



THE COMMONWEALTH OF MASSACHUSETTS

WATER RESOURCES COMMISSION

100 CAMBRIDGE STREET, BOSTON MA 02114

**WRC Findings
Amendment to the August 14, 2003
Interbasin Transfer Act Findings on
Compliance with the Environmental Criteria
Of the Interbasin Transfer Act and
The 2005 Fisheries, Vegetation and Water Quality Monitoring Plan**

Aquaria Regional Desalinization Project

October 10, 2019

Decision

On October 10, 2019, by a unanimous vote of those present (with one abstention), the Water Resources Commission (WRC) voted to amend the August 2003 Decision on compliance with the environmental criteria of the Interbasin Transfer Act (ITA) by the Aquaria LLC. This amendment allows Aquaria to discontinue use of the seasonally-deployed fisheries exclusion netting in exchange for minimizing withdrawals, as described herein, during a six week period critical to white perch and alewife spawning. The amendment also requires revision of Aquaria's monitoring plan to reflect the new withdrawal regimen, to provide for inspection of the intake structure to assure there are no gaps allowing fish to enter the intake gallery, and to incorporate earlier revisions to said monitoring plan. This vote was taken after review of the facts provided by the applicant and analysis of the associated data.

Background

In August 2003, Aquaria LLC received approval under the ITA to transfer water from the Massachusetts Coastal Basin for distribution, mainly, but not limited, to communities within the Taunton River Basin, as water supply. This approval was documented in the August 14, 2003 WRC Findings on Compliance with the Environmental Criteria of the Interbasin Transfer Act for the Aquaria Regional Desalinization Project (the "August 2003 Findings"). The water would be treated through a desalination process to drinking water standards. In March 2005, the City of Brockton received approval under the Interbasin Transfer Act to purchase water from Aquaria. The Aquaria desalination plant is located in the Town of Dighton (see Figure 1).

During the ITA review, the Division of Marine Fisheries (DMF) expressed concerns about impacts to the significant anadromous fishery, including river herring and white perch, at the location of the withdrawal. Concerns for this fishery focused on entrainment and impingement of the species at any of the life stages: eggs, larvae, small juveniles and adults. In addition, DMF noted that passive organisms such as ichthyoplankton can become entrained. Aquaria agreed to install fishery

Figure 1



exclusion devices, including wedgewire screens, Johnson Screens and an exclusionary netting (Gunderboom). The Gunderboom has been deployed seasonally (March through November); the wedgewire and Johnson screens are permanent installations. These were determined to provide the level of protection needed to ensure a healthy fishery at this location. Although not included in the August 2003 Findings, DMF and the Office of Coastal Zone Management (CZM) determined that this level represented approximately an 80% survival rate.

As a condition of its ITA approval, Aquaria was required to submit a monitoring plan for approval by the agencies and to conduct one year of baseline monitoring, prior to plant operation. Aquaria did so, in the 2005 Fisheries, Vegetation and Water Quality Monitoring Plan (“2005 Monitoring Plan”). Baseline monitoring commenced in November 2006. Operational monitoring was also required, with annual reports to be provided to agency staff. The plant became operational and began selling water in November 2008.

The August 2003 Findings also stated that:

Aquaria may submit a request for modification of the operational monitoring program when sufficient information exists to support changes. The basis for the proposed modification(s) shall be clearly described and justified. Any changes to the operational monitoring plan must be approved by the WRC and the appropriate state agency(ies).

Over the years, modifications to the 2005 Monitoring Plan have been made and approved by the WRC after review of the relevant data.

Current Situation

The Gunderboom exclusionary netting device has been deployed seasonally since the Aquaria plant became operational (Figure 2). The Taunton River estuary is a dynamic system. This causes scouring on the riverbanks as well as in the riverbed beneath the Gunderboom. The underscouring has led to fish being trapped behind the Gunderboom, causing stress and mortality. Aquaria instituted an inspection program to minimize the number of fish caught here and to return them to the river in a timely manner. This is a labor intensive process. In addition, the dynamics of the estuarine system cause wear and damage to the fabric of the Gunderboom, and support from the Gunderboom Corporation was discontinued in 2015. Aquaria was able to purchase fabric to replace worn panels of the netting, however, this may be a finite situation.

Over the years, agency staff has been working with Aquaria to address the challenges of the aging Gunderboom. Aquaria has conducted studies on alternative fishery exclusion devices to substitute for the Gunderboom, however, these devices did not provide the level of protection needed to ensure a healthy fishery in the Taunton River system.

Reducing or ceasing pumping from the estuary during critical times for white perch and alewife spawning was suggested as a means to provide the 80% survival rate protection needed for this fishery and a way to discontinue use of the Gunderboom. After reviewing the data from more than 10 years of monitoring, this time period was determined to be a six week period from late April to early June.

On June 19, 2019, Aquaria, through its consultants, submitted a proposal to reduce withdrawals yearly, from April 25th to June 8th. During this time, daily incremental withdrawals of 1 million gallons per day, at a flow rate of less than 6,000 gallons per minute, would occur for a period of 170

Figure 2
Existing Configuration of the Gunderboom within the Taunton River



minutes for the purposes of maintenance flushing. If DEP issues an Emergency Declaration for Aquaria's customers (at this point the City of Brockton is Aquaria's only customer), additional withdrawals could also be allowed per Section 8C of MGL Chapter 21 (the Interbasin Transfer Act) for a period no longer than six months in a calendar year, without WRC approval.

WRC staff, with assistance from staff from CZM, DMF and DEP, reviewed the proposal and recommended that minimizing withdrawals during this time period as proposed would provide the necessary protection for this valuable fishery resource. Therefore on October 10, 2019, the WRC voted to amend the August 14, 2003 Findings on Compliance with the Environmental Criteria of the Interbasin Transfer Act for the Aquaria Regional Desalinization Project to discontinue the use of the Gunderboom fisheries exclusionary netting, provided that Aquaria reduce withdrawals from April 25th to June 8th to the level of incremental withdrawals of 1 million gallons per day, up to five (5) million gallons per week, at a flow rate of less than 6,000 gallons per minute, occurring for a period of 170 minutes for the purposes of maintenance flushing only. The WRC acknowledges that if DEP issues an Emergency Declaration for Aquaria's customers, any withdrawals needed to fulfill the requirements of this Emergency Declaration during this time period are specifically exempt under Section 8C of MGL Chapter 21.

In addition, monitoring must still continue in order to evaluate the efficacy of this withdrawal protocol for providing protection to the fishery resource. If the monitoring results do not demonstrate that this withdrawal protocol provides the protective 80% survival rate, or if it shows that indicator eggs and larvae are present in greater numbers outside of the April 25th to June 8th time period, Aquaria must consult with WRC staff and the agencies to either modify the period of time when withdrawals would be decreased as described above, or to redeploy the exclusionary netting (or some similarly effective device) seasonally, according to the original operating protocols.

The WRC also requires that the current monitoring plan be modified to reflect the amended findings and include:

- Impingement monitoring on the two Johnson screens, twice per week for 10 minutes over an 18-week (from April 1st to July 31st) monitoring period (72 samples total).
- Entrainment monitoring at the Raw Water Pump Station (one sampling point within the station and one directly shoreward of the trash racks in the mouth of the intake structure) two times per week over the 18 week monitoring period (72 samples total).
- In-river ichthyoplankton monitoring, two samples twice per week over the 18-week monitoring period (72 samples total).

In addition, the WRC is concerned about adult fish being found in the intake gallery. The revised monitoring plan should also contain a protocol for visual inspection of the wedgewire screen and the seal between the wedgewire screen and the walls of the intake gallery. The purpose is to identify any cracks, leaks, missing grout, or missing hardware that might allow juvenile fish to enter the intake gallery. Reports, to be included with the required annual reporting, should describe the inspections both in words and with video/photographs. The timing and frequency of these inspections can be determined in consultation with agency staff.

Aquaria must prepare a stand-alone monitoring plan that describes these modifications and includes all monitoring protocols modified and approved by the WRC since the inception of operational monitoring.

Aquaria has been providing monthly reports during the times when the Gunderboom is deployed, documenting the total number of fish which get trapped behind the exclusionary netting, as well as semi-annual reports describing the performance and maintenance of the Gunderboom. These reports can be discontinued once this decision takes effect and use of the Gunderboom is discontinued by Aquaria. Annual reports describing the monitoring results will still be required for review by WRC and agency staff. These reports should include the raw data and compare:

- Entrainment without the Gunderboom to previous entrainment with the Gunderboom
- Impingement on the Johnson screens without the Gunderboom to previous impingement with the Gunderboom (estimating impingement on Johnson screens alone, and Johnson screens and Gunderboom together).

These comparisons should continue for a minimum of five (5) years and may be discontinued once the environmental agencies have determined that the proposed withdrawal protocol is effective.

Other Issues Considered

Aquaria has held discussions with the City of Brockton concerning the proposed modification of the withdrawal protocol. Aquaria has a contractual obligation to provide up to 5 mgd of potable water to Brockton. The contract states that the City can request this volume at any time throughout the year. However, according to Aquaria, the City is amenable to eliminating requests for water during the critical six-week fisheries spawning period in the Taunton River and Mayor Rodrigues has provided a letter (dated October 4, 2019) stating this. The WRC understands that this must still be approved by the City Council. Deployment of the Gunderboom cannot be discontinued until this occurs. Aquaria must inform the WRC when the City Council vote occurs.