
Integrated Modeling for Road Condition Prediction (IMRCP)

System User Instructions and Training

FHWA-JPO-18-748



Objectives and Topics

- Understand the purpose and application of the IMRCP program
- Learn how to access the system and its data
 - User interface tour
 - User instructions
- Explore example use cases and events



IMRCP Objective: An Integrated Predictive System

- Gather real-time and archived data from sensors, systems, and an ensemble of forecast and probabilistic models
- Fuse the data sets to predict the current and future overall road/travel conditions
- Provide actionable information to transportation operators, maintenance providers, and travelers



Benefits and Applications

Future
Present
Past

Source: Wikimedia Commons

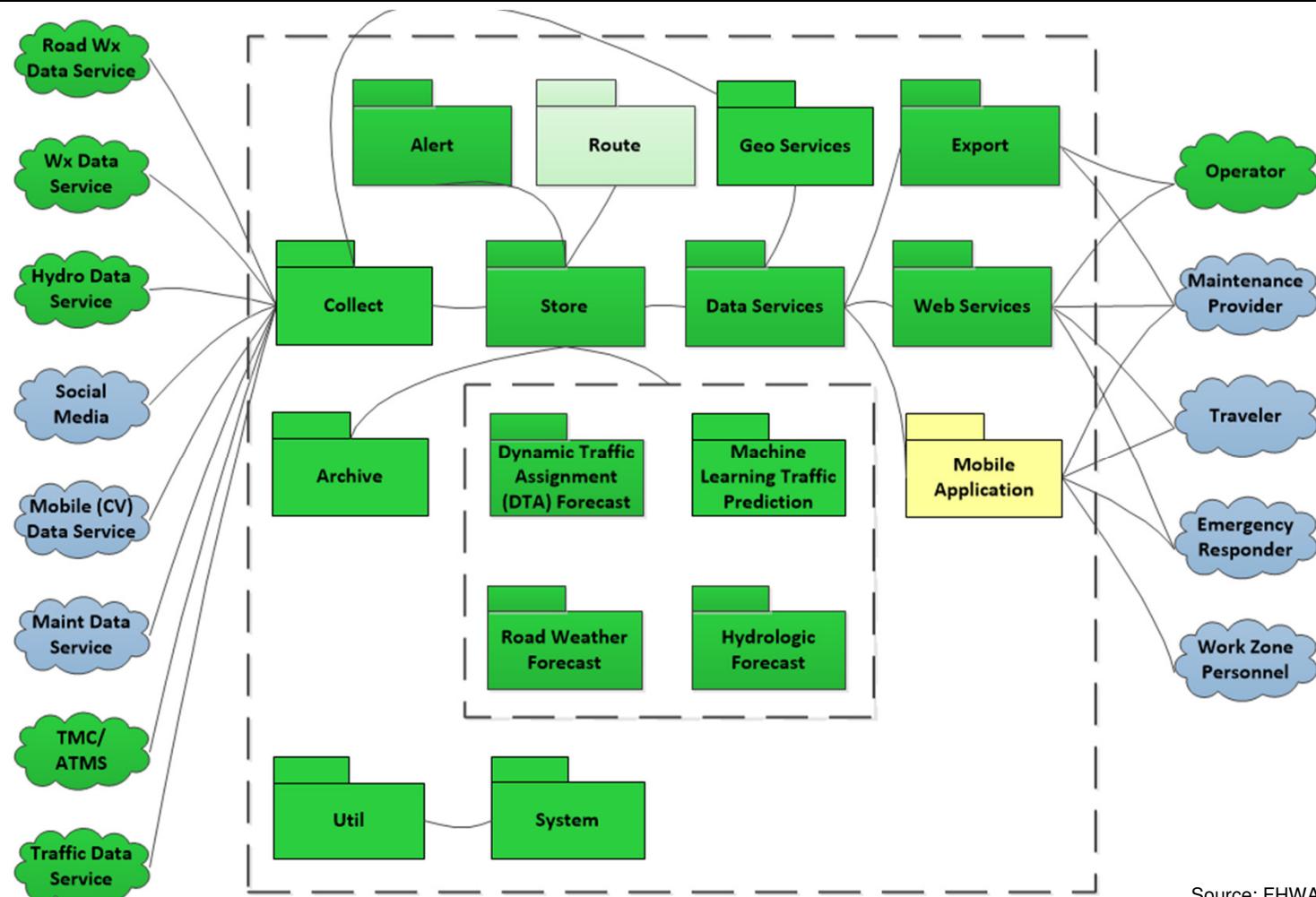


Source: Wikimedia Commons

Source: Wikimedia Commons



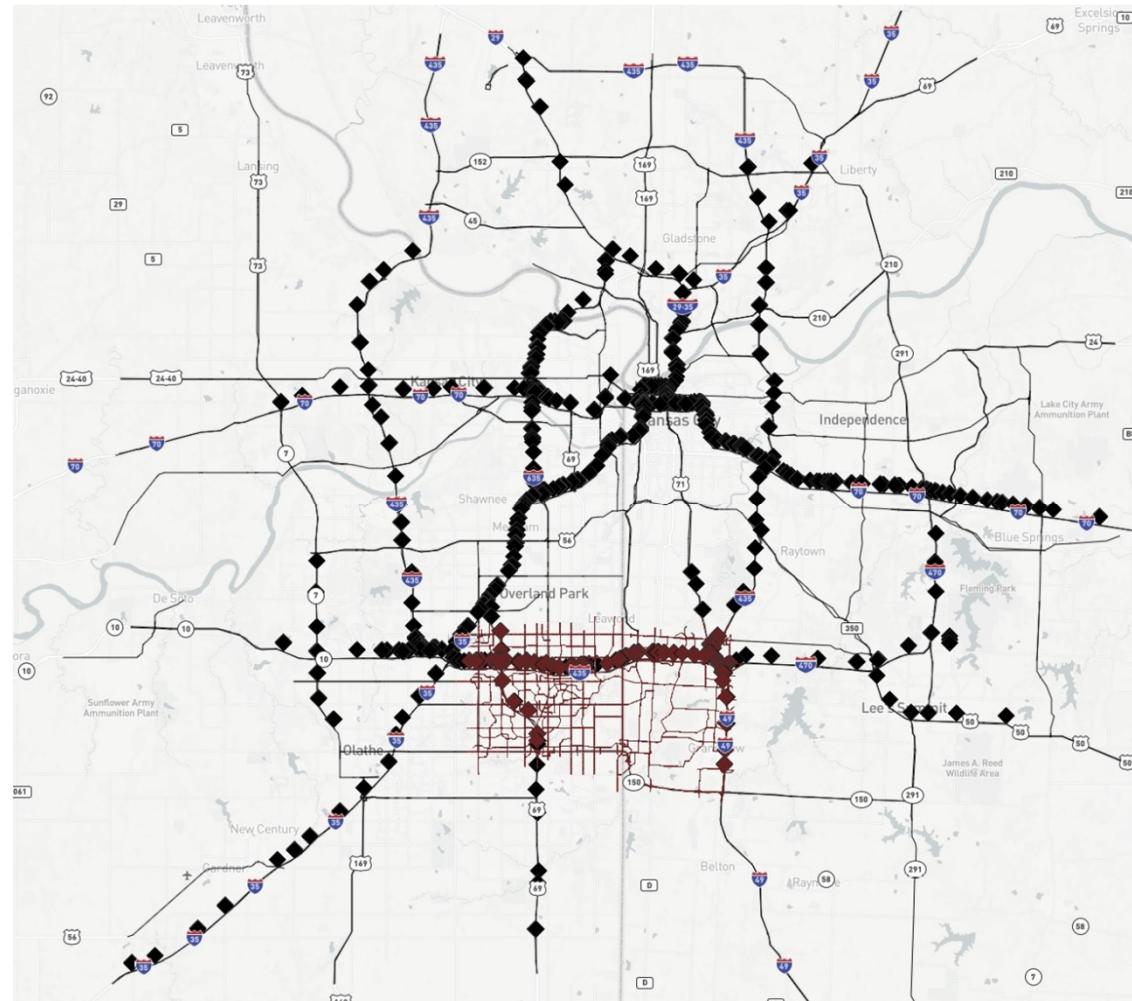
IMRCP Functions



Source: FHWA



Kansas City Study Area



Source: FHWA



6



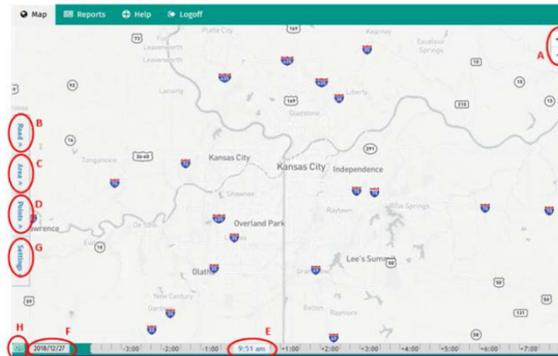
IMRCP User Interface

- The IMRCP system uses a web-based interface
 - Time-variable map
 - Notifications
 - Reports
- Administrators send user names, passwords and instructions to authorized users

Integrated Modeling for Road Condition Prediction
(IMRCP) Version 3
Web Interface Instructions

Map

The IMRCP map provides views of alerts, road conditions and weather in the immediate past, present and near future.



Using Map Tools

1. To zoom in and out of the map, use the zoom controls (A) in the top right corner of the map or use the mouse's scroll wheel with the cursor on the map. Some map layers (for example, roads) may disappear when zoomed out too far.
2. To move the map, click on the map and drag the cursor.

Viewing Road Condition Data

1. Select a road data layer from the "Road" tab and panel (B) on the left side of the page. Click the tab to open the panel, and then click the right-pointing arrow next to "Select Road Layer". A new panel will open to the right. Select the type of data to be displayed. A legend for the selected data type will appear in the left panel and a spinner icon will take the place of the

IMRCP Web Interface Instructions

Source: FHWA

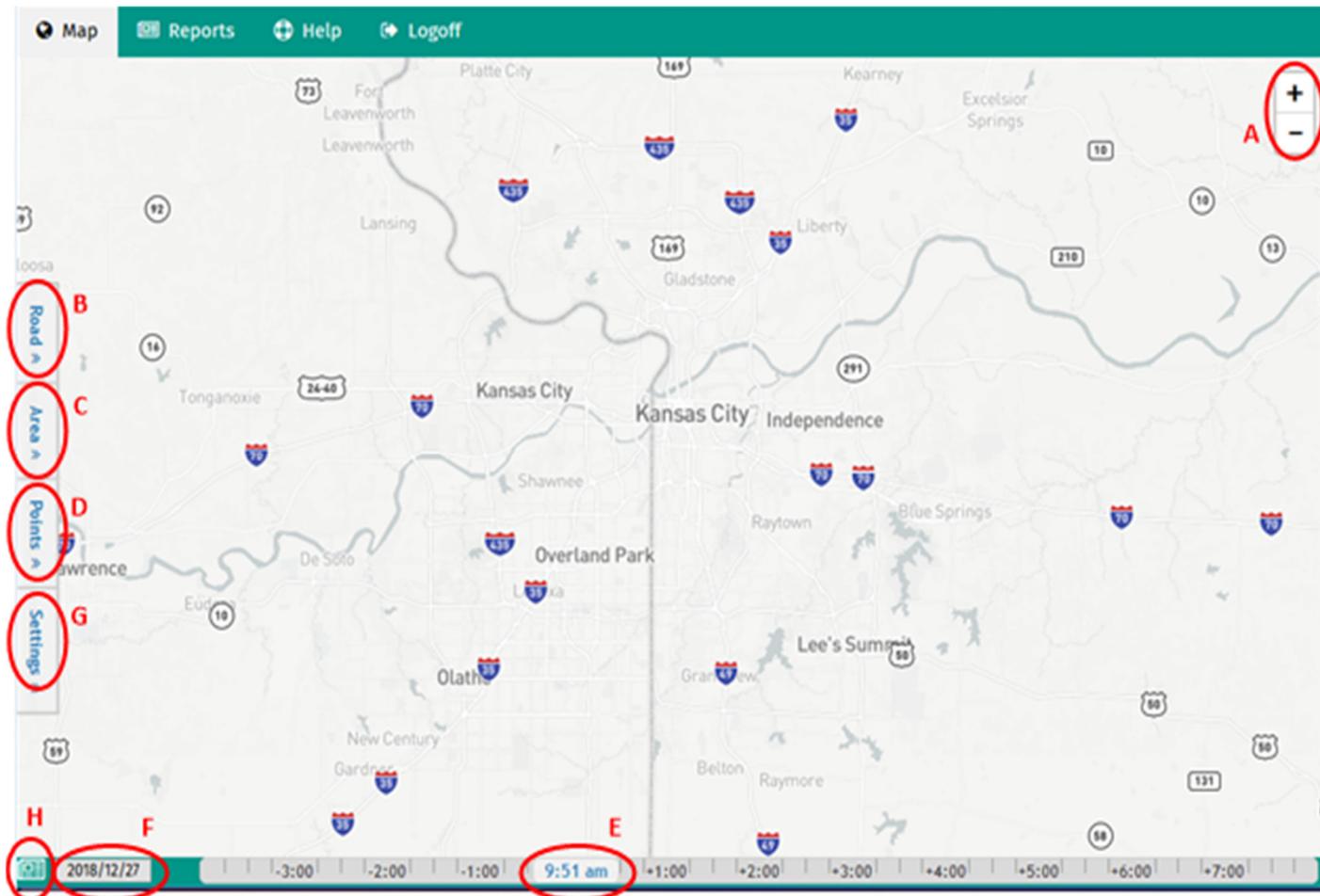


User Interface Demonstration

- Using Map Tools
- Using Date/Time Tools
- Viewing Road Condition Data
- Viewing Weather Condition Data
- Viewing Alerts
- Viewing Routes
- Receiving Notifications
- Creating a Report or Subscription
- Viewing a Report or Subscription



Using the Map Interface



Source: FHWA



Using the Time Selector

- The time selector on the map interface can be used to view:
 - Current observations by placing the time slider at the current time
 - Predictions up to 8 hrs. in the future by sliding the time slider to the right
 - Past observations up to 4 hrs. in the past by sliding the time slider to the left



Source: FHWA

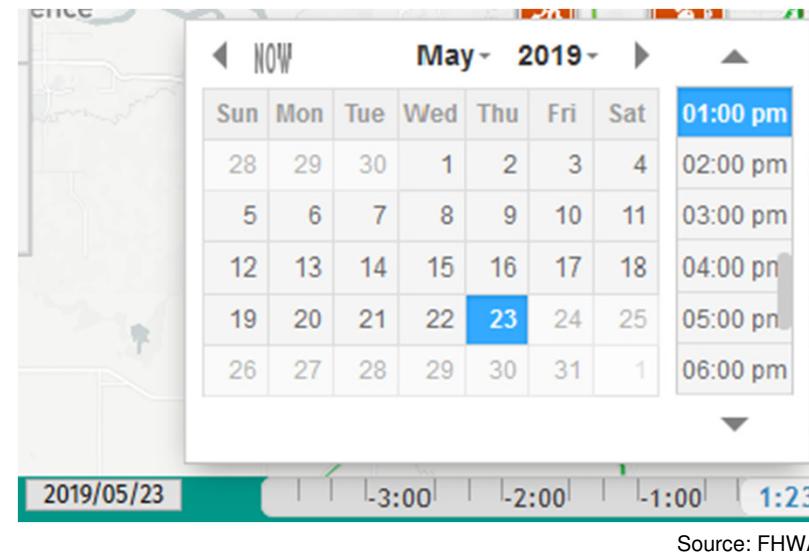


10

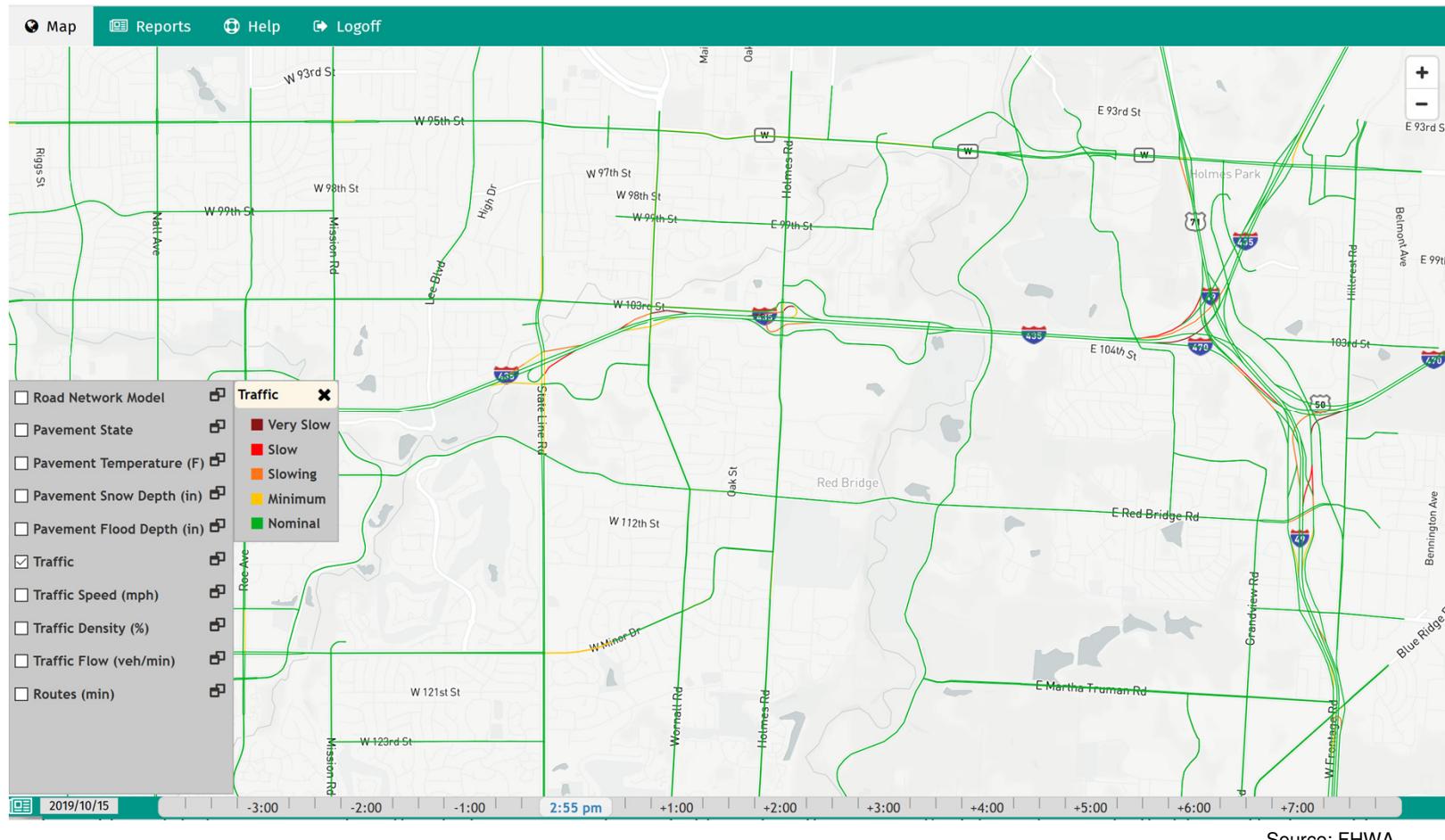


Using the Date/Time Function

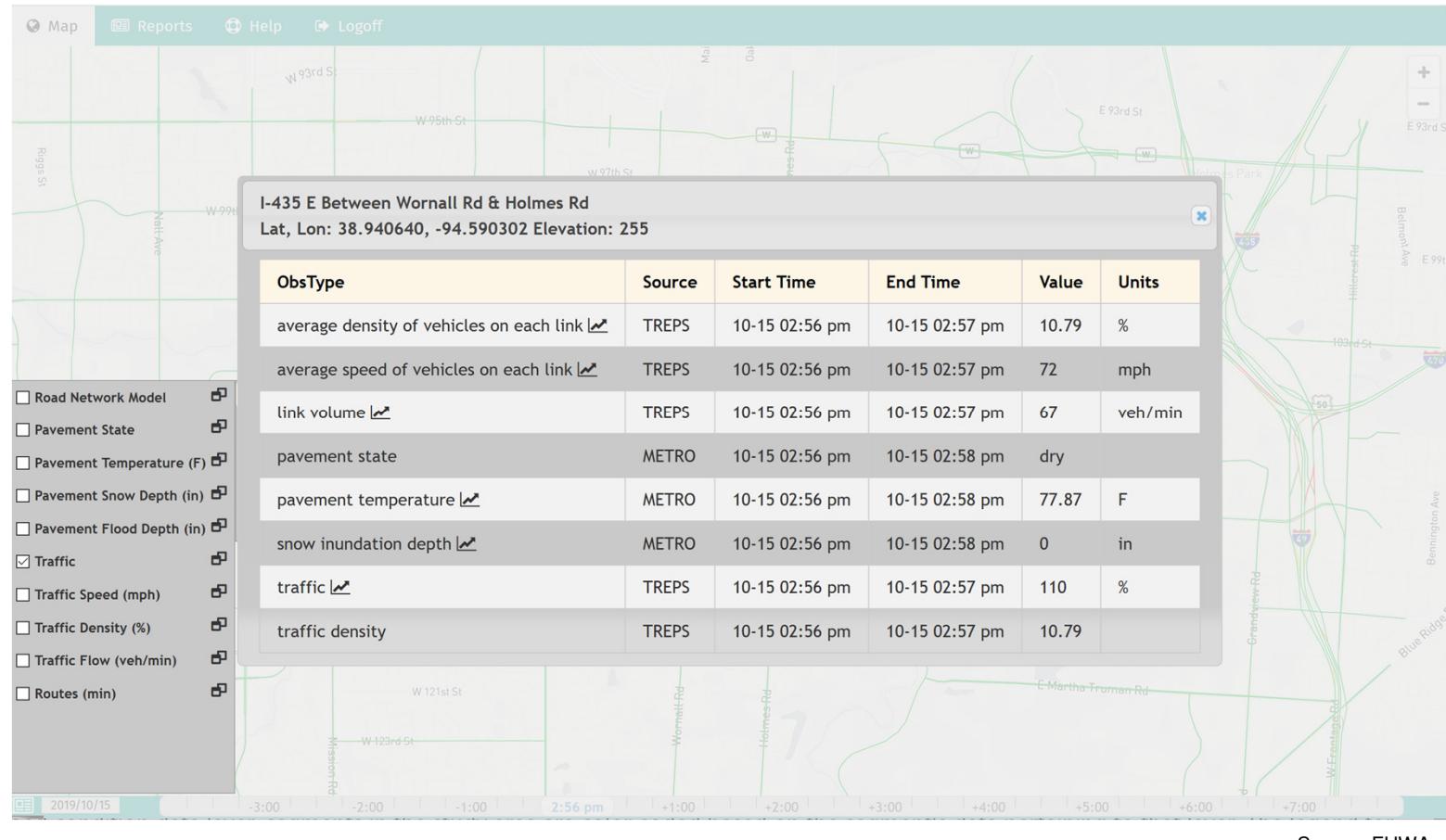
- The date/time function allows users to select a past reference date and time to get a snapshot view of the map at that time.



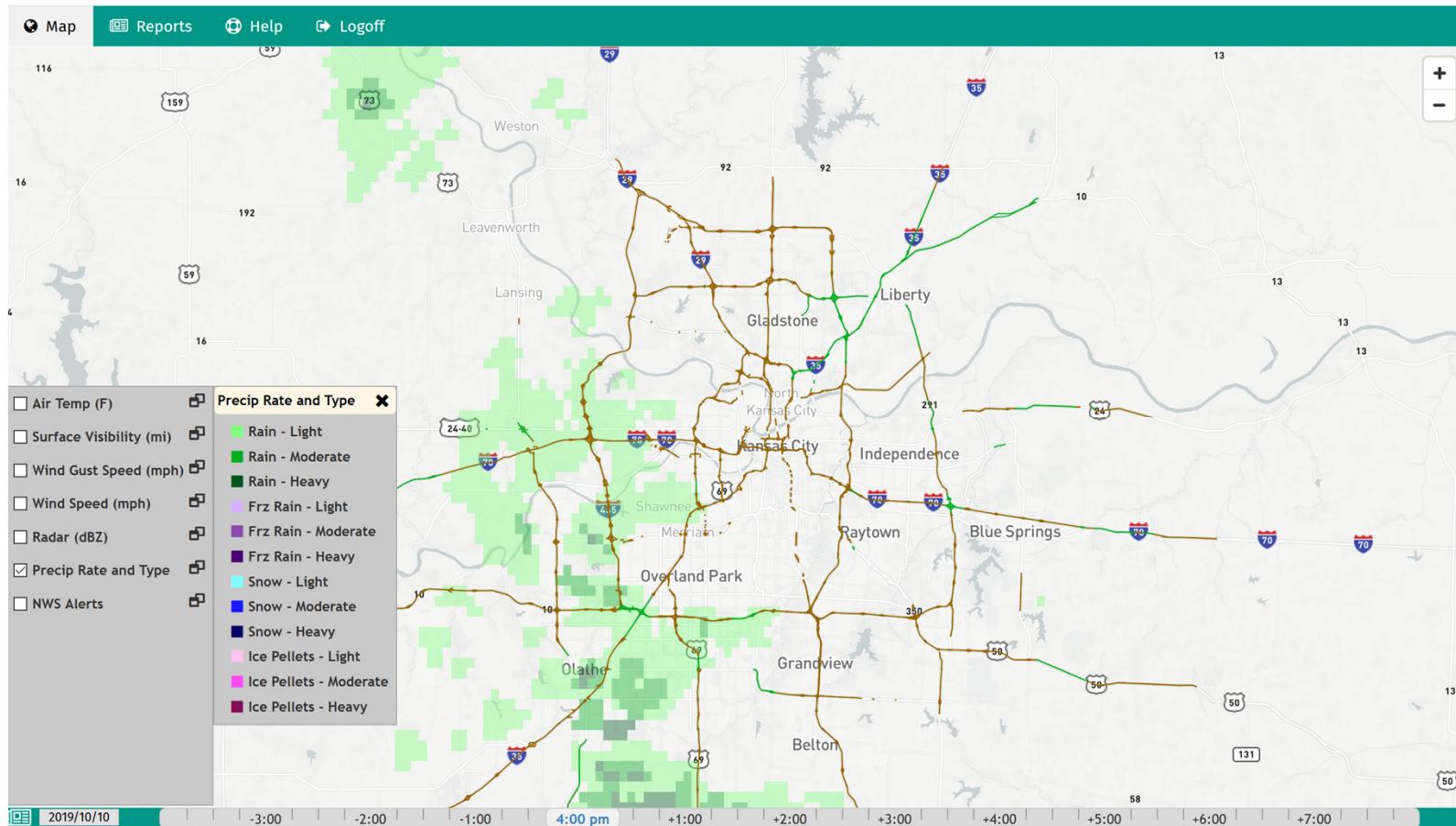
Viewing Road Condition Data



Viewing Road Condition Data



Viewing Weather Condition Data



Source: FHWA



14



Viewing Weather Condition Data

Screenshot of a weather data viewing interface showing current conditions at Lat, Lon: 38.9244411, -94.6695749 Elevation: 0

ObsType	Source	Start Time	End Time	Value	Units
air temperature ↗	NDFD	10-10 04:00 pm	10-10 05:00 pm	61.97	F
air temperature ↗	RTMA	10-10 04:00 pm	10-10 05:00 pm	62.44	F
merged base reflectivity ↗	MRMS	10-10 04:00 pm	10-10 04:04 pm	10.5	dBZ
precipitation category	RAP	10-10 04:00 pm	10-10 05:00 pm	light-rain	
precipitation category	IMRCP	10-10 04:00 pm	10-10 04:04 pm	no-precipitation	
surface visibility ↗	RAP	10-10 04:00 pm	10-10 05:00 pm	3.23	mi
surface visibility ↗	RTMA	10-10 04:00 pm	10-10 05:00 pm	7.71	mi
wind speed gust height above ground ↗	RTMA	10-10 04:00 pm	10-10 05:00 pm	22.26	mph
wind speed height above ground ↗	RAP	10-10 04:00 pm	10-10 05:00 pm	5.26	mph
wind speed height above ground ↗	NDFD	10-10 04:00 pm	10-10 05:00 pm	12.75	mph
wind speed height above ground ↗	RTMA	10-10 04:00 pm	10-10 05:00 pm	10.69	mph

Legend (checkboxes):

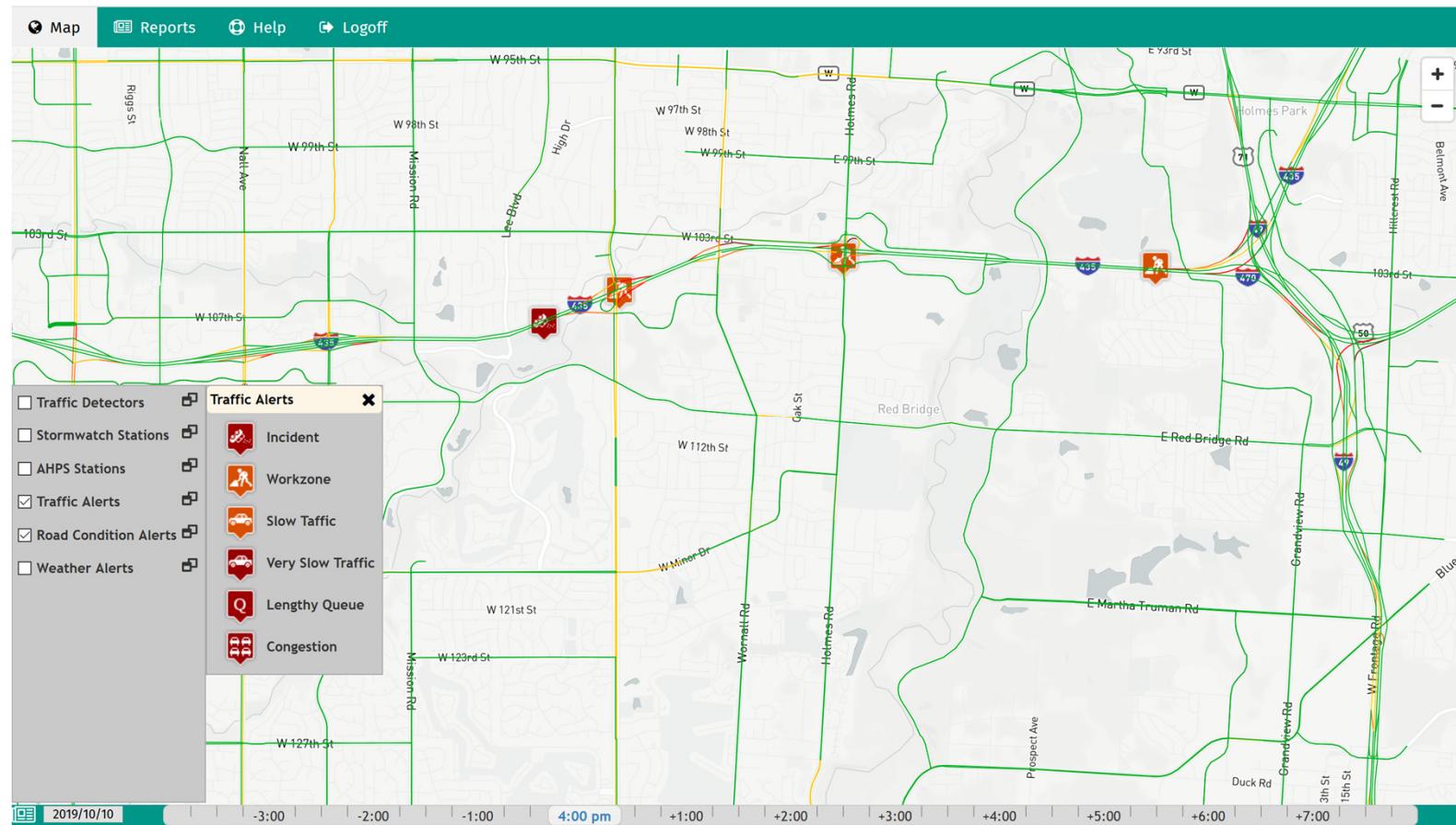
- Air Temp (F)
- Surface Visibility (mi)
- Wind Gust Speed (mph)
- Wind Speed (mph)
- Radar (dBZ)
- Precip Rate and Type
- NWS Alerts

Map showing Belton, Texas area with radar and traffic overlays.

Source: FHWA



Viewing Alerts

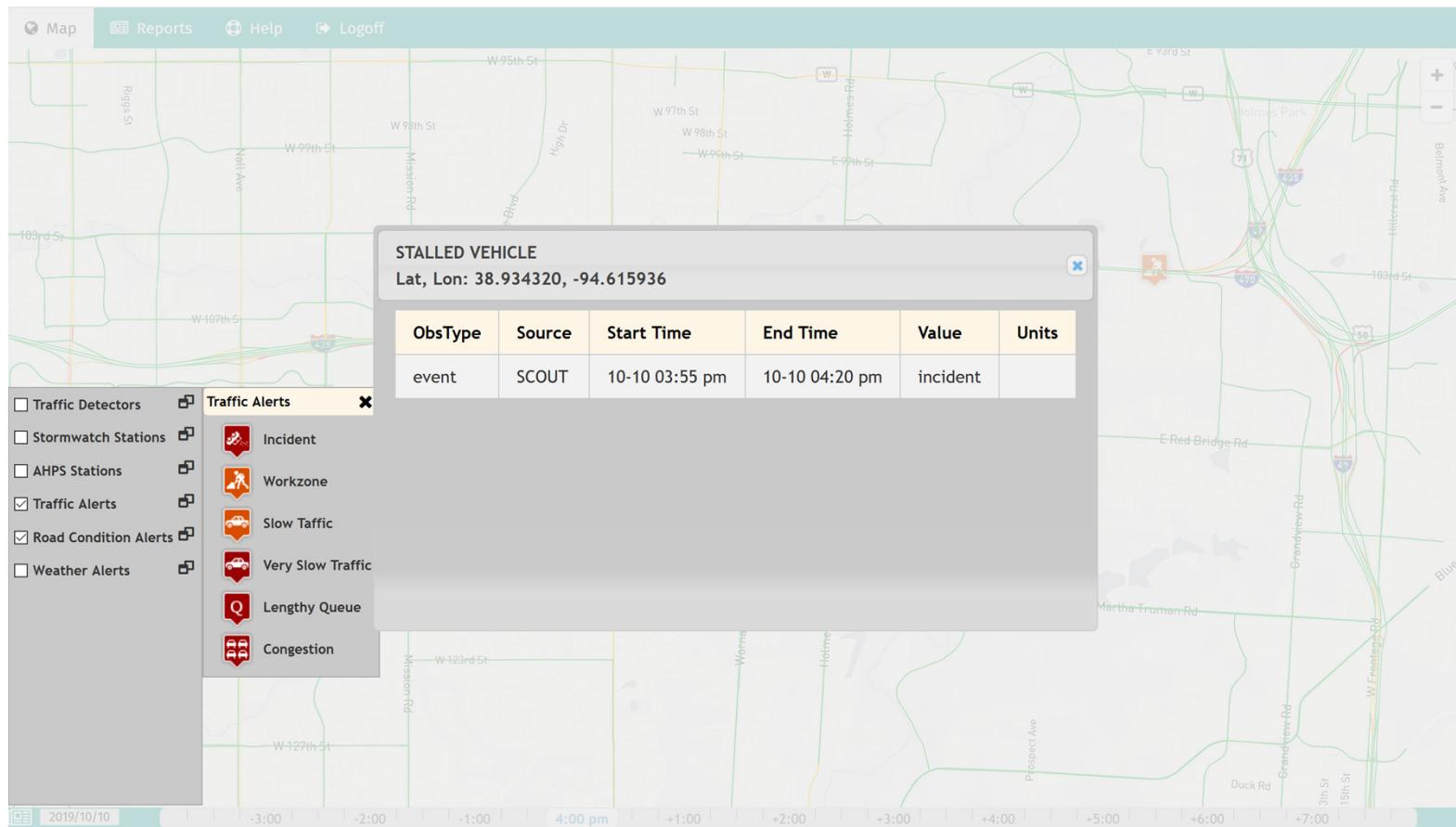


Source: FHWA

16



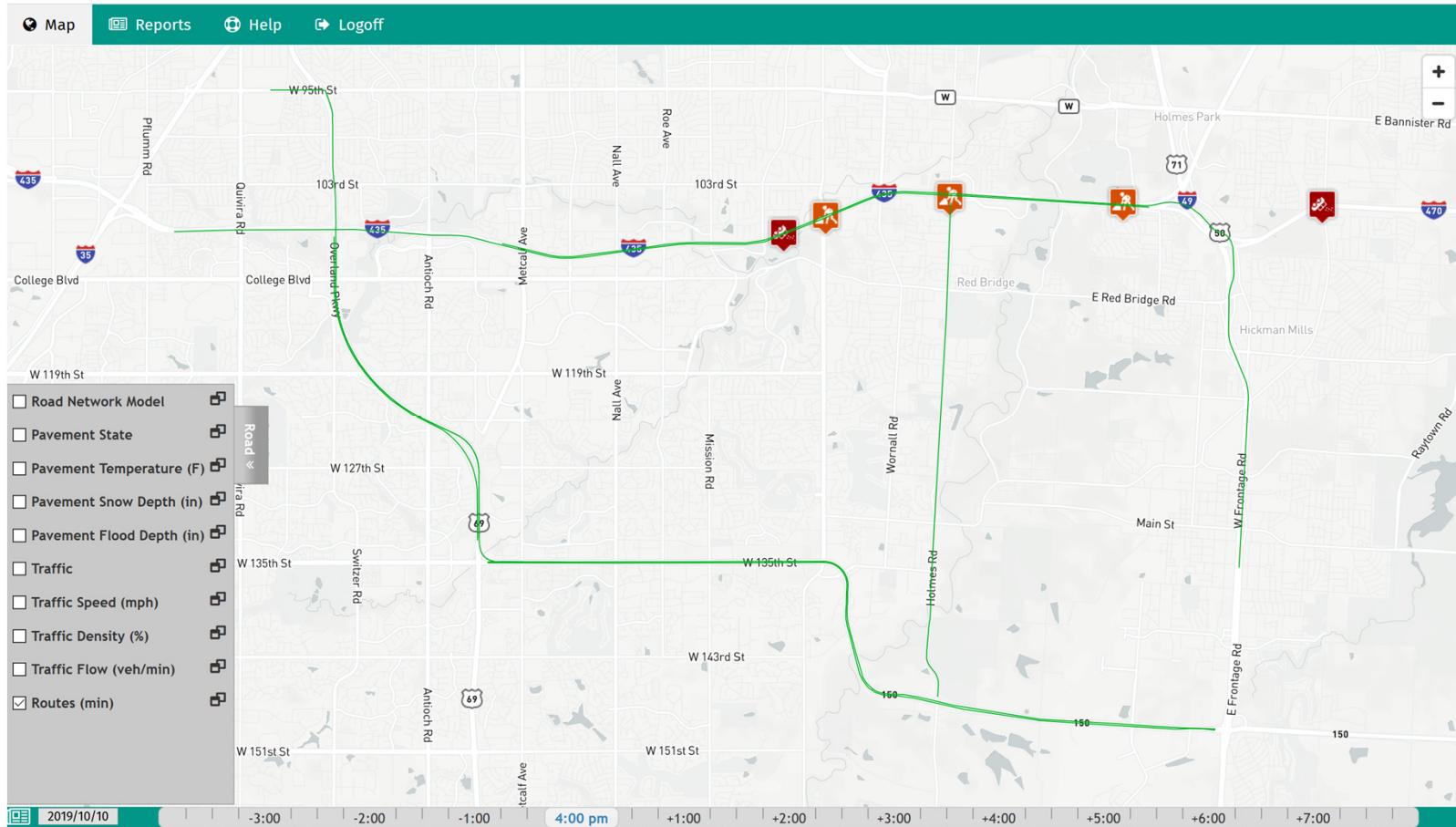
Viewing Alerts



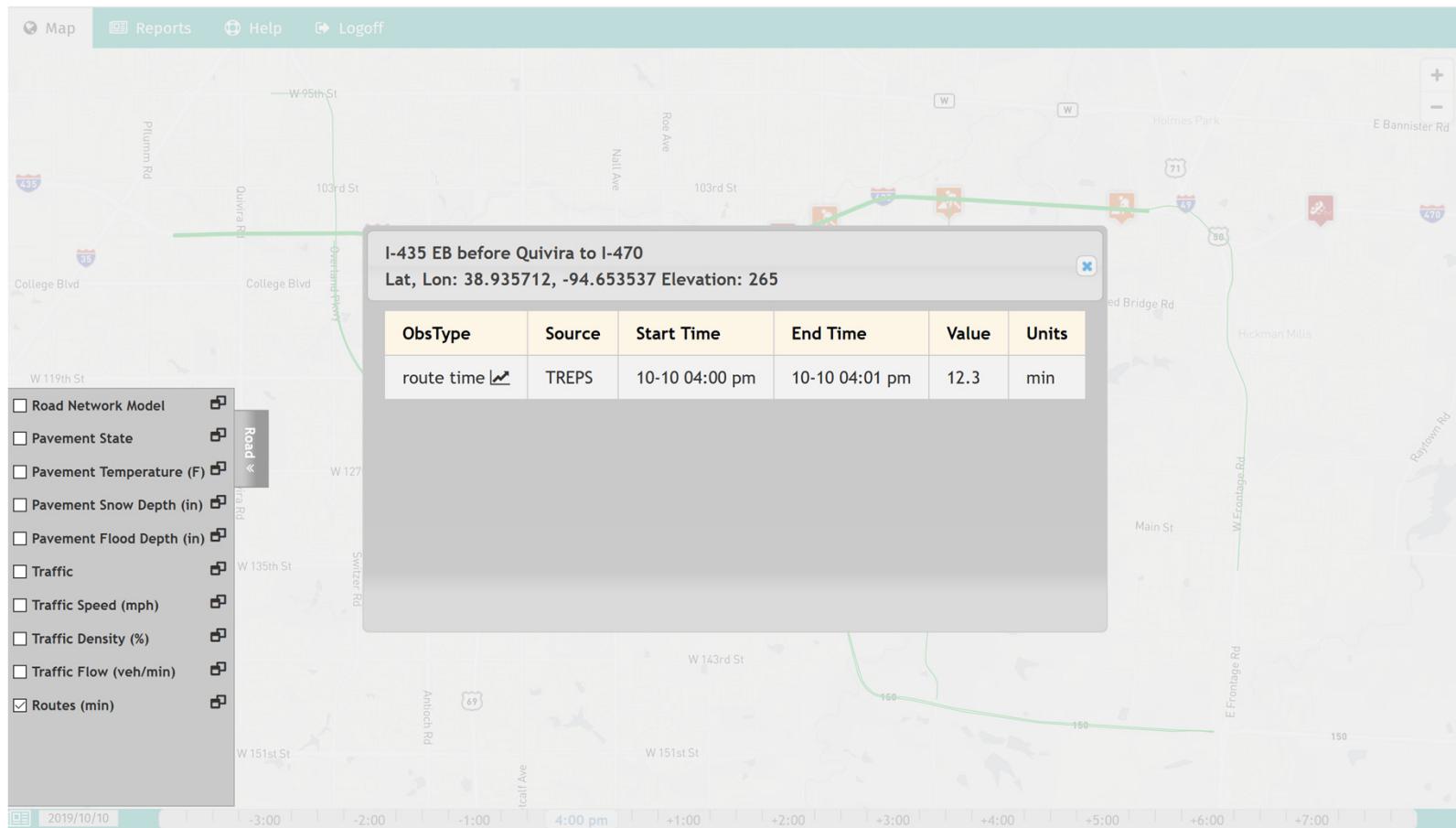
Source: FHWA



Viewing Routes



Viewing Routes



Source: FHWA



19

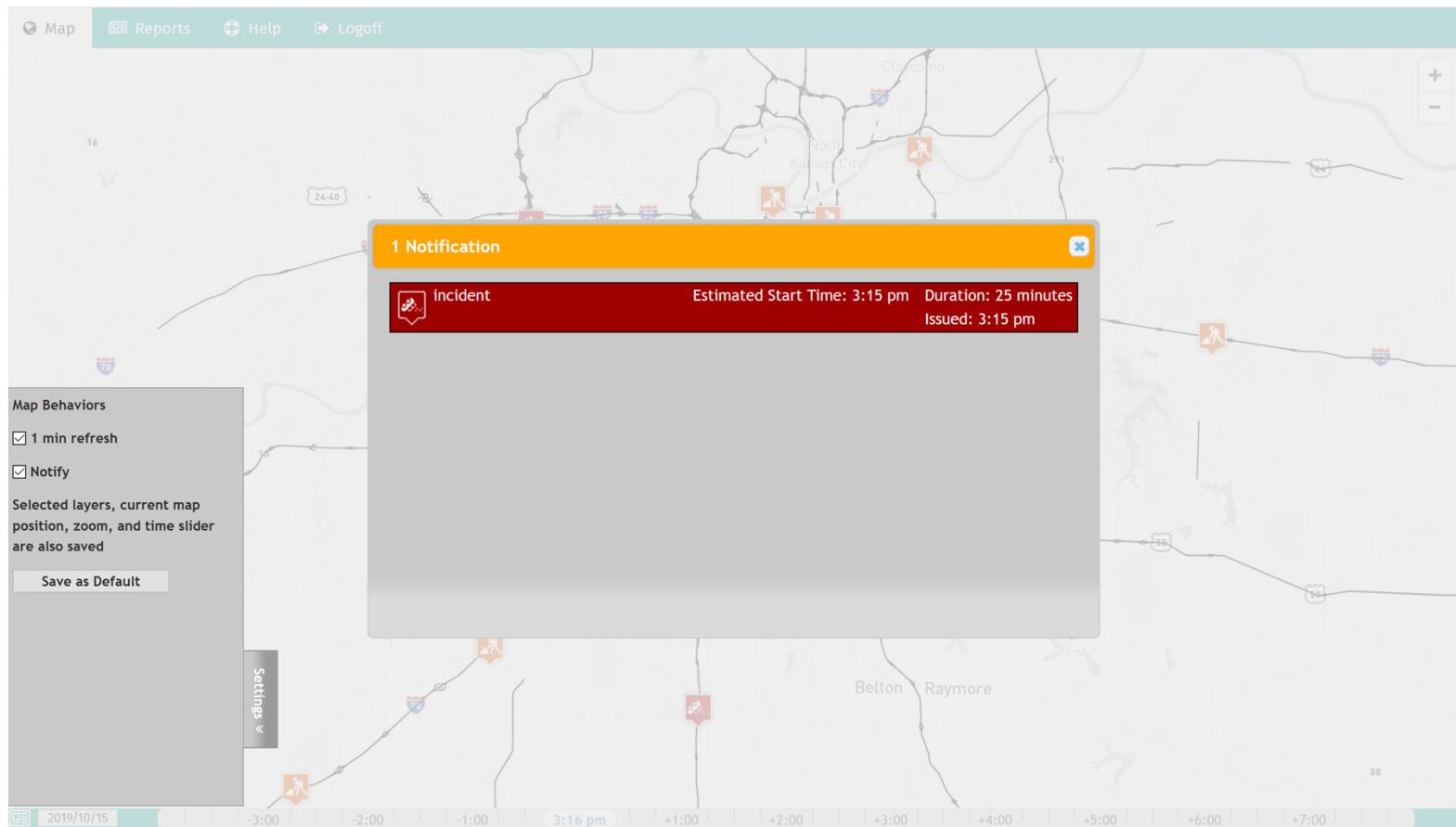


Receiving Notifications

- A map interface checkbox turns on notifications
- Notifications are a subset of alerts
- The notification box pops up and shakes when new notifications are available based on current and predicted (P) alerts
- Clicking on notifications in the pop-up box centers the map on the alert area



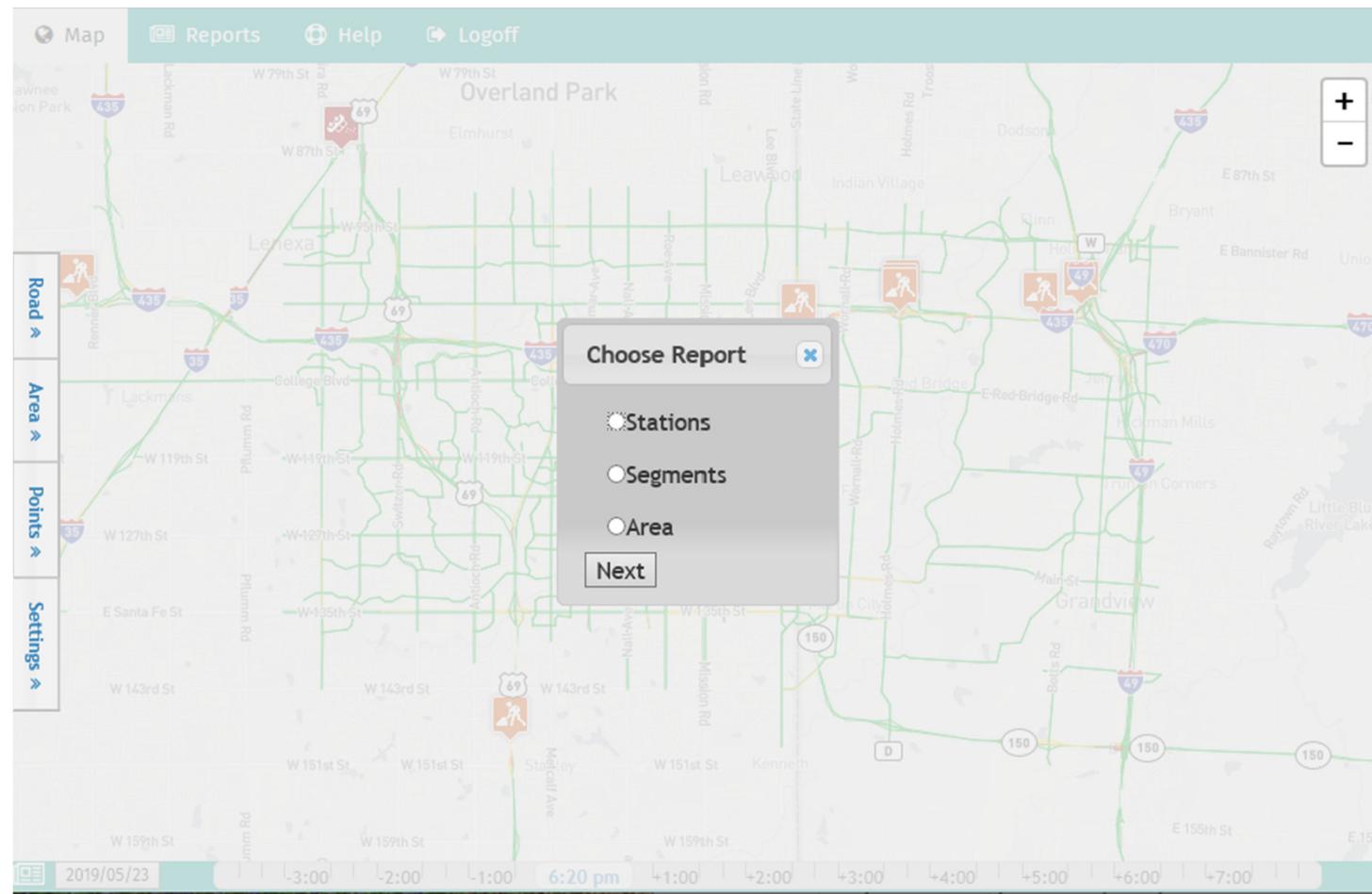
Receiving Notifications



Source: FHWA



Creating Reports/Subscriptions



Source: FHWA



22



Creating Reports/Subscriptions

Lat 1 39.010381 Lon 1 -94.681206
Lat 2 39.010381 Lon 2 -94.681206
Name
Obstype (Up to 5)
SPFLNK, average speed of moving vehicles on each link, mph
STG, flood stage, ft
STPVT, pavement state
TAIR, air temperature, F
TDEFW_dew point temprerature_F
Min Max
Format CSV
 Run Report Create Subscription
Ref Time 2018/12/27 12:36 pm
-24 -20 -16 -12 -8 -4 0 +4 +8
Offset 0:00 Duration 0:30
Submit Cancel

Source: FHWA

Reports

Lat 1 39.010381 Lon 1 -94.681206
Lat 2 39.010381 Lon 2 -94.681206
Name
Obstype (Up to 5)
SPFLNK, average speed of moving vehicles on each link, mph
STG, flood stage, ft
STPVT, pavement state
TAIR, air temperature, F
TDEFW_dew point temprerature_F
Min Max
Format CSV
 Run Report Create Subscription
Interval 15 min 30 min 1 hour
-4 -2 0 +2 +4 +6 +8
Offset 0:00 Duration 0:30
Submit Cancel

Source: FHWA

Subscriptions



Getting Reports/Subscriptions



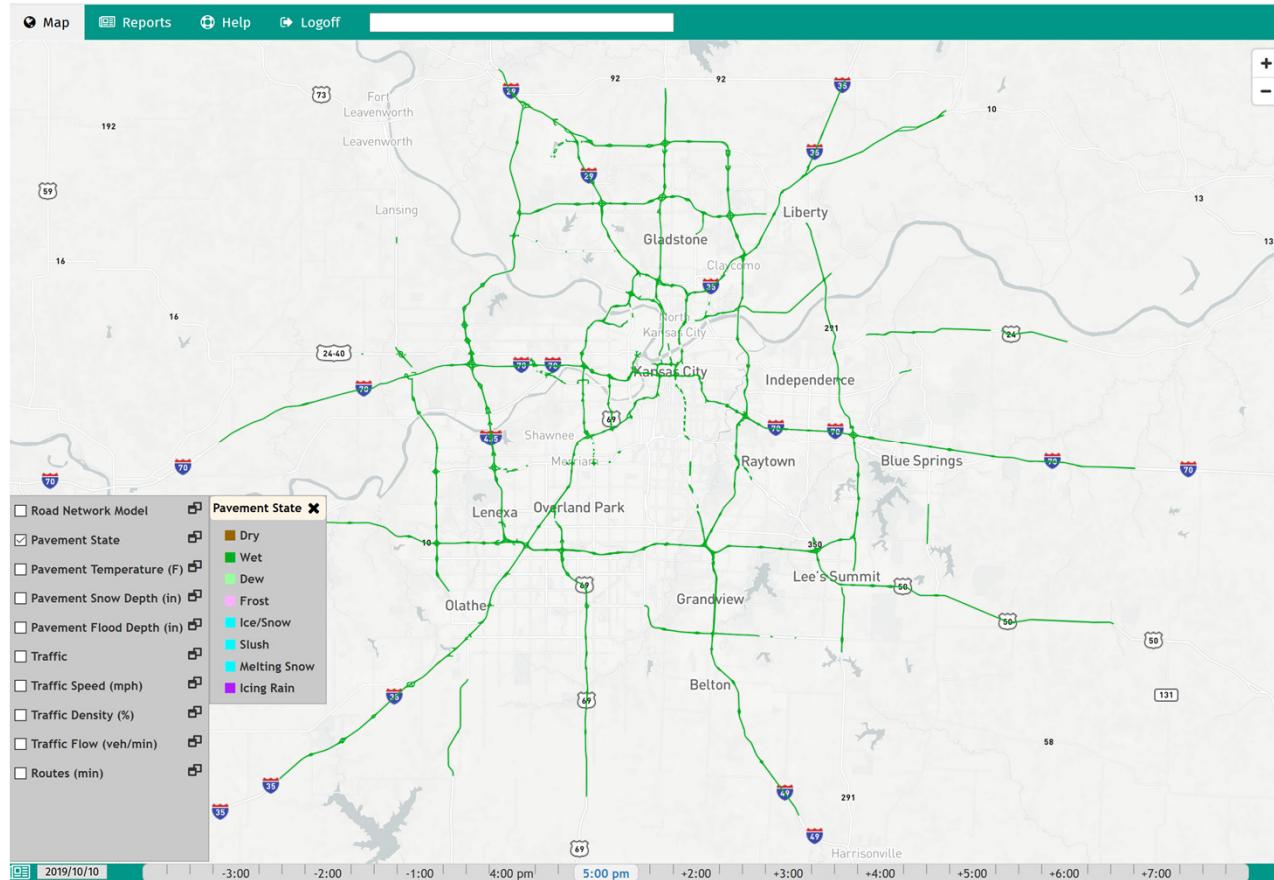
Map Reports Help Logoff

Reports	Subscriptions	Subscription Files
<p>Reports requested through the map interface are listed below with their identifying attributes. They are run in the order submitted and are available upon completion (which may take a few minutes after submission).</p> <p>Reports can be retrieved as many times as needed, but will be removed from the system if they have not been accessed for two weeks.</p> <p>Click to open</p> <p>test report 1</p> <p>Created: Dec 28 00:11 UTC Start: Dec 27 23:10 UTC End: Dec 28 00:10 UTC</p> <p>Elements: 1 segment Obs: SPDLNK</p>	<p>Subscriptions defined through the map interface are listed below. Similar to reports, subscriptions are retained for up to two weeks after the most recent download, after which time they will be removed from the system.</p> <p>Each subscription is listed below with its attributes. When a subscription is selected, the subscription files are listed in the column to the right. The download URL can be used by external scripts to retrieve the output automatically.</p> <p>Click to list</p> <p>test subscription 1</p> <p>Created: Dec 28 00:12 UTC Interval: 60 minutes Offset: -1:00 Duration: 1:00</p>	<p>The selected subscription's files are listed below with the most recent files listed at the top.</p> <p>test_subscription_1</p> <p>20181228_0100.csv</p> <p>Click to open</p>

Source: FHWA



Use Case: Pavement Condition



Source: FHWA



25



Reports: Pavement Condition

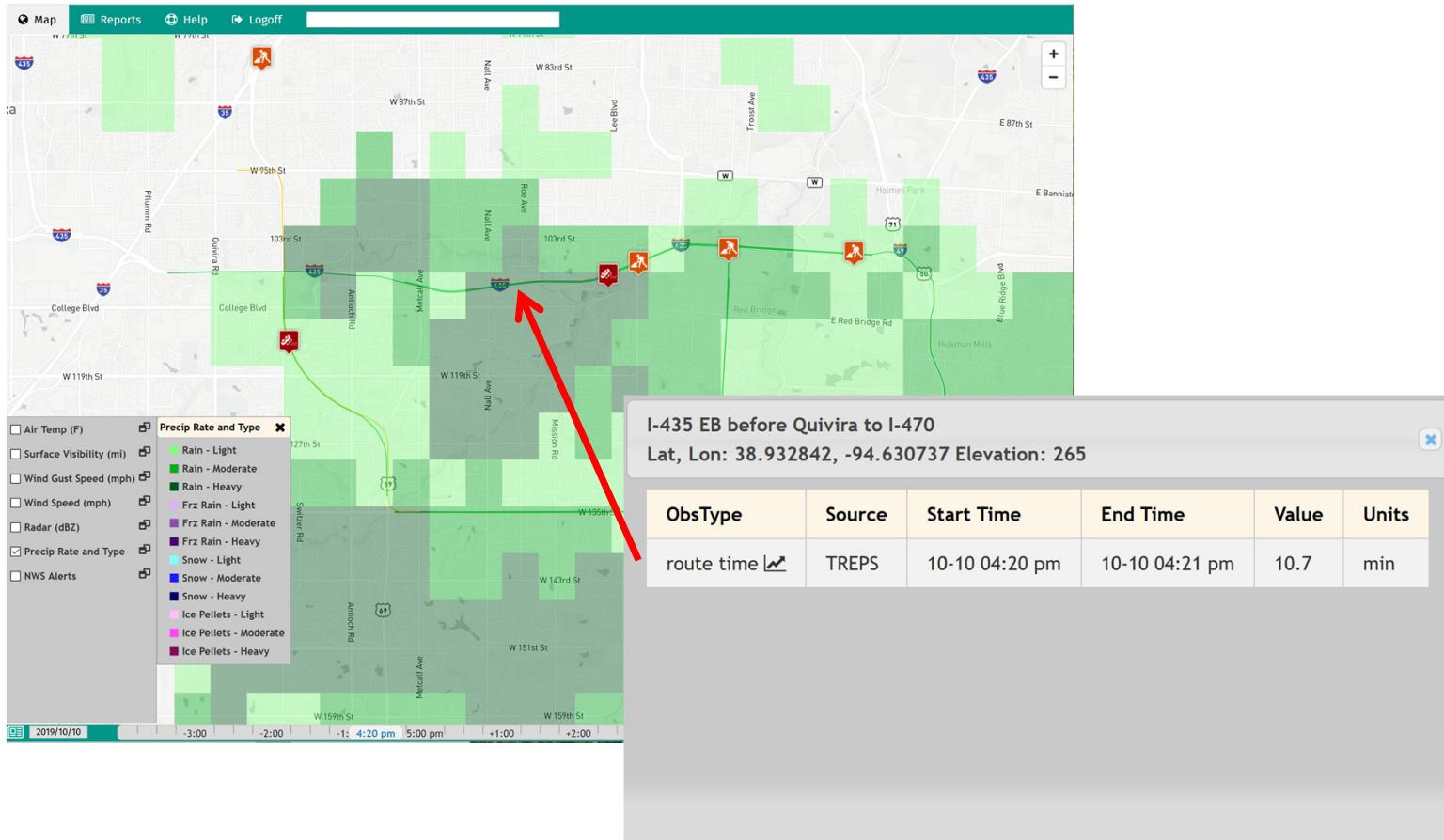
Lat 1 Lon 1
Lat 2 Lon 2
Name
Obstype (Up to 5)
Min Max
Format
 Run Report Create Subscription
Ref Time

Offset Duration

Source: FHWA



Use Case: Travel Time



Source: FHWA



Questions/Discussion



Contact

- Jawad Paracha, FHWA
 - Jawad.Paracha@dot.gov

