


## STAFF SUMMARY


**TO:** Board of Directors  
**FROM:** Frederick A. Laskey, Executive Director   
**DATE:** October 14, 2020  
**SUBJECT:** Compliance with America's Water Infrastructure Act

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**COMMITTEE:** Water Policy & Oversight

X  INFORMATION  
  VOTE

Stephen Estes-Smargiassi, Director, Planning and Sustainability  
Valerie Moran, Director, Waterworks  
Preparer/Title

  
David W. Coppes, P.E.  
Chief Operating Officer

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### RECOMMENDATION:

For information only.

### DISCUSSION:

Congress imposed new requirements for assessing and responding to water system vulnerabilities in the America's Water Infrastructure Act (AWIA) that was signed into law in October 2018. AWIA requires that community drinking water systems develop or update risk assessments and emergency response plans and certify to EPA that they have been completed or updated by specified deadlines. Staff previously updated the Board on AWIA in November 2019.

AWIA required that MWRA certify that it had completed Risk and Resilience Assessments in accordance with the Act's requirements by March 31, 2020, and that it had completed Emergency Response Plans meeting the AWIA requirements by September 31, 2020. MWRA has met both certification deadlines.

*Risk and Resilience Assessment:* AWIA essentially renamed what were previously called Vulnerability Assessments under Congress' post 9/11 requirements as Risk and Resilience Assessments (RRAs). It expanded the threats and consequences covered to include natural hazards and more explicitly covered cyber security and aspects of the system's financial systems.

*Emergency Response Plans:* In addition to the Risk and Resilience Assessments, AWIA required that systems certify to EPA that they had developed or updated their Emergency Response Plans (ERPs) no later than six months after submission of their RRAs. These ERPs have a broader definition than that typically used by water systems: they include not just planning for responses after an event has occurred, but also longer term planning and implementation actions to deter or detect an event and to mitigate the effects of an event. For MWRA, this broader scope encompasses Master Planning efforts, the redundancy program, and maintenance of back up supplies and emergency response capabilities.

Neither the RRAs nor the ERPs were required to be submitted to EPA; MWRA only needed to certify that they had been completed. They will be kept securely at MWRA. In addition, under AWIA, systems must now recertify that they have reviewed and updated their RRAs and ERPs every five years. Staff's efforts have included creating the documentation necessary to facilitate that five-year update.

### MWRA's Approach to Compliance with AWIA

Immediately after passage of AWIA in 2018, MWRA assembled a team of Operations, Security and Emergency Response, Environmental Quality, SCADA and MIS staff to ensure that MWRA would fully meet all the AWIA requirements. The approach that MWRA took included both internal staff efforts and some external consultant efforts as a means to independently check certain facilities or programs.

Since there have been many staffing changes due to retirements, promotions and reassignments, staff have used this opportunity for succession planning and knowledge transfer. A team of staff reviewed all the relevant EPA and AWWA standards and manuals, previous vulnerability assessments and emergency response plans to identify gaps and needs for updating. The consultant that developed EPA's Vulnerability Self-Assessment Tool<sup>1</sup> was brought in to provide training to a group of experienced and newer staff.

MWRA staff and its consultant conducted detailed assessments of nine newer water facilities, as well as reviewed past assessments of all other water facilities. Staff reassessed the SCADA system using the Department of Homeland Security's Cyber Security Evaluation Tool (CSET). The MIS Department used an outside consultant to do in-depth testing of Internet-facing computing systems and computing systems that interact with finances, and document the results with the CSET Tool.

### Key Findings

Overall, the effort to comply with AWIA has shown that MWRA's efforts to build resilience into its water system have resulted in a robust and durable system. These efforts include focus on redundancy, back-up systems, effective water quality and security monitoring, security conscious design and operating practices in MWRA's automated control systems, and planning, preparing and practicing for emergencies.

Major findings by MWRA's consultants were that MWRA's focus on redundancy has greatly reduced the risks of service disruption posed by natural or malevolent acts, and MWRA's implementation of delay, detection and deterrence strategies at critical facilities reduces the risks posed to those facilities. These include MWRA's water quality and security monitoring practices with extensive routine process control and regulatory monitoring processes used by MWRA to manage and report on the water system and water quality, as well as the state-of-the-art contaminant monitoring system and associated processes for collecting information from, and collaborating with, our customer communities and health authorities.

An important observation from the work of conducting, reviewing and updating the risk and resilience assessment is that in some areas MWRA practices are well developed and utilized, but

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<sup>1</sup> AWIA does not require the use of any particular tool or program. MWRA used a spreadsheet-based version of the AWWA J100 Standard: Risk and Resilience Management of Water and Wastewater Systems.

documentation of those practices has not kept up with MWRA's progress. For example, the review of security practices and operating procedures pointed to a number of areas where MWRA's efforts were meeting the standard of practice under the AWWA G430 standard, but were not well documented. Substantial effort has occurred over the past six months to better document existing practices.

Review of the two water treatment plants noted that MWRA's design, construction and emergency preparedness efforts provided substantial resilience at each facility, with the potential for adapting disinfection strategies to the loss of key components, and in the case of the Carroll Water Treatment Plant, of using an alternate intake and supply conduit. Emergency response plans for both facilities were updated to include newer processes.

The review also found that MWRA's SCADA system design principles provide robust security with effective separation of the SCADA system from outward facing computer systems, dedicated communication systems, redundant pathways and both physical and software isolation of the one-way communication of operating data to other systems. Provision of, and practice in using, fully functional back-up Operation Control Centers, and physical protection of communication equipment also provides a substantial measure of resilience to both malevolent acts and natural hazards such as flooding.

Similarly, in part due to the defense-in-depth best practice employed by the MWRA, the consultant hired by MIS found the perimeter defenses to be solid and to provide appropriate protections against external malevolent acts.

#### Updates to Emergency Response Plans

AWIA requires water systems have in place ERPs, based on the findings of the Risk and Resilience Assessments, which improve system resilience, aid in the detection of and lessen the impact of malevolent acts or natural hazards that threaten the system's ability to provide safe drinking water. MWRA already had a culture of preparing for emergencies with dozens of detailed emergency response plans and a robust security and water quality monitoring program in place.

Teams of staff reviewed all of MWRA's existing ERP's, updated them and will be incorporating the changes into the regular training and review sessions that are conducted for each facility.

MIS and SCADA staff continue to review cyber security findings from their assessments for opportunities to enhance the strong cyber security protections within the MWRA computing networks.

#### Assistance to MWRA Customer Communities

Only a few of the largest customer communities are on the same compliance schedule as MWRA, including BWSC, Cambridge and Worcester. Systems serving 50,000 to 99,999 people must complete and certify their RRAs by December 31, 2020, and systems serving 3,301 to 49,999 people must complete theirs by June 30, 2021. In both cases, ERPs are due six months later.

In November 2019, MWRA hosted EPA's AWIA training session for Region 1 at its Chelsea facility. In addition to staff from MWRA and its communities, attendees participated from throughout New England.

As part of MWRA's regular community ERP training program, conducted to help communities meet annual DEP training requirements, MWRA staff included a module on the AWIA requirements and deadlines in the 2019 and 2020 classes. Staff also reached out through training sessions sponsored by Boston Society of Civil Engineers and New England Waterworks Association, and directly coordinated with BWSC and its consultant. Staff will continue outreach through the fall and over the winter to assist communities in meeting the AWIA requirements and deadlines.

**BUDGET/FISCAL IMPACT:**

The task order for the facilities related Risk and Resilience Assessment cost was \$121,523, and the MIS AWIA contract cost to date was \$155,722.