



DAM SAFETY UPDATE

ICE HARBOR LOCK AND DAM

U.S. ARMY CORPS OF ENGINEERS

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What residents near dams should know

Living with dams and along rivers comes with risk. Know your risk. One of USACE's primary missions is to ensure that the inland navigation traffic can move safely, reliably, and efficiently and with minimal impact on the environment.

Living with locks and dams is a shared responsibility of residents, local emergency management, and the Corps. Know your role. Listen to and follow instructions from local emergency management officials. The Corps doesn't normally issue evacuation instructions. Contact your local officials to learn about flood risk management decisions in your area. Consider purchasing flood insurance.

For additional information, see:

http://www.damsafety.org/media/Documents/DownloadableDocuments/LivingWithDams_ASDSO2012.pdf.

<http://www.usace.army.mil/Missions/CivilWorks/DamSafetyProgram.aspx>.

<http://www.nww.usace.army.mil/Missions/DamSafety.aspx>.



Photo by Davig Rigg

Project Description

Ice Harbor Lock and Dam is a run-of-river dam that maintains a navigable pool for river traffic but does not store flood waters. It is located on the Snake River about 10 miles above its confluence with the Columbia River. It is owned and operated by the Walla Walla District of the U.S. Army Corps of Engineers for hydroelectric power generation, navigation, and recreation. Ice Harbor consists of a spillway, powerhouse, navigation lock, earth fill embankment, and fish passage facilities, removable spillway weir and recreation areas. Construction began in December 1955 and was completed in 1961. The powerhouse generates 603 megawatts of electricity.

The dam is 2,822 feet long with a normal operating hydraulic height of 100 feet. Lake Sacajawea lies directly upstream of the dam and has a surface area of 8,375 acres. It extends upstream 32 miles up the Snake River until it reaches Lower Monumental Lock and Dam. The lake is surrounded by 3,576 acres containing recreation and wildlife habitat management areas.

Public Safety is the Corps' Highest Priority

The U.S. Army Corps of Engineers' highest priority is public safety. While we cannot completely eliminate risk, we can reduce risk. The objective of the Corps' Dam Safety Program is to maintain public safety, make Corps dams safer and minimize risks. Since 2007, the Corps has used a risk-informed process to prioritize addressing dam safety deficiencies on a nationwide basis. Walla Walla District dams and appurtenant (dam-related) levees were screened and assessed for dam safety issues and deficiencies and their potential risk to the public. This led to a better understanding of specific conditions at dams, which has led to safety improvements. After dams and dam-related levees were assessed, the Corps categorized dams into five Dam Safety Action Classifications (DSAC) based on individual dam safety risk:

- DSAC 1: Very High Urgency
- DSAC 2: High Urgency
- DSAC3: Moderate Urgency

- DSAC4: Low Urgency
- DSAC5: Normal

The dam safety classifications assist the U.S. Congress and the Corps in prioritizing funding for dam safety infrastructure improvements.

Ice Harbor Lock and Dam Status

Ice Harbor Lock and Dam was screened and classified as DSAC 3 “Moderate Urgency” in September 2009, primarily due to potential overtopping/erosion of embankment/abutment and potential upstream radial lock gate failure during high pool.

The Ice Harbor DSAC 3 means for confirmed and unconfirmed dam safety issues, the combination of life, economic or environmental consequences with likelihood of failure is moderate. The Corps considers this level of life-risk to be unacceptable except in unusual circumstances. Currently there is no evidence to suggest an emergency situation exists or is about to occur.

Risks Associated with Dams in General

Every day, thousands of vessels move people, animals, and products across the country via the nation's inland rivers and harbors. This water traffic is a vital component of the nation's economy. However, the navigation infrastructure is aging. Over half of the locks and dams are over 50 years old, and the consequences of this aging infrastructure are increasing incidents of downtime, with disruption to river navigation, and a higher risk of major component failures. Both of which have significant economic risks. To manage these risks, the Corps routinely inspects and monitors its locks and dams. The Corps implements short- and long-term actions such as interim risk reduction measures (IRRM), on a prioritized basis, when unacceptable risks are found at any of its dams. Ice Harbor Lock and Dam IRRM include:

Completed/Resolved Interim Risk Reduction Measures (as of February 2015)

- Perform spillway tainter gate fit-for-service evaluation: Evaluation completed June 2012. Updates will be required as future inspections and data collection warrant.
- Update probable maximum flood: Update completed and approved August 2013.
- Perform potential failure mode analysis: Completed April 2014.
- Complete a spillway hydraulic study: Cancelled; no significant risk reduction benefit.
- Conduct a spillway (service) bridge study: Cancelled; no significant risk reduction benefit.

Ongoing/Remaining Interim Risk Reduction Measures (as of February 2015)

- Relocate spillway backup power generator and provide seismic bracing.
- Conduct upstream navigation lock gate reliability analysis.
- Develop a navigation lock operation plan: Recommended to be incorporated in next emergency action plan revision.
- Conduct navigation lock monolith 6 analysis: Recommended to be incorporated in next emergency action plan revision.
- Develop right abutment closure plan: Recommended to be incorporated in next emergency action plan revision.
- Stockpile emergency material such as sand and gravel.
- Develop a dam surveillance plan for high water events.
- Update emergency action plan inundation maps and generate water surface profile.
- Conduct emergency exercises.
- Update the dam safety emergency action plan.

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