RAMBOLL

Bright ideas.
Sustainable change.

# Using Experience Builder to Support USACE Remediation Projects

Esri AEC Conference 2021

Presenter: Christopher Bowles, Ramboll

Authors: Timothy Cushman, Ramboll; Daniel Sirkis, USACE

# Ramboll

Our experts create **sustainable solutions across the built and natural environment**.

We combine expertise in biodiversity net gain, natural capital valuation, ecosystem services, nature restoration and ecological surveys and monitoring with our data science and remote sensing specialists.

300 global offices

35 countries

16,000 employees

# Project Background

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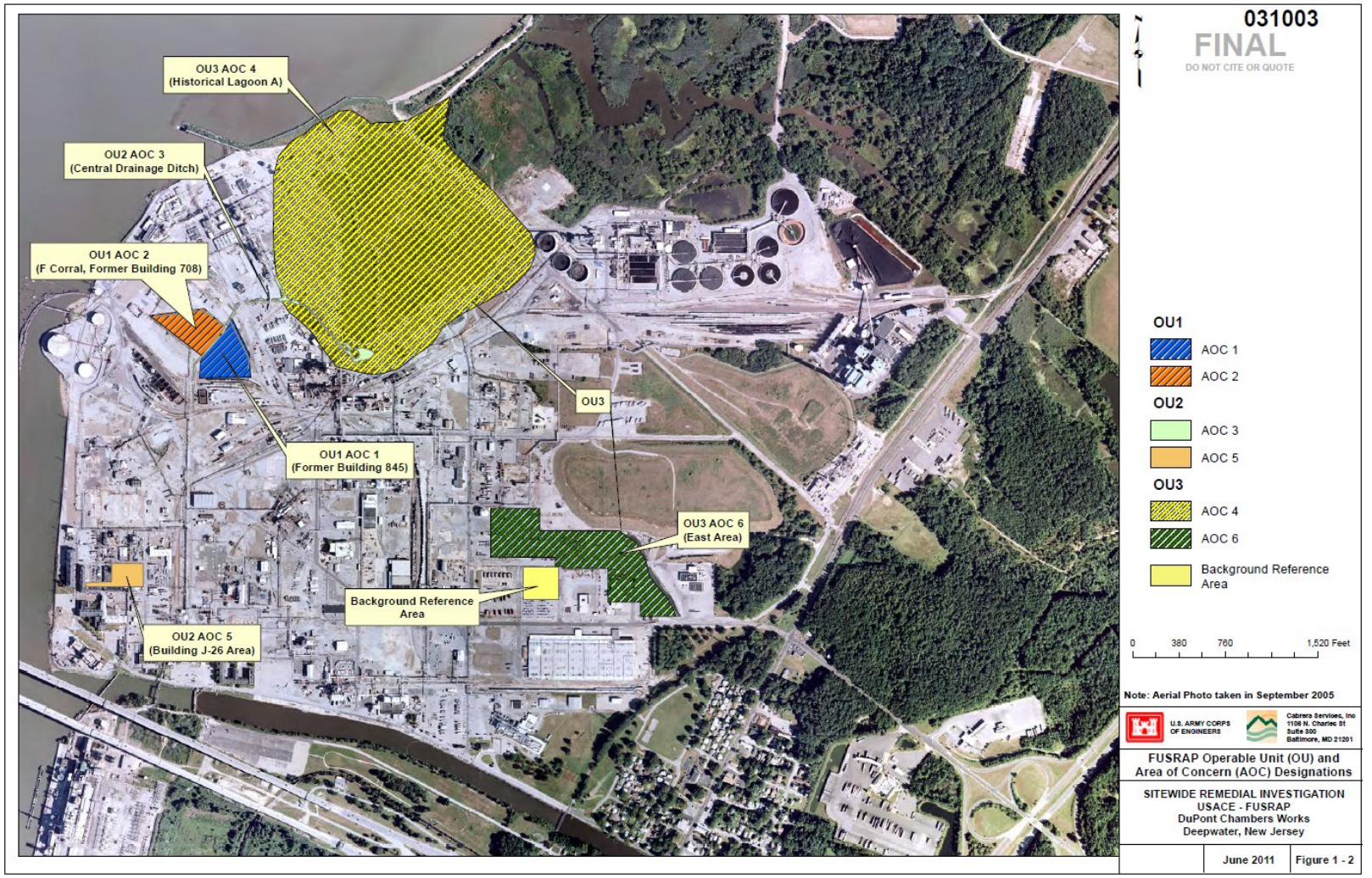
| | |
|---|---|
| 1942 | DuPont Company Chambers Works Site (DCWS), Deepwater NJ, begins support to the Manhattan Engineering District Project (MED). Operations involving uranium processing began in 1942 |
| ’42-47 | DCWS was under contract to the USACE MED to process uranium compounds and uranium scrap to produce uranium tetrafluoride, uranium hexafluoride, and a small quantity of uranium metal. |
| 1997 | U.S. Army Corps of Engineers (USACE) is directed by Congress to conduct assessment, remedial action, and site closure activities for Formerly Utilized Sites Remedial Action Program (FUSRAP). |

# Project Background

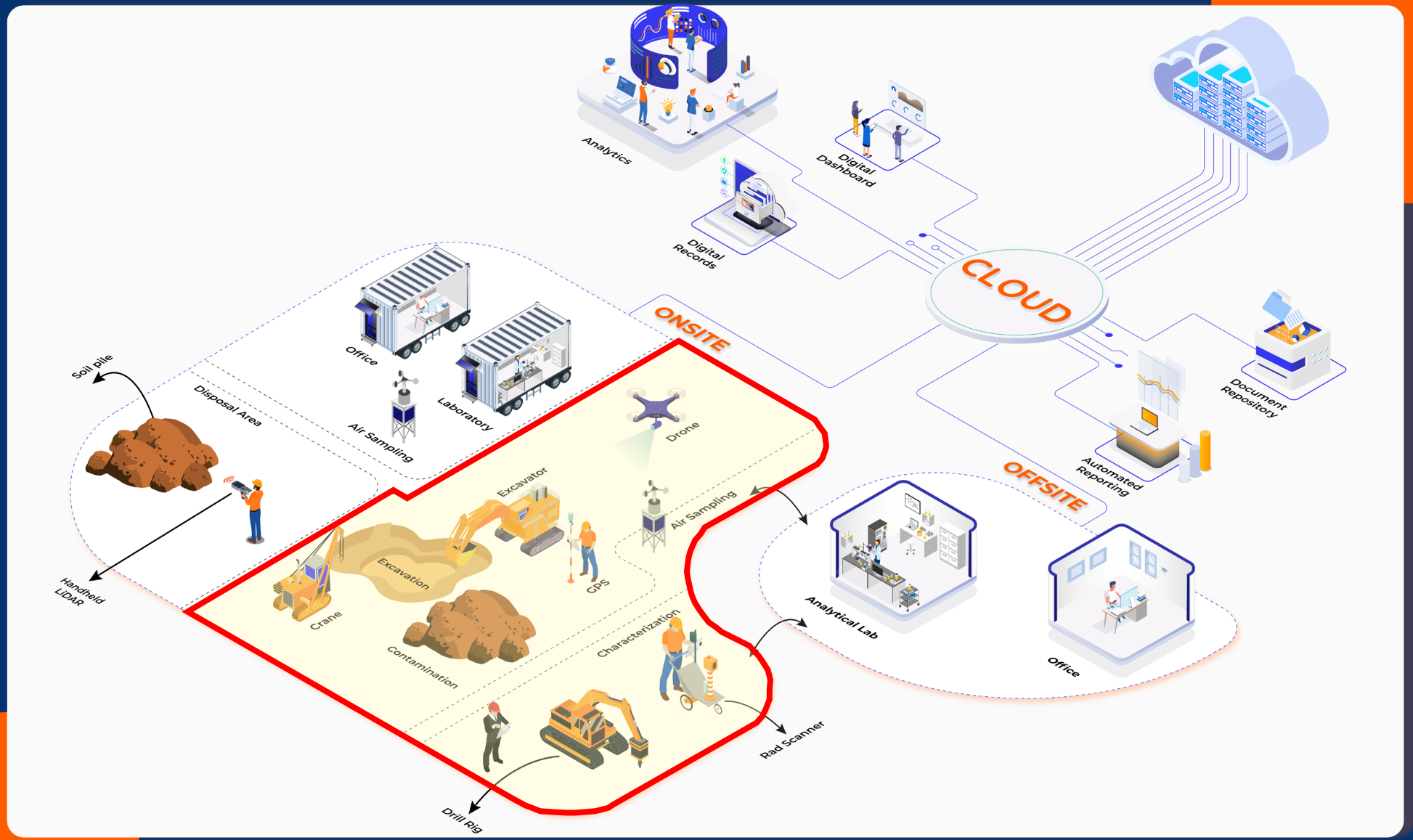


# Vision

*USACE and Ramboll wanted to:*

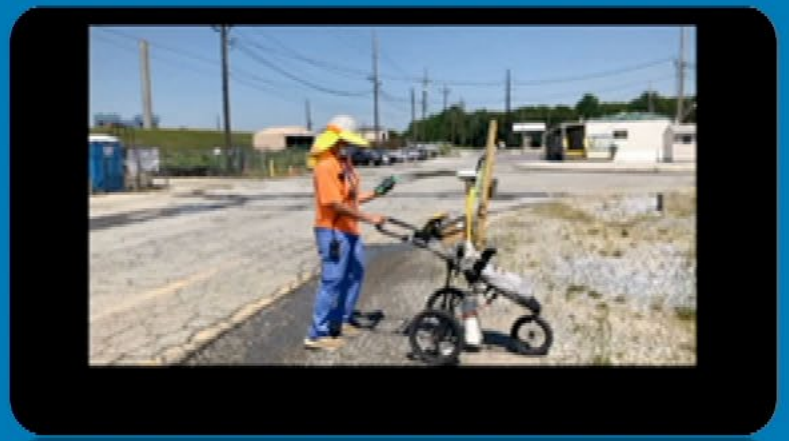
- *Increase efficiencies on data collection*
- *Improve the decision-making process*
- *Provide greater transparency*
- *Create better historic records*

# Digital Database Integration

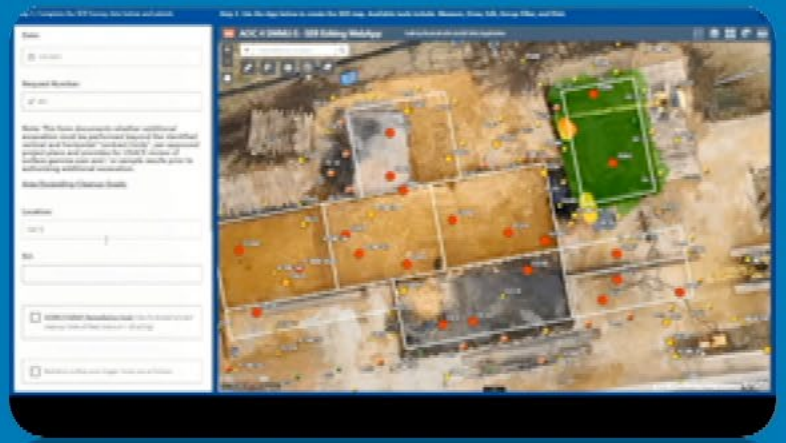

Analytics
Digital Dashboard
Digital Records
CLOUD
Document Repository
Automated Reporting
ONSITE
OFFSITE
Office
Air Sampling
Laboratory
Soil pile
Disposal Area
Handheld LiDAR
Drone
Excavator
Excavation
Crane
GPS
Contamination
Characterization
Air Sampling
Analytical Lab
Office
Rad Scanner
Drill Rig


# Onsite Activities

- LiDAR drone
- High-resolution GPS units
- Gamma scan operations
- Characterization/sampling efforts
  - Field Maps (Collector/Survey123)
  - Soil Sampling
  - Air Sampling
  - Direct connections to onsite laboratory
- Track volumes excavated



# DIGITAL DATABASE INTEGRATION

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# Cloud Activities

- All onsite activities stored in the cloud
- AEC Portal
  - Tracking elevations
  - Tracking change over time
- Digital Dashboards
  - WebApp Builder
  - Experience Builder
  - Evaluate soil concentrations
  - Make better informed decisions
  - Automated reporting
  - Secondary excavation requests

Step 1. Complete the SER Survey data below and submit.

Step 2. Use the App below to create the SER map. Available tools include: Measure, Draw, Edit, Group Filter, and Print.

Date:

m/d/yyyy

Request Number:

123

Note: This form documents whether additional excavation must be performed beyond the identified vertical and horizontal "contract limits", per approved project plans and provides for USACE review of surface gamma scan and / or sample results prior to authorizing additional excavation.

Area Exceeding Cleanup Goals:

Location:

SU:

- [ ] DCWS FUSRAP Remediation Goal: (results exceed project cleanup limits of Total Uranium > 65 pCi/g)

- [ ] Radiation surface scan trigger levels are as follows:

- ( ) Lower Contamination Trigger Level = 18,000cpm

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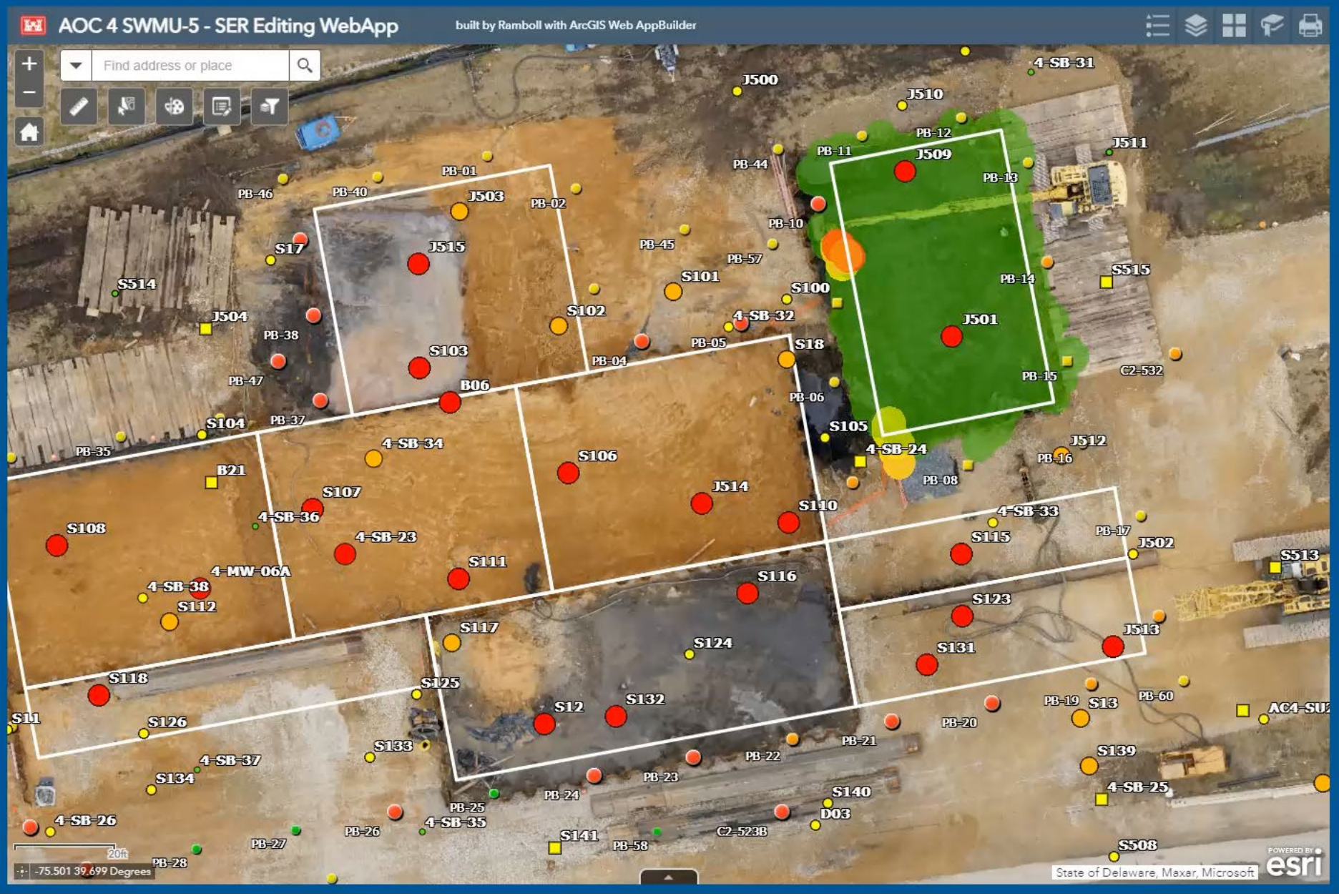

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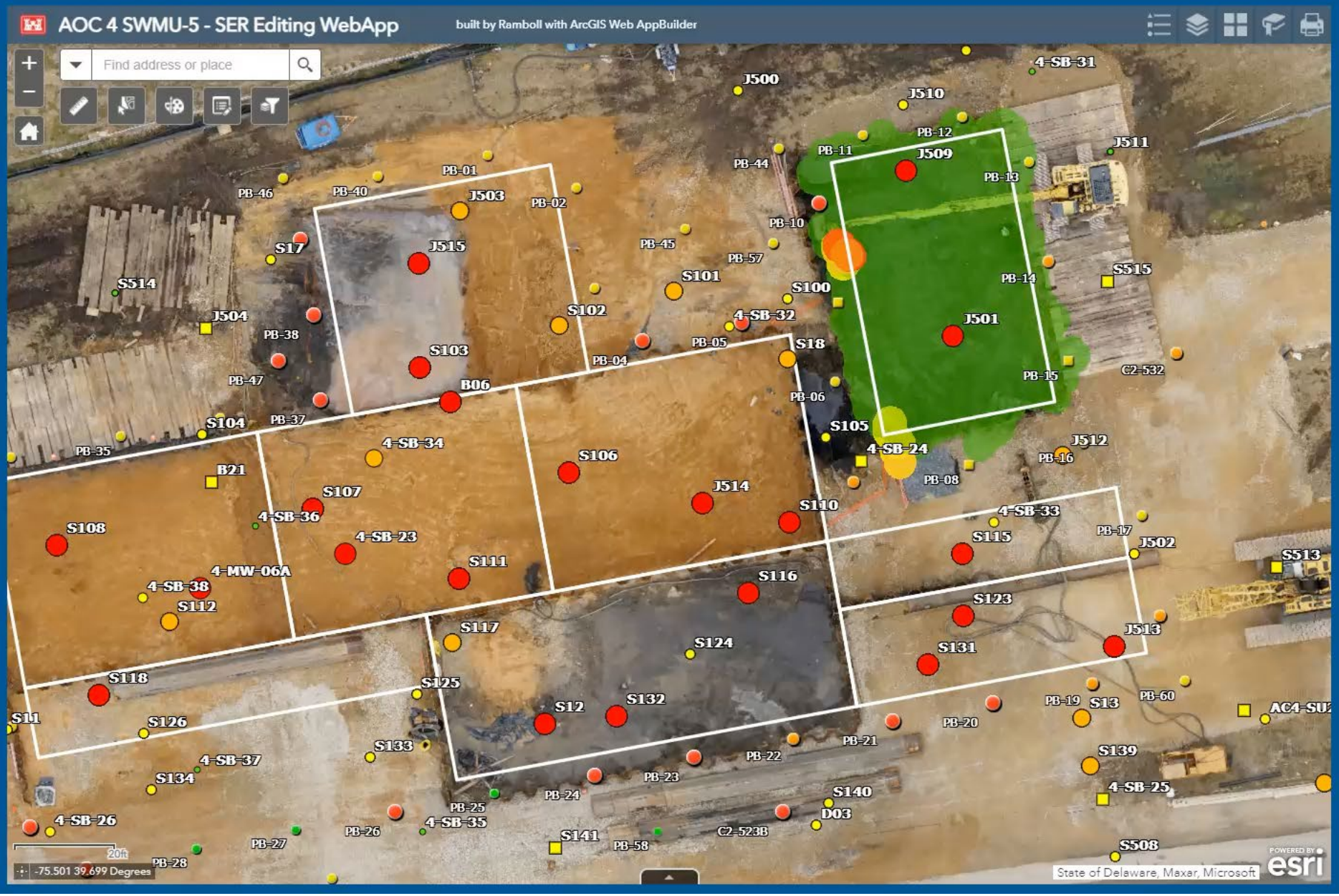


# Secondary Excavation Requests

**Secondary Excavation Request Form**
**DuPont/Chemours Chambers Works FUSRAP Site**

Date: October 21, 2020
Request No: 1

Note: This form documents whether additional excavation must be performed beyond the identified vertical and horizontal "contract limits", per approved project plans and provides for USACE review of surface gamma scan and / or sample results prior to authorizing additional excavation.

**Area Exceeding Cleanup Goals:**

Location: AOC 4 - SWMU5 Cell 1

Survey Unit: 1

☑ **DCWS FUSRAP Remediation Goal: (results exceed project cleanup limits of Total Uranium > 65 pCi/g;**

☐ **Radiation surface scan trigger levels are as follows:**

☑ Lower Contamination Trigger Level = 18,000 cpm

☐ Upper Contamination Trigger Level = 21,000 cpm

Scan Location: ☑ Floor ☐ Sidewall; ☐ N ☐ E ☐ S ☐ W

Floor Scan Results: 20,000 cpm
North Sidewall Scan Results: _____ cpm
East Sidewall Scan Results: _____ cpm
South Sidewall Scan Results: _____ cpm
West Sidewall Scan Results: _____ cpm

Sample Location: ☐ Sidewall ☐ N E S W? ☑ or See Narrative Below

Sidewall Scan Results: _____ pCi/g
North Sidewall Scan Results: _____ pCi/g
East Sidewall Scan Results: _____ pCi/g
South Sidewall Scan Results: _____ pCi/g
West Sidewall Scan Results: _____ pCi/g

☑ Narrative: Gamma scan indicates area in C1 has significantly elevated gamma radiation levels. 30% of the measurements were in excess of 20,000 CPM.

☑ **Additional Excavation Required:** Area to be excavated:

**Note:**

The estimated amount of material is based on Primary Cut Design provided by USACE.

Estimated cubic yards of additional material to be excavated: 250.56 yd³.
Note: (55 ft x 41 ft x 3 ft)/27 = 250.56yd³.

Reviewed/Requested By: _____ Don Wadsworth RSO

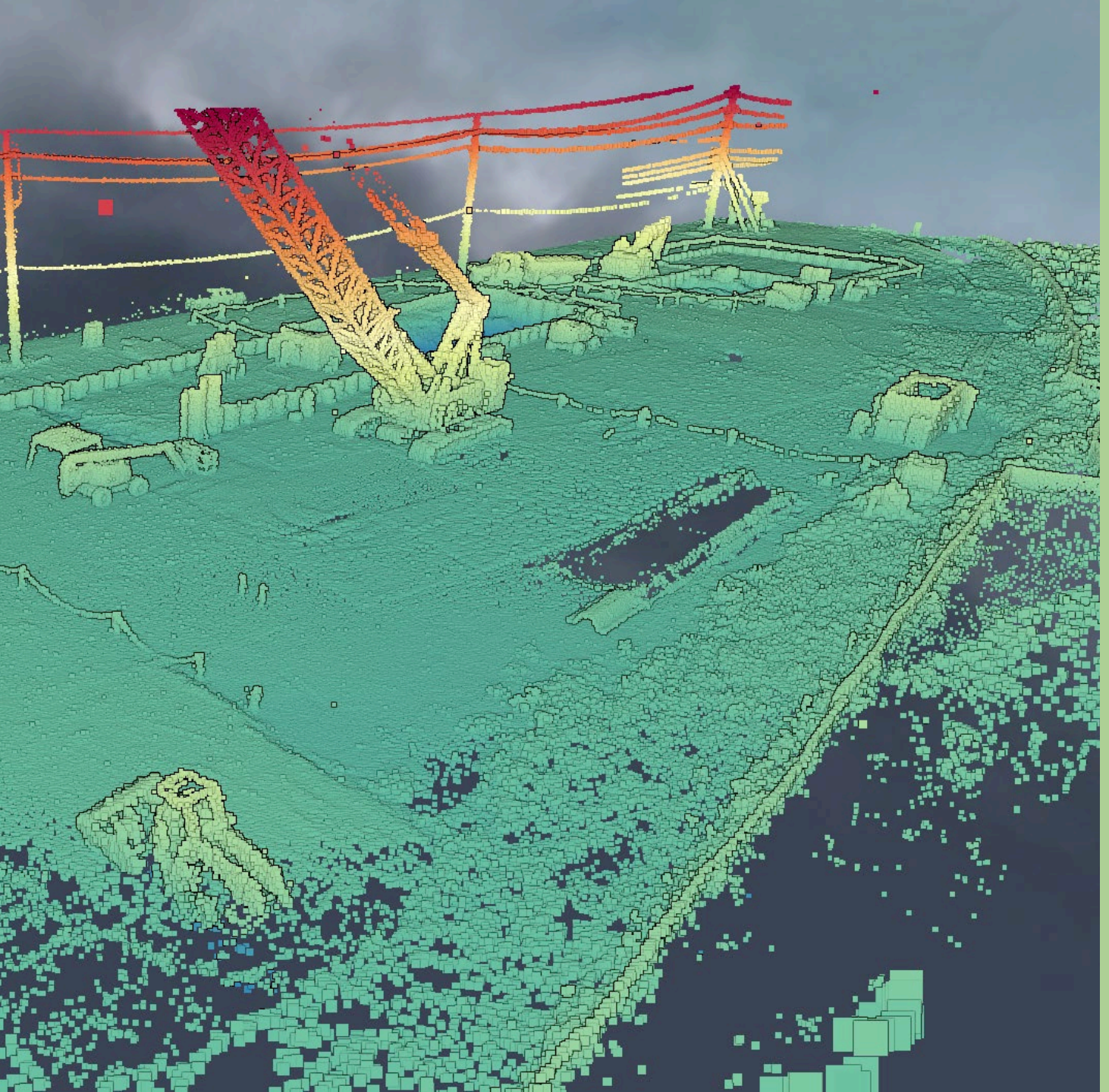
Reviewed By: _____ Sevenson Representative

Approved

_____ Project Engineer / USACE Construction Representative

_____ Date

# Lessons Learned



# Creating Valuable Dashboards

- Engage
- Listen/Watch
- Adapt
- Test
- Be Patient

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**Step 2. Use the App below to create the SER map. Available tools include: Measure, Draw, Edit, Group Filter, and Print.**


SER points | SER lines | SWMU-5 Soil Data (Max value) | AC4U1C1102020_0946_Sensor | AC4U1C1102020_0946_Sensor_1m_buffer | Drone Orthomosaic (Flight Date - 10/23/20)

Options | Filter by map extent | Zoom to | Clear selection | Refresh

| NORTHING | EASTING | GAMMA CPM | PDOP | HDOP | VDOP | DATE | TIME | DETECTOR | ELEVATION | NUMBER |
|---|---|---|---|---|---|---|---|---|---|---|
| 316,762.82 | 210,434.86 | 30,868 | 1 | 2.70 | 2.00 | 10:20:20.000 | 10:14:47.000 | Sensor | -8 | 1,167 |
| 316,762.34 | 210,441.26 | 30,753 | 1 | 2.70 | 2.00 | 10:20:20.000 | 10:12:48.000 | Sensor | -8 | 1,049 |
| 316,760.26 | 210,439.44 | 30,708 | 1 | 4.60 | 2.00 | 10:20:20.000 | 10:11:16.000 | Sensor | -8 | 957 |
| 316,759.72 | 210,435.36 | 30,650 | 1 | 2.10 | 1.30 | 10:20:20.000 | 10:18:15.000 | Sensor | -8 | 1,376 |
| 316,759.06 | 210,434.82 | 30,596 | 1 | 2.10 | 1.30 | 10:20:20.000 | 10:18:12.000 | Sensor | -8 | 1,373 |
| 316,759.83 | 210,435.60 | 30,471 | 1 | 4.60 | 2.00 | 10:20:20.000 | 10:15:24.000 | Sensor | -8 | 1,205 |

407 features 28 selected

*Select samples from the map to update the graphics below*

1 of 16

## C2-526 (1.00 ft bgs)

# 2.893

pCi/g

*Last update: a few seconds ago*

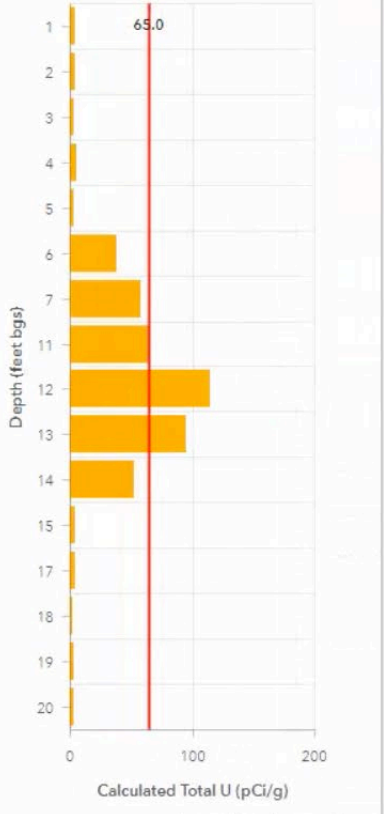
1 of 15

## S119 (1.00 ft bgs)

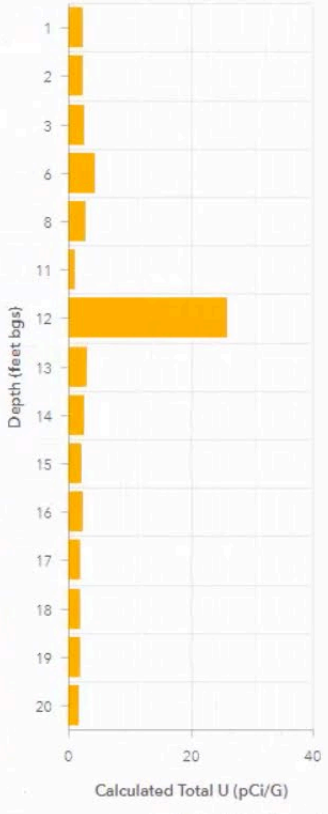
# 2.186

pCi/g

*Last update: a few seconds ago*




*Last update: a few seconds ago*

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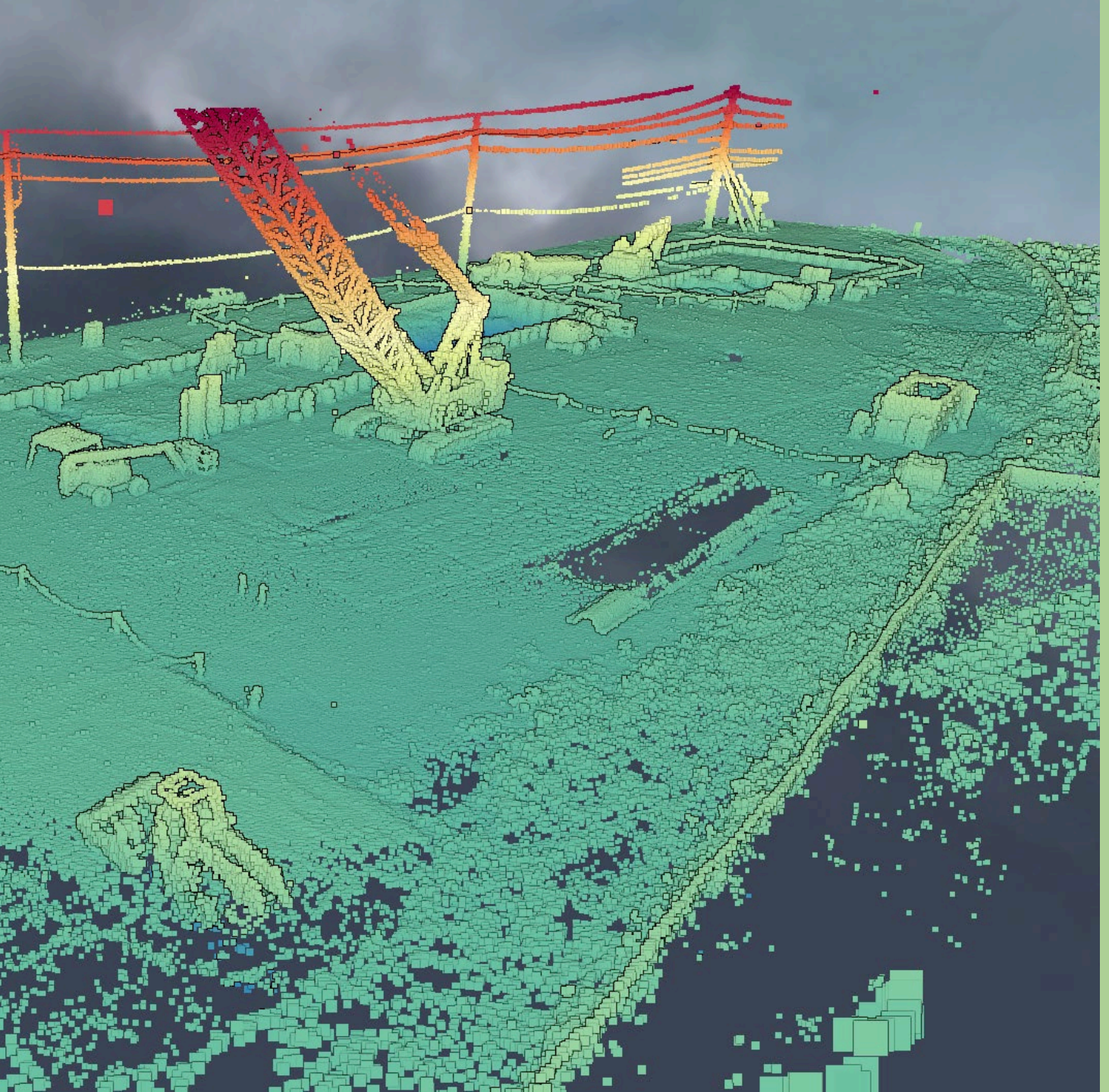

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