



# Regional Water Quality Plan

## **ACCOMPLISHMENTS** **2014**

LAS VEGAS VALLEY WATERSHED ADVISORY COMMITTEE  
City of Henderson | City of Las Vegas | City of North Las Vegas  
Clark County | Clark County Regional Flood Control District  
Las Vegas Valley Water District | Southern Nevada Water Authority



## Regional Water Quality Plan

# 2014 Accomplishments

In January 2009, the Las Vegas Valley Watershed Advisory Committee (LVVWAC) adopted a Regional Water Quality Plan to help meet its mission to:

*Protect, preserve and enhance the quality and quantity of water resources in the Las Vegas Valley watershed and to sustain economic well-being and protect the environment for present and future generations.*

In December 2012, the LVVWAC approved a Strategy Document that further defines its goals and summarizes actions needed to fulfill the Regional Water Quality Plan.

Each LVVWAC member agency has individual responsibilities that contribute to the management of the Las Vegas Valley watershed. Following is a summary of LVVWAC's collaborative accomplishments for 2014.





## GOAL ONE

### **Manage the Las Vegas Valley Watershed to help protect Lake Mead as a source of water for Southern Nevada and downstream users**

The Las Vegas Valley accesses Nevada's Colorado River allocation through existing facilities at Lake Mead. The Muddy River, Virgin River and the Las Vegas Wash also contribute inflows to Lake Mead. In 2014, LVVWAC member agencies monitored and responded to upstream inflows to Lake Mead through the following actions:

- Received grant funding from the Bureau of Reclamation that supported the Estuary and Lake Computer Model (ELCOM), a three-dimensional model of Lake Mead. These model runs are used to better understand the effects of low oxygen concentrations on sediment nutrient flux and how this potentially impacts Lake Mead's future water quality;
- Continued to utilize the 2012 Lake Mead Monitoring Plan and optimized resources by sharing staff and equipment to accomplish the goals of the Plan;
- Continued to implement the Las Vegas Wash Surface Water Quality Monitoring and Assessment Plan;
- Conducted water-quality sampling and analysis in Lake Mead, Las Vegas Wash, Muddy River, Virgin River, and Colorado River above Lake Mead and below Hoover Dam; and
- Leveraged the Lower Colorado Water Quality Database — a database utilized by agencies in the lower Colorado River region to facilitate data sharing.

LVVWAC accomplishments relative to managing non-point sources from the Las Vegas Valley include:

- Completed construction of the Archery and Silver Bowl Weirs (18 permanent erosion control structures have been completed);
- Continued construction of the Three Kids Weir in the Las Vegas Wash;
- Revegetated 21 acres along the Las Vegas Wash to armor the banks against erosion and limit sediment and contaminant movement downstream to Lake Mead;
- Supported ongoing conservation initiatives in the Las Vegas Valley;
- Obtained Nevada Division of Environmental Protection (NDEP) approval for two programs intended to address surface water quality impacts posed by new development and significant redevelopment (NDSR). Development of these programs satisfied a commitment of the Storm Water Management Plan (SWMP) adopted in 2012 as required by the 2010 National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit for the Las Vegas Valley. NDSR design requirements for 1) parking lots larger than one acre and; 2) water quality features in regional detention basins were codified in an amendment to the Hydrologic Criteria and Drainage Design Manual and thus added to the comprehensive suite of existing measures detailed in the SWMP. Modifications to the outlet structure for Angel Park North Detention Basin to install water quality features were completed in September 2014. Retrofits to add water

quality features for Equestrian and Pioneer Detention Basins began construction in 2014 with anticipated completion in 2015;

- Continued the execution of the Construction and Industrial Site Storm Water Inspection Program to fulfill requirements of the SWMP;
- Completed all monitoring required for the MS4 Permit and NPDES Wastewater Discharge Permits, and reported results to the State of Nevada;
- Continued participation in NDEP's Lake Mead Water Quality Forum and two of the forum's sub-committees (Selenium Sub-Committee and the Lake Mead Ecosystem Monitoring Workgroup);
- Continued participation in the Las Vegas Wash Coordination Committee and three of the committee's sub-committees (Operations Study Team, Administrative Study Team, and Research and Environmental Monitoring Study Team);
- Continued wastewater pre-treatment programs to monitor and prevent contaminants and industrial wastes from entering the wastewater collection system;
- Transferred control of the City of North Las Vegas' Pretreatment Program to the Water Reclamation Facility to improve effectiveness; and
- Installed two pet waste disposal bag dispensers at the Clark County Wetlands Park Wells and Pabco trailheads to keep pet waste out of the Las Vegas Wash.

The Clark County Water Reclamation District (CCWRD) and the cities of Henderson, Las Vegas and North Las Vegas operate and maintain the community's wastewater treatment facilities. These facilities discharge highly-treated reclaimed water to Lake Mead via the Las Vegas

Wash. Additionally, many of these facilities provide reclaimed water for direct non-potable reuse at area parks, golf courses, and industries. LVVWAC member agencies managed, coordinated and optimized water reclamation facilities by:

- Continued operation of state-of-the-art membrane bio-reactor treatment plant by the City of North Las Vegas and City of Henderson;
- Completed various rehabilitation and optimization efforts at numerous biological nutrient removal plants, which resulted in increased energy efficiency, improved biological phosphorus removal, reduced chemical utilization, and decreased sludge hauling costs;
- Delivered reclaimed water from the Southwest Water Reclamation Facility to golf courses in the City of Henderson;
- Began operation of a state-of-the-art membrane-filtration/ozone-disinfection project at the CCWRD;
- Completed conversion of older treatment trains at the City of Las Vegas Water Pollution Control Facility from nitrification-only to biological nutrient removal;
- Implemented a comprehensive system-wide cleaning and inspection program for the wastewater collection system to minimize Sanitary Sewer Overflows;
- Reduced the number of Sanitary Sewer Overflows to below the EPA benchmark for well operated sanitary sewer systems of two overflows per year per 100 miles of sanitary sewer; and
- Participated in water and wastewater treatment optimization studies.



## GOAL TWO

### Meet or surpass federal, state and local standards and regulations

Key water quality laws and regulations, such as the Clean Water Act, the Safe Drinking Water Act and the Nevada Administrative Code are in place to safeguard local and regional water sources. While Southern Nevada's water treatment facilities are capable of addressing many source water quality challenges, proactive management of the Las Vegas Valley watershed remains key to protecting the region's overall water resources. To protect Lake Mead, the Las Vegas Wash and associated tributaries, LVVWAC member agencies:

- Continued year-round phosphorus removal at wastewater treatment facilities to meet the 334 pound-per-day Waste Load Allocation for total phosphorus surpassing permit requirements, which only require phosphorus removal between March 1 and October 31;
- Continued year-round ammonia removal;
- Developed and exceeded internal goals for minimizing Sanitary Sewer Overflows;
- Reported storm water monitoring results to NDEP and complied with storm water quality requirements;
- Executed wet weather monitoring programs;
- Performed treatment studies that examined the removal of unregulated contaminants, such as endocrine-disrupting compounds in wastewater, which provided guidance on control strategies and the minimization of these contaminants in effluent discharges to the Las Vegas Wash and Lake Mead;
- The cities of Henderson and Las Vegas earned the National Association of Clean

Water Agencies (NACWA) Platinum Peak Performance Award for years of consecutive 100 percent NPDES permit compliance. The City of Las Vegas reached a milestone of 15 consecutive years of compliance; and

- CCWRD earned the NACWA Gold Peak Performance Award for 100 percent NPDES permit compliance at both the Laughlin and Flamingo Water Resource Centers.

Ensuring that Southern Nevada's water meets or surpasses federal, state and local regulations is of key importance to LVVWAC's member agencies. As such, LVVWAC is proud to report that:

- Southern Nevada's drinking water quality continues to meet or surpass state and federal drinking-water regulations;
- Weekly monitoring of Lake Mead was conducted to determine the impacts of the inflows (Las Vegas Wash, Virgin River, Muddy River and Colorado River) on the Southern Nevada Water Authority (SNWA) intakes;
- Quarterly endocrine disrupting compound monitoring was conducted in the Las Vegas Wash, Lake Mead and below Hoover Dam. The effluent of CCWRD was also sampled; and
- Construction continued on a new intake tunnel in Lake Mead. This new intake will provide better water quality and ensure reliability of the resource despite declining lake elevations. Intake construction is scheduled to be completed in 2015.



## GOAL THREE

### **Preserve and enhance the natural, cultural, historic and recreational values of the watershed.**

The Las Vegas Valley watershed includes the Lake Mead National Recreation Area and the Las Vegas Wash. These water sources and open lands present opportunities for recreation and support important environmental resources including wildlife and habitat. The following efforts were made by LVVWAC member agencies to provide for recreation and to manage wildlife and habitats:

- Continued the implementation of the Las Vegas Wash Wildlife Management Plan;
- Conducted monthly aquatic bird counts, surveyed for the federally endangered Southwestern Willow Flycatcher and Yuma Clapper Rail, and surveyed for the Yellow-Billed Cuckoo now listed as threatened at the Las Vegas Wash;
- Provided and managed recreational opportunities in the Clark County Wetlands Park and Henderson Bird Viewing Preserve that are compatible with native plants and wildlife;
- Continued general invertebrate inventory on the Las Vegas Wash, identifying more than 20 new species;
- Conducted tamarisk-feeding invertebrate survey, documenting the first widespread defoliation by northern tamarisk beetle larvae;
- Planted more than 250 native plants, trees and shrubs to improve habitat near the Clark County Wetlands Park Nature Center;
- Continued execution of environmental education programs for the public at the Wetlands Park;

- Removed approximately two acres of tamarisk and revegetated two additional acres at the Wetlands Park; and
- Installed an interpretive panel at the Clark County Wetlands Park to discuss the benefits of fire in natural areas.

LVVWAC supports National Park Service missions to provide for the enjoyment of scenery, natural and historic objects and wildlife in a manner that will leave such resources unimpaired for future generations. LVVWAC member agencies made the following progress in minimizing impacts to cultural and historic values:

- Continued to implement the Programmatic Agreement for the Clark County Wetlands Park between the Bureau of Reclamation, Army Corp of Engineers, SNWA, Clark County, the Nevada State Historic Preservation Office and the Advisory Council on Historic Preservation to expedite the construction of erosion-control structures in the Las Vegas Wash;
- Continued to support the Cultural Resources Coordinating Committee;
- Minimized impacts to cultural and historical features by managing recreational activities at the Las Vegas Wash;
- Completed compliance process for upcoming weir construction projects; and
- Planned remote sensing project for Larder and Scorpion Knoll sites.

LWWAC's member agencies also took the following measures to prevent and control invasive species:

- Removed more than 30 acres of tamarisk at the Las Vegas Wash and revegetated the cleared areas with native plants;
- Removed two acres of tamarisk at the Clark County Wetlands Park for revegetation in 2014;
- Participated in meetings and symposiums regarding quagga mussels; and
- Monitored and evaluated quagga mussel progression in Lake Mead.

LWWAC actively worked to support recreational uses and the health of fisheries and other water-dependent wildlife by:

- Managed nutrient inputs from wastewater treatment plants to support a healthy fishery in Lake Mead;
- Completed a biodynamic model for the Las Vegas Wash using macroinvertebrates, sediment, coarse particulate organic matter, and water to determine how selenium is incorporated into the food web;
- Monitored selenium concentrations in Las Vegas Wash and its tributaries to establish background concentrations and determine sources; and
- Ensured that wastewater quality met the water-quality standards as determined by NDEP for recreation.



*Las Vegas Wash Green Up Event*



## GOAL FOUR

### Sustain and coordinate water resources for future generations

All of LVVWAC's member agencies addressed regional water quality planning and management efforts by working collectively and through participation in various regional committees and groups, such as the Las Vegas Wash Coordination Committee, the Lake Mead Water Quality Forum, the Lake Mead Ecosystem Monitoring Workgroup and the Stormwater Quality Management Committee. In 2014, significant strides were made to improve the structural integrity of the Las Vegas Wash and prevent further erosion. Accomplishments include:

- Completed the Archery and Silver Bowl Weirs;
- Continued construction of the Three Kids Weir;
- Completed design of the Sunrise Mountain and Historic Lateral Weirs;
- Installed approximately 6,000 feet of bank protection; and
- Continued design of Wash improvements on CCWRD property, construction to begin in 2015.

To optimize the use of limited water resources:

- Henderson's Southwest Water Reclamation Facility continued operation, providing reclaimed water to the southern part of the Las Vegas Valley;
- Southern Nevada Regional Water Recycling Study recommendations were implemented;
- Henderson, Las Vegas, North Las Vegas and CCWRD reclaimed 100 percent of their

highly treated reclaimed water effluent, either by returning it to Lake Mead or distributing it to golf courses, parks, industries, and other customers throughout the valley; and

- Reclaimed water was efficiently utilized at the Clark County Wetlands Park and Henderson Bird Viewing Preserve to support plant communities and wildlife habitats.

Water and wastewater treatment and delivery processes require significant energy resources, which link the need to conserve both water and energy and develop renewable energy resources. LVVWAC member agencies have undertaken a number of renewable energy projects that reduce dependence on non-renewable and less-efficient energy sources. Progress highlights include:

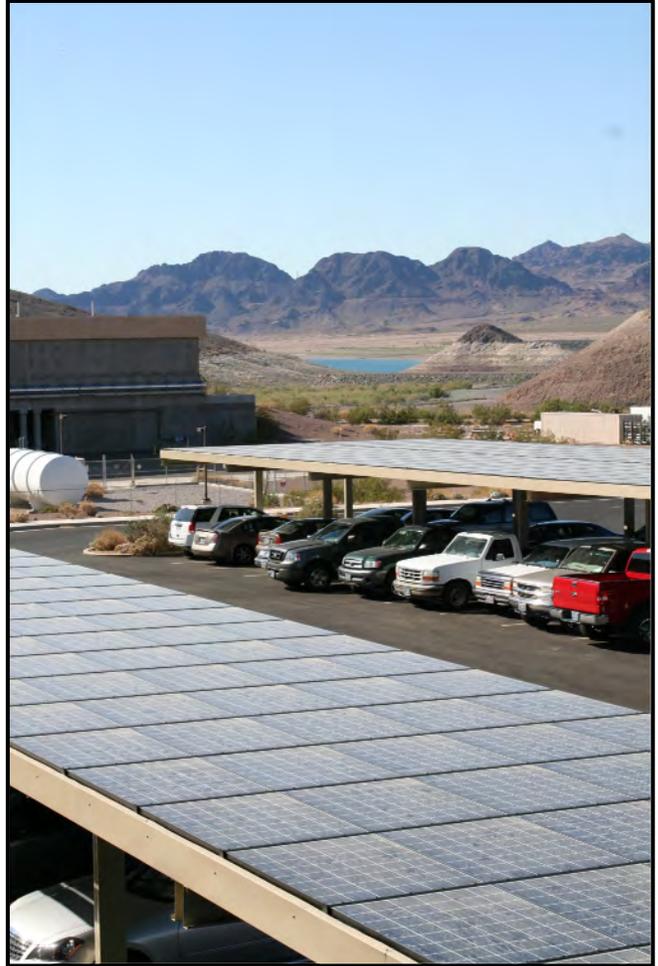
- Completed construction on a pilot project to introduce grease and food waste to the anaerobic digesters at the City of Las Vegas wastewater treatment plant to produce biogas as an energy source;
- Continued operation of the 3-megawatt solar power plant, which offsets a portion of the power used to treat City of Las Vegas wastewater at its main wastewater treatment facility;
- Completed the development of a solar photovoltaic test center at the SNWA's River Mountains Water Treatment Facility (RM). Performed in conjunction with Sandia National Lab and UNLV, the test center is currently collecting data from a new Concentrating Solar PV technology and is

being expanded to accept additional technologies; and

- Leveraged opportunities to share wastewater treatment and transmission facilities between wastewater agencies to reduce energy expenditures.

Enhancements to Energy and Water Conservation Programs include:

- Expanded renewable energy resources when the SNWA entered into an agreement to have a 14 MW solar facility installed at the RM site, where SNWA will utilize the power from the system to offset power that otherwise would have been purchased from the grid. The new installation will mean that between SNWA and LVVWD, 18 percent of its power requirements will be derived from renewable resources. The system will be in service by the end of 2015;
- Continued discussions on instituting an energy conservation project at the LVVWD campus. The project would incorporate energy-efficient devices and possibly include renewable energy systems that will reduce energy usage by up to 30 percent at the campus;
- Two vehicle charging stations are scheduled to be installed at the SNWA main office fleet parking. These additions will mean that SNWA/LVVWD will have vehicle charging facilities at five locations; and
- Enforced policies aimed to reduce water use such as turf limits, fountain and water feature restrictions, mist system restrictions, golf course water budgets, landscape codes, vehicle washing restrictions, and surface, building, and equipment washing restrictions.



*Solar panels atop carports,  
River Mountains Water Treatment Facility*



## GOAL FIVE

### Manage flood risks

Despite an average rainfall of only four inches per year, the region often experiences periods of intense rainfall and subsequent flash flood events. This year, LVVWAC's member agencies took the following measures to minimize the loss of life and property:

- Continued implementation of the Master Plan of Flood Control Facilities;
- Completed eight flood control projects, such as Vegas Drive Storm Drain, Rancho to Shadow Mountain; Angel Park North Detention Basin Expansion; Tropicana Wash, Flamingo Road to Palo Alto and Grand Teton Storm Drain, Hualapai to Tee Pee Lane;
- Funded 11 projects for construction;
- Continued work on the design of channel improvements for the Las Vegas Wash to protect their main reclamation facility at the east end of Flamingo Road. The CCWRD selected a contractor and construction is scheduled to begin in 2015;
- Continued construction on the Las Vegas Wash project through the Desert Rose Golf Course. The project's flood control elements are complete and the reconstruction of the golf course is ongoing, with an expected completion date in early 2015; and
- Continued extensive public outreach efforts, including school presentations, neighborhood meetings, community events and supplying materials for events held by community partners. A total of 48 schools were visited in 2014. Approximately 6,550 students received flash flood and storm water quality information. Public outreach also included three neighborhood meetings attended by about 350 people and two

larger community events. Additional public outreach was conducted via media during the Clark County Regional Flood Control District's annual Flash Flood Awareness press conference.



*Flood control projects, Las Vegas*



## GOAL SIX

### **Build community awareness and support for regional watershed management**

Understanding that the public has a direct impact on the overall quality of the Las Vegas Valley's watershed, LVVWAC engaged the community to enhance awareness and support of regional watershed management. In 2014, LVVWAC's member agencies contributed to presenting a unified public education program. Initiatives included:

- Implemented three education and outreach grants from NDEP through an interlocal agreement with Clark County on non-point source pollution entering the Las Vegas Wash and Lake Mead;
- Received non-point source grant funding from NDEP to install a trash boom on the Las Vegas Wash;
- Continued to offer and conduct personal and self-guided interpretive and educational programs at the Wetlands Park. Through these programs, more than 750 community members engaged in active, hands-on stewardship; more than 220 Wetlands Walker Program participants tracked their walking mileage; more than 2,200 Clark County School District students enjoyed an outdoor learning experience; and more than 1,000 families participated in environmental education;
- Promoted flood safety through "Flash Flood Awareness Month" with the Clark County Board of Directors; classroom presentations; a Flood Safety Awareness campaign (a combination of billboards, radio, television, and print media); a license plate billboard contest; a new public service announcement for television; a new smartphone application called FloodSpot that allows users to get weather updates, see flood reports, share flood photos and learn about floods and insurance; and the production of the Flood Channel (a 30-minute informational television program);
- Hosted the Clark County Water Reclamation District's "Only Rain in the Storm Drain" at the Wetlands Park. The Exhibit Hall hosted over 25,000 visitors in 2014;
- Continued public outreach efforts such as classroom presentations, attendance at neighborhood meetings, staffing of tables at community events and supplying materials for events held by community partners. A total of 48 schools were visited in 2014. Approximately 6550 students received flash flood and storm water quality information. Public outreach also included 3 neighborhood meetings attended by about 350 people and 2 larger community events;
- Provided tours to 33 individuals at the City of Henderson's Water Reclamation Facility and Southwest Water Reclamation Facility;
- Facilitated field trips for local schools to educate students about the water cycle in Las Vegas; held two Green-Ups and a World Wetlands Day event at the Las Vegas Wash; led tours and participated in community outreach, hosting or attending 20 outreach events throughout the year with a total participation of approximately 3000 people. The Green-Ups and field trips with students from Mabel Hoggard were funded in part through a non-point source grant from NDEP;
- Maintained the public website, [www.lvwash.org](http://www.lvwash.org) and a Facebook page for the Las Vegas Wash project and distributed a

monthly newsletter to keep the public informed of project progress;

- Expanded the “Medicine Disposal Program,” which emphasizes the proper methods to dispose of unused medications by placing disposal boxes in all law enforcement agencies in Southern Nevada;
- Collaborated with the Springs Preserve to provide “Pain in The Drain” education to visitors throughout 2014;
- Partnered with the Springs Preserve for the “Holiday Cooking Oil” recycling campaign at the Preserve during the 2014 holiday season; and
- Attended numerous outreach events including Clark County Commissioner town hall meetings and Fire Department open houses to promote public education and awareness on “Pain in the Drain” and the medicine disposal initiative.

LVVWAC integrated existing stakeholder programs to specifically address watershed issues:

- All agencies promoted water conservation and water resource management through the “Be Water Smart” and “Pain in the Drain” programs;
- A special web page on the SNWA website provided enhanced accessibility to LVVWAC information ([http://www.snwa.com/wq/watershed\\_lvwwac.html](http://www.snwa.com/wq/watershed_lvwwac.html)). This page carries all LVVWAC reports and presentations, as well as posted agendas and meeting minutes;
- All agencies were linked to LVVWAC website;
- The continued linking of the Lower Colorado River Water Quality Database to the LVVWAC website provided a mechanism to access the water-quality data collected in the Las Vegas Valley; and
- Presentations and updates on LVVWAC activities were given to the Las Vegas Wash

Coordination Committee and the Lake Mead Water Quality Forum.



*Interpretive Learning, Wetlands Park*