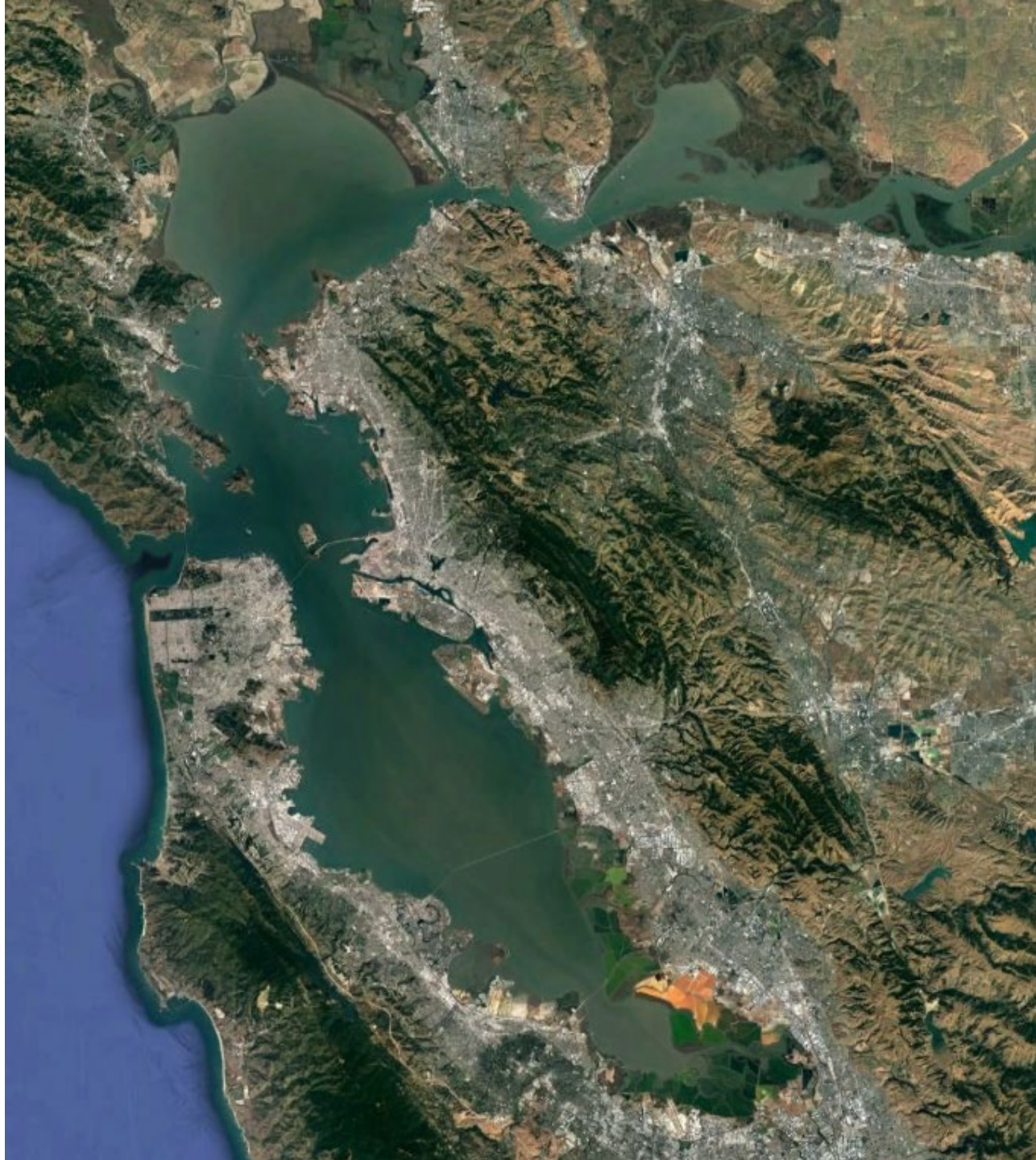
SF Bay
Sand Science Studies

BCDC Working Group Meeting #1

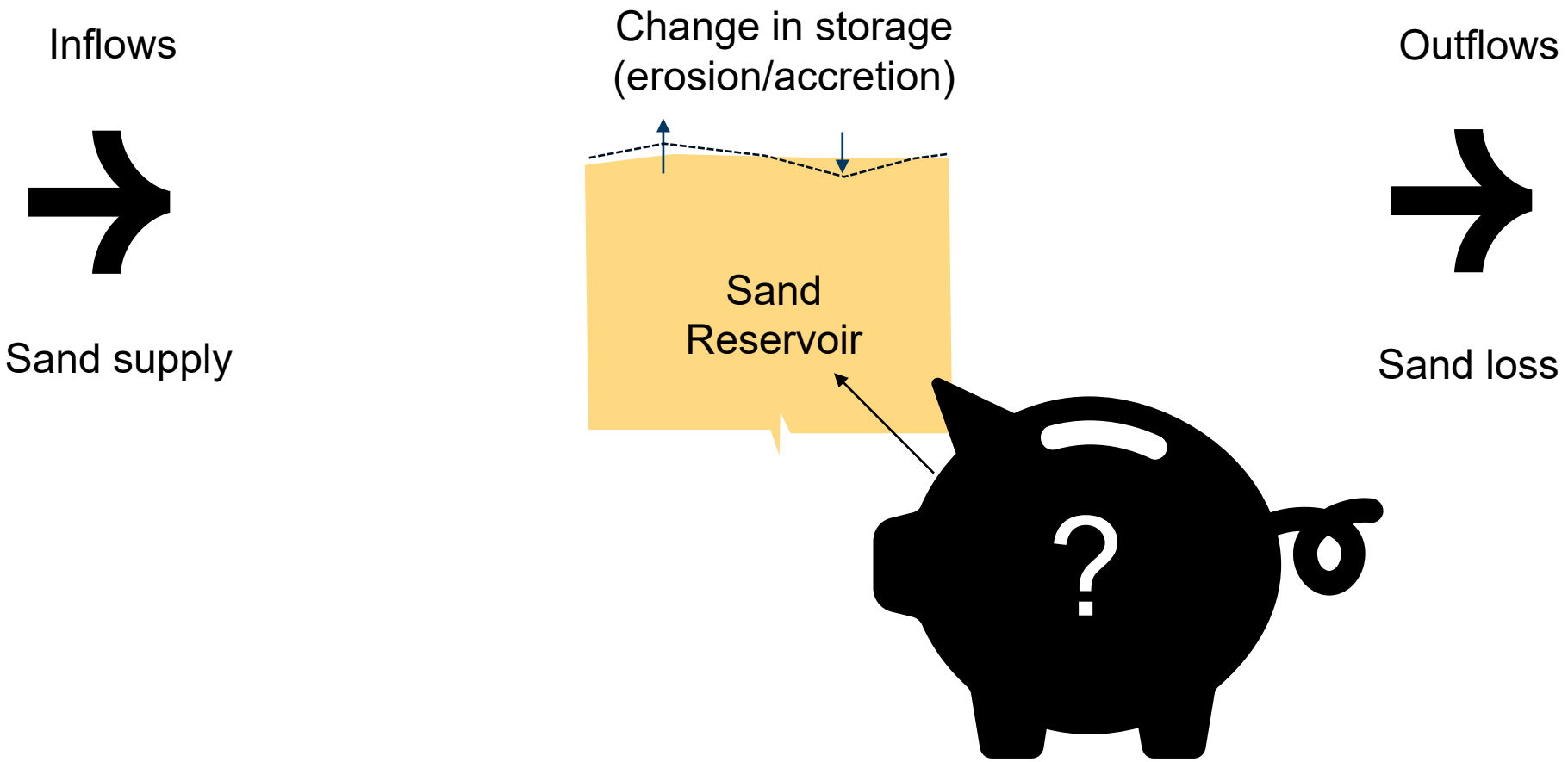
July 12, 2024

Mining Team – Supporting Slides



Sand Budget – Missing size of sand reservoir

- Sand budget focused on inflows, outflows and bathymetric (storage) change
- Size of “very large sand reservoir” not included in sand budget



Sand Budget Results – Uncertainty in direction and magnitude at GG

Table 3. Results of the sensitivity analysis for flux estimates at each subembayment boundary.

Boundary	Sand flux Million metric tonnes per year (Mt/y)			Mud flux Million metric tonnes per year (Mt/y)		
	Lower	Upper	Best	Lower	Upper	Best
Delta - Suisun Bay	-0.002	-0.006	-0.004	0.24	0.69	0.46
Suisun Bay - San Pablo Bay	-0.010	0.44	0.22	0.73	2.0	1.4
San Pablo Bay - Central Bay	0.23	1.1	0.67	1.2	2.9	2.0
Lower South Bay - South Bay	-0.0069	-0.045	-0.026	-0.13	-0.34	-0.24
South Bay - Central Bay	0.11	0.30	0.21	-0.017	0.062	0.023
Central Bay - Pacific Ocean	-0.66	1.1	0.25	0.57	2.3	1.4

(-) negative denotes net landward (flood flux)

SFEI

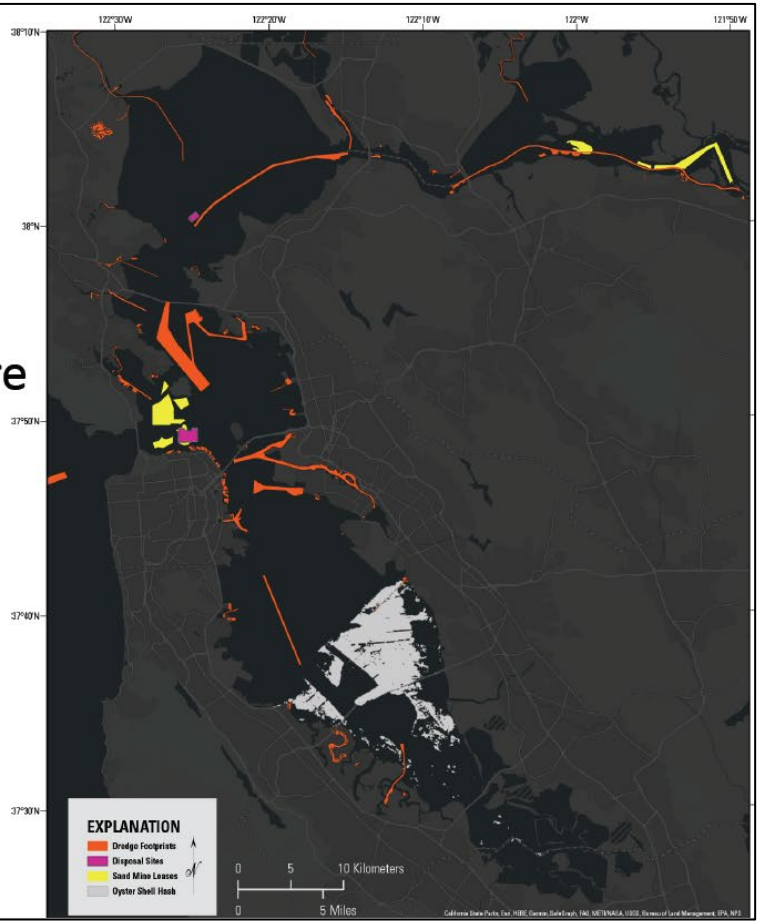
"BUT flux at the Golden Gate is the most uncertain term….due to computation by difference and accumulative uncertainties associated with all the other inflow terms, the direction of flux between Central Bay and the Pacific Ocean is uncertain." Lester McKee (SFEI), Comments on ISP Report

Sand budget – double counting concern

USGS methods excluded areas of human activities (mining & dredging) from bathymetric change volumes.

SFEI team included areas of human activities in their bathymetric change volumes <u>AND</u> separately as outflows.

Areas with human activities (sand mining, dredging, disposal, etc.) were excluded from this analysis and will be accounted for separately in the sand budget



"We decided that it would be <u>double-counting</u> if we included it in both the bathymetric change and in the mining." Bruce Jaffe (USGS), Quarterly Meeting #9

Sand Budget – double counting concern

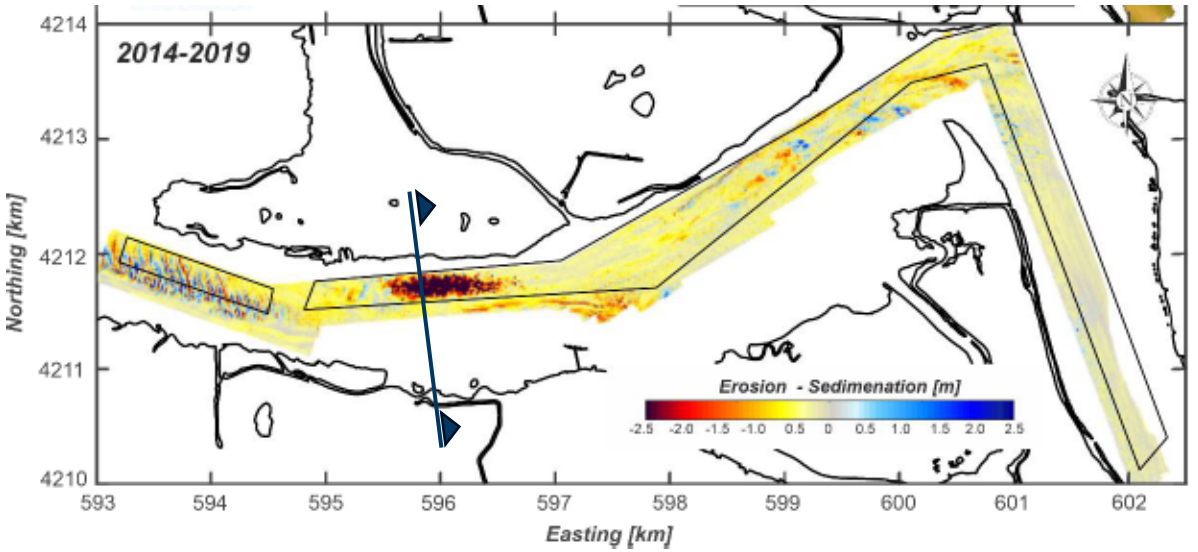
- Sand mining is double counted:
  - Bathy change includes mining
  - Sand mining also counted separately as outflow

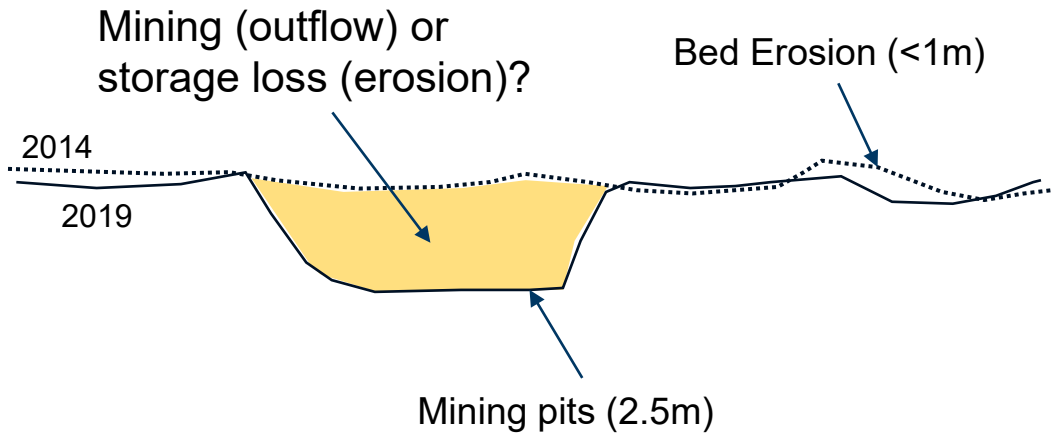
- Bathymetric change (Δ storage) includes mined areas, which represent a significant loss of sand

- Deltares work indicates very little recovery ~1% in mined areas of Suisun Bay

- Of the -0.39 Mt/y erosion in Suisun Bay budget, ~0.29 Mt/y is due to mining

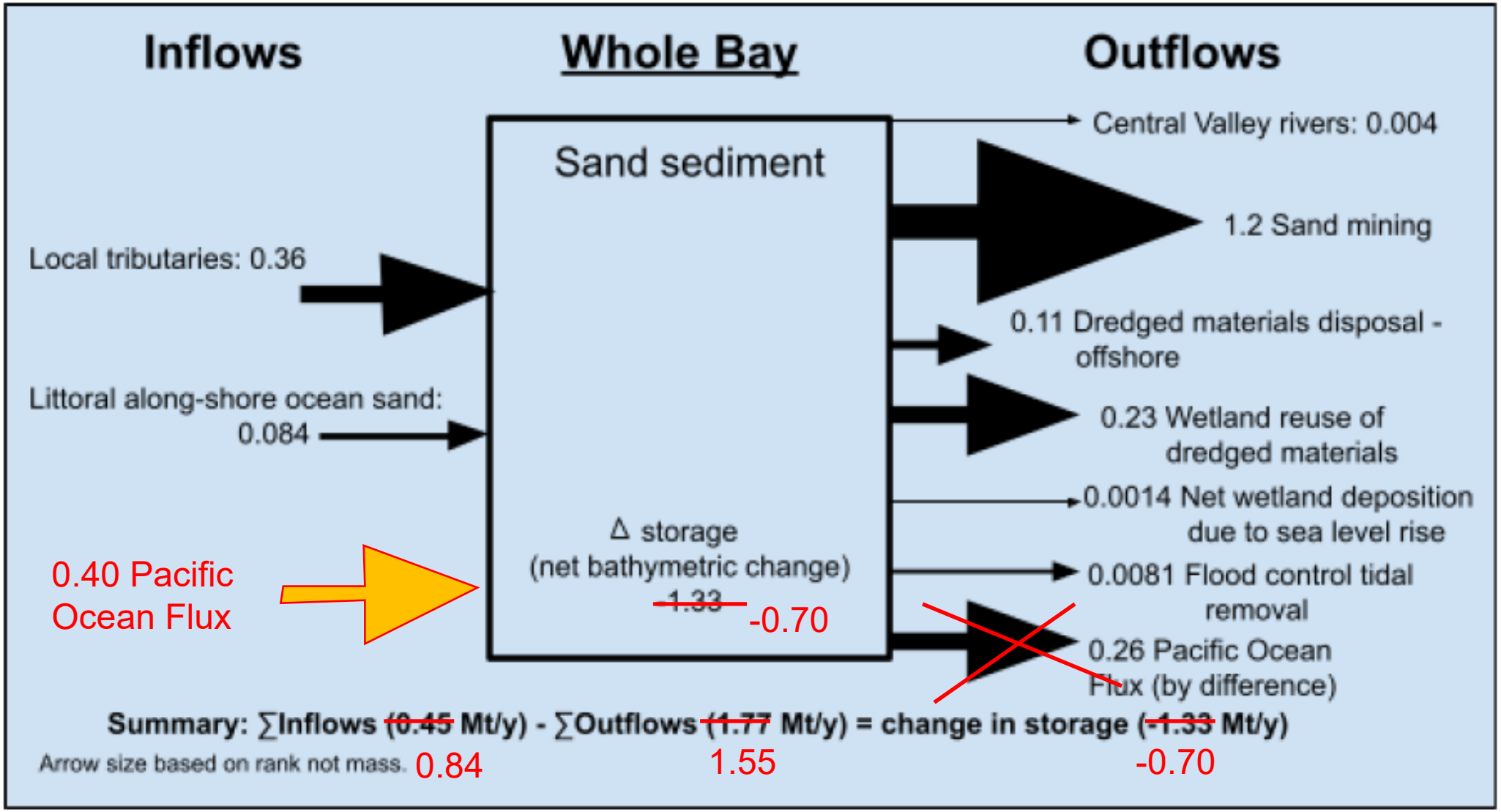
Suisun Bay example:



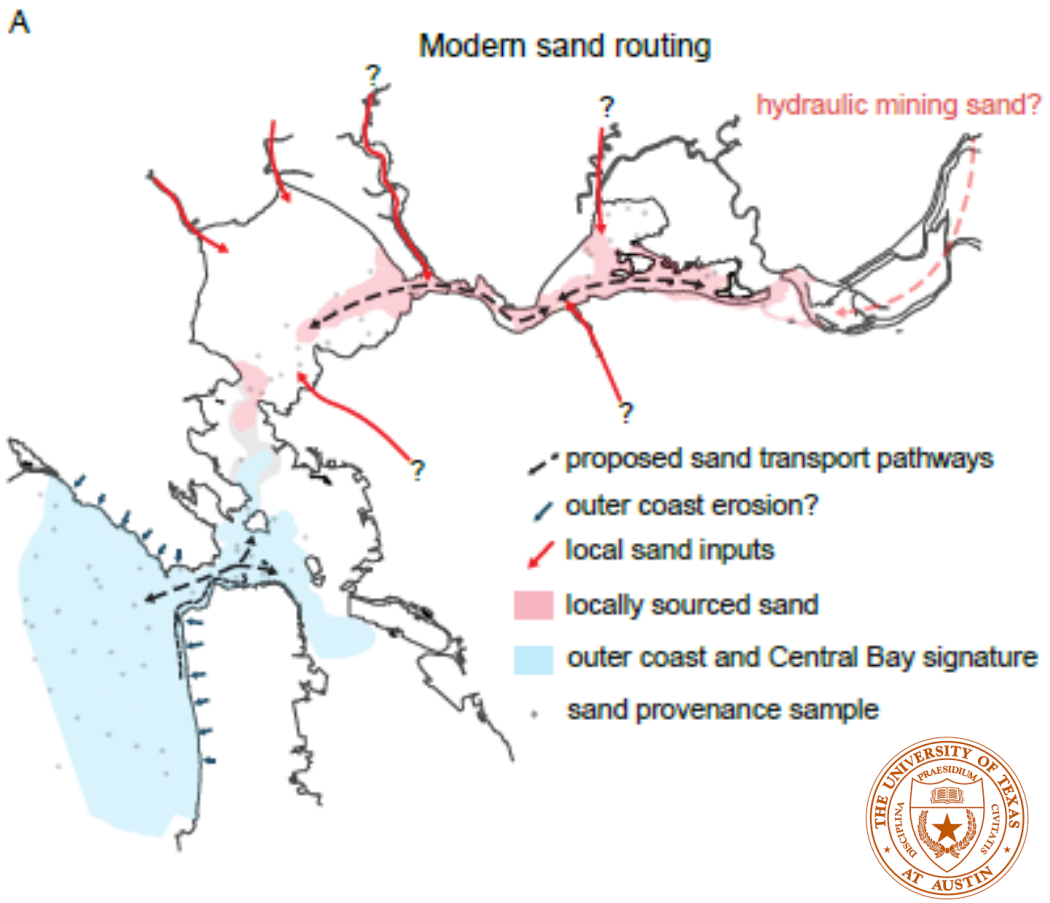


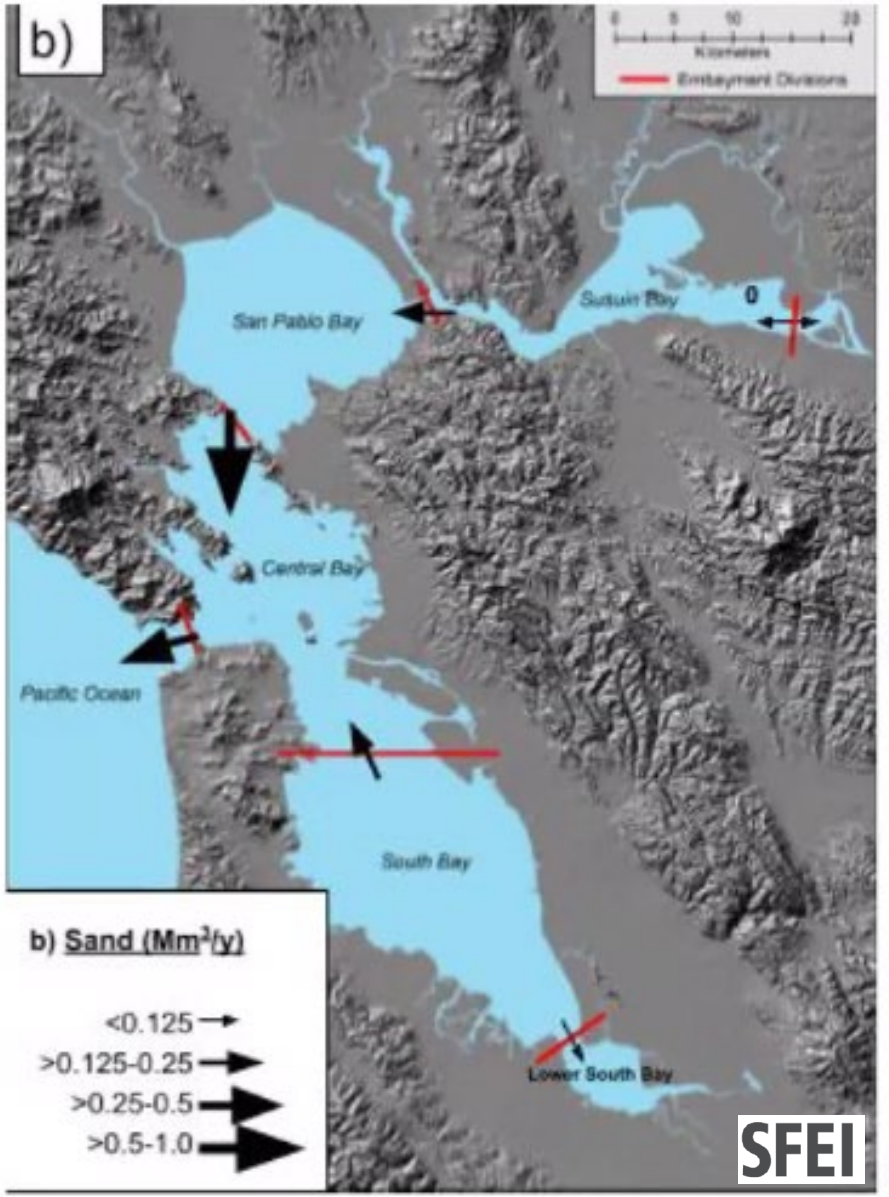
Sand Budget - Corrections

Bathy change adjusted to remove Δ storage in mining areas



Comparison – Conceptual Model vs Sand Budget





Conceptual Model vs Sand Budget (Corrected)