level	µV/m	**Problem Code**	
Detection Date	2/3/2020 12:47:52 PM	**Repair Date**	
Detected By Tech	jordan0009longertechid	**Repair Tech**	
Location	3513 Wildwood Farms Blvd, Indianapolis, IN 46239		
Leak Level	14159.3 µV/m		
Post Fix Level	µV/m	**Problem Code**	
Detection Date	2/3/2020 12:47:22 PM	**Repair Date**	
Detected By Tech	jordan0009longertechid	**Repair Tech**	
Location	7754 Southeastern Ave, Indianapolis, IN 46239-1323		
Leak Level	11120.5 µV/m		
Post Fix Level	µV/m	**Problem Code**	
Detection Date	2/3/2020 12:48:36 PM	**Repair Date**	
Detected By Tech	jordan0009longertechid	**Repair Tech**	
Location	3451 S Senour Rd, Indianapolis, IN 46239-9604		
Leak Level	2000.0 µV/m		
Post Fix Level	µV/m	**Problem Code**	
Detection Date	2/3/2020 2:36:11 PM	**Repair Date**	
Detected By Tech	jordan0009longertechid	**Repair Tech**	

Sample Canadian CLI report

CLI Report (FCC)

The Cumulative Leakage Index (CLI) Report provides a mathematical summation of leakage for the selected communities in order to approximate interference with aeronautical-based communications.

The Cumulative Leakage Index (CLI) Report is generated based on operating rules set forth by the Federal Communications Commission. This function is to be used to generate leakage reports for cable systems in United States. After clicking the **CLI Report** link, the **Report Parameters** menu will appear as shown in the following figure.

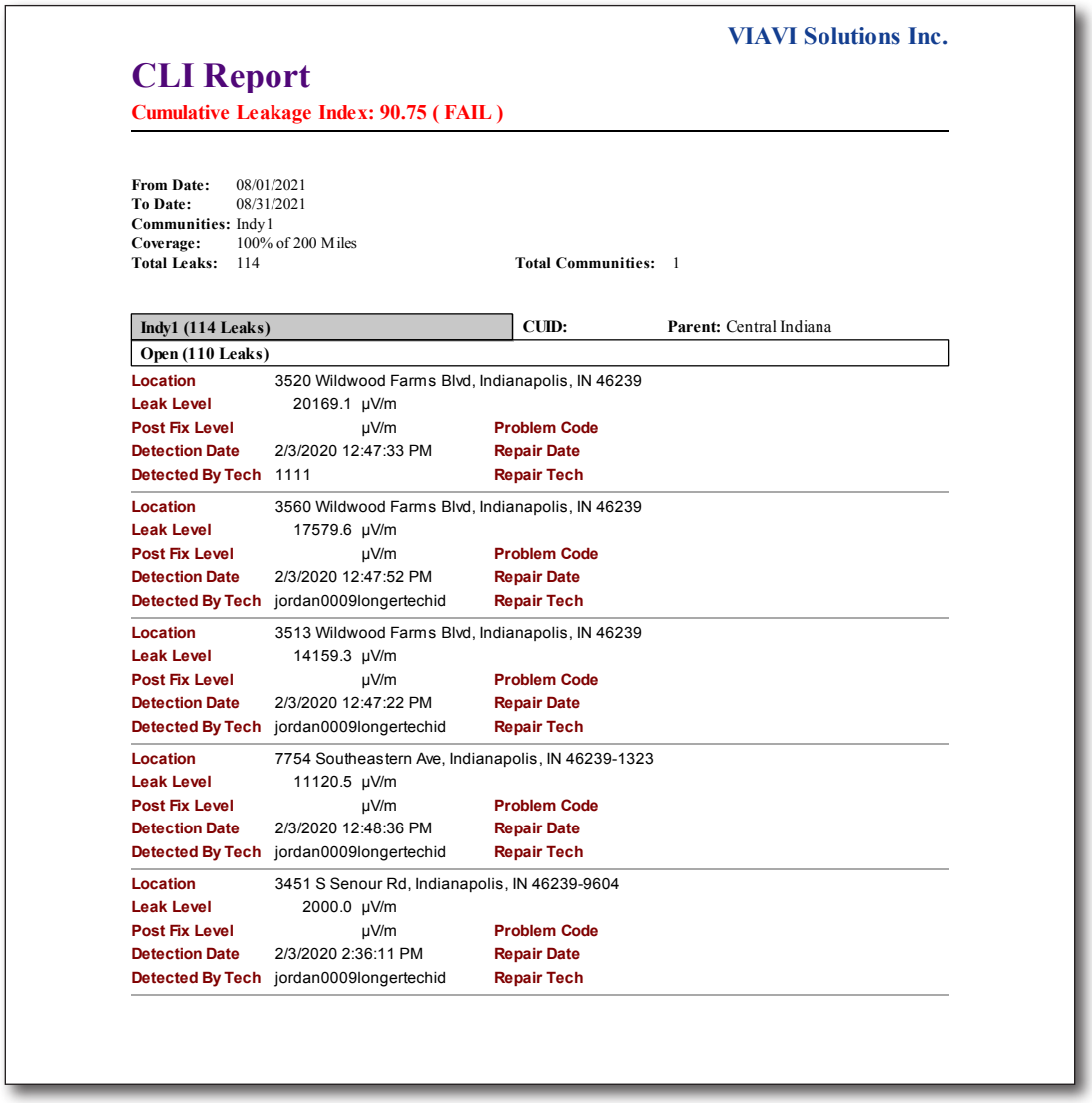


To view the report, enter the following report parameters:

- **Communities** – This is the community in which the CLI Report will be generated. To choose a community, select the corresponding checkbox(es) from the list.
- **From Date** – This is the beginning date of the CLI Report.
- **To Date** – This is the end date of the CLI Report.
- **Coverage Area** – This is the percentage of the cable system coverage area.

Once the report parameters have been chosen, select the **Display Report** button. The report will open as a PDF file in a separate window. At this point, the file can be saved or printed. CLI reports may also be exported from LAW-X in either a text file format or in a FCC Form 320 format which that can be submitted to the FCC for leakage reporting.

- Select the **Export File** button to export the CLI report as a text file.
- Select the name of the FCC form from the dropdown box to the left of the Create FCC Form 320 button and then select the Create FCC Form 320 button to create the customized CLI report form.



VIAVI Solutions Inc.

CLI Report

Cumulative Leakage Index: 90.75 (FAIL)

From Date: 08/01/2021
To Date: 08/31/2021
Communities: Indy1
Coverage: 100% of 200 Miles
Total Leaks: 114 **Total Communities:** 1

Indy1 (114 Leaks) **CUID:** **Parent:** Central Indiana

Open (110 Leaks)

Location	3520 Wildwood Farms Blvd, Indianapolis, IN 46239		
Leak Level	20169.1 µV/m		
Post Fix Level	µV/m	**Problem Code**	
Detection Date	2/3/2020 12:47:33 PM	**Repair Date**	
Detected By Tech	1111	**Repair Tech**	
Location	3560 Wildwood Farms Blvd, Indianapolis, IN 46239		
Leak Level	17579.6 µV/m		
Post Fix Level	µV/m	**Problem Code**	
Detection Date	2/3/2020 12:47:52 PM	**Repair Date**	
Detected By Tech	jordan0009longertechid	**Repair Tech**	
Location	3513 Wildwood Farms Blvd, Indianapolis, IN 46239		
Leak Level	14159.3 µV/m		
Post Fix Level	µV/m	**Problem Code**	
Detection Date	2/3/2020 12:47:22 PM	**Repair Date**	
Detected By Tech	jordan0009longertechid	**Repair Tech**	
Location	7754 Southeastern Ave, Indianapolis, IN 46239-1323		
Leak Level	11120.5 µV/m		
Post Fix Level	µV/m	**Problem Code**	
Detection Date	2/3/2020 12:48:36 PM	**Repair Date**	
Detected By Tech	jordan0009longertechid	**Repair Tech**	
Location	3451 S Senour Rd, Indianapolis, IN 46239-9604		
Leak Level	2000.0 µV/m		
Post Fix Level	µV/m	**Problem Code**	
Detection Date	2/3/2020 2:36:11 PM	**Repair Date**	
Detected By Tech	jordan0009longertechid	**Repair Tech**	

Sample FCC CLI report

FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

BASIC SIGNAL LEAKAGE PERFORMANCE REPORT
FORM 320

Note: FCC Privacy Act and Paperwork Reduction Act statements are at the end of the FCC Form 320 instructions.

SECTION I -- GENERAL INFORMATION

(1) Cable system owner: Viavi Cable system
Phone number:
Address: 5808 Churchman Bypass
INDIANAPOLIS (City) IN (State) 46203 (ZIP)
(2) Community served: Indy1
(3) Community unit no.:
(4) Physical system ID:

SECTION II -- LOCAL SYSTEM INFORMATION

(1) Person(s) resonsible for the report:
Name: Darragh (Last) Mark (First) (M)
Phone number: 9254943361

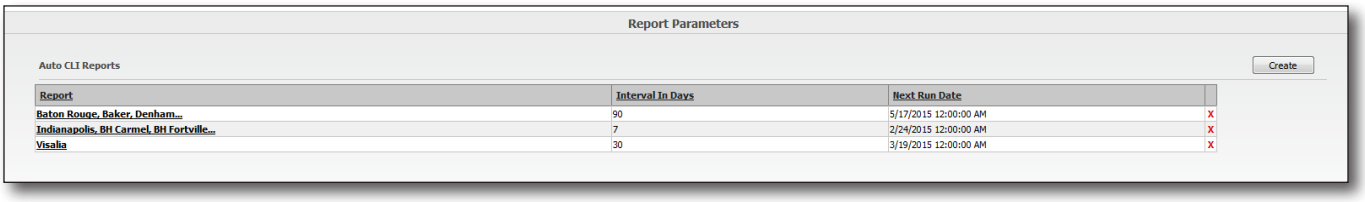
Address: 5808 Churchman Bypass
INDIANAPOLIS (City) IN (State) 46203 (ZIP)
(2) Are aeronautical frequencies (i.e., 108-137 or 225-400 MHz) used by this cable television system?
Yes: ☐ No: ☐

Sample FCC Form 320 report

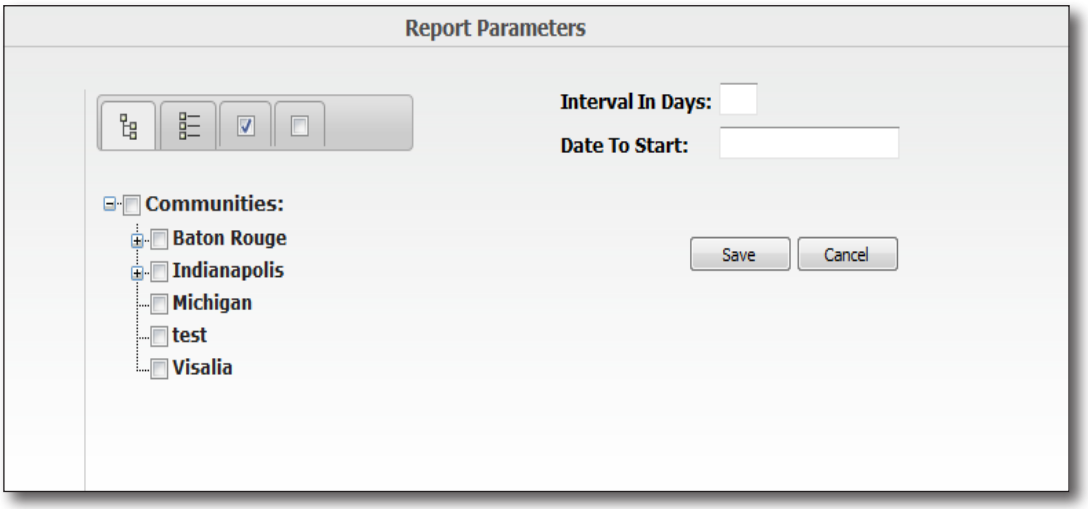
Auto CLI Report

The Automatic Cumulative Leakage Index (CLI) Report is run on a continual basis, and is automatically sent to the LAW-X user's e-mail account, based on the user's login criteria. After clicking the **Auto CLI Report** link, select the **Create** button to create a new report.

You can create multiple Auto CLI reports, as well. In the example below, 3 reports have been scheduled.



The **Auto CLI Report** menu will appear as shown in the following figure.



To establish CLI report criteria, enter the following report parameters:

- **Communities** – This is the community in which the report will be generated. To choose a community, select the corresponding checkbox(es) from the list.
- **Interval in Days** – This is the number of days between when reports are generated.
- **Date to Start** – This is the date that the first report will run.

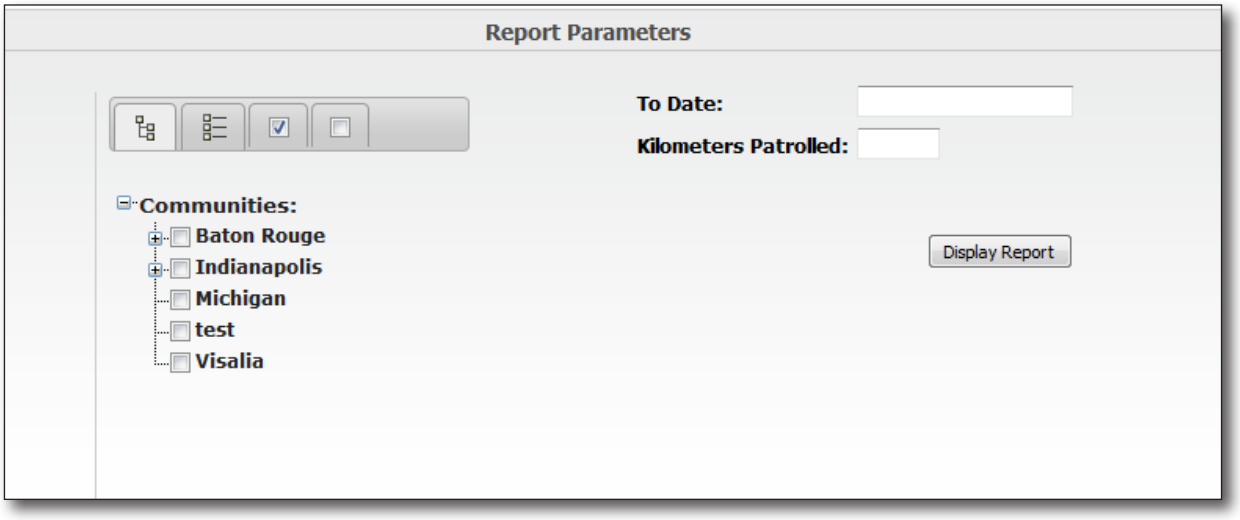
Once the report criteria has been established, select the **Save** button. The report criteria is saved and used to generate the CLI report.

NOTE:

LAW-X does not automatically generate Canadian CLI reports. As a result, the Auto CLI Criteria only applies to FCC-regulated CLI reports.

ELD Report

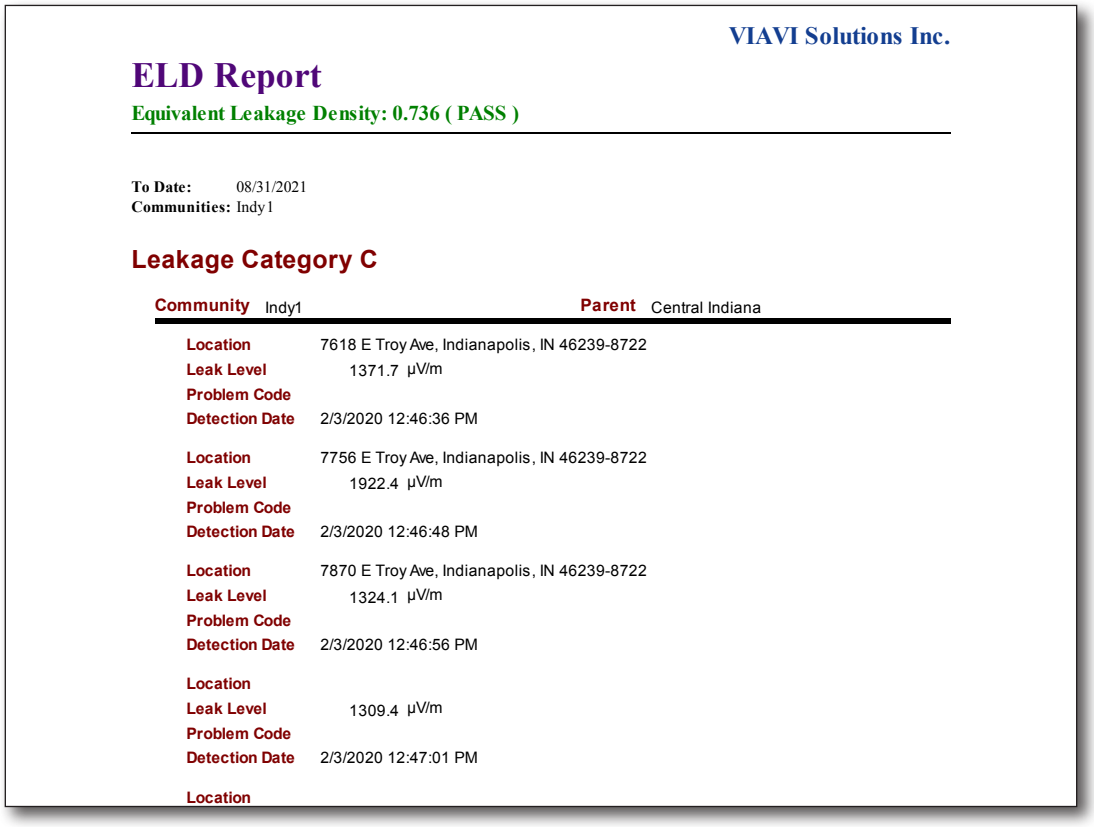
The Equivalent Leakage Density Report is an alternate leakage measurement method, as allowed by Industry Canada. After clicking the **ELD Report** link, the **Report Parameters** menu will appear as shown in the following figure.



To view the report, enter the following report parameters:

- **Communities** – This is the community in which the ELD Report will be generated. To choose a community, select the corresponding checkbox(es) from the list.
- **To Date** – This is the end date of the ELD Report.
- **Kilometers Patrolled** – This is the distance patrolled in the coverage area.

Once the report parameters have been chosen, select the **Display Report** button. The report will open as a PDF file in a separate window. At this point, the file can be saved or printed.



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ELD Report

Equivalent Leakage Density: 0.736 (PASS)

To Date: 08/31/2021
Communities: Indy1

Leakage Category C

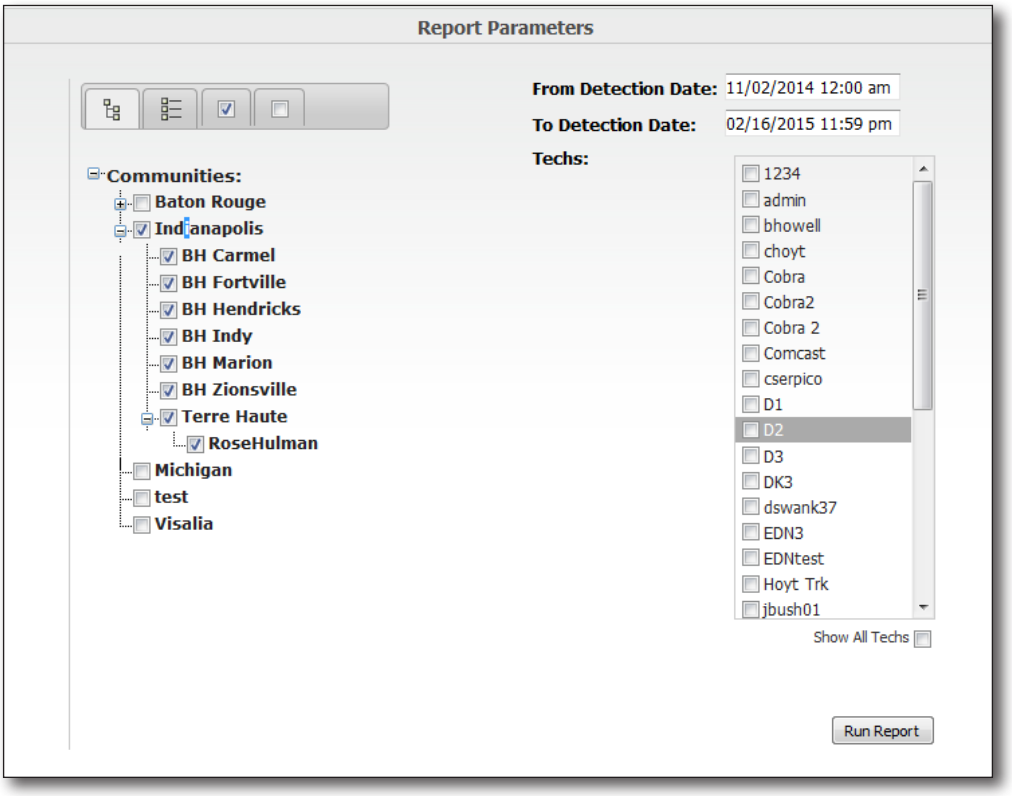
Community Indy1 **Parent** Central Indiana

Location	7618 E Troy Ave, Indianapolis, IN 46239-8722
Leak Level	1371.7 µV/m
Problem Code	
Detection Date	2/3/2020 12:46:36 PM
Location	7756 E Troy Ave, Indianapolis, IN 46239-8722
Leak Level	1922.4 µV/m
Problem Code	
Detection Date	2/3/2020 12:46:48 PM
Location	7870 E Troy Ave, Indianapolis, IN 46239-8722
Leak Level	1324.1 µV/m
Problem Code	
Detection Date	2/3/2020 12:46:56 PM
Location	
Leak Level	1309.4 µV/m
Problem Code	
Detection Date	2/3/2020 12:47:01 PM
Location	

Sample ELD report

Discovery Report

The Discovery Report details the number of leaks found and miles driven by a technician in the specified communities, during the specified time frame. After clicking the **Discovery Report** link, the **Report Parameters** menu will appear as shown in the following figure.



To view the report, enter the following report parameters:

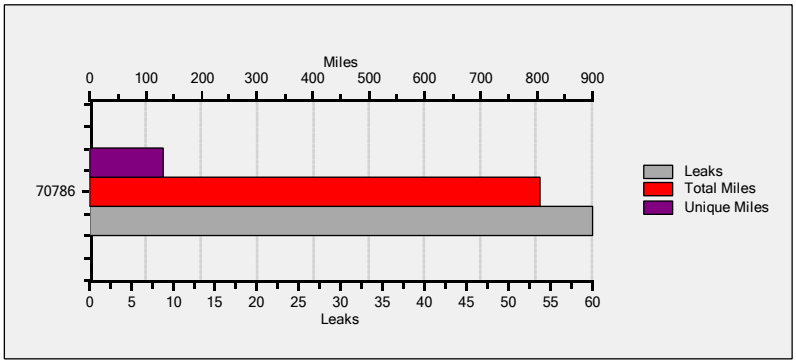
- **Communities** – This is the community in which the Discovery Report will be generated. To choose a community, select the corresponding checkbox(es) from the list.
- **From Detection Date** – This is the beginning date of the Discovery Report.
- **To Detection Date** – This is the end date of the Discovery Report.
- **Techs** – This is the technician (or technicians) for whom the Discovery Report will be generated.

Once the report criteria has been established, select the **Run Report** button. A pop-up window will appear to notify you that the report will be e-mailed to the LAW-X user, once LAW-X has completed the report generation. The report will be e-mailed as PDF file to the address which is associated with the user's account.

VIAVI Solutions Inc.

Discovery Report

From Date:	8/1/2021 12:00:00 AM		
To Date:	9/10/2021 11:59:00 PM		
Quarter:	3rd (beginning 7/1/2021)		
Communities:	Indianapolis; Central Indiana; Indy 1; Area 51; BH Indy; Noblesville		
Techs:	70786		
Total Techs:	1	**Total Communities:**	6
Total Leaks:	60	**Total Leaks/Day:**	1.46
Total Miles:	806.11	**Total Miles/Day:**	19.66
Unique Miles:	132.44	**Unique Miles/Day:**	3.23

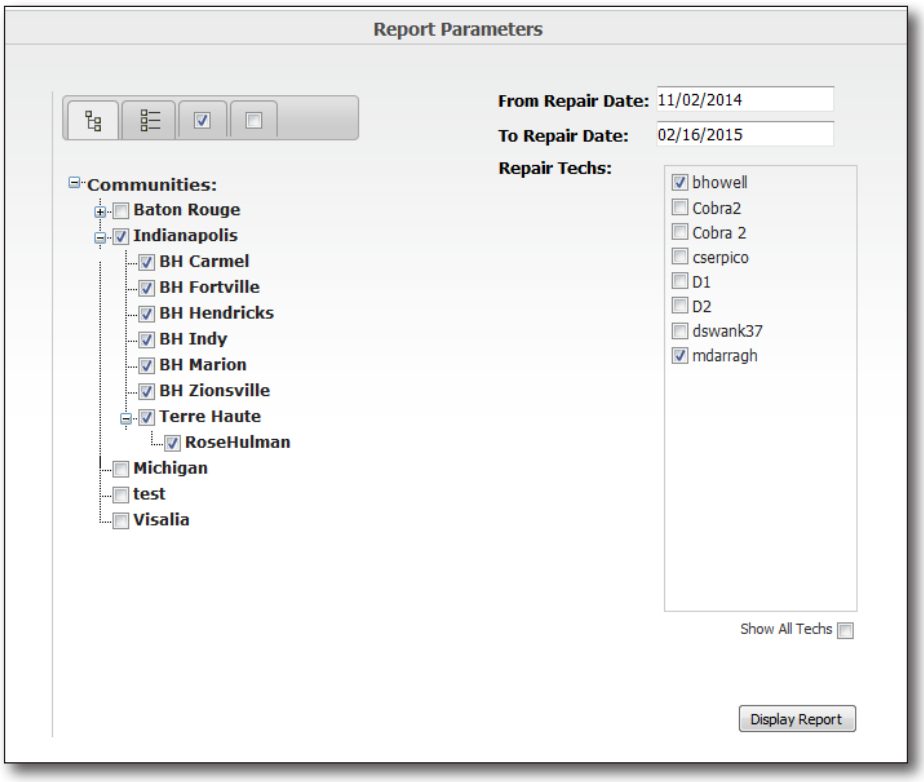


Tech ID	Leaks	Leaks/Day	Total Miles	Total Miles/Day	Unique Miles	Unique Miles/Day
70786	60	1.46	806.11	19.66	132.44	3.23

Sample Discovery report

Repair Report

The Repair Report details closed leaks which are grouped by community and technician, during the specified time frame. The Repair Report also provides details of leak levels and causes for the leaks. After clicking the **Repair Report** link, the **Report Parameters** menu will appear as shown in the following figure.



To view the report, enter the following report parameters:

- **Communities** – This is the community in which the Repair Report will be generated. To choose a community, select the corresponding checkbox(es) from the list.
- **From Repair Date** – This is the beginning date of the Repair Report.
- **To Repair Date** – This is the end date of the Repair Report.
- **Repair Techs** – This is the technician (or technicians) for whom the Repair Report will be generated.

Once the report parameters have been chosen, select the **Display Report** button. The report will open as a PDF file in a separate window. At this point, the file can be saved or printed.

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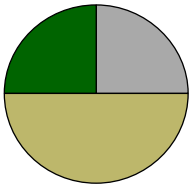
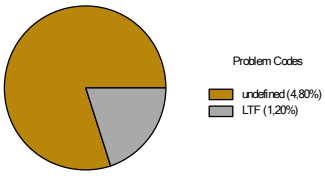
Repair Report

From Date: 08/01/2021
To Date: 08/31/2021
Communities: Indy1
Techs: MarkD; MarkD10; MarkD no wo; mdarragh; MRD21; MRD22
Total Techs: 6 **Total Communities:** 1
Total Leaks: 5 **Total Problem Codes:** 1

Leakage Breakdown



Cause Breakdown



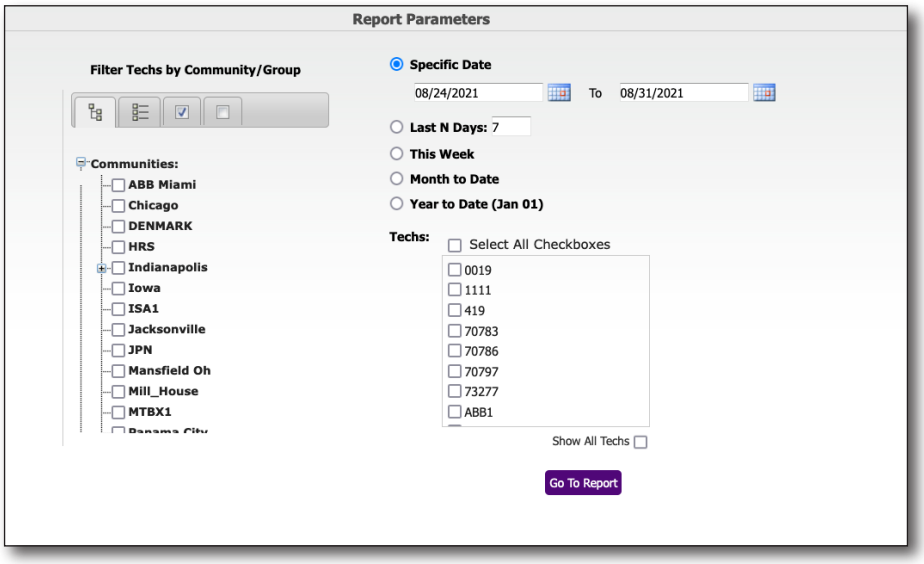
Leak	Work Order	Level	Post Level	Problem Code	Location	Repair Date	Comment
Indy1 (5 Leaks, 1 Problem Code)							
mdarragh (2 Leaks, 1 Problem Code)							
23253	2481	122.0	0.0	LTF	11706 Whisperwood Way, Fishers, IN 46037, USA (39.97564/-85.96012)	8/6/2021 10:31:00 AM	
24661	2623	0.0	0.0		321 N Devon Ave, Indianapolis, IN 46219, USA (39.77739/-86.02097)	8/12/2021 8:34:00 AM	
MRD21 (3 Leaks, 0 Problem Codes)							
24373	2598	49.7	0.0		5981 W 900 N, McCordsville, IN 46055, USA (39.91331/-85.91869)	8/17/2021 3:32:00 PM	
24375		17.2	0.0		6024 Bayfront Shores, McCordsville, IN 46055, USA (39.91643/-85.91903)	8/17/2021 3:29:00 PM	
24376		16.6	0.0		9211 N 600 W, McCordsville, IN 46055, USA (39.91582/-85.91909)	8/17/2021 3:30:00 PM	

8/31/2021 12:51:48 PM VIAVI LAW™ Page 1 of 1

Sample Repair report

Repair Compliance QC Report

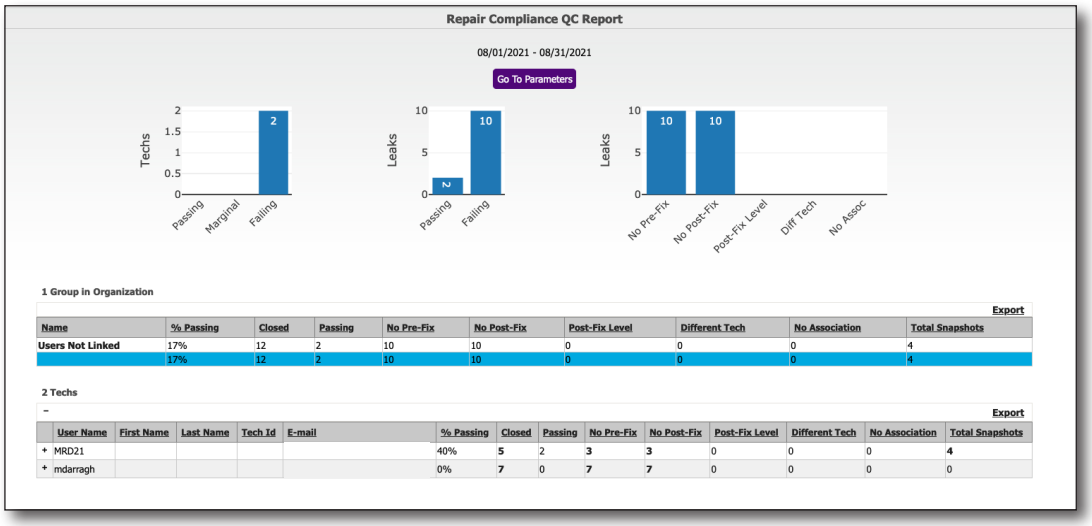
The Repair Compliance QC Report documents how well the organization is complying with the rules established for closing a leak. After clicking the **Repair Compliance QC Report** link, the **Report Parameters** menu will appear as shown in the following figure.

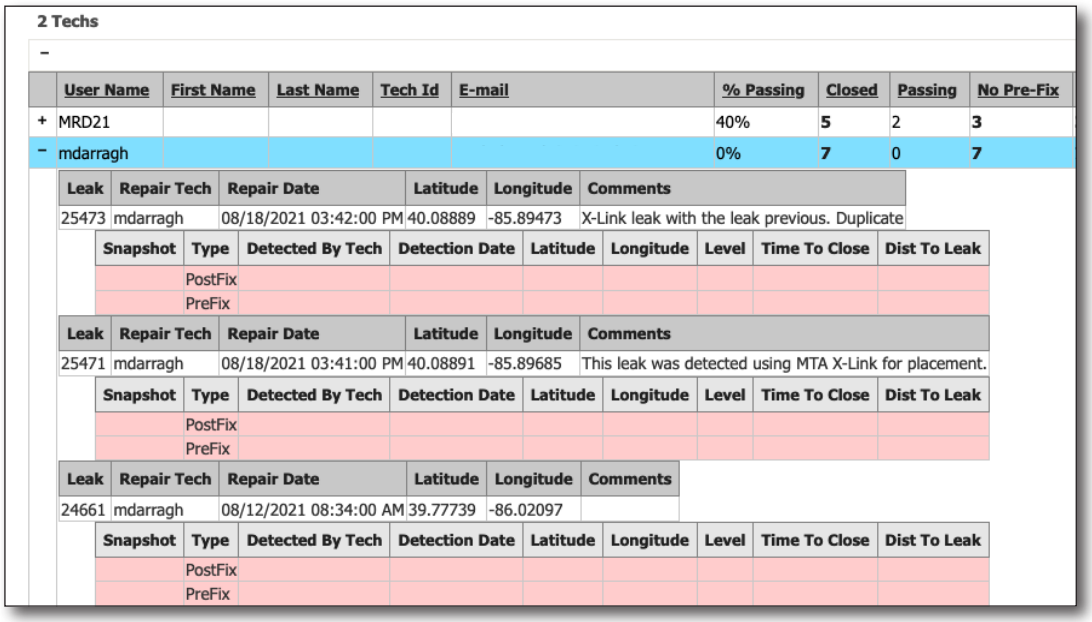


To view the report, enter the following report parameters:

- **Communities** – This is the community in which the Repair Compliance QC Report will be generated. To choose a community, select the corresponding checkbox(es) from the list.
- **Specific Date / Last N Days / This Week / Month to Date / Year to Date** – This is the beginning date or date range of the Repair Compliance QC Report.
- **Repair Techs** – This is the technician (or technicians) for whom the Repair Compliance QC Report will be generated.

Once the report parameters have been chosen, select the **Go to Report** button. The report will open as a PDF file in a separate window. At this point, the file can be saved or printed.

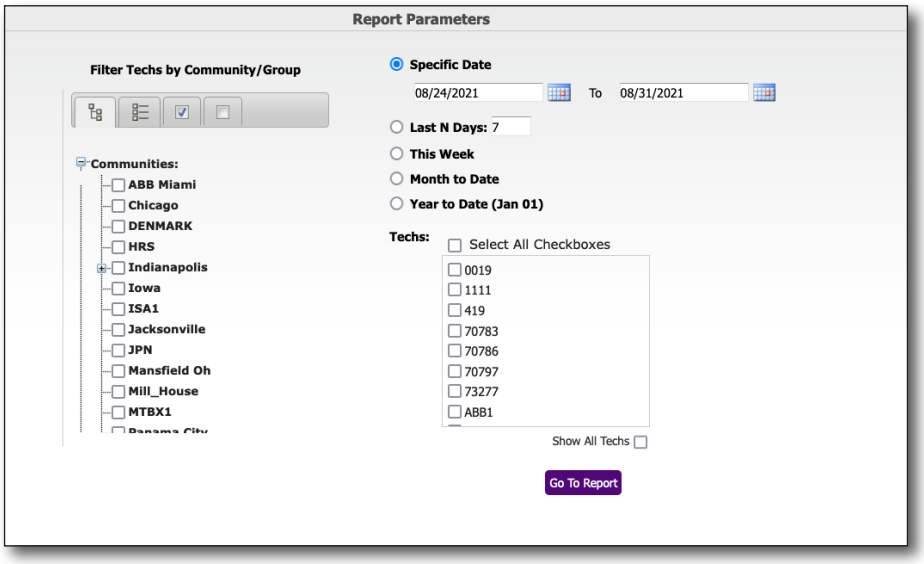




Sample Repair Compliance QC report

Equipment Health QC Report

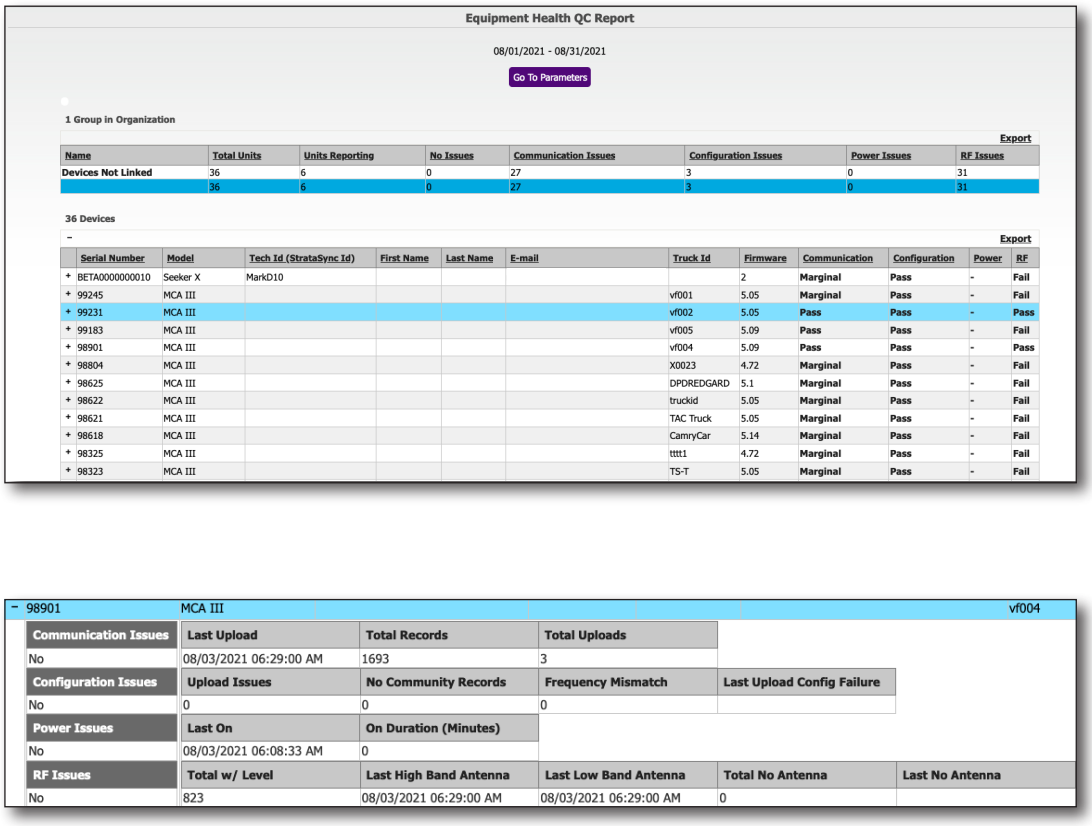
The Equipment Health QC Report documents any potential failures in hardware based on regular self-reports by the devices. After clicking the **Equipment Health QC Report** link, the **Report Parameters** menu will appear as shown in the following figure.



To view the report, enter the following report parameters:

- **Communities** – This is the community in which the Equipment Health QC Report will be generated. To choose a community, select the corresponding checkbox(es) from the list.
- **Specific Date / Last N Days / This Week / Month to Date / Year to Date** – This is the beginning date or date range of the Equipment Health QC Report.
- **Repair Techs** – This is the technician (or technicians) for whom the Equipment Health QC Report will be generated.

Once the report parameters have been chosen, select the **Go to Report** button. The report will open as a PDF file in a separate window. At this point, the file can be saved or printed.



Equipment Health QC Report

08/01/2021 - 08/31/2021

Go To Parameters

1 Group in Organization

Export

Name	Total Units	Units Reporting	No Issues	Communication Issues	Configuration Issues	Power Issues	RF Issues
Devices Not Linked	36	6	0	27	3	0	31
	36	6	0	27	3	0	31

36 Devices

Export

Serial Number	Model	Tech Id (StrataSync Id)	First Name	Last Name	E-mail	Truck Id	Firmware	Communication	Configuration	Power	RF
BETA0000000010	Seeker X	MarkD10					2	Marginal	Pass	-	Fail
99245	MCA III					vf001	5.05	Marginal	Pass	-	Fail
99231	MCA III					vf002	5.05	Pass	Pass	-	Pass
99183	MCA III					vf005	5.09	Pass	Pass	-	Fail
98901	MCA III					vf004	5.09	Pass	Pass	-	Pass
98804	MCA III					X0023	4.72	Marginal	Pass	-	Fail
98625	MCA III					DPDREDGARD	5.1	Marginal	Pass	-	Fail
98622	MCA III					truckid	5.05	Marginal	Pass	-	Fail
98621	MCA III					TAC Truck	5.05	Marginal	Pass	-	Fail
98618	MCA III					CamryCar	5.14	Marginal	Pass	-	Fail
98325	MCA III					tttt1	4.72	Marginal	Pass	-	Fail
98323	MCA III					TS-T	5.05	Marginal	Pass	-	Fail

98901 MCA III vf004

Communication Issues	Last Upload	Total Records	Total Uploads		
No	08/03/2021 06:29:00 AM	1693	3		
Configuration Issues	**Upload Issues**	**No Community Records**	**Frequency Mismatch**	**Last Upload Config Failure**	
No	0	0	0		
Power Issues	**Last On**	**On Duration (Minutes)**			
No	08/03/2021 06:08:33 AM	0			
RF Issues	**Total w/ Level**	**Last High Band Antenna**	**Last Low Band Antenna**	**Total No Antenna**	**Last No Antenna**
No	823	08/03/2021 06:29:00 AM	08/03/2021 06:29:00 AM	0	

Sample Equipment Health QC report

Device details

When expanding the details for each device, the following information is displayed (if applicable):

Communication Issues – Number of communications issues that were calculated for that device.

- **Last Upload** – Takes all uploads in the database and finds the latest date before the set end date parameter an upload occurred for that device. This will count as 1 failure if the date is outside the set date parameters. If last upload falls outside of date range this field is considered a Marginal pass, instead of Pass or Fail. There is no failure for this field only passing (uploaded within time period = true) and marginal (uploaded within time period = false).
- **Total Records** – Total number of records uploaded within the selected date parameters. If number of records is 0, it is 1 failure.
- **Total Uploads** – Total number of uploads within the selected date parameters. If number of uploads is 0, it is 1 failure.

Configuration Issues – Number of configuration issues that were calculated for that device.

- **Upload Issues** – Number of times the device's Username/Truck ID was found in the table of failed upload attempts due to a bad configuration within the selected date parameters. This number will be 0 if the device has had a successful upload since the most recent upload failure, otherwise, it is 1 failure per type of failed attempt entry (User Not Recognized, User is Not a Meter User, User Does Not Exist, or Uninitialized Tech).
- **No Community Records** – Number of records uploaded within the selected date parameters that was not in a community. Counts as a failure if the number of total records uploaded is more than 0, and the number of records not in a community is equal to the number of total records uploaded. (No uploaded records within the date parameters were in a community)
- **Frequency Mismatch** – Number of times the Username/Truck ID was found in the table recording the number attempted uploads with mismatched frequencies. Fails if there is at least 1 occurrence within the selected date parameters. (**Note:** Only applies to analog Seeker.)
- **Last Upload Config Failure** – This is the date/time when the last config issue occurred. This can be one of the "Upload Issues" or a "Frequency Mismatch". If a failed upload had a blank username. This will cause a unique user to be created with a serial number and username of "This Uninitialized Tech Is Not A User". We have no other information for this user, so we will show the most recent date of an uninitialized tech failure, and count it as a single configuration issue. This user will not have any other issues calculated for it, as we have no other details for it.

Power Issues – Number of power issues that were calculated for that device, which can only be a Seeker X, since no other device sends On /Off Records.

- **Last On** – Out of all on/off records for this device, this is the most recent On record where the date is before the set end date parameter. State is N/A, as this is informational only.
- **On Duration** – Out of records where the on records are within the selected date parameters, this is the total on duration in minutes recorded by On/Off records of that device. State is N/A, as this is informational only.

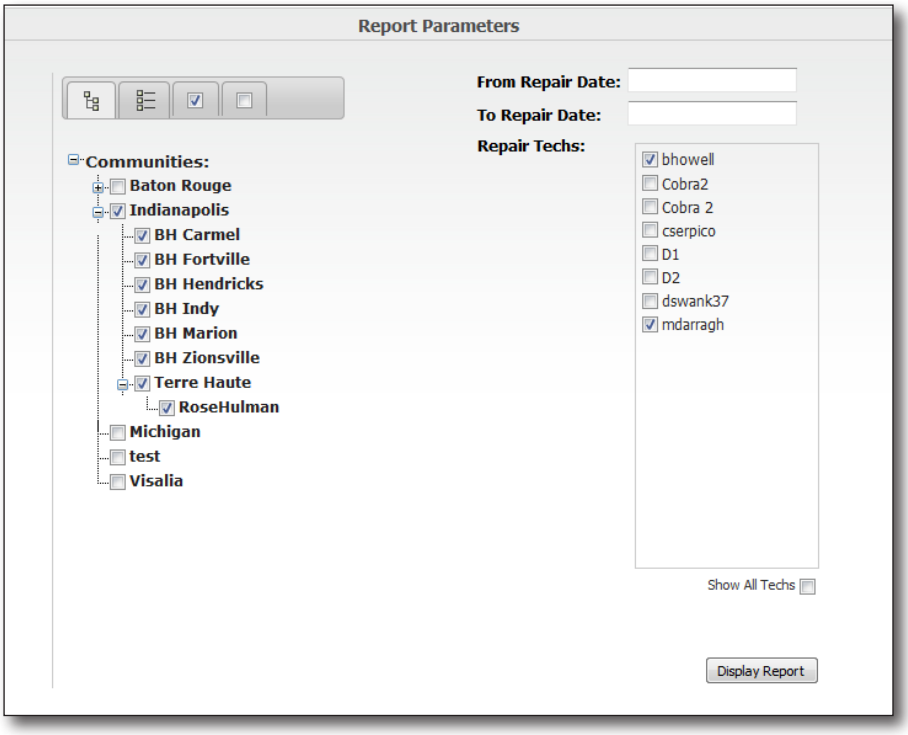
RF Issues – Number of RF issues that were calculated for that device, where there was at least 1 upload. The end date AND Last Upload Date must also be past the date or firmware these record counts were implemented, otherwise the category will be considered N/A and marked as "-". If either Last High Band Antenna or Last Low Band Antenna have a failing result the overall RF Issues field will be a failure. This only passes if both High and Low band antennas pass.

- **Total w/ Level** – Number of records upload with a level within the selected date parameters. This will count as 1 failure if the value is 0.
- **Last High Band Antenna** – Out of all uploads for this device, this is the most recent upload before the end date parameter with a tagged leakage reading in the high band. This will count as 1 failure if the date is outside the set date parameters. Only applies to Seeker X and Seeker D.

- **Last Low Band Antenna** – Out of all uploads for this device, this is the most recent upload before the end date parameter with a tagged leakage reading in the low band. This will count as 1 failure if the date is outside the set date parameters. Only Applies to Seeker X and Seeker D.
- **Last No Antenna** – Out of all uploads for this device, this is the most recent upload before the end date parameter with at least 1 antenna record indicating no antenna was connected. Informational only, so it will not count towards pass/fail result of the category.
- **Last No Antenna Snapshot** – Out of all uploads for this device, this is the most recent upload before the end date parameter with at least 1 antenna snapshot record indicating no antenna was connected. Informational only, so it will not count towards pass/fail result of the category.
- **Last w/ Community Level** – Out of all uploads for this device, this is the most recent upload before the end date parameter with at least 1 record above the community defined minimum level. This will count as 1 failure if the date is outside the set date parameters. Informational only, so it will not count towards pass/fail result of the category.

Cause Detail Report

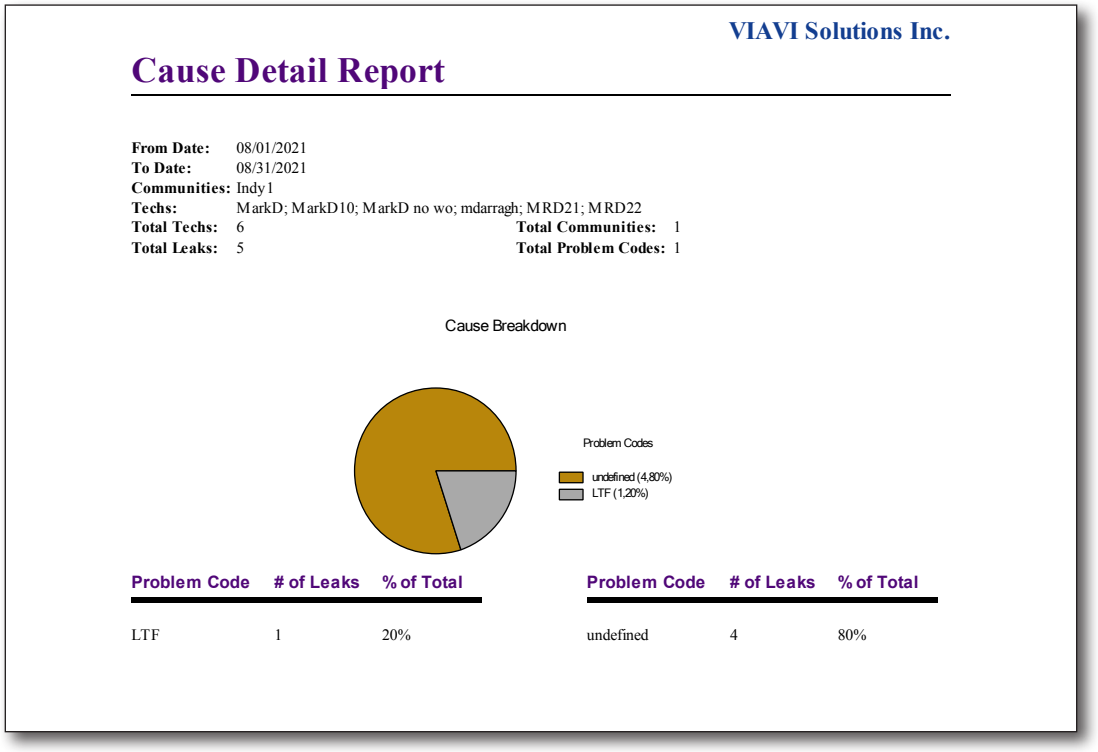
The Cause Detail Report provides the frequency at which specific problems occur within the specified group of repaired leaks. After clicking the **Cause Detail Report** link, the **Report Parameters** menu will appear as shown in the following figure.



To view the report, enter the following report parameters:

- **Communities** – This is the community in which the Cause Detail Report will be generated. To choose a community, select the corresponding checkbox(es) from the list.
- **From Repair Date** – This is the beginning date of the Cause Detail Report.
- **To Repair Date** – This is the end date of the Cause Detail Report.
- **Repair Techs** – This is the technician (or technicians) for whom the Cause Detail Report will be generated.

Once the report criteria has been established, select the **Display Report** button. The report will open as a PDF file in a separate window. At this point, the file can be saved or printed.



VIAVI Solutions Inc.

Cause Detail Report

From Date: 08/01/2021
To Date: 08/31/2021
Communities: Indy1
Techs: MarkD; MarkD10; MarkD no wo; mdarragh; MRD21; MRD22
Total Techs: 6 **Total Communities:** 1
Total Leaks: 5 **Total Problem Codes:** 1

Cause Breakdown

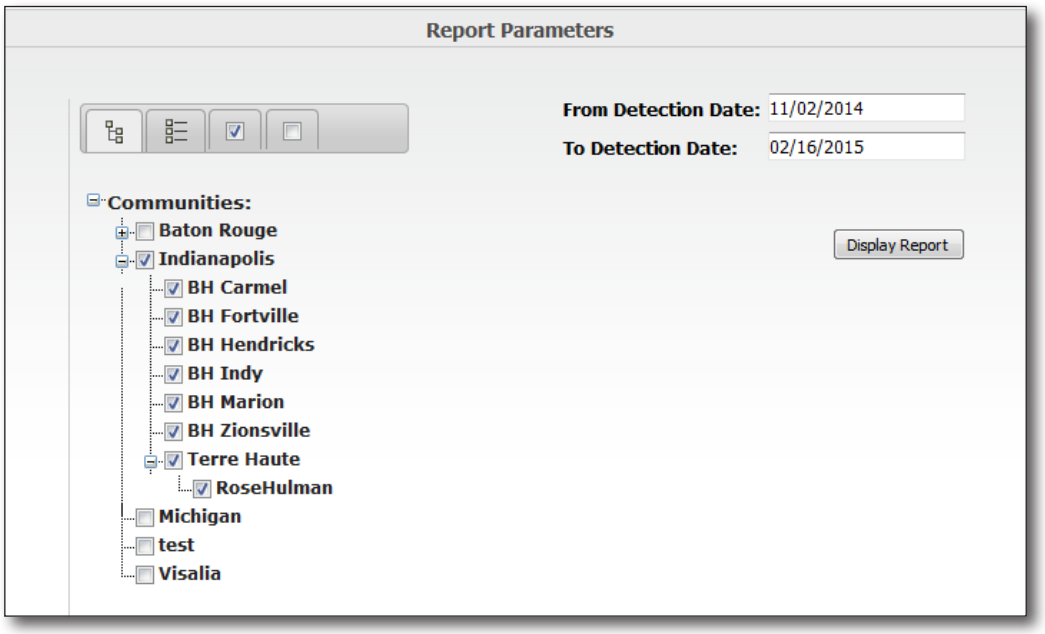
Problem Code	# of Leaks	% of Total
LTF	1	20%

Problem Code	# of Leaks	% of Total
undefined	4	80%

Sample Cause Detail report

Open Leaks Report

The Open Leaks Report details open leaks that are discovered during the specified time frame. The leaks are grouped by community and technician. Details for leak levels are also provided. After clicking the **Open Leaks Report** link, the **Report Parameters** menu will appear as shown in the following figure.



To view the report, enter the following report parameters:

- **Communities** – This is the community in which the Open Leaks Report will be generated. To choose a community, select the corresponding checkbox(es) from the list.
- **From Detection Date** – This is the beginning date of the Open Leaks Report.
- **To Detection Date** – This is the end date of the Open Leaks Report.

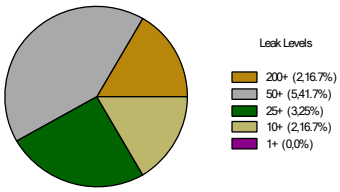
Once the report criteria has been established, select the **Display Report** button. The report will open as a PDF file in a separate window. At this point, the file can be saved or printed.

VIAVI Solutions Inc.

Open Leaks Report

From Date: 08/01/2021
To Date: 08/31/2021
Communities: Indy1
Total Leaks: 13 **Total Communities:** 1

Leakage Breakdown



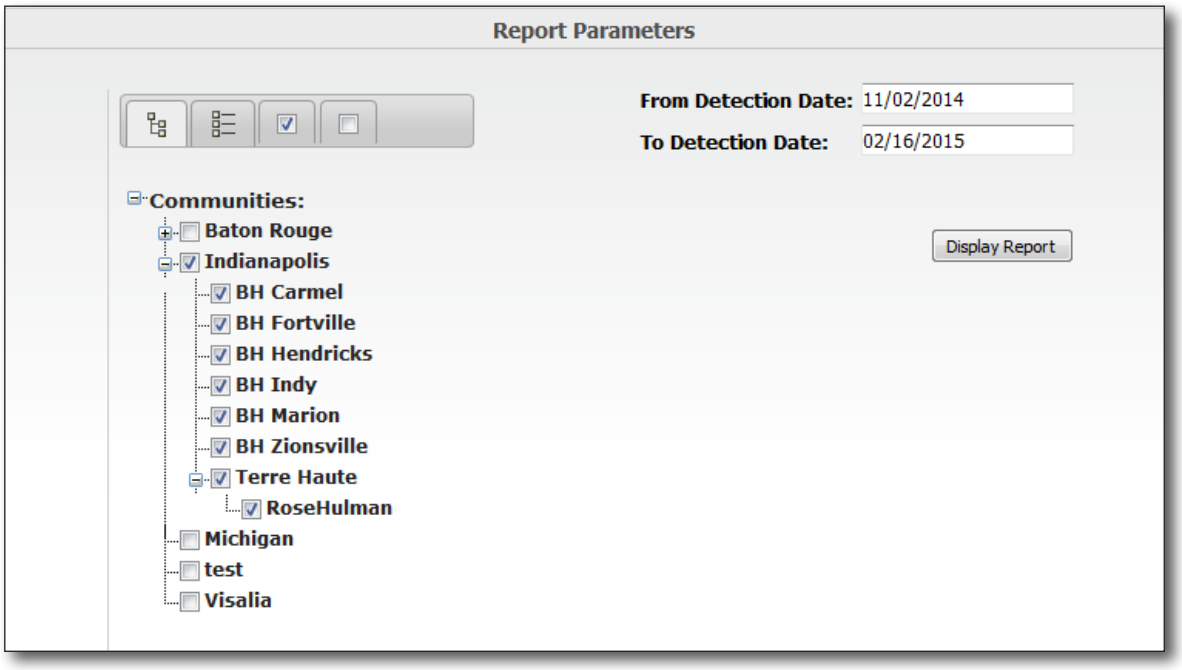
Leak	Work Order	Temp Level	Location	Detection Date	Comment
Indy1 (13 Leaks)					
No tech assigned. (8 Leaks)					
25098		32.4	4611 N Franklin Rd, Lawrence, IN 46226, USA (39.84119/-86.02714)	8/7/2021 3:26:02 PM	
25099		32.4	4628 N Franklin Rd, Indianapolis, IN 46226, USA (39.84176/-86.02717)	8/7/2021 3:26:05 PM	
25426		0.0	9710 Park Davis Drive, indianapolis, IN 46235 (39.82105/-85.99662)	8/11/2021 10:05:00 AM	
25436		16.7	13642 Olivia Way, Fishers, IN 46037, USA (39.98853/-85.91909)	8/16/2021 9:43:21 AM	
25470		16.3	6023 Bayfront Shores, McCordsville, IN 46055, USA (39.91605/-85.91917)	8/17/2021 2:18:54 PM	
25474		53.7	7855 Brookville Rd, Indianapolis, IN 46239, USA (39.75021/-86.02772)	8/21/2021 11:04:52 AM	
25475		57.8	15779 Hawkswood Ln, Fishers, IN 46037, USA (39.97472/-85.88102)	8/21/2021 6:55:26 PM	
25476		31.3	12782 Winery Way, Fishers, IN 46037, USA (39.97406/-85.88105)	8/21/2021 6:56:36 PM	
mdarragh (5 Leaks)					

Sample Open Leaks report

Leakage Life Cycle Report

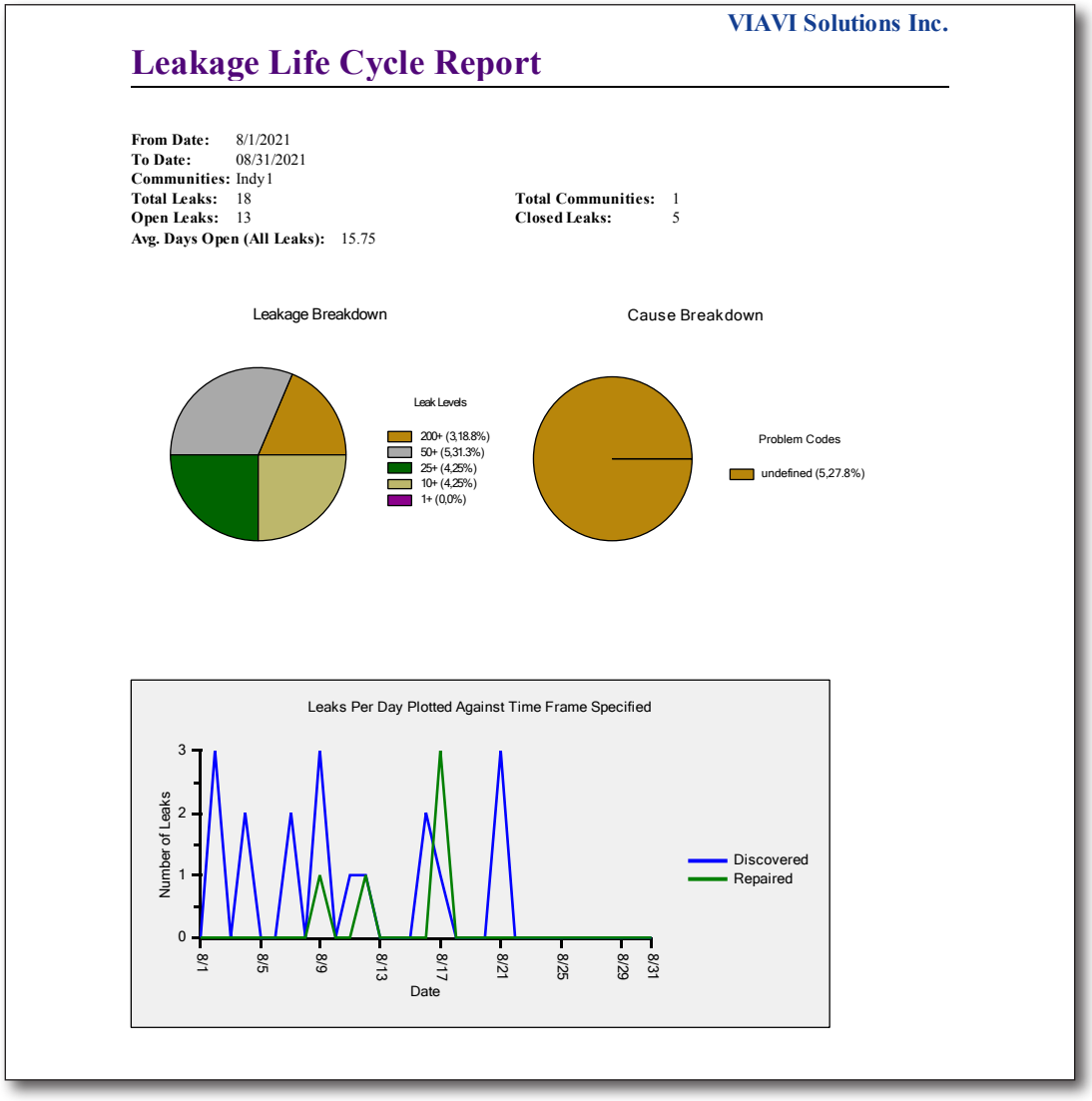
The Leakage Life Cycle Report details all leaks discovered during the specified time frame. Details of leak levels and causes is displayed with a linear graph showing the daily discovery of leaks and the time required to repair those leaks. Causes for leaks which have been repaired and the average number of days which a leak remains open are also displayed. After clicking the **Leakage Life Cycle Report** link, the **Report Parameters** menu will appear as shown in the following figure.

To view the report, enter the following report parameters:



- **Communities** – This is the community in which the Leakage Life Cycle Report will be generated. To choose a community, select the corresponding checkbox(es) from the list.
- **From Detection Date** – This is the beginning date of the Leakage Life Cycle Report.
- **To Detection Date** – This is the end date of the Leakage Life Cycle Report.

Once the report criteria has been established, select the **Display Report** button. The report will open as a PDF file in a separate window. At this point, the file can be saved or printed.



VIAVI Solutions Inc.

Leakage Life Cycle Report

From Date: 8/1/2021
To Date: 08/31/2021
Communities: Indy 1
Total Leaks: 18
Open Leaks: 13
Avg. Days Open (All Leaks): 15.75

Total Communities: 1
Closed Leaks: 5

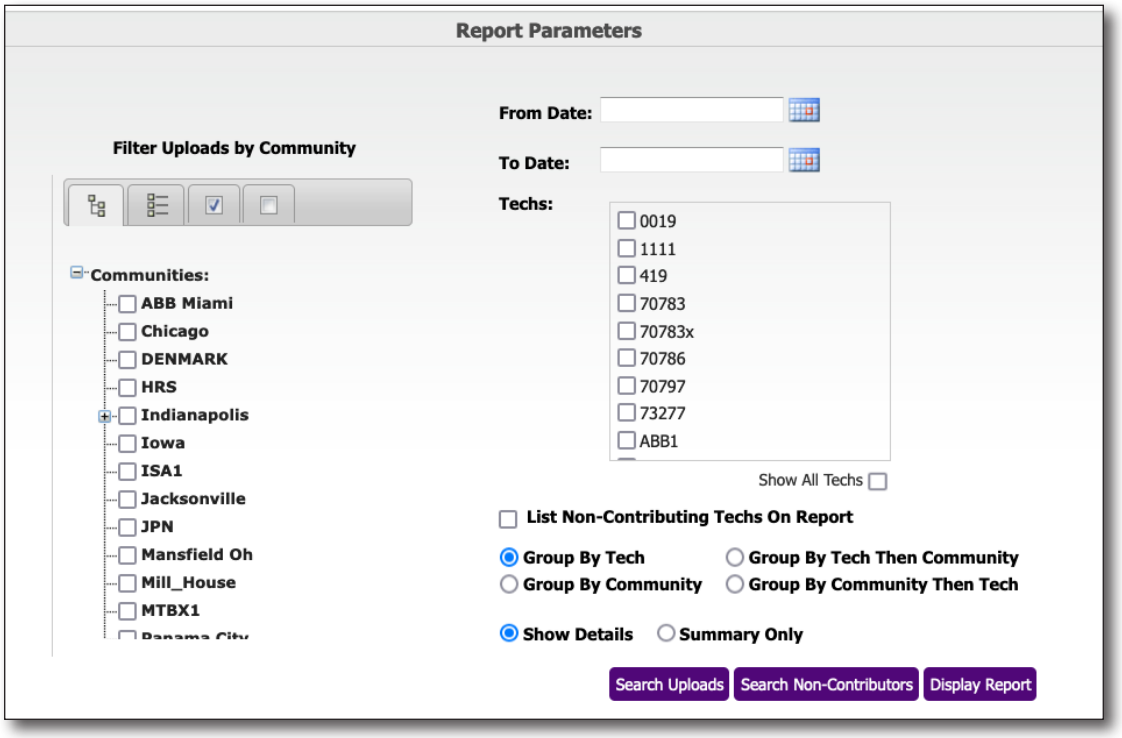
Leakage Breakdown

Cause Breakdown

Sample Leakage Life Cycle report

Uploader Log Report

The Uploader Log Report tracks which technicians uploaded (or did not upload) data to the system. After clicking the **Uploader Log Report** link, the **Report Parameters** menu will appear as shown below.



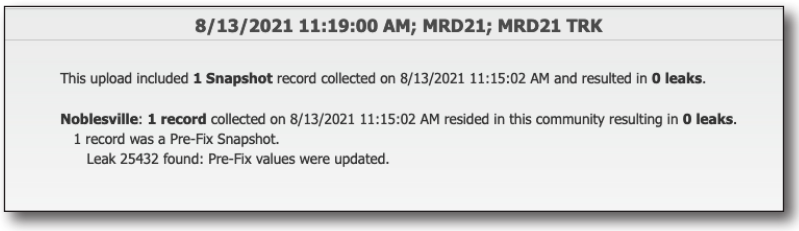
To view the report, enter the following report parameters:

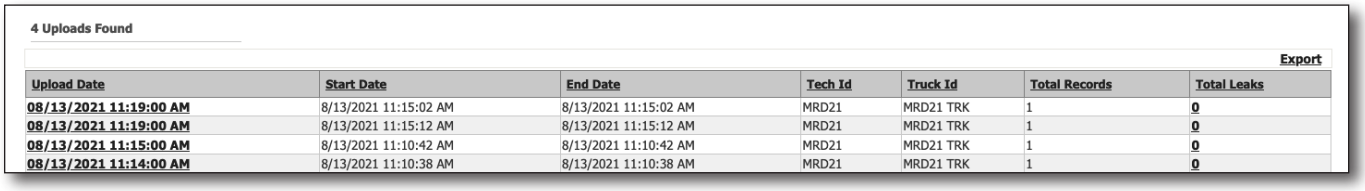
- **Communities** – This is the community in which the Uploader Log Report will be generated. To choose a community, select the corresponding checkbox(es) from the list.
- **From Date** – This is the beginning date of the Uploader Log Report.
- **To Date** – This is the end date of the Uploader Log Report.
- **Techs** – This is the technician (or technicians) for whom the Uploader Log Report will be generated.
- **List Non-Contributing Techs on Report** – Select this checkbox to include a list of technicians that haven't uploaded to LAW-X in the selected time frame.
- **Group By Tech** – This groups the data by technician.
- **Group By Tech Then Community** – This groups the data by technician, then community.

- **Group By Community** – This groups the data by community.
- **Group By Community Then Tech** – This groups the data by community, then technician.
- **Show Details** – This displays detailed information in the report.
- **Summary Only** – This displays a short summary in the report.

Once the report parameters have been chosen, perform either of the following actions:

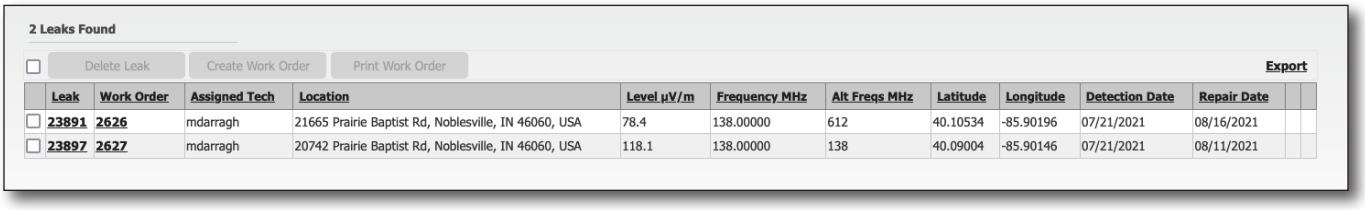
- Select the **Search Uploads** button. A list of the uploads by the selected technician(s) during the date range are displayed at the bottom of the screen as shown in the image below.
    - To export all of the upload data, select the **Export** link.
    - For more record detail, select the link for the date/time of the upload record. The record detail is displayed at the top of the screen, as shown below.





Upload Date	Start Date	End Date	Tech Id	Truck Id	Total Records	Total Leaks
08/13/2021 11:19:00 AM	8/13/2021 11:15:02 AM	8/13/2021 11:15:02 AM	MRD21	MRD21 TRK	1	0
08/13/2021 11:19:00 AM	8/13/2021 11:15:12 AM	8/13/2021 11:15:12 AM	MRD21	MRD21 TRK	1	0
08/13/2021 11:15:00 AM	8/13/2021 11:10:42 AM	8/13/2021 11:10:42 AM	MRD21	MRD21 TRK	1	0
08/13/2021 11:14:00 AM	8/13/2021 11:10:38 AM	8/13/2021 11:10:38 AM	MRD21	MRD21 TRK	1	0

- For more leak detail, select the leaks link under the **Total Leaks** column on the same line as the date/time you want. The leak detail is displayed at the top of the screen, as shown below:

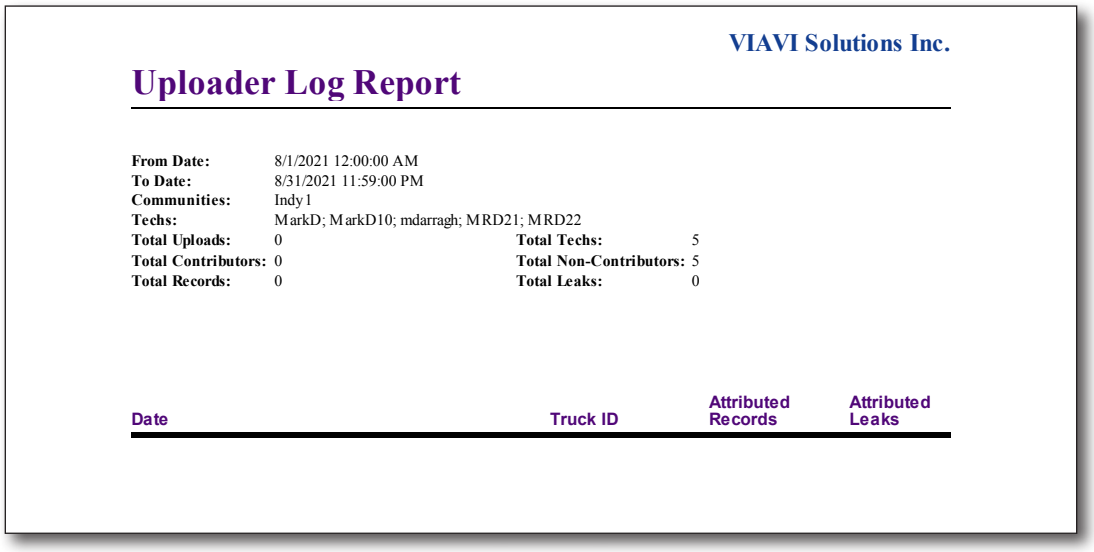


2 Leaks Found

Delete Leak | Create Work Order | Print Work Order | Export

Leak	Work Order	Assigned Tech	Location	Level µV/m	Frequency MHz	Alt Freqs MHz	Latitude	Longitude	Detection Date	Repair Date
23891	2626	mdarragh	21665 Prairie Baptist Rd, Noblesville, IN 46060, USA	78.4	138.00000	612	40.10534	-85.90196	07/21/2021	08/16/2021
23897	2627	mdarragh	20742 Prairie Baptist Rd, Noblesville, IN 46060, USA	118.1	138.00000	138	40.09004	-85.90146	07/21/2021	08/11/2021

- Select the **Display Report** button. The report will open as a PDF file in a separate window. At this point, the file can be saved or printed.



VIAVI Solutions Inc.

Uploader Log Report

From Date: 8/1/2021 12:00:00 AM
To Date: 8/31/2021 11:59:00 PM
Communities: Indy1
Techs: MarkD; MarkD10; mdarragh; MRD21; MRD22
Total Uploads: 0 **Total Techs:** 5
Total Contributors: 0 **Total Non-Contributors:** 5
Total Records: 0 **Total Leaks:** 0

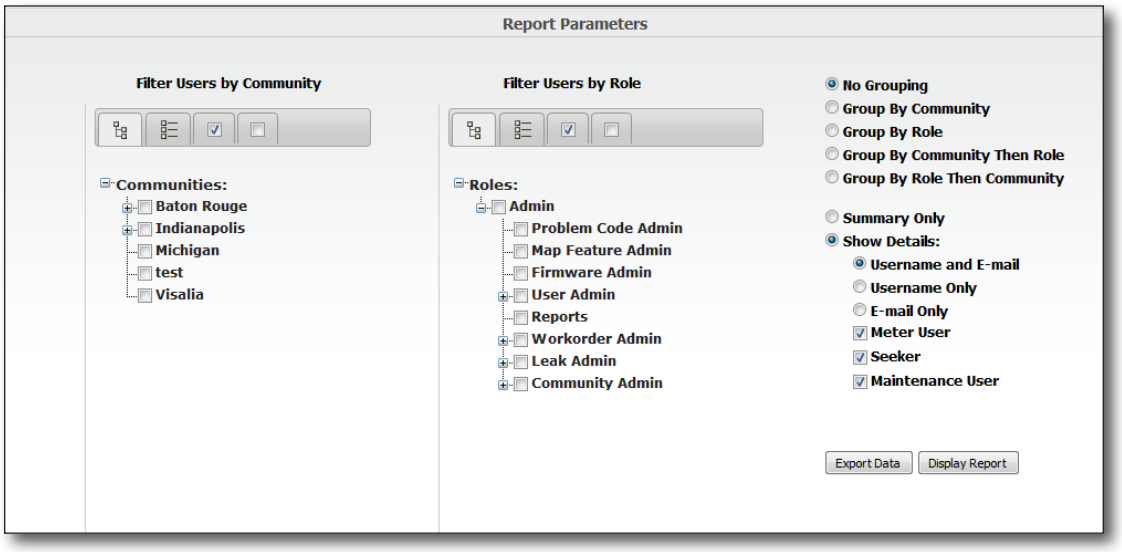
Date	Truck ID	Attributed Records	Attributed Leaks

Sample Uploader Log report

User Report

The User Report provides a list of users that can be filtered and grouped by role and community. Optionally, a user summary report can be generated, which does not show user details.

After clicking the **User Report** link, the **Report Parameters** menu will appear as shown in the figure below.



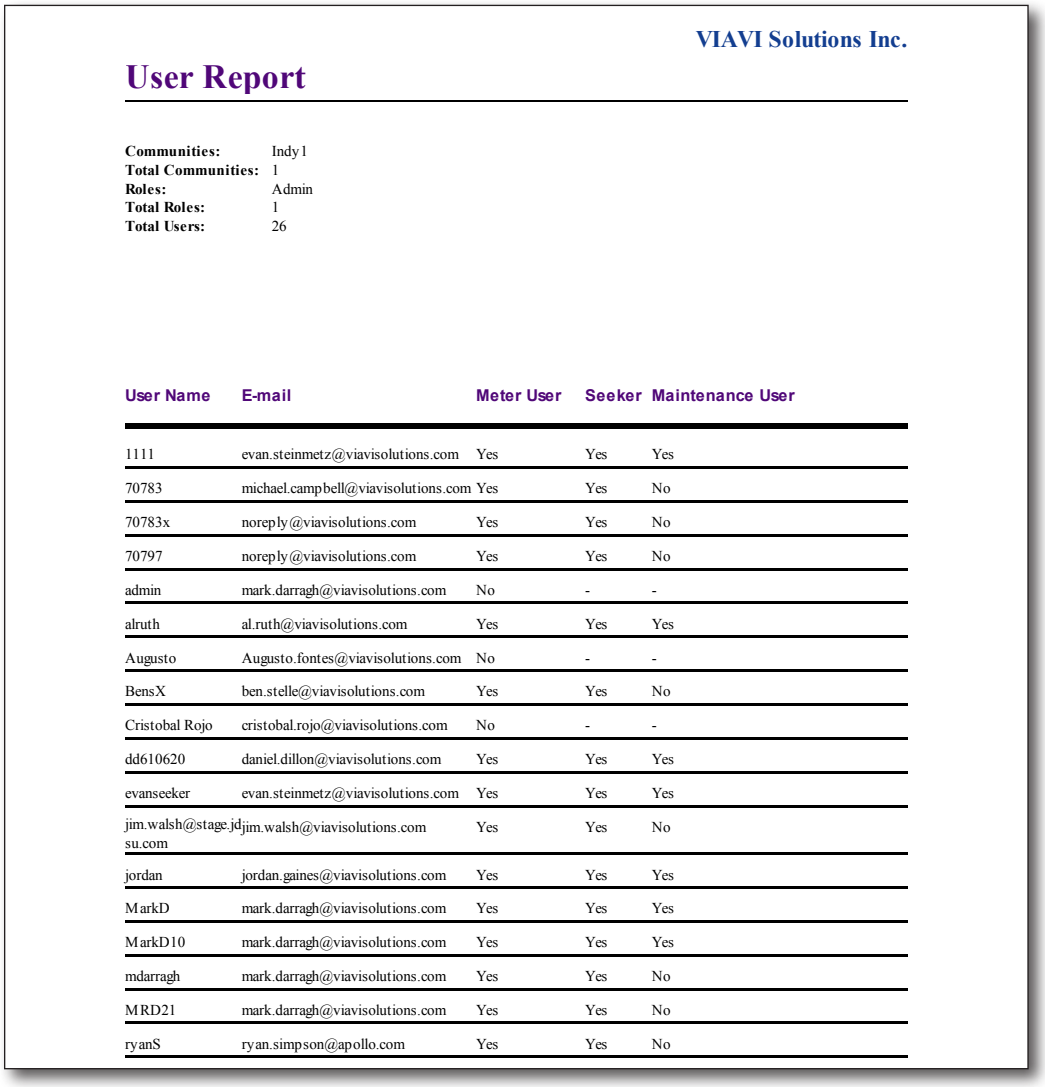
To view the report, enter the following report parameters:

- **Communities** – This is the community in which the User Report will be generated. To choose a community, select the corresponding checkbox(es) from the list.
- **Roles** – This is the role in which the User Report will be generated. To choose a role, select the corresponding checkbox(es) from the list.
- **No Grouping** – This does not group the data.
- **Group By Community** – This groups the data by community.
- **Group By Role** – This groups the data by role.

- **Group By Community Then Role** – This groups the data by community, then role.
- **Group By Role Then Community** – This groups the data by role, then community.
- **Summary Only** – This displays a short summary in the report.
- **Show Details** – This displays detailed information in the report, as follows:
    - **Username and E-mail –** Displays username and email address
    - **Username Only** – Displays username only
    - **E-mail Only** – Displays email address only
    - **Meter User** – Displays if user is a meter user
    - **Seeker** – Displays if a user is a Seeker user
    - **Maintenance User** – Displays if a user is a maintenance user

Once the report parameters have been chosen, perform either of the following actions:

- Select the **Export Data** button to export to a file.
- Select the **Display Report** button. The report will open as a PDF file in a separate window. At this point, the file can be saved or printed.



VIAVI Solutions Inc.

User Report

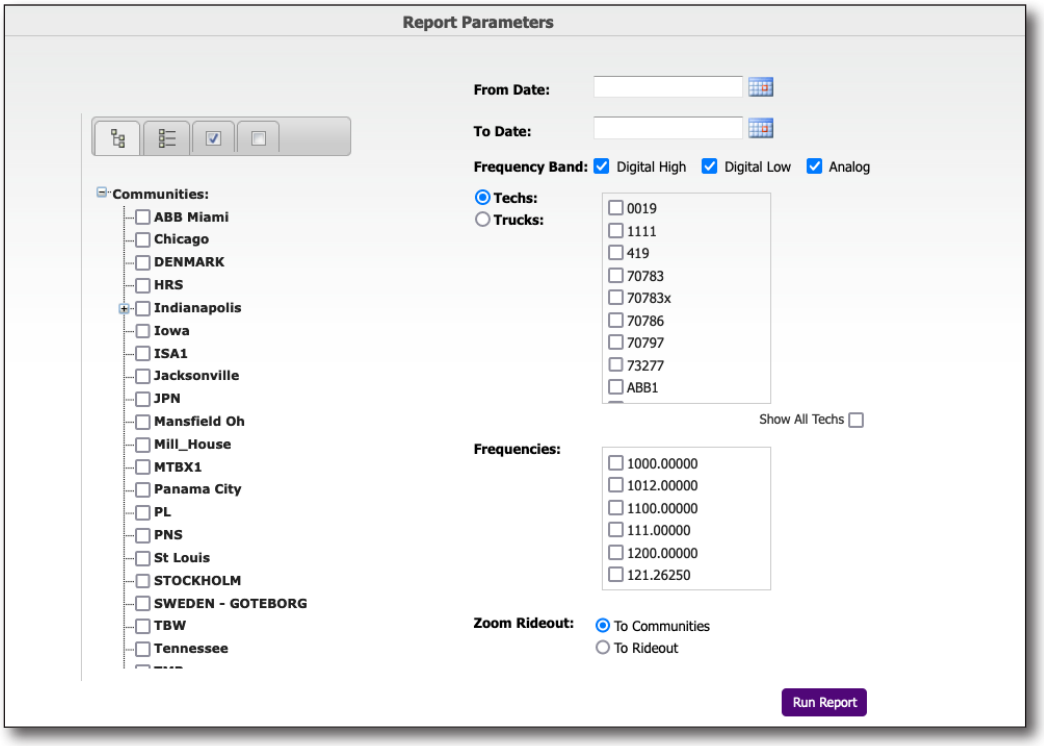
Communities: Indy1
Total Communities: 1
Roles: Admin
Total Roles: 1
Total Users: 26

User Name	E-mail	Meter User	Seeker	Maintenance User
1111	evan.steinmetz@viavisolutions.com	Yes	Yes	Yes
70783	michael.campbell@viavisolutions.com	Yes	Yes	No
70783x	noreply@viavisolutions.com	Yes	Yes	No
70797	noreply@viavisolutions.com	Yes	Yes	No
admin	mark.darragh@viavisolutions.com	No	-	-
alruth	al.ruth@viavisolutions.com	Yes	Yes	Yes
Augusto	Augusto.fontes@viavisolutions.com	No	-	-
BensX	ben.stelle@viavisolutions.com	Yes	Yes	No
Cristobal Rojo	cristobal.rojo@viavisolutions.com	No	-	-
dd610620	daniel.dillon@viavisolutions.com	Yes	Yes	Yes
evanseeker	evan.steinmetz@viavisolutions.com	Yes	Yes	Yes
jim.walsh@stage.jdsu.com	jim.walsh@viavisolutions.com	Yes	Yes	No
jordan	jordan.gaines@viavisolutions.com	Yes	Yes	Yes
MarkD	mark.darragh@viavisolutions.com	Yes	Yes	Yes
MarkD10	mark.darragh@viavisolutions.com	Yes	Yes	Yes
mdarragh	mark.darragh@viavisolutions.com	Yes	Yes	No
MRD21	mark.darragh@viavisolutions.com	Yes	Yes	No
ryanS	ryan.simpson@apollo.com	Yes	Yes	No

Sample User report

Rideout Report

The Rideout Report generates a map of the route a technician had driven over a certain period of time. After clicking the **Rideout Report** link, the **Rideout Report** menu will appear as shown in the following figure.

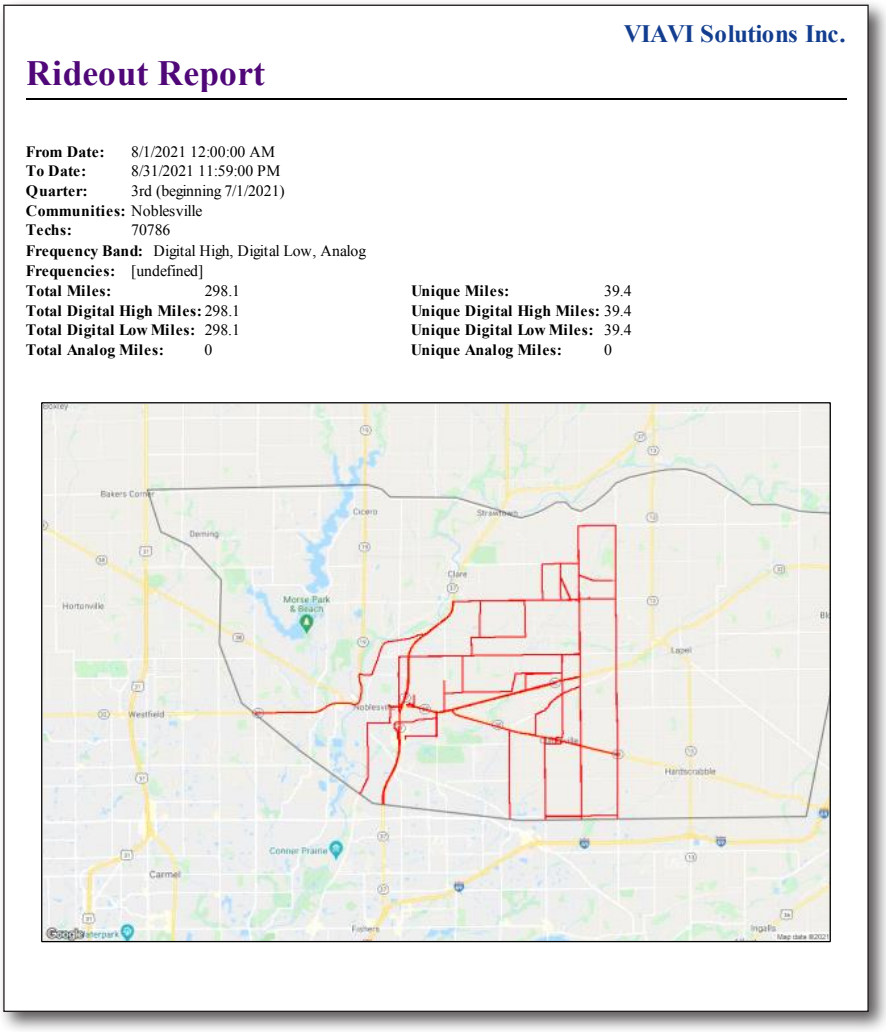


To view the report, enter the following report parameters:

- **Communities** – This is the community in which the Rideout Report will be generated. To choose a community, select the corresponding checkbox(es) from the list.
- **From Date** – This is the beginning date and time of the Rideout Report.
- **To Date** – This is the end date and time of the Rideout Report.
- **Frequency Band –** Leakage rideout frequencies can be included in the Rideout Report by selecting either or all of the following options:
    - **Digital High** – Displays digital high-band frequency rideout points
    - **Digital Low** – Displays digital low-band frequency rideout points
    - **Analog** – Displays analog frequency rideout points

- **Techs** – This is the technician (or technicians) for whom the Rideout Report will be generated.
- **Trucks** – This is the truck (or trucks) for whom the Rideout Report will be generated.
- **Frequencies –** Leakage rideout frequencies can be included in the Rideout Report by selecting them.
- **Zoom Rideout** – Select to either zoom the map view to the selected communities or to the rideout.

Once the report criteria has been established, select the **Run Report** button. A pop-up window will appear to notify you that the report will be e-mailed to the LAW-X user once LAW-X has completed the report generation. The report will be e-mailed as a PDF file and a CSV file to the email address which is associated with the user's account.



VIAVI Solutions Inc.

Rideout Report

From Date: 8/1/2021 12:00:00 AM
To Date: 8/31/2021 11:59:00 PM
Quarter: 3rd (beginning 7/1/2021)
Communities: Noblesville
Techs: 70786
Frequency Band: Digital High, Digital Low, Analog
Frequencies: [undefined]

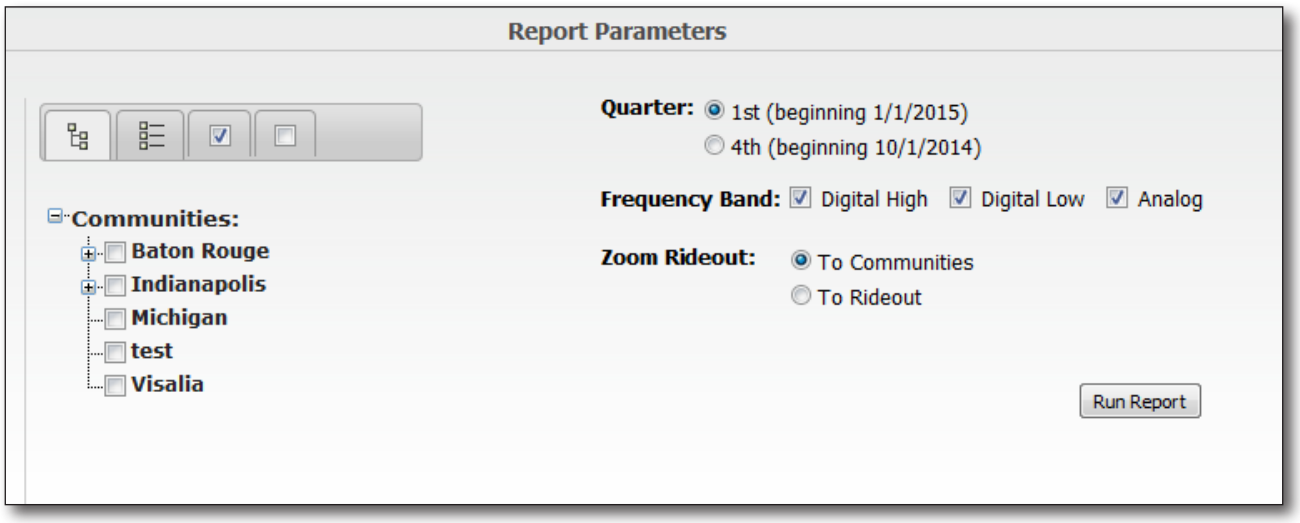
Total Miles:	298.1	**Unique Miles:**	39.4
Total Digital High Miles:	298.1	**Unique Digital High Miles:**	39.4
Total Digital Low Miles:	298.1	**Unique Digital Low Miles:**	39.4
Total Analog Miles:	0	**Unique Analog Miles:**	0

Sample Rideout report

Plant Coverage Report

The Plant Coverage Report details the number of plant miles driven for the selected communities and, if available, a map showing areas of the plant requiring rideout.

After clicking the **Plant Coverage Report** link, the **Report Parameters** menu will appear as shown in the following figure.

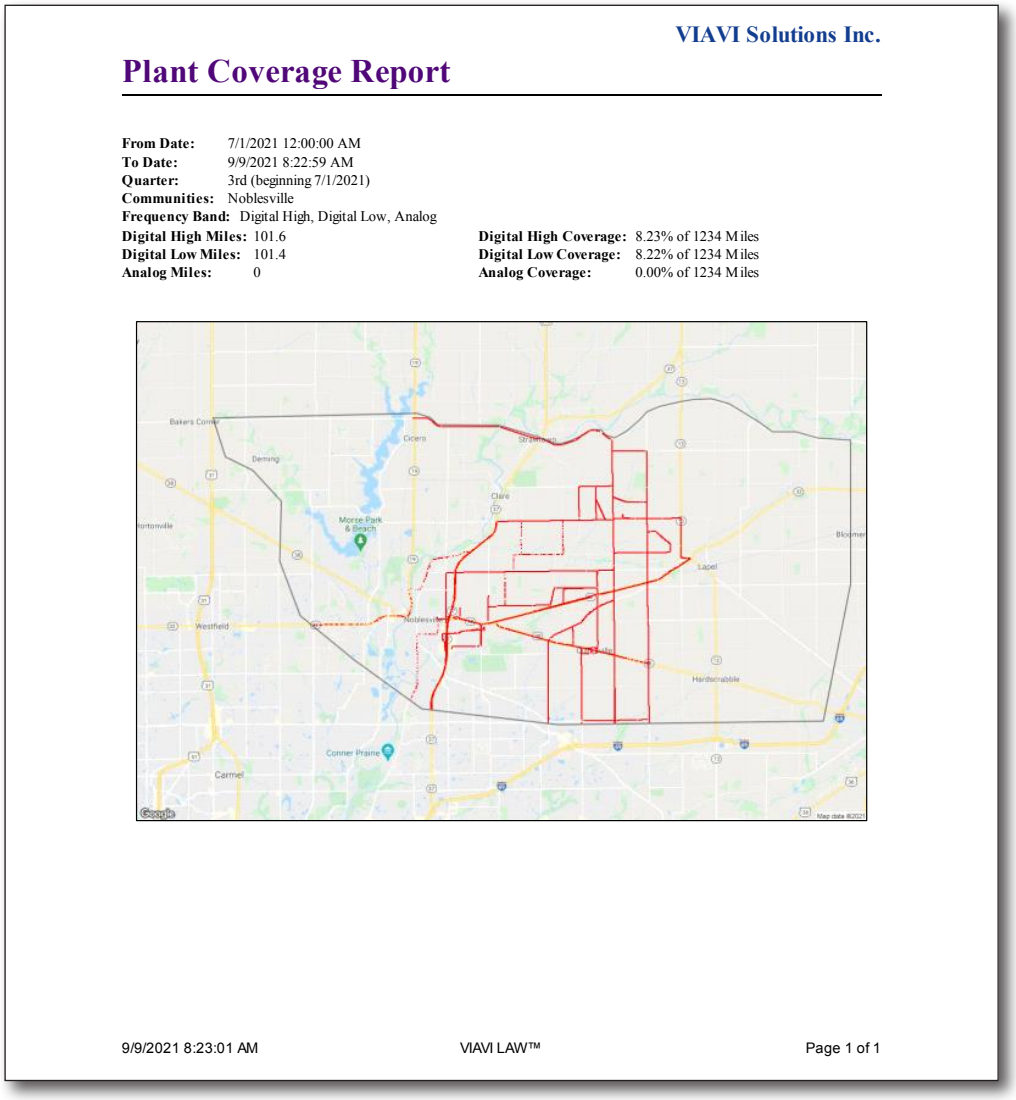


To view the report, enter the following report parameters:

- **Communities** – This is the community in which the Plant Coverage Report will be generated. To choose a community, select the corresponding checkbox(es) from the list.
- **Quarter** – This is the quarter to begin the Plant Coverage Report.
- **Frequency Band –** Leakage rideout frequencies can be included in the Plant Coverage Report by selecting either or all of the following options:
    - **Digital High** – Displays digital high-band frequency rideout points
    - **Digital Low** – Displays digital low-band frequency rideout points
    - **Analog** – Displays analog frequency rideout points
- **Zoom Rideout** – Select to either zoom the map view to the selected communities or to the rideout.

Once the report criteria has been established, select the **Run Report** button. A pop-up window

will appear to notify you that the report will be e-mailed to the LAW-X user once LAW-X has completed the report generation. The report will be e-mailed as a PDF file and a CSV file to the email address which is associated with the user's account.



VIAVI Solutions Inc.

Plant Coverage Report

From Date: 7/1/2021 12:00:00 AM
To Date: 9/9/2021 8:22:59 AM
Quarter: 3rd (beginning 7/1/2021)
Communities: Noblesville
Frequency Band: Digital High, Digital Low, Analog
Digital High Miles: 101.6
Digital Low Miles: 101.4
Analog Miles: 0
Digital High Coverage: 8.23% of 1234 Miles
Digital Low Coverage: 8.22% of 1234 Miles
Analog Coverage: 0.00% of 1234 Miles

9/9/2021 8:23:01 AM VIAVI LAW™ Page 1 of 1

Sample Plant Coverage report

NOTE:

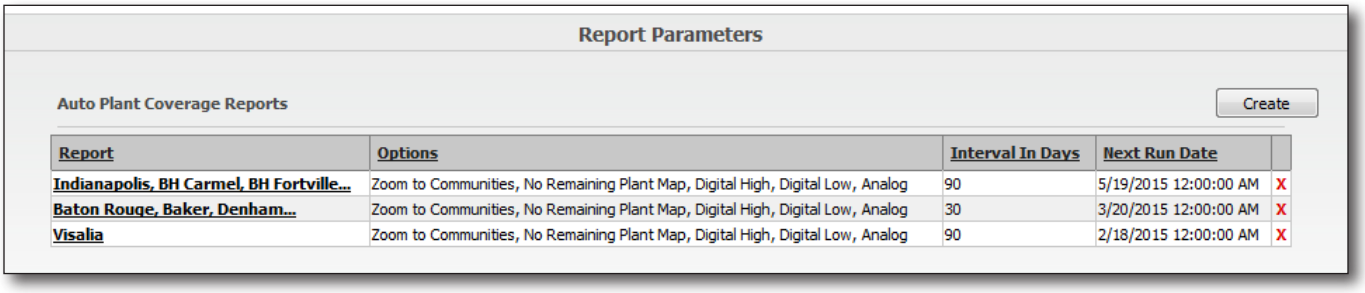
The green lines in the map show areas that have not yet been driven. Red areas show plant coverage rideouts.

Auto Plant Coverage Report

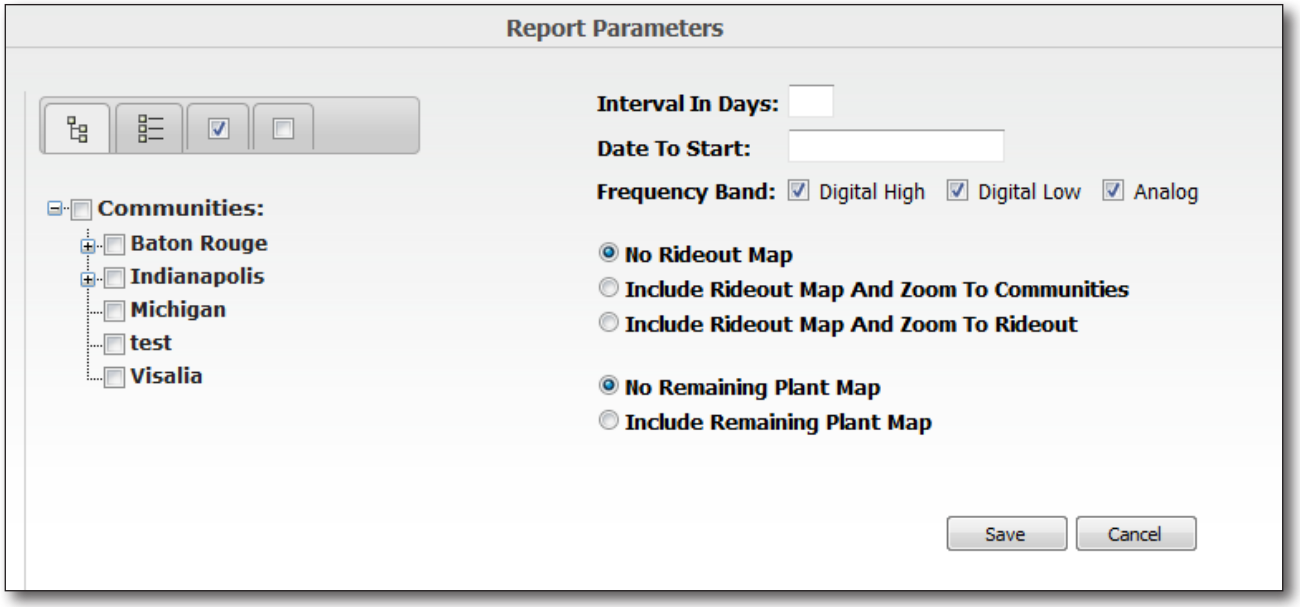
The Auto Plant Coverage Report allows the Plant Coverage Report to be automatically generated and sent to the LAW-X user's e-mail account, based on the user's login criteria, at the specified interval for the selected communities.

After clicking the **Auto Plant Coverage Report** link, select the **Create** button to create a new report.

You can create multiple Auto Plant Coverage reports, as well. In the example below, 3 reports have been scheduled.



The **Auto Plant Coverage Report** menu will appear as shown in the following figure.



To view the report, enter the following report parameters:

- **Communities** – This is the community in which the Plant Coverage Report will be generated. To choose a community, select the corresponding checkbox(es) from the list.
- **Interval in Days** – This is the number of days between when reports are generated.
- **Date to Start** – This is the date that the first report will run.
- **Frequency Band –** Leakage rideout frequencies can be included in the Plant Coverage Report by selecting either or all of the following options:
    - **Digital High** – Displays digital high-band frequency rideout points
    - **Digital Low** – Displays digital low-band frequency rideout points
    - **Analog** – Displays analog frequency rideout points
- **No Rideout Map** – Select to not include the rideout map.
- **Include Rideout Map and Zoom to Communities** – Select to include the rideout map and zoom to the communities.
- **Include Rideout Map and Zoom to Rideout** – Select to include the rideout map and zoom to the rideout.
- **No Remaining Plant Map** – Select to not include the remaining plant map.
- **Include Remaining Plant Map** – Select to include the remaining plant map.

Once the report criteria has been established, select the **Save** button. The report criteria is saved and used to generate the Plant Coverage report.

6

Using LAW-X with a Mobile Device

This chapter provides steps for using the VIAVI Mobile Tech app, including the following:

VIAVI Mobile Tech app

Your Seeker X and LAW-X server are designed to be paired with a mobile device or tablet (such as an iPhone, iPad, or similar Android device), and leverages the user interface of those devices along with the **VIAVI Mobile Tech App** to provide a smooth user experience.

Mobile Tech

You can view leak detail and even report new leaks when you find them in the field with your Seeker X, syncing files back your LAW-X server for monitoring and reporting.

To get started, download the VIAVI Mobile Tech app from your App Store or available from your VIAVI representative.

Download on the App Store

GET IT ON Google Play

Connecting to StrataSync

You can connect to StrataSync using your smart phone or tablet anytime, anywhere using the VIAVI Mobile Tech app.

Once your instrument is connected to the Mobile Tech app via Bluetooth, geo location information can be added to reports and files when syncing to StrataSync. If configuration files or work orders are set to be deployed from StrataSync to your meter, you can check those here, as well as browsing files from the unit itself.

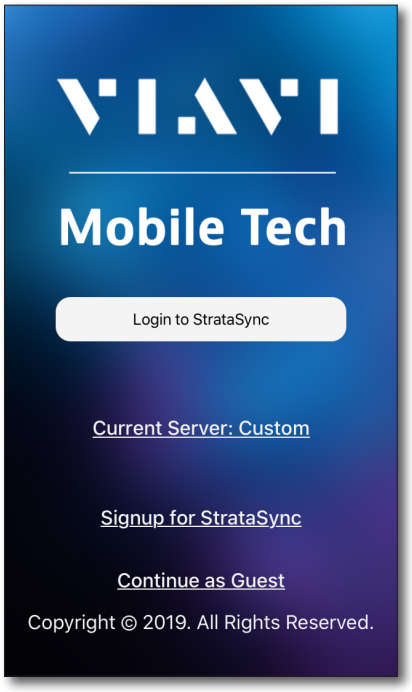
Once you download the application, log in to StrataSync just as you do on the website. To operate the tests, follow the instructions on the application screens.

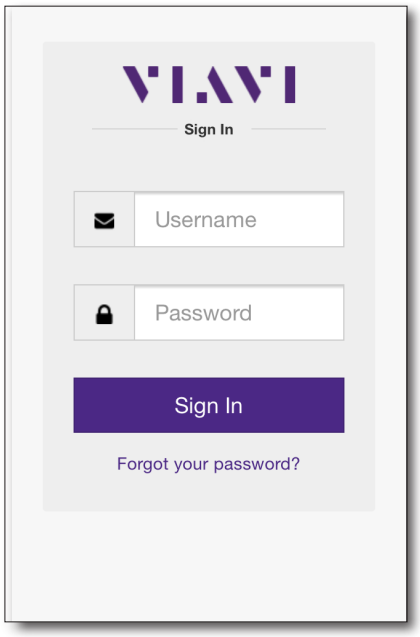
Using the Mobile Tech app

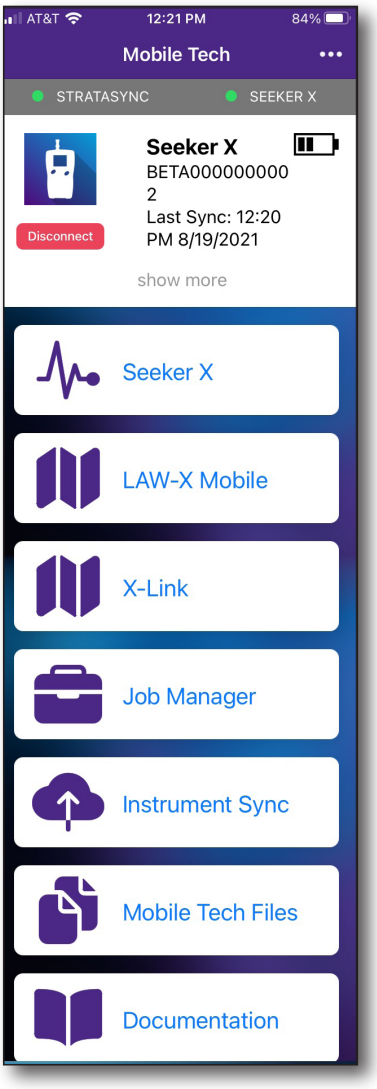
Logging in to StrataSync

To get started using the Mobile Tech app, you need to log in to StrataSync.

1. Launch the **Mobile Tech app** on your mobile device.
2. Press the **Login to StrataSync** button. The Login screen will be displayed.
3. Enter your Username and Password, then press the **Sign In** button. The Mobile Tech **Main menu** will be displayed.



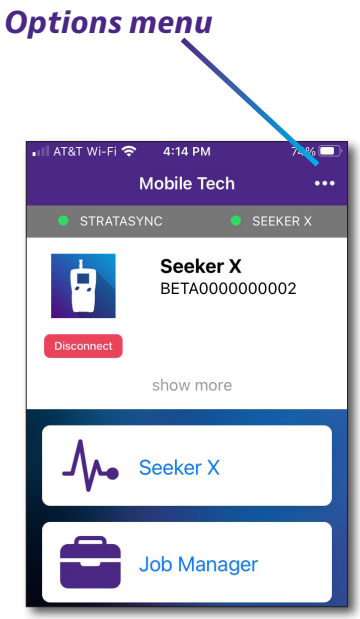


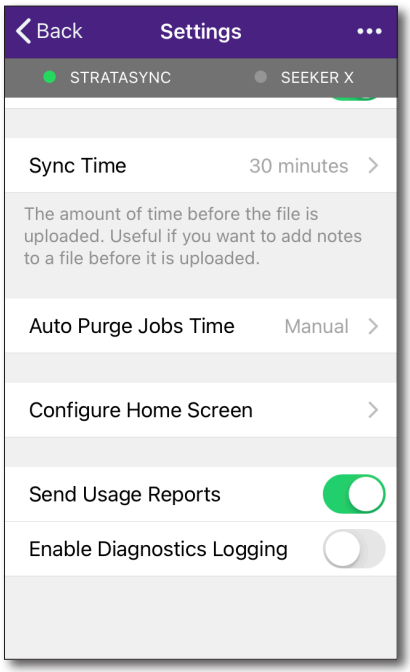


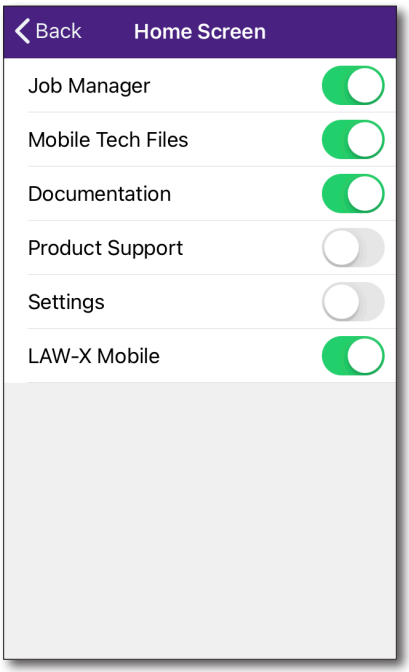
Setting up LAW-X Mobile

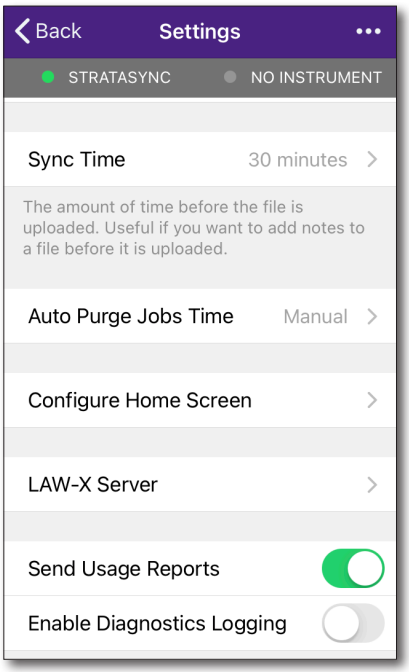
You need to set up the LAW-X Mobile feature in the Options menu before you can sync data with your LAW-X server.

1. From the Mobile Tech Main menu, select the **Options** menu in the upper right. The Settings menu appears.
2. Select **Configure Home Screen**. The Configure Home Screen appears, showing the available menu items.
3. Select **LAW-X Mobile** to enable it, then select **Back** to return to the Settings menu. The LAW-X Server menu now appears in the settings list.





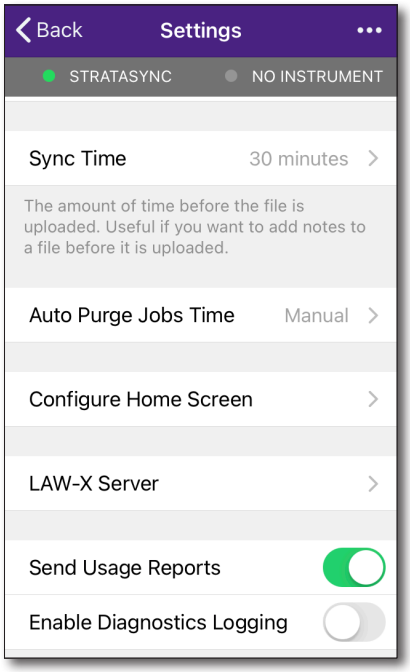


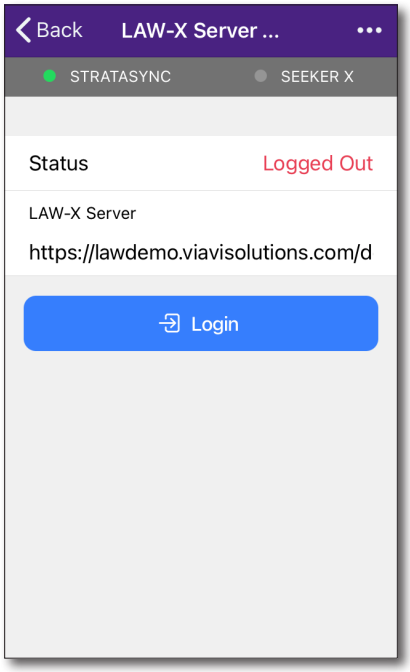


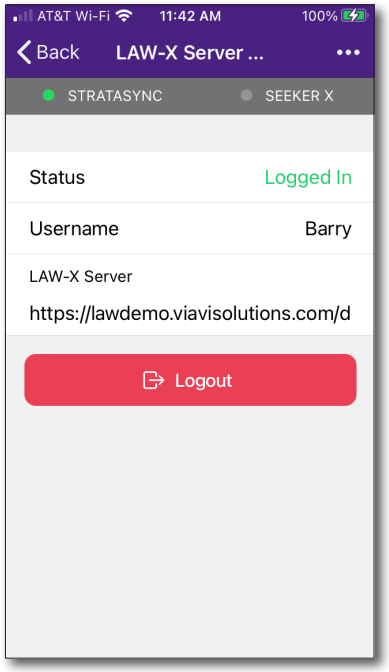
4. From the Settings screen, select **LAW-X Server**. The LAW-X Server Settings screen appears.
5. Enter your LAW-X server URL provided by VIAVI or your LAW server admin and press the **Login** button.

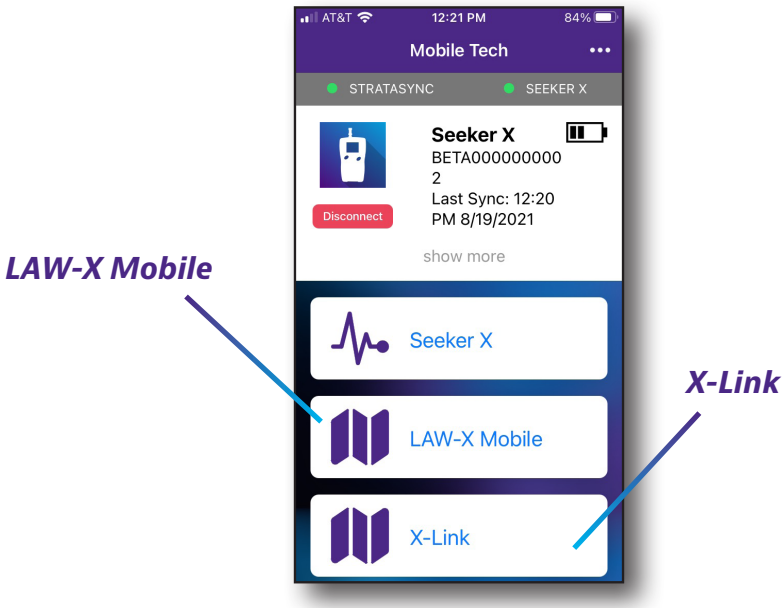
   Once logged in, your username will appear, according to your StrataSync account information.

   When you go back to the Main menu, you will now see the LAW-X Mobile and X Links menus listed.









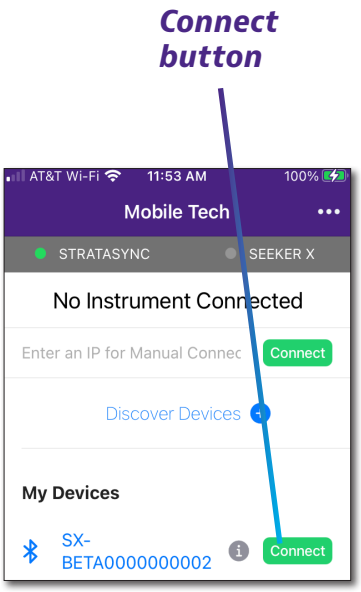
Pairing the Seeker X to your mobile device

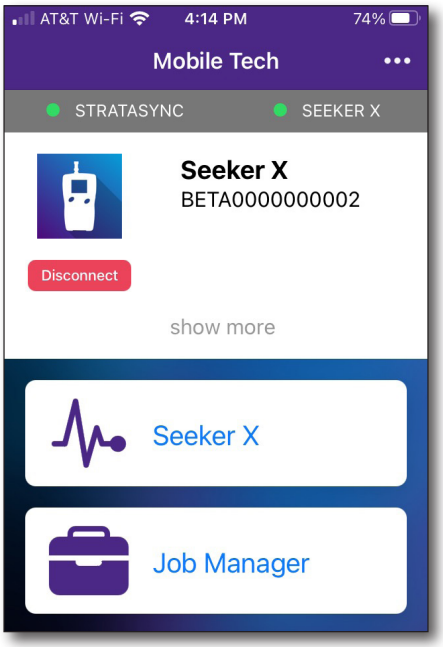
To interact with your Seeker X, the mobile device must be paired with the unit over Bluetooth.

1. On the mobile device, do the following:
   - Go to the **Settings** menu, then select **Bluetooth**.
   - Verify that the device is not paired with ***any*** Seeker X unit.
2. From the Mobile Tech Main menu, under **My Devices**, find the meter, shown as "Seeker X", and select **Connect**.

   If you don't see the device, you may need to press **Discover Devices**.
3. Select the Seeker X you want to connect to and the devices will begin pairing.
4. When connected, your Seeker should appear in the Mobile Tech app.

You can now transfer files and sync your Seeker X to StrataSync through the Mobile Tech App.

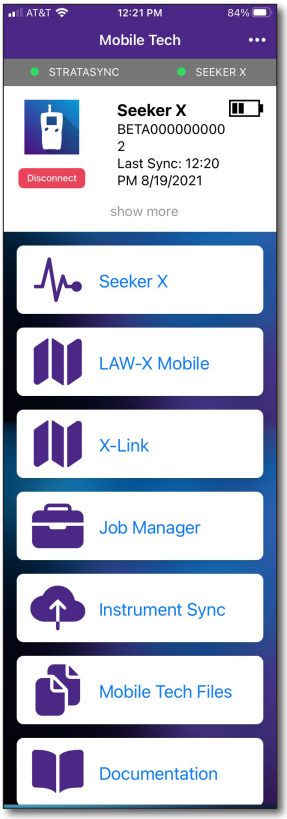


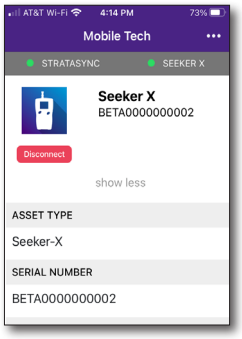


Mobile Tech Main Menu

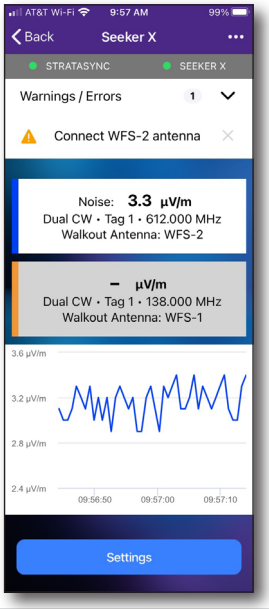
Once you log into StrataSync, you will see the Main menu. Here you can see details of the Seeker X, use LAW-X Mobile, upload Seeker X files and leaks to LAW-X, manage jobs, sync to StrataSync, manage files on the unit, and view documentation.

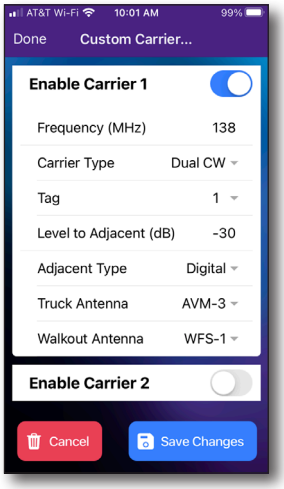
Near the top of the Main menu, you can click **Show more** to see details on your instrument, including all of the installed options.



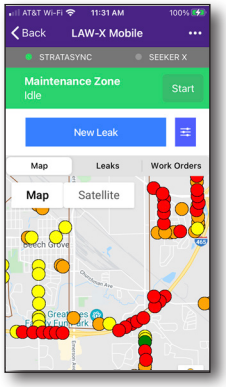


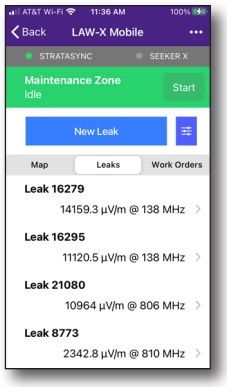
- **Seeker X** – Monitor leakage measurements, take snapshots, adjust what frequency is being used, volume, distance, and peak hold. See *"Seeker X" on page 143* or the *Seeker X User's Guide* for more information

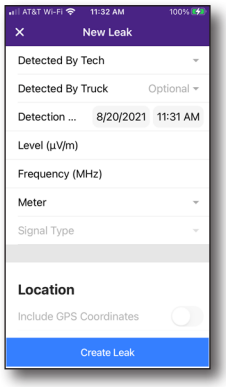




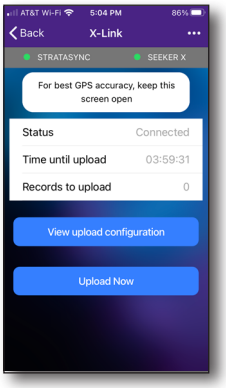
- **LAW-X Mobile** – When connected to LAW, view current leaks in the field, create maintenance zones, and even report new leaks as you find them

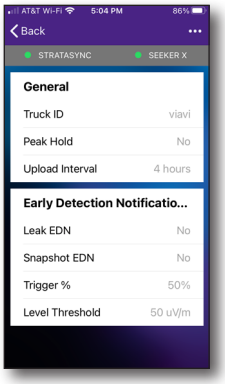




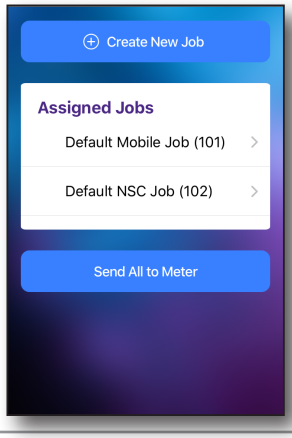


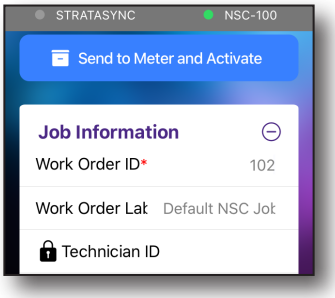
- **X Link** – Connects Seeker X and LAW-X to log rideout and walkout data and upload leakage data to the LAW-X server

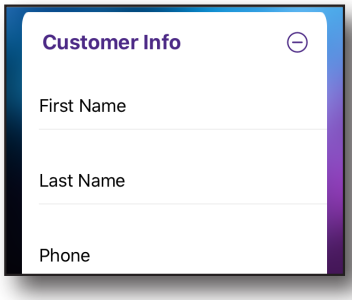




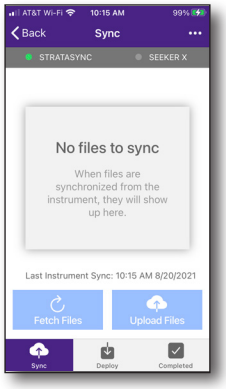
- **Job Manager** – Attach jobs to tests, including customer info and work orders, and track test results

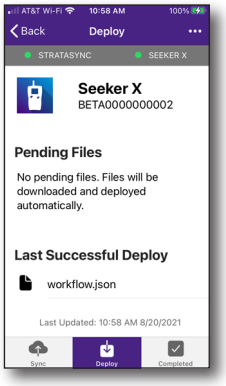


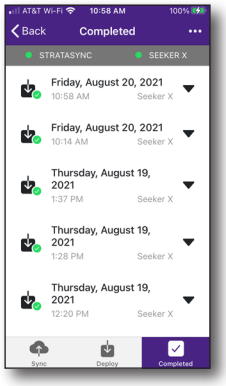




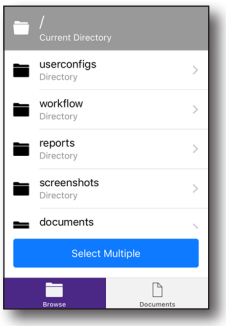
- **Instrument Sync** – Sync your instrument to StrataSync and deploy configuration files

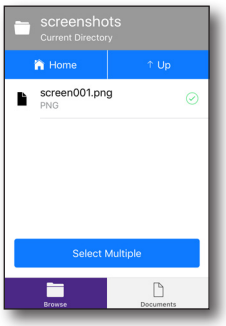




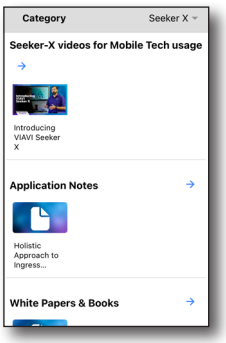


- **Mobile Tech Files** – Manage files on the unit that you can save to your phone or tablet.





- **Documentation** – View and download various documentation for your instrument, including applications notes, software release notes, and quick reference guides



Updating the firmware from StrataSync

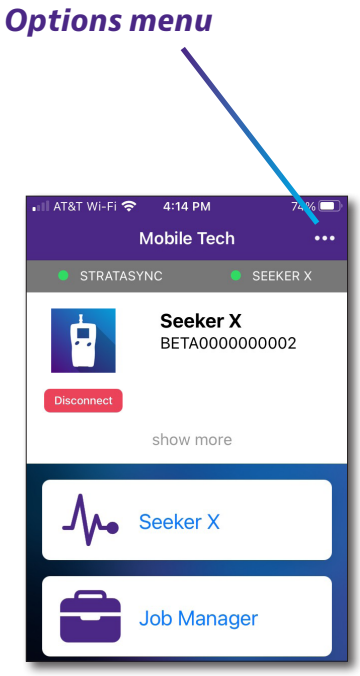
Once you are logged into StrataSync, you can update the firmware. If a firmware update is available, it will appear just below the last sync time.

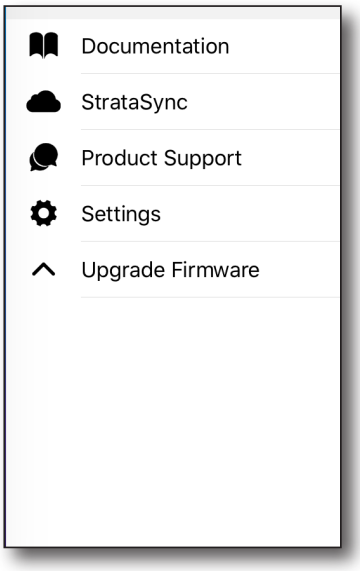
1. Make sure your Seeker X is fully charged or powered when in the truck during the update.
2. Go back to the Main screen and select the **Options** menu in the upper right. The Options menu appears.
3. Select **Upgrade Firmware**. The Upgrade Firmware screen appears, showing the current firmware version and if an update is available.

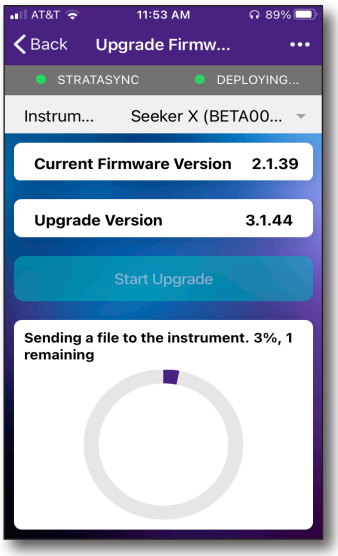
   You can also get to the Upgrade Firmware screen from the Main menu and selecting **Show More**.
4. If an update is available, select **Start Upgrade** to update the unit.

The update will begin and the meter will power off when finished. Please wait as this could take 10-15 minutes, based on the size of the update file and connection speed.

Keep your Seeker X near the mobile device until the update is completed.







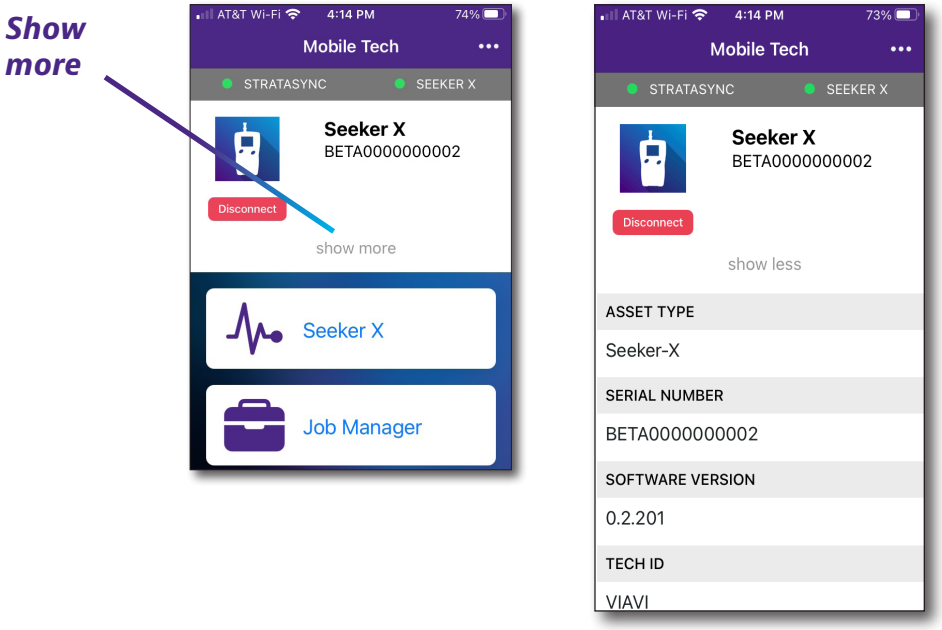
NOTE:

You need the appropriate permissions in StrataSync to update the firmware.

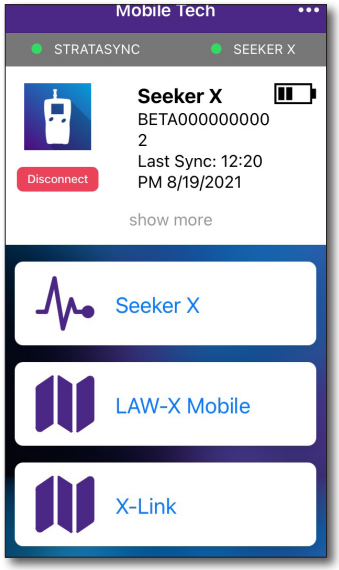
Viewing hardware/software versions and options

You can easily see more detail about your Seeker X, including the software version, serial number, Tech ID, and installed software options.

From the Main menu, select **Show More** near the top of the screen. Scroll down to see more details.



Syncing to the StrataSync server



StrataSync® is a hosted, cloud-based software application that provides VIAVI instrument asset, configuration, and test-data management. StrataSync manages inventory, test results, and performance data anywhere with browser-based ease and improves technician and instrument efficiency.

Features include the following:

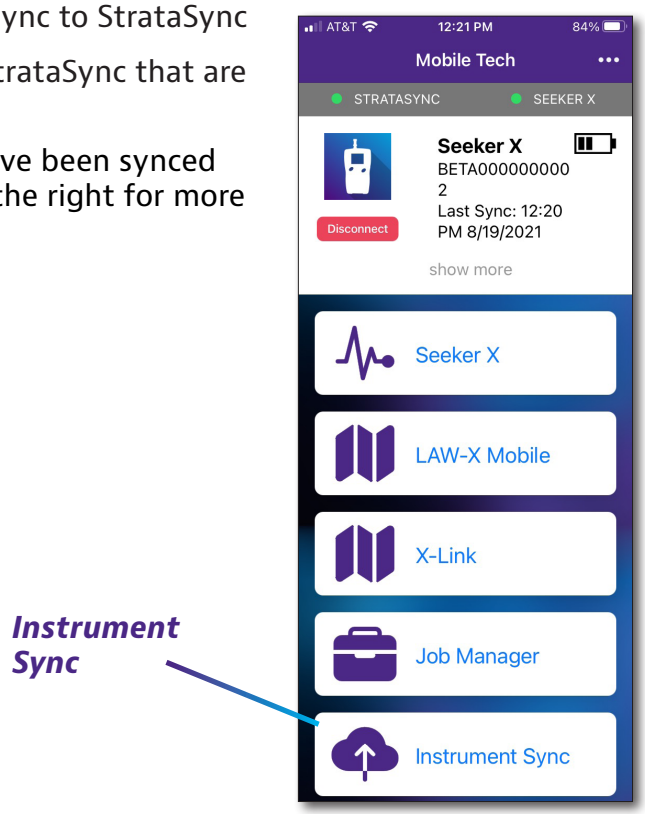
- Tracking ownership of the unit
- Pushing certain configuration settings to the unit
- Pushing work orders to the unit and keeping in sync with the server
- Receiving certain configuration setting from the unit
- Adding and/or removing software options
- Updating the software on the unit
- Updating the software on the modem
- Cloning a device (create a “golden” unit)
- Uploading and storing of test reports, screenshots, profiles, and configurations

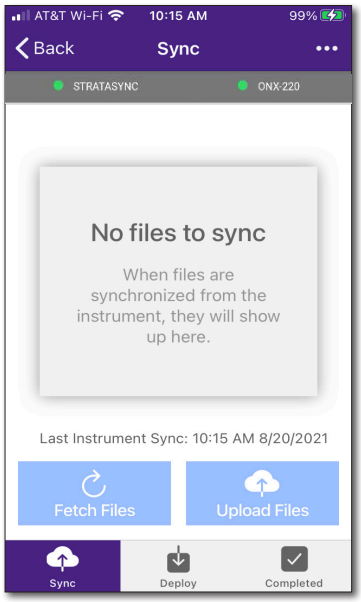
To obtain the latest configuration settings, software options and updates, and ownership registration information, the Seeker X can sync with a VIAVI server via the internet. The synchronization also stores any user files saved on the unit to the StrataSync server.

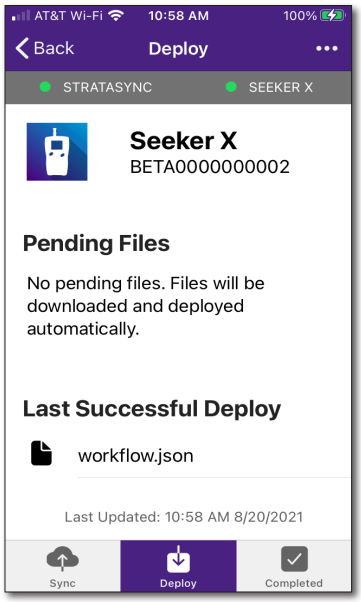
You should sync immediately upon receipt of the unit and on a regular (daily) basis thereafter to ensure that the unit is as up-to-date as possible and to allow all user information to be backed up. Before attempting to synchronize with StrataSync, please confirm your server settings with your manger or your company's IT organization.

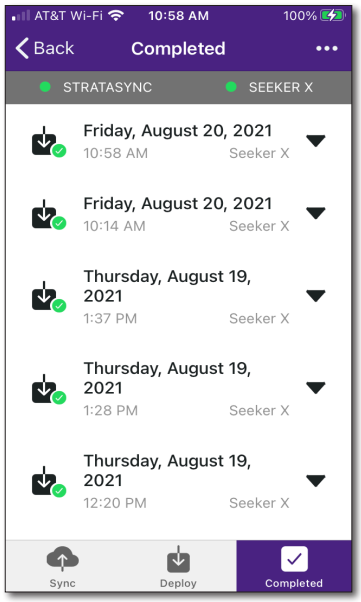
Syncing with StrataSync

1. From the Main menu, select **Instrument Sync**. The StrataSync Sync menu appears.
2. Select **Sync**, **Deploy**, or **Completed** at the bottom of the screen.:
   - **Sync** – Shows any files ready to sync to StrataSync
   - **Deploy** – Shows any files from StrataSync that are ready to be deployed to the unit
   - **Completed** – Shows files that have been synced or deployed. Select the arrow to the right for more detail









- Upon synchronization with the StrataSync server, the unit will send to the server the following information:
  - The unit's serial number
  - The unit's hardware information (constituent assemblies and their revision levels)
  - The unit's MAC address
  - The unit's user settings – Name (user/technician) and ID
  - Software update milestones (includes status and warnings, if applicable)

    If the configuration information contained on the server is newer than that on the unit, the server will be considered to be the most up-to-date.
- The server will then send any files to the unit being synchronized that it determines are newer than those on the unit.
- The unit will then send any reports, configuration profiles, XML results, screen shots, etc. that have been saved on the unit since the last configuration.
- The server then applies any applicable options to the unit.
- Copy ("clone") the configuration settings for the base unit, as well as any company-specific configurations such as custom filters, web bookmarks, and FTP passwords. This can be used to create a "golden" unit.
- Lastly, if any updates are available, you will be prompted that you can update

When synchronization is complete, the Status will indicate "Sync Complete".

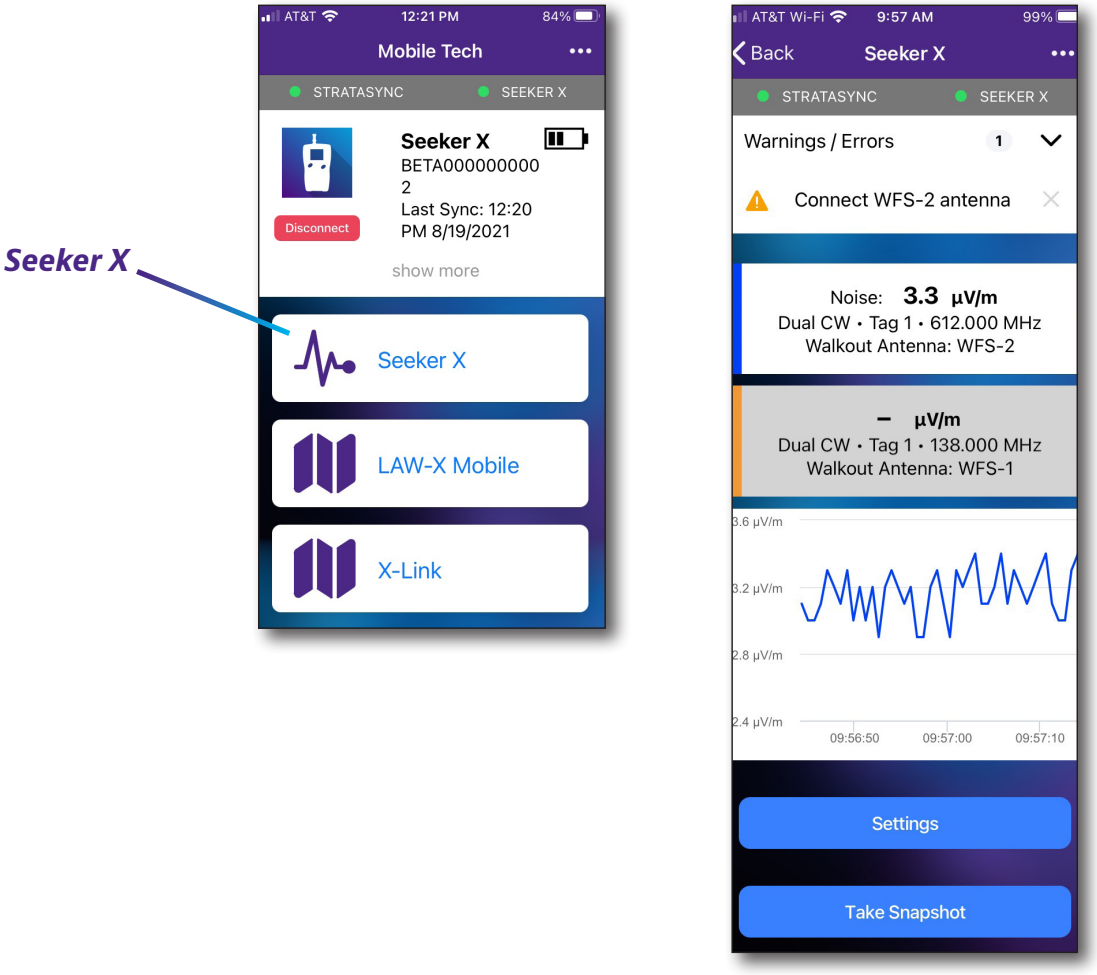
Seeker X

When a Seeker X is connected via Bluetooth, you can monitor leaks right from Mobile Tech. Keep in mind, you'll need to attach the appropriate antenna to the Seeker X, depending on the frequency you want to track.

1. From the Main menu, select **Seeker X.** The Seeker X screen appears.
2. Connect the corresponding antenna to the Seeker X for the frequency you want to monitor (WFS-1 for 138 MHz, WFS-2 for 612 MHz). A notification of the proper antenna for the selected frequency will show at the top of the display (this will show if an antenna is connected or not, just like on the meter).
3. At the top, the 612 MHz and 138 MHz frequencies are shown, with the current leak levels. You can toggle the frequencies being monitored by pressing them.

   The current live levels are also shown on the graph below.

   - To change the configuration settings, select **Settings**. See *"Settings" on page 144* for more details.
   - To take a snapshot of the readings, select **Take Snapshot**.



Settings

Use **Settings** to change the Seeker X carrier configuration, view the current configs, edit custom carriers, adjust the volume on the Seeker, and enable peak hold.

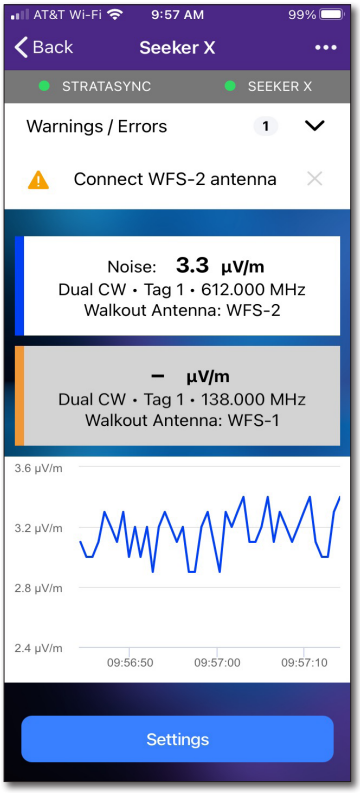
To clear records on the Seeker X at any time, select **Clear Records**.

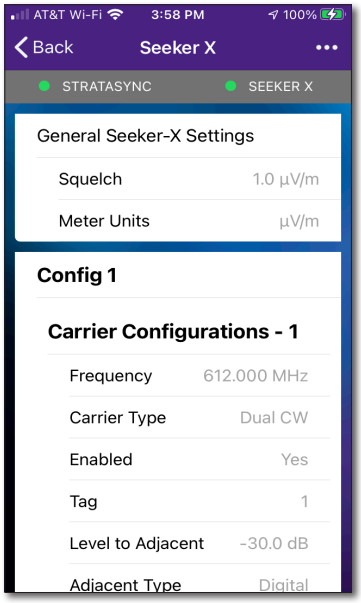
Carrier Configuration

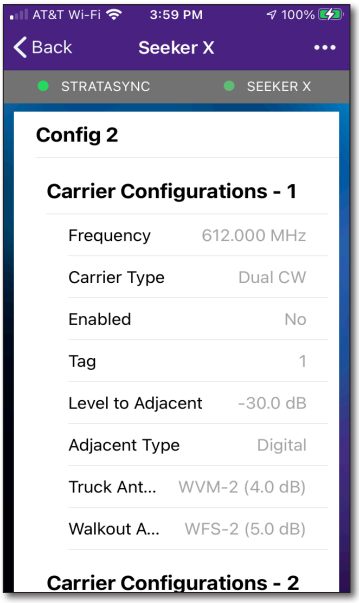
Allows you to select which preprogrammed configuration you want to use in the Seeker X. Select **Carrier Configuration** and choose the configuration you want to use (1-4 or custom).

View Configuration

Allows you to view the preprogrammed configurations in the Seeker X. Select **View Configuration**. All 4 configurations will be displayed, with carrier configurations for each.







Edit Custom Carriers

Allows you to program a custom carrier to be used in the Seeker X. The use of the custom carrier configuration is temporary.

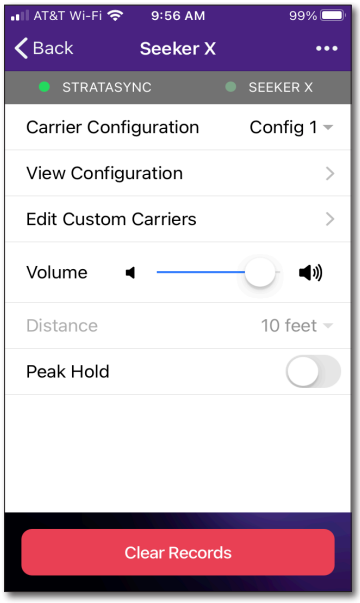
Select **Edit Custom Carriers** from the Settings menu.

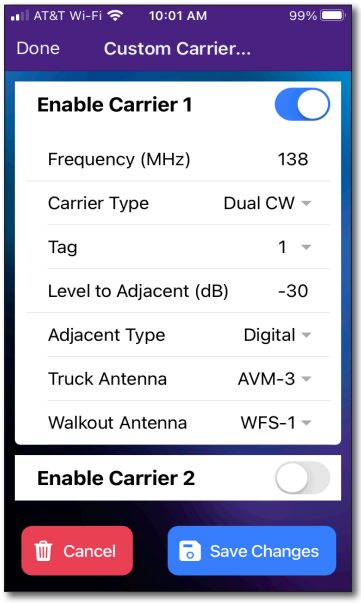
To enable more carriers, in the Custom Carrier screen, select **Enable Carrier #** and adjust as necessary.

When finished, select **Save Changes**.

Custom Carriers

- Frequency (MHz)
- Carrier Type (Dual CW, Chirp, or OFDM)
- Tag (1-8)
- Level to Adjacent (dB)
- Adjacent Type (Digital or Analog)
- Truck Antenna (AVM-3 or Custom)
- Walkout Antenna (WFS-1, AFS-2, Low Band Duck, or Custom)





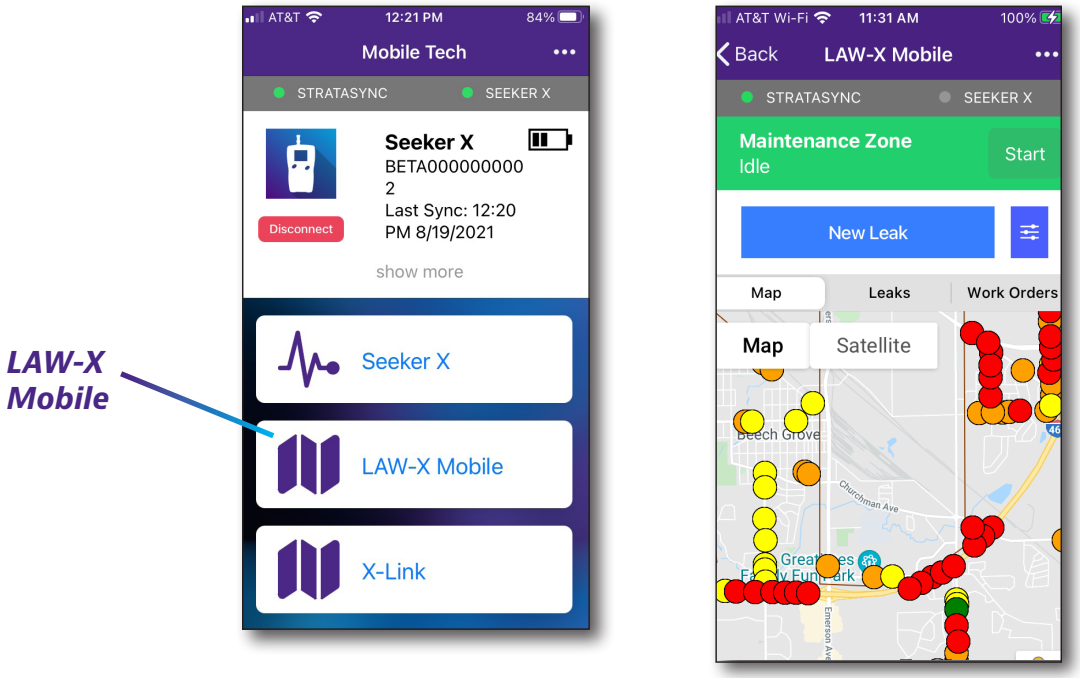
LAW-X Mobile

When a Seeker X is connected via Bluetooth and when connected to LAW, view current leaks in the field, create maintenance zones, and even report new leaks as you find them. Keep in mind, you'll need to attach the appropriate antenna to the Seeker X, depending on the frequency you want to track.

1. From the Main menu, select **LAW-X Mobile.** The LAW-X Mobile screen appears, showing the map of the current location and the leaks reported to LAW-X. Toggle between map view or satellite.

   You can toggle the views using the **Map**, **Leaks**, and **Work Orders** tabs.

   - To start a maintenance zone, select **Start**.
   - To report a new leak, select **New Leak**.
   - To filter the leaks shown, use the **Leak filter**.
   - To see leak details, select a leak.



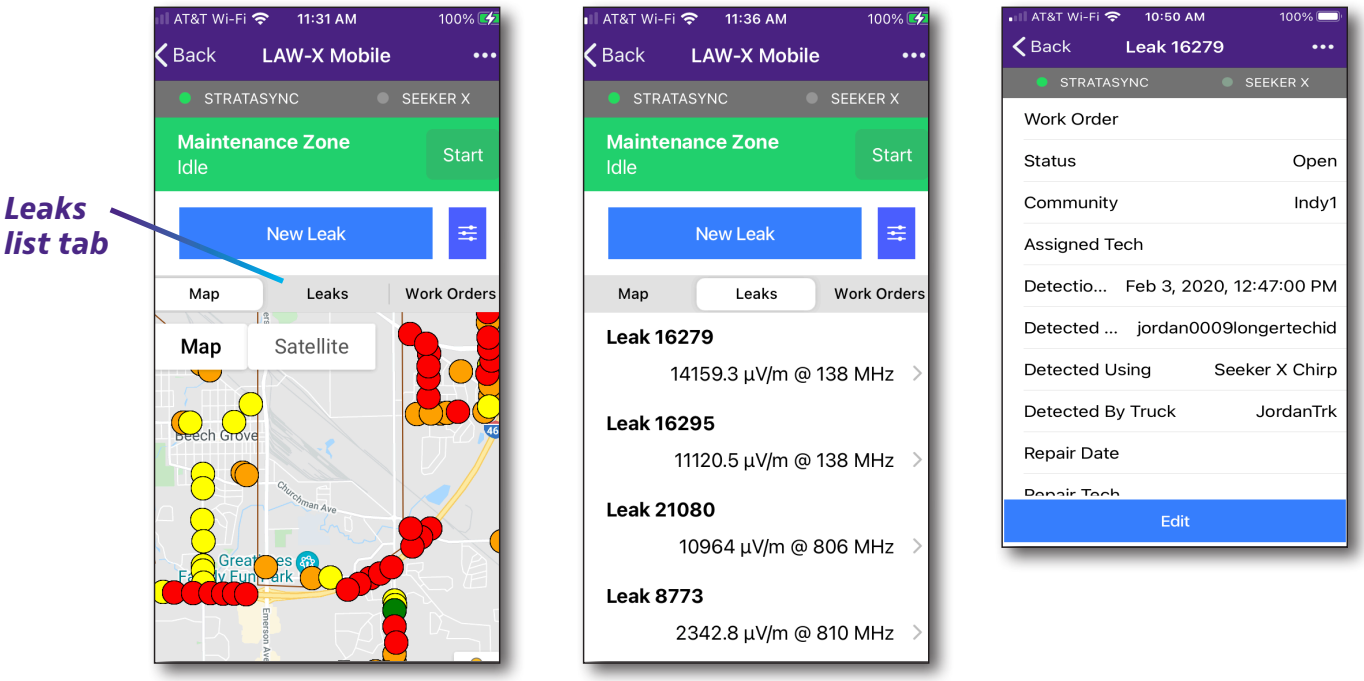
Leaks list

The **Leaks list** shows a list of leaks with the following information:

- Leak ID
- Location address
- Level
- Frequency

From the LAW-X Mobile screen, select the **Leaks** tab. The List Leaks screen appears, showing a list of the leaks in the current area. Click a leak for more detail.

- To return to the map view, select the **Map** tab.
- To filter the leaks shown, use the **Leak filter**.

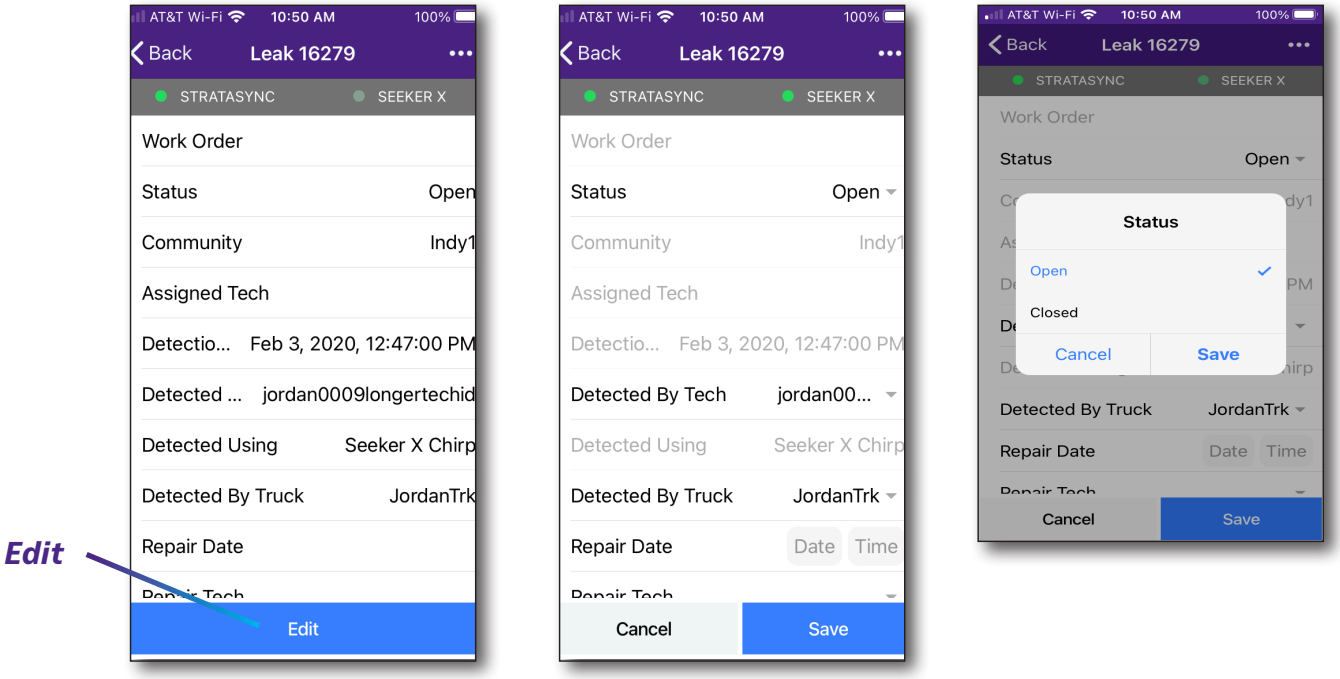


Leak details

The **Leak details** shows details for the particular leak, including work order number, status, location, date, and the tech who reported it, etc.

From the Leak lists screen or the map, select a leak for more detail.

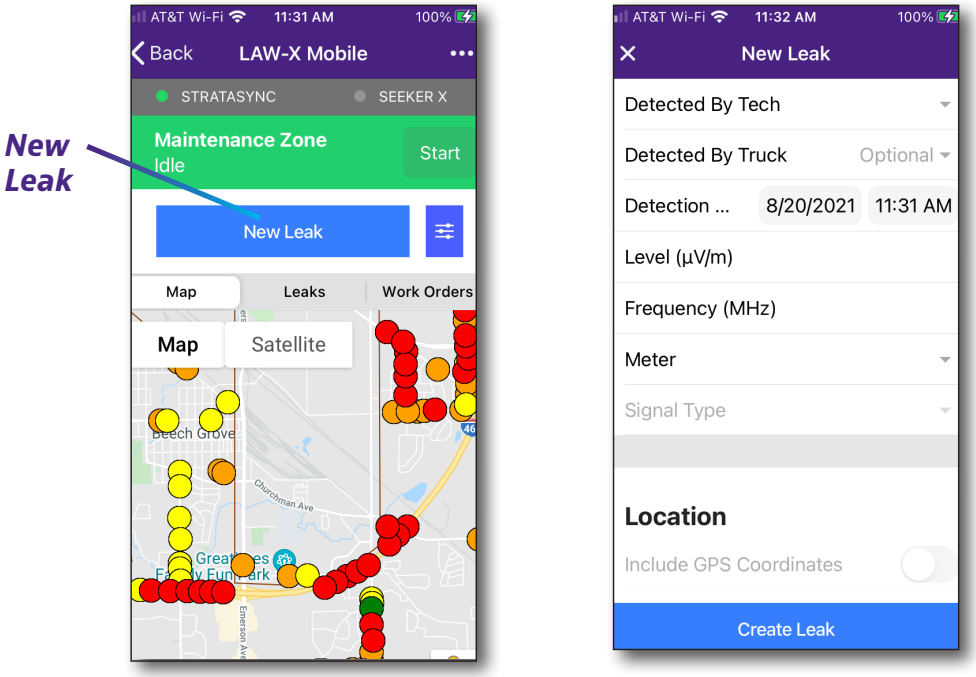
- To edit a leak, select **Edit** at the bottom and adjust as necessary. When finished, select **Save**.



Reporting leaks

While in the field, you can report a leak using Mobile Tech.

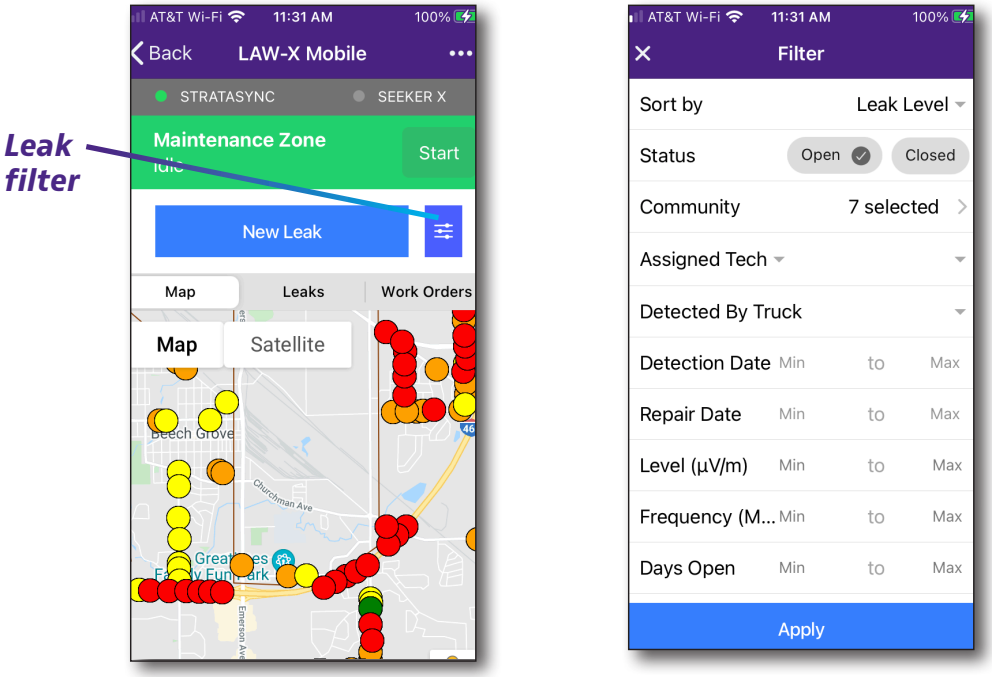
1. From the Leak lists screen or map, select **New Leak** to create a new leak.
2. Enter the leak information.
3. When finished, select **Create Leak**.



Filtering leaks

To filter leaks from either the map or list views, select the **Leak filter** next to the **New Leak** button at the top.

Adjust as needed and select **Apply** to run the filter.



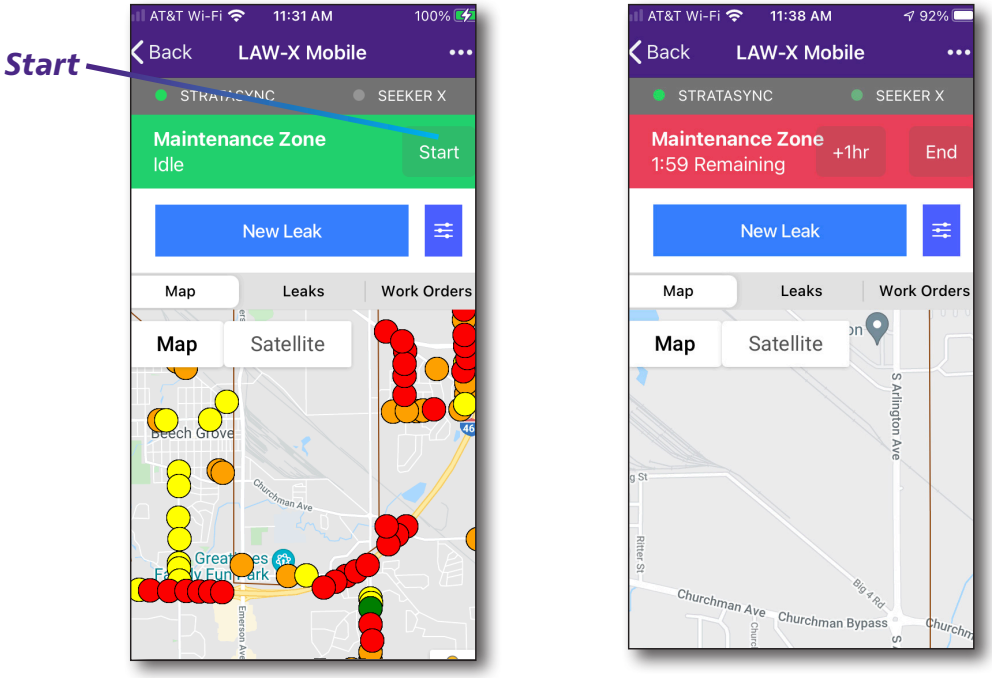
Maintenance Zone

To create a **Maintenance Zone** to alert other techs in the area you are working, select the **Start** button at the top.

When a zone is clear for your work, the mainenace zone is green, when it is currently zoned, it will be red.

A 2-hour timer will start counting down and the active maintenance zone will be sent to LAW-X. A geo-fence will also be created around the area so that the maintenance zone can be stopped automatically when you leave the area.

- To add another hour, select the **+1hr** button.
- To end the maintenance zone, select **End**. This tells the LAW-X server the zone is no longer active.



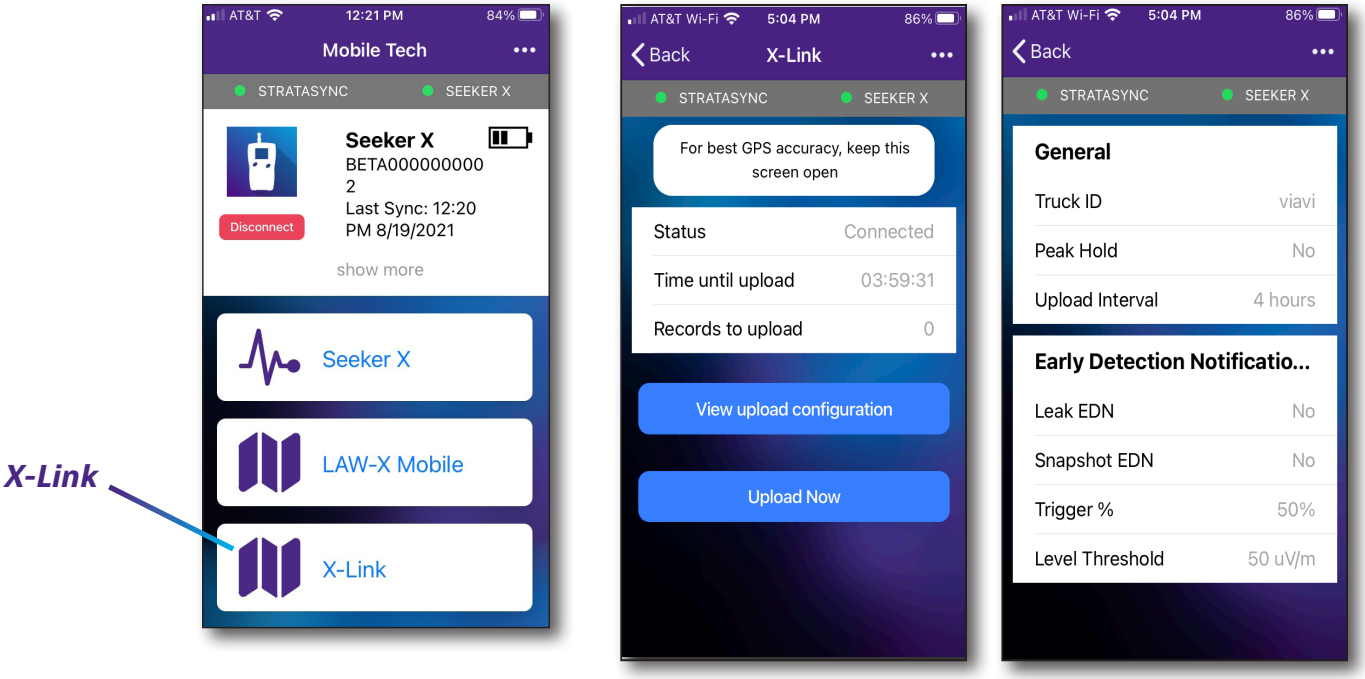
NOTE:

Location Services must be enabled on your mobile device for Mobile Tech to use GPS for this feature.

X-Link

X-Link connects Seeker X and LAW-X to log rideout and walkout data and upload leakage data to the LAW-X server.

1. From the Main menu, select **X-Link.** The X Link screen appears.
    - To view the upload configuration, select **View upload configuration**.
    - To upload data, select **Upload Now**.



Managing files

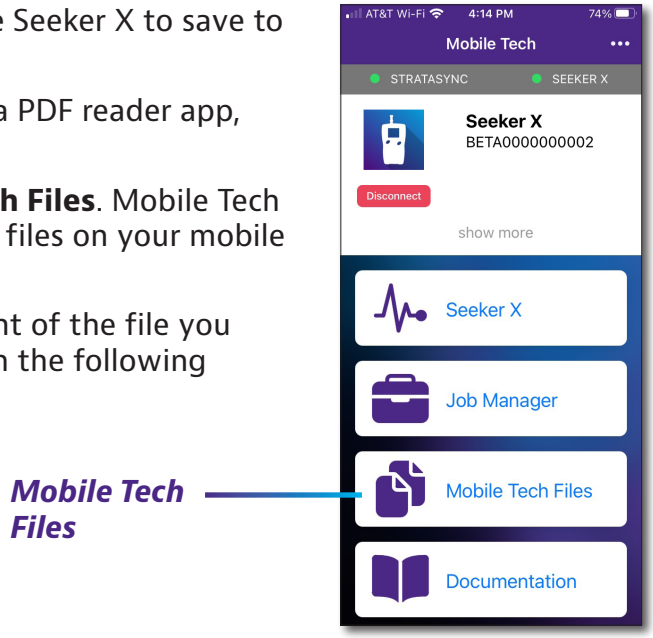
Use the **Mobile Tech Files** menu to manage files stored on your mobile device, deploy to the Seeker X, upload to StrataSync, or export to another app on your device, such as text or email.

Mobile Tech Files

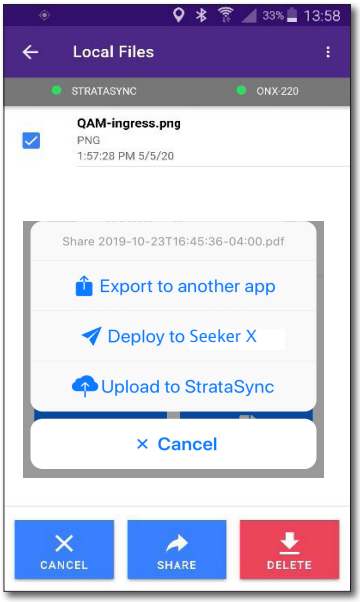
When you download files and reports from the Seeker X to save to your device, they will apper here.

To view PDF files, you may need to download a PDF reader app, such as Adobe PDF Reader.

1. From the Main menu, select **Mobile Tech Files**. Mobile Tech Files screen appears, showing the list of files on your mobile device.
2. Select the purple share arrow to the right of the file you want to send. A pop-up will appear with the following options:



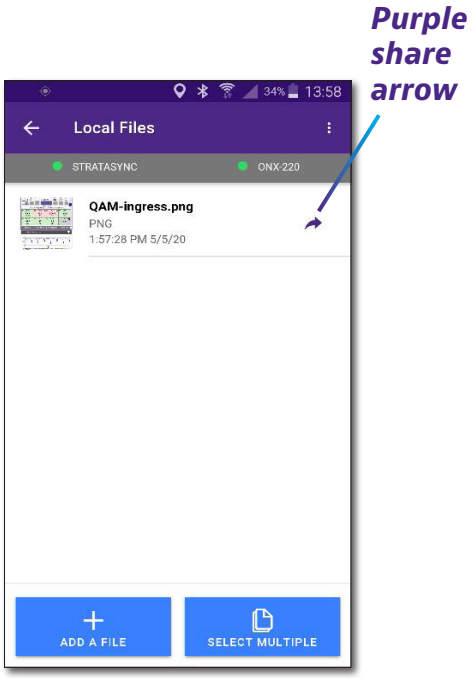
Mobile Tech Files

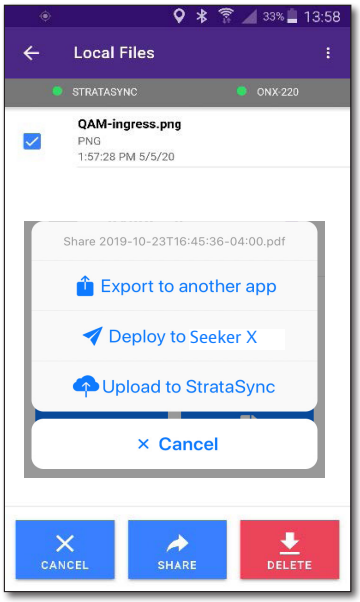


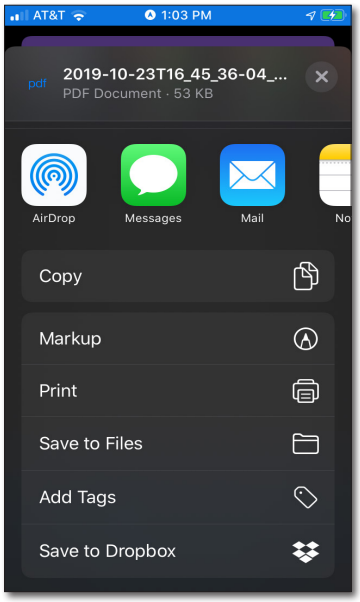
- Export to another app
- Deploy to Seeker X
- Upload to StrataSync

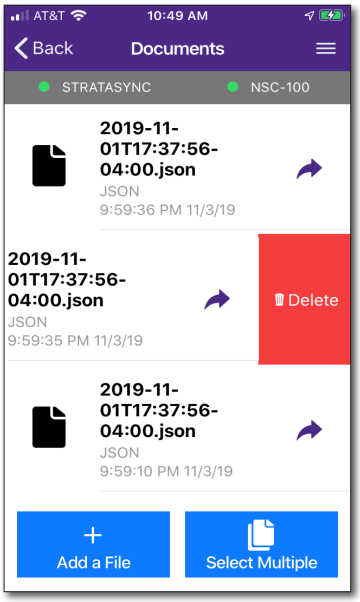
To return to the Main menu at any time, select **Back** in the upper left.

3. Choose the option you want. To export to another app, choose the app you want from the pop-up. The file will also be deployed or uploaded to StrataSync, if selected.
    - To delete a file, select the file and swipe to the left. Then select **Delete**.

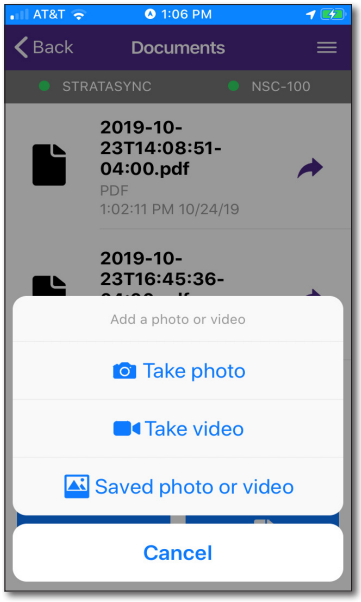


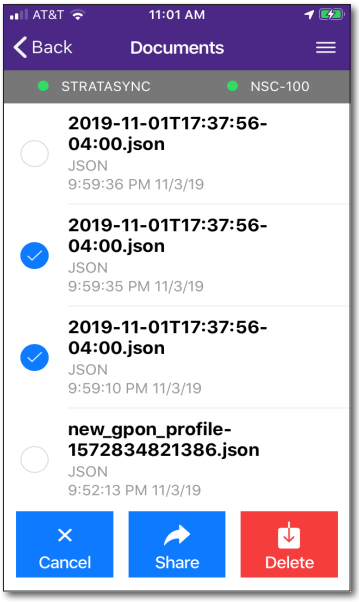






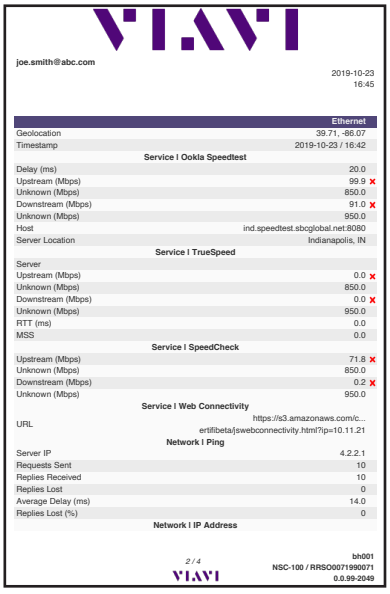
- To add a photo or video to the meter, press the **Add a File** button at the bottom, then choose **Take photo**, **Take video**, or **Saved Photo or video**.
- To select multiple files, press the **Select Multiple** button at the bottom, and then select the files to share or delete. Then select **Share** or **Delete**.





Managing files with StrataSync

When the Seeker X syncs with StrataSync, various files are uploaded and stored in the StrataSync cloud, such as test reports, screenshots, work orders, and configurations. You can access these files via the StrataSync website. For more information see *"Syncing to the StrataSync server" on page 140.*



7

Administration

This chapter provides an overview of the advanced LAW-X administrative features, including the following:

Overview

The **Administration** menu allows a variety of tasks to be performed, including the following:

- Define community boundaries
- Exclude areas within a community
- Delete leaks from the application
- Change report preferences
- Update configuration parameters
- Update API configuration parameters (Optional)
- Manage user profiles
- Manage communities
- Manage roles
- Manage trucks
- Manage problem codes
- Manage forms
- Manage map features and layers
- Schedule batch processes
- Run batch processes
- View active uploads
- Uploader troubleshooting
- Review the event log
- View mismatched frequencies
- Manage firmware
- Manage the organization
- View registration information

The **Administration** menu allows you to perform numerous administrator functions in LAW-X. Hovering over the **Administration** link will display a quick access dropdown menu as shown in the following figure.

After clicking the **Administration** link, the **Administration** menu will appear as shown in the following figure.

NOTE:

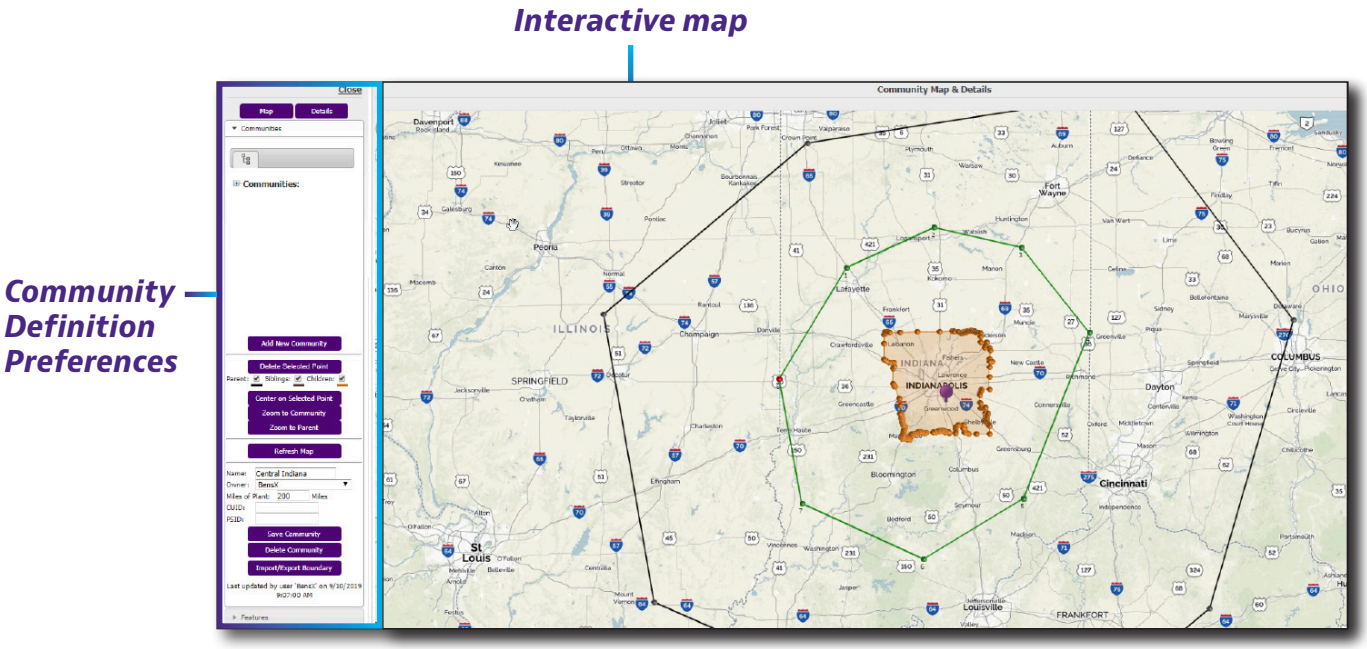
The API Configuration link is only available if the currently logged-in user has account privileges to access the API.

Community Definition

Overview

The **Community Definition** menu allows communities to be setup within a specific service area, which are assigned to a specific user. This will allow administrators to automatically generate and assign work orders to technicians based on leaks within the defined communities.

To enter the Community Definition function, select the **Community Definition** link from the **Administration** menu. Key areas of the **Community Definition** menu are shown in the following figure.



NOTE:

Users can only view mapped communities as allowed by their user account. Which communities can be viewed by users is determined by the LAW-X administrator.

NOTE:

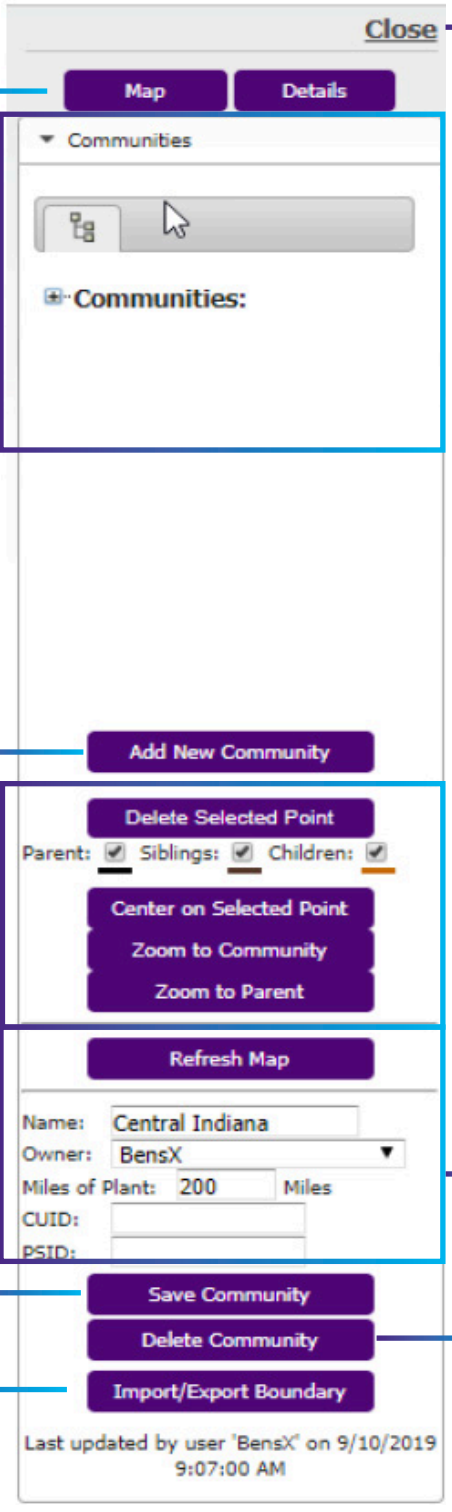
LAW-X administrators cannot edit communities for which they have not been assigned ownership. Administrators can only edit communities if they are assigned "community admin" privileges.

NOTE:

LAW-X users cannot edit communities for which they have not been assigned ownership. Owners of parent communities can save edits in a child community, even when the user is not an owner of the child community.

Community Definition Preferences

The **Community Definition Preferences** menu is shown in the following figure.



Close/Open

Displays or hides the menu

Map/Details

Displays the map or details preferences

Community Tree

Displays the name of the actively selected community and all configured communities

Community Preferences

When adding new communities, enter the data of the new community or when editing existing communities, edit the data of an existing community

Add New Community

Select this to add a new community

Map View Preferences

This area controls the preferences applied to the current map view

Delete Community

Select this to delete the selected community

OR

Cancel New Community

Select this to cancel the creation of a new community or simply navigate away from the page without saving.

Save Community

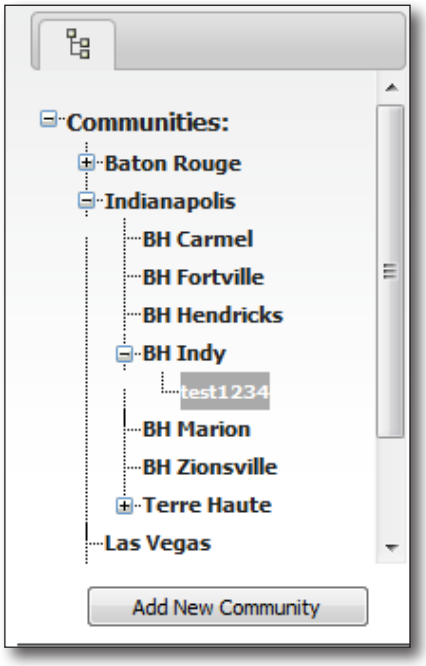
Select this to apply changes to a community

Import/Export Boundary

Select this to import/export boundary data

Community Tree

The Community Tree is used to display and navigate all of the configured communities within LAW-X.



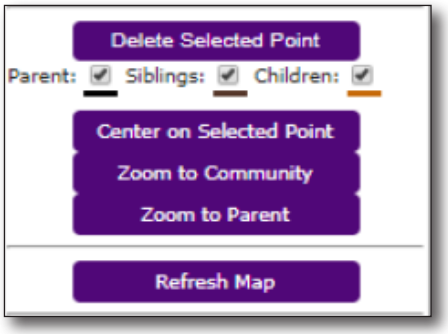
The **Communities** level of the tree is the default parent of all communities created within LAW-X and will always be displayed. When this level of the tree is selected, the Home Base location will be displayed on the communities map view.

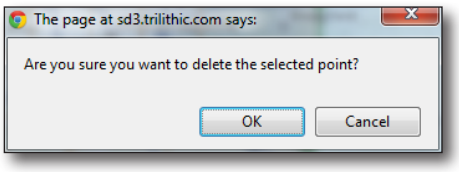
All parent communities that include children communities will be displayed with a +/- symbol to the left of its name. Use the +/- to expand and collapse the parent community in order to show its child communities.

Select the name of the community from the Community Tree in order to view the community map and/or edit its preferences.

Map View Preferences

This area is used to control actions within the community map view. The following controls are available:





- **Delete Selected Point** – If a point is selected on the community map view, select this button to delete that point. A notification will be displayed as shown below. Select the **OK** button to delete the selected point or select the **Cancel** button to exit without deleting the point.
- **Parent/Siblings/Children** – These checkboxes are used to show/hide the three types of communities that can be displayed on the community map view. Each type of community is displayed on the map as follows:
  - **Parent** – This type of community is displayed with a black boundary line and can include child communities. Parent communities can also have sibling communities.
  - **Siblings** – This type of community is displayed with a brown boundary line and fill shading.
  - **Children** – This type of community is displayed with an orange boundary line and fill shading.

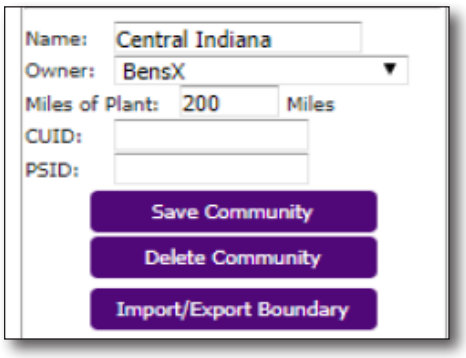
NOTE:

When related to community levels, the terms Parent, Sibling, and Children are always in relation to the currently selected community.

- **Center on Selected Point** – If a point is selected on the community map view, select this button to center the map view on the selected point.
- **Zoom to Community** – Select this button to zoom the map view to the boundaries of the selected community.
- **Zoom to Parent** – If a child community is selected and displayed on the community map view, select this button to zoom the map view to its parent community boundaries.
- **Refresh Map** – Select this button to refresh the community map view.

Community Preferences

This area is used to edit the preferences of the selected community. The following community preferences can be adjusted:



- **Name** – Enter the name of the community in this field. This is a required field.
- **Owner** – Use this dropdown box to select the owner of the community. This is a required field.
- **Miles of Plant** – Enter the miles of plant that are within this community. This is a required field.
- **CUID** – Enter the Community Unit ID in this field.
- **PSID** – Enter the Physical System ID in this field.
- **Site ID** – Enter a value in this field only if the Site ID is different from the default Site ID or a defined parent community's Site ID.
- **Exclude From API** – Select this checkbox only if this community is not to be included in third-party applications through the API. This checkbox will not be displayed if the API is not activated.

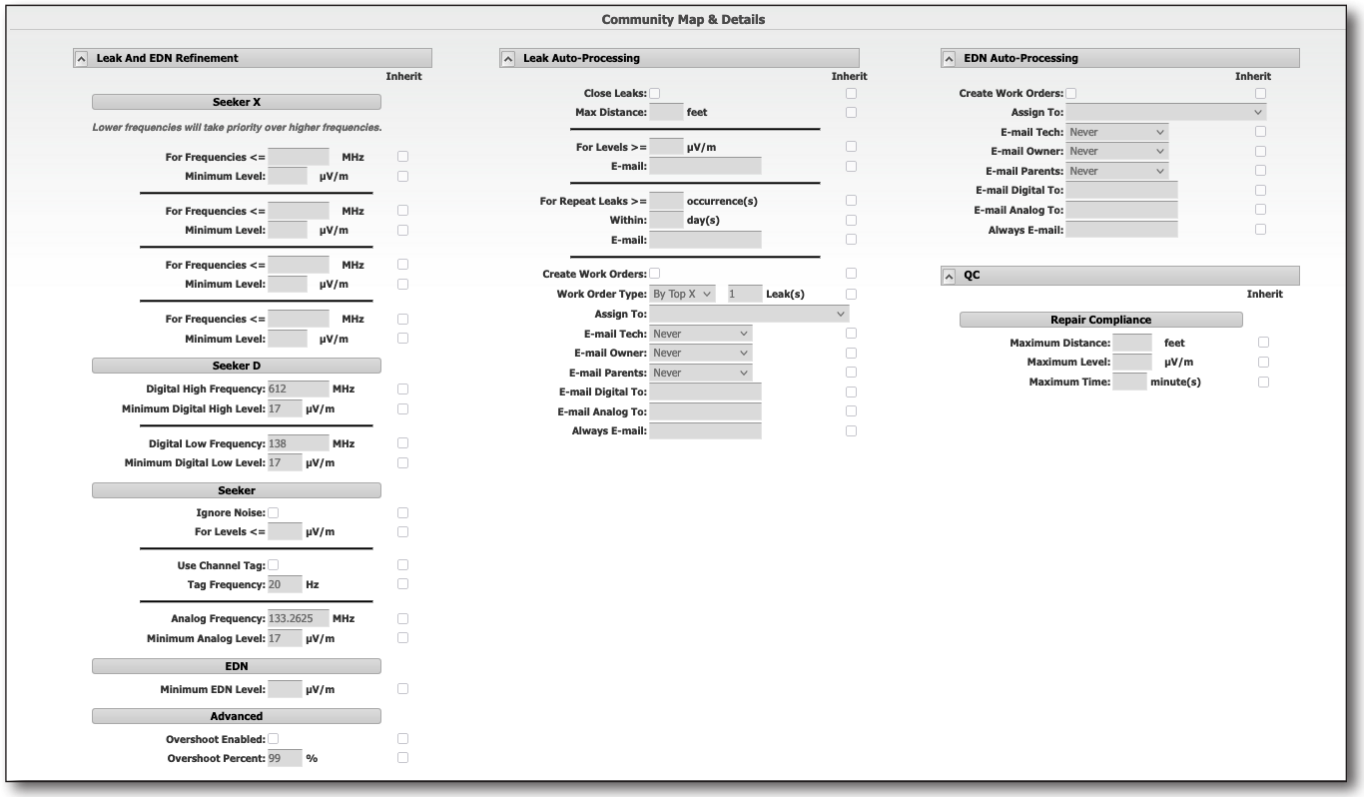
NOTE:

The Site ID and Exclude from API settings will not be displayed unless the currently logged-in user has account privileges to access the API.

Community Definition Details

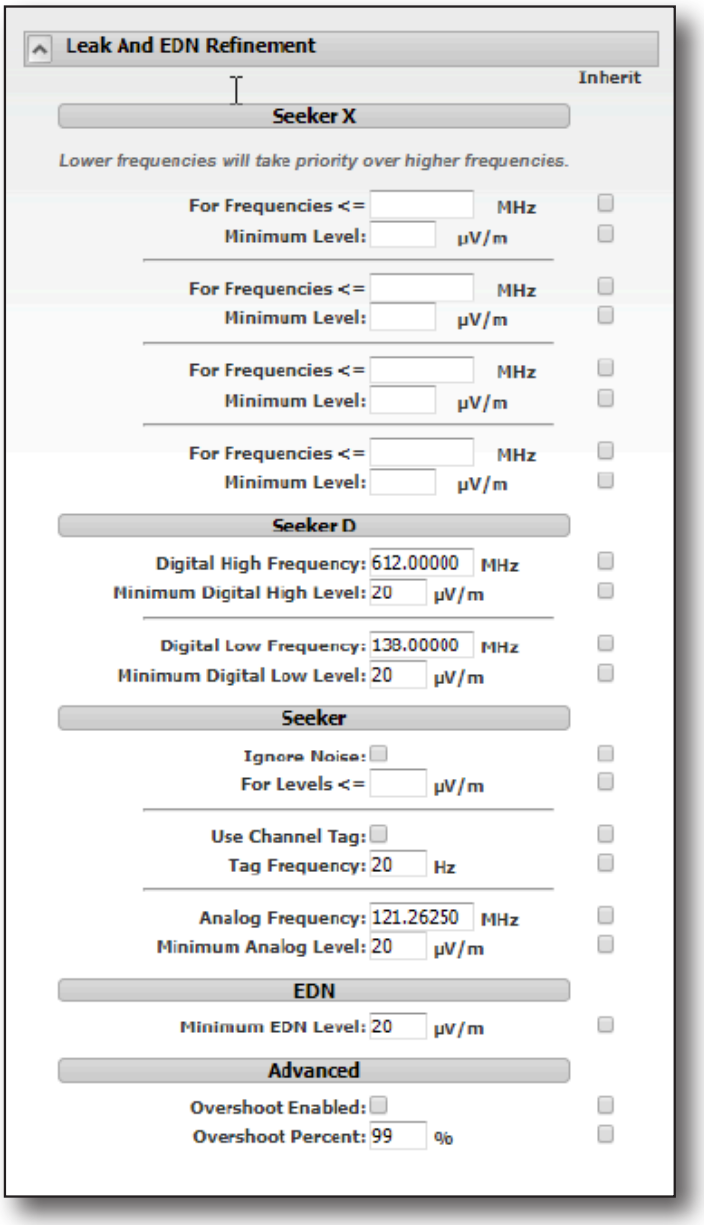
The **Community Definition Details** menu allows you to customize how leaks and early detection notifications are processed by LAW-X and displayed on the leakage map. It also lets you define who receives emails for the notifications.

To display the **Community Definition Details** menu, select the **Details** button on the **Community Definition** menu.



Leak & Early Detection Notification Refinement Preferences

The refinement variables must be entered for each community. The following refinement preferences can be adjusted:



- **Ignore Noise** – Select this option to ignore non-RF leak data that is uploaded from the Seeker GPS which originates outside of the tested cable system.
- **For Levels <=** – If Ignore Noise is selected, this option allows you to ignore noise that is less than or equal to a value X, where X is a variable assigned by the user. Leave this option blank to ignore all noise.
- **Use Channel Tag** – If the monitored cable system employs a channel tagger to aid in locating leaks, select this checkbox.
- **Tag Frequency** – Enter the frequency that the CT-2 or CT-3 channel taggers are set to.
- **Digital High Frequency** – Enter the digital high-band frequency the Seeker GPS is set to for the drive out. This frequency must exactly match the Seeker frequency setting.
- **Minimum Digital High Level** – Enter the lowest digital high-band leakage value for LAW-X to post on the map. Leaks below the minimum digital high level will not be displayed.
- **Digital Low Frequency** – Enter the digital low-band frequency the Seeker GPS is set to for the drive out. This frequency must exactly match the Seeker frequency setting.
- **Minimum Digital Low Level** – Enter the lowest digital low-band leakage value for LAW-X to post on the map. Leaks below the minimum digital low level will not be displayed.

- **Analog Frequency** – Enter the analog frequency the Seeker GPS is set to for the drive out. This frequency must exactly match the Seeker frequency setting.
- **Minimum Analog Level** – Enter the lowest analog leakage value for LAW-X to post on the map. Leaks below the minimum analog level will not be displayed.
- **Minimum EDN Level** – Enter the minimum early detection notification level that LAW-X will post on the map, regardless of the EDN setting configured on the Seeker MCA III. Leaks below the minimum EDN level will not be displayed.
- **Overshoot Enabled** – To enable the overshoot percentage, select this checkbox.
- **Overshoot Percentage** – LAW-X assigns an exclusion zone around mapped leaks. The overshoot percentage is the value above the mapped leak's value which will display an additional leak within the exclusion zone.
- **Inherit checkbox** – To apply a property to all child communities, select this checkbox. Select **Save Community** to save the change.

NOTE:

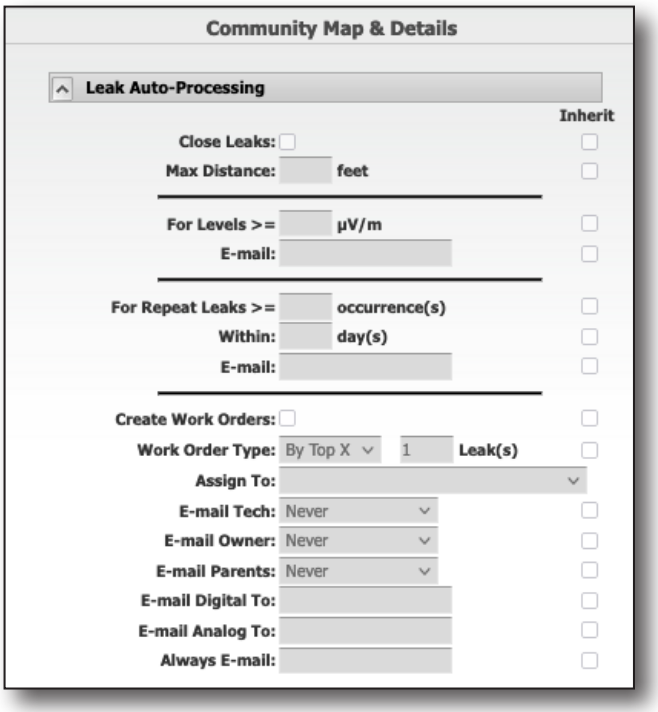
The recommended setting for the overshoot percentage is 99%, if enabled.

NOTE:

When ignoring noise that is less than or equal to a certain value, the value reference is the total leak level and not the actual noise level. In this case, noise is a true/false attribute of the leak and is not measured in uV/m.

Leak Auto-Processing Preferences

The leak auto-processing preferences must be entered for each community. The following auto processing preferences can be adjusted:



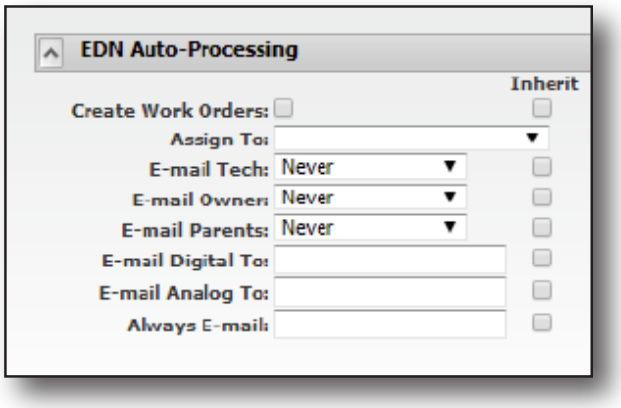
- **Close Leaks** – To automatically close leaks during processing, select this checkbox.
- **Max Distance** – Set the max distance to associate a snapshot with a leak.
- **For Levels >=** – Minimum leak level for notification to be emailed.
    - **Email** – Notification email address, separate multiple addresses with commas.
- **For Repeat Leaks >=** – Minimum number of previous leaks for notification to be emailed.
    - **Within** – Maximum number of days to search for previous leaks. If blank, there is no time limit.
    - **Email** – Notification email address, separate multiple addresses with commas.
- **Create Work Orders** – To automatically create work orders during processing, select this checkbox.
- **Work Order Type** – Use this dropdown box to select from the following types of work orders:
    - **Circle** – In selecting this option, LAW-X creates an imaginary circle on the map, with the largest user-specified leak on the map as the center point. This leak, and all leaks within the circle, are included on the first work order. All successive work orders are centered on the next largest leak in the community not already on a work order. The size of the **Circle** is entered by the user, with feet as the unit of measure.
    - **Grid** – This option divides the community into a grid pattern, and leaks within each grid square are assigned to one work order. The size of the grid squares in the **Grid** option are entered by the user, with feet as the unit of measure.
    - **Top X** – This option adds the top *x* number of leaks to a work order, where top refers to the size in uV/m and *x* equals the quantity of leaks to place on each work order. This option works best in smaller communities since there is no limit to the distance between leaks on the work order within the community boundaries.

- **Assign To** – Use this dropdown box to select the technician who the work order will be assigned to. If this field is not specified, the work order will not be assigned to a technician.
- **Email Tech/Owner/Parents** – Use these dropdown boxes to select when to email the technician, community owner, or community parents as follows:
    - **Always** – This option will always send an email when a work order is created, assigned, or unassigned.
    - **Assigned Only** – This option will only send an email when a work order is assigned.
    - **Never** – This option will never send an email when a work order is created.
    - **Unassigned Only** – This option will only send an email when a work order is unassigned.
- **E-mail Digital To** – This field is used to enter a list of additional email addresses that will be notified any time a digital leak is detected. Separate multiple email addresses by using a comma between each address.
- **E-mail Analog To** – This field is used to enter a list of additional email addresses that will be notified any time an analog leak is detected. Separate multiple email addresses by using a comma between each address.
- **Always E-mail** – This field is used to enter a list of additional email addresses that will be notified any time a work order is created, assigned, or unassigned. Separate multiple email addresses by using a comma between each address.
- **Inherit checkbox** – To apply a property to all child communities, select this checkbox.

When done editing the community, select the **Save Community** button.

Early Detection Notification Auto-Processing Preferences

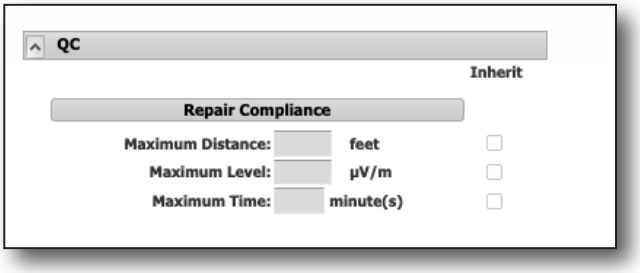
The EDN auto-processing preferences must be entered for each community. The following EDN preferences can be adjusted:



- **Create Work Orders** – To automatically create work orders for EDNs, select this checkbox.
- **Assign To** – Use this dropdown box to select the technician who the EDN work order will be assigned to. If this field is not specified, the EDN work order will not be assigned to a technician.
- **Email Tech/Owner/Parents** – Use these dropdown boxes to select when to email the technician, community owner, or community parents as follows:
    - **Always** – This option will always send an email when an EDN work order is created, assigned, or unassigned.
    - **Assigned Only** – This option will only send an email when an EDN work order is assigned.
    - **Never** – This option will never send an email when an EDN work order is created.
    - **Unassigned Only** – This option will only send an email when an EDN work order is unassigned.
- **E-mail Digital To** – This field is used to enter a list of additional email addresses that will be notified any time a digital EDN is detected. Separate multiple email addresses by using a comma between each address.
- **E-mail Analog To** – This field is used to enter a list of additional email addresses that will be notified any time an analog EDN is detected. Separate multiple email addresses by using a comma between each address.
- **Always E-mail** – This field is used to enter a list of additional email addresses that will be notified anytime an EDN work order is created, assigned, or unassigned. Separate multiple email addresses by using a comma between each address.
- **Inherit checkbox** – To apply a property to all child communities, select this checkbox.

When done editing the community, select the **Save Community** button.

Quality Control – Repair Compliance Preferences



The QC Repair Compliance preferences must be entered for each community. The following QC preferences can be adjusted:

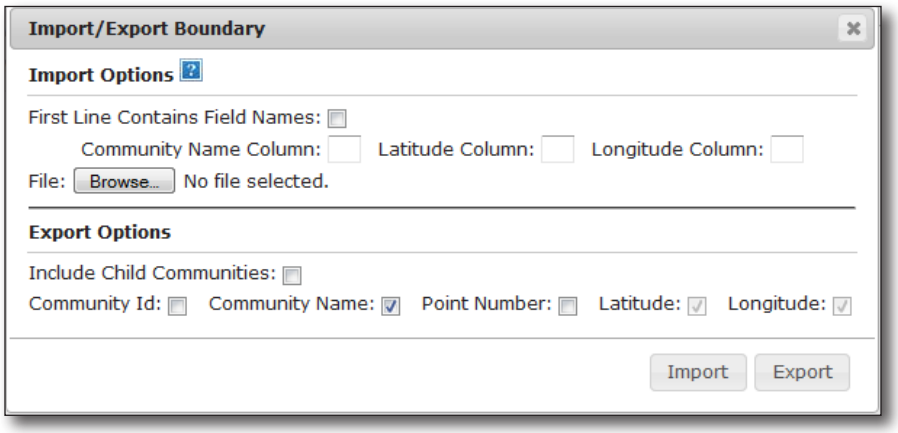
- **Maximum Distance** – Set the max distance allowed from snapshot to leak location.
- **Maximum Level** – Set the max level allowed for post-fix snapshot.
- **Maximum Time** – Set the max time allowed between post0fix snapshot and repair leak date.
- **Inherit checkbox** – To apply a property to all child communities, select this checkbox.

When done editing the community, select the **Save Community** button.

Import/Export Community Boundaries

The boundaries for each community can be exported/imported to/from a Comma Separated Values (.csv) file.

Select the **Import/Export Boundary** button to display the **Import/Export Boundary** pop-up screen.



Import Boundary

Before importing a community boundary, be sure to keep in mind the following rules:

- If a community is selected, only the boundary for the selected community will be imported.
- Changes will not take affect until the community is saved.
- If no community is selected, all boundaries in the file will be imported, validated, and saved automatically based on the community name.
- The community must pre-exist when the boundaries are imported. Only the boundaries are imported, not the community details.

Perform the following steps to import a community boundary:

1. Select the **First Line Contains Field Names** checkbox if the first row of the file you will be importing includes the field names.
2. Enter the value of the **Community Name**, **Latitude** and **Longitude** columns of the file you will be importing (e.g., 1, 2, 3, etc.).
3. Select the **Browse...** button to select the name and location of the Comma Separated Values (.csv) file you will be importing.
4. Once you have located the file you will be importing, select the **Open** button to prepare the file to be imported.
5. Select the **Import** button to proceed with importing the new boundary.

6. If importing one community with the community selected in the community tree, the boundaries will be shown on the map and the changes will need to be saved.

   If importing multiple boundaries by name, all community boundaries will be imported and saved only if all boundaries are validated and abide by the boundary rules.

Export Boundary

Perform the following steps to export the selected community boundary:

1. Select the **Include Child Communities** checkbox to export the boundaries of all of the child communities of the selected community.
2. By default, the **Community Name**, **Latitude** and **Longitude** will always be selected for export. You can also select the optional **Community ID** and/or **Point Number** to be exported.
3. Select the **Export** button to proceed with exporting the selected community boundary.
4. A new .csv file with the community name will be created and automatically download to the default downloads folder of your web browser.

Add a New Community

To add a new community, perform the following steps.

1. Navigate to the point in the Community Tree in which you would like to add a new community and either select a top level or parent community.
2. Select the **Add New Community** button and a new community will be created as a new parent community or as a child community.
3. Complete the Community, Leak & EDN Refinement, Leak Auto-Processing, EDN Auto-Processing, and QC Preferences for the new community as shown in the previous sections.
4. Use the mouse to position the pointer over the community map; use the left mouse button to place points on the map.
5. When done making changes to the new community, select the **Save Community** button to save the new community or select the **Cancel New Community** button to exit without saving the new community.
6. A notification message will appear after successfully saving the new community.

NOTE:

When adding a community within an existing community, points must be added within the existing boundary of the parent community. If a point is placed outside this boundary, an error message will result.

NOTE:

The boundaries are based on straight lines between each point. To add curved boundaries, several points must be added which approximate a curved boundary.

NOTE:

To delete a point that has been added, select the point, then select the Delete Point button. Select this button more than once to remove multiple points.

NOTE:

To relocate a point, simply left click and drag the dot to a new location and then release the mouse button.

NOTE:

To add or change a community boundary simply select the lower numbered dot of the line segment you want to change and add more dots by left clicking to place additional dots.

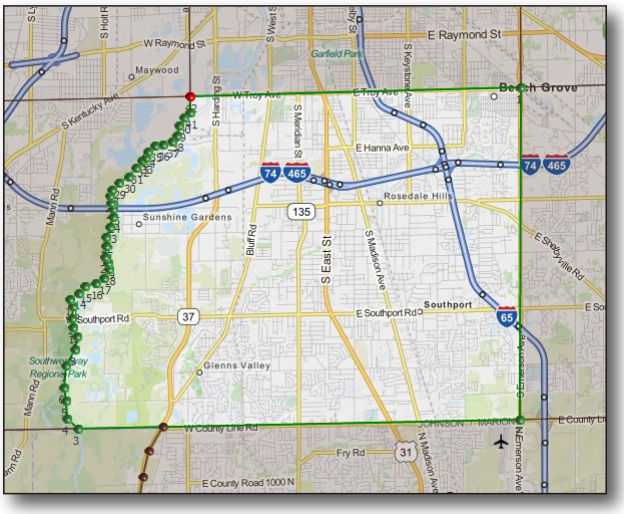
NOTE:

Boundaries can be shared but cannot overlap. LAW-X will display an error message in the case of overlapping boundaries.

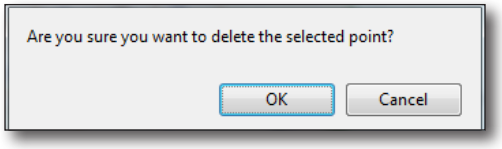
Edit an Existing Community

To edit the an existing community, perform the following steps.

1. Use the **Community Tree** to select the community to be edited. The map view will refresh to show the selected community on the map.
2. Edit the Community, Leak & EDN Refinement, Leak Auto-Processing, EDN Auto-Processing, and QC Preferences for the community as shown in the previous sections.
3. The currently selected community's boundary will be shown in green. If a parent community exists, the parent community's boundary will be shown in black and any sibling communities will be displayed in brown.



4. To move anchor points for the selected community (shown as green circles), select an anchor point by left-clicking on it with the mouse. The selected anchor point will turn from green to red. Using the left mouse button, drag the anchor point to a new location.
5. To add additional anchor points on the community boundary,
   - Left-click to select the point which is numerically "lower" than the point to be added. The selected anchor point will change to red.
   - Position the cursor over the location where the new point will be added and left-click with the mouse to place an anchor point, numerically "above" the selected anchor point.
   - New anchor points can be moved, as described in *Step 3.*
6. To delete an anchor point, position the cursor over the point and left-click to select the point. The anchor point's color will change to red. Select the **Delete Selected Point** button to remove the selected anchor point.
7. A notification window will appear as shown to the right. Select the **OK** button to proceed with deleting the selected point or select the **Cancel** button exit without deleting the point.

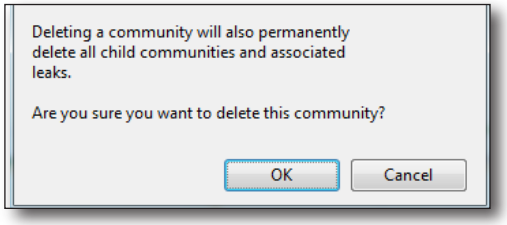


8. When done editing the community, select the **Save Community** button.

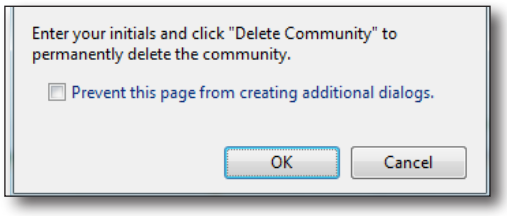
Delete an Existing Community

To delete an existing community, perform the following steps.

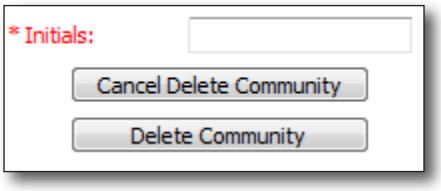
1. Use the **Community Tree** to select the community to be edited. The map view will refresh to show the selected community on the map.
2. Select the **Delete Community** button to delete the selected community.
3. A notification window will appear as shown to the right. Select the **OK** button to proceed with deleting the selected community or select the **Cancel** button exit without deleting the community.



4. An additional notification window will appear as shown to the right. Select the **OK** button to proceed with entering your initials before deleting the selected community or select the **Cancel** button exit without deleting the community.



5. Enter your initials into the community preferences area and select the **Delete Community** button to delete the selected community or select the **Cancel Delete Community** button to exit without deleting the community.



NOTE:

Deleting a community will permanently delete all child communities of the deleted community, as well as leak records for the parent and affected child communities.

NOTE:

A community can only be deleted by its owner. Owners of parent communities can delete child communities of the parent community; even if the child community is not owned by the user assigned to the parent community.

NOTE:

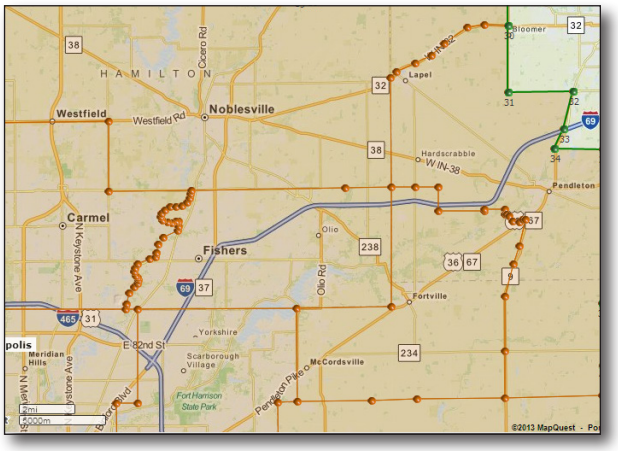
Community administrators can delete communities, even when the administrator is not a community owner. Users (and LAW-X administrators) who are not owners of a particular community cannot delete the selected community.

IMPORTANT:

When a community is deleted, the delete operation cannot be reversed, and the community data is non-recoverable, leak data and leak history.

Sharing Community Boundaries

To edit the boundary points of an existing community so that it shares a boundary with another community, perform the following steps.



1. Use the **Community Tree** to select the community to be edited. The map view will refresh to show the selected community on the map.
2. The currently selected community's boundary will be shown in green. If a parent community exists, the parent community's boundary will be shown in black and any sibling communities will be displayed in brown.
3. To share boundaries, hover over the anchor point that you want to share until it turns white and then left click placing your new anchor precisely over the top of the point. Simply follow the boundary points in order until the entire boundary is shared.
4. When done making changes to the new community, select the **Save Community** button to save the changes to the community.
5. A notification message will appear after successfully saving the new community.

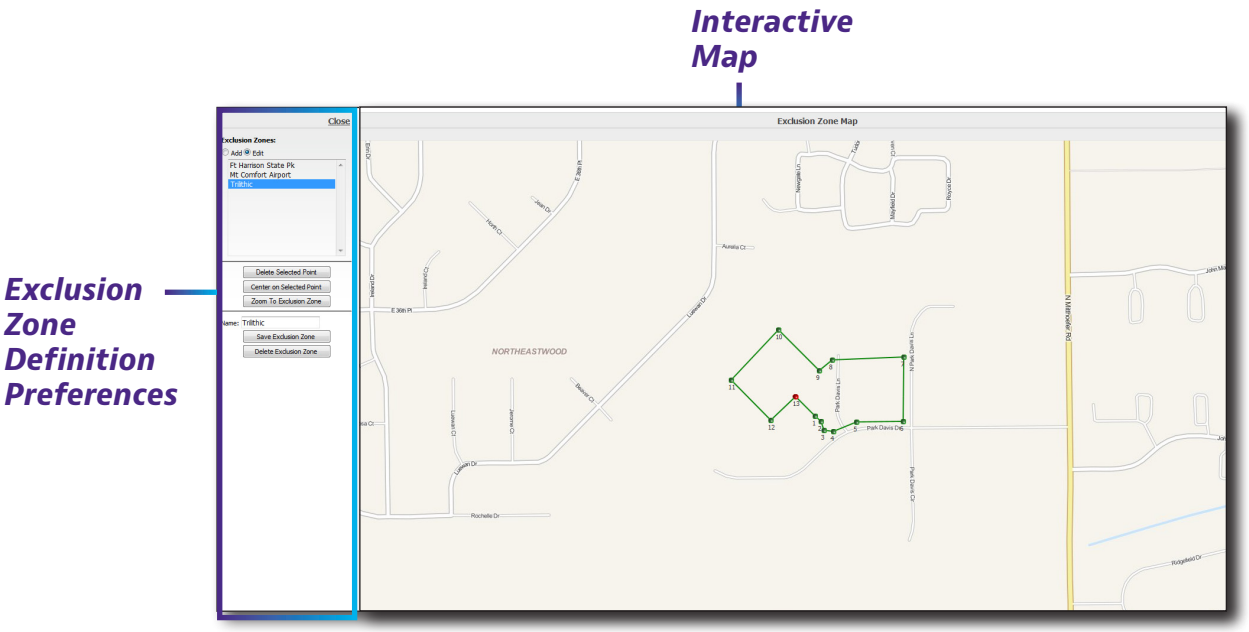
NOTE:

Anchor points can be added or deleted, see "Edit an Existing Community" on page 177 for details.

Exclusion Zone Definition

LAW-X allows users to establish exclusion zones. Any leaks (or other sources of RF noise) which originate in an exclusion zone are not recorded within the LAW-X application.

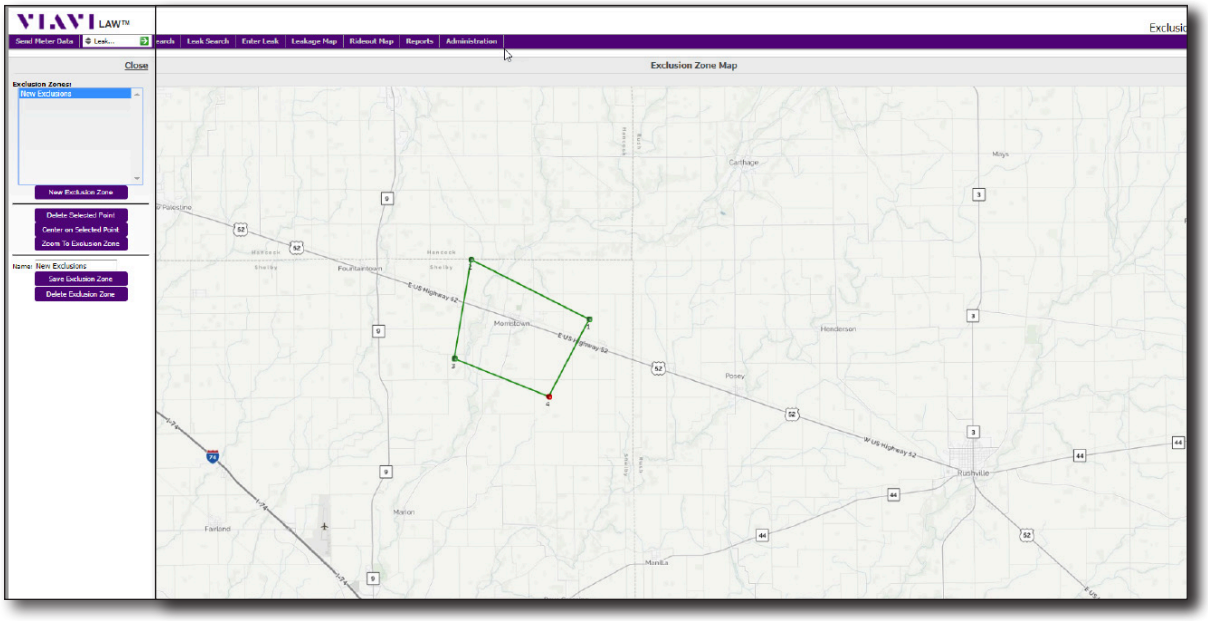
To enter the Exclusion Zone Definition function, select the **Exclusion Zone Definition** link from the **Administration** menu. Key areas of the **Exclusion Zone Definition** menu are shown in the following figure.



Add a New Exclusion Zone

To add an exclusion zone, perform the following steps.

1. From the **Exclusion Zone Definition** menu, select the **Add** radio button.
2. The Exclusion Zone Definitions Preferences will be displayed as shown below.
3. Type a name for the exclusion zone in the **Name** text field.

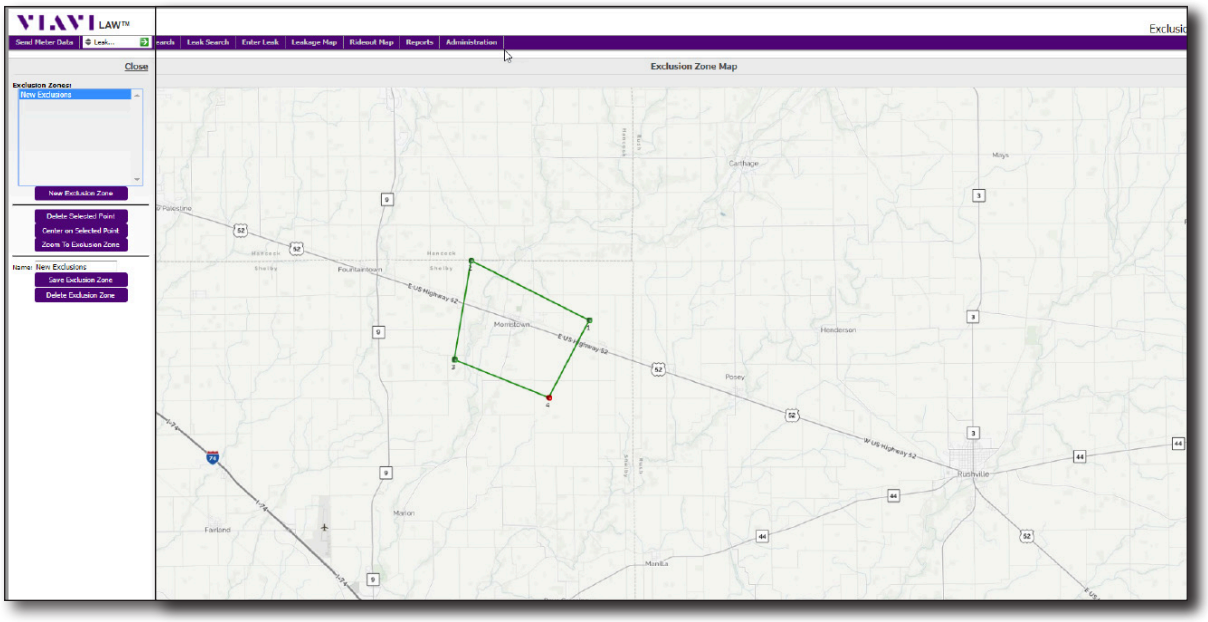


4. Left-click on the map to place anchor points for the exclusion zone.
5. Select the **Zoom to Exclusion Zone** button to zoom the map display to the extents of the exclusion zone boundary.
6. Select the **Save Exclusion Zone** button to save the new exclusion zone.

Edit an Existing Exclusion Zone

To edit an existing exclusion zone, perform the following steps.

1. From the **Exclusion Zone Definition** menu, select the name of the exclusion zone to edit. The map view will refresh to show the selected community on the map.
2. The Exclusion Zone Definitions Preferences will be displayed..



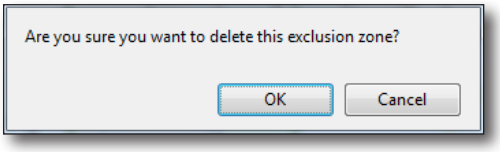
3. Edit the **Name** for the exclusion zone as shown in the previous section.
4. The currently selected exclusion zone's boundary will be shown in green.
5. To move anchor points for the selected exclusion zone (shown as green circles), select an anchor point by left-clicking on it with the mouse. The selected anchor point will turn from green to red. Using the left mouse button, drag the anchor point to a new location.
6. To add additional anchor points on the exclusion zone,
   - Left-click to select the point which is numerically "lower" than the point to be added. The selected anchor point will change to red.
   - Position the cursor over the location where the new point will be added and left-click with the mouse to place an anchor point, numerically "above" the selected anchor point.
   - New anchor points can be moved, as described in *Step 5.*

7. To delete an anchor point, position the cursor over the point and left-click to select the point. The anchor point's color will change to red. Select the **Delete Selected Point** button to remove the selected anchor point.
8. A notification window will appear as shown to the right. Select the **OK** button to proceed with deleting the selected point or select the **Cancel** button exit without deleting the point. When done editing the exclusion zone, select the **Save Community** button.

Delete an Existing Exclusion Zone

To delete an existing exclusion zone, perform the following steps.

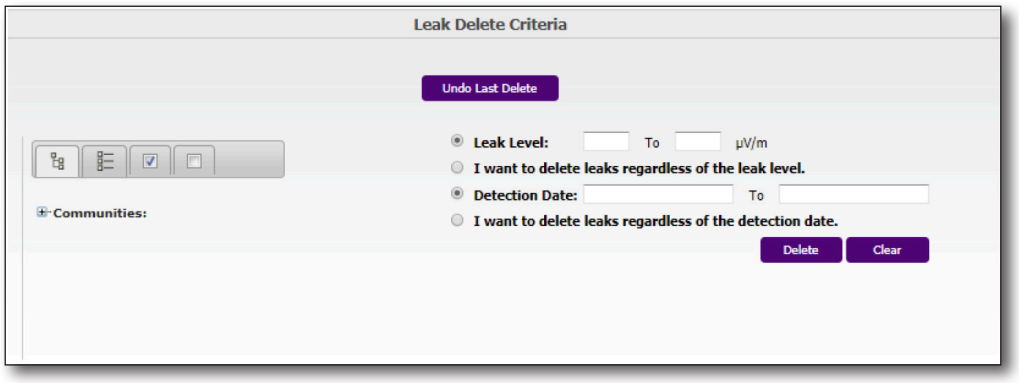
1. From the **Exclusion Zone Definition** menu, select the name of the exclusion zone to edit. The map view will refresh to show the selected community on the map.
2. The Exclusion Zone Definitions Preferences will be displayed.
3. A notification window will appear as shown to the right. Select the **OK** button to proceed with deleting the selected exclusion zone or select the **Cancel** button to exit without deleting the exclusion zone.



Leak Delete

A broad range of leaks can be simultaneously removed from the LAW-X application through the **Leak Delete** menu.

To enter the Leak Delete function, select the **Leak Delete** link from the **Administration** menu. The **Leak Delete Criteria** menu is shown in the following figure.



To delete multiple leaks from LAW-X, perform the following steps.

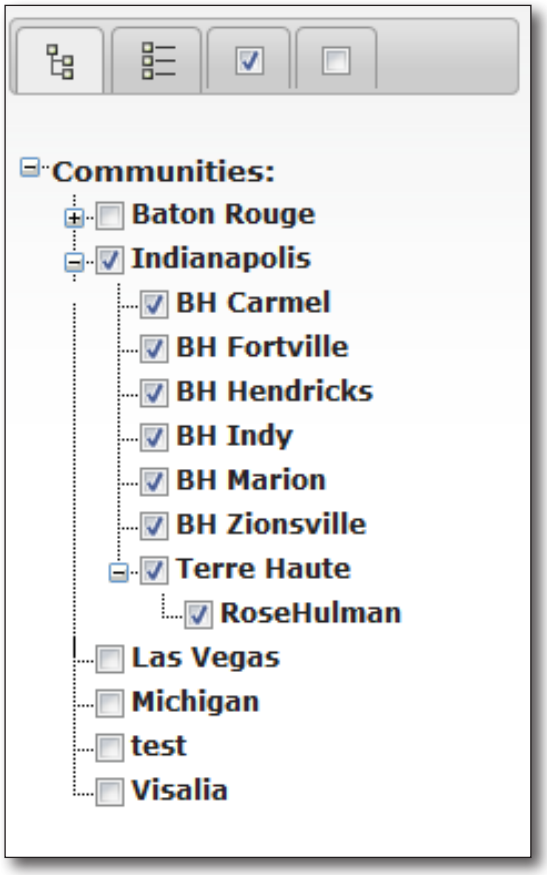
1. From the **Leak Delete Criteria** menu, select from either of the following level search criteria for the leaks to be deleted:
    - **Leak Level** – To delete leaks within a specific level range, select this option and enter the low/high level limits into the search fields.
    - **I want to delete leaks regardless of the leak level** – Delete all leaks regardless of the leak level.
2. From the **Leak Delete Criteria** menu, select from either of the following date search criteria for the leaks to be deleted:
    - **Detection Dates** – Enter the lower and higher dates into the search fields
    - **I want to delete leaks regardless of the detection date** – Delete all leaks regardless of the leak detection date.

NOTE:

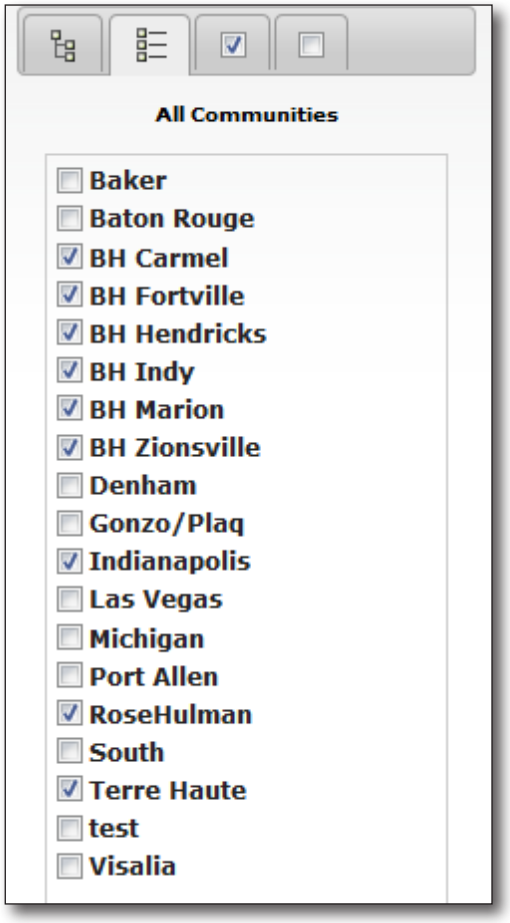
To delete leaks greater than a certain value you would enter Leak Level 100 to ___ uV/m to delete leaks greater than 100 uV/m. To delete leaks less than a number you would enter ___ uV/m to 100 uV/m to delete all leaks less than 100 uV/m. This method also applies to date ranges as well.

3. Select the communities that you wish to delete leaks from as follows:

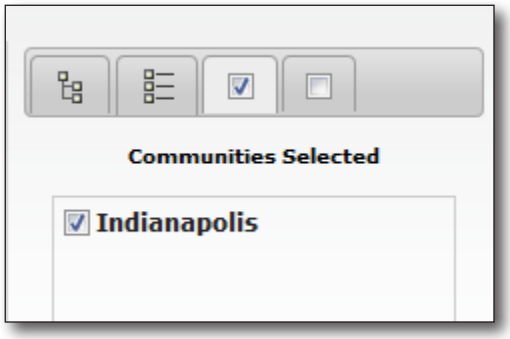
   - **Communities Tab** – This tab displays all of the configured communities in the Community Tree format. Select communities using the following methods:
     - Use the +/- symbol to the left of parent communities to show/hide child communities.
     - To choose a single community, select the checkbox next to each community name.
     - To choose a parent community and all of its children, select the name of the community itself.



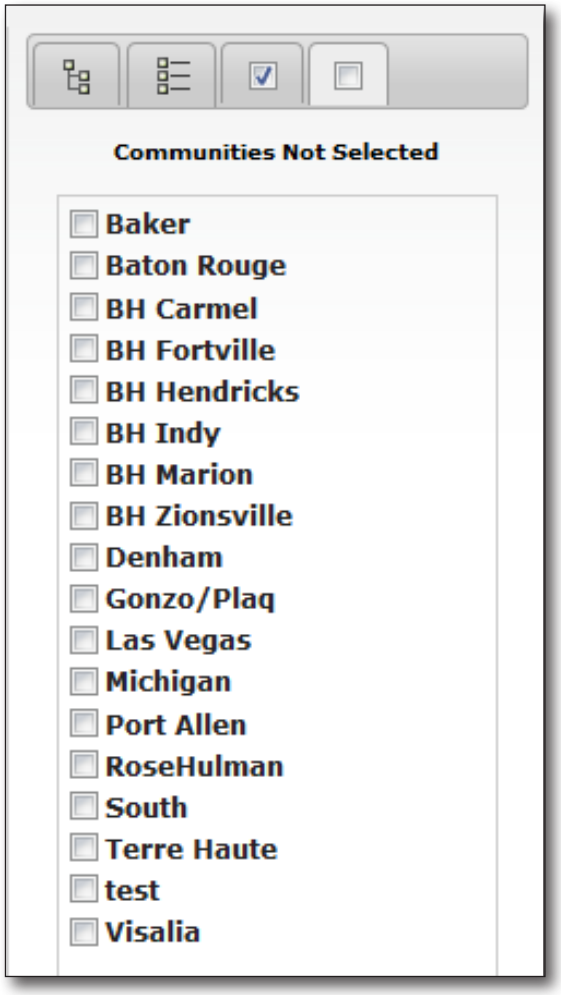
- **All Communities Tab** – This tab is used to display all of the available communities in alphanumeric order and easily remove any unwanted communities. To deselect communities, uncheck the checkbox next to the community name.



- **Communities Selected Tab** – This tab is used to display all of the selected communities in alphanumeric order and easily remove any unwanted communities. To deselect communities, uncheck the checkbox next to the community name.



- **Communities Not Selected Tab** – This tab is used to display all of the unselected communities in alphanumeric order and easily add additional communities. To add additional communities, select the checkbox next to the community name.



4. Select the **Delete** button to delete all leaks which meet the criteria entered. Select the **Clear** button to clear all text fields on the screen.

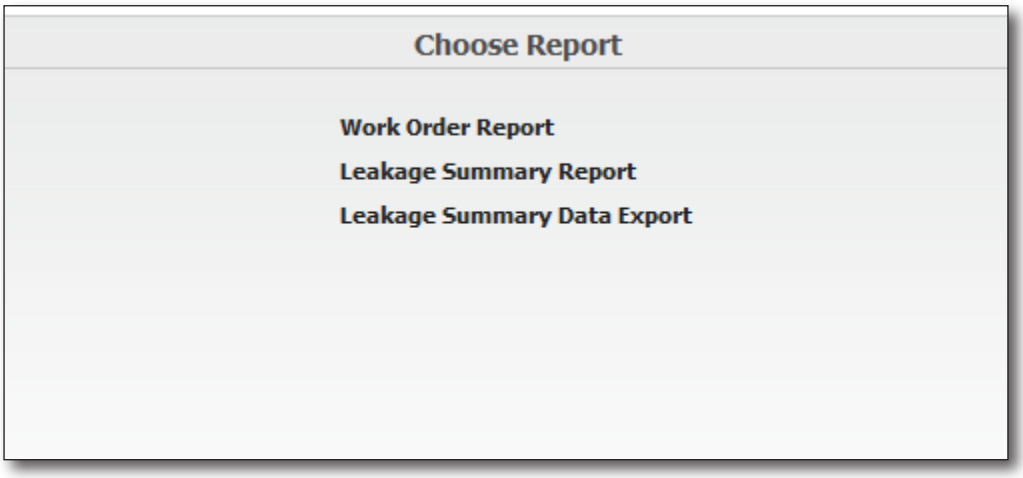
NOTE:

The Undo Last Delete button allows for ONE undo operation. If a leak was deleted in error, the Undo Last Delete button provides the ability to recover leaks which were deleted in the MOST RECENT delete operation.

Report Preferences

Report preferences can be changed based on individual requirements. Prior to running the **Work Order Report** and the **Leakage Summary Report**, select the options to be included in the reports.

To enter the Report Preferences function, select the **Report Preferences** link from the **Administration** menu. The **Choose Report** menu is shown in the following figure.



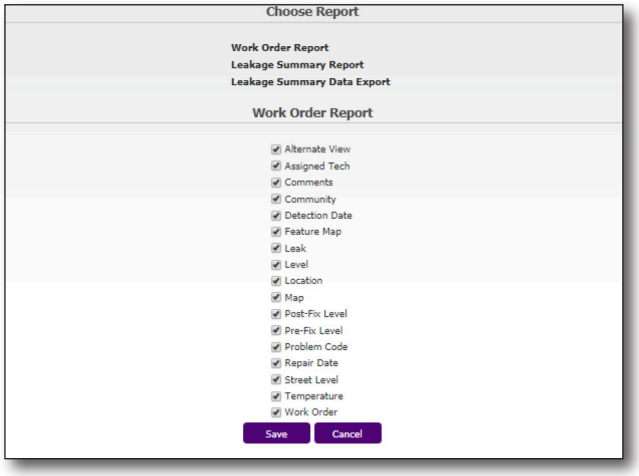
After making changes to the report preferences, select the **Save** button to save your changes or select the **Cancel** button to exit without saving.

Work Order Report Preferences

To adjust the Work Order Report preferences, select the **Work Order Report** link from the **Choose Report** menu.

Select the checkbox next to each of the items that should be displayed on the Work Order Report.

The **Work Order Report** preferences are shown in the image to the right and are described below:



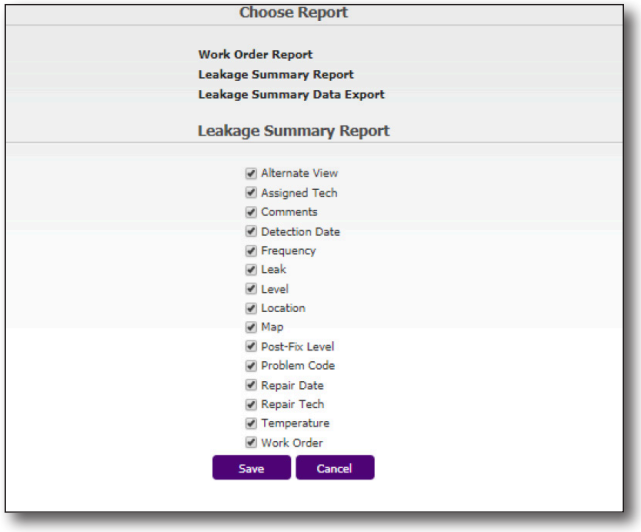
- **Alternate View** – If a leak level is detected at both high and low frequencies, the alternate view is the lesser of the two
- **Assigned Tech** – Name of technician assigned to the work order
- **Comments** – Comments from the technician assigned to the work order
- **Community** – Name of the community where the leak was detected
- **Detection Date** – Date leak was detected
- **Feature Map** – Include map features you have imported
- **Leak** – Leak record ID number
- **Level** – The projected frequency level (µV/m) at the time of detection at the leak location
- **Location** – Latitude and longitude coordinates where the leak was detected
- **Map** – Map displaying the leak points
- **Post-Fix Level** – Leak level (µV/m) detected after repairing the leak
- **Pre-Fix Level** – Leak level (µV/m) detected before beginning repairs
- **Problem Code** – Problem code entered to describe the leak
- **Repair Date** – Date leak was repaired
- **Street Level** – The projected frequency level (µV/m) at the time of detection at the street
- **Temperature** – Ambient air temperature measured where the leak was detected
- **Work Order** – Work order number

Leakage Summary Report Preferences

To adjust the Leakage Summary Report preferences, select the **Leakage Summary Report** link from the **Choose Report** menu.

Select the checkbox next to each of the items that should be displayed on the Leakage Summary Report.

The **Leakage Summary Report** preferences are shown in the image to the right and are described below:



- **Alternate View** – If a leak level is detected at both high and low frequencies, the alternate view is the lesser of the two
- **Assigned Tech** – Name of technician assigned to the work order
- **Comments** – Comments from the technician assigned to the work order
- **Detection Date** – Date leak was detected
- **Frequency** – Frequency of the detected leak
- **Leak** – Leak record ID number
- **Level** – Size of leak at time of detection
- **Location** – Latitude and longitude coordinates at the point where the leak was detected
- **Map** – Map displaying the leak points
- **Post-Fix Level** – Leak level (µV/m) detected after repairing the leak
- **Problem Code** – Problem code entered to describe the leak
- **Repair Date** – Date leak was repaired
- **Repair Tech** – Name of technician assigned to fix the leak
- **Temperature** – Ambient air temperature measured where the leak was detected
- **WorkOrder** – Work order number

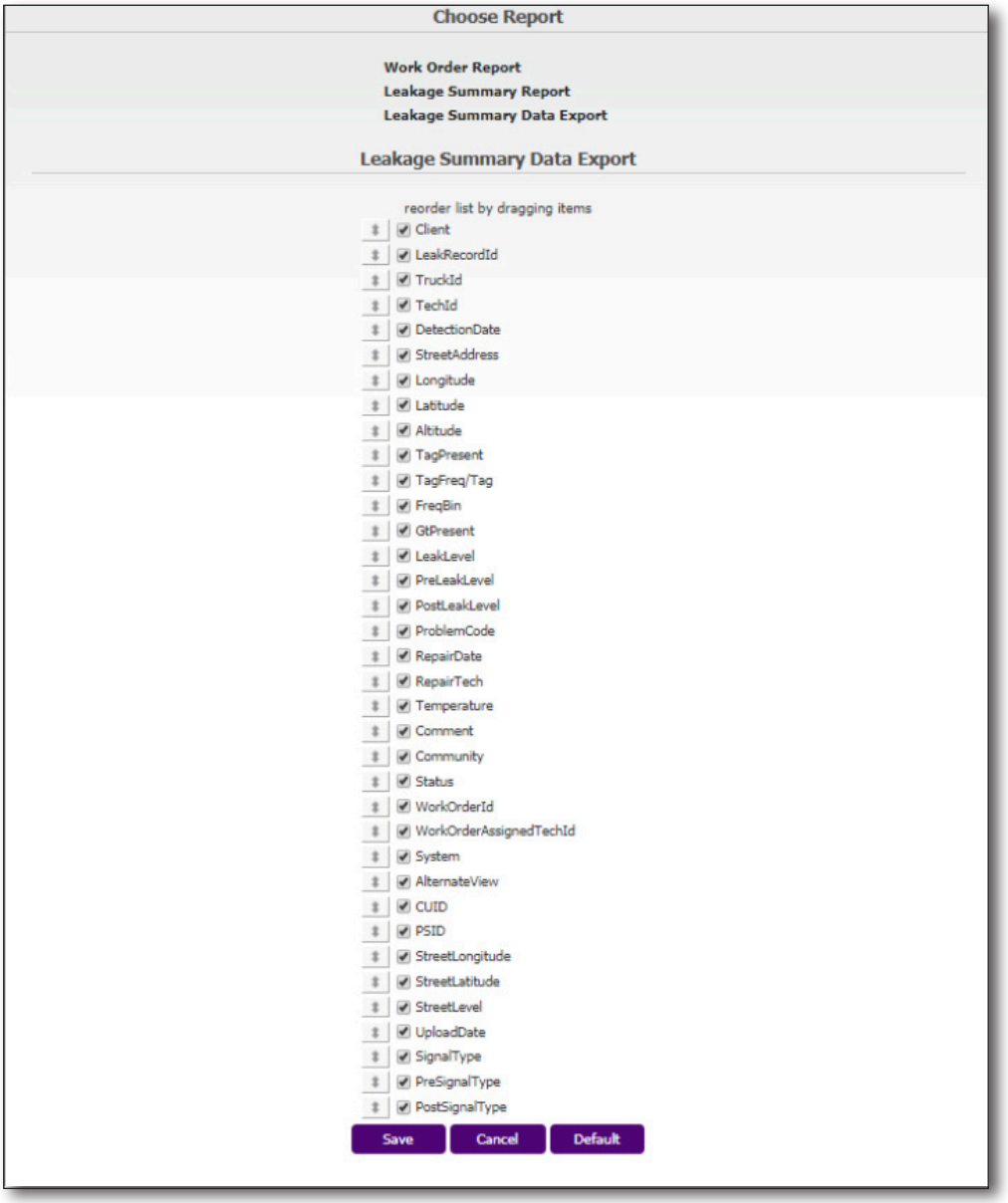
Leakage Summary Data Export Preferences

To adjust the Leakage Summary Data Export preferences, select the **Leakage Summary Data Export** link from the **Choose Report** menu.

Select the checkbox next to each of the items that should be displayed on the Leakage Summary Data Export. You can also click and drag items to reorder how they appear in the report. For descriptions of the items, see the previous sections.

To return to the default settings, select the **Default** button.

The **Leakage Summary Data Export** preferences are shown in the image below:



Configuration

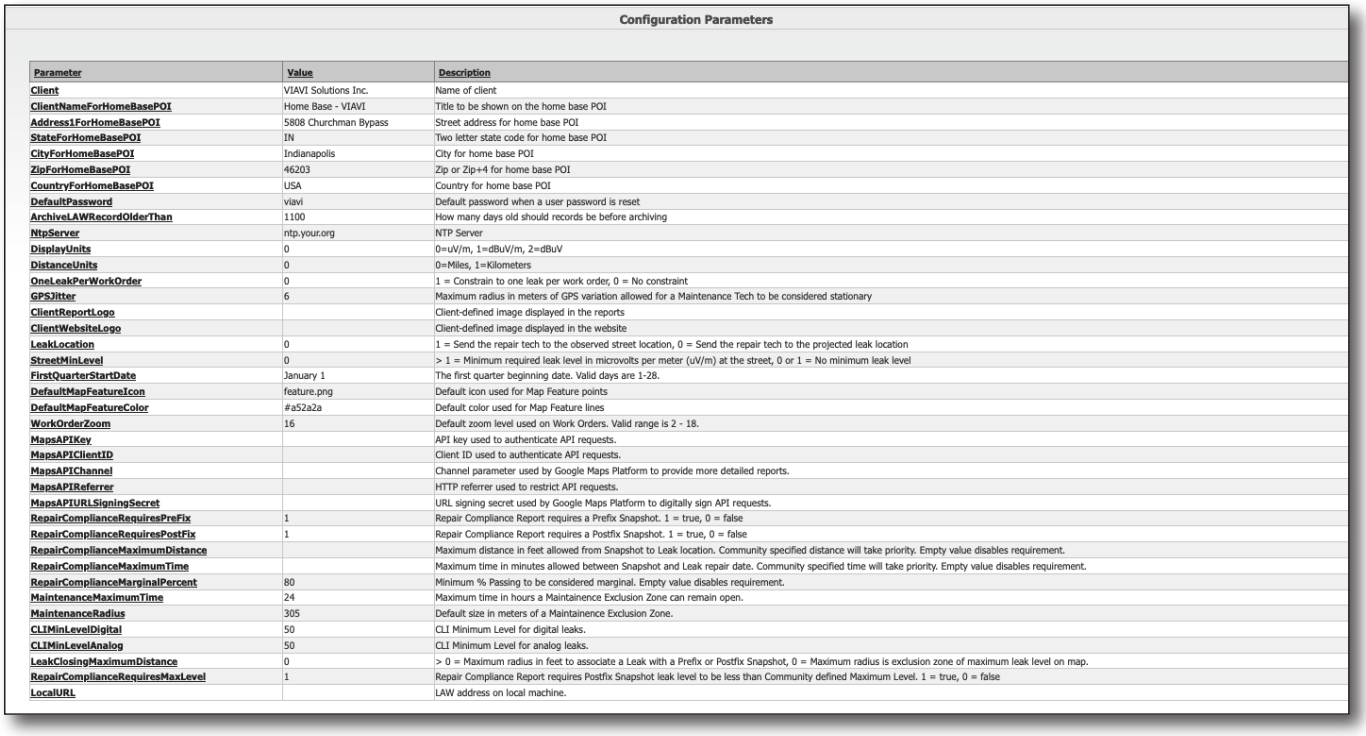
Configuration parameters can be defined or modified using this administrative function.

To enter the Configuration Parameters function, select the **Configuration** link from the **Administration** menu. The **Configuration Parameters** menu is shown below.

The **Configuration Parameters** menu includes the following columns:

- **Parameter** – Name of the configuration parameter
- **Value** – Specific value assigned to the configuration parameter
- **Description** – Description of the configuration parameter

The configuration parameters can be sorted by any of the columns listed above by clicking on **Parameter**, **Value**, or **Description** links located at the top of the table. The following figure shows this process in detail.



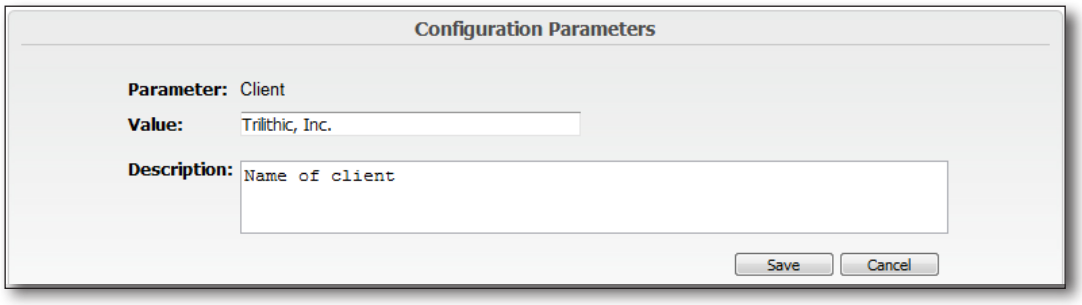
Configuration Parameters

Parameter	Value	Description
Client	VIAVI Solutions Inc.	Name of client
ClientNameForHomeBasePOI	Home Base - VIAVI	Title to be shown on the home base POI
Address1ForHomeBasePOI	5808 Churchman Bypass	Street address for home base POI
StateForHomeBasePOI	IN	Two letter state code for home base POI
CityForHomeBasePOI	Indianapolis	City for home base POI
ZipForHomeBasePOI	46203	Zip or Zip+4 for home base POI
CountryForHomeBasePOI	USA	Country for home base POI
DefaultPassword	viavi	Default password when a user password is reset
ArchiveLAWRecordOlderThan	1100	How many days old should records be before archiving
NtpServer	ntp.your.org	NTP Server
DisplayUnits	0	0=uV/m, 1=dBuV/m, 2=dBuV
DistanceUnits	0	0=Miles, 1=Kilometers
OneLeakPerWorkOrder	0	1 = Constrain to one leak per work order, 0 = No constraint
GPSJitter	6	Maximum radius in meters of GPS variation allowed for a Maintenance Tech to be considered stationary
ClientReportLogo		Client-defined image displayed in the reports
ClientWebsiteLogo		Client-defined image displayed in the website
LeakLocation	0	1 = Send the repair tech to the observed street location, 0 = Send the repair tech to the projected leak location
StreetMinLevel	0	> 1 = Minimum required leak level in microvolts per meter (uV/m) at the street, 0 or 1 = No minimum leak level
FirstQuarterStartDate	January 1	The first quarter beginning date. Valid days are 1-28.
DefaultMapFeatureIcon	feature.png	Default icon used for Map Feature points
DefaultMapFeatureColor	#a52a2a	Default color used for Map Feature lines
WorkOrderZoom	16	Default zoom level used on Work Orders. Valid range is 2 - 18.
MapsAPIKey		API key used to authenticate API requests.
MapsAPIClientID		Client ID used to authenticate API requests.
MapsAPIChannel		Channel parameter used by Google Maps Platform to provide more detailed reports.
MapsAPIReferrer		HTTP referrer used to restrict API requests.
MapsAPIURLSigningSecret		URL signing secret used by Google Maps Platform to digitally sign API requests.
RepairComplianceRequiresPreFix	1	Repair Compliance Report requires a Prefix Snapshot. 1 = true, 0 = false
RepairComplianceRequiresPostFix	1	Repair Compliance Report requires a Postfix Snapshot. 1 = true, 0 = false
RepairComplianceMaximumDistance		Maximum distance in feet allowed from Snapshot to Leak location. Community specified distance will take priority. Empty value disables requirement.
RepairComplianceMaximumTime		Maximum time in minutes allowed between Snapshot and Leak repair date. Community specified time will take priority. Empty value disables requirement.
RepairComplianceMarginalPercent	80	Minimum % Passing to be considered marginal. Empty value disables requirement.
MaintenanceMaximumTime	24	Maximum time in hours a Maintainence Exclusion Zone can remain open.
MaintenanceRadius	305	Default size in meters of a Maintainence Exclusion Zone.
CLIMinLevelDigital	50	CLI Minimum Level for digital leaks.
CLIMinLevelAnalog	50	CLI Minimum Level for analog leaks.
LeakClosingMaximumDistance	0	> 0 = Maximum radius in feet to associate a Leak with a Prefix or Postfix Snapshot, 0 = Maximum radius is exclusion zone of maximum leak level on map.
RepairComplianceRequiresMaxLevel	1	Repair Compliance Report requires Postfix Snapshot leak level to be less than Community defined Maximum Level. 1 = true, 0 = false
LocalURL		LAW address on local machine.

Edit a Configuration Parameter

To edit a configuration parameter, perform the following steps:

1. From the **Configuration Parameters** menu, select the **Parameter** name associated with the configuration parameter to be changed. The **Configuration Parameters** menu will be displayed as shown in the following figure.
2. Changes can now be made to the **Description** and/or **Value** fields. See the ***Parameter Values*** in the next section for more detailed information about specific configuration parameters.
3. Select the **Save** button after completing changes, or select the **Cancel** button to discard changes without saving.

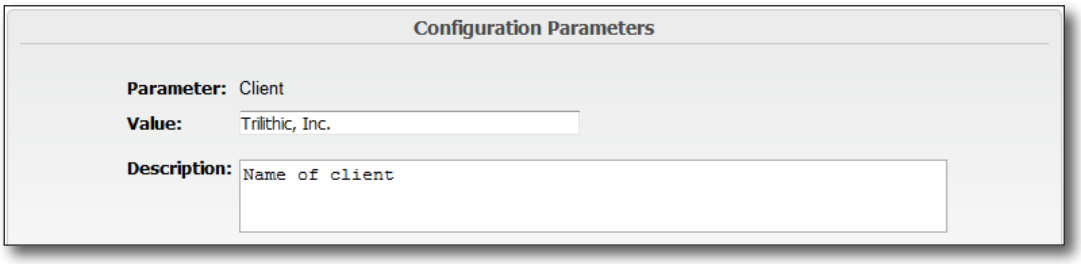


Parameter Values

This section describes the configuration parameters displayed in the **Value** column of the **Configuration Parameters** menu and the information that will be entered into the value field for each parameter.

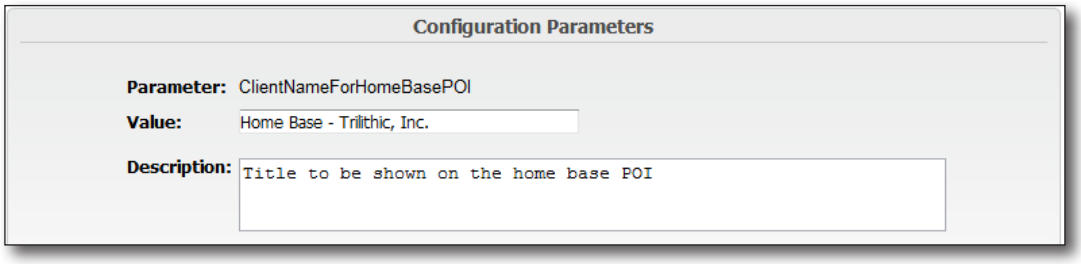
Client

The name of the client as it will be displayed on report headers.



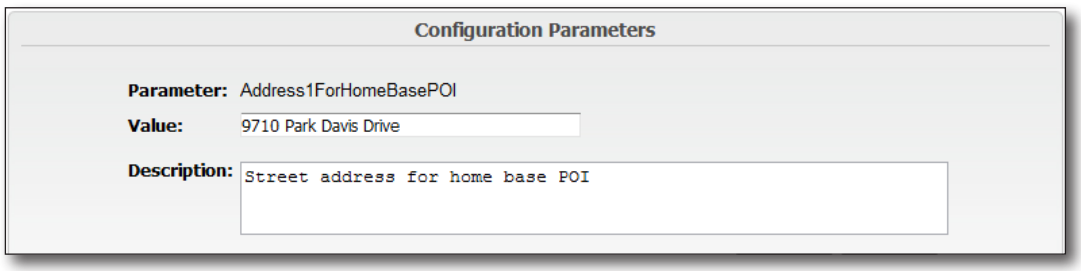
ClientNameForHomeBasePOI

The name of the company as it will be defined in the Leakage Map.



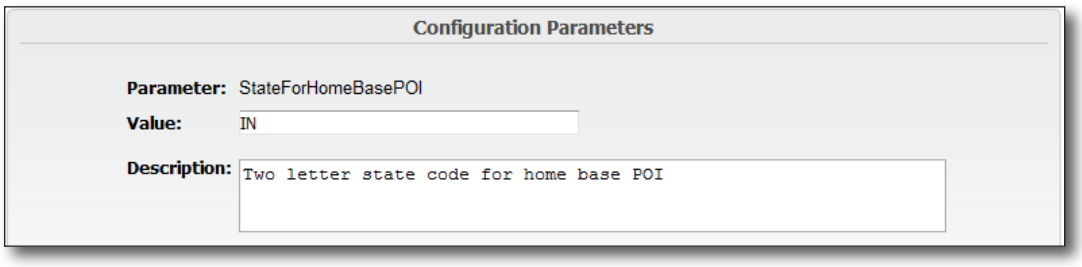
Address1ForHomeBasePOI

The street address for the location considered to be the company's home base. This location will be marked with a map pin on the Leakage Map.



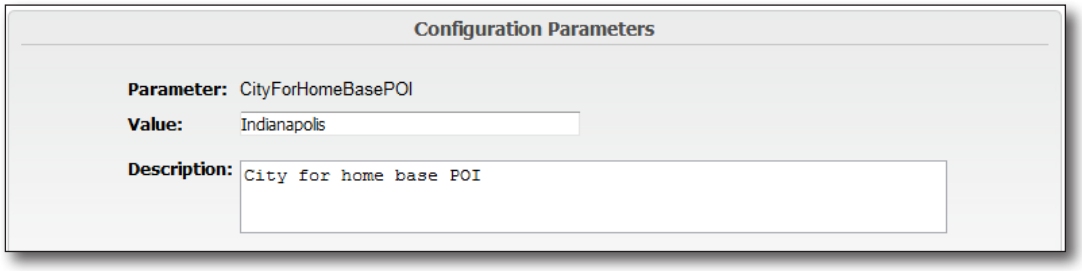
StateForHomeBasePOI

The state corresponding with the street address for home base.



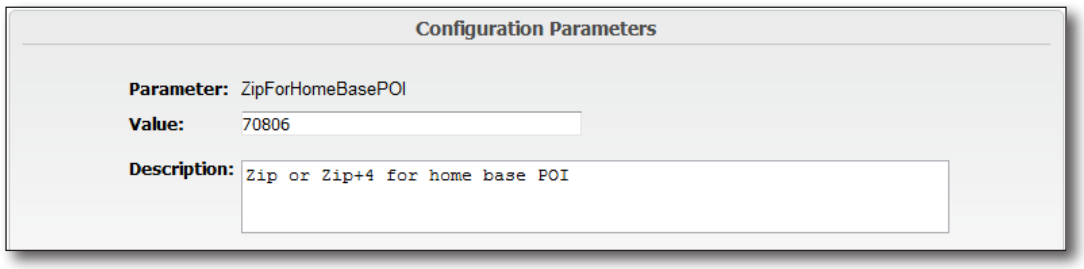
CityForHomeBasePOI

The city corresponding with the street address for home base.



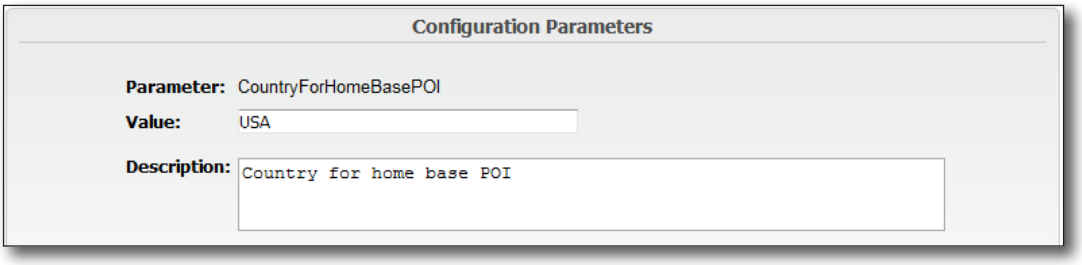
ZipForHomeBasePOI

The zip code corresponding with the street address for home base.



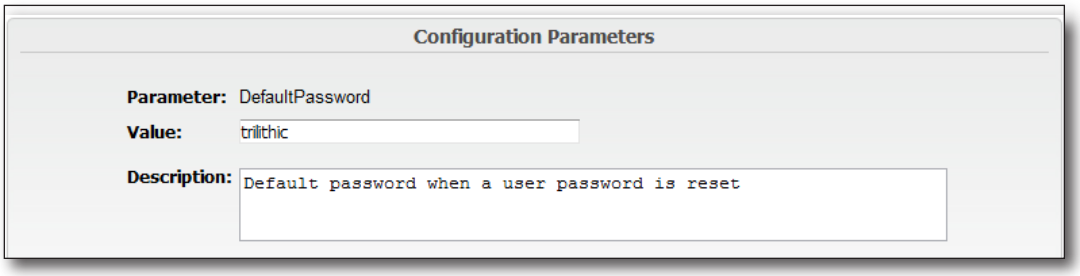
CountryForHomeBasePOI

The country corresponding with the street address for home base.



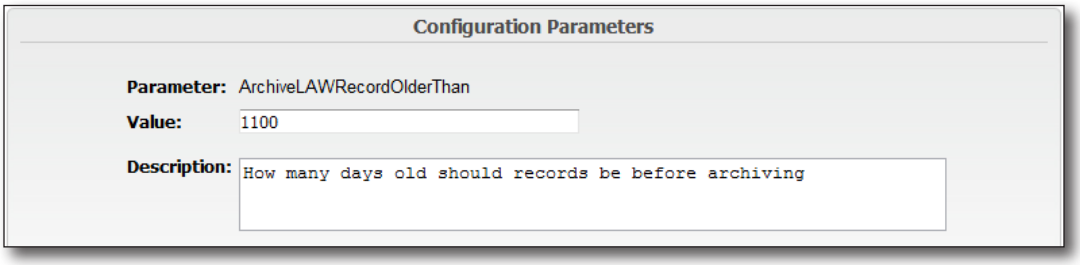
DefaultPassword

The default password when the user account password is reset.



ArchiveLAWRecordOlderThan

This value is how many days old records should be before archiving.

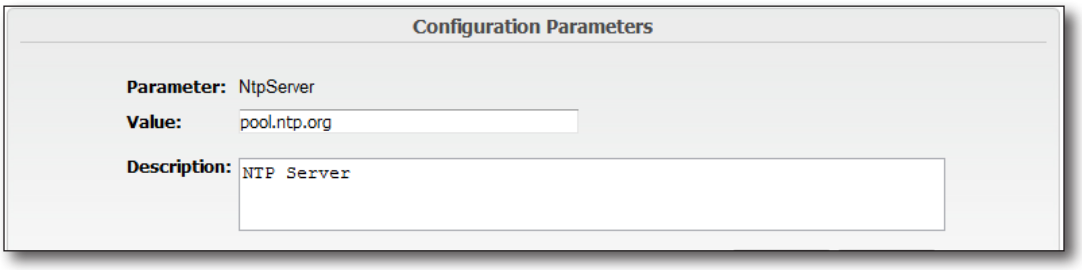


NOTE:

Archive refers to leakage data only. Rideout data is archived after 120 days and this time period cannot be changed.

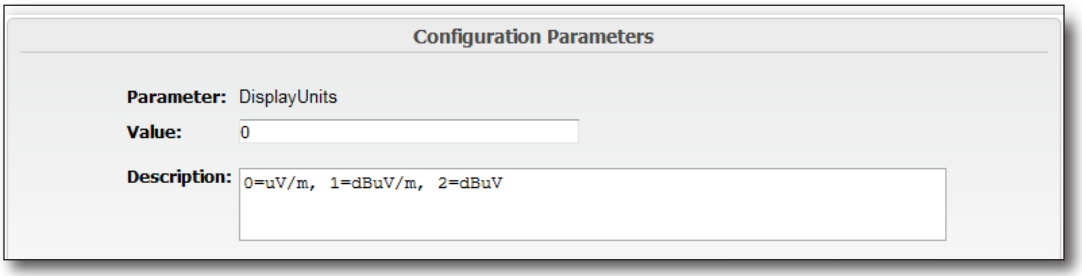
NtpServer

The time server that LAW-X references. This time data is shared between LAW-X and the individual Seeker meter units each time they connect to upload.



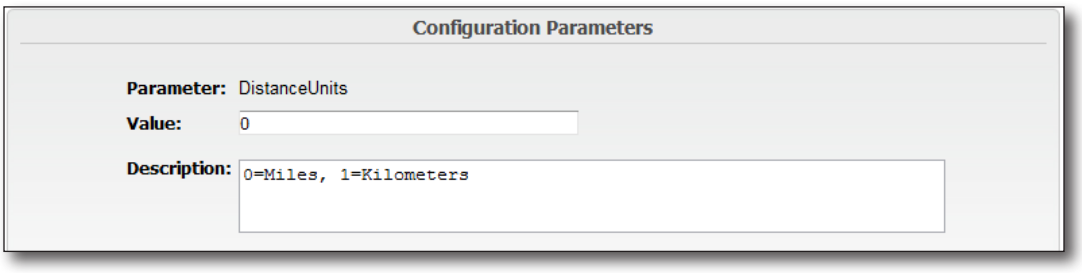
DisplayUnits

The unit(s) of measurement used to display the leak data.



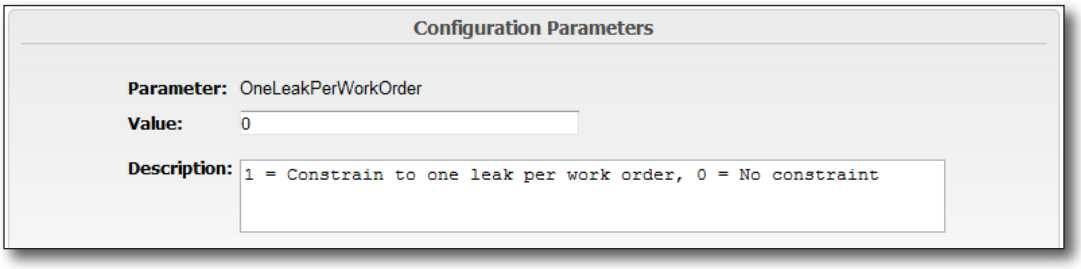
Distance Units

The distance unit(s) of measurement used to display the leak data.



OneLeakPerWorkOrder

Constrain work orders to include only one leak per work order or do not set any constraints.



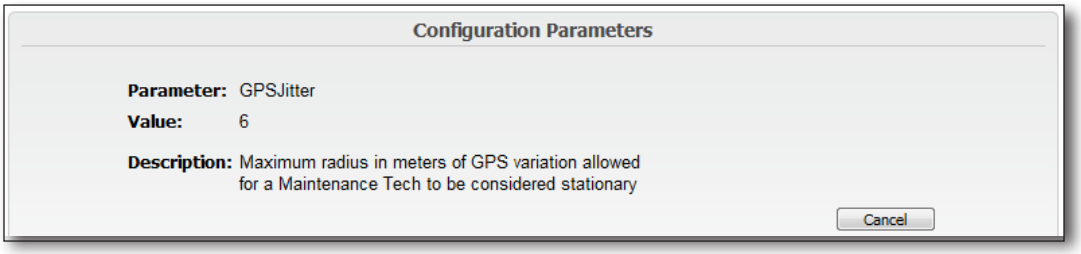
NOTE:

This value is automatically set to 1 when the LAW-X API is active.

If this value is 0, the number of leaks per work order is determined by the community definition.

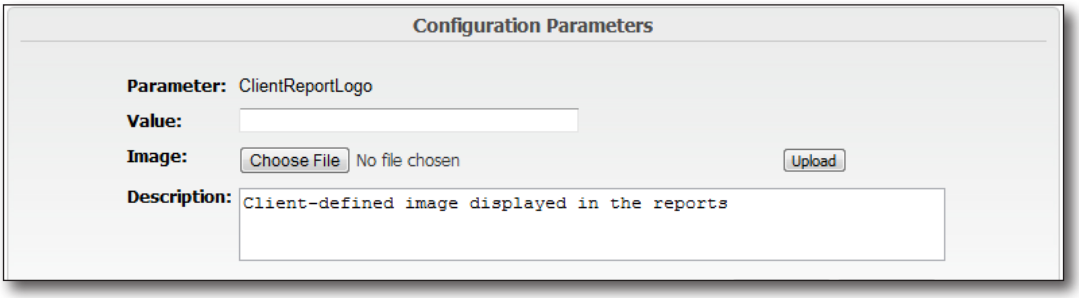
GPSJitter

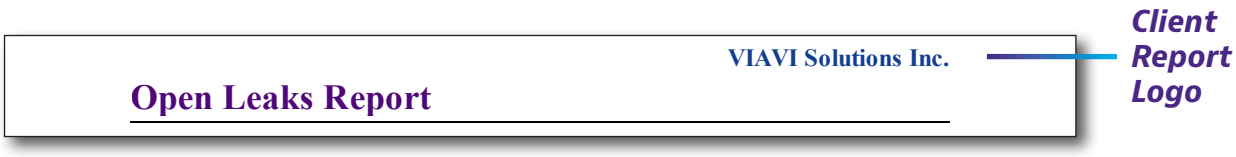
This value is the maximum radius in meters of GPS variation allowed for a Maintenance Tech to be considered stationary and cannot be changed.



ClientReportLogo

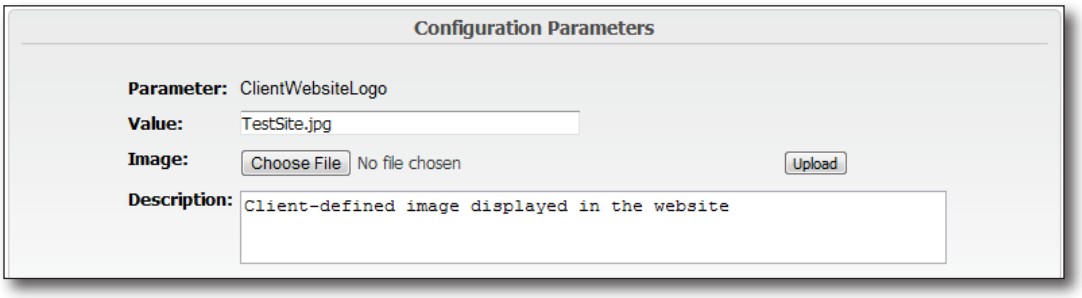
This is the client defined image that is displayed in the report header. Select the **Choose File** button to locate the image file and then select the **Upload** button to upload the image file to LAW-X for use as the report header logo. Select the **Save** button to accept the logo.





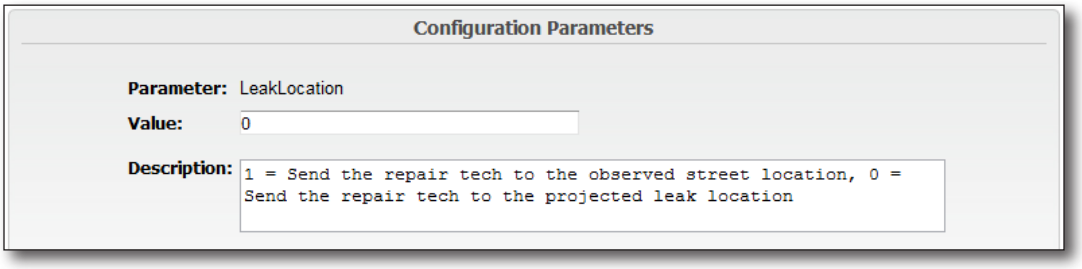
ClientWebsiteLogo

This is the client defined image that is displayed in the LAW-X website header. Select the **Choose File** button to locate the image file and then select the **Upload** button to upload the image file to LAW-X for use as the website header logo. Select the **Save** button to accept the logo.



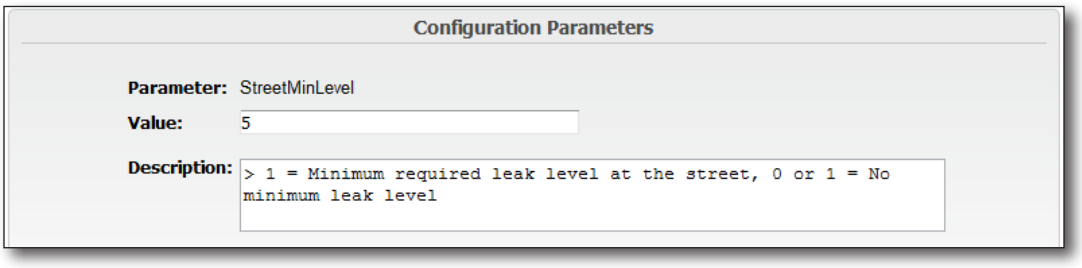
LeakLocation

This controls whether to send the repair tech to the observed street location or to the projected leak location.



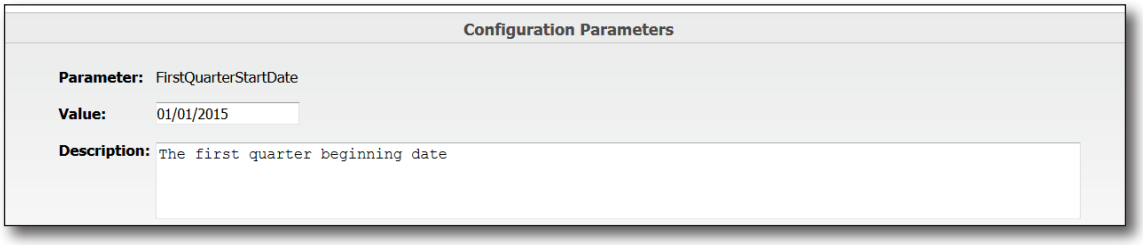
StreetMinLevel

This controls the minimum required leak level at the street.



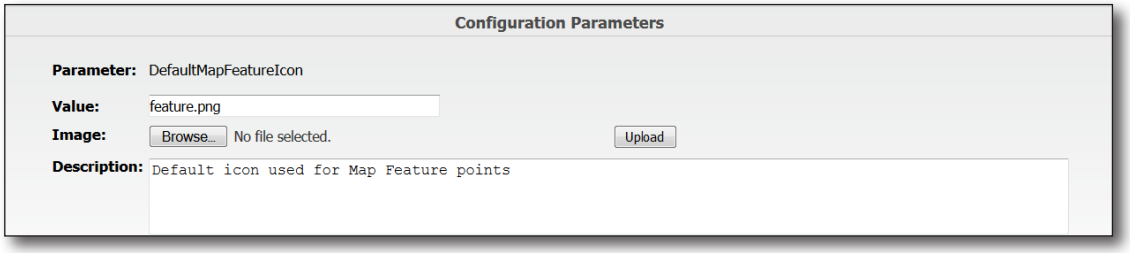
FirstQuarterStartDate

This sets the first quarter start date for unique miles and corresponding reports.



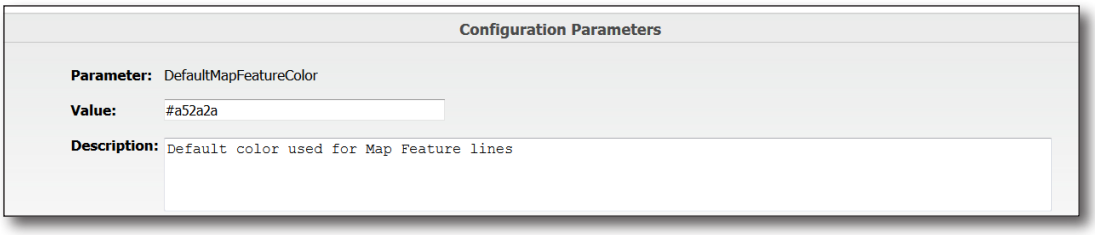
DefaultMapFeatureIcon

This is the default map feature point image that is displayed on the leakage map. Select the **Browse** button to locate the image file and then select the **Upload** button to upload the image file to LAW-X. Select the **Save** button to accept the map feature image.



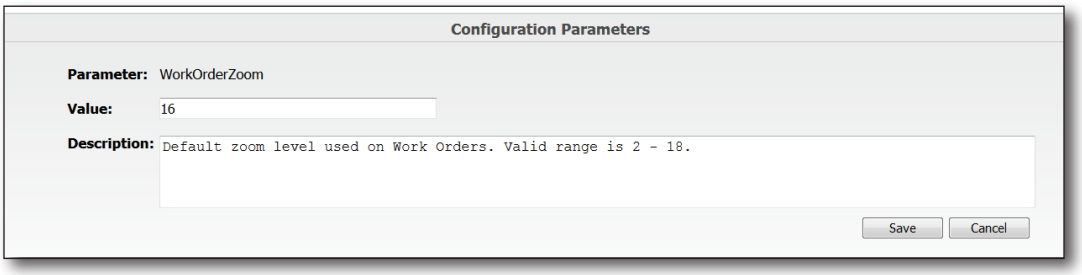
DefaultMapFeatureColor

This is the default map feature line color that is displayed on the leakage map.



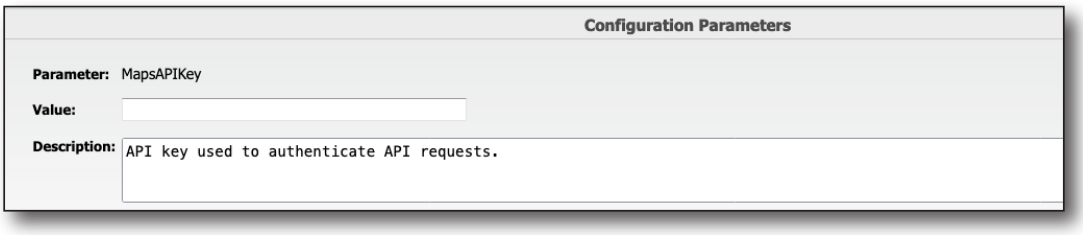
WorkOrderZoom

This is used to set the default zoom level for work orders. It can be set from 2-18.



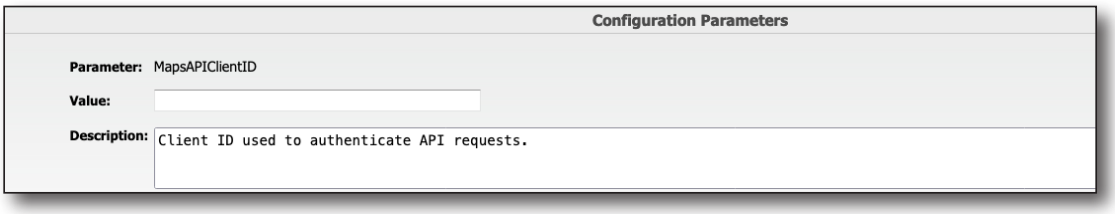
MapsAPIKey

The API key is used to authenticate API requests.



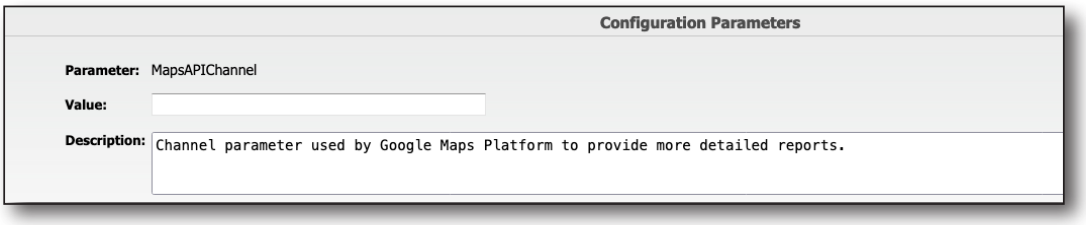
MapsAPIClientID

The Client ID is used to authenticate API requests.



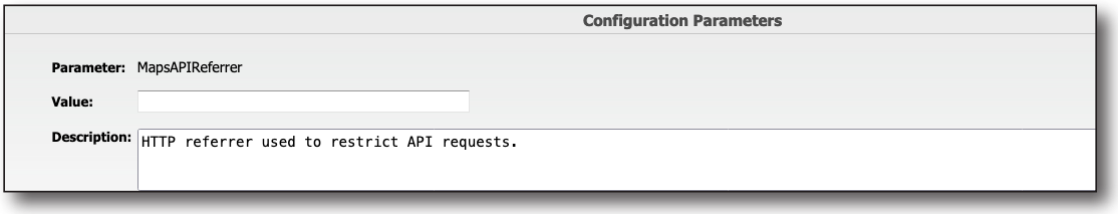
MapsAPIChannel

The channel parameter used by Google Maps Platform to provide more detailed reports.



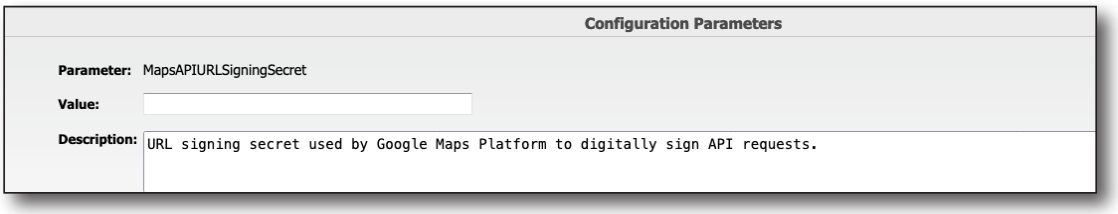
MapsAPIReferrer

The HTTP referrer used to restrict API requests.



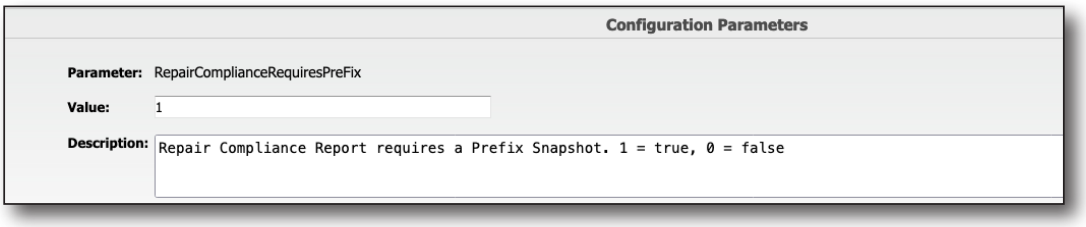
MapsAPIURLSigningSecret

The URL signing secret used by Google Maps Platform to digitally sign API requests.



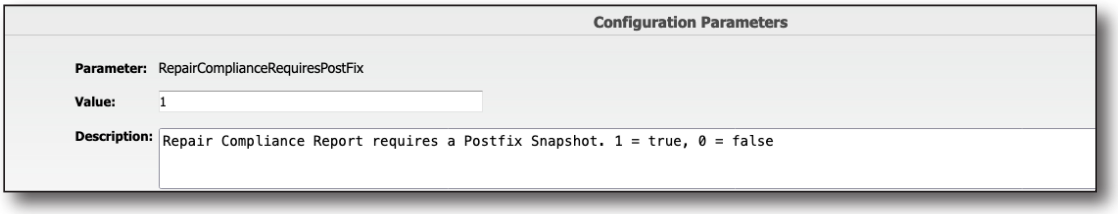
RepairComplianceRequiresPreFix

This is used when the Repair Compliance Report requires a prefix snapshot. 1 = true, 0 = false.



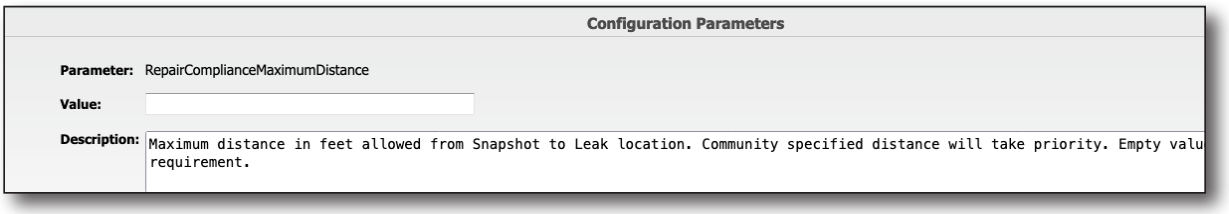
RepairComplianceRequiresPostFix

This is used when the Repair Compliance Report requires a postfix snapshot. 1 = true, 0 = false.



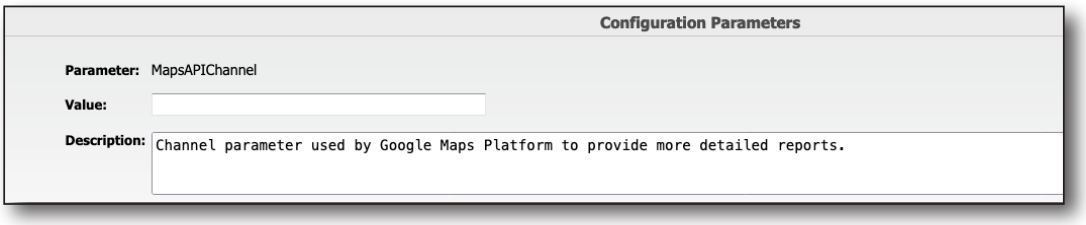
RepairComplianceMaximumDistance

The maximum distance in feet allowed from snapshot to leak location. Community specified distance will take priority. Empty value disables requirement.



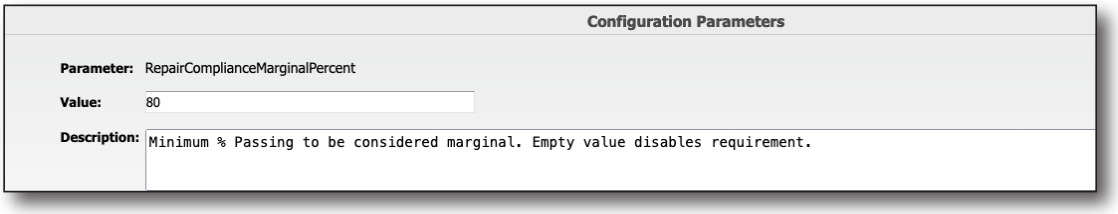
RepairComplianceMaximumTime

The maximum time in minutes allowed between snapshot and leak repair date. Community specified time will take priority. Empty value disables requirement.



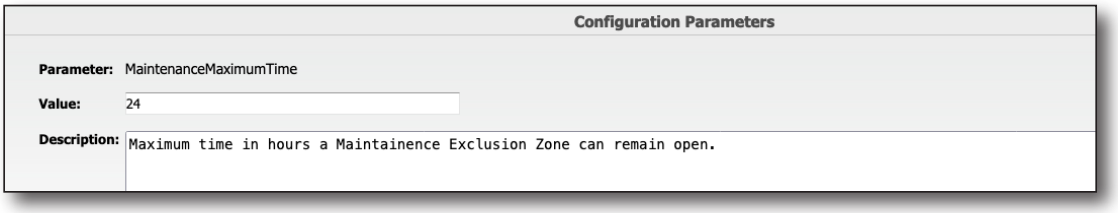
RepairComplianceMarginalPercent

The minimum % passing to be considered marginal. Empty value disables requirement.



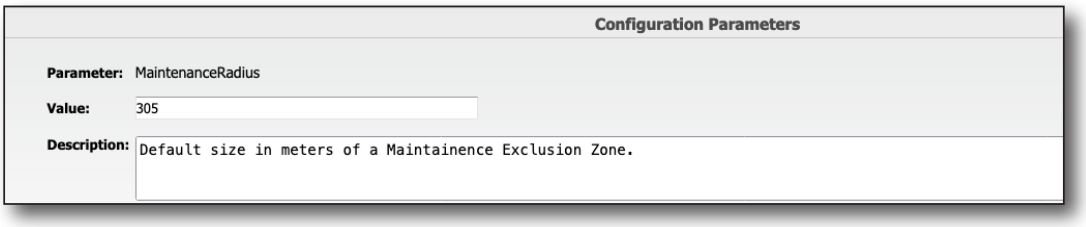
MaintenanceMaximumTime

The maximum time in hours a Maintainence Exclusion Zone can remain open.



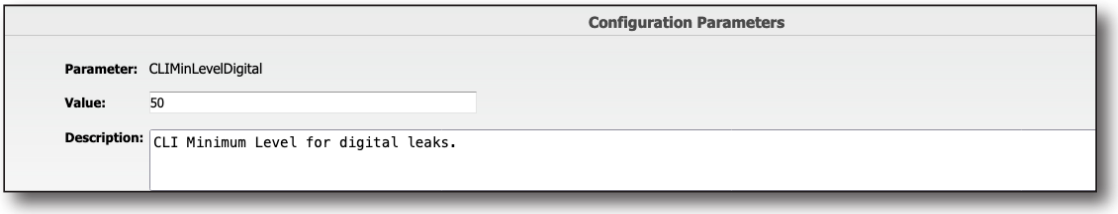
MaintenanceRadius

The default size in meters of a Maintainence Exclusion Zone.



CLIMinLevelDigital

The CLI minimum level for digital leaks.

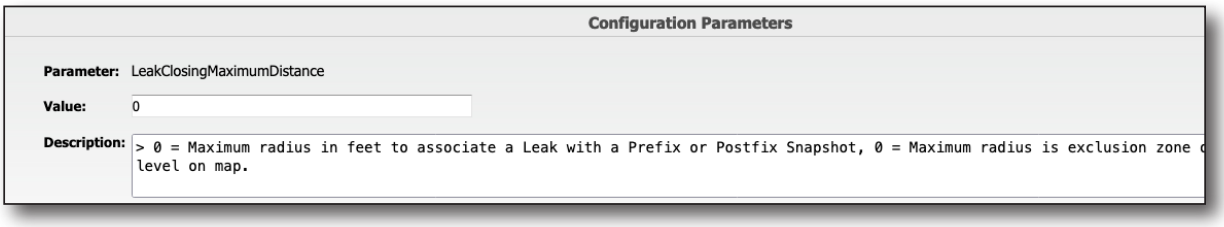


CLIMinLevelAnalog

The CLI minimum level for analog leaks.

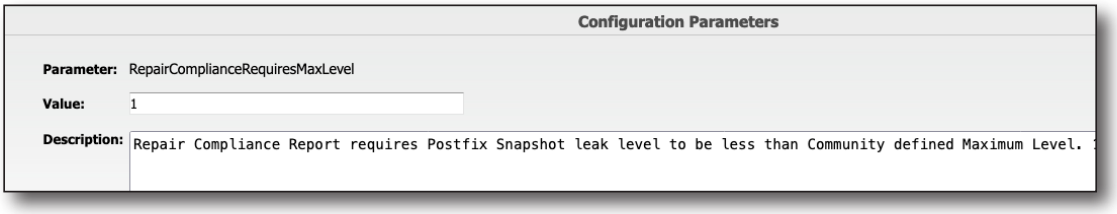
LeakClosingMaximumDistance

The > 0 = Maximum radius in feet to associate a leak with a prefix or postfix snapshot, 0 = Maximum radius is exclusion zone of maximum leak level on map.



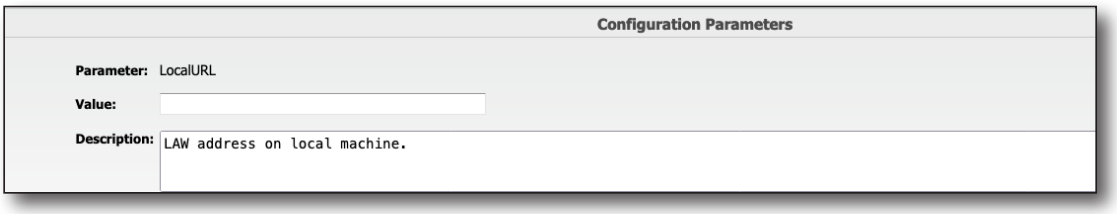
RepairComplianceRequiresMaxLevel

The Repair Compliance Report requires postfix snapshot leak level to be less than Community defined maximum level. 1 = true, 0 = false.



LocalURL

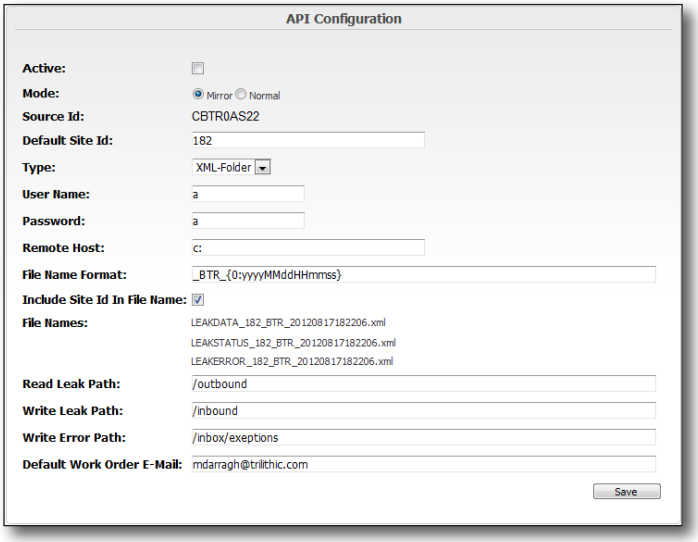
The LAW address on the local machine.



API Configuration

To enter the API Configuration function, select the **API Configuration** link from the **Administration** menu. The **API Configuration** menu is shown in the following figure.

The LAW-X API configuration allows the user to export an XML "image" of all data needed to create a work order in the user's third-party work order management system. The API Configuration menu allows settings for the exported XML file to be customized.



NOTE:

The API Configuration link is only available if the currently logged-in user has account privileges to access the API.

To configure the LAW-X API, set the following parameters and once finished making changes to the API configuration, select the **Save** button:

- **Active** – Select the **Active** checkbox if the process to transfer leakage and work order information to or from a remote host is currently running.
- **Mode** – Select the **Mirror** radio button to export all open leaks to a remotely-hosted third-party mapping tool. The mirror mode is for output only. Select the **Normal** radio button to send and receive leakage and work order information between LAW-X and a remotely-hosted third-party work order management program.
- **Source ID** – This identification number is assigned by LAW-X, and is used to identify the XML information that is sent from the LAW-X server. This is derived from the database name and cannot be changed.
- **Default Site ID** – Enter an identification code for the LAW-X server in this field. This is derived from the database name but can be changed.

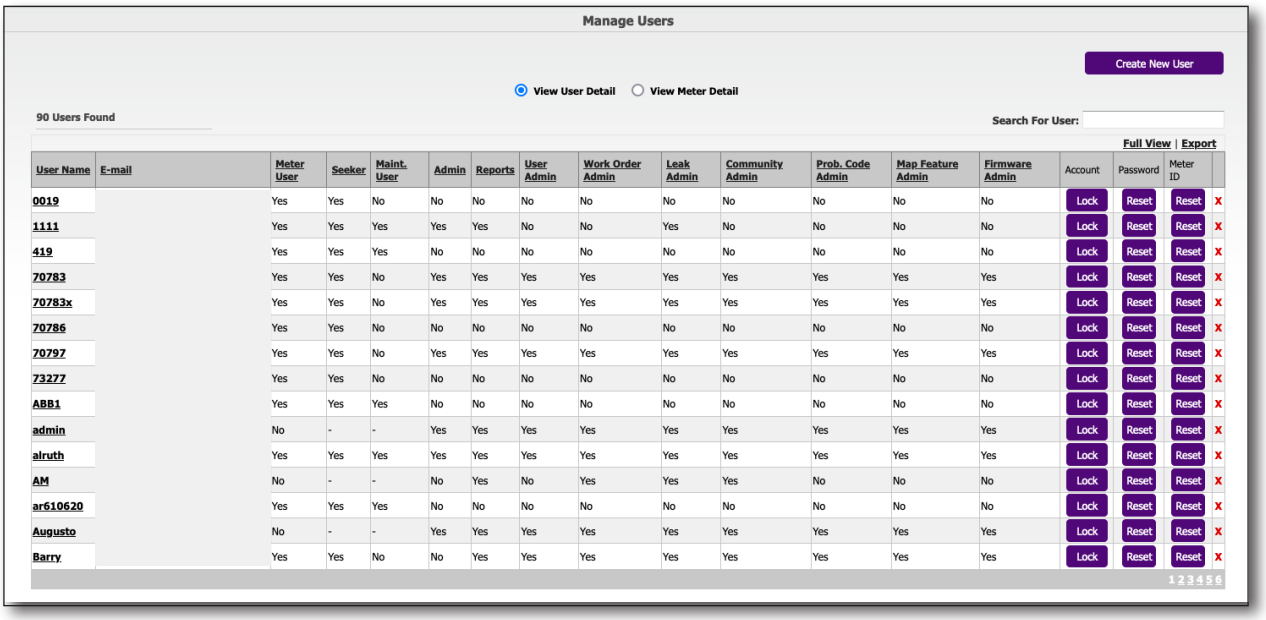
- **Type** – Use the dropdown list to select between **XML-FTP** and **XML-Folder**. The FTP option sends the XML file to a remote FTP server; the Folder option sends the XML file to a user-specified folder on the remotely-hosted server where the third-party work order management application is installed.
- **User Name** – Enter the username used to connect to the remotely-hosted server or FTP server for the XML file transfer.
- **Password** – Enter the password used to connect to the remotely-hosted server or FTP server for the XML file transfer.
- **Remote Host** – If **XML-Folder** is selected from the **Type** dropdown list, enter the IP address or host name of the remote server where the third-party work order management application is installed. If **XML-FTP** is selected from the **Type** dropdown list, enter the IP address or host name of the FTP server. With the **XML-FTP** option selected, file transfers will occur over a TCP/IP network using FTP protocol. With the **XML-Folder** option selected, file transfers will occur using a shared folder.
- **Remote Port** – If **XML-Ftp** is selected from the **Type** dropdown list, enter the port number of the remote server where the third-party work order management application is installed.
- **File Name Format** – The file naming format of the transferred files is displayed in this field. The default file name format is as follows: _DBname or site id_ {0:yyyyMMddHHmmss}.
- **Include Site ID in File Name** – Selecting this checkbox will include the Site ID in the XML file name. If a Site ID is specified in the community definition menu, the default site ID is substituted by the Community Site ID in the file name.
- **File Names** – This area shows the names of the XML files as they will appear based on the entries for the **File Name Format** and **Include Site ID in File Name** settings. In this example we included the Site ID plus a designator BTR for a server location.
- **Read Leak Path** – This is the location on a shared resource where files will be transferred to *before* being transferred *to* LAW-X.
- **Write Leak Path** – This is the location on a shared resource where files will be transferred to *after* being transferred *from* LAW-X.
- **Write Error Path** – This is the location on a shared resource where files will be transferred if errors prevent the files from being transferred *to* LAW-X.
- **Default Work Order E-Mail** – This is the location to set the default e-mail address where work orders will be sent. In the event that the billing system assigns a work order to a technician that is not in LAW-X, a user account will automatically be created and use this email address.

Manage Users

The following functions can be performed from the **Manage Users** menu:

- Create new users
- Search for users
- View user permissions
- Edit users
- Delete users
- Reset passwords
- Reset meter ID
- View meter details

To enter the Manage Users menu, select the **Manage Users** link from the **Administration** menu.

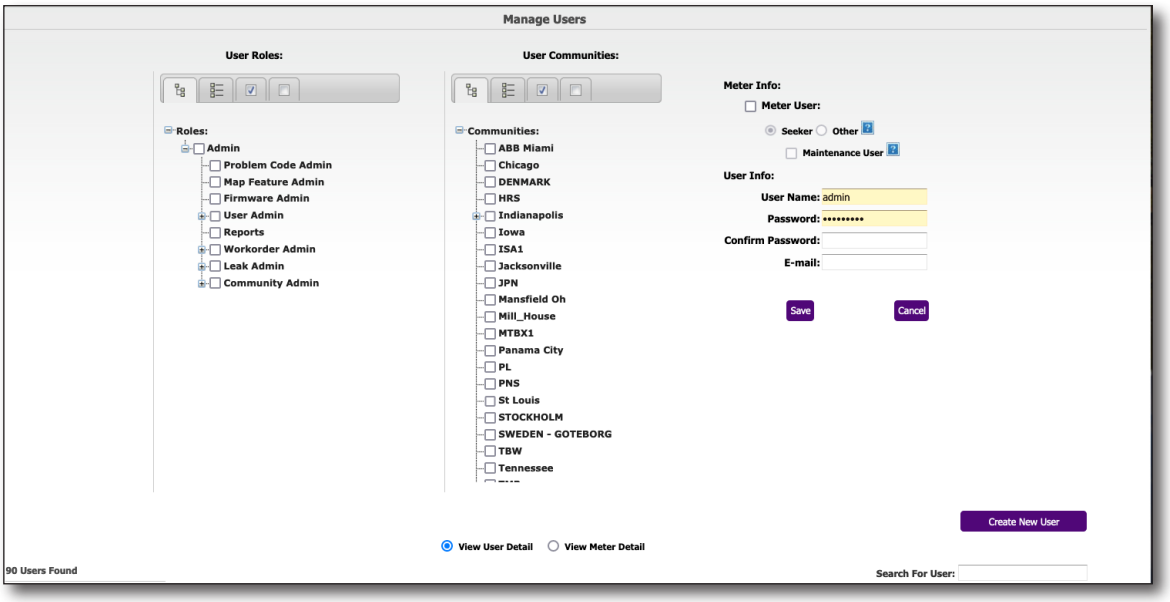


Manage Users menu

Create a New User

To create a new user account perform the following steps:

1. Select the **Create New User** button. The **Manage Users** menu will be displayed.

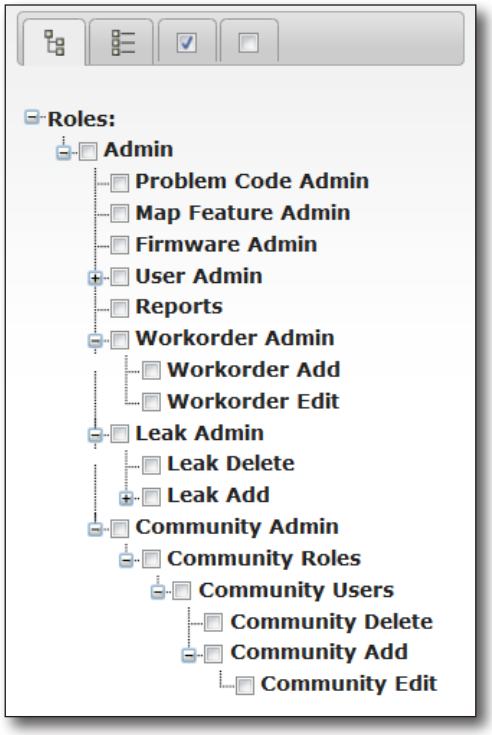


Create New User menu

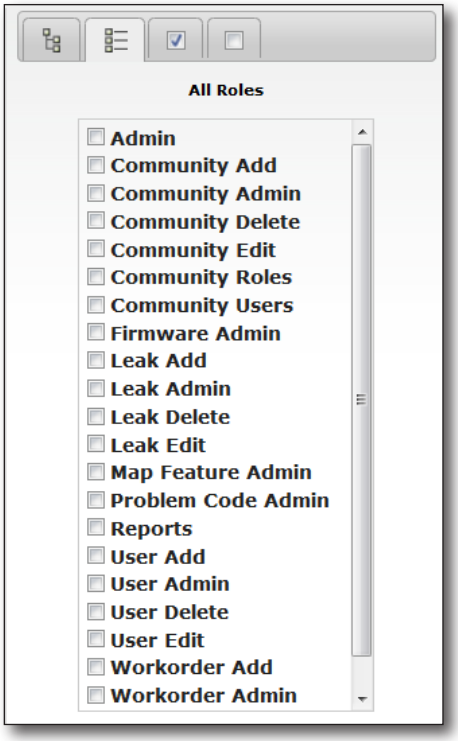
2. Select the roles the new user will have as follows:

   - **Roles Tab** – This tab displays all of the configured roles. Select roles using the following methods:

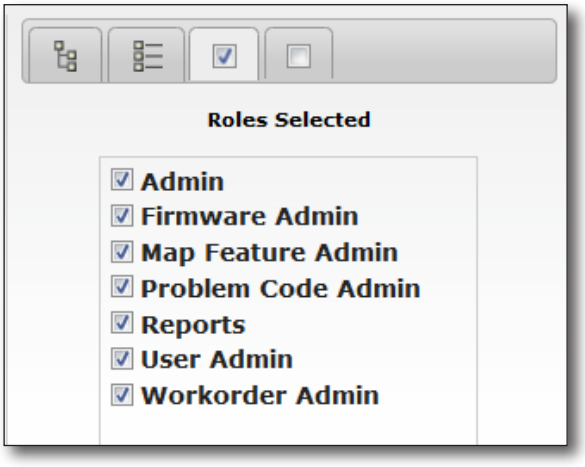
     - Use the +/- symbol to the left of parent roles to show/hide child roles.
     - To choose a single role, select the checkbox next to each role name.
     - To choose a parent role and all of its children, select the name of the role itself.



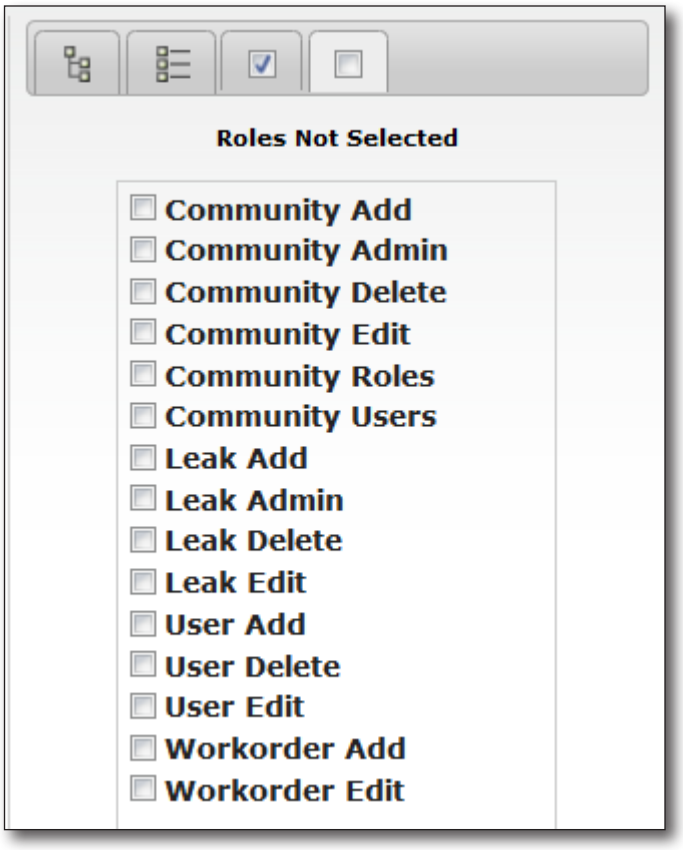
   - **All Roles Tab** – This tab is used to display all of the available roles in alphanumeric order and easily remove any unwanted roles. To deselect roles, uncheck the checkbox next to the role name.



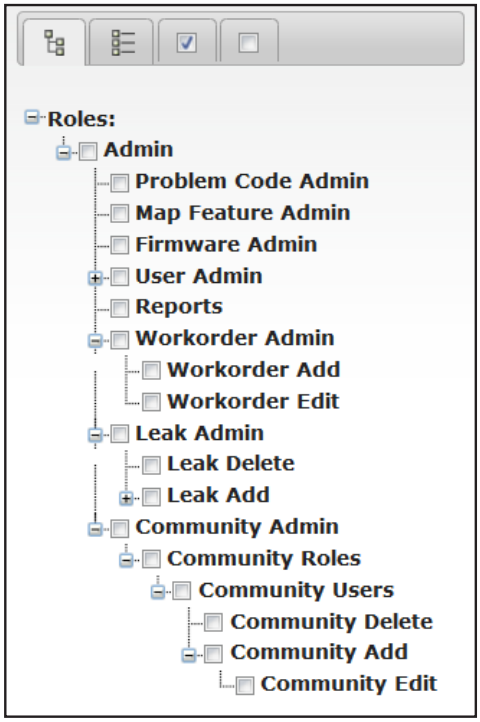
- **Roles Selected Tab** – This tab is used to display all of the selected roles in alphanumeric order and easily remove any unwanted roles. To deselect roles, uncheck the checkbox next to the role name.



- **Roles Not Selected Tab** – This tab is used to display all of the unselected roles in alphanumeric order and easily add additional roles. To add additional roles, select the checkbox next to the role name.



3. Select none, any, or all of the following user roles:



   - **Admin** – This allows a user to perform all actions in LAW-X including administrative functions.
     - **Problem Code Admin** – This allows a user to configure problem codes
     - **Map Feature Admin** – This allows a user to configure map features
     - **Firmware Admin** – This allows a user to configure device firmware settings
     - **User Admin** – This allows a user to configure user accounts
       - **User Delete** – This allows a user to delete user accounts
       - **User Add** – This allows a user to add user accounts
       - **User Edit** – This allows a user to edit user accounts
   - **Reports** – This allows a user to access reports without the need for administrative privileges
   - **Workorder Admin** – This allows a user to configure work orders
     - **Workorder Add** – This allows a user to add work orders
     - **Workorder Edit** – This allows a user to edit work orders
   - **Leak Admin** – This allows a user to configure leaks
     - **Leak Delete** – This allows a user to delete leaks
     - **Leak Add** – This allows a user to perform manual leak entry
     - **Leak Edit** – This allows a user to edit leaks

- **Community Admin** – This allows an administrative user to perform all community administrative functions while overriding individual communities' ownership safeguards
    - **Community Roles** – This allows a user to configure community roles
        - **Community Users** – This allows a user to configure community users
            - **Community Delete** – This allows a user to delete communities assigned to the user
            - **Community Add** – This allows a user to add communities assigned to the user
            - **Community Edit** – This allows a user to edit communities assigned to the user
- **API Admin** – This allows a user to configure LAW-X to publish API (application programming interface) files in XML format

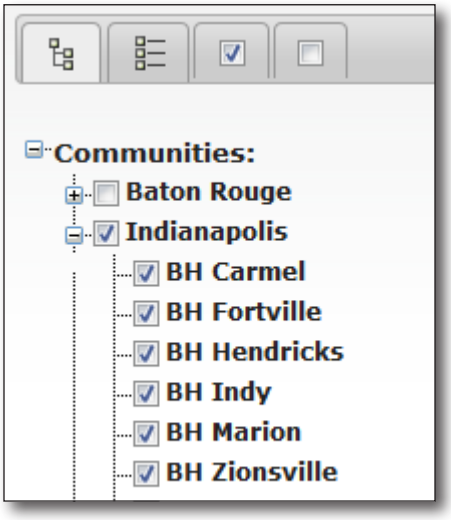
NOTE:

When none of the permissions listed above are selected, the user will only be able to access the Leakage Map & Data menu, Work Order Search menu, and the Leak Search, Rideout Map, and Tech Tools menus.

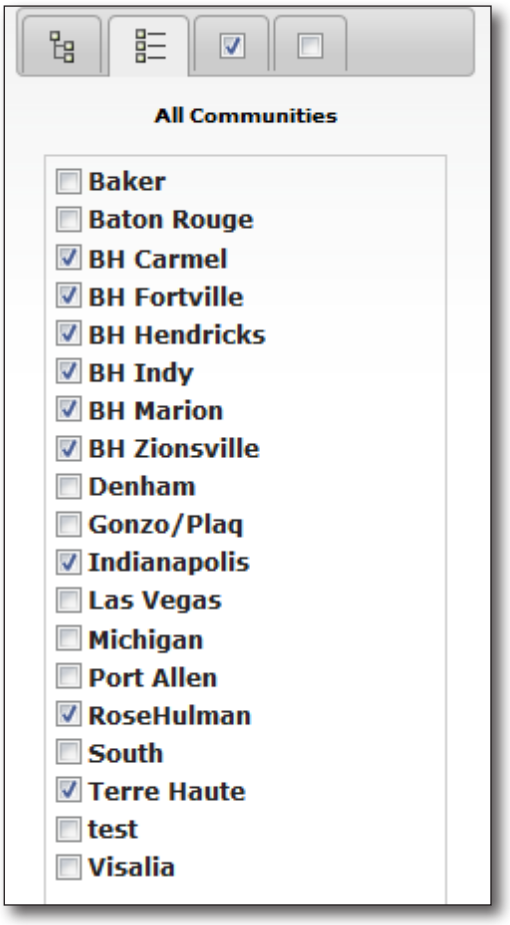
NOTE:

The API Admin checkbox is only available if the third-party API interface is installed.

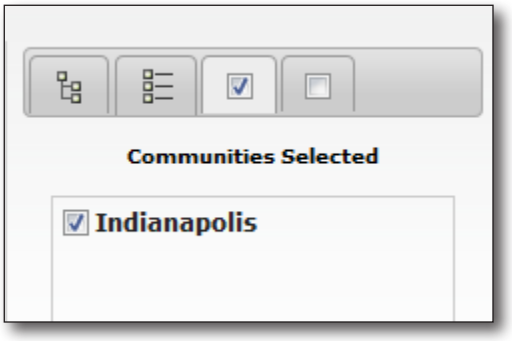
4. Select the communities that the new user will have access to as follows:
    - **Communities Tab** – This tab displays all of the configured communities. Select communities using the following methods:
        - Use the +/- symbol to the left of parent communities to show/hide child communities.
        - To choose a single community, select the checkbox next to each community name.
        - To choose a parent community and all of its children, select the name of the community itself.



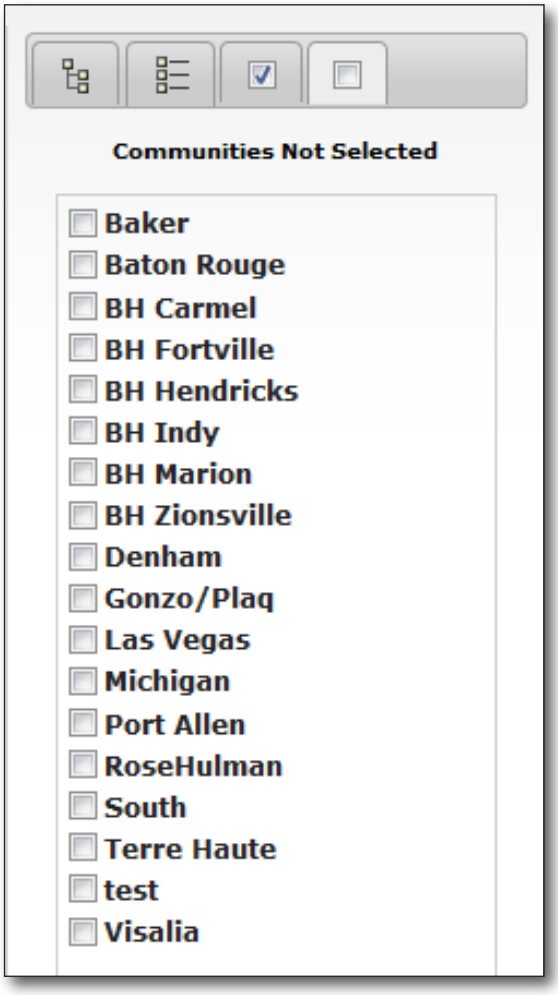
- **All Communities Tab** – This tab is used to display all of the available communities in alphanumeric order and easily remove any unwanted communities. To deselect communities, uncheck the checkbox next to the community name.



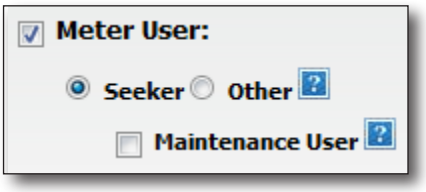
- **Communities Selected Tab** – This tab is used to display all of the selected communities in alphanumeric order and easily remove any unwanted communities. To deselect communities, uncheck the checkbox next to the community name.



- **Communities Not Selected Tab** – This tab is used to display all of the unselected communities in alphanumeric order and easily add additional communities. To add additional communities, select the checkbox next to the community name.



5. If the new user will be a leakage meter user, select the **Meter User** checkbox and then select from either of the following types of meter users:



   - **Seeker** – Select this option if the user has a Seeker leakage meter.
   - **Other** – Select this option if the user has a leakage meter other than the Seeker.

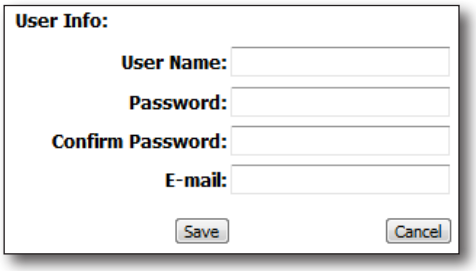
> ***NOTE:***
>
> ***Only meter users will be included in dropdown lists within LAW-X and require a seat in LAW-X.***

6. If the user is a technician who frequently makes stops to make maintenance repairs, select the **Maintenance User** checkbox.

> ***NOTE:***
>
> ***This feature is used to filter out self-created leaks while the vehicle is stationary.***

7. Enter the following user information:

   - **User Name** – Enter a user name that the end user will use to access LAW-X online
   - **Password** – Enter a default user password
   - **Confirm Password** – Re-enter the default user password
   - **E-mail** – Enter the user's e-mail address



NOTE:

The User Name and Password fields are case-sensitive.

NOTE:

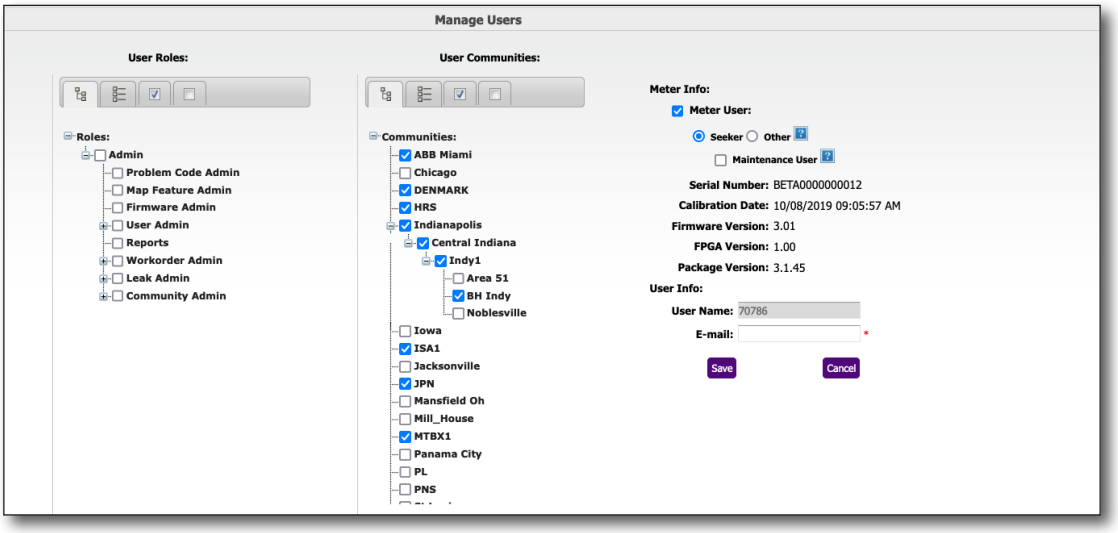
If the account is for a technician's meter upload, ensure that the User Name matches the Tech ID that is configured using the Seeker Setup software. For more information, see the Seeker Setup Operation Manual.

8. After making changes, select the **Save** button to add the user to the system or select the **Cancel** button to discard any changes.

Edit a User Account

To edit a user account, perform the following steps:

1. From the **Administrators** tab, select **Manage Users**.
2. Find the user name of the profile to edit and select it. The **Edit User** menu will appear.



Edit User menu

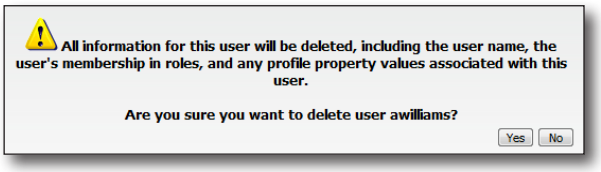
3. The following items can be edited for an existing user:
    - User roles
    - Community access privileges – Provide visibility to community data and do not prevent techs from uploading data to other communities.
    - Meter user settings
    - User e-mail address
4. After making changes, select the **Save** button to apply the changes to the user's account or select the **Cancel** button to discard any changes.

Delete a User

If a user profile is no longer needed, it can be removed from the system.

To delete a user profile, find the user name to be removed from the system and select the **Delete User** link (red X icon) on the same line as the user name to be deleted.

A confirmation message will appear. Select the **Yes** button to remove the user from the system or select the **No** button to keep the user in the system.



NOTE:

Before deleting a user profile, check to see if that user is a community owner. If so, a new owner must be assigned to the community, prior to deletion of the user profile.

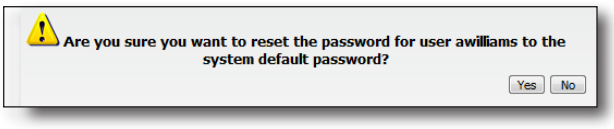
NOTE:

Deleting a user profile will remove the User ID from all dropdown lists within LAW-X.

Reset a User's Password

To reset a user's password, perform the following steps:

1. Find the user name of the profile for which the password will be reset and click the **Reset Password** button, located to the right of the user name.
2. A confirmation message will appear. Select the **Yes** button to reset the password (see *"Changing Your Password" on page 25* for initial user password setup) which is the system default password, or select the **No** button to leave the password at its current value.



3. Inform the user that the password has been reset to the default password. The user will then need to login using the system default password. The system will then prompt the user to change the password.

Reset a User's Meter ID

To reset a user's meter identification, perform the following steps:

1. Find the user name of the profile for which the meter ID will be reset and click the **Reset Meter ID** button, located to the right of the user name.
2. A confirmation message will appear. Select the **Yes** button to reset the meter ID, or select the **No** button to leave the Meter ID at its current value.

NOTE:

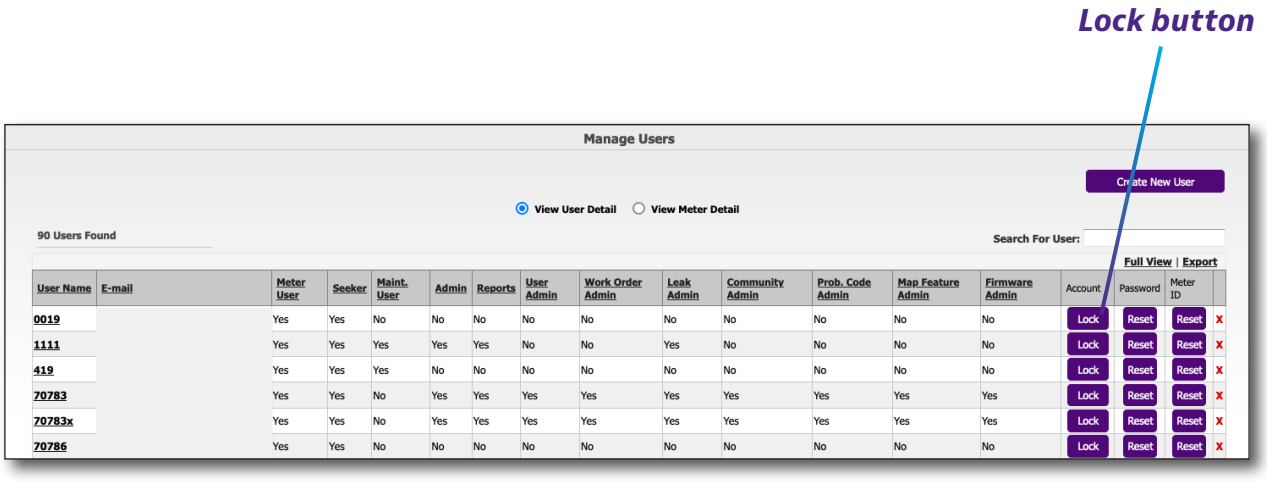
The meter ID will be automatically reset when the Seeker MCA uploads data via Wi-Fi to the LAW-X database.

Reset Meter ID / retry upload is typically used to clear an upload error "Device Not Recognized."

Locking a User's account

To lock a user's account, perform the following steps:

1. Find the user name of the account you want to lock and click the **Lock** button, located to the right of the user name.
2. To unlock the account, simply click the **Unlock** button.



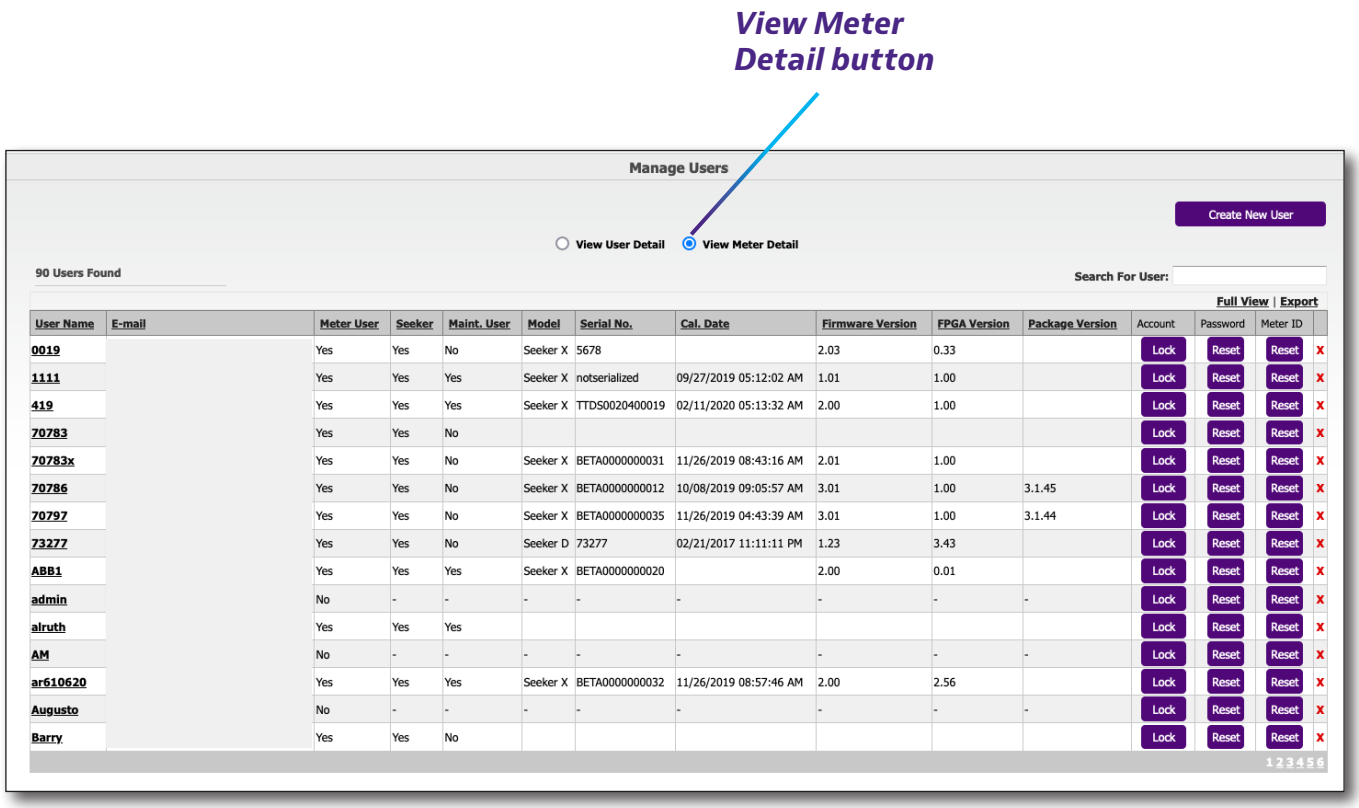
Locking a user account

View Meter Detail

The following information is displayed on the **View Meter Detail** menu:

- User name
- User e-mail
- If the user is a meter user
- If the meter is from the Seeker family
- If the user is a maintenance user
- Model number
- Serial number
- Calibration date
- Firmware version
- Package version
- FPGA version

Select the **View Meter Detail** radio button to show detailed meter information for users.



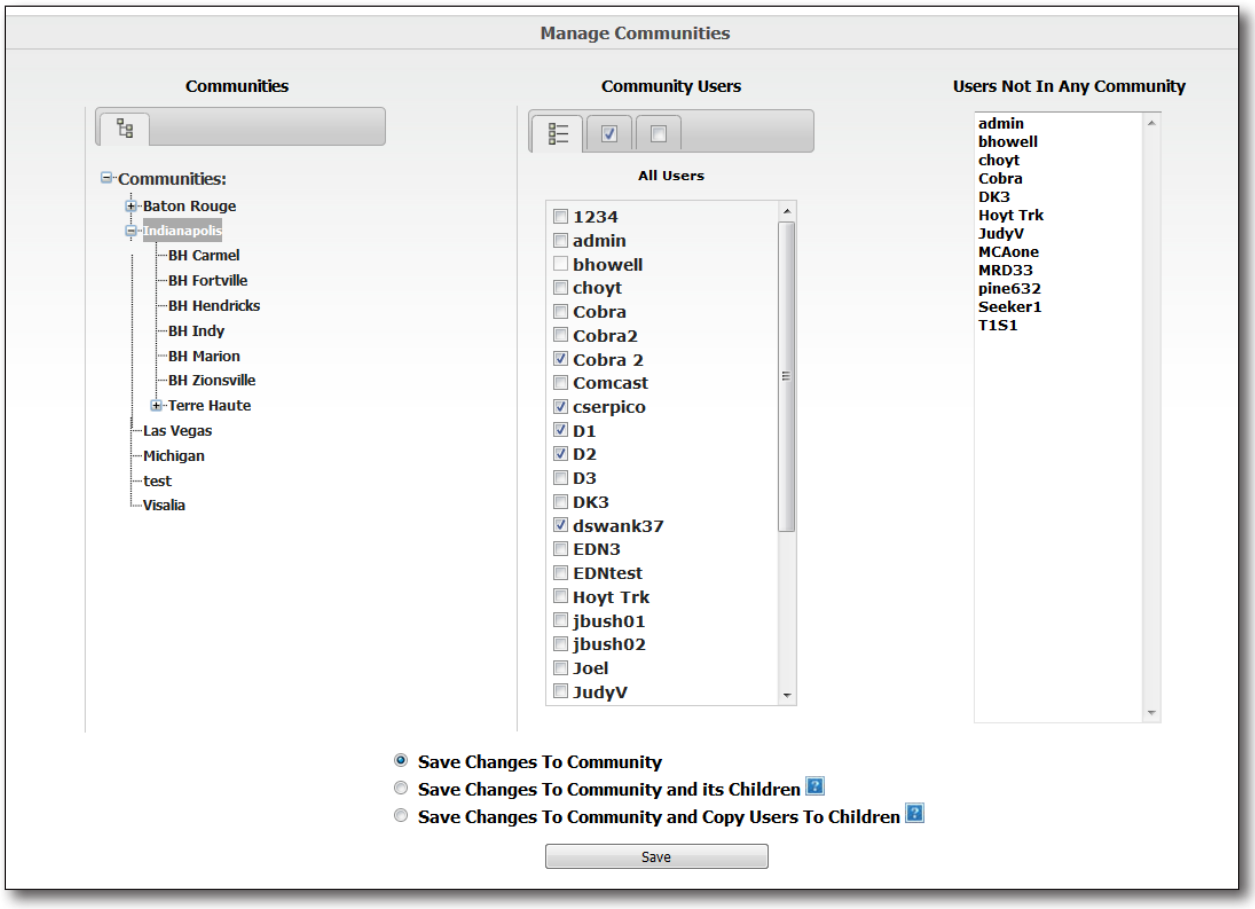
View Meter Detail menu

Manage Communities

The following functions can be performed from the **Manage Communities** menu:

- Add users to communities
- Remove users from communities

To enter the Community Management menu, select the **Manage Communities** link from the **Administration** menu.



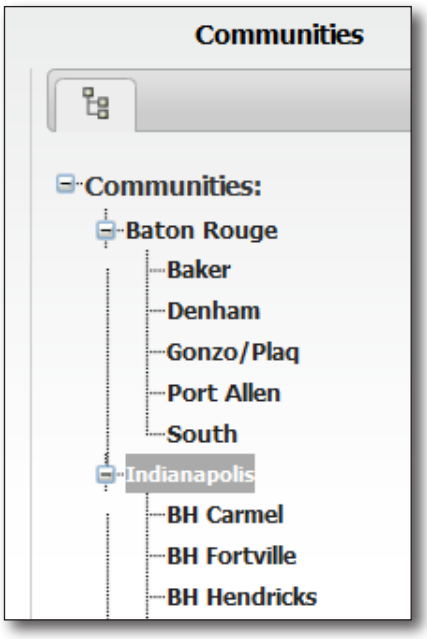
Manage Communities menu

Adding Users to Communities

To add multiple users to a community, perform the following steps:

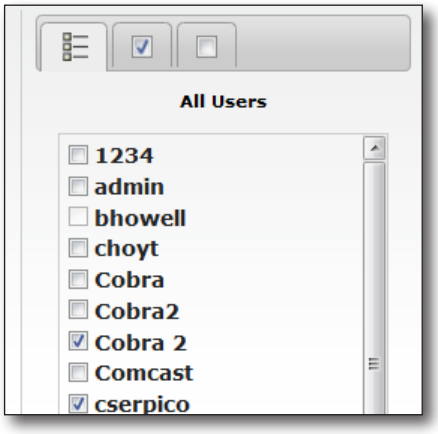
1. Select the communities the users will have access to as follows:

   - **Communities Tab** – This tab displays all of the configured communities. Select communities using the following methods:
     - Use the +/- symbol to the left of parent communities to show/hide child communities.
     - To choose a parent community, select the name of the parent community.
     - To choose a child community, select the name of the child community.



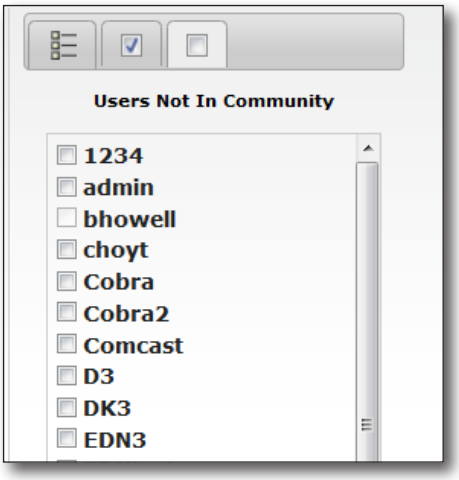
2. Select the users to add to the community as follows:

   - **All Users Tab** – This tab is used to display all of the available users in alphanumeric order and easily remove any unwanted users.To deselect users, uncheck the checkbox next to the user name.



- **Users in Community Tab** – This tab is used to display all of the users in a community in alphanumeric order and easily remove any unwanted users. To deselect users, uncheck the checkbox next to the user name.

- **Users Not in Community Tab** – This tab is used to display all of the users that aren't in the community in alphanumeric order and easily add additional users. To add additional users, select the checkbox next to the user name.



NOTE:

For a quick look at the users not in any community, use the Users Not in Any Community section on the right of the Manage Communities menu.

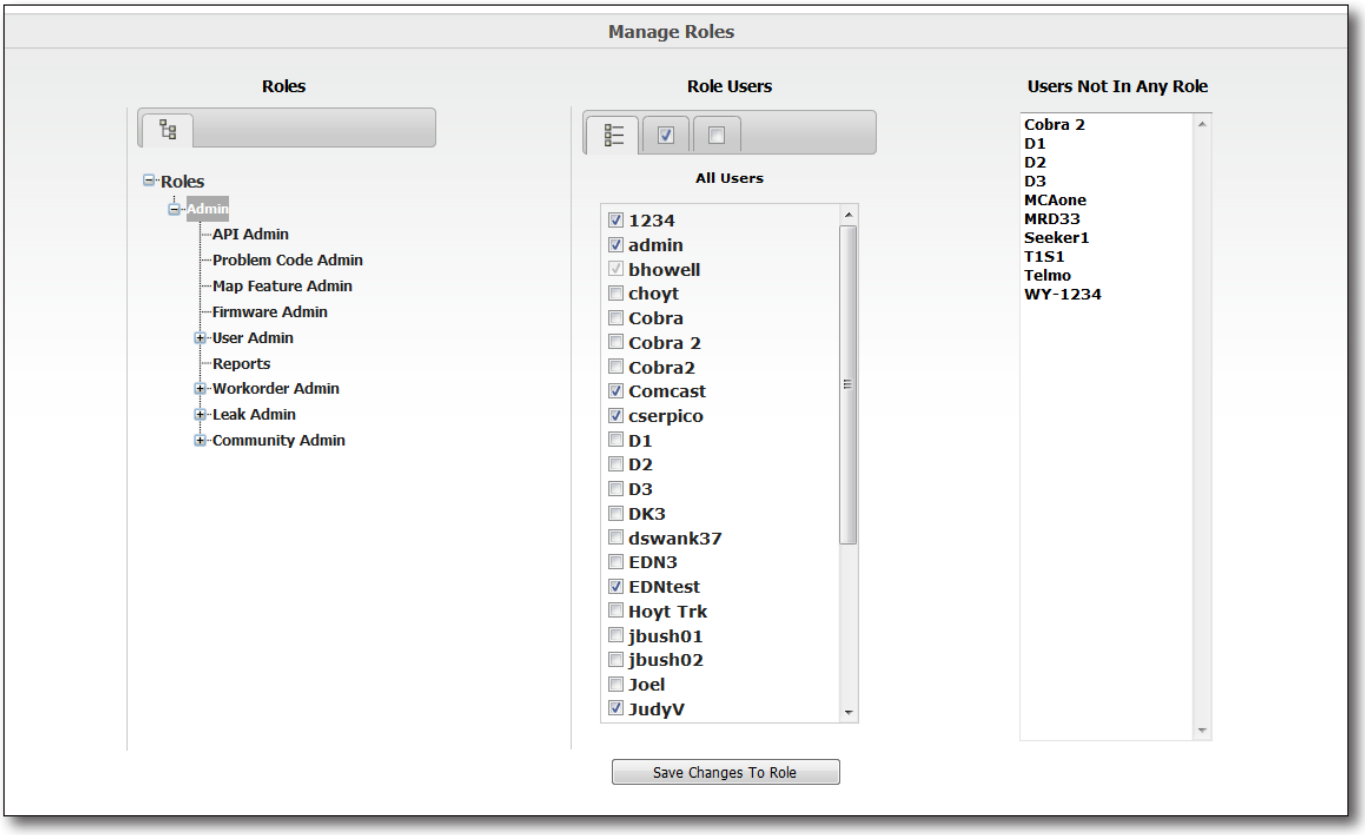
3. After making changes, select the method to save the changes as follows:
    - **Save Changes to Community** – Save user changes you have made to the community
    - **Save Changes to Community and its Children** – Save user changes to the community and apply the changes to child communities
    - **Save Changes to Community and Copy Users to Children** – Save user changes to the community. Also, copy and replace all child community users with the current community users.
4. When finished, select the **Save** button to apply the changes and save.

Manage Roles

The following functions can be performed from the **Manage Roles** menu:

- Add users to roles
- Remove users from roles

To enter the Role Management menu, select the **Manage Roles** link from the **Administration** menu.



Manage Roles menu

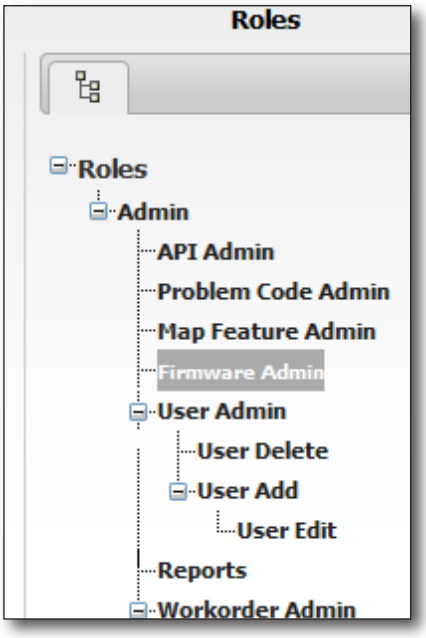
Adding Users to Roles

To add multiple users to a role, perform the following steps:

1. Select the roles the users will have access to as follows:

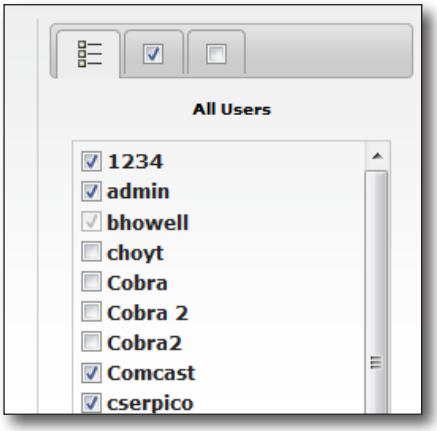
    - **RolesTab** – This tab displays all of the configured roles. Select roles using the following methods:

        - Use the +/- symbol to the left of parent communities to show/hide child roles.
        - To choose a parent role, select the name of the parent role.
        - To choose a child role, select the name of the child role.

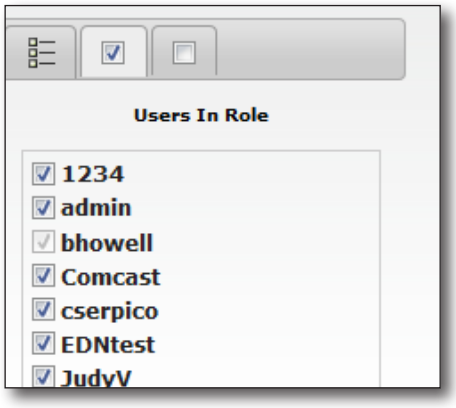


2. Select the users to add to the role as follows:

    - **All User Tab** – This tab is used to display all of the available users in alphanumeric order and easily remove any unwanted users.To deselect users, uncheck the checkbox next to the user name.

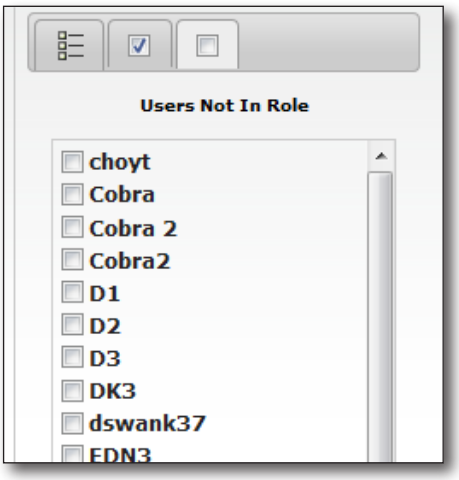


- **Users in Role Tab** – This tab is used to display all of the users in a role in alphanumeric order and easily remove any unwanted users. To deselect users, uncheck the checkbox next to the user name.



- **Users Not in a Role Tab** – This tab is used to display all of the users that aren't in the role in alphanumeric order and easily add additional users. To add additional users, select the checkbox next to the user name.

3. After making changes, select the **Save Changes to Role** button to apply the changes and save.



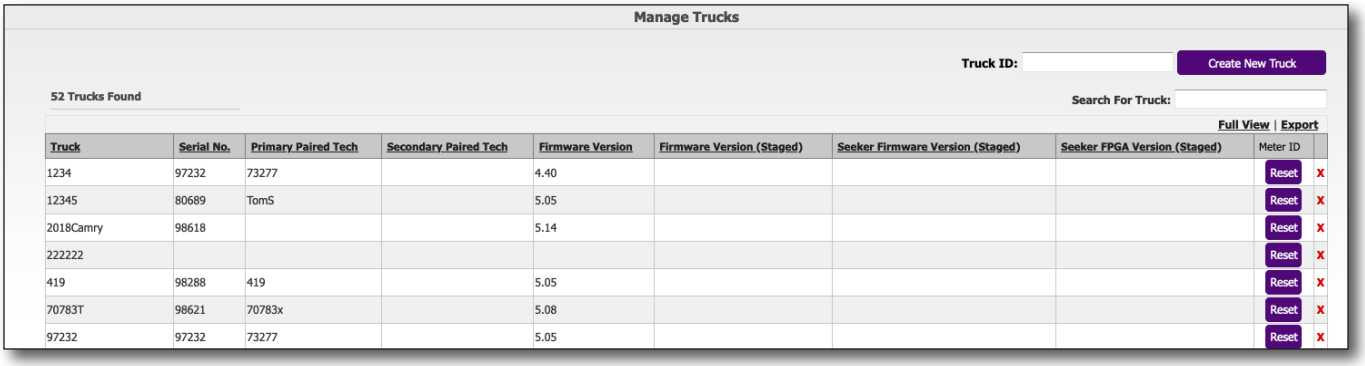
For a quick look at the users not in any role, use the Users Not in Any Role section on the right of the Manage Roles menu.

Manage Trucks

The following functions can be performed from the **Manage Trucks** menu:

- Create new trucks
- Search for trucks
- View meter serial number
- View primary and secondary paired technician
- View firmware, staged firmware, staged Seeker firmware, and staged Seeker FPGA versions
- Delete trucks
- Reset meter ID

To enter the Truck Management menu, select the **Manage Trucks** link from the **Administration** menu.



Manage Trucks menu

NOTE:

The Reset Meter ID command is used when programming a second Seeker or Seeker MCA with a like Tech ID with a Seeker or Seeker MCA that has been taken out of service..

NOTE:

All fields populate automatically when uploading via Wi-Fi. There is no need to manually enter any information in these tables if all uploads are via Wi-Fi.

NOTE:

This menu is used to enter Truck IDs to be used in reports and searches done by Truck ID. If Truck ID searches are unnecessary then there is no need to manually setup this menu.

NOTE:

Paired Tech and App Version cannot be manually entered and only gets populated by the result of a Wi-Fi upload.

Create a New Truck

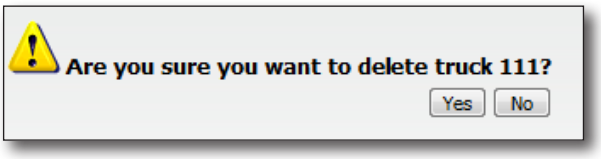
To create a new truck account, enter a name for the new truck in the **Truck ID** text field. Then, select the **Create New Truck** button and the **Manage Trucks** menu will update to show the new truck.

Delete an Existing Truck

If a truck account is no longer needed, it can be removed from the system.

To delete a truck account, find the truck name to be removed from the system and select the **Delete Truck** link (red X icon) on the same line as the truck name to be deleted.

A confirmation message will appear. Select the **Yes** button to remove the truck account from the system or select the **No** button to keep the truck account in the system.



Reset a Truck's Meter ID

To reset a trucks's meter identification, perform the following steps:

1. Find the truck name for which the meter ID will be reset and click the **Reset Meter ID** button located to the right of the truck name.
2. A confirmation message will appear. Select the **Yes** button to reset the meter ID, or select the **No** button to leave the Meter ID at its current value.

NOTE:

The meter ID will be automatically reset when the Seeker MCA uploads data via Wi-Fi to the LAW-X database.

Manage Problem Codes

The following functions can be performed from the **Manage Problem Codes** menu:

- Activate/Deactivate problem codes
- Create new problem codes
- Search for problem codes
- View last modified by/date information
- Edit problem codes
- Delete problem codes
- Import/Export problem codes
- Find unmanaged problem codes
- Delete all managed problem codes
- Split problem codes
- Rebuild problem codes

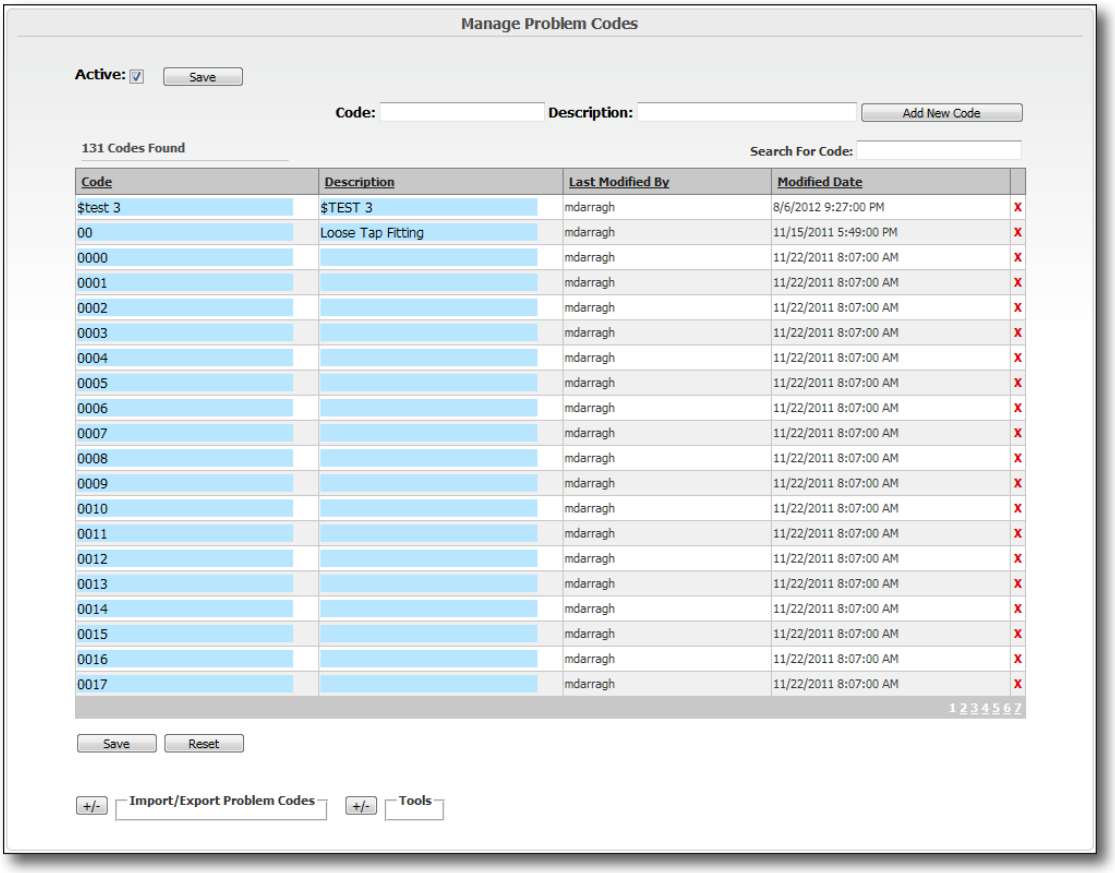
NOTE:

The Manage Problem Code feature is only available if you are logged into an account with rights to manage problem codes.

NOTE:

Unmanaged codes are problem codes that were manually typed into the leak edit menu prior to this feature's implementation. Manage problem codes allows you to create, change, or simply clean up the problem codes that currently exist in LAW-X.

To enter the Problem Code Management function, select the **Manage Problem Codes** link from the **Administration** menu..



Manage Problem Codes menu

Enable Problem Code Management

To enable problem code management, select the **Active** checkbox and then choose the **Save** button.

NOTE:

To enable the problem code dropdown on the Leak edit menu select the Active checkbox and select the Save button. You should not activate the dropdown until you have managed or cleaned up the old code list.

Create a New Problem Code

To create a new problem code, enter a code number and description for the **Code** and **Description** text fields. Then, select the **Add New Code** button and the **Manage Problem Codes** menu will update to show the problem code.

Edit an Existing Problem Code

To edit an existing problem code, perform the following steps:

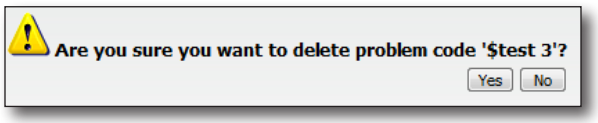
1. Find the problem code to edit and select either the **Code** or **Description** column field to edit these values.
2. Select the **Save** button to save your changes, or select the **Cancel** button to exit without saving the changes.

Delete an Existing Problem Code

If a problem code is no longer needed, it can be removed from the system.

To delete a problem code, find the problem code to be removed from the system and select the **Delete User** link (red X icon) on the same line as the code to be deleted.

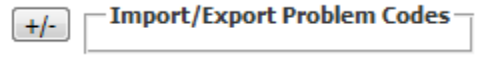
A confirmation message will appear. Select the **Yes** button to remove the problem code from the system or select the **No** button to keep the problem code in the system.

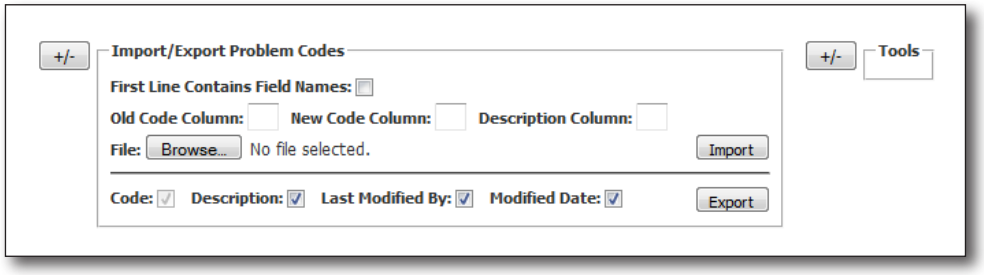


Import/Export Problem Codes

The problem codes can be exported/imported to/from a Comma Separated Values (.csv) file.

Select the +/- button to the left of Import/Export Problem Codes in order to show/hide the import/export function.





Import Problem Codes

Perform the following steps to import problem codes:

1. Select the **First Line Contains Field Names** checkbox if the first row of the file you will be importing includes the field names.
2. Enter the value of the **Old Code**, **New Code** and **Description** columns of the file you will be importing. The value entered in these fields is a number that corresponds to the location of each column in the Microsoft Excel data file, where 1, 2, and 3 in LAW-X correspond to columns A, B, and C of the data file.
3. Select the **Browse** button to select the name and location of the Comma Separated Values (.csv) file you will be importing.
4. Once you have located the file you will be importing, select the **Open** button to prepare the file to be imported.
5. Select the **Import** button to proceed with importing the new problem codes.
6. The new problem codes will be displayed.

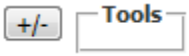
Export Problem Codes

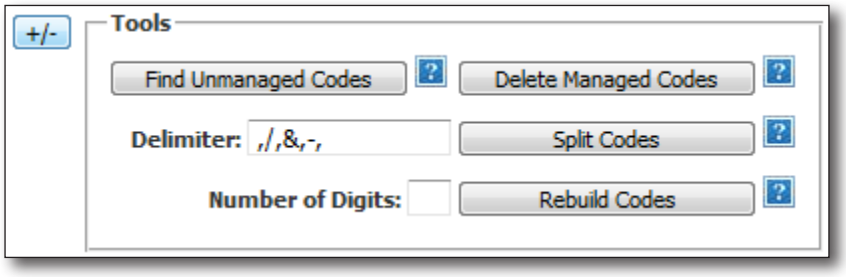
Perform the following steps to export the problem codes:

1. By default the **Codes** will always be selected for export. You can also select the optional **Description**, **Last Modified By** and/or **Modified Date** to be exported.
2. Select the **Export** button to proceed with exporting the problem codes.
3. A new file titled "ProblemCodes.csv" will be created and automatically download to the default downloads folder of your web browser.

Tools

The problem codes can be managed with additional tools. Select the +/- button to the left of Tools in order to show/hide the Tools function.





Find Unmanaged Codes

Select the **Find Unmanaged Codes** button to search leak records for unmanaged problem codes and add them to the Problem Code Management list.

Delete Managed Codes

Select the **Delete Managed Codes** button to delete all problem codes from the Problem Code Management list.

NOTE:

The Delete Managed Codes function does not delete problem codes from leak records. It simply deletes problem codes from the managed code list that is used in the edit leak menu dropdown list.

Split Codes

Select the **Split Codes** button to search managed problem codes for multiple codes (e.g. '0001 & 0002') using the specified single character delimiter(s) (e.g. '&') and separate them. Problem codes containing text or dates will not be modified. Separate multiple delimiters by using commas.

Rebuild Codes

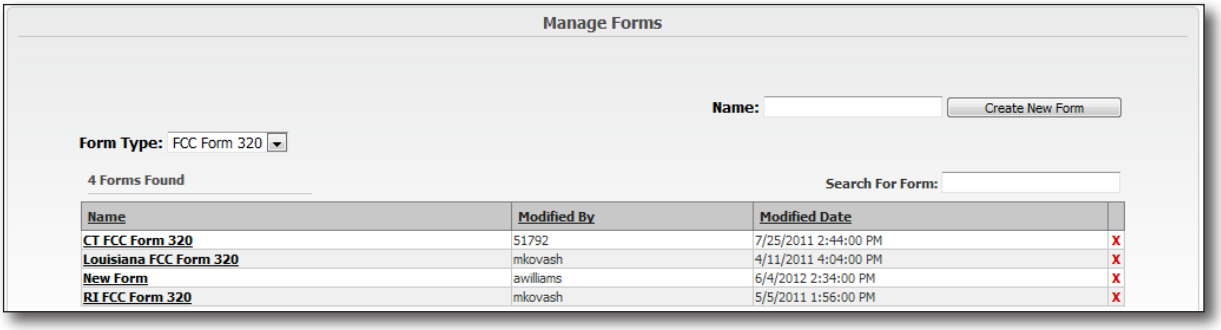
Select the **Rebuild Codes** button to have the specified number of digits (e.g. '1' to '0001'). Problem codes containing text or dates will not be modified.

Manage Forms

The following functions can be performed from the **Manage Forms** menu:

- Select form type
- Create new forms
- Search for forms
- View last modified by/date information
- Edit forms
- Delete forms

To enter the Form Management function, select the **Manage Forms** link from the **Administration** menu. The **Manage Forms** menu is shown in the following figure.



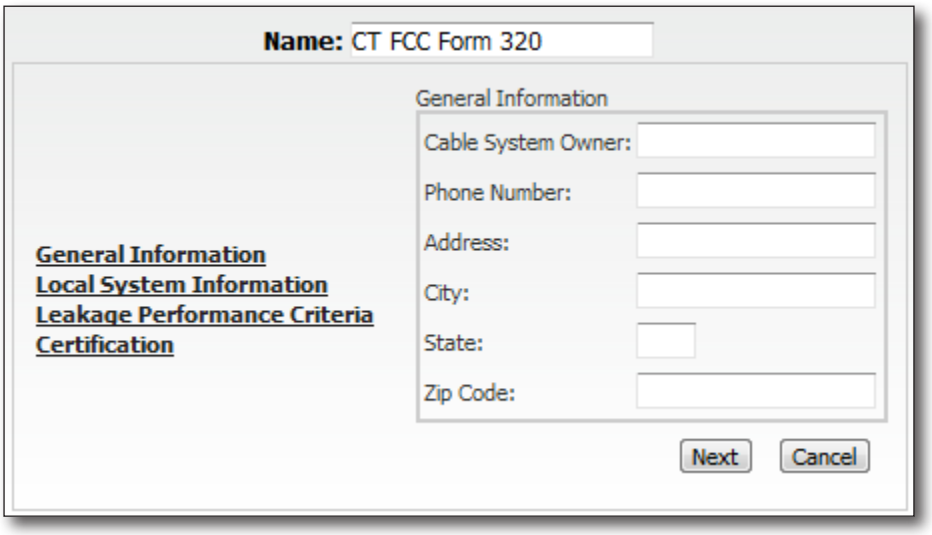
Create a New Form

To create a new form, enter a name for the new form in the **Name** text field. Then, select the **Create New Form** button and the **Manage Forms** menu will update to show the new form.

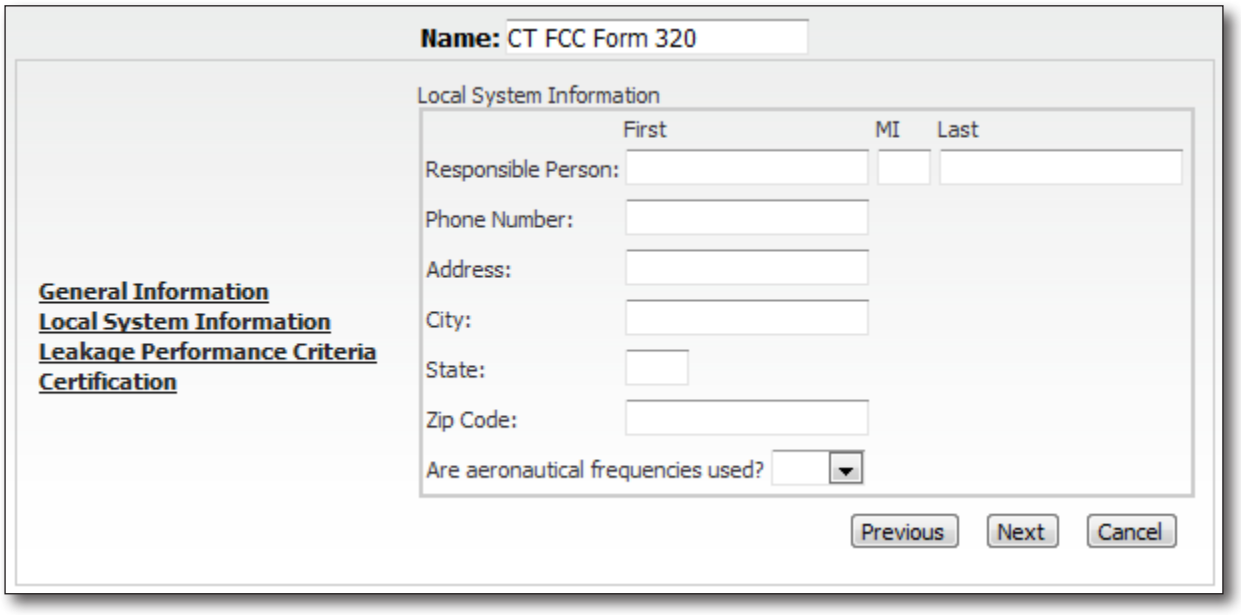
Edit an Existing Form

To edit an existing form perform the following steps.

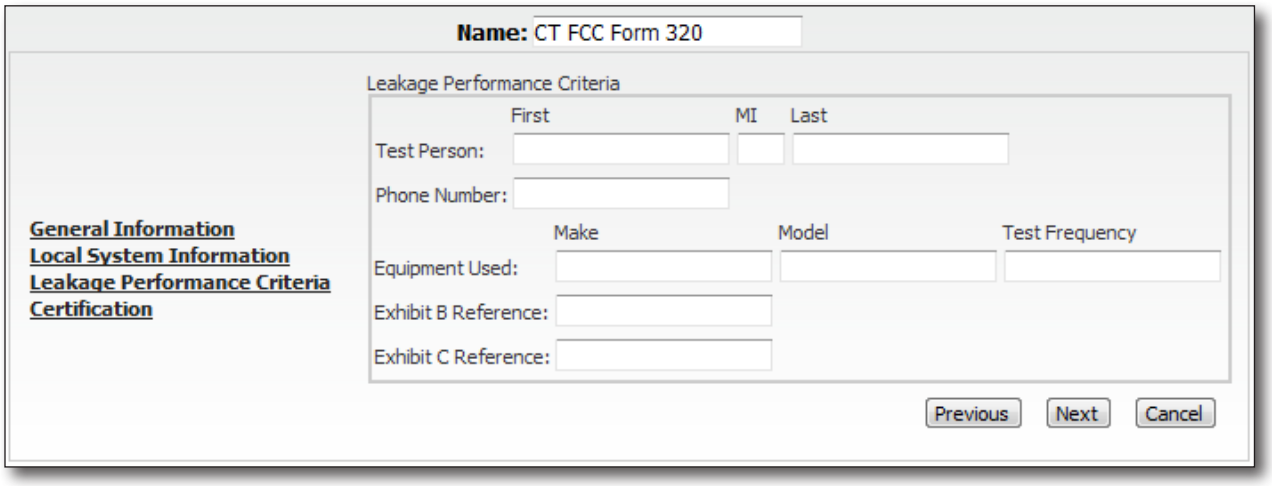
1. Find the form name of the form to edit and select the form name.
2. The **General Information** menu will appear as shown in the following figure:



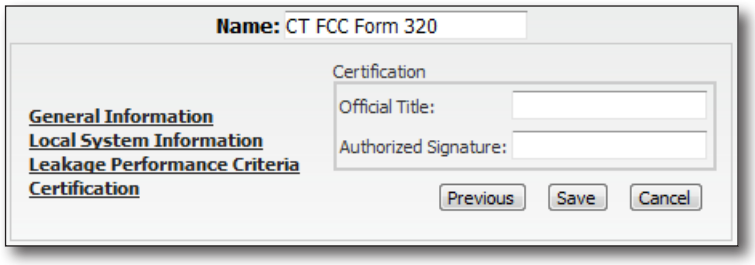
3. Enter or edit the **General Information** parameters as described below.
    - **Cable System Owner**
    - **Phone Number**
    - **Address**
    - **City**
    - **State**
    - **Zip Code**
4. Click the **Local System Information** link to advance to the next screen, or click the **Next** button. Click the **Cancel** button to discard any changes.



5. Enter or edit the **Local System Information** parameters as described below.
    - **Responsible Person**
    - **Phone Number**
    - **Address**
    - **City**
    - **State**
    - **Zip Code**
    - **Aeronautical Frequencies**
6. Click the **Leakage Performance Criteria** link to advance to the next screen, or click the **Next** button. Click the **Cancel** button to discard any changes.



7. Enter or edit the **Leakage Performance Criteria** parameters as described below.
    - **Test Person**
    - **Phone Number**
    - **Equipment Used**
    - **Exhibit B Reference**
    - **Exhibit C Reference**
    - **Zip Code**
8. Click the **Certification** link to advance to the next screen, or click the **Next** button. Click the **Cancel** button to discard any changes.



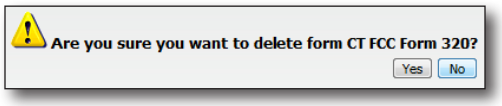
9. Enter or edit the **Certification** parameters as described below.
    - **Official Title**
    - **Authorized Signature**
10. Click the **Save** link to save the changes to the form; click the **Cancel** button to discard any changes.

Delete an Existing Form

If a form is no longer needed, it can be removed from the system.

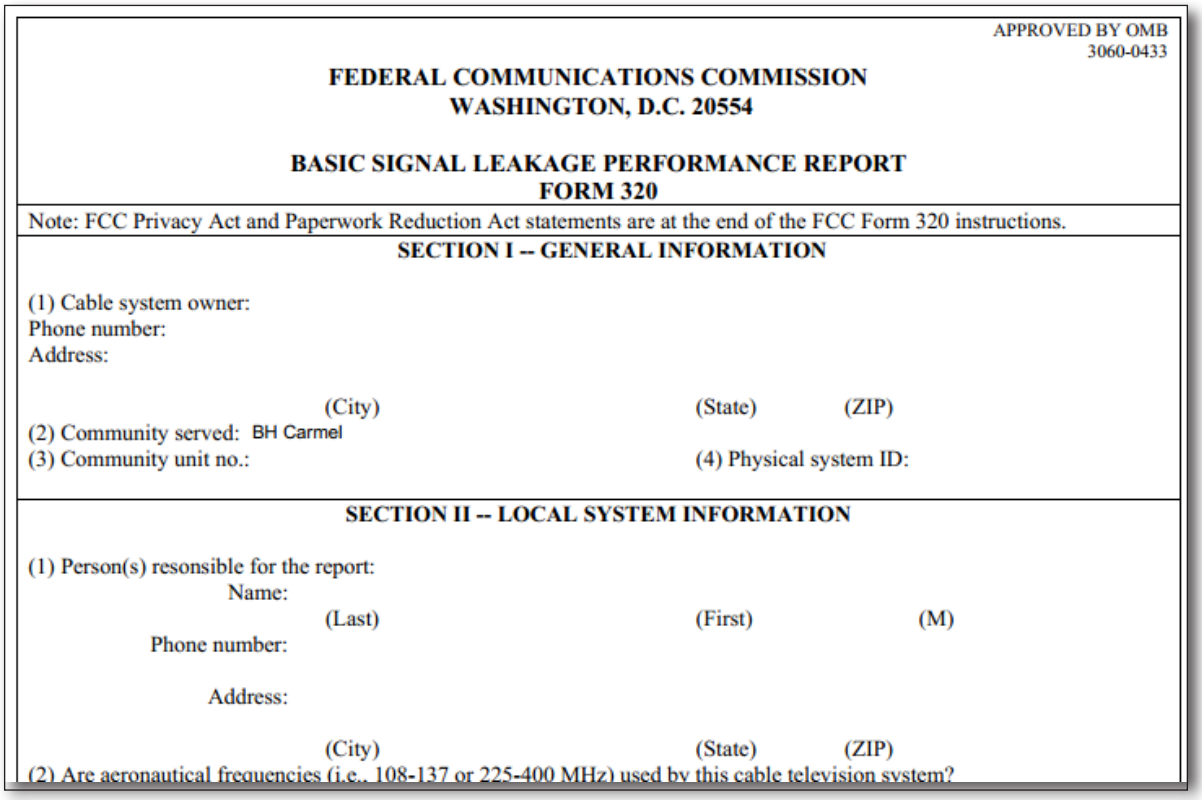
To delete a form, find the form to be removed from the system and select the **Delete Form** link (red X icon) on the same line as the form to be deleted.

A confirmation message will appear. Select the **Yes** button to remove the form from the system or select the **No** button to keep the form in the system.



Example Report

The following graphic represents a typical FCC Form 320 Report.



APPROVED BY OMB
3060-0433

FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554

BASIC SIGNAL LEAKAGE PERFORMANCE REPORT
FORM 320

Note: FCC Privacy Act and Paperwork Reduction Act statements are at the end of the FCC Form 320 instructions.

SECTION I -- GENERAL INFORMATION

(1) Cable system owner:
Phone number:
Address:

(City) (State) (ZIP)

(2) Community served: BH Carmel
(3) Community unit no.: (4) Physical system ID:

SECTION II -- LOCAL SYSTEM INFORMATION

(1) Person(s) resonsible for the report:
Name:
(Last) (First) (M)
Phone number:

Address:

(City) (State) (ZIP)

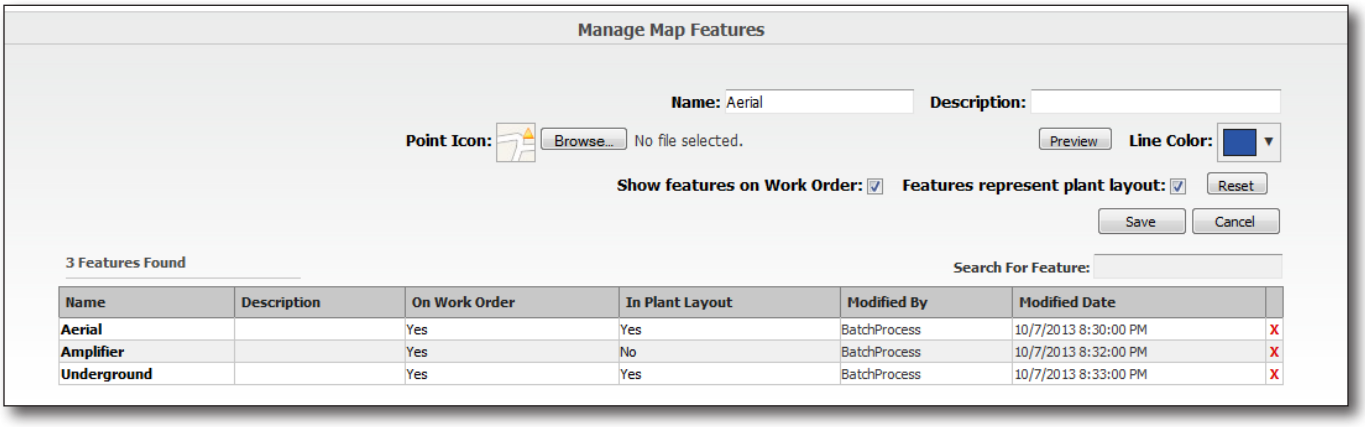
(2) Are aeronautical frequencies (i.e., 108-137 or 225-400 MHz) used by this cable television system?

Map Features and Layers

The **Map Features and Layers** menu allows you to set up plant features and layers to be included on maps and work orders, etc.

To enter the Map Features and Layers menu, select the **Map Features and Layers** from the **Administration** menu.

See the ***Importing Map Features*** in the next section for steps on where to place map feature files to import to the server.



Map Features and Layers menu

To set up the map features, perform the following steps:

1. Enter a name and description for the map feature.
2. Select the **Browse** button to choose the point icon to upload. You can also click the **Preview** button to see an example.
3. Once you have located the point icon file you want to upload, select the **Open** button to choose the file to be uploaded.
4. Choose the line color from the dropdown.
5. Select the **Show features on Work Order** checkbox, if you want to include the map features.
6. Select the **Features represent plant layout** checkbox, if you want to include the map features as plant layout.
7. To return to the default map settings, select the **Reset** button.
8. Select the **Save** button to save the settings, or select the **Cancel** button to exit without saving.

Importing Map Features

In order to import plant features to the LAW-X server, you need to place the proper shape files in the correct folder location on your LAW-X server. LAW-X will then import them automatically during the next batch process, or you can import them manually.

File Types

The required file types are as follows. Note, you must also use the appropriate file extension:

- **.shp** – The shape format; the feature geometry itself
- **.shx** – The shape index format; a positional index of the feature geometry to allow seeking forwards and backwards quickly
- **.dbf** – The attribute format; columnar attributes for each shape, in dBase IV format

Place the files in this location on your LAW-X server:

NOTE:

The following shape types are supported:

- ***Point***
- ***MultiPoint***
- ***PolyLine***
- ***Polygon***

PolygonZ and PointZ are not supported at this time.

D:\\Law Upload\[LawInstanceName]\Client\BatchFeatureImport
(where **LawInstanceName** is the name of your LAW-X server instance).

The drive location could be C: or D:, so adjust accordingly.

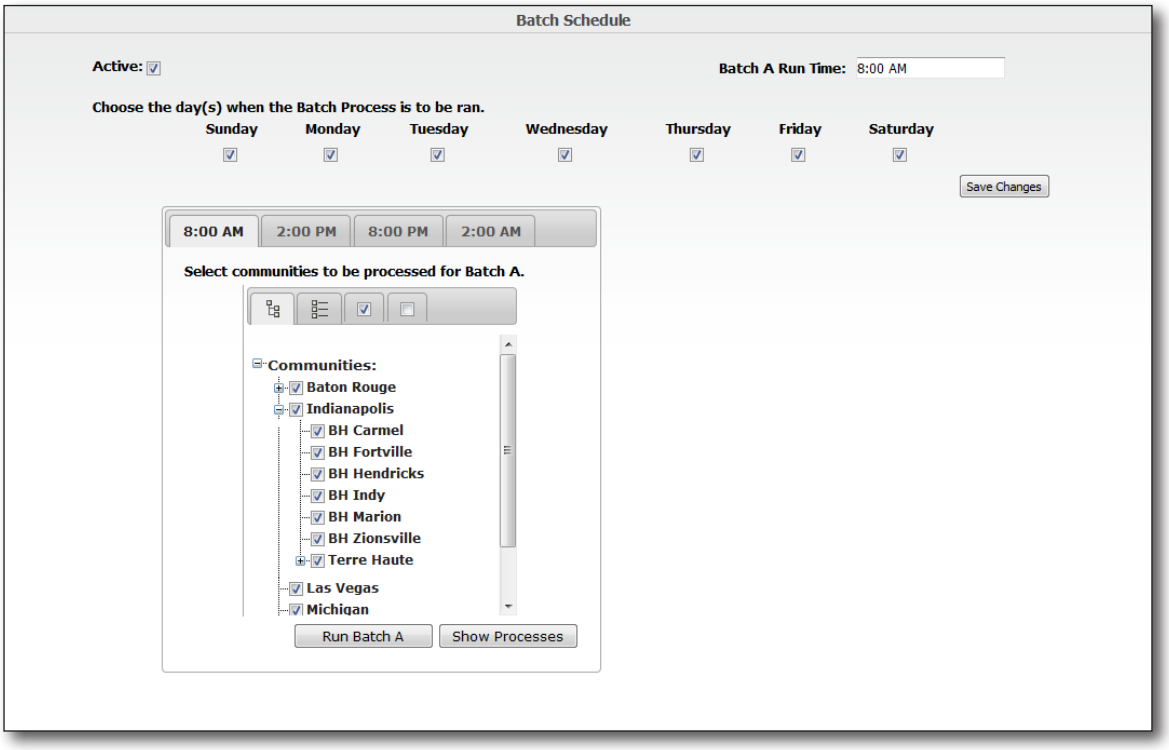
To import the files manually, go to the **Administration** menu, select **Batch Processes**, and click the **Import Map Features** button.

Once the map features are imported into LAW-X, you can customize how they appear on maps and work orders as covered in the previous ***Map Features and Layers*** section.

Batch Schedule

The **Batch Schedule** menu allows a user to set when batch processes will be run.

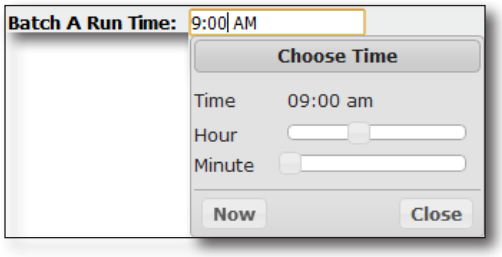
To enter the Batch Schedule menu, select the **Batch Schedule** from the **Administration** menu.



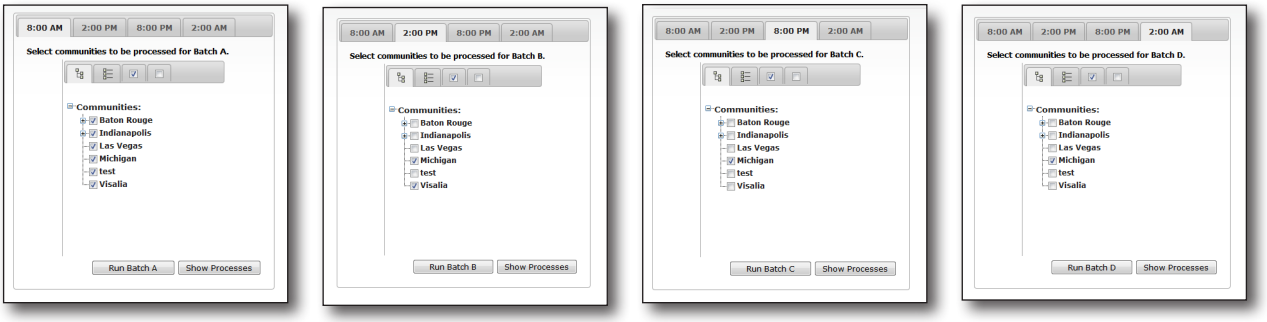
Batch Schedule menu

To configure Batch Scheduling, perform the following steps:

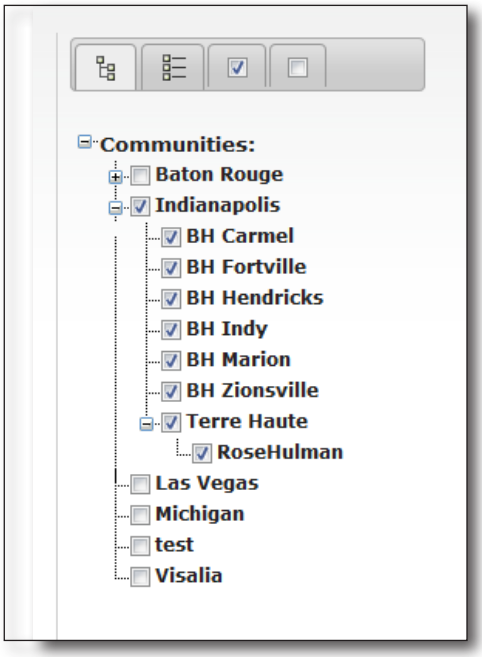
1. To activate the batch schedule, select the **Active** checkbox.
2. There are four batch processes that can be configured and they are spaced every six hours, starting with Batch A. To select the start time of the first batch process (Batch A), select the **Batch A Run Time** text field and either enter the start time manually or use the time selection tool as shown in the image to the right.



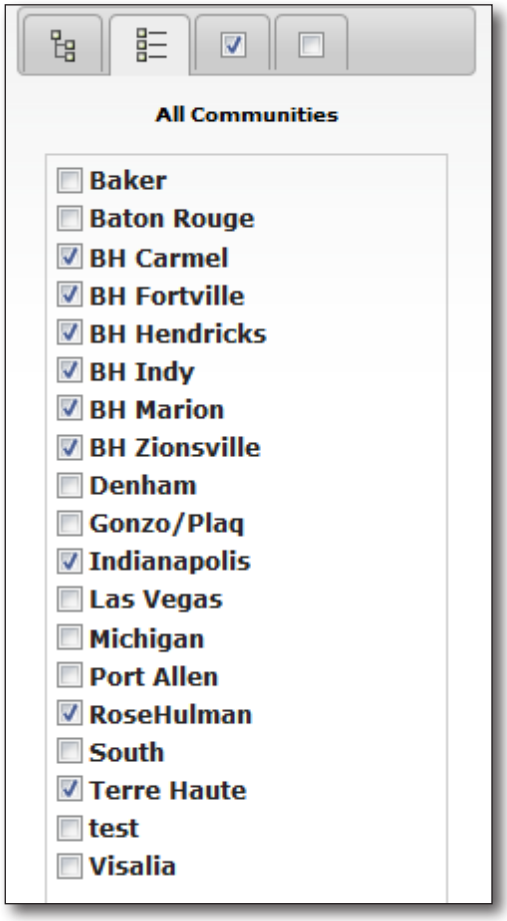
3. To choose the days that the batch schedule is run, select the checkbox below the name of the corresponding days.
4. Select from one of four batch schedules; Batch A, B, C, or D to configure specific communities for each one. The communities can be distributed among the four batch processes but each community must be selected for at least one time slot.
    - If the selected batch schedule is running, it will be indicated by a grayed out **Batch # is Running** button.
    - If the selected batch schedule is not running, the batch schedule can be run by selecting the **Run Batch #** button.
    - To see which processes are currently running, select the **Show Processes** button.
5. Select the communities for each batch process as follows:



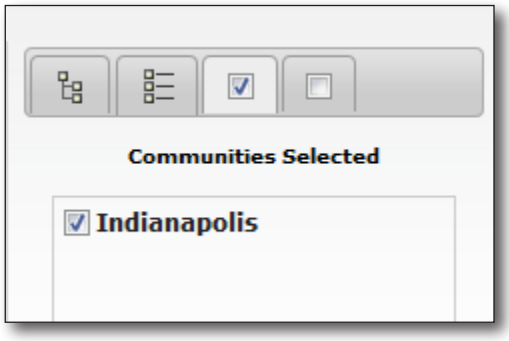
- **Communities Tab** – This tab displays all of the configured communities. Select communities using the following methods:
    - Use the +/- symbol to the left of parent communities to show/hide child communities.
    - To choose a single community, select the checkbox next to each community name.
    - To choose a parent community and all of its children, select the name of the community itself.



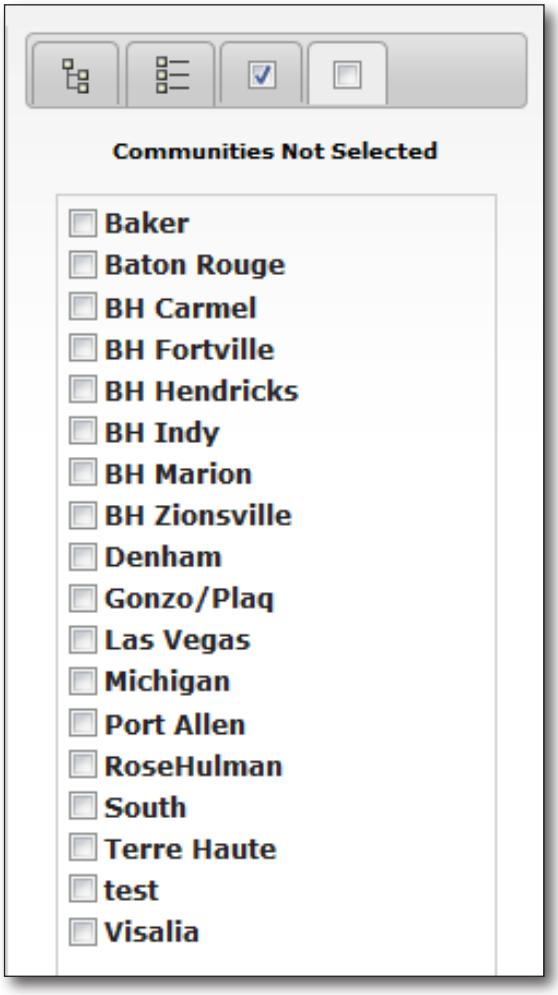
- **All Communities Tab** – This tab is used to display all of the available communities in alphanumeric order and easily remove any unwanted communities. To deselect communities, uncheck the checkbox next to the community name.



- **Communities Selected Tab** – This tab is used to display all of the selected communities in alphanumeric order and easily remove any unwanted communities. To remove unwanted communities, select the checkbox next to the community name.



- **Communities Not Selected Tab** – This tab is used to display all of the unselected communities in alphanumeric order and easily add additional communities. To add additional communities, select the checkbox next to the community name.

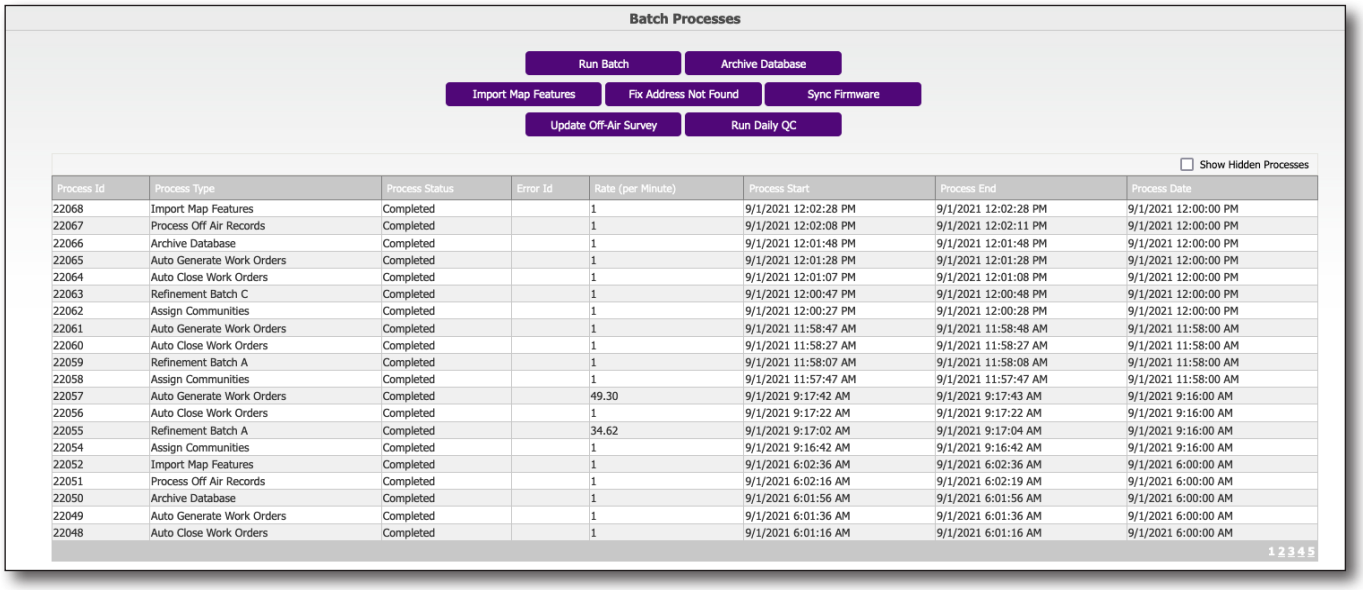


6. Repeat Steps 4 and 5 for each of the four batch schedules.
7. After making changes to the batch schedule, select the **Save Changes** button.

Batch Processes

The **Batch Processes** menu allows a user to view currently running processes, as well as a history of finished processes.

To enter the Batch Processes menu, select the **Batch Processes** from the **Administration** menu.



Process Id	Process Type	Process Status	Error Id	Rate (per Minute)	Process Start	Process End	Process Date
22068	Import Map Features	Completed		1	9/1/2021 12:02:28 PM	9/1/2021 12:02:28 PM	9/1/2021 12:00:00 PM
22067	Process Off Air Records	Completed		1	9/1/2021 12:02:08 PM	9/1/2021 12:02:11 PM	9/1/2021 12:00:00 PM
22066	Archive Database	Completed		1	9/1/2021 12:01:48 PM	9/1/2021 12:01:48 PM	9/1/2021 12:00:00 PM
22065	Auto Generate Work Orders	Completed		1	9/1/2021 12:01:28 PM	9/1/2021 12:01:28 PM	9/1/2021 12:00:00 PM
22064	Auto Close Work Orders	Completed		1	9/1/2021 12:01:07 PM	9/1/2021 12:01:08 PM	9/1/2021 12:00:00 PM
22063	Refinement Batch C	Completed		1	9/1/2021 12:00:47 PM	9/1/2021 12:00:48 PM	9/1/2021 12:00:00 PM
22062	Assign Communities	Completed		1	9/1/2021 12:00:27 PM	9/1/2021 12:00:28 PM	9/1/2021 12:00:00 PM
22061	Auto Generate Work Orders	Completed		1	9/1/2021 11:58:47 AM	9/1/2021 11:58:48 AM	9/1/2021 11:58:00 AM
22060	Auto Close Work Orders	Completed		1	9/1/2021 11:58:27 AM	9/1/2021 11:58:27 AM	9/1/2021 11:58:00 AM
22059	Refinement Batch A	Completed		1	9/1/2021 11:58:07 AM	9/1/2021 11:58:08 AM	9/1/2021 11:58:00 AM
22058	Assign Communities	Completed		1	9/1/2021 11:57:47 AM	9/1/2021 11:57:47 AM	9/1/2021 11:58:00 AM
22057	Auto Generate Work Orders	Completed		49.30	9/1/2021 9:17:42 AM	9/1/2021 9:17:43 AM	9/1/2021 9:16:00 AM
22056	Auto Close Work Orders	Completed		1	9/1/2021 9:17:22 AM	9/1/2021 9:17:22 AM	9/1/2021 9:16:00 AM
22055	Refinement Batch A	Completed		34.62	9/1/2021 9:17:02 AM	9/1/2021 9:17:04 AM	9/1/2021 9:16:00 AM
22054	Assign Communities	Completed		1	9/1/2021 9:16:42 AM	9/1/2021 9:16:42 AM	9/1/2021 9:16:00 AM
22052	Import Map Features	Completed		1	9/1/2021 6:02:36 AM	9/1/2021 6:02:36 AM	9/1/2021 6:00:00 AM
22051	Process Off Air Records	Completed		1	9/1/2021 6:02:16 AM	9/1/2021 6:02:19 AM	9/1/2021 6:00:00 AM
22050	Archive Database	Completed		1	9/1/2021 6:01:56 AM	9/1/2021 6:01:56 AM	9/1/2021 6:00:00 AM
22049	Auto Generate Work Orders	Completed		1	9/1/2021 6:01:36 AM	9/1/2021 6:01:36 AM	9/1/2021 6:00:00 AM
22048	Auto Close Work Orders	Completed		1	9/1/2021 6:01:16 AM	9/1/2021 6:01:16 AM	9/1/2021 6:00:00 AM

Batch Processes menu

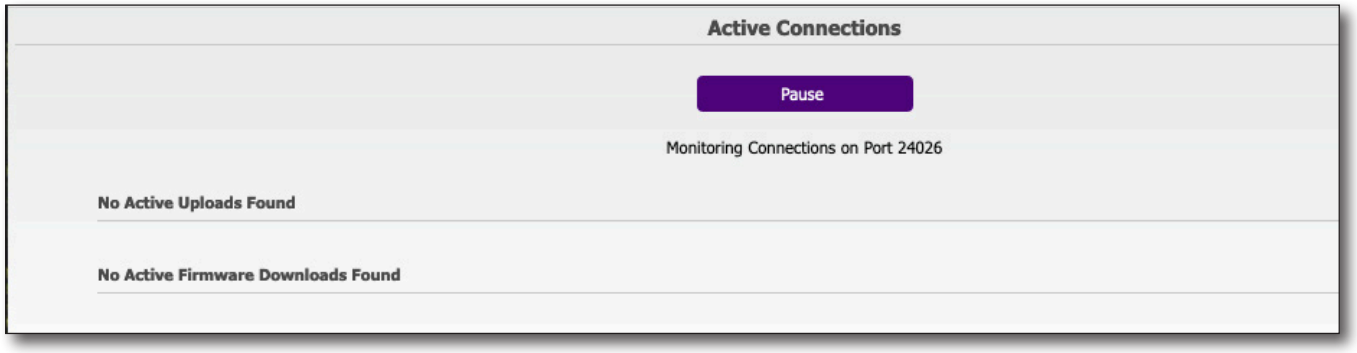
The following functions are available from the **Batch Processes** menu:

- **Run Batch** – This is used to manually run a batch process.
- **Archive Database** – This is used to run a manual archive of the LAW-X database.
- **Run Third Party API** – This is used to manually run a batch process for the third party API connection. This function is only available if the API is activated.
- **Import Map Features** – This is used to manually import map features.
- **Fix Address Not Found** – This is used to manually fix addresses that are not found.
- **Sync Firmware** – This is used to manually sync the meter firmware.
- **Update Off-Air Survey** – This is used to manually update the off-air survey.
- **Run Daily QC** – This is used to manually run the daily Quality Control repair compliance report.

View Active Connections

The **Active Connections** menu allows a user to view all active leakage uploads, as well as any active firmware downloads.

To enter the Active Connections function, select the **View Active Connections** link from the **Administration** or **Tech Tools** menu. The **Active Connections** menu is shown in the following figure.



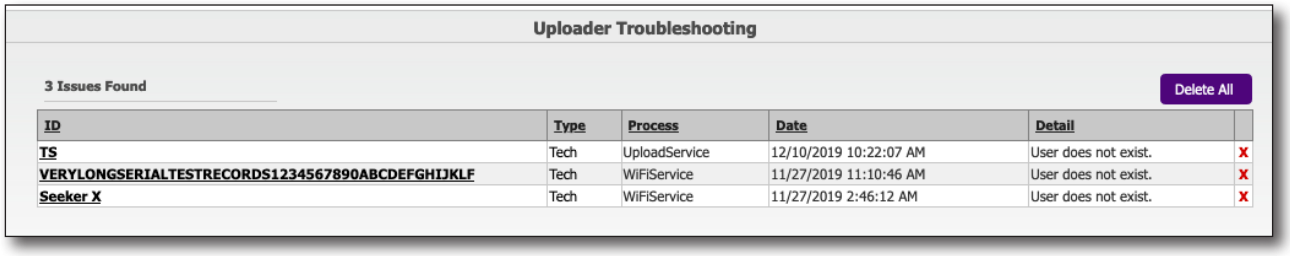
Select the **Pause** button to temporarily pause all active uploads.

The upload service port displayed is the wi-fi port being monitored for upload data to LAW-X from any MCA devices. This is the port that you program into the MCAIII to reach the LAW-X server during a Wi-Fi upload.

Uploader Troubleshooting

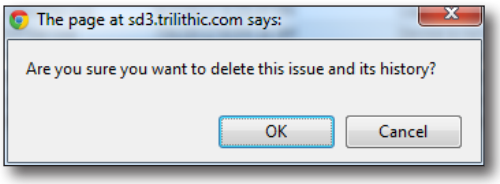
The **Uploader Troubleshooting** menu allows a user to view uploading issues.

To enter the Uploader Troubleshooting function, select the **Uploader Troubleshooting** link from the **Administration** or **Tech Tools** menu. The **Uploader Troubleshooting** menu is shown in the image below.

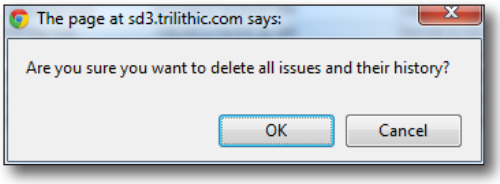


If uploader issues are no longer needed, they can be removed from the system.

To delete an uploader issue, find the issue to be removed from the system and select the **Delete Issue** link (red X icon) on the same line as the uploader issue to be deleted. A confirmation message will appear. Select the **OK** button to remove the uploader issue from the system or select the **Cancel** button to keep the uploader issue in the system.



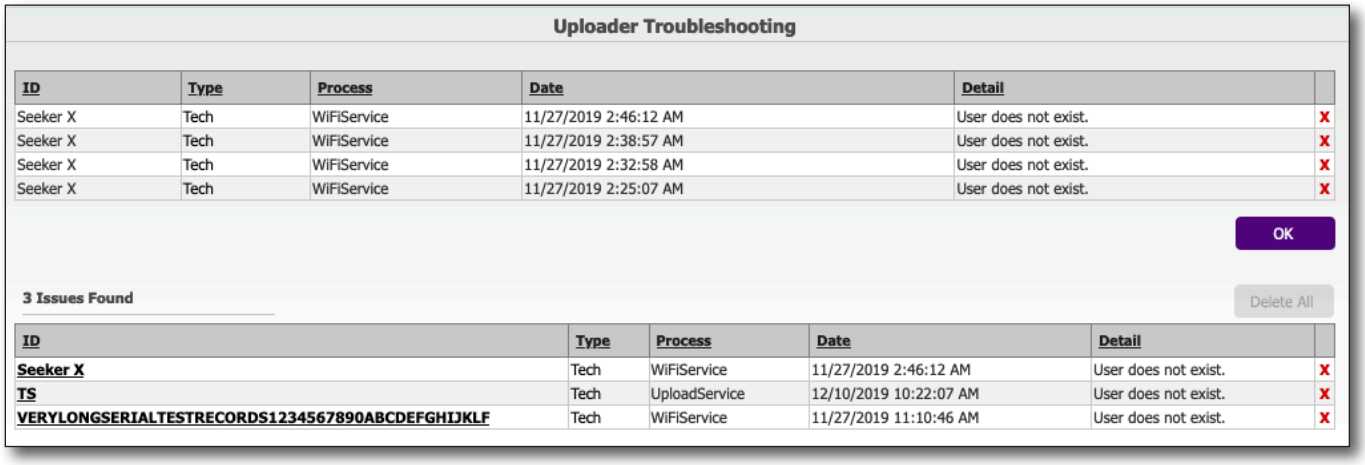
Select the **Delete All** button to delete all of the uploader issues. A confirmation message will appear. Select the **OK** button to remove the uploader issues from the system or select the **Cancel** button to keep the uploader issues in the system.



Select the **ID** link to view uploader issue details as shown in the image below. Once you have finished reviewing the uploader issue details, select the **OK** button.

There are three different types of issues that can appear in the Detail column:

- **User does not exist** – To correct this issue, create a user under Manage Users that matches the user in the ID field.
- **User is not a meter user** – To correct this issue, go to the user account that matches the user in the ID field and select the Meter User checkbox and then save the changes to the user.
- **Device not recognized** – To correct this issue, go to the user account that matches the user in the ID field and reset the meter ID and then save the changes to the user.



NOTE:

If a manual upload fails due to the current configuration of the Seeker, the Process field will display the text UploadService. If a manual upload fails during processing as stated in the upload dialog box, the Process field will display the text WiFi Service.

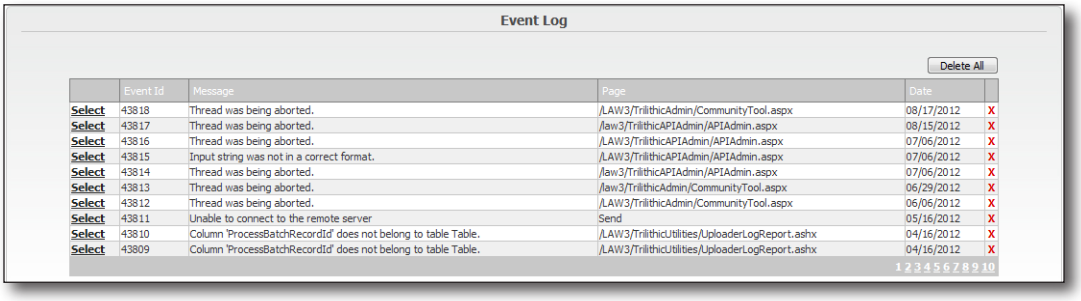
NOTE:

The type field will display either Tech for the Seeker's Tech ID or Truck for the MCA's Truck ID.

Event Log

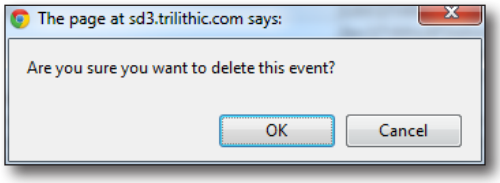
The **Event Log** menu allows a user to view the log of events within LAW-X.

To enter the Event Log function, select the **Event Log** link from the **Administration** menu. The **Event Log** menu is shown in the image below.



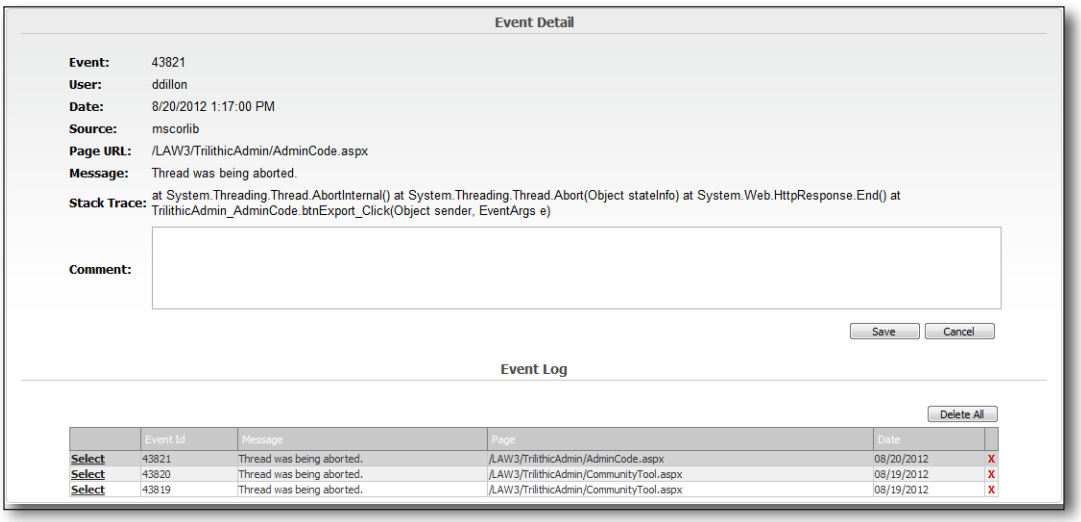
To view the log of events within LAW-X, click the page number in the lower right corner of the screen to view additional pages of events.

To delete an event, find the event to be removed from the system and select the **Delete Event** link (red X icon) on the same line as the event to be deleted. A confirmation message will appear. Select the **OK** button to remove the event from the system or select the **Cancel** button to keep the event in the system.



Select the **Delete All** button to delete all of the events.

To view details about a specific event, choose the **Select** link, next to the corresponding event. The **Error Detail** menu appears as shown in the following image. If needed, comments can be added to the event. After adding comments, select the **Save** button to save the comments or select the **Cancel** button to discard the comments.

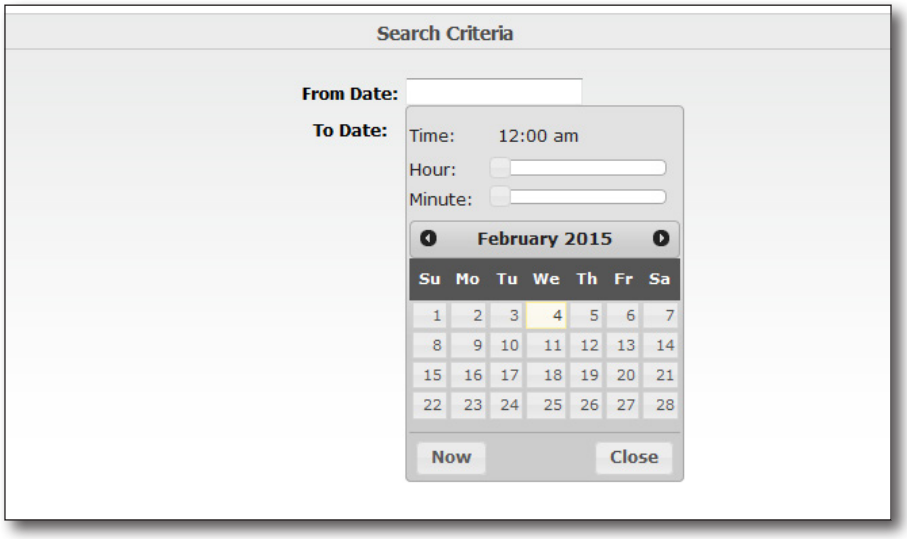


Frequency Mismatch Search

The **Frequency Mismatch Search** menu allows a user to view technicians or trucks which have attempted to upload leak data captured in the wrong frequency range to a specific community.

To enter the Frequency Mismatch Search function, select the **Frequency Mismatch Search** link from the **Administration** or **Tech Tools** menu. The **Search Criteria** menu is shown in the image below.

The settings for each community within LAW-X include a BIN frequency and a Tag frequency



that must match the frequency (MHz) programmed into the Seeker at the time of rideout and data collection. The Tag frequency is only used if required in the community definition. The **Frequency Mismatch Search** is a function used to identify Seeker GPS meters that have uploaded leakage data that has been collected with the wrong frequency as related to the community BIN frequency.

IMPORTANT:

If the frequency that is set in LAW-X and the Seeker do not match, the mismatched data will be discarded at the time of upload.

This does not apply to the Seeker D, or Seeker X.

To view the report, enter the following report parameters:

- **From Date** – This is the beginning date of the **Frequency Mismatch Search**. To enter the date, select the empty field next to the **From Date** field. Enter the start date manually using the following format "mm/dd/yyyy hh:mm am/pm" or choose the start date on the calendar by directly selecting the date. If the **Frequency Mismatch Search** is to start today, select the **Today** button. To remove the contents of the **From Date** field or to change the beginning date of the **Frequency Mismatch Search**, simply select the field again to manually enter a new date or choose the start date again on the calendar.
- **To Date** – This is the end date of the **Frequency Mismatch Search**. To enter the date, select the empty field next to the **To Date** field. Enter the end date manually using the following format "mm/dd/yyyy hh:mm am/pm" or choose the end date on the calendar by directly selecting the date. If the **Frequency Mismatch Search** is to end today, select the **Today** button. To remove the contents of the **To Date** field or to change the end date of the **Frequency Mismatch Search**, simply select the field again to manually enter a new date or choose the start date again on the calendar.

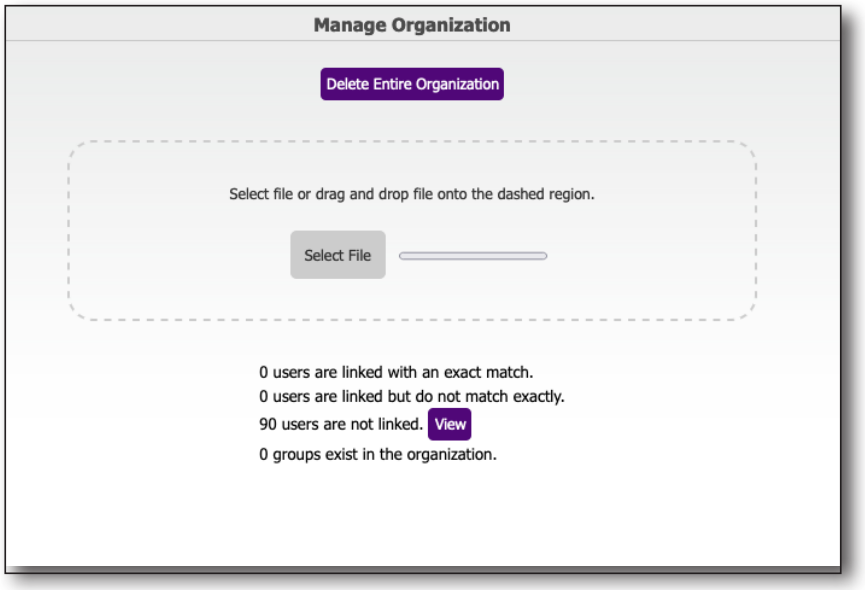
NOTE:

The date range entered represents the date range of the rideout and data collection, and not the date of the upload.

Manage Organization

The **Manage Organization** menu allows you to delete the entire organization on the LAW server.

To enter the Registration Information menu, select **Manage Organization** from the **Administration** menu.



Manage Organization menu

Click **Delete Entire Organization** to delete the organization. A confirmation widow will ask you to confirm you want to delete. Click **OK** to delete.

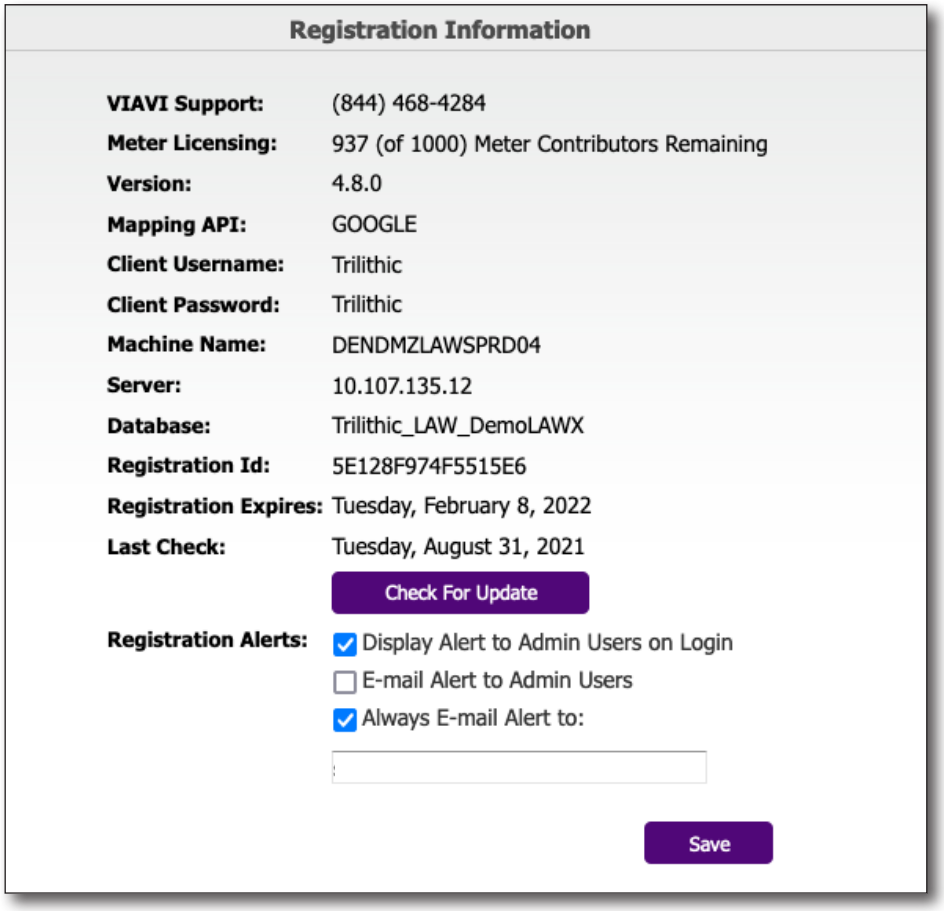
To add a file you have exported, click the **Select File** button to browse your desktop for the file, or click and drag it into the window.

You can also view users that are not linked to the organzation. Click the **View** button for the list.

Registration Information

The **Registration Information** menu allows a user to view the registration information of the LAW-X server.

To enter the Registration Information menu, select **Registration Information** from the **Administration** menu.



Registration Information menu

Click **Check for Update** to check your registration status.

You can also set up registration alerts and email notifications to be notified when the LAW-X server registration is about to expire, as follows:

- **Display Alert to Admin Users on Login** – This option displays a license registration alert to admin users on login.
- **E-mail Alert to Admin Users** – This option will send a license registration alert email to admin users
- **Always E-mail Alert to** – This field is used to enter a list of additional email address that will be notified with license registration alerts. Separate multiple email addresses by using a comma between each address.

8

Application Programming Interface

This chapter provides an overview of the API features, including the following:

Overview

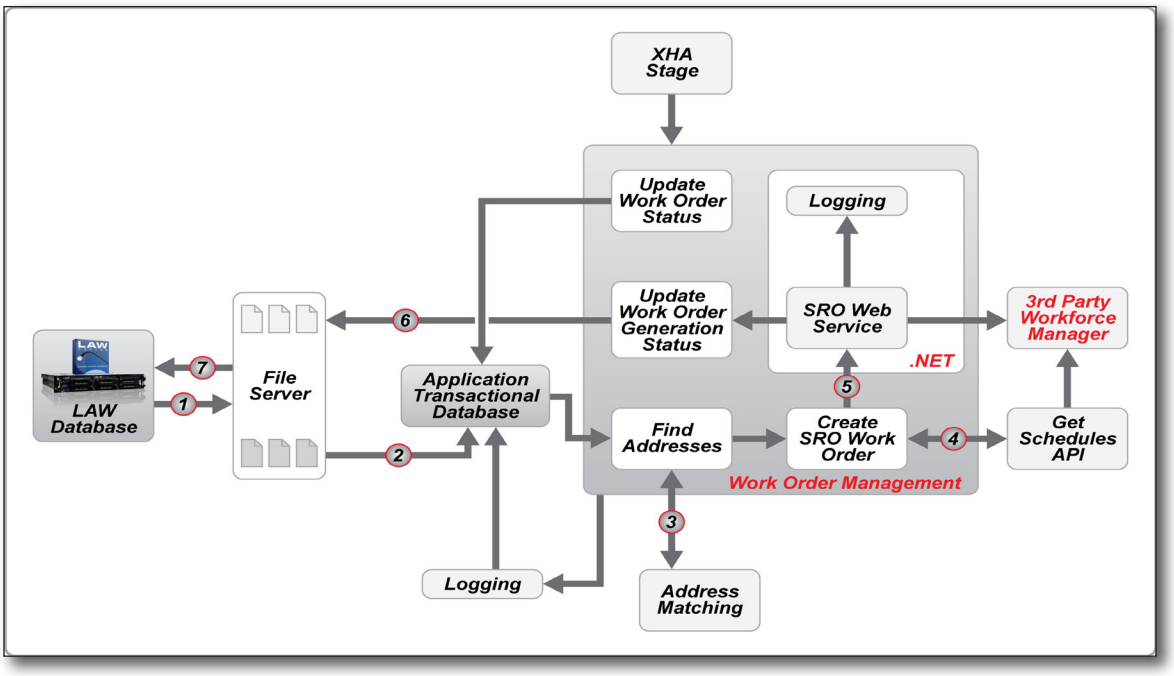
The LAW-X API (application programming interface) allows users to export an XML “image” of all of the data needed to create a work order. When a batch process is executed, the API will generate an XML file and place it in a user-specified folder (see ***“Batch Processes” on page 253***).

The XML file includes leaks whose status has changed since the last batch process had been executed unless said changes were made by the third-party API (status changes include street address, new leaks, closed leaks, or leaks whose strength has changed). This XML file is then integrated into the user’s proprietary work order system to automatically or manually create work orders. The user has the flexibility to then decide how to prioritize leaks, and how to schedule leak repairs.

To take advantage of the XML image created by LAW-X, the user must develop an “adapter” which will allow third-party applications to interface with the XML file. The adapter is not included with the LAW-X software, and must be developed by the end user or a third-party application developer.

For technical requirements necessary to interface a third-party adapter to the application programming interface, contact us at ***1-844-GO-VIAVI /1-844-468-4284 or Trilithic.support@viavisolutions.com***.

API Integration



The LAW-X API integrates into the third-party workforce management software as follows:

1. LAW-X pushes data from its database to an Input File located on an agreed-upon File Server.
2. The file is pulled by the application service and moved to the Application Transactional database.
3. File records are processed to extrapolate the closest customer address to the leak, which is initially identified with GPS coordinates. The address information is passed to the Create SRO Work Order module.
4. The SRO Work Order Module assembles the data necessary for a work order, integrating available schedules from the existing web service. The data is passed to the web service that actually creates the work order in the third-party Workforce Manager software.
5. The SRO Web Service generates a work order in the third-party Workforce Manager using the already-defined API.
6. The Update Work Order Generation Status module retrieves the status of all the input records and pushes the information to an Output File located on an agreed-upon File Server.
7. LAW-X retrieves this file from the File Server and uses the file to update the leak status in the LAW-X database.

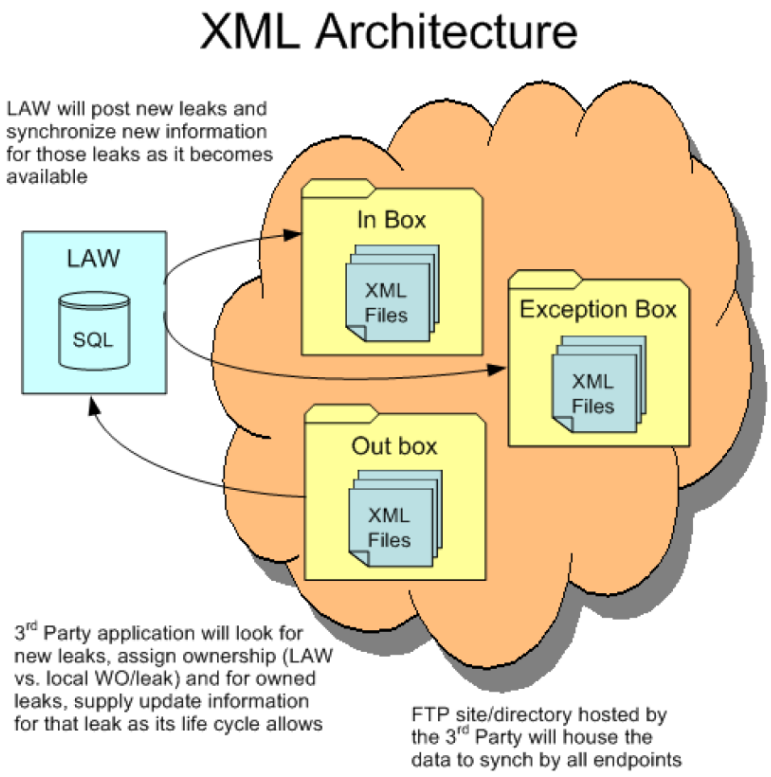
XML Implementation

Overview

With LAW-X's application programming interface (API) enabled, the VIAVI LAW-X server will create an XML file with a record of each leak, which will then be posted to an FTP site or hosted directory. The third-party application would supply feedback required for leak life cycle management in a similar XML file, in a different folder on the same FTP site or directory. During LAW-X's normal batch processing, not only will LAW-X post newly discovered or modified leaks, it will synchronize the data supplied by the third-party application. In the case where the leak has been closed, the closure will be synchronized as well and the leak will be retained within LAW-X for historical purposes and reporting.

Timing for either endpoint is non-critical in regard to synchronization; if one end misses an update from the other during a synchronization pass, the data will remain available for future processing. Either party can check for updates and new files more frequently. With this methodology, neither the time-critical processes nor data capacity of the LAW-X server, the application server, or the third-party databases will be disrupted.

In the case where errors occur related to API usage by either party, an XML error message can be posted to a designated sub folder.



Details

When a new leak is discovered or modified, LAW-X will supply the following information to the FTP site/directory, in XML format:

1. Leak record ID
2. LAW-X work order ID
3. Detection date and time
4. Latitude/longitude of the actual leak location
5. The predicted level of the leak
6. The reverse geocoded street address to the actual leak location
7. Status of the leak (open, closed/fixed, deleted)
8. Status of the work order (open, closed/fixed, deleted)
9. Assigned repair technician

The API can be configured so that feedback will not be used or required, as described below. Rather than requiring feedback from the third-party application, the API would function as a mirror, to be used for export of LAW-X data to the third party. As LAW-X manages the life cycle of the leak, the data in the XML file would be updated and removed as appropriate for normal operation of LAW-X. In this mode, the XML file will be republished every time a batch process is executed, and would only contain open leaks.

Otherwise, once the third-party application becomes aware of these leaks/work orders, it will create a similar XML file that would contain the following additional information, as well as updating the status, assigned technician, and street address fields as appropriate, based upon feedback from field technicians, dispatchers, etc.:

1. Repair/fix date and time
2. Problem code/cause of leak
3. Observed pre-fix leak level
4. Observed post-fix leak level
5. Comments
6. LAW-X-only leak? (true, false)
7. System work order ID

LAW-X will synchronize all of the updated data from the available XML files during its normal batch processing. New leaks will be posted to the third-party application for technician dispatch and repair. Data collected from the field will then be transferred by the third-party application back to LAW-X, which will allow for proper and efficient operation of both systems.

The normal capabilities of LAW-X to remove a leak from a work order and to delete erroneous leaks will be disabled (only for leaks recorded in the third-party application) and handled exclusively by the third-party application. Automatic closure of leaks and work order assignment (only for leaks recorded in the third-party application) will be disabled in LAW-X.

Within the administrative section of LAW-X, a new user permission (titled API admin) is available. This user permission will allow a user with “API admin” rights to perform the otherwise-blocked functions described above.

When the third-party application changes the status of a leak/work order to a “closed/fixed” or “deleted” status, the third party will signal LAW-X to close or delete the leak and the associated work order on the next synchronized exchange.

In an instance where the API Admin user does not have a means to provide a list of authorized technicians, LAW-X will add a default account for the technician specified by the 3rd party feedback.

All API-related errors are recorded in the LAW-X system error log, and a sub folder on the FTP site/directory. Third-party errors posted to this file location are not reported in the LAW-X error log.

Additional Information

For users with “API admin” account privileges, a link will be available on the main administration menu that allows them to set up necessary modes, switches, file paths, and miscellaneous aspects of API implementation. Included in the administrative privileges are database management; FTP connection parameters; port designation; and external connection strings. User accounts which are designated as "API admin" only do not have general administrative privileges, they only include API administrative privileges as necessary for IT personnel who will not oversee LAW-X functionality.

In all functions within LAW-X, the interface will display the third-party work order number, rather than a LAW-X work order number. The third-party application can send leak information to LAW-X of a new leak that was not entered in the LAW-X database. The LAW-X database will retain records on all leaks reported by the third-party application so it can be available for historical purposes.

Outbound from LAW-X / Inbound to Third-Party WFM

Sample XML

```
<xml>
    <SignalLeakage>
        <Header>
            <SourceID>######</SourceID>
            <SiteID>######</SiteID>
            <LeakRecordID>######</LeakRecordID>
            <LeakSystemOrderID>######</LeakSystemOrderID>
        </Header>
        <Data>
            <DetectionTimeStamp>######</DetectionTimeStamp>
            <PredictedLeakLevel>######</PredictedLeakLevel>
            <TechID>######</TechID>
            <LeakSystemWorkOrderStatus>######</LeakSystemWorkOrderStatus>
            <LeakStatus>######</LeakStatus>
            <Address>
                <Latitude>######</Latitude>
                <Longitude>######</Longitude>
                <UnitNumber>######</UnitNumber>
                <StreetNumber>######</StreetNumber>
                <StreetName>######</StreetName>
                <City>######</City>
                <State>######</State>
                <Zip5>######</Zip5>
            </Address>
        </Data>
    </SignalLeakage>
</xml>
```

XML Definitions

The following descriptions apply to the XML elements shown on the previous page:

- **<xml></xml>** – This is a standard XML schema root element for outbound XML communications from LAW-X. This element includes the **<SignalLeakage>** element. In a typical XML file, the **<SignalLeakage>** element will be used many times to include all of the leaks in the system. Each time this element is included it represents a single leak being transferred to the third-party WFM system.
- **<SignalLeakage></SignalLeakage>** – This is the LAW-X signal leakage XML schema element. This element includes the **<Header>** and **<Data>** elements for each leak.
- **<Header></Header>** – This is the header element of the **<SignalLeakage>** element. This element includes the **<SourceID>**, **<Site ID>**, **<LeakRecordID>** and **<LeakSystemOrderID>** elements.
- **<SourceID></SourceID>** – The content of this element is assigned by LAW-X, and is used to identify the XML information that is sent from the LAW-X server. This is derived from the database name and cannot be changed.
- **<Site ID></Site ID>** – The content of this element is the identification code for the LAW-X server and is derived from the database name but can be changed.
- **<LeakRecordID></LeakRecordID>** – The content of this element is the identification number that LAW-X automatically assigned to the leak when it was created.
- **<LeakSystemOrderID></LeakSystemOrderID>** – The content of this element is the identification number that LAW-X automatically assigned to the work order when it was created.
- **<Data></Data>** – This is the data element of the **<SignalLeakage>** element. This element includes the **<DetectionTimeStamp>**, **<PredictedLeakLevel>**, **<TechID>**, **<LeakSystemWorkOrderStatus>**, **<LeakStatus>** and **<Address>** elements.
- **<DetectionTimeStamp></DetectionTimeStamp>** – The content of this element is the date and time the leak was detected.
- **<PredictedLeakLevel></PredictedLeakLevel>** – The content of this element is the projected level of the leak.
- **<TechID></TechID>** – The content of this element is the ID of the technician that was assigned to the respective LAW-X work order.
- **<LeakSystemWorkOrderStatus></LeakSystemWorkOrderStatus>** – The content of this element is used to mark a work order open or closed.
- **<LeakStatus></LeakStatus>** – The content of this element is used to mark a leak

open or closed.

- **<Address></Address>** – This is the address element of the **<SignalLeakage>** element. This element includes the **<Latitude>**, **<Longitude>**, **<Unit Number>**, **<StreetNumber>**, **<StreetName>**, **<City>**, **<State>** and **<Zip5>** elements.
- **<Latitude></Latitude>** – The content of this element is the latitude at the location of the leak.
- **<Longitude></Longitude>** – The content of this element is the longitude at the location of the leak.
- **<UnitNumber></UnitNumber>** – The content of this element is the reverse geocoded building unit number at the location of the leak.
- **<StreetNumber></StreetNumber>** – The content of this element is the reverse geocoded street number at the location of the leak.
- **<StreetName></StreetName>** – The content of this element is the reverse geocoded street name at the location of the leak.
- **<City></City>** – The content of this element is the city in which the leak is located.
- **<State></State>** – The content of this element is the state in which the leak is located.
- **<Zip5></Zip5>** – The content of this element is the zip code in which the leak is located.

Inbound to LAW-X / Outbound from Third-Party WFM

Sample XML

```
<SignalLeakageXML>
    <SignalLeakageStatus>
        <Header>
            <SourceID>######</SourceID>
            <SiteID>######</SiteID>
            <LeakRecordID>######</LeakRecordID>
            <LeakSystemOrderID>######</LeakSystemOrderID>
        </Header>
        <Data>
            <LeakStatus>######</LeakStatus>
            <LeakSystemWorkOrderStatus>######</LeakSystemWorkOrderStatus>
            <FixTimeStamp>######</DetectionTimeStamp>
            <ProblemCode>######</ProblemCode>
            <Pre-fixLeakLevel>######</Pre-fixLeakLevel>
            <Post-fixLeakLevel>######</Post-fixLeakLevel>
            <LAWOnlyLeak>######</LAWOnlyLeak>
            <TechID>######</TechID>
            <End-BillingSystemWorkOrderNumber>######</End-
            BillingSystemWorkOrderNumber>
            <End-BillingSystemMatchAddress>
                <Latitude>######</Latitude>
                <Longitude>######</Longitude>
                <UnitNumber>######</UnitNumber>
                <StreetNumber>######</StreetNumber>
                <StreetName>######</StreetName>
                <City>######</City>
                <State>######</State>
                <Zip5>######</Zip5>
            </End-BillingSystemMatchAddress>
        </Data>
    </SignalLeakageStatus>
</SignalLeakageXML>
```

XML Definitions

The following descriptions apply to the XML elements shown on the previous page:

- **<SignalLeakageXML></SignalLeakageXML>** – This is a standard XML schema root element for inbound XML communications to LAW-X. This element includes the **<SignalLeakageStatus>** element. In a typical XML file, the **<SignalLeakageStatus>** element will be used many times to include all of the leaks in the system. Each time this element is included it represents a single leak being transferred from the 3rd party WFM system to LAW-X.
- **<SignalLeakageStatus></SignalLeakageStatus>** – This is the LAW-X signal leakage status XML schema element. This element includes the **<Header>** and **<Data>** elements for each leak.
- **<Header></Header>** – This is the header element of the **<SignalLeakageStatus>** element. This element includes the **<SourceID>**, **<Site ID>**, **<LeakRecordID>** and **<LeakSystemOrderID>** elements.
- **<SourceID></SourceID>** – The content of this element is assigned by LAW-X, and is used to identify the XML information that is sent from the LAW-X server. This is derived from the database name and cannot be changed.
- **<Site ID></Site ID>** – The content of this element is the identification code for the LAW-X server and is derived from the database name but can be changed.
- **<LeakRecordID></LeakRecordID>** – The content of this element is the identification number that LAW-X automatically assigned to the leak when it was created.
- **<LeakSystemOrderID></LeakSystemOrderID>** – The content of this element is the identification number that LAW-X automatically assigned to the work order when it was created.
- **<Data></Data>** – This is the data element of the **<SignalLeakageStatus>** element. This element includes the **<LeakStatus>**, **<LeakSystemWorkOrderStatus>**, **<FixTimeStamp>**, **<ProblemCode>**, **<Pre-fixLeakLevel>**, **<Post-fixLeakLevel>**, **<LAWOnlyLeak>**, **<TechID>**, **<End-BillingSystemWorkOrderNumber>** and **<End-BillingSystemMatchAddress>**elements.
- **<LeakStatus></LeakStatus>** – The content of this element is used to mark a leak open or closed.
- **<LeakSystemWorkOrderStatus></LeakSystemWorkOrderStatus>** – The content of this element is used to mark a work order open or closed.
- **<FixTimeStamp></FixTimeStamp>** – The content of this element is the date and time the leak was fixed.

- **<ProblemCode></ProblemCode>** – The content of this element is problem code assigned to a leak at the time it was fixed.
- **<Pre-fixLeakLevel></Pre-fixLeakLevel>** – The content of this element is the observed level of the leak before it was fixed.
- **<Post-fixLeakLevel></Post-fixLeakLevel>** – The content of this element is the observed level of the leak after it was fixed.
- **<LAWOnlyLeak></LAWOnlyLeak>** – The content of this element is used to mark the leak as residing only in LAW-X.
- **<TechID></TechID>** – The content of this element is the ID of the technician that was assigned to the respective LAW-X work order.
- **<End-BillingSystemMatchAddress></End-BillingSystemMatchAddress>** – This is the address element of the **<SignalLeakageStatus>** element. This element includes the **<Latitude>**, **<Longitude>**, **<Unit Number>**, **<StreetNumber>**, **<StreetName>**, **<City>**, **<State>** and **<Zip5>** elements.
- **<Latitude></Latitude>** – The content of this element is the latitude at the location of the leak.
- **<Longitude></Longitude>** – The content of this element is the longitude at the location of the leak.
- **<UnitNumber></UnitNumber>** – The content of this element is the reverse geocoded building unit number at the location of the leak.
- **<StreetNumber></StreetNumber>** – The content of this element is the reverse geocoded street number at the location of the leak.
- **<StreetName></StreetName>** – The content of this element is the reverse geocoded street name at the location of the leak.
- **<City></City>** – The content of this element is the city in which the leak is located.
- **<State></State>** – The content of this element is the state in which the leak is located.
- **<Zip5></Zip5>** – The content of this element is the zip code in which the leak is located.

9

Appendix

This appendix includes troubleshooting and supplemental information, including the following:

Limited warranty

For the latest warranty information, visit

https://www.viavisolutions.com/literature/viavi-solutions-inc-general-terms-en.pdf

https://www.viavisolutions.com/en-us/literature/viavi-manufacturer-warranty-nse-products-en.pdf

Technical assistance

If you require technical assistance, call 1-844-GO-VIAVI / 1.844.468.4284.

Outside US: +1-855-275-5378

Email: **Trilithic.support@viavisolutions.com**

For the latest TAC information, visit

https://support.viavisolutions.com

https://www.viavisolutions.com/en/services-and-support/support/technical-assistance

Additional information

For more detailed information, contact us at **Trilithic.support@viavisolutions.com** for these additional documents.

Seeker X User's Guide

MCA III User's Guide

CT-X User's Guide

Seeker Setup User's Guide

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