

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Application of San Jose Water Company
(U168W) for Approval of Cost Recovery for
PFAS Remediation.

Application 26-04-010
(Filed April 10, 2026)

REBUTTAL TESTIMONY OF SUZANNE DELORENZO

September 28, 2026

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I. THE WILLIAMS STATION PFAS TREATMENT FACILITY CAN OPERATE EFFECTIVELY AT THE PROPOSED CAPACITY

Q1. Do you agree with Mr. Sarkar's assertion that wells W-4, W-13, and W-18 create infrastructure constraints that prevent operation of the proposed PFAS treatment facility at 20,000 gallons per minute (gpm)?

A1. No. The available water quality and engineering evaluations do not support that conclusion. Wells W-4 and W-13 have experienced iron-related limitations, and W-18 has experienced elevated turbidity and sanding.¹ These conditions were known during development of the Williams Station treatment project and were specifically evaluated in the selection of pretreatment.

Hazen's March 2022 Revised Facilities Plan for Williams Station, PFAS Treatment and Softening Facilities identified iron and turbidity as the constituents to be addressed and evaluated four pretreatment alternatives: bag filtration, cartridge filtration, self-backwashing strainers, and greensand filtration.² The evaluation included bench-scale pretreatment testing and additional water quality sampling.

Based on that testing, SJWC determined that 5 µm cartridge filtration was sufficient to meet SJWC's iron target of 0.03 milligrams per liter (mg/L) and turbidity target of 1

¹ Wells 4 and 13 were offline at the time of bench testing due to iron, and Well 18 was offline due to turbidity and sanding. W-4 was sampled as the representative elevated-iron well because it exhibited a higher average iron concentration over the most recent compliance period (0.22 mg/L, with a range of 0.11 to 0.39 mg/L) and produced elevated iron more consistently than W-13, whose most recent reported concentration was 2.1 mg/L.

² The four alternatives were screened against technology readiness, footprint, burden on operations, truck traffic, removal of co-contaminants, and SJWC's water quality targets of iron below 0.03 mg/L and turbidity below 1 NTU. None of the four was found to have a fatal flaw, and all four were carried forward into detailed evaluation. Greensand filtration, while the most effective of the four for dissolved iron, was rated neutral for footprint and operational burden, produces a backwash waste stream that must be partially disposed of and reduces overall recovery, and may itself require downstream cartridge filtration to remove particulates smaller than 10 micron. It was therefore not carried forward as a necessary component of the preferred configuration.

1 NTU³ while protecting the downstream ion exchange ("IX") vessels from fouling and
2 premature media exhaustion, and that it was the simplest and most cost-effective of the
3 alternatives evaluated. Iron and turbidity management were therefore incorporated into
4 the treatment evaluation and pretreatment selection rather than deferred.

5 Mr. Sarkar's concern is not simply that the cartridge filters will reach their terminal
6 differential pressure, but that iron and turbidity from these wells will load and degrade
7 the pretreatment system, causing automated shutdowns. The bench-scale data address that
8 concern directly. Particle size distribution testing at W-4 and W-18 showed that most
9 solids produced by the wells were smaller than the approximately 70 µm cutoff of the
10 existing sand separators, and that 5 µm cartridge filters would remove most of the solids
11 produced. The same testing showed that solids concentrations decrease significantly with
12 run time: total suspended solids were below detection in all wells except W-11 and W-18
13 after fifteen minutes of runtime, silt density index fell below 4 in all wells tested except
14 W-18 after fifteen minutes, and iron concentrations in wells above 0.1 mg/L decreased by
15 more than an order of magnitude within the same period.

16 For W-18 specifically, cartridge filtration achieved iron reductions of 81 to 97 percent
17 with a median of 96 percent, indicating that the iron present was predominantly
18 particulate and well removed by filtration rather than passing through to load downstream
19 equipment. For all active wells, unfiltered iron was below SJWC's goal within five
20 minutes of startup, indicating that no iron treatment is required for most of the wellfield.

21 The 15-psi terminal differential pressure criterion is a cartridge filter design and operating
22 parameter that establishes when elements are changed out. It is a routine, planned

³ Nephelometric Turbidity Unit, which is the standard unit used to measure the cloudiness or clarity of water.

1 maintenance activity, and reaching it is an expected part of normal operation rather than
2 evidence of system failure. The bench-scale loading data do not indicate that the filters
3 will approach that criterion at a rate inconsistent with the design.⁴

4 For these reasons, the documented conditions at W-4, W-13, and W-18 do not establish
5 that the pretreatment system or the wellfield is incapable of supporting the proposed
6 treatment capacity. Iron, turbidity, and pretreatment performance were evaluated during
7 project planning using site-specific water quality data from the affected wells, and the
8 selected pretreatment was demonstrated to control these constituents to SJWC's targets
9 across the facility's operating range.

10 **Q2. Does operation below the facility's maximum design capacity create hidden**
11 **operational-efficiency problems with the IX resin?**

12 A2. No. Operating below maximum capacity is a normal and anticipated condition for a
13 facility of this type, and the water quality consequences Mr. Sarkar identifies do not
14 follow from it.

15 As documented in CDM Smith's design criteria, the facility is configured in a series lead-
16 lag arrangement with fourteen trains, thirteen duty and one standby, comprising twenty-
17 six vessels, each providing an empty bed contact time of 2.5 minutes, or 5.0 minutes per
18 train, using PSR2 single-use anion exchange resin.⁵

⁴ Bench-scale testing was conducted on February 16 and May 5. Parameters measured included silt density index, iron, sand level, total suspended solids, turbidity, and particle size distribution, sampled at intervals of 0, 5, 10, 15, and 30 minutes following well startup. On May 5, turbidity and iron were measured in unfiltered, 5 µm filtered, and 10 µm filtered samples, with iron analyzed at a reporting limit of 0.01 mg/L.

⁵ CDM Smith design criteria for the Williams Station IX treatment facility: 20,000 gpm design flow, series lead-lag configuration, fourteen trains (thirteen duty, one standby), twenty-six vessels at 12-foot diameter, EBCT of 2.5 minutes per vessel and 5.0 minutes per train, PSR2 single-use anion exchange resin.

1 The significance of the parallel-train arrangement, from a water quality standpoint, is that
2 the number of trains in service can be matched to station flow. The trains that are running
3 therefore remain within their design hydraulic loading rate and empty bed contact time
4 (“EBCT”)⁶ rather than being throttled below the conditions under which PFAS removal
5 was demonstrated. Maintaining EBCT is what governs treatment performance, and this
6 configuration preserves it across the operating range.

7 Mr. Sarkar's concern is that resin in trains not in continuous service will become stagnant
8 and therefore prone to bacterial biofouling, compaction, and channeling, destroying
9 adsorptive capacity early and driving future O&M costs.⁷ Biofouling, compaction, and
10 channeling are real operating conditions. They are, however, consequences of source
11 water quality, pretreatment performance, and operation and maintenance practice, not of
12 a facility having capacity in reserve.

13 Several features of the Williams configuration and its planned operation address each
14 mechanism directly:

15 **Biofouling** is limited by feed water quality. All water entering the IX vessels will
16 pass through 5 µm cartridge filtration, which removes the particulate and organic
17 material that supports biological growth, and the water will be disinfected in
18 accordance with SJWC's normal practice for treated groundwater.

19 **Compaction and channeling** are associated with bed disturbance and with
20 hydraulic loading outside the design range. Because trains will be brought in and

⁶ A calculation used in water treatment to measure how long water stays in contact with filter media (like activated carbon or special resins).

⁷ Cal Advocates report, citing Smith & Jones (2018), Biofilm Formation and Fouling in Fixed-Bed Adsorption Systems.

1 out of service as whole units rather than throttled, active trains will operate at
2 their design loading rate, and the bed shifting that causes short-circuiting at
3 excessive hydraulic loading will be avoided.

4 **Idle and standby trains.** Resin that is not in active service must be maintained,
5 not simply left standing. Prior to facility startup, SJWC will establish written
6 operating procedures for the Williams Station IX facility, consistent with standard
7 practice for fixed-bed ion exchange and with the resin manufacturer's
8 requirements. Those procedures will provide for periodic rotation of trains
9 through service, maintenance of a disinfectant residual in standing water, limits
10 on the duration a vessel may remain idle, and flushing with water quality
11 verification before a train is returned to service.

12 **Redundancy.** The design includes one standby train in addition to the thirteen
13 duty trains. This will allow a train to be removed from service for resin
14 changeout, inspection, or maintenance without reducing available treatment
15 capacity, so resin condition can be managed proactively rather than deferred to
16 avoid a capacity shortfall.

17 **Verification.** Treated water will be monitored for PFAS breakthrough at the lead-
18 lag interface and at the combined effluent, so any degradation in resin
19 performance would be detected through routine compliance and process
20 monitoring well before it affected finished water quality.

21 I do not dispute that a resin bed left stagnant and unmanaged for an extended period
22 could develop biological growth. That is precisely why such vessels are not left
23 unmanaged. The relevant question is whether the facility will be operated in accordance

1 with established practice for ion exchange treatment, not whether the facility has capacity
2 in reserve. Maintaining idle and standby media is a routine element of operating any
3 multi-train IX facility, and it is not a hidden or unaccounted-for consequence of the
4 selected design.

5 Operation below maximum capacity was also anticipated in the project's economics. The
6 O&M analysis used a planned average production of approximately 4,860 gpm in
7 estimating resin replacement and other operating costs.⁸ The difference between average
8 production and maximum design capacity was therefore built into the evaluation rather
9 than treated as an unexpected condition. The upstream cartridge filtration that will protect
10 the resin from fouling is itself a cost-control measure: by keeping particulates and iron
11 out of the vessels, it preserves resin life and holds changeout frequency to the rate
12 assumed in the estimate.

13 Accordingly, the difference between average production and maximum design capacity
14 does not establish that the resin will experience premature failure, that additional future
15 O&M costs will be incurred, or that the facility is oversized.

⁸ 7 MGD ÷ 1,440 min/day ≈ 4,860 gpm.