Mapping RPU Service Trucks in Real-Time Using ArcGIS

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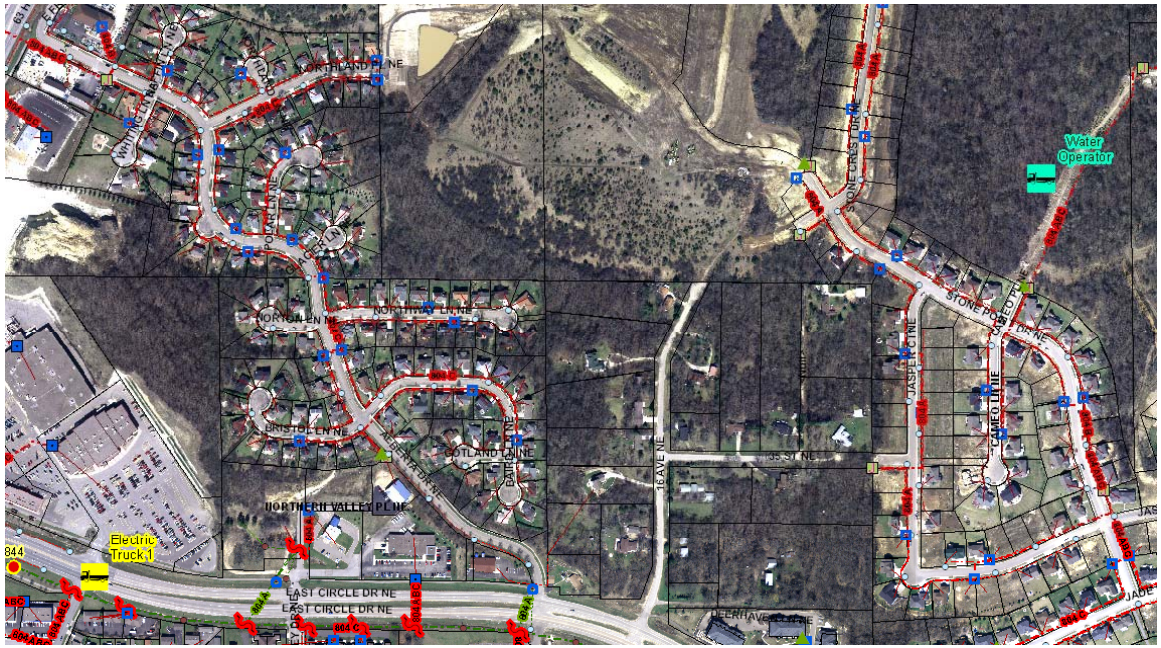
Project Goals

- Show RPU Service Truck locations within ArcGIS using real-time data

- Archive the data in a SQL Server database



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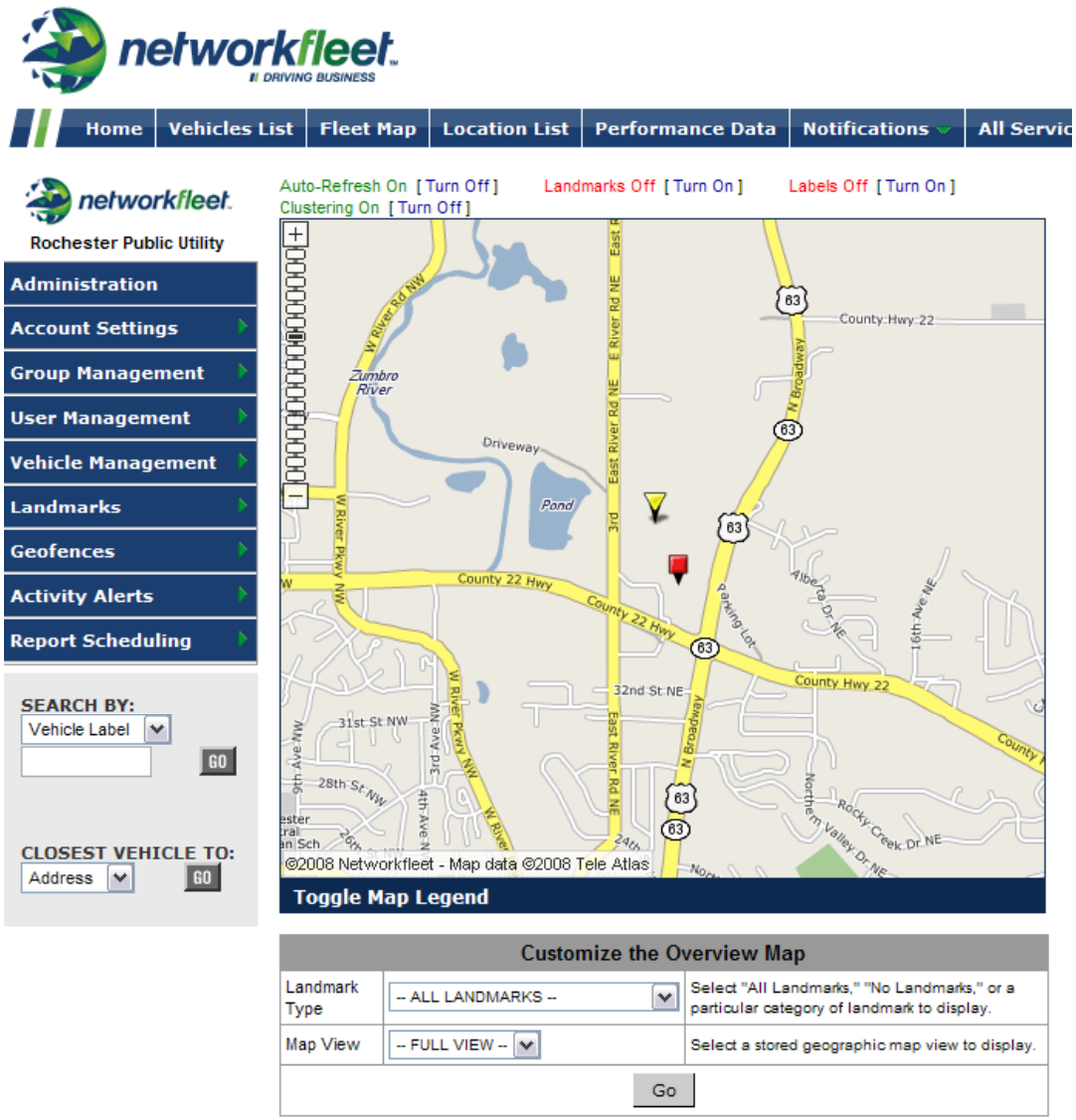
Mapping System Hosted by Networkcar

- http://www.networkcar.com/networkcar/pub/login



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How It Works

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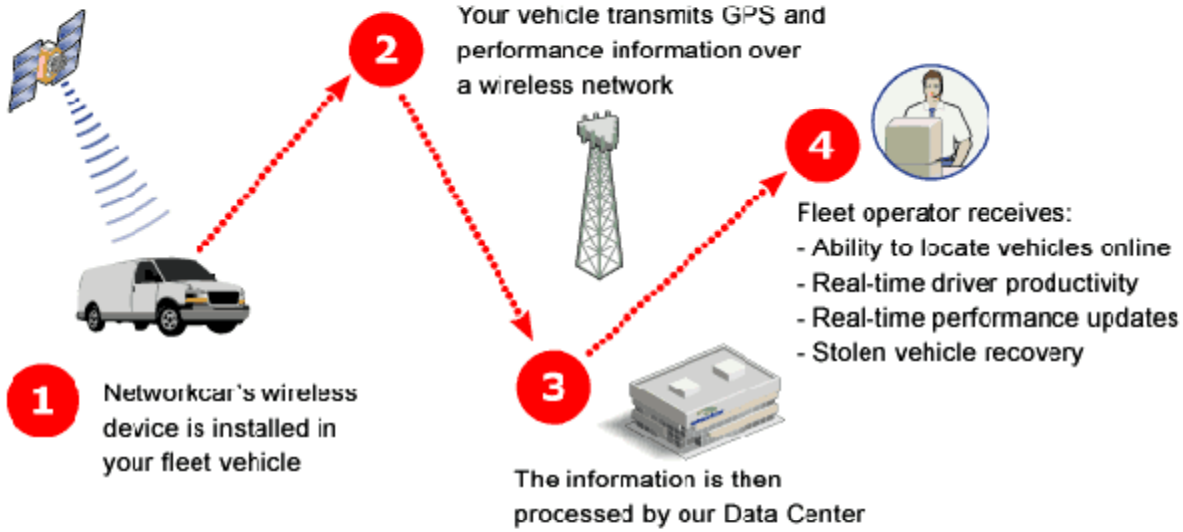
Networkfleet™ is the first commercially available aftermarket system that dynamically measures and reports the status of a vehicle's diagnostic performance. Once installed in a vehicle, our patented system collects diagnostic data from a host vehicle's on-board computer and location information from a global positioning system (GPS) and transmits these data over a conventional wireless network to an Internet-based computer system. The computer system analyzes the data and posts the results on a secure web site. (www.networkfleet.com).



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Getting the Data from Network Car's Server

- Part of the Networkfleet's subscription allows you retrieve the Truck GPS data via a published web service

- RPU developed a Visual Basic .Net application adds the Networkcar Webservice as a Web Reference. Once this is added you can access the functions of the web service.

  – Ex.

```
Public Function getFleetGpsInfo(ByVal username As String, ByVal password As String) As
String
    Member of: Networkcar_GPS_Data_Webservice.Networkcar.GpsInfo
```

- Results are returned as an XML File
- The VB.Net application is setup as a scheduled task on the server that runs every 2 minutes, which keeps the locations of the trucks current.

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Processing the Data

Results returned from the Web Service as an XML file

XML is Parsed and written to a text file to be read by ArcGIS

\\Rpu39\fleetgpsdata\webservicegpsdata.txt - Notepad++

File Edit Search View Format Language Settings Macro Run TextFX Plugins Window ?

webservicegpsdata.txt


```xml
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE Vehicle SYSTEM "http://www.networkcar.com/networkcar/dtd/vehicle.dtd">
<Vehicle action='FleetGpsFixReply'>
    <Version>1.0</Version>
    <NumberOfRecords>2</NumberOfRecords>
    <VehicleLocationList>
        <VehicleLocationItem>
            <VehicleName>COOK, BILL</VehicleName>
            <VehicleLabel>V172</VehicleLabel>
            <VIN>1GBHK24284E317381</VIN>
            <Year>2009</Year>
            <Month>01</Month>
            <Day>08</Day>
            <Hour>14</Hour>
            <Minute>14</Minute>
            <Second>05</Second>
            <TimeZone>GMT</TimeZone>
            <TzOffsetHours>0</TzOffsetHours>
            <UTF>1231424045</UTF>
            <AgeMinutes>0.00</AgeMinutes>
            <Latitude>44.07979</Latitude>
            <Longitude>-92.488746</Longitude>
            <MilesTraveled>0.00</MilesTraveled>
            <Ignition>on</Ignition>
            <Speed>38</Speed>
            <SpeedUnits>mi</SpeedUnits>
            <SpeedType>Max</SpeedType>
        </VehicleLocationItem>
```


mapFleetLocationGPS.txt - Notepad

File Edit Format View Help

```
trucknum,lat,long
V172,44.0751,-92.482702
V423,44.06158,-92.455396
```

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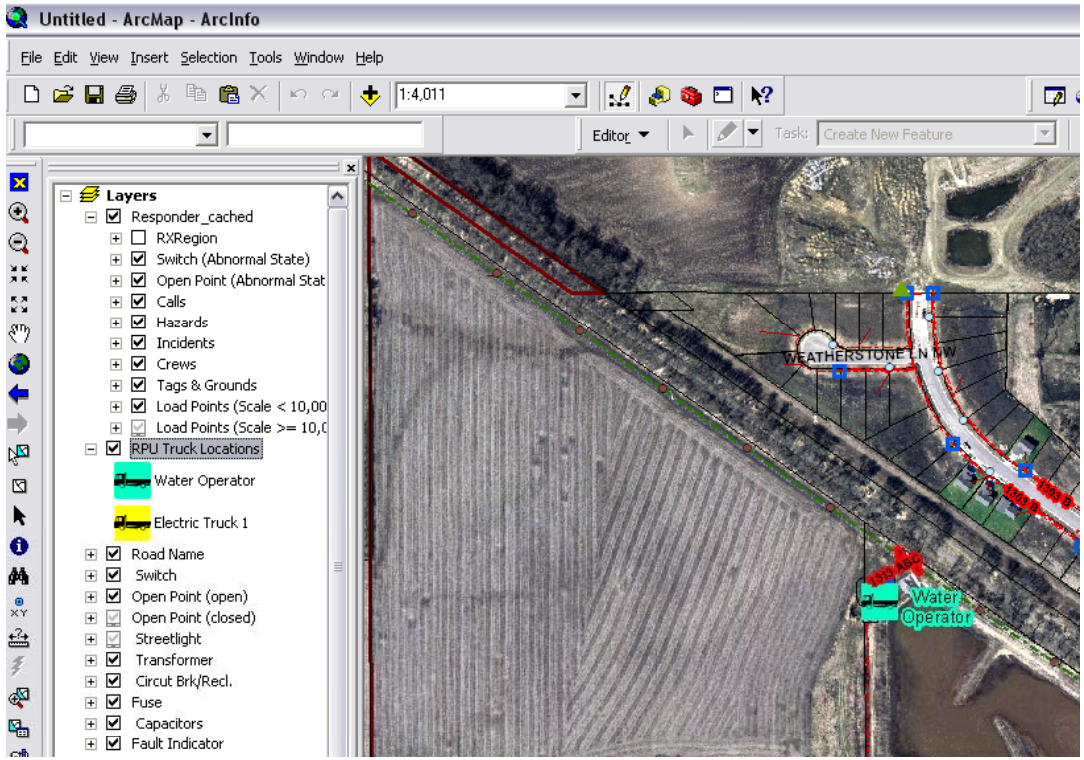
Mapping the Data

- Second VB.Net Application was developed to create a custom button in ArcGIS
- This application adds the text file to current map document
- Creates a new layer by running the Display XY Data geoprocessing task
- Layer file currently manually loaded to create the symbology. (Future release will hopefully do this the code)
- Either clicking the custom button, refresh button, or zooming or panning the map updates the locations of the trucks



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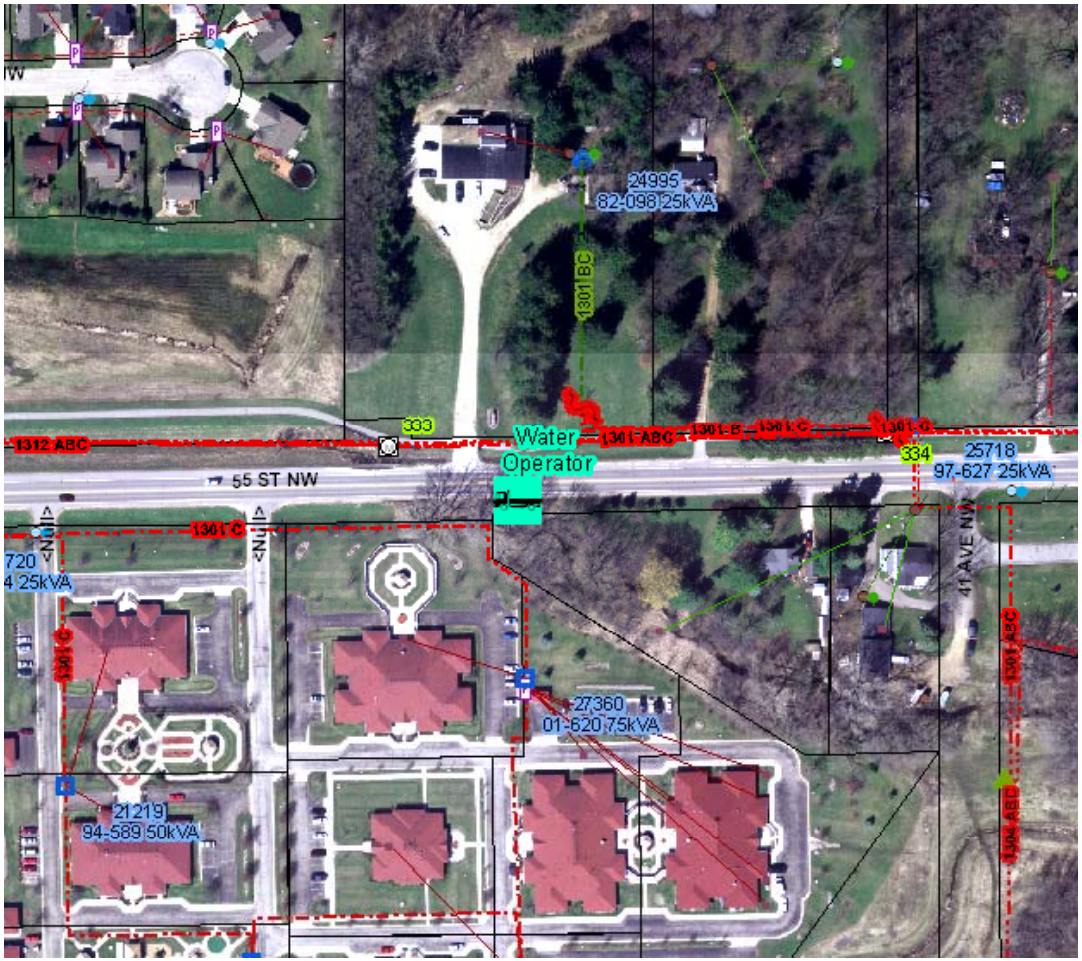
Benefits of having Truck Locations Mapped in ArcGIS

•Truck locations can be added to any of RPU's GIS map documents

•System operations can more efficiently dispatch trucks based on which ones are closes to the incident reported relation to problems reported.

•Safety for the crews is increased by knowing exactly where they are in the event of an accident. This will be especially helpful routing responders when crews are working in areas away from roadways.

•It's cool having live GIS data!!



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Moving Forward

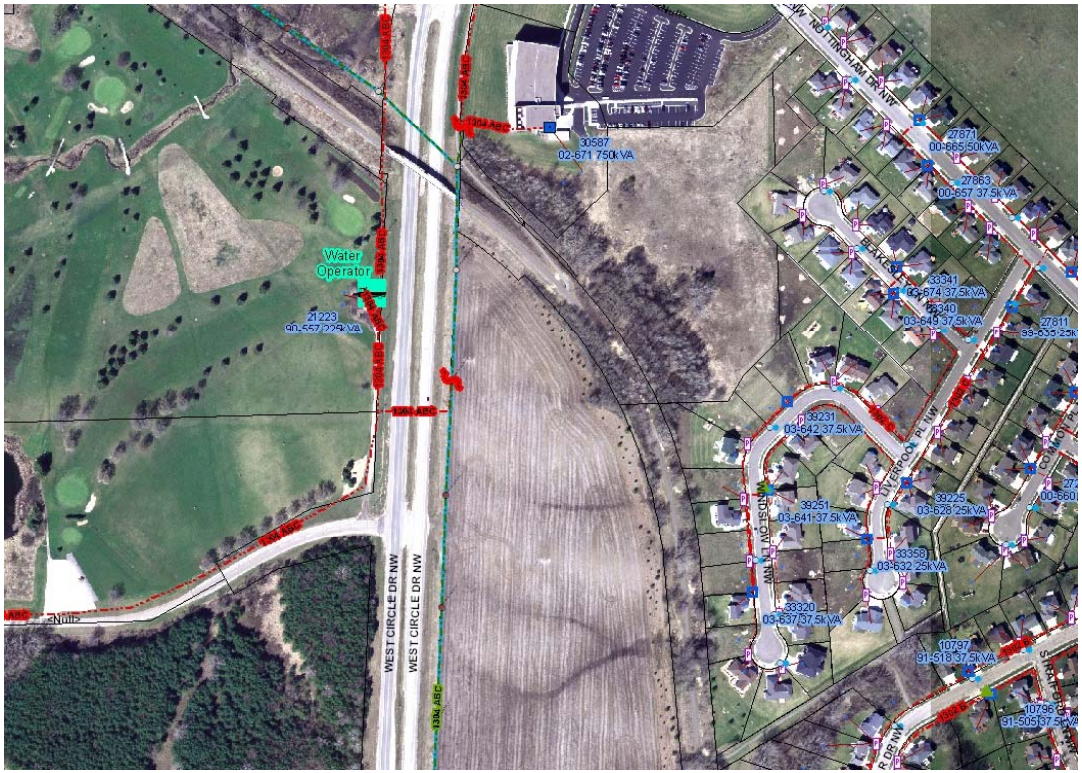
- Eventually add GPS to all RPU fleet vehicles

- Keep an archive of GPS positions in SQL Server (recently completed) that can be replayed if necessary.

- Change application that runs as a scheduled task on the server to a Server Service to reduce resources utilized on the server

- Change application that creates the RPU Truck Locations layer in ArcGIS to automatically load the layer file.

- Create an ArcServer application that displays the fleet location data



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