ALDOT MS4 IDDE Program

Uses of Innovative Technology for Outfall Mapping and Screening

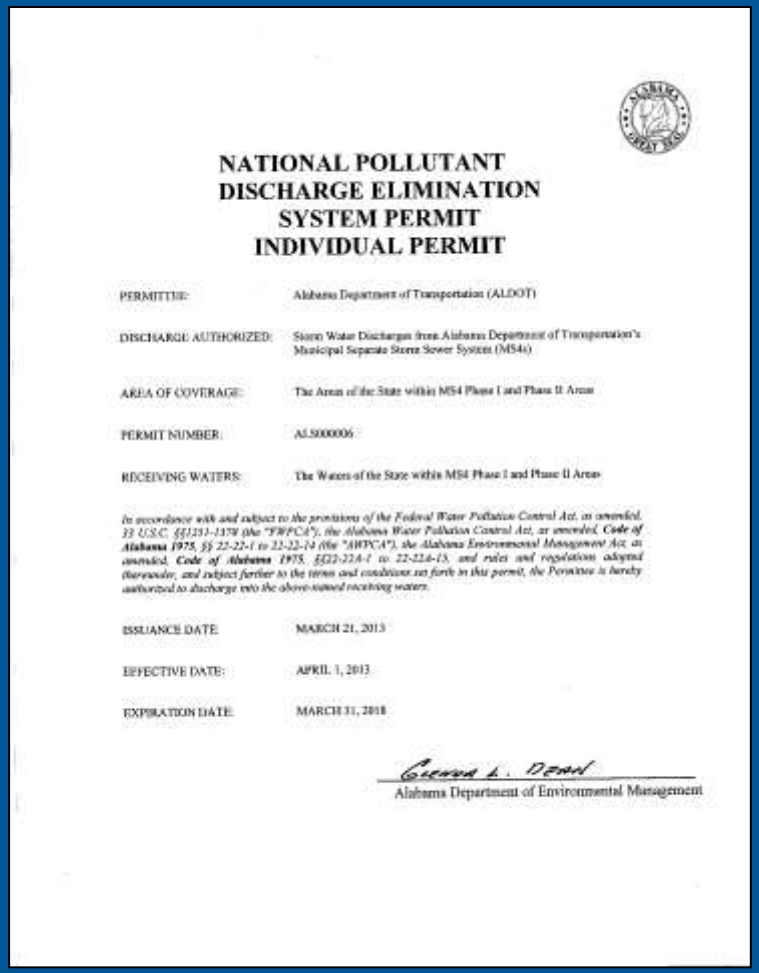
Richard Klinger, P.E. – ALDOT

Brian Kane, P.E. - Trimble

ALDOT MS4 Permit

Permit No. ALS000006

- New MS4 Permit Effective 1 April 2013
- Applies to Phase I and Phase II MS4 areas within state
- Applies to Waters of State within Phase I and Phase II MS4 areas



NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT INDIVIDUAL PERMIT

PERMITTEE:	Alabama Department of Transportation (ALDOT)
DISCHARGE AUTHORIZED:	Storm Water Discharges from Alabama Department of Transportation's Municipal Separate Storm Sewer System (MS4s)
AREA OF COVERAGE:	The Areas of the State within MS4 Phase I and Phase II Areas
PERMIT NUMBER:	ALS000006
RECEIVING WATERS:	The Waters of the State within MS4 Phase I and Phase II Areas

*In accordance with and subject to the provisions of the Federal Water Pollution Control Act, as amended, 33 U.S.C. §§1251-1378 (the "FWPCA"), the Alabama Water Pollution Control Act, as amended, **Code of Alabama 1975**, §§ 22-22-1 to 22-22-14 (the "AWPCA"), the Alabama Environmental Management Act, as amended, **Code of Alabama 1975**, §§22-22A-1 to 22-22A-15, and rules and regulation adopted thereunder, and subject further to the terms and conditions set forth in this permit, the Permittee is hereby authorized to discharge into the above-named receiving waters.*

ISSUANCE DATE:	MARCH 21, 2013
EFFECTIVE DATE:	APRIL 1, 2013
EXPIRATION DATE:	MARCH 31, 2018

Alabama Department of Environmental Management

ALDOT MS4 Permit

Permit No. ALS000006

- Illicit Discharge Detection and Elimination (IDDE) Program
- ALDOT will develop dry weather screening program of all major outfalls within applicable areas
- Screening of major outfalls each five-year permit period

ALDOT MS4 Permit

Permit No. ALS000006

- Major Outfalls
- Transportation Facilities
  - Closed conveyance (pipe) with cross-sectional area of 7.07 ft^2
  - Open swale draining 50 acres or more
- Support Facilities
  - Closed conveyance (pipe) with cross-sectional area of 0.79 ft^2
  - Open swale draining 2 acres or more

ALDOT MS4 IDDE Program

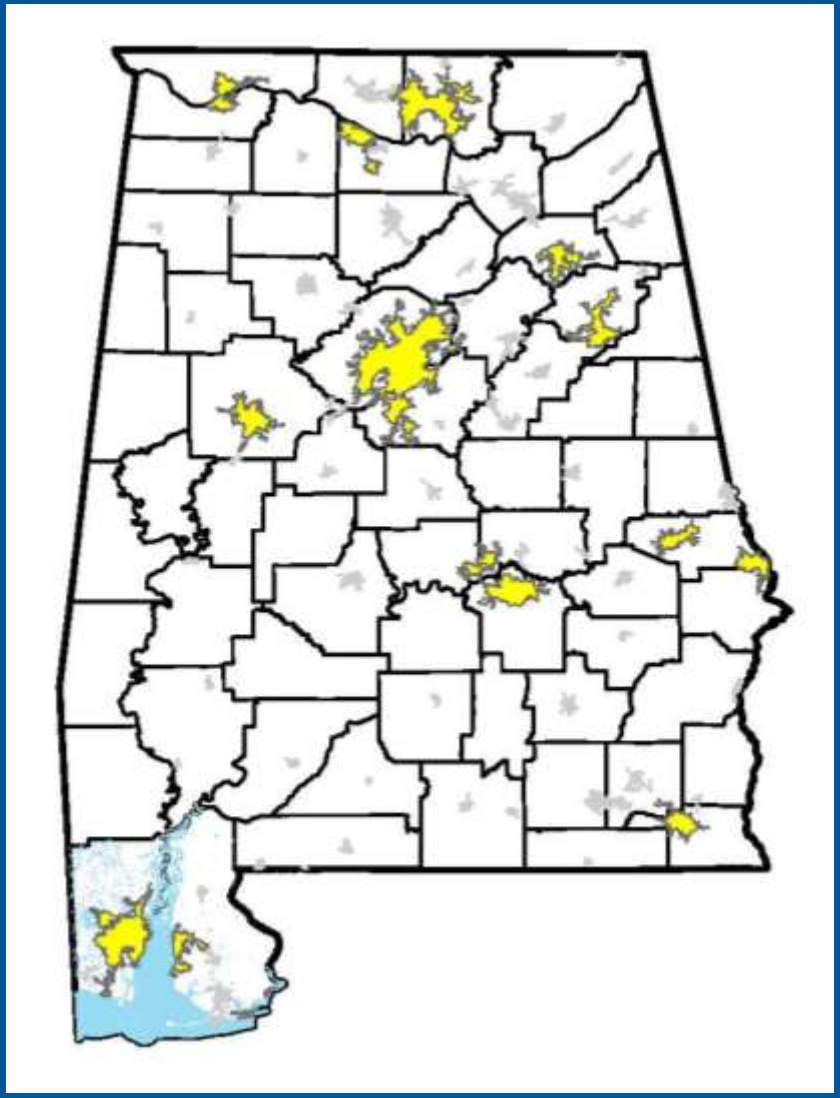
- ALDOT required to establish outfall mapping program to get major outfall inventory
- Decided to map all outfalls in designated areas and determine if major or minor
- Needed to streamline mapping process to make field work efficient
- Support facilities are located
- Transportation facilities needed location determination prior to mapping visit

ALDOT MS4 IDDE Program

- GIS Analysis needed to determine where Transportation Facilities are located.
- ALDOT has information, but needed to develop an algorithm to efficiently determine locations
- This would save time from manually looking for each location
- ALDOT established algorithm to use information from different GIS layers to pinpoint locations

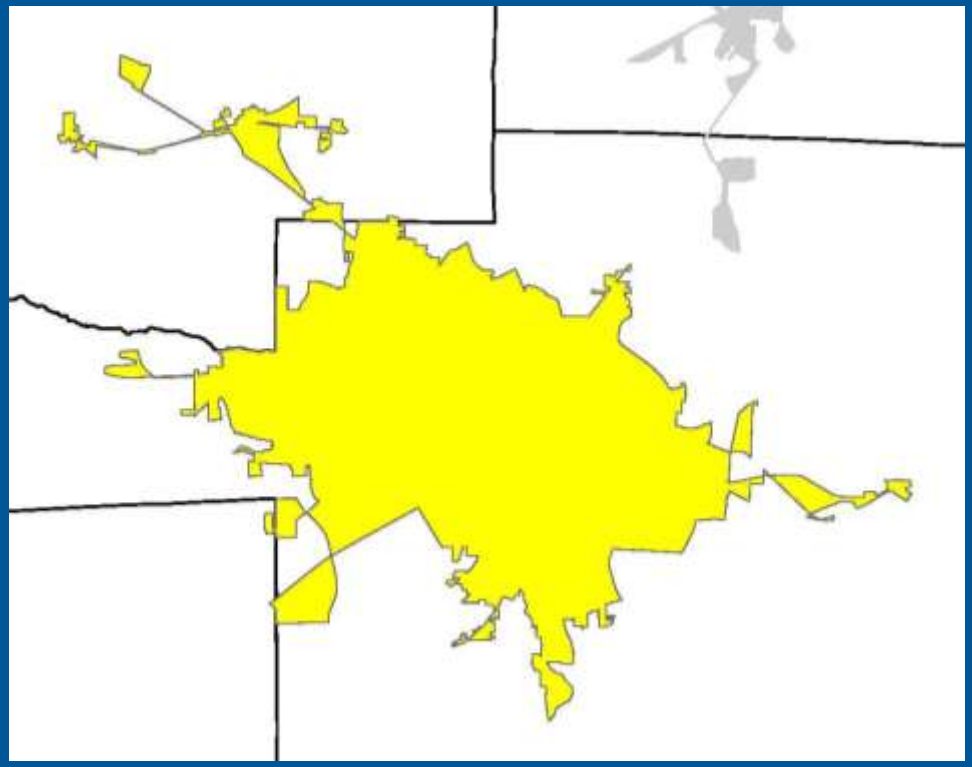
ALDOT MS4 IDDE Program

- Begin with Phase I and Phase II MS4 areas throughout the state.
- Data from 2010 U.S. Census



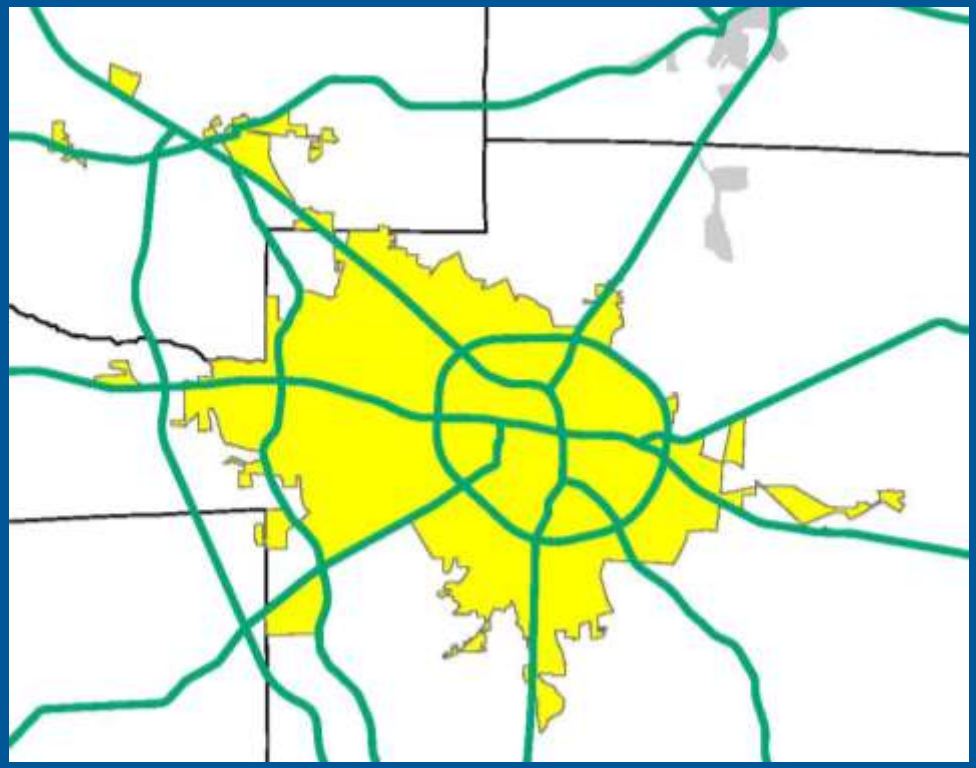
ALDOT MS4 IDDE Program

- Example – Dothan Urbanized Area



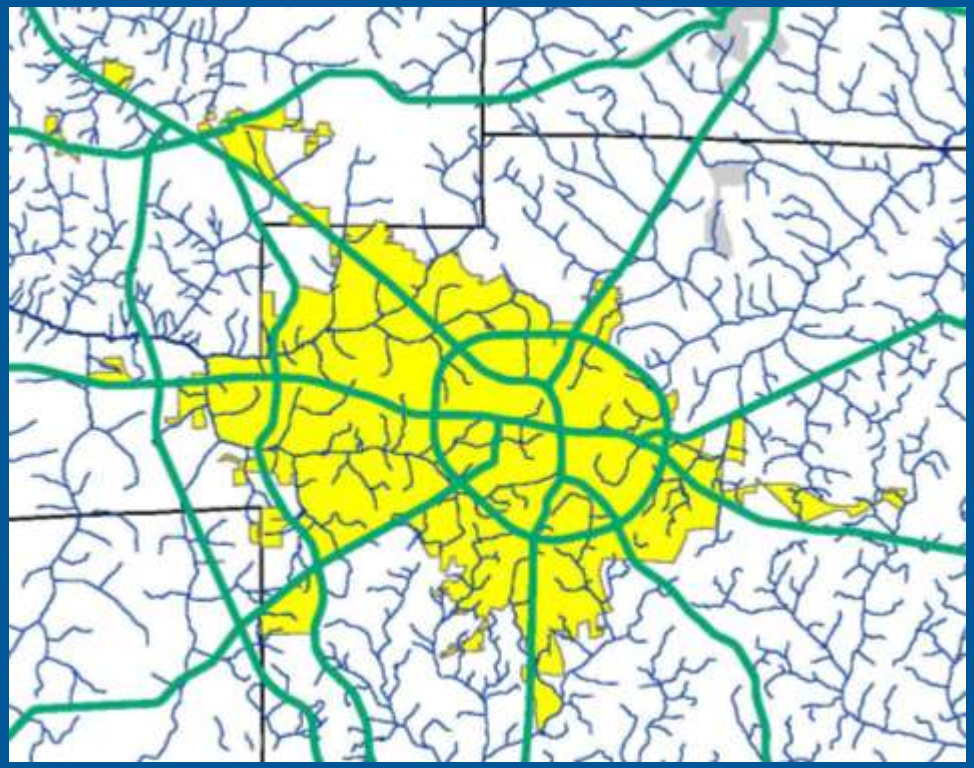
ALDOT MS4 IDDE Program

- Example – Dothan Urbanized Area
- ALDOT Roads



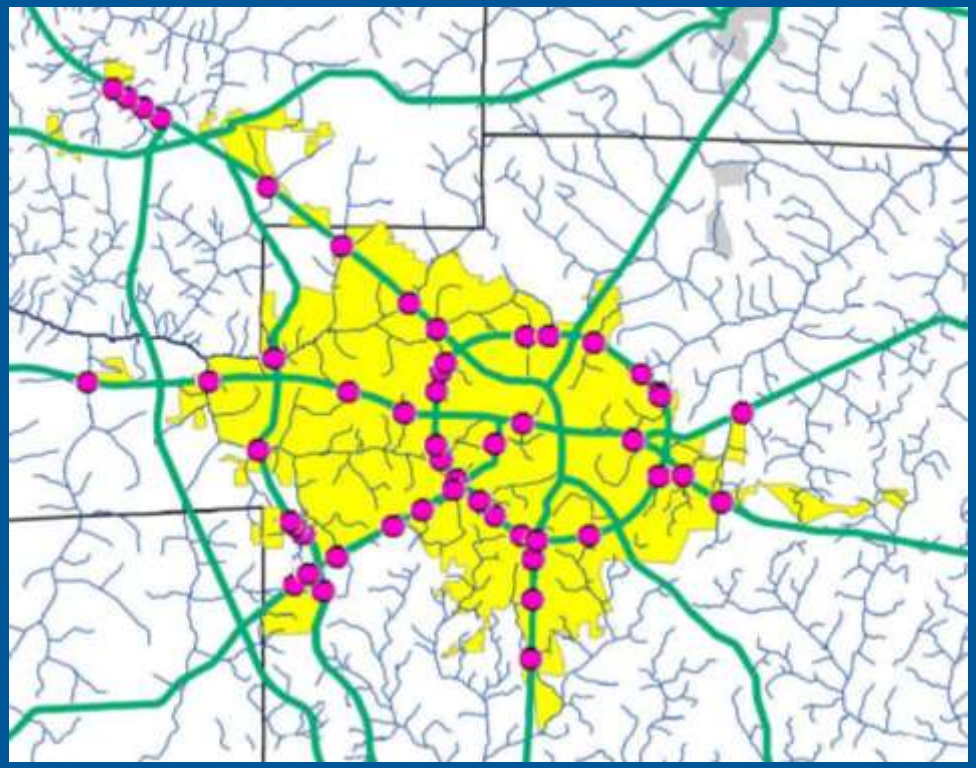
ALDOT MS4 IDDE Program

- Example – Dothan Urbanized Area
- ALDOT Roads
- National Hydraulic Dataset



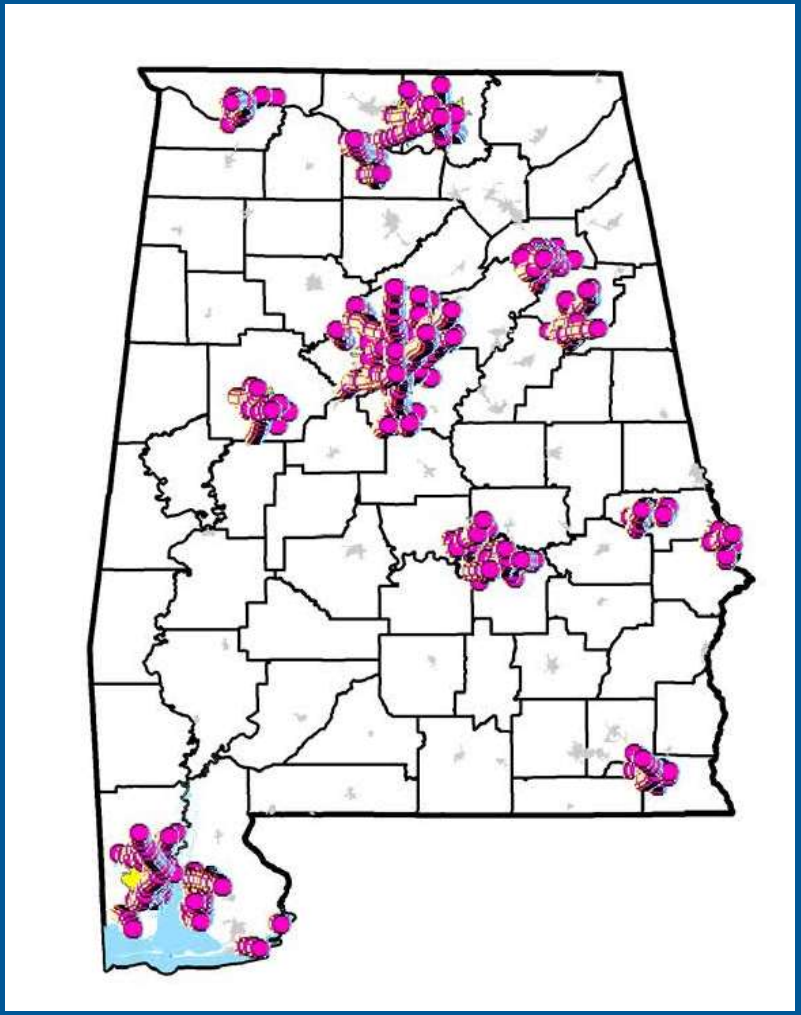
ALDOT MS4 IDDE Program

- Example – Dothan Urbanized Area
- ALDOT Roads
- National Hydraulic Dataset
- Intersection of each layer



ALDOT MS4 IDDE Program

- After algorithm identified locations, QA/QC of locations was required
- Vast majority of the locations were useable
- Used GIS to create a temporary identifier for each location
- Final total of 1,352 locations



ALDOT MS4 Program

Outfall Mapping

- ALDOT established locations for outfall mapping
- ALDOT needed all locations mapped prior to end of five-year permit cycle
- ALDOT asked Trimble to develop process to efficiently:
  - Capture information in the field
  - Reduce post-processing time
  - Deliver information in a timely manner for possible further investigations
  - Deliver information compatible with ALDOT GIS (Roadmap)

ALDOT MS4 Program

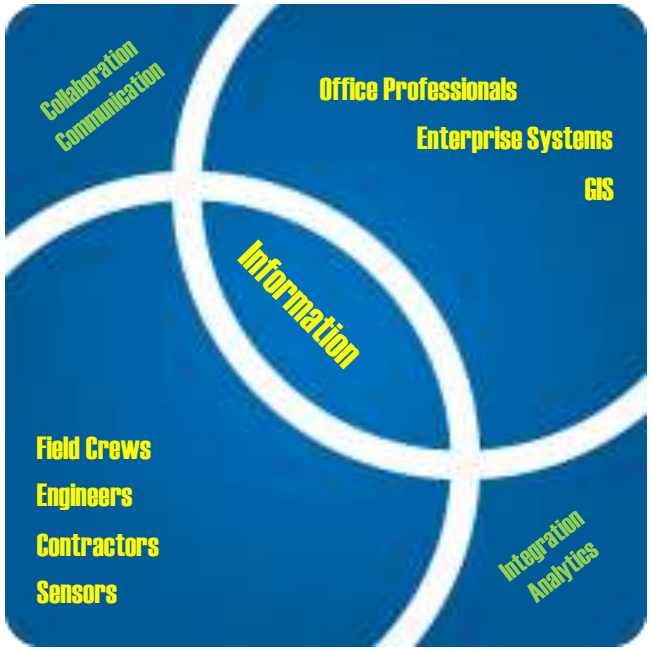
Outfall Mapping

- Trimble determined an electronic form for information capture would be more efficient than paper forms
- Would prefer cloud-based information capture which would be easily GIS convertible
- Inquired if **Trimble** Unity could be formatted to fit ALDOT's needs
- **Trimble** Unity previously used for Water, Wastewater, and Stormwater mapping and work order functions

Trimble Unity

Through a Unified Suite of Applications

- Unified Cloud-based and Mobile Collaboration Suite of Applications for Smart Water Management, integrating:
  - Mobile workers and office professionals
  - Field and back office enterprise systems
  - GIS and field operations
  - Utilities with their contractors



Trimble Unity

- Focus on workflow and business process improvement with the added benefit of better information for decision making and regulatory compliance

Trimble

Trimble Unity

Supporting Various Mobile Platforms

Leverage Trimble's rugged high accuracy GPS handheld devices OR bring you own device (BYOD)

Microsoft Surface Tablet

Apple iPhone®

Samsung Galaxy Android Phone

Trimble Ranger 3 Rugged Handheld

Trimble Geo7® (Centimeter level accuracy Optional Laser Rangefinder)

Trimble Yuma® 2 Tablet

Trimble JunoT41® (Enhanced 1M to 2M accuracy)

Trimble Unity

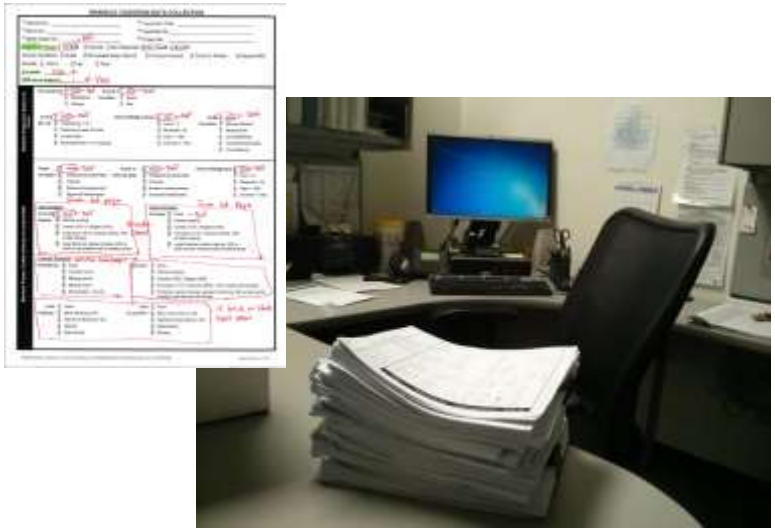
Managing Work From One Location

Login from anywhere from a web browser to interact with latest GIS data, dispatch work and manage field operations.

Cloud and mobile GIS powered by esri

Trimble

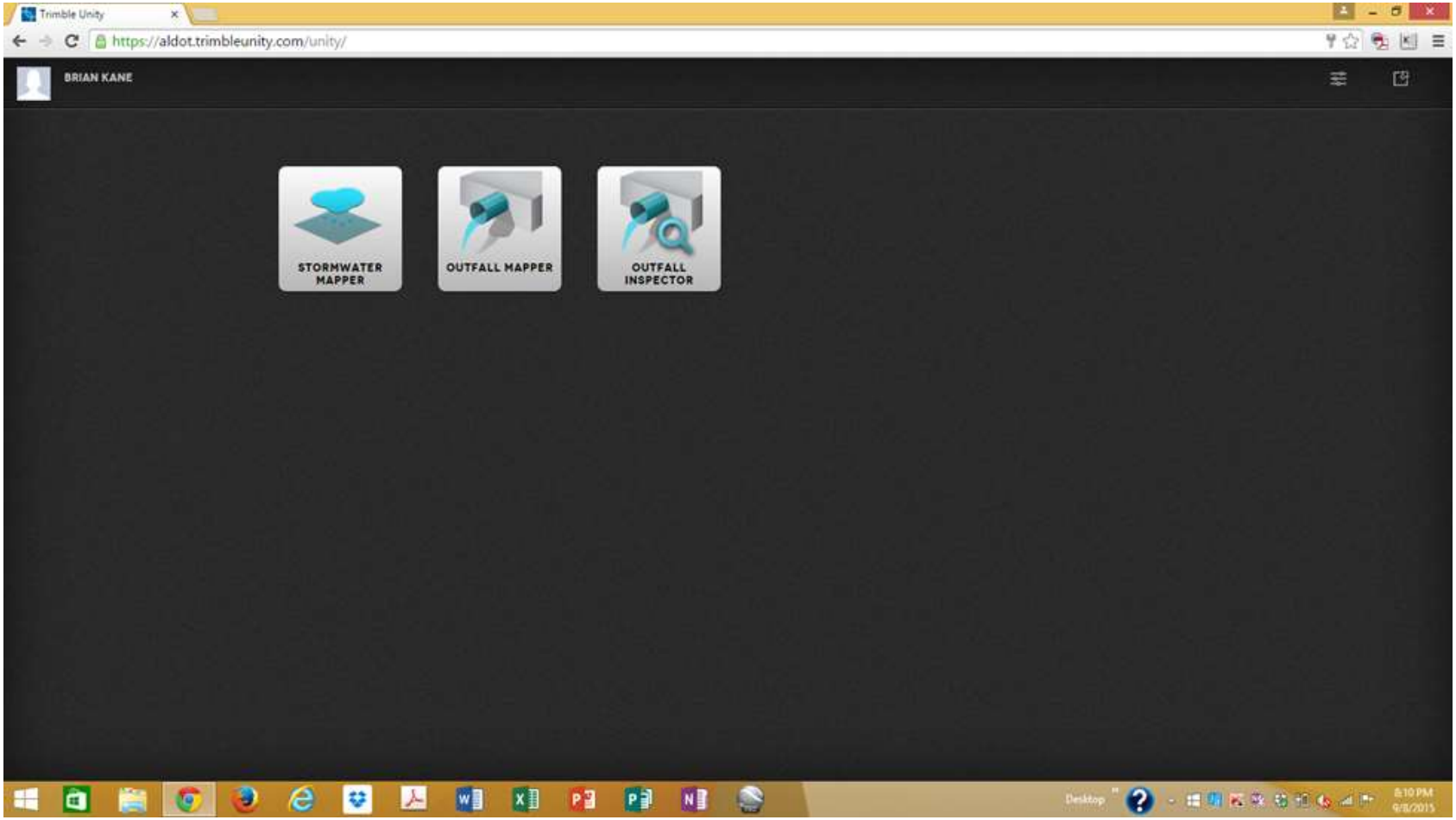
Trimble Unity Benefits



- Standardize and automate field work.
- Eliminate paper and manual data entry.
- Streamline field data collection activities through intelligent workflows and data collection forms.
- Seamless flow of data between the field and office.

- Improve accuracy of field collected GIS and asset data.
- Keep your GIS up-to-date and locate hard to find assets.
- Connect to your back office systems and manage work on one platform.
- Measure performance through standard and configurable dashboards.

Trimble Unity



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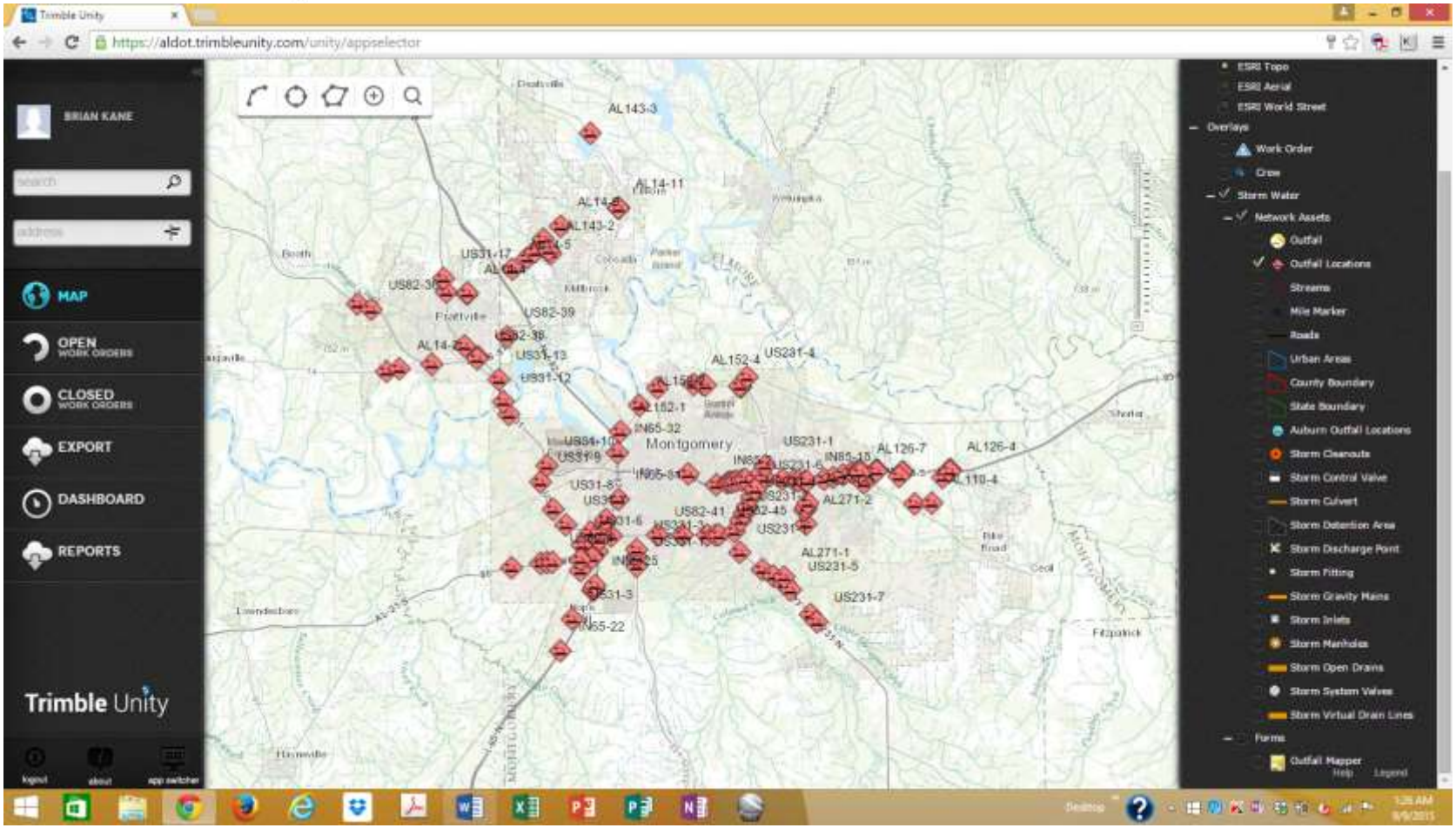

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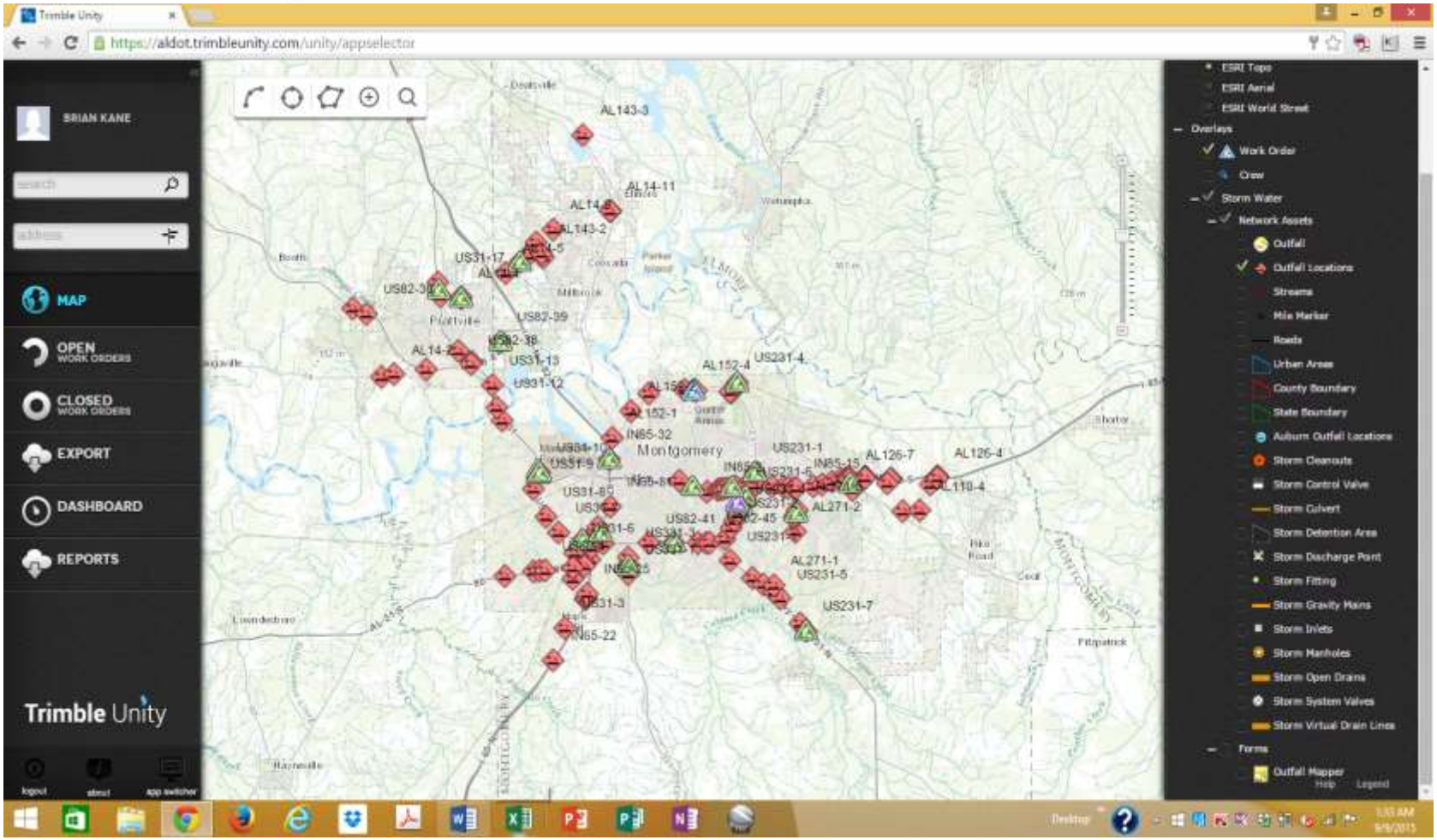

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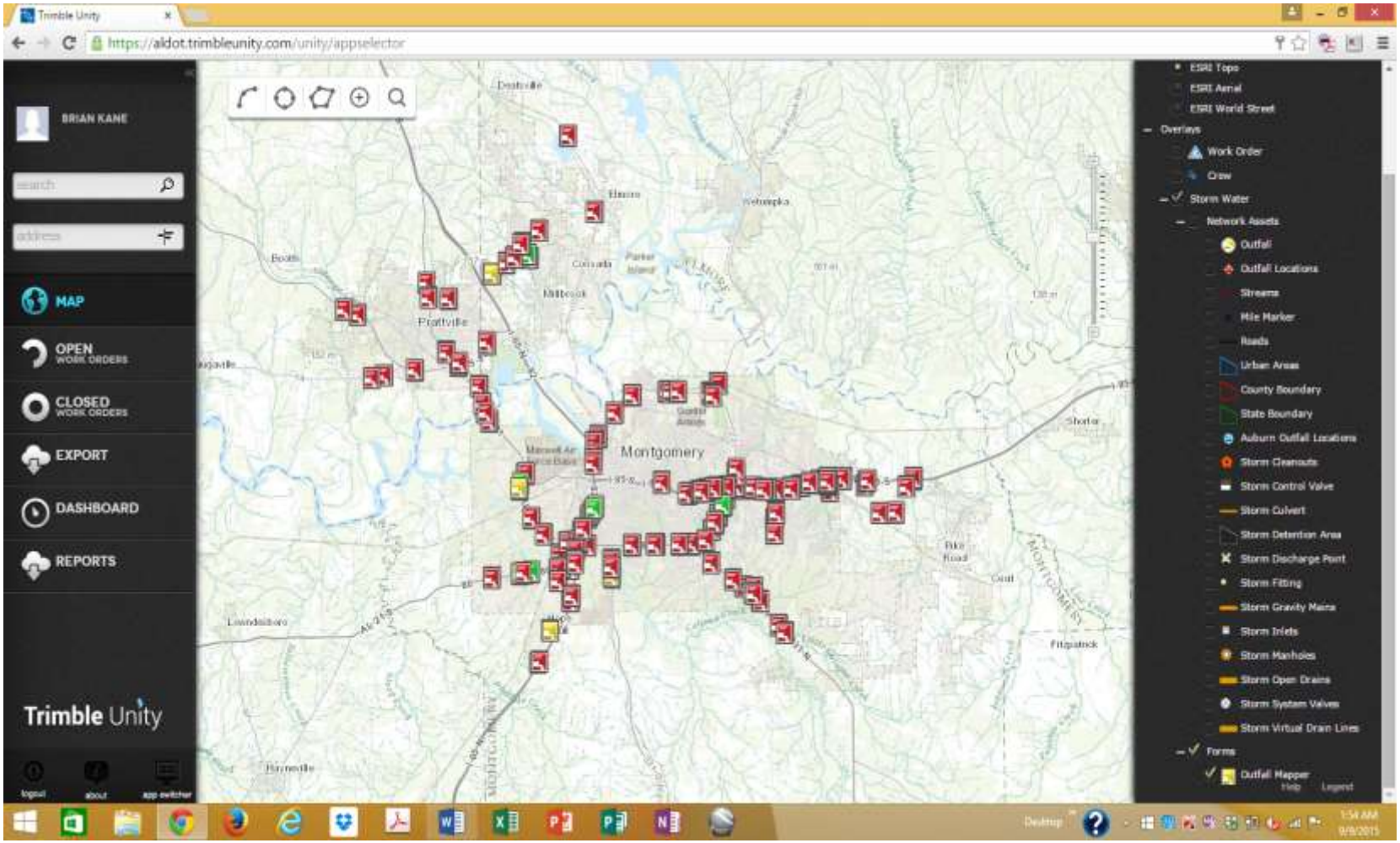
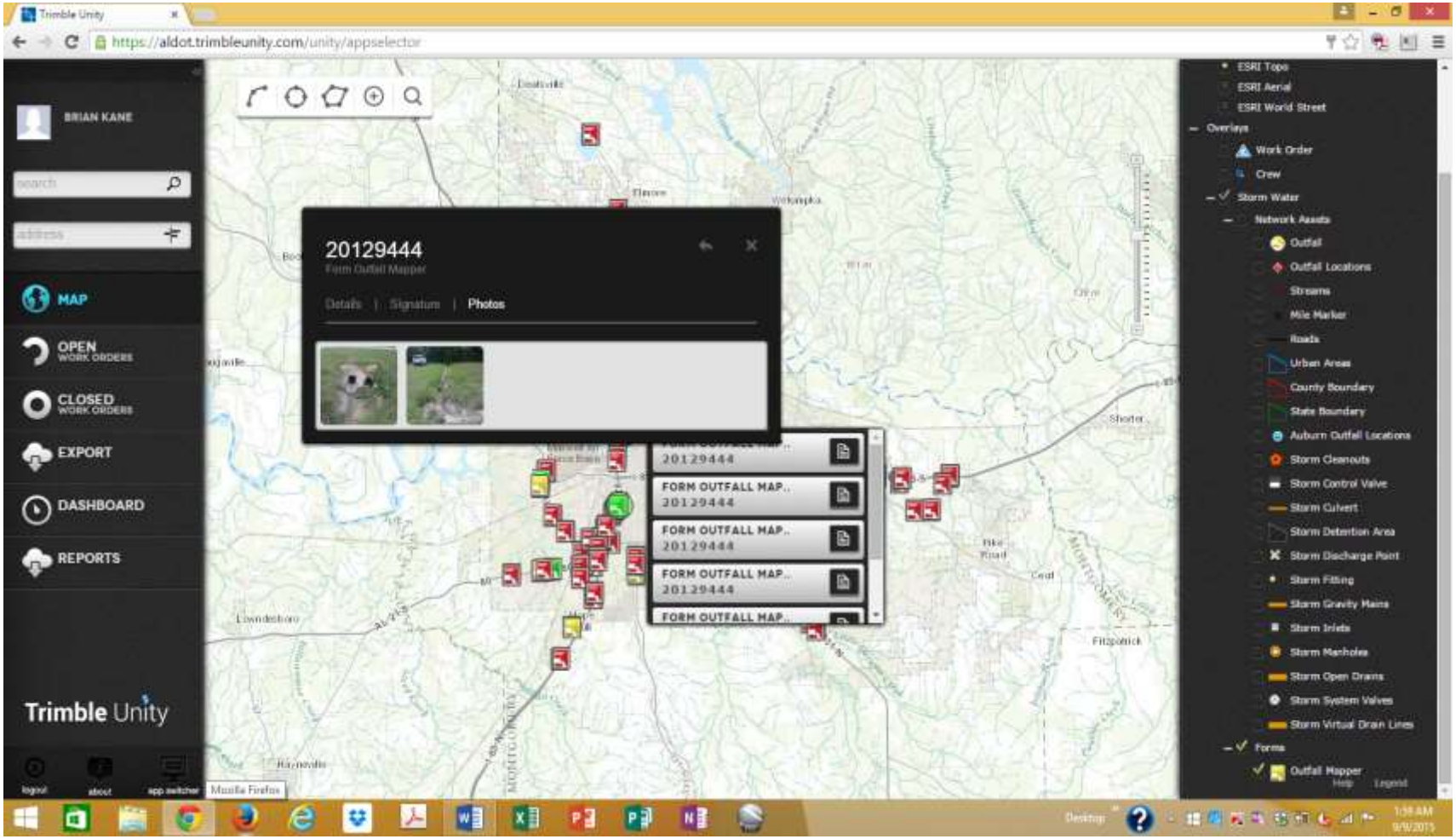


ALABAMA DEPARTMENT OF TRANSPORTATION

Trimble

Trimble Unity



ALABAMA DEPARTMENT OF TRANSPORTATION

Trimble

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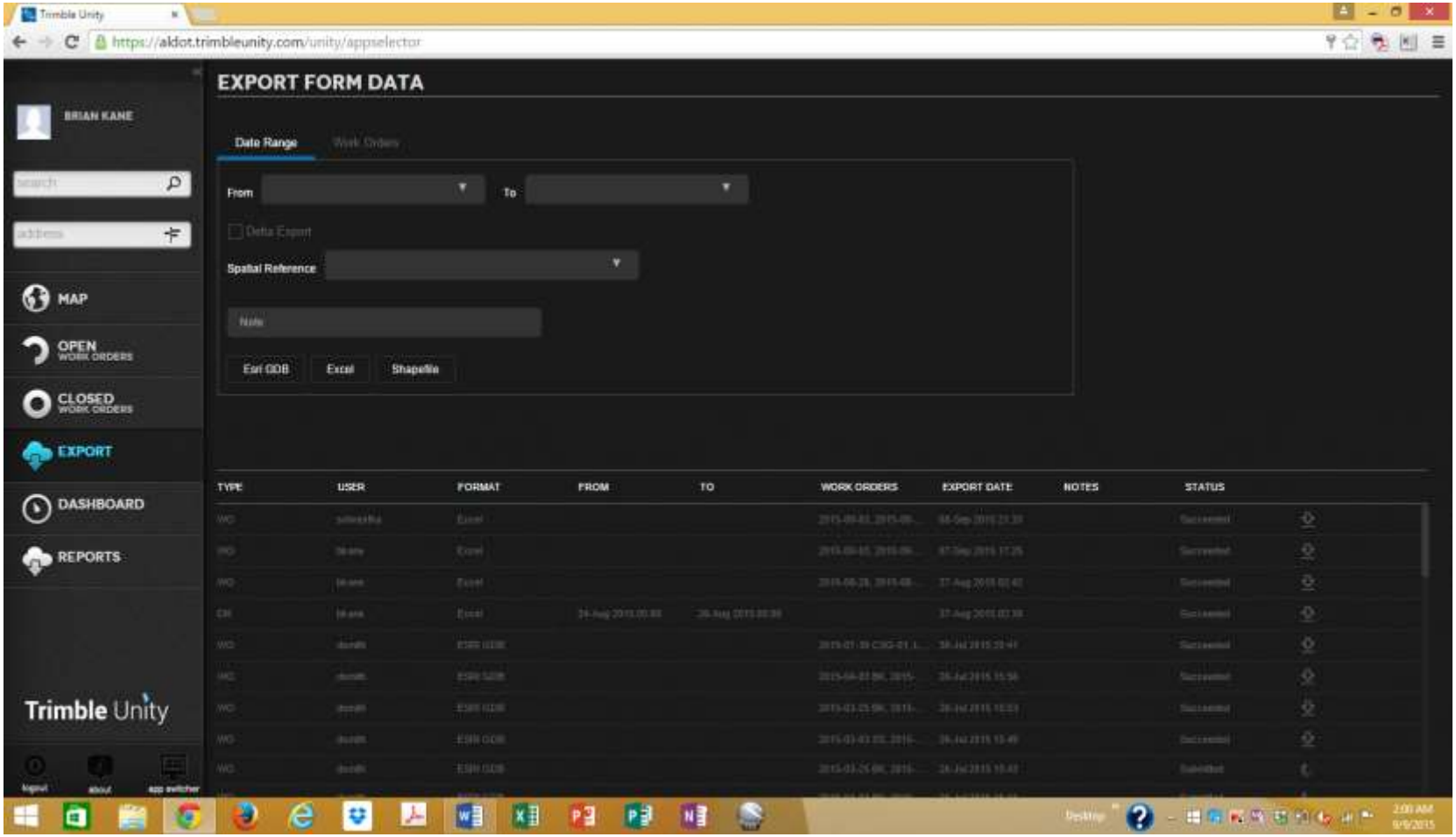
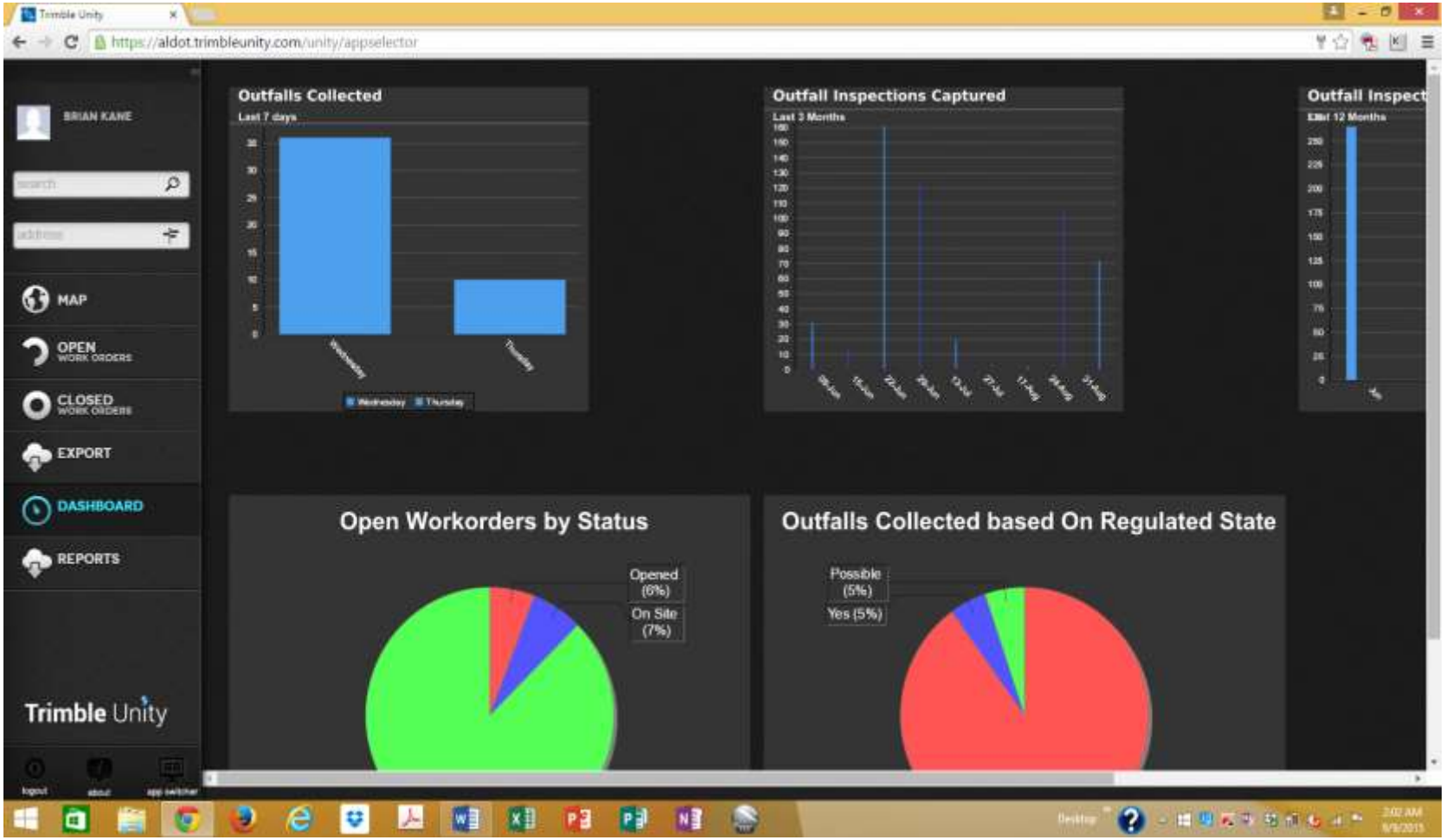


Trimble Unity

- Can export data into different file types
  - Geodatabase
  - Shapefile
  - Excel
  - Others if needed
- Pictures are attached in the Geodatabase
- Can be imported into GIS systems such as ALDOT's Roadmap

Trimble

Trimble Unity



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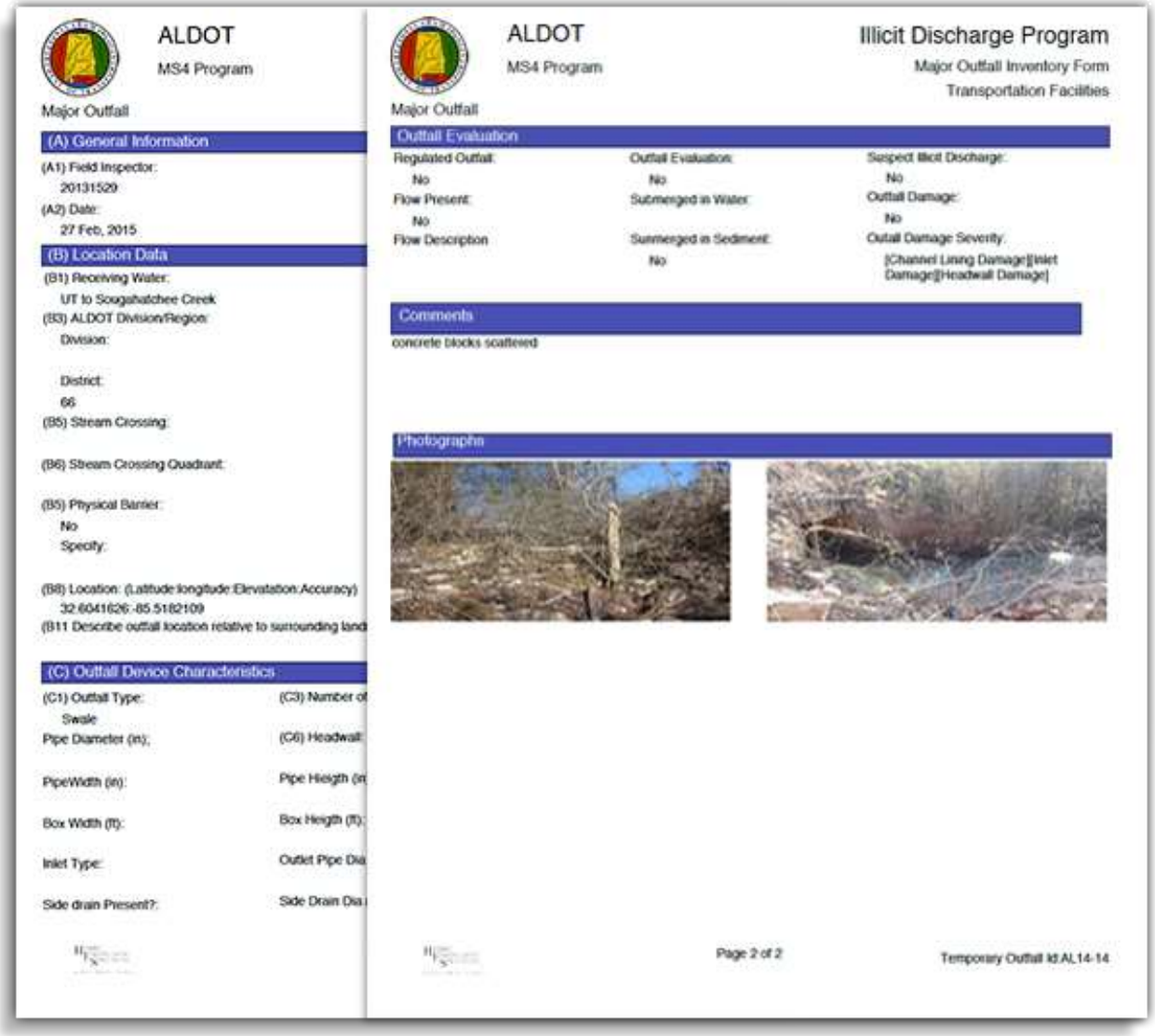

ALDOT
MS4 Program

Major Outfall

(A) General Information

(A1) Field Inspector:
20131529
(A2) Date:
27 Feb, 2015

(B) Location Data

(B1) Receiving Water:
UT to Sougahatchee Creek
(B3) ALDOT Division/Region:
Division:

District:
66
(B5) Stream Crossing:

(B6) Stream Crossing Quadrant:

(B5) Physical Barrier:
No
Specify:

(B8) Location: (Latitude longitude:Elevation:Accuracy)
32.6041626:-85.5182109
(B11 Describe outfall location relative to surrounding land

(C) Outfall Device Characteristics

(C1) Outfall Type:
Swale
(C3) Number of
Pipe Diameter (in):
(C6) Headwall:
PipeWidth (in):
Pipe Hieigth (in
Box Width (ft):
Box Height (ft):
Inlet Type:
Outlet Pipe Dia
Side drain Present?:
Side Drain Dia

ALDOT
MS4 Program

Illicit Discharge Program
Major Outfall Inventory Form
Transportation Facilities

Major Outfall

Outfall Evaluation

Regulated Outfall:
No
Flow Present:
No
Flow Description

Outfall Evaluation:
No
Submerged in Water:

Submerged in Sediment:
No

Suspect Illicit Discharge:
No
Outfall Damage:
No
Outfall Damage Severity:
[Channel Lining Damage][Inlet Damage][Headwall Damage]

Comments

concrete blocks scattered

Photographs

Page 2 of 2

Temporary Outfall Id:AL14-14

ALABAMA DEPARTMENT OF TRANSPORTATION

Trimble

Mapping Statistics

Urbanized Area	Locations	Outfalls Mapped	Two Crew Work Days
Dothan	52	253	14
Auburn/Columbus, GA	68	321	12
Montgomery	125	599	9
Tuscaloosa	98	531	9
Totals	343	1,704	44

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