

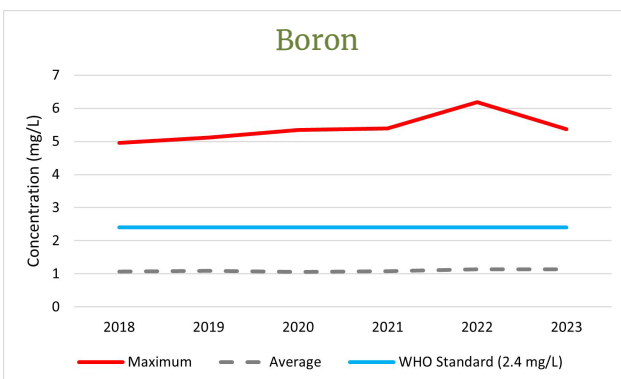
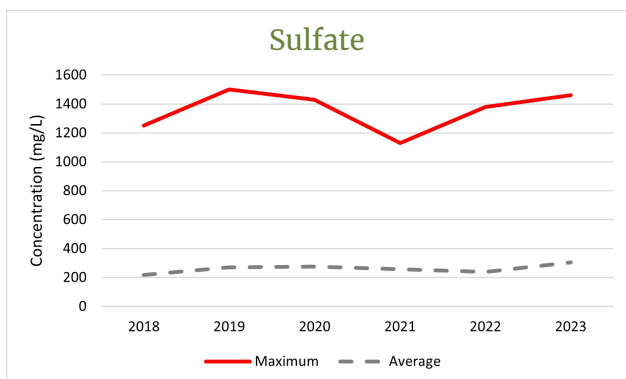
# Walter Scott, Jr. Energy Center



**Walter Scott, Jr. Energy Center (WSJEC)** is owned by MidAmerican Energy Company (MEC) and currently operates 2 coal-fired units (690-megawatts and 790-megawatts). It is located on the Eastern bank of the Missouri River, adjacent to the cities of Council Bluffs, Iowa and Omaha, Nebraska. WSJEC consists of an onsite monofill and 2 coal ash ponds (North and South). The North pond covers an area of 156 acres with an approximate depth of 40 feet, while the South pond covers an area of 133 acres with an approximate depth of 20 feet. Until 2020, the ponds were evaluated separately. From 2020 onwards, the contaminants between the ponds were evaluated in the same reports. The North coal ash pond was no longer accepting waste when the Federal CCR Rule was enacted in 2015. The South coal ash pond stopped accepting waste in 2018, so both ponds are currently inactive, and their waste will be consolidated and closed in-place in the North pond. As of right now, the closure deadline for the ponds is the end of 2025. WSJEC has been permitted a disposal area by IDNR of 187.6 acres, of which 88 acres are currently occupied by the onsite monofill. The height of the monofill is approximately 35–45 feet tall.

## Groundwater Monitoring for the North and South Coal Ash Ponds

- MEC monitors its ash pond system with 39 total monitoring wells.
- In the most recent report published in 2023, the 2 ponds had statistically significant increases in several contaminants, including:
  - Boron, Calcium, Chloride, Fluoride, pH, Sulfate, TDS, Cadmium, Lead, and Molybdenum**
- Of these, **Boron** and **Sulfate** were found to have these SSIs in more than 2 of their monitoring wells, with their maximum recorded concentration in the last 6 years all being at the same well.



## Clean Air Task Force: Toll from Coal

- The Clean Air Task Force, a nonprofit research and advocacy organization, issued a 2019 study that quantified the deaths and other human health damages attributed to air pollution from coal-fired power plants.<sup>1</sup>
- Fine particle pollution from Coal Ash can invade the lungs, bloodstream, and can be transported to vital organs.

Type of Emissions	Annual Tons Polluted
SO <sub>2</sub>	8,895
NO <sub>x</sub>	5,592
CO <sub>2</sub>	8,785,669

At Risk Population within 12 miles	
Population	445,115
Children	129,267
Schools	509
Nursing homes	30
Hospitals	19
Places of worship	116
People of color vs state average	30% vs. 12%

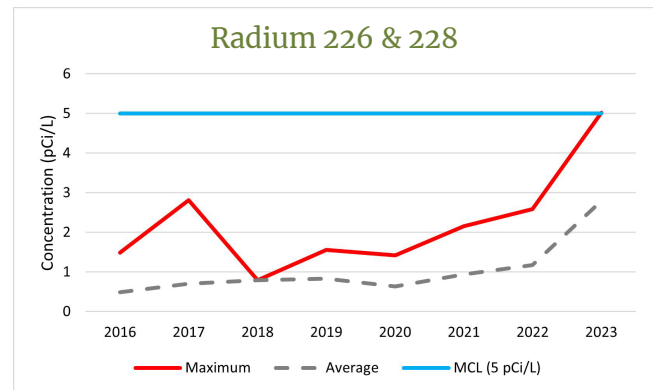
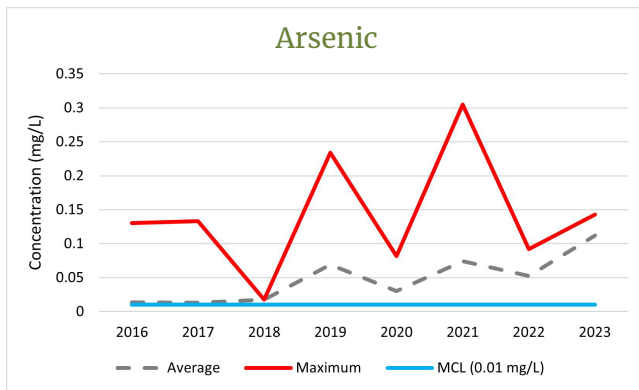
<sup>1</sup> "Find Your Risk from Power Plant Pollution," Clean Air Task Force

# Walter Scott, Jr. Energy Center



## Groundwater Monitoring at the Onsite Monofill Wells

- MEC monitors its monofill with 29 total monitoring wells.
- In the most recent reporting period, where data was collected in 2023, there were elevated levels of **Arsenic** and **Radium**.
- The maximum concentration detected among the monitoring well network surpassed the EPA's Maximum Contaminant Level (MCL) for both contaminants in 2023.



## Statistics From the Monofill

Maximum concentration of Arsenic compared to the EPA's Maximum Contamination Level (MCL)	
Year	Multiples of the MCL (0.01 mg/L)
2016	13
2017	13.3
2018	1.74
2019	23.4
2020	8.17
2021	30.5
2022	9.18
2023	14.3

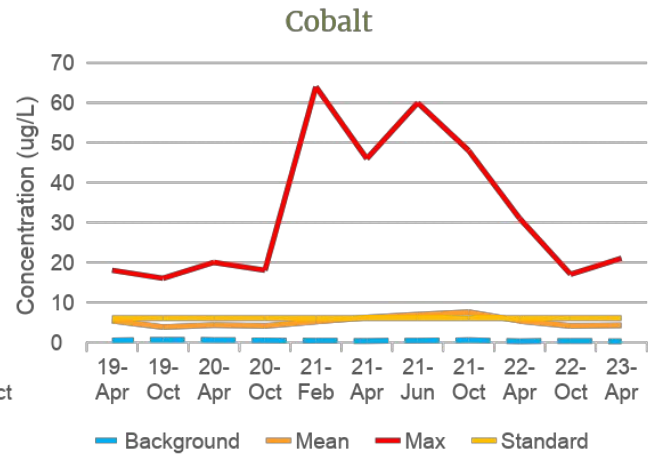
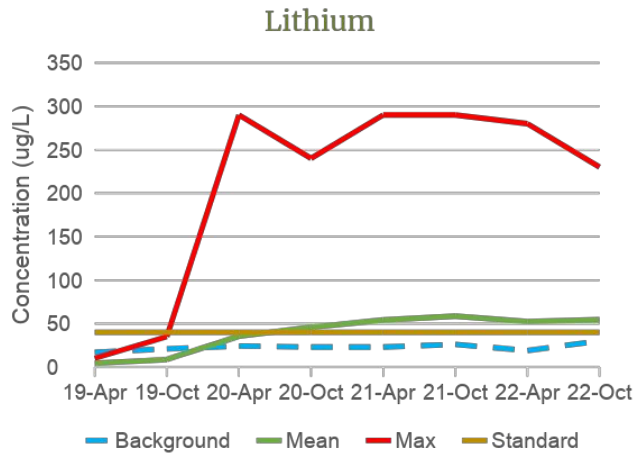
- According to the World Health Organization, **Arsenic** in drinking water is carcinogenic to humans.<sup>1</sup>
- According to the EPA, "If [**Radium** is] inhaled as dust or ingested as a contaminant, risk is increased for several diseases, including lymphoma, bone cancer, and hematopoietic (blood-formation) diseases, such as leukemia and aplastic anemia."<sup>2</sup>

<sup>1</sup> [Arsenic \(who.int\)](https://www.who.int)   <sup>2</sup> [FACTSHEET: EPA FACTS ABOUT RADIUM - FINAL](#)

# Ottumwa Generating Station

**Ottumwa Generating Station (OGS)** is owned 48% by Interstate Power and Light (a subsidiary of Alliant) and 52% by MidAmerican Energy (owned by Berkshire Hathaway). OGS operates one coal fired power generator. There are 2 ash ponds at the facility, the Zero Liquid Discharge Pond (36 acres) and the OGS Ash Pond (72 acres). Both are closed due to groundwater contamination. The Zero Liquid Discharge Pond completed closure in June of 2023 by removing all CCR, and the OGS Ash Pond is closed in place, no longer receiving new deposits of CCR. Ottumwa also has an off-site ash landfill.

## Groundwater Contamination at Ottumwa Ash Pond



- Approximately **230,000** lowans rely on private wells for their water usage. Contamination from coal ash ponds can put these water sources at risk.
- Groundwater monitoring shows maximum lithium levels **6 to 7 times** the Federal CCR Rule standard consistently since 2020.
- **Lithium** can cause negative gastrointestinal and neurological effects. Long term exposure may result in thyroid, kidney, and heart issues.
- Maximum cobalt concentrations have dramatically exceeded both background levels and water quality standards, with maximum concentrations exceeding federal CCR rule standards by **1100%** in 2021 (Note: data for MW-307, the well producing the highest spikes, is unavailable for 22-Oct and 23-Apr).
- Consistent exposure to high levels of cobalt has been linked to heart and thyroid problems. Animal studies also found high level exposure to cause blood, liver damage, kidney, and testes damage, behavioral effects, and birth defects.

## Toll from Coal at Ottumwa

Type of Impact	Annual Incidence (per year)
Deaths	15
Heart attacks	6
Asthma attacks	151
Hospital admissions	2
Acute bronchitis	8
Asthma ER visits	3

- The Clean Air Task Force issued a 2019 study that quantified the deaths and other human health damages attributed to air pollution from coal-fired power plants.
- Fine particle pollution from Coal Ash can invade the lungs, bloodstream, and can be transported to vital organs.

# Ottumwa Generating Station

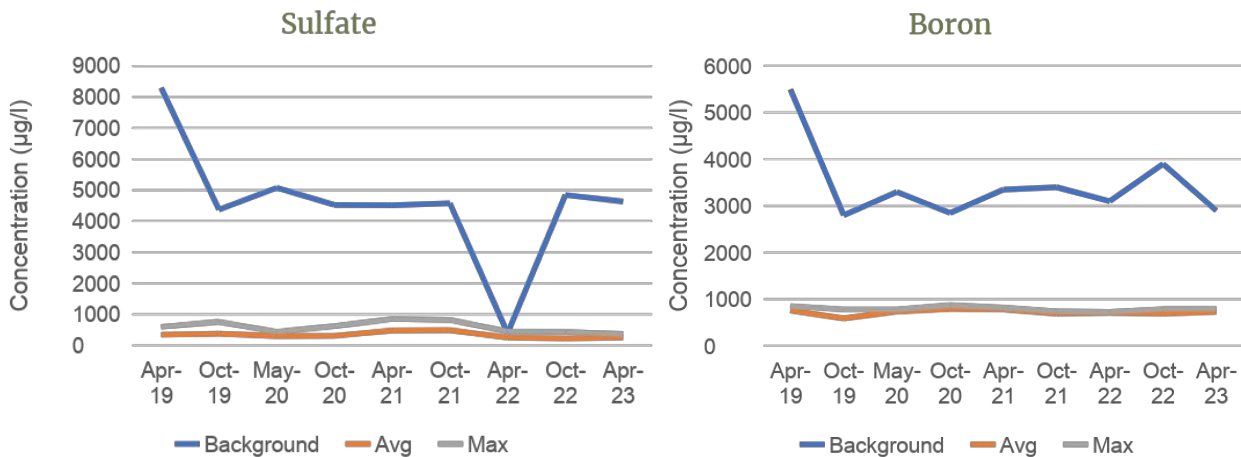


## Background Well Problems

- Ottumwa has only one background well, located extremely close to the facility, raising questions as to whether it captures groundwater uncontaminated by Ottumwa's operations.
- The placement of the background well at Ottumwa is potentially problematic as evidenced by levels of key CCR indicators such as boron, selenium and lithium in higher concentrations at the background well than at many upgradient wells.

## Groundwater Contamination at Ottumwa Ash Landfill

Ottumwa also operates an off-site coal ash landfill. The landfill is located approximately 5.5 miles east of the Ottumwa Generating Station. The landfill is active and is receiving ash in two phases. The existing cell is receiving ash and an additional cell is available for expansion. The total size for both phases is approximately 24 acres.

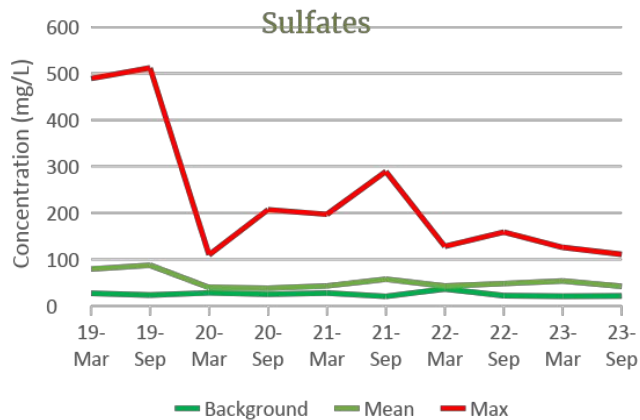


- The two background monitoring wells at the Ottumwa Ash Landfill show extremely high levels of boron and sulfate, both indicators of coal ash. Despite these abnormally high concentrations, Ottumwa still considers these wells to be background wells.
- These high background concentrations mean that the three downgradient wells, despite having high concentrations of boron and sulfate are not likely to show increases above background. Thus, the landfill remains in detection monitoring for a few contaminants, rather than moving to assessment monitoring which requires monitoring for a long list of dangerous contaminants such as arsenic and lithium.

# Louisa Generating Station

The **Louisa Generating Station** is owned and operated by MidAmerican Energy, which in turn is owned by Berkshire Hathaway. The facility is located in Louisa County on the western banks of the Mississippi River, just south of the Quad Cities. Louisa has two coal ash landfills and one ash pond: East Monofill (approximately 30 acres), West Monofill (closed with ash in place, approximately 33 acres), and Bottom Ash Impoundment (closed with ash in place, approximately 25 acres). The East Monofill is lined, whereas the West Monofill and Bottom Ash Impoundment are unlined. The East Monofill has three active cells and 5 more cells available for future use.

## Groundwater Contamination at Louisa



- The monitoring network for the three ash disposal units at Louisa includes 22 wells, 6 of which are background.
- A number of monitoring wells show statistically significant increases over background levels or high levels of coal ash indicators such as boron and sulfate. However, the contaminant concentrations are below applicable standards with the exception of radium as noted below.
- Of note, monitoring data at Louisa consistently shows maximum sulfate concentrations well above those at background wells.
- Louisa has seen very high levels in Radium in recent years. The standard for Radium is 5.0 pCi/L. Long term exposure to radium in drinking water has been linked with an increased incidence of cancer. The two highest radium spikes were at the monitoring wells at the Bottom Ash Impoundment.

### Radium (pCi/L)

	Sept 2021	Mar 2022	Sept 2022	Mar 2023	Sept 2023
<b>Background</b>	.286	.294	.800	.222	.437
<b>Maximum</b>	34.6	16.7	1.33	.656	.944

## Toll from Coal

- Louisa Generating Station is situated near the Mark Twain National Wildlife Refuge, a common point for migratory waterfowl species on the Mississippi River Flyway. The Refuge is also home to a variety of other native wildlife such as foxes, deer, beavers, and number of reptile and amphibious species.
- Louisa is in close proximity to public water supply wells and commercial wells, a concerning vulnerability.
- Louisa County is considered to be a major flood risk, which enhances the risk that coal ash could contaminate rivers and groundwater nearby. The Mississippi River is a source of drinking water for many communities.

Type of Impact	Annual Incidence (per year)
Deaths	40
Heart attacks	17
Asthma attacks	420
Hospital admissions	4
Acute bronchitis	22
Asthma ER visits	8

# George Neal North Energy Center

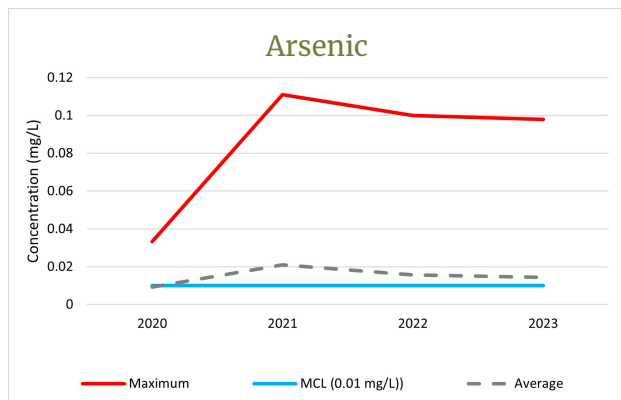


**George Neal North Energy Center (GNNEC)** is owned by MidAmerican Energy Company (MEC) and currently operates a singular 550-megawatt coal-fired unit. GNNEC consists of 4 coal ash ponds (labeled Pond 1, 2, 3A, and 3B) and an onsite monofill that also accepts waste from the nearby George Neal South Energy Center. Ash pond 1 has an area of 12.2 acres, with an approximate depth of 18.5 feet, pond 2 has an area of 26.9 acres, with an approximate depth of 16 feet, and pond 3 has a total combined area of 76.1 acres, and an approximate depth of 15 feet. The onsite monofill has an area of 13.5 acres with an approximate height of 125 – 135 feet tall. MEC monitors its ash pond system with 39 total monitoring wells, sampling at least twice a year since 2017.

## Monitoring at Upgradient and Downgradient Wells

### Previous Contamination

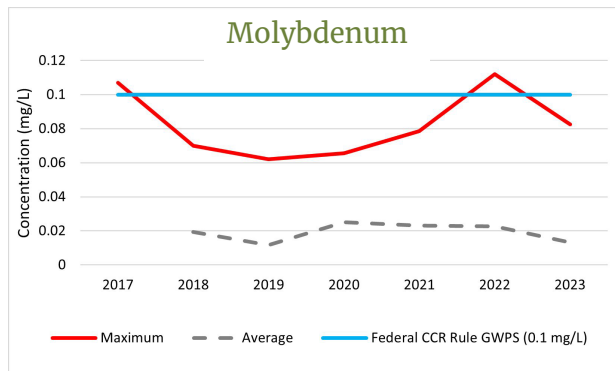
- Ash ponds 1, 2, and 3A detected contaminants **Arsenic, Cobalt, and Lithium** at concentrations above the EPA's Maximum Contamination Level (MCL) or Federal CCR standard in 2022:



- These ash ponds were closed in-place in 2017, but an assessment on the potential for groundwater contamination led MEC to conclude that the waste from these ponds needed to be consolidated “at an elevation above the 100-year flood stage observed in 2019.”

### Ongoing Contamination

- Ash pond 3B consolidated waste from ponds 1, 2, and 3A after elevated levels of **Lithium** were found to be leaking from the unlined ponds in early 2022. They finished closure by the end of 2022.
- In the most recent groundwater monitoring reports (2023), there were statistically significant increases in 5 contaminants: **Boron, Chloride, Sulfate, pH, and Molybdenum.**



Of these contaminants, only **Molybdenum** (0.1 mg/L) and **Chloride** (250 mg/L) have a federal or state guideline for groundwater protection or drinking water standards.

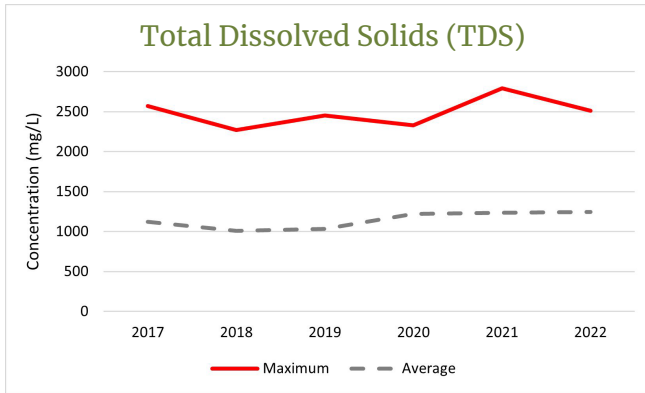
## Statistics From the Previously Closed Ash Ponds

Maximum concentration of <b>Arsenic</b> compared to the EPA's Maximum Contamination Level (MCL)		Maximum concentration of <b>Lithium</b> compared to CCR Rule Standard		Maximum concentration of <b>Cobalt</b> compared to CCR Rule Standard	
Year	Multiples of the MCL (0.01 mg/L)	Year	Multiples of the CCR Rule (0.04 mg/L)	Year	Multiples of the CCR Rule (0.006 mg/L)
2021	11.1	2021	6.1	2022	4.4
2022	10	2022	5.7	2023	11.9
2023	9	2023	4.9		

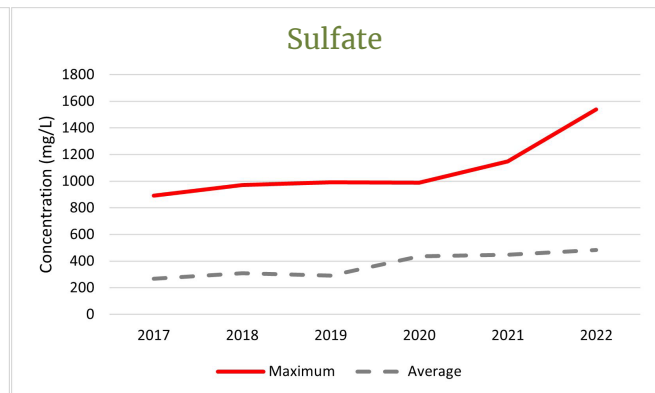
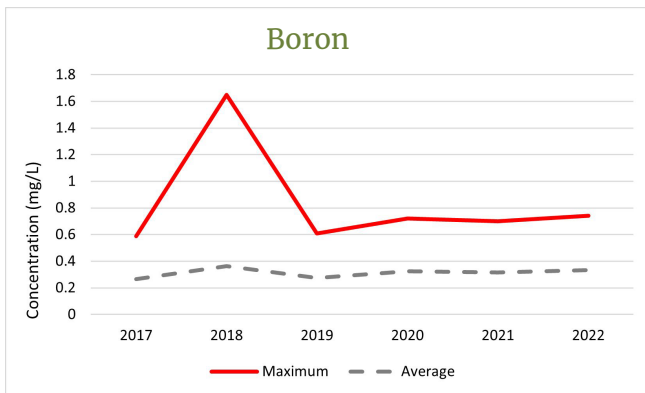
- Arsenic** has been identified as carcinogenic to humans in drinking water.<sup>1,2</sup>
- Ingestion of **Lithium** has been linked to renal and neurological impacts.<sup>3</sup>
- Cobalt** exposure can have adverse effects to blood, lungs, and skin.<sup>4</sup>

<sup>1</sup> [Arsenic \(who.int\)](#) <sup>2</sup> [Chemical Contaminant Rules | US EPA](#) <sup>3</sup> [Technical Fact Sheet: Lithium in Drinking Water \(epa.gov\)](#) <sup>4</sup> [Cobalt - ToxFAQs™ \(cdc.gov\)](#)

## Groundwater Monitoring at the Onsite Monofill Wells



- The monofill began accepting waste in 1978 and closed by the end of 2023.
- The monofill accepted CCR waste from Neal North and Neal South coal ash facilities.
- As of their most recent groundwater monitoring report in 2023, there were statistically significant increases (SSI) in several contaminants, including: **Calcium, Sulfate, and Total Dissolved Solids (TDS)**.
- Sulfate and Boron have been widely linked to coal ash facilities, and because they don't naturally occur at significant levels outside of manmade sources, **they are good indicators of coal ash contamination in groundwater.**<sup>1</sup>



<sup>1</sup> Hazardous and Solid Waste Management System; Identification and Listing of Special Wastes; Disposal of Coal Combustion Residuals From Electric Utilities. 75 Fed. Reg. 35128. (proposed June 21, 2010) (to be codified at 40 C.F.R. pt. 257, 261, 264 et al).

## Clean Air Task Force: Toll from Coal

- The Clean Air Task Force, a nonprofit research and advocacy organization, issued a 2019 study that quantified the deaths and other human health damages attributed to air pollution from coal-fired power plants.<sup>2</sup>
- Fine particle pollution from Coal Ash can invade the lungs, bloodstream, and can be transported to vital organs.

Type of Emissions	Annual Tons Polluted
SO <sub>2</sub>	3,113
NO <sub>x</sub>	1,836
CO <sub>2</sub>	1,880,388

At Risk Population within 12 miles	
At Risk Population	63,372
Children	19,644
Schools	75
Nursing homes	7
Hospitals	2
People of color vs state average	31% vs. 12%

<sup>2</sup> "Find Your Risk from Power Plant Pollution," Clean Air Task Force

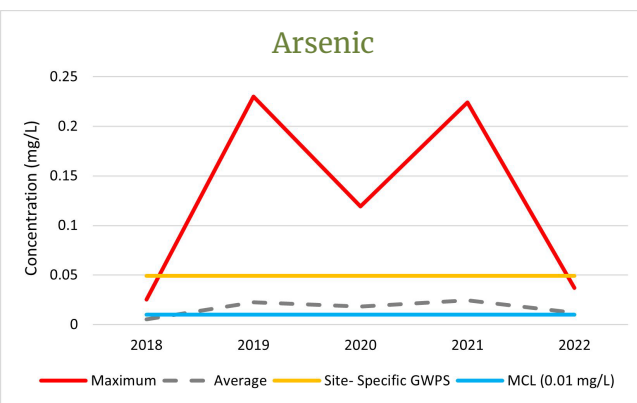
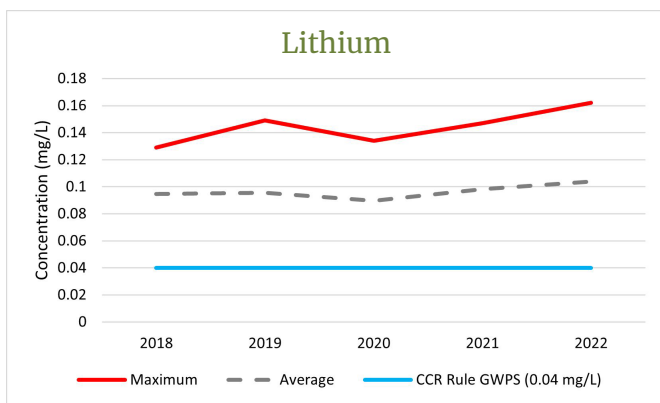
# George Neal South Energy Center



**George Neal South Energy Center (GNSEC)** is owned by MidAmerican Energy Company (MEC) and currently operates a singular 640-megawatt coal-fired unit. GNSEC has no coal ash ponds but does have an onsite monofill that was closed in place in 2018 by “capping in place.” According to EarthJustice, “cap-in-place” is defined as, “Draining the surface water and capping the pond with the toxic waste still in place.”<sup>1</sup> The monofill has an area of 32 acres, with an approximate height of 63-68 feet tall.

## Groundwater Monitoring at the Onsite Monofill

- The groundwater monitoring network originally included 23 monitoring wells.
- After a spike in concentrations of **Arsenic** in 2019, corrective action measures were triggered in 2020.
- As part of corrective action measures, 29 more monitoring wells were constructed, bringing the total to 52.
- There were several other contaminants that had statistically significant increases (SSI) in their concentrations as of the most recent report in 2023, including: **Boron, Chloride, Lithium, Sulfate, and Total Dissolved Solids (TDS)**.
- Of these SSIs, **Lithium and Chloride** were the only other contaminants that had either a Groundwater Protection Standard (GWPS) or a Drinking Water Standard (DWS) which was exceeded in recent years.



## Statistics From the Monofill

Maximum concentration of <b>Arsenic</b> compared to the EPA's Maximum Contamination Level (MCL)		Maximum concentration of <b>Lithium</b> compared to CCR Rule GWPS Standard	
Year	Multiples of the MCL (0.01 mg/L)	Year	Multiples of the CCR Rule (0.04 mg/L)
2018	2.51	2018	3.25
2019	23	2019	3.73
2020	11.9	2020	3.35
2021	22.4	2021	3.68
2022	3.69	2022	4.05

- According to the World Health Organization, **Arsenic** in drinking water is carcinogenic to humans.<sup>2</sup>
- “Drinking high levels of **Chloride** in water may dangerously increase the Chloride concentrations in the blood. This is known as *hyperchloremia*. Symptoms of hyperchloremia include:
  - High blood pressure
  - Fluid retention
  - Numbness and tingling.”<sup>3</sup>

<sup>1</sup> [Cleaning Up Coal Ash For Good: Resources and Recommendations - Earthjustice](#) <sup>2</sup> [Arsenic \(who.int\)](#) <sup>3</sup> [Chloride in Water \(waterfilterguru.com\)](#)