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Water Operations and Maintenance Bulletin

Wildland Fire Management

U.S. Department of the Interior

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Bulletin Mission Statement

This *Water Operations and Maintenance Bulletin* is published quarterly through the Asset Management Division of the Dam Safety and Infrastructure Directorate. It serves as a medium to connect personnel who operate and maintain Bureau of Reclamation water supply systems.

Bulletin History

The *Water Operations and Maintenance Bulletin* has been published quarterly since 1952. Past issues may be read and downloaded at [Water Operations and Maintenance Bulletins](#), where you can also search the entire bulletin database by subject.

Contact

We welcome suggestions for future issue topics, contributing authors, and comments on the *Bulletin*. Please direct all inquiries to drowateroandm@usbr.gov.

Editor's Note

Thank you for continuing to read and engage with the *Water Operations and Maintenance Bulletin*. This Winter issue highlights the Wildland Fire Management Program and how it intersects with operations and maintenance. After another busy and destructive wildfire season, we hope this issue helps explain the ways in which Reclamation is protecting assets from fire and ensuring continued delivery of project benefits.

We are lucky to have three different contributors from Wildland Fire Management for this issue. Laura Harger's "Wildland Fire Program Overview" discusses what Wildland Fire is, collaboration with regions and offices, and Reclamation's operations before, during, and after wildfires. In "Preparing for and Mitigating Wildland Fire," John Hutchings describes the history of wildfire in California, fuel breaks for mitigation, and funding means for Wildland Fire Management. Kendra Fallon's "Moving from Reactive to Proactive: Utilizing GIS to Address Wildland Fire Impacts to Reclamation" shares how the Columbia-Pacific Northwest Region developed an ArcGIS Online App that overlays mapped Reclamation jurisdictional lands and assets with near-real-time fire perimeter feature layers and satellite heat signatures.

We are also pleased to share Nicholas Casamatta's "Seasonal Condition Assessment" article about best practices for off-season maintenance that can be conducted between shut down and water up. Finally, Jay Bytheway of the Upper Colorado Basin Regional Office sat down with us for a Q&A. Please join us in congratulating Jay on his retirement after 34 years with Reclamation!

Happy New Year!

Darion Mayhorn, P.E.
Supervisor, Operations and Maintenance
Asset Management Division

Andrew Daigle, Ph.D.
Writer-Editor
Dam Safety and Infrastructure

Around O&M

- Asset Management Division (AMD) hosted a Bridge Ownership and Disposal training on November 10. The goal of the training was to educate Reclamation staff on the complexities of identifying ownership and project purpose for over 7,200 bridges crossing Reclamation facilities or land. The training stressed that a team approach is needed between operations and maintenance (O&M), realty, contracts, resources, project management, and leadership to identify bridge ownership and dispose of unneeded bridges. Multiple area offices presented on their experiences and lessons learned with bridge ownership and disposal.
- In December, the hydropower asset class in the Enterprise Asset Registry was completed. Water conveyance (lines), levees, transportation, and lands asset classes will also be released in fiscal year 2022.
 - Read Dan Staton's article on the Enterprise Asset Registry in the December [Knowledge Stream](#).
- Enacted on November 15, 2021, the Infrastructure Investment and Jobs Act (PL 117-58) authorizes \$8.3 billion for Reclamation. Information will be forthcoming for the O&M community on how to leverage the \$3.2 billion allocated for the Aging Infrastructure Account. Additionally, the Extraordinary Maintenance (XM) Directive and Standard, PEC 05-03, which details the XM application process, is available for public comment until December 9, 2021.
- AMD congratulates Camille Touton on the U.S. Senate's vote for her confirmation November 4, 2021, as Commissioner of the Bureau of Reclamation.



Buck at snow-covered Pueblo Dam.



East Troublesome Fire, October 24, 2020,
near Estes Park, Colorado.

Wildland Fire Program Overview

Laura Harger

Wildland Fire Management Program Coordinator, Asset Management Division

What is Wildland Fire?

The National Wildfire Coordination Group, or NWCG, defines Wildland Fire as “any non-structure fire that occurs in vegetation or natural fuels including Wildfires and Prescribed Fires.”

Why do we care?

As current drought patterns persist through the western United States, wildland fires have increased in size, impacting Reclamation’s ability to effectively execute its mission. Common post-fire impacts can include sedimentation and degradation of water quality in reservoirs/canals and debris blocking intakes to power facilities and head gates to water systems.

All wildland fire incidents have the potential to significantly damage or destroy infrastructure and alter natural and cultural resources on our lands and in our waterbodies.

How does Reclamation manage and react to wildland fire?

Currently, wildland fire activities are implemented at regional, area, and field offices with varying levels of coordination. The Asset Management Division (AMD) is responsible for Reclamation Manual Policy and Directives and Standards that help organize those activities. Each region has an established Wildland Fire Management (WFM) Program Coordinator that administers the program at a regional level, with responsibility for engaging the area and field offices.

Each region has different amounts and types of lands, or burnable acres, and various partnering agencies. This creates a complex management scenario, and Reclamation's capabilities are limited to mainly administering agreements with other agencies like the Bureau of Land Management or the Forest Service for wildland fire suppression, mitigation, and post-fire restoration. The agreements have proven valuable in their protection of water delivery and power generating structures; however, they come at higher costs each year.

What's new this year?

On May 3, 2021, AMD received leadership's concurrence to optimize Reclamation's WFM Program using Department of the Interior (Interior) [Office of Wildland Fire \(OWF\)](#) informal programmatic review recommendations. The OWF was established in 2001 to oversee a \$1 billion program that supports Interior agencies in wildland fire work, coordination, and technology. To meet Reclamation's desired outcomes for developing an efficient WFM program, OWF recommended to 1) increase staffing capacity; 2) address financial concerns; 3) assess incident qualification and participation; 4) improve data management and collection; and 5) engage in interagency coordination.

In September 2021, Reclamation hired a WFM Program Coordinator, Laura Harger, working within the Land Resources Branch of AMD, to lead and develop the WFM Program and provide support and guidance to the existing and future regional WFM program coordinators.

The WFM Program's overall goals include:

- Ensuring safety of stakeholders, customers, managing partners, employees, public at large, and communities at-risk.
- Continuing to meet Reclamation contractual obligations by protecting water and related resources, reservoir storage, and hydropower production from post-fire impacts.
- Minimizing fire impacts to Reclamation's assets and infrastructure.
- Identifying and securing appropriations and funding mechanisms to meet program needs.

What does this mean for Reclamation?

BEFORE wildland fires occur, the WFM Program develops established and ongoing interagency coordination and ensures that relevant agreements and relationships are in place and cover standards for prevention and suppression needs, fuels reduction, prevention, and preparedness. Some specific examples include:

- Integration/representation with the NWCG.
- Clear and effective agreement templates and tools for area and field offices.
- Implementing initial fuel reduction treatments and securing funding for maintenance.



DURING an actual active wildland fire incident, Reclamation is not a fire-fighting agency, so we depend on other agencies to suppress wildfire on our lands. A fully implemented WFM Program will support certified staff, through the [Incident Qualification and Certification System \(IQCS\)](#), and position staff as agency representatives and resource advisors to represent Reclamation's interest.



Cameron Peak Fire (approximately one year post-burn), October 11, 2021, near Fort Collins, Colorado.

AFTER a wildland fire occurs or post-fire, the WFM Program looks for opportunities to support post-fire rehabilitation and active management and mitigation of post-fire effects that may threaten assets and critical infrastructure. In addition to local and regional mitigation and restoration efforts on Reclamation lands and waterbodies, there may be opportunity to integrate into Interior's post-fire program and become a chartered member of the Burned Area Emergency Response (BAER) team, which in turn could provide BAER and Environmental Stabilization and Rehabilitation funding for mitigation/restoration efforts. This is non-Reclamation funding.

Questions and comments should be directed to:

Denver Office, AMD: Laura Harger
CGB Region: John Hutchings
CPN Region: Kendra Fallon
LCB Region: Justin DeMaio
UCB: Dave Krueger/Tyler Larsen
MB & ART Region: John Arkins/Buddy (Bud) Fazio

Research and Development (R&D) and Wildland Fire

The R&D Office's Science and Technology (S&T) Program seeks to provide innovative solutions to challenges faced in delivering our mission. With increased wildfire activity in the western United States, the S&T Program helped organize a workshop in April 2021 to bring together Reclamation wildfire program contacts, Reclamation technical experts, and partners across Federal agencies to discuss priority research needs to support Reclamation's preparedness and response to wildfire. A workshop report is [available](#). As a result of the workshop, six new wildfire-related research projects were funded at the start of fiscal year 2022. Efforts are also highlighted in the recent [Knowledge Stream](#) starting on page 23.

Wildland Fire Facts

- There are approximately 260 acronyms and 2,300 wildland fire-related [terms](#).
- About 85% of wildland fires in the United States are started by humans.
- A fire tornado is a whirlwind of smoke and ash that can travel up to 90 mph.
- The largest fire in recorded U.S. history was the 1825 Miramichi Fire, which burned 3 million acres in Canada and parts of Maine.
- Crown Fire is when the fire moves from top to top of trees or shrubs more or less independent of a ground surface fire.
- Wildland fires are typically 1,600 degrees Fahrenheit (°F); sometimes, temperatures can reach 2,000 °F. The most extreme temperature measured on a wildland fire was 2,400 °F.
- Despite his real name being Smokey Bear, the name "Smokey the Bear" has been perpetuated in popular culture.



Preparing for and Mitigating Wildland Fire

John Hutchings

Regional Wildland Fire Coordinator, California-Great Basin Regional Office

Wildfires are a natural phenomenon in California and are essential to the health and regeneration of its ecosystems. Historically, wildfires caused by lightning and volcanic activity would periodically sweep through California's landscapes, regenerating forests by clearing underbrush, returning nutrients to the soil, removing dead and diseased vegetation, and aiding in seed germination for fire-dependent flora. These periodic fires would prevent the over-accumulation of fire fuels, resulting in less intense and destructive wildfires. Wildfires continued to play a natural role in California until the early 1900s, when Federal and state governments viewed fire as destructive to natural landscapes and adopted aggressive fire exclusion policies to extinguish all natural and human-caused fire. Excluding fire from its natural ecological role has resulted in a vast increase in the accumulation of live, dead, and downed vegetation in the state's forests and brushlands.

While wildfires are a natural part of California's landscape, the fire season in California and across the West is starting earlier and ending later each year, with climate change considered a key driver in this trend. Warmer spring and summer temperatures, reduced snowpack, and earlier spring snowmelt create longer and more intense dry seasons that increase moisture stress on vegetation and make forests more susceptible to severe wildfires. Fire season has increased by 75 days across the Sierra Nevada Mountains, which seems to correspond with an increase in the extent of forest fires across the state. The number of catastrophic wildfires has steadily increased over the last decade, with eight of the ten largest recorded wildfires in California history having occurred between 2017 and 2021.



Reclamation's Auburn Project Lands before fuels reduction activities.

These fires can cause significant damage to Reclamation's land, infrastructure, and watersheds that supply Reclamation reservoirs. Intense fire and post-fire watershed conditions can impact the quality, quantity, and timing of water entering these reservoirs, which can impede Reclamation's ability to deliver water and power and adversely impact downstream investments such as instream habitat restoration projects.

As wildfires become more intense, managing them has become increasingly difficult, particularly as urban development continues to encroach into what was once wildlands. Californians increasingly live near high-risk fire corridors, with residential neighborhoods spilling into previously rural or remote areas. This transition zone is known as the wildland-urban-interface (WUI) and greatly increases the risk wildland fire poses on human populations. Mixing fire-prone wildland areas and suburban development makes it difficult for fire to maintain its natural ecological role and presents challenges for firefighters to protect life and property.

The combination of increased fire fuel buildup on and urban development near Reclamation lands and waterbodies has prompted Reclamation to take a proactive role in managing these lands to reduce the buildup of hazardous fuels. To mitigate the impacts and reduce the severity of wildland fires, Reclamation engages in wildfire management activities (WFM) such as developing fire management plans for all burnable lands throughout the region and funding a Regional Wildland Fire Coordinator position to plan and implement regional fire mitigation activities, including fuel breaks around its infrastructure and on Reclamation lands in the WUI.



Completed section of Auburn Shaded Fuel Break after hazardous fuels reduction activities.

A fuel break is a common pre-fire management technique that provides opportunities for firefighting success by modifying a vegetative arrangement to change fuel composition. Fuel breaks are generally a wide strip of land on which vegetation has been modified so that a fire burning into it can be more readily controlled. This is achieved through careful and strategic thinning of dense vegetation so that wildfire does not easily move from the ground to the overhead tree canopy where fire intensifies and spreads rapidly. A fuel break does not stop a wildfire but increases the likelihood of containing it by reducing the quantity and continuity of flammable vegetation.

Reclamation's ability to implement fire mitigation projects and other WFM activities is significantly limited by its funding capabilities. Reclamation is not currently one of the five dedicated Federal firefighting agencies and is working to optimize the program to take care of its assets and critical infrastructure. Because of this, fuel reduction projects are implemented on Reclamation lands throughout the California-Great Basin (CGB) Region under an array of contracts, agreements, and partnerships with other Federal, state, and local governments, including non-government agencies such as FireWise Communities and local Fire Safe Councils. These partners have a shared interest in mitigating fuel loads and post-fire impacts on Reclamation lands to improve public safety and protect assets and resources within their respective communities from a wildfire originating on or burning through Reclamation lands. Funding and implementing such projects is often obtained by these stakeholders through grants, in-kind labor, and private fiscal contributions.

Direct funding for WFM projects on Reclamation lands is primarily dedicated to Cooperative Agreements with the California Conservation Corps and the California Department of Forestry and Fire Protection's inmate conservation camp program. These are Reclamation's main labor sources for constructing and maintaining nearly 5,000 acres of current and planned hazardous fuels reduction work throughout CGB. Initial planning efforts have focused on using these limited resources to protect vulnerable water delivery and power generation infrastructure and on CGB wildlands adjacent to residential and commercial development. Recent wildfire activity has also prompted CGB to monitor and mitigate post-fire-related impacts such as increased runoff, erosion, and accumulation of debris and sediment in its reservoirs.

Although Reclamation is not considered a Department of the Interior land management or fire bureau, its ability to carry out its mission is substantially threatened by the impacts of wildland fire.

Mandatory evacuations of dams and powerplants along with damages to power transmission equipment have resulted in disruptions in power generation and unregulated thermal releases from reservoirs; post-fire conditions such as fire-damaged trees and unstable hillsides have threatened penstocks, canals, access roads, communication towers, and buildings; debris flow, erosion, and sedimentation triggered by intense precipitation events over burn scars have significantly affected the quality, quantity, and timing of water entering reservoirs; and turbidity, contaminants, and debris have threatened Reclamation investments in improving instream habitat conditions for endangered and threatened species.

As the effects of wildfire on water resources management become more profound, Reclamation and CGB are continuing to increase their footprint in preparing for and mitigating the impacts of wildland fire. CGB is strengthening existing partnerships and exploring mutually beneficial partnerships with upstream landowners to reduce the impacts of wildfire on water resources.



Inmate fire crew removing hazardous trees along an access route to Whiskeytown Dam following the 2018 Carr Fire.

Moving from Reactive to Proactive: Utilizing GIS to Address Wildland Fire Impacts to Reclamation

Kendra Fallon

Regional Wildland Fire Coordinator, Columbia-Pacific Northwest Regional Office

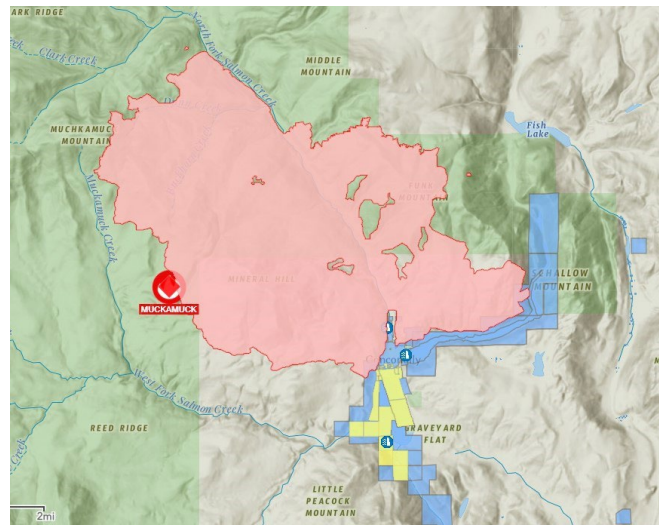
The Bureau of Reclamation (Reclamation) is not unique among other Federal agencies that are impacted by wildland fire on jurisdictional lands. Over the past four years, the Columbia-Pacific Northwest (CPN) Region has averaged 39 individual incidents per season with yearly burned acres ranging from 750 to 17,600. What does separate Reclamation from sister agencies is the impact potential of these fires on downstream Reclamation assets and the impacts that an emerging incident can have on operations. It is anticipated that fire season will continue to lengthen, fires will be more severe, and burned acres will continue to increase.

In an effort to shift from a reactive to proactive position, the CPN Region developed an ArcGIS Online App (App) that overlaid mapped Reclamation jurisdictional lands, values, and assets with near-real-time fire perimeter feature layers and satellite heat signatures. The purpose of the App was 1) to provide a near-real-time visualization of fire activity in the region in spatial relation to critical assets or facilities, 2) identify large fires upstream of Reclamation reservoirs that may contribute to detrimental sedimentation influx or changes to the watershed hydrology, and 3) coordinate with Reclamation Operations and Maintenance (O&M) employees about continuity of operations if there is a threat fire. The App went live in time for the 2021 fire season, which provided an excellent proving ground for the utility of this product. The following are case studies of the utility of the App as it pertains to O&M.

Muckamuck Fire, Conconully, Washington

The Muckamuck Fire was identified as a threat early through the App's satellite feed of initial start locations and heat imagery showing direction of spread. This allowed advanced notification to the Ephrata Field Office who were able to quickly ascertain any potential impacts to Reclamation values and assets and coordinate with stakeholders in the area. By the time the fire reached Reclamation

land, Reclamation was well prepared to coordinate and liaise on behalf of the Bureau with the Incident Management Team (IMT) assigned to the fire. Due to the large fire footprint in relationship to a small reservoir, Reclamation coordinated with adjoining agencies to collect information regarding the potential post-fire hydrologic impacts (e.g., debris flow and soil burn severity).

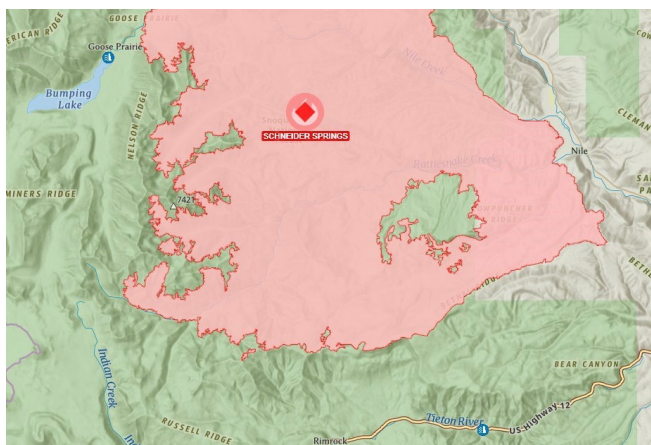


Screen capture of the information provided by the CPN Wildland Fire App for Muckamuck.

Schneider Springs Fire, Yakima, Washington

At the same time as the Muckamuck Fire, the Schneider Springs Fire started a couple of miles east of Bumping Lake, Washington. Similar to Muckamuck, this fire was also identified as a potential threat, triggering early communication with the Yakima Field Office (YFO) staff regarding potential impacts. The YFO Maintenance staff expressed concerns about the fire not only physically impacting the facility at Bumping Dam, but also the potential impacts to the ability to access facilities along the Tieton River to manually operate the gates for the annual fall “flip flop” of flow from the Yakima River to the Tieton River.

Knowing these concerns in advance of the eventual IMT's assignment to the fire allowed them to be communicated to the team during the in-briefing, which led to the establishment of an escort plan should the transportation routes become subject to mandatory evacuation. The early identification of the potential threat of the fire to the Bumping Dam facility also provided a window of opportunity for staff to access the facility to prepare for the approaching fire, where they did a final facility inspection to confirm reservoir elevation (storage capacity) and gate positioning was set to assure release flows were stable long-term during the duration of the incident.

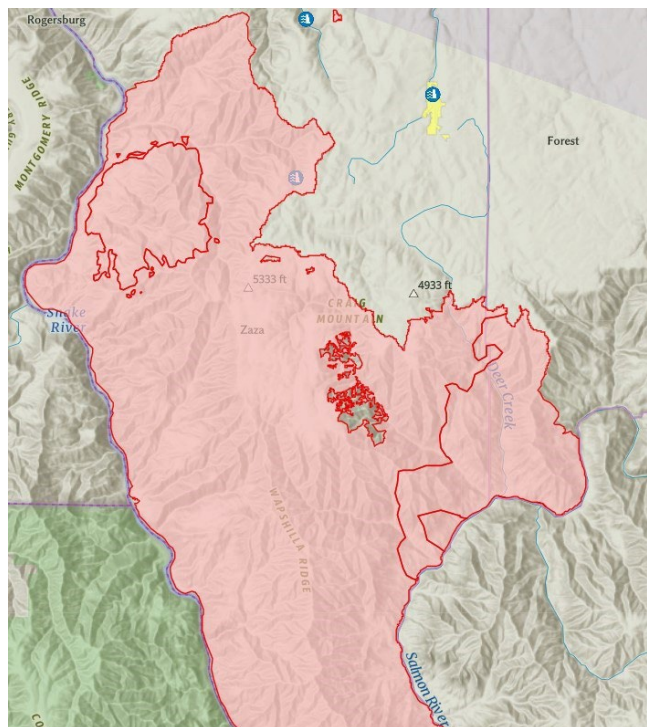


Screen capture of the information provided by the CPN Wildland Fire App for Schneider Springs.

Snake River Complex, Lewiston, Idaho

The Snake River Complex was a complex of fires ignited by lightning south of Lewiston, Idaho. The fires were communicated early in their growth as a potential threat to the facility at Soldier Meadows to appropriate Snake River Area Office (SRAO) staff. Utilizing the near-real-time satellite imagery of fire growth and direction, SRAO staff reached out to the Lewiston Orchards Project Irrigation District Manager to maintain communications. Through these communications, the SRAO Emergency Management Specialist (EMS) was able to give ongoing updates regarding the fire's progression while also obtaining specific details of on-scene firefighting efforts. With these communications, the SRAO EMS was able to identify key facilities that had been protected with suppression efforts. Further, having identified these specific facilities, the SRAO and the district were able to prepare plans for further suppression techniques to protect these facilities if the fire were to once again threaten the facilities. With these plans in place,

communication to Planning Section Chiefs of the Incident Command Team would have been quick and concise even if the district were to need to evacuate from the area.



Screen capture of the information provided by the CPN Wildland Fire App for Snake River Complex.

Review and Future Direction

The App did achieve the desired objectives and created large windows of opportunity to anticipate and prepare for potential impacts during emerging incidents. Though this product was developed specifically for the CPN Region, the framework can be adopted and modified by any other region that may find benefits. It is anticipated that the App will continue to evolve and include more information as additional data is mapped and as feedback is received from the end users. Though the utility of the App has demonstrable application to multiple different disciplines within Reclamation, these case studies were selected to help plant the seeds of thought for how the Wildland Fire Program can continue to develop to meet O&M needs.

Seasonal Condition Assessment

Nicholas Casamatta, P.E.

Conveyance Operations and Maintenance Program Manager, Asset Management Division

The end of summer brings many things: the fall harvest, winter rain and snow, or depending where you live at least cooler temperatures. Reclamation operates in 17 western states. Regardless which is yours, fall and winter typically bring lower demand for irrigation water, and in many places deliveries stop all together. This is an excellent opportunity to turn attention toward condition assessment, maintenance, and planning. Seasonal change in conditions can enable work difficult or otherwise impossible to conduct the rest of the year. Condition assessment between shut down and water up, or at least between low and high flow periods, is a prudent practice. This includes identifying changes over the season, those which require immediate action, and providing sufficient time to plan and execute repairs. Doing so sets your team up for success come spring, which is a critical and potentially hectic time for many irrigators.



Black Canyon Main Canal Gate in off-season (2021).

Condition Assessment

Assessing the condition of many assets can be difficult or impossible during normal operations and seasons of high vegetation growth. The presence of water and vegetation can obscure view, prevent access, and inhibit the ability to test mechanical equipment. As a result, it is critical to take advantage of outages and off-seasons to identify changes and assess condition. The following list highlights important areas for annual inspection and those that may be best suited for the off-season or an outage.

Embankments

- Animal burrows
- Erosion / slope failures
- Encroachments
- Unauthorized deliveries
- Cross drainage structure blockages
- Sediment deposition

Mechanical and Electrical Equipment

- Proper Operation of gates and valves
 - Exercise travel
 - Motor performance
 - Seals
 - Coatings
- Cathodic Protection / Corrosion Monitoring
 - Broken and missing connections
 - Utilizing test stations and ensuring function
 - Sacrificial anode presence and condition
- Instrumentation
 - Flow measurement, level, and position sensors
 - Are they intact and properly located?
 - Review results throughout the season for errors or disruptions

Closed Conveyance Conduits

- Tunnels, Culverts, and Siphons
 - Displacement at an entrance, exit, and joints
 - Sediment deposition
 - Internal erosion / loss of support
 - Cracking and intersecting patterns of cracking
 - Safe entrance is critical, including air monitoring

Maintenance

Maintenance is a continual process, but not all actions can be conducted throughout the year. It is critical to address issues that affect the integrity of the system or the ability to safely resume or increase flow in the spring. Making these repairs in the off-season can

safeguard against the consequence of an unplanned outage during irrigation season. Concrete and corrosion repairs are currently the most common maintenance needs identified on Reclamation infrastructure based on our internal facility review programs. Before jumping straight into action, it's important to consider a do-no-harm approach. Concrete and coating repairs can be expensive, complex, and are expected to endure. Preventing early and sometimes immediate failure of repairs requires appropriate planning. Critical to success and longevity are appropriate surface preparation and environmental conditions like humidity and temperature. The following list highlights important opportunities for maintenance during the off-season based on the previous areas for inspection.

Embankment Repairs

- Erosion, animal burrows, slope failures
- Concrete lining repair and replacement

Vegetation and Sediment Removal

- In channel and in cross drainages

Mechanical Equipment

- Exercise and lubrication
- Seal and seat repair and replacement
- Coating repair and replacement

Cathodic Protection

- Anode replacement
- Running test station procedures and evaluating results
- Repair broken wires or connections

Structural repairs

- Concrete structures
- Pipeline, siphon, and culvert
 - Coatings, linings, regulating control repairs

Planning and Administrative

There are many tasks that cannot be completed immediately, as they may be too large, costly, or complex to conduct in a normal outage period.

In these cases, planning may include design, analysis, raising funds, and environmental permitting. For example, a pipeline may have considerable corrosion. It may be tempting to conduct as many spot repairs as possible during an outage window, but this may not be

the most economical or efficient approach. Conducting a detailed corrosion assessment is a wise step prior to conducting large repairs.

After analysis, the best course of action may be a series of zone repairs over multiple years or a full recoat. Additional analyses with instrumentation can also be used to quantify areas of coating failure and corrosion not visible to the human eye as a means of prioritizing action and effectively assigning limited resources. Other important tasks such as planning for emergency management can be well-suited to slower times of year, especially when they require coordination between multiple groups. In fall 2020, "Emergency Management Program for Water Impoundment Structures" underwent a major revision within the Reclamation Manual. It contains additional details and requirements for emergency management plans, including content, format, exercise schedules, and urban canals.



New York Canal (Boise Project). End of annual lining project (2021).

As seasons change, so too do the opportunities and constraints we face. Preparing for them can help make the most of these changes. For additional resources on condition assessment, maintenance, and planning topics covered within this article, please visit the following links.

Canal Operation and Maintenance Guides

- [Canal Operation & Maintenance Guidelines](#)
 - New [Coatings and Cathodic Protection Manual](#)
- [Concrete Repair Guide](#)
- For integrated pest management and ecological support, see [Ecological Research Laboratory Services and Equipment](#).
- For corrosion, cathodic protection, and coating technical support, see [Materials and Corrosion Laboratory Services](#).
- Emergency management requirements
 - [FAC 01-01](#)
 - [Emergency management support](#)

Q&A

Jay Bytheway, P.E.

Supervisor, Engineering Services Group

Upper Colorado Basin Regional Office

Before he retired at the end of November, Jay Bytheway talked with us about his 34 years with Reclamation. Named Regional Engineer of the Year in 2020, Bytheway discusses Value Engineering, working alongside Utah State Parks, and how his mentor pushed him to finish school.



Jay Bytheway in the Salt Lake City Office.

Can you provide a high-level summary of your work before joining Reclamation?

I didn't do engineering before Reclamation. I was in construction for a while, building houses and such. But I joined Reclamation while I was a student and started out working with my mentor Dr. Brent Taylor.

What brought you to Reclamation?

There was a job announcement at the university. The initial role was as a student or whatever they called it at the time. I started doing inundation studies and modeling dam failures, floodplains, and making inundation maps.

Can you describe notable roles you've had in the 34 years since you joined Reclamation?

I started out working as a student for Dr. Taylor. After I graduated, I went away to work for the Utah Department of Transportation (UDOT). That only lasted six months. Then I came back to Reclamation as a full-time employee. I worked for Richard Jensen as a designer in the Design Group. And I currently hold Richard Jensen's old position. From there, I transferred to Provo in the late 90s. I did state park renovation work mostly but other designs too. I took that job over from Clyde Thomas. I really enjoyed doing that. It was good working hand-in-hand with the state park supervisors. Good on-the-ground work. There's a lot of fun preparing the drawings and following the project all the way through construction.

Then I went to Provo and then from there back to Salt Lake City as a supervisor over the Design Group. That position went from Richard Jensen to Ken Browning to Clyde Thomas to me. And I have been doing that up to this present day.

What work does the Upper Colorado Basin Engineering Services Group perform?

We've done designs off and on. I brought some of my state parks work with me but lost it to the Provo Office after a while. Most of the design work we do today is for the Power Office. Overseeing other things: the bridge program, life safety code, and Value Engineering Program for the region.

What are the biggest challenges you have encountered as Supervisor of Engineering Services?

I've had the role since 2008. Biggest challenge has probably been getting the bridge program working correctly. The Value Program has gone pretty smoothly for me.

Could you expand on what the bridge program is?

For bridges used by the public, we inspect every two years. For bridges used by Reclamation or district personnel, it's every six years. With the second kind of bridges, there are several that have not been done that need to be caught up on. We need to have them all initially done by 2024. It's inspecting bridges for safety purposes.

You were named 2020 Regional Engineer of the Year for your work in value engineering. What does a Regional Value Program Coordinator do?

Value engineering is to take a good project and make it better. We're trying to reduce costs without reducing quality. We would like to do both, and we have been able to reduce costs and increase quality. It's getting a group together of subject matter experts, preferably from different backgrounds, and then getting them talking the same language. We get everyone speaking the same language by using function analysis. Then, once we're all on the same page, we brainstorm and come up with ideas to improve the project.

We have to report on everything over \$1 million. And then we do value planning on everything over \$10 million and value engineering afterwards. In the planning stage, we're not necessarily looking at costs. We're looking at the whole world of ideas and getting that ship headed in the right direction before it's too late to do so. We've also used this for the contract administration group in our region. We did a study for them and one for HR. So, it can be applied to construction and non-construction things.

Can you share a success story about a project you've been involved with?

East Canyon State Park. The main entrance would back up into the highway and people who weren't going into the park were held up by traffic. We redid the entrance. We had to work with UDOT to change the point of the entrance. We actually lengthened the entrance and improved site visibility. This alleviated that backup traffic onto the highway.

While that was under construction, I was approached by one of the park patrons, and he asked why we had to do it. He had a negative opinion of it at first, but when I explained it to him, he had a positive opinion, so that was a good solution. We alleviated traffic, and this was also our pioneering effort to put yurts into a state park and rent those out, which was a big success.



New Fee Station and Office at Entrance to East Canyon State Park. Part of the entrance realignment.

Who have been your mentors in Reclamation?

Dr. Brent Taylor. While he wasn't officially my supervisor, he was very helpful. I don't think I would have finished college without him. He was someone I didn't want to let down. He expected me to graduate, and he really helped me get there.

What is a piece of advice that you could share with employees starting their careers in Reclamation?

I got settled in, where I was, I think a little too much and didn't take opportunities for promotions like I should have. Looking for opportunities to advance would be one thing I would suggest. Get to know and build a rapport with as many people as you can.

What plans do you have for retirement?

I just purchased a house on 15 acres in Chester, Utah. It's a fixer-upper. I've got a little money leftover so we're going to do an addition and renovate it. We'll have fun, raise some animals, grow fruit trees. Just see what happens.



House and shop building on 15 acres in Chester, Utah.

Updates & Due Dates

2022 Water Management Workshop

The Water Management Workshop is a seminar for supervisors, managers, water masters, and others responsible for or associated with the operations and maintenance (O&M) of water systems. It is held when field activities are generally at a minimum for the convenience of operating personnel. The workshop, sponsored by the Bureau of Reclamation (Reclamation), has been held since 1961. Participants will spend their time attending multiple sessions in a virtual setting. The objective of the workshop is the self-improvement of personnel who are directly responsible for the technical details of operating and maintaining water systems.

What's New?

We are virtual! Please join us for the 2022 Water Management Workshop, held February 22-24, 2022. Registration is now open. Please see below for further guidance. The workshop can be up to three hourlong sessions in the morning and afternoon. For Reclamation employees, this workshop will count for annual training requirements.

Presentations

- Water Operations and Maintenance (O&M)
- Materials & Corrosion Lab
- Concrete & Structural Lab
- Unmanned Aerial Systems
- Hydraulic & Investigation Lab
- Reclamation Enterprise Asset Registry
- Special Inspections: Rope and Dive Team



FY 2020 Water Management Workshop Million Pound Press Demonstration.

Registration

Please email watermanagementworkshop@usbr.gov and return the provided registration form by January 7, 2022.

Cost

There is no tuition fee for this workshop.

Access

The three-day workshop will be held via Microsoft Teams. Meeting invites will be sent to attendees in January 2022 with the agenda and other materials.

We look forward to seeing you there! For questions, please contact the [Water Management Team](#).