

Tools & Technology for Winter Weather Response

Michael Kelly, PE, PS
Staff Maintenance Engineer



slido



**Join at slido.com
#2916849**

ⓘ Start presenting to display the joining instructions on this slide.

2023 TRC Transportation Engineering Conference & Equipment Expo

slido



When you hear the words *Winter Weather*, What do you think about?

ⓘ Start presenting to display the poll results on this slide.

slido

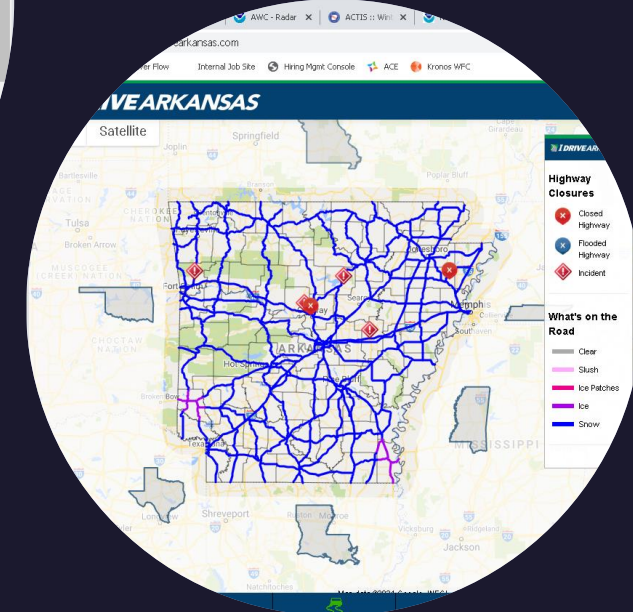
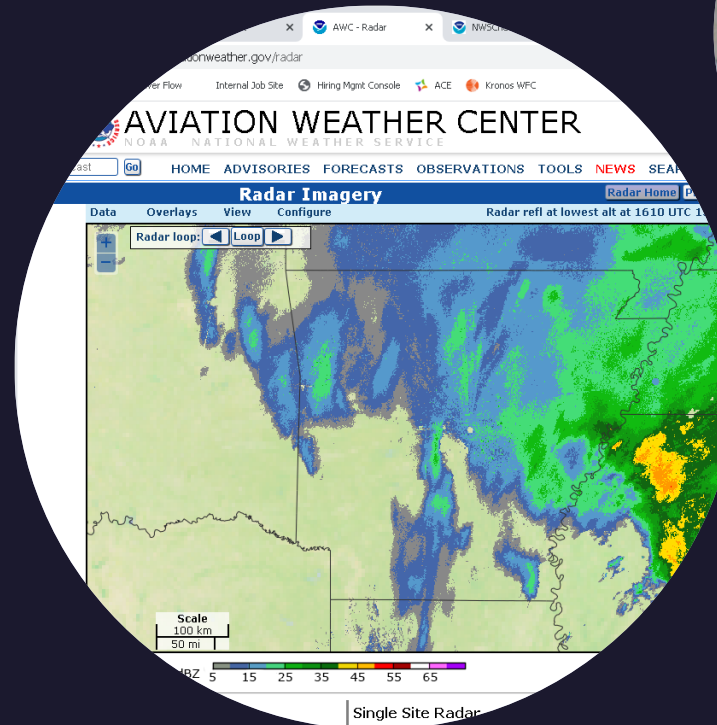


What area of the Transportation Industry do you represent?

ⓘ Start presenting to display the poll results on this slide.

Topics

- Planning & Preparation
- Materials
- Equipment
- People
- Technology



slido



Which Months do Winter Weather Operations begin?

ⓘ Start presenting to display the poll results on this slide.

Winter Weather Timeline



Planning & Preparation

- Update Plans
- Order Supplies
- Employee Training
- Readiness Drills



Snow and Ice Removal Guide

- MoDOT Guide as a start
- Condition Definitions
- Recommended Treatments
- Reporting



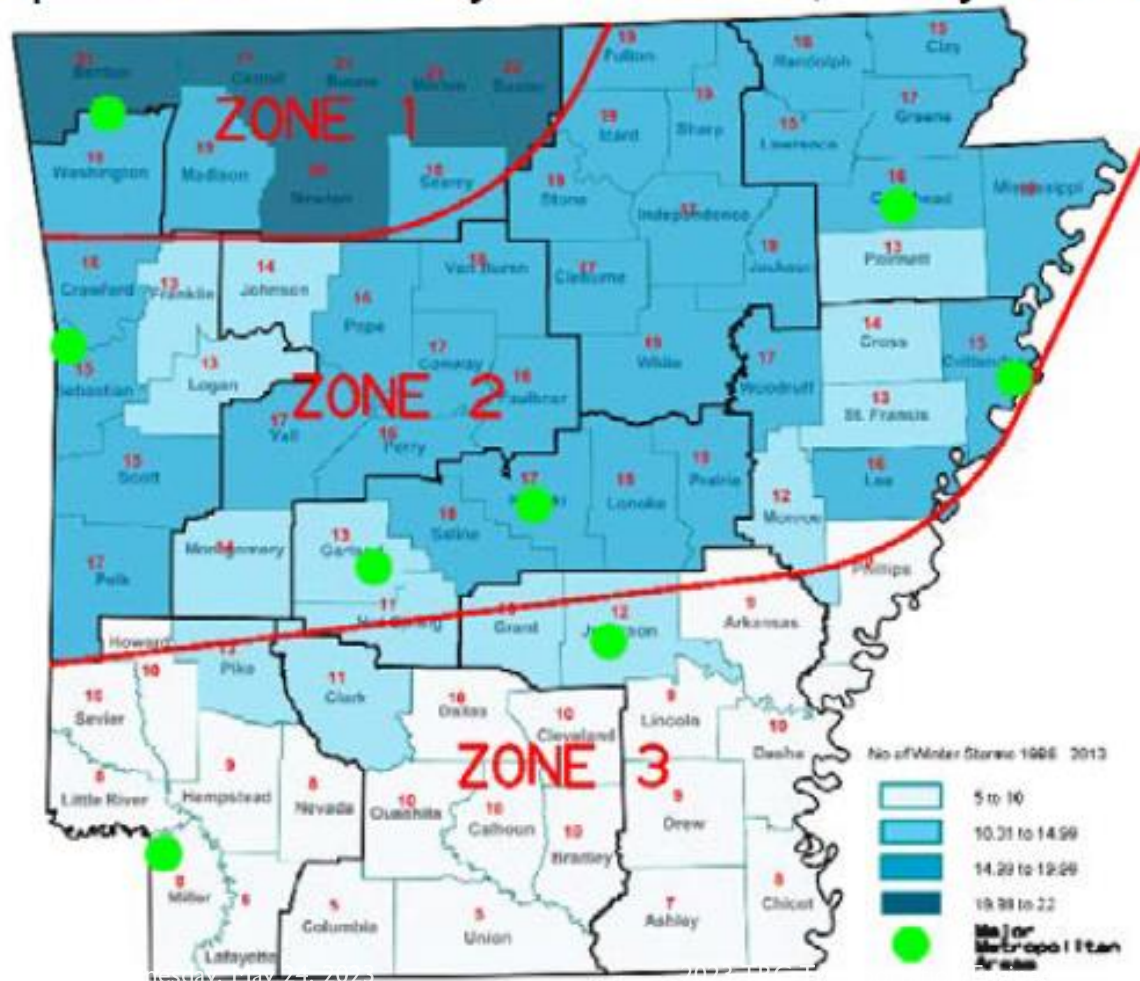
Snow and Ice Removal Guide



Prepared by the Maintenance Division
2014

Design Storm and Probability of Occurrence

Based on the number of winter storm occurrences from 1996 to 2013, the State has been divided into three Zones. Zone location and the desired level of service (LOS) for each zone are shown below. For purposes of evaluating equipment and material needs, a Type III winter storm requiring continuous operations of 4 days for Zone 1, 3 days for Zone 2, and 2 days for Zone 3 will be used.



Zone 1 LOS Criteria

- Equipment needs - 25 Ln-Mi / Truck ratio
- Salt storage needs - 150 Lb / Ln-Mi rate
- District 9, Washington County, 7 Major Metropolitan Areas, All Interstates and Freeways

Zone 2 LOS Criteria

- Equipment needs - 50 Ln-Mi / Truck ratio
- Salt storage needs - 150 Lb / Ln-Mi rate
- Districts 1,4,5,6,8,10

Zone 3 LOS Criteria

- Equipment needs - 75 Ln-Mi / Truck ratio
- Salt storage needs - 150 Lb / Ln-Mi rate
- Districts 2,3,7

Condition Definitions



Covered



Partly Covered



Mostly Clear

Clear

Treatment Recommendation based on Weather Event

Table 7. Weather Event: Moderate or Heavy Snow Storm.

PAVEMENT TEMPERATURE RANGE AND TREND	INITIAL OPERATION				SUBSEQUENT OPERATIONS			COMMENTS
	Pavement surface at time of initial operation	Maintenance action	Salt spread rates		Maintenance action	Salt spread rates		
			Pre-wetted solid salt (lb/ln-mi)	Brine (gal/ln-mi)		Pre-wetted solid salt (lb/ln-mi)	Brine (gal/ln-mi)	
Above 32°F steady or rising	Dry, wet, slush, or light snow cover	None - see comments			None - see comments			1) Monitor pavement temperature closely for drops toward 32°F and below 2) Treat slick patches if needed with pre-wetted salt at 100 lb/ln-mi or with brine at 44 gal/ln-mi; plow if needed
Above 32°F 32°F or below is imminent ALSO 30 to 32°F remaining in range	Dry	Apply brine or pre-wetted solid salt	100	44	Plow accumulation and reapply brine or solid salt as needed	100	44	1) If the desired plowing/treatment frequency cannot be maintained, the spread rate can be increased to 200 lb/ln-mi to accommodate longer operational cycles 2) Do not apply brine onto heavy snow accumulation or packed snow
	Wet, slush, or light snow cover	Apply brine or pre-wetted solid salt	100	44				
20 to 30°F remaining in range	Dry	Apply brine or pre-wetted solid salt	150-200	65-87	Plow accumulation and reapply brine or solid salt as needed	200	87	1) If the desired plowing/treatment frequency cannot be maintained, the spread rate can be increased to 400 lb/ln-mi to accommodate longer operational cycles 2) Do not apply brine onto heavy snow accumulation or packed snow
	Wet, slush, or light snow cover	Apply brine or pre-wetted solid salt	150-200	65-87				
10 to 20°F remaining in range	Dry, wet, slush, or light snow cover	Apply pre-wetted solid salt	200		Plow accumulation and reapply solid salt as needed	250		1) If the desired plowing/treatment frequency cannot be maintained, the spread rate can be increased to 500 lb/ln-mi to accommodate longer operational cycles 2) Liquid calcium chloride may be used for wetting solid salt at colder temperatures
Below 10°F steady or falling	Dry or light snow cover	Plow as needed			Plow accumulation as needed	250		1) As pavement becomes slick apply salt/abrasives mix to enhance traction. Salt will have limited melting power in this temperature range

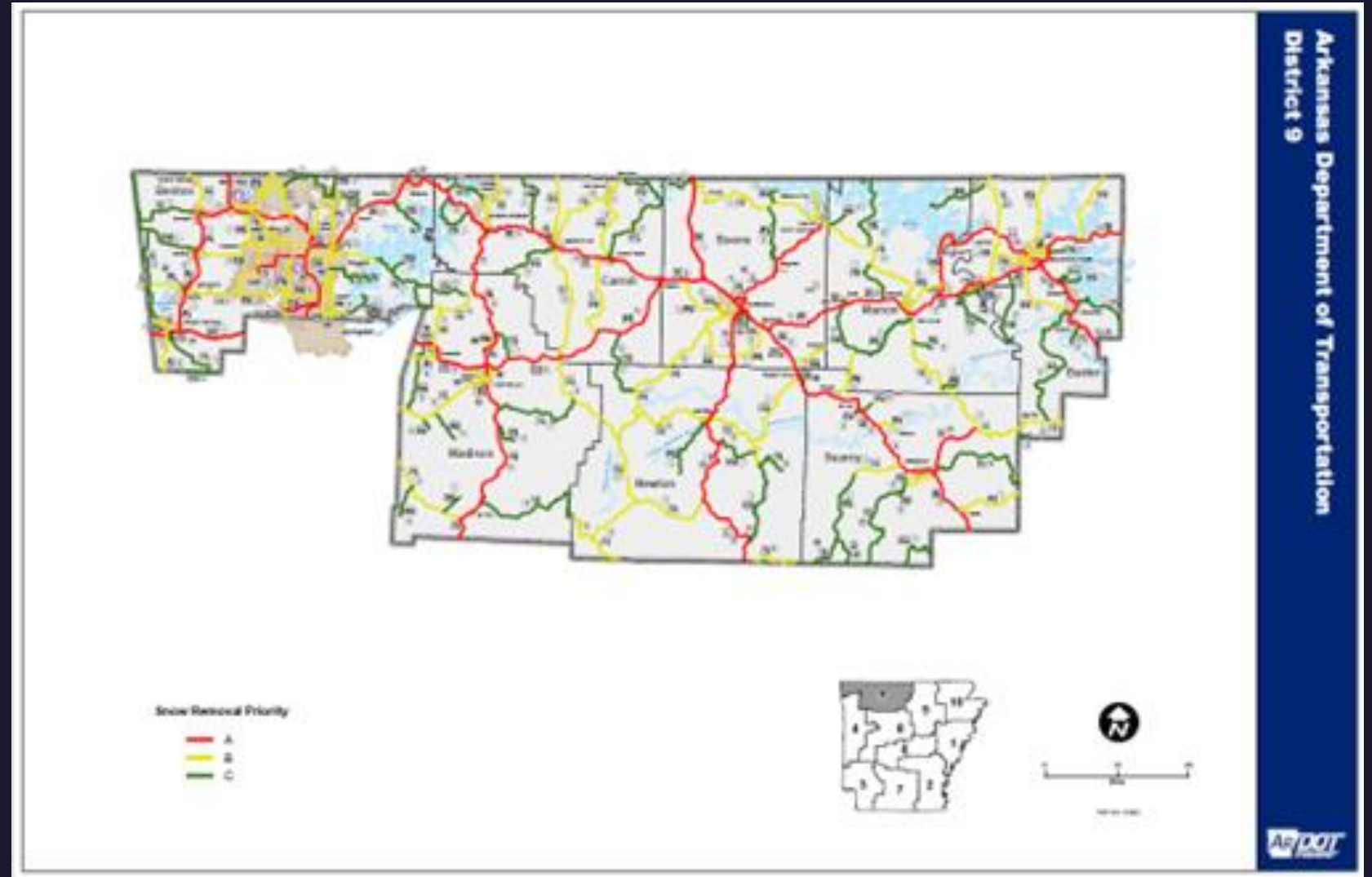
Notes: SALT APPLICATIONS. (1) Time initial and subsequent salt applications to prevent deteriorating conditions or development of packed and bonded snow—timing and frequency of subsequent applications will be determined primarily by plowing requirements. (2) Apply salt ahead of traffic rush periods occurring during storm. PLOWING. Plow before chemical applications so that excess snow, slush, or ice is removed and pavement is wet, slushy, or lightly snow covered when treated.

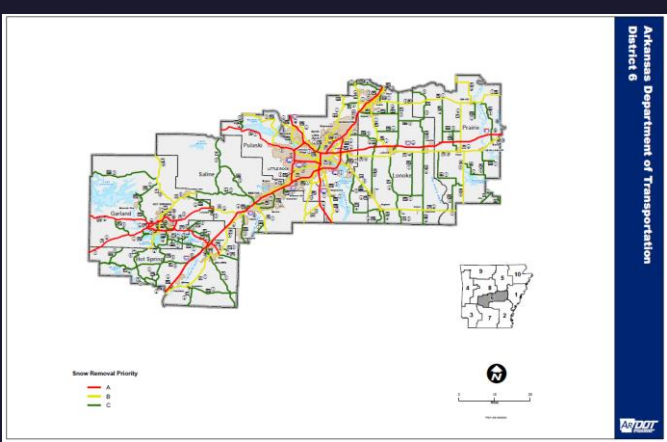
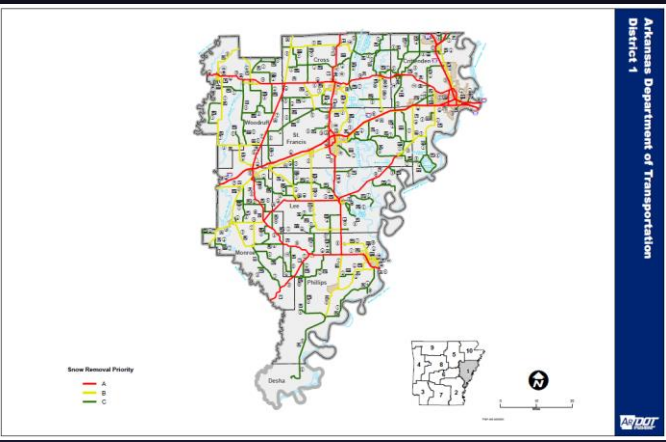
- Light Snowstorm
- Light Snow w/ Moderate or Heavy Snow
- Moderate or Heavy Snowstorm
- Frost or Black Ice
- Freezing Rainstorm
- Sleet Storm

ABCs of Route Priorities

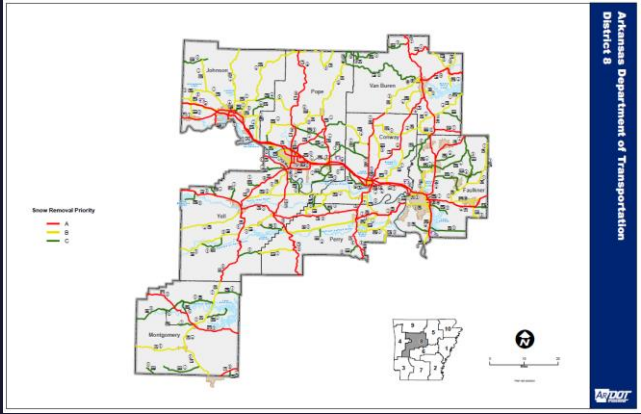
Route Priorities based on
Functionality and Traffic

- A. Interstates & Other Principal Roads
- B. Other Major Roads
- C. Lower Traffic Roads

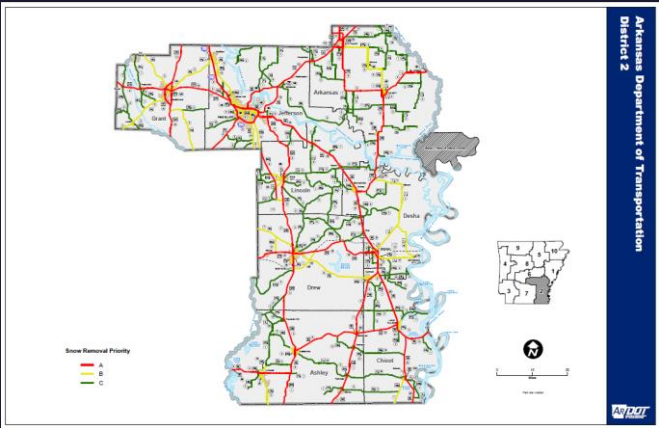




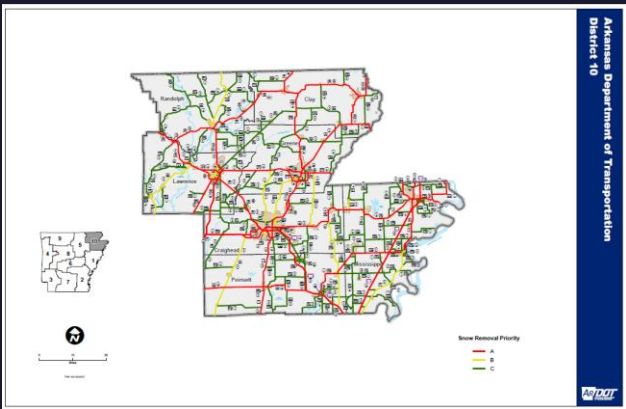
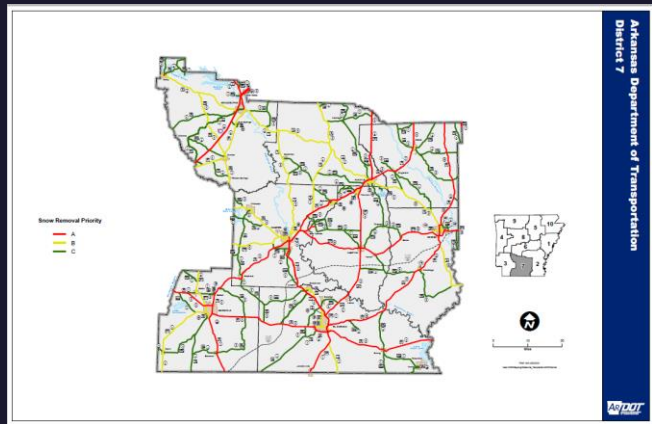
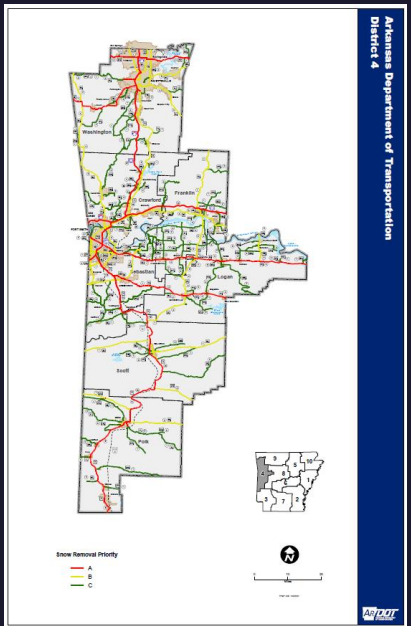
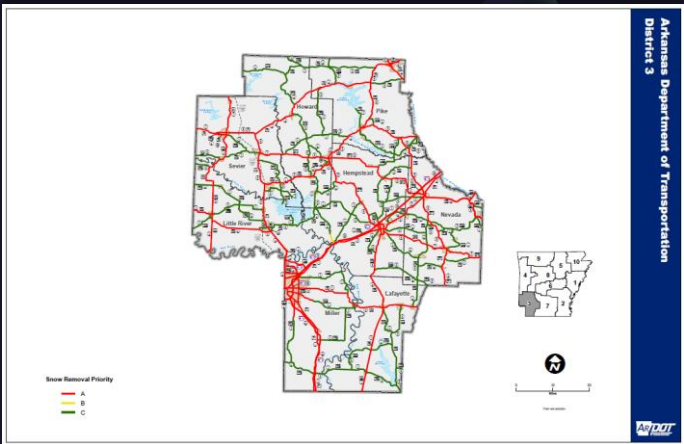
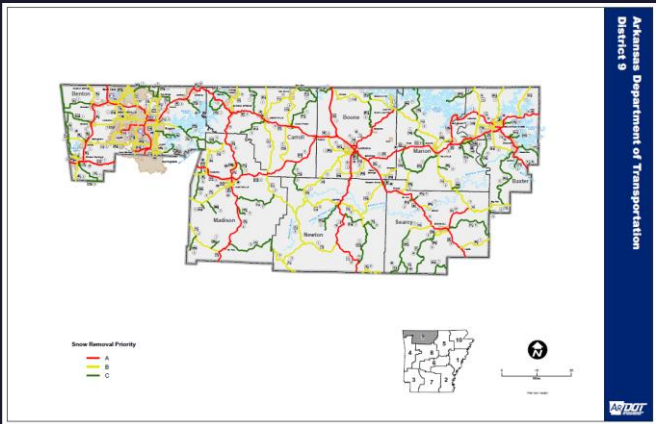
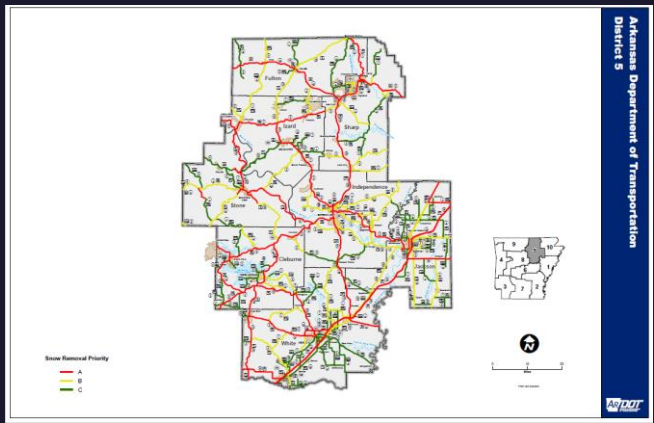
B



C

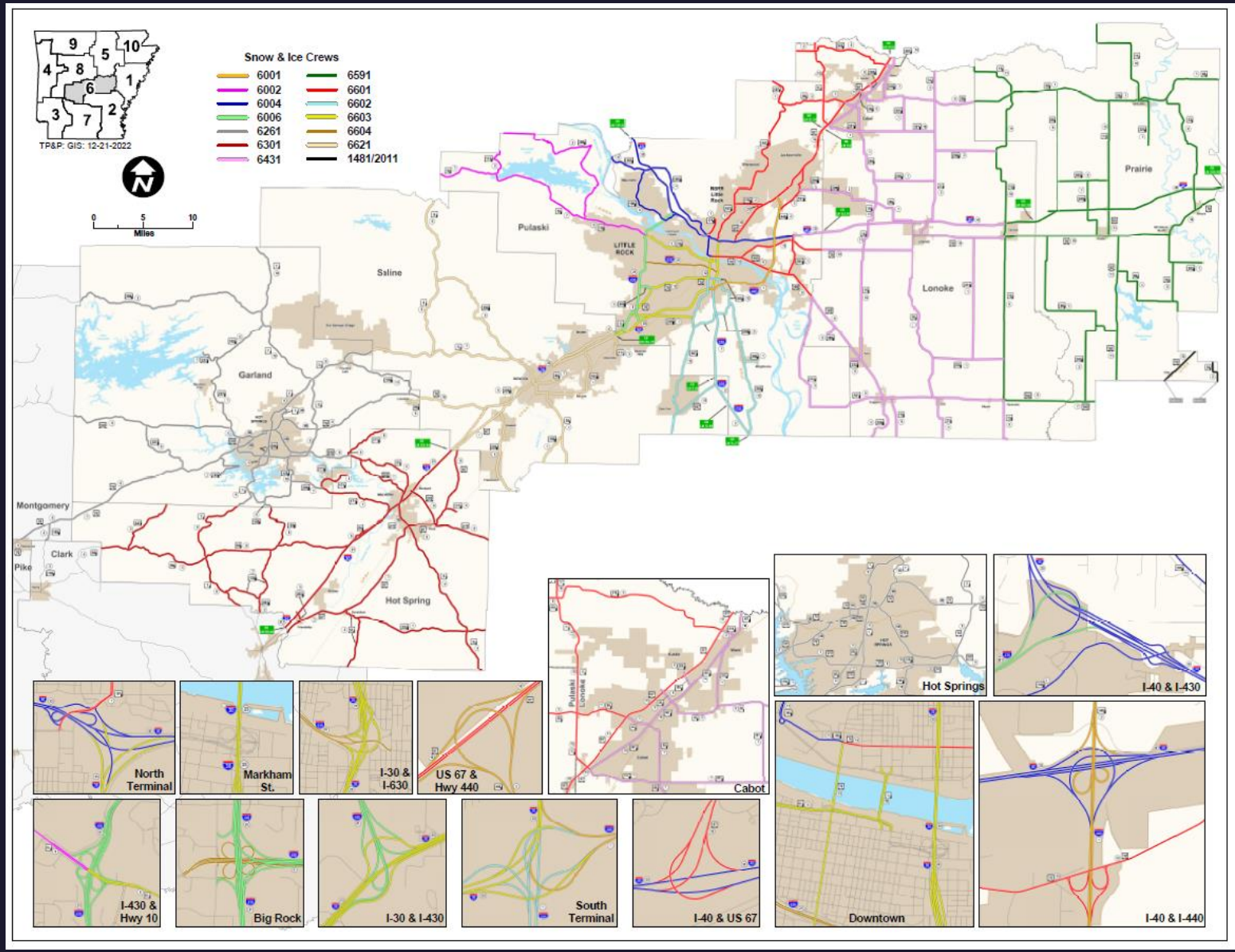


A





District 6 Crew Assignments





Emergency Operations Center: Position Specific Guidelines & Procedures

Functional Roles, Responsibilities, & Checklists

December 2021

ARDOT Emergency Operations Center (EOC)

- Statewide Coordination
- Situation Reporting
- Resource Gaps
- Direct Maintenance Division Strike Team

EOC Activation Levels

Level 1

Full Activation

- EOC Managers in person
- Coordinating Statewide Reporting & Resource Gaps
- Directing Strike Teams as needed
- Coordination Calls

Level 2

Increased Preparedness & Monitoring

- EM Staff monitoring situation
- Briefing SME
- Initiate Situation Reporting
- Activities maybe virtual

Level 3

Normal Operations

- Steady State

Situation Reports



AR DOT Emergency Operations Center (EOC) **SITUATION REPORT** **IDRIVE** ARKANSAS.COM

District 9

- EOC Active: No
 - Bobby Keaton is I
- Activities: Personnel are I
- Personnel: There are cur
- Equipment: There are cur
- Materials: There are cur
- Other Impacts: No other I

District 10

- EOC Active: Yes
 - Shane Wood is PK
- Activities: Salt and Flow
- Personnel: There are cur
- Equipment: There are cur
- Other Impacts: Eastern pa roadways are partially cov with 2 - 18 wheelers on I

Warning/Notice: This document is **FI** personnel who do not have a valid "a document contains initial and prelimina ARDOT internal use and any external is **Page 6 of 6**

AR DOT Emergency Operations Center (EOC) **SITUATION REPORT** **IDRIVE** ARKANSAS.COM

District 3

- D-3 does not have sig
- Other Impacts: No

District 4

- D-4 does not have sig
- Other Impacts: No

District 5

- EOC Active: Distri
 - Alex Roofe
- Activities: Salt and
- Personnel: There ar
- Equipment: There a
- Materials: Approx.
- Other Impacts: No

District 6

- EOC Active: No
 - John Morra
- Activities: Complet
- Personnel: There ar
- Equipment: There a
- Materials: Salt hou
- Other Impacts: No

District 7

- D-7 does not have sig
- Other Impacts: No

District 8

- D-8 does not have sig
- Other Impacts: No

Warning/Notice: This docum personnel who do not have a v document contains initial and pre ARDOT internal use and any exte **Page 5 of 6**

AR DOT Emergency Operations Center (EOC) **SITUATION REPORT** **IDRIVE** ARKANSAS.COM

Maintenance Division

- ARDOT EOC activated
- Maintenance Division
- Strike Team is availa
- Emergency Managem
- Emergency Support Fi
 - There is curren
 - Transp
 - The Traffic Managem

Equipment and Procuremen

- E&P Staff are monitor
- All 12 Strike Team tru
- Shop, Service Station,
- Field Mechanics are av

District 1

- EOC Active: District I
 - Matt Emberton
- Activities: District per district
- Personnel: There are o
- Equipment: There are
- Materials: Approx. 85'
- Other Impacts: Accide miles

District 2

- EOC Active: District I
 - Tim Kelly is PI
- Activities: Monitoring
- Personnel: There are o
- Equipment: There are
- Materials: Approx. 30'
- Other Impacts: No oth

Warning/Notice: This document is **FG** personnel who do not have a valid "a document contains initial and prelim ARDOT internal use and any external re **Page 5 of 6**

AR DOT Emergency Operations Center (EOC) **SITUATION REPORT** **IDRIVE** ARKANSAS.COM

Imp

Interstate & Expressways

- I-55, I-555, and US 67 are
- US 67 is covered with Slu
- Other Interstates and Exp

Arkansas Primary Highway Ne

- Portions of US 65, 62/412
- Other APHN routes are re

Other State Highways

- Portions of other State Hij the state. These routes are

Tourist Information Centers (T

- 14 of 14 Tourist Informati
- 13 of 15 Rest Areas are O
 - 2 Rest Areas (I-30

Other Impacts

- No other known in

Warning/Notice: This document is **FG** personnel who do not have a valid "a document contains initial and prelim ARDOT internal use and any external re **Page 5 of 6**

AR DOT Emergency Operations Center (EOC) **SITUATION REPORT** **IDRIVE** ARKANSAS.COM

Activation Level 2 **SitRep** 2 **Operational Period** 600pm January 5, 2022 - 1200pm January 6, 2022 **Event Name** January 5, 2022 Winter Weather

Summary

Winter weather precipitation passed through the northern portions of the state moving from the west to the east starting in the AM hours of 1/6/2022 and expected to exit the eastern portion of the state by 1200 1/6/2022. Some roadways were covered with light snow for a few hours. The plowing operations and flow of traffic caused the snow to blow off the roadways. Any remaining snow on the roadways is expected to be removed before the end of today.

Weather Outlook

[Decision Support Page](#)

Hazards Next 7 Days (Red: Hazards, Green: None)						
Thu	Fri	Sat	Sun	Mon	Tue	Wed

Specifics About Hazards (If any): Areas of rain mixed with sleet will be seen this morning over central into northeast and east sections of the state. Temperatures will initially be above freezing, with limited to no impacts expected. However, colder air will continue to filter in this morning, with the rain mixing with some freezing rain in addition to sleet. Some hazardous driving conditions may be seen, especially across eastern sections of the area this morning as temperatures drop to near or just below freezing. Further north, snowfall will develop this morning, eventually moving out of the areas by this afternoon. Snowfall amounts of a dusting, to an inch to inch and a half are possible across northern into northeast portions of the area. This snowfall may result in some hazardous driving conditions this morning into the afternoon hours. By this afternoon and especially this evening and overnight, expect drier conditions to be seen. However, wind chill values will dip down into the single digits and teens across northern and central Arkansas, and in the 20s further south. There will be a chance of some brief freezing rain early Saturday but temperatures will warm quickly and any wintry weather will turn to rain and no impacts are expected. Showers and isolated thunderstorms are expected Saturday through early Sunday as a cold front crosses the area. Otherwise, no hazardous weather is expected at this time. **Message Last Updated:** 4:34 AM local time on 1/6/2022.

Warning/Notice: This document is **FOR OFFICIAL USE ONLY (FOUO)** and is not to be released to the public or other personnel who do not have a valid "need-to-know" without prior approval by the State Maintenance Engineer of ARDOT. This document contains initial and preliminary reporting, which may or may not be completely accurate. This information is intended for ARDOT internal use and any external recipients should be aware of the preliminary nature of some of the content. **Page 1 of 6**

Coordination Calls

The EOC hosts Coordination Calls as needed before & during the event as needed.

- Representatives:
 - Districts
 - Maintenance Division
 - Highway Police
 - Public Information
 - Equipment & Procurement
 - Executive Leadership

The screenshot shows a Microsoft Word document with the following structure:

- Table of Contents:**
 - Schedules
 - EOC Notes
 - Shift #1: Monday Noon - ...
 - Shift #2: Tuesday Midnig...
 - Shift #3: Tuesday Noon -...
 - Shift #4: Wednesday Mi...
 - Shift #5: Wednesday No...
 - Shift #6: Thursday Midni...
 - Shift #7: Thursday Noon ...
 - Shift #8: Friday 0600 - 18...
 - 1/30/23 Coordination Call**
 - 1/31/23 Coordination Call
 - 2/1/23 Coordination Call
 - Lessons Learned
 - 2/2/23 Coordination Call

1/30/23 Coordination Call
Monday, January 30, 2023 10:00 AM

Situation Briefing: Winter Weather in west and northwest
ACE-O: ice storm, trees down and powerlines. May send chainsaw crews and road crews across districts lines. Chainsaw training – remember guardian angel lights, put on steady burn. Helped identify/locate personnel in dark.

District 1: Starting PT. Plan to run thru Wed night. Strike team truck on I-40
District 2: day/night shift applying brine to top north counties. Shift equipment for down trees.
District 3: PT in morning. Day & night crews Tues night. Ready to assist southern D4 & D8
District 4: started PT north of 40, will continue today. Ice on bridges. Another round of sleet expected. 24 hour operations for next few days
Has needs for Strike Team if available.
District 5: PT started yesterday. 67 is primary concern. 24hr ops thru Wed
District 6: 24hr ops most crew on night shift. Will PT where not raining. Planning to use abrasives.
District 7: PT top 3 counties. Split crews day/night and monitor. Equipment looking good.
District 8: currently pt 24 hr started last night until Wed/Thur.
District 9: started pt yesterday, started 24 then. Still having problems in a few areas. Equipment issues. 20s in Benton Co. Wed/Wed night
District 10: PT this morning. 24 hr op. Prepared for down trees.
AHP: D4 – officers ready to go. D2 – crews ready to go day/night. D5 – 24hr coverage.
PIO: Good handle on message. Get off the road

Material Supply Contracts



ARKANSAS STATE HIGHWAY DEPARTMENT
ARDOT - EQUIPMENT AND PROCUREMENT DIVISION
BID INVITATION

H-23-220H

BID OPENING LOCATION: ARDOT Equipment and Procurement Division
11302 W. Baseline Road
Little Rock, AR 72209

MAIL TO: ARDOT Equipment and Procurement Division
P.O. Box 2261
Little Rock, AR 72203

July 26, 2022 Time: **11:00 a.m.**

...the commodities and/or services described below, subject to the Standard Bid Conditions of this Bid Invitation will be received at the ...
...until the above-noted bid opening date and time, and then publicly opened at the above-noted bid opening location. **Bids must be submitted ...
...in appropriate, or bids will be rejected. Late bids and unsigned bids will not be considered.**

...with this Bid Invitation and subject to all the Conditions thereof, the undersigned offers and agrees to furnish any and all items upon which prices are quoted ...
...each item.

Name (Type or Print): _____
Title: _____
Phone: _____ Fax: _____
E-mail Address: _____
State: _____ Zip: _____
Tax ID or Social Security No.: _____

Signature:
Signature must be legible original (not photocopied) and in ink.
Unsigned bids will be rejected.

SNOW AND ICE CONTROL MATERIALS (SOLID)

Arkansas Department of Transportation (hereinafter called ARDOT) will receive sealed bids for furnishing requirements of **PRETREATED ...
ROCK SALT & CALCIUM CHLORIDE**, specified herein with prices firm as set forth on the Bid Forms for the period from Date of ...
April 30, 2023.
...be submitted through Bidexpress.com

...as noted on Bid Form.

...that the Bid Invitation, General Conditions, Bidder Information, Bid Forms, Bid Information and Specifications are an ...
...reference are incorporated herein as fully and effectively as if set forth in detail and; that by submission of bid, bidder ...
...all things shall be governed by the Laws of the State of Arkansas. Should there be a conflict between Standard Bid C ...
...Bid Information and Specifications, the latter shall prevail.

...on a per-ton basis FOB – the specified delivery points. See Condition 10 on page 1 of Standard B ...
...ions of materials proposed should be submitted with bid. The information supplied must include ...
...10.1200. Samples may be required per Condition 11 on page 2 of Standard Bid Condition ...

...with individual orders placed by ARDOT within ten (10) days after recei ...
...will be made on each individual order as promptly as possible after ...

Employee Training

SNOWPLOW SIMULATOR



SAFETY & DRIVER TRAINING



EOC & Strike Team Drill

State conducting winter weather drill on Wednesday

Dec 4, 2022



ARDOT's Winter Weather Strike Team will exercise training drills in the central Arkansas area on Wednesday.

The drill will consist of training drivers, performing equipment checks and maintenance, road-testing snowplow trucks, and communicating with the Emergency Operations Center (EOC) that will operate in an exercise mode for the event.

"It is crucial that we do everything we can do to be prepared when winter weather hits," said Michael Kelly, ARDOT Staff Maintenance Engineer and Emergency Management Liaison Officer. "These drills help us see both our strengths and areas for improvement. It's our job to keep our roadways safe, and we take that responsibility seriously."

State Transportation Department puts its winter weather response to the test

by Daniel McFadin | December 12, 2022 at 8:33 a.m.



Follow



A crew refuels a snowplow before leaving the ARDOT maintenance facility in Little Rock during a winter weather strike team training exercise on Wednesday, Dec. 7, 2022... (Arkansas Democrat-Gazette/Stephen Swofford)

Winter Readiness Meetings

- Each District holds individual meetings
- Annual Winter Readiness meeting includes internal & external partners:
 - National Weather Service (NWS)
 - Ark State Police (ASP)
 - Public Information
 - Ark Div of Emergency Mgmt (ADEM)

Winter Weather Awareness Week

Weather Forecast Office
Little Rock, AR



November 28 – December 2, 2022

#WinterPrep

Daily Topics

Purpose

- | | | |
|------------|--|---|
| Monday: | Winter Outlook | <ul style="list-style-type: none"> • Increase awareness of winter weather hazards • Review winter weather preparedness and safety procedures for at home, work, and on the road • Help public safety officials and the public build a Weather Ready Nation |
| Tuesday: | Winter Precipitation Types | |
| Wednesday: | Winter Weather Watches, Warnings, and Advisories | |
| Thursday: | Winter Weather Safety | |
| Friday: | The Cold of Winter | |



NWSLittle Rock

weather.gov/lzk

slido



Audience Q&A Session

ⓘ Start presenting to display the audience questions on this slide.



Materials

Rock Salt

Salt Brine

Calcium Chloride

Magnesium Chloride

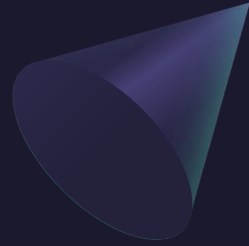
Abrasives

Rock Salt



Salt Brine & Super Brine

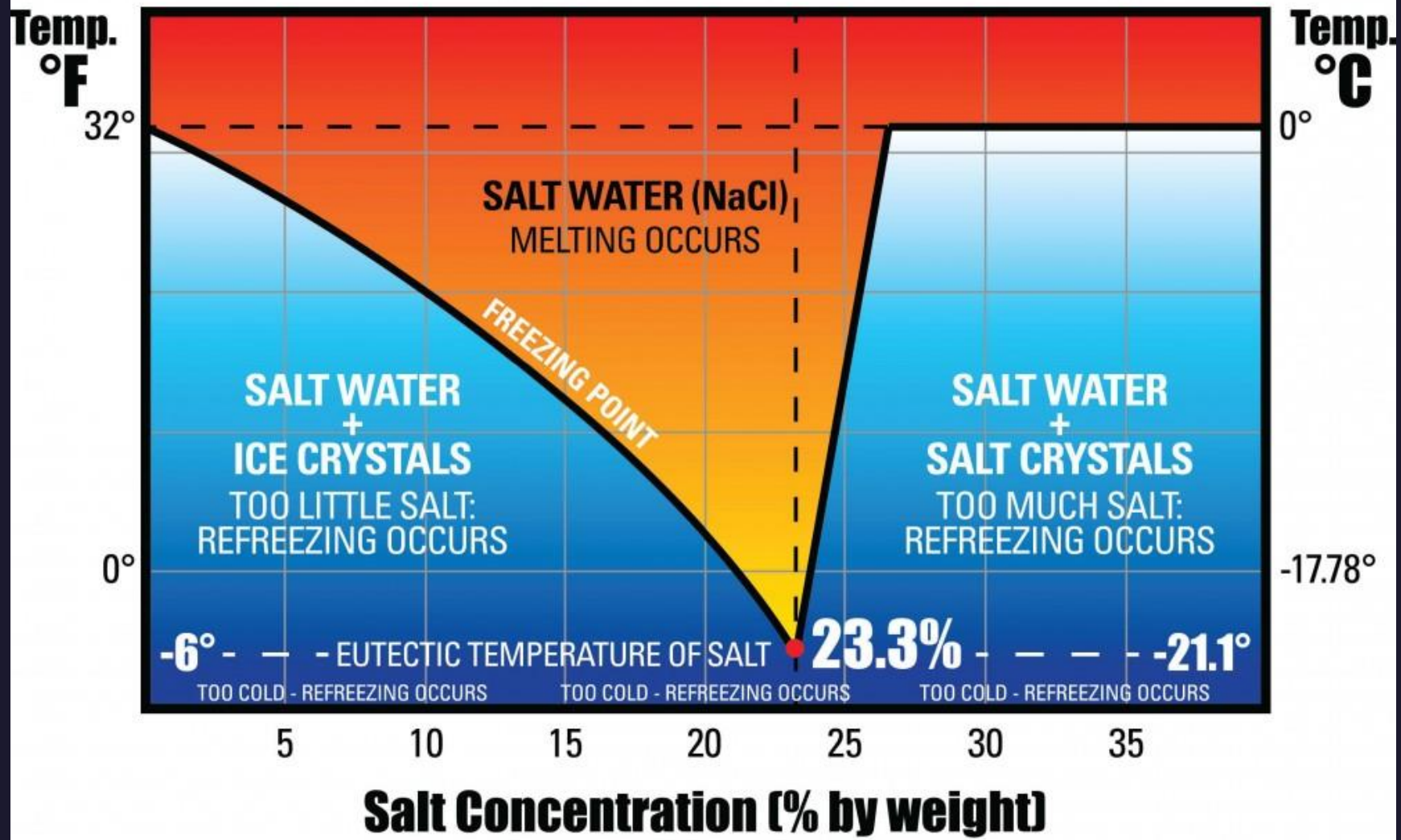




Salt Brine Machine



SALT BRINE - PHASE DIAGRAM



Data courtesy of the Federal Highway Administration (FHWA)

Salt Brine or Not???



**WE GOT
THE BEET!**

7 facts about beet juice on highways

1 KDOT uses beet juice to pretreat or treat highways at more than 20 locations around the state.

2 KDOT has used beet juice for about five years now.

3 The beet juice comes from an Iowa supplier.

4 Beet juice looks brown and can get on vehicles — don't worry, it washes off.

5 Beet juice added to brine is especially useful with temperatures from 15 degrees down to 5 degrees.

6 Because beet juice is sticky, it holds ice-fighting brine to pavement longer.

7 By using a mix of beet and brine, it takes less brine, so it lowers the corrosive effect of the salt in brine — which helps cut down on road and bridge repair.



Other Materials

ROCK SALT

- 15 degrees F
- Lower Cost
- Deicing & anti-icing



MAGNESIUM CHLORIDE

- -10 degrees F
- Costly
- Deicing & anti-icing



CALCIUM CHLORIDE

- -20 degrees F
- Costly
- Deicing



slido



How much money does ARDOT spend on Materials for Winter Weather per year?

ⓘ Start presenting to display the poll results on this slide.

2023 TRC Transportation Engineering Conference & Equipment Expo

Abrasives / Sand

Used for additional traction when temperature is too low for chemicals to work



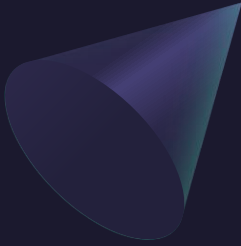
slido



**What other alternatives materials
have been used for Snow & Ice
deicing?**

ⓘ Start presenting to display the poll results on this slide.

2023 TRC Transportation Engineering Conference & Equipment Expo



Beer?



AP

U.S. News World News Politics Sports Entertainment Business Technology Health Science Oddities Lifestyle Photography

Turning to beet juice and beer to address road salt danger

By MICHAEL CASEY January 29, 2018



Equipment

Plow Trucks

Brine Trucks

Motor Patrol

Salt Dog

Snow Blower



Dump Truck w/ Front Plow, Belly Plow, & Spreader



Material Spreader



slido



How much does a Plow Truck cost?

ⓘ Start presenting to display the poll results on this slide.

2023 TRC Transportation Engineering Conference & Equipment Expo

Brine Trucks

USED FOR PRETREATING & DEICING



Motor Patrol

- Typically used on Low-Speed Routes
- Contract plowing by local construction companies



“Salt Dog” – ¾ or 1 Ton Truck

FRONT PLOW



SMALL SPREADER OR BRINE TANK IN REAR



Snow Blower



- Plan to Purchase for use on I-30 Arkansas River Bridge



slido



How many Snow Plows do ArDOT Operate?

ⓘ Start presenting to display the poll results on this slide.

2023 TRC Transportation Engineering Conference & Equipment Expo

2022-2023 Snow & Ice Equipment

	District 1	District 2	District 3	District 4	District 5	District 6	District 7	District 8	District 9	District 10	Strike Team	Totals
Dump Truck 12 CUYD (Bellow Plow)	5	0	2	11	9	11	4	4	21	7	12	86
Dump Truck 12 CUYD (Tri-Axle)	19	7	30	6	7	19	4	2	16	0	0	110
Dump Truck 10 CUYD	12	28	8	30	27	19	28	37	24	29	0	242
Dump Truck 6 CUYD	31	26	36	34	21	38	26	17	20	28	0	277
Snow Plows	53	35	41	76	64	62	39	56	99	62	12	599
Spreader 10 CUYD	5	7	2	14	14	9	4	4	21	5	12	97
Spreader 7.5 CUYD	25	23	31	30	26	12	28	38	47	26	0	286
Spreader 4.5 CUYD	15	13	18	21	20	28	21	10	17	20	0	183
Spreader 1.5 CUYD	0	1	0	0	0	15	1	25	3	1	0	46
Motor Patrol	10	6	18	6	10	7	12	11	10	8	0	98
Bulk Salt Capacity (CUYD)	3869	4360	6766	6553	5641	4280	2679	3440	18870	9347	0	65,805
Cal or Mag Chloride (Gallons)	0	0	0	0	0	0	1500	0	5500	9000	0	16,000
Salt Brine Capacity (Gallons)	106000	114000	158500	148000	147000	43400	111000	51600	141200	146900	0	1,167,600
Beet Juice Capacity (Gallons)	39000	8000	0	80000	0	15300	0	23000	71900	6000	0	243,200
Tanker Trailers (Each)	3	4	2	2	3	5	4	2	3	2	0	30

Maintenance Workers

Equipment Preparation





Material Handlers

FILE

Pretreating Roadways

RIVER VALLEY AND NORTHWEST ARKANSAS CREWS ARE PREPPING THE ROADS AHEAD OF WINTER WEATHER

HAPPENING NOW



Plow Drivers (Day & Night)



Supervisors





Technology

Weather Sensors & Cameras

Weather Forecasting

MDSS

ACTIS & IDrive

Roadway Weather Information System (RWIS)

A RWIS is a combination of field hardware and software that provides detailed and timely road-weather information that is used to support operations and maintenance decisions.

Atmospheric Data

- Air temperature
- Humidity
- Visibility distance
- Wind speed and direction
- Precipitation type and rate

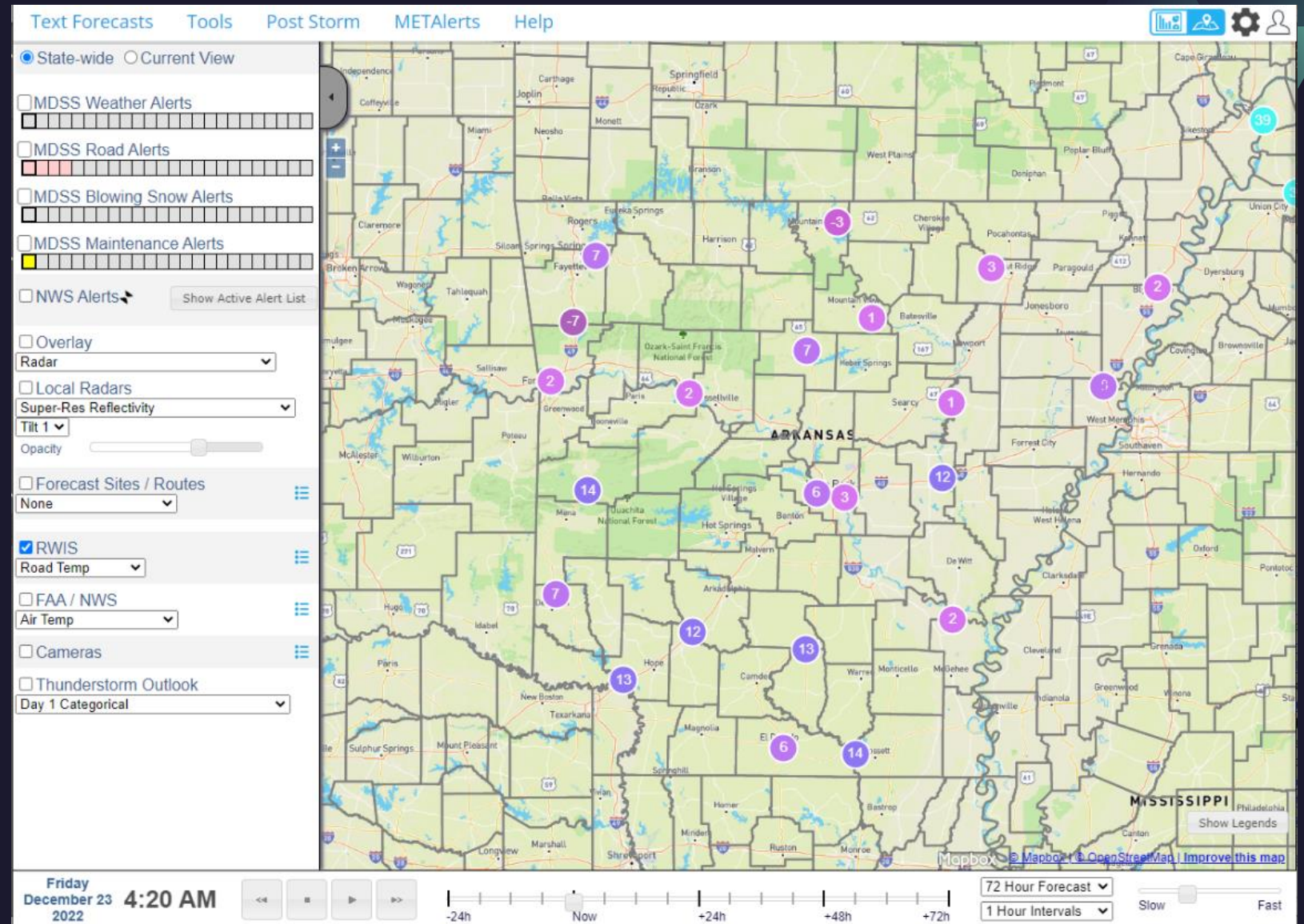
Pavement Data

- Pavement temperature
- Pavement condition (dry, wet, ice, frost)
- Subsurface temperature



RWIS Stations

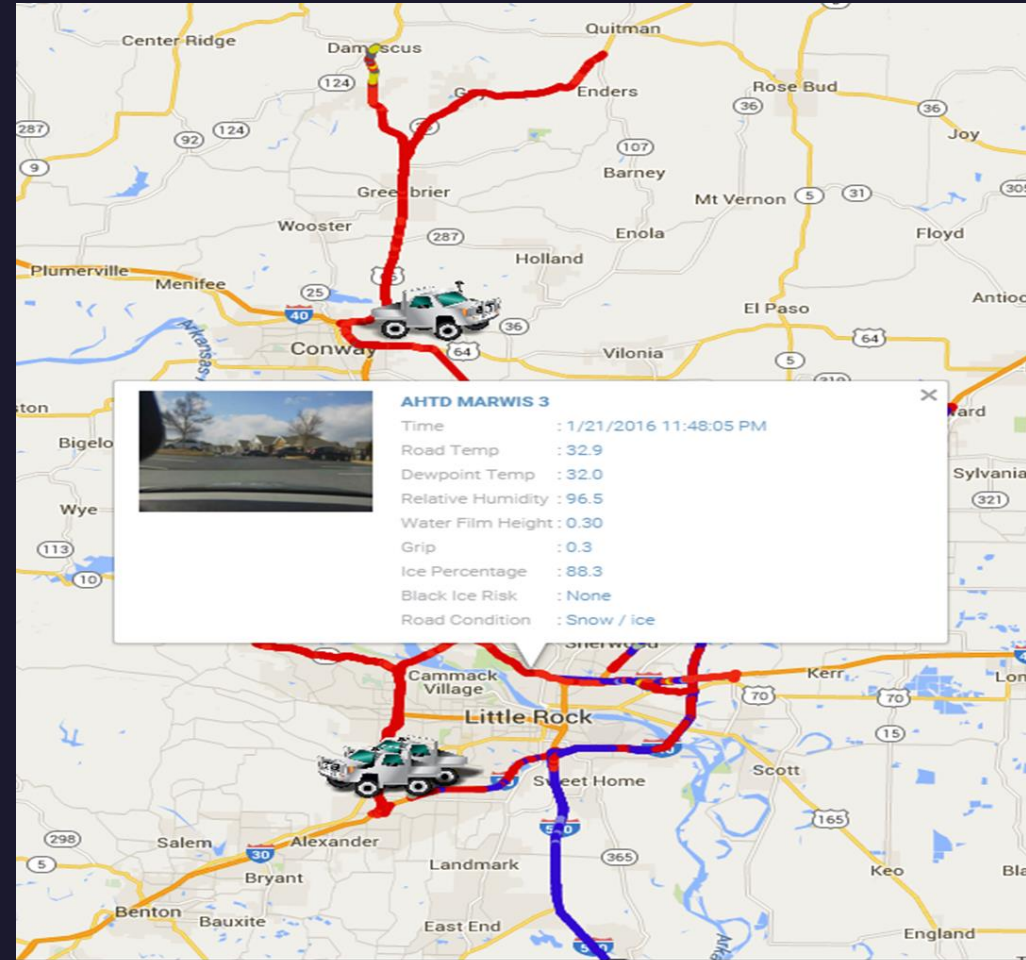
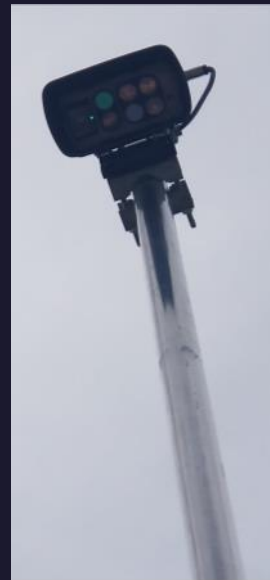
- 30+ Stations Statewide
- Station locations are coordinated with District
- Most locations are remote or area of interest (I-40 @ White River)

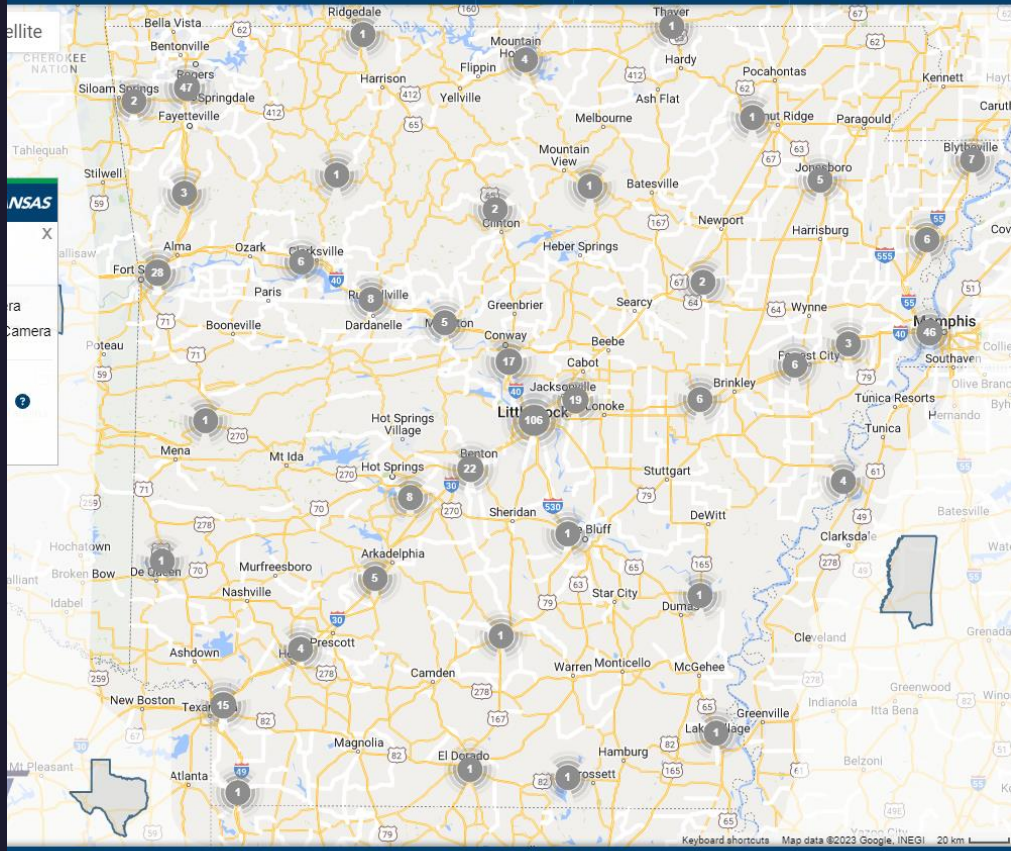


Mobile Advanced Roadway Weather Information System (MARWIS)

Sensors are mounted to mobile platform. Used as a “Scout” vehicle before the storm to predict time roads will freeze.

II – MARWIS Statewide



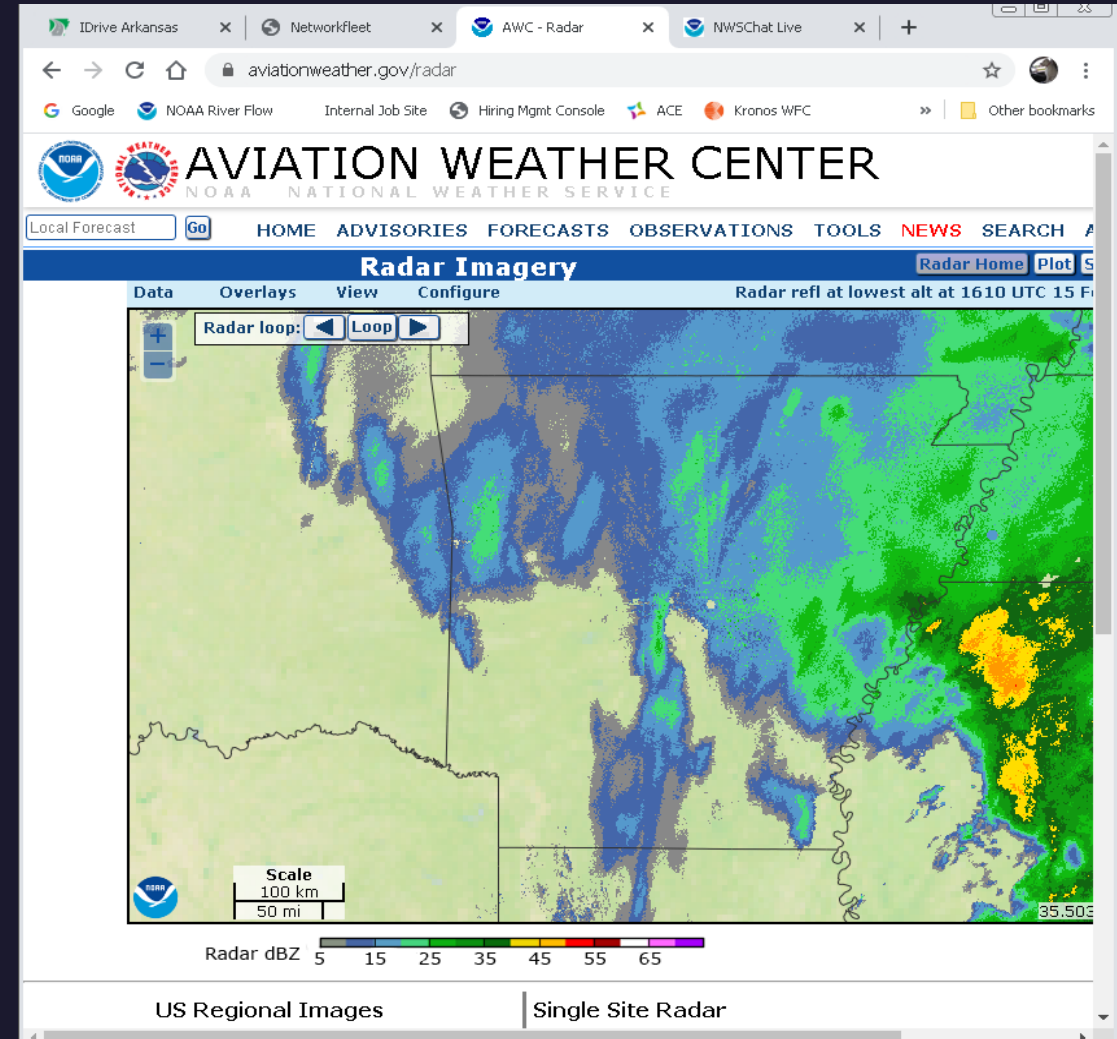
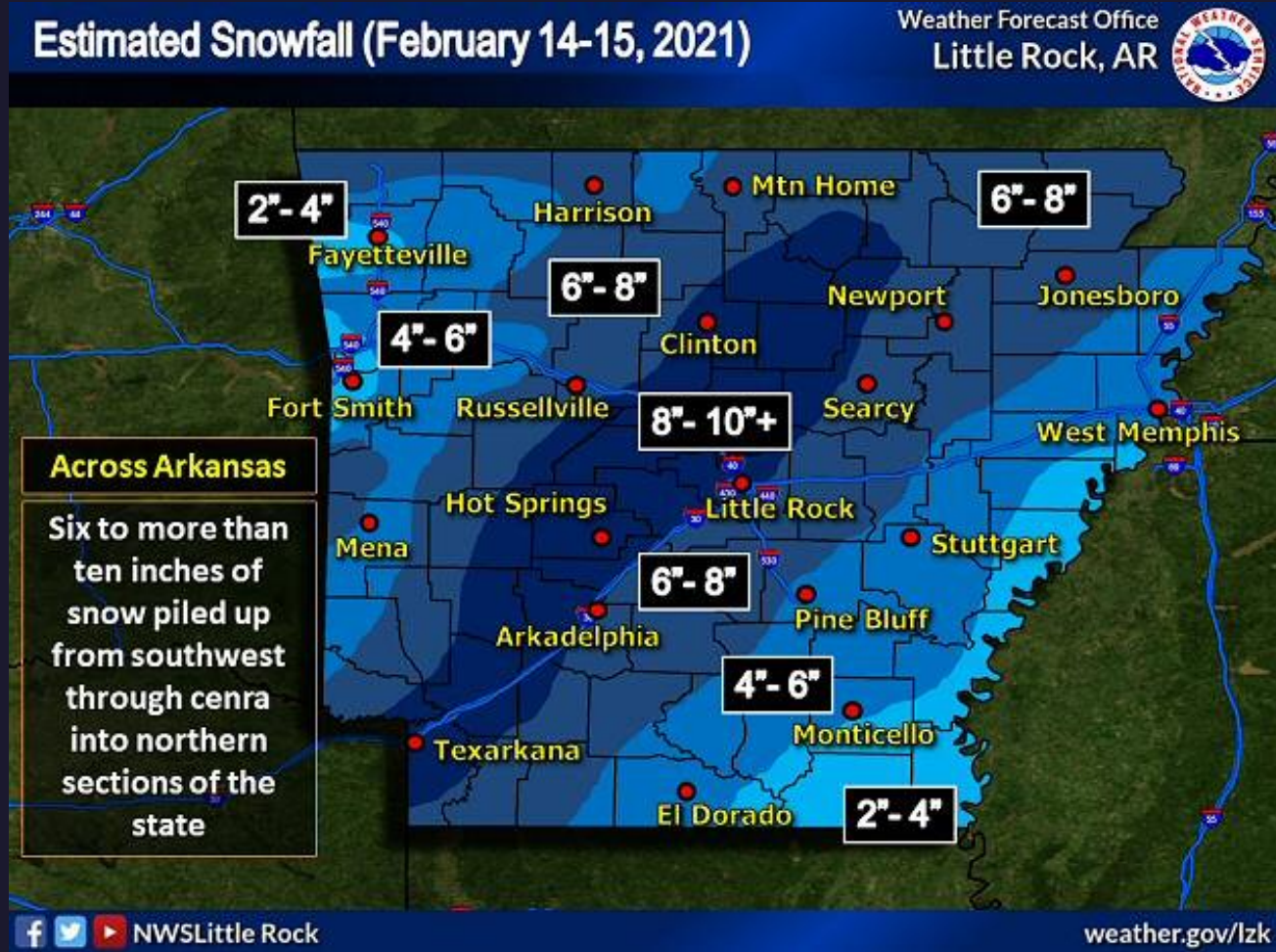
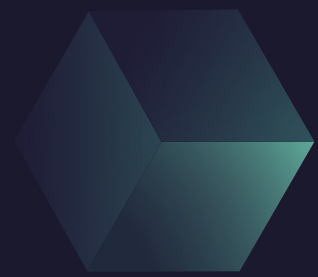


Traffic Cameras

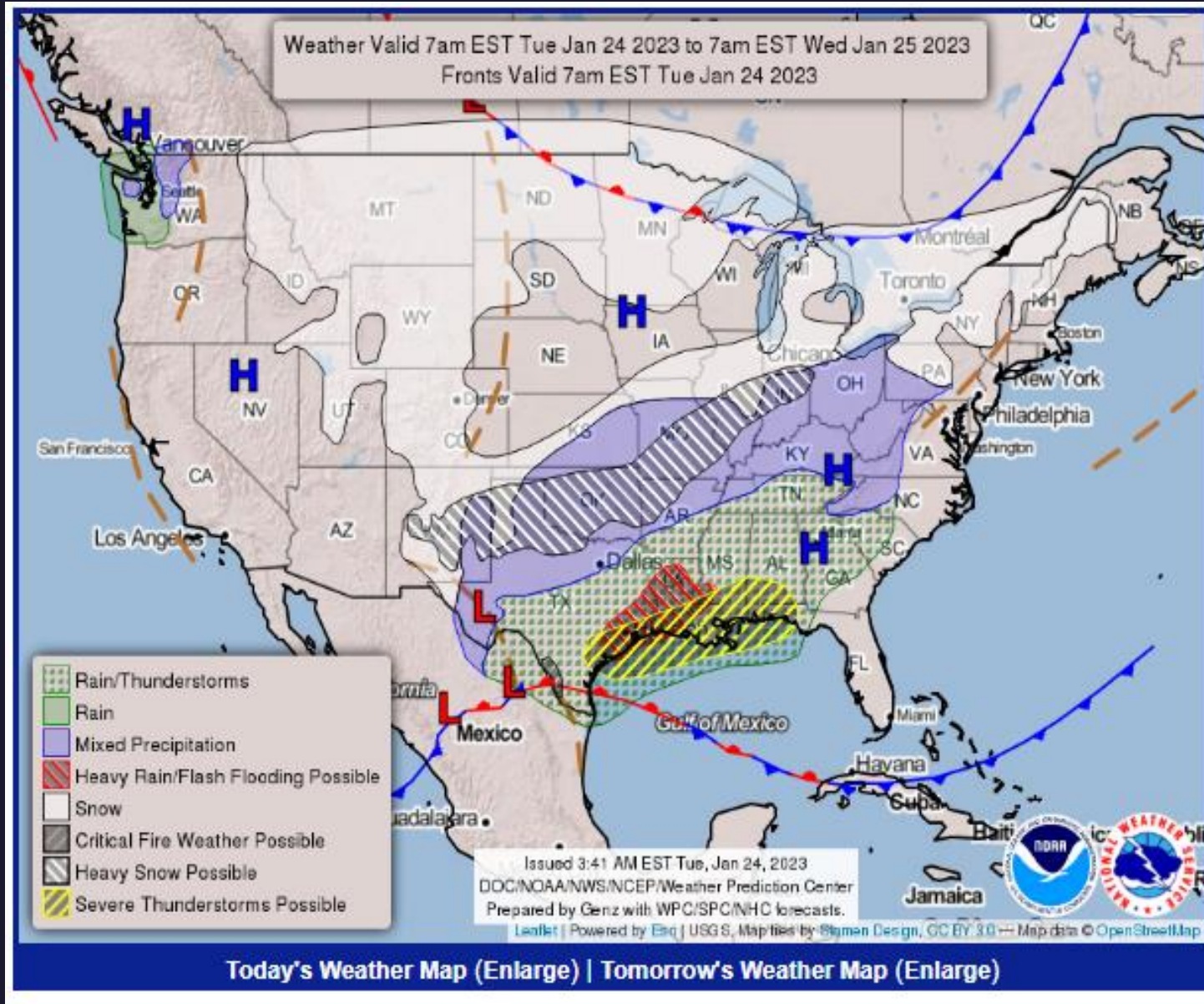


- Over 300 Cameras Statewide
- 40+ Cameras for Plow Trucks

National Weather Service (NWS) - Forecasts

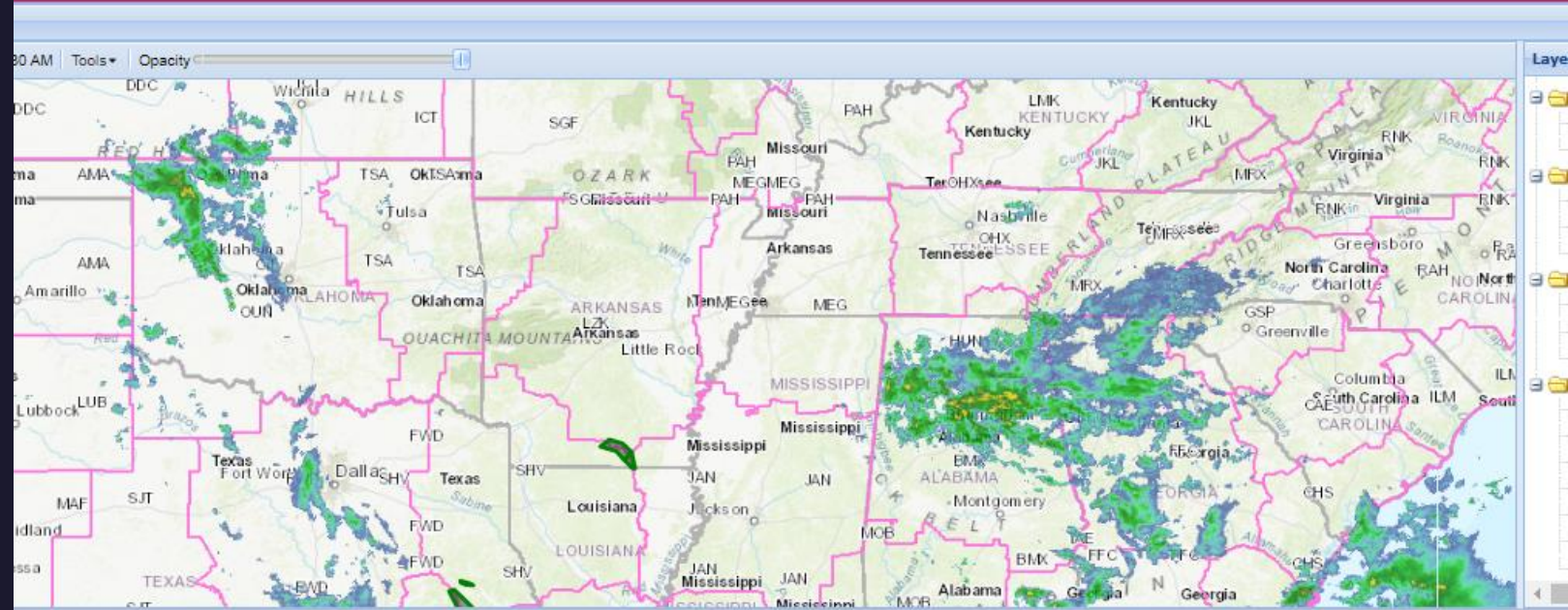


National Weather Service (NWS) - Forecasts



NWS Chat

- Chat directly with NWS Weather Forecasters
- Arkansas covered by 5 different NWS offices
 - LZK – Little Rock
 - TSA - Tulsa
 - SHV - Shreveport
 - JAN - Jackson
 - MEG – Memphis
- Also monitor
 - SGF – Springfield
 - PAH - Paducah



sgfchat | lzkat | tsachat | shvchat | megchat | pahchat | janchat

Print Log | View As HTML | Hide NWSBot | Sounds Muted | A A

6 PM) nwsbot: LZK continues [Flood Warning](#) for the Ouachita River at Thatcher L and D [AR] till further notice

PM) nwsbot: LZK issues [Area Forecast Discussion \(AFD\)](#) ... NEW SHORT TERM, LONG TERM ...

PM) nwsbot: LZK issues [Daily Climate Report \(CLI\)](#) for NORTH LITTLE ROCK

PM) nwsbot: LZK issues [Daily Climate Report \(CLI\)](#) for PINE BLUFF/GRIDER

PM) nwsbot: LZK issues [Daily Climate Report \(CLI\)](#) for HARRISON/BOONE CO.

PM) nwsbot: LZK issues [Daily Climate Report \(CLI\)](#) for LITTLE ROCK/ADAMS

PM) nwsbot: LZK issues [Area Forecast Discussion \(AFD\)](#) ... NEW AVIATION ...

PM) nwsbot: ----- May 23, 2023 [UTC] -----

PM) nwsbot: LZK continues [Flood Warning](#) for the Ouachita River at Thatcher L and D [AR] till further notice

nwsbot: LZK issues [Area Forecast Discussion \(AFD\)](#) ... NEW AVIATION ...

sbot: LZK issues [Daily Climate Report \(CLI\)](#) for HARRISON/BOONE CO.

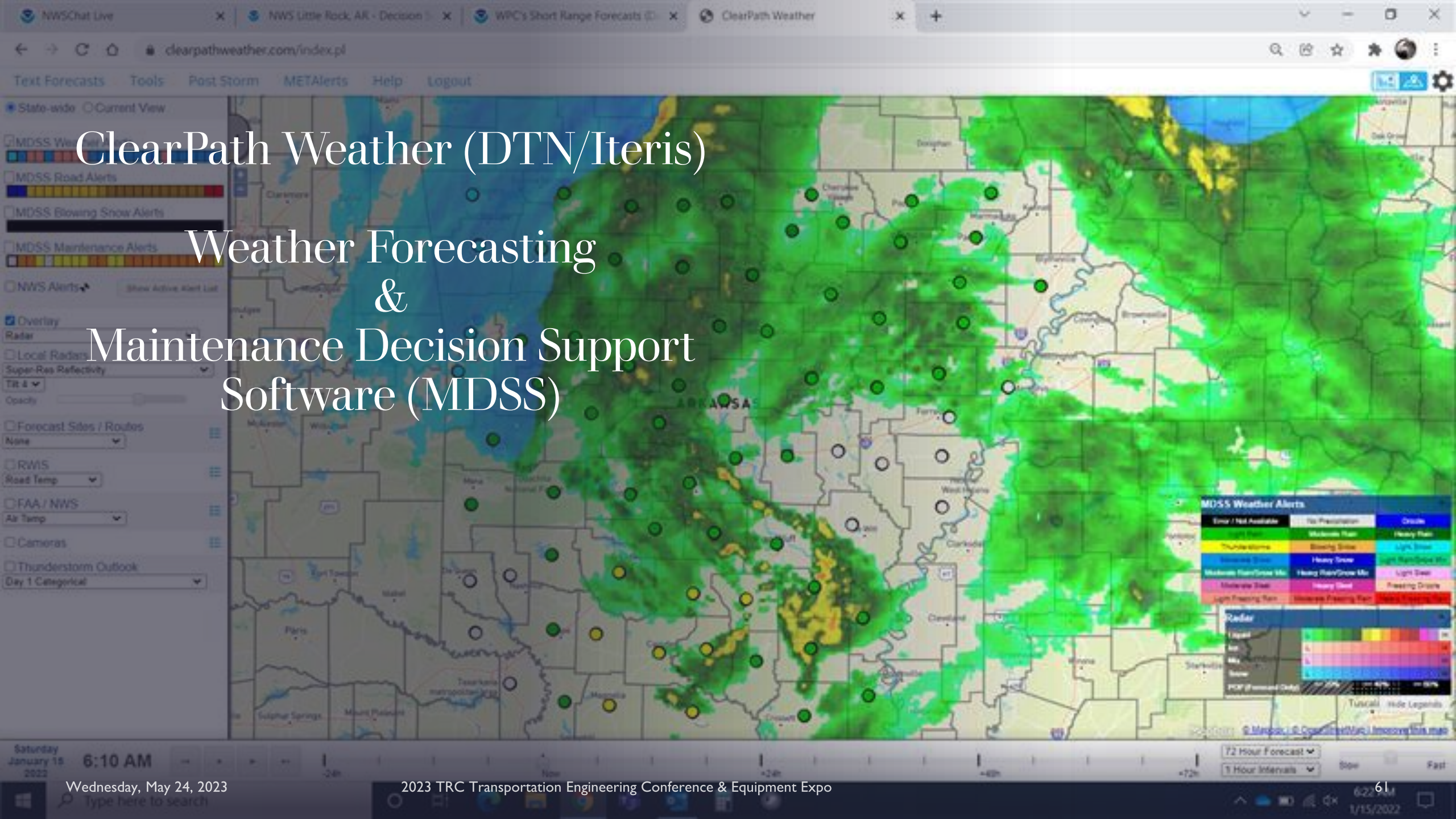
sbot: LZK issues [Daily Climate Report \(CLI\)](#) for PINE BLUFF/GRIDER

sbot: LZK issues [Daily Climate Report \(CLI\)](#) for LITTLE ROCK/ADAMS

sbot: LZK issues [Daily Climate Report \(CLI\)](#) for NORTH LITTLE ROCK

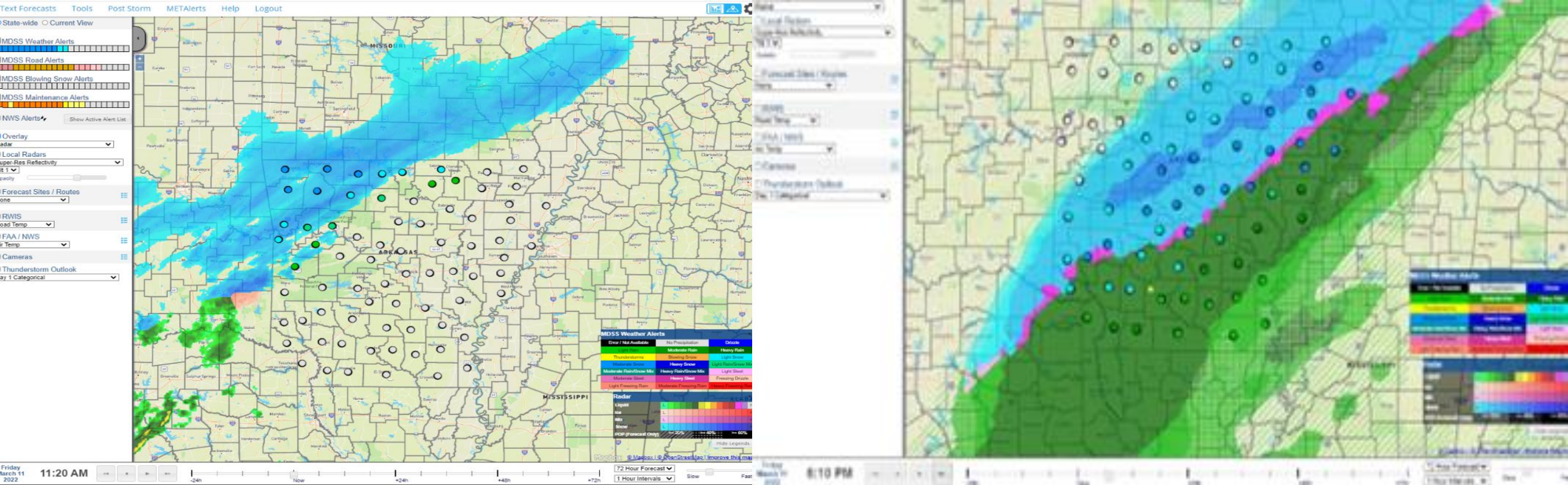
sbot: LZK issues [Area Forecast Discussion \(AFD\)](#) ... NEW SHORT TERM, LONG TERM ...

sbot: LZK issues [Hazardous Weather Outlook \(HWO\)](#)



ClearPath Weather (DTN/Iteris)

Weather Forecasting & Maintenance Decision Support Software (MDSS)



Weather Forecasting

Maintenance Decision Support Software (MDSS)

The MDSS provides reliable weather, road condition, and maintenance information enabling transportation agencies to accomplish their winter maintenance missions.

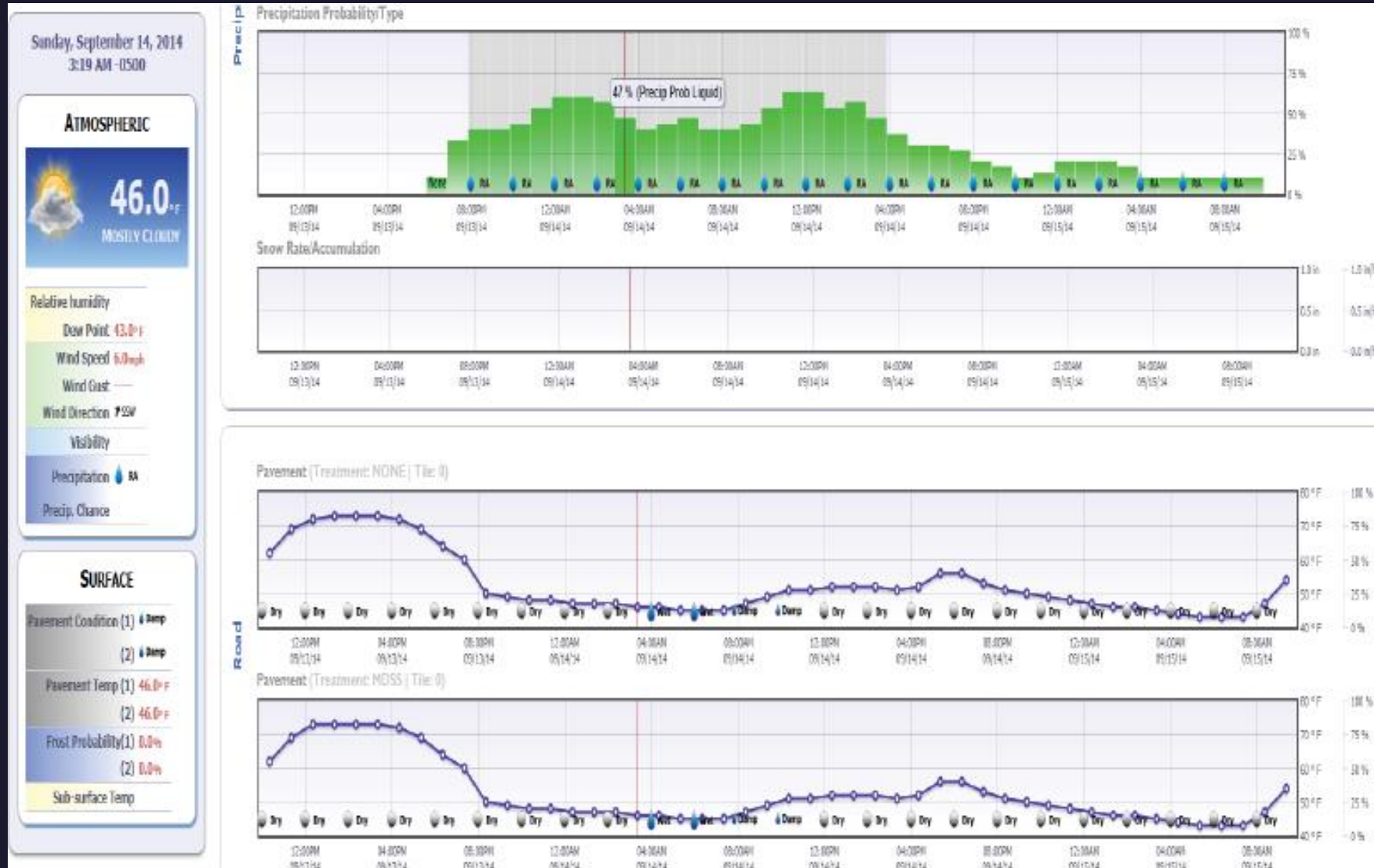
The screenshot displays the MDSS software interface for a roadway. The main data table shows the following information:

Time (GMT-0600)	Temp	Pvm t Cond	Frost Prob	Maintenance	Rate
Wed 1am	28	SN	5	---	---
Wed 2am	31	SN	0	NaCl	---
Wed 3am	26	CmpSn	5	---	---
Wed 4am	26	CmpSn	10	---	---
Wed 5am	25	CmpSn	10	NaCl	100 lbs
Wed 6am	24	CmpSn	10	---	---
Wed 7am	24	CmpSn	5	---	---
Wed 8am	24	CmpSn	5	---	---
Wed 9am	26	Slush	0	---	---
Wed 10am	27	Slush	0	---	---
Wed 11am	29	Slush	0	---	---
Wed 12pm	30	Slush	0	---	---
Wed 1pm	31	Slush	0	---	---
Wed 2pm	33	Damp	0	---	---
Wed 3pm	32	Dry	0	---	---
Wed 4pm	34	Dry	0	---	---
Wed 5pm	33	Dry	0	---	---

A pop-up window highlights a maintenance event:

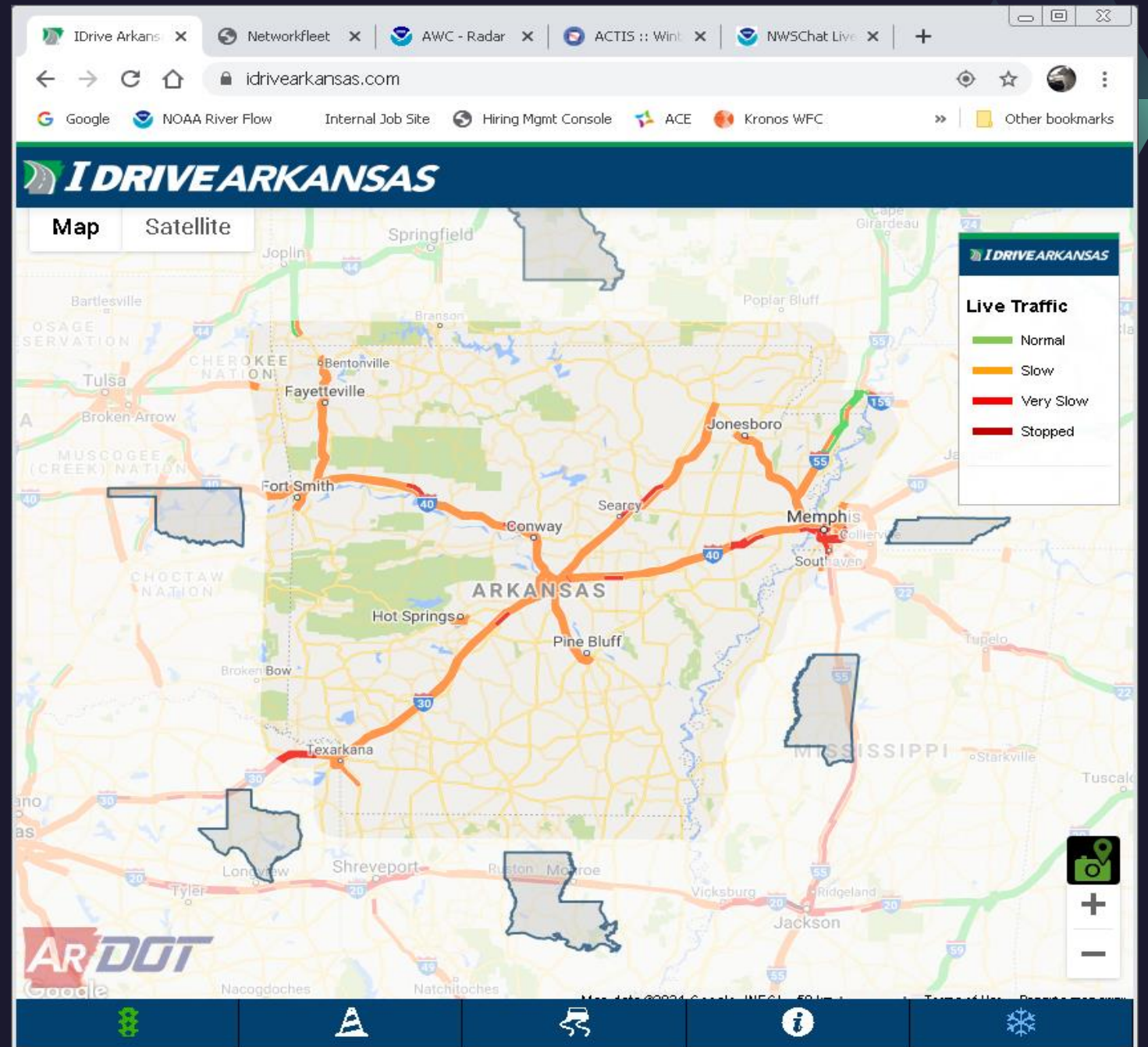
- Treatment:** MDSS
- Event:** Prewet Salt (w/ Salt Brine) (PREFERRED OPTION) @ 100 lbs/lane mile
- Alternate:** Brine Salt (ALTERNATE OPTION) @ 20 gallons/lane mile
- Start Time:** Wed 4:25am
- End Time:** Wed 6:25am

Maintenance Decision Support Software (MDSS)



IDrive Arkansas & ACTIS

- Idrivearkansas.com is the Public Facing Website
- actis.idrivearkansas.com is the internal website that feeds data to the public site.

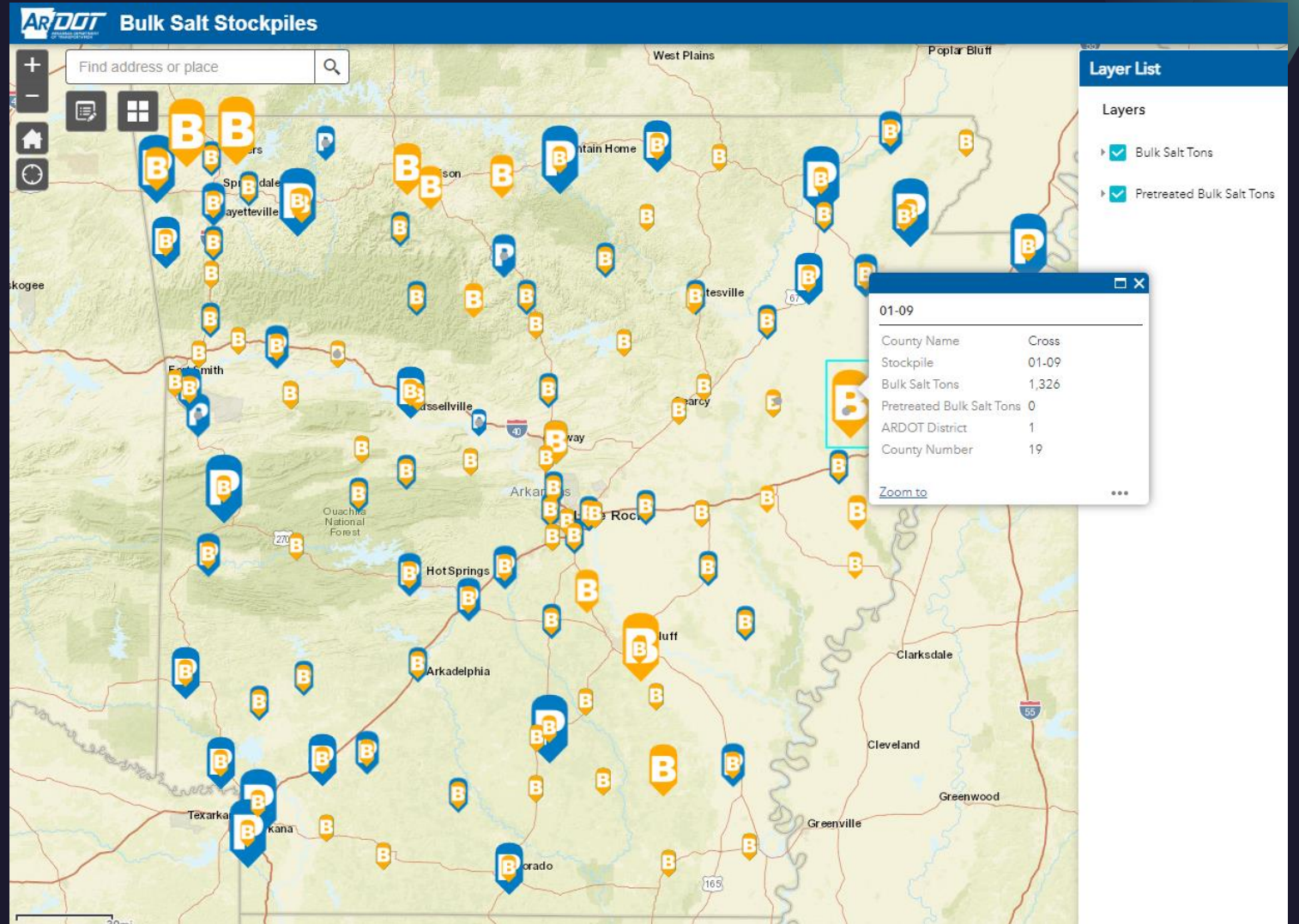


Winter Weather Reporting in ACTIS

The screenshot shows the ARDOT Winter Weather Road Conditions web application. At the top left is the ARDOT logo (Arkansas Department of Transportation). The main header is "Winter Weather Road Conditions". Below this is a breadcrumb trail: "Main Menu / Winter Weather". The main content area is titled "Winter Weather" and contains a grid of ten buttons for navigation:

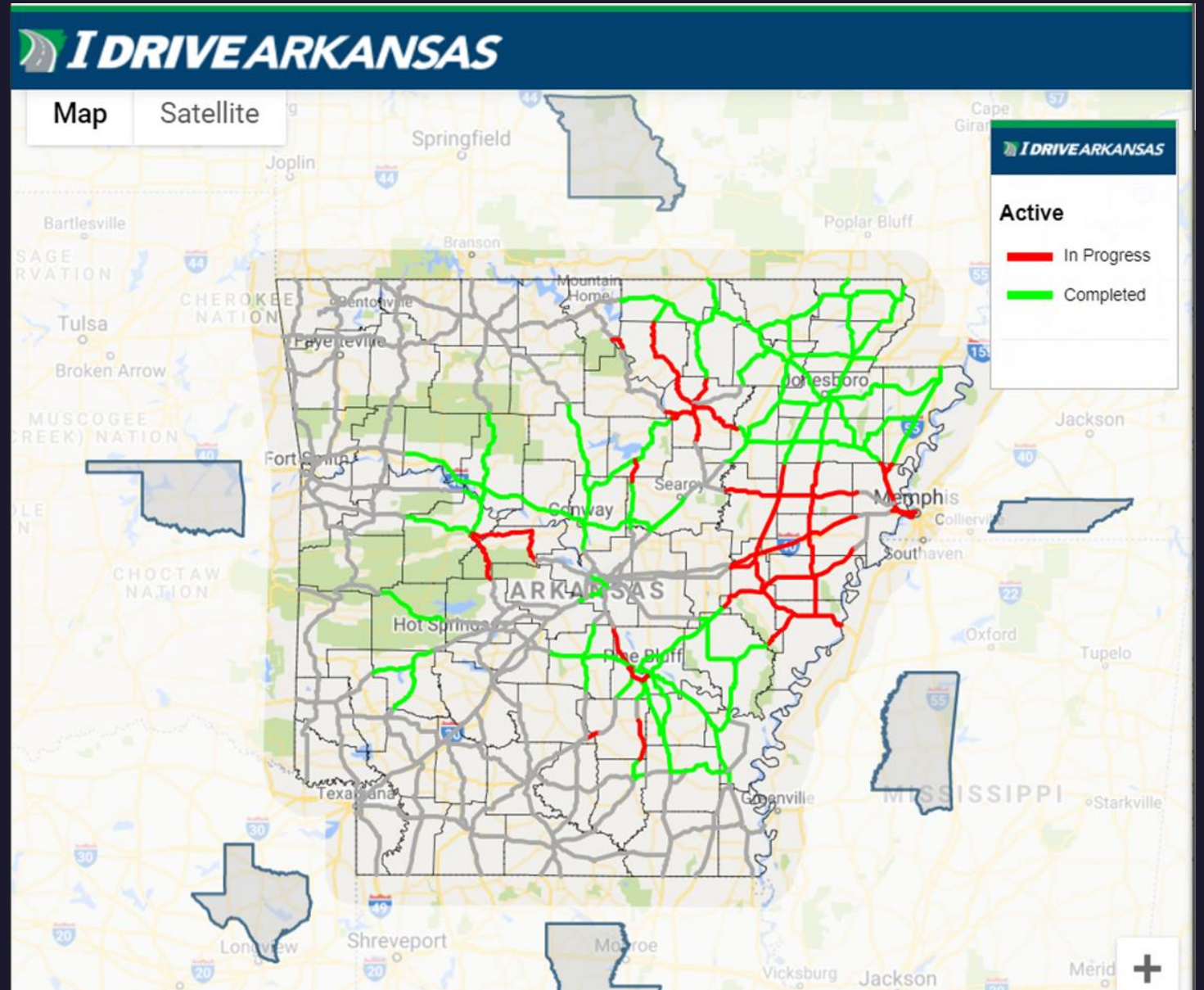
- Route Reporting
- Activity Report
- Non-Clear Routes
- Pretreatment
- Bulk Salt Storage
- MARWIS
- NWS Chat
- Iteris
- Performance by Route
- Performance by Event

Bulk Salt Stockpile Map

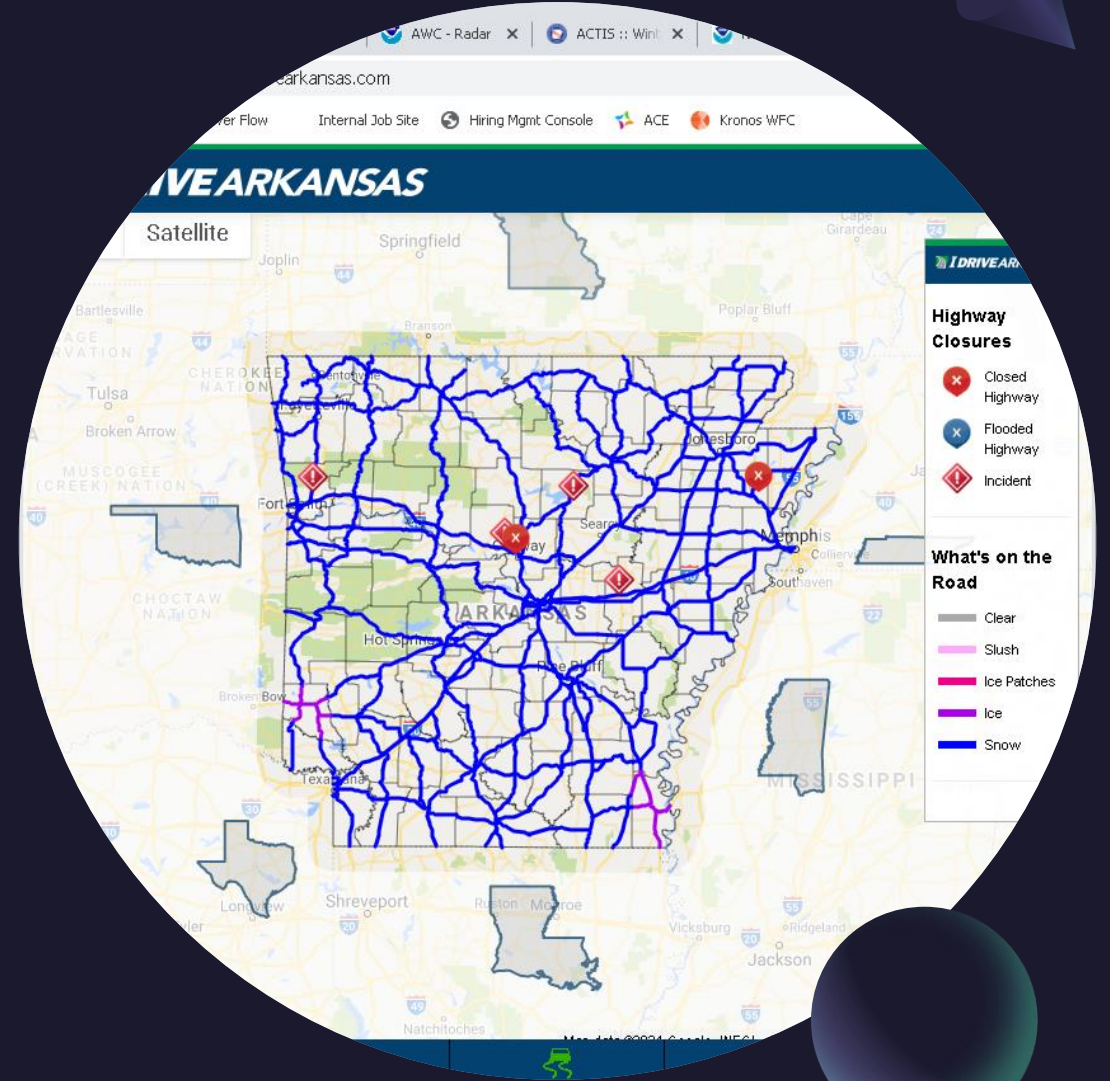


Pretreatment

- Maintenance Crews will pretreat the roadways with Salt Brine or Rock Salt prior to precipitation or temperatures dropping below freezing



Road Conditions based on Observations by Maintenance Staff



Fleet Management Software

- Locations of active Dump Trucks with Plows

Networkfleet

Map

Vehicle

Fleet

Analytics

Reports

VEHICLE LIST

View by: Ignition Status

Ignition Status: Keyed On

Select a Vehicle

2 3

●	8911
●	8522
●	8801
●	8288
●	8627
●	8459
●	8057
●	9715
●	8519
●	8824
●	9731
●	8809
●	9063
●	8877
●	8481
●	7992
●	7962
●	8830
●	8048
●	8120
■	8790
■	8325
■	9048
■	8099
■	8933

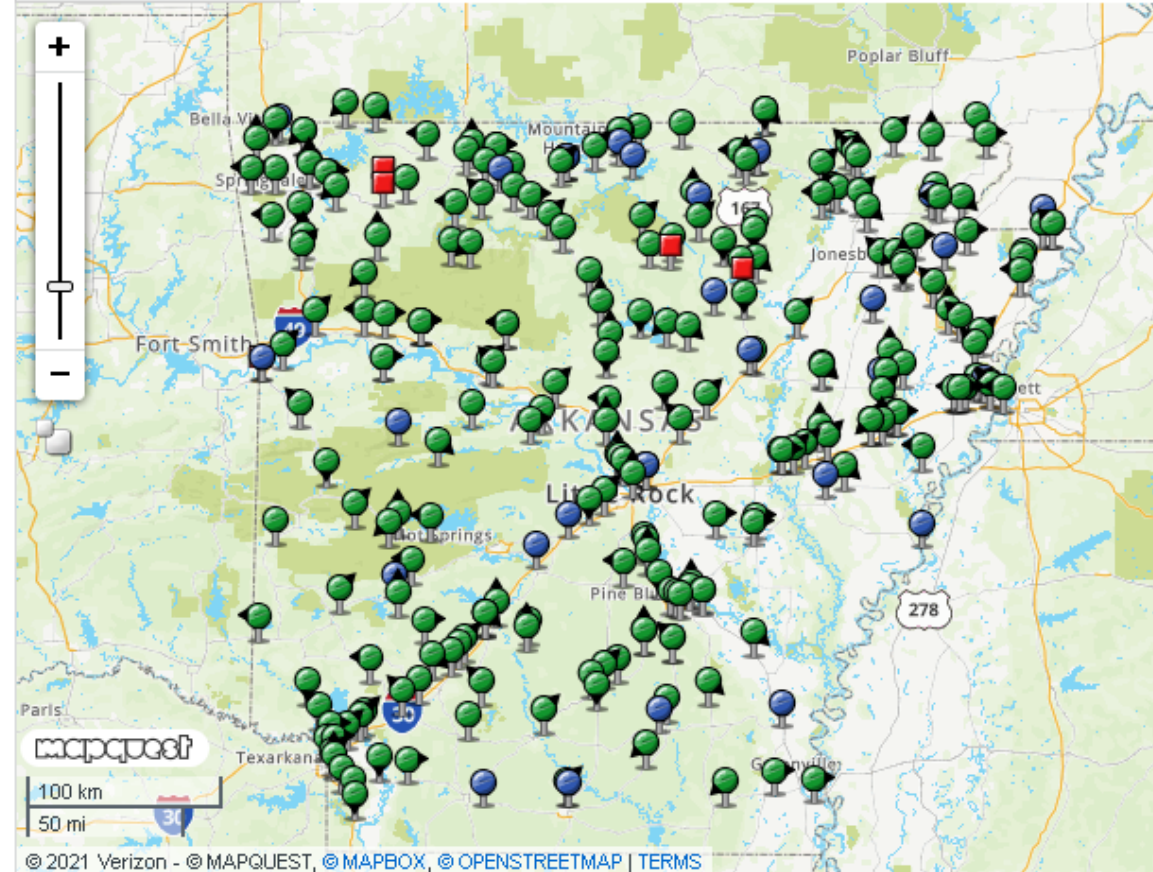
Overview Map

Location Detail

Track Vehicles

Map > Overview Map

Launch Full Screen Map



Collaboration Software

- MS Teams has enhanced collaboration between teams throughout our organization
- Channels for each event
- OneNote for event logging
- Sharepoint Files
- “Wiki” for FAQs and Guides

The screenshot displays the Microsoft Teams interface. On the left, the navigation pane shows various icons for Activity, Chat, Teams, Calendar, Calls, Files, Training, and Apps. The main area is divided into two sections: 'Your teams' and 'Hidden teams'. Under 'Your teams', there are several channels listed, including 'Emergency Management', 'General', 'EOC Planning', 'Processes and Internal Audit', 'Maint Div Teams Space', 'Statewide.Striping', and 'Winter Weather'. The 'Winter Weather' channel is selected, showing a 'General' sub-channel with a list of items: 'Emergency Contact List', 'EOC Tools', '13 hidden channels', 'Task Order Slide Repairs', 'Maintenance Safety Committee', 'Maintenance Supervisor Conference', 'Emergency Locator Telephone List Up...', 'FHWA/ArDOT ER Program', '2024 Eclipse', 'Raised Pavement Marker Project', and 'Power Platform Maker'. A 'Winter Weather' meeting invitation is overlaid on the right side of the screen. The invitation details include the date '01.30.2023', the time '10:41 PM', the organizer 'Kelly, Michael', and the meeting ID '229 727 685 43'. It also provides a passcode 'FqJiau' and instructions for joining via video conferencing or audio only.

slido



Audience Q&A Session

ⓘ Start presenting to display the audience questions on this slide.



ArDOT in Action

I40 – White River Bridge





Dealing with Ice Storm Debris







Gang Plowing

Ice & Snow Take it Slow





Media Coverage



ARDOT HAS SHIFTED HOW IT TREATS
ROADS FOR ICE AND SNOW

**SEVERE
WEATHER**





MID-SOUTH WINTER STORM
PEOPLE DEALING WITH SNOW AND ICE
BLYTHEVILLE, AR

Neighbor Shaming



Charles Peek

@CharlesPeekWX

Big difference in #Arkansas and #Texas snow removal in #Texarkana. This is Stateline Rd. Right side is AR and left side is TX. @weatherchannel #arwx #txwx



slido



Audience Q&A Session

ⓘ Start presenting to display the audience questions on this slide.



Thank You

Michael Kelly, PE, PS

Staff Maintenance Engineer

