Appendix 4: Summary of California Rapid Assessment Method

The California Rapid Assessment Method for Wetlands (CRAM) is a rapid habitat condition assessment. CRAM is a standardized tool for wetland monitoring, developed with support from EPA. It is based on the concept that the structure and complexity of a wetland is indicative of its capacity to provide a range of functions and services. It is designed for assessing ambient conditions within watersheds, regions, and throughout the State. It can also be used to assess the performance of restoration projects. CRAM requires a team of 2-3 trained practitioners less than 3 hours to assess a representative wetland area.

CRAM is composed of four main attributes of condition:

1. **Buffer and Landscape Context** - measured by assessing the quantity and condition of adjacent aquatic areas as well as extent and quality of the buffering environment adjacent to the Assessment Area.
2. **Hydrology** - assesses the sources of water, the hydroperiod of the estuary from evidence of alterations to the mouth of the lagoon, and the hydrologic connectivity of rising flood waters in the estuary
3. **Physical Structure** - measured by counting the number of patch types[1] found within the AA and the topographic complexity of the marsh plain.
4. **Biotic Structure** - measures the site on several factors including the number of plant vertical layers[2], the number of different species that are commonly found in the marsh, the percent of the common species that are invasive, and the horizontal and vertical heterogeneity of the plant communities.

These four attributes are consistent for all wetland modules of CRAM. Each of the four attribute categories is comprised of a number of metrics and submetrics that are evaluated in the field and scored on a scale of (A)12 to (D)3. The metrics that are measured may vary between wetland types. Each of the four attribute categories are then converted to a scale of 25 through 100, and the average of these four scores is the final CRAM index score, also ranging on a scale from 25 (lowest possible) to a maximum of 100.

The scale of condition categories presented in Table 1 is appropriate for the purposes of evenly distributing CRAM results into quartiles.

[1] A patch is a spatially distinct structural element of a wetland system large enough to serve as a habitat for wildlife, or to serve as an indicator of spatial variations in hydrological or edaphic (soil) conditions within a wetland.
[2] Plant layer type definitions include: floating (growing on water surface); short (<0.3 m); medium (0.3 – 1.0 m); tall (1.0 – 3.0 m); and very tall (>3.0 m).

Table 1. CRAM condition categories and associated index scoring ranges.

Condition Category	Total CRAM Index Score Range
Excellent	82-100
Good	63-81
Fair	44-62
Poor	25-43