# Draft Implementation Plan: Partitioning Egg and Fry Survival of Winter-Run Chinook Salmon in the Upper Sacramento River

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NAS Committee Meeting
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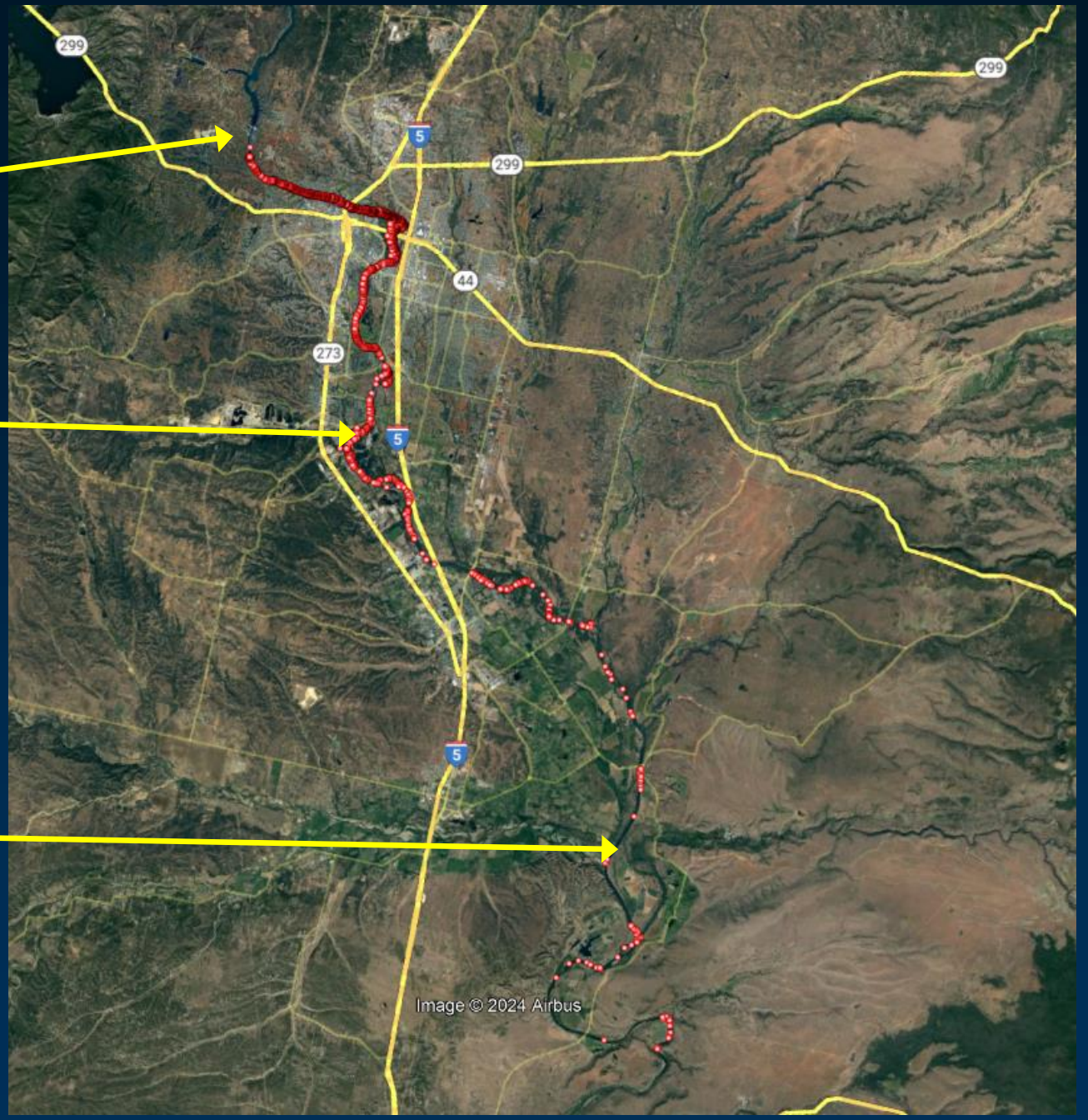
# Study Area

Keswick Dam

Clear Creek

Cow Creek

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# Scope: Spatial and Temporal

Spatial gradient in survival

- Distance from Keswick Dam
- Change in temperature and dissolved oxygen

Temporal variation in survival

- Run timing
- Seasonal change in flow
- Inter annual variation in conditions

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# Artificial Redd Installation

Two-day process

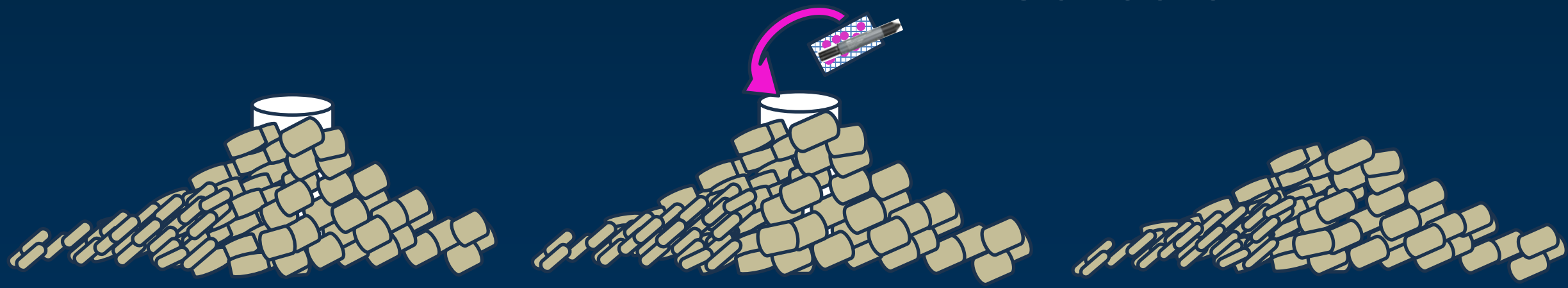
Day one

- Construct redd
- PVC stand pipe

Day two

Transport

- Fertilize eggs
- Egg boxes
- Sensors



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# Measured Factors

- Parentage
- Location, date, depth
- Assessment of deceased eggs and surviving fry
  - % yolk sac remaining, development indices
- Dissolved oxygen and temperature in each redd
  - 5 min intervals
- Percent fines and cobble characteristics
- Dam operations and river discharge
- Scour chains

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# Sample Sizes

Total of 10,000 eggs annually

- 100 eggs per redd
  - 3ml of milt per 100 eggs
- 5 redds per site (replication)
- 10 sites (spatial gradient)
- Early and late spawn time
- Emergence target 900 to 930 ATUs

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# Project Schedule

- 5 Year Study from 2024 to 2028
- Implementation plan 2024
  - Pilot study using fall-run eggs later this year
- Annual data releases and public updates
- Interim report in 2026 and final report in 2028

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