| | **Key Uncertainties, in italics, are followed by specific, high-priority Applied Study Questions (in bold) with a brief explanation of the importance of each question.** | **Where Studies are Planned (Year)(Researcher)** | **Notes** |
|---|---|---|---|
| ***Sediment Dynamics*** | *Is there sufficient sediment available in the South Bay to support marsh development without causing unacceptable impacts to existing habitats?* | | |
| 1 | **Will sediment accretion in restored tidal areas be adequate to create and to support emergent tidal habitat ecosystems within the 50-yr projected time frame?** | Island Ponds A21 (2006-9) and Pond A6 (2011-2012) (Callaway)<br>Project-wide satellite imagery pre and post restoration (2009 – 2011)(Fulfrost) | Final Callaway Report on Island Pond A21 on website |
| 2 | **Will sediment movement into restored tidal areas significantly reduce habitat area and/or ecological functioning (such as plankton, benthic, fish or bird diversity or abundance in the South Bay?** | Shoals area off SF2 (2009/10)(USGS) and Pond A6 Shoals (2010)(Takekawa) | |
| 3 | **Will restoration activities always result in a net decrease in flood hazard?** | Alviso Slough bathymetry (2010, 2011) (USGS);<br>Alviso Slough Cross sections(SCVWD) | |
| ***Bird Use of Changing Habitats*** | *Can the existing number and diversity of migratory and breeding shorebirds and waterfowl be supported in a changing (reduced salt pond) habitat area?* | | |
| 4 | **Will the habitat value and carrying capacity of South Bay for nesting and foraging migratory and resident birds be maintained or improved relative to current conditions?** | Pond islands- nesting, roosting, foraging waterbirds – SF2, A12, A16? (2011-2012) (Ackerman);<br>Shoals- foraging –SF2 (2009/2010);<br>Foraging – A6(2010)(USGS)<br>SBSP Ponds - 2002-present)(USGS);<br>Carghill Ponds (2002-present)(PRBO);<br>Model of shoals carrying capacity(Rowan) | PRBO Topic 6 RFP study will provide baseline bird abundance, salt pond carrying capacity model, and identify data gaps. |
| 5 | **Will shallowly flooded ponds or ponds constructed with islands or furrows provide breeding habitat to support sustainable densities of snowy plovers while providing foraging and roosting habitat for migratory shorebirds?** | Plovers – Baywide and nesting (2003 – present)(SFBBO,FWS);<br>Nesting ,roosting, foraging waterbirds – SF2, A12, A16? (2011-2012)(Ackerman) | |
| 6 | **Will ponds reconfigured and managed to provide target water and salinity levels significantly increase the prey base for, and pond use by waterfowl, shorebirds and phalaropes/grebes compared to existing ponds not managed in this manner?** | Baywide:<br>Benthic communities pre (1993 -95) and post ISP (2006 – 08)(Thompson);<br>Model of bird abundance and salt pond habitat(Athearn) | |

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| 7 | **To what extent will the creation of large isolated islands in reconfigured ponds maintain numbers (and reproductive success) of terns and other nesting birds in the South Bay, while increasing densities of foraging birds over the long term compared to ponds not managed in this manner?** | Nesting, roosting, foraging waterbirds – SF2, A12, A16 (2011-2012)(Ackerman) | No long term studies yet planned |
| 8 | **Will pond and panne habitats in restoring tidal habitats provide habitat for significant numbers of foraging and roosting shorebirds and waterfowl over the long term?** | | Tidal pond and panne habitats not yet formed, will need to assess later. |
| 9 | **How do California clapper rails and/or other key tidal habitat species respond to variations in tidal marsh habitat quality and what are the habitat factors contributing to that response?** | Clapper rail population dynamics and habitat requirements(Overton) | Tidal habitats not yet formed, will need to assess later. |
| ***Effects on Non-Avian Species*** | *Can restoration actions be configured to maximize benefits to non-avian species both onsite and in adjacent waterways?* | | |
| 10 | **To what extent will increased tidal habitats increase survival, growth and reproduction of native species, especially fish and harbor seals?** | Island Ponds A19, A20, A21; Ponds A8, A6,& Alviso Slough/Coyote Creek; Ponds E9, E8X , E8, & Old Alameda Creek (2010 -2011); Pond SF2; Bair Island(Hobbs) | |
| ***Mercury*** | *Will mercury be mobilized into the food web of the South Bay and beyond at a greater rate than prior to restoration?* | | |
| 11 | **Will tidal habitat restoration and associated channel scour increase MeHg levels in marsh and bay-associated sentinel species** | Alviso Ponds and Alviso Slough<br>fish/waterbird biosentinels(Ackerman);<br><br>Alviso area, SF2 and Ponds A6 and shoals<br>Fish and waterbird eggs, 2010(Ackerman/USGS) | |

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|---|---|---|---|
| 12 | **Will pond management increase MeHg levels in ponds and pond-associated sentinel species?** | Alviso Ponds and Alviso Slough<br>fish/waterbird biosentinels (2010-2012)(Ackerman);<br>Alviso area, SF2 and Ponds A6 and shoals<br>Fish and waterbird eggs(Ackerman/USGS) | |
| ***Water Quality*** | *Will restoration adversely affect water quality and productivity?* | | |
| 13 | **What is the effect of a) pond management, including increased pond flows and associated managed pond effects, and b) increased tidal prism from tidal habitat restoration on water quality, phytoplankton and fish diversity and abundance, and food web dynamics in South Bay?** | Water quality monitoring of ponds and discharges required by RWQCB(USGS)<br><br>Baywide:<br>Benthic communities pre (1993 -95) and post ISP (2006 – 08)(Thompson) | No integrated controlled studies planned addressing all trophic levels;<br>RFP studies will provide information on specific trophic levels |
| ***Invasive and Nuisance Species.*** | *Can invasive and nuisance species such as Spartina alterniflora (or the invasive Spartina hybrid), corvids and the California gull and, if warranted, raptors such as the northern harrier, be controlled. I f not, how can the impacts of these species be reduced in future phases of the project?* | | |
| 14 | **Where not adequately eradicated, does invasive *Spartina* and hybrids significantly reduce aquatic species and shorebird uses?** | Invasive Algerian sea lavender study | Depends on Invasive Spartina Project results |
| 15 | **Will California gulls, ravens, and crows adversely affect (through predation and encroachment on nesting areas) nesting birds in managed ponds?** | CAGU nest surveys A1, A5, A6, A9/10, Coyote Hills and Mowry colonies; gull color-marking (2010 – 2012)(Ackerman) | |
| ***Public Access and Wildlife*** | *Will trails and other public access features / activities have significant negative effects on wildlife species?* | | |
| 16 | **Will increases in boating access significantly affect birds, harbor seals or other target species on short or long timescales?** | | No studies planned for birds or harbor seals |

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|---|---|---|---|
| 17 | **Will landside public access significantly affect birds or other target species on short or long timescales?** | Plovers – Eden Landing or Warm Springs; Foraging ( 2003-present)(SFBBO/FWS)<br>Waterbirds – E12/13, SF2, other locations (2010-2012) (Trulio) | |
| 18 | **Will public access features provide the recreation and access experiences visitors and the public want over short or long timescales?** | Trail user surveys- (2010 – 2012)(Trulio) | |