

Appendix 6. Performance Standards

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APPENDIX 6

Performance Standards



6.1 PURPOSE

This Appendix sets forth the requirements for Performance Standards, described in Article 5 (Testing, Start-up, and Acceptance) of the Design-Build Contract (Contract). The Company must demonstrate achievement of the Performance Standards during the Acceptance Test period in order to achieve Acceptance, as described in Article 5 (Testing, Start-up, and Acceptance), Appendix 7 (Pre-Acceptance and Acceptance Testing Requirements), and approved Acceptance Test Plan. The specific protocols that will be used to demonstrate compliance with the Performance Standards and additional performance-related standards are provided in Appendix 7.

The following categories of Performance Standards are set forth herein:

- Water Treatment Standard
- Electricity Demand and Utilization Standard
- Chemical Consumption Standard
- Noise Control and Outdoor Lighting Standard

Additionally, this Appendix describes the conditions for Uncontrollable Circumstance Relief for specified Raw Water quality parameters.

6.2 PERFORMANCE STANDARDS

This section sets forth the Performance Standards that the Company must satisfy in the Acceptance Test operation of the Regional Water Facilities with regard to the Finished Water quality, electricity demand and utilization, and noise and lighting. Design requirements, many of which require compliance demonstration during the Acceptance Test, are discussed in Appendix 5 (Project Technical Requirements). Requirements for demonstrating compliance with design requirements are discussed in Appendix 7 (Pre-Acceptance and Acceptance Testing Requirements).

6.2.1 Water Treatment Standard

The Company shall design and construct the Regional Water Facilities in such a manner that the Regional Water Facilities together with the related Project facilities are capable of continuously producing Finished Water in compliance with Applicable Law and the Additional Finished Water Quality Standards specified in Table 6-2 of this Appendix. The Additional Finished Water Quality Standards are more stringent than the Applicable Law standards. During the Acceptance Test, the Company must operate the Regional Water Facilities and related Project components in coordination with and utilizing the Stanislaus Regional Water Authority (SRWA) Water Treatment Plant (Plant) operators (as provided by Section 5.4(A) (Acceptance Test) of the Contract) and demonstrate that the Regional Water Facilities are capable of continuously producing Finished Water in compliance with Applicable Law and the Additional Finished Water Quality Standards. During the Acceptance Test, or any other time in which Finished Water is delivered to either the City of Ceres or the City of Turlock (Cities) Water Supply System, SRWA operations staff will be responsible, in close collaboration with the Company, for operating the Regional Water Facilities.

Applicable Law includes, but is not limited to, all enforceable primary and secondary drinking water standards established by the Division of Drinking Water (DDW) as specified in Title 22 of the California Code of Regulations, all federal drinking water regulations (e.g., primary maximum contaminant levels (MCLs), pathogen removal and inactivation regulations, disinfection byproduct control regulations), and all notification requirements under California Health & Safety Code Section 116455 in the event of a pre-Acceptance confirmed detection of a contaminant found in the Finished Water that is in excess of an MCL, a notification level, or a response level established by DDW.

Through the SRWA, and during the pre-Acceptance Test and Acceptance Test period as defined in Appendix 7 (Pre-Acceptance and Acceptance Testing Requirements), the Cities shall each have the right to set distinct concentrations for the following Finished Water quality parameters as specified in Table 6-2 and within the ranges set forth in Table 6-2: total chlorine residual; alkalinity; pH and/or Langelier Saturation Index (LSI); and corrosion inhibitor. With the exception of corrosion inhibitors, the points of performance measurement for these parameters shall be at the Point of Interconnection for each of the Cities, as noted in Table 6-2. The Points of Interconnection for each of the Cities are described in Appendix 5 (Project Technical Requirements) and shall be in accordance with Section 4.1(C) (Points of Interconnection) of the Contract. All other points of performance measurement, as well as all DDW-specified points of compliance, shall be located within the Plant.

6.2.2 Electricity Demand and Utilization Standard

No later than 30 days prior to the Acceptance Test, the Company shall provide the following for the SRWA's review and approval:

1. **Electricity Demand and Utilization Report.** This report shall present an analysis of the energy-consuming equipment installed at the Regional Water Facilities that substantiates conformance with the guaranteed maximum electricity demand (GMED) and guaranteed maximum electricity utilization (GMEU) amounts set forth in Proposal Forms P-3, P-4, and P-5. The Electricity Demand and Utilization Report shall clearly document assumptions regarding the operation of energy-consuming equipment, including design operating points, minimum electrical efficiencies, duty vs. standby units, equipment runtimes and/or operating frequencies (e.g., for filter backwash pumps and air scour compressors), the use of equipment affected by seasonal weather patterns (i.e., HVAC equipment), and so forth. The analysis shall generally reflect equipment design criteria included in the Technical Proposal Forms (attached to Appendix 5) and the Company's detailed specifications utilized for procurement of equipment. The Electricity Demand and Utilization Report shall reference the number and title of technical specifications associated with the equipment described in the report.
2. **Factory Test Data for High Electricity Demand Equipment.** For each equipment item installed at the Regional Water Facilities with a maximum electricity demand of 18.6 kW (25 hp) or greater, the Company shall provide factory test data substantiating the analysis presented in the Electricity Demand and Utilization Report. Factory testing of rotodynamic pumps shall conform to Section 5.4.7.3.6 (Pumps) of Appendix 5.

If the submitted factory test data for each high electricity demand equipment item are found to substantiate an electricity demand equal to or less than 102 percent of the corresponding demand presented in the approved Electricity Demand and Utilization Report, the Company will be found to be in compliance with the Performance Standard for electricity demand and utilization.

6.2.3 Chemical Consumption Standard

During the Acceptance Test, the Company must operate (in coordination with the SRWA) the Regional Water Facilities and demonstrate that the Regional Water Facilities can be operated at all times in compliance with the chemical consumption rates for each chemical used in the Regional Water Facilities set forth in Proposal Form T-10 (attached to Appendix 5). During the Acceptance Test, the SRWA will consider a chemical consumption rate to be acceptable for a given chemical based on the criteria shown in Table 6-1 below.

Chemical	Standard	Acceptance Criteria
Caustic, Lime, Sodium Permanganate, Calcium Thiosulfate, Carbon Dioxide, Anionic Polymer, Nonionic Polymer	Theoretical usage ^(a) calculated based on actual measured Raw Water quality parameters and specified Finished Water characteristics	Average usage less than or equal to 120% of theoretical usage
Primary Coagulant (i.e., Alum)	Theoretical usage ^(a) based on jar test data in Reference Document 3A ^(b)	Average usage less than or equal to 130% of theoretical usage
LOX, Ozone	Theoretical usage ^(a) based on jar test data in Reference Document 3B ^(c) , normalized as a function of actual TOC levels measured during the Acceptance Test	Average usage less than or equal to 130% of theoretical usage
(a) Theoretical usage calculations shall be clearly presented for SRWA review as part of the Acceptance Test Report. (b) Reference Document 3A refers to the document titled "Bench Test Results – TM 1" (Trussell Technologies, October 2017). (c) Reference Document 3B refers to the document titled "Bench Test Results – TM 2 - Seasonal Ozone Demand" (Trussell Technologies, September 2018).		

The SRWA may monitor instantaneous and historical chemical consumption data at any time during the Acceptance Test to verify the Company’s compliance with these requirements.

Table 6-2. Additional Finished Water Quality Standards

Parameter	Units	Point of Performance Measurement	Concentration	Allowed Concentration Variance
Turbidity	Nephelometric Turbidity Unit (NTU)	Comply with 40 C.F.R §141.718, Treatment performance toolbox component (1) Combined Filter Performance, (2) Individual Filter Performance		
Total Trihalomethanes (TTHMs) ^(a)	Milligrams per liter (mg/L)	Finished Water for each of the Cities	< 0.064	none
Five Haloacetic Acids (HAA5) ^(a)	mg/L		< 0.048	none
Bromate	mg/L	Finished Water at the WTP	< 0.008	none
Manganese, total	mg/L	Finished Water at the WTP	< 0.015	none
Iron, total	mg/L	Finished Water at the WTP	< 0.10	none
Aluminum, total	mg/L	Finished Water at the WTP	< 0.10	none
Pathogen Treatment	Log Removal Value (LRV)	DDW-specified compliance points. Compliance based on summation of LRV through WTP	<i>Cryptosporidium</i> = 2-log <i>Giardia</i> = 4-log Virus = 5-log	none
Free Chlorine Residual ^(b)	mg/L as Cl ₂	Finished Water for each of the Cities, at the Points of Interconnection	Set by each of the Cities, within the range of 0.5-3.5	±0.2
Finished Water pH ^(b,c,d)	pH units		Set by each of the Cities, within the range of 7.5-9.3	±0.2
LSI ^(b,c,d)	--		Set by each of the Cities, within the range of -0.5 to +1.0	±0.1
Alkalinity, total	mg/L as CaCO ₃		Set by each of the Cities, within the range of 20 to 100	+5
Calcium	mg/L as Ca		Set by each of the Cities, within the range of the ambient River level to 25	+2
Phosphate, dissolved ^(b,c)	mg/L as PO ₄		Set by each of the Cities, within the range of 0.5 to 5	±10%
Methylisoborneol (MIB), Geosmin	Nanograms per liter (ng/L)	Raw and Finished Water at the WTP	≤ 5 ng/L or ≥ 90% removal (each parameter)	none
Recycle Flow	Percent of Finished Water Flow	Recycle stream returning to the head of the WTP to a point consistent with the Code of California Regulations Title 22 (Drinking Water Regulations)	< 10%	none
Recycle Turbidity	NTU	Recycle stream returning to the head of the WTP to a point consistent with the Code of California Regulations Title 22 (Drinking Water Regulations)	< 2	none

(a) TTHM and HAA5 concentrations shall be determined using the Simulated Distribution System (SDS) test method in Standard Methods (Method 5710C). Samples of the Finished Water going to each City Water Supply System shall be collected with no adjustment of chlorine residual or pH and held at the temperature of the Finished Water at the time of collection (±2°C) for a 96-hour holding time. Each of the Cities shall independently specify the target chlorine residual and pH for the Finished Water, which requires that separate Simulated Distribution System Disinfection Byproduct (SDSDBP) samples are collected for the Cities.

(b) Through SRWA, each of the Cities have the right to require a different concentration for each noted parameter. Compliance shall be based on separately meeting the concentration specified for each of the Cities at the specified point of performance measurement.

(c) The Plant shall include space allocated for future equipment for possible injection of orthophosphate at the dosage range identified in the Table.

(d) Through SRWA, if all parameters (pH, LSI, and Alkalinity) cannot be within their respective set ranges, the Cities shall specify one of them to be primary and the others are allowed to be outside the City's set range, but not outside the range set herein. Samples for MIB and Geosmin shall be taken immediately upon SRWA's request during the Acceptance Test and the MIB and Geosmin concentrations then shall be analyzed and measured using Standard Methods 6040D. If the measured MIB or Geosmin concentration exceeds the required concentration, the Company may resample within 24 hours of receiving results of the first sample, and then average the two sample results before concluding whether a Finished Water quality violation has occurred. Repeat analyses shall be performed at the same laboratory.

6.2.4 Noise Control and Outdoor Lighting Standard

During pre-Acceptance Testing and Acceptance Testing activities, the Company must operate (in coordination with SRWA) the Regional Water Facilities and demonstrate that the Regional Water Facilities can be operated at all times in compliance with the noise and outdoor lighting requirements specified in Appendix 9 (Government Approvals, Utilities, and Landowner Coordination).

The SRWA may monitor any light and noise requirements specified in Appendix 9 at multiple locations at any time during the Acceptance Test to verify the Company’s compliance with these requirements.

6.3 UNCONTROLLABLE CIRCUMSTANCE RELIEF FOR SPECIFIED RAW WATER QUALITY PARAMETERS

Table 6-3 sets forth Raw Water quality variations that may entitle the Company to Uncontrollable Circumstance relief under Section 8.3 (Uncontrollable Circumstances – Entitlement to Relief) of the Contract. For each 24-hour period during the Acceptance Test in which the concentration of any Raw Water quality parameter satisfies the conditions set forth in Table 6-3, the Company shall be entitled to a 24-hour suspension of the Acceptance Test and a 24-hour extension of the Acceptance Test Period. Upon the return of all Raw Water quality parameters listed in Table 6-3 to values less than the specified conditions of relief, the Company shall resume the Acceptance Test in accordance with Appendix 7 (Pre-Acceptance and Acceptance Testing Requirements) within 48 hours. No Uncontrollable Circumstances relief shall be provided for any Raw Water quality parameter not specified in Table 6-3 unless otherwise approved in writing by the SRWA based on good cause as demonstrated by the Company. Uncontrollable Circumstances relief due to adverse Raw Water quality shall provide for a suspension of the Acceptance Test and a correlated extension of the Acceptance Test period. The Company also shall be entitled to an adjustment of the Base Design-Build Price to include any additional costs incurred by the Company as a result of any adverse Raw Water quality delay exceeding 24 hours. Any price relief associated with such a delay shall be limited to the Company’s reasonable daily general conditions costs, subject to Cost Substantiation in accordance with Section 10.8 (Cost Substantiation of Work Already Performed), for the number of days of delay caused by the adverse Raw Water quality but only to the extent any such delay actually causes delay in the Company’s critical path completion schedule after the exercise of all reasonable mitigation efforts by the Company.

Table 6-3. Uncontrollable Circumstance Relief for Specified Raw Water Quality Parameters	
Raw Water Quality Parameter	Condition of Uncontrollable Circumstance Relief
Turbidity	Daily average > 50 NTU for 14 days continuously
Turbidity	1-day average > 250 NTU
Total Organic Carbon (TOC)	> 10 mg/L
Bromide	> 0.05 mg/L
Manganese, dissolved	> 0.2 mg/L
Iron, dissolved	> 0.3 mg/L
MIB	Average of two or more samples > 25 ng/L
Geosmin	Average of two or more samples > 25 ng/L