

# Mapping Landfills in Arkansas

Environmental Geology

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# Ideas

- Stream analysis of BOD in NWA waters
- Mapping methane emissions in landfills in AR

# Project Introduction

Landfills in karst regions can pose environmental risks to human populations in the same area.

The focus of this project is on the distribution of landfills in NW Arkansas.

As part of the Environmental Geology course curriculum a KML will be generated to display all landfills located within Arkansas and as a result, a map will be generated as well.

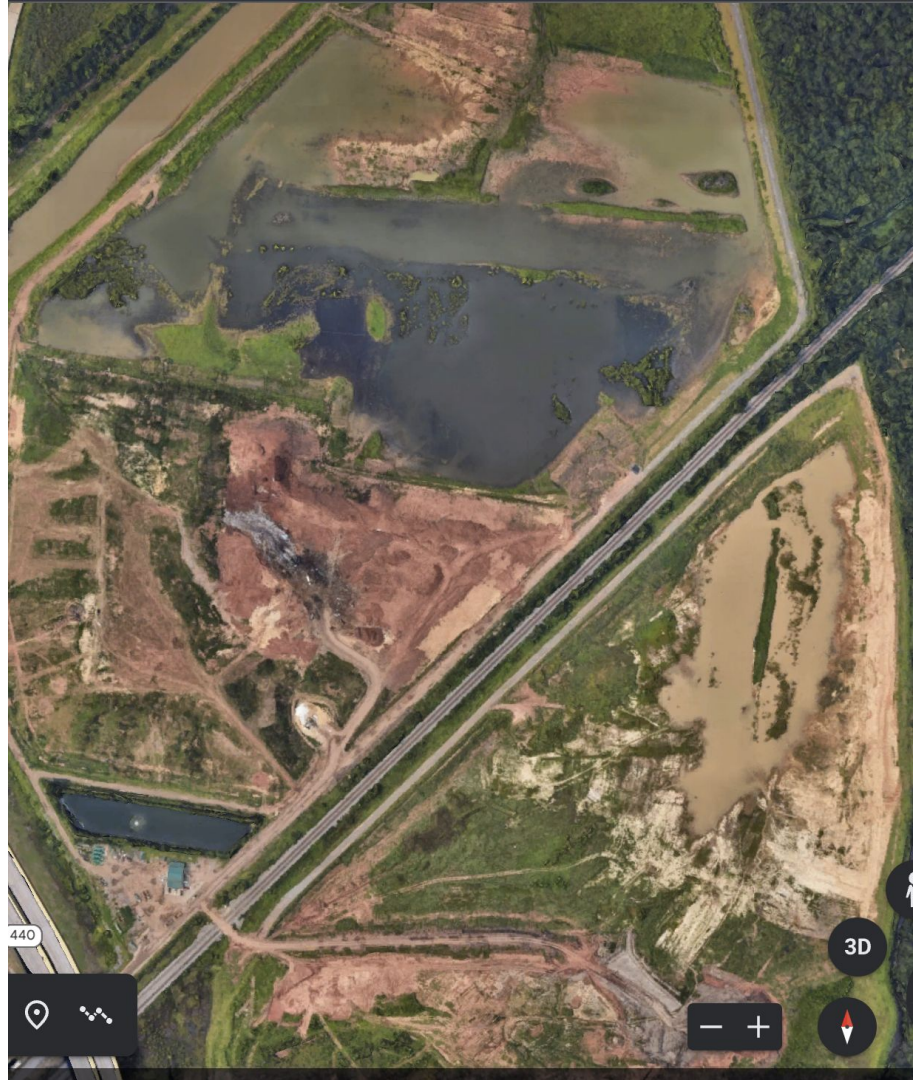
# Curriculum – What am I learning from this project?

- Relate geological principles to environmental issues
- Identify the geological aspects of waste management & disposal
- Recognize the relationships between humans & the environment, particularly the effects of population growth on natural systems

# Introduction

## Class 1

- Non-hazardous household, commercial, & industrial solid wastes
- Must have impermeable liner
- Must cover waste with 6" of earthen material at the end of every operating day
- Coverage prevents disease, fires, odors, blowing litter, & scavenging
- No leachate
- Run-on & run-off control systems



# Introduction

## Class 4

- Slow or non-degradable wastes that pose a minimal potential for release of contaminants into ground or surface water
- Ex- demolition, tree wastes, yard wastes, furniture, appliances, auto parts, shredded or cut tires, shipping wastes

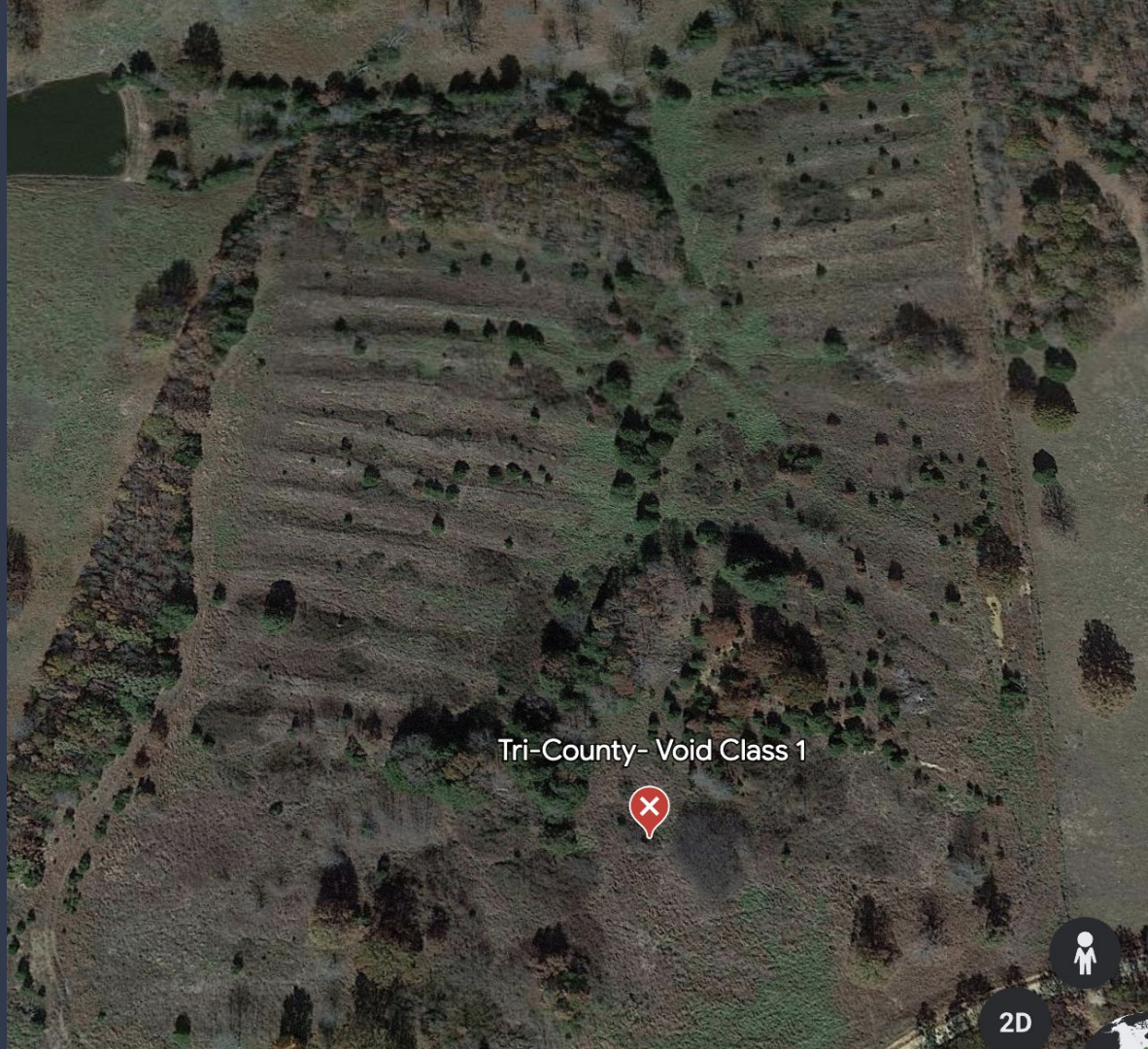


Alternative Waste Management, LLC- Active Class 4

# Introduction

## Settling

- Rapid pace until about 10 years
- Causes cracks, fissures, & infestation
- Monitored minimum of 30 years after closure





Clark County- Void Class 1





# Project Overview

To Create a KML file of all Class 1 & Class 4 landfill sites in Arkansas including; active, void, not constructed, denied applications, and pending applications.

# Community

- Prof. Travis Atwood → Other geologists at the Arkansas Department of Energy and Environment
- Deals with 8 sites weekly but sometimes also others
- New facility openings & requirements → Google Earth measurements
- No public maps for closed sites
- Assists weekly meetings regarding assigned facilities

# Technology Used

Google Earth Pro

Macbook Pro



# Methodology

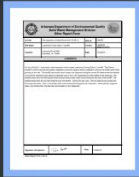
- 15-20 hours to complete
- 3-35 minutes per landfill site

# Timeline

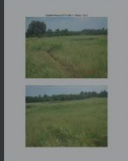
- Started 4/16- (5 hours)
- 4/28- (5 hours)
- 30 minutes each day during the two weeks

| ▲ AFIN   | Reports                          | ▲ Permit Number | Permit Code * | Facility Status ** | Facility Class *** | Facility Name & Location  | Owner Name & Mailing Address   |
|----------|----------------------------------|-----------------|---------------|--------------------|--------------------|---|--|
| 01-00117 | <a href="#">Facility Report</a>  | 🏠0198-S1-R2     | A             | O                  | 1                  | Eaton-Moery Environmental Ser.<br>47 CR 451<br>Parkin, AR 72373<br><b>County:</b> Arkansas<br><b>Latitude:</b> 34° 18' 44.95723"<br><b>Longitude:</b> 91° 15' 40.40199"           | <b>EMS</b><br>P. O. Box 1025<br>Wynne, AR 72396<br>(870) 238-3260                                |
|          | <a href="#">Permit Track Rpt</a> |                 |               |                    |                    |   |  |
|          | <a href="#">Inspection Rpt</a>   |                 |               |                    |                    |   |  |
| 01-00152 | <a href="#">Facility Report</a>  | 🏠0066-SR-1      | V             | V                  | 4                  | City of Stuttgart (Ash)<br>1103 South Airbase Road<br>Stuttgart, AR 71765<br><b>County:</b> Arkansas<br><b>Latitude:</b> 34° 35' 15.40507"<br><b>Longitude:</b> 91° 33' 49.54037" | <b>Stuttgart, City of</b><br>304 South Maple Street<br>Stuttgart, AR 72160<br>(870) 673-4566     |
|          | <a href="#">Permit Track Rpt</a> |                 |               |                    |                    |   |  |
|          | <a href="#">Inspection Rpt</a>   |                 |               |                    |                    |   |  |
| 01-00152 | <a href="#">Facility Report</a>  | 🏠0291-S4        | A             | O                  | 4                  | City of Stuttgart<br>1103 South Airbase Road<br>Stuttgart, AR 71765<br><b>County:</b> Arkansas<br><b>Latitude:</b> 34° 35' 44.17298"<br><b>Longitude:</b> 91° 33' 47.91942"       | <b>Stuttgart, City of</b><br>304 South Maple Street<br>Stuttgart, AR 72160<br>(870) 673-4566     |
|          | <a href="#">Permit Track Rpt</a> |                 |               |                    |                    |   |  |
|          | <a href="#">Inspection Rpt</a>   |                 |               |                    |                    |   |  |
| 02-00033 | <a href="#">Facility Report</a>  | 🏠0142-S         | V             | V                  | 1                  | City of Crossett<br><b>County:</b> ;Ashley<br><b>Latitude:</b> 33° 06' 31.74"<br><b>Longitude:</b> 92° 01' 25.97"   | <b>Crossett, City of</b><br>PO Box 560<br>Crossett, AR 71635<br>(870) 364-4825                   |
|          | <a href="#">Inspection Rpt</a>   |                 |               |                    |                    |   |  |
| 02-00038 | <a href="#">Facility Report</a>  | 🏠0230-S1-R1     | A             | O                  | 1                  | Ashley County<br>309 Ashley 438 Road<br>Hamburg, AR 71646<br><b>County:</b> Ashley<br><b>Latitude:</b> 33° 12' 43.41"<br><b>Longitude:</b> 91° 50' 51.33"                         | <b>Ashley County</b><br>205 E. Jefferson St.,<br>Suite 14<br>Hamburg, AR 71646<br>(870) 853-2000 |
|          | <a href="#">Permit Track Rpt</a> |                 |               |                    |                    |   |  |
|          | <a href="#">Inspection Rpt</a>   |                 |               |                    |                    |   |  |
| 02-00038 | <a href="#">Facility Report</a>  | 0230-S4         | V             | V                  | 4                  | Ashley County Class 4 LF<br>309 Ashley 438 Road<br>Hamburg, AR 71646<br><b>County:</b> Ashley   | <b>Ashley County</b><br>215 E. Jefferson St.<br>Hamburg, AR 71646<br>(870) 853-2000              |
|          | <a href="#">Permit Track Rpt</a> |                 |               |                    |                    |   |  |
|          | <a href="#">Inspection Rpt</a>   |                 |               |                    |                    |   |  |
| 03-00051 | <a href="#">Facility Report</a>  | 🏠0191-S         | V             | V                  | 1                  | RLH, Inc.<br><b>County:</b> ;Baxter<br><b>Latitude:</b> 36° 23' 39.15135"<br><b>Longitude:</b> 92° 26' 14.41358"  | <b>NABORS Landfill</b><br>1305 Rossi Road<br>Mountain Home, AR 72653<br>(870) 425-3213           |
|          | <a href="#">Permit Track Rpt</a> |                 |               |                    |                    |   |  |
|          | <a href="#">Inspection Rpt</a>   |                 |               |                    |                    |   |  |
| 03-00051 | <a href="#">Facility Report</a>  | 🏠0249-S1-R2     | A             | O                  | 1                  | Northwest AR RSWMD<br>1320 RLH Landfill Road<br>Three Brothers, AR 72653<br><b>County:</b> Baxter<br><b>Latitude:</b> 36° 27' 50.25444"<br><b>Longitude:</b> 92° 27' 07.05833"    | <b>NABORS Landfill</b><br>1305 Rossi Road<br>Mountain Home, AR 72653<br>(870) 425-3213           |
|          | <a href="#">Permit Track Rpt</a> |                 |               |                    |                    |   |  |
|          | <a href="#">Inspection Rpt</a>   |                 |               |                    |                    |   |  |
| 03-00051 | <a href="#">Facility Report</a>  | 🏠0249-S4        | A             | O                  | 4                  | Northwest AR RSWMD<br>1320 Rossi Road<br>Three Brothers, AR 72653<br><b>County:</b> Baxter  | <b>NABORS Landfill</b><br>1305 Rossi Road<br>Mountain Home, AR 72653                             |
|          | <a href="#">Permit Track Rpt</a> |                 |               |                    |                    |   |  |

Lawrence County  
**County:** ;Lawrence



1



2





3



4



|  <b>Arkansas Department of Environmental Quality</b><br><b>Solid Waste Management Division</b>  |   |               |                           |
|---|---|---------------|---------------------------|
| <b>Activity</b>   | Site Inspection (Voided Permit # 0173-SR-1) | <b>PDS ID</b> | 085455                    |
| <b>Site Name</b>  | Lawrence County Class 1 Landfill            | <b>County</b> | Lawrence<br>AFIN 38-00043 |
| <b>Location</b>   | Lawrence Road 2580<br>Powhatan, Ar. 72458   | <b>Date</b>   | 7/23/2015                 |

#### COMMENTS

On July 23, 2015, I conducted a site inspection of the closed Lawrence County Class 1 Landfill. The Class 1 Landfill is 100% covered with weedy vegetation and some sparse woody vegetation such as the small cedar trees growing at the site. The landfill had areas where waste was disposed using the trench-fill method that had settled a lot and the trenches could easily be depicted due to the 2-3ft. depressions in the middle of the trenches. The settled areas were not draining and had several areas where water was ponding on the cap of the landfill. The settled areas were all over the noted all over the landfill. During this site visit, I did not observe any areas that had exposed waste. Also, no leachate leaks were observed during this site inspection. Aerial photos, engineer maps, and photos from the site visit are included in this inspection.





4



5



6



7



8

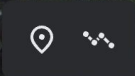
Voided Permit 0173-SR-1 Photo 3 & 4

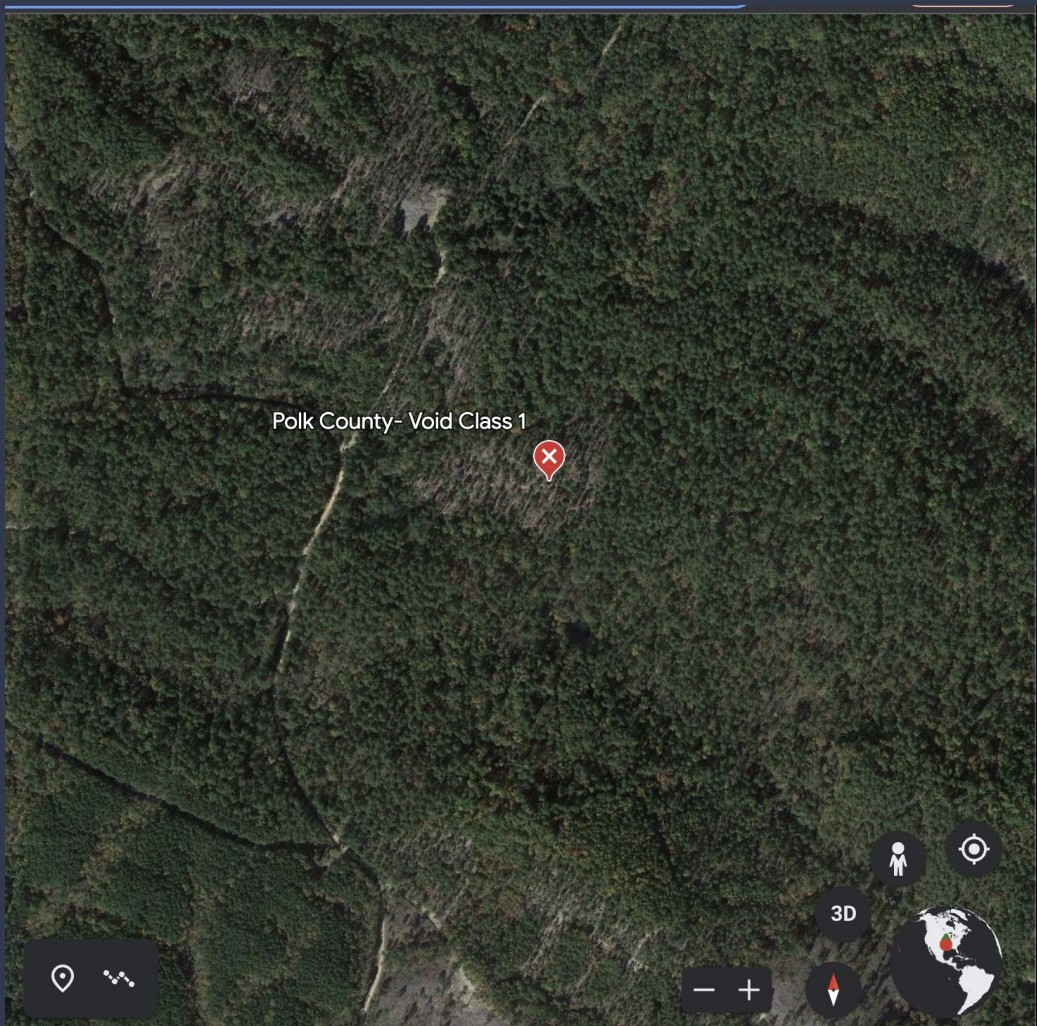


Lake Charles Full  
Gospel Church

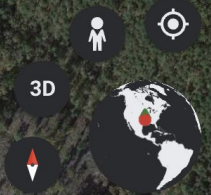
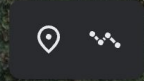


Lawrence County- Void Class 1





Polk County- Void Class 1



# Project Results

Class 1 & 4 Landfills- Arkansas (1).kml

129  
mapped  
landfill  
sites

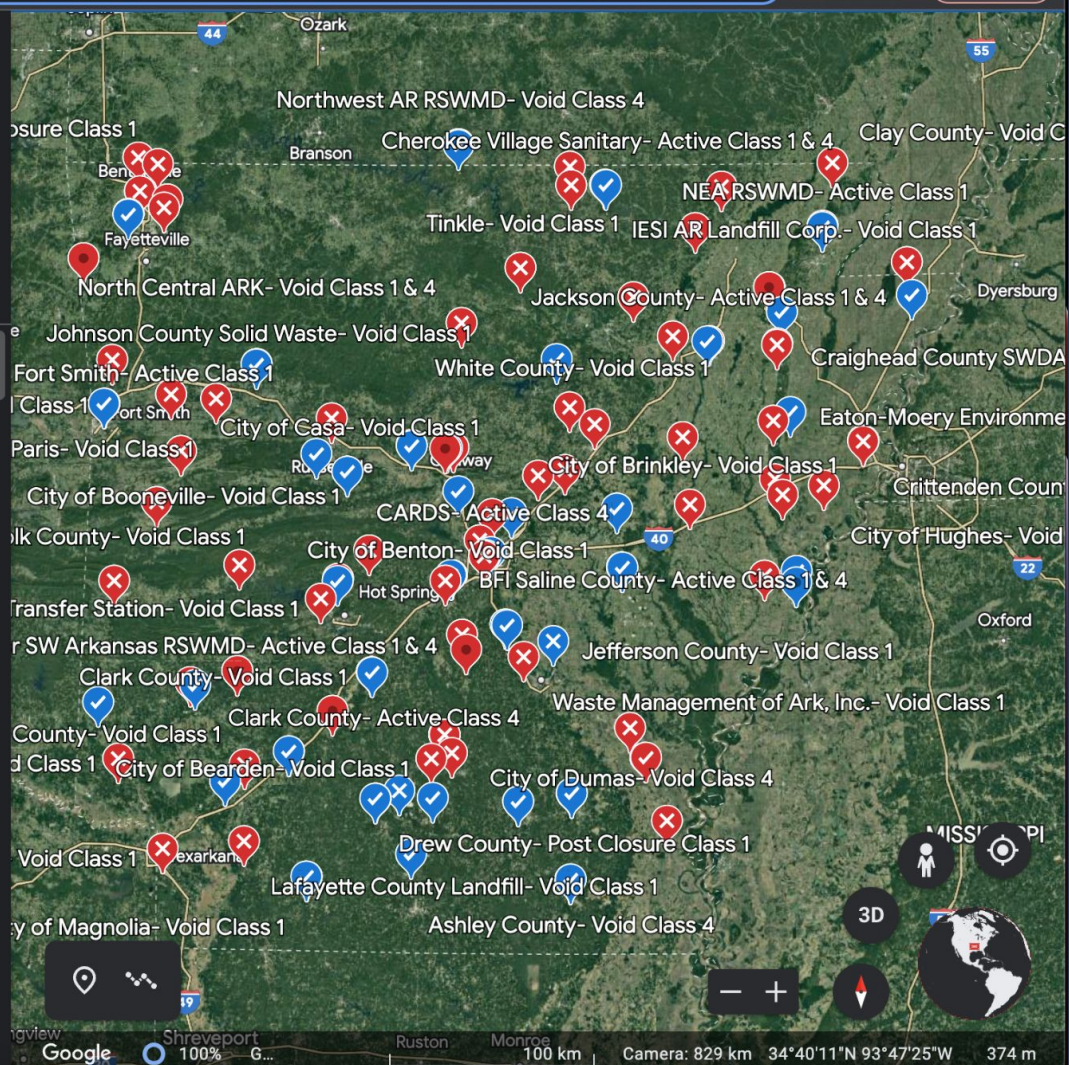
## Class 1 & 4 Landfills- Arkansas

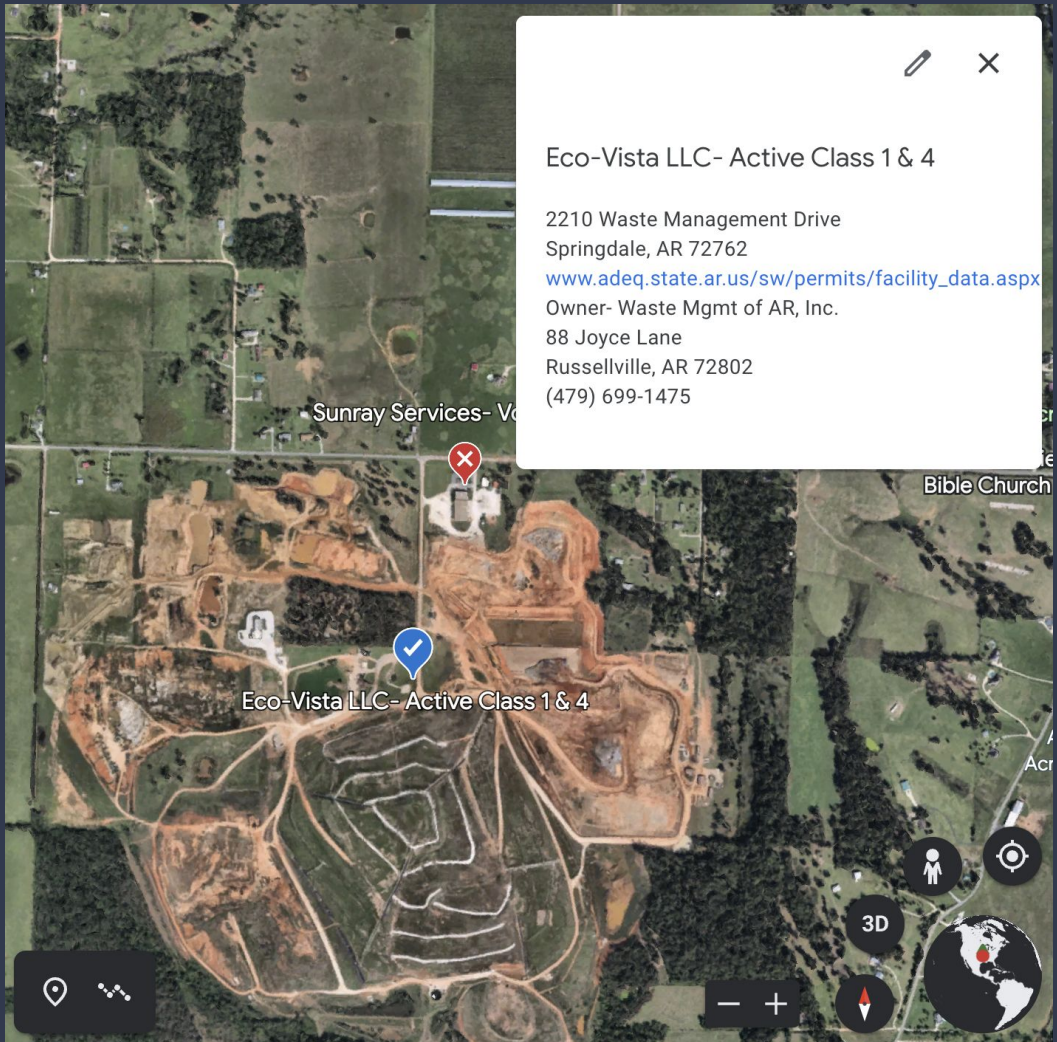
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New feature

Present

- Eaton-Moery Environmental Ser.- Active Class 1
- City of Stuttgart (Ash)- Void Class 4
- City of Stuttgart- Active Class 4
- Ashley County- Void Class 4
- Northwest AR RSWMD- Active Class 1 & 4
- Ashley County- Active Class 1
- Northwest AR RSWMD- Void Class 4
- Bella Vista POA- Void Class 1
- City of Bentonville- Void Class 1
- Fulton- Post Closure Class 1
- City of Warren- Closed Class 1 & 4
- Bradley County- Active Class 4
- City of Thornton- Closed Class 4
- Calhoun County- Active Class 4



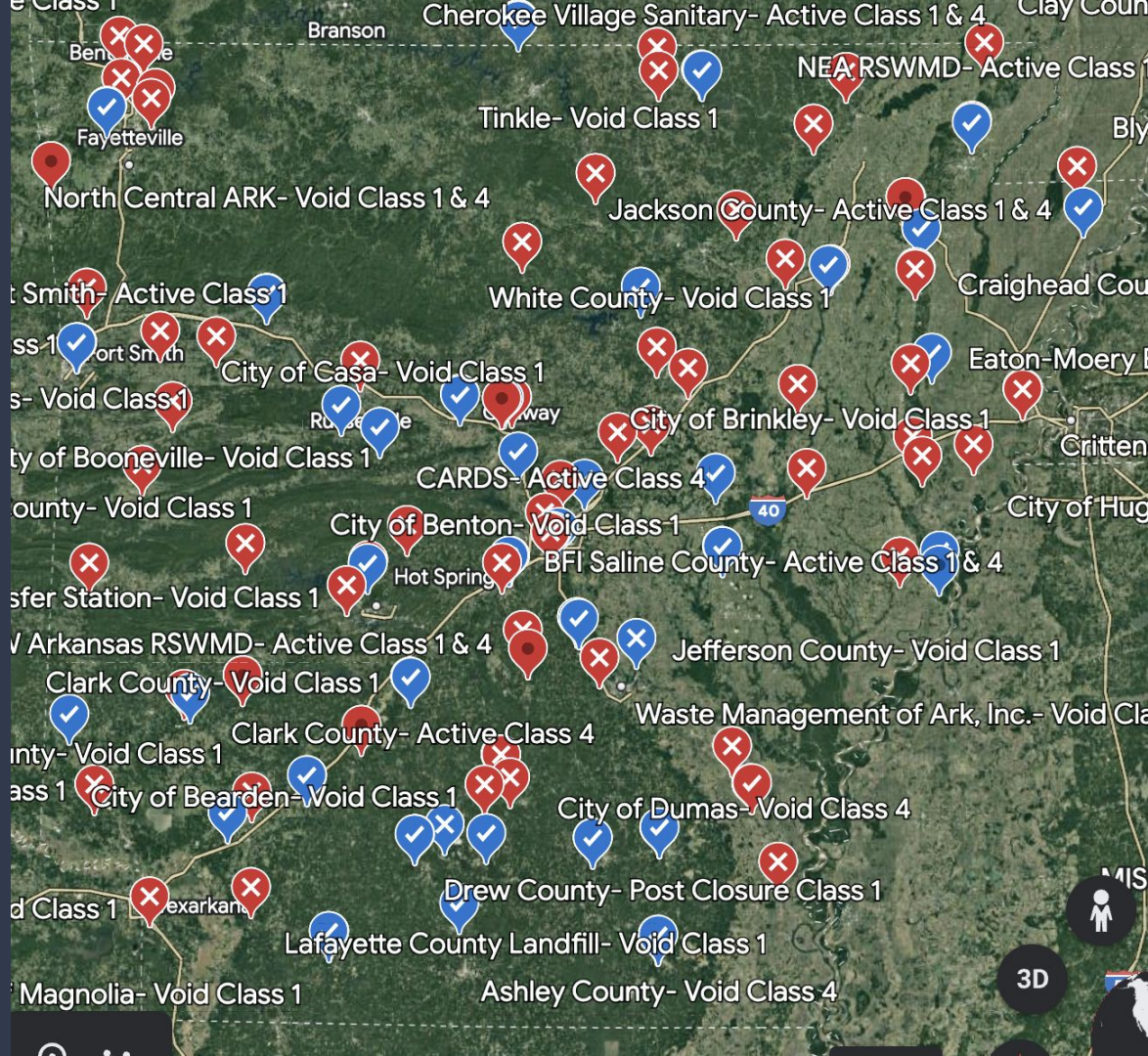


Eco-Vista LLC- Active Class 1 & 4

2210 Waste Management Drive  
Springdale, AR 72762  
[www.adeq.state.ar.us/sw/permits/facility\\_data.aspx](http://www.adeq.state.ar.us/sw/permits/facility_data.aspx)  
Owner- Waste Mgmt of AR, Inc.  
88 Joyce Lane  
Russellville, AR 72802  
(479) 699-1475

# Map of Landfills in Arkansas

- Blue Check- Active
- Red "X"- Void
- Red Dot- Unconstructed, denied application, pending application



# Skills Learned

- Teamwork-Collaboration
- Use Technology
- Communicate – Orally & via Email
- Problem solving
- Applying course content

- How to use technology in a project by using Google Earth Pro
- Use of geological locations
- Using maps to find landfill sites
- Taking screenshots on my computer!



# Acknowledgements

- Prof. Lowery  
plowery@nwacc.edu
- Prof. Dianne Phillips  
dphillips@nwacc.edu
- Prof. Travis Atwood  
tatwood@nwacc.edu

# References

[www.adeq.state.ar.us/sw/permits/facility\\_data.aspx#  
Display](http://www.adeq.state.ar.us/sw/permits/facility_data.aspx#Display)

[https://www.adeq.state.ar.us/sw/permits/pdfs/allowable\\_types\\_of\\_waste\\_for\\_acceptance\\_at\\_a\\_class\\_4\\_landfill.pdf](https://www.adeq.state.ar.us/sw/permits/pdfs/allowable_types_of_waste_for_acceptance_at_a_class_4_landfill.pdf)