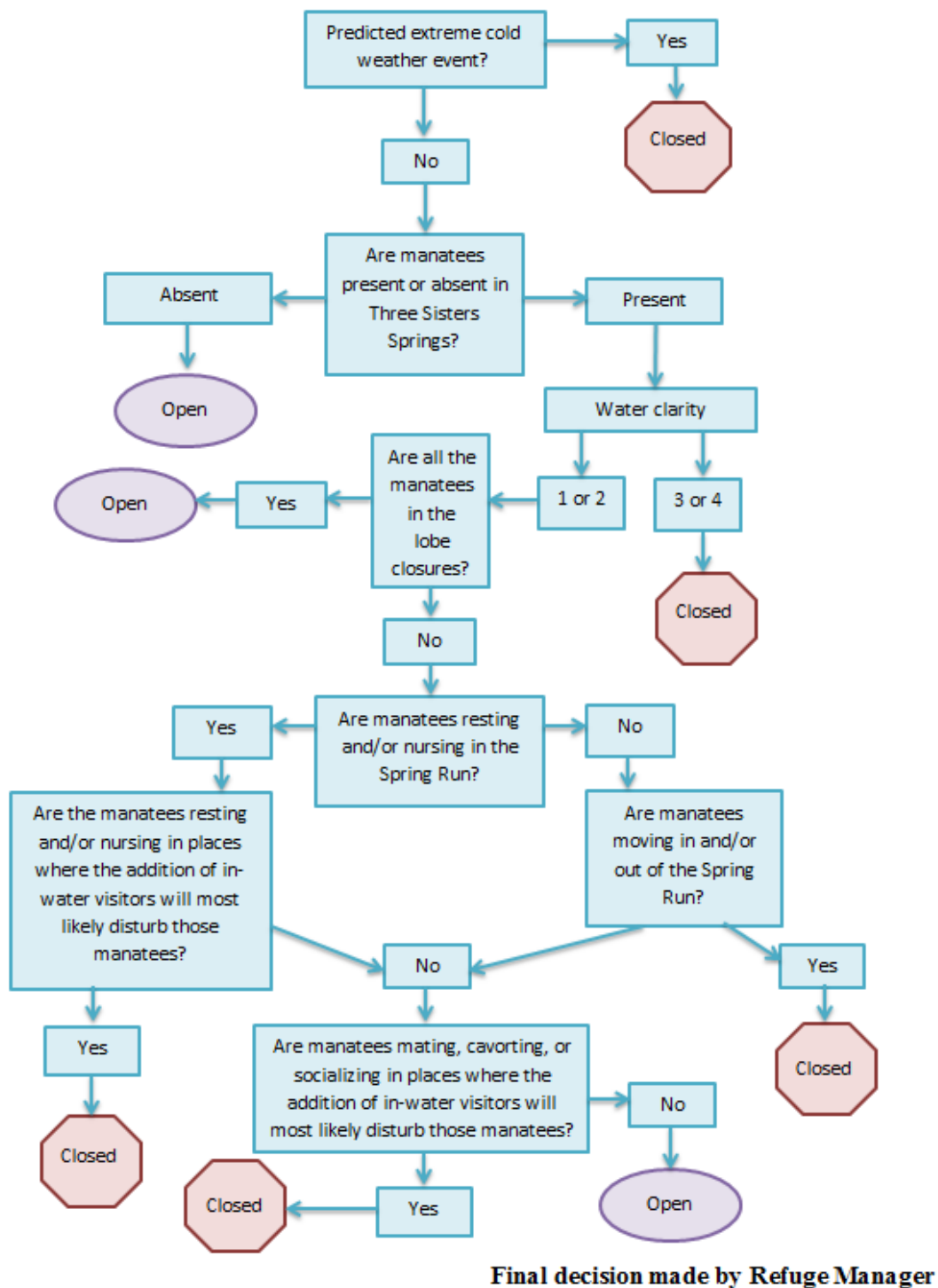


# Biological Guidelines Used to Determine the Open or Closed Status of the Three Sisters Springs Unit (Springs) of CRNWR to Visitor In-water Access, November 15, 2016 to March 31, 2017

This flowchart is used on-site at sunrise (plus one hour of observation period) and throughout the day to make the decision to open or close the Springs to in-water access.



The following factors are considered in determining the open or closed status of Three Sisters Springs to visitor in-water access.

## **Water Clarity:**

Water clarity is defined on a 1 to 4 scale. 1= crystal clear, 2= clear with some sediment or cloudiness in some areas, 3= manatees only visible within 4 feet of water's surface, 4= opaque; zero visibility; manatees can only be seen when resting at the surface. Water clarity is factored in for manatee and human safety. Clarity also affects the ability to evaluate manatee presence, movements, distribution, and behaviors.

## **Manatee Movement, Distribution & Behavior:**

The movement of manatees into or out of the Springs is considered as well as the distribution of manatees within or outside of the two closed lobes (i.e., eastern and western lobes) and in the Spring run. The presence of manatees within the Springs and an overview of their behavior throughout the Springs, including resting, nursing, mating, cavorting, or milling, are also evaluated and considered in making the decision to open or close the Springs.