

October 18th 2019

Lunch and Learn: **Cyanobacteria Assessment Network (CyAN) App.**

New Tool for the Early Detection of Algal Blooms in U.S. Freshwater Systems



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Cyanobacterial harmful algal blooms (HABs), which can appear in water bodies across the country, are an indicator of poor water quality and can potentially cause serious environmental and human and aquatic health effects. Historically, monitoring these HABs has been labor intensive and limited due to cost, time, and logistical constraints.

EPA developed the Cyanobacteria Assessment Network Mobile Application (CyAN app) to help local and state water quality managers make faster and better-informed management decisions related to cyanobacterial blooms. It provides an easy to use, customizable interface for accessing algal bloom satellite data for over 2,000 of the largest lakes and reservoirs in the United States.



*The **CyAN app** is free and available for download on Google Play™. It is designed for use on Android™ devices and is compatible with versions 4.2-9.0 (API levels 18-26). It is currently being developed as a web-based app, which will be compatible with most devices.*

Download the CyAN app today: epa.gov/water-research/CyANapp

Partnership

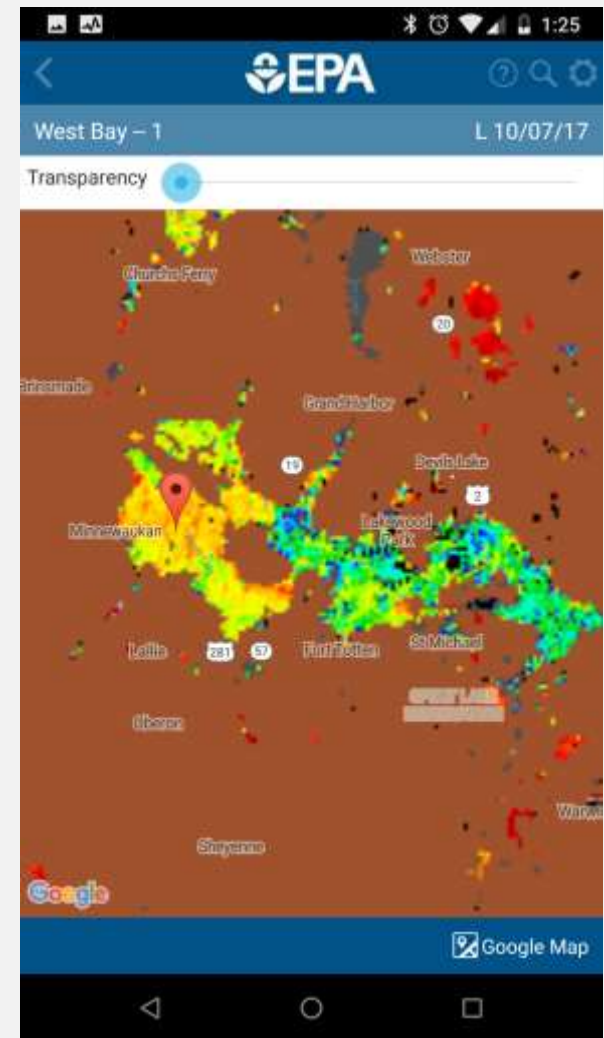
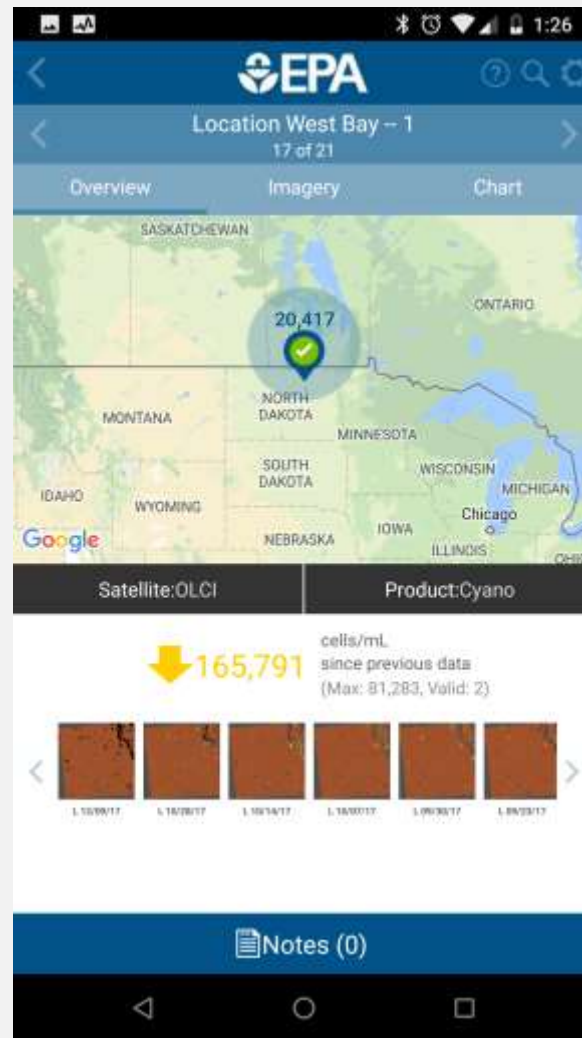


epa.gov/cyanoproject

CyAN is a multi-agency (NASA, NOAA, USGS and EPA) effort that supports environmental management and public use of US lakes and reservoirs by providing a capability of ***detecting and quantifying algal blooms*** using satellite data records and disseminating this information through a mobile application developed and hosted by EPA.

- CyAN Mobile App provides water quality managers with a user-friendly tool that reduces the complexities associated with accessing satellite data to allow fast, efficient, initial assessments across lakes and drinking water reservoirs.
- Data from the Ocean and Land Colour Instruments (OLCI) sensor onboard the European Space Agency Copernicus Sentinel-3 satellite are used in ***near real-time*** to make initial water quality assessments and quickly alert managers to potential problems and emerging threats related to cyanobacteria.

Mobile App Overview





Weekly Data *Behind the Scenes*

50,000
cell/mL

200,000
cell/mL



Sunday

Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

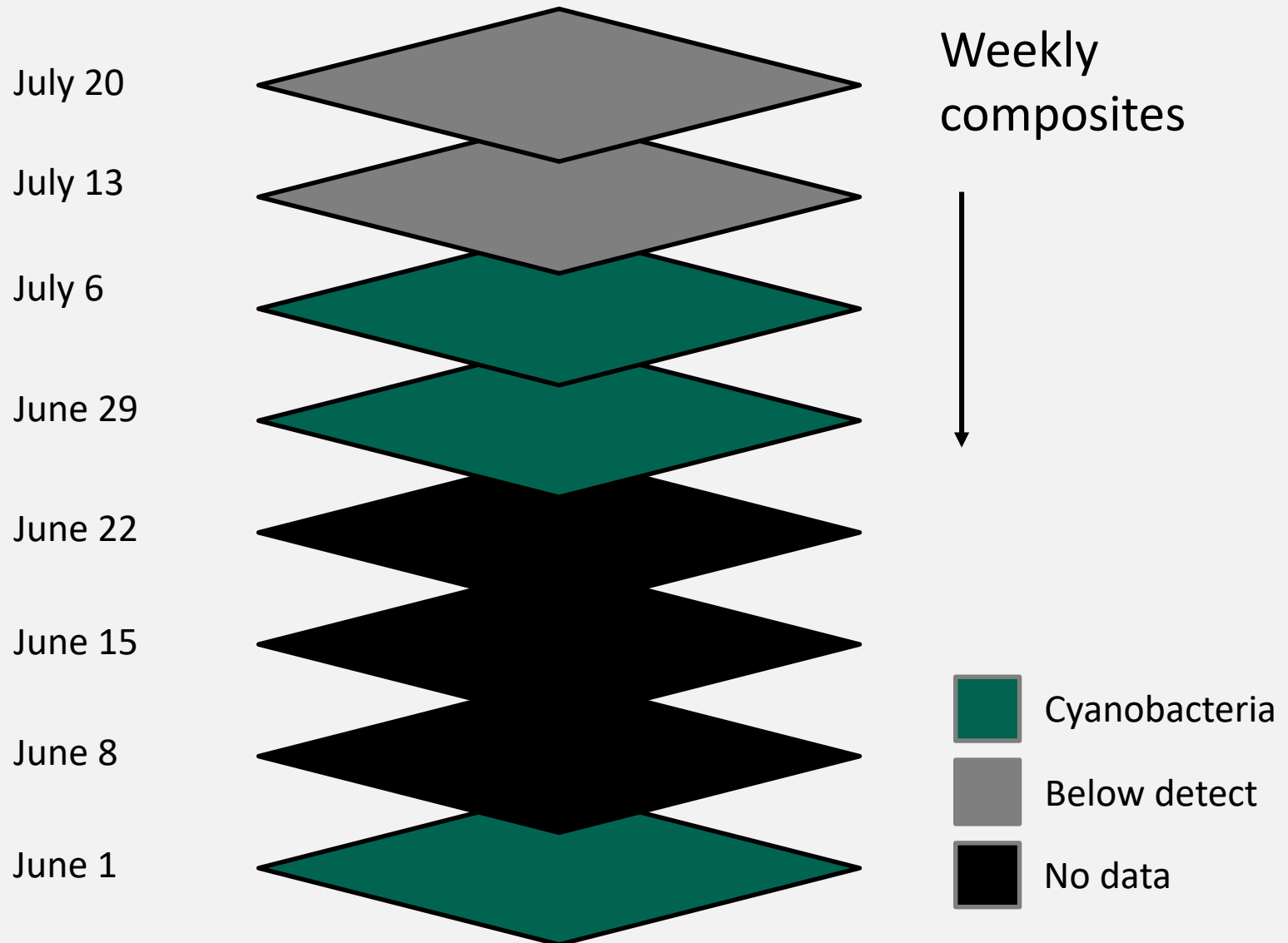
Weekly composite



200,000
cell/mL

Is the App Up-to-Date?

Only reports when cyanobacteria is detected.



CyAN App Feedback

Aaron Borisenko, Oregon Department of Environmental Quality:	<i>"Moving ahead we want to spread the word about the application and get more eyes on the situation. It is important to identify where blooms are typically occurring using CyAN app as an early warning system."</i>
Benjamin Holcomb, Utah Department of Water Quality:	<i>"The images we've been receiving through the CyAN project have been tremendously helpful to the Utah Division of Water Quality (UDWQ), providing the foundation for a wide range of useful outputs. It allows UDWQ to better target field sampling and more efficiently use our limited resources to protect public health. Finally, images are easily shared with response agencies as a useful visual communication aid."</i>
Angela Shambaugh, Vermont Department of Environmental Conservation:	<i>"Large lakes like Lake Champlain have an extremely patchy distribution of cyanobacteria due to varying environmental conditions and lake shape. The CyAN app helps viewers visualize that patchiness and provides additional context for our [cyanobacterial] Tracker Map which shares data gathered by our cyanobacteria monitoring program."</i>
Daniela Gurlin, Wisconsin Department of Natural Resources:	<i>"The CyAN app provides our water resources specialists a tool to access near real-time satellite data products for detecting and quantifying algal blooms in hundreds of lakes across Wisconsin. Simple map navigation and minimal steps required to mark locations and view the latest images make this app a useful tool for responding to questions related to the potential presence of harmful algal blooms in specific lakes. Time series images and blooming charts provide additional insights into the temporal dynamics and intensities of algal blooms at a particular location."</i>
Bart Johnsen-Harris, Environment America:	<i>"From Florida to the Great Lakes to California, we are seeing widespread outbreaks of toxic algae in our waterways. As I work on these issues and advocate for clean water policy, CyAN has proved to be a uniquely helpful tool. I expect that scientists, lawmakers, and concerned citizens alike will benefit from these maps."</i>
Lenard Long, Lake Cascade Citizen Scientist Monitoring Group:	<i>"Our goal is to enhance the community's ability to rapidly respond to and manage the growing threat posed by toxic algae by reducing human controlled nutrient pollution; the CyAN app helps us do that.... the CyAN app has been extremely useful...."</i>



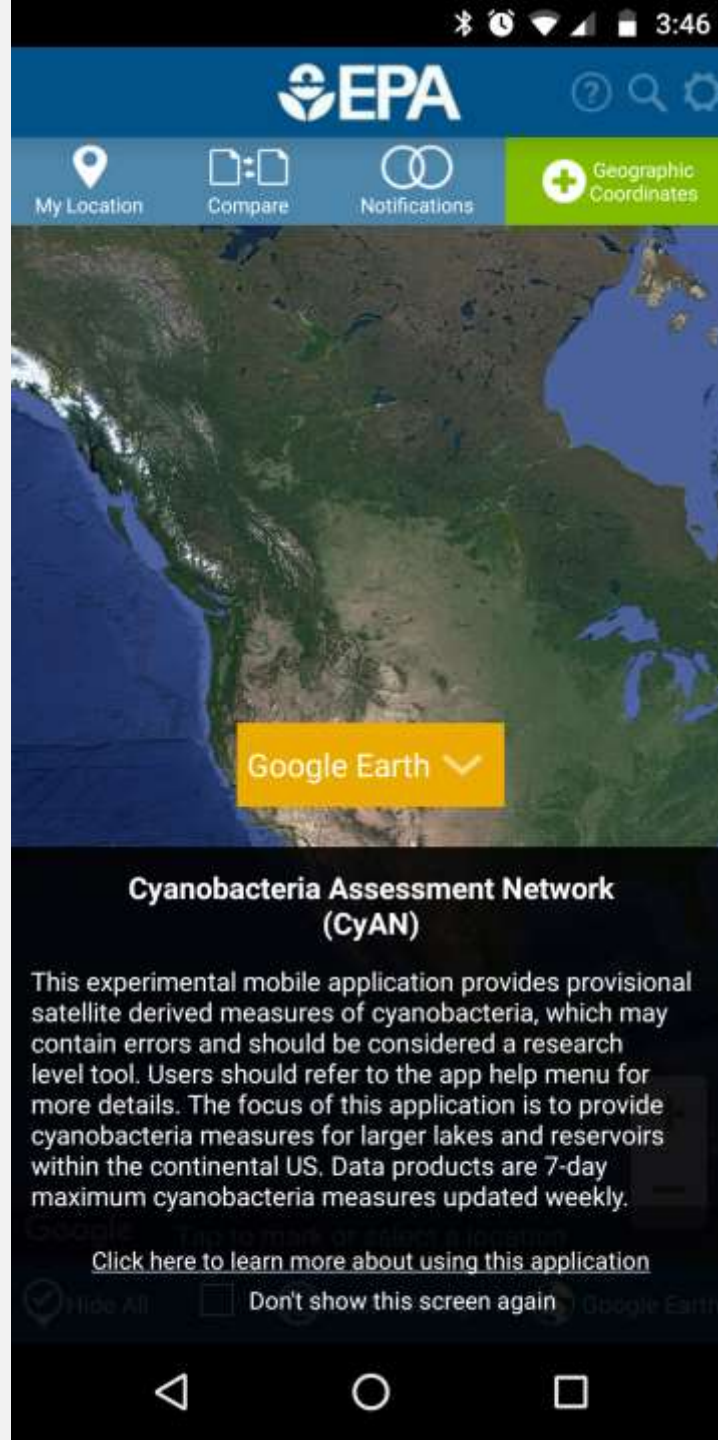
Download the CyAN app today:
epa.gov/water-research/CyANapp

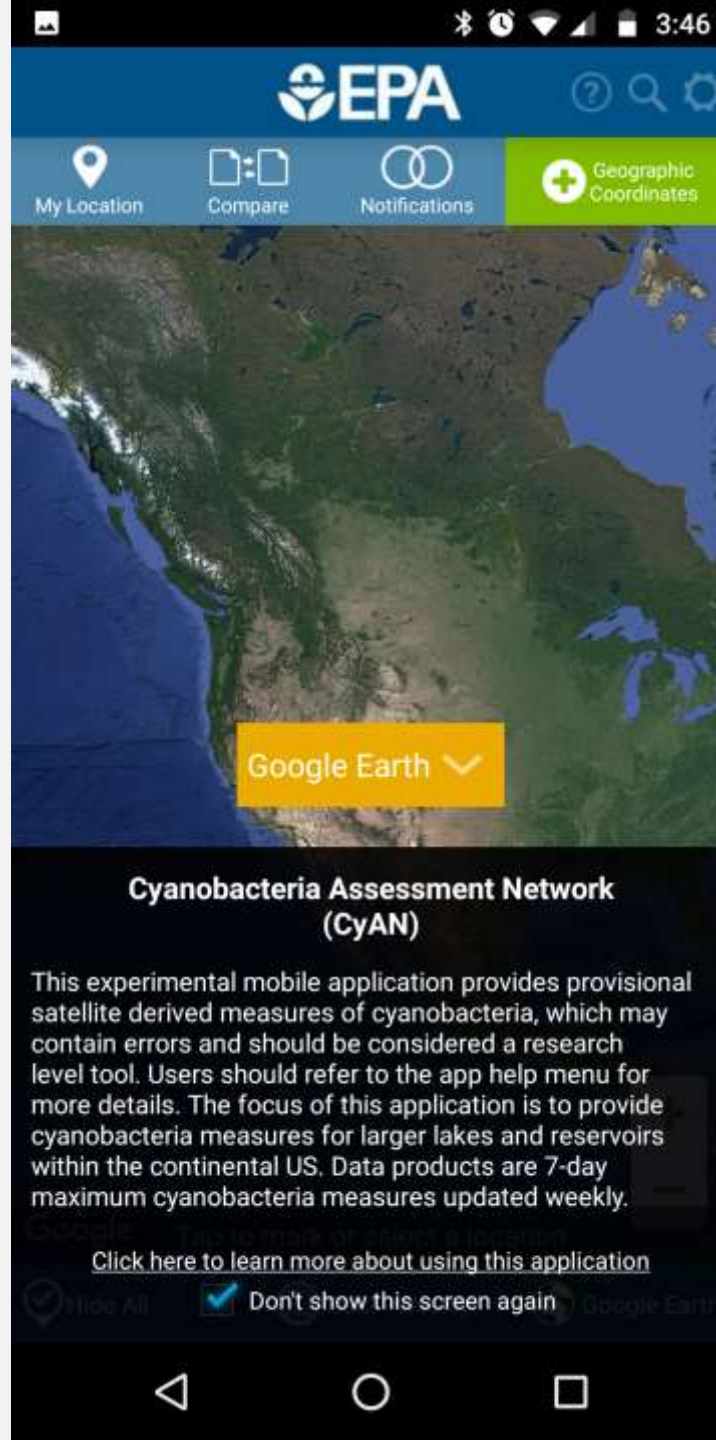


Step-by-Step Training



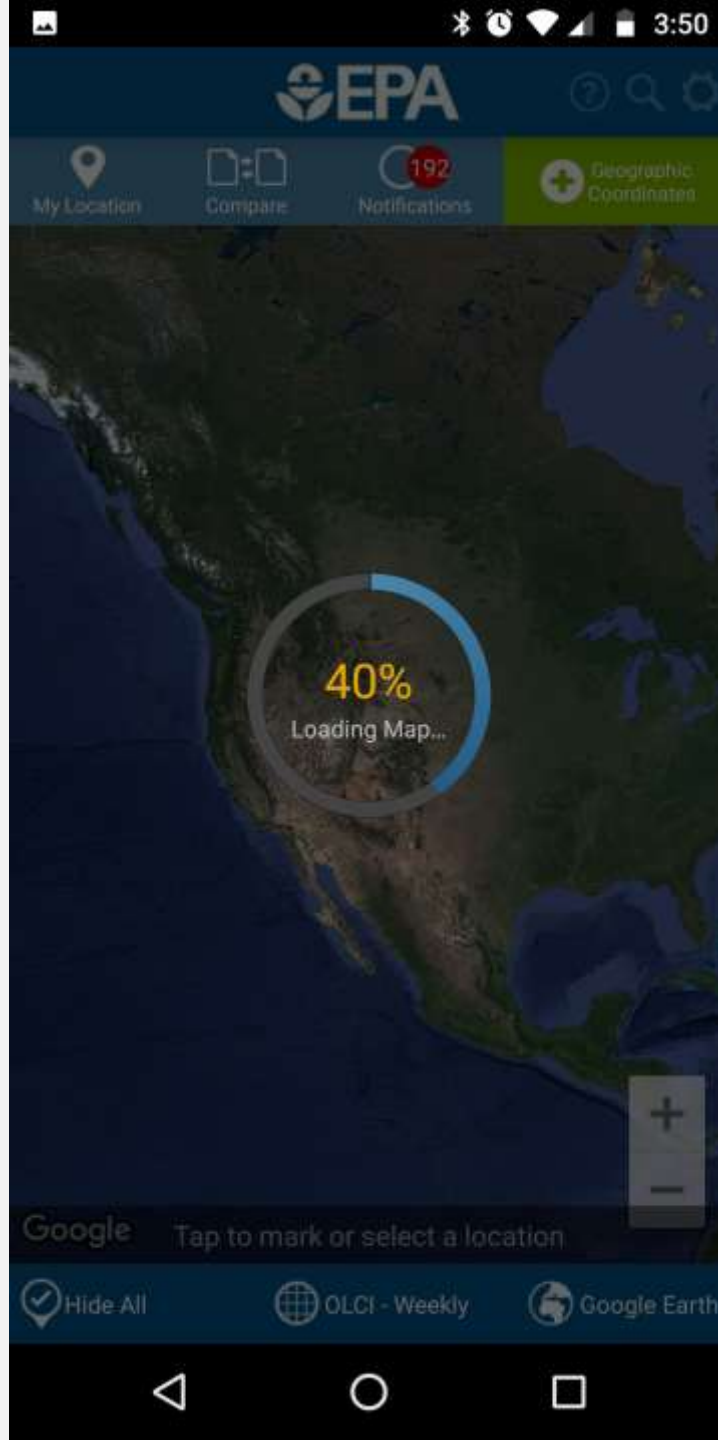
Single point location example













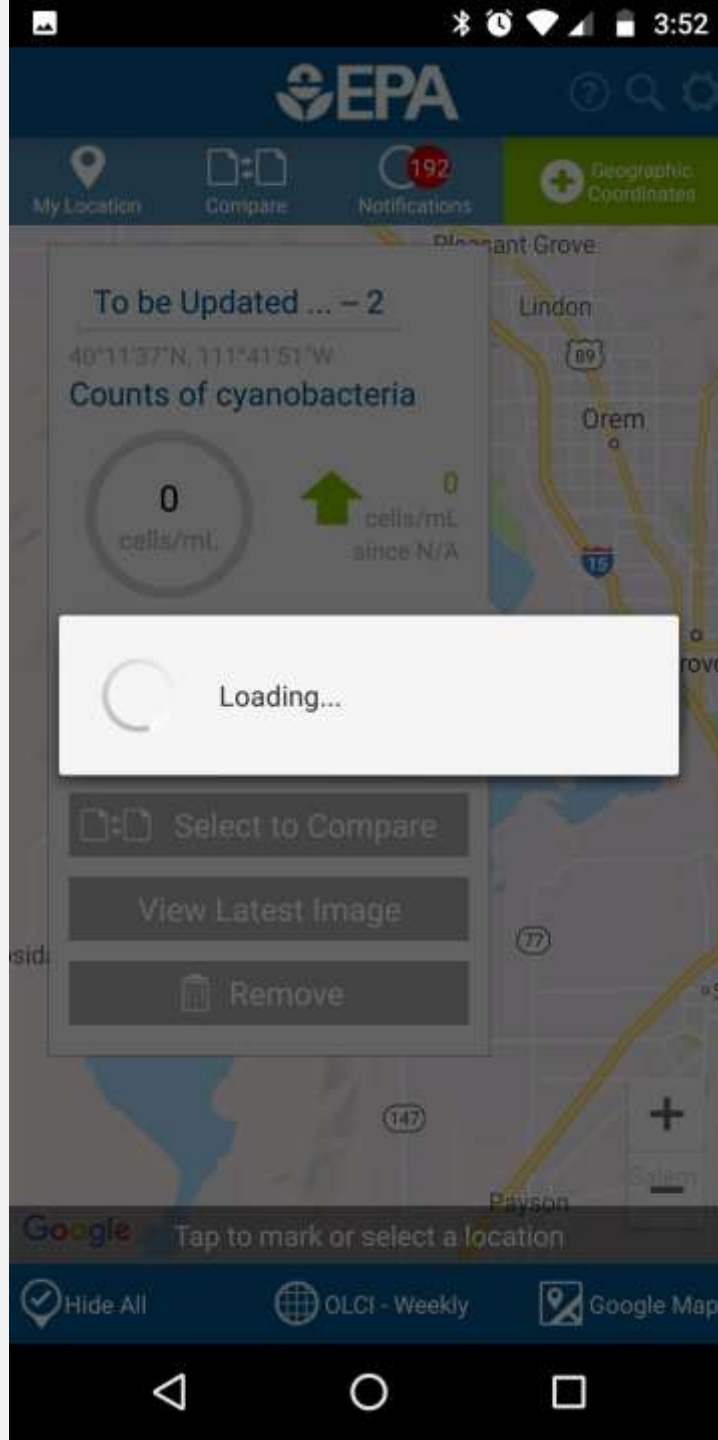


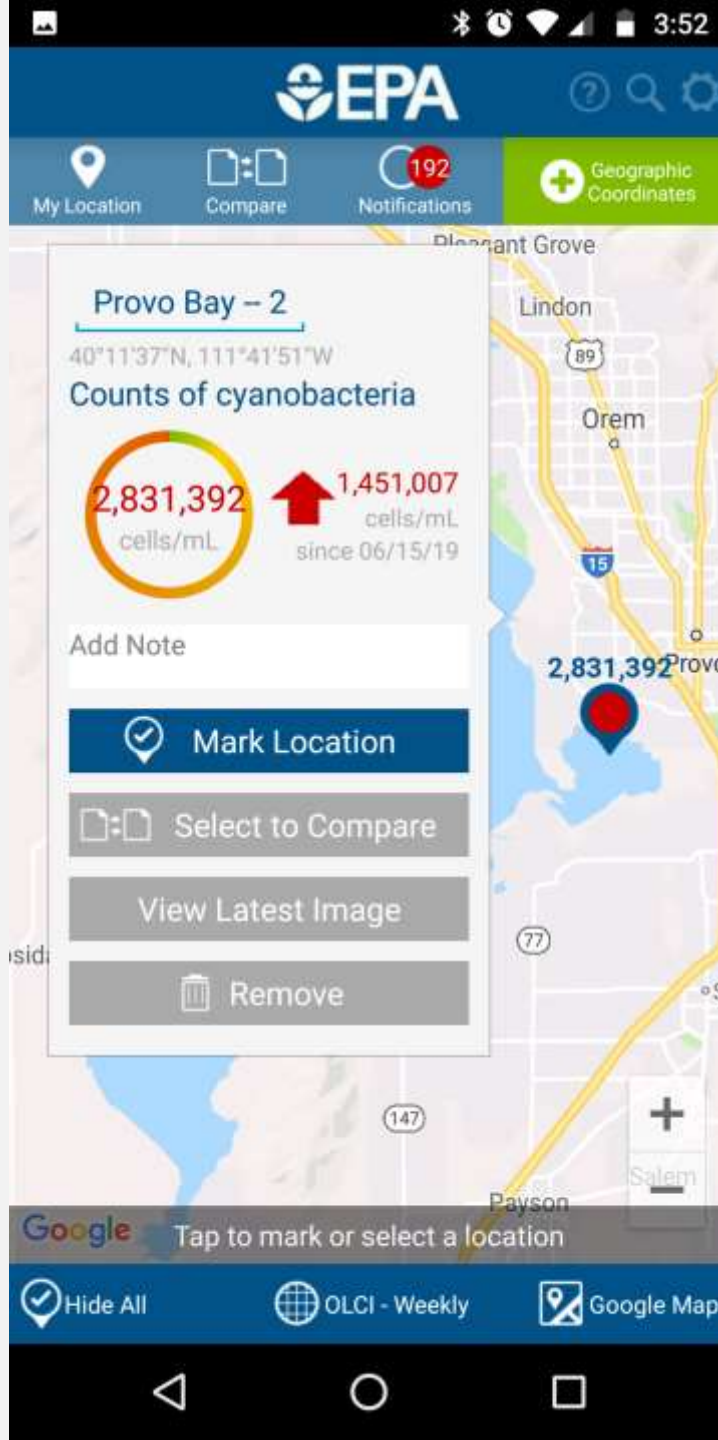


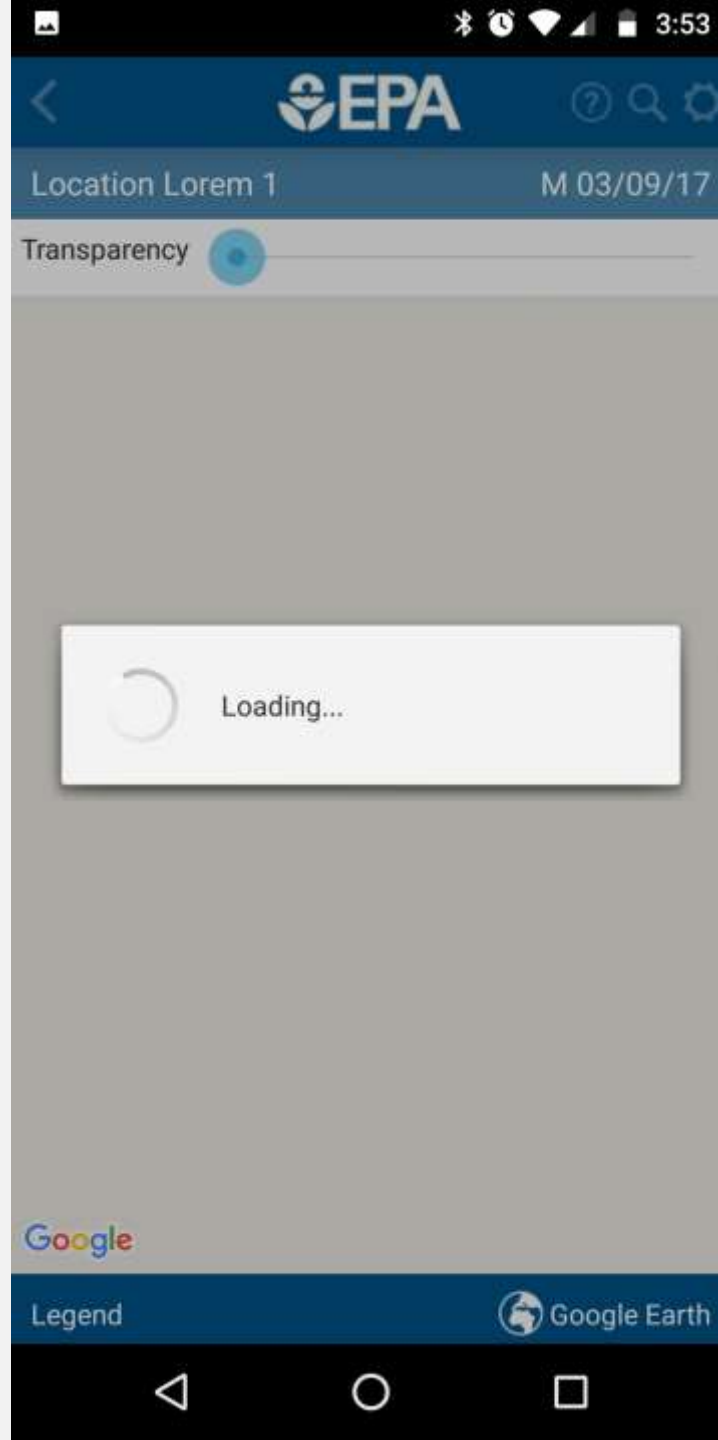




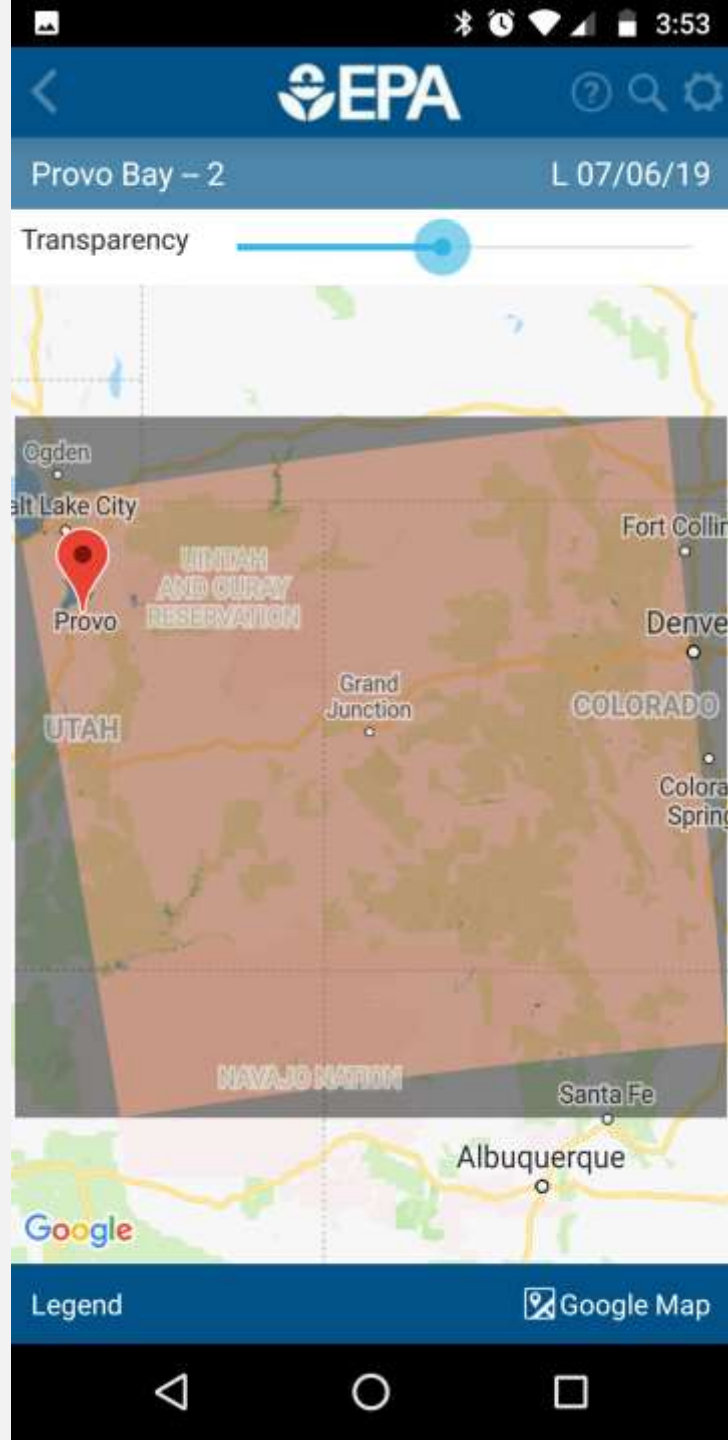




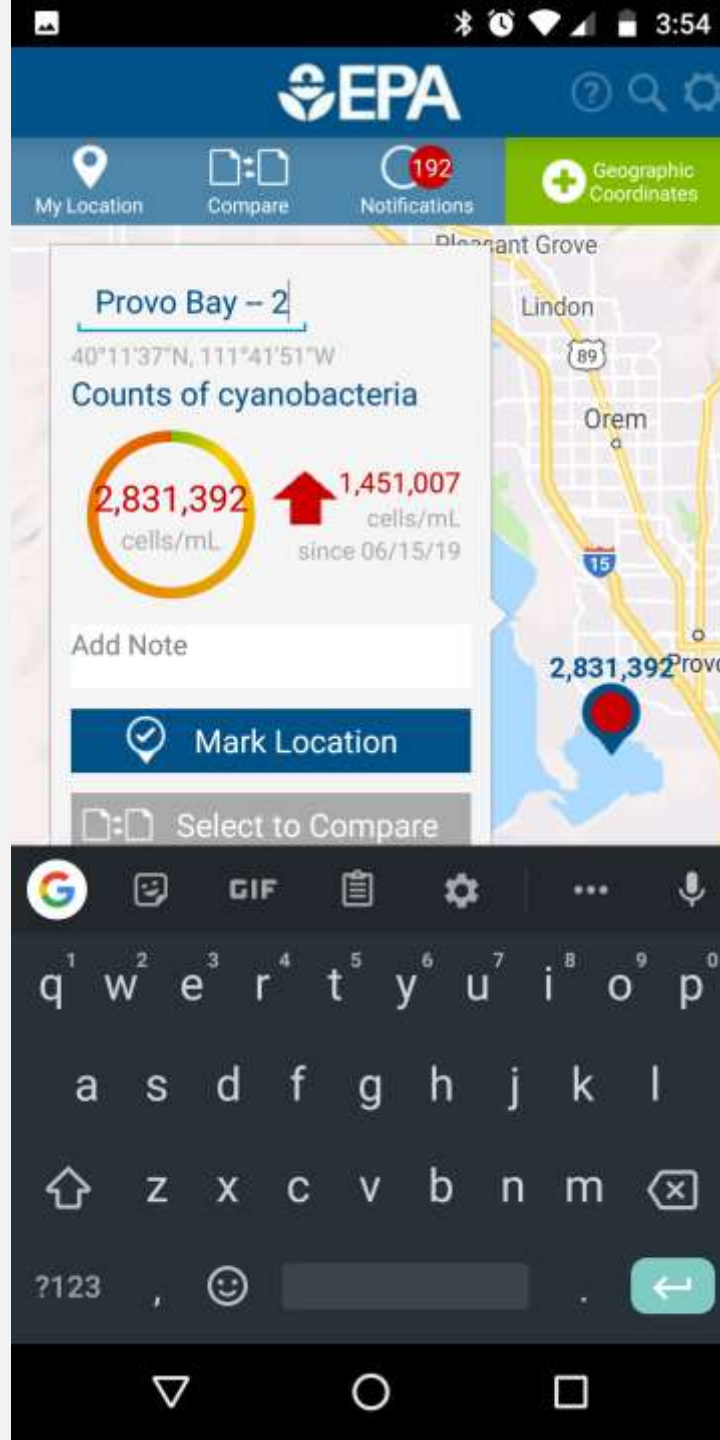


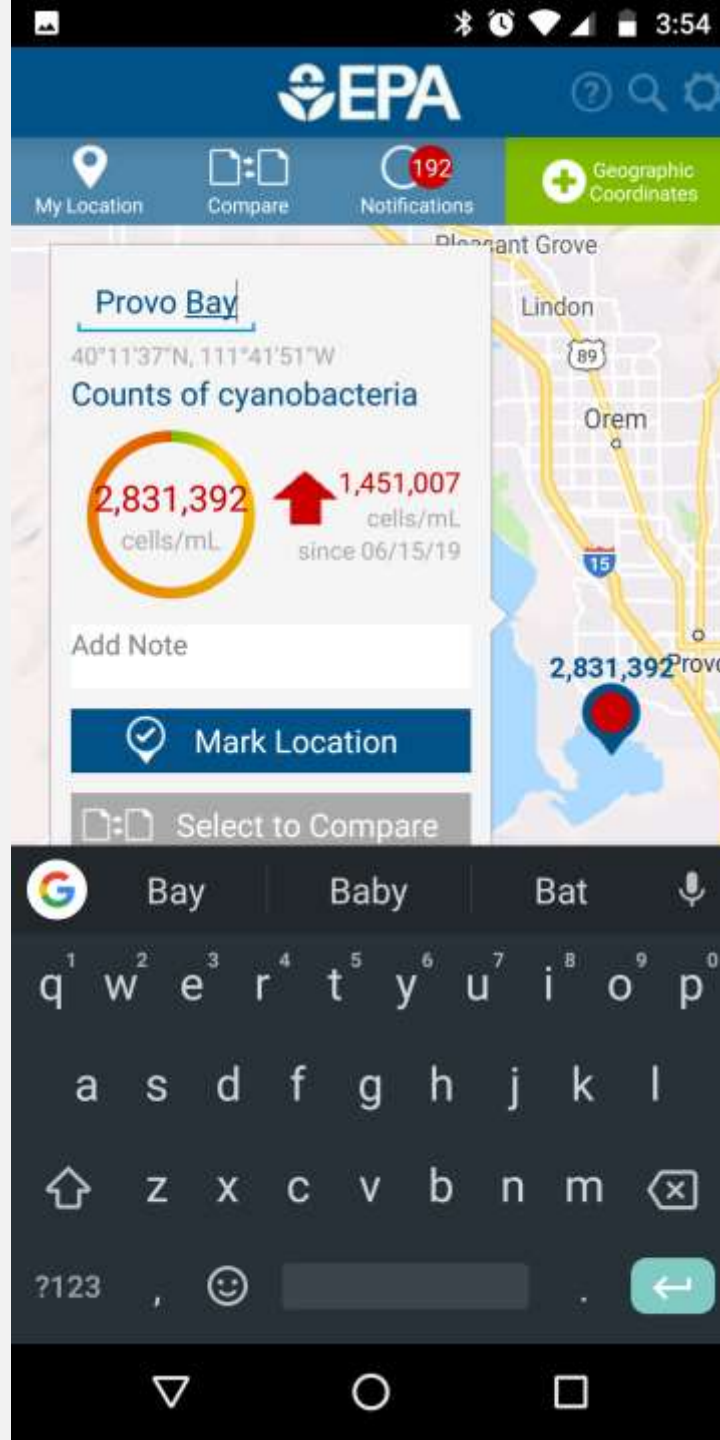




















Version: R.1.0.1


Geographic Coordinates

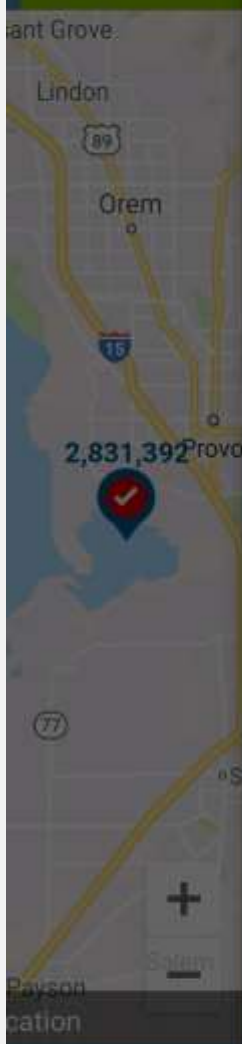
Modify Graph Color Configuration


Low	From	To
	10,000	109,000
Medium	From	To
	110,000	299,000
High	From	To
	300,000	1,000,000
Very High	Higher than	
	1,001,000	


☐ Alert when higher than


1,000,000

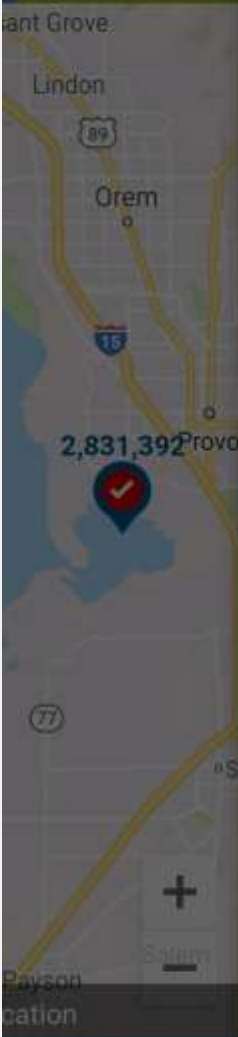
 Google Map





Version: R.1.0.1?🔍⚙️

Geographic Coordinates




2,831,392

Provo

Google Map

Modify Graph Color Configuration

Low




From


10,000

To

109,000



Medium




From


110,000

To

299,000



High




From


300,000

To

1,000,000




Very High




Higher than

1,001,000

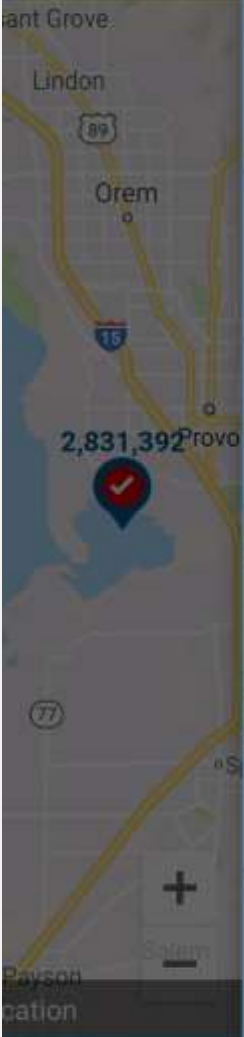


☒ Alert when higher than

1,000,000




Reload Data



Geographic Coordinates

2,831,392

Google Map



Version: R.1.0.1

Modify Graph Color Configuration

Low

From 10,000 To 109,000

Medium

From 110,000 To 299,000

High

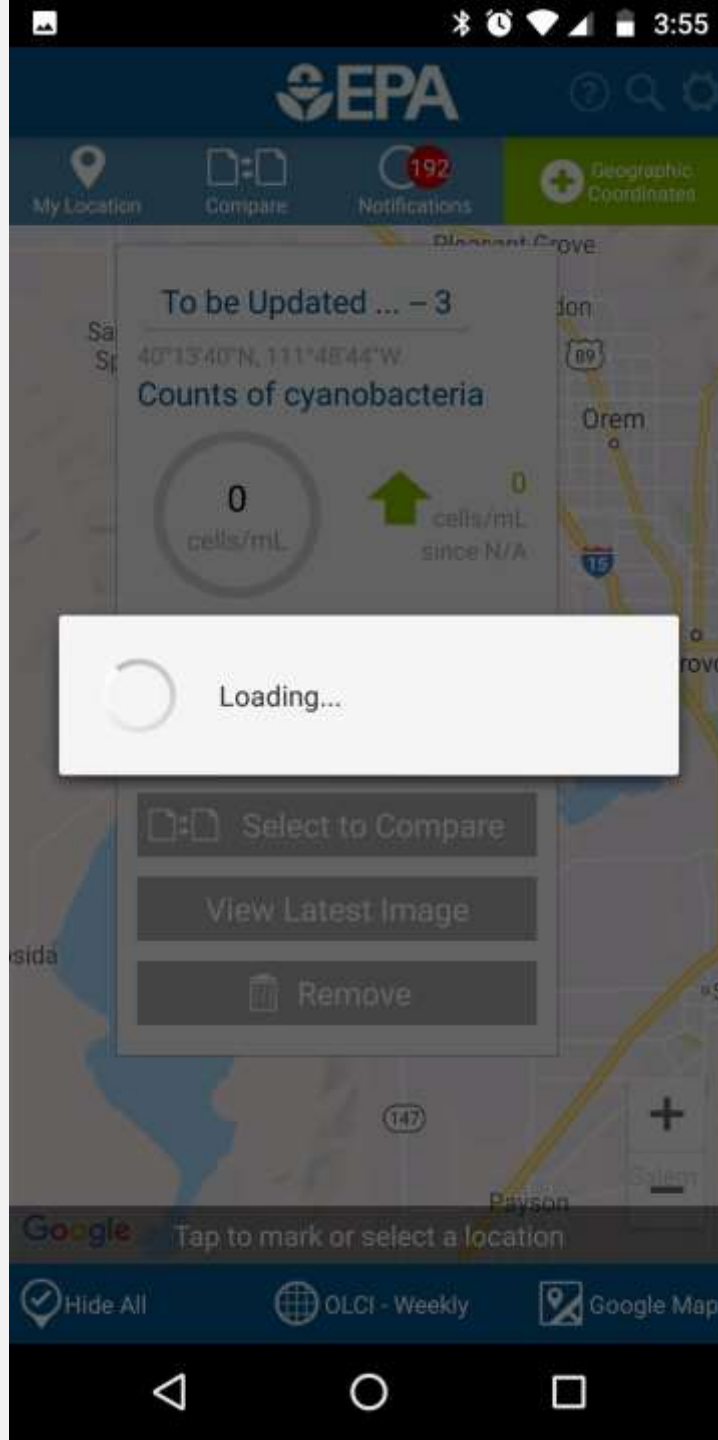
From 300,000 To 501,000

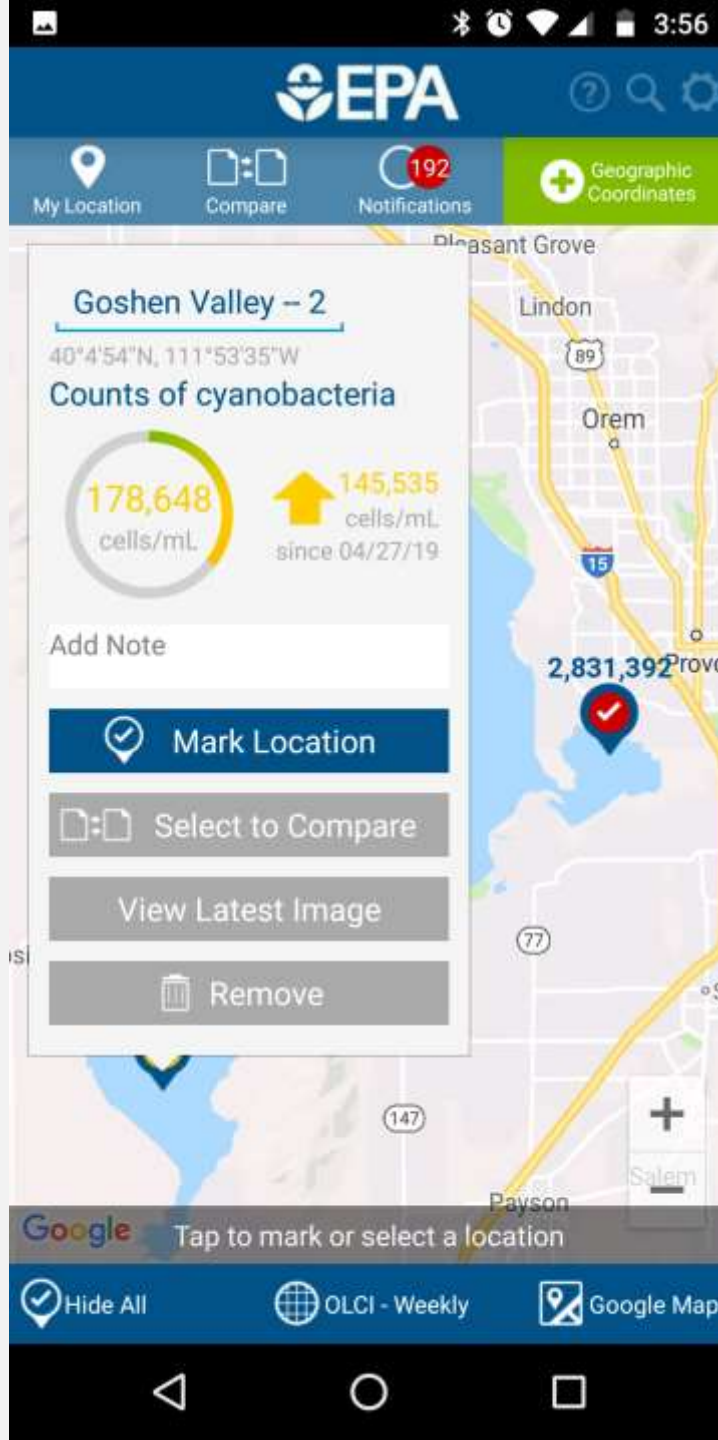
Very High

Higher than 502,000

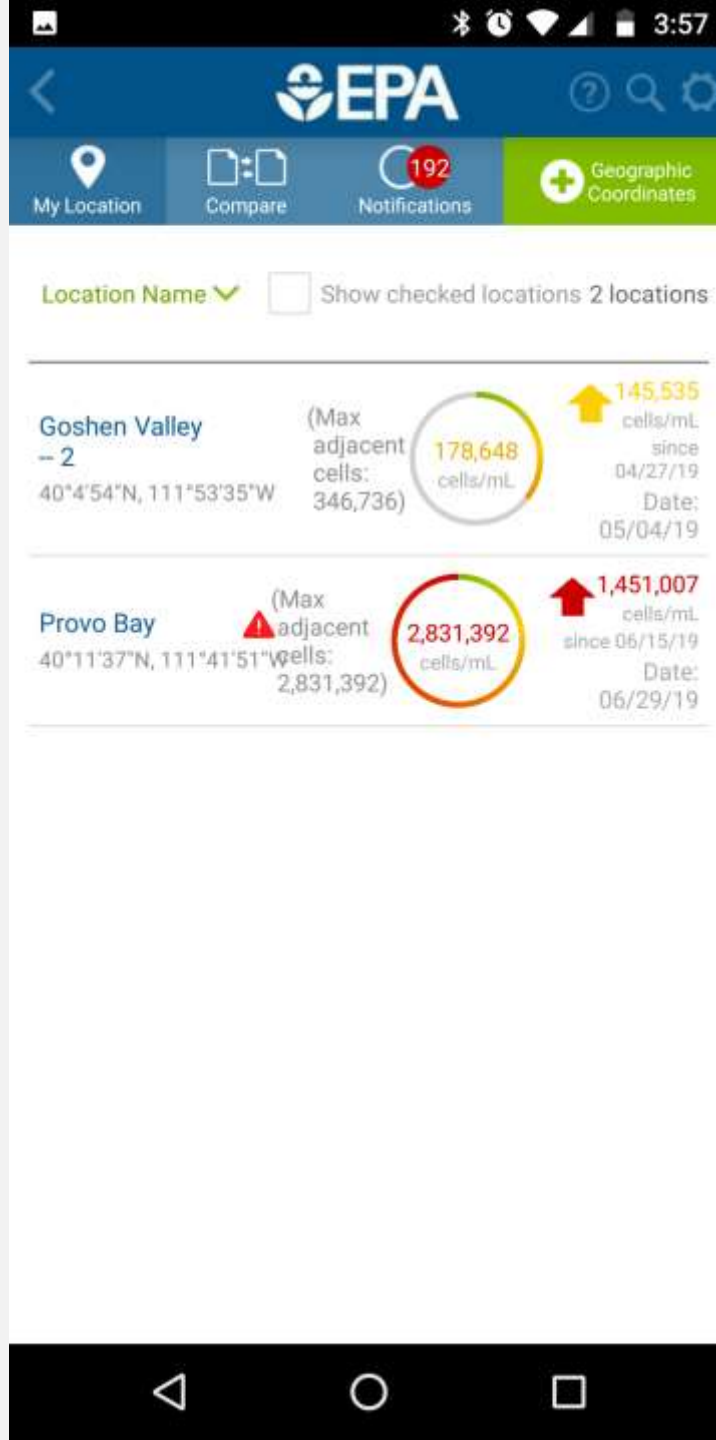
☒ Alert when higher than 1,000,000

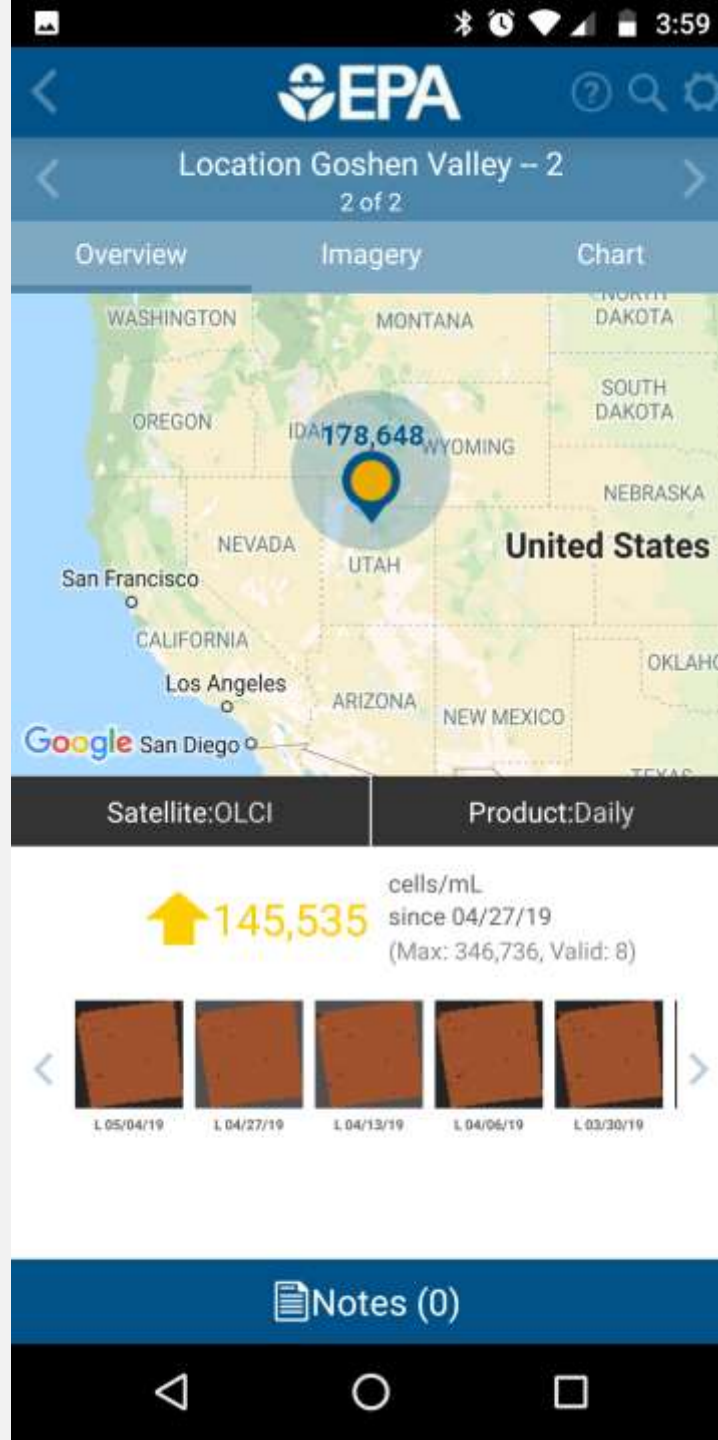
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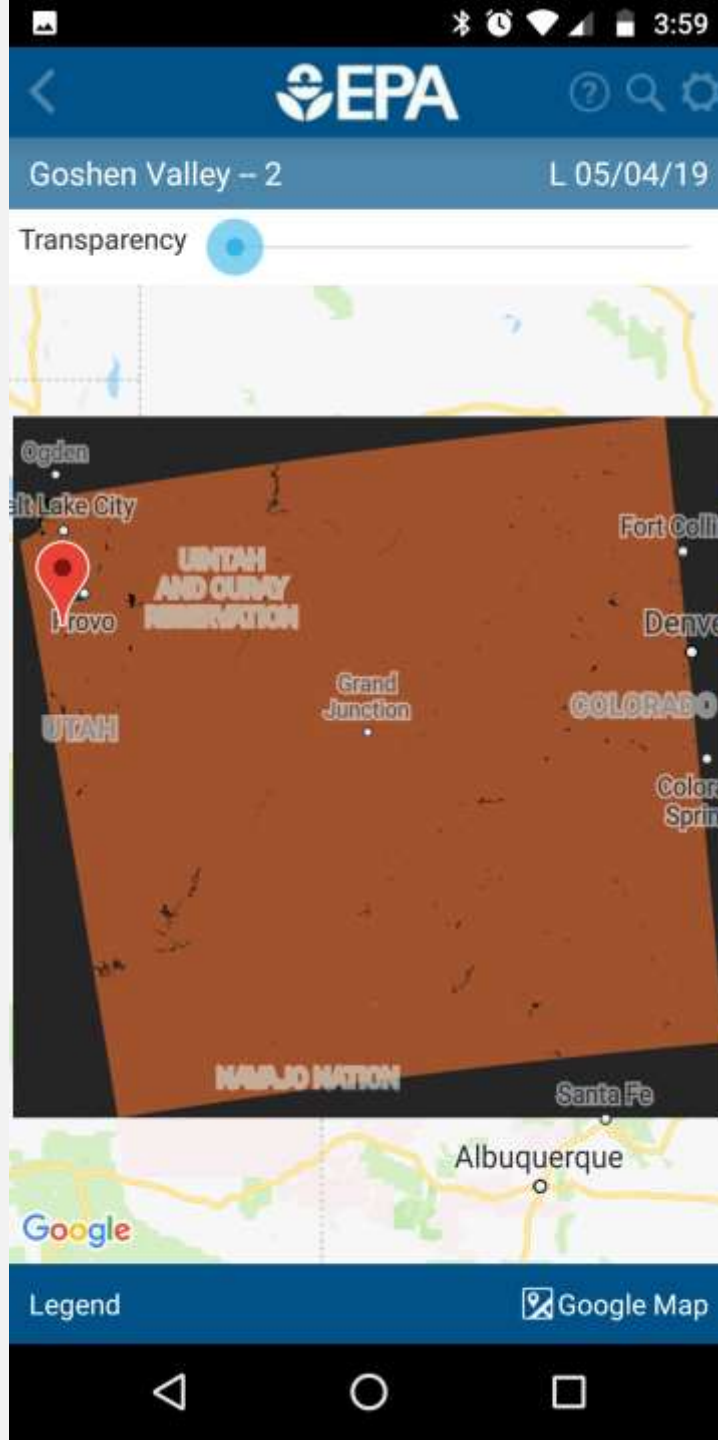




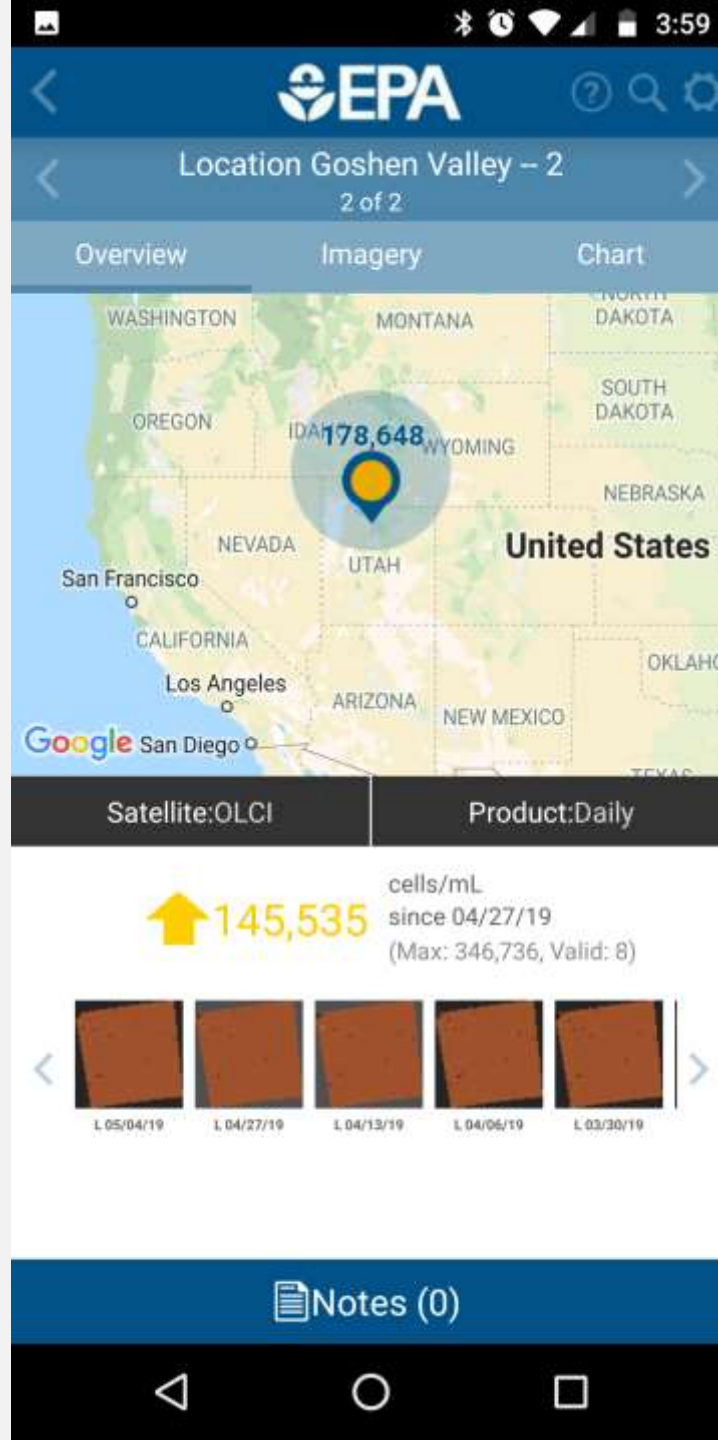


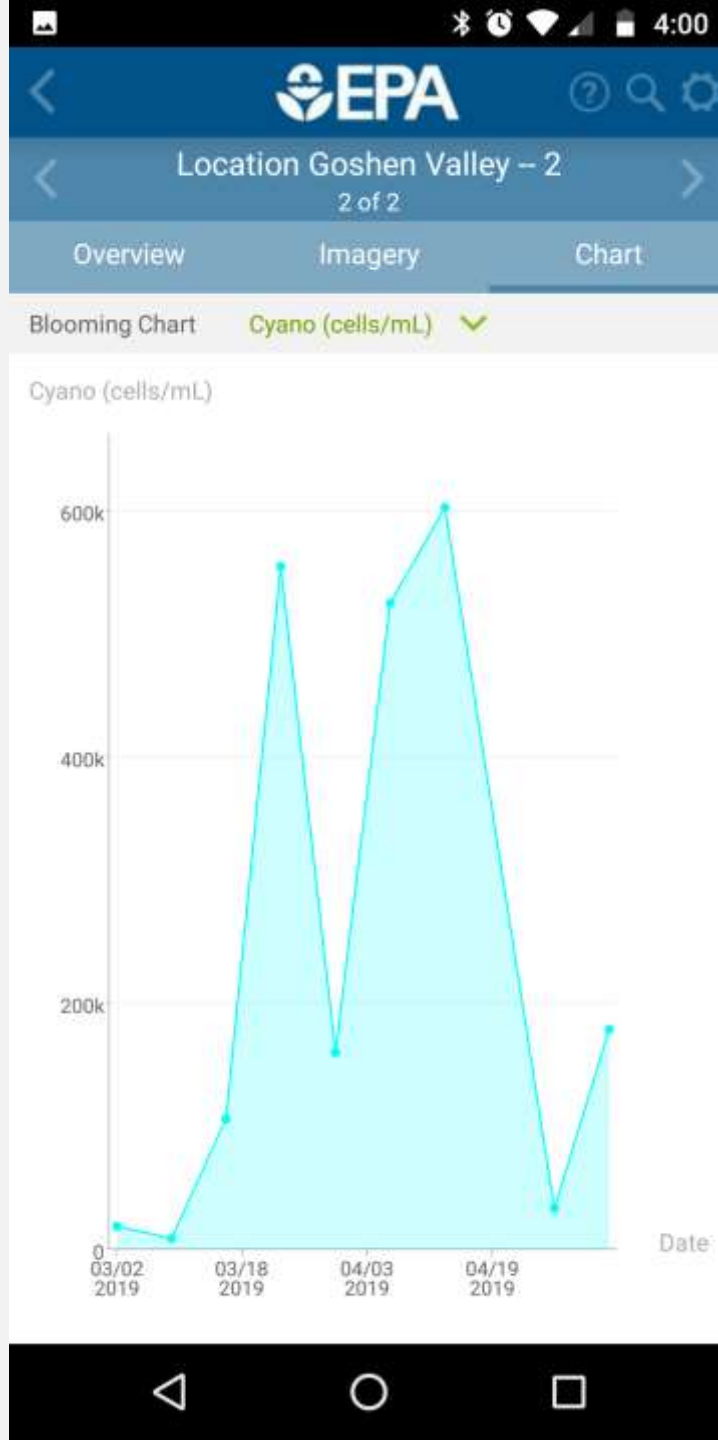


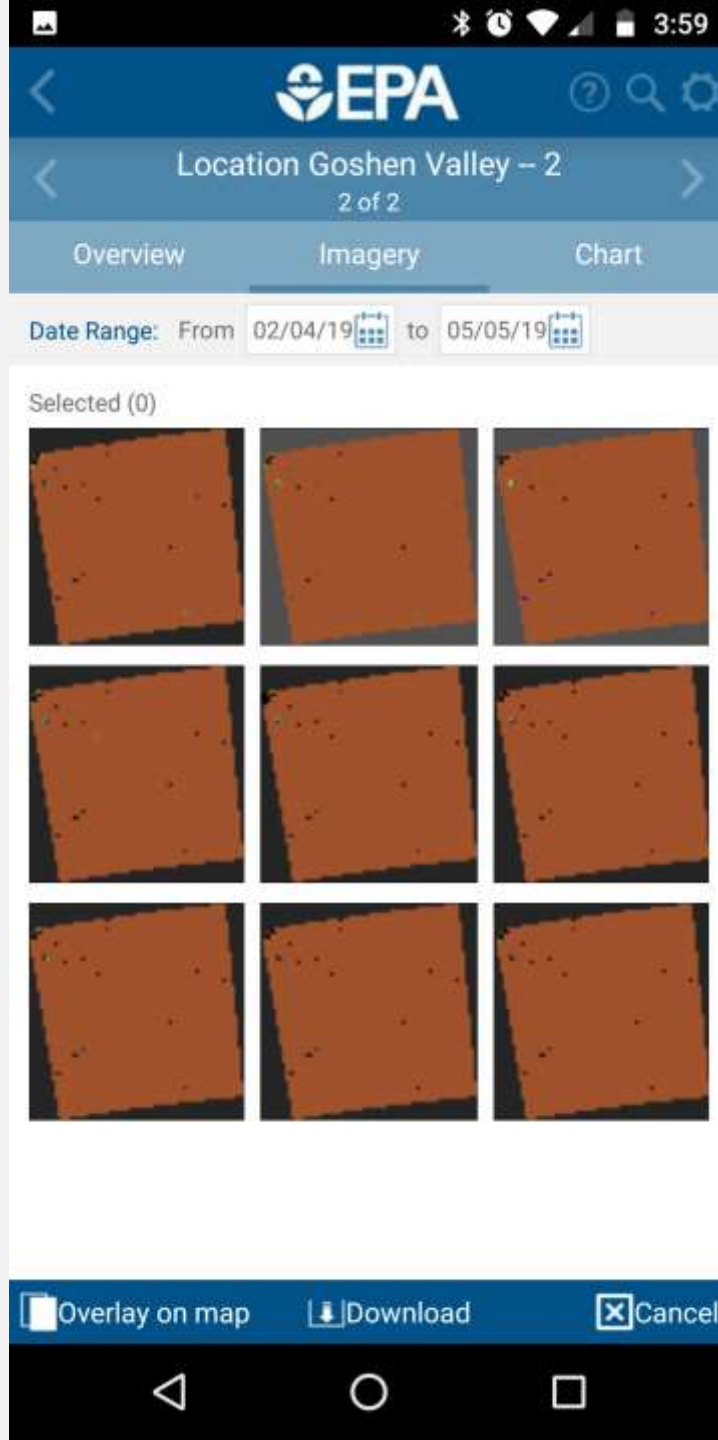


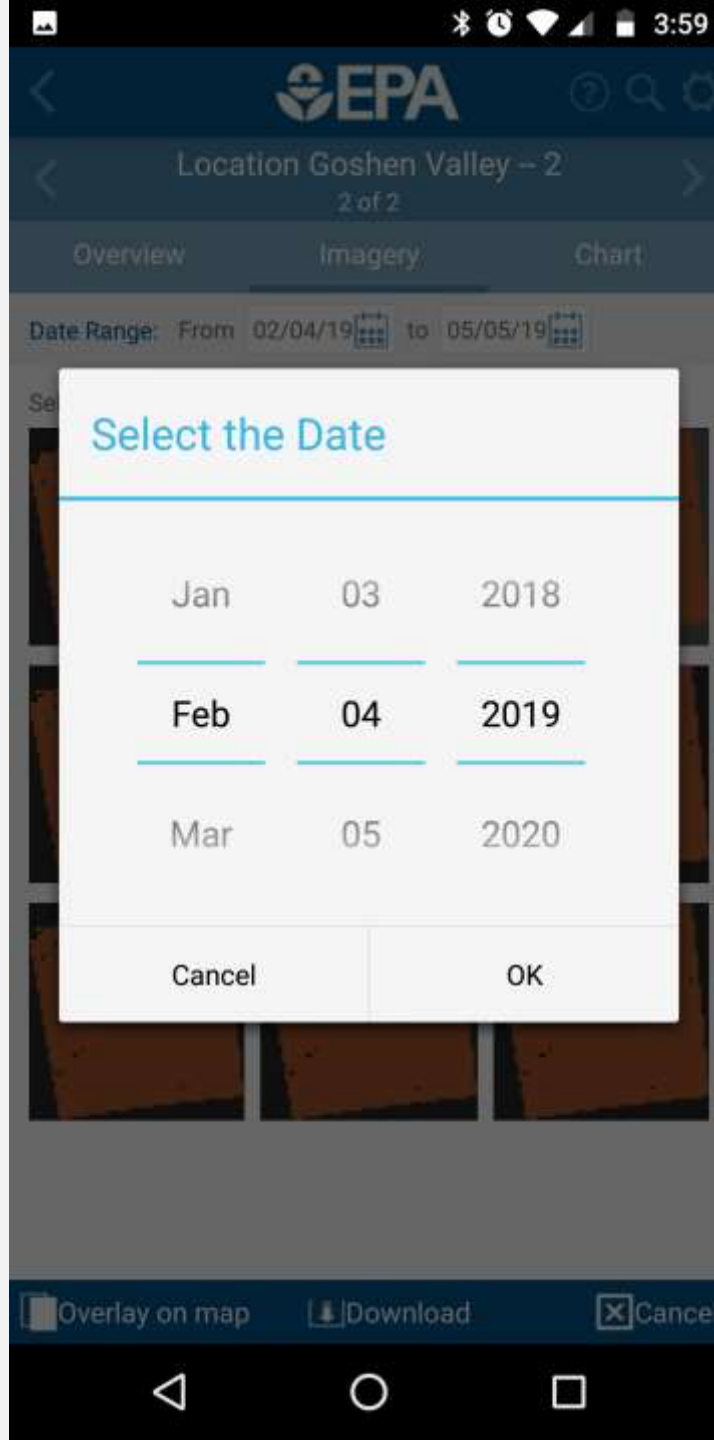


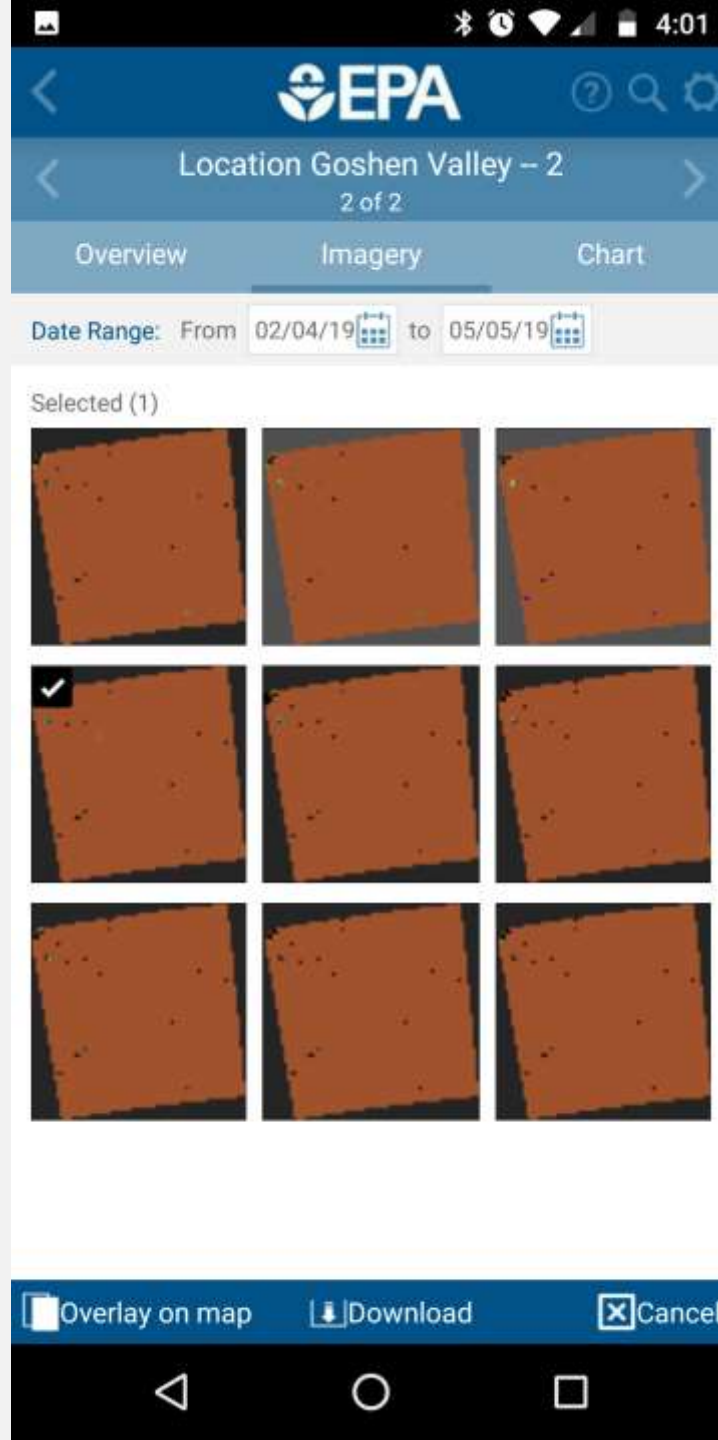


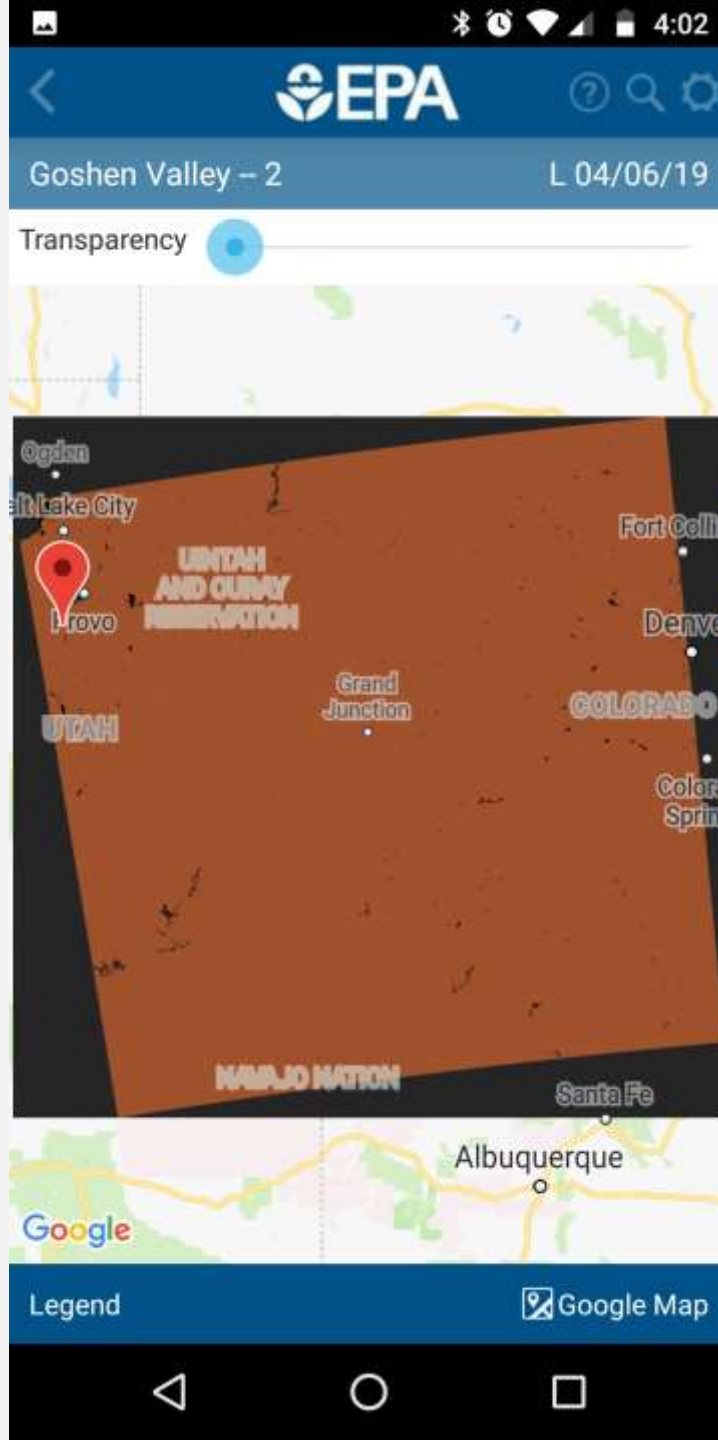




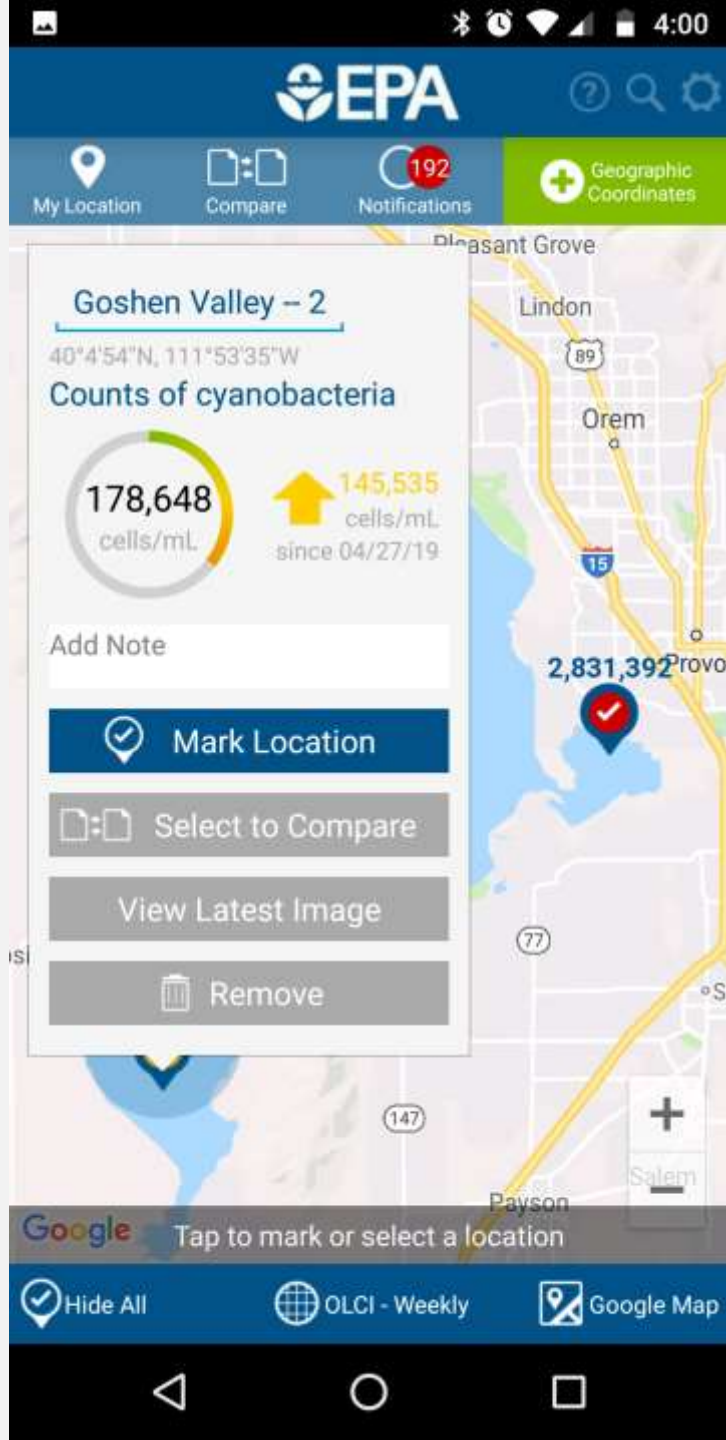




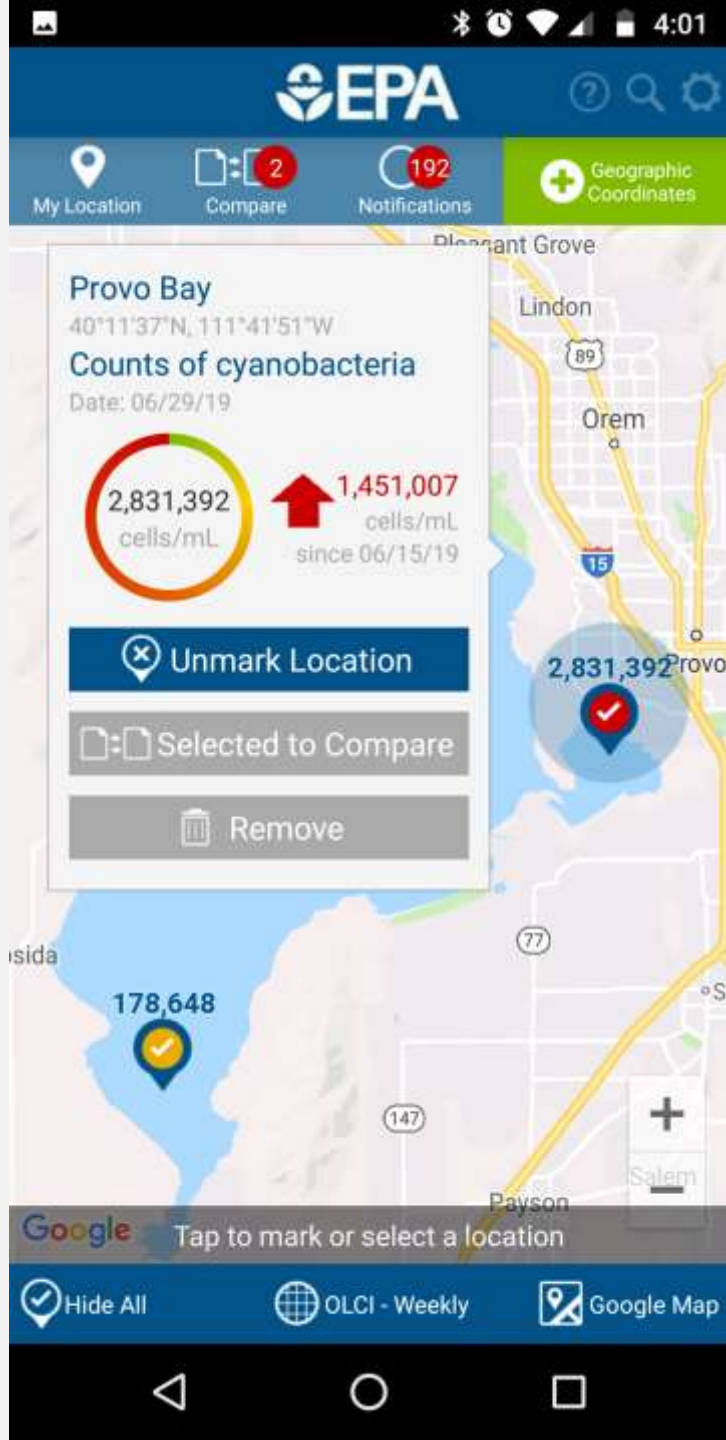


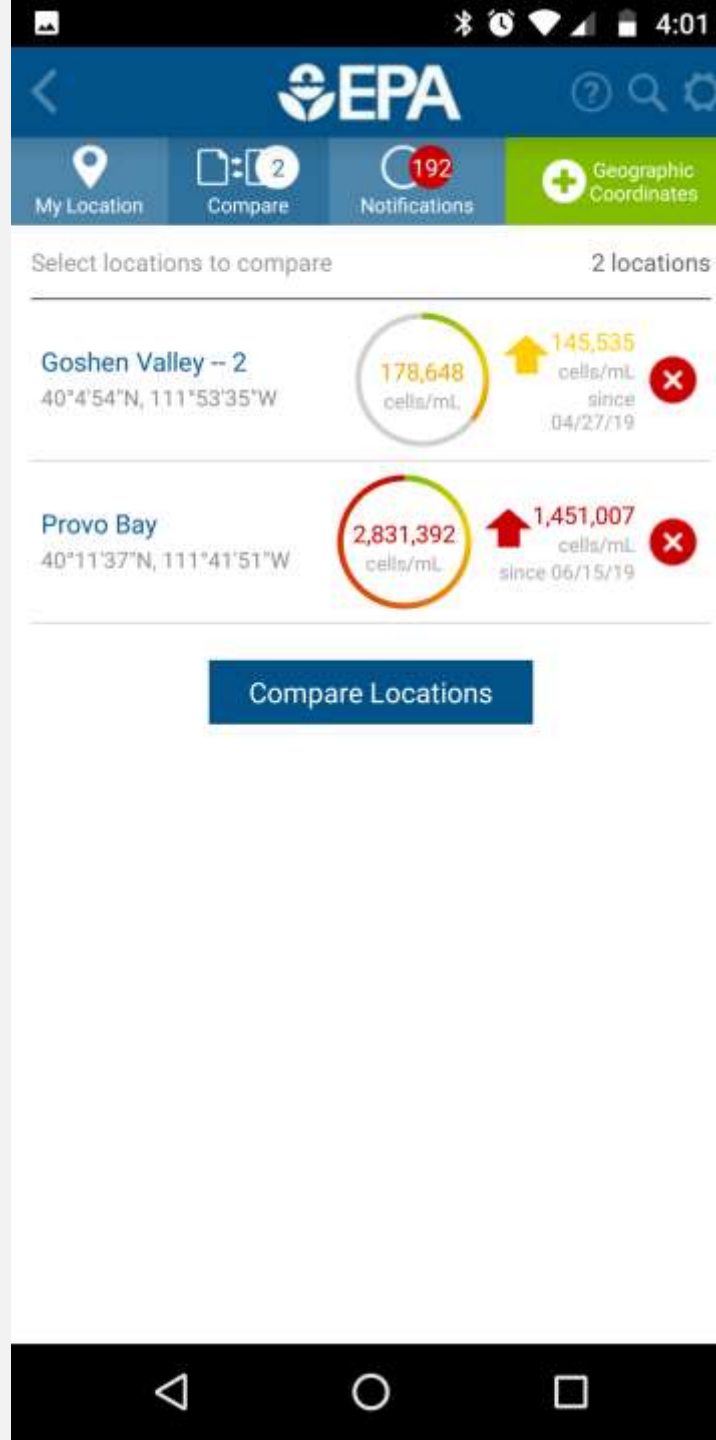


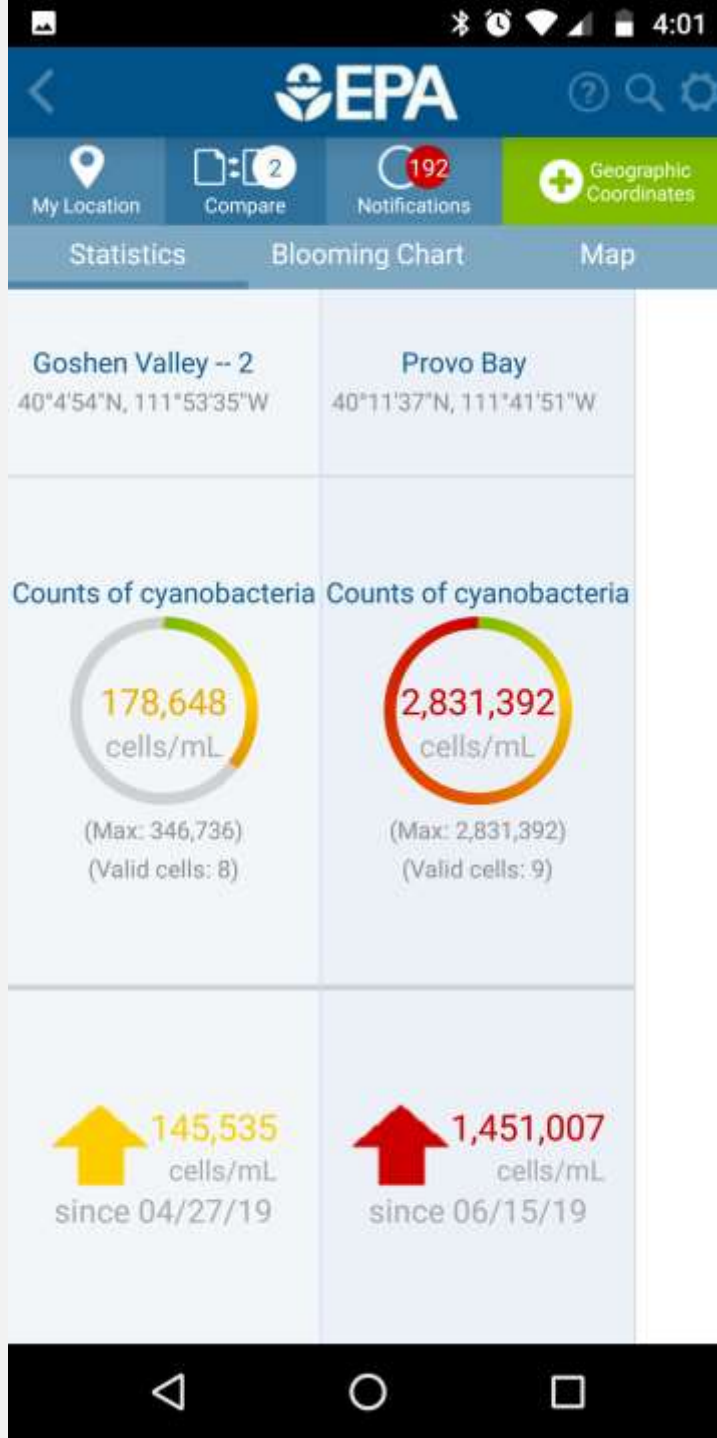
Location Comparison

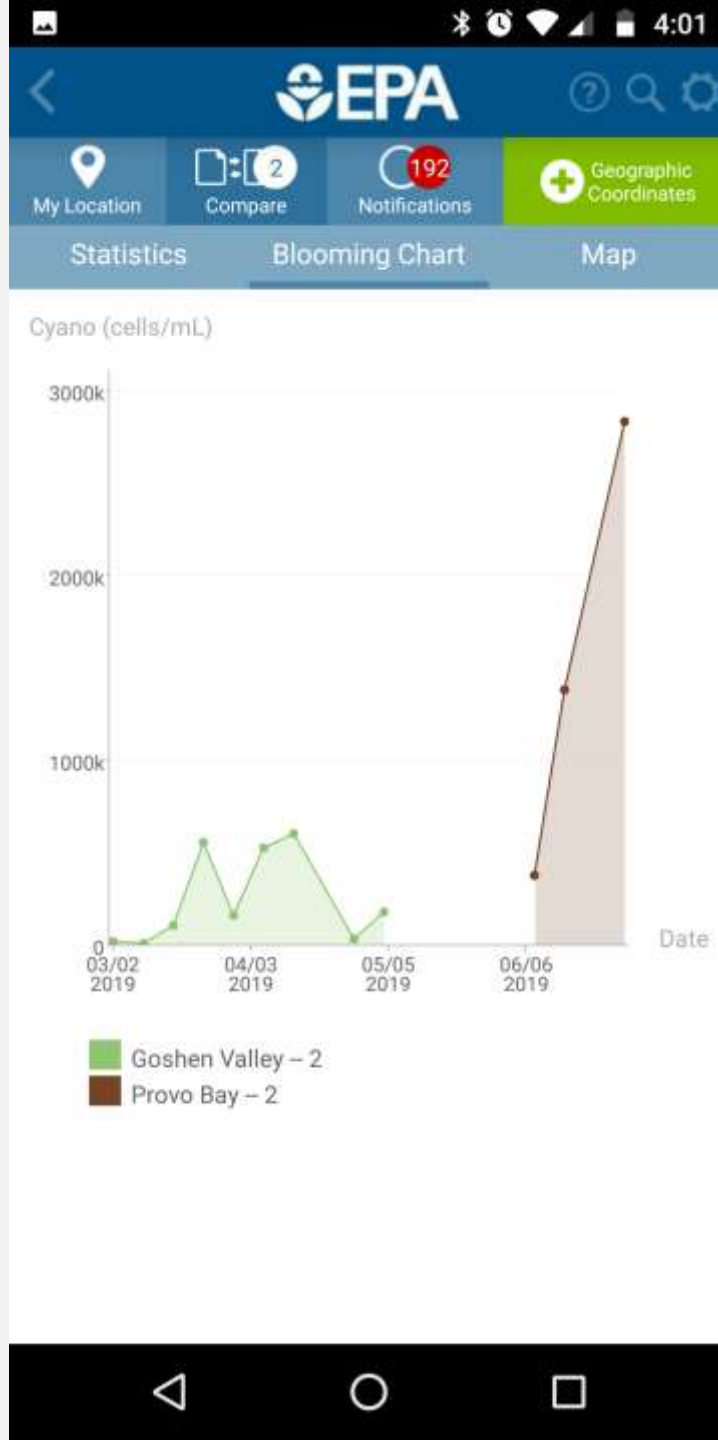




















Notifications






My Location

2Compare

192Notifications

Geographic Coordinates

☐ Only show new notifications 192 new notifications

Clear

New data available for 07-03-2019 09:31 AM EDT; update y...

07/03/19, 10:09

New Location Data Available

New data available for 07-03-2019 10:09 AM EDT; update y...

07/04/19, 11:03

New Location Data Available

New data available for 07-04-2019 11:03 AM EDT; update y...

07/06/19, 10:14

New Location Data Available

New data available for 07-06-2019 10:14 AM EDT; update y...

07/07/19, 10:44

New Location Data Available

New data available for 07-07-2019 10:44 AM EDT; update y...

07/07/19, 10:49

New Location Data Available

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07/08/19, 08:31

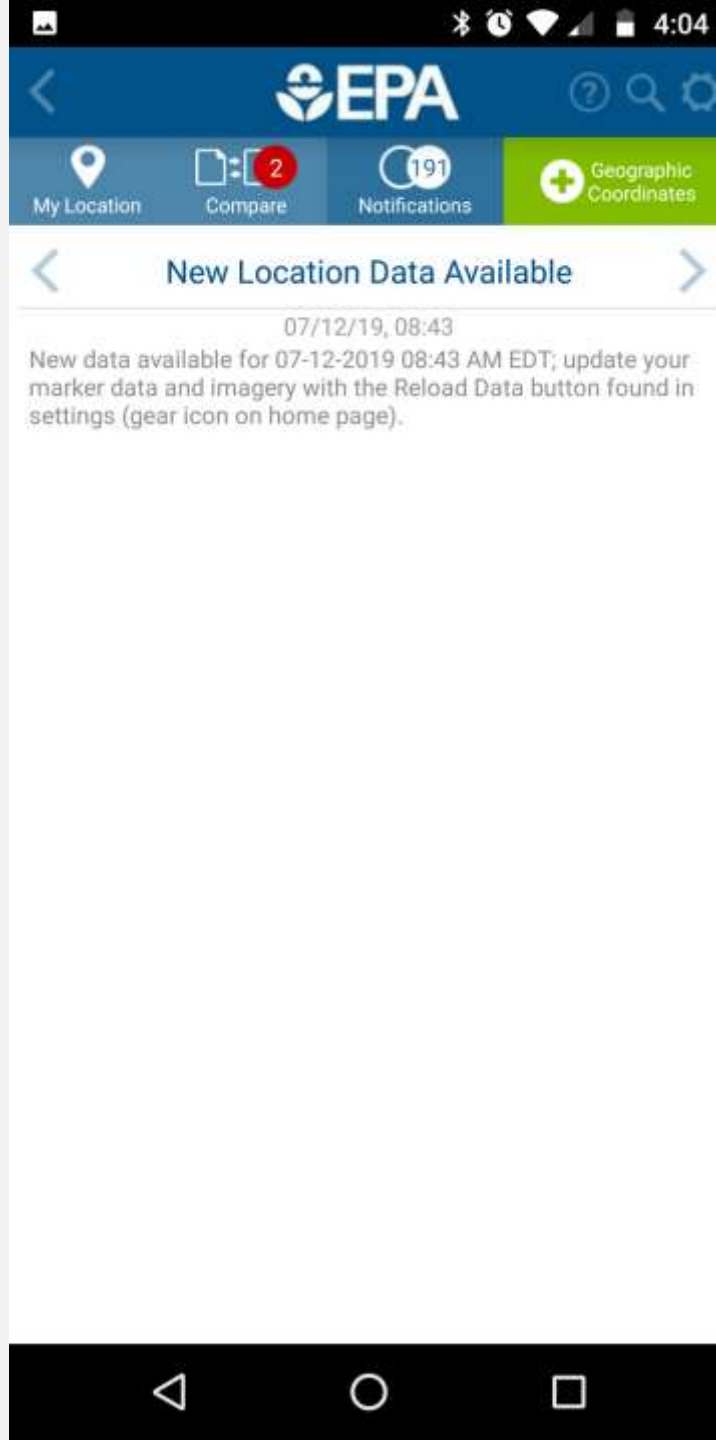
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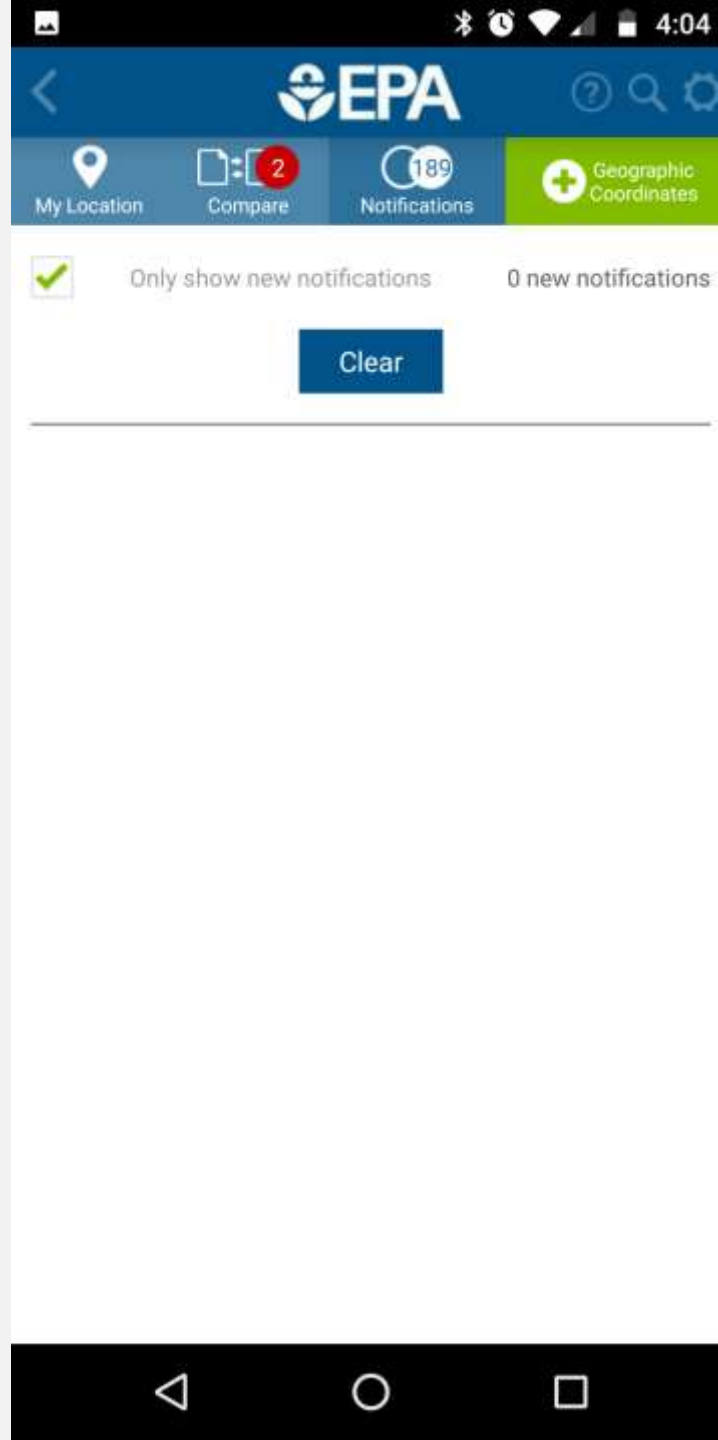
New data available for 07-08-2019 08:31 AM EDT; update y...

07/12/19, 08:43

New Location Data Available





New data available for 07-12-2019 08:43 AM EDT; update y...









Specific GPS location





   

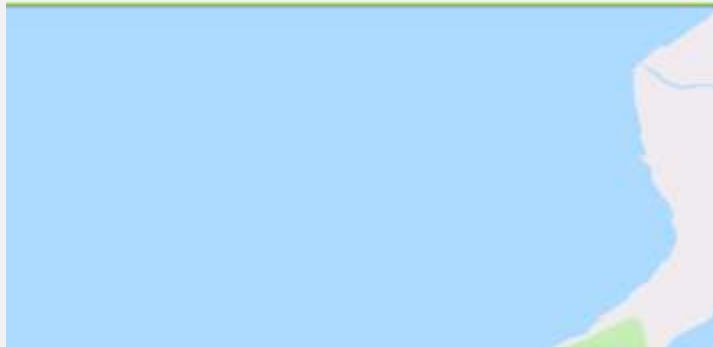
 My Location  2  Notifications  Geographic Coordinates

Enter the latitude and longitude below to find a new location

Latitude N


Longitude W





 Select to Compare  Mark Location



1 2 3 -
4 5 6 _
7 8 9 ×
, 0 . →

4:15



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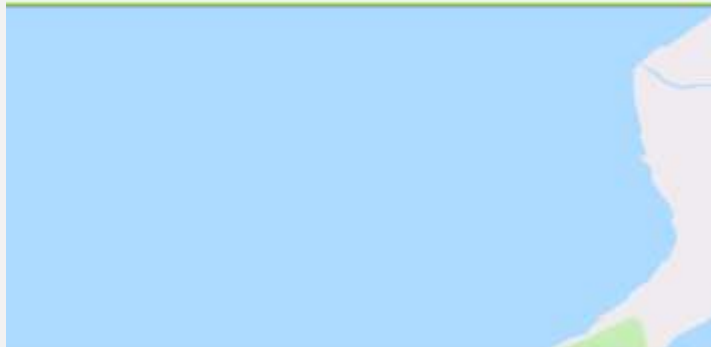
 My Location  2 Compare  Notifications  Geographic Coordinates

Enter the latitude and longitude below to find a new location

Latitude ° Min' Sec" N


Longitude Deg° Min' Sec" W





 Select to Compare  Mark Location



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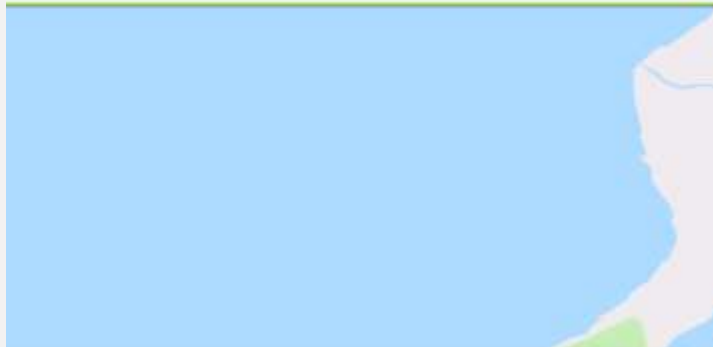
 My Location  Compare  Notifications  Geographic Coordinates

Enter the latitude and longitude below to find a new location

Latitude ° Min' Sec" N


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 Select to Compare  Mark Location



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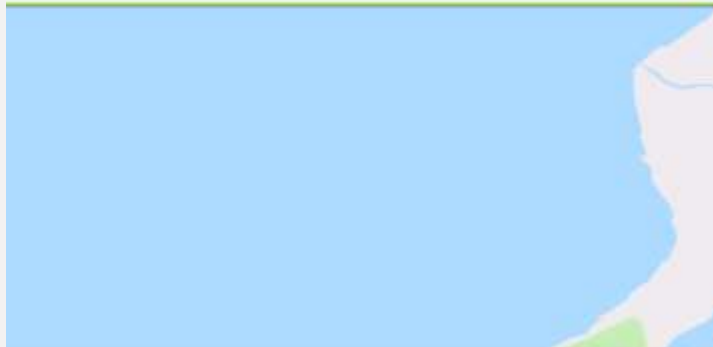
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Enter the latitude and longitude below to find a new location

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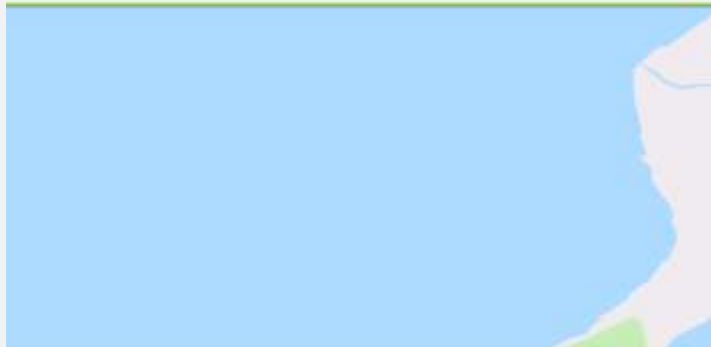
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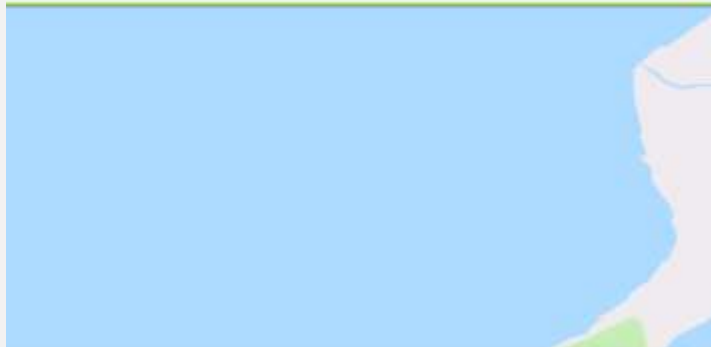
 My Location  Compare  Notifications  Geographic Coordinates

Enter the latitude and longitude below to find a new location





Latitude ° ' " N





Longitude ° ' " W

 Select to Compare  Mark Location



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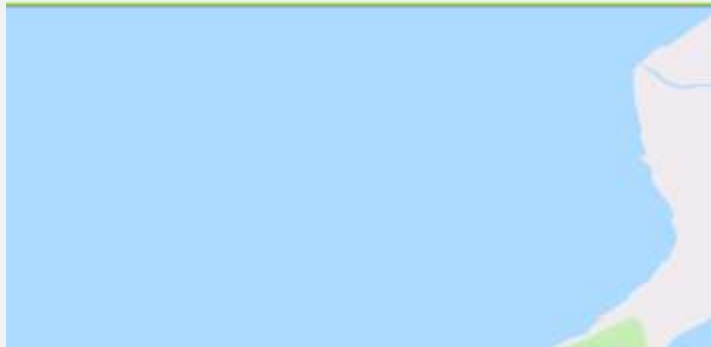
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Enter the latitude and longitude below to find a new location

Latitude ° ' " N


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 Select to Compare  Mark Location



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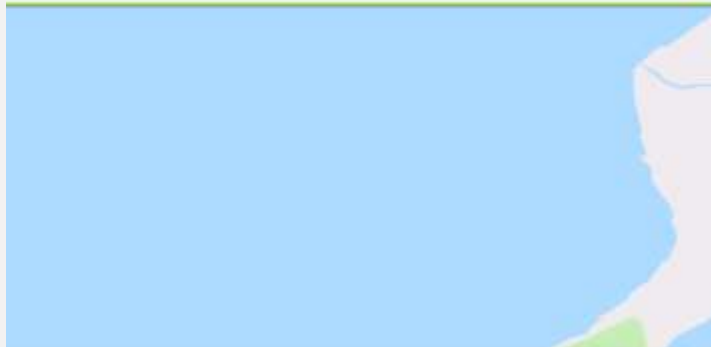
 My Location  2 Compare  Notifications  Geographic Coordinates

Enter the latitude and longitude below to find a new location

Latitude ° ' " N


Longitude ° Min' Sec" W





 Select to Compare  Mark Location



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4:15





 My Location  Compare  Notifications  Geographic Coordinates

Enter the latitude and longitude below to find a new location


Latitude ° ' " N





Longitude ° ' Sec" W

 Select to Compare  Mark Location

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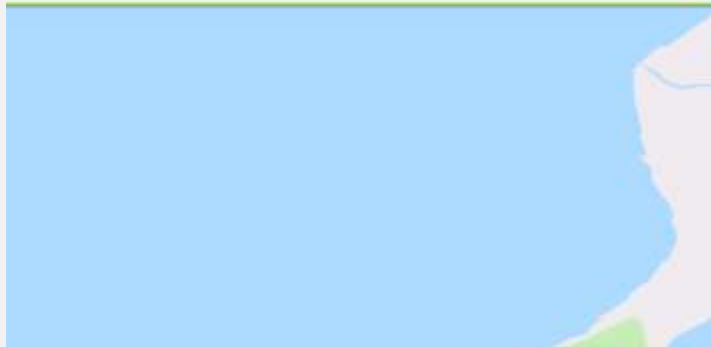
 My Location  2  Notifications  Geographic Coordinates

Enter the latitude and longitude below to find a new location





Latitude ° ' " N





Longitude ° ' Sec" W

 Select to Compare  Mark Location



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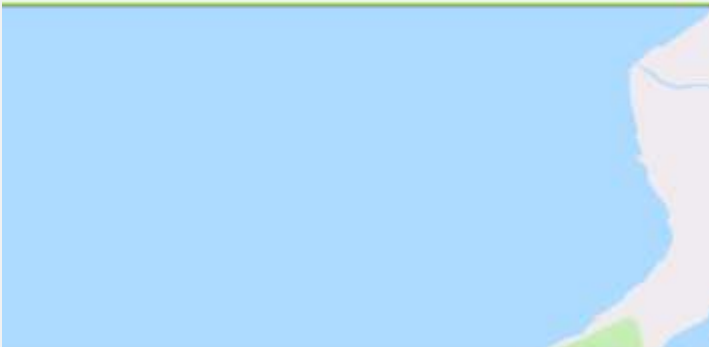
 My Location  **2** Compare  Notifications  Geographic Coordinates

Enter the latitude and longitude below to find a new location





Latitude ° ' " N





Longitude ° ' " W

 Select to Compare  Mark Location



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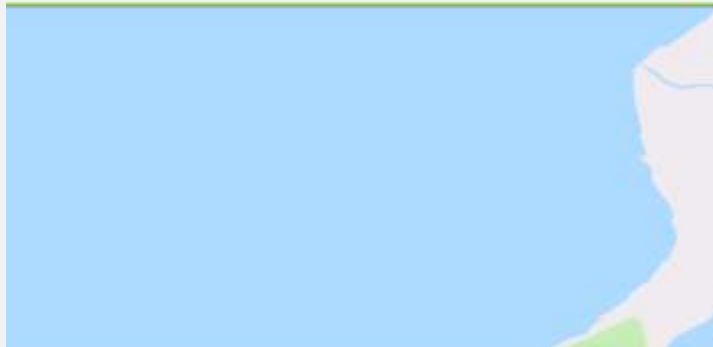
 My Location  **2**  Notifications  Geographic Coordinates

Enter the latitude and longitude below to find a new location

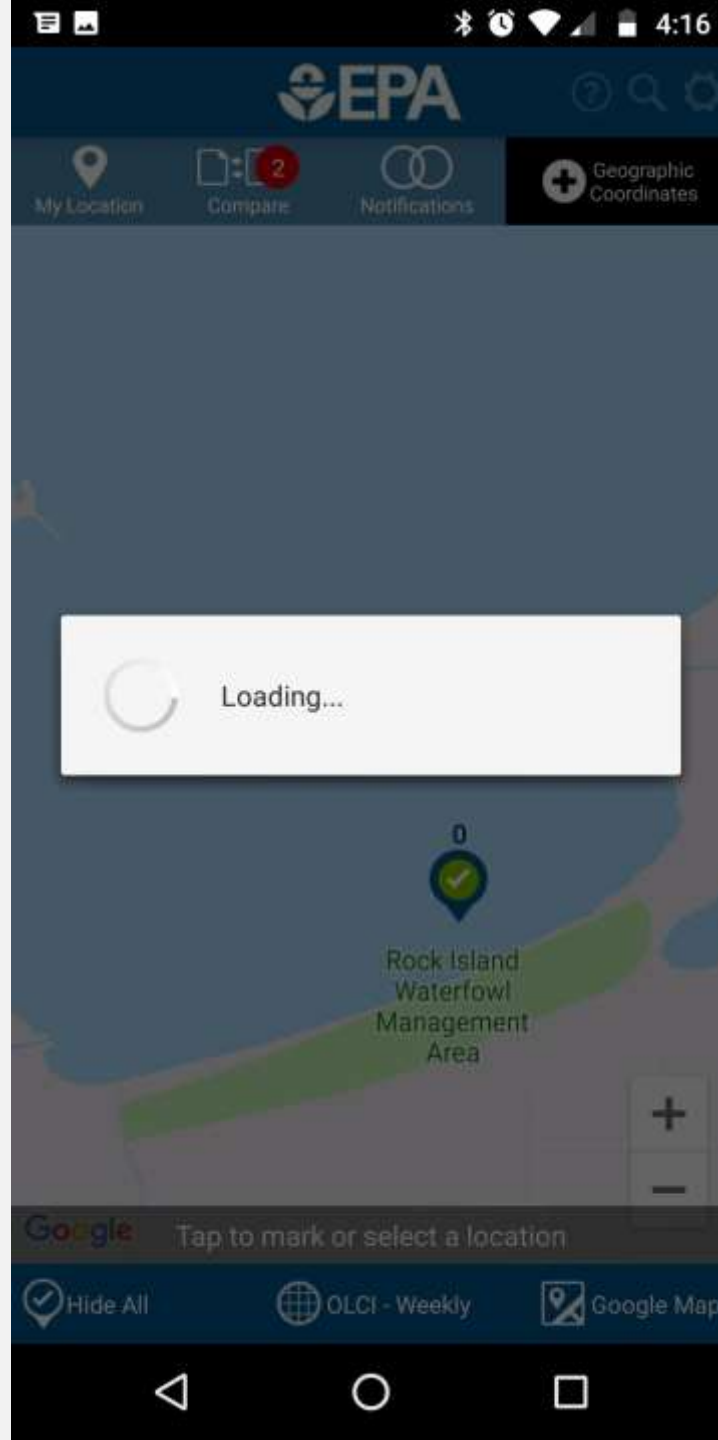
Latitude ° ' " N

Longitude ° ' " W

 Select to Compare  Mark Location

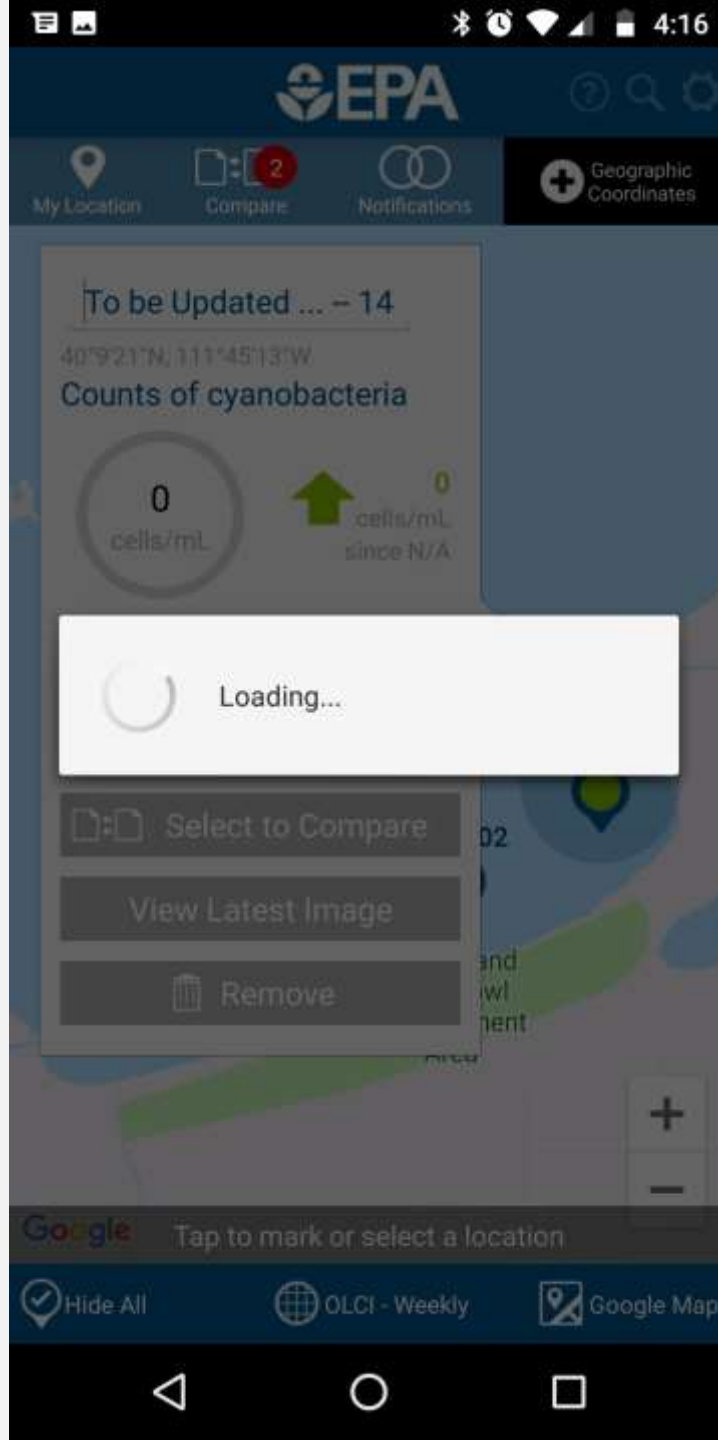


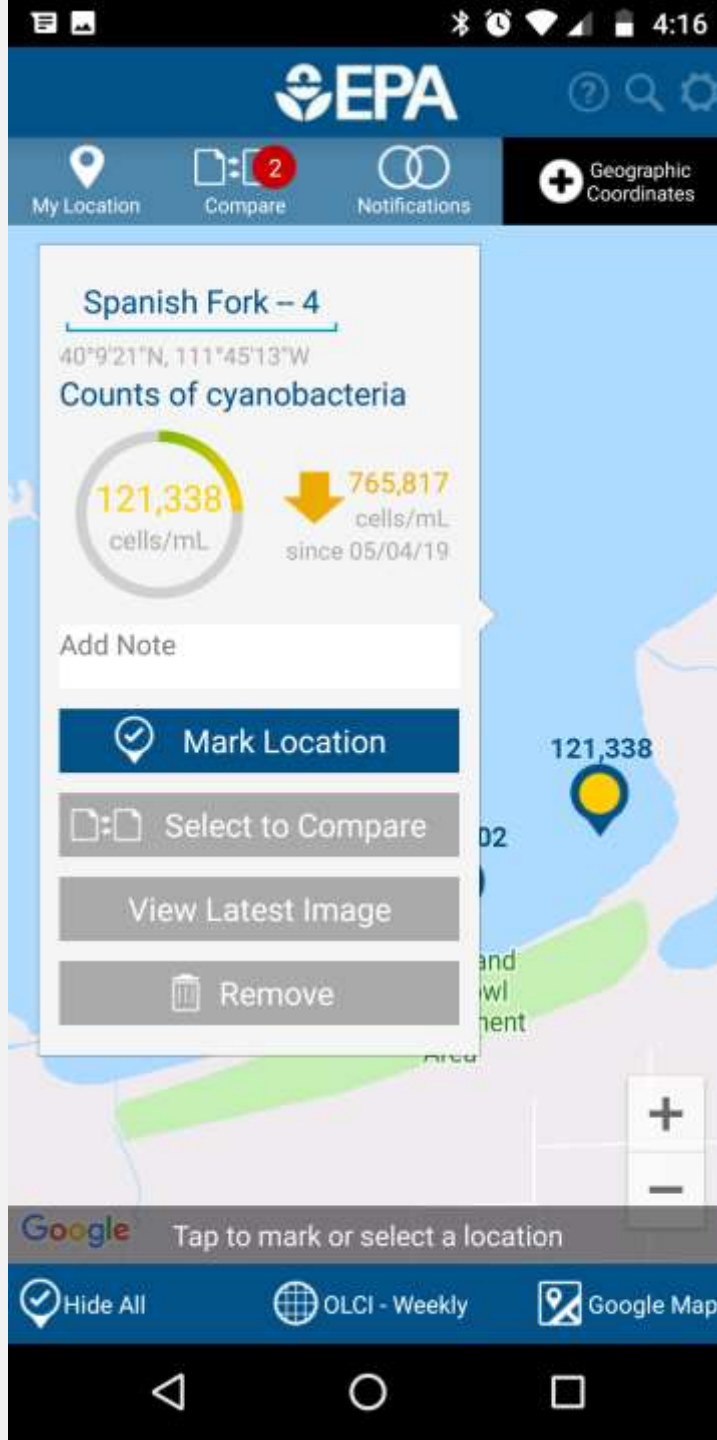
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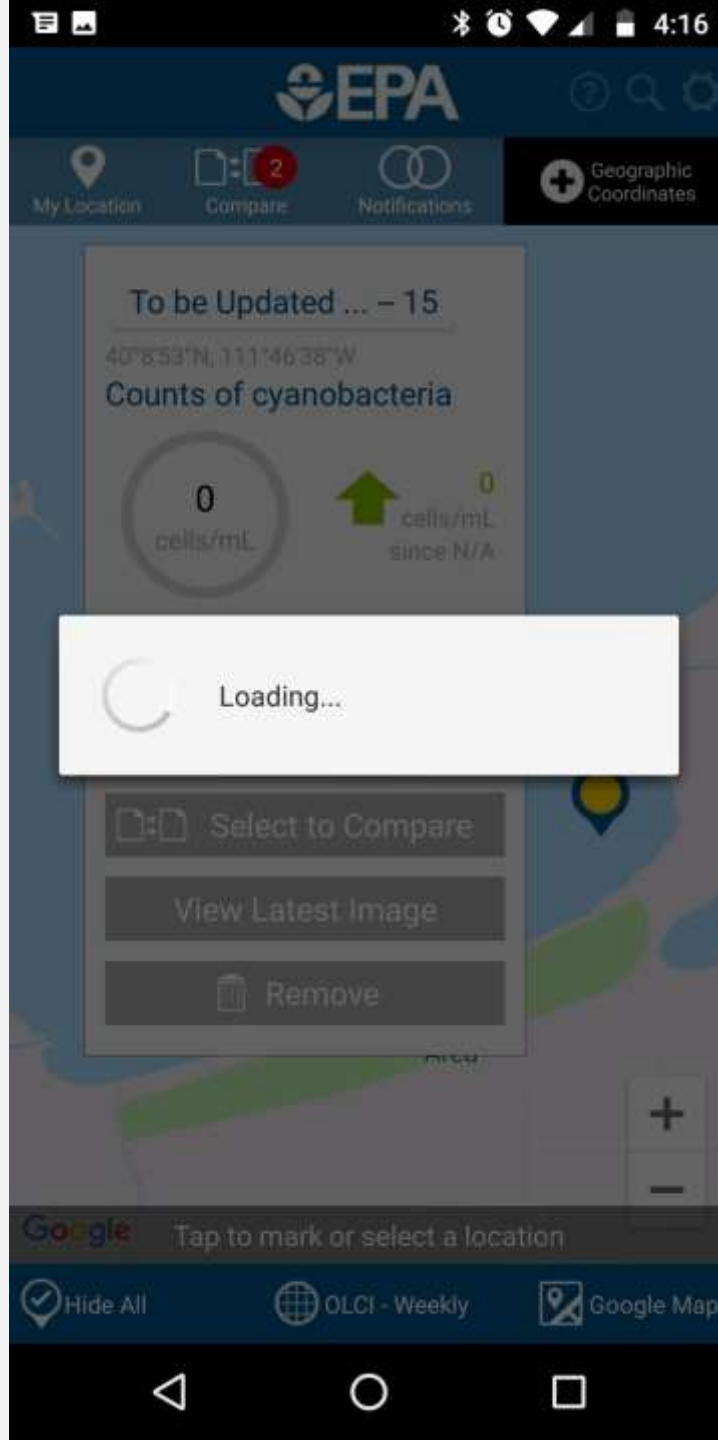


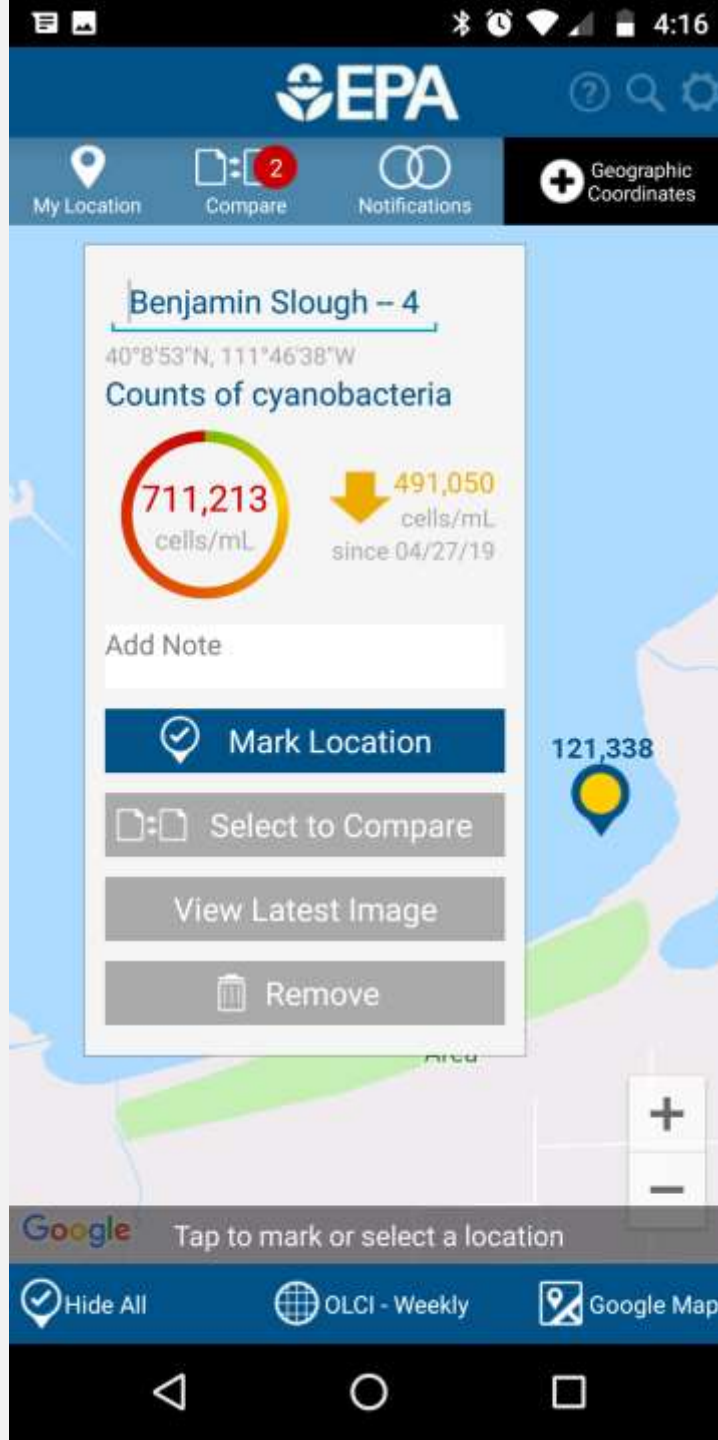


Recreation area









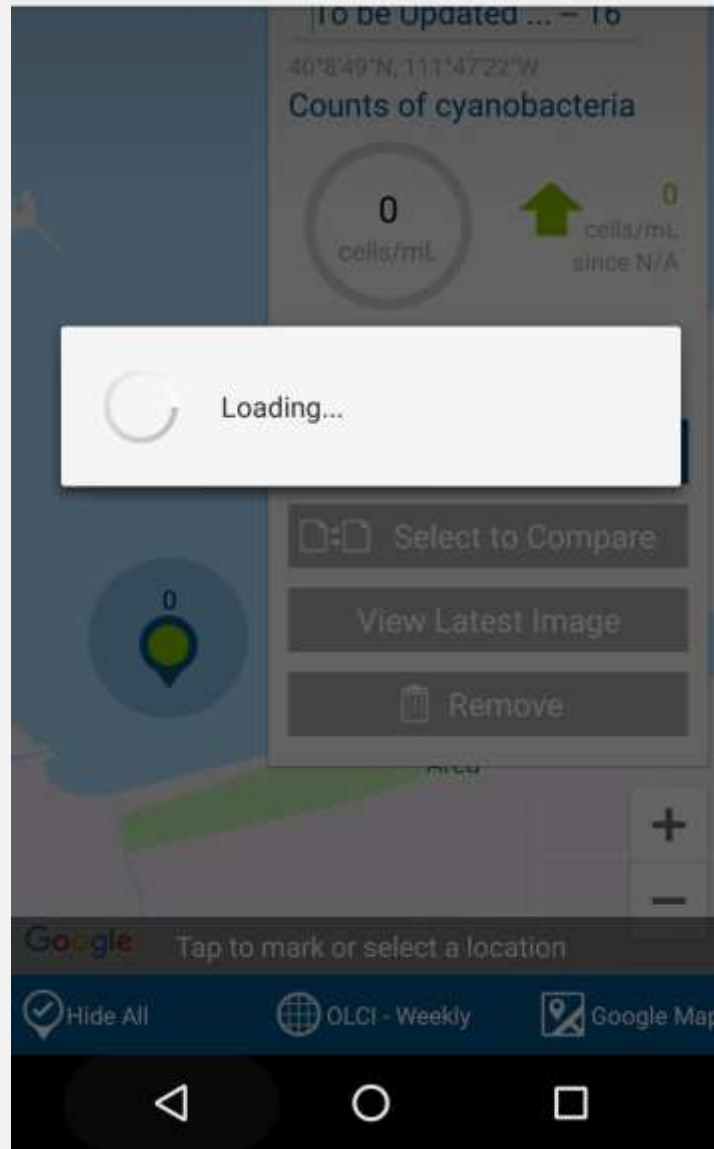
Messages • now ▾

Kelly, Yoomi
Yoomi Hi...



MARK AS READ

REPLY



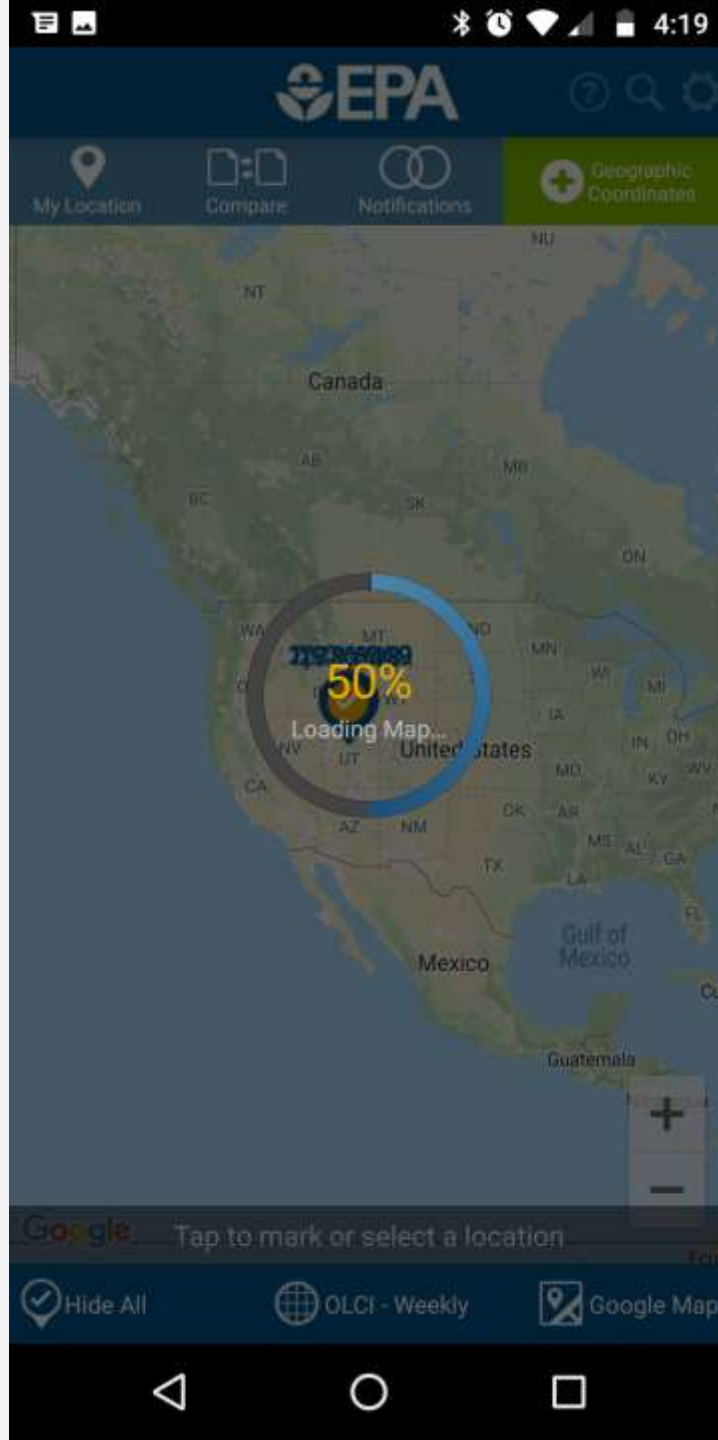


Daily imagery for event responses

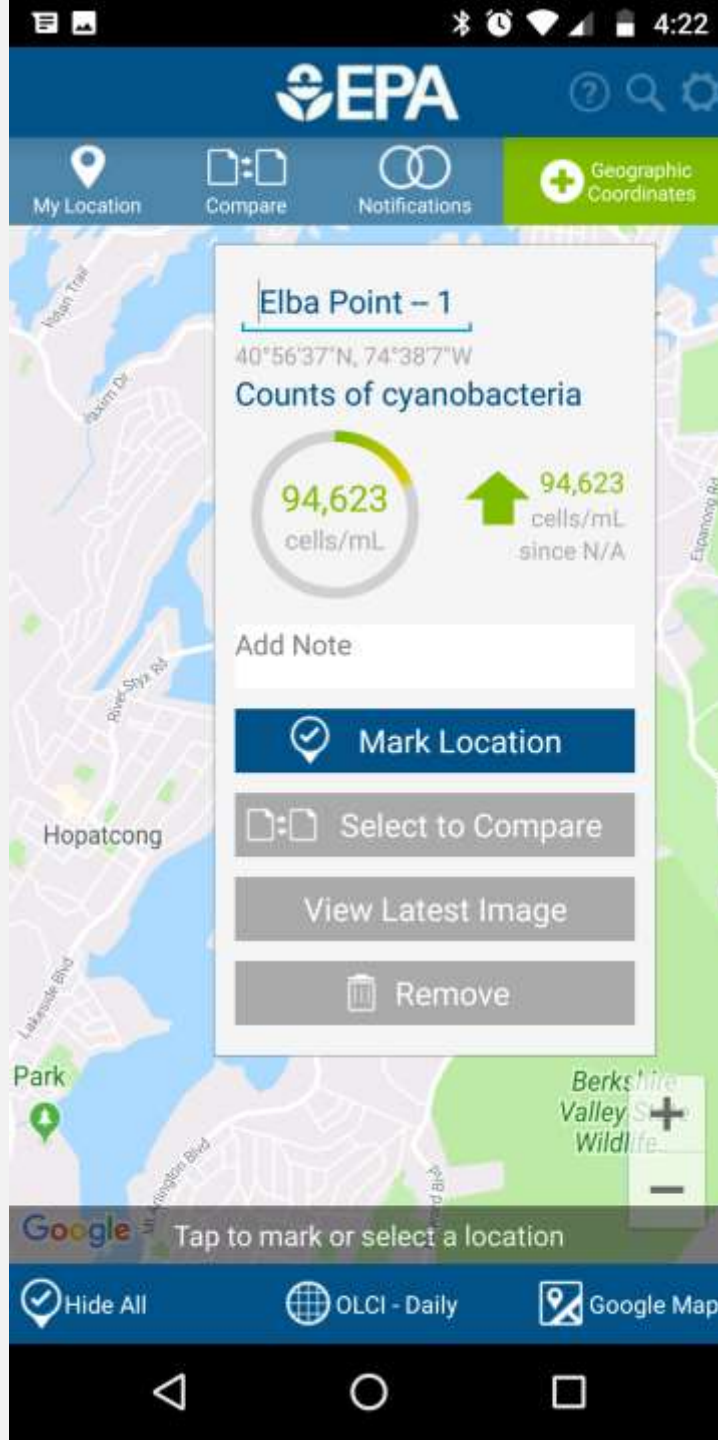


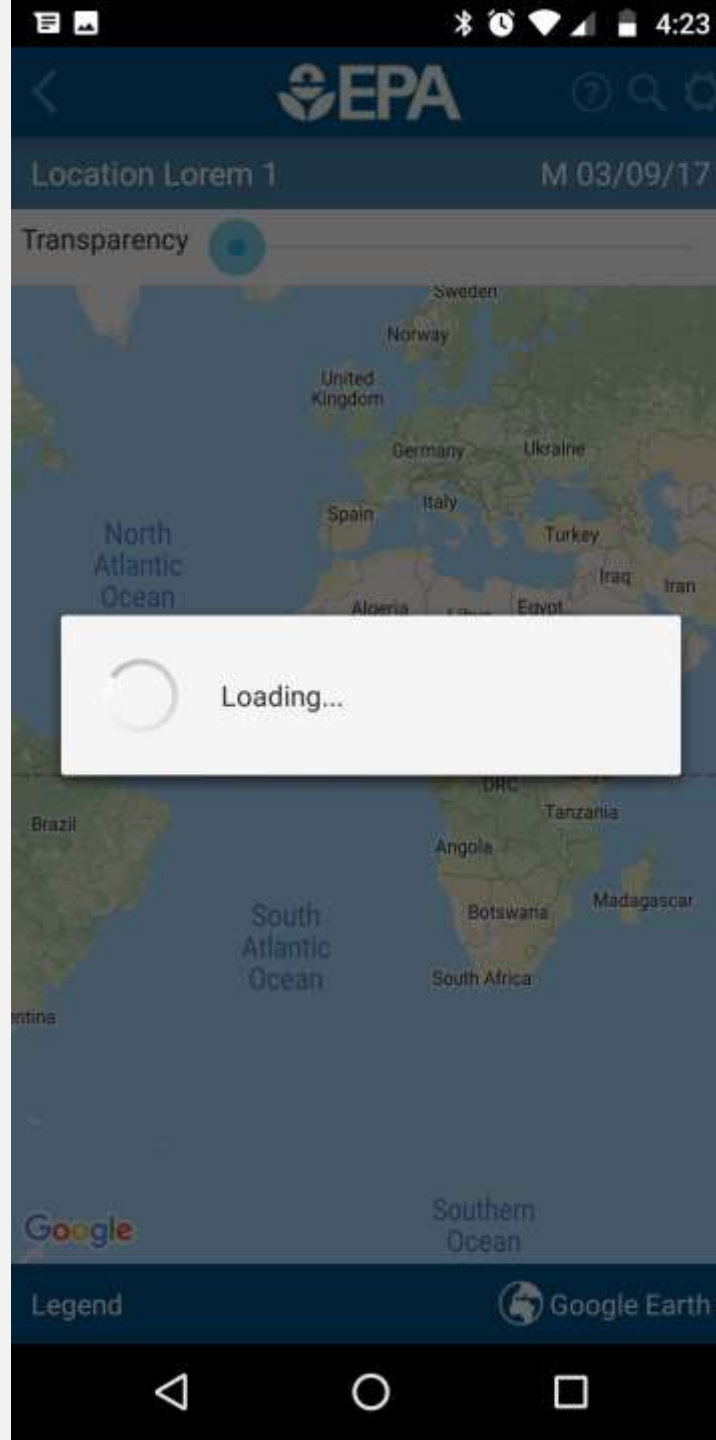






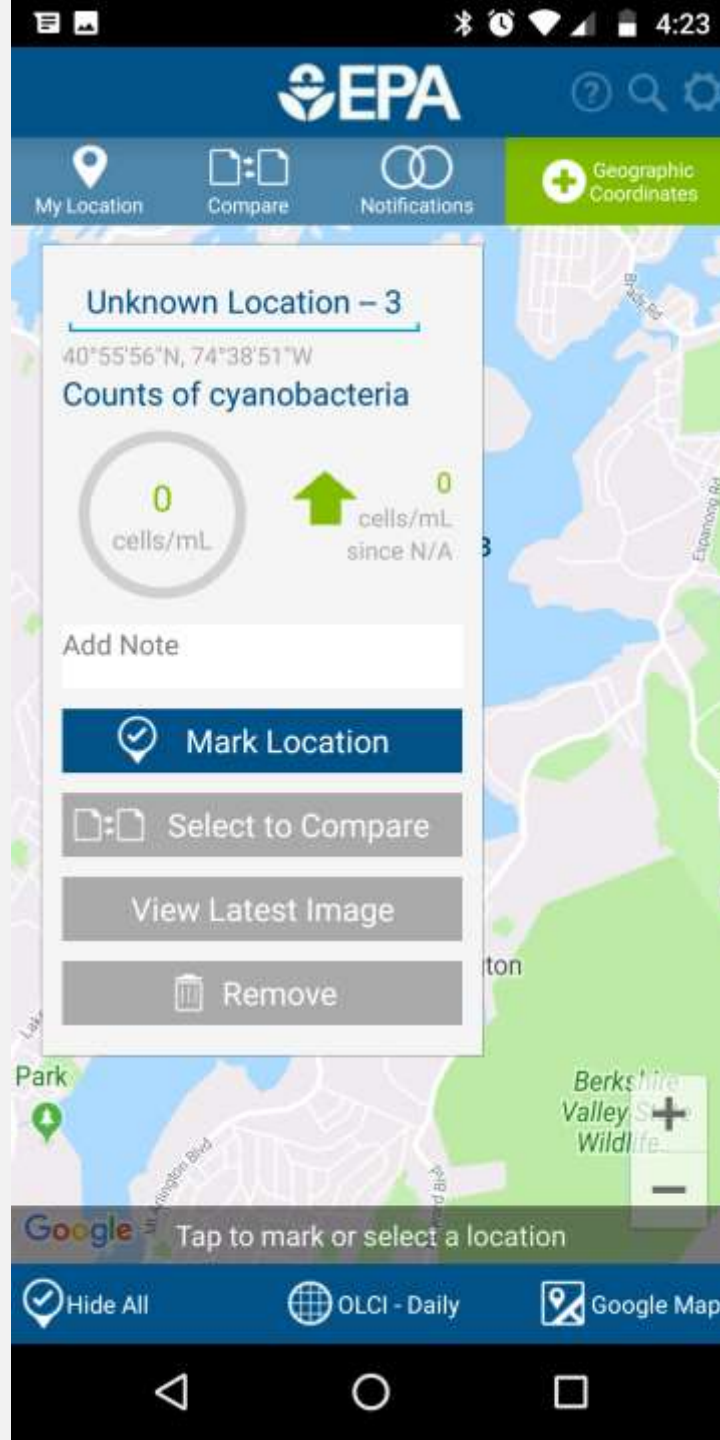


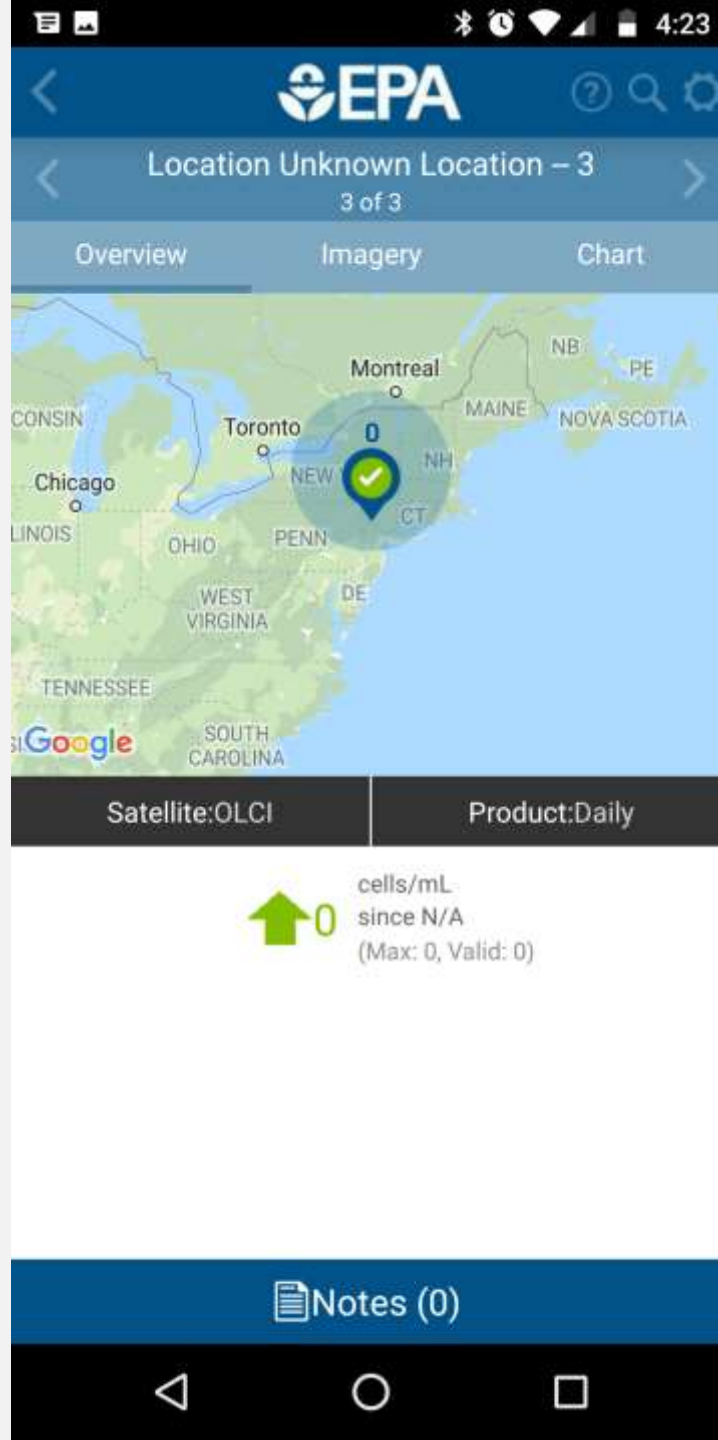






No Data

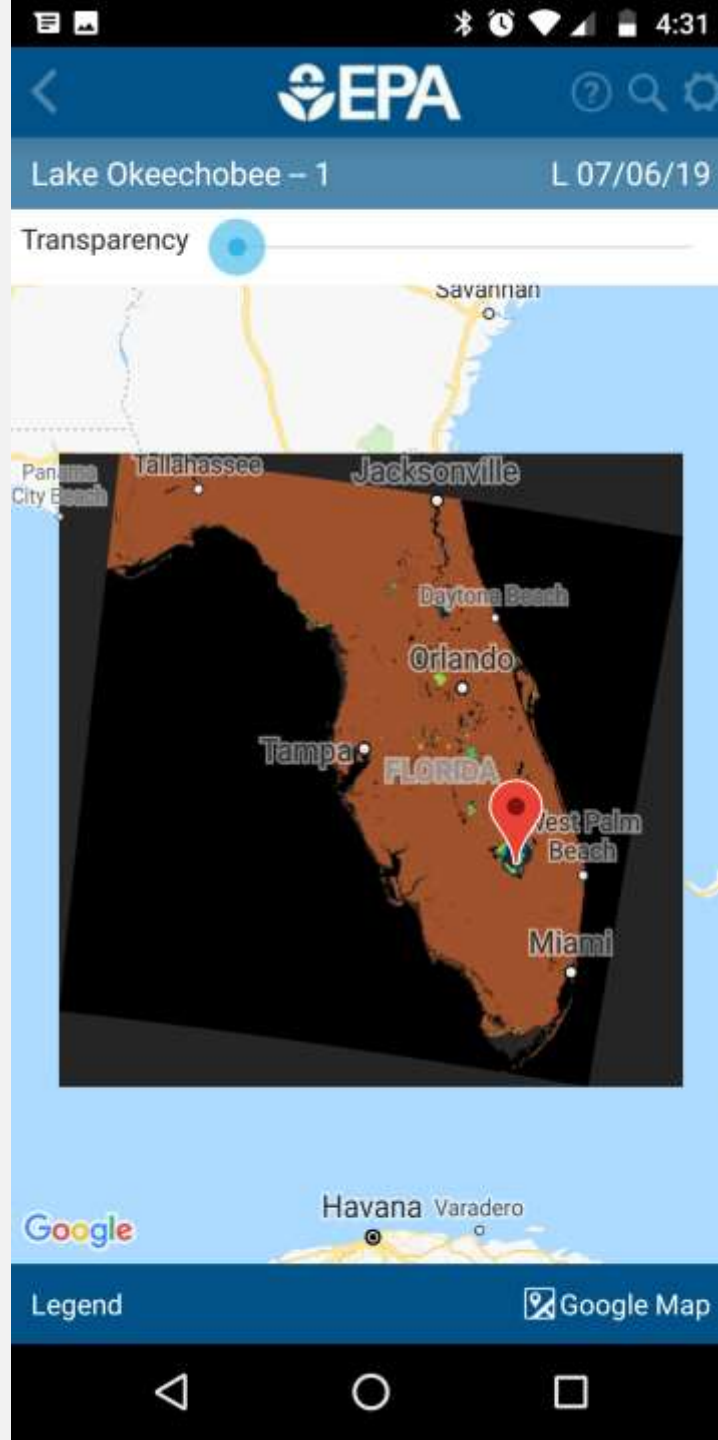




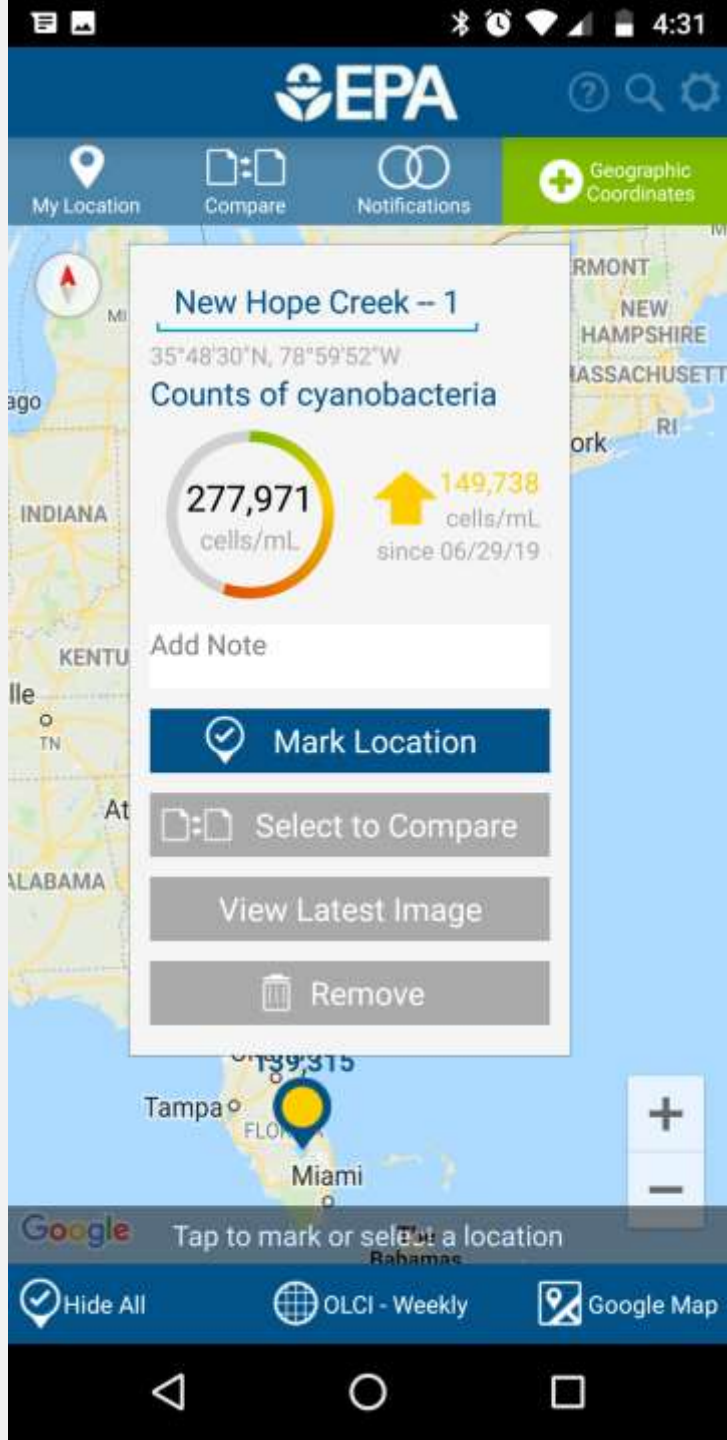
View the country in minutes

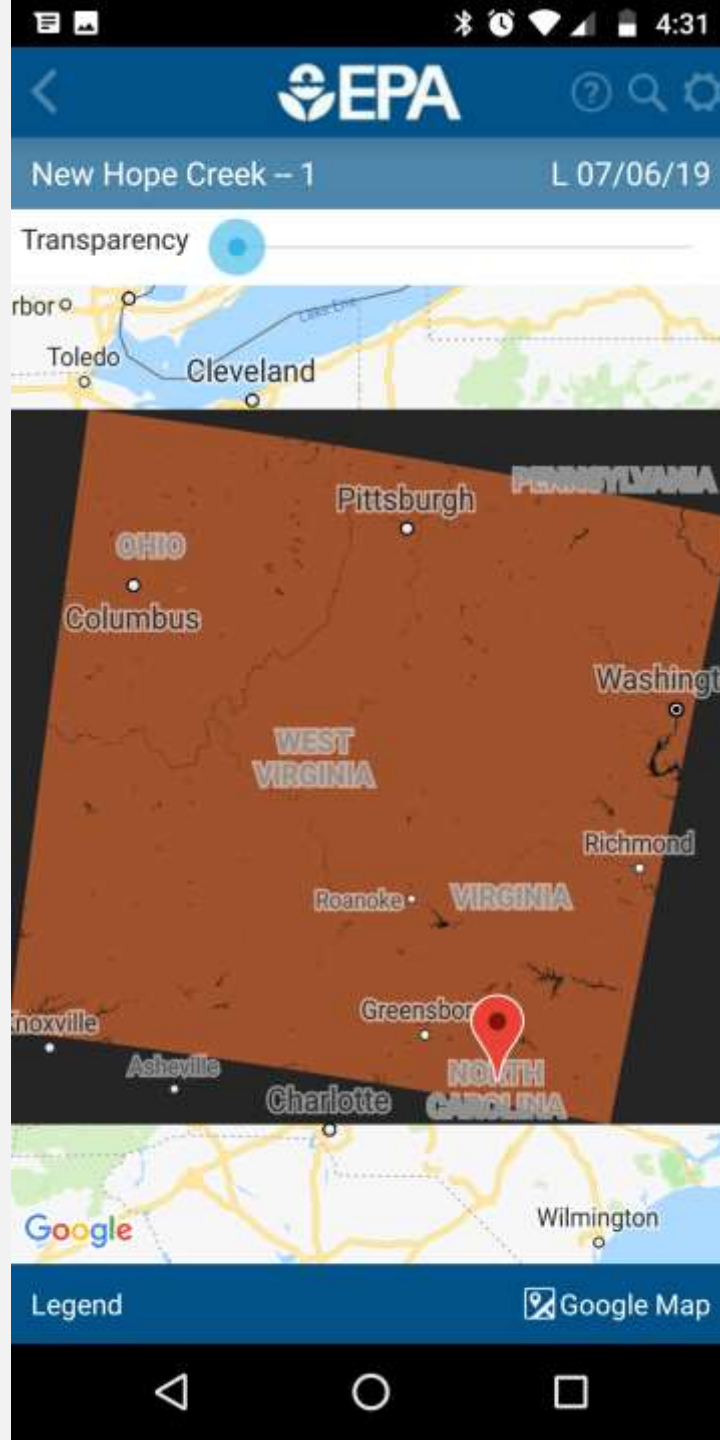






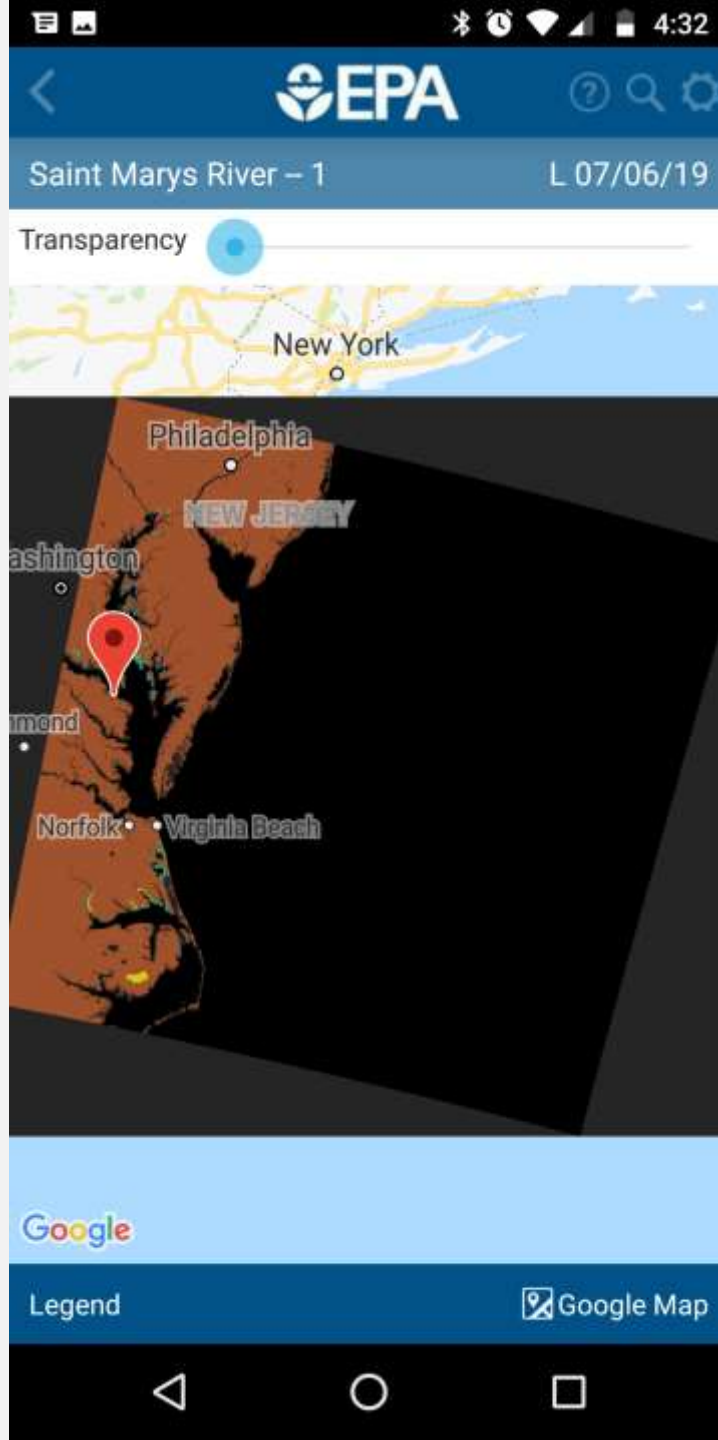




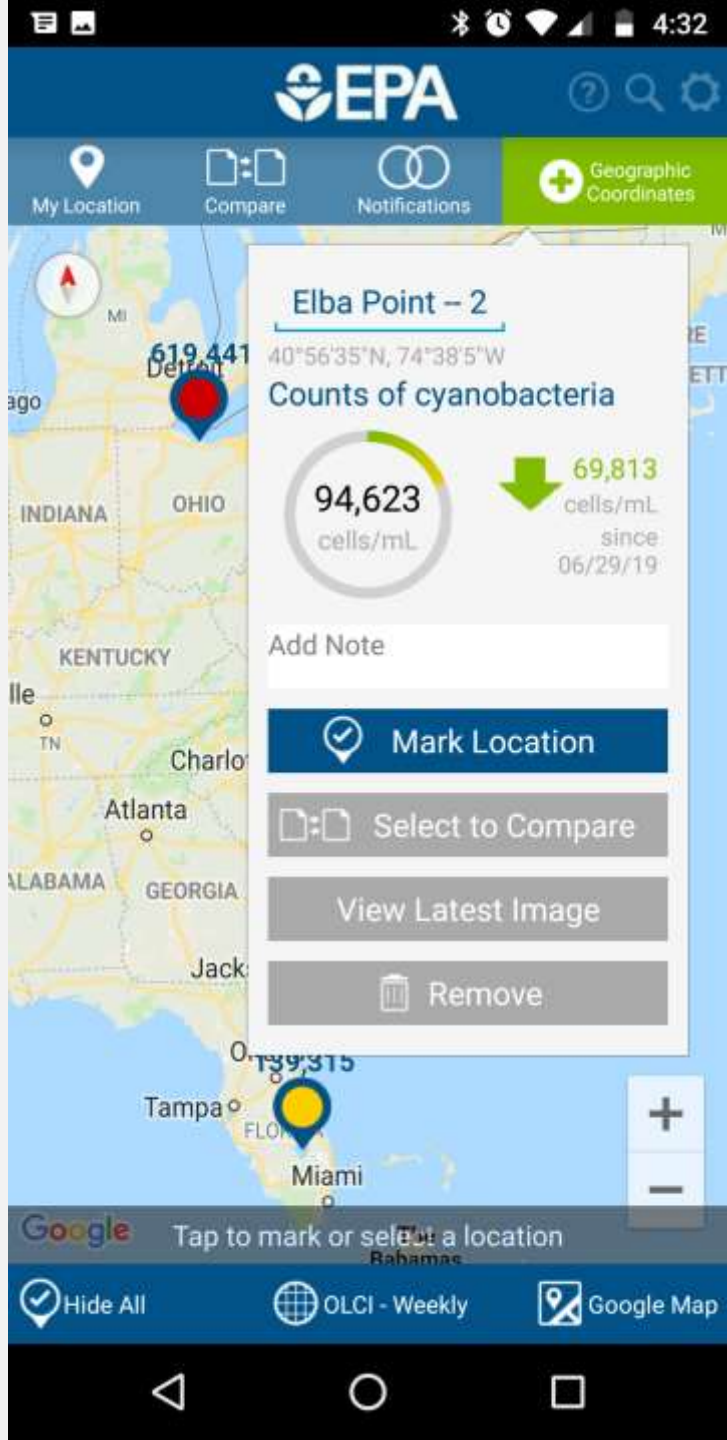






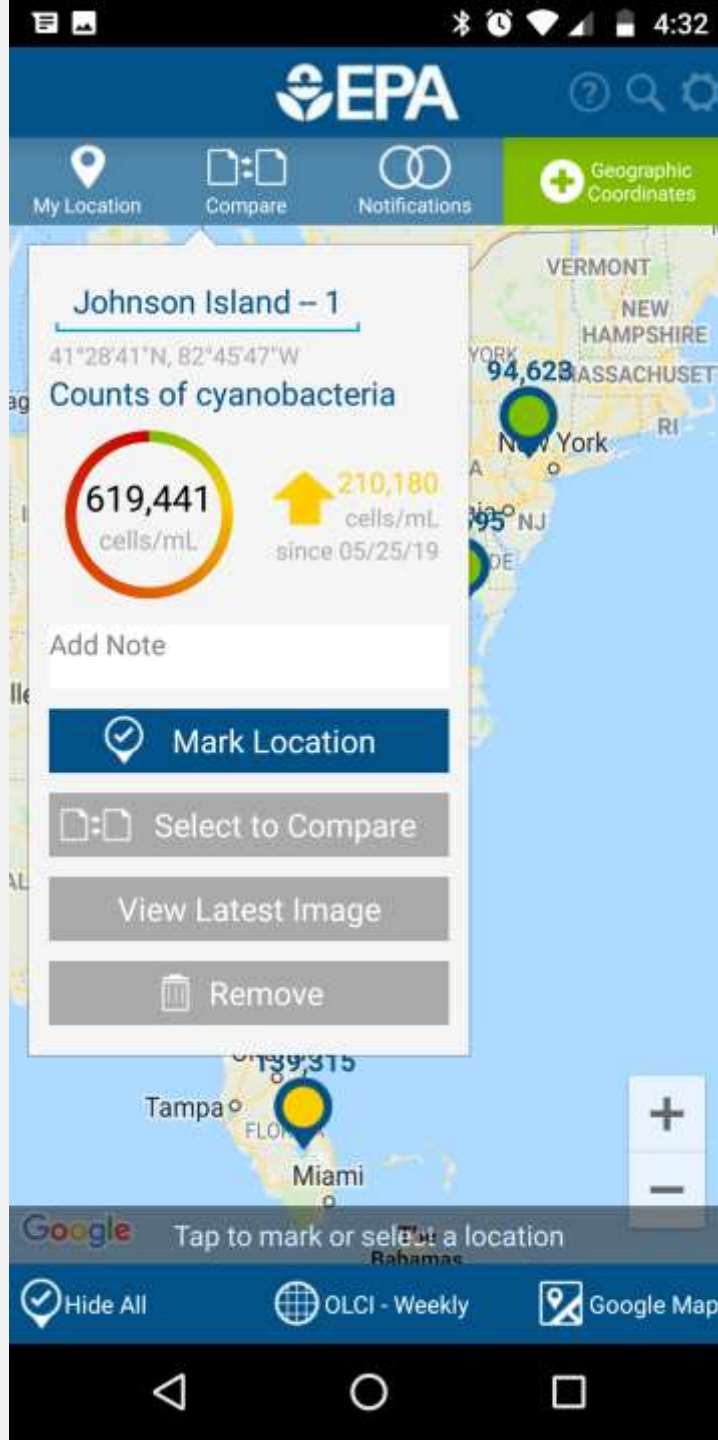


















Q&A

Download the CyAN app today:

epa.gov/water-research/CyANapp



Contact us about the CyAN app:

CyAN@epa.gov