

**CISA Can Improve Efforts  
to Ensure Dam Security  
and Resilience**





## OFFICE OF INSPECTOR GENERAL

Department of Homeland Security

Washington, DC 20528 / [www.oig.dhs.gov](http://www.oig.dhs.gov)

September 9, 2021

MEMORANDUM FOR: The Honorable Jen Easterly  
Director  
Cybersecurity and Infrastructure Security Agency

FROM: Joseph V. Cuffari, Ph.D.  
Inspector General

SUBJECT: *CISA Can Improve Efforts to Ensure Dam Security and Resilience*

JOSEPH V  
CUFFARI

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For your action is our final report, *CISA Can Improve Efforts to Ensure Dam Security and Resilience*. We incorporated the formal comments provided by your office.

The report contains five recommendations aimed at improving Dams Sector security and resilience. Your office concurred with all five recommendations. Based on information provided in your response to the draft report, we consider all five recommendations open and resolved. Once your office has fully implemented the recommendations, please submit a formal closeout letter to us within 30 days so that we may close the recommendations. The memorandum should be accompanied by evidence of completion of agreed-upon corrective actions and of the disposition of any monetary amounts.

Please send your response or closure request to  
[OIGAuditsFollowup@oig.dhs.gov](mailto:OIGAuditsFollowup@oig.dhs.gov).

Consistent with our responsibility under the *Inspector General Act*, we will provide copies of our report to congressional committees with oversight and appropriation responsibility over the Department of Homeland Security. We will post the report on our website for public dissemination.

Please call me with any questions, or your staff may contact Bruce Miller, Deputy Inspector General for Audits, at (202) 981-6000.



# DHS OIG HIGHLIGHTS

## *CISA Can Improve Efforts to Ensure Dam Security and Resilience*

September 9, 2021

### Why We Did This Audit

Nationwide, there are more than 91,000 dams, levees, and other water retention structures protecting homes and businesses, delivering electricity, and providing recreation and transportation. Recent dam failures in Oroville, CA, and Midland, MI, and widespread flooding in the Midwest highlight a need for comprehensive Federal oversight and guidance. In 2018, CISA became the newly formed DHS component responsible for Dams Sector security and resilience. Our audit objective was to determine to what extent CISA's oversight has improved Dams Sector security and resilience.

### What We Recommend

We made five recommendations that, when implemented, will improve dam security and resilience.

**For Further Information:**

Contact our Office of Public Affairs at (202) 981-6000, or email us at [DHS-OIG.OfficePublicAffairs@oig.dhs.gov](mailto:DHS-OIG.OfficePublicAffairs@oig.dhs.gov)

### What We Found

The Cybersecurity and Infrastructure Security Agency (CISA) cannot demonstrate how its oversight has improved Dams Sector security and resilience. We attribute this to CISA's inadequate management of Dams Sector activities. Specifically, CISA has not:

- coordinated or tracked its Dams Sector activities;
- updated overarching national critical infrastructure or Dams Sector plans; or
- collected and evaluated performance information on Dams Sector activities.

In addition, CISA does not consistently provide information to the Federal Emergency Management Agency (FEMA) to help ensure FEMA's assistance addresses the most pressing needs of the Dams Sector. CISA and FEMA also do not coordinate their flood mapping information. Finally, CISA does not effectively use the Homeland Security Information Network Critical Infrastructure Dams Portal to provide external Dams Sector stakeholders with critical information.

As a result, CISA could improve its oversight, coordination, and communication to better support the Dams Sector security and resilience. These changes would enhance the Sector's ability to adapt to the risk environment and decrease the likelihood of future dam failures and flooding events.

### CISA Response

CISA concurred with all five of our recommendations. We have included a copy of CISA's response in its entirety in Appendix A.



## OFFICE OF INSPECTOR GENERAL

### Department of Homeland Security

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### Background

Within the Department of Homeland Security, the Cybersecurity and Infrastructure Security Agency (CISA) is responsible for the safety, security, and resilience of the Nation's more than 91,000<sup>1</sup> dams, levees, navigation locks, and other water retention structures and barriers.<sup>2</sup> When well maintained and properly functioning, these structures protect homes and businesses, deliver electricity, and provide recreation and transportation. However, when they fail, the effects create a cascade of water inundation and flooding to buildings and agriculture, loss of power, disruptions to transportation, and damage to communication lines.

The Dams Critical Infrastructure Sector (Dams Sector) is one of 16 critical infrastructure sectors *Presidential Policy Directive – Critical Infrastructure Security and Resilience* (PPD-21) identifies as so vital that its security and resiliency is a national priority.<sup>3</sup> On November 16, 2018, the President signed into law the *Cybersecurity and Infrastructure Security Act of 2018*. This created CISA, assigning it the lead role in coordinating the national effort to secure and protect against critical infrastructure risks. The Act transfers responsibilities of the former National Protection and Programs Directorate (NPPD) to CISA, including the responsibility of fulfilling DHS' role as the Sector-Specific Agency (SSA) of the Dams Sector.<sup>4</sup> As the SSA, CISA is responsible for leading, facilitating, and supporting the security and resilience of the sector. CISA does so by providing technical assistance and training opportunities and evaluating risk to guide its sector partners and stakeholders in improving the safety, security, and resiliency of their facilities.

The Dams Sector, like all critical infrastructure sectors, relies on a variety of other partners, stakeholders, and groups to handle the everyday functions of

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<sup>1</sup> U.S. Army Corps of Engineers National Inventory of Dams as of December 8, 2020.

<sup>2</sup> The *2015 Dams Sector Specific Plan* defines Dams Sector assets as: dam projects, hydropower plants, navigation locks, levees, dikes, hurricane barriers, mine tailings, and other industrial waste impoundments.

<sup>3</sup> PPD-21 identifies the 16 critical infrastructure sectors: commercial facilities; chemical; communications; critical manufacturing; dams; defense industrial base; emergency services; energy; financial services; food and agriculture; government facilities; healthcare and public health; information technology; nuclear reactors, materials, and waste; transportation systems; and water and wastewater systems.

<sup>4</sup> PPD-21 designated DHS as the SSA for Dams. Under *DHS Delegation 17001, Delegation to the Under Secretary for National Protection and Programs (NPPD)*, DHS delegated the roles and responsibilities of the Secretary provided in PPD-21. Section 9002 of the *William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021* replaced the name SSA with the term "Sector Risk Management Agency, or SRMA". However, because this change occurred after the close of our audit and the guiding documents referenced throughout this report still use the term SSA, this report uses the term SSA to describe CISA's responsibilities as delegated.

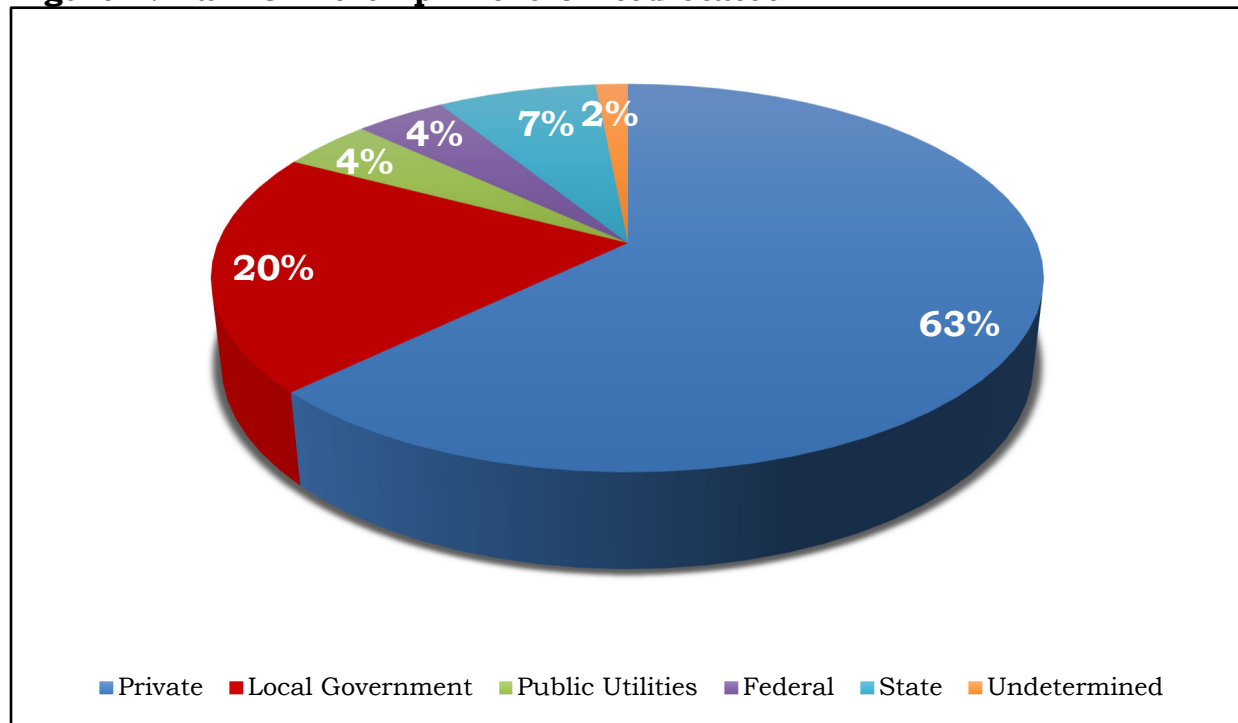


**OFFICE OF INSPECTOR GENERAL**  
Department of Homeland Security

the sector. While CISA acts as the Dams Sector SSA, DHS’ Federal Emergency Management Agency (FEMA) serves as the lead agency for the National Dam Safety Program (NDSP),<sup>5</sup> providing help to state dam safety programs through financial assistance, training, research, technology, and public safety and awareness programs. FEMA oversees two grants related specifically to dams, the State Dams Assistance Grant Funding and the High Hazard Potential Dams Grant Program. (Appendix B lists and describes other major Dams Sector partners.)

Although CISA does not own or operate any of the 91,457 dams in the United States,<sup>6</sup> it is responsible for the safety, security, and resiliency of dams nationwide. Sixty-three percent of dams are privately owned. Federal, state, and local governments and public utilities own 35 percent, and the remaining 2 percent have undetermined ownership.<sup>7</sup> Figure 1 shows dam ownership by entity within the United States.

**Figure 1. Dam Ownership in the United States**



Source: DHS Office of Inspector General-created chart based on U.S. Army Corps of Engineers’ National Inventory of Dams data as of December 8, 2020

<sup>5</sup> The National Dam Safety Program was established by the *National Dam Safety Program Act of 1996* and is referenced in the *2015 Dams Sector Specific Plan*.

<sup>6</sup> U.S. Army Corps of Engineers National Inventory of Dams as of December 8, 2020.

<sup>7</sup> Of the 91,457 dams in the National Inventory of Dams, 1,366 have “undetermined” ownership, resulting in 1.49 percent, which was rounded up to 2 percent to total 100 percent.



## OFFICE OF INSPECTOR GENERAL

Department of Homeland Security

### Significant Dam Failures and Flooding Events

In the American Society of Civil Engineers 2017 Infrastructure Report Card,<sup>8</sup> the Dams Sector received a “D” grade because the Nation’s dams are currently in disrepair with approximately 17 percent (15,498 dams) considered a “high-hazard potential.” A dam is classified as having high-hazard potential when a failure is anticipated to cause a loss of life.

Recent dam failures highlight the Nation’s need for CISA’s comprehensive oversight and guidance over dam resilience. In February 2017, heavy rains increased water levels at Lake Oroville in Oroville, California, forcing use of the main spillway at the Oroville Dam. Concrete and foundation erosion in the main spillway forced the use of the emergency spillway for the first time in the dams’ history. However, hillside erosion on the emergency spillway caused engineers to fear massive flooding downstream,<sup>9</sup> which prompted the evacuation of nearly 200,000 people,<sup>10</sup> and eventually caused \$1.2 billion in damage to the dam.<sup>11</sup> In the spring of 2019, record-breaking floods swamped the Midwest, and dozens of levees built to protect people from flooding catastrophically failed.<sup>12</sup> The destruction caused more than \$6 billion in damage,<sup>13</sup> flooded the Offutt Air Force Base in Nebraska,<sup>14</sup> and potentially contaminated more than a million wells in 300 counties across the Midwest.<sup>15</sup> Most recently, in May 2020, two dams failed in Midland, Michigan, forcing

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<sup>8</sup> The American Society of Civil Engineers is a national civil engineering organization. Every 4 years, the society provides an assessment of the Nation’s 16 major infrastructure conditions and needs, assigning grades from A to F and making recommendations for improvements.

<sup>9</sup> California Department of Water Resources, *Oroville Spillways Incident Background Report*, <https://water.ca.gov/Programs/State-Water-Project/SWP-Facilities/Oroville/Oroville-Spillways/Background>. (Last Accessed February 17, 2021).

<sup>10</sup> National Aeronautics and Space Administration, <https://ghrc.nsstc.nasa.gov/home/content/atmospheric-rivers-and-lake-oroville-dam-stress>. (Last Accessed February 17, 2021)

<sup>11</sup> California Department of Water Resources Press Release, Feb. 1, 2021, <https://water.ca.gov/News/News-Releases/2021/Feb-21/FEMA-Releases-Additional-Reimbursement-Funds-for-Oroville-Spillways-Repairs-and-Reconstruction>.

<sup>12</sup> Jack Healy, *As Floods Inundate the Midwest, Many Ask: Will Our Levees Be the Next to Fail?*, The New York Times (Mar. 22, 2019), <https://www.nytimes.com/2019/03/22/us/midwest-flooding-levees.html>.

<sup>13</sup> *Annual Climate Disaster Report 2019*, National Oceanic and Atmospheric Administration, [Billion-Dollar Weather and Climate Disasters: Events | National Centers for Environmental Information \(NCEI\) \(noaa.gov\)](https://www.noaa.gov/news/billion-dollar-weather-and-climate-disasters-events-national-centers-for-environmental-information-ncei).

<sup>14</sup> Offutt Air Force Base News Release, *Team Offutt battling flood waters*, Mar. 17, 2019, <https://www.offutt.af.mil/News/Article/1787242/team-offutt-battling-flood-waters/>.

<sup>15</sup> The National Ground Water Association Press Release, Mar. 25, 2019, <https://www.ngwa.org/publications-and-news/Newsroom/2019-press-releases/ngwa-reports-thousands-of-wells-potentially-affected-by-midwestern-flooding>.



## OFFICE OF INSPECTOR GENERAL

Department of Homeland Security

10,000 residents to evacuate<sup>16</sup> and causing millions of dollars in damage, resulting in a Major Disaster Declaration under the *Robert T. Stafford Disaster Relief and Emergency Assistance Act*.<sup>17</sup> Figure 2 shows the failed Sanford Dam in Michigan. Figure 3 shows flooding in Michigan as a result of the dam failures.



**Figure 2 (left). Image of the failed Sanford Dam in Michigan**  
**Figure 3 (right). Several homes inundated under floodwaters in Midland, Michigan**

Source: National Oceanic and Atmospheric Administration, National Weather Service, <https://www.weather.gov/dtx/HistoricFlooding-May-17-20-2020> (Last Accessed February 23, 2021).

We conducted this audit to determine to what extent CISA oversight has improved Dams Sector security and resilience.

### Results of Audit

#### CISA Does Not Manage or Evaluate Its Dams Sector Activities

CISA has various divisions and offices that execute Dams Sector activities as part of its efforts as the SSA to improve security and resilience. These activities include facilitating public-private partnerships, developing strategic goals to mitigate physical and cyber risks and improve resilience, supporting education, training, information and outreach, and providing support to identify vulnerabilities and mitigate incidents.<sup>18</sup> However, these activities are not centrally managed or formally evaluated, which prevents CISA from

<sup>16</sup> National Weather Service, *Historic Flooding May 17–20*, <https://www.weather.gov/dtx/HistoricFlooding-May-17-20-2020>.

<sup>17</sup> Michigan Severe Storms and Flooding (DR-4547), July 9, 2020, <https://www.fema.gov/disaster/4547>.

<sup>18</sup> <http://cisa.gov/sopd> (last accessed February 2, 2021).



## OFFICE OF INSPECTOR GENERAL

### Department of Homeland Security

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determining its impact on Dams Sector security and resilience. This occurred because CISA did not have overarching national critical infrastructure or Dams Sector plans to reflect current risks, goals, or guidance to sector partners. It also did not establish an agency-wide organizational structure with defined roles and responsibilities over Dams Sector stakeholder activities; or establish policies, procedures, and performance metrics to guide these activities.

### **CISA Does Not Coordinate or Track Its Own Dams Sector Activities**

According to the *National Infrastructure Protection Plan 2013: Partnering for Critical Infrastructure Security and Resilience* (NIPP), the Dams Sector SSA is responsible for collaborating with dam owners and operators, prioritizing sector activities, providing technical support, and coordinating overall security and resilience. As the SSA charged with ensuring Dam Sector security and resilience, CISA has several program offices and divisions that carry out Dams Sector-related activities:

- The Stakeholder Engagement Division (SED) houses the Dams SSA management team, which is responsible for facilitating public-private partnerships; developing strategic goals to mitigate physical and cyber risks and improve resilience; supporting education, training, information sharing, and outreach; and providing support to identify vulnerabilities and mitigate incidents. SED does this by participating in the Government Coordinating Council, updating the *2015 Dams Sector Specific Plan* (SSP) and other Dams Sector publications, planning training events, and providing outreach materials to sector partners and stakeholders.
- The Infrastructure Security Division (ISD) operates both the Protective Security Advisor (PSA) program, which conducts assessments of critical infrastructure assets, including Assist Visits and Infrastructure Survey Tools, and the Vulnerability Assessment Branch, which conducts assessments of security risks to sector assets at the request of owners or operators.
- The National Risk Management Center (NRMC) conducts activities in support of all critical infrastructure, including the Dams Sector, providing risk and threat analyses, and interdependence of critical infrastructure, including dam failure simulation modeling.

Although responsible for coordinating the security and resilience of the Dams Sector as the SSA, CISA did not properly manage its own internal Dams Sector efforts to ensure these offices shared and leveraged information. Specifically, the Infrastructure Security Division and NRMC did not formally or consistently





## OFFICE OF INSPECTOR GENERAL

### Department of Homeland Security

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report their activities or their impact on the Sector to SED to help it fulfill its responsibilities as the Dams SSA management team. For example, PSAs conducted risk assessments on facilities, but this information was protected from disclosure. NRMC officials noted their role was to provide information on downstream effects of a dam failure to CISA leadership. Full and open exchange of information is key to a coordinated effort by CISA as the SSA to ensure the Dams Sector is secure and resilient, risks are identified, and responses are properly managed.

In addition, although the *Cybersecurity and Infrastructure Security Agency Act of 2018*<sup>19</sup> was enacted more than 2 years ago, CISA has not yet established a final structure or policies and procedures to govern its internal operations. As a result, there are no clear lines of reporting or required coordination among ISD, NRMC, or SED for Dams Sector activities. For example, PSAs in ISD did not interact with owners and operators of the two Michigan dams or SED prior to the dam failures. Without these lines of reporting, CISA can neither ensure its activities achieve their desired results nor measure its impact on the Dams Sector. CISA needs to formalize its organizational structure to clarify Dams Sector roles and responsibilities, as well as reporting authorities, to ensure it is fulfilling its SSA responsibilities.

### **CISA Has Not Updated Overarching Critical Infrastructure Plans**

PPD-21 requires CISA to establish a process to measure and analyze the Nation's ability to manage and reduce risks to dams and other critical infrastructure.<sup>20</sup> However, CISA has not updated two critical infrastructure strategic and operational plans. First, the NIPP, which provides overall strategic direction for the national effort to focus on critical infrastructure activities, has not been updated since 2013. In response to a recommendation in a recently issued DHS OIG report,<sup>21</sup> CISA estimated it would update the NIPP by December 31, 2020, but as of March 8, 2021, CISA had not done so. Second, the NIPP also requires that each Critical Infrastructure Sector publish its own SSP every 4 years to ensure each sector adjusts to the ever-evolving risk landscape.<sup>22</sup> The Dams SSP was last updated in 2015.<sup>23</sup> CISA has not updated the Dams SSP to reflect current risks, goals, and priorities. For

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<sup>19</sup> *Cybersecurity and Infrastructure Security Agency Act of 2018* became law on November 16, 2018.

<sup>20</sup> *Presidential Policy Directive – Critical Infrastructure Security and Resilience (PPD-21), Implementation of the Directive*, pages 9–10.

<sup>21</sup> *DHS Can Enhance Efforts to Protect Commercial Facilities from Terrorism and Physical Threats*, OIG-20-37, June 11, 2020. In the report, OIG also recommended CISA develop comprehensive policies and procedures to support its role as the Commercial Facilities' SSA.

<sup>22</sup> *National Infrastructure Protection Plan 2013*, page 22.

<sup>23</sup> *Dams Sector Specific Plan*, 2015.



## OFFICE OF INSPECTOR GENERAL

Department of Homeland Security

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example, in April 2019, CISA released a new framework<sup>24</sup> for prioritizing critical infrastructure through a systematic approach to corresponding risk management activity referred to as “National Critical Functions.” The 2015 Dams SSP does not reflect the National Critical Functions or how the two will operate in concert.

CISA officials said they believe their engagement efforts with Sector stakeholders provide quick updates and they determine Dam Sector risks through strategic meetings. CISA officials also stated that they will not update the Dams SSP until the next version of the NIPP is finalized. CISA needs to update both the NIPP and Dams SSP to ensure strategies and operations related to Dams Sector security and resilience consider current risks and all partners are aware of the current goals and priorities of the sector.

### **CISA Does Not Gather or Evaluate Performance Information on Dams Sector Activities**

Fundamentals of good management<sup>25</sup> require that agencies be able to measure outcomes and have reasonable assurances their activities achieve desired results. CISA lacked a number of these key controls and does not track or measure its own Dams Sector activities. CISA could not determine its impact on Dams Sector security and resilience because it does not have performance metrics as required by the SSP and other Federal requirements.<sup>26</sup> Previously, DHS reported Dams Sector performance with other sectors’ performance as part of the *Critical Infrastructure National Annual Report*.<sup>27</sup> When this reporting requirement ended, CISA stopped collecting and reporting this information to Congress.

Without comprehensive performance information, CISA cannot show how its Dams Sector activities improve the safety, security, and resiliency of the sector. For example, SED cannot effectively advise dam stakeholders of potential risks without proactive coordination or evidence of the value of its activities. CISA

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<sup>24</sup> CISA released the inaugural set of National Critical Functions on April 30, 2019. See <https://www.cisa.gov/news/2019/04/30/cisa-releases-national-critical-functions-set> (last accessed February 10, 2021).

<sup>25</sup> OMB Circular No. A-123: *Management's Responsibility for Enterprise Risk Management and Internal Control* (M-16-17), July 15, 2016.

<sup>26</sup> GPRM Modernization Act of 2010 requires that agencies focus on the performance and results of their programs by measuring outcomes against their strategies and plans. Further, OMB Circular No. A-123, *Management's Responsibility for Enterprise Risk Management and Internal Control* (M-16-17) requires effective management controls to ensure Federal agencies improve program implementation and provide reasonable assurance management decisions will achieve desired results.

<sup>27</sup> *Critical Infrastructure National Annual Report*, 2014–2015, (September 7, 2016).



## OFFICE OF INSPECTOR GENERAL

### Department of Homeland Security

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should establish policies, procedures, and performance metrics to help determine its activities' impact on the sector.

### **CISA Does Not Consistently Coordinate with FEMA or Other External Dams Sector Partners**

PPD-21 requires CISA as the SSA to provide, support, or facilitate technical assistance and consultations for the Dams Sector to identify vulnerabilities and help mitigate incidents. However, CISA does not consistently provide information to FEMA to help FEMA better manage its dam-related grants; nor does CISA coordinate with FEMA in its flood mapping efforts. This occurred because CISA and FEMA do not have formal agreements to help ensure CISA provides input to FEMA's grant programs and to clarify how CISA, FEMA, and Dams Sector stakeholders should coordinate and use flood mapping information. CISA also does not effectively communicate critical information to external Dams Sector stakeholders due to a lack of strategy or formal guidance on using the Homeland Security Information Network Critical Infrastructure (HSIN-CI) Dams Portal effectively.

### **CISA Does Not Coordinate with FEMA to Provide Information for Dams Sector Grants**

FEMA has three grant programs aimed at improving dam safety and resilience and high-risk critical infrastructure. FEMA awards grant assistance to states for dam inspections, equipment, establishing emergency action plans, and dam safety workshops. Additionally, FEMA oversees the Rehabilitation of High Hazard Potential Dams Grant Program, which funds technical assistance, planning, and construction for rehabilitation of eligible high hazard potential dams. FEMA also provides Building Resilient Infrastructure and Communities grants aimed at improving resiliency in all critical infrastructure.

CISA does not coordinate with FEMA to ensure these grant programs address the most pressing needs of the Dams Sector. Although CISA provides risk information from the National Critical Infrastructure Prioritization Program<sup>28</sup> to FEMA, this information is high level and only applies to FEMA's State Homeland Security Grant program overall state-by-state allocation formulation. Further, CISA did not work with the FEMA officials responsible for developing the Building Resilient Infrastructure and Communities program to ensure funds targeted the infrastructure risks. Due to the lack of coordination, FEMA

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<sup>28</sup> The National Critical Infrastructure Prioritization Program prioritizes critical infrastructure into two categories (Level 1 and Level 2), which are used to inform the Department's infrastructure protection plans and programs to ensure that risk mitigation efforts are applied in the most effective ways possible.



## OFFICE OF INSPECTOR GENERAL

### Department of Homeland Security

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missed opportunities to prioritize facilities, including dams, for its grant programs that CISA identified as high risk.

This lack of coordination and information sharing occurred because CISA does not have agreements with FEMA, such as Memorandums of Understanding or Interagency Agreements. By establishing such agreements, CISA could formalize a process for providing risk information to help ensure FEMA's assistance addresses the most current risks and targets the highest priority needs of the Dams Sector.

### **CISA Does Not Coordinate with FEMA on Flood Mapping Information**

CISA also does not coordinate dam failure flood (inundation) mapping information with FEMA to prevent duplication and confusion. Inundation maps show the areas likely to flood when a dam fails and how long it will take these flood waters to reach different locations. CISA and FEMA rely on separate inundation mapping systems and have not identified how the systems differ, the risks associated with using multiple systems, or under which conditions each system should be used. Flood mapping information from the system CISA uses<sup>29</sup> during emergency situations is not available to dam owners, according to the system operators. Access to FEMA's system<sup>30</sup> is available to FEMA, state dam safety officials and Federal and state stakeholder agency officials at no cost. However, according to CISA and FEMA officials, they do not have access to the information from each other's systems. We identified nearly 3,300 potentially duplicate inundation mapping simulations that were run in both systems.

Further, following the dam failures in Michigan, CISA and FEMA did not coordinate their responses or mapping efforts. Initially, after the dam failure, FEMA, as the Federal lead for disaster response, closely coordinated with state and local emergency responders, according to state officials. According to state dam safety officials, they based their response efforts on the inundation maps from the dam's Emergency Action Plan created by FEMA's DSS-WISE™ Lite system. Separately, CISA's contractor, Pacific Northwest National Laboratories, performed and provided inundation modeling to CISA's NRMC. According to CISA, these maps were shared internally within CISA to understand whether any critical infrastructures would be affected. (Appendix C contains the maps provided by the DSS-WISE™ Lite system and Pacific Northwest National Laboratories.)

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<sup>29</sup> CISA contracts with the Pacific Northwest National Laboratory to run the Rapid Infrastructure Flood Tool/Water Extreme Lookup Library (RIFT/WELL).

<sup>30</sup> FEMA supports the Decision Support System for Water Infrastructural Security (DSS-WISE™) Lite system through a partnership with the University of Mississippi.



## OFFICE OF INSPECTOR GENERAL

### Department of Homeland Security

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According to NRMC officials, they began working with FEMA and the U.S. Army Corps of Engineers on an inundation modeling engagement strategy to address this issue. NRMC officials said the aim of the strategy is to align dam modeling activities and core capabilities to determine how Federal partners can benefit from each other's programs. Although a positive step, improvement in the Dams Sector may be limited because, according to SED officials, they are not involved. Without involvement of SED's SSA management team, inundation maps may not be used consistently throughout the sector. In addition to ensuring SED is included in this group, CISA should establish an agreement with FEMA to clarify coordination and use of flood mapping information by DHS, its components, and Dams Sector stakeholders.

### **CISA Does Not Effectively Use the HSIN-CI Dams Portal to Provide Critical Information to Sector Stakeholders**

According to the SSP, the HSIN-CI Dams Portal (Dams Portal) is the primary system through which private-sector dam owners and operators, DHS, and other Federal, state, and local government agencies collaborate to protect the Nation's critical infrastructure.<sup>31</sup> Dams Sector stakeholders have access to the Dams Portal, which contains lessons learned from prior incidents and exercises, best practices, and emerging threats and incident information. Although CISA asserts the Dams Portal is the main way it communicates with sector partners, it is not using the portal to its fullest potential.

For example, as of December 20, 2020, the Dams Portal had 1,273 users compared to more than 91,000 dams nationwide. According to CISA officials, the number of users active in the Dams Portal does not accurately represent who is receiving information, and one user may share information with multiple people, or one dam owner may have multiple dams. CISA also acknowledged it does not analyze Dams Portal user information and does not follow up or track communications to verify who has received sensitive but unclassified information and other urgent situational updates. Stakeholders we spoke with reported that instead of using the Dams Portal, they receive dam-related information via email from multiple sources such as CISA, FEMA, and the Sector meetings. If CISA continues to rely on the Dams Portal to communicate with the sector, it should establish a strategy to increase membership and analyze portal use to ensure critical information reaches Dams Sector partners.

Additionally, sector stakeholders can submit information to the Dams Portal, including exercises and lessons learned from real world events, by submitting

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<sup>31</sup> <https://www.dhs.gov/hsin-critical-infrastructure> (last accessed February 2, 2021).



## OFFICE OF INSPECTOR GENERAL

### Department of Homeland Security

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their requests to CISA via email. However, the Dams Portal does not clearly identify this capability is available to stakeholders or clearly outline a submission process for stakeholders to follow. Without formal guidance or clear instructions in the Dams Portal to encourage and clarify submission requests, users will continue to be unaware of its information-sharing capability. Combined with the low percentage of active users, CISA cannot ensure stakeholders gain the maximum benefit from the Dams Portal's capabilities. CISA should formulate an outreach strategy and update the Dams Portal with clear instructions and encourage the submission of useful information, such as lessons learned, after action reports, and best practices, to fully maximize the use of the Dams Portal.

### Conclusion

The Dams Sector protects homes and businesses from flooding, powers those buildings with electricity, and provides recreation opportunities and safe modes of transportation. To ensure the safety, security, and resilience of the Dams Sector, CISA needs to ensure full information sharing internally; formalize its internal organizational structure and processes; update its strategic plans, such as the NIPP and the SSP; and gather or evaluate performance information on its Dams Sector activities. Further, because DHS and CISA do not own or operate any dams, coordination with all Dams Sector partners and stakeholders is critical. CISA also needs to effectively communicate information to its Dams Sector partners and stakeholders. Without such coordination and communication, CISA may continue to face challenges with its Dams Sector activities. For instance, prior to the Michigan dam failures, the dams' hydropower license was revoked, and its regulatory authority was transferred from the Federal Energy Regulatory Commission to the State of Michigan in 2018, due to repeated safety violations. CISA officials stated they were unaware of the license transfer or the persistent, unaddressed safety problems that led to the license revocation. Had CISA had a process in place to monitor potential hazards, it may have helped Michigan mitigate these risks. CISA can improve its oversight, coordination, and communication to better support the Dams Sector security and resilience, thus enhancing the Sector's ability to adapt to the risk environment and decrease the likelihood of future dam failures and flooding events.

### Recommendations

We recommend the Director, Cybersecurity and Infrastructure Security Agency:

**Recommendation 1:** Update the Dams Sector-Specific Plan as required, ensuring alignment with the updated National Infrastructure Protection Plan currently under development.



## OFFICE OF INSPECTOR GENERAL

### Department of Homeland Security

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**Recommendation 2:** Formalize CISA’s organizational structure to clarify roles, responsibilities, coordination processes, and reporting procedures across all divisions performing activities relating to CISA’s role as the Sector-Specific Agency for the Dams Sector.

**Recommendation 3:** Establish policies, procedures, and performance metrics to help ensure CISA divisions consistently assess the impact of all programs and activities relating to CISA’s role as the Sector-Specific Agency for the Dams Sector, and that CISA assess their effectiveness in the role of Sector-Specific Agency for the Dams Sector.

**Recommendation 4:** Strengthen coordination with FEMA by establishing Memorandums of Understanding, Interagency Agreements, or other documented strategies to formally define CISA’s and FEMA’s roles and responsibilities for information sharing and analytical collaboration for grant decision-making related to safety, security, and resilience of dams, as well as the use and applicability of numerical simulation models, flood inundation tools, and supporting geospatial mapping capabilities to support emergency preparedness and incident response.

**Recommendation 5:** Develop and implement a strategy for Dams Sector stakeholders to use the HSIN-CI Dams Portal to its fullest potential. CISA should develop metrics on usage, performance, and training needs; update the HSIN-CI Dams Portal with clear instructions; and encourage sharing of lessons learned, after action reports, and best practices among stakeholders.

### Management Comments and OIG Analysis

CISA concurred with all five recommendations. We have included a copy of the Management Comments in their entirety in Appendix A. We also received technical comments to the draft report and revised the report as appropriate. Additionally, CISA noted several initiatives it has undertaken to address the issues identified in our report including Dams Sector Strategic Planning Initiatives and efforts to promote the HSIN-CI Dams Portal. Finally, CISA noted the change in terminology from “SSA” to the Sector Risk Management Agency or “SRMA” that was codified in the *William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021*. A summary of CISA’s responses to our recommendations and our analysis follows.

**CISA’s Response to Recommendation 1:** Concur. CISA’s SED will update the Dams SSP upon completion of the revised National Plan. CISA’s update of the Dams SSP will reflect updates and incorporate concepts and ideas from



## OFFICE OF INSPECTOR GENERAL

### Department of Homeland Security

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several products and initiatives completed since the previous Dams SSP was developed. Estimated Completion Date (ECD): September 30, 2022.

**OIG Analysis:** CISA's actions are responsive to the recommendation. We consider the recommendation resolved and open. It will remain open until CISA's SED provides an updated Dams SSP.

**CISA's Response to Recommendation 2:** Concur. CISA ISD and SED will collaborate to formally document SRMA processes and coordination mechanisms guiding the execution of the SRMA function across the Agency, including the roles and responsibilities of each division in executing CISA's role and the SRMA for the Dams Sector. ECD: March 31, 2022.

**OIG Analysis:** CISA's actions are responsive to the recommendation. We consider the recommendation resolved and open. It will remain open until CISA provides formal documentation describing the roles, responsibilities, and coordination mechanisms for executing the Dams Sector responsibilities throughout the agency.

**CISA's Response to Recommendation 3:** Concur. The effort by CISA ISD and SED to formally document SRMA process and coordination will also describe the sector management role assigned to SED. This role, which cuts across all SRMA lines of effort, includes capturing, monitoring, assessing, and documenting the overall performance of the Agency as the SRMA for its assigned sectors, as well as documenting how SRMA-related activities are contributing to CISA risk management priority initiatives. ECD: March 31, 2022.

**OIG Analysis:** CISA's actions are responsive to the recommendation. We consider the recommendation resolved and open. It will remain open until CISA provides Dams Sector performance metrics to determine its effectiveness in performing its SSA/SRMA responsibilities as outlined by the updated Dams SSP.

**CISA's Response to Recommendation 4:** Concur. CISA Office of Strategy, Policy, and Plans (SPP), supported by ISD and CISA's National Risk Management Center, will coordinate closely with FEMA's Grants Programs Directorate and National Dam Safety Program to develop the appropriate interagency coordination agreements to formally document and define the respective roles and responsibilities for information sharing and analytical collaboration for grant decision-making related to safety, security, and resilience of dams. In addition, CISA SPP will work closely with FEMA to develop the appropriate interagency coordination agreements for the use and applicability of numerical simulation models, flood inundation tools, and





## OFFICE OF INSPECTOR GENERAL

### Department of Homeland Security

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supporting geospatial mapping capabilities to support emergency preparedness and incident response. ECD: September 30, 2022.

**OIG Analysis:** CISA's actions are responsive to the recommendation. We consider the recommendation resolved and open. It will remain open until CISA provides interagency coordination agreements for collaborating on dam-related grants and the use of flood inundation tools for the Sector.

**CISA's Response to Recommendation 5:** Concur. CISA SED will develop and implement a strategy to promote the HSIN-CI Dams Portal for information sharing across Dams Sector stakeholders. It will also develop metrics and standards such as those included in this recommendation to evaluate usage and performance of all sector-specific communities of interest within HSIN-CI, including the HSIN-CI Dams Portal. SED will report usage and performance metrics as part of CISA's regular quarterly performance review process beginning at the end of the second quarter of fiscal year 2022. ECD: May 31, 2022.

**OIG Analysis:** CISA's actions are responsive to the recommendation. We consider the recommendation resolved and open. It will remain open until CISA provides a documented strategy for promoting the HSIN-CI Dams Portal and metrics for determining the successful usage of the Dams Portal by users.



## OFFICE OF INSPECTOR GENERAL

Department of Homeland Security

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### Objective, Scope, and Methodology

The Department of Homeland Security Office of Inspector General was established by the *Homeland Security Act of 2002* (Public Law 107–296) by amendment to the *Inspector General Act of 1978*.

We conducted this audit to determine to what extent CISA’s oversight has strengthened the Dams Sector security and resilience. To answer our objective we obtained, reviewed, and analyzed Federal, departmental, and component documents and information including, but not limited to:

- CISA organizational charts
- legislation, policies, procedures, and guidance related to the Dams Sector
- *Dams Sector-Specific Plan 2015*
- *Federal Guidelines for Dam Safety*
- *Federal Guidelines for Dam Safety – Emergency Action Planning for Dams*
- *Dams Sector Security Guidelines*
- assist visit and assessment data
- budget information
- contract information
- Dams Sector committee meeting minutes and surveys
- prior OIG and Government Accountability Office reports
- media reports on dam failures and current Sector issues

Our audit scope was from June 2014 to June 2020. We conducted interviews with officials from various divisions within CISA, FEMA National Dam Safety Program officials, Federal and state partners, and private industry.

We conducted site visits to meet with DHS officials, the U.S. Army Corps of Engineers, and the Iowa State Department of Natural Resources. We conducted interviews with representatives from the U.S. Army Corps of Engineers, the Federal Energy Regulatory Commission, the U.S. Department of Interior - Bureau of Reclamation and Bureau of Land Management, the U.S. Department of Agriculture, Michigan State Police and Emergency Management officials, and members of the Association of State Dams Safety Officials.

We interviewed members of the Dams Sector Government Coordinating Council, the Dams Sector Coordinating Council, individual state dam safety officials, and individuals who had received CISA vulnerability assessments. We interviewed individuals whose facilities had flood mapping performed in both the DSS-WISE™ Lite and RIFT/WELL systems. These interviews were targeted to gain an understanding of their experience and interaction with DHS officials



## OFFICE OF INSPECTOR GENERAL

### Department of Homeland Security

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in the Dams Sector and provided these officials the opportunity to offer suggestions and recommendations.

We reviewed minutes from the Dams Sector Government Coordinating Council (GCC), the joint National Dam Safety Review Board and Interagency Committee on Dam Safety meetings, and the joint Dams Sector Government Coordinating Council and Sector Coordinating Council meetings. We also reviewed member surveys from the GCC. We reviewed CISA's travel budget information. However, the agency does not break down its budget allocation based on Critical Infrastructure Sectors.

We conducted this performance audit between June 2019 and March 2021 pursuant to the *Inspector General Act of 1978*, as amended, and according to generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based upon our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based upon our audit objectives.

The Office of Audits major contributors to this report are Yesenia Starinsky, Director; Douglas Campbell, Audit Manager; Kirsten Teal, Analyst-in-Charge; Yvette S. Mabry, Auditor; John Schmidt, Program Analyst; Tanya Suggs, Program Analyst; Thomas Hamlin, Communications Analyst; Lena Stephenson-George, Independent Referencer.



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**Appendix A**  
**CISA Comments to the Draft Report**

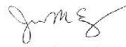
U.S. Department of Homeland Security  
Washington, DC 20528



**Homeland  
Security**

August 17, 2021

MEMORANDUM FOR: Joseph V. Cuffari, Ph.D.  
Inspector General

FROM: Jen Easterly   
Director  
Cybersecurity and Infrastructure Security Agency

SUBJECT: Management Response to Draft Report: “CISA Can Improve  
Efforts to Ensure Dam Security and Resilience”  
(Project No. 19-052-AUD-CISA)

Thank you for the opportunity to comment on this draft report. The Cybersecurity and Infrastructure Security Agency (CISA) appreciates the work of the Office of Inspector General (OIG) in planning and conducting its review and issuing this report.

CISA is pleased to note OIG’s recognition that CISA is in the process of developing an updated National Infrastructure Protection Plan (National Plan). It is also important to note that CISA has already undertaken a number of efforts to improve the execution of the Dams Sector Risk Management Agency (SRMA) role<sup>1</sup>, including completing:

- Several initiatives that will directly support the future update of the Dams Sector-Specific Plan, including an August 2019 Dams Sector Profile, an August 2019 Dams Sector Landscape, and a Dam Sector Strategic Planning Initiative held from February 2020 to May 2021, and
- Multiple efforts to better promote the Homeland Security Information Network - Critical Infrastructure (HSIN-CI) Dams Portal and enhance information sharing processes with sector stakeholders, including the Information Sharing in the Dams Sector Fact Sheet and the HSIN-CI Dams Portal Fact Sheet, both completed in April 2021.

CISA remains committed to enhancing the security and resilience of our Nation’s critical infrastructure.

<sup>1</sup> On January 1, 2021, the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021 became law. This law codifies the term Sector Risk Management Agency, or SRMA, in place of the term Sector-Specific Agencies (SSAs). CISA’s responses to this report use “SRMA” in lieu of “SSA.”



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The draft report contained five recommendations, with which CISA concurs. Attached find our detailed response to each recommendation. CISA previously submitted technical comments addressing several accuracy, contextual, and other issues under a separate cover for OIG's consideration.

Again, thank you for the opportunity to review and comment on this draft report. Please feel free to contact me if you have any questions. We look forward to working with you again in the future.

Attachment



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### Attachment: Management Response to Recommendations Contained in 19-052-AUD-CISA

OIG recommended that the Director of CISA:

**Recommendation 1:** Update the Dams Sector-Specific Plan as required, ensuring alignment with the updated National Infrastructure Protection Plan currently under development.

**Response:** Concur. CISA's Stakeholder Engagement Division (SED) will update the Dams Sector Specific Plan upon completion of the revised National Plan. It is important to emphasize that it is critical to complete the revised National Plan before updating the Dams Sector Specific Plan, and for similar plans for all other critical infrastructure sectors. CISA's Infrastructure Security Division (ISD), supported by SED, is in the process of refreshing the existing National Plan—last updated in 2013—in response to seminal changes in law, policy, and the risk environment in which the Nation's critical infrastructure operates. Most notably, Section 9002 of the fiscal year 2021 NDAA codified and clarified the roles and responsibilities of SRMAs, as well as the ways that government and industry partners collaborate to manage risk to the Nation's infrastructure. CISA's update of the Dams Sector Specific Plan will reflect these updates and incorporate concepts and ideas from several products and initiatives completed since the previous Dams Sector Specific Plan was developed, including an August 2019 Dams Sector Profile, an August 2019 Dams Sector Landscape, and a Dam Sector Strategic Planning Initiative held from February 2020 to May 2021. Estimated Completion Date (ECD): September 30, 2022.

**Recommendation 2:** Formalize CISA's organizational structure to clarify roles, responsibilities, coordination processes, and reporting procedures across all divisions performing activities relating to CISA's role as the Sector-Specific Agency for the Dams Sector.

**Response:** Concur. In 2020, CISA completed a multi-year reorganizational effort to implement the Cybersecurity and Infrastructure Security Agency Act of 2018, which also formalized CISA's current organizational structure to align functional responsibilities for the cybersecurity, infrastructure security, emergency communications, stakeholder engagement, risk management, and integrated operations mission areas to separate divisions within the Agency. The distributed nature of functional responsibilities, and of the SRMA role across the Agency, necessitates a coordinated approach among all CISA organizational elements to ensure mission success. Moving forward, CISA ISD and SED will collaborate to formally document SRMA processes and coordination mechanisms guiding the execution of the SRMA function across the Agency, including



## OFFICE OF INSPECTOR GENERAL

### Department of Homeland Security

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the roles and responsibilities of each division in executing CISA's role and the SRMA for the Dams Sector. ECD: March 31, 2022.

**Recommendation 3:** Establish policies, procedures, and performance metrics to help ensure CISA divisions consistently assess the impact of all programs and activities relating to CISA's role as the Sector-Specific Agency for the Dams Sector, and that CISA assess their effectiveness in the role of Sector-Specific Agency for the Dams Sector.

**Response:** Concur. The effort by CISA ISD and SED to formally document SRMA process and coordination will also describe the sector management role assigned to SED. This role, which cuts across all SRMA lines of effort, includes capturing, monitoring, assessing, and documenting the overall performance of the Agency as the SRMA for its assigned sectors, as well as documenting how SRMA-related activities are contributing to CISA risk management priority initiatives. ECD: March 31, 2022.

**Recommendation 4:** Strengthen coordination with FEMA [Federal Emergency Management Agency] by establishing Memorandums of Understanding, Interagency Agreements, or other documented strategies to formally define CISA's and FEMA's roles and responsibilities for information sharing and analytical collaboration for grant decision-making related to safety, security, and resilience of dams, as well as the use and applicability of numerical simulation models, flood inundation tools, and supporting geospatial mapping capabilities to support emergency preparedness and incident response.

**Response:** Concur. CISA Office of Strategy, Policy, and Plans (SPP), supported by ISD and CISA's National Risk Management Center, will coordinate closely with FEMA's Grants Programs Directorate and National Dam Safety Program to develop the appropriate interagency coordination agreements to formally document and define the respective roles and responsibilities for information sharing and analytical collaboration for grant decision-making related to safety, security and resilience of dams. In addition, CISA SPP will work closely with FEMA to develop the appropriate interagency coordination agreements for the use and applicability of numerical simulation models, flood inundation tools, and supporting geospatial mapping capabilities to support emergency preparedness and incident response. ECD: September 30, 2022.

**Recommendation 5:** Develop and implement a strategy for Dams Sector stakeholders to use the HSIN-CI Dams Portal to its fullest potential. CISA should develop metrics on usage, performance, and training needs; update the HSIN-CI Dams Portal with clear instructions; and encourage sharing of lessons learned, after action reports, and best practices among stakeholders.

**Response:** Concur. CISA SED will develop and implement a strategy for the promotion of the HSIN-CI Dams Portal as an information sharing for Dams Sector stakeholders, and



## OFFICE OF INSPECTOR GENERAL

### Department of Homeland Security

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will develop metrics and standards such as those included in this recommendation to evaluate usage and performance of all sector-specific communities of interest within HSIN-CI, including the HSIN-CI Dams Portal. SED will report usage and performance metrics as part of CISA's regular quarterly performance review process beginning at the end of the second quarter of fiscal year 2022. ECD: May 31, 2022.





**OFFICE OF INSPECTOR GENERAL**  
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**Appendix B**  
**Major Dam Sector Partners**

<b>Name of Agency/Organization</b>	<b>Role and Responsibility</b>
<b>U.S. Army Corps of Engineers</b>	Maintains National Inventory of Dams; operates and maintains approximately 740 dams.
<b>U.S. Department of Interior Bureaus</b>	Plans, designs, constructs, operates, maintains, and provides oversight for nearly 3,000 dams.
<b>Federal Energy Regulatory Commission</b>	Inspects, regulates, and licenses 2500+ hydropower dams.
<b>Government Coordinating Council</b>	Serves as an advisory committee made of Federal, state, local, and tribal owners and operators, and Federal and state regulators.
<b>Sector Coordinating Council</b>	Serves as an advisory committee of non-Federal owners and operators and trade associations.
<b>National Dam Safety Review Board</b>	Is an advisory committee made of Federal, state, and private members, which FEMA chairs. Advises the FEMA Administrator on national dam safety priorities and policies and assists in monitoring state dam safety programs.
<b>Interagency Committee on Dam Safety</b>	Is a Federal advisory committee, which FEMA chairs. Acts as permanent forum for coordination of Federal activities in dam safety and security.
<b>State dam safety programs</b>	Permits, inspects, and enforces regulations for about 77 percent of U.S. dams.
<b>Association of State Dam Safety Officials</b>	Is a non-profit that serves the state dam safety programs and broader dam safety community.
<i>Source: DHS OIG-created based on interviews and document reviews</i>	



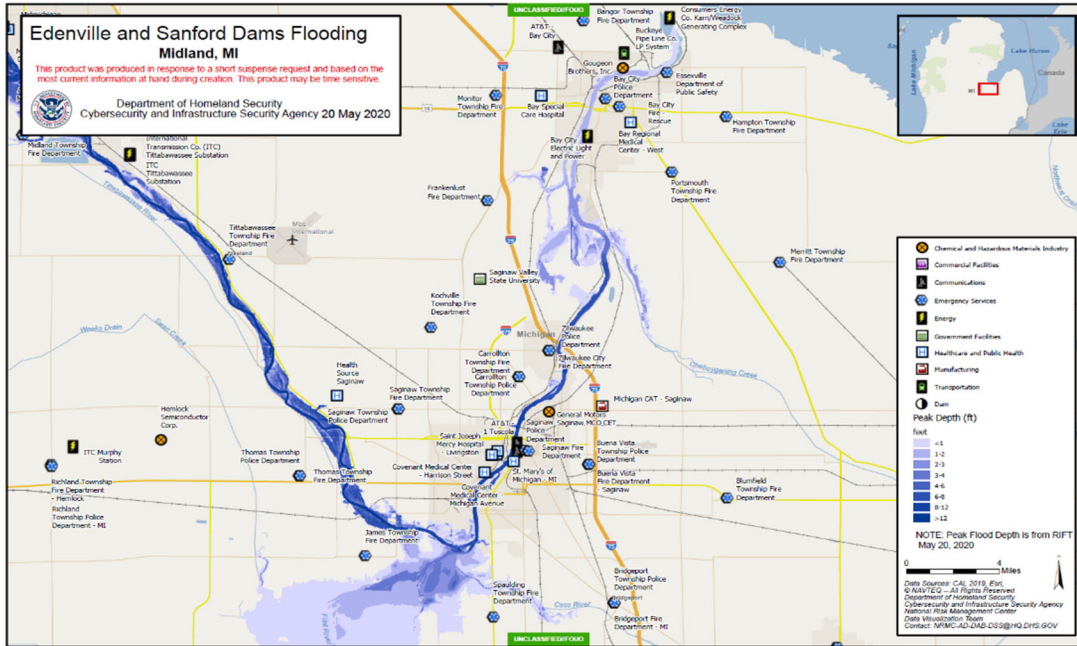
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## Appendix C

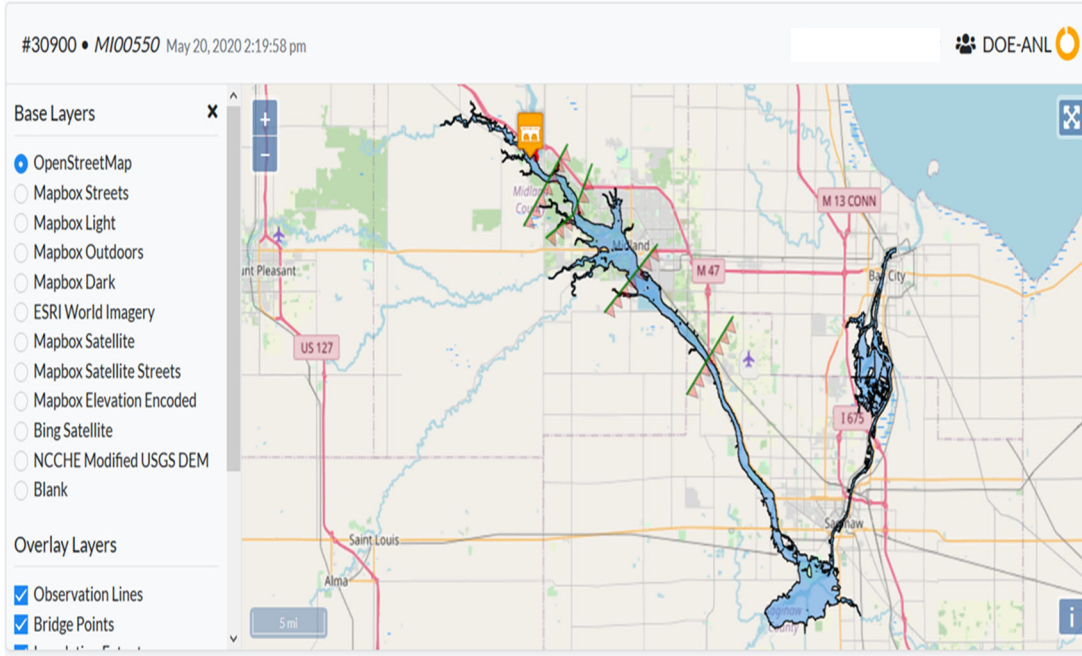
### May 20, 2020: Edenville and Sanford Dams Flood Modeling

Figure 4. CISA-NRMC Simulation from Pacific Northwest National Labs



Source: CISA

Figure 5. FEMA DSS-WISE™ Lite Simulation from Argonne National Labs



Source: FEMA



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**Appendix D**  
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