las vegas wash coordination committee

2017 year-end report
LAS VEGAS WASH COORDINATION COMMITTEE

Basic Management, Inc.
Bureau of Reclamation
Citizen Members
City of Henderson
City of Las Vegas
City of North Las Vegas
Clark County
Clark County Parks and Recreation
Clark County Regional Flood
Control District
Clark County Water Reclamation District
Colorado River Commission
Conservation District of Southern Nevada
Desert Wetlands Conservancy
Lake Las Vegas Resort
Las Vegas Boat Harbor
National Park Service
Natural Resources Conservation Service
Nevada Department of Wildlife
Nevada Division of Environmental
Protection
Nevada State Health Division
Southern Nevada Health District
Southern Nevada Water Authority
University of Nevada, Las Vegas
U.S. Army Corps of Engineers
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service
U.S. Geological Survey

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
Clark County Water Reclamation District
Las Vegas Valley Water District
Southern Nevada Water Authority
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Throughout history, the Las Vegas Wash (Wash) has curled its way through the desert, its wetlands creating a splash of green in a monochromatic landscape. The Wash provided prehistoric travelers refuge and early settlers a source of water for farming. Today, the Wash channels approximately 200 million gallons of highly-treated effluent, urban runoff and shallow groundwater to Lake Mead daily (along with occasional stormwater), and its wetlands filter sediment and other impurities from its flows.

As the 1,600-square-mile Las Vegas Valley watershed grew more populated, Wash flows increased significantly, eroding the channel’s bed and banks, threatening wildlife habitats, water quality and utility infrastructure.

The Las Vegas Wash Coordination Committee (LVWCC) formed in 1998 to address long-term management and protection of the channel and its resources. The LVWCC developed the Las Vegas Wash Comprehensive Adaptive Management Plan (CAMP)—a blueprint that includes 44 specific action items—to address the challenges facing the Wash. The LVWCC also created study teams and an oversight committee, the Las Vegas Valley Watershed Advisory Committee (LVVWAC). The Las Vegas Wash Project Coordination Team (Wash Team) is the implementation arm of the LVWCC.

The LVVWAC presents in this report maps of locations and activities, a summary of the LVWCC’s progress on CAMP action items, and descriptions of accomplishments from the last year and operational objectives for eight programs in 2018.

### BUDGET, 2017

<table>
<thead>
<tr>
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<td>Local Contribution</td>
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<td>Bureau of Reclamation Grants</td>
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<td>NV Division of Environmental Protection Grant</td>
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<td>Total</td>
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<td>Capital Budget</td>
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**Dear Friends:**

When I reflect on our achievements at the Las Vegas Wash over the past 19 years, I can’t help but feel awed. The channel, once imperiled, has rebounded in the most spectacular way. In 2017 we started constructing the final stabilization projects at the Wash—the Tropicana and Sunrise Mountain weirs and Historic Lateral Weir expansion; we continued to sample and monitor Wash water quality; and we detected threatened and endangered species including a Yuma Ridgway’s rail and a yellow-billed cuckoo with a possible nest.

This progress is a direct result of the efforts of stakeholders who make up the Las Vegas Wash Coordination Committee, our volunteers and public support. Thank you for playing such a vital role in the Wash’s success story.

I hope you read this 2017 year-end report with a sense of accomplishment and pride. Your efforts through the years have taken this integral waterway from an urban channel to a thriving wetland, rich with wildlife and beauty. Your continued support and collaboration will further us along the path of success and help maintain this important part of southern Nevada’s watershed.

Sincerely,

Zane L. Marshall
Las Vegas Valley Watershed Advisory Committee Chair
LOCATIONS MAP
1. Upper Diversion Weir, Bridge and Bypass Channel
2. Monson Weir
3. Visitor Center Weir
4. Nature Center
5. Tropicana Weir
6. DU Wetlands No. 2 Weir
7. DU Wetlands No. 1 Weir
8. Silver Bowl Weir
9. Archery Weir
10. Duck Creek Confluence Weir
11. Upper Narrows Weir
12. Sunrise Mountain Weir
13. Pabco Road Weir
14. Historic Lateral Weir
15. Bostick Weir
16. Calico Ridge Weir
17. Lower Narrows Weir
18. Homestead Weir
19. Three Kids Weir
20. Rainbow Gardens Weir
21. Powerline Crossing Weir and Bridge
22. Fire Station Weir

LEGEND
- Clark County Wetlands Park
- Nature Preserve
- In-lieu Fee Mitigation Wetlands
- Existing Weirs
- Weirs Under Construction

ACTIVITIES MAP LEGEND
- Bureau of Reclamation Stabilization Work
- Mainstream and Total Suspended Solids/Perchlorate Monitoring Sites
- Tributary Sampling Sites
- Selenium Sampling and Tributary Stream Gaging Sites
- Real-Time Monitoring Sites
- Shallow Groundwater Monitoring Sites
- Mitigation Wetlands Sampling Sites
- Marsh Bird Monitoring Sites
- Southwestern Willow Flycatcher Survey Sites
- Yellow-billed Cuckoo Survey Sites
- Avian Point Count Sites
- Fish Survey Sites
- Green-Up Plantings
summary of progress on CAMP action items

The LVWCC uses an adaptive process to meet its mission and presents in this section a summary of progress on the CAMP action items for which it, the study teams and LVWAC are responsible.

Erosion and Stormwater, administered by the Operations Study Team
1. Install erosion control structures – 19 of 21 planned erosion control structures (i.e., weirs) in place.
2. Obtain topography and geophysical data – Semi-permanent ground control points established; topography and geophysical data collected as needed to facilitate weir design and construction.
3. Conduct sediment transport modeling – Models developed using standard computer programs; model runs conducted as needed to understand system function and inform weir design.
4. Establish off-stream wetlands with alternate discharge considerations – Feasibility study prepared; concluded wetlands should be established within active flood plain.
5. Evaluate stormwater detention/retention basins – Addressed by Clark County Regional Flood Control District (CCRFCD) master plan.

Alternate Discharge, administered by the LVWAC, action items 6 – 10
Deemed unnecessary for the foreseeable future.

Land Use, administered by individual member agencies, action items 11 – 15

Jurisdictional and Regulatory, administered by the LVWAC and LVWCC
16. Further investigate and define structure for local oversight of the CAMP – Established by interlocal agreement, creating the LVWAC; members act on behalf of their governing boards and councils. Southern Nevada Water Authority (SNWA) appointed lead agency.
17. Ensure interagency coordination – Regular meetings convened by managerial, technical and administrative staff.

Public Outreach, administered by the Administrative Study Team
18. Establish a method to continue implementation of the public outreach program – Implementation funded annually and directed by the 2013 update of the outreach plan.
19. Continue implementation of feedback mechanisms and measurements of progress and results – Feedback obtained at events and on lvwash.org. Progress measurements (e.g., website visitors, event attendees, number of events, etc.) recorded and reported quarterly to the LVWCC and in annual reports.
20. Provide updates to elected officials – Member agencies use the Wash newsletter and year-end reports to keep elected officials informed.

Funding, administered by the Administrative Study Team
21. Further investigate potential funding sources identified by the team – Funding sources include local, state, federal and private contributions. Local contributions come from a portion of a quarter-cent sales tax and direct payments. State, federal and private contributions come from grants.
22. Anticipate future funding needs – Annual budgets detail funding needs for anticipated operating and capital expenditures.
23. Work with the Wash management entity to review funding options – Budgets reviewed and approved by the LVWAC annually. Operating expenditures not reimbursed by state, federal or private grants are paid for by the City of Henderson (5.2%), City of Las Vegas (9.4%), City of North Las Vegas (3.6%), Clark County (10%), CCRFCD (10%), Clark County Water Reclamation District (21.8%) and SNWA (40%). Capital expenditures not paid for by grants are paid for by a portion of the quarter-cent sales tax and account loans.
24. Develop method to identify specific projects for grant funding – Projects vetted by the study teams and Wash Team; assessment and prioritization criteria include feasibility, cost, need for and importance of information and program benefit.
25. Utilize existing resources and staff, whenever possible – Regular meetings among stakeholders ensure coordination and help to prevent duplication.
Shallow Groundwater, administered by the Research and Environmental Monitoring (REM) Study Team

26. Develop a central database – Database developed; data added when made available.
27. Locate and inventory existing shallow monitoring wells – Valley wells located and inventoried using existing data and geospatial technologies.
28. Identify issues of concern – Ongoing monitoring programs and stakeholder data-sharing forums provide for early detection of issues of concern.
29. Develop a long-term monitoring plan – Plan finalized and implemented.
30. Develop a method to identify the potential for future contaminant discovery – Data regularly assessed to evaluate potential concerns.
31. Develop and implement a notification plan – Managed by outside agencies.
32. Promote interagency coordination – See item 17.
33. Develop a bibliography – Bibliography complete.

Wetlands Park, administered by Clark County, action items 34 – 39

Environmental Resources, administered by the REM Study Team

40. Develop long-term management and monitoring plans – Plans complete; updates and other activities ongoing to achieve goals.
41. Conduct additional research – Various studies ongoing.
42. Preserve and address cultural resource issues – SNWA works with state, federal and tribal stakeholders to preserve cultural resources where feasible and mitigate when infeasible. A programmatic agreement was signed and executed by all parties in 2011. The Cultural Resources Coordinating Committee was established and created a cultural resources management plan to guide future activities.
43. Identify funding needs – Funding needs vetted by the study teams and Wash Team.
44. Facilitate interagency coordination to ensure projects are implemented – See item 17.
PROJECT SUMMARY
Stabilization is an important part of the LVWCC’s mission. Weir and bank protection projects reduce erosion and sediment transport, helping to improve water quality. Sustainable flood plain management also requires maintaining the capital investment in these assets in the long term. Bureau of Reclamation (Bureau) crews assist with this each winter, repairing damaged or impaired structures, helping facilities work as designed.

To date, the LVWCC has completed 19 of 21 weirs upstream of Lake Las Vegas and installed more than 12 miles of bank protection. The National Park Service has constructed four weirs downstream; at least five more are planned but no funding has been obligated. This issue is of great concern to the LVWAC, which is seeking partnerships to complete the final structures.

2017 IN REVIEW
Early in winter, Bureau crews reconstructed the backwater of the Upper Diversion Weir to reestablish grades, restoring proper function. They also reconstructed a nearby access ramp with corresponding track area to facilitate future maintenance of the weir.

Construction of the Tropicana Weir began in earnest in January and continued throughout the year. Most of the confined rock riprap structure and some bank protection were completed. The land between the weir and the Clark County Wetlands Park Nature Preserve (Nature Preserve) was scarified and will be revegetated with native species to enhance wildlife habitat and patrons’ overall park experience.

The Sunrise Mountain Weir is the last remaining large grade control structure to be built and is being constructed with the expansion of the existing Historic Lateral Weir. After a two-year delay, construction commenced in October of 2017 and is expected to be completed by mid-2019. Partnering with the Nevada Division of Environmental Protection (NDEP), the Nevada Environmental Response Trust (NERT) and others facilitated the initiation of construction. NERT will treat nuisance water from the construction as one of many approaches to remove perchlorate from contaminated groundwater. The Southern Nevada Public Land Management Act (SNPLMA) is providing $4 million in grant funding to help offset capital costs of the Sunrise Mountain Weir.

Staff conducted numerous site visits, lecture series, media interviews and tours in 2017 to support LVWCC and Clark County Wetlands Park (Wetlands Park) initiatives. Staff also requested proposals for professional services to review existing Wash stabilization facilities and stream sections for compliance with all local, regional, state and federal regulations and make recommendations for remediation for areas not in compliance. Louis Berger was selected and will facilitate objectives to transition from capital improvements construction into long-term operation and maintenance of the Wash.

2018 OPERATIONAL OBJECTIVES
Bureau crews will conduct improvements to the Visitor Center Weir in the first quarter. Tropicana Weir is expected to be completed and fully commissioned by mid-year. The Clark County Water Reclamation District (CCWRD) soil stockpile site, the primary location for depositing excavated soil from the weir’s construction, will be closed and construction will continue at the Sunrise Mountain and Historic Lateral weirs.
2017 AT A GLANCE

- Continued water quality sampling and monitoring programs in and along the Wash and its tributaries
- Uploaded data to water quality database
- Removed a real-time water quality monitoring station due to equipment failure
- Reviewed bioassessment monitoring program with the Bureau
- Collected and sent fish to laboratory for selenium analysis

PROJECT SUMMARY

Quarterly water quality sampling in the mainstream and its tributaries provides a comprehensive understanding of Wash flows and potential impacts on drinking water in Lake Mead. These long-term monitoring programs are used to: evaluate baseline conditions, demonstrate variations over time, quantify the effects of wetland vegetation and urban runoff on water quality, and provide a long-term data history that can be used to make watershed-based decisions. Permanent monitoring stations at select sites provide real-time data, including temperature, pH, specific conductance and dissolved oxygen. These data also help track water quality changes during storm events in the Las Vegas Valley.

Water samples and flow data are collected monthly at 12 sites along eight tributaries and the samples are analyzed for selenium and total dissolved solids (TDS). Total suspended solids (TSS) are analyzed monthly along the Wash to determine how efficient erosion control structures are at removing them. Shallow groundwater wells are monitored quarterly to demonstrate groundwater quality changes and surface and groundwater interactions along the Wash.

A bioassessment monitoring program for the Wash and its tributaries was developed in 2001 and implemented in 2003 to address concerns about the razorback sucker and how weirs and their impoundments may impact the endangered species downstream in Lake Mead.

2017 IN REVIEW

Sampling for all programs was conducted as scheduled and the data was uploaded to the Lower Colorado River Water Quality Database. The real-time monitoring station at LW11.1 (on the Wash near Vegas Valley Drive) was removed in July due to equipment failure. The other two stations, DC1 (Duck Creek) and LW0.8 (on the Wash below Lake Las Vegas), recorded data for all of 2017 with no major data gaps. Ongoing construction activities along the Wash and its tributaries had some impacts on water quality results for the year, namely small periodic increases in TSS at some locations. Funding for quarterly mainstream and tributary sampling and real-time monitoring stations is provided by the Bureau.

Data uploading from all the projects into the water quality database was improved. The database allows members to upload, search and download data from both ongoing and historic monitoring programs in the Wash, tributaries, Lake Mead, Muddy River, Virgin River and lower Colorado River.

SNWA held discussions with the Bureau regarding the future of the bioassessment monitoring program and agreed to conduct limited sampling in 2018.

Fish samples were collected and sent to a laboratory for selenium analysis in preparation for the adoption of the new aquatic life ambient water quality criterion by the NDEP. The Wash may not meet the standard of 3.1 µg/L for flowing waters or the 8.5 mg/kg fish standard, and a site-specific standard may need to be calculated.

2018 OPERATIONAL OBJECTIVES

All monitoring programs in and along the Wash and its tributaries will continue in 2018. Staff will further explore options to improve the water quality database and will upgrade the equipment for the real-time monitoring stations, which will include installing a new unit at LW11.1. As part of the bioassessment study, sediment samples will be collected and analyzed from several locations in the Wash.
2017 AT A GLANCE
- Installed new drainage pipe valve at cell 7
- Enhanced vegetation, planting 500 plants at cell 5
- Met with U.S. Army Corps of Engineers to discuss project progress
- Removed common reed and fivehook bassia; treated tall whitetop
- Surveyed for marsh birds
- Monitored water quality monthly

PROJECT SUMMARY
Wetlands provide valuable ecosystem services by improving water quality and increasing wildlife habitat. Several years ago, the Wash Team conducted wetland demonstration projects at a wastewater treatment facility and along a valley tributary to further quantify these services. Currently, the Wash Team has focused on managing and creating wetlands on Clark County’s behalf at the in-lieu fee mitigation wetlands (Mitigation Wetlands).

Clark County developed the Mitigation Wetlands to provide off-site wetland mitigation for construction projects throughout the valley. The goal is to create the wetland acres needed to meet the U.S. Army Corps of Engineers (Corps) permit requirements. The Nature Preserve receives tertiary-treated effluent from the CCWRD, which flows into the Mitigation Wetlands. Additional flows from the Tropicana Floodway Channel also enter the wetlands. The Wash Team monitors water quality and surveys for marsh birds at the site to quantify changes and detect trends.

2017 IN REVIEW
Early in winter, contractors installed a new drainage pipe valve at cell 7 to allow for improved water level management of the system. Wetland enhancement continued with the planting of approximately 500 emergent and riparian species at cell 5 to increase diversity.

The Wash Team and Clark County met with the Corps in July to discuss progress towards meeting permit requirements. The Corps representative was pleased with the overall wetland enhancements within the cells, but did suggest some further reduction in the common reed surrounding cells 5, 6 and 7. Consequently, during late fall, contractors removed 3.4 acres of common reed along the road adjacent to these cells and cleared the outflow ditches on the eastern and western sides of the project area. Other weed management activities included removal of the invasive fivehook bassia and chemical treatment of two acres of the noxious tall whitetop.

Annual surveys for marsh birds identified the federally endangered Yuma Ridgway’s rail (see Wildlife).

Monthly water quality monitoring continued at the two sample locations in the Mitigation Wetlands. The Wash Team monitored and reported TDS, nitrate as nitrogen, chloride, phosphate, sulfate and fecal coliform. The team also reported flow data from the CCWRD pipeline and data collected by CCWRD for a third site, in compliance with Clark County Parks and Recreation’s National Pollutant Discharge Elimination System (NPDES) permit. CCWRD replaced the valve on the pipe on their property that feeds the water to the Nature Preserve and Mitigation Wetlands due to failure. This repair enabled the Wash Team to have more control of the water flow coming in to the site.

2018 OPERATIONAL OBJECTIVES
Contractors will continue with revegetation of native species at cells 5, 6 and 7, focusing on areas where common reed was removed, as well as continue invasive and noxious weed control. The Wash Team will raise water levels in the spring to irrigate the vegetation during the growing season and create the wetland acres needed and will conduct a follow-up field visit with the Corps to assess the wetlands for possible permit closure. Staff will also monitor marsh birds in the breeding season and continue to monitor water quality and read flow measurements monthly.
PROJECT SUMMARY
The Wash is home to hundreds of species of wildlife. The Wash Team has surveyed this wildlife and used the data to develop the Las Vegas Wash Wildlife Management Plan. The plan contains three objectives: conserve native species, protect and enhance their habitats and increase environmental awareness of these resources in the community. Biologists continue to conduct surveys in support of the plan and to help the stabilization program comply with the Endangered Species Act and other regulations.

2017 IN REVIEW
Wash Team biologists detected the first Yuma Ridgway’s rail to be found during official surveys for the endangered bird. The rail was heard at the Mitigation Wetlands, April 19 - June 1. Field crews also detected a Ridgway’s rail in 2015 and 2016 during other work, but prior to that there had been no detections since 2006, suggesting increased use in recent years. Biologists also identified American bittern, least bittern, Virginia rail and sora in the 2017 marsh bird surveys that discovered the Ridgway’s rail.

Field crews detected just two migrant willow flycatchers, in May, during surveys for the endangered southwestern subspecies, possibly due to construction-related habitat loss. Biologists identified a probable yellow-billed cuckoo breeding territory in a Wash revegetation site, making five detections of the threatened species in and around the same location. On June 27, the cuckoo responded with alarm calls, indicating a possible nest. The Wash Team also monitored for the threatened desert tortoise, as well as for nesting birds as required by the Migratory Bird Treaty Act, to avoid impacts from weir construction.

Great Basin Bird Observatory continued biweekly avian point counts along the Wash, funded by a Bureau grant. The counts have identified more than 200 species overall and have shown significant increases in the number of species and individuals detected per survey. Annual reports for this and the other bird surveys are available on lvwash.org.

Biologists documented roof rats (a.k.a. black rats, Rattus rattus) in riparian stands in the summer, using motion capture video to confirm the species identification. Because roof rats can devastate native wildlife, Clark County is leading mitigation efforts.

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The Wash Team began a fish survey in 2017. The prior effort was in 2002-2003. The hydrology of the Wash has changed dramatically since then, and the new survey should highlight effects to the fish community. Thus far, staff have identified one new species—blue tilapia—brining the total to 12 (including incidental detections), all non-native. Biologists collected, processed and shipped fish samples to a laboratory for selenium analysis (see Water Quality).

Cataloging of invertebrate species continued. In 2017, 16 of the 20 new species came from citizen scientists using online databases to submit observations, increasing the number of species identified to 490. The Wash Team also continued participating in the Southwest monarch study; one monarch was tagged for migration tracking, and a sample was taken to test for OE (Ophryocystis elektroscirrha), a deadly parasite threatening the population.

2018 OPERATIONAL OBJECTIVES
Biologists will continue compliance-related surveys, avian point counts, monarch-tagging, informal invertebrate inventories and the fish survey.
2017 AT A GLANCE
• Revegetated 18 acres with native plants
• Conducted first Wash Green-Up enhancing a previously planted area
• Monitored vegetation for 2017
• Summarized 2016 vegetation monitoring data in report
• Treated invasive weeds and removed 3.5 acres of tamarisk from the Wash

PROJECT SUMMARY
Vegetation enhancement along the Wash is conducted to meet regulatory, grant and management plan objectives. The CAMP directs the LVWCC to revegetate areas along the Wash to stabilize soils, improve water quality and increase aesthetics, while the Las Vegas Wash Wildlife Management Plan directs the Wash Team to improve vegetation to support wildlife.

More than 500 acres have been revegetated along the Wash since the project’s inception. Approximately 138 of these acres are wetlands. Revegetation of wetlands with native plants is needed to meet permit requirements issued for erosion control projects, which often remove wetlands (typically dominated by non-native species) within their construction footprint.

Tamarisk once dominated the Wash but now covers less than 65 acres. The ongoing treatment of this invasive plant and other weeds is vital to the success of the program, ensuring the survival and sustainability of native vegetation. Regular monitoring helps identify new infestations and a wide variety of treatment methods are used to control these undesirable species.

2017 IN REVIEW
The Wash Team held two volunteer Wash Green-Up planting events in 2017. The first took place in the spring at an 8-acre site at the Three Kids Weir. This was the 30th Green-Up and was one of the most publicly visible. The site is adjacent to the extension of Galleria Drive, which carries traffic to and from the Lake Las Vegas community. The second Green-Up took place on a 10-acre site that was planted as part of the spring 2011 Green-Up, the first event to enhance a previously planted area. The site is near Pabco Road Weir and borders the entry to the Pabco Trailhead. It was originally planted with honey mesquite and catclaw acacia trees. The most recent planting included shrubs, grasses and annuals to fill in the spaces between the trees and was funded by grants from the Bureau and NDEP.

Biologists completed vegetation monitoring for 2017 in the fall and prepared the Las Vegas Wash Vegetation Monitoring Report, 2016, detailing results from the prior year. The report describes the status of all revegetation sites along the Wash. During monitoring, the field crew inventories the species in each revegetation area and estimates the percentage cover for each species and for the site overall. Survivorship is also measured at recently planted sites. In 2016, 15 of the 126 revegetation sites (11.9%) were new sites that were never monitored before. Of the existing sites, 83 (65.9%) had the same cover in 2015, 16 (12.7%) increased in cover and 12 (9.5%) decreased in cover.

The Lake Mead Exotic Plant Management Team surveyed more than 550 acres for invasive weeds along the Wash and treated nearly seven acres. Weir construction activities removed a total of 3.5 acres of tamarisk from sites near the Tropicana and Historic Lateral weirs.

2018 OPERATIONAL OBJECTIVES
Both the spring and fall Green-Ups will likely take place at the Tropicana Weir, along with other plantings to install wetland and riparian vegetation along the banks. Wash Team biologists will continue to monitor revegetation sites to ensure that plantings are successful and provide data to permitting and granting agencies. Invasive weeds will continue to be monitored and controlled, and staff will prepare planting plans for the weir projects scheduled to be completed in 2019.
PROJECT SUMMARY
The Wash has provided a haven for people for thousands of years. In 1977, the area was designated as the Las Vegas Wash Archaeological District due to the artifacts and structures left behind by prehistoric visitors and early settlers. It is the responsibility of the Wash Team to record, protect and interpret the Wash's many cultural resources.

A 2011 programmatic agreement (PA) provides guidelines for the Section 106 consultation process for cultural resources within the Wetlands Park, and outlines responsibilities between the Bureau, Clark County, SNWA and other stakeholders. As part of the PA the Cultural Resources Coordinating Committee (CRCC) was created and meets quarterly to review construction developments, research questions and give updates on activities. This collaboration of stakeholders has led to a clearer understanding of the roles of each agency in protecting cultural resources, saving time and expense.

2017 IN REVIEW
Wash Team staff and contractors completed the writing and review of the final testing report for the Larder site (26CK6146) in 2017. Results from the testing uncovered a shallow pithouse built and occupied between A.D. 1275 and 1395. Features from the partially excavated pithouse included a central hearth, storage pits and postholes. Cottonwood Triangular projectile points were recovered, but no pottery was identified. This is only the second pithouse recovered from Wash cultural resource sites and one of the very few discovered in the Las Vegas Valley.

Activities at the Larder site associated with the development and construction of Tropicana Weir began in 2013. Improvements to the Visitor Center Weir, which is also near the site, are planned for 2018, so work near the Larder site should be completed. Future work will focus on interpreting the site for visitors of the Wetlands Park.

A large-scale reanalysis of lithic artifacts recovered from surveys and excavations in the Wash began in late 2017 and is being funded in part by a Bureau grant. This project will allow much tighter chronological control of sites in the Wash, providing better understanding of when people lived along the water. The project will also complete sourcing for approximately 70 obsidian artifacts. Obsidian as a tool source was coveted by prehistoric peoples due to the sharpness and ease of use of the material. The chemical properties of obsidian allow it to be sourced to volcanic areas and even specific lava flows in some instances.

The CRCC met three times in 2017, once each quarter with the summer meeting cancelled. Meetings focused on several topics, including future construction activities, Wetlands Park security and the administration and reporting of the Larder site project.

The Wash Team finished 2017 completing compliance review and comments for the 2018 improvements planned for the Visitor Center Weir. Staff identified potential impacts on cultural resources within the construction footprint and easement of the proposed work and recommended avoidance and mitigation efforts when appropriate.

2018 OPERATIONAL OBJECTIVES
The lithics analysis project will be completed, and Wash Team staff will continue to support stabilization activities.
**PROJECT SUMMARY**

Promoting and sharing the Wash with the public has always been an important goal of the LVWCC. Over the years, the group has engaged with more than 245,000 people, educating them about the Wash, its history and the LVWCC’s accomplishments stabilizing the channel and enhancing the surrounding areas for wildlife and recreation. To aid in this effort, the Wash Team has developed several digital outreach tools, described in detail in Data Resources.

To further guide activities, the team created the Las Vegas Wash Outreach Plan, 2013. The plan reaffirms past goals and establishes new ones; lays out core messages, strategies and tactics; and describes methods for measuring outreach effectiveness.

**2017 IN REVIEW**

The Wash Team recognized World Wetlands Day by hosting a two-day science symposium for students from six area high schools, attracting nearly 240 participants. Held at the Wetlands Park Nature Center, each day started with a keynote address and then continued with presentations from professionals on a variety of wetland topics followed by a sponsored lunch and hands-on activities. The event also included a photography and essay writing contest, with a winner selected for each category.

Staff continued to work with the fifth-grade students at Mabel Hoggard Math and Science Magnet Elementary School, as they have since 1999. The Wash Team conducted in-school exercises with three classes involving wildlife, hydrology and water quality. These visits were then complemented with an all-day field trip, starting with a ride on the Desert Princess on Lake Mead where students engaged in water quality and food web activities, and finishing with a trip to the Nature Preserve where they explored the trails, visited the Nature Center exhibit hall and learned about the different habitats and animals found at the Wash. Staff also initiated an update to the notebook students use for data collection.

Wash Green-Ups, where volunteers help revegetate the Wash with native plants, building a legacy for the future, continued to be important for engaging the community. The March event involved 260 volunteers planting approximately 3,000 plants and the September event involved 514 volunteers planting more than 5,000 plants. The NDEP provides funding towards the Mabel Hoggard program and Wash Green-Ups.

The Wash Team also participated in a variety of community events in 2017. Some of these were typical opportunities to spread the word about the Wash and the LVWCC’s efforts to stabilize and enhance the channel and included the plant sales at the Springs Preserve, the Wetlands Park Open House, GREENFest and Festival of the Communities. Other events also provided a means to increase environmental awareness of wildlife and habitat resources in support of the wildlife management plan. These included the Wetlands Park BioBlitz, two International Migratory Bird Day events and Get Outdoors Nevada Day. In total, the Wash Team attended, hosted or participated in 27 events (including tours and presentations), reaching more than 7,500 people.

**2018 OPERATIONAL OBJECTIVES**

The Wash Team will host its fourth World Wetlands Day science symposium and two Wash Green-Ups. Updates to the notebook will be completed, Mabel Hoggard field trips will continue, and the team will participate in other events in continued support of the outreach plan.
PROJECT SUMMARY
The LWCC continues to utilize a variety of digital media tools and platforms to increase the range of its public outreach. The lvwash.org site provides information about Wash history, construction activities and biological surveys, and includes maps, photos and more. A newsletter is drafted and delivered to email accounts monthly, giving updates, project details and event information to subscribers. The Wash Facebook page is an effective tool for engaging the public on a more interactive level and a great way to advertise upcoming events and other efforts. It also provides the opportunity to promote member activities.

The LWCC uses several imagery resources to track and present changes at the Wash. This imagery includes panoramic photos taken annually at specific locations, high-resolution aerial imagery that can be used in mapping software, and more recently, imagery taken by drones. Finally, the Lower Colorado River Water Quality Database allows agencies to search, upload and share water quality monitoring data. The database hosts more than 4.5 million lines of data from 41 projects and 11 participating agencies going back more than 50 years.

2017 AT A GLANCE
- Hosted more than 18,000 sessions for over 15,000 visitors at lvwash.org and supported 37 page updates
- Providing monthly newsletter to more than 400 subscribers
- Increased Facebook followers to 777
- Conducted annual photo comparative analysis study, processed new aerials and coordinated a drone imagery project
- Added 78,708 lines of data to water quality database

2017 IN REVIEW
In 2017, the lvwash.org site hosted 18,067 sessions for 15,092 visitors, averaging 1,506 visits and 1,258 unique visitors each month. Team members managed and supported 37 page updates and added and/or updated 8 PDFs and 46 new images. The main page on the website was refreshed monthly, using an article from that month’s newsletter to conveniently connect the two resources. The newsletter was delivered to more than 400 email inboxes on the first day of every month, filled with information regarding current Wash activities, published reports and upcoming events. A sample of topics in 2017 includes a recap of the World Wetlands Day science symposium; an article on North America’s smallest butterfly, the pygmy blue; and the exciting detections of threatened and endangered bird species in breeding season surveys.

The newsletter was delivered to more than 400 email inboxes on the first day of every month, filled with information regarding current Wash activities, published reports and upcoming events. A sample of topics in 2017 includes a recap of the World Wetlands Day science symposium; an article on North America’s smallest butterfly, the pygmy blue; and the exciting detections of threatened and endangered bird species in breeding season surveys.

The Wash Facebook page was instrumental in expanding the LWCC’s audience when shared by agency partners and increasing the number of volunteers for the fall Green-Up event after an unusually slow initial start.

The Wash Team conducted the annual photo comparative analysis study at 61 sites. Traditional aerial imagery was flown and processed, and staff helped coordinate a drone flight along the Wash, which produced beautiful video and still imagery that will be used to enhance the website and update the Wash brochure.

Four agencies added 78,708 lines of data into the water quality database in 2017. The data was from 13 projects, covering 56 sites and more than 400 water quality parameters.

2018 OPERATIONAL OBJECTIVES
The Wash Team will continue to manage and update data resources related to the Wash project. Refreshing and improving the lvwash.org website will be one of the biggest objectives in 2018, as will exploring social media platforms such as Instagram to assist with public outreach efforts.
mission
working to stabilize and enhance
the valuable environmental resources
of the Las Vegas Wash