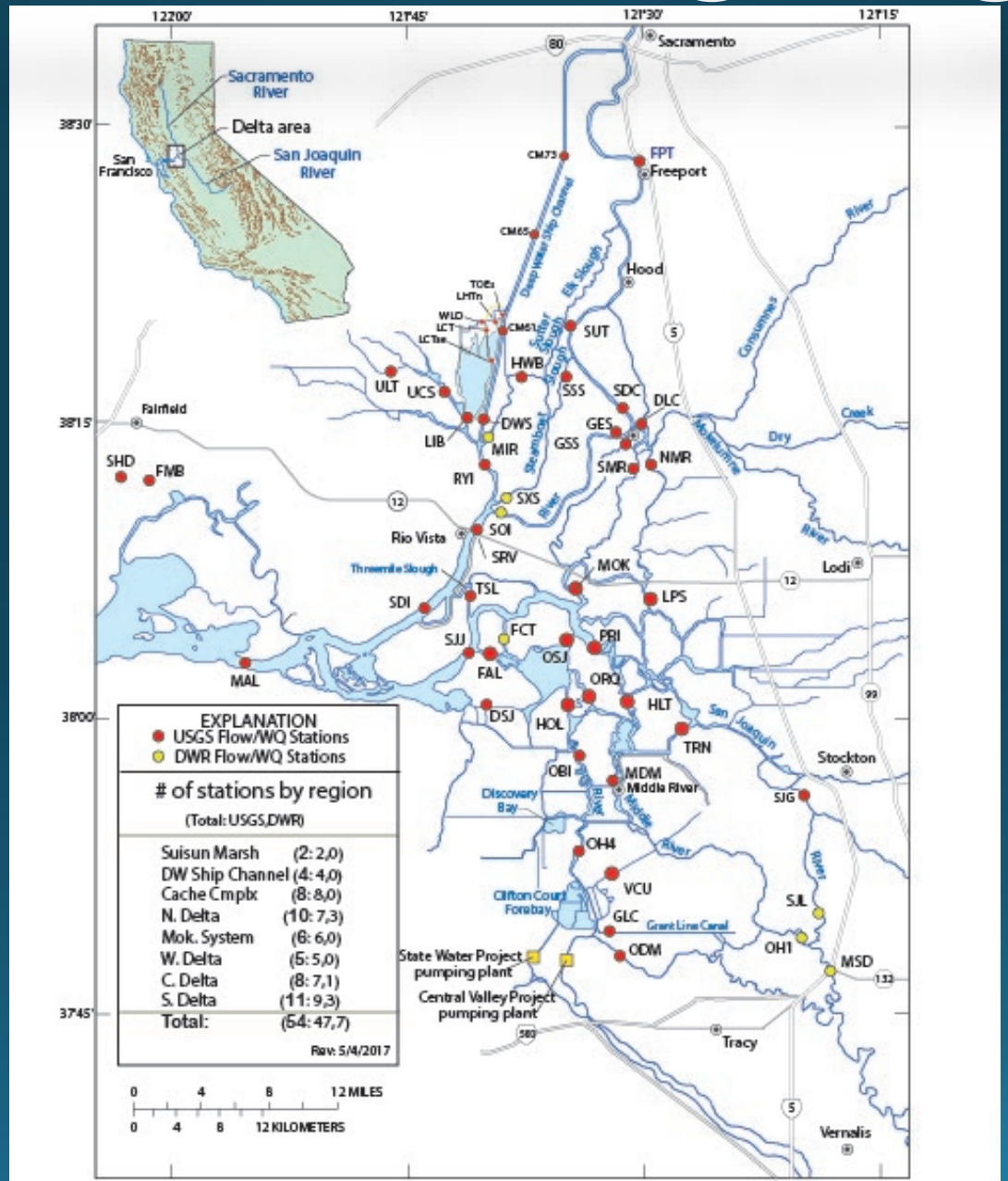
Use additional data collection and drought emergency to get agency funding for BDL

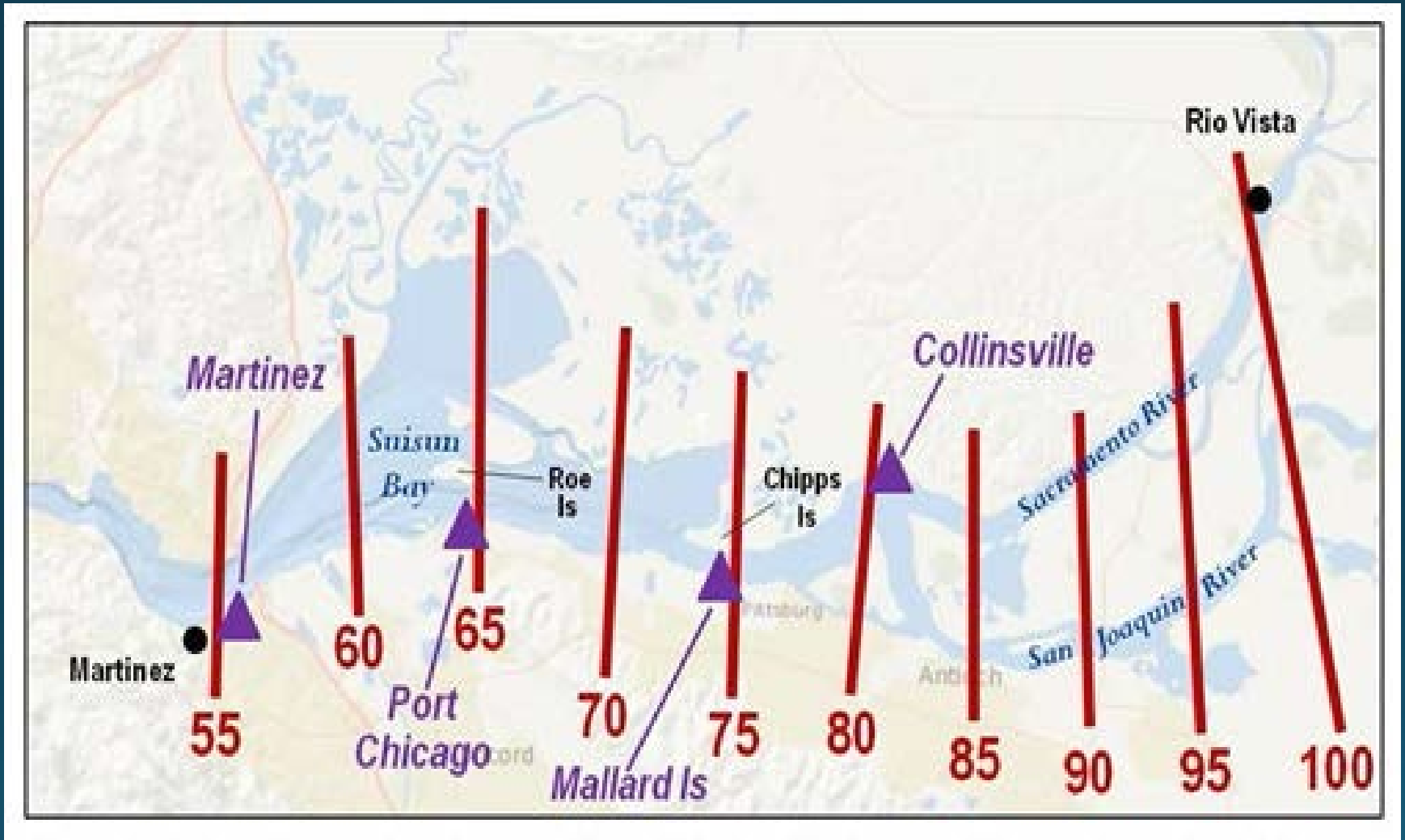
I have data collection funding from the BIG 3: DWR, USBR, SWRCB

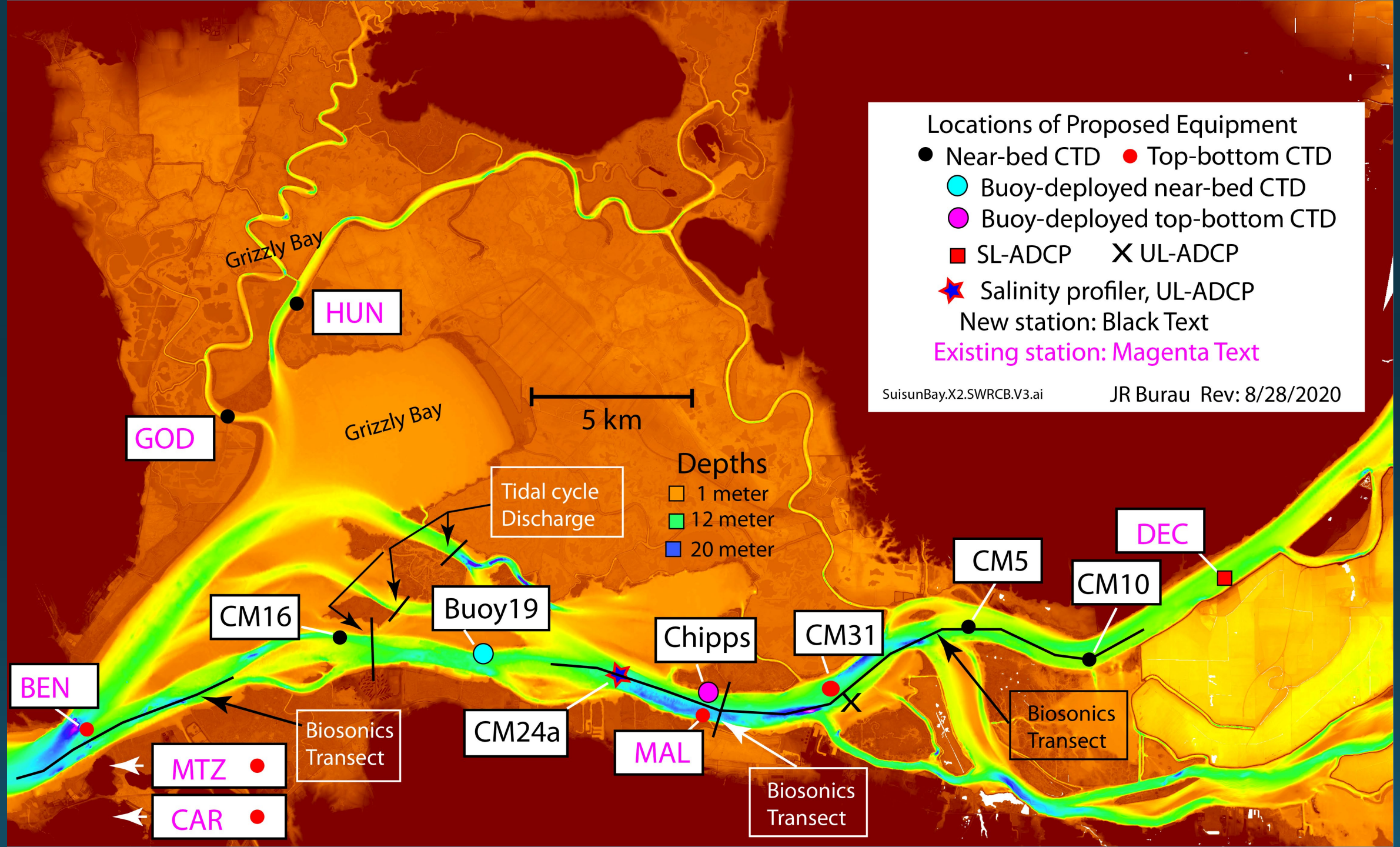
Backbone Monitoring Program



A study to (funded by SWRCB):
Accurately measure the position of X2
and
Conduct pilot level testing of salinity profiling equipment aimed at making dynamically-based predictions of X2

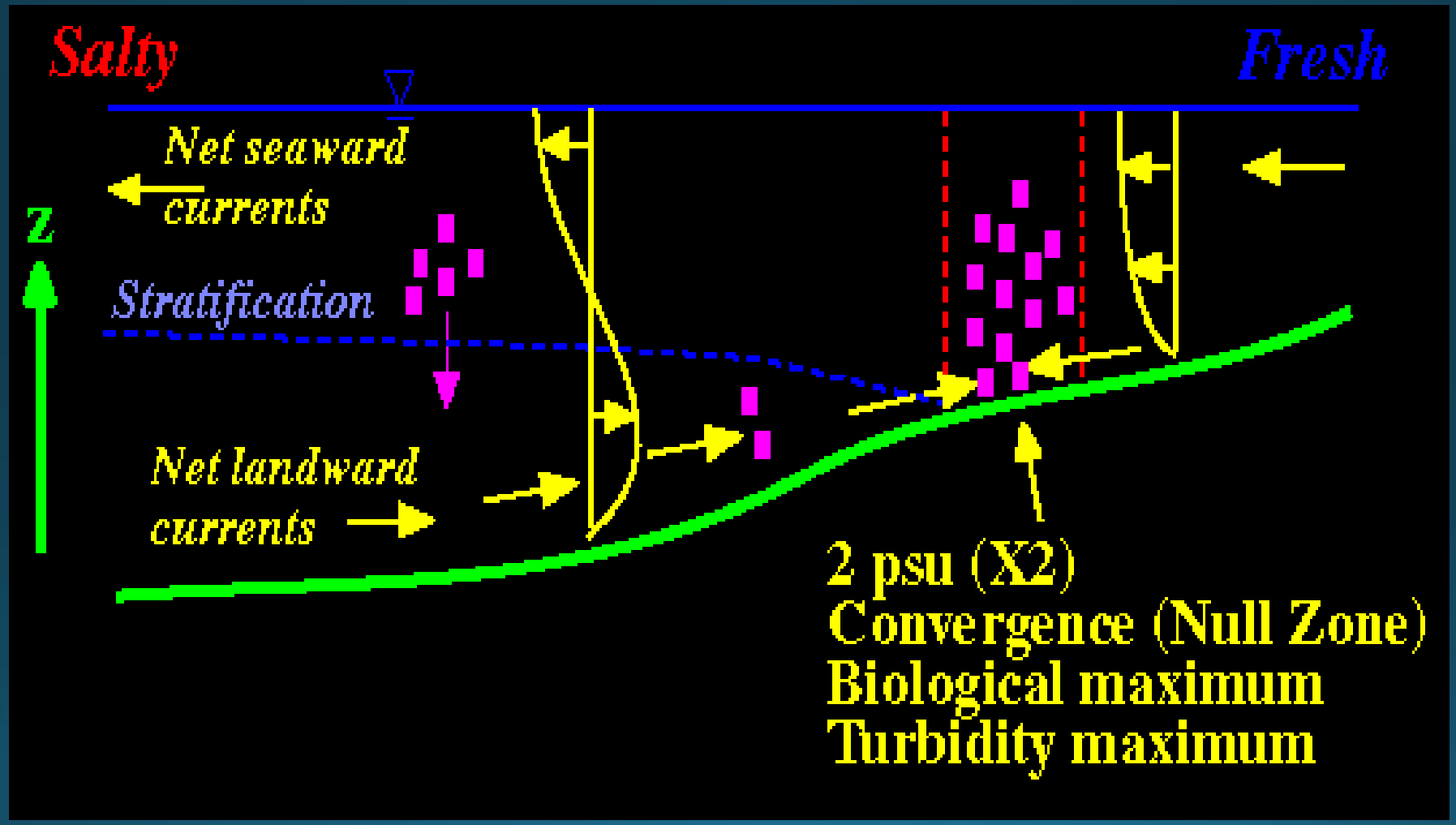
Location of X2 and data collection locations used to estimate X2




Locations of Proposed Equipment
Near-bed CTD
Top-bottom CTD
Buoy-deployed near-bed CTD
Buoy-deployed top-bottom CTD
SL-ADCP
UL-ADCP
Salinity profiler, UL-ADCP
New station: Black Text
Existing station: Magenta Text
SuisunBay.X2.SWRCB.V3.ai
JR Burau Rev: 8/28/2020
Grizzly Bay
Grizzly Bay
5 km
Depths
1 meter
12 meter
20 meter
HUN
GOD
Tidal cycle
Discharge
CM16
Buoy19
Chipps
CM31
CM5
CM10
DEC
BEN
Biosonics
Transect
CM24a
MAL
Biosonics
Transect
Biosonics
Transect
MTZ
CAR


RIO
100 km
Currently Deployed
White Dots X2 Study
Blue Dots Drought Study
CM 22
94 km
CM 13
88 km
CM 16
63 km
CM 19
66 km
CM 24a
70 km
CM 31
76 km
CM 5
82 km
CM 10
85 km
CM 25 – SJ
96 km
CM 18 – SJ
90 km
N
9 mi
Google Earth

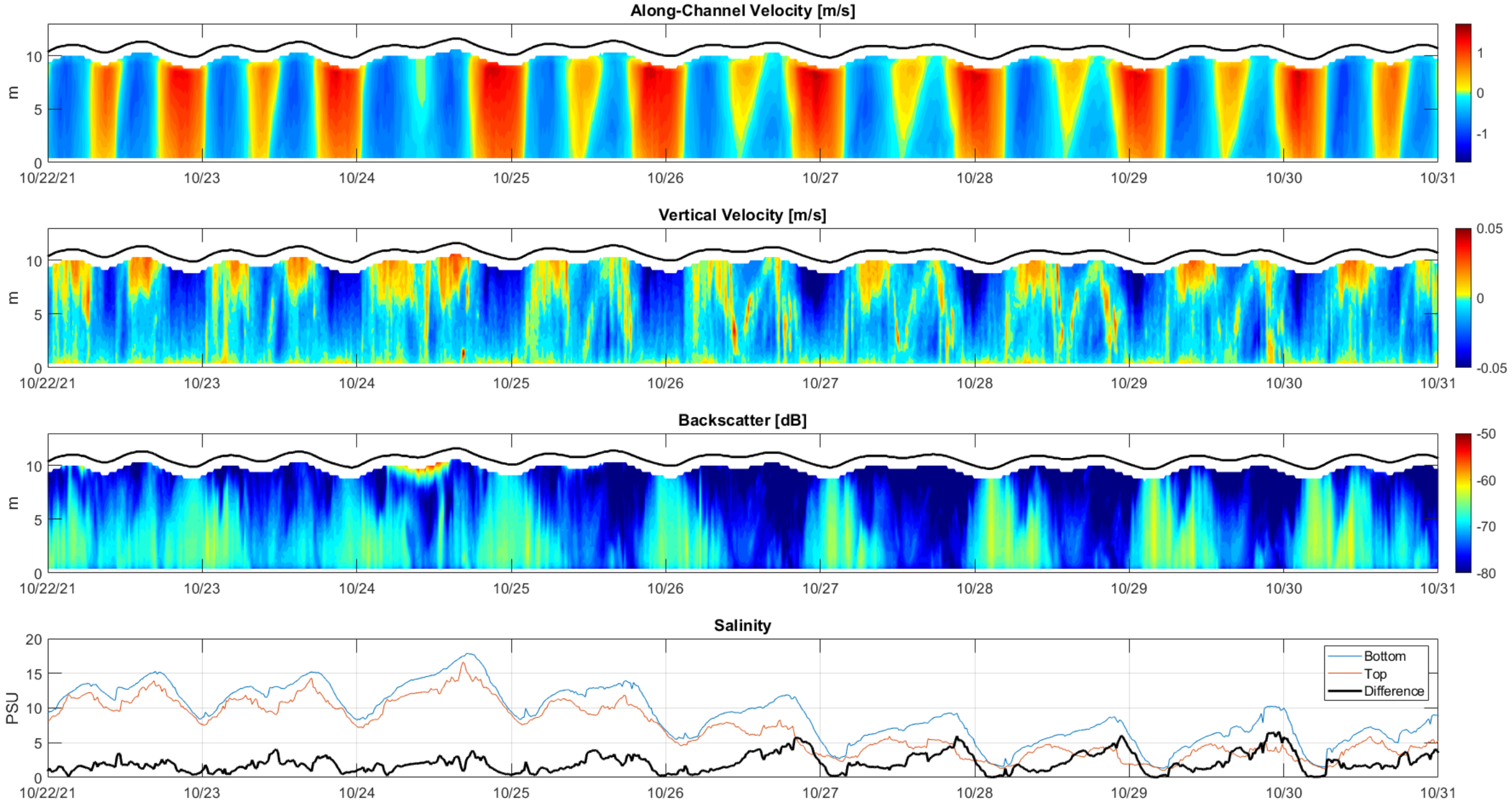
Existing Conceptual Model
(Chesepeake, Columbia)



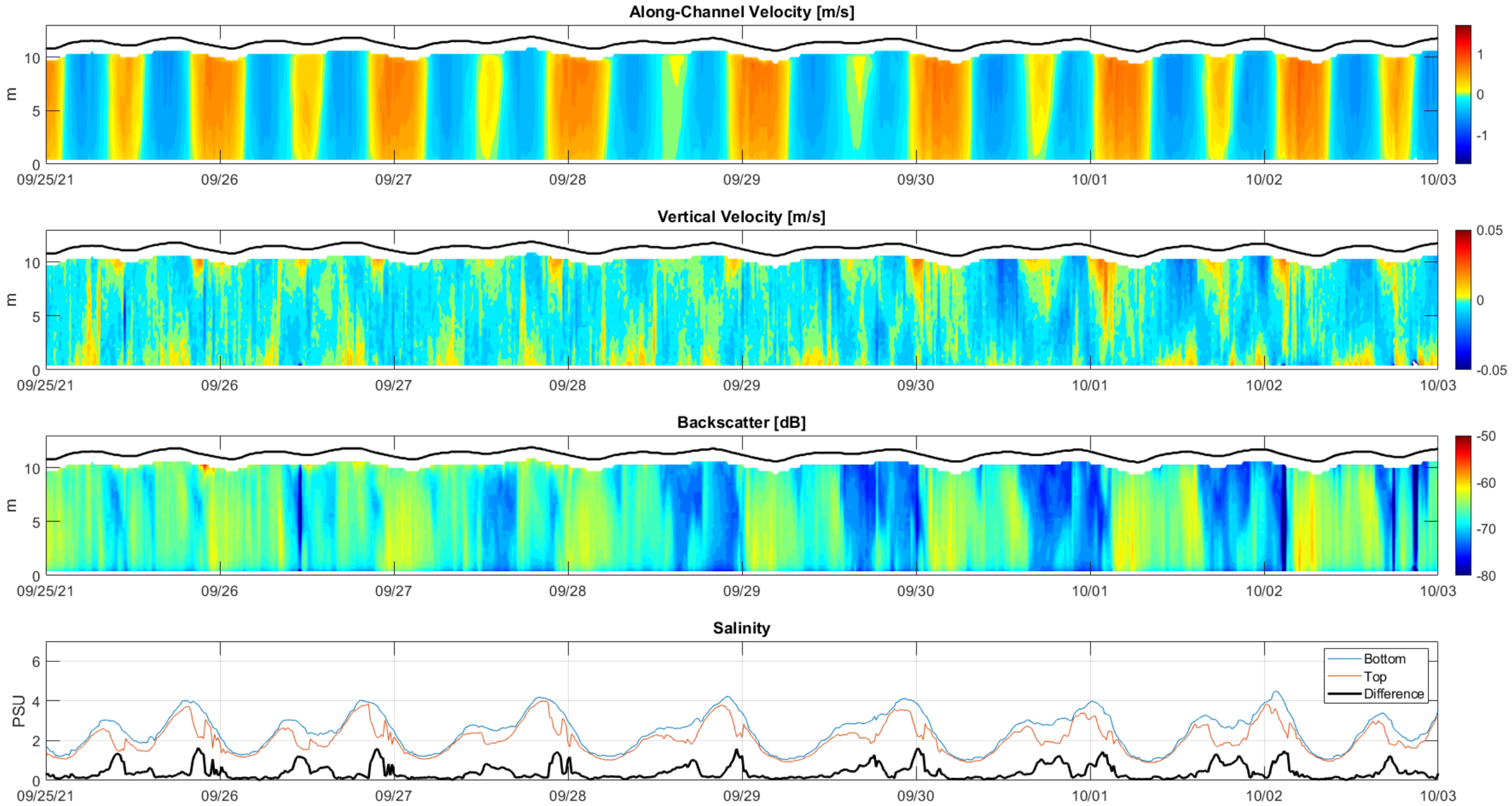
USGS

JRB

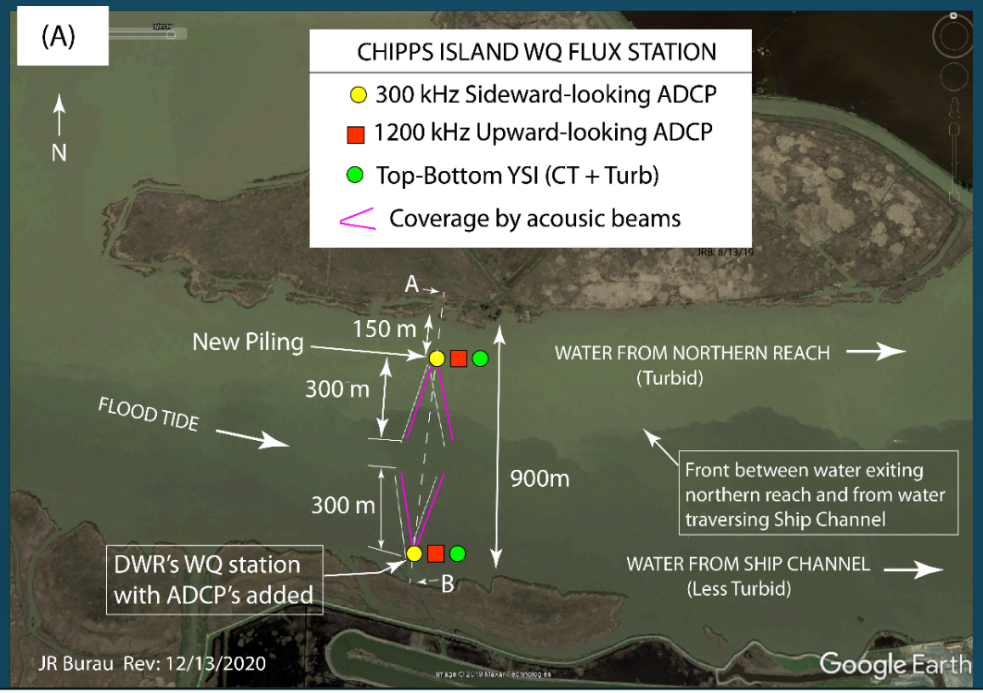
CM 24a – Velocity and Salinity, 10/22 – 10/31/2021

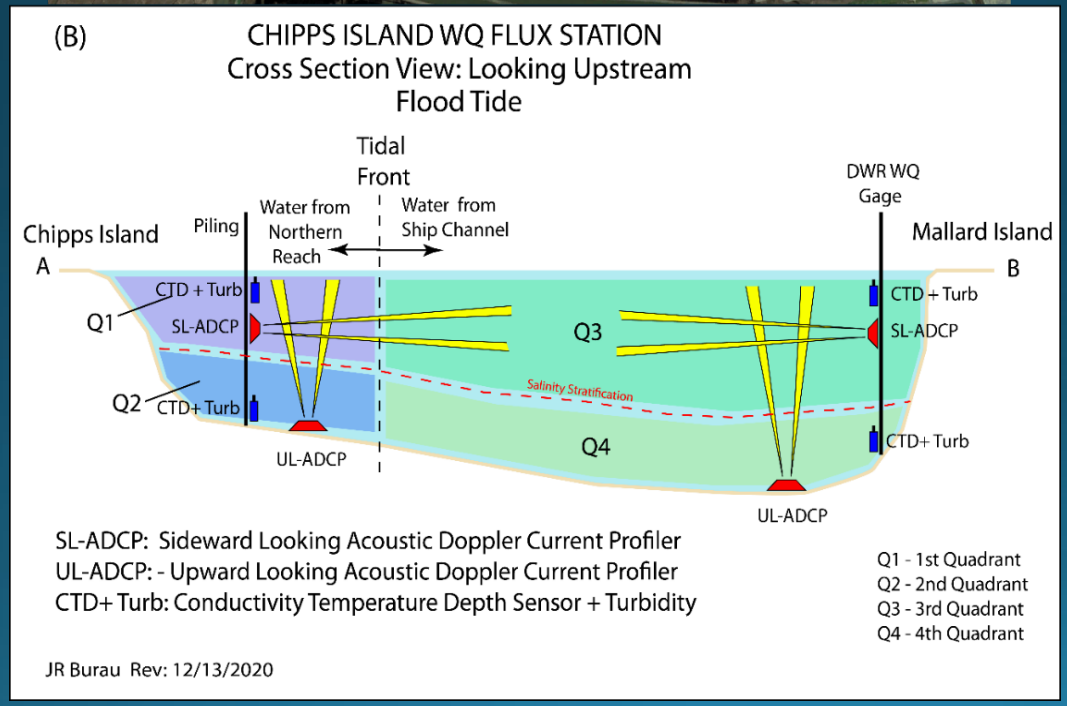


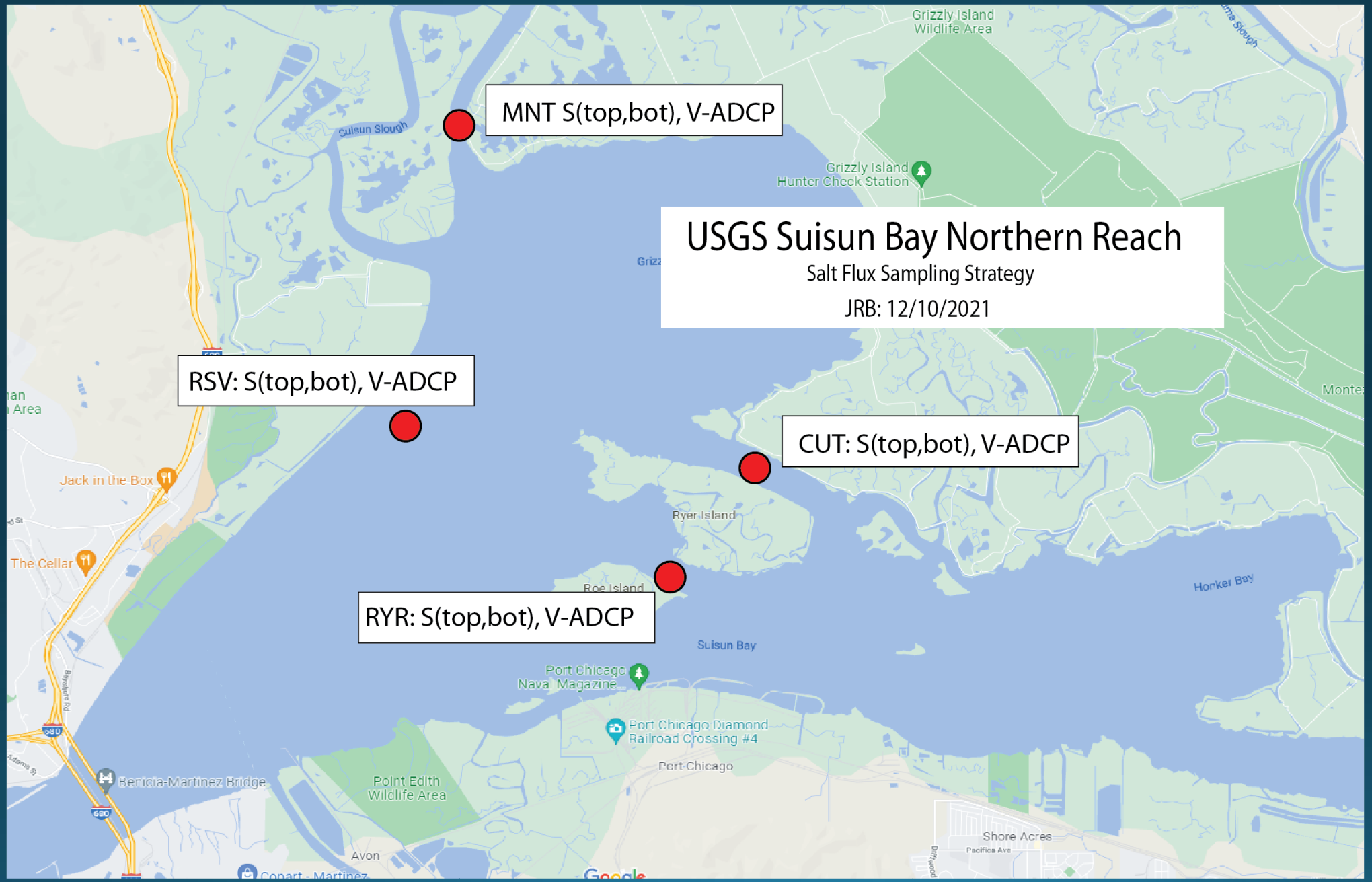
CM 18, SJ – Velocity and Salinity, 9/25 – 10/3/2021



SWRCB – New Work (start early 2023)


(A)
CHIPPS ISLAND WQ FLUX STATION
300 kHz Sideward-looking ADCP
1200 kHz Upward-looking ADCP
Top-Bottom YSI (CT + Turb)
Coverage by acousic beams
N
A
New Piling
150 m
300 m
300 m
900m
FLOOD TIDE
WATER FROM NORTHERN REACH
(Turbid)
Front between water exiting northern reach and from water traversing Ship Channel
WATER FROM SHIP CHANNEL
(Less Turbid)
DWR's WQ station with ADCP's added
B
JR Burau Rev: 12/13/2020
Google Earth

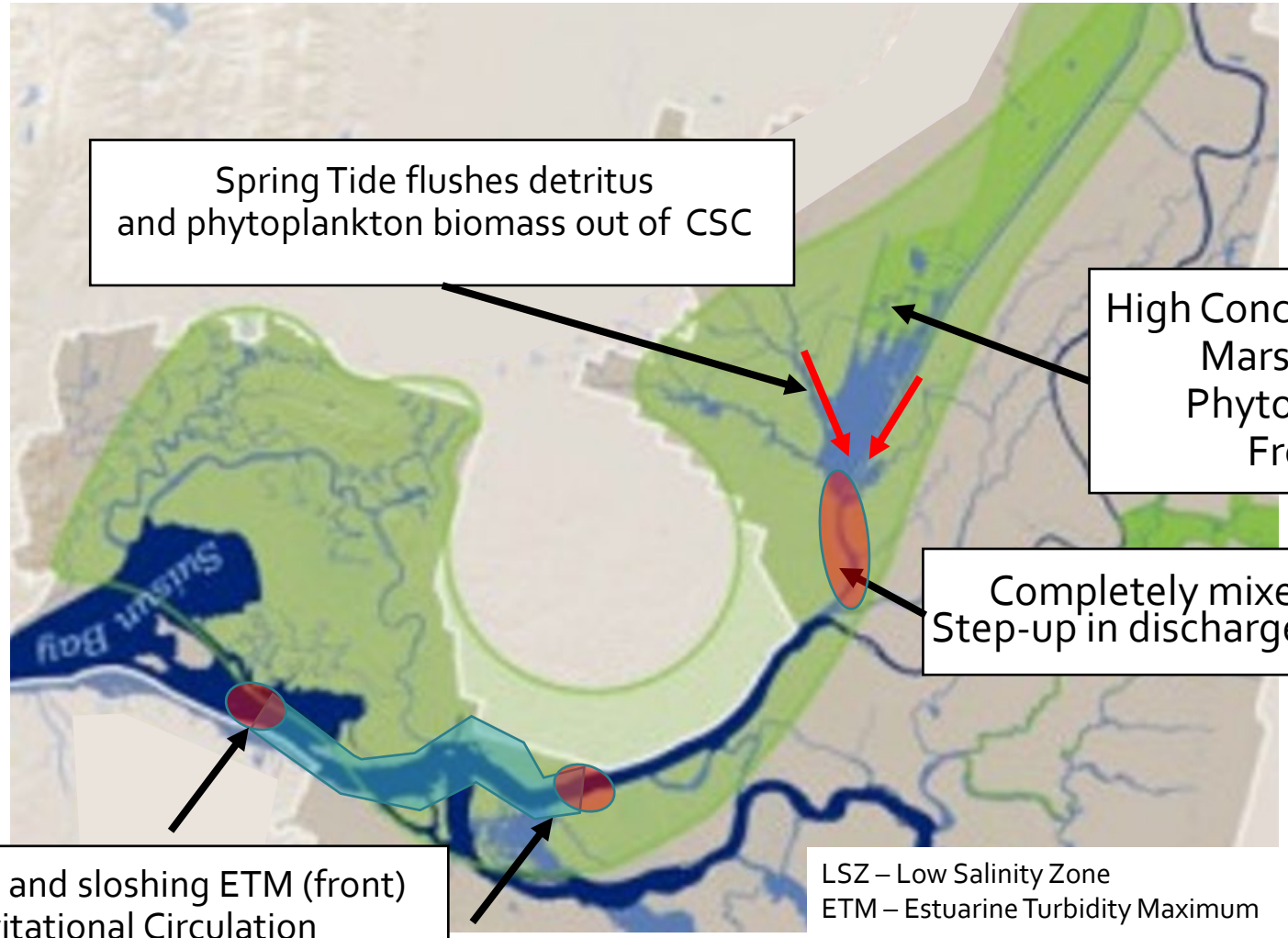

(B)
CHIPPS ISLAND WQ FLUX STATION
Cross Section View: Looking Upstream
Flood Tide
Tidal Front
Water from Northern Reach
Water from Ship Channel
DWR WQ Gage
Chipps Island
A
Piling
Mallard Island
B
CTD + Turb
SL-ADCP
Q1
Q2
CTD+ Turb
UL-ADCP
Q3
Salinity Stratification
Q4
CTD + Turb
SL-ADCP
CTD+ Turb
UL-ADCP
SL-ADCP: Sideward Looking Acoustic Doppler Current Profiler
UL-ADCP: - Upward Looking Acoustic Doppler Current Profiler
CTD+ Turb: Conductivity Temperature Depth Sensor + Turbidity
Q1 - 1st Quadrant
Q2 - 2nd Quadrant
Q3 - 3rd Quadrant
Q4 - 4th Quadrant
JR Burau Rev: 12/13/2020


MNT S(top,bot), V-ADCP
USGS Suisun Bay Northern Reach
Salt Flux Sampling Strategy
JRB: 12/10/2021
RSV: S(top,bot), V-ADCP
CUT: S(top,bot), V-ADCP
RYR: S(top,bot), V-ADCP
Grizzly Island Wildlife Area
Suisun Slough
Grizzly Island Hunter Check Station
Jack in the Box
The Cellar
Ryer Island
Roe Island
Honker Bay
Suisun Bay
Port Chicago Naval Magazine...
Port Chicago Diamond Railroad Crossing #4
Port Chicago
Benicia-Martinez Bridge
Point Edith Wildlife Area
Avon
Shore Acres
Google

Linkage to Fall Flow Action

Export of negatively buoyant materials from Cache Slough Complex is severely diluted as it transits Cache Slough

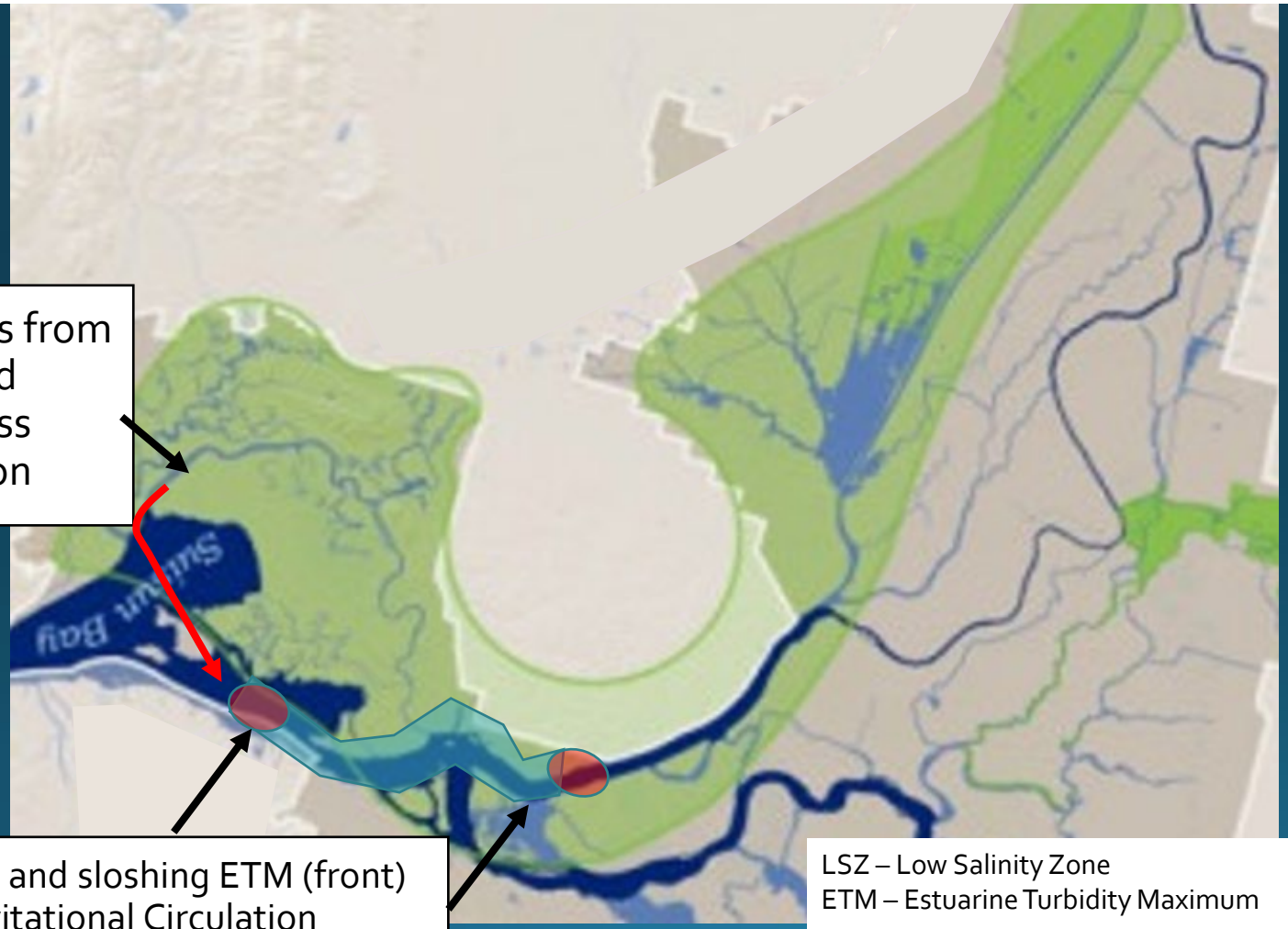
But… It is re-accumulated in the ETM



Linkage to SMSCG

Export of negatively buoyant materials from Suisun Bay Due to SMSCG operations

Will also accumulate in the ETM

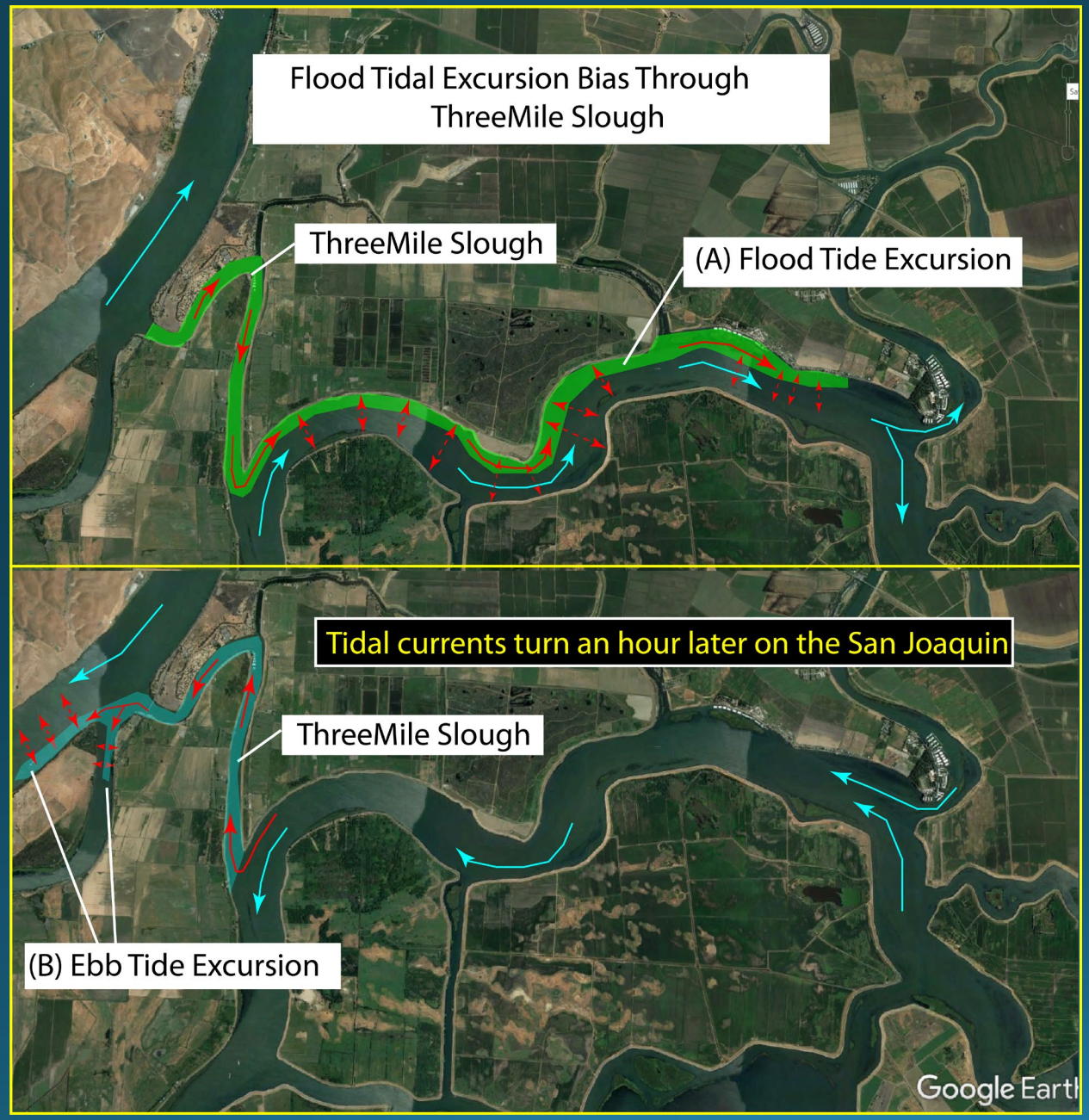


High Conc Detrital biomass from Marsh restoration and Phytoplankton biomass From SMSCG operation

LSZ –small and sloshing ETM (front) Gravitational Circulation

LSZ – Low Salinity Zone
ETM – Estuarine Turbidity Maximum

Use BDL to educate on how delta really works


Flood Tidal Excursion Bias Through ThreeMile Slough
ThreeMile Slough
(A) Flood Tide Excursion
Tidal currents turn an hour later on the San Joaquin
ThreeMile Slough
(B) Ebb Tide Excursion
Google Earth

BDL could help us provide monthly updates
On how the Delta is working:
Drought, Atmospheric Rivers, Levee Failure

Embed algorithm using anomalies in flow
Data as a first alert and to guide response
To levee failure.

Show Example of monthly reports Produced using Tableau..