



vaulted

Vaulted Deep for Eastern Shore of Virginia Ground Water Committee

October 2025



Agenda

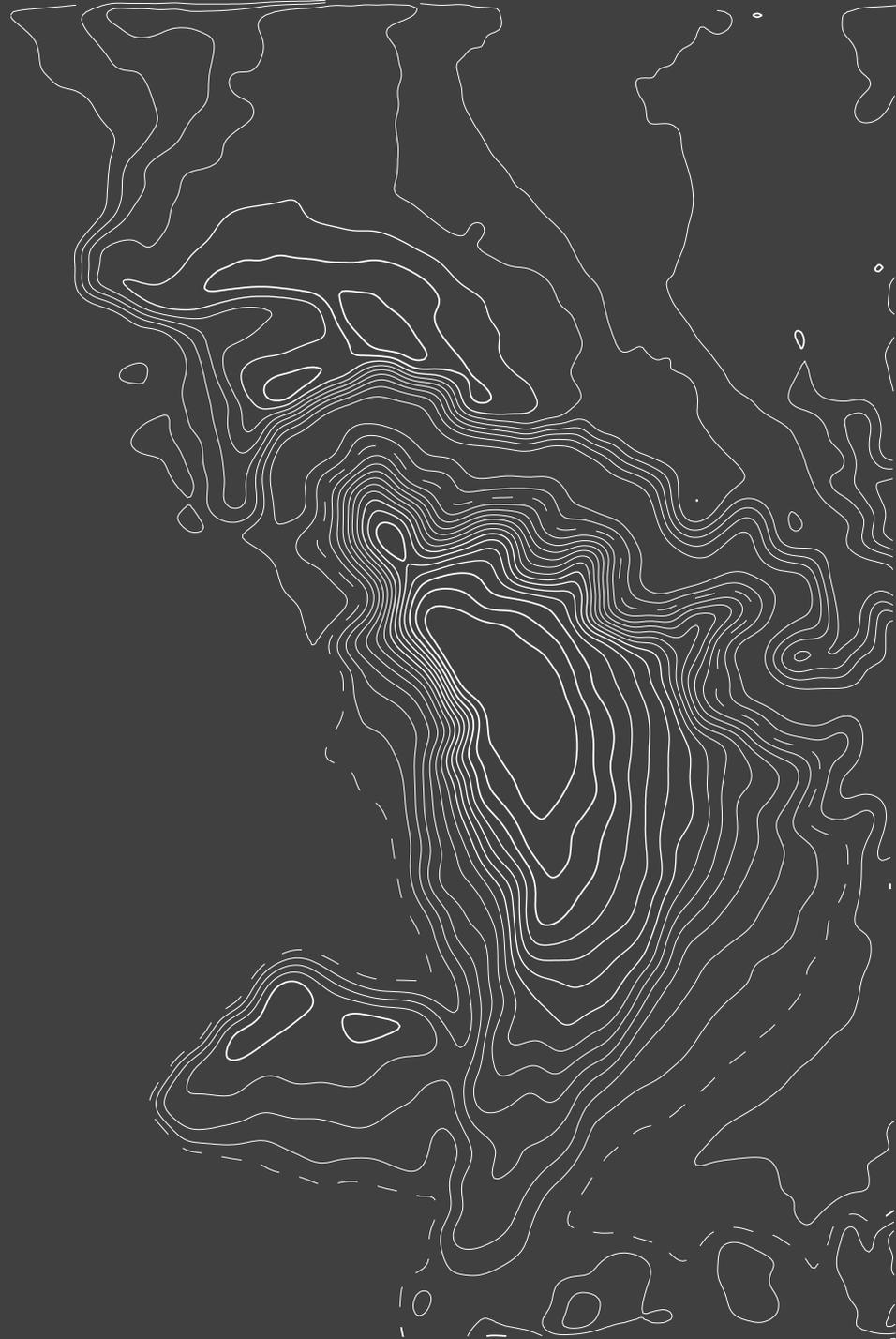


- 1. High-level: Vaulted Deep**
- 2. Vaulted's Operating Sites**
- 3. Proposed Accomack County Site**
- 4. Local benefits & FAQs**



Vaulted Deep

Who are we, and what do we do?

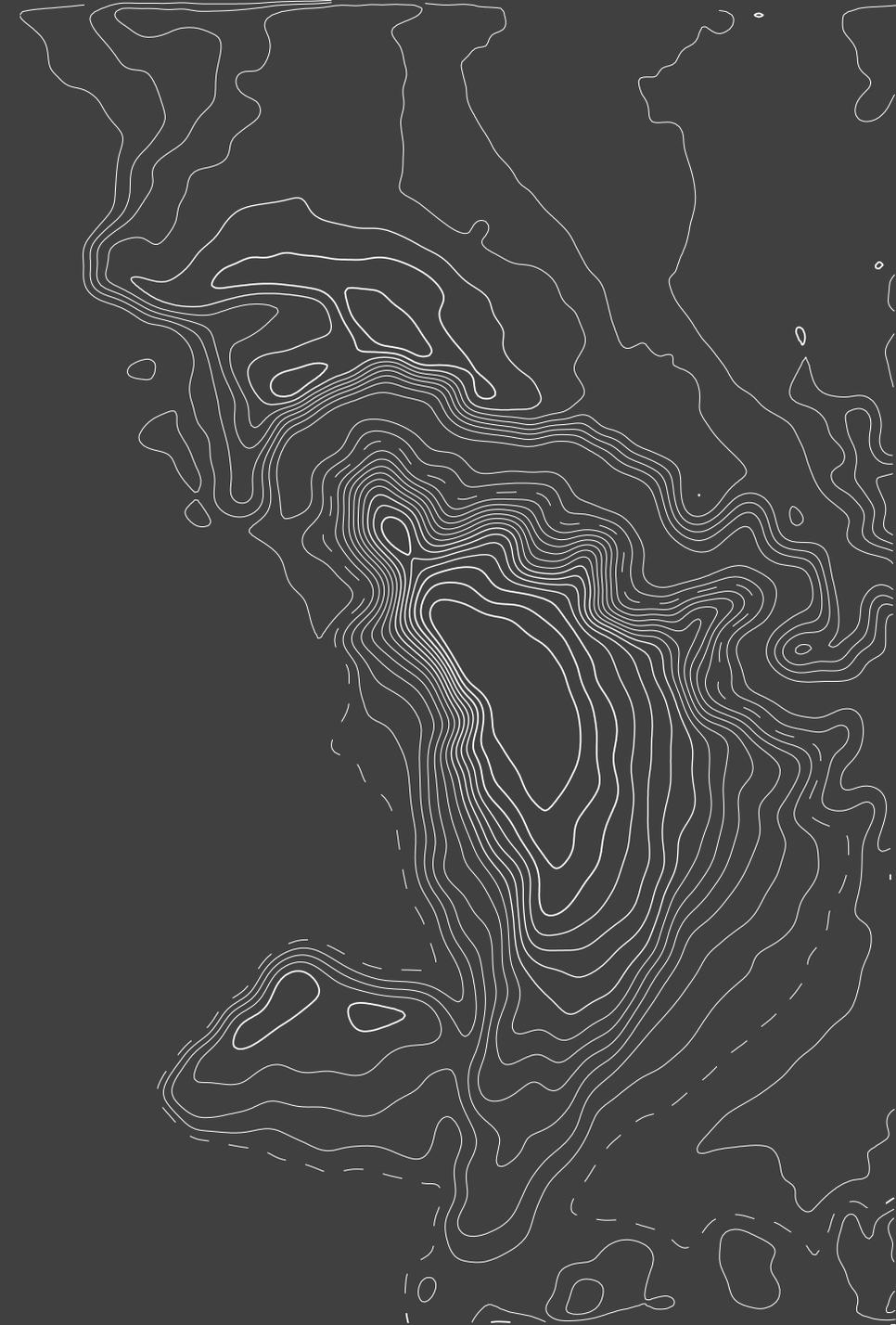


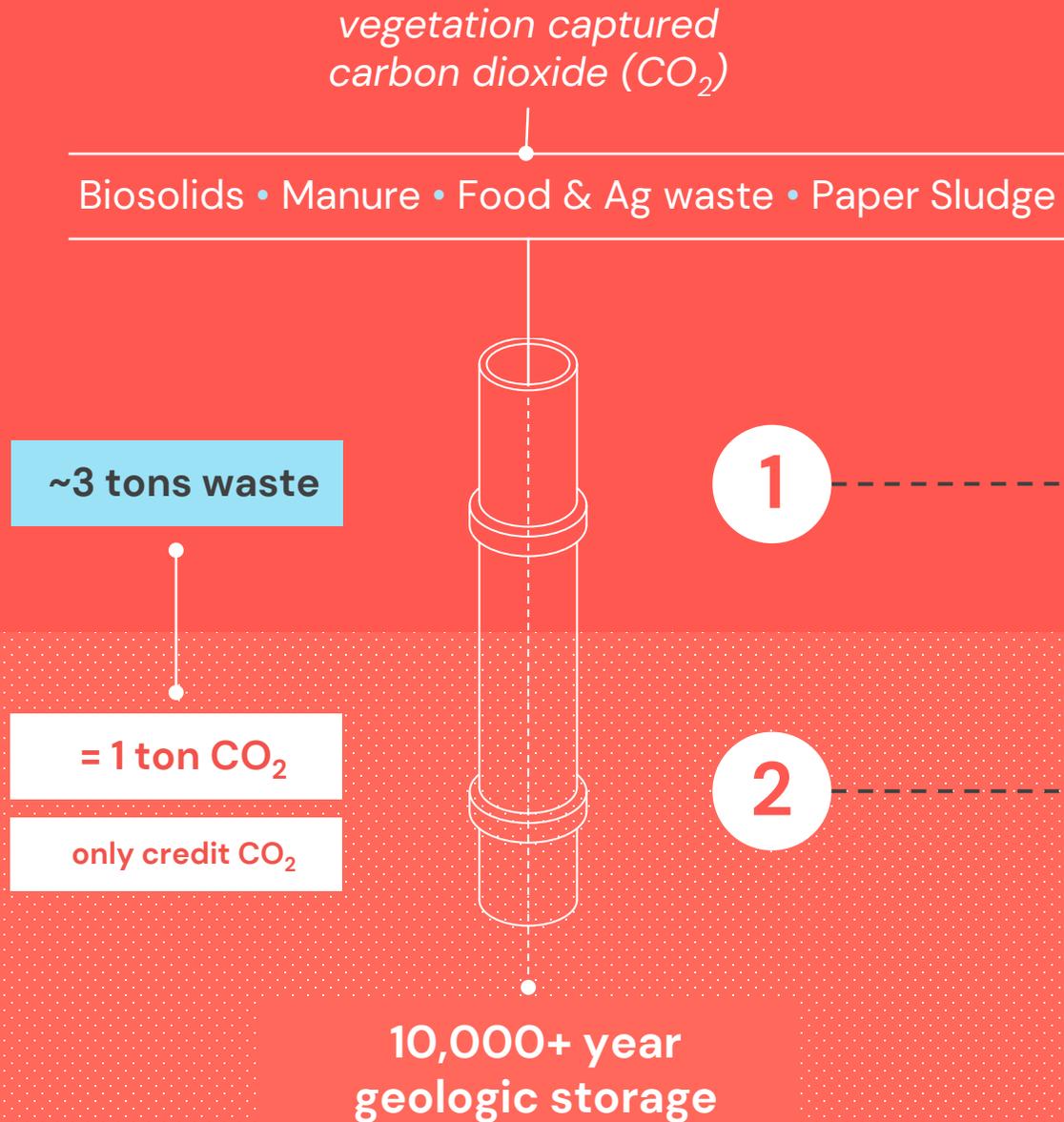


Vaulted Deep (Vaulted) is a company that permanently stores organic materials deep underground – providing waste management solutions to support clean land, air and water.

Vaulted is based in Houston, TX.

Vaulted spun out of Advantek, a worldwide leader in deep well injection, allowing Vaulted to build on decades of expertise.





Our simple carbon removal process:

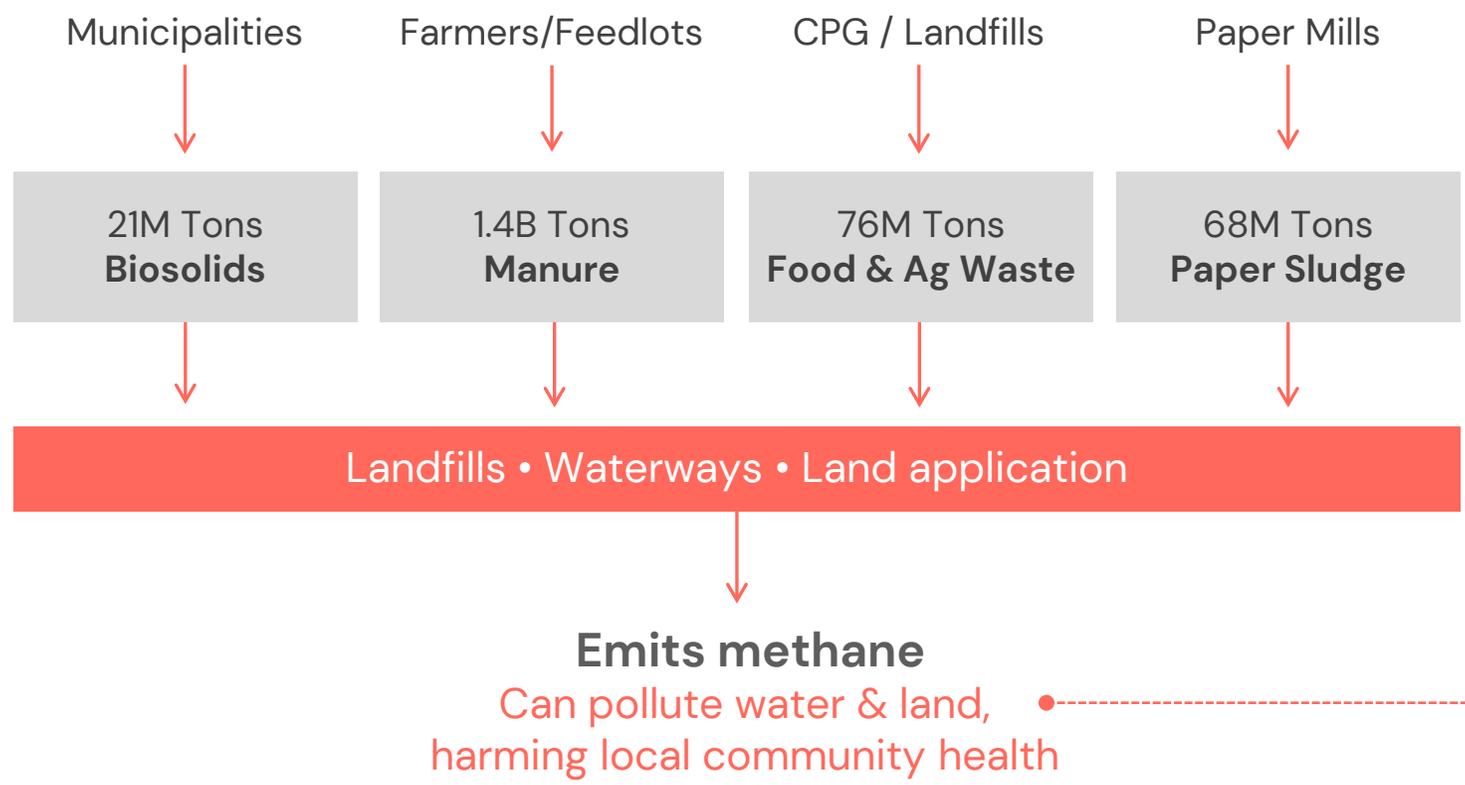
- 1 • Take organic waste (excess manure, biosolids, paper sludge) that would have decomposed
- 2 • Inject it underground for permanent, safe, and cost-effective waste disposal & carbon removal

Carbon dioxide removal verified by
 ISOMETRIC

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1 Take "end of life" carbon to avoid methane & local pollution





2 Unlocked by unique, patented slurry injection tech

Safety of operation fully regulated by the EPA

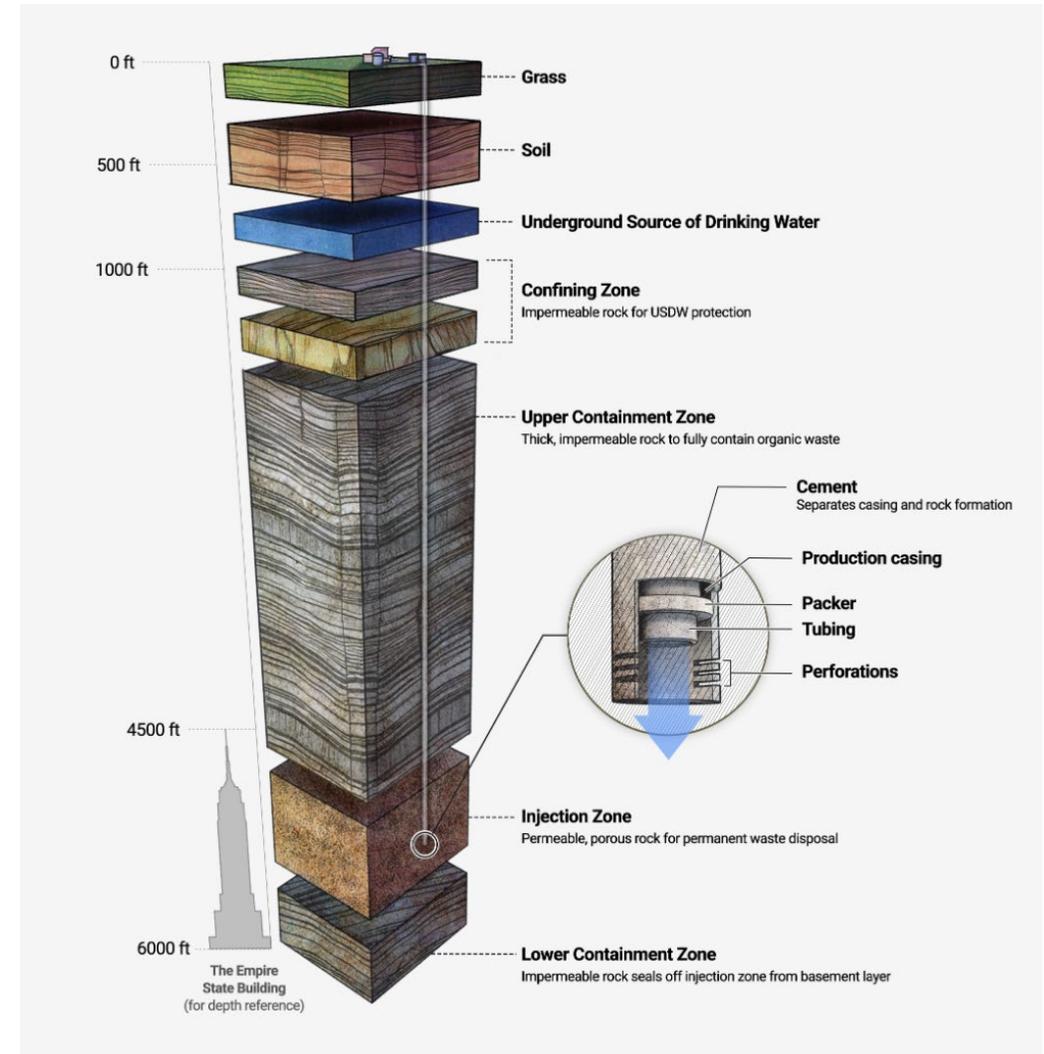
Used in hundreds of installations worldwide



Proprietary injection ops & monitoring software



Safe disposal zones – no leakage, no earthquakes, protects groundwater





Multiple layers of casing ensure groundwater protection

Vaulted places *three layers of casing cemented* between the injection tube and surrounding rock.

Three layers of steel-cemented pipes serves to:



Protect different rock layers and aquifers



Secure the wellbore

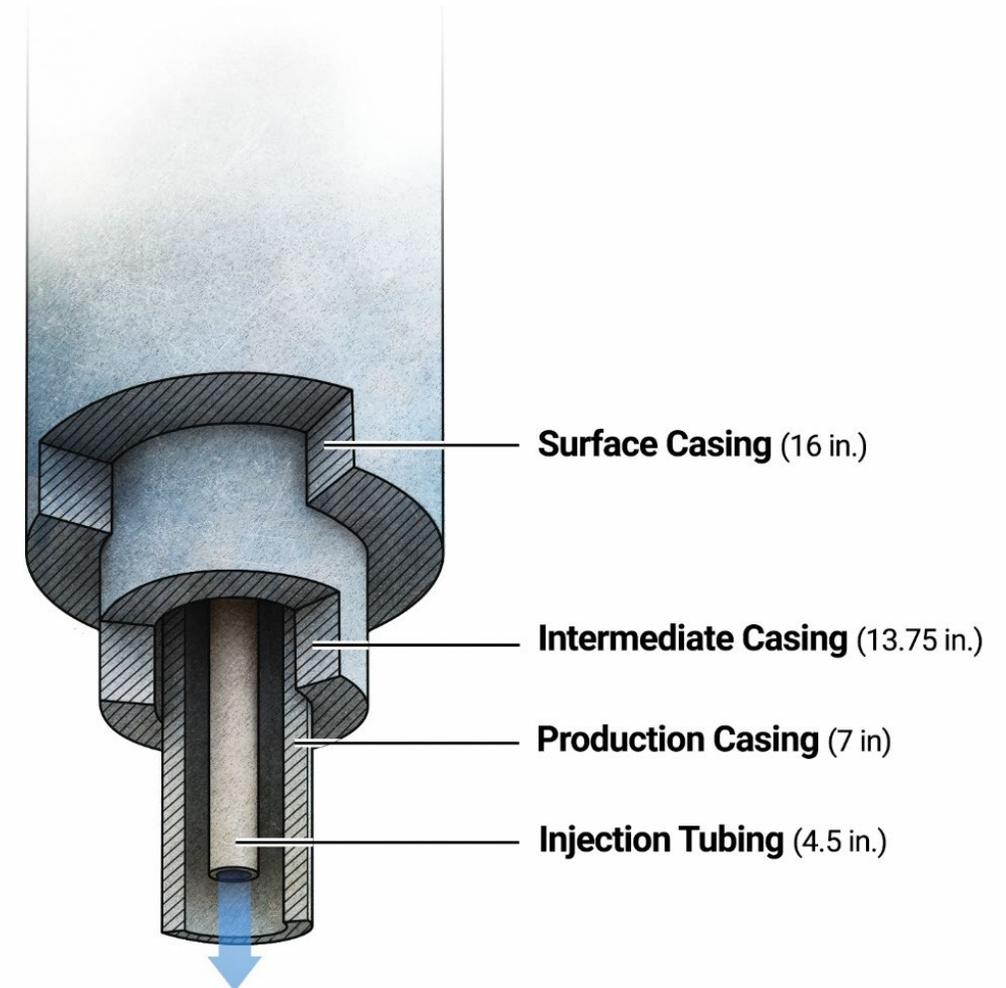


Prevent fluid migration



Provide a stable conduit for safe injection

Conductor casing	Stabilizes the well by preventing loose sediments from entering the wellbore.
Surface casing	Isolates the wellbore from groundwater sources and prevents fluid leakage.
Production casing	Runs the full depth of the well, providing isolation and stability.
Tubing	Transports injection slurry into the formation.





Vaulted's 24/7 safety protocols mitigate fluid migration risk

Monitoring Plan

Continuous Monitoring Devices & Locations

- Pressure Gauges
 - ✓ Wellhead: Tubing and annulus pressure
 - ✓ Pumps: Discharge pressure
 - ✓ Flow Meters: Integrated with Variable Frequency Drives (VFDs) on pumps to monitor flow rate
- Tank-Level Indicators
 - ✓ Installed on on-site tanks to track slurry and waste volumes

Data Recording & Transmission

- All sensors transmit data in real time to the cloud
- Pressure and flow data recorded continuously
- Data reviewed by qualified operators and submitted to regulatory agencies as required

Contingency Protocols

Pressure Increase Protocol

- Immediate well shut-in after flushing with clean water
- Notification sent to regulatory agency
- Follow-up actions implemented per permit

Pressure Drop Protocol

- Well shut-in after flushing
- Integrity testing of containment formation
- Injection resumes only if formation integrity is confirmed
- Immediate notification if compromised

Testing Failure Protocol

- Injection suspended upon failed integrity test
- Regulatory agency notified
- Investigation and repair plan submitted for approval

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How we're regulated for safety

What to know:

- Vaulted's injection wells are regulated by the [U.S. EPA's Underground Injection Control \(UIC\) program](#), under the Safe Drinking Water Act – a program designed to protect underground sources of drinking water.
- Through detailed plans, modeling, and monitoring prior to injection, Vaulted demonstrates that our well construction and operations will not endanger water supply or induce seismicity.
- During daily operations, our proprietary real-time monitoring software continuously confirms containment.

Other proof points:

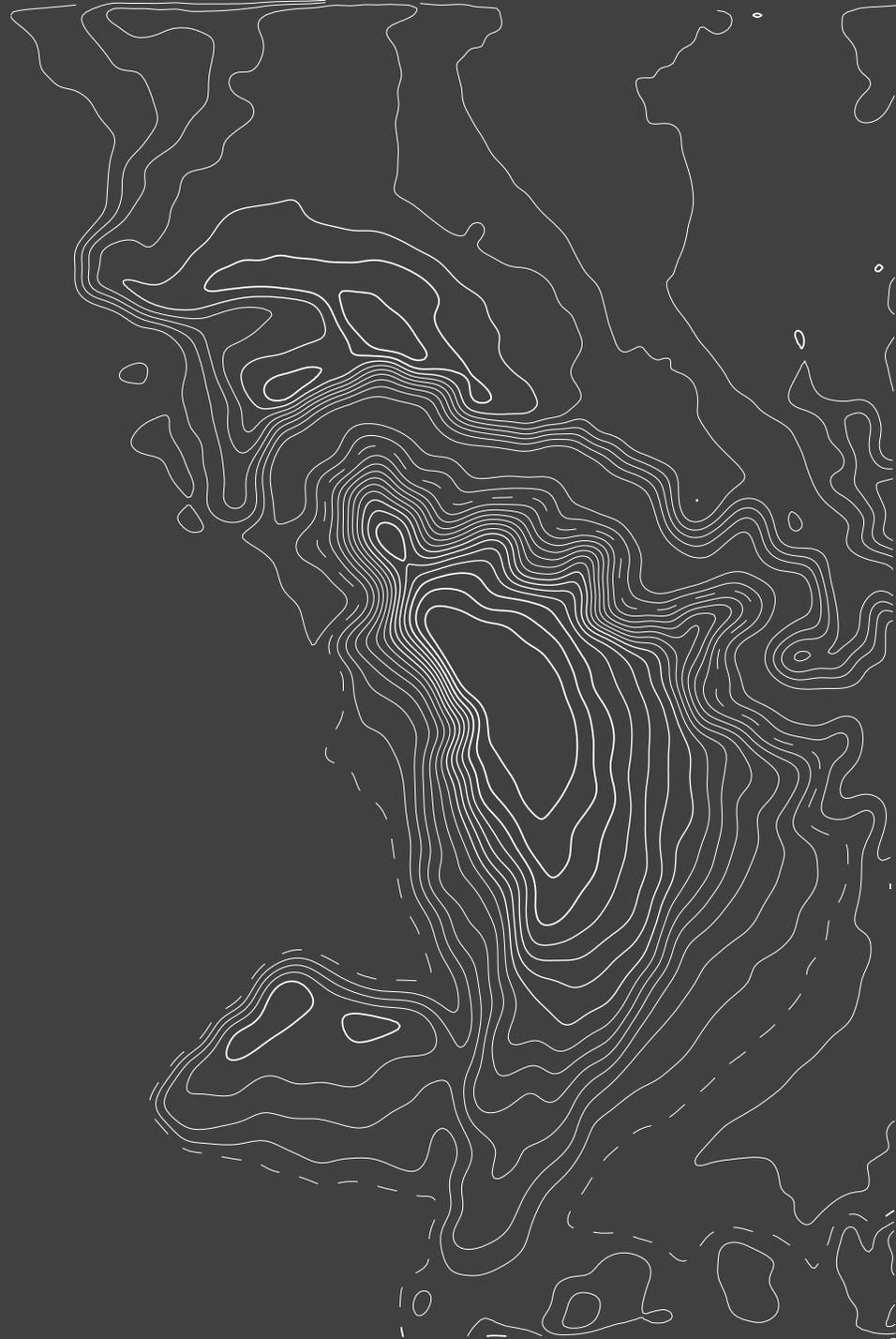
- Our technology has been operating in Los Angeles at TIRE since 2008 with an exemplary safety record – the site has not induced a single groundwater contamination or seismic event.





Vaulted's Operating Sites

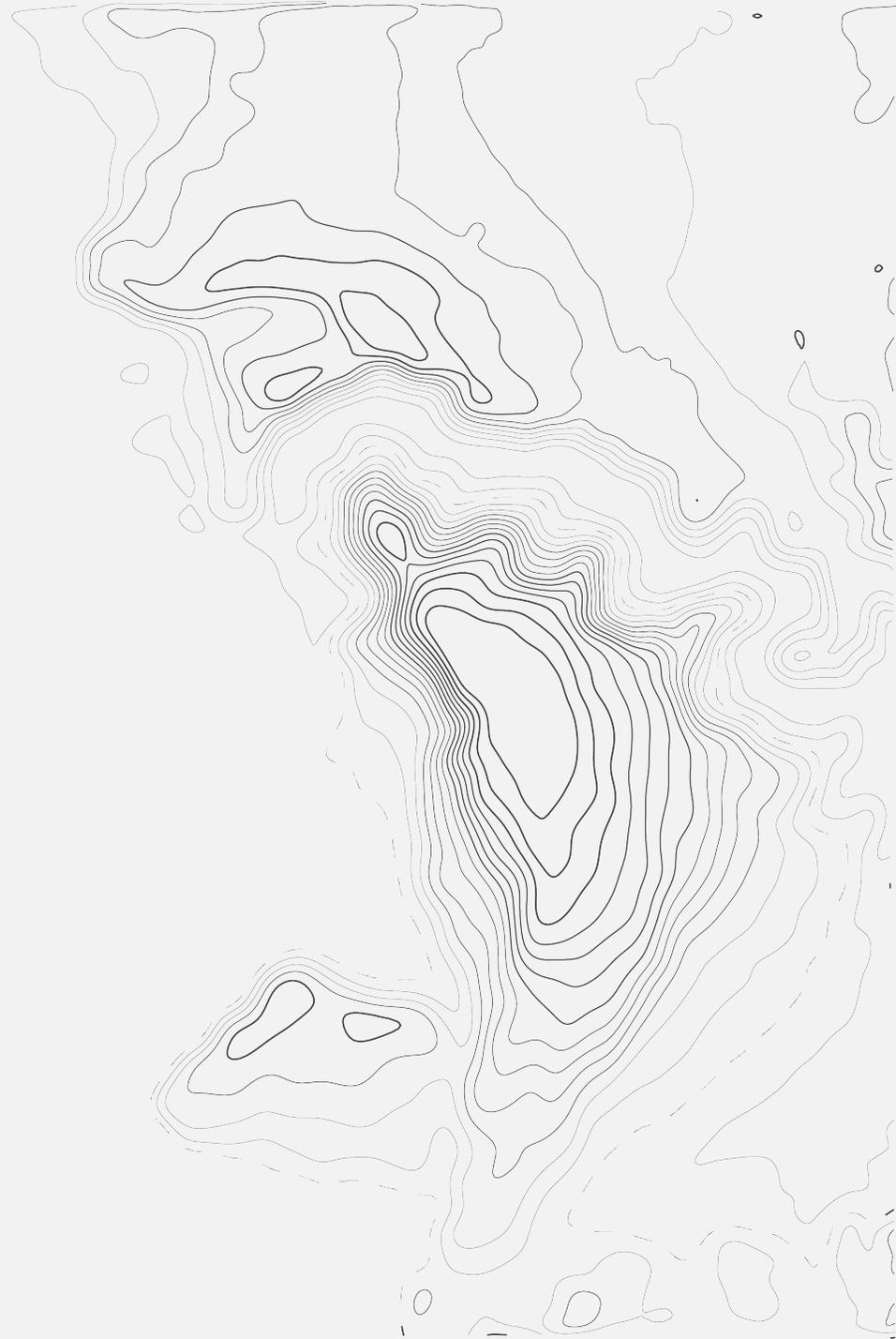
Great Plains & TIRE Facility





Great Plains

Hutchinson, Kansas





Safely cleaning up excess waste in Kansas



Community open house

Our history:

- Vaulted began operations in Hutchinson, Kansas, in 2023
- We recently held an open house for a site expansion to triple the facility's waste processing capacity in 2025
- The site currently accepts feedlot manure, mixed woody waste diverted from landfills, and municipal biosolids
- Our local relationships are strengthened by an open-door policy. We welcome community members to contact us with concerns or questions at any time



On-site injection well

Rigorous safety protocols enforced onsite:

- 24/7 real-time monitoring of our wells and no groundwater incidents in its lifetime
- Regular reports to state permitting officials on waste emplacement, cavern pressure, and groundwater testing
- PPE requirements across our operating team (and no lost-time incidents)



Investing in the local economy



\$1.8M to local vendors

Including local trucking companies, rentals, and office supplies



31 new full-time jobs

across multiple disciplines with extensive upskilling and career development: field operations, data analytics, office administration & more



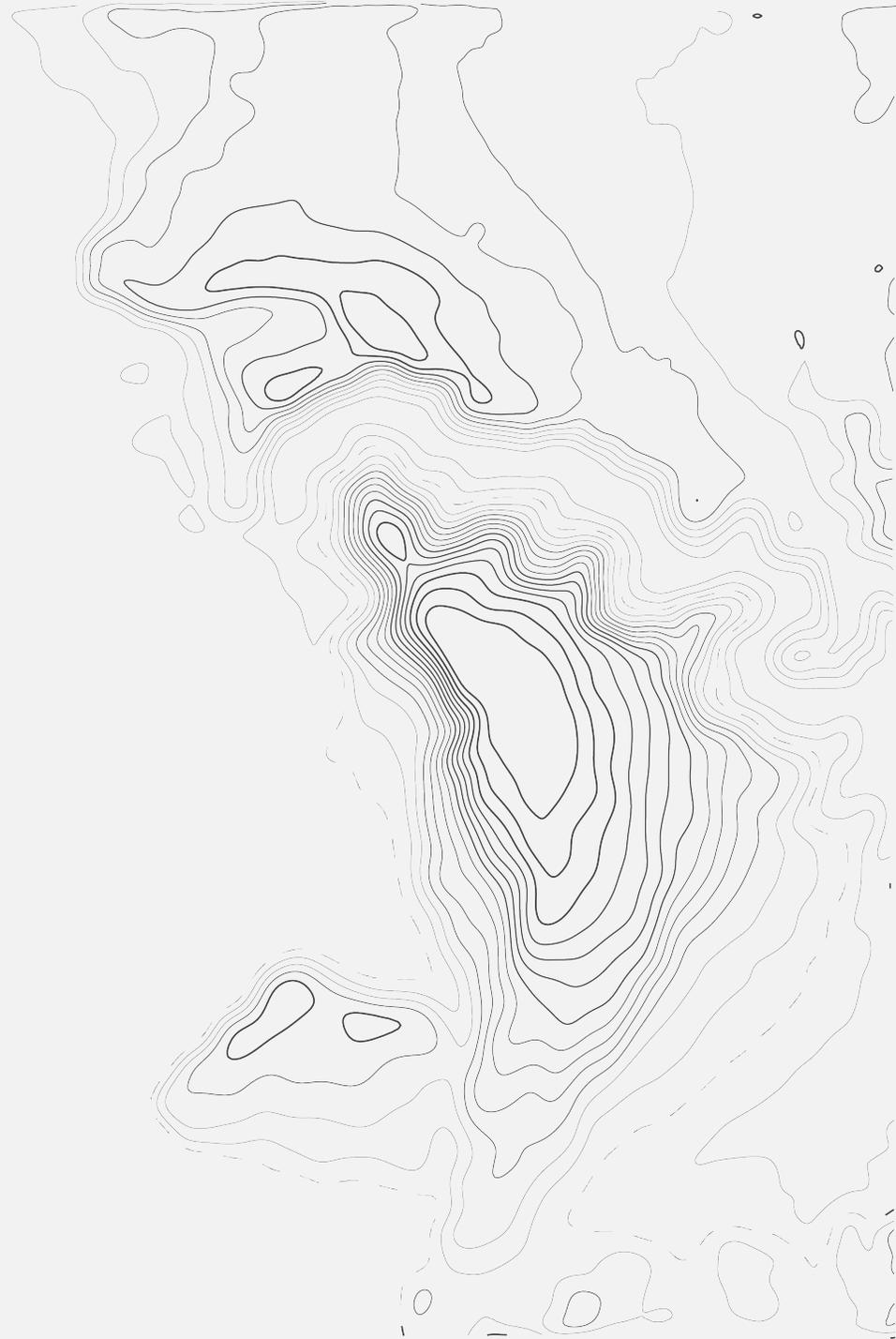
\$1.6M in wages

Competitive hourly rates and salaries, plus comprehensive employee benefits



TIRE

Los Angeles, CA





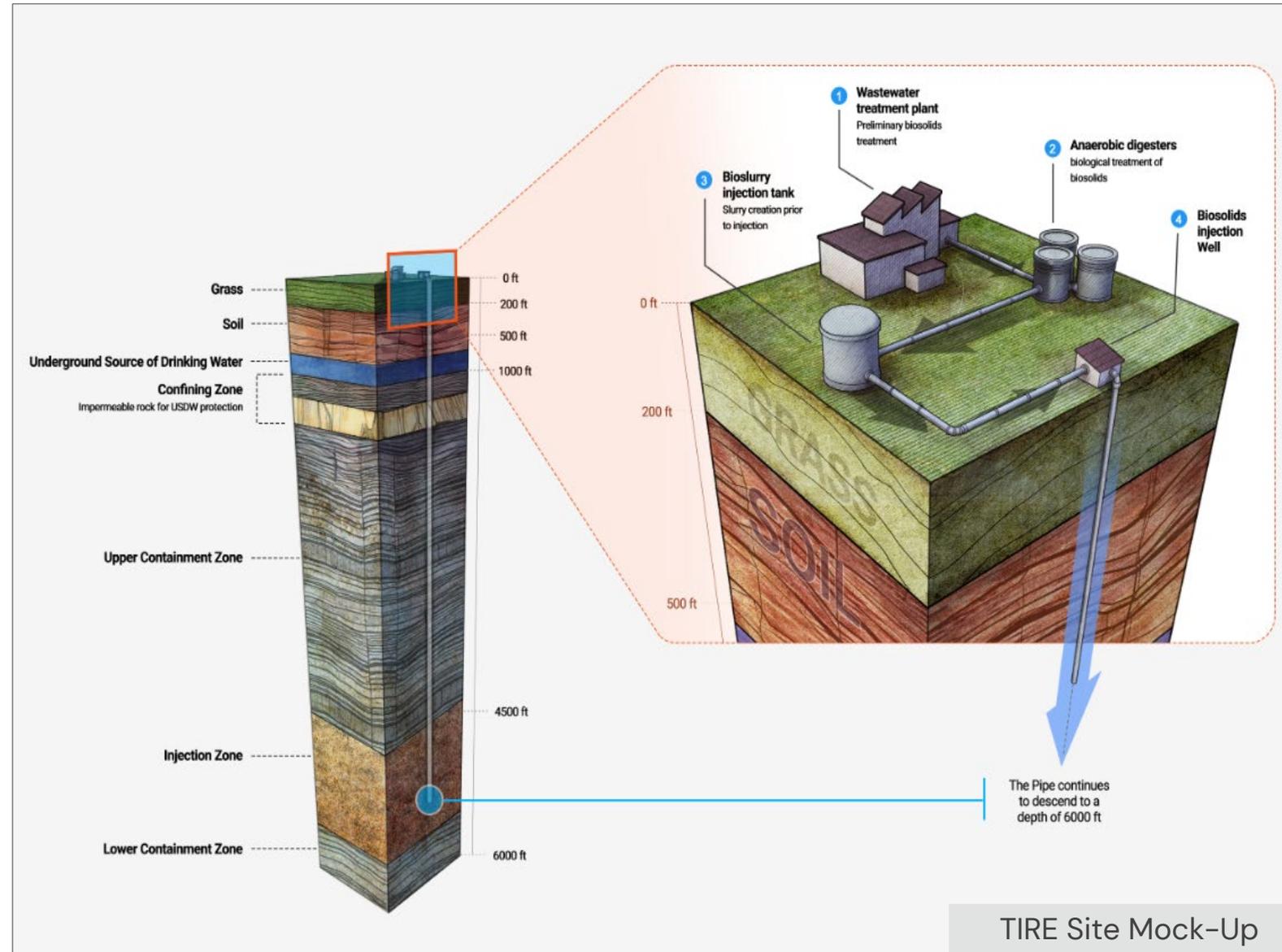
A scalable solution in challenging geology

The Terminal Island Site (TIRE) is operated by our partner, Advantek, in Los Angeles, California. Since 2008, **65,000 tons of biosolids are annually stored** that would otherwise contaminate the surrounding environment with PFAS

15+ years of safe operations storing 20% of the City of Los Angeles' biosolids deep underground

Safety First

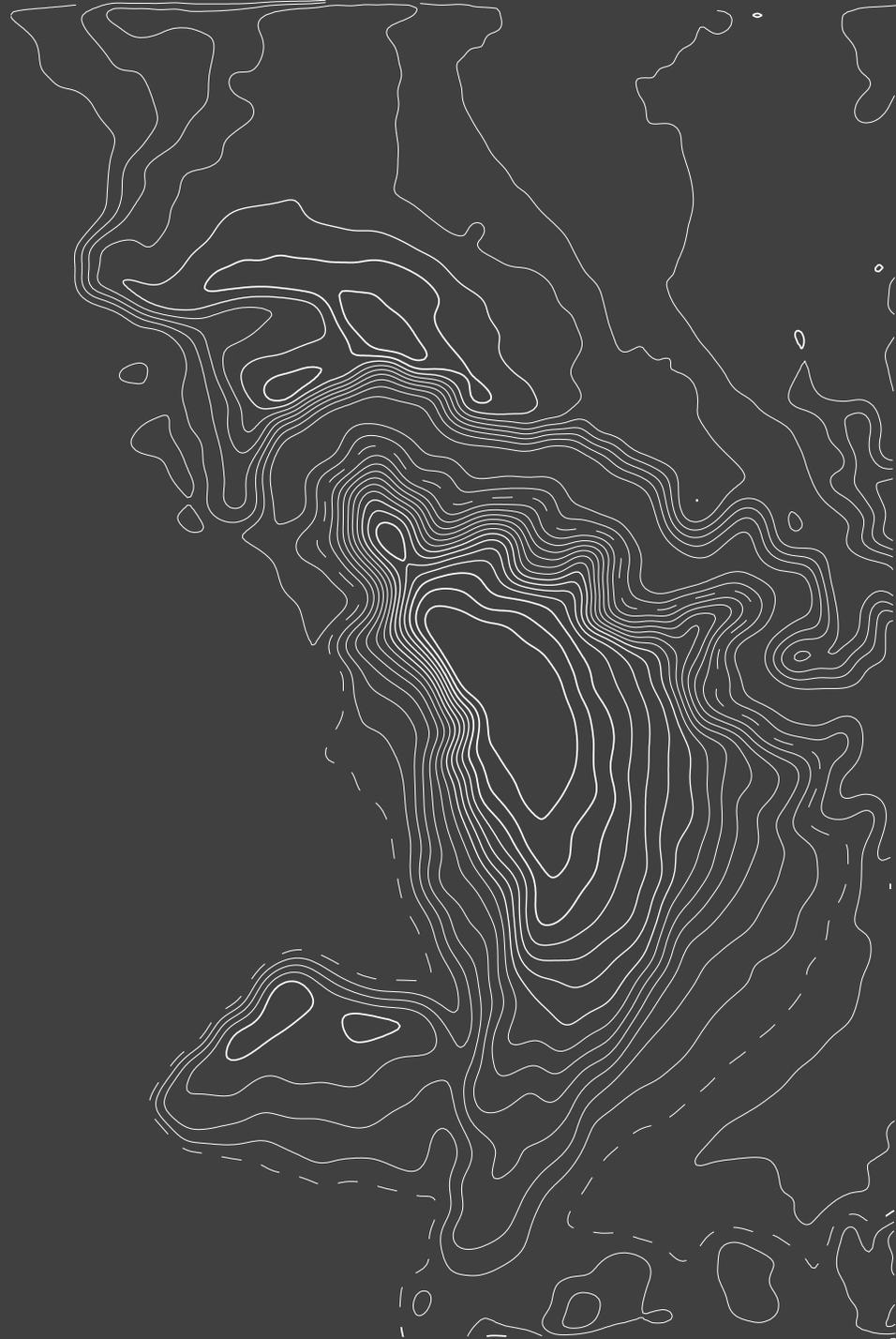
Real-time seismic monitoring conducted, and adjustments to injection rates and volumes as needed





Proposed Accomack County Site

Our Accomack County project





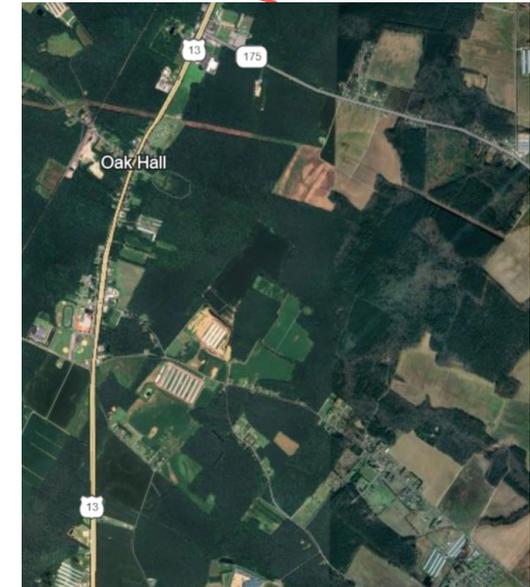
Site Overview: proposed Accomack County site

Overview

- **Site footprint:** 5 acres
- **Waste streams:** Poultry manure, poultry processing waste (DAF waste)
- **Waste Volume:** ~150,000 wet tons annually
- **Number of wells:** 2 wells, with the opportunity to drill several more
- **Duration:** 8-15 years

Why Accomack

- Subsurface geology in Accomack is ideal (deep saline aquifers separated from the USDW by thick confining rock layers)
- Abundant waste from local chicken farms and poultry processing facilities





Thick containment layers between USDW and potential injection formations

Quick facts:

- Waste at Bayberry Landing will be injected into the Waste Gate Formation
- Waste injection will take place in phases, starting in the deepest part of the Waste Gate

Safety:

- Site unaffected by Chesapeake Bay impact crater (30 miles south)
- The injection zone is more than 2,000 feet below the base of drinking water, reducing risk of impact to groundwater supplies
- The US Geologic Survey estimates a 0.2% annual probability (once in 2,500 years) for a seismic event more intense than minor ground shaking

Description	Depth (feet)	Gross thickness (feet)
USDW	0	2,500
Overburden Layers	2,500	2,722
Upper containment	5,222	83
Potential Inj. Formation	5,305	158
Upper and lower containment	5,462	58
Potential Inj. Formation	5,520	370
Lower containment	5,890	>40
Basement (bedrock)	6186+	-

Thousands of feet between injection zone and USDW

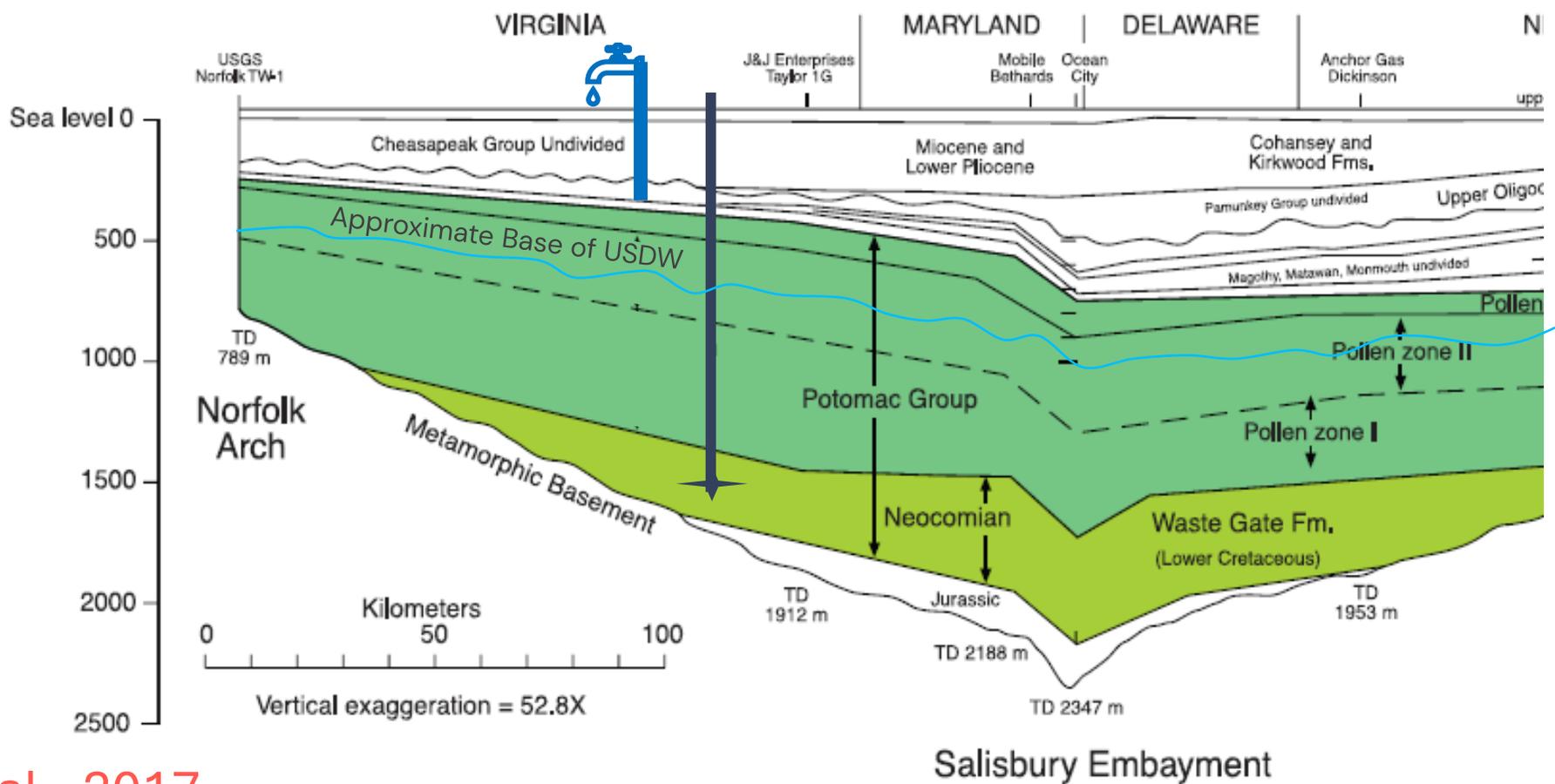


Typical water well depth: <300 feet

Proposed injection well depth: 5,000+ feet



Thousands of feet between injection zone and drinking water

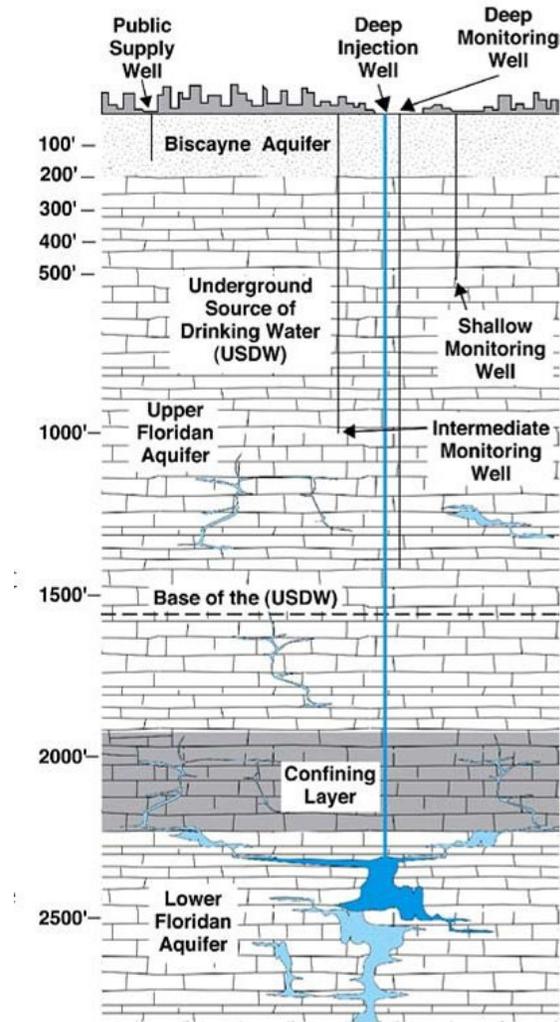


[Miller et al., 2017](#)

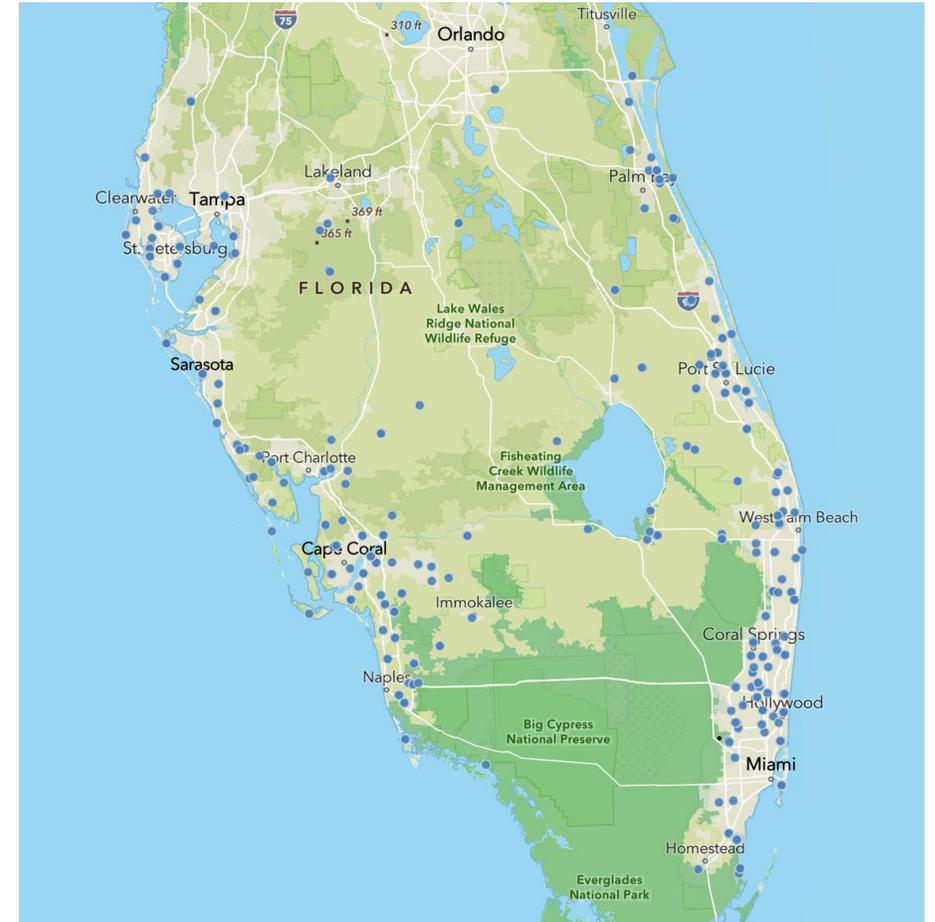
Safe application in other areas with sole source aquifers



Florida has more than 100 Class I injection wells

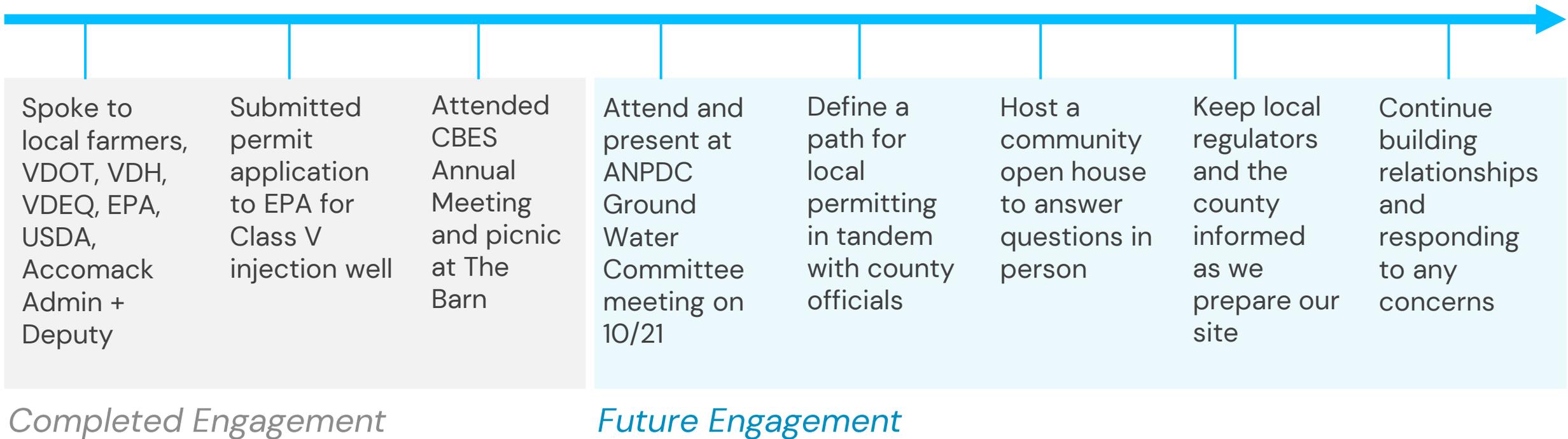


Hydrogeologic Cross Section in South Florida





Vaulted's engagement in Accomack

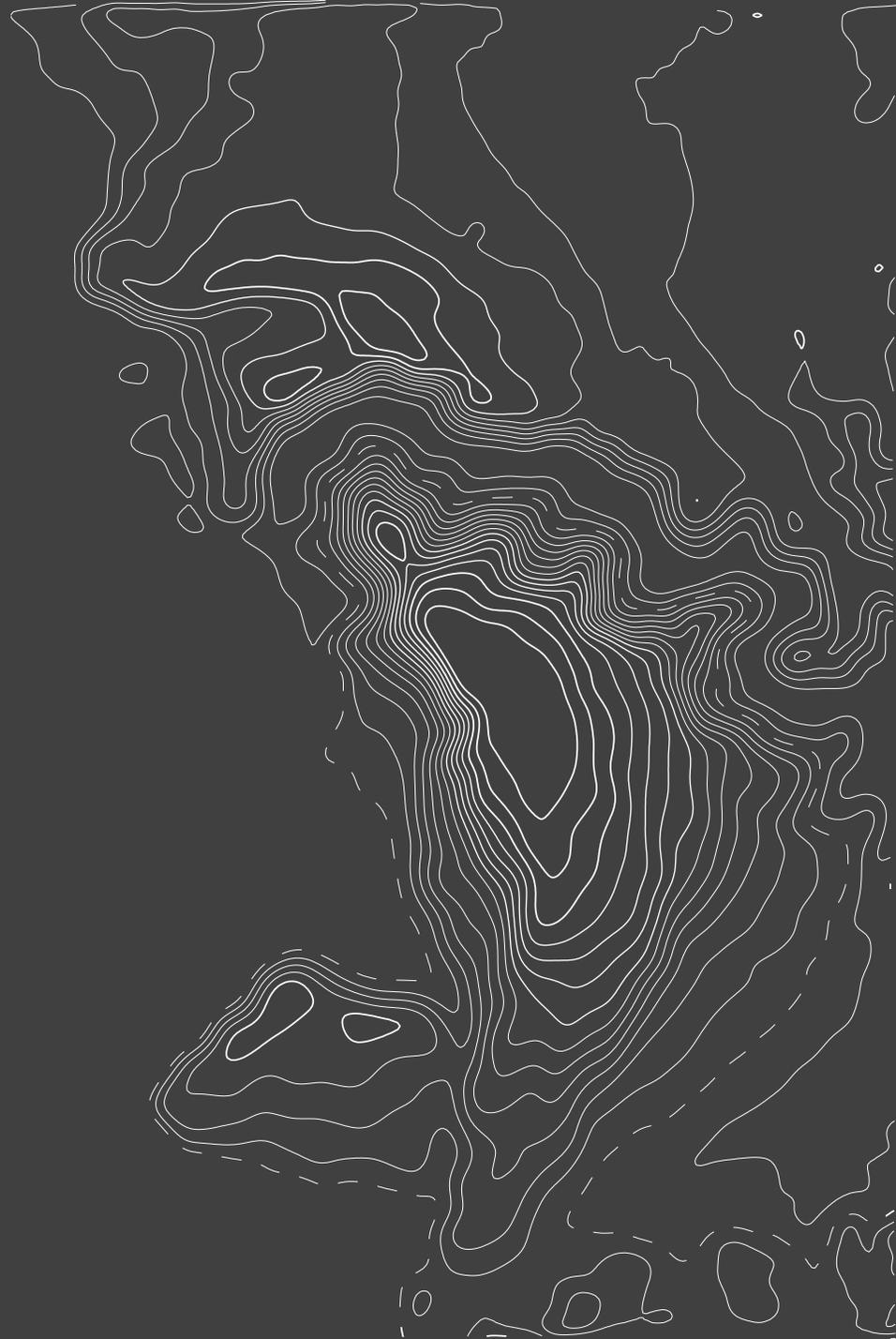


Vaulted is committed to answering your questions and learning more about what it means to be a good neighbor in Accomack



Local Benefits & FAQ

Information about local benefits and other questions

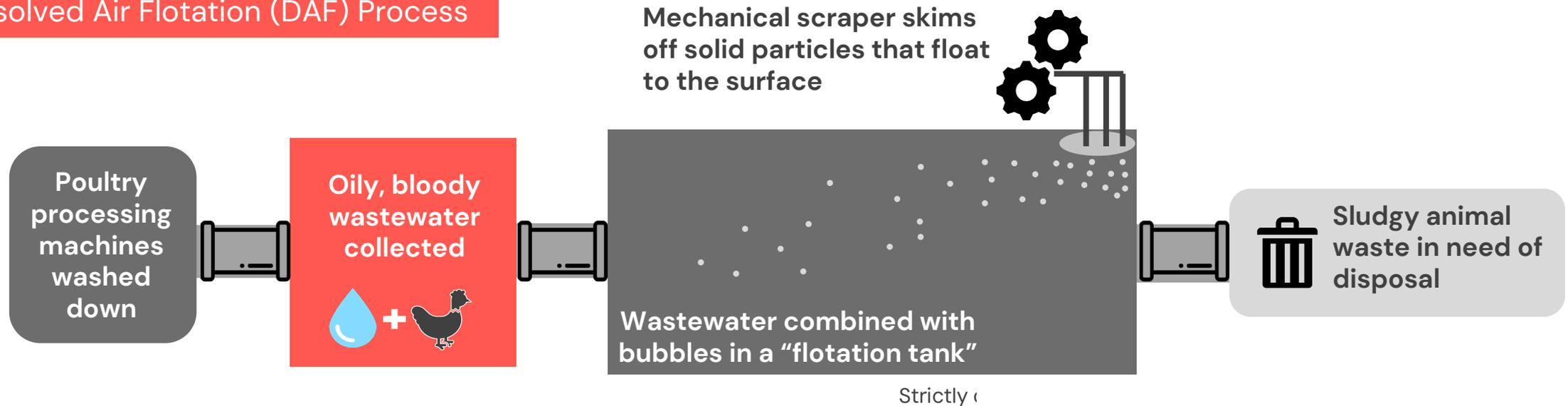


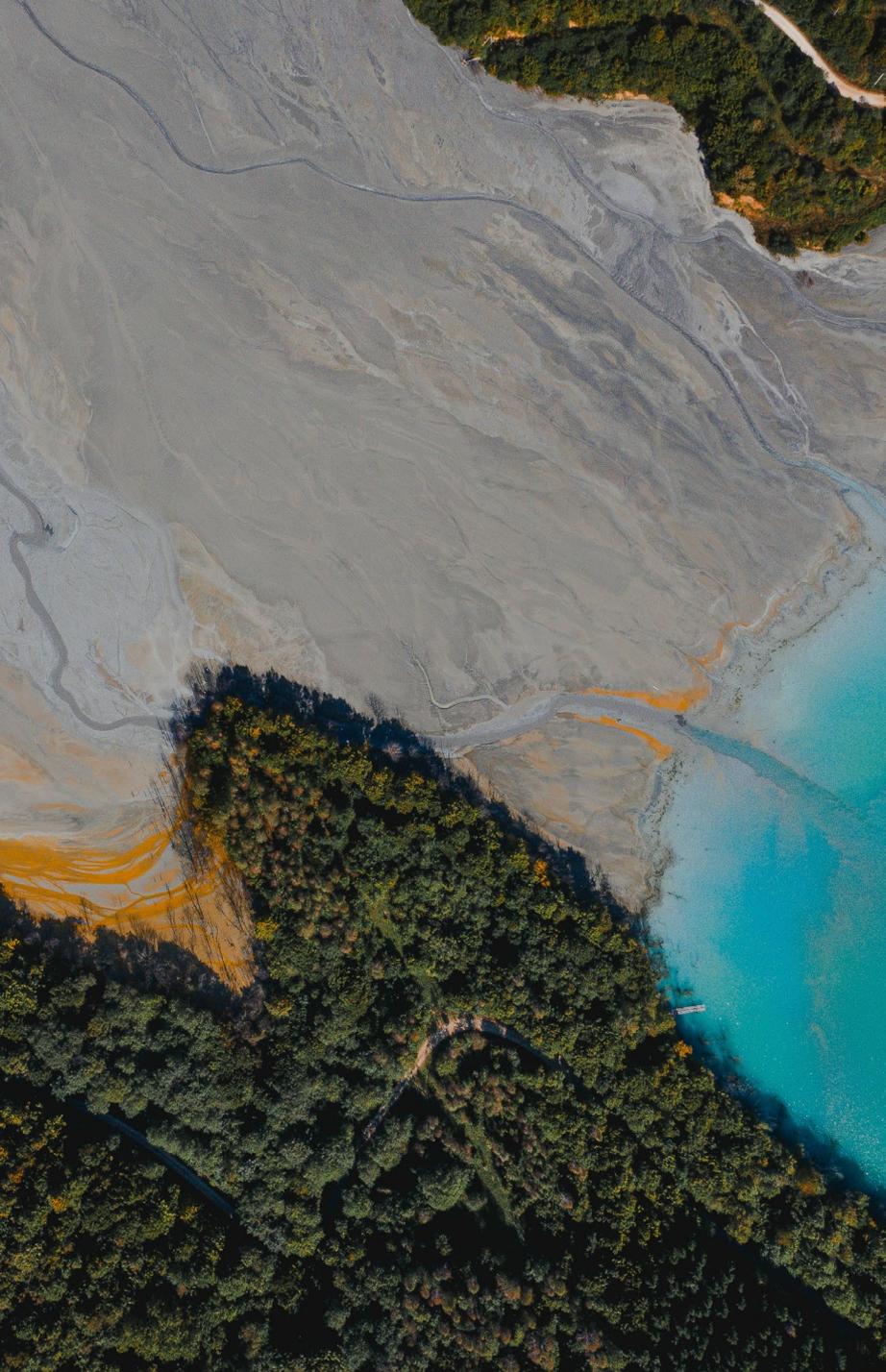


Vaulted provides a beneficial waste disposal solution for DAF waste

- Animal processing facilities rely on dissolved air flotation (DAF) systems to treat their wastewater
- DAF systems remove fats, oils, grease and suspended solids, creating sludgy waste
- Processing facilities face challenges disposing of this waste, which is typically either land applied or held in storage tanks
- Improper disposal can lead to serious environmental impacts like nutrient runoff
- **Vaulted's technology offers a cost effective, environmentally conscious solution**

Dissolved Air Flotation (DAF) Process





Tackling nutrient pollution in your watershed



U.S. rivers and streams are polluted, often due to **nutrients from excess manure entering ground and surface water**

- **Manure is a great fertilizer**, but matching supply & demand is challenging, and **land application often exceeds crop uptake and soil retention**
- Excess manure that is not properly absorbed by crops or soil **seeps into groundwater and surface waters**, increasing nitrogen and phosphorous levels and contributes to:
 - 1) **drinking water contamination**, 2) **ecosystem disruptions**, 3) **higher water treatment costs**

Using its slurry injection technology, **Vaulted can dispose of excess manure** in geographic areas where it lacks a productive use due to less local demand or application capacity

- We lock it away deep underground, helping to **reduce nutrient pollution** and its associated risks



Preventing the spread of avian disease

Following experts' leads:

- Vaulted follows protocols regarding PPE, foot covering, signage, and visitor policies set by local farmers.
- We are in communication with USDA and VDH, and we'll continue to work with local officials, industry groups, and other experts to follow best practices and plan emergency protocol.

Vaulted's avian flu safety protocols:

- All entrants and materials will be logged and tracked using the site manifest documents, essentially trackers for waste origin, transportation, chain of custody, and other personnel involved.
- In the case of an outbreak, we will use manifest documents to track disease spread.



Checklist for Managing Poultry Manure and Litter

When you raise or handle poultry, you'll need to deal with manure. Depending on how you raise your birds, you may also need to dispose of used poultry litter. Managing these materials properly is a key part of biosecurity. Avian influenza virus can survive in manure and litter for long periods of time, and these items can carry other contaminants, too.

So, how do you manage poultry manure and litter safely? You can take some simple steps to protect your flock every day and plan ahead to guard them from disease spread during an outbreak.

Check the list on the back for tips to help keep your flocks healthy.



FAQs



Will this create odors in my community?

No — in fact, we reduce odors. Waste is injected immediately, preventing storage and odor buildup, and we divert waste from landfills or fields where it would otherwise smell in communities.

How do you decide where wells can safely go?

We always look for the right geology when we assess a potential site, using proprietary tools for geomechanical modeling, fracture simulations, and formation capacity modeling. Our process ensures injection zones are deep below drinking water sources, maximizing containment and safety.

How do you know Vaulted facilities won't contaminate groundwater?

We keep groundwater safe through robust well design, real-time monitoring, and strict regulatory reporting. Waste is injected deep underground, far below drinking water, sealed by impermeable rock in low-risk sites for lasting safety.

Will Vaulted increase traffic in my community?

Early in its site development, Vaulted conducts traffic studies to assess community impact of our operations, collaborating with state and local officials to minimize congestion. Sites co-located with waste partners may see no added traffic.

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FAQs



What happens to the waste over time?

Vaulted carefully evaluates all injection sites to ensure that they have the appropriate geology to keep waste contained and preserved for 10,000 years or more. This means that waste is functionally preserved underground.

What are the risks of compiling waste from different sources?

Oftentimes, chicken litter is piled up in open-air buildings before being applied to the land, mixing litter from different sources and risking runoff throughout the process. In comparison, Vaulted transports the litter and directly unloads into a mixer to “slurrify” it for immediate injection. This means the waste is permanently disposed of on site, reducing risks of runoff or disease spread.

How many facilities will waste be sourced from?

For DAF waste, we plan to source our waste from nearby poultry processing facilities. Chicken litter may come from up to 100 out of the 1,200 poultry farms across the Delmarva peninsula.

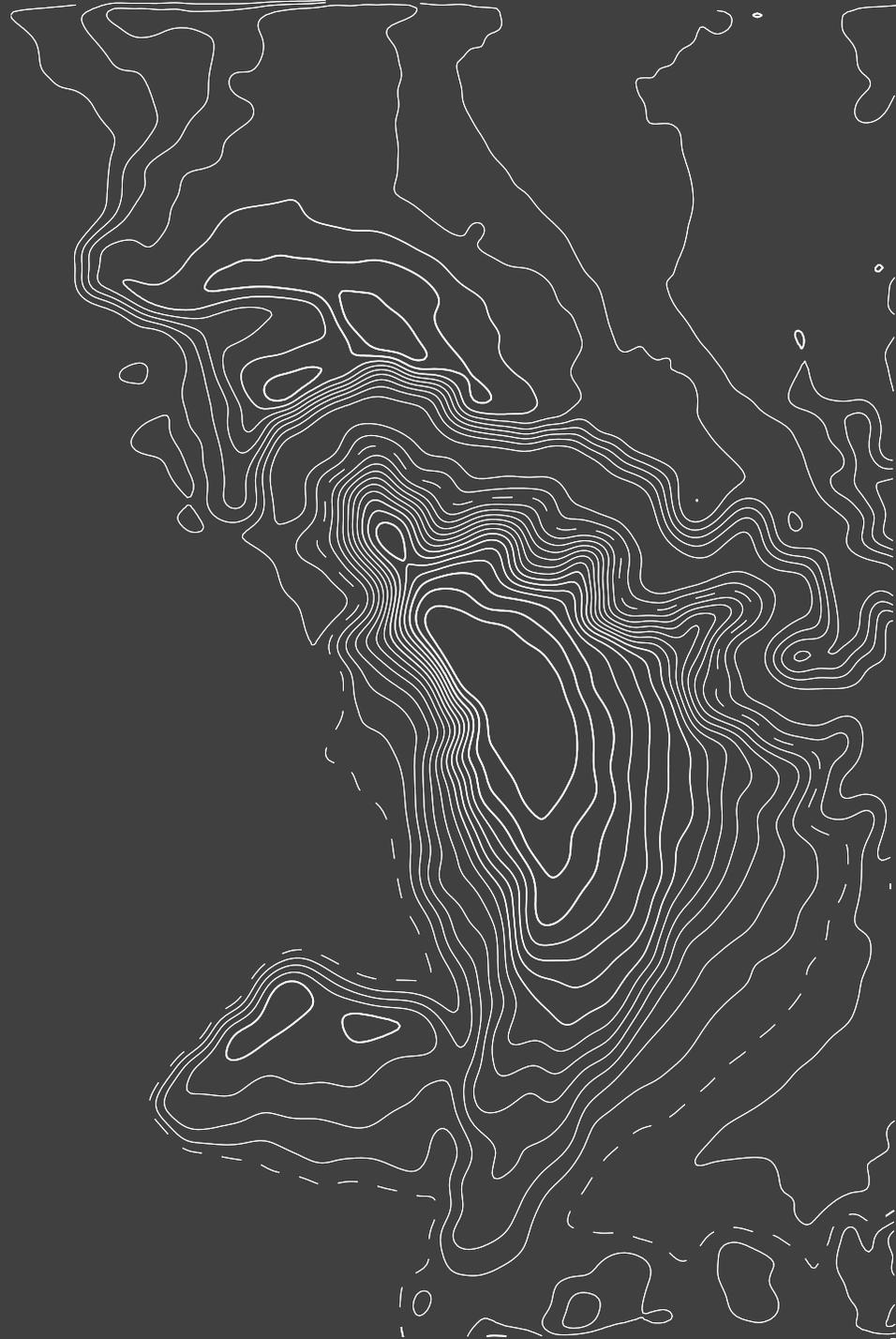
Isn't manure a great fertilizer? Why are you putting it underground?

Manure is valuable fertilizer, but only when it's available at the right time and place for farmers to use. Excess manure can sit in piles at feedlots and farms, degrading in quality and posing environmental risk. Vaulted handles only surplus, ensuring we're not driving up prices or displacing productive fertilizer use.

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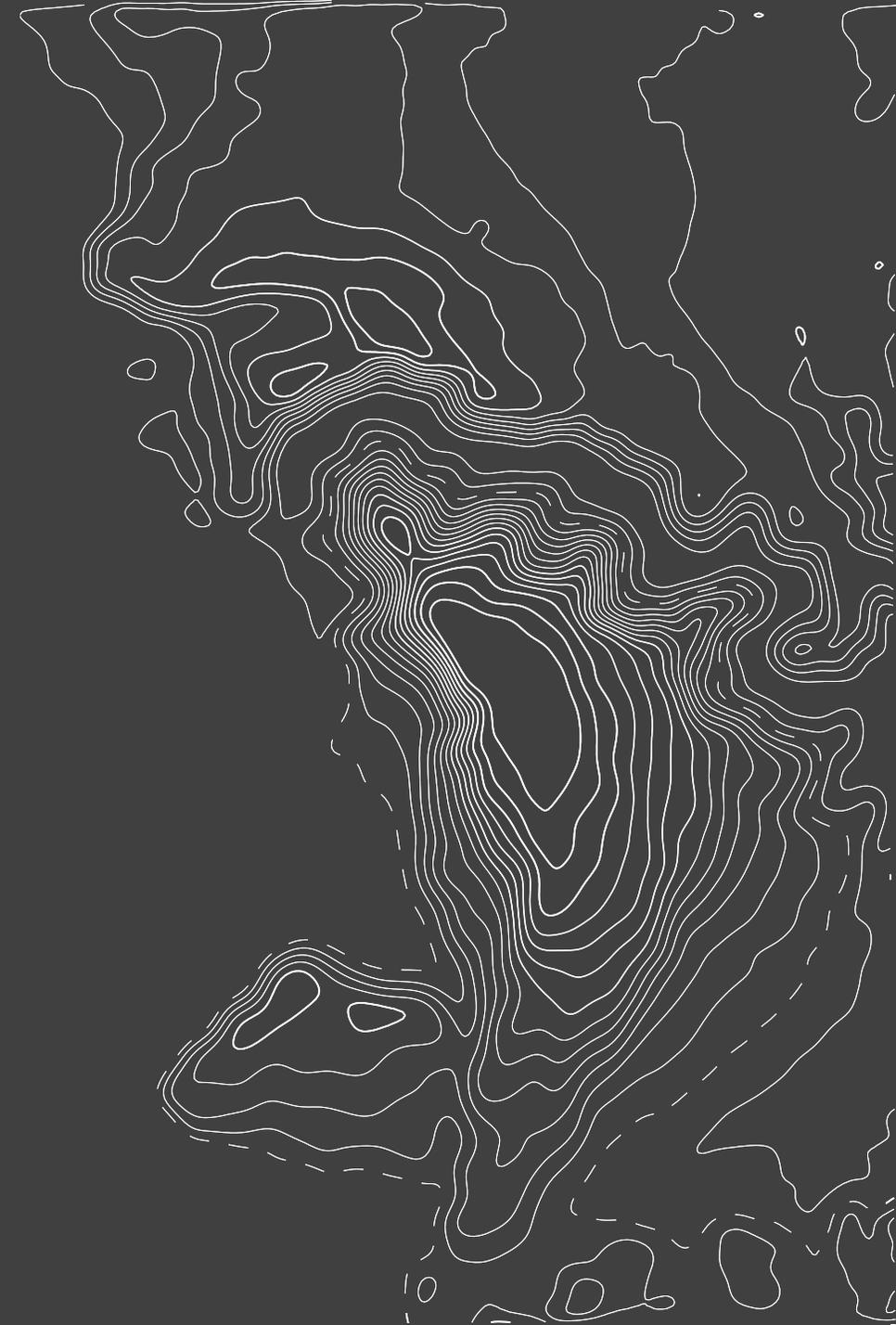


Thank you





Appendix





Underground Source of Drinking Water base is about 2,250 ft

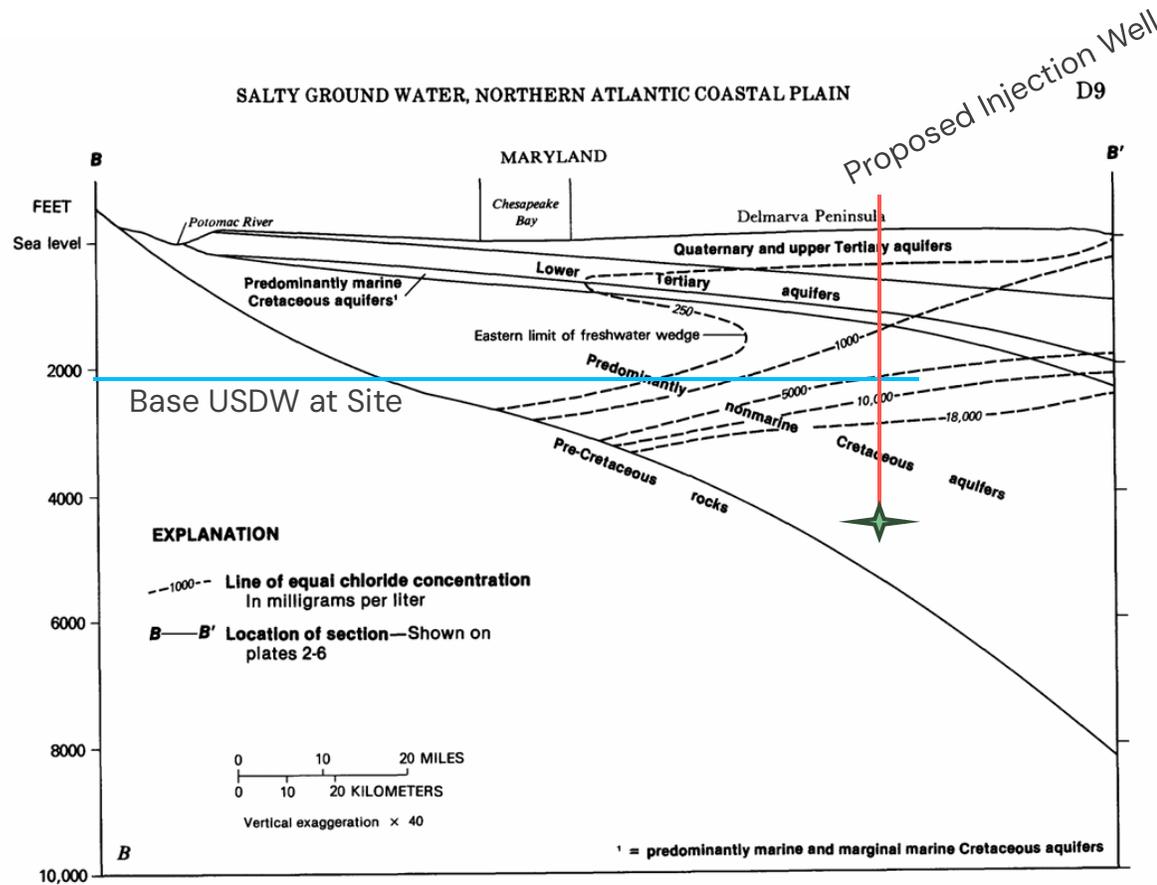


FIGURE 3B.—Hydrogeologic section showing chloride concentrations in Maryland.

The 10,000 mg/L chloride concentration approximates the chloride concentration of salty ground water that contains 10,000 mg/L DS. Ground water containing more than 10,000 mg/L DS is not a safe source of drinking water (U.S. Congress, 1980, p. 42502) and is unusable for most purposes. "Federal regulations permit the injection of waste water in strata containing more than 10,000 mg/L of dissolved solids, provided water of better quality is not degraded by the injection" (Davis, 1984, p. 9). Hence, the map delineating the depth to water containing 5,000 mg/L chloride (pl. 4) can be used in evaluations of potential sites for waste-water injection.

- Site is about 3 miles from the nearest well, which was drilled to basement rock and gives us log data to inform geology analysis
- Using nearby well log data, Vaulted estimated the base of the USDW
- The estimated depth of 2,250 ft is ~250 ft deeper than the regional USDW map prepared by [Meisler, 1989](#), indicating a more conservative estimate.



Multiple tests to assess formation properties and ensure long-term integrity

Test	Purpose	Category
Open Hole Well Logs (SP, Caliper, Resistivity, GR, Bulk Density, Porosity, Sonic)	Determine formation properties	Formation
Mud Log	Confirm lithology	Formation
Cores (sidewall)	Assess petrophysical properties	Formation
Cement Bond Log (CBL)	Verify cement quality and isolation	Formation
Mechanical Integrity Test (MIT)	Confirm wellbore integrity (leak-free)	Wellbore
Step Rate Test (SRT)	Determine safe injection pressure	Formation
Injectivity Test	Confirm formation can accept fluids	Formation
Baseline Pressure Monitoring	Track long-term pressure buildup	Formation
Pressure transient analysis	Track the formation behavior with respect to injection activity	Formation
pH Testing	Assess acidic/basic nature of waste	Waste
Density Measurement	Characterize fluid density	Waste
Hazardous/Nonhazardous Classification	Ensure compliance with non-hazardous Class V permit	Waste
Viscosity Testing	Understand fluid flow into formation	Waste