



Department of  
Toxic Substances  
Control

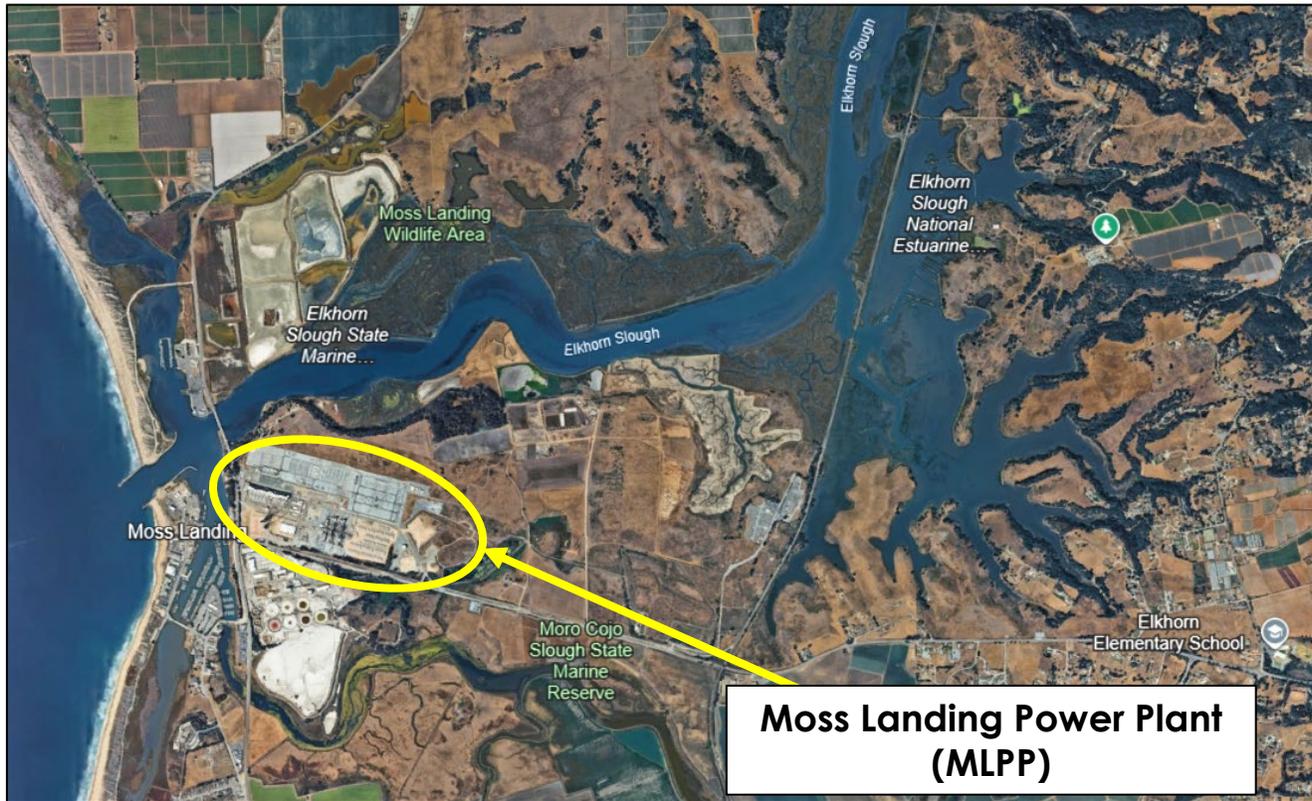


# Ecological Risk Assessment

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# Moss Landing—Elkhorn Slough



Tidal Slough and Estuary

 Dynamic Environment

 Diverse Habitats

 Conservation and Research



# What is Ecological Risk Assessment (ERA)?

**Ecological risk assessment** is a process for evaluating the likelihood of adverse effects to biological communities due to a hazardous [chemical] release.

- **Science-based, stepwise process** that follows federal and state guidance (US EPA, DTSC).
- Assesses potential for **long-term** adverse effects in terrestrial and aquatic environments.
- **Helps inform if site clean-up is needed** and to what extent.

# What is the Ecological Risk Assessor's Role?

**The Ecological Risk Assessor** conducts technical reviews and provides input on biological resource concerns at potential hazardous release sites.

- **Review work plans and reports** prepared by responsible party or their consultants.
- **Ensure federal and state standards are met** for data quality and risk assessment requirements.
- **Help risk managers** make informed decisions regarding clean-up.

# Preliminary Endangerment Assessment (PEA) Equivalent Report

The PEA “provides basic information for determining if there has been a release of a hazardous substance that presents a risk to human health or the environment.”  
(DTSC PEA Guidance, 2015).

- Prepared by **Terraphase** on behalf of **Vistra**.
- Included an **Ecological Screening-Level Evaluation** based on:
  - Phase 1 sampling (terrestrial upland habitat).
  - Phase 2 sampling (aquatic marsh habitat).
- Why is it a PEA “**Equivalent**”?
  - Report is tailored to the site-specific investigation process.
  - Still intended to meet regulatory standards.

# PEA Equivalent Report is in Draft Status

**The PEA Equivalent Report is still under regulatory review.**

- **The Report's results and conclusions may change** pending regulatory feedback and revisions.
- **This presentation** provides:
  - Background information leading up to the Report.
  - An overview of the ERA presented in the Report's 1<sup>st</sup> draft.

# Basis for Ecological Risk Assessment

Observations indicating potential impact of battery fire to wildlife or habitat:



**Modeled Deposition  
Plume**

IMAAC, Jan. 2025



**Insect Population  
Changes at MAOA**

Mosquito Abatement District  
Observation Area

District Memo, Feb. 2025



**Potential Fire Debris at  
Hester Marsh**

CDFW Letter, Feb. 2025

## Potential Fire Debris—Hester Marsh (Jan-Feb 2025)



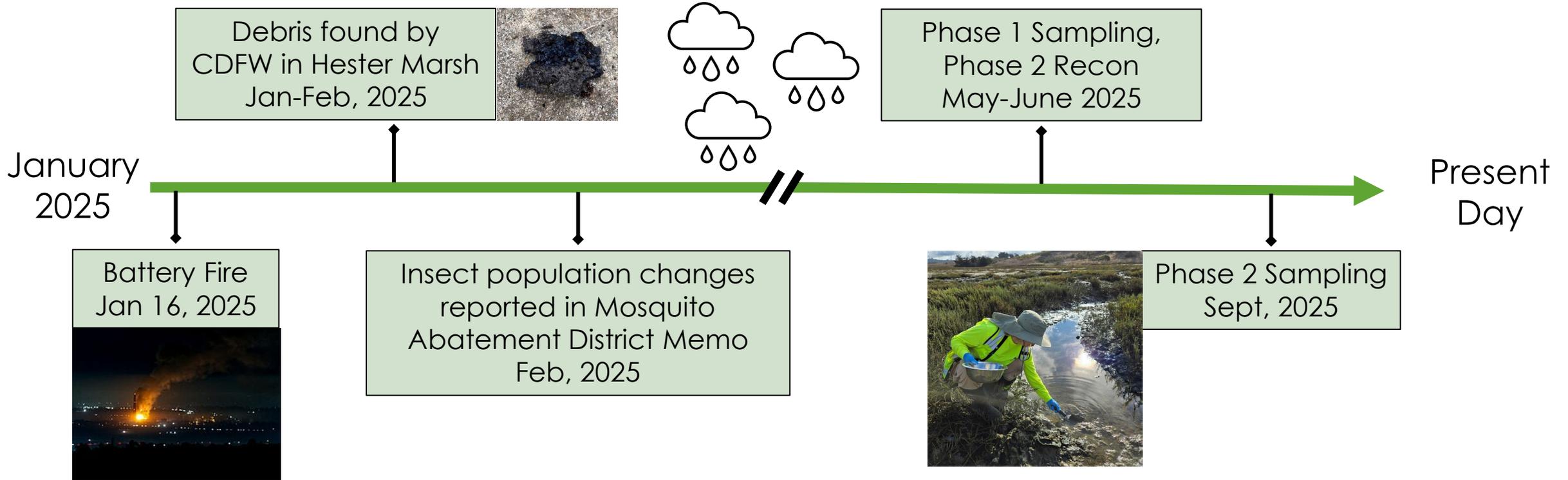
Photo from California Department of Fish and Wildlife (CDFW) Central Region, January 25, 2025.

Hundreds observed by CDFW Staff in January and February 2025.

Unknown origin and composition, estimated 6-inch diameter flakes.

Not observed during follow-up site visits; Presumed by CDFW to be dissolved by rain.

# Timeline of Events



# Ecological Screening-Level Evaluation Process



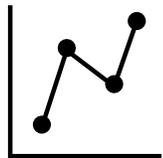
## Risk Assessment Parameters

- Chemicals of Interest
- Habitat and Exposure Media
- Screening Levels



## Sample Collection

- Environmental Fate and Transport
- Sensitive Habitat



## Risk Characterization

- Risk Screening
- Data Interpretation

# Chemicals of Interest

## Chemical Class

- Metals
- Polycyclic Aromatic Hydrocarbons (PAHs)
- Dioxins/Furans

## Reason for Selection

- ◆ Battery Constituents
- ◆ Combustion Products



**Line of evidence:**  
Is there a chemical fingerprint?

# Habitat and Exposure Media

## Phase 1 Sampling



Soil

**Upland Terrestrial  
Habitat**

## Phase 2 Sampling



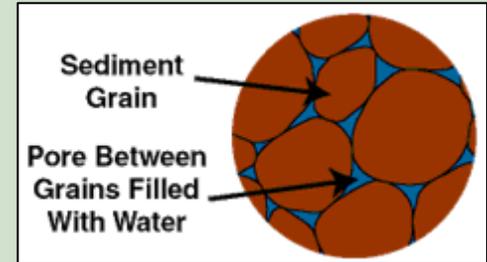
Surface Water

**Aquatic Habitat**



Sediment

**Benthic Habitat**



Porewater

**Supports Sediment  
Sampling**

# Ecological Screening Level Selection

## Hierarchy of Sources

Prioritized by quality and availability.

## Sample Media

Each sampled medium has its own screening levels.

## Conservative Exposure Assumptions

The most sensitive representative wildlife species is evaluated.

# Field Sampling Considerations



## Dynamic Habitat

- Tidal action
- Sediment chemistry
- Natural background variation



## Weather Impacts

- Debris dissolved or moved by rain
- Stormwater runoff
- Direction of stormwater flow

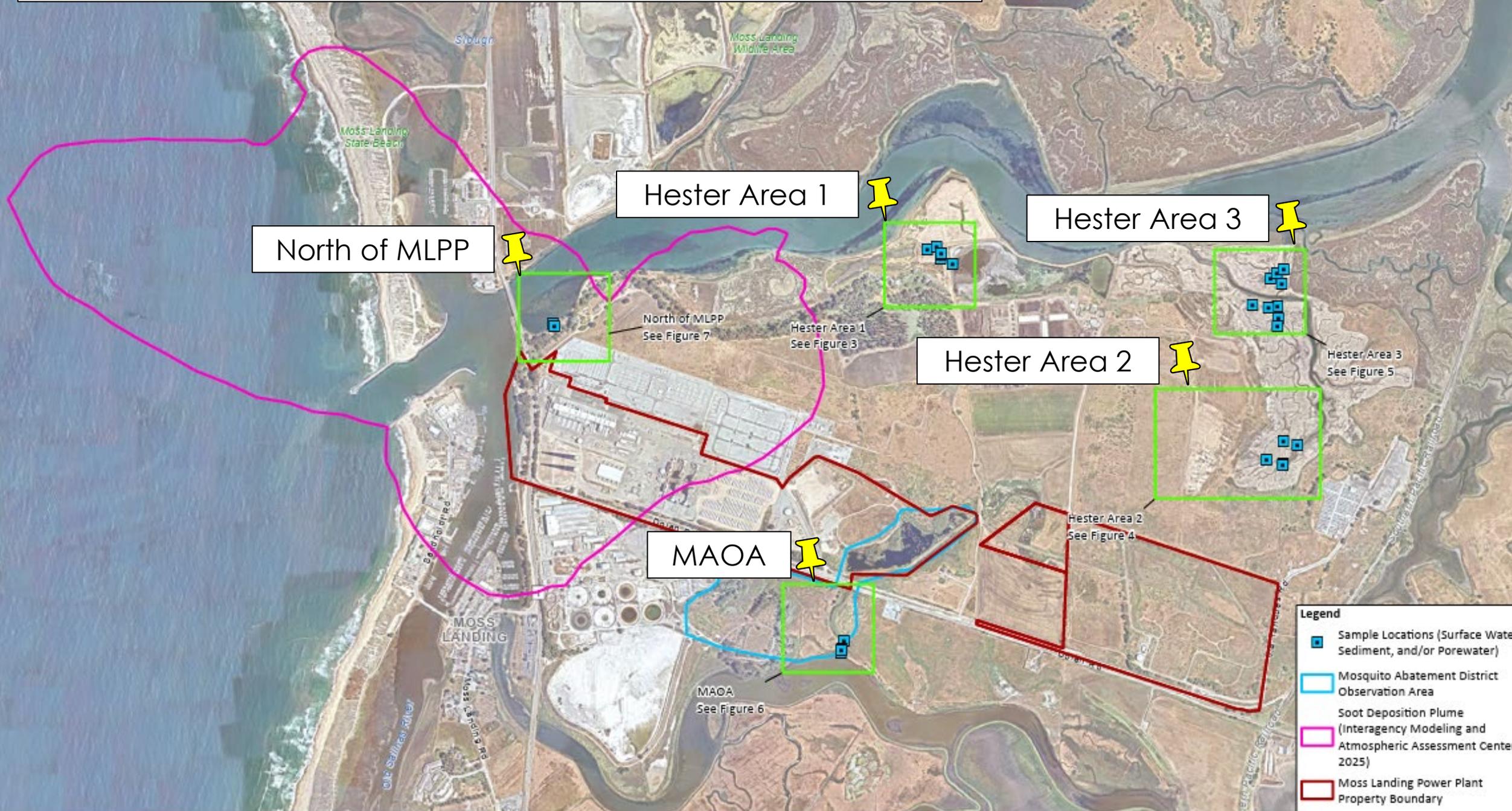


## Chemical Inputs

- Watershed and ocean
- Atmospheric deposition
- Human activities



# Sampling Areas. Adapted from Phase 2 Sampling Report (Terraphase, 2025)



# Sample Collection – Sediment and Surface Water

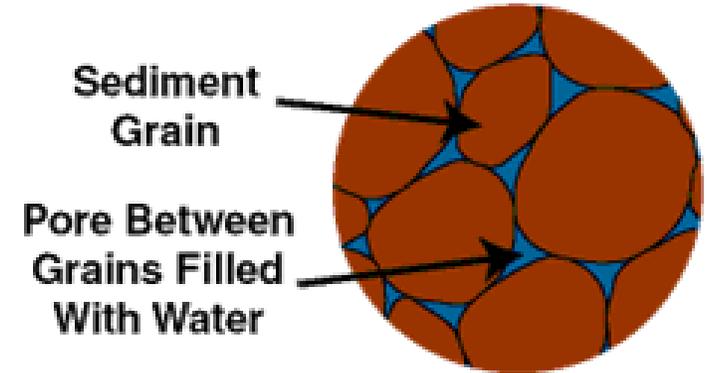
- 4 samples collected at each location, except:
  - North of MLPP: 1 sample.
- Analyzed for metals, PAHS, and dioxins/furans.



Sediment **(left)** and surface water **(right)** sampling from Phase 2 Photolog (Terraphase, 2025).

# Sample Collection – Porewater

- One sample collected from each of Hester Areas 1 and 2.
- Analyzed for metals
- Other porewater collections unsuccessful due to low sediment permeability.
- Tried alternative methods and multiple attempts.



Porewater sampling with pump attached to steel probe **(left)** and sediment impeding uptake **(right)** (Terraphase, 2025).

## How were the sampling data used?

Highest sample concentration compared to its respective screening level.



If the sample concentration exceeded the screening level:

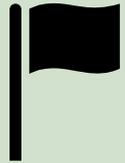
Indicates potential for ecological risk.

Does not mean potential risk is unacceptable or related to the battery fire.

**Further assessment needed.**

- Lines of evidence (regional background values).
- Risk refinements.

# Screening Evaluation Results



Nickel in MAOA Sediment:  
Found at 3x Screening Level.



Line of Evidence:

Concentration is within regional  
background.



No other chemicals exceeded screening levels in all other  
evaluated media.

# Conclusions of the PEA Equivalent Report (Under Regulatory Review)



- The data do not indicate potentially unacceptable risk to the environment.
- No further ecological risk assessment is needed.

- The Report's results and conclusions may change pending regulatory review.
- The DTSC Ecological Risk Assessment Section's opinion on the conclusion will be rendered upon completion of the review process.