



OFFICE OF THE CITY MANAGER
City of Newport, Oregon
169 S.W. Coast Hwy.
Newport, OR 97365
541-574-0603
s.nebel@newportoregon.gov

MEMO

DATE: February 7, 2020
TO: Mayor and City Council
FROM: Spencer Nebel, City Manager

SUBJECT: Status Report for the two-week period ending Friday, February 7, 2020

It has been a very wet January and early February to date. My weather station at home recorded over 13.5 inches of rain for January. On Wednesday, my rain gage measured over 3.5 inches of rain during a 24-hour period. While the rain has interfered with completing projects requiring dry weather, and has created challenges for maintaining gravel roads and patching, we have been fortunate not to have major slides or other complications resulting from the heavy precipitation. We are also coming up to the Seafood and Wine Festival. Hopefully the weather cooperates and we have a safe and successful event sponsored by the Chamber of Commerce for the Greater Newport Area.

Finally, congratulations to Oregon Coast Community College on achieving independent accreditation. This has been a multiyear task, which required the efforts of everyone pulling together at OCCC to show the accreditation agency that the college has the capabilities to operate independently. This is a big step and a big day for Newport, Lincoln County and for OCCC!

Highlights of activities over the last two weeks include the following:

- Met with Department Heads to review the City Council goals, recommendations from the Finance Work Group, and capital outlay projects for the 2020-2021 Fiscal Year Budget. During the three and-a-half hour meeting, we were able to discuss various approaches to addressing the goals, and the recommendations from the Finance Work Group. Also, we discussed how we were going to approach the budget development process for this coming fiscal year.
- Held bi-monthly meetings with Jason Malloy, Rob Murphy, and Lance Vanderbeck to discuss various departmental issues.
- Mike Murzynsky, Steve Baugher, and I participated in a conference call with Piper Jaffray, and Hawkins, Delafield & Woods outlining approaches to addressing potential general obligation bond financing for the dams. Even though a bond issue is likely several years down the road, the City was advised to have the Council adopt a resolution giving the City the right to utilize bond proceeds. This resolution

would allow the use of bond proceeds to reimburse the City for design, and other work, that would occur prior to the actual bonds being issued. We were advised that there is not a downside to approving that resolution. A decision on refunding previously incurred costs could be made by the City Council at the time of final financing for the dam project. If a resolution is not adopted, however, the City would not have this option as part of its toolbox in addressing financing for this project.

- Met with Laura Kimberly in a bi-monthly meeting to review various issues at the Library.
- Met with Mayor Sawyer to review draft letters of thanks to the congressional offices that spent time with the Newport delegation last year.
- Met with Barb James, Jim Salisbury, Rob Murphy, and John Johnston regarding Jim Salisbury's efforts to collect information about the various alarm and sprinkler systems in the City of Newport. As a part of this effort, it is clear that we will need to assign responsibility to assure that we are keeping all of these systems inspected and in good operational condition on a City-wide basis. We also intend to enter into agreements with the appropriate vendors for inspection and repair services. In the past, these were handled individually by departments. However, as personnel and other changes occurred, there was not a consistent approach to dealing with the testing and monitoring of these systems.
- Derrick Tokos, Tim Gross, and I met with Paula Miranda and Aaron Bretz from the Port of Newport regarding our Sand/Disposal Agreement at the airport that expired. Both the Port and City are interested in renewing this agreement for an additional three years. The Port still intends to strip the organic soils from the McClain property, and utilize a site at the airport for depositing those materials. In exchange for accepting those materials at the airport, the City will be able to utilize sand from "Mount NOA" in South Beach.
- Derrick Tokos, Tim Gross, and I met with Mike Warren to discuss possible acquisition of a parcel of property located adjacent to the Water Treatment Plant. We indicated that the City was willing to purchase the property for the appraised value, provide a use easement over a corner of the property to Mr. Warren, and assure access for three or four additional home sites on Mr. Warren's remaining property. Access to Mr. Warren's property is strictly by easement across the Water Treatment Plant property. Following the meeting, Derrick Tokos indicated he would summarize the offer, and forward it to Mike Warren for review by he and his wife. If he is agreeable to the terms, we will then draft a purchase agreement to bring back to the City Council for consideration.
- Tim Gross, Mike Murzynsky, and I met to review four unresolved storm water ESU appeals. Two of the appeals are from churches who do not want to pay a storm water charge. Two other appeals are related to gravel surfaces versus concrete or asphalt surfaces. We will develop a response on these appeals, and forward them to the property owners. Appeal of any determination made by the City Manager would be considered by the City Council.
- Met with Jim Salisbury over his request to utilize the kiosk in South Beach for selling coffee. We had reviewed that request internally, and due to a number of factors, have indicated that we do not believe it would be in the City's interest to rent the kiosk at this time. The kiosk was partially damaged by fire, and will eventually be moved from that site. Furthermore, with the reconstruction of

Highway 101 at this location, the City intends to utilize the property as a staging area for the contractors working on this project. We were asked to take one last look at this possibility.

- Met with News-Times reporter, Cheri Brubaker, on housing issues, and an overview of vacation rentals. Having stepped into these issues late in the game, she wanted to get up-to-speed on the recent history of these efforts.
- Along with Mayor Sawyer, and Councilor Goebel, attended a YBEF meeting. YBEF heard a presentation from the City of Toledo and the Port of Toledo on activities occurring there. The development of a new welding program through OCCC, the Lincoln County School District, and the Port of Toledo were the issues highlighted in their report. The City of Toledo is working to secure funding for a biosolids incinerator project that would serve the region. Toledo is the midst of their second effort to hire a City Manager. Mayor Rod Cross is feeling good about the quality of candidates that are applying in this second go-around.
- Worked on agenda items for the February 3, 2020 work session and City Council meeting.
- Participated in a Newport Retirement System Trustee meeting. The investments for the retirement system had a banner year in 2019 with 19% growth in investments. Because of new mortality tables utilized by the City's actuaries, and employees taking lump sum settlements from the pension fund, the unfunded liability dropped from 93% to 84% for the fiscal year ending June 30, 2019. This year's growth will certainly help bring our funding levels up, barring any major crash during the remaining six months of the fiscal year.
- Met with Rob Murphy to discuss various issues within the Fire Department.
- Was out of the office most of the day on Friday, January 31st chairing an OCCMA Board of Directors meeting and an OCCMA Senior Advisors meeting in Salem.
- Held a routine Department Head meeting.
- Met with Peggy O'Callaghan to discuss a personnel issue.
- Participated in a Council work session to discuss the Nye Beach Turnaround improvements and the Nye Beach Core Zone Proposal.
- Held an executive session to discuss real property transactions and exempt public records regarding privileged attorney/client written communications.
- Participated in the February 3, 2020, Council meeting.
- Participated in a conference call with Dude Solutions regarding a facility condition assessment program that they operate. This would be in conjunction with the Finance Work Group's recommendation to do a complete assessment on City facilities.
- Barb James, Tim Gross and I met regarding an employee disciplinary issue in Public Works.
- Held bi-monthly meetings with Derrick Tokos, Tim Gross and Barb James.
- Met with Barb James, Derrick Tokos and Tim Gross. We discussed options for Public Works restructuring. We also discussed the challenges of filling the former position of Dave White. We have advertised and gone through interview procedures with two candidates previously, with the qualified candidate for this position withdrawing from the process. We have re-advertised, but have not been satisfied with the quality of the candidates applying for this position. We may look

at bringing someone in temporarily to help address issues within the operational functions of Public Works. These functions include streets and storm sewers, sanitary sewer collection system, and the water distribution system. This is a significant division that is requiring daily supervision. I hope to have a decision on Public Works organizational issues by March.

- Rob Murphy, Barb James and I participated in a conference call with Mark Wolf from Speer Hoyt regarding possible arbitration of a grievance involving disciplinary actions. The union is appealing my decision on a grievance. Under the terms of the contract, unresolved grievances go to an independent arbitrator for resolution. In reviewing the information with Mark Wolf, we believe that we are on good ground to proceed with arbitration in this case.
- Rob Murphy, Barb James and I met with Mark Wolf to review the IAFF contract in preparation for negotiations. This contract expires on June 30. We have initiated a schedule for negotiations. We will be utilizing Mark Wolf to assist us in this effort.
- Interviewed Derrick Tokos on KNPT Radio on various issues regarding homelessness and housing. We discussed the Planning Commission's consideration of a car parking ordinance which eventually will be brought to the City Council for review and potential approval. We also talked about the impacts that HB 2001 will have on single family zoning districts across the state of Oregon for communities in excess of 10,000 people.
- Met with Wayne Couto representing the HOA of the property owners from The Landing. They have concerns about the dumpster location and maintenance by The Embarcadero. This dumpster is located in front of The Landing where The Embarcadero parking extends. The Landing Association will be meeting with The Embarcadero Association to discuss this directly with them. Mr. Couto wanted to make sure that the City is aware of this issue, as well.

The second issue that Mr. Couto wanted to discuss, is the process for modifying a conditional use permit that was approved at the time The Landing was built. The Landing consists of both restricted and unrestricted units. While all the units are privately owned, the restricted units have a requirement to not be rented for more than 29 consecutive days a year. They are concerned because in order for them to remain operational as a resort property, they need to have available inventory for rental. Many of the folks that are in the restricted units, choose not to put their units in the rental pool. As a result, this reduces the revenue to The Landing for maintenance, staffing and other activities. I indicated that I will meet with staff to review both of these concerns.

- Attended the retirement party for Sheryl Eldridge at City Hall. Sheryl is retiring from the Library after 21 years of service. She intends to eventually relocate to Washington to be close to her kids and grandchildren. Congratulations Sheryl on your service years to the City of Newport and your retirement.
- Tim Gross, Derrick Tokos and I met with Wayne Belmont to discuss the lease of property at the airport for potential use as an animal shelter. Wayne will be developing an intergovernmental agreement to authorize certain steps to be taken to move forward with this request. This will give the County authority to proceed with certain due diligence steps regarding the lease of this site. The

intergovernmental agreement will need to be approved by Council after a draft is has been reviewed by Council.

- Met with Councilor Parker to develop a report for the February 18 work session on electric vehicle charging stations in the City.
- Rob Murphy, Bob Harvey, Barb James, and I met to discuss departmental concerns that have been shared from members of the Fire Department (staff and volunteers). We discussed developing an action plan to work through some of these issues. I believe that the Chief has a good initial plan to share with the department on working through these concerns within the department.
- Participated in interviews for the City Attorney position. The Council is scheduled to meet in executive session on February 18 to consider the next steps in filling this position.
- Participated in an OCCMA Host Committee conference call.
- Worked on developing a report for the Council on electric vehicle policy options.

Upcoming Events:

- I will be on vacation from February 10-12. (I will be out of town from Saturday, February 8 through Wednesday, February 12).
- A tour of City reservoirs for City Council regarding the PUD easement. The primary date and time is scheduled for 10-12 noon on February 11th, an alternate date and time is 3-5 pm on February 10th.
- The annual joint work session with Lincoln County will be held February 12, 2020, at 6 PM in Council Chambers.
- City Hall will be closed on February 17 in observance of Presidents Day. The City Council meeting will be held on Tuesday, February 18, with a work session at 4 PM.
- I will be taking a couple of vacation days on Thursday, February 20 and Friday, February 21. I will be in town hosting visiting family from Michigan this week.
- The Newport Seafood and Wine Festival will begin Thursday, February 20 with a reception that evening. Council should be receiving invites to this reception. The festival runs through Sunday, February 23.
- The Preliminary Budget Committee meeting is March 3 at 6 PM.
- I plan to attend the NW Regional Managers meeting in Vancouver, Washington, from March 18-20.
- There will be a Town Hall meeting on March 30 at 6 PM. Location is to be determined.
- The first Budget Committee meeting is April 21 at 5 PM.
- The League of Oregon Cities Spring Conference is April 24 in Hermiston. Those who are registered are Councilors Goebel, Jacobi, Parker, Mayor Sawyer, Peggy Hawker and myself.
- The second Budget Committee meeting is May 12 at 5 PM.
- The third Budget Committee meeting is May 19 at 6 PM.
- I plan to attend the OCCMA Summer Conference in Bend from July 7-10.
- There will be a Town Hall meeting held Monday, August 31 at 6 PM. Location is to be determined.

- I plan to attend the Annual ICMA Conference in Toronto, Ontario, from September 23-26.
- The LOC Annual Conference will be held October 14-16 in Salem. Please let Peggy know if you plan to attend.

Attachments:

- ✚ Attached is an article regarding Pacific Seafood's Astoria dorm proposal. Pacific Seafood is also proceeding with property they have acquired in Newport for a similar project. We have not had as much push back as illustrated here. Pacific Seafood is also doing a project in Warrenton, Oregon, where they are converting part of a machine shop into a 70-bed bunkhouse. The approval of that arrangement included a good-neighbor agreement to govern the behavior of residents in that facility.
- ✚ Attached is an article indicating Tillamook Fire is charging for certain emergency responses.
- ✚ Attached is the draft article in which Mayor Sawyer appears on the cover of Municipal Water Leader. This issue is devoted entirely to dam safety issues and features Big Creek Dam and other collaboratives occurring in Lincoln County.

I hope everyone has a great week.

Respectfully submitted:



Spencer R. Nebel
City Manager

cc: Department Heads

https://www.dailyastorian.com/news/local/pacific-seafood-s-astoria-dorm-proposal-faces-community-concerns/article_1af33f3e-42d2-11ea-90c4-5babbfc9927c.html

TOP STORY

Pacific Seafood's Astoria dorm proposal faces community concerns

Neighbors complain about traffic, safety and noise

By Edward Stratton, The Astorian
Jan 29, 2020

Pacific Seafood confronted a wave of community concerns Tuesday over a proposed 125-worker dormitory in the former drug treatment center at Astoria Pointe.

The seafood processor applied for a one-year conditional use permit at the nearly 16,000-square-foot building off Exchange Street in Uniontown. The building, opened as a nursing home in 1966 and reopened as a drug treatment center in 2006, closed two years ago and has since sat vacant.



Pacific Seafood wants to turn Astoria Pointe, the former drug treatment center in Uniontown, into temporary worker housing.

Hailey Hoffman/The Astorian

The property, surrounded by single-family homes and narrow, hilly streets without sidewalks, is zoned for high-density residential. Neighbors came out in droves to City Hall on Tuesday to raise concerns about traffic, safety, noise and other impacts they argue will result from moving so many workers into a quiet neighborhood.

City staff recommended approval of the company's application with several conditions. The permit would last a year.

The company would provide three shuttle buses to take most workers to and from Pacific

Seafood's processing plant in Warrenton and for shopping. No more than 13 employee vehicles would be allowed to park at the dorms. The company would also have to add 24 bike spaces.

Pacific Seafood was recently approved by the Warrenton City Commission to turn part of a machine shop in Hammond into a 70-bed bunkhouse, which could increase to 90 beds after a one-year trial. The approval followed a good-neighbor agreement approved by the company and city to govern the behavior of residents and the eviction process.

Mike Robinson, the company's attorney, and Mike Miliucci, another attorney and manager of special projects, argued the dorms are necessary to allow the new Warrenton plant to operate at full capacity in the busy summer months and not take away from the region's housing stock.

Miliucci said he was tasked 1 1/2 years ago with finding housing along the Oregon and Washington state coasts for Pacific Seafood's workers but ran into a housing market just as tight as Portland, with apartments running on average \$1,250 a month, he said.

Workers in the company's rented housing, who pay about \$10 a day, have to abide by house rules for good behavior or risk losing a place to stay while they work, Miliucci said. He argued the company has a proven track record of providing worker housing, including about 60 workers in rented cottages in Westport, Washington, 60 workers housed in Warrenton and about 200 in rented motels and hotels elsewhere along the coast during the summer.

"They work very hard, and at the end of the day, they just want to go home at the living quarters and eat and sleep," he said.

Neighbors worried about the impact of so many people. David Gasser, who lives on the eastern edge of the Astoria Pointe property and was one of about 10 neighbors testifying against the project, said he experienced damaged fences, dented walls and noise issues with just 20 to 40 people in the treatment center.

"The idea of 125 people coming and going at 4 in the morning," he said. "I simply don't know how I would stay there, because it would be too noisy, too smoky and intolerable. I want cheap housing, but I'm 20 feet from the east door."

Neighbors argued the facility and neighborhood is not fit for so many people and will lead to decreased property values and increased danger for pedestrians. They called for a lower number of workers to be housed at the treatment center, which Miliucci said once housed nearly 80 people.

"I think this is an accident waiting to happen," said Scott Fenton, who lives nearby. "The living conditions for the workers? Let's be honest. This is a barracks."

Tammy Sanderson, a real estate consultant with John L. Scott Realty representing building owner Eleanor Dooner, said allowing Pacific Seafood to lease the building will help keep her client's property value up. Dooner, who lives in Memphis, Tennessee, and her late husband, Bill, a recovering alcoholic, opened drug and alcohol treatment centers around the country. But lowering insurance reimbursements made the treatment center financially infeasible, she said.

Pacific Seafood asked that the hearing be continued to next Tuesday so it could address concerns that were raised and craft a draft good-neighbor agreement for Astoria. Miliucci said the company is willing to listen to neighbors' concerns and make changes, including a lower number of workers than the 125 proposed.

"I'm willing to talk to the neighbors about 80" residents, Miliucci said. "It doesn't have to be 120."

Edward Stratton

Edward Stratton is a reporter for The Astorian. Contact him at 971-704-1719 or estratton@dailyastorian.com.

https://www.tillamookheadlightherald.com/news/tillamook-fire-to-charge-for-certain-emergency-responses/article_cdda2d0c-42cc-11ea-ba6f-5f58e131c182.html

FEATURED

Tillamook Fire to charge for certain emergency responses

Non-residents, negligent or criminal actions subject to billing

Cody Mann

Jan 29, 2020



Tillamook Fire District officials approved a resolution imposing charges for responding to certain incidents, primarily when the responsible parties live outside the district, or when negligence or criminal actions are involved.

The resolution establishes a billing policy for responses that include accidental or intentional fires, incidents caused by criminal acts, hazardous materials incidents, vehicle crashes, excessive false alarms (more than three in a year), fire/rescue standbys for non-emergency

events hosted by for-profit organizations, and rescues requiring special techniques or equipment.

According to the resolution, Tillamook Fire District will affix a base charge of \$250 for responding to "all incidents where a liable party is responsible for said action." The fee is meant to help offset the cost of training, equipment, staff time, fuel and other logistical expenses including lost or damaged equipment. EF Recovery, a private firm specializing in emergency response billing that already operates in the region, will administrate claims for the fire district.

"Our services often times are requested by people who don't pay taxes into our district," Chief Daron Bement said. "That can be very frustrating for people who do live in our district as taxpayers – they're basically paying for somebody else to get free service."

Bement said the resolution was not necessarily aimed at residents of the fire district or even the neighboring districts. Its goal is holding people accountable for responses that could have been avoided through good judgement or law abiding. For example, a person who ignores clear signage and warnings only to get stuck while hiking a remote or dangerous area would likely receive a bill for being rescued.

Who is billed, individuals or insurance companies, will be at the discretion of fire officials, Bement said.

The fire district has added an option to its reporting software to track what portion of responsible parties are from outside the area. At this time, there is no historical data to indicate how often responses are required for non-residents. However, Bement said there is an estimated potential for as much as \$60,000 to be recovered in some months.

There are exemptions to the policy for fires caused by railroad trains, which are responsibility of the railroad, and also for fires involving district-owned buildings as well as for fire and emergency services provided outside of any mutual aid agreement boundaries, unless the municipality in question has adopted a resolution to impose or authorize the collection of fees for fire and emergency service.

An itemized invoice will be sent to responsible parties or insurers once it is prepared by fire district officials. The invoice will demand full payment in 30 days of billing. Any amount due after 30 days will garner a late charge of one percent a month.

Invoices will be delivered by first class mail, registered mail or personal service, according to the policy. Responsible parties will be provided an opportunity to appeal or modify their bill within given time limits. Unpaid bills involving real property will be subject to a lien.

Cody Mann

Municipal Water Leader

Volume 7 Issue 3

March 2020



**Dean Sawyer: Averting Disaster and
Guaranteeing Newport's Future**

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Dean Sawyer: Averting Disaster and Guaranteeing Newport's Future

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Coming soon in *Municipal Water Leader*.
April: The Salt River Project
May: Israel

Do you have a story idea for an upcoming issue? Contact our editor-in-chief, Kris Polly, at kris.polly@waterstrategies.com.

Municipal Water Leader

Municipal Water Leader is published 10 times a year with combined issues for May/June and November/December by



WATER STRATEGIES LLC

an American company established in 2009.

STAFF:

Kris Polly, *Editor-in-Chief*
Joshua Dill, *Managing Editor*
Tyler Young, *Writer*
Stephanie Biddle, *Graphic Designer*
Eliza Moreno, *Web Designer*

SUBMISSIONS:

Municipal Water Leader welcomes manuscript, photography, and art submissions. However, the right to edit or deny publishing submissions is reserved. Submissions are returned only upon request. For more information, please contact our office at (202) 698-0690 or municipal.water.leader@waterstrategies.com.

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CIRCULATION:

Municipal Water Leader is distributed to irrigation district managers and boards of directors in the 17 western states, U.S. Bureau of Reclamation officials, members of Congress and committee staff, and advertising sponsors. For address corrections or additions, please contact our managing editor, Joshua Dill, at joshua.dill@waterstrategies.com.

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COVER PHOTO:

Dean Sawyer, Newport Mayor
Photo courtesy of the City of Newport and the Newport News Times.

The Dam Safety Issue

By Kris Polly

Dam safety is a topic of critical importance. Dam failures can cause death and destruction on a devastating scale. Even if they do not take human lives, they can cause evacuations, damage property, and knock out local industries that rely on steady water supplies, not to mention cost millions of dollars in repairs.

In our cover story, we interview Dean Sawyer, the mayor of Newport, Oregon, which relies for its water supplies on two dams that suffer from seepage and are at risk of catastrophic failure in the case of a significant earthquake. Mr. Sawyer tell us about the urgency of finding funding to replace Newport's dams before a disaster occurs.


We also have the honor of featuring an article by United States Senator from Oregon Jeff Merkley on Congress's role in funding water infrastructure and recent legislation like the America's Transportation Infrastructure Act and the Water Infrastructure Finance and Innovation Act.

From the area around Newport, we feature Adam Denlinger, the general manager of Seal Rock Water District, and Alan Fujishin, a farmer from the Siletz Valley, both coconveners of the Mid-Coast Water Planning Partnership, a pilot place-based planning body. Mr. Denlinger tells us about developing a new water source for SRWD and about the importance of his system's intertie with that of the City of Newport. Mr. Fujishin delves into the history and purpose of the Mid-Coast Water Planning Partnership, formed to implement Oregon's Integrated Water Resources Strategy in the hydrologically complex Mid-Coast region of Oregon.

Providing the state-level perspective, Racquel Rancier of the Oregon Water Resources Department tell us about the agency's efforts to modernize Oregon's dam safety statutes and inspect high- and significant-hazard dams.

On the national level, Lori Spragens, the executive director of the Association of State Dam Safety Officials, tells us about her organization's efforts to aid and advocate for the 50 states' dam safety programs.

Finally, we zoom in on one particularly striking case study of dam failure: the Oroville Dam spillway collapse of 2017. Personnel from HDR were present as the incident progressed and were involved in the response and reconstruction. We speak with two of them, Sam Planck and Kenny Dosanjh, about what HDR learned from the incident and how it is helping other dam owners and managers improve their spillway maintenance and management to avoid future disasters.

Ensuring dam safety is a responsibility that is incumbent on local, state, and national officials alike. Only working together can they marshal the resources and determination to make sure that these great water storage and delivery structures can operate safely for decades to come. 

Kris Polly is the editor-in-chief of Municipal Water Leader magazine and the president and CEO of Water Strategies LLC, a government relations firm he began in February 2009 for the purpose of representing and guiding water, power, and agricultural entities in their dealings with Congress, the Bureau of Reclamation, and other federal government agencies. He may be contacted at kris.polly@waterstrategies.com.

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Dean Sawyer: Averting Disaster and Guaranteeing Newport's Future



Newport's upper dam.

Newport, Oregon, is a thriving city of 10,000 on the Oregon coast that is popular with tourists and home to many businesses and organizations. However, the city faces an existential threat. Its two aging dams would not survive a moderately sized earthquake and suffer from seepage issues. A dam breach would cause loss of life and would erase at a stroke the city's ability to supply basic water service to its residents and business community.

Newport Mayor Dean Sawyer is leading the effort to raise awareness of this issue across Oregon and the entire nation. He and his team are leading a publicity campaign, holding tours of the dam, and seeking funding from the State of Oregon and from Congress and federal agencies. In this interview, he tells Municipal Water Leader about his efforts and his recent trip to Washington, DC.

Municipal Water Leader: Please tell us about your background and how you came to be in your current position.

Dean Sawyer: I served with the Newport Police Department for 30 years in both command and supervision positions. After I retired, I saw some issues in the city that concerned me as a resident and public servant, and 10 years ago, I decided to run for city council. I have been on the council ever since, and a year ago I was elected mayor. I ran for mayor because I wanted to improve our downtown area and push forward the dam issue.

Municipal Water Leader: Please tell us about Newport, Oregon.

Dean Sawyer: Newport is a port city on the central Oregon coast with a population of 10,000. It is the county seat and a regional hub. We also have several large employers here, including the National Oceanic and Atmospheric Administration's West Coast headquarters, Rogue Ales and Spirits, Oregon State University's Marine Science Center, and the Oregon Coast Aquarium. In addition to our residential population, nearly 5,000 people commute to Newport for work each day. Newport has a significant number of second homes, and the city receives about 2.5 million tourists a year; tourism is our biggest industry.

Municipal Water Leader: What are your water sources?

Dean Sawyer: We have two reservoirs, built in 1951 and 1968. The Oregon coast is an active seismic area, and we've been told by our engineers that even a 3.5-magnitude earthquake would cause the dams to fail. About a year ago, we were notified by the state that the dams have an advanced seepage issue, which we are now actively monitoring. Advanced seepage increases the risk to the community.

The two reservoirs provide water to the local community and to the industries here. We have one of the largest fishing fleets on the Oregon/Washington coast,



Corrosion and seepage on one of the dams' outfall pipes.

and during peak season about 50 percent of our water goes to the fish processing plants. If that water supply were to disappear, the fishing fleet would leave town. We also provide water to a local brewery and to the Oregon Coast Aquarium.

Municipal Water Leader: If an earthquake or the seepage issue caused one or both of the dams to fail, what would the consequences be?

Dean Sawyer: If the dams failed, the water would take out several homes downstream. The people who live in those homes would only have only seconds to leave, which means that, unfortunately, they would likely perish. It could also take out U.S. Highway 101, a major arterial on the Oregon coast. The effect would be huge. We've been told that it would take 6–8 years to build a new dam. If we couldn't provide water for that period of time, the local community would close up. If there were no water to take a shower, make beer, or process fish, it would be tremendously difficult for the local economy to survive.

Municipal Water Leader: How many people live in the flood zone you described?

Dean Sawyer: We believe that at least 20 homes would be impacted.

Municipal Water Leader: Is the community at large aware of the seriousness of this problem?

Dean Sawyer: Yes. We have partnered with Deep Dig Research for the past 8 years on a campaign called SOS, or Save Our Supply. We've spread the word using the local media and radio and have held several public tours of our dam. We've had community and state leaders and congressional staffers come out and look at the condition of the dams. As a result of our ongoing campaign, I'm pretty sure most people in town know that the estimated costs are \$70–80 million. Our community could not raise that much money via taxation without driving people out of town.

Municipal Water Leader: So that would be the cost of new dams?

Dean Sawyer: Instead of two dams, we would build one. We've done a lot of studies on building a dam, because there really isn't a lot of information out there on how to build dams to a seismic standard. We've learned that if we raise the estimated height of the dam by about 5 feet, we could minimize the use of the Siletz River as a backup source during the summer, which we currently do. That would reduce the impact on instream flow and would help the salmon run on the Siletz River.



A dam outfall pipe showing evidence of seepage.

Municipal Water Leader: What is the city's current emergency plan for a potential breach?

Dean Sawyer: It's standard disaster planning, which is a multi-incident response. Basically, if the dams are breached, we would respond first to save as much life and property as possible. Other than that, we would have to reach out to the state and federal governments to assist us in bringing in water for the local residents and to develop a plan to build a short-term dam so that we could start providing water again on a regular basis.

Municipal Water Leader: What are the prospects for raising the necessary money through taxation?

Dean Sawyer: We have a couple of significant local bonds paid for through property taxes, including for our hospital, our water treatment plant, our international port terminal, and our school system. These all impact our property taxes at the end of the year. About 4 years ago, we proposed a \$9 million bond for a new swimming pool. The first time it was voted on, it failed. The second time, it passed with a margin of 64 votes. You can see the challenges that a \$9 million bond faced.

Extrapolate from that what would occur with a \$70 million bond. It's difficult to get something of that magnitude passed. Also, about 35 percent of our population are senior citizens. A lot of them are on fixed incomes and could not afford a huge increase in their tax bill.

Municipal Water Leader: What role have the state and federal governments played?

Dean Sawyer: We recently approached the state legislature and asked for \$40 million in funding, or half our anticipated project costs. So far, we have received \$4 million in lottery bonds for dam design and permitting costs. Unfortunately, that allocation was one of several under consideration for a possible veto. We met with Governor Kate Brown's staff and provided her office with information about our city's funding strategy and efforts at the federal level. In the end, she did not veto the \$4 million allocation and instead created a task force to address high-hazard dams statewide, which Newport will participate in. We greatly appreciate this initial assistance from the state and thank the governor for maintaining the funding allocation. That \$4 million will pay for preliminary design work. As of today, we've acquired about \$8 million from local, state, and federal sources; all that has gone to research and design.

Municipal Water Leader: Have you considered lowering the water behind the dam to put less pressure on it?

Dean Sawyer: We've looked at that. Unfortunately, we could not meet the water demand of our community in the summer without the water stored in the reservoir. It's not a viable solution.

Municipal Water Leader: Have you looked into developing alternative sources of water?

Dean Sawyer: The Siletz River is the backup source that we use during the summer when Big Creek is low. We have water rights for 6 cubic feet per second of the Siletz River's flow. The problem is that the Siletz River's flow in the summer is low as well. Even if we wanted to pipe that water to the city, we would need reservoirs to store it in order to meet the high demand of the fish plants and the tourism industry during the day. The city has researched desalination, wastewater reuse, and accessing water from a different source, but rebuilding a dam at Big Creek has always penciled out to be the least costly and least environmentally disruptive option.

Municipal Water Leader: Are there other cities in Oregon or elsewhere that are dealing with similar issues?

Dean Sawyer: Yes. Four dams in Oregon have been identified as unsafe or structurally deficient. A recent

article by the Associated Press said that at least 1,600 dams nationwide are dealing with similar issues.

Municipal Water Leader: With so many dams in so many places having these issues, is the problem attracting attention on the national level or in Congress?

Dean Sawyer: We're trying to attract attention to non-federally owned high-hazard dams. We've lobbied at the state level with the state legislature, and in November 2019, Water Strategies helped us present our case to the federal legislators and bureaucrats in Washington, DC. Unfortunately, there really is no single source of funding for dam replacements either at the state or at the federal level. The interesting thing is that, if our dams do fail, the Federal Emergency Management Agency's disaster funds could provide enough money to replace them. The problem is that, if our dams fail today, it would take 6-8 years to rebuild. Our community is unlikely to survive that.

Municipal Water Leader: What is your message to Congress?

Dean Sawyer: Our message to Congress is to point out the critical funding gap that exists to address safety and resiliency issues for dams across the country and to encourage the development of funding sources. We're not the only ones who are dealing with this issue. Federal policies on dam building generally deal with irrigation, flood control and environmental issues. We don't fall clearly under any of those categories; we are just trying to supply basic water services to serve our population.

Municipal Water Leader: Was there anything else you wanted to touch on?

Dean Sawyer: I'd like to talk about Water Strategies. Being from a small town on the Oregon coast, I'd never utilized the services of a Washington, DC, lobbying group, but it was suggested that we utilize the services of Water Strategies, and I'm glad we did. We had little knowledge of the complexities of dealing with the policymakers in Washington. Water Strategies made that process easy and streamlined. From the moment we arrived at Water Strategies' office till the moment we left, they focused on our issues and how we could deliver our message to the right people. Water Strategies had a full 3 days of meetings with our congressional delegation staffers and numerous key members of federal agencies scheduled for us. Water Strategies started out by asking questions about our project, and then made suggestions about how to craft our message for the various policymakers we were scheduled to meet with. Water Strategies knows its business model well, and also knows the various federal offices. We would have been lost trying to find them in the maze of federal buildings by ourselves. After the whirlwind of meetings in Washington, I

would never do it again without the help of the professionals at Water Strategies. I can definitely tell our constituents that the money spent on Water Strategies was money well spent.

Municipal Water Leader: What is your vision for the future?

Dean Sawyer: We're going to continue campaigning for capital funds. We'll continue to hold guided tours of the dam to key stakeholders we're trying to educate. For example, we recently showed representatives of the local hospital and the Newport Chamber of Commerce the dam and explained its problems, the cost of a new dam, and the technologies we have decided to use. We'll continue meeting with our state legislators and the governor's office. The governor has started a task force for dam safety in Oregon and named me the first member of the group. I'm excited about the task force because it'll bring more statewide awareness to the issue. We're also going to continue working with our federal legislators and with Water Strategies to bring our message to the federal level. M



A bellmouth spillway at one of Newport's dams.



Dean Sawyer is mayor of Newport, Oregon. He can be reached at d.sawyer@newportoregon.gov.



Congress's Role in Funding Water Infrastructure

By Senator Jeff Merkley

Our public infrastructure has been in disrepair for far too long. According to the American Society of Civil Engineers, our nation's roads, highways, bridges, railways, airports, and water systems will require \$4.6 trillion in investments before 2025. However, current funding levels are falling short of our infrastructure needs, and there will be an estimated \$2 trillion funding gap.

Water infrastructure in particular has been a challenge for municipalities. I hold a town hall in each of Oregon's 36 counties every year. Before each town hall, I meet with local elected officials to hear about the challenges and successes they are seeing in their communities. For years, in almost every meeting that I held, in every corner of Oregon, I heard about the challenges of finding funding to replace or upgrade aging water infrastructure. Local leaders told me there was no affordable financing available for these big projects. This left local governments in a bind: They were forced to choose between sticking with old water systems

that were outdated, too small for growing populations, or sometimes even downright dangerous, or sticking ratepayers with a huge increase on their water bills.

This is unacceptable, which is why I've used my role in the U.S. Senate to help communities in Oregon and across the nation in a few key ways.

Early in my senate service, I won bipartisan support for a new program called the Water Infrastructure Finance and Innovation Act (WIFIA). I created this program, housed in the U.S. Environmental Protection Agency, after hearing from communities across Oregon that affordable financing for drinking water and wastewater infrastructure projects wasn't easily accessible. I introduced legislation creating the WIFIA program in 2012; it was signed into law in 2014 and officially launched in 2017.

WIFIA credit assistance allows projects to lock in financing savings at today's low rates for the duration of the entire project. And unlike commercial bond transactions,

PHOTO COURTESY OF THE OFFICE OF JEFF MERKLEY



Senator Merkley attends the groundbreaking of the WIFIA-funded Willamette Water Supply Program.

payments on borrowed funds do not begin until the funds are received by the projects, adding to the savings for ratepayers.

Just last fall we broke ground on Oregon's first WIFIA project. A total of \$638 million was provided to the Tualatin Valley Water District and the City of Hillsboro, where ratepayers will save an estimated \$264 million in financing costs. Also last fall, we announced low-interest WIFIA financing for the Bull Run Treatment and Water Supply Improvement programs, which will serve the greater Portland area for generations to come. Partners will be able to apply for up to \$554 million and \$58 million, respectively, in financing. With interest rates around 2 percent, the financing will save ratepayers hundreds of millions of dollars.

In July 2019, the Senate Environment and Public Works Committee, of which I am a member, passed the America's Transportation Infrastructure Act (ATIA), a bill that

authorizes and funds the nation's surface transportation system over the next 5 years (the current authorization expires in fiscal year 2020). The next 5-year bill authorizes \$287 billion, an increase of nearly 28 percent over previous levels. Although this bipartisan bill was not as ambitious as I believe we need to be, I was encouraged that many of the priorities I pushed for were included. These included grants for rural infrastructure, funding for resiliency measures to counter the effects of climate chaos, electric vehicle infrastructure, and public transit funding.

This bill is an important step forward. A major investment in infrastructure is critical to the long-term competitiveness of our economy and is a way to create good, living-wage jobs. As Congress works to develop a comprehensive public infrastructure plan, I will continue fighting for policies that support local communities, maintain environmental and labor protections, and make real and sizable investments in clean energy technology.



In 2013, I joined the Senate Appropriations Committee so that Oregon would have a strong voice in decisions about the investments our nation should be making. I am still the only member of Congress from Oregon from either chamber to serve on the Appropriations Committee, considered to be one of the most powerful on Capitol Hill. One of the most gratifying aspects of serving on the Senate Appropriations Committee is that I get to work with communities across the state to fund their needs, and then see the effects of the funding in action. For instance, I've prioritized infrastructure funding for small ports, which are the lifeblood of Oregon's coastal economy. This year the small ports and U.S. Army Corps of Engineers Navigation program received over \$600 million for deep-draft harbor and channel improvements, \$50 million for inland waterways, \$24 million for navigation maintenance, and \$54 million for small ports.

I've also worked to support various funding mechanisms for seismically at-risk dams—which, if they fail, threaten public health, drinking water supplies, and economies. As municipalities like the City of Newport pursue Federal Emergency Management Agency funding to address safety challenges with two dams on the Big Creek River, I will not only continue to do what I can to support of the city's funding request, but also ensure the agency has resources for such requests.

Federally managed dams like Scoggins Dam in Washington County also face seismic risks. Scoggins Dam is classified as one of the Bureau of Reclamation's most seismically at-risk dams, which means that, if the dam isn't upgraded, its failure due to a large earthquake could result in significant damage or even loss of life. So for several years I've been able to use my seat on the Appropriations Committee to secure millions of dollars for upgrades.

Everywhere I go in Oregon—rural or urban, east or west—people are looking for help building and rebuilding for the future. They know building stuff means good jobs now, and that there's no shortage of important work to do. If we are serious about investing in our communities and our future, we should do far more infrastructure building, and fund the roads, bridges, and water infrastructure improvements every community needs. M



Jeff Merkley is a U.S. Senator for Oregon. To contact Senator Merkley's office, visit merkley.senate.gov.

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How Seal Rock Water District Is Planning for Resilience

S eal Rock Water District (SRWD) provides water to several thousand yearly and seasonal residents of the Oregon coast. With a newly installed smart water grid, it is a technologically advanced district that has sharply reduced water waste and demand. Moreover, SRWD is thinking about the future. As it builds a new water intake to increase its resilience and independence, it is designing it to be resilient to potential earthquakes and tsunamis.

In this interview, SRWD General Manager Adam Denlinger tells Municipal Water Leader about his district's water sources and infrastructure; the usefulness of its intertie with the Newport, Oregon, system; and its plans for the future.

Municipal Water Leader: Please tell us about your background and how you came to be in your current position.

Adam Denlinger: I have a 36-year career working for the water and wastewater departments of municipal governments, serving both large and small communities in Texas, California and Oregon. I studied the principles of water and wastewater management at Sacramento State University, California. I began working for a municipal agency 36 years ago in Tyler, Texas. I spent a number of years there and really enjoyed working to provide essential services. I moved from there to California, where I spent several years working for a few larger cities in their water and wastewater or public works departments. In 2006, I moved to Oregon to manage the public works department of the City of Toledo, a small community in this region. About 7 years ago, I took the role of general manager of SRWD. Over the course of my career, I have been

responsible for managing numerous complex government programs and infrastructure projects related to municipal water and wastewater uses. I have served in collaborative roles with multiple agencies to provide beneficial, cost-saving outcomes related to joint service agreements and regional municipal improvements. I serve on the board and the legislative committee of the Special Districts Association of Oregon and am a coconvener of the Mid-Coast Water Planning Partnership. I hold state registration in water and wastewater in both Oregon and California.

Water is important to me not just because it's essential to life, but because I genuinely believe that everyone should have access to clean, reliable, safe drinking water and sanitation. It is a basic human right.

Municipal Water Leader: Please tell us about SRWD.

Adam Denlinger: SRWD is one of the largest municipal water districts on the Oregon coast, although we're still considered a small community water district. SRWD was formed in 1956 through the merger of some small districts in this region. We serve an area of about 12½ square miles between Waldport and Newport. We maintain 65 miles of piping and about 3 million gallons of stored treated water and we do a volume of about 95 million gallons a year in water sales. We have 2,595 service connections. We serve a population about 5,500 static residents, and in the summer months, tourism brings the population closer to 8,000. We also support service to fire districts within our boundaries. We maintain the system in operation with nine employees.



A panorama of the Oregon mid-coast at Seal Rock State Recreation Site.

Like that of most municipal water providers, our infrastructure was built over the years and installed to different standards, so we have various sizes of pipe. Our largest pipe is 14 inches in diameter, and it goes down to 2 inches in our main line systems. We have several pumping stations and booster pump stations that balance pressure and deliver water to meet demand.

SRWD is one of the most sophisticated water districts or municipal water suppliers that I've ever worked for. The technology and programs we use to manage the system include a smart water grid system consisting of a series of fully automated meters that read into a central point here at the office, which allows us to respond more quickly to leaks and has reduced our water loss down to 10 percent, from about 27 percent 12 years ago. The work that our board has approved to correct deficiencies in the system has made the district a more sustainable, resilient operation.

Municipal Water Leader: Do you have any issues with aging infrastructure?

Adam Denlinger: SRWD received its articles of incorporation in 1956, but it was formed through the merger of existing smaller districts, and the materials that are used in our system range from C900 polyvinyl chloride (PVC) pipe to high-density polyethylene (HDPE) pipe, which we're using because of its flexibility and resilience to earth movement. I believe the oldest pipe in the system is 12- to 14-inch asbestos concrete transmission pipe, which is close to 75 years old. That material is targeted for replacement in our master plan.

Municipal Water Leader: What is the source of your district's water?

Adam Denlinger: The district currently purchases wholesale water from the City of Toledo. Our source water comes from the Siletz River, where the district has water rights, and is treated through an agreement with the City of Toledo, which then delivers it to the district via an 8-mile, 14-inch transmission line that is vulnerable due to age and soil conditions. The district is currently in the process of developing a primary source of water closer to the district that will give us more local control. Recently, the district advertised a request for bids for the construction of an intake on Beaver Creek, which is in the center of the district's service area. The project includes constructing an intake, a 1½-mile raw water delivery line, and an advanced membrane treatment facility located outside of the tsunami inundation zone. Construction is scheduled to begin in spring 2020.

I should also say that one of the important supports of our system is an emergency intertie with the City of Newport's system. From time to time, the district and the city share water between our systems, whether because of an emergency or because of scheduled maintenance. This intertie was constructed with a grant from the Federal Emergency Management Agency's Natural Hazard Mitigation Grant Program and funding provided by Business Oregon's Infrastructure Finance Authority. Having access to the intertie allows me to sleep a little easier, because we have lost access to our primary source water line on a number of occasions. When this occurs, the district can rely on about 5 days of storage in our reservoirs, but the intertie gives us the luxury of being able to switch to a secondary source if necessary.

Municipal Water Leader: Would you give us an example of a time when it was necessary to take advantage of that?



The SRWD office.

Adam Denlinger: At one point, a fire hydrant was hit in South Beach, the community just across the Yaquina River from Newport, and it had to shut down its system and isolate the area that was under repair. We were able to open the intertie and provide water to the City of Newport. More recently, we had a fire in a community near the airport where the intertie is located. Several fire trucks connected to our system and were pulling so much water from it that they were reducing pressure both to the local community and to the adjacent community. We were able to open the intertie and balance the pressure so that the firefighters could continue to safely respond to the fire without negatively affecting the water system.

Municipal Water Leader: Please tell us about your earthquake resiliency planning.

Adam Denlinger: I can talk specifically about the planning process we have followed in developing the source water project I discussed a moment ago. Aside from the actual design and construction of the facility, we also put care into choosing a location for the facilities where they will be more likely to survive and recover from an earthquake and subsequent tsunami. We followed the state's resiliency and recovery plan closely. We used HDPE pipe, which is flexible and can move along with the earth. The project also considers the use of seismic fittings. While more expensive than conventional fittings, they will be able to move and flex

as the earth moves. Our treatment plant will be constructed outside the tsunami inundation zone in order to ensure access to that facility even in the case of a tsunami. The million-gallon storage reservoir at the treatment plant will be constructed according to our region's seismic standards. The system will be fully automated not only as far as treatment is concerned, but also in its capability to shut down if there's a power outage. If the earth moves, valves will close to isolate water.

Municipal Water Leader: Please tell us about your communications initiatives.

Adam Denlinger: We are working to raise awareness of the value of water within our community. I don't think that we as community water providers have done an effective job of informing our customers about the true cost of water and the effort that we put into delivering water. In fact, I think we've done quite the opposite and we need to change the narrative. As municipal water suppliers across the nation, we have done such a good job of extending the useful life of community water systems that we have inadvertently created a culture of complacency in which water is taken for granted. The customer turns on the tap and expects water to be there. We certainly want that to be the case, but we also need to educate our community on the true financial costs of treating that water as well as the effects on the environment. Here on the Central Oregon coast, we have experienced



SRWD employee Brendi Hargrove and U.S. Department of Agriculture Rural Development employee Holly Halligan.

drought conditions every year for the last 3 years. The last 2 years, we've had to issue water curtailment notices to our communities. The district, along with several neighboring municipal water suppliers, participates in a regional water conservation consortium to educate our community about the need to conserve water, not just so that it's available for domestic use, but to ensure that it is used responsibly and remains available in the stream.

One important issue that SRWD and our board of commissioners have placed high on the priority list is the implementation of our state-approved water management and conservation plan (WMCP). Benchmarking identified in the WMCP included taking steps to reduce unaccounted-for water loss in the system. To improve customer response time with daily and hourly consumption monitoring, the district decided to upgrade to an advanced metering infrastructure (AMI) system, also known as a smart water grid system, using funding provided by the U.S. Department of Agriculture's Rural Development Waste Disposal Loan & Grant Program. The grant offers support for clean and reliable drinking water initiatives in rural areas.

Since the installation of the district's smart water grid system, district staff has worked hard to engage our community in developing profiles that allow individual customers to monitor their own water use. Through a partnership with our customers, we've reduced our water

loss from 27 percent to 10 percent. More importantly, we have reduced our demand on our source water by 25 percent. We're using 25 percent less water today than we were 5 years ago, despite growing 7 percent in the same time period. We're seeing tremendous benefits and results from using technology to help us manage our system. Proper water management is necessary in order to gain control of the little water we do have.

Innovative system technology is one cost-effective solution for municipal water suppliers. Protecting the environment is everyone's responsibility and something the SRWD board of commissioners takes seriously. Water is a precious resource, and using new, innovative technology like AMI allows water providers like us to ensure this precious resource remains sustainable and available for future generations. ^M



SRWD employees Trish Karlson, Joy King, and Brendi Hargrove.



Adam Denlinger is the general manager of Seal Rock Water District. He can be contacted at adenlinger@srwd.org or (541) 563.3529. For more information about SRWD, visit www.srwd.org.

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JOEL IRVING
(310) 614-4681
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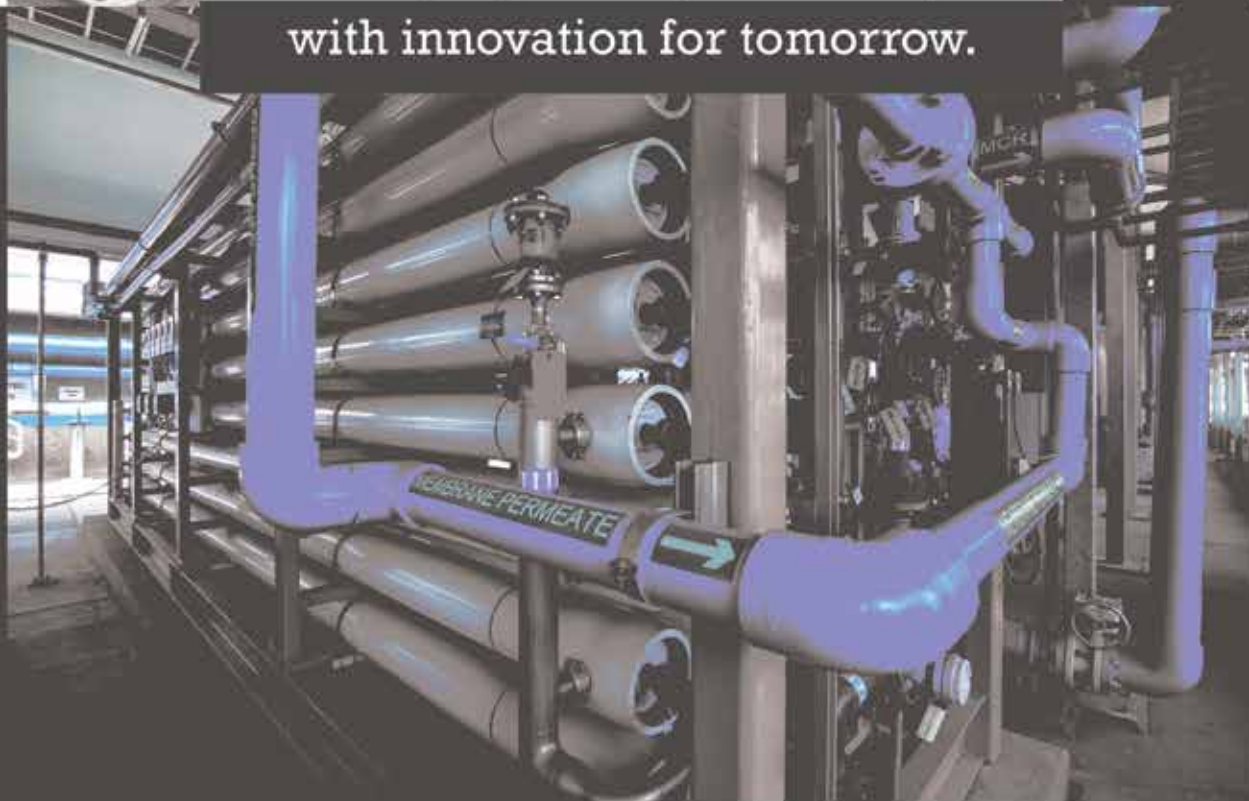
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Creating Consensus on Oregon's Mid-Coast



Partners learn about water treatment at a local small water district.

The Mid-Coast region of Oregon is surprisingly complex in its hydrology. It contains eight hydrological basins, each with its own population demographics, water supply, and water needs. In this sense, the mid-coast is a microcosm of Oregon as a whole, which is also a climatically and geographically diverse state. In recognition of this fact, the state established an Integrated Water Resources Strategy in 2012 to coordinate efforts to understand and balance diverse water needs. The Mid-Coast Water Planning Partnership is one of four pilot programs to across the state working to create a local, place-based regional water plan using this voluntary, non-regulatory approach. In this interview, Alan Fujishin, a local farmer and a coconvener of the partnership, tells Municipal Water Leader about the partnership's activities and accomplishments.

Municipal Water Leader: Please tell us about your background and how you came to be in your current position.

Alan Fujishin: My wife, Lorissa, and I manage Gibson Farms, a blueberry and cattle farm in the Siletz Valley of Oregon's central coast. We were approached in 2016, at the beginning of this collaborative, place-based planning process, to help represent the agricultural community and rural interests in the Mid-Coast Water Planning Partnership. The partnership discovered that there is plenty of work to go around in water planning, so I agreed to become one of the coconveners along

with Seal Rock Water District, the City of Newport, and the Oregon Water Resources Department (WRD).

Municipal Water Leader: Please tell us about the Mid-Coast Water Planning Partnership.

Alan Fujishin: It is a regional planning group that represents diverse water interests in the Mid-Coast region. We work to understand and meet the water needs of local communities, the environment, and the economy within a bounded area. Oregon is a diverse state when it comes to climate and geography, and our 20th-century experience led us to the conclusion that a one-size-fits-all water policy for the state doesn't work very well. The state's Integrated Water Resources Strategy attempts to remedy that by coordinating the activities of state agencies and establishing local, place-based discussions and programs around water that are tailored to local needs and priorities.

Municipal Water Leader: When was the partnership founded?

Alan Fujishin: The partnership had its first meeting in 2016, after the City of Newport and the Oregon WRD cooperated on a grant to get the process started. Since then, we have brought together more than 70 local partners to participate in the process. We are more than three-quarters

of the way through our planning process, which, according to state guidelines, is a 5-step process. We wanted to involve local stakeholders early on to make sure that this was a collaborative process. Our second step was to really understand the natural and built water systems that we had here on the Mid-Coast, which are more complicated than you might imagine. Within this small area there are eight major hydrologic basins and dozens of smaller ocean tributaries. Right now, we are working to identify current and future needs, including in-stream needs for fishing, aquatic life, habitat and recreation and out-of-stream needs for industrial, municipal, domestic, and agricultural uses. Then, over the next year and a half, we will pivot toward identifying, prioritizing, and carrying out practical solutions and strategies to meet those needs.

Municipal Water Leader: Was the partnership founded in response to a state policy?

Alan Fujishin: Yes. The Oregon Water Resources Commission adopted the Integrated Water Resources Strategy in 2012 in response to a directive from the legislature to meet Oregon's current and future water needs. It established better coordination between the various

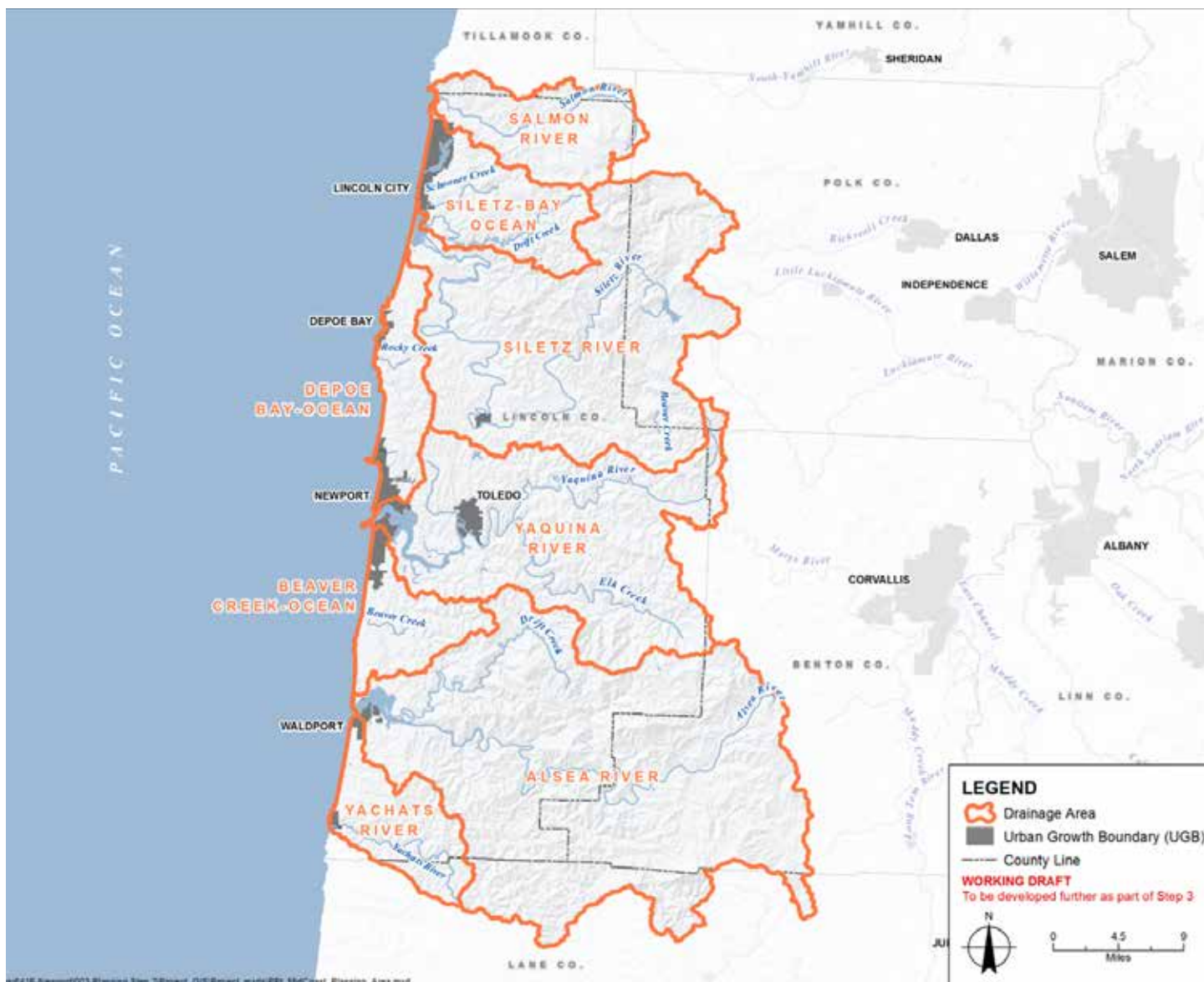


Local foresters and hydrologists explain a streamside habitat enhancement project on private forestland within the planning area.

agencies responsible for different aspects of water as well as the local communities they serve. This is important in a state like ours, where a high-desert area may get less than 8 inches of precipitation a year, but a coastal area may get over 100. Each region has its own needs.



Field tour participants learn about water treatment facilities from an operator at the City of Lincoln City, Oregon.



Mid-Coast Planning Area Map

In 2015 and 2016, the state established four pilot planning areas for place-based water planning, one of which was the Mid-Coast. The other pilot areas are basically defined by single hydrological basins within the drier eastern part of the state, rather than by a series of eight basins, as ours is. The Mid-Coast is also the most diverse in terms of local demographics and water use. The state is looking at each of these pilot programs to learn how place-based planning works and to inform future water planning efforts around the state.

One of the benefits of a place-based planning approach is that it's portable and scalable. The problems we have on the Mid-Coast of Oregon are different from the problems people have in a basin just over the Cascades. The flexibility of the model makes it valuable in helping solve Oregon's water problems in a way that is tailored to each region.

Municipal Water Leader: Who are the members of the partnership? Are they primarily organizations or individuals?

Alan Fujishin: We wanted to maintain an open door for all potential partners to help inform the plan as well as help implement the plan once we have that in place. If folks support of our governing charter and want to participate as full partners, they can sign up at any one of our meetings. Some of our early partners were municipal and special water districts, local businesses and governments, state agency representatives, tribes, and local conservation groups. Since then, we've also attracted the interest of coastal residents who understand the value of water and want to contribute to a regional plan to help solve those issues. We have over 70 signed partners now, who run the gamut of water interests in the Mid-Coast. One of the benefits of the place-based planning approach is that a coastal resident who is just an interested member of the public has the same standing at the table as a large water provider. That levels the playing field and allows us to have meaningful discussions.

Municipal Water Leader: How is the partnership funded?

Alan Fujishin: The partnership has a range of funding sources. We receive some state funding through an Oregon WRD grant; we have also received grant funding from private nonprofits and organizations and from our local partners. We also receive significant in-kind funding from our local partners, including people's time, effort, and talents.

Municipal Water Leader: How does the partnership plan to move from the research and planning stage to the implementation of its ideas?

Alan Fujishin: I think we're doing a good job of identifying what the various needs are and projecting those needs into the future. We are aware that development and perhaps climate change are going to affect those needs, that Oregon may need more water in the future, and that our water supply may not be as robust as it has been in the past. Based on that understanding, we can then roll out ideas for how to address those issues together, regionally, and then prioritize those ideas. While those ideas may not be implemented by the partnership itself, our participating partners can work to secure the necessary resources and use the partnership's plan to guide and validate their activities toward the benefit of the entire region, rather than working individually without mutual support.

Municipal Water Leader: How is the partnership helping accomplish things that individual agencies and people could not do on their own?

Alan Fujishin: One thing that became clear to me as an early participant in the partnership was that a lot of the water interests within our planning area have been working for decades in a siloed way. They weren't necessarily talking with each other or sharing a lot of information. In some cases, they came down on different sides of a local issue and had a history of antagonism. In some ways, it was surprising to me that a nonregulatory, voluntary organization like the partnership has been able to create a space in which those previously-siloed local government agencies, business entities, interested citizens, and nonprofits can come together and have a productive conversation in a nonconfrontational environment. That is going to be the basis of our shared success. This is not a forum like a public hearing in which one side comes out the victor and the other the loser. We're able to look for win-win solutions and learn from each other. I've learned a lot through participating in this partnership, even though I'm a local resident who has been engaged in these issues in the past. Now we have a shared level of baseline knowledge about the region's water needs and water availability. That will allow us to find practical and realistic solutions for the Mid-Coast region.


Municipal Water Leader: How does working collaboratively help the members of the partnership gain grant funding?

Alan Fujishin: Whenever we're able to demonstrate to potential funders, be they public, private, or nonprofit, that although we are diverse constituents we agree through consensus that a project or effort is important in our local area, they are more likely to view it as a worthwhile investment of their time and resources. I think that will give us a real advantage as a partnership when it comes time to turn this plan into projects on the ground.

Municipal Water Leader: What is your message to the Oregon State Legislature and to Congress?

Alan Fujishin: My message to the Oregon Legislature and our state agencies is, first, one of gratitude. We've been working for more than 3 years now on this local planning process, and we have been given tremendous latitude to do so in a way that made sense considering local culture, local demographics, and local politics. The second message is that that work is not over yet. One of our main concerns as a partnership is that once we have this plan in hand, that plan not simply sit on the shelf. In order to avoid that, we will need to have the resources to implement the plan. I'm sure it will come as no surprise to those folks to hear that the plan will need continued support to go forward, but that's the reality. I understand that with the biennial budget cycle, we can't always make commitments many years ahead, but water requires a long-term view and these place-based planning processes are a long-term effort. They're not a one-and-done commitment.

Municipal Water Leader: What is your vision for the future?

Alan Fujishin: I would like people to be empowered to help solve important problems in their own communities. As we wrap up the plan, we want to continue to hear from constituents about their water priorities. Hearing from our partners about the ways they use and value water helps us learn from each other and develop shared ideas for ensuring water availability in the future. The sky's the limit in terms of our ideas, and those ideas have already generated outside-the-box approaches and strategies. While our area is small, its water issues are surprisingly complex. We will need both creativity and cooperation to solve them. 



Alan Fujishin is a coconvener of the Mid-Coast Water Planning Partnership. You can learn more about the partnership at www.midcoastwaterpartners.com.

Modernizing Oregon's Dam Safety Statutes

By Racquel Rancier



The Dalles Dam on the Columbia River has been designated as a high hazard potential dam.

In 1928, the St. Francis Dam in California failed, resulting in the loss of hundreds of lives and the passage of dam safety laws in several states, including Oregon. Over the years, however, the resources dedicated to dam safety have been limited, and challenges in ensuring their safety remain. Engineering standards have evolved over time, as has our understanding of seismic and flood risks, demanding new actions and programs. These challenges are compounded by the fact that dams are aging, with some showing signs of degradation or requiring urgent repairs.

These challenges are not unique to Oregon, and in the past 5 years, the failure of over 100 dams in North and South Carolina during extreme flooding and the safety incident at California's Oroville Dam have demonstrated their urgency. Recently, the State of Oregon has increased its

focus on improving the safety of dams under its jurisdiction, recognizing that actions must be taken to address dam safety deficiencies in order to prevent the loss of life and damage to property from a dam failure and to preserve the many benefits that dams provide for our communities and economy.

The Oregon Water Resources Department (WRD) is the state agency charged with overseeing the safety of approximately 950 dams in Oregon that store water for agriculture, cities, industry, recreation, fisheries, and other purposes. Of these dams, 76 are rated as high hazard, meaning that the loss of human life would be expected should the dam fail, while another 151 are rated significant hazard, meaning failure is likely to result in damage to property or infrastructure, but not the loss of life. The hazard rating reflects the expected results of failure, not the condition of the dam.

PHOTO COURTESY OF SAM BEEBE.

In 2018, the Oregon WRD began an effort to modernize Oregon's dam safety statutes, which had remained virtually unchanged since 1929. In 2019, the Oregon Legislature passed House Bill 2085, providing a policy foundation and additional tools for the department to address dam maintenance and safety issues. Among other features, the bill provides the department with the authority to work cooperatively with dam owners to address safety issues prior to engaging in a more traditional enforcement approach. The cooperative approach was proposed in recognition of the time and expense required to repair, replace, or rehabilitate a dam and the fact that lack of funding can be a significant barrier to these efforts.

Visual inspections are the primary tool and approach the department employs to identify potential deficiencies. Oregon seeks to inspect high-hazard dams annually, and significant-hazard dams every few years. Of the 76 dams rated high hazard, 20 are in poor or unsatisfactory condition based on current information available to the department.

As resources allow, the department has conducted risk assessments or analyses of dams for certain vulnerabilities, but the reality is that funding has been insufficient for decades. Significant federal funding for the inspection of nonfederal dams was provided after a series of dam failures in the 1970s. In Oregon, these federal dollars bolstered engineering staff working on dam safety, improving the ability of the department to evaluate dam safety deficiencies. The effort, however, was temporary, as federal funding for the effort waned. With minimal funding resources, the department has been able to do only partial risk assessments of dams; full risk assessments of state-regulated dams have not been completed in 40 years, even as engineering standards and the understanding of risks to dams has advanced.

Now that the state has a strong policy foundation, the department is turning its attention towards obtaining resources to conduct more detailed assessments of the risks to dams, including funding for more in-depth analyses, where needed; identifying approaches to prioritizing dams for repair, rehabilitation, or replacement; and to identifying funding resources for addressing dam safety issues.

Towards that end, the department applied for and was awarded funding from the Federal Emergency Management Agency's High-Hazard Potential Dam Rehabilitation Grant, which will help it conduct risk assessments of 16 high-hazard dams and take steps to help dams in the state meet the criteria for future funding. The program's current funding, however, is small in comparison to its needs, and future federal



Willow Creek Dam in Jackson County has been designated a high hazard potential dam.

authorizations will need to be increased greatly if the goal is to make meaningful progress on safety issues.

The State of Oregon is also providing funding to improve the safety of dams, with the Oregon Legislature allocating \$14 million in 2019 to address the long-standing safety issues of Wallowa Lake Dam, which were identified in the 1980s. The Oregon Legislature also authorized \$4 million to support efforts to begin to address the seismic deficiencies discovered in the past decade, as well as recent and increasing seepage at the City of Newport's dams. The City of Newport has been aggressively seeking out other funding sources. The city and state have noted the challenges of finding funding to address dam safety issues.

The funding provided by the state is a good first step, but much work remains, and the funding gap is significant. As such, Oregon Governor Kate Brown is introducing legislation for the 2020 legislative session to provide \$2 million to the department to conduct risk assessments at additional high-hazard dams and to fund more in-depth seismic analyses. The legislation will also establish a dam safety task force that will make recommendations on how to prioritize dam safety projects and identify potential funding mechanisms. These efforts will help the state determine how to most effectively direct its limited resources and will complement the governor's 100-Year Water Vision as well as the state's resiliency efforts. [M](#)



Racquel Rancier is a policy manager at the Oregon Water Resources Department. She can be contacted at racquel.r.rancier@oregon.gov.

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The ASDSO: Advocating for Dam Safety Nationwide



ASDSO's 2018–2019 board of directors at the Johnstown Flood Museum in Johnstown, Pennsylvania.

The Association of State Dam Safety Officials (ASDSO) was founded in 1984 after a string of high-profile dam failures to aid each state in improving its dam safety regulatory program. Since then, it has helped state dam safety agencies communicate with one another and adopt best practices, conducted training, and engaged in awareness raising and legislative advocacy.

In this interview, ASDSO Executive Director Lori Spragens speaks with Municipal Water Leader about the organization's history and activities and about the prospects for increased dam safety funding on the federal and state levels.

Municipal Water Leader: Please tell us about your background and how you came to be in your current position.

Lori Spragens: I have been the executive director of ASDSO for about 30 years. When I was in grad school, I had an internship with a national nonprofit organization

headquartered in Lexington, Kentucky, called the Council of State Governments (CSG), which conducts research to support all three branches of state government and has a number of affiliate associations. ASDSO emerged in the wake of a 1979 executive order issued by President Jimmy Carter that mandated dam safety coordination throughout federal agencies and departments. The CSG was engaged to help support the launch of the new organization. As an intern, I was assigned to help with this initiative. Eventually, ASDSO matured to the degree that it was able to move from under the umbrella of the CSG, and I chose to stay with it. In the ensuing years, we received a great deal of support from the University of Kentucky, including office space, and our headquarters have remained in Lexington, Kentucky.

Municipal Water Leader: Following the 1979 executive order, how did dam safety coordination change? What role did ASDSO play?

Lori Spragens: During the 1970s and early 1980s, there was a rash of pretty high-profile dam failures around the nation, and it became clear that many states didn't even have state regulatory programs for dams. The federal government engaged those that did to help guide the other states in starting dam safety regulatory agencies. The early leaders first worked on establishing communication channels between the various states to provide guidance and support. The National Dam Safety Program, administered by the Federal Emergency Management Agency (FEMA), was created at the same time, adding a base for the national coordination of federal and state agencies and eventually providing guidance documents, state assistance, and training programs to the dam safety community.

Within 15 years of the national program's inception in 1984, every state but one had implemented a state dam safety regulatory program. Throughout its existence, ASDSO has provided significant support to the states, whose statutes and regulations are different, and whose dam safety programs have different levels of staffing and funding. We serve as a facilitator, helping them to communicate with one another as well as with their federal counterparts. We also conduct extensive training and assist states with their respective legislative advocacy efforts. We can proudly point to the fact that we have grown from an organization whose members were the 50 states to one that has some 3,000 additional members from federal agencies and departments and from the private sector, including consultants, engineering firms, and dam owners and operators.

Municipal Water Leader: Are your members organizations or individuals?

Lori Spragens: It's a mix. For example, each state dam safety program has an organizational membership. The Bureau of Reclamation and U.S. Army Corps of Engineers are both members of too, and many individual Reclamation and Army Corps employees are involved in our organization and its programs. Similarly, when it comes to dam owners, many dams are owned by small numbers of individuals, who could be considered individual members of our organization.

Municipal Water Leader: Is your organization funded by member dues?

Lori Spragens: Membership dues account for approximately 30 percent of our revenue stream. We also receive a



The ASDSO organizing committee in 1985.

significant percentage of our revenue from conferences and training programs. Dues and registration fees together represent the majority of our overall revenues. We also have several small contracts with and grants from organizations such as FEMA and the U.S. Department of Agriculture's Natural Resources Conservation Service that are tied to training and other activities. As a nonprofit entity, we have donors as well.

Municipal Water Leader: In addition to training, conferences, and communications work, does ASDSO engage in other activities?

Lori Spragens: We spend a lot of time focusing on public awareness. For example, we have a significant amount of information on our website, some dedicated to media interests and some oriented toward the general public. In both cases, this information revolves around understanding dams—the different types of dams, how they work, and how they can fail. Over the past couple of years, we've expanded our mission to another major aspect of dam safety, which is educating people about the more immediate dangers of recreating around a dam. One example of a major cause of drowning is watercraft being used by anglers drifting too close to the open gates of a dam spillway. Low-head dams, which typically have low walls that run across the width of a riverbed to slow the river flow and are generally not regulated, can create what is called a roller effect on its downstream side. The force from this rolling water can capture a person or small watercraft in a continuous circular current, leading to drowning. The alarming thing is that an increasing number of rescuers also fall victim to such structures. Many of the volunteers associated with our organization are interested in promoting public safety

around dams, so we are working to raise awareness through our website and our operations. We are also engaging in outreach efforts with organizations that may share these interests, like boating and kayaking associations and those that represent first responders, and the media.

Municipal Water Leader: What are the association's other top issues and concerns today?

Lori Spragens: We are currently spending a great deal of time in Washington, DC, advocating for the new Rehabilitation of High Hazard Potential Dam Grant Program we and the American Society of Civil Engineers successfully pushed for over the past 3 years. Congress funded it for the first time last fiscal year, and because it is new, it has been somewhat difficult to get it up and running. FEMA, which is managing the program, has now approved a few grant applications submitted by dam owners. Now our focus is to secure additional funding for the program so that it can continue to grow and build upon its successes and to give it a few tweaks to help ensure that it runs as efficiently and effectively as possible. We're really excited right now, because we've identified a couple of members of the House of Representatives and Senate who are interested in the program and its success. Senator Kirsten Gillibrand (D-NY) has been vocal about the importance of this program, which she is trying to get fully funded. She recently circulated a letter to several of her colleagues on the subject. Right now, the program's authorized funding level is around \$40 million a year, and currently, Congress is only funding it at the \$10 million level. That is what it received last fiscal year, and it appears it will be the same this time around. Senator Gillibrand is pushing hard for an increase in this funding. We're also working closely with Senator Diane Feinstein (D-CA), who is extremely interested in this program, particularly in light of the 2017 Oroville Dam incident in California. She is a major advocate for dam safety and the national dam rehabilitation program.

Municipal Water Leader: What is your sense of the public awareness of the problems of high-hazard-potential dams?

Lori Spragens: The level of public awareness is low. Unfortunately, increasing it has been a heavy lift. When it comes to the issue of high-hazard-potential dams, people have an out-of-sight, out-of-mind mentality. People just don't know that the dams near them pose hazards until something bad happens. Until then, they generally don't even think about such infrastructure. We are trying hard to change that. The challenge is helping them understand what they are supposed to do once they have been made aware of such situations. So, we start by educating people to pay attention to warnings, emergency alerts, and evacuation orders and to be aware of where they decide to live and work. We also want to educate municipal leaders about

the importance of understanding how dams fit into their local infrastructure, their hazard mitigation planning, and their emergency action preparations. It will require both education and advocacy over the long term, but it is something we are committed to.


Municipal Water Leader: Do many municipalities struggle to fund appropriate dam safety projects?

Lori Spragens: Yes, we hear consistently from dam owners and operators that they don't have access to funding at the level that these issues demand. They can often cost hundreds of thousands of dollars or more. It is a huge challenge and has not improved for several years. The new national dam rehabilitation program that I mentioned, if fully funded, could help with such needs.

Municipal Water Leader: What are the prospects for more funding for dam safety at the federal and state levels?

Lori Spragens: We hope to see this new rehab program get started and have its funding become stable or even grow. That would be a great start. We're hoping that this funding can be distributed equally among the states on a proportional basis. Similarly, we are hopeful that as states become more aware of this issue, they will become more willing to provide similar sorts of grant funding or even loans. There are probably a dozen states that already have grant or loan programs in place. New Jersey, in particular, has a sizable low-interest loan program that is available to private dam owners. Hopefully, as awareness of funding issues grows, other states will step up to the challenge in a similar fashion.

Municipal Water Leader: What other trends do you see in dam safety today?

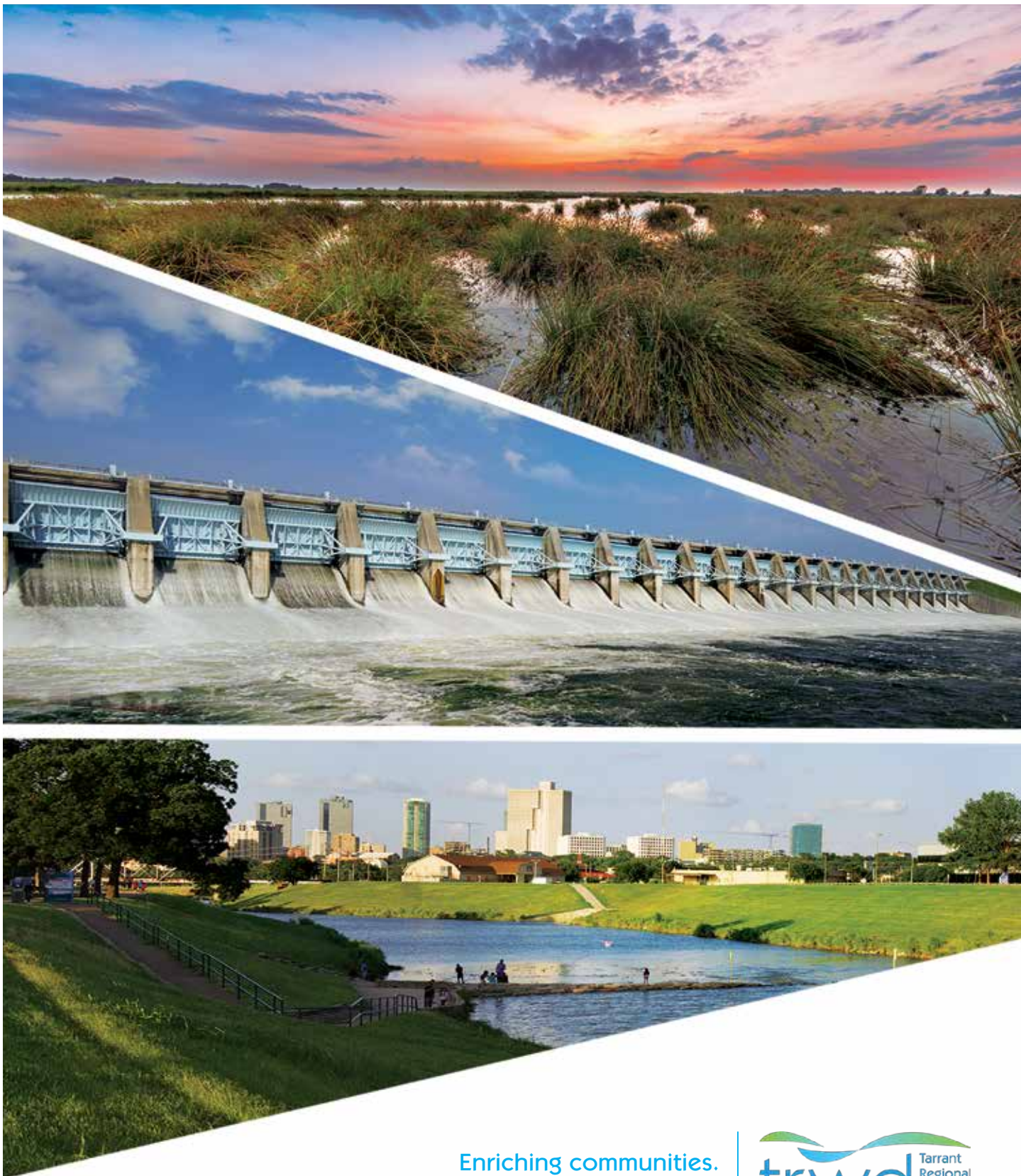
Lori Spragens: People talk a great deal about climate change's potential impact on dams. That is an area that I believe needs the attention of our best engineering and meteorological experts. The hydrometeorological report maps that are in use today were developed by the National Oceanic and Atmospheric Administration's National Weather Service years ago and are likely outdated. There has been significant discussion within our organization about how new precipitation and extreme rainfall data should come into play when dams are analyzed, designed, and rehabilitated in the future. 



Lori Spragens is the executive director of the Association of State Dam Safety Officials. You can contact ASDSO at info@damsafety.org.

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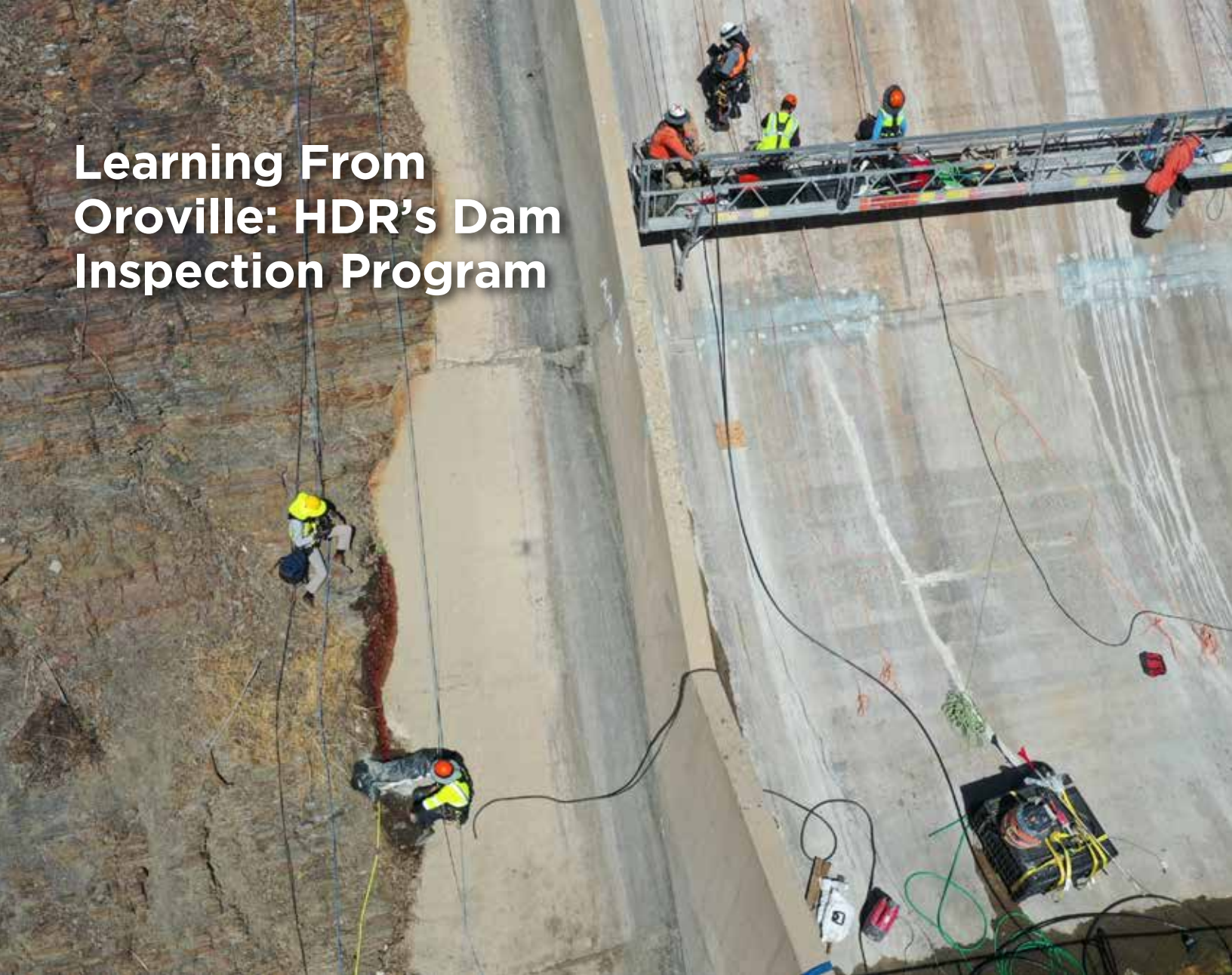
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Learning From Oroville: HDR's Dam Inspection Program



A rope-access inspection of an unlined emergency spillway in conjunction with the remediation of a service chute spillway using ropes and a rolling scaffolding.

In February 2017, the service spillway of California's Oroville Dam began to crater and collapse, an emergency that required the temporary evacuation of 188,000 people downstream. While the danger was contained and the spillway was reconstructed the following year, the Oroville incident was serious enough to provoke a thorough rethink of dam maintenance and inspection practices across California and nationwide.

The personnel of engineering firm HDR, Inc., were onsite at Oroville Dam and played a major role both in responding to the initial failure and in developing new methods and practices for dam and spillway inspection. In this interview, HDR Principal Hydraulic Structures Engineer Sam Planck and Hydraulic Structures Practice Leader Kenny Dosanjh tell Municipal Water Leader about their work promoting dam safety in the aftermath of the Oroville spillway incident.

Municipal Water Leader: Please tell us about your backgrounds and how you came to be in your current positions.

Sam Planck: My background is primarily in hydraulic structures. I've been with HDR for 30 years. The way I usually describe my work is that I'm engaged with the steel-and-concrete end of water resources. This could be tied to dam safety, flood control, or fisheries. My work typically focuses on all those pieces at a dam site that aren't the actual dam. I've been in my current role managing one of the California Department of Water Resources' (DWR) dam safety contracts for HDR for about 6 years. Before that, I managed the hydraulic structures group at HDR.

Kenny Dosanjh: I'm HDR's hydraulic structure practice leader. I've been with the company for 15 years now. My background has focused heavily on rope-access inspections for various types of structures, including radial gates, spillways, and one-off structures like outlets and intake structures. I've also done a lot of finite element analysis of various hydraulic structures and design and repairs of flood

walls, gates, and spillways. I was the dams and hydraulics structures section manager for approximately 4 years.

Municipal Water Leader: What services does HDR perform with regard to dams?

Sam Planck: It's a pretty extensive list. Some of the more traditional items on it would be inspection, analysis, and design. We also do a significant amount of dam safety work related to potential failure mode analyses, risk assessments, and the development of dam safety training learning tools. We also conduct hydraulic, geotechnical, and structural analyses.

Kenny Dosanjh: As Sam said, we are involved in every single discipline associated with dams, from geotechnical investigations to developing potential maximum precipitation and potential maximum flood updates. Because we're involved in the structural work for dams, we also get involved in the related civil work, such as the construction support and site civil engineering, including access roads, drainage, and grading.

Municipal Water Leader: Would you tell us about the 2017 Oroville Dam spillway failure? What occurred, and why?

Sam Planck: It's believed that the event began with a small failure in the spillway slab. The deterioration of the slab concrete at the joints, combined with the pressure that accompanies high-velocity water on such a spillway, eventually took a small piece of concrete out of the spillway floor. Once there was a disruption in that flow, the cavitation forces and pressures began to tear the rest of the spillway apart. As larger and larger pieces of it were dislodged, the foundation and chute walls were further eroded and eventually collapsed, providing a new outlet for the water to spill down and further erode the hillside.

Municipal Water Leader: What was HDR's role in the response to the failure?

Sam Planck: Prior to that incident, HDR had been working with the California DWR, under one of its dam-safety contracts, to provide a variety of services, including inspection analyses, studies, and hydrology and hydraulics work. When the spillway incident occurred, our role was to support DWR's internal dam safety group. Specifically, we were asked to provide a significant number of monitors along with extensive consulting. We had over 150 personnel on site, split into crews, working 24 hours a day, 7 days a week, for 6 months. Their initial objective was to monitor the progression of the head cutting and then to observe the remainder of the spillway and other elements that could have been affected by the event. It was the most interesting and the most challenging period of my career. The level of resourcing and staffing and the number of things that were changing

at any given time were unprecedented. While I was working more behind the scenes, lining up the resources, Kenny had a firsthand view of what was happening.

Kenny Dosanjh: I was called up the day it happened. I remember Les Harder telling me that something was going on with the spillway and asking if I could grab some inspection gear and go up to the dam with him. When we arrived, I saw the extent of the initial failure area and realized that everything I had brought was pretty much useless. We were the first people to actually go into the failure areas of the spillway, and by the next day we were thrust into leading DWR's assessment efforts.

Our objective was to quantify the damage within the initial damage area and then develop ideas to potentially fix the spillway on the fly. We collected a number of rock samples to try to get a better understanding of what the makeup of the exposed foundation material was. We needed to figure out if the foundation would be susceptible to head cutting and whether the spillway foundation would continue to erode upstream. This information was helping inform us of what the ramifications might be from a continued release over the damaged spillway. We continued relaying data back to Sam and the team at the office, who were doing real-time analysis. They used our imagery and videos from the field to calibrate the models they were developing, with the underlying objective of having the best idea of what could happen and how best to ensure everyone's safety in the meantime.



A rope-access inspection of a gated chute spillway.

Municipal Water Leader: What new spillway reliability and performance practices has HDR developed and introduced in response to the Oroville incident?



A rope-access inspection of a gated ogee spillway.

Kenny Dosanjh: The Oroville incident showed how important it is to create a baseline document and a baseline condition assessment for spillways in order to have something to compare future assessments to. That practice is probably one of the biggest things that HDR helped introduce to the industry following Oroville. In the wake of Oroville, it was apparent that spillways generally didn't have such baselines, meaning that we couldn't tell whether the deterioration they suffered occurred right after construction or had been occurring over time. These baseline assessments should identify deficiencies and determine whether they require immediate repair or close monitoring through regular inspections. A critical component of all this is understanding the original design and looking at whether anchors, water stops, or other features are in place to help with spillway functionality. The next step is to take all those initial design criteria and compare them to our standards today; that helps you understand your spillway, what could happen to it, and what can be done to maximize its operational capabilities and safety. Looking at the initial structural design can also signal potential failure modes, both under general operating conditions and in the case of unusual events such as seismic activity. These things have not necessarily been done routinely in the past. The industry was previously focused on the potential failure modes of actual dams, but in the wake of the Oroville incident, we're emphasizing the spillway as well.

Municipal Water Leader: What are some of the other problems you have found in spillways built in the 1960s and 1970s?

Sam Planck: One of the biggest surprises has been that there are problems with the condition of underdrains, which are usually a series of clay pipes that lie underneath the concrete slabs in spillways. These clay pipes have a series of holes that allow pressure building up under the slabs to drain out. They are difficult to get to because they're buried, and as a result they are rarely inspected. Over the last couple of years, we've been using everything from crawling submersible robots to push cameras to inspect miles of underdrain in spillways across the country. We've been quite surprised by the number of pipes that are broken or somehow blocked. Many of them have also been identified as undersized and thus ineffective. In addition to video inspections, we have conducted dye testing and smoke testing to determine if they are able to dissipate water pressure. Along with these inspections, we take measurements to identify joint offsets which could disrupt drain flows or otherwise erode the pipes themselves. Remediation in these situations can often be as simple as refilling the joints or grinding down a high spot so that it doesn't disrupt the high-speed water. Another approach that avoids disrupting or tearing up any part of the structure is to use ground-penetrating radar to look for voids in the foundation beneath the concrete slab and to identify deficiencies in the concrete—essentially, layers within the concrete that are not performing correctly. If we identify something via these noninvasive methods, then we can drill a small hole into the concrete and run cameras down to find out if there really are voids and how well the slab is connected to the foundation material.



An underdrain inspection reveals a broken and displaced clay underdrain.

Municipal Water Leader: Would you tell us about other dam inspections that HDR has been involved with?

Sam Planck: As we noted earlier, HDR conducts a variety of types of hydraulic structure work and dam inspections. Historically, a lot of our work has dealt with gate inspections. About 20 years ago, we formed a rope-access

climbing team for this specific purpose. It has performed inspections on thousands of gates all over the country over the last couple of decades. HDR has done over 100 spillway inspections across the nation since Oroville. Some require the rope team, while others are done on foot. Some of the spillways that have been inspected are enormous, while others are not much larger than a driveway. In every case, they receive the same type of inspection. I would say 20–25 percent of those inspections lead to some type of retrofitting or remediation or even the replacement of portions of the structure.

Municipal Water Leader: Has HDR done any research on the seismic vulnerability of dams around the nation?

Sam Planck: Yes, we do quite a bit of seismic analysis. The kind of analysis that is done depends on whether you are looking at the dam as a whole or at a piece of it, such as its spillway. We're currently doing seismic analyses of spillways for a number of clients. Obviously, an analysis of the dam itself is even a bigger undertaking and can often involve more complicated computer models that can do things like nonlinear analysis.

Kenny Dosanjh: We're relying on programs such as ANSYS and LS-DYNA to perform this work. We are not just focusing on the model of the actual dam, rather we are using Bureau of Reclamation standards and spanning out thousands of feet to the sides of or underneath the dams. We're modeling in foundation conditions, water, and terrain and even initiating a seismic force underneath the dam in the model and allowing it to propagate up. HDR is one of the leaders in this approach.

Municipal Water Leader: Would you tell us about how the Federal Energy Regulatory Commission (FERC) and the California DWR's Division of Safety of Dams (DSOD) rewrote dam safety investigation requirements?


Sam Planck: A lot of that rewriting is still going on, and the regulatory environment varies by state and structure. FERC regulations, for example, only apply to dams that generate power. If the dam doesn't generate power but has a spillway, it falls under state jurisdiction; in California, for instance, it would fall under the jurisdiction of the DSOD. California has a strong dam safety regulator in DSOD with a lot of knowledgeable people on staff, while in other states there might be only a handful of people assigned to this area who furthermore may not have a great deal of experience with dams. Therefore, this first round of spillway inspections across the nation will definitely influence how these regulations develop. The techniques that reveal the most defective conditions will probably end up being prescribed by regulations, while those that do not reveal as much valuable information may well not end up in the regulations.

Municipal Water Leader: How has HDR been helping dam owners adapt their inspection programs?

Kenny Dosanjh: One of the biggest things is to create a periodic inspection checklist. This can work in conjunction with the baseline condition analyses we discussed earlier. Dam owners can go through their checklists, looking for certain items, taking certain measurements, and even making observations by drone, in order to compare current conditions to the baseline. That's one of the most significant initiatives that emerged from the Oroville incident. Another was the new emphasis on underdrain review and the remediation protocols we developed. This led to the much more rigorous inspection and maintenance objectives that we insist on today. Another big thing is the new emphasis on dewatering systems. Spillway terminations are often covered with water for 100 percent of their lifetime. Even with flip buckets, there will often be drains that are clogged to one degree or another. That can cause some pretty bad things in terms of deterioration. Dewatering at 50-year intervals is no longer appropriate considering what we now know and the tools and techniques we have at our disposal today.

Sam Planck: A significant aspect of this revolves around altering mindsets about dam programs. For example, it is important to convince people to think of a spillway as a machine. Machines need to be inspected and when necessary, remediated.

Municipal Water Leader: What is your vision for the future of dam safety?

Sam Planck: There's going to be a lot more attention paid to risk and risk-informed decision making. A lot of the things that were revealed at Oroville imply really expensive decisions for dam owners going forward. Whether to retrofit one part of a dam or another could be a multimillion or multibillion-dollar decision. Knowing which project could most significantly reduce risk can help determine the relative value of such expenditures. 



Sam Planck, PE, is a vice president and principal hydraulic structures engineer at HDR in Folsom, California. He can be contacted at sam.planck@hdrinc.com.



Kenny Dosanjh, PE, is an associate, hydraulic structure practice leader and rope access dam inspection program lead at HDR in Sacramento, California. He can be contacted at kenwarjit.dosanjh@hdrinc.com.

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The SoilTain dewatering tube is a geotextile containment system that is used to dewater a wide variety of sludge types and dredged materials.

The gravity dewatering of sludge produces a reduction in volume. The geotextile dewatering tube system operates more efficiently than traditional dredge dumps and is more economical than mechanical dewatering processes.



Features:

- Purpose-developed high-performance woven filter material
- Dewatering tubes manufactured in both standard and project-specific sizes
- Seams with high tensile strength to ensure performance



High flow dewatering.

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A person wearing a safety vest and waders is crouched in a large, dark, corrugated metal pipe, using a device to sample water. The pipe is part of a larger structure, possibly a water supply facility, with a view of the ocean and a distant coastline visible through the opening at the end of the pipe.

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At HDR, we're helping our clients push open the doors to what's possible, every day. We can help you navigate the complexity of planning, designing, constructing, managing and operating your water supply facilities.



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Blaine Dwyer | blaine.dwyer@hdrinc.com

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Municipal Water Leader

Upcoming Events

- March 4–6** Texas Water Conservation Association, Annual Conference, Fort Worth, TX
- March 12** Association of California Water Agencies, Legislative Symposium, Sacramento, CA
- March 16–18** Utah Water Users Association, Annual Workshop, St. George, UT
- March 24–26** Texas Water Conservation Association, Texas Water Day, Washington, DC
- April 2–3** Association of California Water Agencies, Water Policy Conference, Davis, CA
- April 6–9** CA/NV AWWA Section, Spring Conference, Anaheim, CA
- April 20–22** National Water Resources Association, Federal Water Issues Conference, Washington, DC
- May 5–8** Association of California Water Agencies, Monterey, CA
- May 15** Agribusiness & Water Council of Arizona, Annual Meeting, TBD
- June 8–9** Idaho Water Users Association, Water Law & Resources Issues Seminar, Sun Valley, ID
- June 17–19** Texas Water Conservation Association, Mid-Year Conference, The Woodlands, TX

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