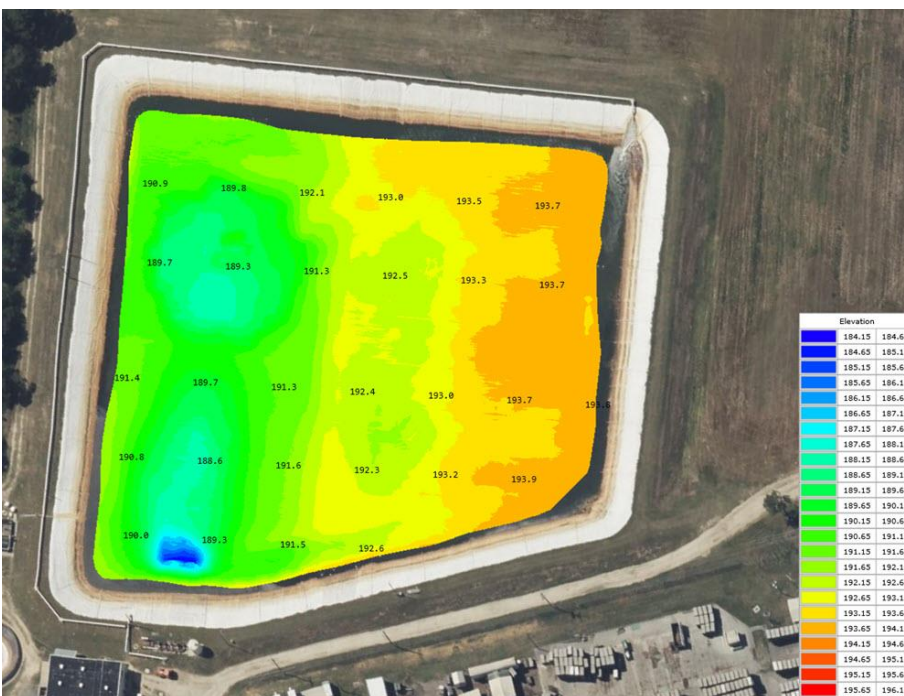


CEE-USV and Hydromagic Used for Two-Year Wastewater Lagoon Sludge Accumulation Survey

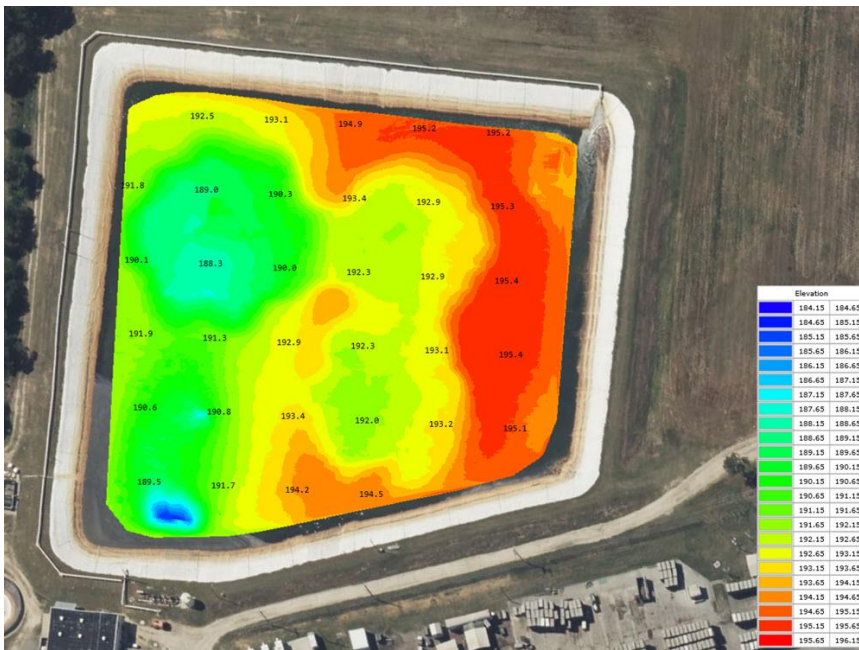
East Coast USA construction firm Bearing Construction are supporting a large industrial food processing site with wastewater infrastructure construction and maintenance. As part of their on-site services, Bearing can deploy their in-house CEE-USV to monitor the accumulation (or removal) of wastewater sludge in the retention / treatment lagoons. An initial survey was conducted in 2023 and the sludge level was accurately surveyed. Water level elevations were measured using a robotic total station, followed by a high-density single beam hydrographic survey conducted using the CEE-USV. Eye4Software was used for the mission planning, data acquisition and post processing.



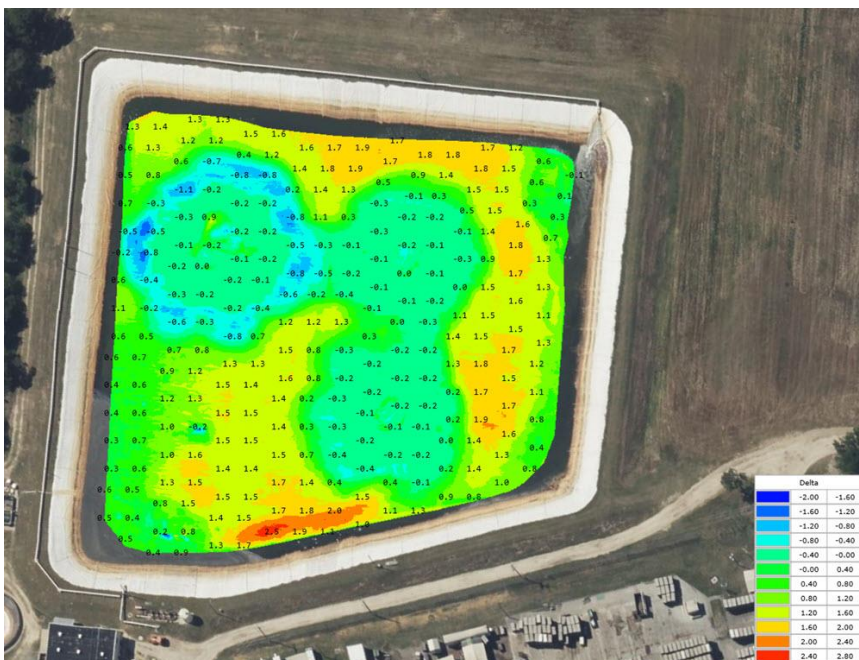
The first survey showed the accumulation of sludge close to the wastewater inlet location.



The follow-up survey about two years later showed a change in the sludge elevation across the lagoon. In addition to a substantial buildup on the inlet side, sludge levels also dropped close to the aerators – maybe as a result of increased aerator agitation.



The Hydromagic software package is able to compare survey matrices to determine the total buildup or removal of sludge compared to the initial reference level. This delta matrix clearly depicts the sludge changes over time and shows that the three active aerators are associated with a decrease in the sludge level. A larger sludge accumulation is seen in the lower velocity regions – including where one aerator is out of service.



In order to quantify the change in sludge volume, Hydromagic is able to calculate the change in sludge volume both above and below the reference level (initial survey) across the overlapping survey area. This can then be used to calculate the net sludge accumulation. In the two-year period in this case, the second survey shows that 3736m³ of sludge had accumulated above the reference and 496m³ has been removed (or relocated) below it. So, the net volume of sludge accumulated is 3240m³.

Eye4Software Hydromagic - Volume Calculation (Compare Matrices)

Matrix 1

Matrix:

elevation 1ft.mtx

 (Sounding)

Type: Elevations: Hi

Level:

0.00

 ft

Matrix 2

Matrix:

Matrix 1ft Elev.mtx

 (Reference)

Type: Elevations: Hi

Level:

0.00

 ft

Only calculate area and volumes in selected region(s)

Boundaries:

BOUNDARY0001;

Select...

Totals

Area:

17351

 m2

Processed:

16760

 m2

Spacing:

1.00

 ft

Volume:

4232

 m3

Above Reference (Dredge)

Area:

11041

 m2

Volume:

3736

 m3

Below Reference (Dump)

Area:

5718

 m2

Volume:

496.3

 m3

Use this tool to calculate volumes and covered area from a sounding and a reference. To use this tool, it is required to generate a matrix from your sounding first.
[Click here to open the documentation on volume calculation by comparing matrices.](#)

Calculate

Report...

Close