

## Project Monitoring Plan

### Project 3: Cambria Community Services District (CCSD) Emergency Water Supply Project

#### **Introduction**

*Required submittal under Proposition 84 Integrated Regional Water Management (IRWM) Drought Solicitation Grant Agreement No.4600010880 (and related Funding Agreements with Project Sponsors).*

The intent of the Project Performance Monitoring Plan is to present to DWR the planned project monitoring, assessment and performance measures that will demonstrate that a project meets intended goals, achieves measurable outcomes, and provides value to the State of California. The performance measures, monitoring and assessment help to quantify and verify each of the projects' performance goals that are related to the project's stated benefits.

Planned monitoring programs for surface water and groundwater will comply with all State of California requirements for the California Statewide Groundwater Elevation Monitoring Program, Surface Water Ambient Monitoring, Groundwater Ambient Monitoring and Assessment Programs and other Statewide Monitoring programs as applicable. Further related discussion can also be found in the CCSD's November 19, 2015 Groundwater Management Plan.

#### **Minimum Standards:**

Per the Grant Agreement and Funding Agreement, the CCSD Emergency Water Supply Project Performance Monitoring Plan includes the following elements:

- Describe performance measures that will be used to quantify and verify project performance
- Discuss the monitoring system to be used to verify project performance, with respect to the project benefits or objectives
- Indicate where the data will be collected and the types of analyses to be used
- Discuss how monitoring data will be used to measure the performance in meeting the overall goals and objectives of the IRWM Plan
- Submit a Project Performance Measures Table including:
  - Project goals
  - Desired outcomes
  - Output indicators – measures to effectively track output
  - Outcome indicators – measures to evaluate change that is a direct result of the work
  - Measurement tools and methods
  - Targets – measurable targets that are feasible to meet during the life of the Agreement
- Baseline conditions
- Brief description of monitoring systems to be utilized
- Methodology of monitoring
- Frequency of monitoring
- Location of monitoring points

#### **1. Description of Performance Measures**

The most direct performance measure that this project addresses will be to provide drinking water to the CCSD customers during emergency and drought conditions. Secondary benefits include reduction in salts and nutrient loads within the localized groundwater basin area and habitat protection in the San Simeon Creek lagoon.

## 2. Description of Monitoring System

Construction and operation of the Emergency Water Supply Project has included flow meters, water quality instrumentation, and water sampling stations to measure and monitor the project's performance while ensuring compliance with permitted conditions. Attachment A provides a schematic of the project's advanced water treatment plant. Essentially, sampling ports are provided before and after each process unit that is shown. Flow meters are shown on this figure as a box containing the letter "M." Besides grab sampling from sampling ports, composite samplers are provided on the plant influent, micro-filter (MF) filtrate, MF backwash, and Product Water.

The Water Board-issued permits contain associated monitoring and reporting requirements that cover the advanced water treatment facility, the evaporation pond, lagoon water discharge, and micro-filter backwash discharge. Table 1 summarizes the permits that have been issued on the project. Reporting associated with these permits is provided to the Central Coast Regional Water Quality Control Board (Water Board), the Water Board's Division of Drinking Water, and are uploaded to the Water Board's GeoTracker web site.

Project efforts included completion of an Operations, Maintenance, and Monitoring Plan (OMMP), which provides further details on the analyses and operating reports that are to be provided by the CCSD to the Water Board. Further details on the sampling locations, analyses being conducted, and related sampling and analyses frequencies are provided within the project's OMMP as well as in the aforementioned permits.

Groundwater monitoring is a key component of the project's monitoring system to ensure permit compliance and to guide facility operations. Attachment B shows the project's monitoring wells. Table 2 lists monitoring wells that are associated with the project. The Title 27 permit issued for the project's evaporation pond includes up-gradient (well MW-1) and down-gradient monitoring wells (Wells MW-2 and MW-3). Title 22 permitting requirements include lower aquifer sampling and analyses from the project's source extraction well (Well 9P7), re-injection well (Well RIW-1), monitoring well (Well MIW-1), and potable water production wells (Wells SS-1, SS-2, and SS-3). Down-gradient monitoring is also required at existing well 16D1 and a more recently installed well MW-4.

To ensure the project is avoiding potential impacts to the nearby riparian habitat, an Adaptive Management Plan (AMP) was prepared that describes biological monitoring which is to coincide with operation of the new facilities. The AMP allows for project operations to be adjusted to avoid potential impacts to the habitat based on observations made by biological monitors.

Production is reported monthly to the Water Board as part of the CCSD's monthly project reporting. In addition, production is provided as part of the CCSD's monthly Board of Director's agenda packet. The CCSD's agenda packet is further posted each month at its cambriacsd.org web site.

Table 1

Permit	Issuing Agency	Summary Description	Reporting Frequency
Emergency Coastal Development Permit (CDP) ZON2013-00589	San Luis Obispo County	Permit was effective May 15, 2014. Authorized construction and operation of emergency water supply project. Permit is valid until Stage 3 water shortage emergency has ended, or a regular CDP has been approved. (The CCSD is currently completing efforts to obtain a regular CDP).	
Waste Discharge Requirements and Water Recycling Requirements. RWQCB Order No. R3-2014-0050	RWQCB	Permit was effective on November 14, 2014. Also referred to as a Title 22 permit. Permit includes concentration limits on water being re-injected into the San Simeon Creek aquifer. An accompanying Monitoring and Reporting Program No. R3-2014-0050 includes groundwater monitoring requirements.	Start-up Monthly Quarterly Annually 5-year
Waste Discharge Requirements for RO Concentrate Evaporation Pond RWQCB Order No. R3-2014-0047	RWQCB	Permit was effective on November 14, 2014. Also referred to as a Title 27 permit. Describes protective requirements of evaporation pond and related monitoring to prevent ground-water or surface water contamination. An accompanying Monitoring and Reporting Program No. R3-2014-0047 includes groundwater monitoring requirements.	Upon any non-compliance occurrence By January 31 <sup>st</sup> - Annual summary report Annual wet weather preparedness report (by October 1 <sup>st</sup> ) By May 10, 2019 – update ROWD By May 10, 2019 – Update report on reasonably foreseeable release
Low Threat Discharge of Water to Lagoon Monitoring and Reporting Program No. R3-2011-0223.	RWQCB	Modified on December 8, 2014. Covers monitoring and reporting of discharge of water to the San Simeon Creek lagoon, which is used to maintain surface water levels. Incorporates by reference a December 9, 2011 Draft Waste Discharge Requirements Order No. R3-2011-0223 (NPDES Permit CAG993001) for Discharges with Low Threat to Water Quality.	Start-up By January 30 <sup>th</sup> – annual self-monitoring report 30-days prior to adding any chemical additives that would change effluent characteristics

### Baseline Conditions

Existing San Simeon production well water quality data will be used as the baseline condition

**Table 2 – Existing Groundwater Wells**

CCSD Water Department Well ID Code	State Well Identifier	Coordinates		Reference Elevation Point	Notes	Estimated Survey Date
		Latitude	Longitude	Feet Above Mean Sea Level		
<b>SAN SIMEON CREEK WELLS</b>						
SS1	27S 8E 9J4	N35° 36' 01.63"	W121° 06' 32.19"	32.37	Elevation at painted X next to well	2/12/2015 NCE
SS2	27S 8E 9J5	N35° 36' 04.12"	W121° 06' 33.17"	33.16	Elevation at painted X next to well	2/12/2015 NCE
SS3	27S 8E 9K3	N35° 36' 04.28"	W121° 06' 38.95"	33.73	Elevation at painted X next to well	2/12/2015 NCE
SS4	27S 8E 9P5	N35° 35' 53.51"	W121° 06' 51.10"	25.92	Lat & long not surveyed - values from Google Earth estimate	
MIW		N35° 36' 04.44"	W121° 06' 41.51"	29.89	Elevation at Top of casing	2/12/2015 NCE
RIW		N35° 36' 02.69"	W121° 06' 47.74"	25.41	Elevation on concrete next to well	2/12/2015 NCE
9P7	27S 8E 9P7	N35° 35' 49.47"	W121° 07' 01.26"	20.69	Elevation at Top of casing	2/12/2015 NCE
9P2	27S 8E 9P2			19.11		
MW3		N35° 35' 57.47"	W121° 07' 10.20"	49.56	Elevation at Top of casing	2/12/2015 NCE
MW2		N35° 35' 53.38"	W121° 07' 14.03"	38.10	Elevation at Top of casing	2/12/2015 NCE
MW1		N35° 36' 04.44"	W121° 06' 41.51"	42.11	Elevation at Top of casing	2/12/2015 NCE
MW4		N35° 35' 41.90"	W121° 07' 15.33"	15.95	Elevation at Top of casing	2/12/2015 NCE
16D1	27S 8E 16D1	N35° 35' 41.84"	W121° 07' 17.47"	11.36	Elevation at Top of casing	2/12/2015 NCE

- Wells associated with evaporation pond monitoring/Title 27 permit
- Wells associated with advanced water treatment facility/Title 22 permit
- Wells associated with existing well field operations and Title 22 permit.

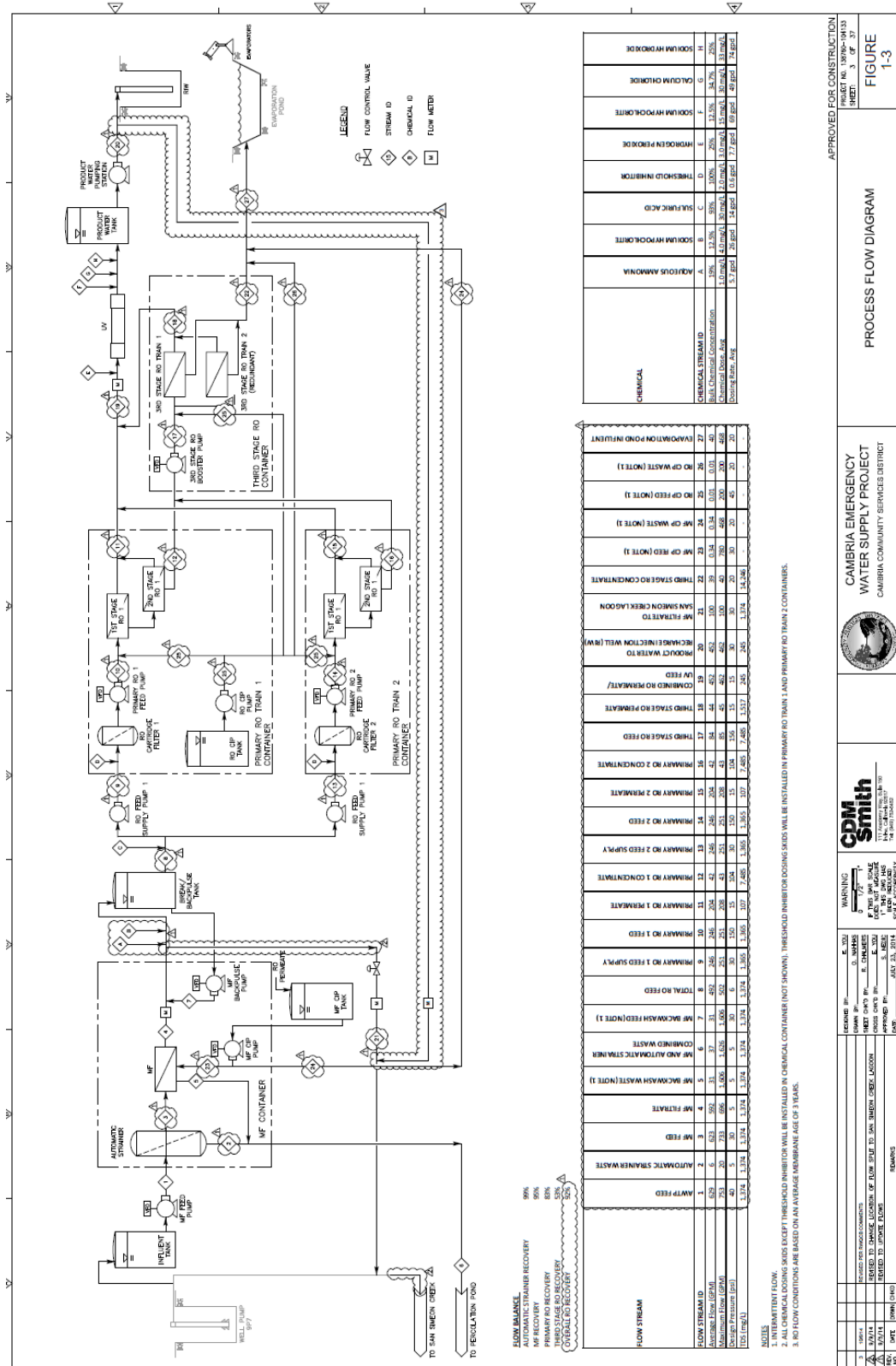
**3. Project Performance Plan Measurement Table**

Table 3 summarizes the Project Performance Plan and associated measurements.

<b>Table 3 – Project Performance Monitoring Plan</b>		
<b>Project Name: Cambria Community Services District Emergency Water Supply Project</b>		
<b>Proposed Physical Benefits</b>	<b>Measurement Tools and Methods</b>	<b>Targets<sup>1</sup></b>
Water Supply (primary)	<p>Goal: Install infrastructure to provide up to 250 acre-feet of drinking water during a 6-month dry season period. The 250 acre-feet is based on a 24 hours per day operation occurring seven days per week.</p> <p>Water flow delivered from the project’s advanced water treatment plant will be measured prior to injection. Based on modeling and related estimates provided by the project’s geo-hydrologist, approximately 60-percent of the injected water will be used to determine the amount of injected water that is pumped by production wells SS-1 and SS-2 when the new facilities are in operation.</p>	Up to 250 AF
Water Quality Improvement (secondary)	<p>Goal: Monitor re-injected water quality and associated monitoring wells to ensure water meets State Title 22 permitted criteria, including Federal and State drinking water requirements.</p> <p>Water quality monitoring from the existing San Simeon production wells and down-gradient monitoring wells 16D1</p>	Maximum nitrate concentration of re-injected water is permitted at 2.3 mg/l NO <sub>3</sub> -N. The state MCL for Nitrate in drinking

Table 3 – Project Performance Monitoring Plan		
Project Name: Cambria Community Services District Emergency Water Supply Project		
Proposed Physical Benefits	Measurement Tools and Methods	Targets <sup>1</sup>
	and MW-4 will continue as required by existing permits and to support operations. The wells and water system are routinely monitored for contaminants per existing permits and a Water Board/Division of Drinking Water approved Operation, Maintenance and Monitoring Plan.	water is at 10 mg/l NO <sub>3</sub> -N.
<p>Comments:</p> <p>(1) Measurable targets that are feasible to meet throughout the life of the project and during periods of drought. Based on historical rainfall data in SLO County, it is assumed that a drought is likely to occur every 8 years and last for 3 years. Interim targets are not applicable in this project.</p> <p>(2) Actual water use will vary depending upon level of drought emergency, water use restrictions, conservation measures, etc. During years where there is no drought, and subject to current efforts being successful to obtain a regular coastal development permit, the new facilities would be operated to improve water use efficiency while providing secondary improvements during the late summer/early fall period. The project is estimated to have a 30-year useful life.</p> <p>(3) Approximately 50% reduction in nitrate concentration in the source water will occur from the project's reverse osmosis unit process.</p>		

Attachment A – Schematic of Advanced Water Treatment Plant



CHEMICAL	A	B	C	D	E	F	G	H
POTASSIUM PERMANGANATE								
SULFURIC ACID								
POTASSIUM DICHROMATE								
LIQUID AMMONIA								
POTASSIUM PERCHLORATE								
THRESHOLD INHIBITOR								
HYDROGEN PEROXIDE								
POTASSIUM HYDROXIDE								
CALCIUM CHLORIDE								
LITHIUM HYDROXIDE								

FLOW STREAM ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Flow Stream	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

**APPROVED FOR CONSTRUCTION**  
 SHEET 3 OF 37  
**FIGURE 1-3**  
**PROCESS FLOW DIAGRAM**

**CAMBRIA EMERGENCY WATER SUPPLY PROJECT**  
 CAMBRIA COMMUNITY SERVICES DISTRICT

**CDM Smith**  
 THE CONSULTANTS GROUP  
 400 NORTH HAVEN DRIVE  
 SUITE 100  
 VAN NUYS, CA 91411

**WARNING**  
 ALL CHEMICALS ARE TO BE KEPT IN ORIGINAL CONTAINERS. THRESHOLD INHIBITOR DOSE SKIDS WILL BE INSTALLED IN PRIMARY RO TRAIN 1 AND PRIMARY RO TRAIN 2 CONTAINERS.  
 ALL CHEMICAL DOSE SKIDS EXCEPT THRESHOLD INHIBITOR DOSE SKIDS WILL BE INSTALLED IN PRIMARY RO TRAIN 1 AND PRIMARY RO TRAIN 2 CONTAINERS.  
 NO FLOW CONDITIONS ARE BASED ON AN AVERAGE MEMBRANE AGE OF 3 YEARS.

DATE: 07/27/2011  
 DRAWN BY: J. L. HARRIS  
 CHECKED BY: D. W. JOHNSON  
 APPROVED BY: J. L. HARRIS

Attachment B – Project Monitoring wells

