las vegas wash coordination committee

2014 year-end report
CAMP action items

**EROSION & STORMWATER**, administered by the Operations Study Team

1. Install erosion control structures
2. Obtain topography and geophysical data
3. Conduct sediment transport modeling
4. Establish off-stream wetlands with alternate discharge considerations
5. Evaluate stormwater detention/retention basins

**ALTERNATE DISCHARGE**, administered by the Las Vegas Valley Watershed Advisory Committee

6. Implement the dischargers scope of services, alternative discharge study
7. Incorporate options and selection criteria developed by the Alternate Discharge Study Team
8. Utilize the Alternate Discharge Study Team throughout the process
9. Integrate work done by other study teams into process
10. Update public officials and interested parties throughout the process

**LAND USE**, administered by individual member agencies

11. Focus land use recommendations on a priority zone of influence (1/2 mile radius of Las Vegas Wash)
12. Support the development and implementation of a common environmental review process among planning entities
13. Develop best management practices
14. Develop educational materials for developers
15. Identify opportunities for interagency coordination efforts

**JURISDICTIONAL & REGULATORY**, administered by the Las Vegas Valley Watershed Advisory Committee and the Las Vegas Wash Coordination Committee

16. Further investigate and define structure for local oversight of the Las Vegas Wash Comprehensive Adaptive Management Plan
17. Ensure interagency coordination

**PUBLIC OUTREACH**, administered by the Administrative Study Team

18. Establish a method to continue implementation of the public outreach program
19. Continue implementation of feedback mechanisms and measurements of progress and results
20. Provide updates to elected officials

**FUNDING**, administered by the Administrative Study Team

21. Further investigate potential funding sources identified by the team
22. Anticipate future funding needs
23. Work with the Las Vegas Wash management entity to review funding options
24. Develop method to identify specific projects for grant funding
25. Utilize existing resources and staff, whenever possible

**SHALLOW GROUNDWATER**, administered by the Research and Environmental Monitoring Study Team

26. Develop a central database
27. Locate and inventory existing shallow monitoring wells
28. Identify issues of concern
29. Develop a long-term monitoring program
30. Develop a method to identify the potential for future contaminant discovery
31. Develop and implement a notification plan
32. Promote interagency coordination
33. Develop a bibliography

**WETLANDS PARK**, administered by Clark County

34. Identify water resources needed to maintain the park
35. Develop long-term monitoring plans
36. Develop a long-term operations & maintenance plan
37. Ensure implementation of mitigation measures
38. Identify funding needs
39. Ensure interagency coordination

**ENVIRONMENTAL RESOURCES**, administered by the Research and Environmental Monitoring Study Team

40. Develop long-term management and monitoring plans
41. Conduct additional research
42. Preserve and address cultural resource issues
43. Identify funding needs
44. Facilitate interagency coordination to ensure projects are implemented

**Relevance to CAMP**

Please note that to the left of each section a side bar contains a list of numbers. These numbers correspond with the CAMP action items relevant to the section.
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<td>Data Resources</td>
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Dear Friends:

It is my pleasure to provide you with the 2014 Las Vegas Wash Coordination Committee Year-End Report. We have accomplished many goals over the past 16 years, and I would like to extend my appreciation to the stakeholders who make up the Las Vegas Wash Coordination Committee and to the public for their support.

As we near the completion of the primary work to stabilize and enhance the Las Vegas Wash and begin to consider the transition to a more maintenance-focused approach, we continue to operate under the foundational principle of collaboration that has been vital to the success of this project. Looking back, it is clear that the spirit of cooperation has been critical to advancing the efforts of the Las Vegas Wash Coordination Committee.

While it is important to acknowledge our many successes, the work is not yet complete and we still need the assistance of our members and the community. As you review the 2014 year-end report, please join me in not only celebrating our accomplishments, but also reflecting on the objectives we have yet to achieve. There is still work to do and continued collaboration between the Las Vegas Wash Coordination Committee, our partners and the public will help us to reach every goal.

Sincerely,

Thomas A. Minwegen
Las Vegas Valley Watershed Advisory Committee Chair
The Las Vegas Wash (Wash) is an integral part of the Las Vegas Valley watershed, providing a conduit for approximately 200 million gallons of highly-treated effluent, urban runoff and shallow groundwater, as well as stormwater from the valley’s occasional, but often intense, rain events, as it makes its way to Lake Mead each day. Wetlands in the channel help filter sediment and other impurities from the Wash’s flows.

Increased population and development in the 1970s, 80s and 90s resulted in a dramatic increase in water flows. This increase, together with flows from large storms, caused massive erosion along the banks and threatened wildlife habitat, water quality and wastewater infrastructure. In 1998, the Las Vegas Wash Coordination Committee (LVWCC) was formed to address the long-term management of the suffering waterway.

The LVWCC developed the “Las Vegas Wash Comprehensive Adaptive Management Plan” (CAMP)—a roadmap that includes 44 specific action items—to address the environmental and water resource challenges facing the Wash. The LVWCC also created internal sub-committees and an oversight committee, the Las Vegas Valley Watershed Advisory Committee (LVVWAC).

This report is provided by the LVVWAC and offers a close look at the progress of the CAMP action items, the LVWCC’s accomplishments of the past year and objectives for 2015.

**PROJECT BUDGET, 2014**

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<th>Category</th>
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<tr>
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1 - Fiscal year July 2014–June 2015
2 - Calendar year January-December

Mature vegetation along the banks of the bypass channel
summary and evaluation of CAMP action items

The LVWCC uses an adaptive process to meet its mission. As part of that process, the action items of the CAMP document are evaluated in this section.

**Erosion and Stormwater**, administered by the Operations Study Team

1. **Install erosion control structures**
   Eighteen of the 21 planned erosion control structures (i.e., weirs) have been installed along an approximately 6-mile section of the Wash. All are permanent structures; the temporary Demonstration Weir was demolished and is being replaced by the Three Kids Weir.

2. **Obtain topography and geophysical data**
   Semi-permanent ground control points were established and topography and geophysical data are collected as needed to facilitate weir design and construction.

3. **Conduct sediment transport modeling**
   Sediment transport models have been developed using standard computer programs. Model runs are conducted as needed to understand system function and to inform weir design.

4. **Establish off-stream wetlands with alternate discharge considerations**
   An off-stream wetland feasibility study was prepared and concluded that wetlands should be established within the active flood plain and not in surrounding upland areas.

5. **Evaluate stormwater detention/retention basins**
   Clark County Regional Flood Control District (CCRFCD, ccrfcd.org) regularly updates a flood control master plan, which includes an evaluation of stormwater detention/retention basins throughout the valley. Facilities built in the Wash and elsewhere in the valley consider regional stormwater plans.

**Alternate Discharge**, administered by the LVWWAC, action items 6 – 10

The Systems Conveyance and Operations Program was deemed unnecessary for the foreseeable future.

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

**Jurisdictional and Regulatory**, administered by the LVWWAC and LVWCC

16. **Further investigate and define structure for local oversight of the Las Vegas Wash Comprehensive Adaptive Management Plan**
   Formerly the Management Advisory Committee, local oversight was officially changed to the LVWWAC by an interlocal agreement in 2007 (then amended in 2012). The eight members act on behalf of their governing boards and councils. Southern Nevada Water Authority (SNWA, snwa.com) was appointed the lead agency for implementing CAMP action items.

17. **Ensure interagency coordination**
   Regular meetings are convened by managerial, technical and administrative staff to ensure that interagency coordination is achieved. The Las Vegas Wash Project Coordination Team (Wash Team) hosted 13 such meetings in 2014.

**Public Outreach**, administered by the Administrative Study Team

18. **Establish a method to continue implementation of the public outreach program**
   Annual funding allocations are provided so that the public outreach program continues to be implemented.

19. **Continue implementation of feedback mechanisms and measurements of progress and results**
   Solicited and unsolicited feedback is obtained at various public outreach events and on lvwash.org. Progress measurements (e.g., website visitors, event attendees, number of events) are recorded and reported quarterly to the LVWCC and in annual reports. The “Las Vegas Wash Outreach Plan, 2013,” further codified effectiveness monitoring for the outreach program. As an additional measure, the plan recommends conducting systematic surveys of various outreach participants.

20. **Provide updates to elected officials**
   Member agencies use the Wash newsletter, year-end reports and other information provided by the Wash Team to keep elected officials informed.
Funding, administered by the Administrative Study Team

21. Further investigate potential funding sources identified by the team
   Funding sources were identified and 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 Las Vegas Wash management entity to review funding options
   Budgets are reviewed and approved annually by the LVWWAC. Operating expenditures not reimbursed by state, federal or private grants are paid for by the City of Henderson (4.9%), City of Las Vegas (9.5%), City of North Las Vegas (3.8%), 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 that could be funded by grants are vetted by the study teams and Wash Team. Assessment and prioritization criteria include, but are not limited to, feasibility, cost, need for and importance of information and program benefit.

25. Utilize existing resources and staff, whenever possible
   Regular meetings among the LWCC stakeholders provide a forum for ensuring that existing resources and staff are used to prevent duplication. Partnerships have led to improved efficiencies in wetland, water quality and bioassessment monitoring programs.

Shallow Groundwater, administered by the Research and Environmental Monitoring (REM) Study Team

26. Develop a central database
   A central database has been developed. Data are added when made available.

27. Locate and inventory existing shallow monitoring wells
   Existing data and geospatial technologies were used to locate and inventory shallow monitoring wells in the valley.

28. Identify issues of concern
   Ongoing water quality monitoring programs and stakeholder data sharing forums provide for the early detection of issues of concern.

29. Develop a long-term monitoring plan
   A presentation on the draft plan was given to the REM Study Team and comments were incorporated into the document.

30. Develop a method to identify the potential for future contaminant discovery
   Regular data assessments are completed to evaluate potential concerns and analyte lists are regularly revised.

31. Develop and implement a notification plan
   Managed by outside agencies.

32. Promote interagency coordination
   Regular meetings are convened by managerial, technical and administrative staff to ensure that interagency coordination is achieved. The Wash Team organized three meetings of the REM Study Team in 2014.

33. Develop a bibliography
   A bibliography was completed and is accessible on the members’ section of lvwash.org.

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
   Long-term management and monitoring plans have been completed and updates and other activities are ongoing to achieve plan goals.

41. Conduct additional research
   Research activities are ongoing and are vetted by the study teams and Wash Team.

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 as a result and finalized the “Cultural Resources Management Plan for the Las Vegas Wash Archaeological District in Clark County Wetlands Park, Las Vegas, Nevada” to guide future activities.

43. Identify funding needs
   Funding needs are vetted by the study teams and Wash Team. Assessment and prioritization criteria include, but are not limited to, feasibility, cost, need for and importance of information and program benefit.

44. Facilitate interagency coordination to ensure projects are implemented
   Regular meetings are convened by managerial, technical and administrative staff to ensure that interagency coordination is achieved. The Wash Team organized three meetings of the REM Study Team in 2014.
Water Quality & Wetland Demonstration Projects

- Real-time Monitoring Sites
- Shallow Groundwater Wells
- Nature Preserve and Mitigation Ponds
- Sampling Sites
- Tributary Sampling Sites
- Mainstream and TSS Monitoring Sites
- Selenium Sampling and Stream Gaging Sites

Note: maps illustrate activities completed during 2014
Southwestern Willow Flycatcher Survey Sites
Aquatic Bird Count Sites
Yellow-billed Cuckoo Survey Transects

Tamarisk-feeding Invertebrate Survey Sites
Marsh Bird Monitoring Sites
Avian Point Count Sites

Green-Up Plantings
Other Plantings
Tamarisk Cleared
Tropicana Outfall Weir Design

Silver Bowl Weir Construction
Archery Weir Construction
Sunrise Mountain Weir Design
Historic Lateral Weir Expansion Design
Bank Protection
2014 AT A GLANCE

- Completed reconstruction of the Historic Lateral Weir, which was damaged in the 2012 floods
- Achieved 70 percent construction completion milestone for the Three Kids Weir
- Started and completed construction of the Silver Bowl and Archery weirs
- Added 6,700 linear feet of new bank protection
- Completed geotechnical investigations for the D-14 Extension and Tropicana Outfall weirs
- Completed design and contract documents for the Historic Lateral Weir Expansion and Sunrise Mountain Weir project and improvements to the Bostick and Rainbow Gardens weirs
- Completed design of the Tropicana Outfall Weir

PROJECT SUMMARY

Stabilization projects are crucial to the success of many other activities at the Wash. Because of this, the LVWCC established Wash stabilization as one of the key initial steps to implementing the CAMP.

The goals of stabilization are to reduce erosion and sediment transport, stop the interception of contaminated shallow groundwater and provide a stable platform for ecological and recreational improvements. Weirs and bank protection are instrumental to meeting these goals. The weirs slow the flow of water, which helps stop channel bed erosion, while bank stabilization helps to reduce the ability of Wash flows to erode, undercut and collapse channel banks.
Eighteen of the planned 21 permanent weirs have now been installed along the channel, upstream of Lake Las Vegas. In addition, the National Park Service (nps.gov) constructed three grade-control weirs downstream of Lake Las Vegas. Six more weirs are planned, of which one is under construction. Crews also have placed more than 12 miles of bank protection along the Wash, above Lake Las Vegas.

2014 MAJOR ACCOMPLISHMENTS

Early in 2014, Bureau of Reclamation (Bureau, usbr.gov) construction crews were busy replacing rock riprap on the Historic Lateral Weir crest and toe, which was moved by a series of three floods in 2012. In addition, one access ramp and a rock riprap down drain were reconstructed following damage suffered in the same floods.

Construction of the Three Kids Weir also continued. Early in 2014, the contractor completed the redirection of Wash flows through 3,000 feet of diversion channel, allowing the north half of the weir to be constructed. Flows were diverted over the finished north half in October. At year’s end, construction of the $11.6 million weir was focused on the southern portion and more than 70 percent of the construction of this very large and difficult weir had been completed. Current plans estimate project completion by mid-2015.

In February, construction started on the Silver Bowl and Archery weirs. Flows were diverted around the weir sites in April. Construction moved quickly on this $11.7 million project throughout the summer and fall months, and included the installation of 6,700 linear feet of bank protection. Both weirs became operational in late-November, and the contractor completed construction by the end of 2014, a full three months earlier than planned.

While construction moved forward in 2014, so did design and contract development. Early in 2014, geotechnical investigations were initiated at the site of the D-14 Extension and Tropicana Outfall weirs. The final geotechnical report, issued in September, indicated that construction of these weirs would be challenging. Further investigation suggested that construction of the D-14 Extension Weir would be difficult and possibly dangerous and also might impact sensitive cultural resources. Given this outcome, the decision was made to eliminate plans for construction of this, the 22nd weir, and opt to extend the toe of the upstream, existing Visitor Center Weir, sometime in the future, when needed.

During 2014, design and contract document development were completed and permitting activities moved forward for the Historic Lateral Weir Expansion and Sunrise Mountain Weir project, as well as for improvements to the Bostick and Rainbow Gardens weirs. By the end of the year, the design of the Tropicana Outfall Weir had been completed with contract document development scheduled for the first half of 2015.

2015 OPERATIONAL OBJECTIVES

Bureau crews will conduct improvements to the Bostick and Rainbow Gardens weirs in the winter months of 2015. The Three Kids Weir should be completed by the end of June. Bidding is expected to move ahead on the Historic Lateral Weir Expansion and Sunrise Mountain Weir project in the fall, pending Nevada Division of Environmental Protection’s (NDEP, ndep.nv.gov) plans for including a perchlorate extraction system in the construction. Contract documents for the Tropicana Outfall Weir will be completed, with construction beginning as early as mid-fall.
2014 AT A GLANCE

• Finalized the plankton selenium report

• Completed the eggshell thickness comparative study using eggshells collected during the four bioassessment rounds

• Incorporated selenium data from 2013 sampling of macroinvertebrates and other media into a biodynamic model

PROJECT SUMMARY

Erosion control structures (weirs) along the Wash have led to water quality improvements and ecosystem enhancements; however, these structures change the flow regime. As the slowed waters pool behind the weirs, there is a potential for contaminants to accumulate and affect both water and wildlife. The bioassessment monitoring program tracks the impacts of the weirs and monitors contaminants in the Wash and select tributaries. Bioassessment monitoring began in 2003 with the help of the U.S. Fish and Wildlife Service (FWS, fws.gov) and has collected water, sediment, bird eggs and fish for analysis of contaminants of potential concern. Four rounds of bioassessment monitoring have been completed, generally on a biennial basis.
In the past few years, the Wash Team has conducted additional research related to the bioassessment monitoring program, including a study to determine if eggshell thickness was affected by elevated concentrations of dichlorodiphenyldichloroethylene (DDE), a study using macroinvertebrates and other media to provide baseline selenium data for a biodynamic model and a study quantifying selenium concentrations in plankton.

2014 MAJOR ACCOMPLISHMENTS
In 2014, the Wash Team finalized the “Selenium Concentrations of Plankton Collected from Lake Mead, Nevada 2010-2012” report. Results from the two-year study were presented in the 2008-2012 year-end report.

A final grant report also was prepared summarizing the eggshell thickness study and macroinvertebrate selenium analysis.

In studying bird egg concentrations, DDE (a derivative of dichlorodiphenyltrichloroethane [DDT]) has been the primary concern over the four rounds of bioassessment monitoring, with DDE concentrations in some sections of the project area high enough to cause eggshell thinning. This was a concern because eggshell thinning can negatively impact bird reproductive success. To determine whether the elevated levels of DDE found in the egg contents caused eggshell thinning, the thicknesses of eggshells collected during the four rounds of bioassessment monitoring were measured. A collection of 134 bird eggs was examined, and of those, 113 eggs were intact enough to determine eggshell thickness.

Thickness measurements were compared against survey year, location and DDE concentration. No detectable differences were noted in the thickness measurements. The thickness of killdeer and American coot eggshells collected from the Henderson Bird Viewing Preserve and Burns Street Channel, sites with elevated concentrations of DDE that warranted moderate concern, were not noticeably different from the thickness of eggshells collected in the Wash or Pahranagat National Wildlife Refuge, sites that did not have elevated levels of DDE.

Also, in 2014, selenium concentrations in macroinvertebrates, sediment, coarse particulate organic matter and water were analyzed from data collected in 2013 at six locations along the Wash and its tributaries. These data were incorporated into a biodynamic model to determine selenium accumulation in the food web and to predict selenium concentrations in water. The model's ability to accurately predict selenium concentrations in water was limited due to the small sample size and because higher trophic level species, fish in particular, were not collected at the same time as the other media; however, the resulting model remains a useful planning tool. The biodynamic model's use of site-specific information to predict selenium accumulation in fish can be used to determine the water concentration that Wash sites must stay below to remain in compliance with the U.S. Environmental Protection Agency’s (epa.gov) proposed selenium standards based on fish tissue concentrations.

2015 OPERATIONAL OBJECTIVES
In 2015, the Wash Team will initiate discussions with the Bureau and FWS to determine if water quality monitoring data can be used as an indicator of potential contaminant accumulation in lieu of continued bioassessment monitoring.
2014 AT A GLANCE

• Conducted monitoring programs in the Wash and tributaries

• Sampled three new shallow groundwater wells

• Presented draft groundwater monitoring plan to the REM Study Team

• Detected impacts to water quality from construction in the Wash and tributaries

• Presented real-time water quality data at the Lake Mead Science Symposium

• Uploaded data to the Lower Colorado River Water Quality Database

• Continued to monitor conditions in Lake Mead

PROJECT SUMMARY

Long-term water quality monitoring in the Wash, its tributaries and Lake Mead provides a comprehensive understanding of Wash flows and potential impacts on the drinking water from the lake. Several programs have been implemented since 2000, and, in 2011, the “Las Vegas Wash Surface Water Quality Monitoring and Assessment Plan” was created to coordinate monitoring efforts.

Monitoring of the mainstream Wash is used to evaluate baseline conditions, detect variations over time and provide a long-term history of data that can be used to make watershed-based decisions. The data show Wash water quality improving each year, reflecting the positive effects of stabilization and revegetation.

Tributary sampling monitors the effects of urban runoff on the Wash, providing important information on non-point sources of contamination, and the flow data collected allows hydrologists to approximate how much urban runoff is entering the Wash.
Additional monitoring is conducted through the extensive selenium sampling project, which samples for selenium and total dissolved solids (TDS) along eight tributaries.

Eighteen of 21 weirs have been constructed in the Wash. The weirs, their impoundments and the wetlands that develop remove total suspended solids (TSS) from the water. The TSS monitoring program was designed to determine the efficiency of this removal. The shallow groundwater monitoring program was established to monitor groundwater quality changes along the Wash during the construction of the weirs. In addition, permanent stations continuously monitor real-time water quality at sites along the Wash and its tributaries.

Sampling of Lake Mead is conducted in Boulder Basin, the Overton Arm and Gregg Basin to assess the lake and the role of the tributary inflows. This sampling provides water treatment operators with up-to-date information on lake conditions and is used by partner agencies to guide resource and recreation management.

**2014 MAJOR ACCOMPLISHMENTS**

The Wash Team continued to conduct established water quality monitoring programs in the Wash and its tributaries in 2014. As part of the shallow groundwater monitoring program, three new wells were sampled and a presentation on the draft “Groundwater Quality Monitoring and Assessment Plan along the Las Vegas Wash” was given to the REM Study Team. The goal of the plan is to support sound management of the Wash by sustaining an integrated, adaptive and robust monitoring network that characterizes the groundwater quality along the Wash and the potential environmental impacts from shallow groundwater contribution. Comments from internal reviewers and from the REM Study Team presentation were incorporated into the draft document.

Several construction projects in the tributaries and the Wash impacted water quality monitoring programs during 2014. Sampling was suspended at LW12.1 due to construction at the Desert Rose Golf Course. In addition, spikes of TSS and elevated concentrations of other parameters, which are closely related to soil and groundwater, were observed at several sample sites. Summer and fall storms also caused some impacts to water quality monitoring results.

A study titled “Real-time Water Quality Data and Applications in the Las Vegas Wash during Storm Events” was presented at the 2014 Lake Mead Science Symposium. Data collected during storm events in the past several years showed correlations between storm intensity-duration-frequency and water quality changes. Runoff that entered the Wash during storm events dramatically diluted TDS concentrations and changed the temperature, pH and dissolved oxygen of Wash water.

Further progress was made on uploading water quality data into the Lower Colorado River Water Quality Database (Water Quality Database) in 2014. This database, accessible via the password-protected members’ website, allows LWCC stakeholders to view and download data from any of the water quality monitoring programs. See the Data Resources section for more information.

Lake Mead levels continued to decline in 2014, reaching a low value of just over 1,080 feet above sea level in August. Falling lake levels have moved Wash/Lake Mead confluence conditions further out. Throughout summer and fall there was an extensive region of low oxygen water in the bottom of the water column of Gregg Basin. This was likely driven by a combination of factors, but was initiated because Colorado River temperatures were 3.5-5.5°F warmer due to changes in storage upstream. These changes, whether driven by management or climate change, have the potential to impact Lake Mead water quality in the future.

During September, October and November the cyanobacteria *Microcystis* became a significant proportion of the algal community. Species within the genus are known to produce toxins when bloom conditions develop; however, *Microcystis* abundance did not rise to the level of a bloom and the toxin microcystin was never found at detectable levels. As in 2013, a high flow experiment was conducted on the Colorado River through the Grand Canyon and the impacts were measured in Lake Mead. Preliminary results from this sampling again suggested that while the experiment was measurable in Lake Mead, the impacts were generally neutral.

Invasive quagga mussels monitoring continued throughout Lake Mead using the abundance of the planktonic veliger phase. Data from 2014 confirmed that the population has stabilized, with quagga mussels present in all areas of the lake. Water quality measurements overall in Lake Mead and Lake Mohave continued to remain high, with good values in Las Vegas Bay and excellent values in the other parts of the lakes.

**2015 OPERATIONAL OBJECTIVES**

All water quality monitoring programs in the Wash, its tributaries and Lake Mead will continue in 2015. Sample locations, frequencies and analyses for these programs may change as agencies continue to work together to prevent duplication of sampling, while ensuring all monitoring needs are met. In addition, the Wash Team will finalize and implement the groundwater monitoring plan.

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<tr>
<td>Mainstream sampling</td>
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<tr>
<td>Tributary sampling</td>
<td>6 locations</td>
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<tr>
<td>Real-time monitoring</td>
<td>2 locations</td>
<td>Continuously</td>
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<td>Shallow groundwater monitoring</td>
<td>16 locations</td>
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<td>TSS and perchlorate monitoring</td>
<td>10 locations</td>
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<td>Extensive selenium sampling</td>
<td>12 locations</td>
<td>Monthly</td>
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<tr>
<td>Tributary stream gaging</td>
<td>12 locations</td>
<td>Monthly</td>
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<td>Outfall sampling for NDEP discharge permits</td>
<td>varies</td>
<td>Daily (while discharging)</td>
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<tr>
<td>Lake Mead sampling</td>
<td>18 locations</td>
<td>Monthly or bi-monthly</td>
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**Water quality monitoring programs**
2014 AT A GLANCE

- Removed fivehook bassia and tall whitetop
- Seeded alkali sacaton and seeded and planted plugs of desert saltgrass during World Wetlands Day event
- Conducted vegetation monitoring at the Mitigation Ponds
- Worked to correct erosion and flow management issues at pond 7
- Contracted with University of Santa Barbara, California for common reed study
- Monitored water quality in accordance with Clark County Parks and Recreation’s National Pollutant Discharge Elimination System permit

PROJECT SUMMARY

Wetlands provide valuable ecosystem services, offering habitat for wildlife and improving the quality of water flowing through them. The Clark County Wetlands Park Nature Preserve (Nature Preserve) and in-lieu fee mitigation ponds (Mitigation Ponds) provide the opportunity to study the benefits offered by wetlands. The Nature Preserve receives tertiary treated effluent from the Clark County Water Reclamation District (CCWRD, cleanwaterteam.com), which, in turn flows into the Mitigation Ponds. Additional flows from the Tropicana Floodway Channel also are delivered into the Mitigation Ponds. The Wash Team monitors water quality in the Nature Preserve and Mitigation Ponds to quantify changes and detect trends, and these data are used to meet compliance requirements for Clark County Parks and Recreation’s National Pollutant Discharge Elimination System (NPDES) permit.
Clark County (clarkcountynv.gov) developed the Clark County In-Lieu Fee Wetland Mitigation Program (i.e., the Mitigation Ponds) to provide off-site wetland mitigation within the county. SNWA signed an agreement with the county on March 15, 2012 to monitor and manage the project on their behalf. The Wash Team partnered with the county to create the acres and types of functional wetlands needed to meet U.S. Army Corps of Engineers (Corps, usace.army.mil) permit requirements.

**2014 MAJOR ACCOMPLISHMENTS**

In 2014, Soil-Tech conducted invasive weed treatments at the Mitigation Ponds during both spring and fall. Crews removed fivehook bassia (*Bassia hyssopifolia*) and tall whitetop (*Lepidium latifolium*). Revegetation efforts also progressed in 2014. The World Wetlands Day volunteer event held in February welcomed more than 500 students from area schools. The students seeded alkali sacaton (*Sporobolus airoides*) and desert saltgrass (*Distichlis spicata*) between ponds 5 and 6 and on the eastside of pond 6. They also planted desert saltgrass plugs harvested from the Warm Springs Natural Area between ponds 5 and 6. Once these plants have established and spread they will help stabilize the banks of the ponds and hopefully outcompete fivehook bassia and other weeds, thus lowering maintenance costs associated with weed removal.

Vegetation monitoring also was completed during fall, within each unique vegetation type per the Corps permit.

Additionally, the Wash Team began working with the Las Vegas Valley Water District’s Ground Maintenance Division (lvwwd.com) on erosion issues below pond 7. The purpose is to open up the outflow box that has been buried over time due to flooding events in the area, as well as fix the erosion that the floods have created. Once completed, the outflow box should be able to work as designed and allow staff to properly manage the water level in pond 7.

The Wash Team also contracted with the University of California, Santa Barbara to conduct a common reed (*Phragmites australis*) study. The one-year study will evaluate genetic and reproductive factors that may contribute to the invasive success of common reed within the Mitigation Ponds and along the Wash. The goals are to determine the distribution of native, hybrid and introduced types of common reed; if hybrid seeds are germinable and if their germination rate is comparable to seeds from native and introduced strands; and if vegetative propagules, such as stem fragments created through current management practices, significantly contribute to the spread of the species.

Water quality monitoring continued in the Nature Preserve and Mitigation Ponds in compliance with Clark County Parks and Recreation’s NPDES permit. In order to meet permit requirements, the Wash Team must monitor and report TDS, nitrate as nitrogen, chloride, phosphate, sulfate and fecal coliform. In July, the number of required monitoring locations was reduced from eight to five. In September, when the NPDES permit was renewed, the number of required monitoring locations was further reduced from five sites to three. To comply, the Wash Team collected water quality samples at two sites, and for the third site, recorded flow data from the CCWRD pipeline and reported data collected by CCWRD.

**2015 OPERATIONAL OBJECTIVES**

Invasive weed management and erosion control and flow management work will continue in 2015. Additionally, the Wash Team will continue monthly water quality monitoring and bird monitoring (described in the Wildlife section).
2014 AT A GLANCE

- Continued surveys for threatened and endangered species
- Detected record number of willow flycatcher migrants
- Concluded aquatic bird counts at weir sites
- Recommenced avian point count study
- Continued tamarisk-feeding invertebrate survey; documented first widespread defoliation by northern tamarisk beetle
- Added 22 invertebrate species to the inventory, bringing the total to 458

PROJECT SUMMARY
The Wash, with its wetland, riparian and desert habitats, is home to hundreds of species of vertebrate and invertebrate wildlife. The Wash Team initiated the first wildlife surveys more than 15 years ago and through the years has studied the birds, reptiles, fishes, amphibians, mammals and invertebrates that inhabit the area. With the findings, the “Las Vegas Wash Wildlife Management Plan” was developed. The plan established three objectives to guide wildlife-related activities along the Wash: conserve native species, protect their habitats and increase environmental awareness of these resources within the community.
2014 MAJOR ACCOMPLISHMENTS

Surveys for federally threatened and endangered bird species continued in 2014. These surveys are conducted to avoid effects to listed species that might impact the Wash stabilization program. Permitted Wash Team biologists conducted marsh bird monitoring, which surveys for the endangered Yuma Ridgway's rail (formerly known as the Yuma clapper rail) and five other species, in April and May. No Yuma Ridgway's rail were found. Of the target species, three were detected: least bittern, Virginia rail and sora.

Permitted Wash Team staff conducted surveys for the endangered southwestern willow flycatcher from late-May through early-July. Field crews detected a record 25 willow flycatchers over the course of the first three surveys; however, none were found in the final two surveys of the season and no breeding activity was observed. The 25 were all concluded to be migrants and thus could not be confirmed as the endangered southwestern subspecies. From late-June through mid-August, Wash Team biologists surveyed for the yellow-billed cuckoo and detected three migrants. The western population of the species was given threatened status under the Endangered Species Act on November 3, 2014.

The Wash Team also conducted aquatic bird counts during the year. The monthly counts reached a milestone of five years of data collection at weir sites along the Wash and at the Mitigation Ponds. Preliminary data analysis shows 68 species at the ponds, 55 species along the Wash and a total of 74 species across both in the five-year period. The counts concluded at weir sites in December. The Mitigation Ponds will continue to be surveyed to comply with the wildlife monitoring requirements of the Corps permit Clark County holds for that project.

A general bird survey was reinitiated in September. The avian point count study was originally conducted from 2005 to 2011 and recorded 185 species. The study kicked off again to document changes to the bird community as a result of further stabilization and enhancement efforts along the Wash channel. The Wash Team contracted with Great Basin Bird Observatory (GBBO) to perform the surveys. GBBO visits the 31 points established in the original study every two weeks. At each point they identify all bird species and count the number of individuals for a five-minute period. A total of 117 species have been detected since the surveys recommenced.

Monitoring for the federally threatened desert tortoise took place throughout 2014 in support of weir construction projects. Every contractor that worked on Wash-related projects underwent a training course to educate them and prevent any negative impacts to the species. No tortoises were observed.

The survey of tamarisk-feeding invertebrates concluded its fourth year in 2014. This survey studies the impact of the northern tamarisk beetle (Diorhabda carinulata), splendid tamarisk weevil (Coniatus splendidulus) and tamarisk leafhopper (Opsius stactogalus) on the invasive tamarisk tree. These invertebrate species may be able to control reestablishment of the invasive plant, which had been the dominant plant species along the Wash prior to restoration efforts. In 2014, the majority of the remaining tamarisk was substantially defoliated by the northern tamarisk beetle (a species of tamarisk leaf beetle), with the larvae doing most of the damage. This was the first widespread defoliation by the beetle documented in the study area. Some trees died as a result of the defoliation, and many of the trees were stressed to the point that they did not produce flowers or seeds, limiting their ability to spread.

Informal invertebrate surveys also continued in 2014. The Wash Team identified 22 new species, bringing the combined known inventory of invertebrates along the Wash and surrounding upland habitat to 458 species.

2015 OPERATIONAL OBJECTIVES

In 2015, the Bureau will reinitiate informal Section 7 consultation with the FWS for effects of Wash program actions on the yellow-billed cuckoo. Permitted staff will continue to conduct surveys for federally threatened and endangered bird species. The avian point count study will continue, as will aquatic bird counts at the Mitigation Ponds. With ongoing and new construction projects on the itinerary, desert tortoise monitoring and training efforts also will continue. Impacts to tamarisk from invertebrates will continue to be monitored, although likely not as part of a formal survey, as much of the remaining tamarisk along the Wash will be removed during the year.
2014 AT A GLANCE

• Revegetated 21 acres with native plants

• Conducted vegetation monitoring at revegetation sites along the Wash

• Summarized 2013 vegetation monitoring data in report

• Documented first occurrence of Las Vegas bearpoppy on a Wash revegetation site

• Closed Corps permit for Lower Narrows and Homestead weirs

• Removed more than 30 acres of tamarisk

PROJECT SUMMARY
Vegetation enhancement activities along the Wash are performed to meet a wide range of objectives, including permit requirements related to the construction of stabilization projects, as well as the objective of the “Las Vegas Wash Wildlife Management Plan” to protect and enhance habitats. In addition, vegetation enhancement provides soil stabilization, water quality improvements and increases the aesthetics of the Clark County Wetlands Park (Wetlands Park).

More than 420 acres of wetland and non-wetland revegetation have been completed along the Wash since 2000. Wetland areas make up 123 of these acres, of which 60 acres have been or will be used to meet permit requirements from the Corps. In addition to providing wildlife habitat and buffers for the wetlands, non-wetland areas established along the Wash, as well as the remaining wetland areas, are used to meet requirements from other permits and grants received by SNWA.
The management of invasive weeds also plays an important role in the overall stabilization and enhancement of the Wash. More than 1,400 acres of tamarisk have been removed since the inception of the LVWCC.

2014 MAJOR ACCOMPLISHMENTS

The Wash Team held two volunteer Green-Up events in 2014, including the 25th event held in the fall. Combined, more than 1,000 volunteers planted 9,330 native plants at two adjoining locations covering 17 acres. Both sites were located on the south side of the Wash adjacent to the Duck Creek Confluence and Upper Narrows weirs that were completed in 2013. More than half of the plants installed at these two sites were grown at the SNWA-owned plant propagation facility located at the Warm Springs Natural Area near Moapa. An additional four acres were planted by Soil-Tech.

Annual monitoring of revegetation sites takes place to document the survivorship of planted plants, trends in growth and invasive weed encroachment, as well as the overall health of the plant communities established. The “Las Vegas Wash Vegetation Monitoring Report, 2013” was completed in 2014 and discussed how the average survivorship of plants on the five most recently planted revegetation sites was 88.2 percent and that most sites either increased in total vegetative cover or remained constant from the previous year. Noxious weeds remained limited on revegetation sites; only two sites had more than 5 percent of their area covered by noxious weeds, while most sites had less than 1 percent.

Two new plant species were identified during 2014 monitoring. Spanish false fleabane (*Pulicaria paludosa*) was previously found at the Mitigation Ponds in 2013 but spread to the wetland area near the DU Wetlands No. 1 Weir this year. This non-native species will be watched by biologists, as it has become a nuisance weed in many other areas of the Colorado River Basin. The second new species was the Las Vegas bearpoppy (*Arctomecon californica*). A single individual of this plant, listed as critically endangered by the State of Nevada, was found on the north side of the Wash between the Duck Creek Confluence and Upper Narrows weirs. While small populations of this plant have been known to occur in the area, this is the first documented occurrence within a revegetation site.

The permit issued by the Corps for the construction of Lower Narrows and Homestead weirs was successfully closed. This large project located downstream of the Calico Ridge Weir and upstream of the Three Kids Weir currently under construction, had a permanent impact to 6.25 acres of wetlands. These areas were mitigated using wetlands reestablished onsite, as well as banked mitigation acres previously established at the DU Wetlands No. 2 and Upper Diversion weirs.

More than 30 acres of tamarisk were removed along the Wash. The contractor, Soil-Tech, cleared 15 acres in preparation for planting events and another 16 acres were removed for the construction of the Silver Bowl, Archery and Three Kids weirs.

2015 OPERATIONAL OBJECTIVES

Areas near the Duck Creek Confluence and Upper Narrows weirs, as well as the recently completed Archery and Silver Bowl weirs will be revegetated with the help of volunteers at the two planned 2015 Green-Up events. Additional wetland and emergent vegetation will be planted throughout this same area. Continued monitoring of past restoration sites will continue in 2015 to ensure the best possible practices are used, as well as to provide information to permitting agencies. Invasive weeds also will continue to be monitored and controlled to limit their negative impact on the Wash restoration project.
2014 AT A GLANCE

- Finalized report on findings from the 2013 excavation of the Beehive Rockshelter site
- Completed compliance process for upcoming weir construction projects
- Conducted planning for remote sensing project at the Larder and Scorpion Knoll sites
- Hosted four meetings of the Cultural Resources Coordinating Committee

PROJECT SUMMARY

With its abundance of natural resources, the Wash has drawn humans to its banks for thousands of years. A wealth of artifacts has been discovered in the project area, highlighting the Wash’s importance to both prehistoric and historic peoples. Given these discoveries, in 1977, the area was designated as the Las Vegas Wash Archaeological District.

It is the responsibility of the Wash Team and its staff and contracted archaeologists to record, protect and interpret the Wash’s cultural resources. In 2011, a Programmatic Agreement (PA), a formal agreement providing guidelines for the Section 106 consultation process for cultural resources within the Wetlands Park, was implemented between the Bureau, Clark County, SNWA and other stakeholders.

The Cultural Resources Coordinating Committee (CRCC) meets quarterly to review construction developments and research questions, and give updates on activities within the Wetlands Park. The collaboration of all stakeholders has led to a much clearer understanding of the roles of each agency in protecting cultural resources, saving both time and expenses.
2014 MAJOR ACCOMPLISHMENTS

The report detailing findings of the 2013 excavation of the Beehive Rockshelter site was finalized in 2014 and approved by the Nevada State Historic Preservation Office (SHPO).

Also in 2014, the Wash Team completed compliance documentation for the remaining weir construction projects. Cultural resource experts worked closely with engineers during the design phase to identify potential impacts on cultural resources in the construction footprints and easements of the proposed weirs.

As stipulated in the PA and cultural resources management plan (CRMP), the Wash Team must conduct a literature and file review for the area of potential effect (known as the APE), followed by an in-field survey. This includes the actual footprint of the constructed weir, the easement where construction vehicles are allowed to operate, ingress and egress routes for construction vehicles, and any areas used for stockpiling or dumping. If no cultural resource sites are found within these areas, the results are provided to the Bureau, who reports the finding to the SHPO and the Corps.

In instances where cultural resources are found in the APE, two options are available: avoidance or treatment. If sites can be avoided, through design changes, prominent marking or both, an official avoidance plan is developed in coordination with the Bureau and submitted to the SHPO for approval. If sites cannot be avoided and will be significantly affected, a treatment plan is required. Treatment plans identify the potential negative effects on a cultural site, the strategies for minimizing the impact via mitigation and data recovery, and outline a research design for understanding and interpreting the cultural site. Treatment plans require a final report detailing the findings of the proposed undertaking.

Currently, all cultural resource reporting requirements are up-to-date for the Three Kids, Silver Bowl, Archery, Sunrise Mountain and Historic Lateral weirs, and construction sites are being monitored for the unexpected discovery of cultural resources.

In the course of planning and design, the Tropicana Outfall and D-14 Extension weirs were found to potentially impact two significant cultural sites, Larder and Scorpion Knoll, in the Wetlands Park. Working within the structure of the PA and the CRMP the CRCC determined that the best approach for this undertaking was to survey the entire site using remote sensing equipment (ground penetrating radar and electric resistivity).

The Larder and Scorpion Knoll sites are found in an interfluvial area along the Wash and were previously identified in an archaeological survey in 2001. Due to the significant surface finds in the area, a research plan was prepared and the sites were resurveyed and tested in 2005-2006. The Larder site was identified as a large artifact scatter that included, among other artifacts, archaic stone tools and “protohiscoric” ceramics. These surface finds indicate not only the extensive size of the site, but also significant use over several thousand years. In order to test the extent of buried deposits, 18 backhoe trenches were excavated uncovering more than 60 storage pits. The contents of the pits revealed that they were used to store food such as mesquite, amaranth and maize. The site also provided the earliest known direct date for maize in the Las Vegas Valley, dating from 350-50 BC.

The Scorpion Knoll site is located very close to the Larder site and was tested using eight backhoe trenches. Excavations revealed storage pits and “pit features” that were interpreted as possible pithouses. Dates from Scorpion Knoll fall between AD 10-1400, with a bulk of dates from AD 660-810, indicating Puebloan period occupation.

In order to better understand these significant sites and protect the sensitive resources, a full remote sensing survey and limited testing are planned for early-2015. A full geophysical map of these sites will allow for better planning and design of nearby weirs and minimize impacts to the sites.

The CRCC met four times in 2014, once each quarter. Meetings focused on several topics, including weir construction activities, cultural site security, and potential research projects, including the remote sensing project for the Larder and Scorpion Knoll sites. A partnership with the Nevada Site Stewards was discussed to monitor sites in the Wetlands Park, but it was determined that missions and requirements did not align at this time.

2015 OPERATIONAL OBJECTIVES

The Larder and Scorpion Knoll remote sensing project is scheduled to take place in the first quarter of 2015, with the final report expected by the third quarter of 2015. In addition, the PA will undergo its two-year review at the first meeting of the CRCC in 2015.
2014 AT A GLANCE

- Continued implementing the outreach plan
- Continued partnership with Mabel Hoggard Math and Science Magnet School
- Hosted fourth annual World Wetlands Day event
- Partnered with the Wetlands Park and other agencies to host an International Migratory Bird Day celebration
- Held two Green-Ups, including the 25th event which included a special community fair
- Designed new bannerstands to better convey Wash messages
- Hosted or participated in a total of 20 outreach events, reaching approximately 3,000 people

PROJECT SUMMARY

Informing and educating the public about the Wash and the LVWCC’s efforts to stabilize and enhance the channel is vital to ensuring long-term community support for the project. To help garner this support, the LVWCC has implemented the public outreach program for 15 years now. In that time, the Wash Team has participated in approximately 575 events and reached nearly 225,000 people with Wash-related messages.

To further guide education and outreach activities, the Wash Team created the “Las Vegas Wash Outreach Plan, 2013.” The plan builds on previous efforts laid out in the CAMP and the “Public Outreach Initiative, 2002-2004.” The 2013 plan reaffirms past goals and establishes new ones, lays out core messages, strategies and tactics, and describes methods for measuring outreach effectiveness. In addition, the Wash Team has a robust outreach presence online that is further described under the Data Resources section.
2014 MAJOR ACCOMPLISHMENTS

In 2014, the Wash Team continued to implement the outreach plan, relaying core messages and utilizing strategies outlined in the document. The partnership with Mabel Hoggard Math and Science Magnet School (Mabel Hoggard), which dates back to 1999, also continued. Staff led fifth graders on daylong field trips that included the Wash and Lake Mead. Students participated in water quality monitoring and learned about the water cycle and how to identify different habitats and animals found along the Wash. In addition, the Wash Team hosted field trips for hundreds of fourth graders from Somerset Academy and Andre Agassi Preparatory Academy.

The Wash Team and Wetlands Park hosted their fourth annual celebration of World Wetlands Day on February 6, which was attended by 500 students from six area schools. Eight agency exhibitors provided educational opportunities at the Nature Center, while activities at the Mitigation Ponds centered around planting and seeding as described in the Wetland Demonstration Projects section. The Wash Team and Wetlands Park also partnered with several member agencies to host an International Migratory Bird Day celebration. The event drew more than 200 people to the park, primarily young families. Attendees participated in several activities, including guided bird walks, bird feeder crafts and live hawk demonstrations. At the event the Wash Team distributed the “Field Guide to the Lower Las Vegas Wash” to increase awareness of the Wash’s wildlife and habitat resources, in support of the wildlife management plan.

As described in the Vegetation Enhancement and Management section, the Wash Team also hosted two Green-Up events. The first, held March 15, included 450 volunteers that planted 4,937 plants covering 8 acres. Then, on October 4, more than 550 volunteers planted 4,393 plants on 9 acres as part of the 25th Green-Up. The fall event featured a community fair, where LWCC members and other organizations hosted informational booths and interacted with the public. The fair also included a variety of family-friendly activities, including meeting agency mascots, such as Smokey Bear and Deputy Drip, face-painting and balloon animals.

Additionally, the Wash Team attended a community outreach event at the CCWRD and participated in the Educators Appreciation Day and Back to School Fair held at the Mirage. Newly designed bannerstands encouraged attendees to engage with staff and promoted the core messages of the LVWCC.

In total, the Wash Team hosted or attended 20 events and reached approximately 3,000 people with Wash messages in 2014.

2015 OPERATIONAL OBJECTIVES

Implementation of the outreach plan will continue in 2015. The Wash Team will hold two Green-Ups, one in spring and one in fall, as well as host a wetlands science symposium during its fifth annual celebration of World Wetlands Day. The symposium will be held at the Nature Center and will target high school juniors and seniors and college freshman, to generate interest in the next generation of wetland scientists.

The Wash Team will participate in community outreach events and continue the partnership with Mabel Hoggard in 2015. Staff also anticipates the development and completion of an animated PowerPoint presentation to deliver core messages to high school students.
2014 AT A GLANCE

- Hosted more than 36,000 visits from 26,056 unique visitors at lvwash.org
- Conducted more than 20 page updates and added 14 new PDFs and 44 new images to lvwash.org
- Received 151 contact requests
- Provided monthly newsletter to more than 500 subscribers
- Increased number of Facebook followers by more than 35 percent, to 370
- Processed new digital aerial imagery
- Added more than 137,000 lines of data to the Water Quality Database

PROJECT SUMMARY

Digital media is one of the most efficient platforms to reach an audience. The LVWCC has used a variety of digital outlets for delivering its messages and connecting with stakeholders and the public.

The lvwash.org website has been a valuable resource for project updates, historical detail and a repository for photos and research documents. The website homepage contains a monthly feature highlighting an activity or recent milestone involving the Wash program. The site also provides access to the members’ website. Logging into this password-protected site gives stakeholders access to a variety of resources, including the Water Quality Database, stakeholder contact information and event calendar.
The LVWCC also actively connects with the public through email and Facebook. A newsletter is delivered to the email inboxes of subscribers on the first day of every month, highlighting program accomplishments and promoting upcoming activities. The Wash Facebook page (facebook.com/lvwash), created in 2012 and continuously updated since, provides followers with a visual feast of the Wash through a host of photo galleries and highlights special moments to entice users to visit lvwash.org for more information.

Data resource activities also support project managers. High-resolution aerial imagery is flown as needed to provide base maps for a variety of applications, including project planning, revegetation mapping, survey reporting and documenting changes along the Wash over time. The Water Quality Database stores millions of lines of water quality data collected from across southern Nevada. This database allows a central location for SNWA and other agency partners to import, search, view and export 50 years of data. These data can be filtered and sorted by project, site location, date and parameter. The database allows agencies to share information efficiently, improving communication and collaboration.

**2014 MAJOR ACCOMPLISHMENTS**

The lvwash.org website continues to grow in both content and traffic. In 2014, the website received 36,298 visits from 26,056 unique visitors, averaging 3,025 visits and 2,171 unique visitors each month, representing an increase of nearly 10 percent for visits and nearly 15 percent for visitors from 2013. The website’s homepage articles included a recap of World Wetlands Day, highlights from two Wash Green-Up events, defoliation by the northern tamarisk beetle and the completion of the Archery and Silver Bowl weirs.

The Wash Team handles a large amount of information each year. As part of the management effort for the lvwash.org website, team members conducted more than 20 page updates and added 14 new PDFs and 44 new images in 2014. Team members also received 151 contact requests this year, typically requesting specific information or to schedule a tour of the Wash. While managing the current content, the Wash Team continues to move forward with the redesign of lvwash.org, giving it a modern aesthetic and structural changes to improve the user experience.

The Wash Team continued its community outreach in 2014 through monthly email updates to more than 500 subscribers. Topics of the monthly newsletters covered the LVWCC annual tour, award-winning year-end report, site improvements to the Sunrise Mountain Trailhead and the opening of Terrazza Park. This year’s newsletters also saw the addition of listings for classes and events at the Wetlands Park Nature Center and Henderson Bird Viewing Preserve to help increase awareness and visitor numbers for both facilities.

The Wash Facebook page accumulated 101 new followers in 2014, reaching 370 fans (an increase of more than 35 percent from 2013) and has been a valuable resource in further connecting with the public. Topics over the year ranged from a timelapse video of the recently completed Galleria Drive and archaeological finds at the Wash to the discovery of an endangered Las Vegas bearpoppy in full bloom and plenty of photos of inspiring Wash sunrises. A total of 21 photo galleries house more than 200 images.

New aerial imagery was flown in August to capture the peak of the growing season. The imagery was then rectified, stored and made available for use.

The task of managing the Water Quality Database continued in 2014. A total of 137,666 lines of data were added by 12 participating agencies. By year’s end, the database covered 43 projects, 708 site locations and 882 parameters.

**2015 OPERATIONAL OBJECTIVES**

In the next year, it is anticipated that the design overhaul of the lvwash.org website will be completed. The Wash Team also will look for opportunities to promote and expand their outreach with the public and increase the number of newsletter subscribers and followers of the Wash Facebook page.
mission: working to stabilize and enhance the valuable environmental resources of the Las Vegas Wash

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