

# Northern Nevada Water Planning Commission

## STAFF REPORT

**DATE:** April 29, 2021

**TO:** Chairman and Members, Northern Nevada Water Planning Commission (“NNWPC”)

**FROM:** Chris Wessel, Water Resources Program Manager  
Krishna Pagilla, PhD, Director, Nevada Water Innovation Institute, and  
Chair, Civil and Environmental Engineering, University of Nevada, Reno

**SUBJECT:** Discussion, action, and possible recommendation to the Western Regional Water Commission (“WRWC”) on a proposed Regional Wastewater Source Control Plan Development-Phase 1 development plan; possible direction to staff

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### SUMMARY

The Nevada Water Innovation Institute (“NWII”) will develop wastewater source control frameworks for each of the five (5) regional water reclamation facilities. The proposed work is focused upon reducing pollutants to enhance and possibly expand the opportunities to use wastewater effluent in existing and future water recycling projects.

Wastewater effluent management strategies, ranging from environmental discharges to potable reuse systems, have very specific water quality objectives and regulatory requirements that are met through treatment processes and operational protocols. Improving the quality of the wastewater being received at a treatment facility is an effective and efficient strategy to manage the facility’s effluent water quality. This water quality enhancement method is referred to as “wastewater source control”.

Source water control strategies, including improving non-point water pollution sources, are often utilized to help meet effluent receiving water quality objectives, protect drinking water supply sources, and enhance local ecosystems. Through the wastewater source control development process, key water quality constituents of concern or interest are identified and may range from trace organics to bulk parameters such as salinity.

NWII envisions two (2) project phases. **Phase 1** is the initial focus and is planned as a single joint regional project initiative. **Phase 1** is the subject of the current contract proposal. NWII and individual agencies would plan and implement the facility-specific tasks related to **Phase 2**.

**Phase 1** is the current proposed regional scope of work, and includes:

- Task 1 - Project Management
- Task 2 - Regulatory Review
- Task 3 - Related Program Review
- Task 4 - Wastewater Source Control Framework Development

**Phase 2** is future work, based on each facility’s specific needs, and would include:

- Task 5 - Wastewater Source Water Quality Sampling Plan Implementation
- Task 6 - Wastewater Source Control Strategy Development

Wastewater source control frameworks for each regional water reclamation facility will reflect current and anticipated effluent management/water recycling practices and existing and planned treatment unit processes. When implemented, the wastewater source control strategies will complement established agency environmental control policies, regulations, and protocols protecting effluent water quality.

**FISCAL IMPACT**

Approval of the proposal would include a fiscal impact not to exceed of \$170,000 for Fiscal Year 2021-2022 from the Regional Water Management Fund. The funds are available as part of the proposed WRWC Fiscal Year 2021-2022 budget in fund center 766, under cost center WP310200.

**RECOMMENDATION**

Staff recommends that the NNWPC make a motion recommending the WRWC approve funding in the amount of \$170,000 in support of a project for a Regional Wastewater Source Control Plan Development-Phase 1 and enter into an interlocal agreement with the University of Nevada Reno's Nevada Water Innovation Institute for that purpose.

Attachments:

1. Regional Wastewater Source Control Plan Development – Phase 1 Proposal



University of Nevada, Reno

## **PROJECT PROPOSAL**

- 1. Project Title:** **Regional Wastewater Source Control Plan Development – Phase 1**
  
- 2. Principal Investigators:** **Krishna Pagilla, Ph.D., P.E., Professor**  
**Director, Nevada Water Innovation Institute**  
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- 3. Project Manager:** **Chris Wessel**  
**Water Resources Program Manager**  
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- 4. Statement of Work:** See attached
  
- 5. Duration of the Project:** July 1, 2021 to June 30, 2022 (12 months)
  
- 6. Deliverables:** As described in the Statement of Work
  
- 7. Equipment:** None
  
- 8. Budget and Description:** As described in the Statement of Work

## 4. Statement of Work

### Section 1 Proposal Summary

The Nevada Water Innovation Institute (NWII) will develop wastewater source control frameworks for each of the five (5) regional water reclamation facilities (WEFs listed below, and the Truckee Meadows region. The proposed work is focused upon reducing pollutants to enhance and possibly expand the opportunities to use wastewater effluent in existing and future water recycling projects. Reduction of pollutants through source control also facilitates the ability to meet discharge permit requirements with greater operational flexibility and reliability. The regional WRFs include:

- Cold Springs Water Reclamation Facility (CSWRF)
- Lemmon Valley Water Reclamation Facility (LVWRF)
- Reno Stead Water Reclamation Facility (CSWRF)
- South Truckee Meadows Water Reclamation Facility (STMWRF)
- Truckee Meadows Water Reclamation Facility (TMWRF)

NWII envisions two (2) project phases. **Phase 1** is the initial focus of this scope and is planned as a single joint regional project initiative. NWII and individual agencies would plan and implement the facility-specific **Phase 2** Tasks following **Phase 1**.

**Phase 1** is the current proposed regional scope of work, and includes:

Task 1 - Project Management

Task 2 - Regulatory Review

Task 3 - Related Program Review

Task 4 - Wastewater Source Control Framework Development

**Phase 2** is future work, based on each facility's specific needs, and would include:

Task 5 - Wastewater Source Water Quality Sampling Plan Implementation

Task 6 - Wastewater Source Control Strategy Development

### Section 2 Proposal Rationale

Wastewater effluent management strategies, ranging from environmental discharges to potable reuse systems, can have very specific water quality objectives that are met through treatment processes and operational protocols. Improving the quality of the wastewater being received at a treatment facility is an effective and efficient strategy to manage the facility's effluent water quality. This water quality enhancement method is referred to as "wastewater source control".

Source water control strategies, including improving non-point water pollution sources, are often utilized to help meet effluent receiving water quality objectives, protect drinking water supply sources, and enhance local ecosystems. Through the wastewater source control development process, key water quality constituents of concern or interest are identified and may range from trace organics to bulk parameters such as salinity.

Developing and implementing a wastewater source control plan for each water reclamation facility within the Truckee Meadows region is timely. Key drivers include:

- The City of Reno and Truckee Meadows Water Authority, in collaboration with OneWater Nevada, are planning an advanced purified water project in the Reno Stead area. A wastewater source control plan for RSWRF must meet Nevada Administrative Code (NAC) 445A.27616(5) requirements to protect reclaimed water quality intended for indirect potable reuse (category A+).
- Effluent originating from TMWRF, and possibly from STMWRF, will be utilized for data center cooling and high purity industrial water applications, which require specific water quality criteria.
- Source water quality control plans will complement current regional reclaimed water master planning, which is predominately addressing infrastructure needs and water resource management needs.
- Source water quality control plans will complement individual facility plans from the outside-the-fence perspective to eliminate or minimize significant capital-intensive upgrades or retrofits.

Wastewater source control frameworks for each regional water reclamation facility will reflect current and anticipated effluent management/water recycling practices and existing and planned unit treatment processes. When implemented, the wastewater source control strategies will complement established agency environmental control policies, regulations, and protocols protecting effluent water quality.

### **Section 3 Phase 1 Task Items**

#### **Task 1 Project Management**

- Develop and maintain project scope, schedule, budget monitoring and reporting protocols.
- Develop a broad, collaborative, and effective stakeholder network, including but not necessarily limited to staff from regional water and wastewater utilities, regional water commissions, local environmental control offices, the Nevada Division of Environmental Protection, and possibly the Nevada Department of Transportation Environmental Bureau.
- Provide regular and effective stakeholder updates and presentations.

#### **Task 2 Regulatory Review**

- Review and incorporate into the work all applicable State of Nevada and local regulations relating to wastewater source control and effluent/reclaimed water quality requirements, including:
  - NAC 445A.27616(5), which regulates category A+ reclaimed water quality for indirect potable.
  - NAC 445A.1236, includes numeric water quality criteria for inorganic and organic contaminants for irrigation (including non-potable water reuse) water supply.
  - Reno, Sparks, and Washoe County environmental control codes and local limits, numeric criteria, policies, goals, and related regulations.
  - NDEP/NPDES effluent discharge permit requirements.

#### **Task 3 Related Program Review**

- Review wastewater source control programs, policies, regulations, and approaches developed by other agencies.

- For example, NWII proposes examining Orange County Sanitation District’s source water control program that protects water quality delivered to the Orange County Groundwater Replenishment System. Other candidate agencies might include El Paso, Texas, Monterey, California, and Santa Ana Watershed Authority.
- With stakeholders, synthesize potential strategies that would be effective and scalable for use within the Truckee Meadows.

**Task 4 Wastewater Source Control Framework Development**

- Develop a wastewater source control framework for each regional facility.
  - Review available wastewater influent and effluent water quality data at each facility and meet with facility operators.
  - Review environmental control reports and meet with agency compliance staff.
  - Consider reclaimed water uses and other effluent management practices currently utilized or anticipated.
  - Consider future planned treatment facilities, particularly for non-potable and indirect potable reuse utilizing advanced water treatment technologies.
  - Identify facility specific water quality constituents of concern, such as pathogens, regulated organic and inorganic drinking water contaminants, unregulated constituents including PFAS/PFOA constituents, and other bulk parameters of concern (e.g. salinity).
  - Develop an understanding of the treatability for each contaminant of interest at each facility. For example, at RSWRF, particular attention to chemical constituents that are challenging to treat through conventional wastewater and advanced purified water treatment processes.
  - RSWRF’s wastewater source control framework will satisfy the intent of NAC 445A.27616(5).

**Section 4 Phase 1 Schedule**

Phase 1 Tasks		Months after Notice to Proceed												
		1	2	3	4	5	6	7	8	9	10	11	12	
Task 1	Project Management	Start Activity	In Progress Work	In Progress Work	In Progress Work	In Progress Work	In Progress Work	In Progress Work	In Progress Work	In Progress Work	End Activity			
Task 2	Regulatory Review	Start Activity	In Progress Work	In Progress Work	End Activity									
Task 3	Related Program Review		Start Activity	In Progress Work	In Progress Work	In Progress Work	End Activity							
Task 4	Wastewater Source Control Framework Development				Start Activity	In Progress Work	In Progress Work	In Progress Work	In Progress Work	In Progress Work	End Activity			

Start Activity
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In Progress Work
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End Activity
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**Section 5 Phase 1 Deliverables**

Phase 1 deliverables include:

Task 1 Project Management

- Monthly written progress report for Task implementation, budget, and Gantt schedule.
- Monthly meetings with staff from each utility, environmental compliance office, and water reclamation facility.
- Quarterly (3 total) updates provided to the Regional Effluent Management Team.

#### Task 2 - Regulatory Review

- Technical Memorandum 1 – Source Water Regulatory Review
  - Summary of applicable Federal, State, and local codes.
  - Summary of discharge permit requirements for each regional water reclamation facility.
  - Appendix of relevant materials.

#### Task 3 - Related Program Review

- Technical Memorandum 2 – Related Program Review
  - Summary document describing the wastewater source water control programs from three (3) communities.
  - Appendix of relevant materials.

#### Task 4 - Wastewater Source Control Framework Development

- Technical Memorandum 3 – Wastewater Source Control Framework Development
  - Descriptions for the known presence for each contaminant of interest at each facility.
  - Assessment for the treatability and removal mechanisms for each contaminant of interest at each facility.
    - Current contaminant treatment and removal pathways, with particular focus on contaminants of concern that are not removed to desired thresholds will be described.
    - For example, for RSWRF, particular attention to chemical constituents that are challenging to treat through conventional wastewater and advanced purified water treatment processes.
  - An assessment describing the contaminant removal pathways, existing and planned treatment unit processes and their respective removal efficiency.
  - Potential for each contaminate of interest to cause a disruption to current and future effluent management and recycled water practices.

### **PROJECT BUDGET AND EXPLANATION**

This Phase 1 of the project as described above will take place over the course of 12 months with a start date of July 1, 2021 following approval by WRWC, with a final completion date of June 30, 2022. It is anticipated that one post-doctoral associate at 0.75FTE and one graduate student at 0.25FTE will assist the PI, Dr. Krishna Pagilla to conduct this study. Dr. Pagilla will be the director of the study and will supervise all functions including communication with the regional partners to assess their needs and goals with respect to wastewater source control plan development. Dr. Pagilla is budgeted for 0.5 months salary for his efforts during the entire

duration of the project. Mr. Rick Warner of Warner & Associates, LLC will be given a subaward for an amount of \$46,200 (308 hours) to offer program coordination including regulatory aspects, assist in frameworks development, and interagency communications for the project. The overall budget is shown in Table 1 below.

**Table 1: UNR’s Budget for the Project**

<b>Item</b>	<b>FY 2021-22</b>
Post-Doctoral Salary (0.75 FTE)	\$38,700
Project Director Salary (0.5 months)	\$10,932
Graduate Assistant (0.25 FTE)	\$8,000
Fringe Benefits	\$17,391
Local Site Travel	\$1,000
Materials and Supplies	\$1,000
Graduate Student Tuition Benefits	\$2,001
Subaward to Warner & Associates	\$46,200
UNR Facilities & Administration Costs (44%) <sup>1</sup>	\$44,890
<b>Annual Funds Requested from TMWA</b>	<b>\$170,114</b>

Note 1: 44% of modified direct costs, \$102,023

**Total Funds Requested for 12 months: \$170,114**