

MANAGING MUNICIPAL WASTEWATER IN NEVADA: A HISTORY TO BUILD ON

BY SYLVIA HARRISON, ESQ.

In times of drought, some Nevadans have a “Eureka!” moment: if only we could re-use effluent from our water treatment plants, we would have a significant new water resource to alleviate water shortages. This is a grand idea, but it is not a new one. Regardless of drought conditions, Nevada has been intensively managing and reusing the majority of effluent produced by its wastewater treatment plants for decades.

Nevada’s first major effluent management effort was not driven by the need to enhance water quantity, but by the need to protect the quality of water in Lake Tahoe. During 1950s and ‘60s, development in the Lake Tahoe basin accelerated dramatically, fueled by the construction of casinos and the 1960 Squaw Valley Winter Olympics. In the absence of adequate centralized water and wastewater facilities, most residential development relied on septic tanks for sewage disposal. These systems posed a growing threat to the quality of Lake Tahoe’s water, due to the discharge of untreated septic effluent into the lake. These sources, in addition to the release of effluent from wastewater treatment plants into the lake, created the right environment for negative consequences, including algal blooms, caused by increased nutrient concentrations.¹

In the late 1960s, recognizing that discharging effluent and septic wastes into the lake was not a sustainable practice, authorities in Nevada and California

required that all effluent be exported out of the Lake Tahoe Basin, prohibited the installation of new septic tanks and required the retirement of existing septic systems. In response, utilities within the basin increased their treatment capacity, enabling them to accept residential effluent, and constructed pipelines to carry the treated wastewater out of the basin. By 1968, virtually all municipal effluent was being exported from the basin.² Today, most effluent from the Lake Tahoe Basin is re-used in Nevada, carried through pipelines over Luther Pass, Kingsbury Grade and Spooner Summit. During the summer it is used for irrigation by Carson Valley ranches and in the winter it is held in reservoirs or man-made wetlands.³

The Southern Nevada Water Authority (SNWA) oversees Nevada’s

largest effluent re-use system. In contrast to the effluent management at Lake Tahoe, the primary goal of this system is enhancement of water supplies. Although the Colorado River is primary source of water in the Las Vegas area, the federal acts dividing the river’s water among the seven states in the Colorado River

watershed allocated only 300,000 acre-feet per year to Nevada—about 1.8 percent of the estimated annual volume of the river. SNWA was

formed in 1991, by agreement among seven Clark County municipalities and water districts, to enhance coordination of regional water resource management. SNWA member agencies that operate wastewater treatment facilities produce highly-treated effluent, of which 99 percent is recycled. Approximately 90

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percent of this effluent is delivered back to Lake Mead via the Las Vegas Wash. Since the Colorado River allocations are based on consumptive use, any water returned to the river results in a return-flow credit. These credits expand Nevada's Colorado River supply by approximately 75 percent. Effluent not returned to the Colorado River is utilized for irrigation and industrial uses.⁴

In the Reno/Sparks area, most wastewater is treated at the Truckee Meadows Water Reclamation Facility (TMWRF), jointly owned by Reno and Sparks. TMWRF is faced with the challenge of managing effluent, both to enhance water supplies and to protect water quality, goals that often conflict. The community has made significant efforts to encourage effluent reuse for non-potable applications, such as irrigation and industrial uses. However, the volume of effluent that can be diverted from TMWRF is limited. Through agreements with the Pyramid Lake Paiute Tribe, including the recently-implemented Truckee River Operating Agreement, TMWRF is required to return the majority of its effluent to the Truckee River in order to maintain in-stream flows and protect the viability of critical fisheries. At the same time, the TMWRF discharges into the Truckee River must meet stringent water quality standards, limiting the amount of nutrient load that can be introduced to the river. Regional agencies are currently engaged in effluent management studies to determine how best to balance the need

to protect Truckee River water quality, meet in-stream flow requirements and maximize the use of effluent to augment the community's water supplies.⁵

Although effluent management in each of these three examples is influenced by complex multijurisdictional laws and agreements, these systems all operate within the framework of Nevada state laws governing both the right to use effluent and how and where it can be used.

Nevada has adapted its traditional water rights laws to determine who has the right to use effluent. NRS Chapter 533.440(3) provides that effluent is deemed "water," subject to Nevada's appropriation permit system, and provides that wastewater treatment facilities are permitted in the same manner as storage reservoirs. The owner of the wastewater treatment plant has the right to obtain a primary permit from the Nevada Division of Water Resources (NDWR), based on the capacity of the facility, following the same procedures as an applicant for any

other water right, except that beneficial use need not be demonstrated. The holder of the primary right may then contract with persons desiring to make beneficial use of the plant's effluent, who must in turn apply for an appropriation permit from NDWR. Upon presentation of documentation of the contract with the primary permittee to store and deliver the requested volume of effluent, NDWR may issue a secondary permit to the effluent user.⁶ This secondary permit is subject to all the requirements of Chapter 533, including establishing proof of beneficial use,⁷ with the exception that notice of the application for the secondary permit is not published.⁸

Nevada Administrative Code 445A.274-280 governs where and how effluent may be used. Pursuant to NAC 445A.2748, "treated effluent is defined as 'sewage that has been treated by physical, biological, or chemical process.'" The term does not include graywater.

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NAC 445A.275 prohibits use of treated effluent except pursuant to a permit and management plan approved by the Nevada Division of Environmental Protection (NDEP). The effluent must have received at least secondary treatment, defined by specific limits on dissolved oxygen demand, total suspended solids and pH. Five permissible reuse categories are defined based upon total coliform and fecal coliform limits. Reuse category "A," the most restrictive in terms of coliform concentration, includes uses that can reasonably be anticipated to include some human contact (e.g., spray irrigation of golf courses). Categories "B" through "D" allow increasing levels of coliforms, but successively more restrictive limits

on human access. Category "E" does not limit coliform concentration, but prohibits human access and establishes a buffer zone of 800 feet. In all cases, signage warning the public against contact with effluent is required. Although spray irrigation for agricultural purposes is allowed consistent with the established limitations, pursuant to NAC 445A.2749, this term does not include growing of crops for human consumption. As illustrated by the examples above,

most recycled effluent in Nevada that is not discharged to support in-stream flows or return flow credits is used for irrigation. This may not be the highest or best use for this resource, nor is it necessarily sustainable. Over the long term, irrigating with effluent can have negative consequences, such as accumulation of salt in the soil at concentrations detrimental to plant growth or soil structure, or in some cases, can result in groundwater pollution from excess nutrients. Moreover, due to seasonal variations in irrigation needs, treatment facilities may need to arrange for alternative uses or effluent storage if, like TMWRF, they are required to reduce overall effluent discharges to meet water quality standards of the receiving waters.

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The recent growth of water-thirsty businesses (such as data centers) in Nevada may present new opportunities for effluent use, with the advantages of firm demands and relatively low treatment requirements.⁹ Another alternative effluent use gaining serious consideration in Nevada is "indirect potable reuse" (IRP), where highly-treated reclaimed water is blended into a groundwater aquifer and ultimately used for potable drinking water. NDEP is currently developing revisions to its regulations to allow IRP. The scenarios under consideration include the introduction of water meeting the category "A" standards into groundwater through rapid infiltration basins, and the creation of a new "Class A+" category, which would require treatment to drinking water standards and allow direct injection into groundwater aquifers. Additional disinfection and treatment can be implemented if necessary. IRP pilot projects are currently being planned in the Truckee Meadows area, along with programs to evaluate public acceptance.¹⁰

Selecting the optimum use for reclaimed effluent requires balancing

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treatment costs against the value of the treated commodity, weighing (and understanding) the positive and negative environmental consequence of the choices, and complying with all applicable legal and regulatory constraints and requirements. As Nevada faces the prospect of increasing water demands and increasingly uncertain water supplies, we are fortunate to have a half-century of experience in effluent management to help guide us in meeting the new challenges and embracing the new opportunities created by our changing human and natural environments. **NL**

1. http://www.trpa.org/documents/rseis/3.13%20Public%20Services%20and%20Utilities/3.13_SWEPS%202004.pdf.
2. <https://www.yourtahoeplace.com/public-works/about-public-works/history-of-public-works>.
3. http://www.trpa.org/documents/rseis/3.13%20Public%20Services%20and%20Utilities/3.13_SWEPS%202004.pdf.
4. Southern Nevada Water Authority, 2015 Water Resource Plan, Chapter 3, available at www.snwa.com/assets/pdf/wr_plan.pdf.
5. See generally, Northern Nevada Water Planning Commission, April 6, 2016 Agenda Item 7, Attachment 1.
6. NRS 533.440(3).
7. NRS 533.440(4).
8. NRS 533.440(1).
9. See generally, Northern Nevada Water Planning Commission, April 6, 2016 Agenda Item 7, Attachment 1.
10. See generally, Northern Nevada Water Planning Commission, April 6, 2016 Agenda Item 7, Attachment 2.



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