

NMPWRC 2022 Annual Meeting

*“The river was cut by the world's great flood and runs over rocks from the basement of time. On some of the rocks are timeless raindrops. Under the rocks are the words, and some of the words are theirs.
I am haunted by waters.”*

— Norman Maclean, [A River Runs Through It and Other Stories](#)

Look Back

New Mexico Produced Water Research Consortium

GUIDANCE ON PRODUCED WATER TREATMENT RESEARCH, DEVELOPMENT, AND PILOT-SCALE DEMONSTRATION TESTING AND EVALUATION



Review

A Critical Review of Analytical Methods for Comprehensive Characterization of Produced Water

Wenbin Jiang¹, Lu Lin¹, Xuesong Xu¹, Xiaoxiao Cheng¹, Yanyan Zhang¹, Ryan Hall² and Pei Xu^{1,*}



Research Paper

Characterization of produced water and surrounding surface water in the Permian Basin, the United States



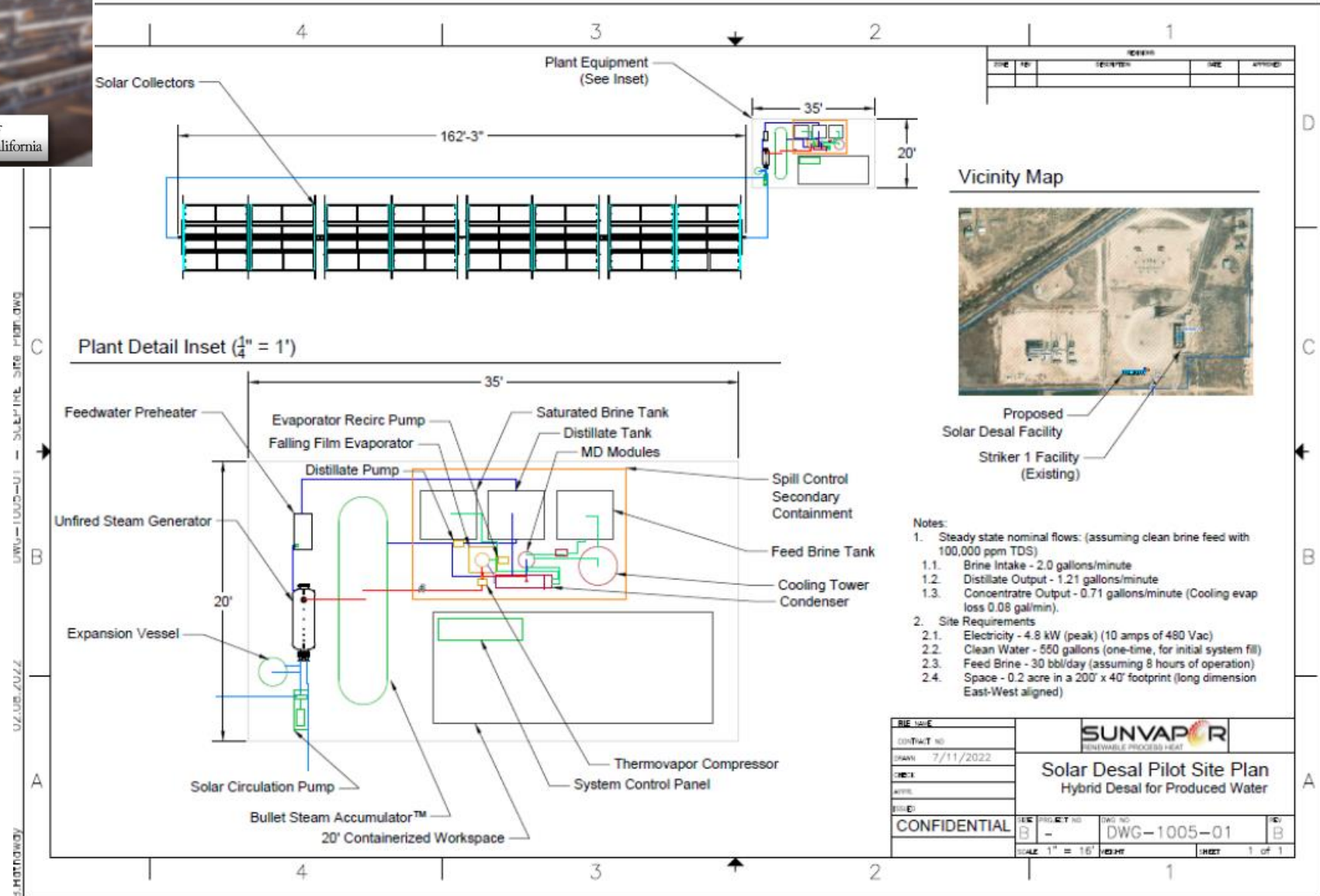
Wenbin Jiang^a, Xuesong Xu^a, Ryan Hall^b, Yanyan Zhang^a, Kenneth C. Carroll^c, Frank Ramos^d, Mark A. Engle^e, Lu Lin^a, Huiyao Wang^a, Matthias Sayer^b, Pei Xu^{a,*}

Table 1. Tiered Analytical Characterization Testing Approach

Level	Use	Description	Parameters	Frequency
Tier 1	Continuous monitoring, bulk testing, KPI rapid analysis, process control	In Line Sensors	Flow, TSS, TDS, TOC, pH, ORP, Iron, H2S, TPH, level sensing, Carbonate,	Realtime, continuous and routine
		Field Parameters		
		Filter Analysis		
Tier 2	Detailed characterization, routine monitoring and Tier 1 data verification, NPDES discharge compliance, modeling treatment technology	Conventional Lab Testing	Wet chemistry, ICP, ICPMS, GC, GCMS, HPLC	Baseline, quarterly, when experiencing data excursions in Tier 1, as per permit/regulatory agency. Beneficial reuse investigation
		Unconventional Lab Testing	LCPMS, Gamma Spec, High Res GCMS	
Tier 3	Risk assessment and data capture for fate/transport modeling. Waste disposal profile generation	WET Testing	Acute and chronic toxicity	When evaluating technology and management processes. As per permit/regulatory agency
		Leachate Testing	TCLP, SPLP, LEAF testing of residual waste	
		Bio-mobility and accumulation testing	Tier 1,2,4 analysis of treated effluent on soil, plant, tissue samples	
Tier 4	Source apportionment, fingerprinting	SEM/EDS, FEEM, XRD, biomarker analysis, isotopic analysis		When evaluating technology and management process. Basic research for method development. Event response. Beneficial reuse investigations.

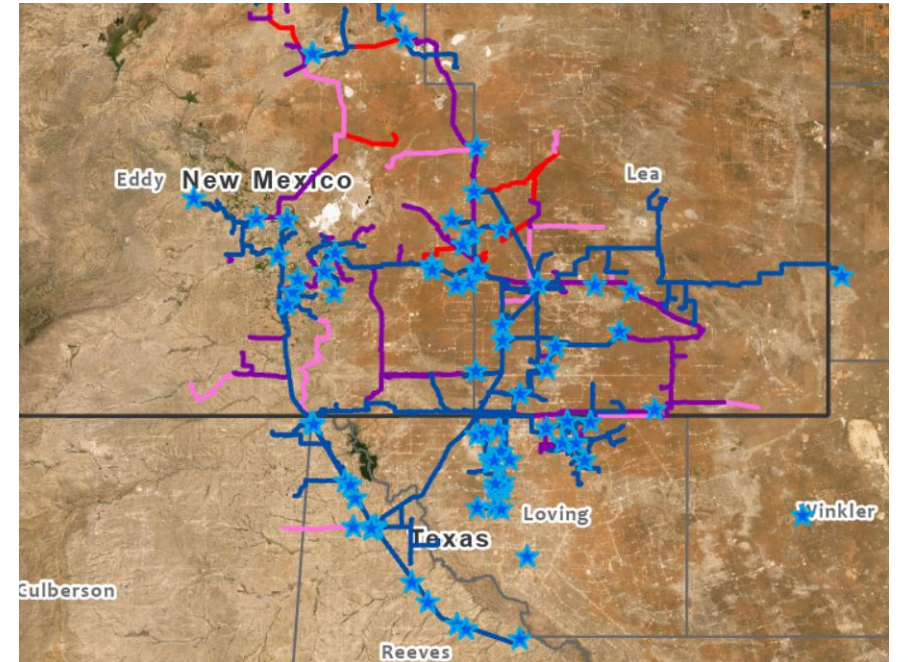


Look Ahead





Look Ahead



Final Thoughts

NM Produced Water - Quarter Township Details All T

Quarter Township Information Download

ID: 023S 031E SE
 Township: 23
 Township Dir: S
 Range: 31
 Range Dir: E
 Quarter Township: SE
 County: Eddy

Total Produced Water - Well Count Close

8

Total Produced Water (BBL)

112,489,274

Produced Water Quantity Over Time Download Close

Quarter Township	Date	Volume (BBL)
023S 031E SE	2022/01/01	1,861,446
023S 031E SE	2021/12/01	2,015,340
023S 031E SE	2021/11/01	1,961,613
023S 031E SE	2021/10/01	2,125,797
023S 031E SE	2021/09/01	2,025,973
023S 031E SE	2021/08/01	2,472,345

Produced Water Quantity Over Time Download

[Hide Legend](#) [Deselect All](#)

■ 023S 031E SE

12/01/2001
 023S 031E SE 169,128

Final Thoughts

Produced Water Quality Over Time						
Quarter Township	Date	TDS	Turbidity	Temperature	DO	pH
023S 031E SE	2015/10/01	113,187.97				7.17
023S 031E SE	2015/09/01	239,150.9				5.9
023S 031E SE	2015/08/01	177,946.2				6
023S 031E SE	2015/06/01	285,395.2				5.6
023S 031E SE	2015/05/01	291,363				5.4
023S 031E SE	2015/04/01	260,565.05				5.92
023S 031E SE	2015/02/01	278,055.82				5.42
023S 031E SE	2015/01/01	278,035.97				5.53
023S 031E SE	2014/12/01	224,515.52				6.13
023S 031E SE	2014/11/01	280,717.95				5.7



We need data

We need PB treated water data

Final Thoughts

TITLE 20 ENVIRONMENTAL PROTECTION
CHAPTER 2 AIR QUALITY (STATEWIDE)
PART 50 OIL AND GAS SECTOR – OZONE PRECURSOR POLLUTANTS

2022 JUL -6

- C. Monitoring requirements:** The owner or operator shall:
- (1) develop a protocol to calculate the VOC emissions from each PWMU. The protocol shall include at a minimum: produced water throughput monitoring, semi-annual sampling and analysis of the liquid composition, hydrocarbon measurement method(s), representative sample size, and sample chain of custody requirements.

	TDS	TSS	GRO	DRO	pH	Total VOC	Calc TOC	TOC
McCloy Influent	110000	120	53	47	6.9	26	88.2	160
McCloy Treated	120000	31	30	7.1	6.7	22	41.37	140
McCloy Pond (Effluent)	130000	20	17	3.2	6.6	9	20.44	110