

Maintenance Activities and Discussion

Overview:

The SR89 Chino Valley Pilot Project Dry-well Site has various maintenance activities that take place to care for the physical infrastructure, to ensure groundwater quality is being protected, and to maintain the electronic data collection system. All of these systems must be working, maintained, and calibrated where necessary to produce a fact based data-set and defined set of site conditions on which to base the reports. This report covers the period from February 28, 2023 thru August 31, 2023.

Basis and Frequency:

The systems infrastructure requires a variety of physical maintenance activities depending on the time of the year, amount of precipitation, size of the recent storm events and condition of the systems components found during site visits and/or witnessed from the electronic data collected. In addition, the electronic rain-gauge data and battery status data collected is reviewed and downloaded remotely, and water quality sampling is conducted if physically possible. Some activities happen on a monthly basis, and others happen on an as-needed basis determined by site visits and/or remotely based on the data log.

Activities:

This reporting period consisted of the following activities: site visits, mowing, herbicide application, drainage clearing, flow gauge maintenance, storm event data collection & review, and rain event monitoring equipment maintenance.

A new development this reporting period is the maintenance activities being moved to a contractor from the District maintenance staff's duties in an effort to reduce the workload on District maintenance personnel due to continual vacancies. The hand-off required some planning, communication and organization so that the execution and tracking of the maintenance tasks went smooth to ensure that the ADOT maintenance tasks were completed in accordance with current agency guidance standards and are tracked for the purposes of this grant.

Mowing was conducted in the collection basin area one time during the reporting period based on the vegetation growth present, and in accordance with ADOT's Roadside Vegetation Management Guidelines (<https://azdot.gov/business/environmental-planning/biology/roadside-vegetation-management-guidelines>) in order to minimize impact on wildlife and unwanted seed disbursement. The weed growth was significant after the summer growing season with some weeds reaching 48 inches tall after the monsoon rains. The weed growth acts as basin erosion control and additional settling control for suspended sediment that enters the basin with runoff. In addition, weed growth can also uptake certain pollutants if present in runoff as an unintended benefit of their presence.

Drainage clearing was necessary at both ends of the collection basin one time during the reporting period due to wind blown tumbleweeds that had collected and clogged both ends of the collection basin. The mud issue has been eliminated due south basin area above the drainage entrance being fully vegetated and stabilized. However, the tumbleweeds presence continues to be an issue and therefore a herbicide treatment was applied in an effort to reduce the problem. The issue will continued to be monitored into the growing season. The drywell is located in a biozone that has four seasons and as such is now in the fall season where vegetation growth significantly slows up until the night-time temperatures reach freezing temperatures which will signify the start of the winter season.

The low-flow measurement gauge was required to be serviced two times this reporting period to remove sediment impairing the gauge's impeller from rotating freely and registering the flow to the

drywell. The gauge is showing to be an issue and is likely causing the volume of recharge to be under reported as a result. The total registered flow volume was 1,400 gallons. However, it was likely a much larger volume and under-reported due to the reoccurring meter issues. This issue will require further investigation and/or better yet, to find a more reliable method to measure the runoff volume needs to be identified and implemented in order to more accurately capture the recharged volume.

The rain gauge and associated data collection was fully functioning and without issue. As was the battery and charging system that powers the rain gauge and data logging system. It was not possible to collect a water sample this reporting period due to a personnel vacancy in the local area at the appropriate time.

In summary, the drywell system is working efficiently and mostly without issue. None of the problems reported were causing the system to be inoperable nor caused a flooding issues. Currently, the biggest issue remains the inaccurate accounting of the recharged volume even though it is being recharged efficiently. The volume being recharged is significantly more than is being recorded on the installed meter based on the overall storm events rainfall total and drainage collection area size. ADOT is looking at other options to improve the volume recharged accounting accuracy. In addition it has been difficult to collect a water sample due to the distance of ADOT personnel from site since the local District Environmental Coordinator recently retired and has not yet been replaced.

Basin Looking south post mowing and herbicide treatment



6-month Chino Rainfall Data Flowlink Cipher

Rainfall - 2105 Interface Module - Chino Valley Total: 3.97 inches

Input Voltage - 2105 Interface Module - Chino Valley Avg: 13173.39 mV

