Northern Nevada Water Planning Commission

STAFF REPORT

DATE: July 28, 2016

TO: Chairman and Members, Northern Nevada Water Planning Commission ("NNWPC")

FROM: Lydia Peri – Environmental Engineer II, Washoe County
Jim Smitherman – NNWPC Water Resources Program Manager

SUBJECT: Report on the "Septic Nitrate Baseline Data and Risk Assessment Study, Phase II: In-Depth Analysis of Prioritized Study Areas, Creation of Baseline Data Set, and Risk Assessment", including nitrate analysis results for groundwater samples; discussion, possible recommendation to the Western Regional Water Commission ("WRWC"), and possible direction to staff.

SUMMARY

At the December 6, 2006, Board of County Commissioners meeting, the Regional Water Planning Commission ("RWPC") reviewed its list of priority projects and directed staff to identify the evaluation of septic tank effluent on local water quality as one of its top priorities. In response, staff developed a scope of work outline for review and comment by the RWPC and developed a strategy to utilize Washoe County experience and resources to develop the required data. Using input from the RWPC, staff compiled the following elements with the assumption that initial Phase I efforts should involve collection, review, and evaluation of existing data.

1. Determine effluent constituents of concern;
2. Identify possible sources other than septics;
3. Review nitrogen speciation;
4. Identify effects on surface water and ground water quality;
5. Identify areas currently served by septic systems and evaluate septic tank densities;
6. Compile available water quality data;
7. Develop a conceptual evaluation of effluent fate and transport;
8. Identify sensitive receptors;
9. Identify potential effects on human health;
10. Identify potential for degradation of potable water supply;
11. Identify potential effect on water quality standards for surface waters;
12. Identify possible mitigation measures, such as:
    a. Sanitary Sewer connection feasibility; and
    b. Septic tank management/maintenance.

On March 19, 2008, the Washoe County Community Services Department (formerly the Washoe County Department of Water Resources) provided a presentation and discussion on the initial report for the project titled *Phase I: Prioritization of Study Areas & Assessment of Data Needs.* Recommendations from the Phase I study suggested a more comprehensive monitoring and assessment program be implemented on the high priority areas to identify the fate and transport of the septic effluent. Following is the outline of the Phase I study recommendations:

- Collect additional water quality and water level data from domestic well owners in all Project Areas.
- Collect water quality samples from surface water bodies adjacent to and downstream of Individual Sewage Disposal Systems.
- Additional analysis of currently available data for High Priority Areas.
- Perform basic mass balance modeling of High Priority Areas.
- Perform basic vadose-zone modeling of High Priority Areas.
- Perform a GIS-based analysis similar to that completed by the USGS in Douglas County.
- Consider the potential for other sources of nitrate within High Priority Areas.

Prior to beginning the second phase of the study, the WRWC approved and funded an interim study to identify and summarize various ways in which communities elsewhere in the United States have developed management or mitigation solutions to septic system pollution of groundwater. At present, the only solution employed locally to solve septic system groundwater contamination problems has been conversion of septic systems to sanitary sewer, which, while effective, is extremely costly. The report was completed in March, 2013 and identifies community based technical, financial and management alternatives for mitigating contamination from septic systems. In September 2013, Washoe County and the WRWC entered into an Interlocal Agreement for the *Septic Nitrate Baseline Data and Risk Assessment Study, Phase II: In-depth Analysis of Prioritized Study Areas, Creation of Baseline Data Set and Risk Assessment* ("Phase II study"). The Board of County Commissioners and the WRWC approved a First Amendment to the Interlocal Agreement, effective July 1, 2015, for the continuation of the Phase II study through June 30, 2016.

RESULTS

The project tasks developed for the Phase II study prioritized nine study areas (Mt. Rose, Ambrose, Hidden Valley, Huffaker, Verdi, Geiger, Island 18, Mogul, and Pleasant Valley) that required a more in-depth analysis to fill in data gaps originally documented in Phase I. During 2014 and 2015, groundwater samples were collected from 173 domestic wells throughout these nine study areas. Of these 173 samples, only 2 domestic wells recorded nitrate levels above the maximum contaminant level ("MCL") of 10 mg/L (Mt. Rose and Verdi).

Additional samples were collected from areas of known impact (Washoe Valley, Cold Springs and Heppner). Prior to this project, these areas were not sampled for 10 to 20 years; therefore, an update was necessary to determine long term trends of septic effluent impact to groundwater. 133 groundwater samples were collected from domestic wells in these three revisited study areas. Of the 83 samples taken from Washoe Valley, 22 were above the MCL, with the study area's maximum nitrate level recorded at 50 mg/L. Of the 33 wells sampled in the Heppner subdivision, 5 were above the MCL, with a maximum nitrate level of 19 mg/L. Of the 17 wells sampled in Cold Springs, none exhibited nitrate above the MCL.

Information collected from domestic well sampling has been compiled into a final report to develop a better understanding of impacts to water sources. Contour plots depict spatial water quality within each study area. Results of the study suggest that some areas have groundwater impacted by nitrate above the MCL; however, because water quality data was not uniformly collected throughout the areas, results may not be representative of uniform water quality. High nitrate concentrations found in domestic wells may or may not affect sensitive receptors such as municipal wells and surface water sources. These data points are simply an update to existing data sets and will be used to fill in gaps for future sampling.

On July 20, 2016, the Washoe County Community Services Department distributed approximately 5,000 informational letters to domestic well owners within, or in the vicinity of, each of the 12 study areas. The

nitrate information letters act as a resource guide to educate homeowners on nitrate in groundwater while providing a summary of nitrate concentrations found within their study area.

NEXT STEPS

Substantial budget authority remains following Phase II activities (approximately $91,000); therefore, it is recommended that a contract extension or new interlocal agreement be implemented to allow for a public outreach component to the Program. Additional outreach for Phase II study areas would include interactive public sessions to give homeowners an opportunity to ask questions of Washoe County staff and in order to gain a better understanding of the effects of nitrate in groundwater.

RECOMMENDATION

Staff recommends that the NNWPC accept the report, recommend that the WRWC accept and approve the report, and direct staff to develop a proposed scope of work for the recommended public outreach.

LP:cw