

May 23, 2012

Mr. Todd Saxberg
Truckee Meadows Water Reclamation Facility
8500 Cleanwater Way
Reno, NV 89502

Subject: Proposal to Perform a Unit Process Capacity Update for the Truckee Meadows Water Reclamation Facility

Dear Mr. Saxberg:

At your request, we have prepared the following Scope of Work to perform a Unit Process Capacity Update for the Truckee Meadows Water Reclamation Facility (TMWRF).

SCOPE OF WORK

Task 1 – Unit Process Capacity Update

In March 2003 Carollo prepared a Unit Process Capacity Assessment of the TMWRF to determine the plant's then existing capacity and projected capacity following completion of the Phase III Expansion Project. The Unit Process Capacity Assessment Report was also used as a basis for the modification of the permit requirements as defined by the Nevada Department of Environmental Protection.

The purpose of this project is to prepare a Unit Process Capacity Update of the TMWRF given that the Phase III Expansion was completed in 2007 and plant staff has about five years of operating experience with the unit process provided as part of that expansion. The Unit Process Capacity Update will also take into account some changes in plant operations and influent flow and loadings that have occurred over the past several years. The following outlines specific tasks that will be performed.

- 1) Attend and conduct a kickoff meeting at TMWRF to discuss project goals, work plan, and schedule.
- 2) Briefly review influent flow and loading data and unit process performance data for the past five years to compare their stated operating and performance criteria and to currently accepted criteria. As part of this task, Carollo will prepare tables summarizing design flow and loads and unit process standby criteria.
- 3) Perform a capacity analysis of the major unit processes at TMWRF.
 - a. Prepare a sampling program of the key treatment streams for the plant. The program will include a writeup of the sampling procedures, a plant schematic figure showing locations of the sampling points, and a table summary of the number and frequency of data required from each sampling location. Sample collection and laboratory analysis will be conducted by TMWRF staff. Carollo will use the data results to update and calibrate the desktop process model for use to perform the capacity analysis.

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- b. Perform a desktop analysis of capacity for each major unit process, including preliminary treatment, primary treatment, secondary treatment, nutrient removal facilities, filtration facilities, disinfection facilities, and solids treatment and stabilization facilities. As part of this task, Carollo will develop tables and/or figures summarizing the rated capacity of each major unit process.
 - c. Develop a testing program to stress test the operation of one nitrification tower to simulate peak hydraulic and process loading conditions. The program will include a writeup of the testing procedures, a table summarizing the constituent to be analyzed and its frequency, and a field testing data sheet for data collection. The stress test work, sample collection and laboratory analysis will be conducted by TMWRF staff. Carollo will evaluate the field data in combination with the desktop analysis to estimate the loading capacity of the nitrification towers.
 - d. Provide 40 hours of on-call consulting services concerning the operation of the TMWRF, including but not limited to the secondary treatment process, nitrification towers, and denitrification reactors.
- 4) Prepare and submit an electronic (PDF file) copy of a draft technical memorandum (TM) summarizing the key findings and recommendations of Task 1. Carollo will attend one meeting at TMWRF to review plant staff comments and then incorporate applicable comments to finalize the TM.

COST AND SCHEDULE

Our estimated cost to perform the Scope of Work is attached. We will begin our services immediately after receiving a purchase order and written notice to proceed from TMWRF.

Please call us if you have any questions concerning this proposal.

Sincerely,

CAROLLO ENGINEERS, INC.



Rick Chan, P.E.
Vice President

LABOR AND BUDGET ESTIMATE

**CITY OF SPARKS - TRUCKEE MEADOWS WATER RECLAMATION FACILITY
UNIT PROCESS CAPACITY UPDATE**

Task	Task Description	Rick Chan	Ron Appleton	Daniel Cheng	CAD	WP	Total Hours	Labor Cost
		\$258	\$250	\$154	\$140	\$108		
1	Unit Process Capacity Update							
	1) Attend and Conduct Kickoff Meeting	8	8	0	0	0	16	\$4,064
	2) Review Flow and Loads and Unit Process Performance	1	16	28	8	0	53	\$9,690
	3) Perform Capacity Analysis							
	a) Prepare Sampling Program/Evaluate Data	1	16	16	4	0	37	\$7,282
	b) Perform Desktop Modeling	1	40	12	8	0	61	\$13,226
	c) Develop Testing Program for Nitrification Tower/Evaluate Data	4	36	16	4	0	60	\$13,056
	d) Provide Consulting Operational Assistance	0	40	0	0	0	40	\$10,000
	4) Prepare Draft and Final TM and Attend One Meeting	8	20	12	0	5	45	\$9,452
	Project Totals =	23	176	84	24	5	312	\$66,770

(1) Labor rate includes all direct cost, overhead, communication, and other material costs.