



Standard Operating Procedure

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| Revision History | | |
|------------------|-------------------|------------------------------------|
| Version No. | Effective Date | Description |
| 1.0 | 01/01/2024 | Original composition by M. Kachmar |
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| | | |

Procedure Owners:

Date:

Mariah Kachmar, Field Project Lead,
LISS Oyster Health Project

Katherine McFarland, Research Biologist

Meghana Parikh, Veterinary Medical Officer

Approved By:

Date:

Lisa Milke, EAD Chief

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1 Purpose

The purpose of this SOP is to provide concise guidance and methodology on how to measure oyster bed area for intertidal sites using Google Earth.

2 Scope

This SOP is pertaining to the EPA Long Island Sound Study funded Oyster Health project where oyster bed area will be used to characterize the size of the oyster bed each oyster site as part of biannual population surveys.

3 Definitions/Acronyms

4 Safety Precautions

N/A

5 Supplies/Equipment

- Laptop or tablet
- Access to Google Earth online

6 Quality Control

All team members will be trained to complete all field tasks, including training on data entry requirements for each specific task. To ensure completeness, data sheets will include a checklist of all data that needs to be recorded. All datasheets will be screenshotted as back up in the event data is lost before connecting to the network.

7 Procedures

1. Creating a new project

- a. Open Google Earth (online version: earth.google.com).
- b. In the left toolbar, create a new project. Click “ + New “ (Figure 1).
- c. Once the project has been created, update the project description to reflect the purpose and goals. Click the pencil icon to edit project details (Figure 2).

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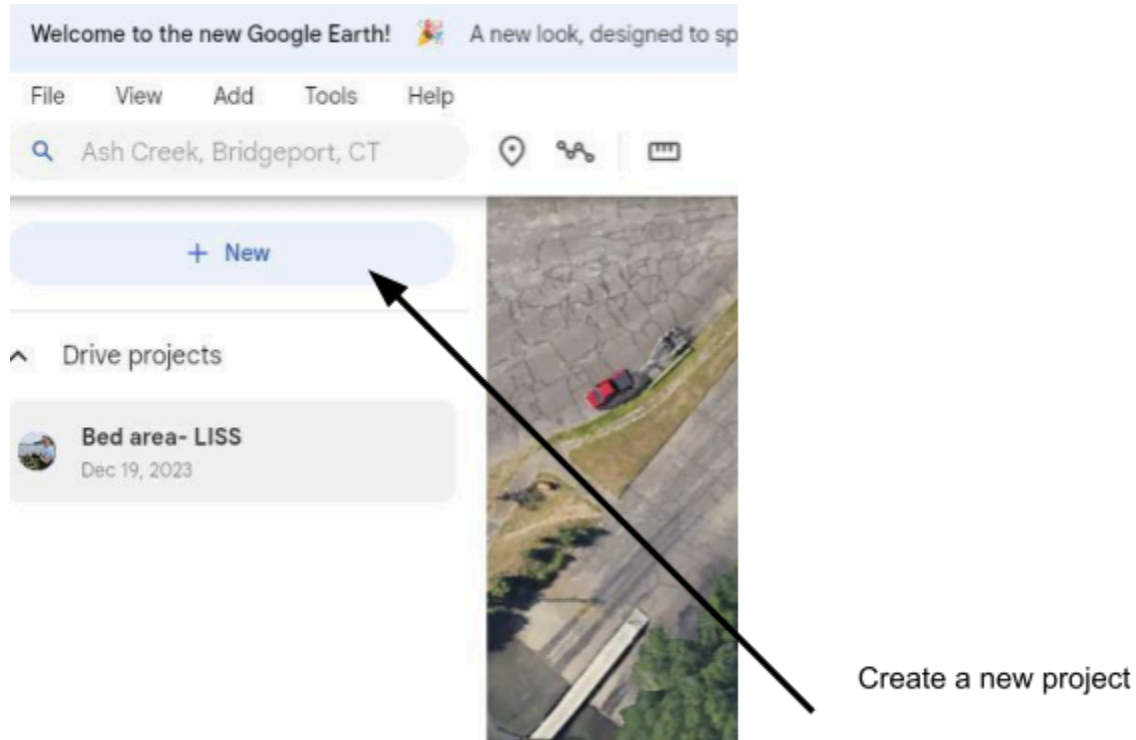


Figure 1: Depiction of where to create a new project in Google Earth.

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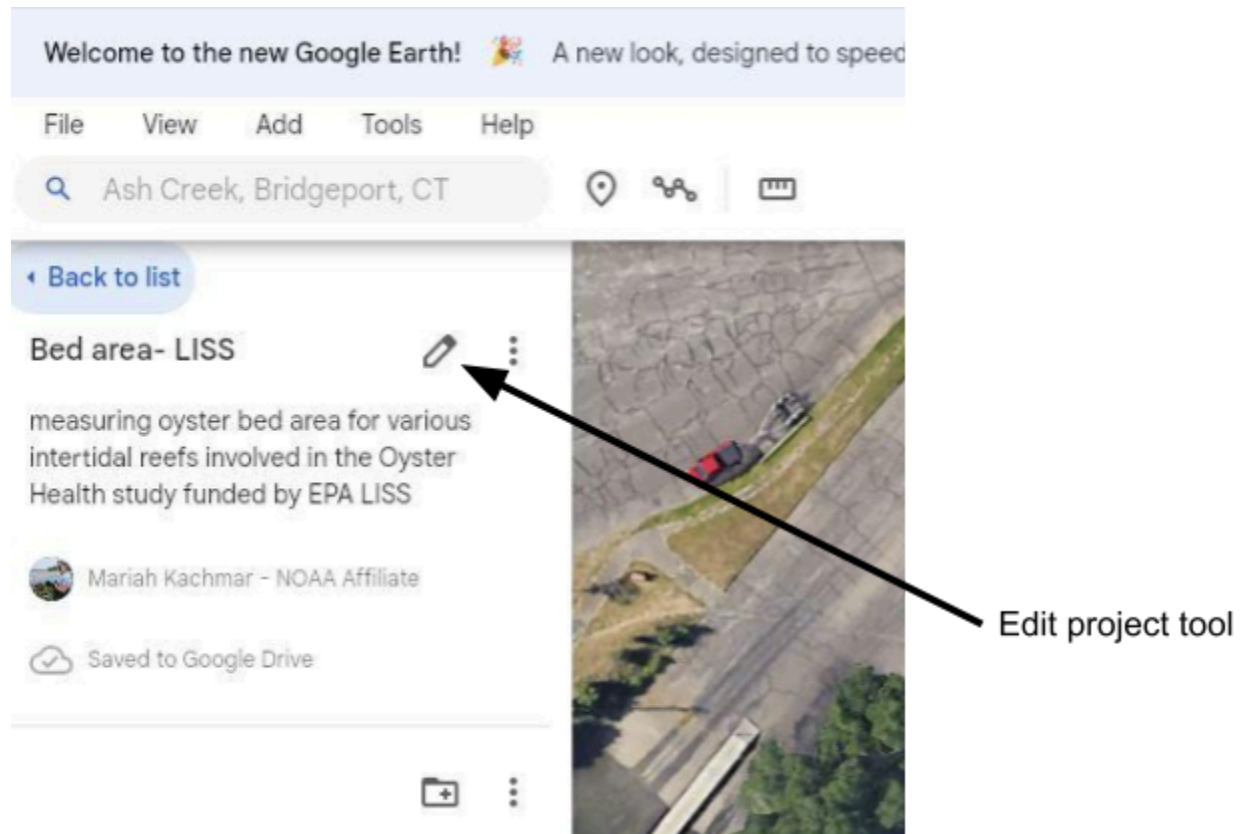


Figure 2: Depiction of where to locate the ‘Edit Project’ tool to edit the description.

2. Searching for sites

- Using the “Search Google Earth” bar, type in the desired oyster bed location. Use specific coordinates or general site name to navigate to the desired location (Figure 3).

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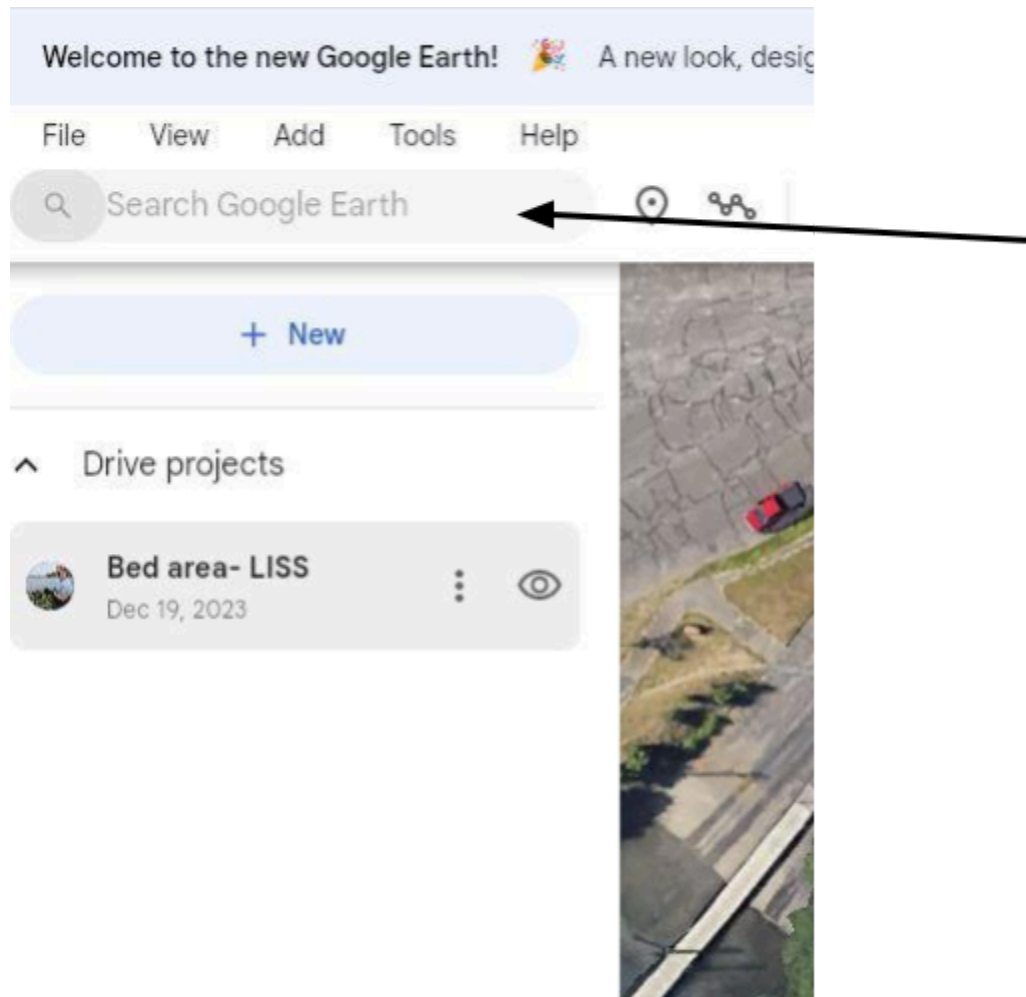


Figure 3: Depiction of where to search for specific locations or coordinates.

- b. Use the zoom icons (+ or - in bottom right corner) and mouse to drag and focus the view onto the desired reef area (Figure 4).

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Figure 4: Depiction of how to zoom in and out of Google Earth.

3. Measuring the area of the oyster bed

- Once the reef has been aerially identified, click the ruler icon to measure distance and area (Figure 5).

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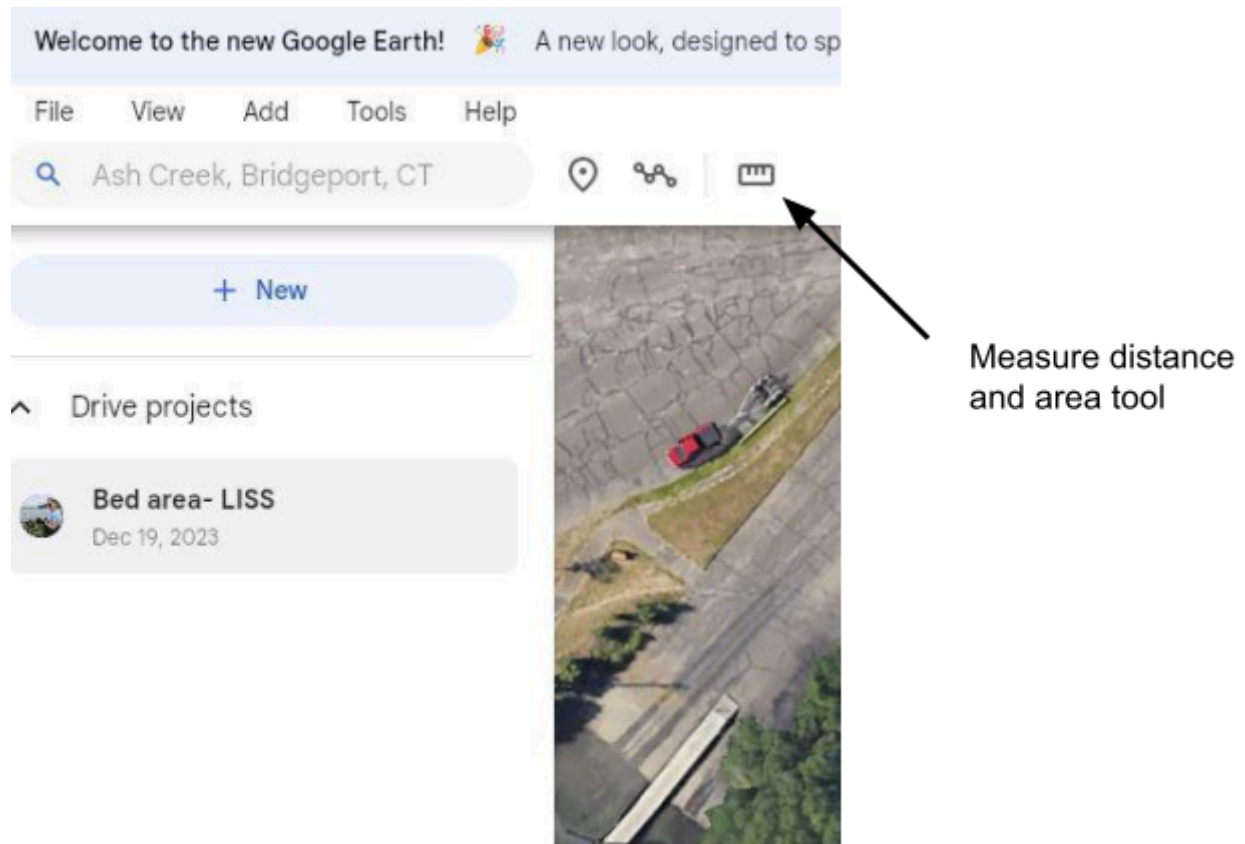


Figure 5: Depiction of where to find the ‘Measure distance and area’ tool to measure the area of the oyster bed.

- b. Using the cursor, click to contour the perimeter of the reef, connecting all lines, to create a polygon like shape. Use known landmarks to help guide where the fringes of the oyster bed are (Figure 6).

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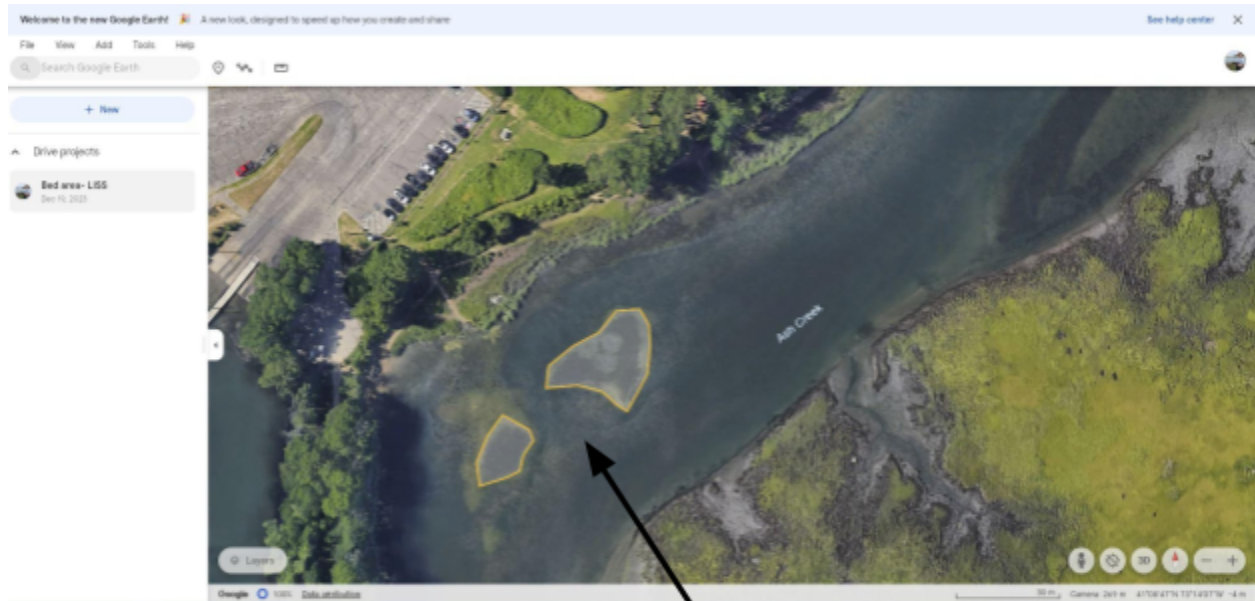


Figure 6: Depiction of the polygon formed using the 'Measure distance and area' tool.

- c. Once this shape has been formed, Google Earth will generate a perimeter measurement in meters and an area measurement in meters squared. Save this measurement to the project (Figure 7).

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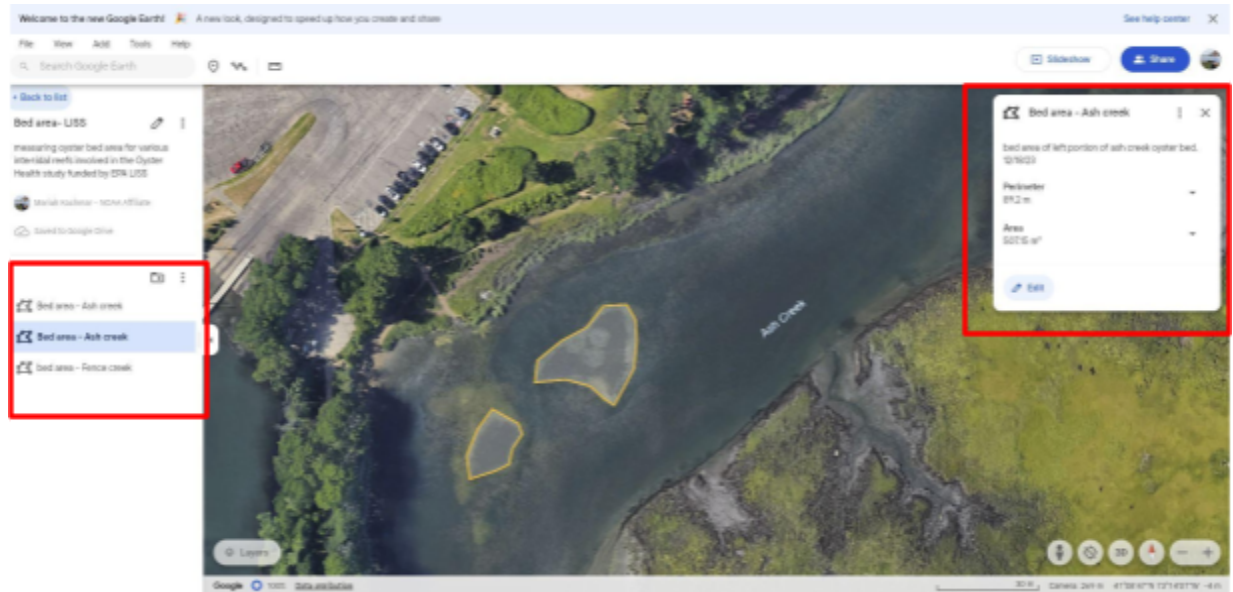


Figure 7: Depiction of a saved measurement and the data generated by Google Earth.

- d. Once the measurements have been saved, click the edit button to edit the measurement and add detailed descriptions of when the measurement was taken, when the Google Earth image was taken (See 7.3.e), and what oyster reef this measurement pertains to (Figure 8).

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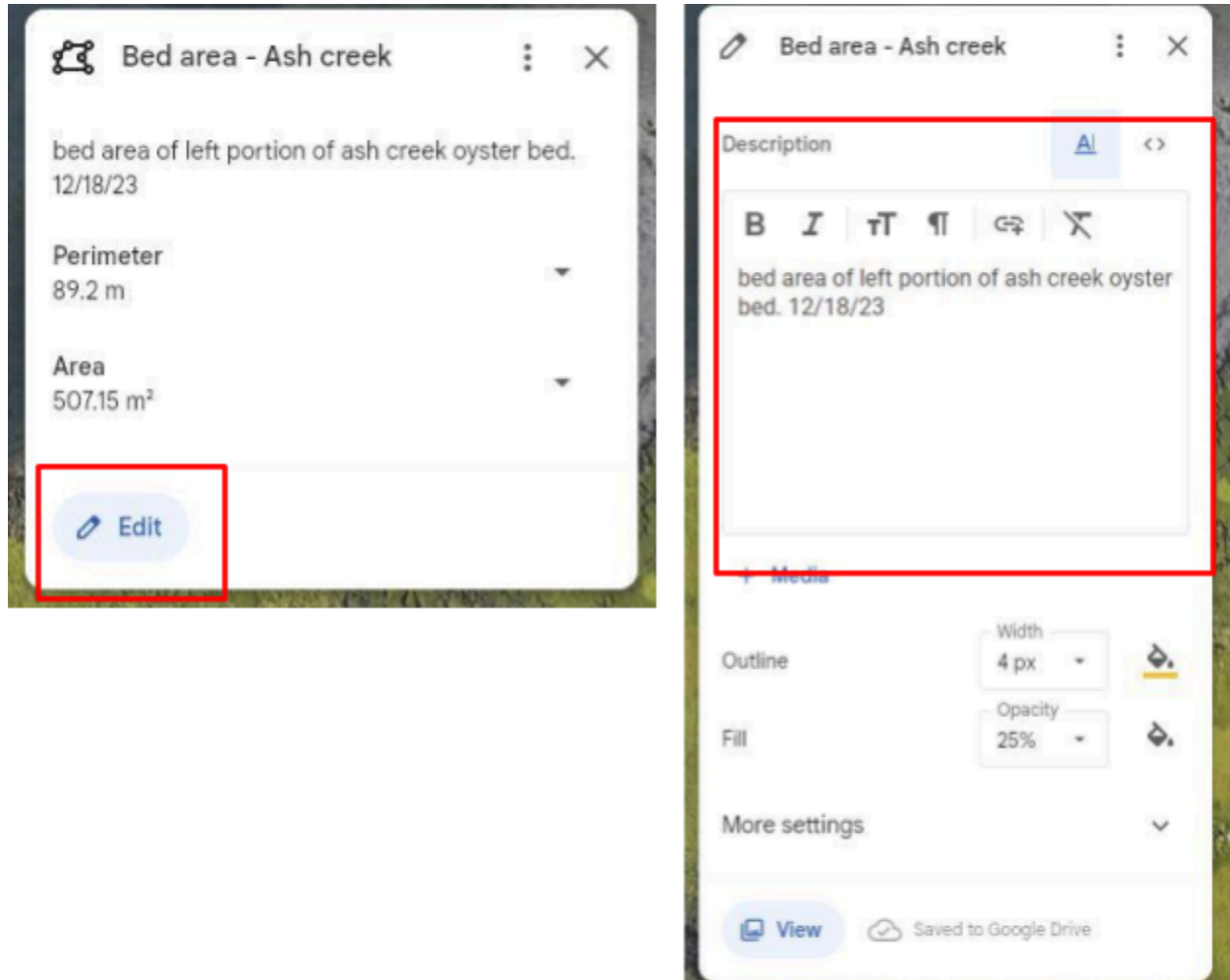


Figure 8: Depiction of how to edit the saved measurement and description.

- e. To find when Google took the Earth images, Open Google Earth and search for a place in the sidebar. Zoom in to an area as much as possible and hover your mouse over the map. You should see the capture date of that satellite image in the status bar at the bottom of your screen by clicking “data attribution” (Figure 9).

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Figure 9: Depiction of where to find 'data attribution' information on when the Google Earth image was taken.

4. Site specific guidelines

- a. Ash Creek has two bed sections (a right and left reef area). The bed sections are identified as right and left based on the view from entering the access point. Both sections should be measured for area and added together for total reef area (Figure 10).
 - i. If new areas of the bed are added via restoration practices, include the new region in the measurement (may change annually due to restoration activities).

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Figure 10: Depiction of the right and left sections of Ash Creek, Fairfield CT oyster bed.

- b. Fence Creek oyster bed includes a former lease site and the natural bed continues under Seaview Ave. Bridge and out towards the ocean. This entire region should be included as one reef area, not as separate areas (Figure 10).

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Figure 10: Depiction of where the Fence Creek, Madison CT oyster bed spans.

11 References

12 Appendices

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