SOUTHERN NEVADA WATER AUTHORITY
BOARD OF DIRECTORS
REGULAR MEETING
JANUARY 18, 2024
MINUTES

CALL TO ORDER	9:05 a.m.
BOARD MEMBERS PRESENT	Marilyn Kirkpatrick, Chair Dan Stewart, Vice Chair Scott Black (by telephone) Olivia Diaz Jim Gibson Justin Jones Steve Walton
BOARD MEMBERS ABSENT	None
STAFF PRESENT	John Entsminger, Colby Pellegrino, Dave Johnson, Doa Ross, Greg Walch, and Kevin Bethel
OTHERS PRESENT	None

Unless otherwise indicated, all members present voted in the affirmative.

COMMENTS BY THE GENERAL PUBLIC
For full public comment, visit snwa.com/apps/snwa-agendas/index.cfml

Laura McSwain spoke concerning items 3 and 4. She provided a copy of her notes which are attached to these minutes. She said safety and health concerns regarding artificial turf should be considered before providing rebates to the Clark County School District to replace grass fields with artificial turf.

Pete Foley spoke concerning item 3. He said that the potential toxicity of materials in artificial turf should be determined before installing turf in schools. He said other communities in the eastern United States were removing artificial turf due to health concerns while our community was installing artificial turf without resolving those concerns. He said that saving water should not come at the potential detriment to the community's health.

Julie Wignall spoke concerning item 3. She said that artificial turf had been shown to have negative environmental and health impacts on communities. She asked the Board not to approve the agenda item or at least delay the vote until the proposal could be further researched.

Amelia Wignall spoke concerning item 3. She said that the proliferation of artificial turf should be stopped due to the potential negative health impacts caused by artificial turf.

Ed Uehling spoke concerning items 2, 3 and 4. He said that item 2 allows the Clark County Commission to have undue influence over other jurisdictions and should not be approved. He said that there had been information provided regarding the negative environmental impacts of artificial turf, which should persuade the Board to reconsider incentives to install artificial turf at schools.

ITEM NO.

1. ***For Possible Action:*** **Approve agenda with the inclusion of tabled and/or reconsidered items, emergency items and/or deletion of items, and approve the minutes from the regular meeting of November 16, 2023.**

FINAL ACTION: Vice Chair Stewart made a motion to approve the agenda for this meeting, and to approve the minutes from the regular meeting of November 16, 2023. The motion was approved.

CONSENT AGENDA **Items 2 – 8 are routine and can be taken in one motion unless a Director requests that an item be taken separately.**

2. ***For Possible Action:*** **Renew the Amended and Restated Interlocal Contract between the Las Vegas Valley Water District and the Authority, which authorizes the General Manager of the District to serve as the General Manager of the Authority and utilize the staff and resources of the District to manage the affairs of the Authority.**

3. ***For Possible Action:*** **Approve and authorize the General Manager to sign an interlocal agreement between the Clark County School District and the Authority to rebate the conversion of natural turf on baseball, softball, and soccer fields to artificial turf at 46 schools, and authorize the General Manager to sign any ministerial documents necessary to effectuate the transaction in an amount not to exceed $23,500,000.**

   John Entsminger, General Manager, said that the concern of toxin exposure from artificial turf is often linked to rubber infill material that is used beneath the turf to maintain the field's structure and help with shock absorption.

   CCSD's policy is that no natural, recycled, or synthetic rubber material can be used for turf infill at its fields. The turf itself cannot contain any toxic substances. Only a specific, approved list of vetted manufacturers and products may be used on school district properties.

   He also said that the interlocal agreement was put together as a direct response from the School District to accelerate the replacement of natural turf fields due to the poor condition of the current fields, which has led to a large number of youth injuries.

   Chair Kirkpatrick added that CCSD has a bond oversight construction committee that reviews these types of policies, and the committee adopted the CCSD's artificial turf requirements and policies before artificial installations began at schools.

4. ***For Possible Action:*** **Approve and authorize the General Manager to sign an amended and restated interlocal agreement between the Clark County School District and the Authority to rebate the conversion of approximately 6,100,000 square feet of irrigated turf at 97 schools to water-efficient landscaping and authorize the General Manager to sign any ministerial documents necessary to effectuate the transaction in an amount not to exceed $11,700,000.**

5. ***For Possible Action:*** **Approve a resolution authorizing the submission of a grant proposal to the Bureau of Reclamation's WaterSMART Drought Response Program: Drought Resiliency Projects grant program seeking $609,937.**

6. ***For Possible Action:*** **Approve a resolution authorizing the submission of a grant proposal to the Nevada Department of Conservation and Natural Resources' Conserve Nevada Program to seek funding for a wetland and riparian restoration project at the Las Vegas Wash, and, if awarded, authorize the General Manager, or his designee, to enter into any future funding agreement for the project.**

7. ***For Possible Action:*** **Approve a resolution authorizing the submission of a grant proposal to the Nevada Department of Conservation and Natural Resources' Conserve Nevada Program to seek funding for a wetland and riparian restoration project at the Warm Springs Natural Area, and, if awarded, authorize the General Manager, or his designee, to enter into any future funding agreement for the project.**

8. ***For Possible Action:*** **Approve and authorize the General Manager to sign Change Order No. 3 to the contract with Monument Construction to replace two trolley mounted electric hoists at the Authority's Pumping Plant Nos. 1A and 2A, in an amount not to exceed $37,592 and extend the Final Completion date by 341 calendar days.**

FINAL ACTION: Director Walton made a motion to approve staff's recommendations. The motion was approved.

BUSINESS AGENDA

9. ***For Possible Action:*** **Approve and authorize the General Manager to sign a high voltage distribution agreement between Nevada Power Company dba NV Energy and the Authority for the construction of an electrical power service line to serve the future Apex 2920 Pumping Station site as a part of the Garnet Valley Water Transmission System in an amount not to exceed $2,687,528.**

FINAL ACTION: Director Gibson made a motion to approve staff's recommendation. The motion was approved.

10. ***For Possible Action:*** **Approve and authorize the General Manager to sign an electric power transmission service agreement among the Colorado River Commission of Nevada, the Silver State Energy Association, and the Authority, enabling the Silver State Energy Association to utilize electric transmission and distribution facilities and other assets owned, controlled and operated by the Colorado River Commission of Nevada and the Authority for the purpose of delivering energy to Authority loads.**

FINAL ACTION: Director Jones made a motion to approve staff's recommendation. The motion was approved.

11. ***For Possible Action:*** **Award a contract for the installation of water distribution pipeline to Harbor Company, Inc., dba Mountain Cascade of Nevada, in the amount of $11,831,900, authorize a change order contingency amount not to exceed $1,000,000, and authorize the General Manager to sign the construction agreement.**

FINAL ACTION: Director Black made a motion to approve staff's recommendation. The motion was approved.

12. ***For Possible Action:*** **Approve and authorize the General Manager to sign, in substantially the same form as attached hereto, a purchase agreement between Ebara Corporation and the Authority for the supply of pumps and motors for the Sloan and Lamb Pumping Stations Expansion Project in the amount of $12,032,800 and authorize a change order contingency not to exceed $1,200,000.**

FINAL ACTION: Director Gibson made a motion to approve staff's recommendation. The motion was approved.

Items 13 and 17 were taken together.

13. ***For Possible Action:*** **Adopt the 2024 Water Resource Plan.**

17. ***For Information Only:*** **Receive an update from staff on water resources including, but not limited to, drought conditions in the Colorado River Basin, conservation programs and initiatives, activities on the Colorado River, and water resource acquisition and development.**

Colby Pellegrino, Deputy General Manager, Resources, gave a presentation on the 2024 Water Resource Plan, drought conditions and conservation programs. A copy of her presentation is attached to these minutes.

Director Jones asked what the Authority was doing to address heat island effects in Southern Nevada. Ms. Pellegrino said that predominately, heat island effects were driven by hard surfaces, such as roads and roofs. While landscaping cannot overcome the urban heat island effect, it does help in managing it. Shade is the most effective contributor to reducing heat island effects, so trees, canopies and structures that help shade those hardscapes are what really help in reducing heat island effects. Therefore, the Authority has added an incentive of $100 to plant robust-sized trees as part of the Water Smart Landscapes program. The Authority has also funded $500,000 toward tree plantings in areas of the community that have high urban heat island index scores to help emolliate some of the urban heat island effect in the community.

FINAL ACTION: Director Gibson made a motion to adopt the 2024 Water Resource Plan. The motion was approved.

14. ***For Possible Action:*** **Adopt the 2024 Water Budget.**

FINAL ACTION: Director Jones made a motion to approve staff's recommendation. The motion was approved.

15. ***For Possible Action:*** **Approve and authorize a temporary increase to the Water Smart Landscapes Program rebate for single family residential properties from $3.00 per square foot to $5.00 per square foot for the first 10,000 square feet of grass converted to water efficient landscaping and from $1.50 to $3.50 for every square foot thereafter for projects completed during calendar year 2024.**

FINAL ACTION: Vice Chair Stewart made a motion to approve staff's recommendation. The motion was approved.

16. ***For Possible Action:*** **Decrease the Water Smart Landscapes Program rebate for non-functional grass conversions to $2.00 per square foot from $3.00 per square feet for the first 10,000 square feet, and to $1.00 per square foot thereafter, on January 1, 2025.**

FINAL ACTION: Director Walton made a motion to approve staff's recommendation. The motion was approved.

Public Comment

Ed Uehling said that the Authority does not conserve water. He said that the Authority transfers water from residents living in the eastside of Las Vegas to those living in Summerlin and the westside of Las Vegas. He said that the Board serves large corporations and resorts instead of less affluent residents. He said that the efficiency and salaries of the Authority and its staff should be investigated.

Pete Foley said that Southern Nevada has successfully conserved water over the last 20 years, but the community cannot expect to continue to save additional water in the future. He said that the Authority has shifted from providing incentives to implementing penalties, including charges for excessive usage which 1 in 6 residents have received. He said that those charges are not being equitably applied since residents in Las Vegas receive the charges while Henderson residents do not. He said residents need fairness and equity in how these measures are applied.

Julie Wignall said that new types of artificial turf, which may not be made with toxic chemicals, can still have detrimental impacts to air quality as the materials age and breakdown. She said that playing surfaces at schools would not be shaded, and that one university study showed that artificial turf can be 37 degrees hotter than asphalt thereby also contributing to the urban heat island effect.

Alex Kleinman said he was concerned that the increased heat from artificial turf playing surfaces at schools would have a negative impact on students.

Laura McSwain said that the community should not be placing water conservation over air quality. She said that certain sections of the community are being targeted while other areas can continue to enjoy trees and grass. She said that grass is a component in helping combat heat, and that measures should be applied equitably across the Valley not just in the City of Las Vegas.

Adjournment

There being no further business to come before the Board, the meeting adjourned at 10:02 a.m.

Copies of all original agenda items and minutes, including all attachments, are on file in the General Manager's office at the Las Vegas Valley Water District, 1001 South Valley View Boulevard, Las Vegas, Nevada.

Submitted for Public Comment by Laura McSwain - SNWA - January 18, 2024 Meeting

Water Fairness
COALITION

SNWA – 01/18/2024 Meeting/ Agenda items #3 and #4 – Public Comment Notes

We are requesting an ABEYANCE until such time that material standards for the use of artificial turf are established by Clark County and municipalities as is a standard practice for materials used in construction. An example exists within agenda item #12 where the contractor being hired to provide pumps is required to submit a submittal list and provide information on safety and health requirements; documents that will be scrutinized to determine whether they meet an appropriate standard.

SNWA has provided a list of trees allowed in their conversion program, this should extend to artificial substitutes for natural turf throughout Clark County.

Studies show that there are serious problems with materials used in artificial turf that contain "Forever Chemicals". Documents were provided at the last meeting and were saved as back-up as part of the minutes. (Attached is an additional publication for your review) They contribute to heat stroke, increased heat island, burns and abrasions, and are carcinogenic. The EPA has only recently taken steps to test for PFAS. They are found in water, air, fish, and soil. The EPA acknowledges that PFAS chemicals are a known carcinogen which can interfere with hormones, reproduction, immunity and cause developmental delays in children. Communities around the country are moving towards outlawing synthetic turf due to PFAS concerns. ABSENT a standard that identifies turf that does not contain these chemicals, and will be designed in such a way that it will not contribute to our heat island, (these materials rival the temperature of asphalt) further use of products that could potentially insert these toxins into our community should cease to be subsidized by taxpayer dollars, at the very least, and ethically, should be disallowed across the board relative to their use as an acceptable substitute for natural turf.

Boston outlawed the installation of artificial turf in April of 2022 out of concerns for its toxicity with arguably a much less harsh exposure to high temperatures and sunlight than

what exists in Southern Nevada. Artificial materials will break down much faster, saturating our soil, becoming airborne, and ultimately ending up in our water supply.

The beauty of capitalism is the creative environment that allows for the development of the needs of humanity, the downside is that absent ethical leadership the community is at risk of products that put them at risk. It is within your power to inspire greater creativity by setting standards that DO NO HARM.

If you are unwilling to create a standard for materials our children and pets will play on, why have any standards at all.

Laura McSwain

President

Water Fairness Coalition

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waterfairnesscoalition.com

Att: Letter from The Children's Environmental Health Center of the Icahn School of Medicine at Mount Sinai Strongly Discourages the Installation of Artificial Turf.

Sarah Evans, PhD, MPH

Letters to the Editor

The Children's Environmental Health Center of the Icahn School of Medicine at Mount Sinai Strongly Discourages the Installation of Artificial Turf

Baseball and Bat at Home Plate
shutterstock/David Lee

By Sarah Evans, PhD, MPH

Published April 15, 2023 at 8:28 AM
Last Updated April 16, 2023 at 1:33 AM

To the Scotch Plains Town Council:

The Children's Environmental Health Center of the Icahn School of Medicine at Mount Sinai strongly discourages the installation of artificial turf playing surfaces and fields due to the uncertainties surrounding the safety of these products and the potential for dangerous heat and chemical exposures.

As pediatricians, epidemiologists, and laboratory scientists, recipients of numerous research grants from the National Institute of Health, and host to one of 10 nationally funded Pediatric Environmental Health Specialty Units, we receive frequent inquiries from communities regarding the wide-scale use of artificial turf surfaces on school grounds and in park properties. This led us to conduct a review of the risks and benefits of artificial playing surfaces, during which we found significant gaps in the evidence supporting the safety of artificial turf products. Our findings are summarized below and in our online resources accessible at https://sinaiexposomics.org/artificial-turf/ and

https://www.healthyplayingsurfaces.org/ and via webinar on the Environmental Health Impacts of Synthetic Turf and Safer Alternatives.[1]

Studies to assess the safety of artificial turf are ongoing and inconclusive. The preponderance of existing data on artificial turf pertains to recycled tire infill, or "crumb rubber", which contains known carcinogens and neurotoxins. Concerns about the safety of recycled rubber playing surfaces have been raised by the federal government, based on a lack of comprehensive studies. In 2016, the United States Environmental Protection Agency (USEPA) announced the launch of an investigation into the safety of crumb rubber in partnership with the Centers for Disease Control and Prevention and the Consumer Product Safety Commission, stating "existing studies do not comprehensively evaluate the concerns about health risks from exposure to tire crumb".[2] In July 2019, USEPA published a portion of their findings from these studies, which confirmed the presence of chemicals linked to cancer, nervous system toxicity, and impaired reproductive development such as polycyclic aromatic hydrocarbons, benzene, lead, and phthalates.[3] The authors emphasize that the reported findings do not constitute a risk assessment and cannot be interpreted as evidence of safety.

Questions remain about the safety of alternatives to crumb rubber. Extremely few studies have examined the composition and safety of alternative infills including those purported to be "natural". A 2016 USEPA report found research supporting the safety of alternative infills such as EPDM, TPE, and plant-based infills "lacking or limited". [4] Recent studies including one conducted by Mount Sinai and the Toxic Use Reduction Institute (TURI) found the presence of known carcinogens and neurotoxins including polycyclic aromatic hydrocarbons (PAHs), lead, zinc, and black carbon in almost all alternative infill materials examined.[5,6]

Adequate safety assessment requires biomonitoring to determine chemical exposures under realistic play conditions. Importantly, no studies have addressed children's exposure to chemicals from artificial turf surfaces via oral and dermal routes, the two most likely ways that turf chemicals enter the body during play. These studies are underway at USEPA; until findings are available and conclusively demonstrate the safety of artificial surfaces, we recommend a moratorium on the use of these materials where children play.

Undisclosed chemicals of concern are present in plastic grass blades and turf pads and matting. A recent study identified per- and poly-fluoroalkyl substances (PFAS, aka "Teflon chemicals"), a class of more than 5000 chemicals linked to numerous health problems including cancer, nervous system toxicity, immune dysfunction, thyroid, and cardiovascular disease in the plastic grass blades and backing used on artificial turf fields and in adjacent bodies of water.[7,8,9,10] PFAS are considered "forever chemicals" because they persist in the body and the environment and are widespread drinking water contaminants. These findings raise concerns about PFAS groundwater and environmental contamination from turf field run off and emphasize the need for further examination of exposures that may occur from turf components other than infill.

New Jersey has some of the most widespread PFAS contamination in the US, with an estimated more than 500,000 residents drinking contaminated tap water. [11] On March 14, 2023, USEPA proposed National Primary Drinking Water Regulations for six PFAS, dramatically lowering the recommended levels of PFOA and PFOS and citing scientific evidence of health impacts at drinking water levels close to zero.[12] These guidelines also include advisories for newer PFAS chemicals PFNA, GenX, PFBS, and PFHxS. The federal government has also taken steps to designate PFAS hazardous substances and to restrict their use in certain products.[13,14] To allow the installation of PFAS-containing surfaces would be extremely short-sighted as further restrictions and regulations on these chemicals are likely to come.

Risk of heat injury is elevated on artificial turf. On hot summer days, temperatures of over 160 degrees Fahrenheit have been recorded on recycled rubber play surfaces.[15] All artificial turf surfaces examined have been shown to have higher surface temperature and air temperature at head height compared with natural grass, regardless of infill type. [16] Vigorous play in these conditions conveys a very real risk of burns, dehydration, heat stress,

or heat stroke. Children are less able to regulate their body temperature than adults, making them particularly susceptible to conditions of extreme heat.[17,18]

High temperatures and risk of heat illness lead to a loss of field usage even on hot days, which have become increasingly common due to climate change. Like asphalt, artificial turf fields contribute to the "heat island effect", in which communities close to the fields become hotter than surrounding areas.[19] Artificial turf contributes to the climate crisis throughout its lifecycle, requiring fossil fuels during production and emitting greenhouse gases during use and disposal.[20]

Children are uniquely vulnerable to harmful exposures from artificial turf surfaces because of their unique physiology and behaviors, rapidly developing organ systems, and immature detoxification mechanisms.[21] Children may be exposed to artificial turf chemicals through ingestion, inhalation, skin absorption, and open wounds or broken skin. Children and young athletes breathe faster than adults, putting them at greater risk for inhalation of chemicals that off-gas from turf fields. Small children put their hands and other objects in their mouths, increasing the risk of exposure via ingestion. In addition, youth have a higher surface area to body mass ratio, produce more body heat per unit mass, and sweat less than adults, all factors that increase susceptibility to heat injuries that have been observed on artificial turf fields.[14] Vulnerability to turf chemicals persists through the teen years as the reproductive and nervous systems continue to develop beyond the first two decades of life. Lastly, children have more future years of life over which chronic diseases linked to the chemicals in turf develop.

Chemical hazards escape from artificial turf surfaces to the environment. A number of the chemical components of artificial turf surfaces are soluble in water. When rain and snow fall on synthetic fields, these materials can leach from the surface to contaminate ground water and soil.[22] Recent studies find PFAS in wetlands adjacent to artificial turf suggesting that these chemicals may migrate from field components to contaminate the environment.[7] Runoff from turf fields also has the potential to release microplastics into the environment. Microplastic contamination is found in drinking water and wildlife throughout the globe and in human blood, lungs, and placenta.[23,24,25]

Turf materials are transported home. Over time, play surfaces break down into smaller pieces and fine particles that may be picked up on children's shoes, clothing, and skin. Infill and grass blades accumulate in shoes and stick to bodies of players, bringing these materials into cars and homes. Thus, exposure can continue for many hours beyond the time that a child spends in the play area. Daily outdoor play and physical activity are essential components of a healthy childhood. Safe play areas are an essential component of any school environment. While it is important to maximize safe play time, we caution against the use of materials which carry risks of chemical and heat exposure and have not been comprehensively tested for safety. For the reasons outlined above, the Children's Environmental Health Center recommends natural grass fields and playing surfaces as the safest option for areas where children play. For case studies that include data on cost, labor, and play time on organically managed natural grass athletic fields see https://www.turi.org/TURI_Publications/Case_Studies/Organic_Grass_Playing_Fields.

Sarah Evans, PhD, MPH
Assistant Professor
Children's Environmental Health Center
Department of Environmental Medicine and Public Health Icahn School of Medicine at Mount Sinai

1 https://www.healthandenvironment.org/webinars/96595
2 http://www.epa.gov/sites/production/files/2016-02/documents/us_federal_research_action_plan_tirecrumb_final_0.pdf
3 https://www.epa.gov/sites/production/files/2019-08/documents/synthetic_turf_field_recycled_tire_crumb_rubber_research_under_the_federal_research_action_plan_final_report_part_1_volume_1.pdf
4 https://www.epa.gov/chemical-research/december-2016-status-report-federal-research-action-plan-recycled-tire-crumb

5 Massey et al. New Solut. 2020 May;30(1):10-26. doi: 10.1177/1048291120906206.
6 Armada et al. Sci Total Environ. 2022 Mar 15;812:152542.
7 https://www.atsdr.cdc.gov/pfas/PFAS-health-effects.html
8 https://www.bostonglobe.com/metro/2019/10/09/toxic-chemicals-found-blades-artificial-turf/1mlVxXjzCAqRahwgXtfy6K/story.html
9 https://sinaiexposomics.org/pfas-chemicals-and-your-health/
10 https://www.turi.org/TURI_Publications/TURI_Chemical_Fact_Sheets/PFAS_in_Artificial_Turf_Carpet
11 https://www.northjersey.com/story/news/environment/2022/01/25/nj-drinking-water-contaminated- chemicals-pfas-pfoa-pfos/9209219002/
12 https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas
13 https://www.epa.gov/superfund/proposed-designation-perfluorooctanoic-acid-pfoa-and- perfluorooctanesulfonic-acid-pfos
14 https://www.epa.gov/newsreleases/epa-proposes-stop-authorized-use-certain-pfas-pesticide-products

15 Devitt, D.A., M.H. Young, M. Baghzouz, and B.M. Bird. 2007. Journal of Turfgrass and Sports Surface Science. 83:68-82

16 https://plantscience.psu.edu/research/centers/ssrc/sportsturf-scoop/temperature
17 https://www.aap.org/en-us/advocacy-and-policy/aap-health-initiatives/Children-and-Disasters/Pages/Extreme-Temperatures-Heat-and-Cold.aspx

18 Falk B, Dotan R. Appl Physiol Nutr Metab. 2008 Apr;33(2):420-7. doi: 10.1139/H07-185.

19 Luz Claudio. Environmental Health Perspectives. Vol 116. No 3. March 2008.
20 https://www.nrpa.org/parks-recreation-magazine/2019/may/synthetic-sports-fields-and-the-heat-island-effect/ 21 Bearer, CF. Neurotoxicology 21:925-934, 2000.
22 Connecticut Department of Environmental Protection (2010) Artificial Turf Study: Leachate and Stormwater Characteristics. http://www.ct.gov/deep/lib/deep/artificialturf/dep_artificial_turf_report.pdf 23Amato-Lourenço et al. Journal of Hazardous Materials. Vol. 416, 15 August 2021, 126124. doi: 10.1016/j.jhazmat.2021.126124
24 Ragusa et al. Environ Int. 2021 Jan;146:106274. doi: 10.1016/j.envint.2020.106274.
25 Leslie et al. Environment International. Vol. 163, May 2022, 107199. 10.1016/j.envint.2022.107199

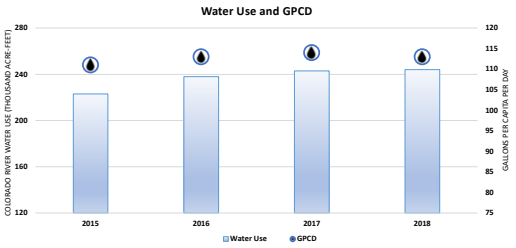
1

WATER CONSERVATION UPDATE

Severe and sustained drought conditions continue to impact critical storage reserves in the Colorado River Basin

2

WATER CONSERVATION UPDATE

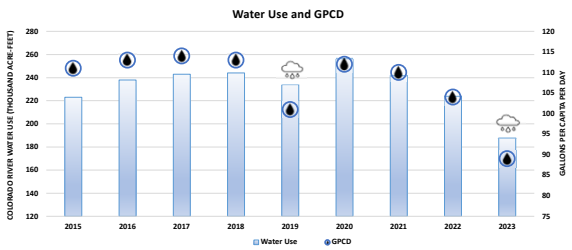


3

WATER CONSERVATION – A COMMUNITY EFFORT

4

WATER CONSERVATION UPDATE



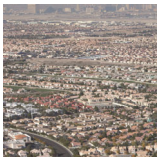
5

WATER RESOURCE PLAN

The SNWA reviews its water resource plan annually.

Plan Inputs:

- Population forecast from the University of Nevada, Las Vegas Center for Business and Economic Research (CBER)
- Hydrologic modeling from the U.S. Bureau of Reclamation and other hydrology assumptions
- Conservation progress (actual and projected)

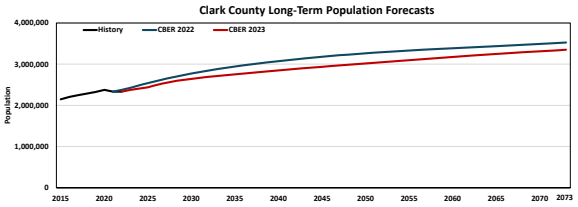


6

SOUTHERN NEVADA WATER AUTHORITY

WATER RESOURCE PLAN

Southern Nevada's population is projected to reach nearly 3.4 million by 2073.

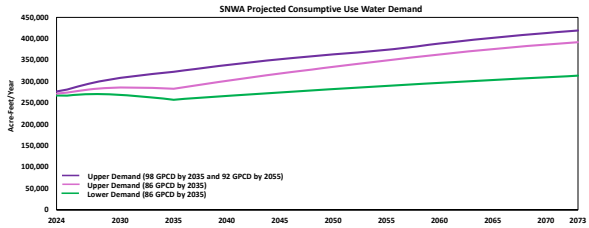


7

SOUTHERN NEVADA WATER AUTHORITY

WATER RESOURCE PLAN

The SNWA considers a range of water demands.



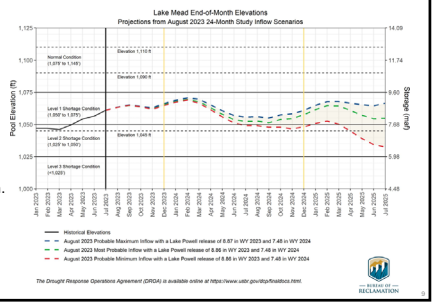
8

SOUTHERN NEVADA WATER AUTHORITY

WATER RESOURCE PLAN

August 24-Month Study:

- Lake Mead water levels are projected to decline.
- A Tier 1 shortage is in effect for 2024.
- More significant shortages are anticipated over the longer-term planning horizon.

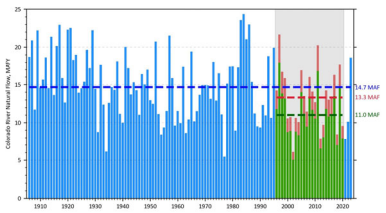


9

SOUTHERN NEVADA WATER AUTHORITY

WATER RESOURCE PLAN

The SNWA considers variable hydrology that brackets a range of possible Colorado River conditions.



The plan assumes Colorado River supply reductions up to 40,000 afy.

10

The SNWA uses a scenario-based planning approach that helps to inform water resource planning and development efforts.

It demonstrates how the SNWA plans to meet future needs, even if conditions change significantly over time.

11

SOUTHERN NEVADA WATER AUTHORITY

WATER RESOURCE PLAN

SNWA planning scenarios consider two water supply conditions and three water demand projections.

SUPPLY INPUTS	DEMAND INPUTS
13.3 MAFY Inflow	Lower Demand 86 GPCD in 2035
11.0 MAFY Inflow	Upper Demand 86 GPCD in 2035
	Upper Demand 98 GPCD in 2035

12

SOUTHERN NEVADA WATER AUTHORITY

WATER RESOURCE PLAN

The plan also considers the timing and volume of resources needed to meet projected demands.

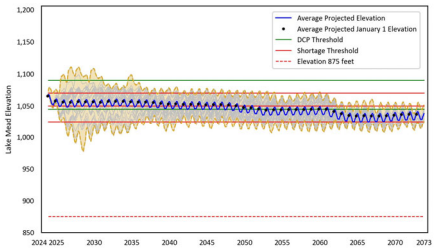
SNWA Water Resource Portfolio

Permanent Resources	Temporary Resources	Future Resources
Colorado River (SNWA)	**Southern Nevada Groundwater Bank**	**Transfers and Exchanges – Permanent Future Supply** Desalination & Colorado River Partnerships
Nevada Unused Colorado River (Non-SNWA)	**Interstate Bank** (Arizona)	**Transfers and Exchanges –** Virgin River/Colorado River Augmentation
Tributary Conservation ICS	**Interstate Bank** (California)	**Garnet & Hidden Valleys Groundwater**
Las Vegas Valley Groundwater Rights	**Intentionally Created Surplus** (Lake Mead storage)	**Tikaboo & Three Lakes Valley Groundwater**

13

SOUTHERN NEVADA WATER AUTHORITY

WATER RESOURCE PLAN



13.3 MAFY Inflow

Hydrology is more optimistic than recent conditions.

Over the most recent 24-year period (2000 – 2023), Colorado River inflows averaged approximately 12.5 MAFY.

Source: 2024 SNWA Water Resource Plan

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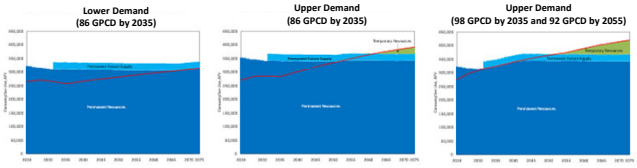
SOUTHERN NEVADA WATER AUTHORITY

WATER RESOURCE PLAN

13.3 MAFY Inflow Scenarios



Source: 2024 SNWA Water Resource Plan

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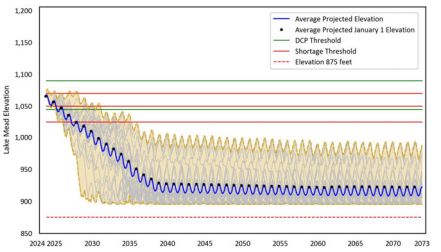
SOUTHERN NEVADA WATER AUTHORITY

WATER RESOURCE PLAN



11.0 MAFY Inflow

Hydrology is less optimistic than current conditions and represents a downward trend that is expected to continue in future years.

Since 2000, there have been 11 years with inflow below 11.0 MAFY.

Source: 2024 SNWA Water Resource Plan

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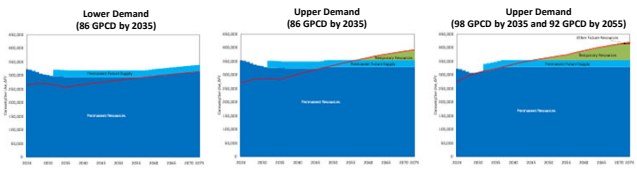
SOUTHERN NEVADA WATER AUTHORITY

WATER RESOURCE PLAN

11.0 MAFY Inflow Scenarios



Source: 2024 SNWA Water Resource Plan

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UPDATE ON COLORADO RIVER CONDITIONS

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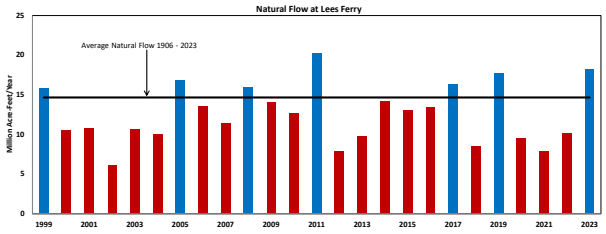
COLORADO RIVER CONDITIONS



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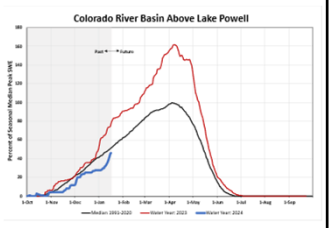
CLIMATE CONDITIONS
UPPER BASIN SNOW CONDITIONS

Water Supply
- WY 2023 Peak Snowpack: 161% of seasonal median
  (Peaked on April 7, 2023)
- WY 2024 Precipitation to Date: 89%
- Current Basin Snowpack: 89%
  (As of January 16, 2024)

Inflow to Lake Powell
- Preliminary observed WY 2023: 140% of average
- Observed Apr-Jul 2023: 166% of average
- Forecasted WY 2024: 72%
- Forecasted Apr-Jul 2024: 66%
  (As of January 16, 2024)



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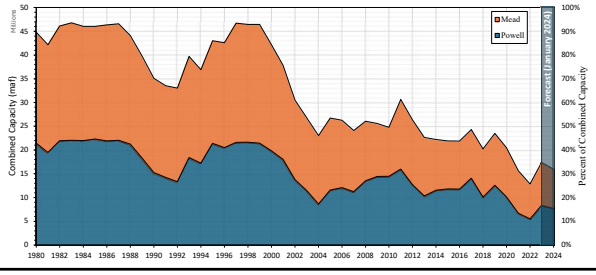
RESERVOIR STATUS
Combined End-of-Calendar-Year Storage



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WATER USE UPDATE

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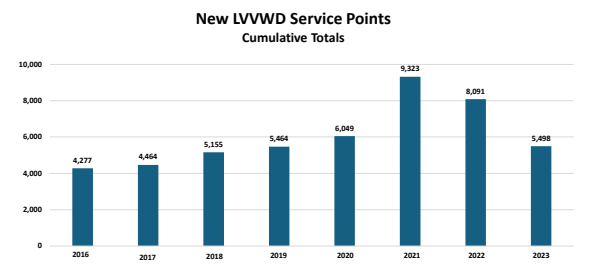
NEW SERVICE POINTS (LVVWD)



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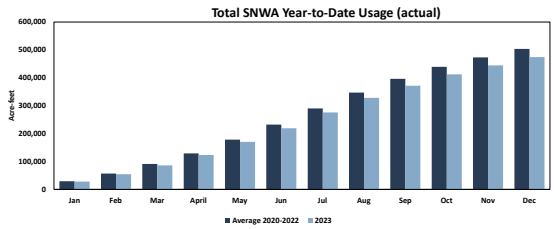
SNWA WATER USE

Total SNWA water use through December was lower than 2022 and the 3-year average.



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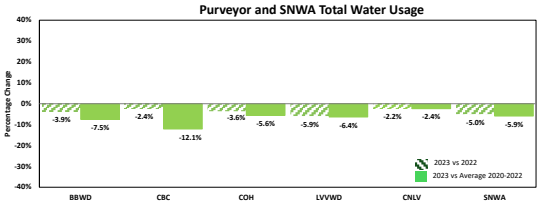
SNWA WATER USE

January-December 2023 SNWA water use was lower than 2022 and the 3-year average.



* The change in Henderson and SNWA water usage would have been lower without the addition of service to Black Mountain Industrial Complex, which was previously served by Basic Water Company.

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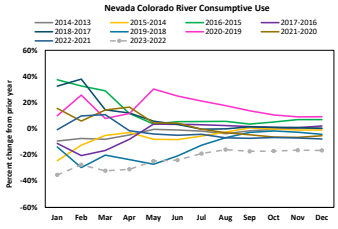
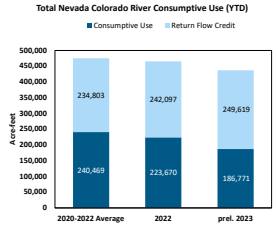
NEVADA COLORADO RIVER USE

January-December 2023 Colorado River consumptive use was well below 2022 and the 3-year average.





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CONSERVATION BENCHMARKS

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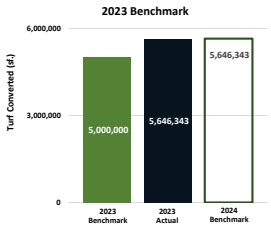
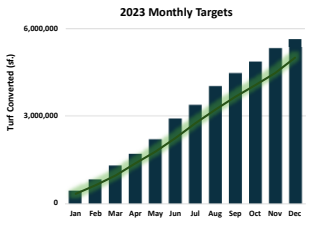
WATER SMART LANDSCAPES

Residents converted more than 5.6 million square feet of turf in 2023, saving an estimated 315 million gallons of water annually.





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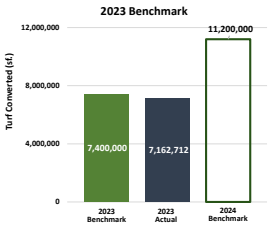
WATER SMART LANDSCAPES

Non-SFR property owners converted more than 7.1 million square feet of turf in 2023, saving an estimated 399.6 million gallons of water annually.



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CONVERSION HIGHLIGHTS

Turf Conversion:

- South Shore at Lake Las Vegas, 68,469 sf. converted
- Tuscano Condos, 51,018 sf. converted
- Cabana Club Apartments, 168,904 sf. converted.

Wet to Dry Cooling Conversion:

- City of Henderson, 4.6 million gallons saved annually

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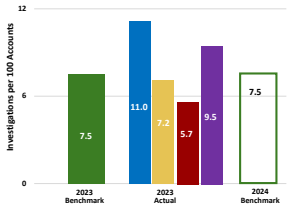
SOUTHERN NEVADA WATER AUTHORITY

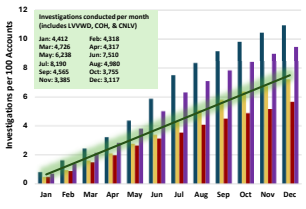
WATER USE COMPLIANCE

In 2023 water use compliance investigations exceeded the benchmark, achieving 9.50 per 100 accounts.

2023 Benchmark



2023 Monthly Targets



Investigations conducted per month (includes LVVWD, COH, & CNLV)

Jan: 4,412	Feb: 4,318
Mar: 4,726	Apr: 4,317
May: 6,238	Jun: 7,510
Jul: 8,190	Aug: 4,980
Sep: 4,565	Oct: 3,755
Nov: 3,385	Dec: 3,117

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