Other Studies of Interest

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original compilation by Heather Peterson, USGS

for best results, print into 11 x 17 paper

Key to column headers

Pond/Trib/Bay: "P" indicates the data are from inside the ponds. "T" indicates that the data are from the creeks that are tributaries to San Francisco Bay. "B" indicates that the data are from southern San Francisco Bay.
Continuous Data: "X" indicates data are recorded by automated devices that are left in place for extended periods of time. Typically the data are recorded at 15-minute intervals for weeks or months at a time.
Discrete Sonde Data: "X" indicates data are collected manually with data sondes by monitoring staff during sampling events. Typically sampling events occur weekly, monthly or annually.
DO: "X" indicates dissolved oxygen is measured. Dissolved oxygen is the amount of gaseous oxygen (O2) dissolved in an aqueous solution. DO is generally reported in mg/l.
Chl a: "X" indicates Chlorophyll a is measured. Chlorophyll a is a green photosynthetic pigment found in most plants, algae, and cyanobacteria. For this project, chlorophyll a concentration is used as a proxy measurement for phytoplankton concentration.
Nutrients: "X" indicates nutrients are measured
Metals: "X" indicates metals are measured
Available/Request: "A" indicates that the data are available on the world wide web, and can be downloaded freely by the public. "R" indicates the data must be requested through the contact person listed for the data element.

Glossary and abbreviations

ADCP: Acoustic Doppler Current Profilers
BMI: Benthic Macro-Invertebrate
CDFG: California Department of Fish and Game. See http://www.dfg.ca.gov/ for more information.
Cs: Cesium
CTD: An instrument that simultaneously measures electrical conductivity, temperature, and pressure (depth). Often sensors for other constituents such as dissolved oxygen, and pH are also bundled with the CTD sensor array.
Cu: Copper

Data sonde: an instrument package with sensors that measure conductivity, temperature, pressure (depth), and other water quality constituents such as dissolved oxygen, turbidity, and chlorophyll a. Instrument packages often come with internal data-logging devices. Sondes can be carried by field staff to collect in-situ measurements or left in-situ for extended periods (weeks or months) to collect data at regular (generally 15-minute) intervals.
DOC: Dissolved organic carbon; the organic carbon present in surface water that passes a 0.2 mm filter.
EC: Conductivity.
EOA: Eisenberg, Olivieri and Associates, Inc.
Grab Samples: For this program grab samples are water or sediment samples collected at the sampling site for later analysis in a laboratory, in contrast to data collected in the field with instrumentation such as a data sonde.
Hg: mercury
LTMAP: Long-Term Monitoring and Assessment Plan sponsored by Stanford University and City of Palo Alto and managed by the San Francisquito Watershed Council
MeHg: Methylmercury
NASA: The National Aeronautics and Space Administration
NH4: Ammonium
Ni: Nickel
NO2: Nitrite
NO3: Nitrate

NPDES: National Pollutant Discharge Elimination System (NPDES) program was established by the federal government to control point-source discharges of water pollution. The program, created in 1972 under the Clean Water Act, is responsible for controlling and regulating point sources of discharge of pollutants to waters within each state to maintain, protect, and restore the water quality of streams, lakes, and rivers.
OBS: Optical Backscatter, a measure of turbidity or water clarity
OP Pesticides: organophosphate, organophosphorus pesticides
PAHs: Polycyclic aromatic hydrocarbons
Pb: Lead
PBDE: polybrominated diphenyl ether
PCBs: polychlorinated biphenyls
pH: pH is a measure of the acidity of a solution in terms of activity of hydrogen ions (H+). Materials with a pH below 7 are considered to be acidic, while materials with a pH above 7 are considered to be basic.
PO4: Phosphate

POTW: Publicly Owned Treatment Works, where sanitary sewage and waste water are treated and purified before release to surface water bodies
ppt: Parts per thousand
psu: practical salinity units measure the conductivity ratio of a sea water sample to a standard KCl solution.
RMP: Regional Monitoring Program is SFEI's largest program and monitors contamination in the San Francisco Bay Estuary
RWQCB: Regional Water Quality Control Board
S04: Sulfate
Sal: Salinity
SBSPRP: South Bay Salt Pond Restoration Program, the largest tidal wetland restoration project on the west coast of the United States. See http://www.southbayrestoration.org/
SCVURPPP: Santa Clara Valley Urban Runoff Pollution Prevention Program, an association of thirteen cities and towns in the Santa Clara Valley, together with Santa Clara County and the Santa Clara Valley Water District. Program participants share a common permit to discharge storm water to South San Francisco Bay, California. To reduce pollution in urban runoff to the "maximum extent practicable", the Program incorporates regulatory, monitoring and outreach measures for South San Francisco Bay and the streams of the Santa Clara Valley. For more information see: http://www.scvurppp-w2k.com/default.htm
Se: Selenium
SFB: San Francisco Bay
SFBBO: The San Francisco Bay Bird Observatory, an organization dedicated to the conservation of birds and their habitats through science and outreach, and to contributing to informed resource management decisions in the San Francisco Bay Area. See http://www.sfbbo.org/ for more information
SFEI: The San Francisco Estuary Institute was founded as a non-profit organization in 1986 to foster the development of the scientific understanding needed to protect and enhance the San Francisco Estuary. For more information see: http://www.sfei.org/index.html
SFSU: San Francisco State University. For more information see: http://www.sfsu.edu/
SiO2: Silica – Silicon Dioxide

SMP: Self Monitoring Program conducted by the SBSPRP, sampling water discharged from opened ponds as required by the USFWS, CDFG, and RWQCB to assure that salinity, pH, temperature, and dissolved oxygen (DO) of discharged waters are not harmful to biological resources.
Sonde: See data sonde
SSC: Suspended sediment concentration
TEMP: Temperature, generally reported in degrees Celsius
TMDL: Total Maximum Daily Load, see http://www.epa.gov/owow/tmdl/ for more information.

TSS: Total suspended solids; for this program a measurement of the dry-weight of particles trapped by a filter, typically of a specified pore size
Turb: Turbidity, a measure of water cloudiness
USFWS: The U.S. Fish and Wildlife Service. For more information see: http://www.fws.gov/
USGS: United States Geological Survy. For more information see: http://www.usgs.gov/

Group:		Study Description	Location	Sampling Site Names	Sample Depth	Interval	Dates	Pond/Trib/Bay	Continuous Data	Discrete Sonde Data	DO	Chl a	Nutrients	Metals	Available/Request	Notes
USGS, Luoma and Thompson Groups, Long-term metals and benthic invertebrates assemblage study																USGS began regular collections of benthic invertebrate assemblages, sediments, and invertebrate samples for contaminant and histological analysis through a program initiated in 1974. Complementary work between Jan Thompson's group (benthic assemblage structure) and Sam Luoma's group (toxics in sediments and biota, invertebrate histology) have provided a chronicle of intra-annual to decadal time scale changes in metals contamination to South Bay.
USGS, Sam Luoma		Metals data for surficial sediments and tissue (*Macoma petalum, formerly M. balthica*) in South San Francisco Bay	Sand Point, Santa Clara, Co (site name is Palo Alto) and western shoreline near Alviso Slough (site name is San Jose)	Palo Alto and San Jose	intertidal sediment	near-monthly (9 times/year)	Palo Alto, 1977-present; San Jose, 1994-1999	B						X	A/R	Samples of surficial sediment and biological tissue have been collected near monthly (9 times per year) from the Palo Alto site and analyzed for metals since 1977. Metal concentrations in these samples are considered indicative of metal loadings assocated with sewage effluent discharged to South Bay approximately 1 km north of the sampling site. Samples from the San Jose site were collected from 1994 to 1999 to provide a regional context to assess temporal patterns at the Palo Alto site. Beginning in 2004, metals data and measurements of biological attributes at different levels of organization (individual, population and community) taken from samples collected at Palo Alto were combined to assess biological responses to metals exposure. Summaries and descriptions of data are published in USGS open file reports available through the USGS library in Menlo Park, CA. Copies of reports can be obtained from the USGS Information Center, Box 25286, MS 517, Denver Federal Center, Denver, CO 80225 and on-line (http://pubs.water.usgs.gov/ofr2006-1152 and http://pubs.water.usgs.gov/ofr2005-1279). Data contact: Sam Luoma.
USGS, Jan Thompson		South San Francisco Bay Benthic studies	Southern San Francisco Bay	various	subtidal sediment	monthly and quarterly	1993-1998	B							R	Monthly benthic sampling of south San Francisco Bay at both shallow and deep water stations for benthic community composition and density. Quarterly high spatial resolution sampling (60+ stations) in selected years. Data contact: Jan Thompson
USGS, Jan Thompson		Palo Alto mudflat community studies	Palo Alto, CA	FN 45,FN 46, FN47	0-20 cm	monthly	1974-present	B							R	Monthly benthic sampling of at Palo Alto mudflat for benthic community composition and density. Concurrent with Luoma's contaminant studies. Data available in annual USGS open files. Data contact: Jan Thompson
USGS, NWIS		USGS flow gauge data	South Bay Region	see notes	n/a	daily	varies	T							A	Flow gauges are maintained by USGS national Water Information System. Data are available at http://waterdata.usgs.gov/nwis/dv/?site_no=11169000 (or change 8-digit station locator to match desired station). Water quality data are available for some sites (designated by *) at http://nwis.waterdata.usgs.gov/usa/nwis/qwdata/?site_no=11169000. Sites include: 11169000 Guadalupe River @ San Jose*, 11169025 Guadalupe River @ Hwy 101, 11172175 Coyote Creek @ Hwy 237, 11180700 Alameda Flood Control Channel @ Union City, 11179000 Alameda Creek near Niles*, 11166000 Matadero Creek @ Palo Alto, 11164500 San Francisquito Creek @ Stanford, and 11172365 Warm Springs Blvd at Fremont. See website for data contact.
USGS, David Schoellhamer		Continuous water quality sensors in Southern SF Bay	Dumbarton Bridge	South San Francisco Bay @ Dumbarton Bridge	1.2 m and 7 m above the bottom	hourly	1991 - present	B	X						A	Salinity, temperature, and suspended sediment data collected in southern San Francisco Bay are publicly available (http://sfbay.wr.usgs.gov/sediment/cont_monitoring/index.html) and data reports are available (http://pubs.usgs.gov/wri/wri034005/). Data contact: Paul Buchanan.
USGS, Francine Meija et al.		Water quality data from South Bay salt ponds and sloughs to complement fish surveys	A2W, A2E, A9, A10, A11, A12, Stevens Cr., Alviso Sl., Coyote Cr., B1, B4, B7, B2, B5, B6, Coyote Hills Sl., Old Alameda Flood Control Ch.	various	various	various	See Notes			X	X				R	The USGS, Mejia group are collecting water quality data (temp, DO, pH, EC, and turbidity) from South Bay salt ponds and sloughs to complement thier fish surveys from these habitats. Phase I Work (South Bay salt ponds and sloughs) included: Alviso complex, ponds A2W (an outlet pond for System A2W), A2E (an interior pond for System A3W), A9 (an intake pond for System A14), and A10, A11, and A12 (all three were interior ponds for System A14) were sampled. Additionally, Stevens Creek, Alviso Slough, and Coyote Creek were sampled; Baumberg complex: Pond B1 (an intake pond for System B2), B4 and B7 (interior ponds for System B2), B2 (an outlet pond for System B2, and Ponds B5 and B6C (interior ponds for System B2C), Coyote Hills Slough and Old Alameda Flood Control Channel were also sampled Mar 2004, Jun 2004, Sep 2004, Nov 2004, Mar 2005, and Jun 2005. Phase 2 Work included sloughs (listed above) only, and was conducted Nov 2005, Mar 2006, Jun 2006, and Sep 2006. Phase 3 work included sampling Alviso Ponds A19, A20, and A21, and Artesian Slough, Coyote Creek, and Mud Slough was conducted May 2005, Jun 2005, and Jul 2005. Data contact: Francine Mejia
NASA, Dana Rogoff		Mowry Slough Ponds (1, 2, 3, 4, 5, 6) and A23	M1, M2, M3, M4, *M5, *M6, *A23	Locations are listed in Appendix 1	surface	once or *twice	Jul 04, Aug 05	P			X	X			R	Pond water was sampled to determine what unicellular organisms (and associated pigments) were present. Full absorbance spectra were analyzed, including phytoplankton chlorophyll *a* and bacterial pigment signals. Sampling date, sampling time, salinity (psu), pH, full absorbance data, and sampling locations are summarized in Appendix 3. Micrographs have been made of organisms found in samples. Further information will be available in Dana's Thesis. Data contact: Dana Rogoff
USF, John Callaway et al.		Pond A21 sediments	A21	various	sediment	quarterly	2006	P							R	John Callaway's project is shared with Tom Parker and Lisa Schile from SFSU. Sedimentation rates in Pond A21 were measured using sediment pins within the pond. The study is intended to provide specific information on sedimentation rates in ponds following breaching as well as evaluate any potential effects on sediment dynamics in nearby existing marshes and mudflats. Data contact: John Callaway.
		Coyote Creek and at Greco Island shoreline sediments	Coyote Cr. and at Greco Isl.	various	sediment		2000-present	T							R	Sedimentation rates in natural marshes are measured using SETs (Surface Elevation Tables) and sediment marker horizons. The study began in 2000, with sites near the mouth of Coyote Creek and at Greco Island. At each site, there were 9 stations with SETs and markers at each station (they're established as 3 transects with low marsh, mid marsh and high marsh stations on each transect). Measurements are made in years 1, 2, 3, and 5 and expected to continue to be made every 2-3 years. Sediment cores are also collected at each station and collaboration with Judy Drexler is underway to date cores using Cs-137 and Pb-210. A manuscript is in prep. Data contact: John Callaway.
Brown and Caldwell		Existing Conditions Report (for pond sediments)	various	various	various			P							A	The Existing Conditions Report was prepared to document existing knowledge of water and sediment quality in the project area. It can be found online at http://www.southbayrestoration.org/pdf_files/Water_and_Sed_Quality_Existing_Conditions.3.30.05.pdf Data contact: Emily Moshier
USGS, Mark Marvin-Di Pasquale et al.		Alviso Slough main channel, high salt marsh, salt panne	Pond A8 and Alviso Slough	various	various		2006-2007			X	X			X	R	USGS (Mark marvin-DiPasquale) will be measuring: total mercury, inorganic reactive mercury , methylmercury, oxidation-reduction potential , organic content as 'loss on ignition, and grain size (% < 64 m) in the sediment; as well as porewater conductivity, sulfate, sulfide and chloride. Water chemistry sampling will be conducted by the SCVWD, in Pond A8 and the habitats associated with Alviso Slough, and will include: unfiltered total mercury, unfiltered methylmercury, oxidation-reduction potential, conductivity, dissolved oxygen, temperature, salinity, turbidity, total suspended solids, water column depth, and Secchi depth. (Sediments will be sampled in the vegetated marsh plain, evaporative panes, and in the primary channel of Alviso Sl. Alameda song sparrow, Brine fly, and Longjaw mudsucker will be sampled in the habitats respectively. Water column Hg will be measured in Alviso Sl. and in Topsmelt from the slough. Data contact: Mark Marvin-DiPasquale.
UC Berkeley, Mark Stacey et al.		Coyote Creek and Island Ponds	Coyote Cr.	A21		15-minute		T	X						R	Marks study measures water velocity (ADCP), salinity and temperature (CTD), and suspended sediment (OBS) with continuous recorders to look at transport changes as the islands are breached. All instruments were deployed from March 8 to May 8 2006 in Coyote Creek outside of Pond A21. Data contact: Mark Stacey

Appendix 1. Sampling data, including date, time, salinity (psu), pH, full absorbance data, and sampling locations from Dana Rogoff, NASA

Pond	Dates	Time	Salinity (psu)	pH	Full Absorbance nm	Sampling Site GPS Locations	
M5	Aug-05	12:55	25.6	8.0-8.5	265	N 37 28.7"	W 121 59.8"
M6	Aug-05	11:02	27.2	7.5	270	N 37 29.4"	W 121 59.8"
A23	Aug-05	13:41	25.3	7.5-8.0	270	N 37 28.6"	W 121 58.4"
M1	Jul-04	10:55	24.3	8	50	N 37 28.6"	W 122 1.6"
M2	Jul-04	10:45	24.5	8	60	N 37 28.4"	W 122 1.6"
M3	Jul-04	11:05	24.4	8	170	N 37 28.3"	W 122 1.5"
M4	Jul-04	9:00	24.7	8.5	270	N 37 28.6"	W 122 0.3"
M5	Jul-04	9:20	24.5	7.5	270	N 37 28.7"	W 121 59.8"
M6	Jul-04	10:10	24.8	7.5	265	N 37 29.4"	W 121 59.8"
A23	Jul-04	13:46	29.6	7.5	325	N 37 28.6"	W 121 58.4"