

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

ORDER R5-2015-0129

WASTE DISCHARGE REQUIREMENTS

FOR  
CALIFORNIA DEPARTMENT OF CORRECTIONS AND REHABILITATION  
CALIFORNIA DEPARTMENT OF FORESTRY FIRE ACADEMY  
MULE CREEK STATE PRISON WASTEWATER TREATMENT PLANT  
AMADOR COUNTY

The California Regional Water Quality Control Regional Board, Central Valley Region, (hereafter Central Valley Water Board) finds that:

1. On 16 March 2015, the California Department of Corrections and Rehabilitation (CDCR) submitted a Report of Waste Discharge (RWD) to apply for revised Waste Discharge Requirements (WDRs) for Mule Creek State Prison Wastewater Treatment Plant (WWTP) in Amador County. Additional information was submitted in April, June, and August 2015.
2. The WWTP provides wastewater treatment and disposal to CDCR Mule Creek State Prison, the Preston Youth Correctional Facility (a Division of CDCR), and the California Department of Forestry Fire Academy (CDFFA). CDCR owns and operates the WWTP.
3. CDCR and CDFFA (hereafter) are jointly referred to as "Discharger" and are responsible for compliance with the WDRs.
4. The WWTP is located at 4001 Highway 104, in Lone (Section 13, T6N, R9E, MDB&M), as shown on Attachment A, which is attached hereto and made part of this Order by reference. The facility occupies Assessor's Parcel Numbers (APN) 004-290-004, 004-290-005, 004-290-006, 005-070-007, 005-070-008, and 005-070-011.
5. WDRs Order 5-00-088, adopted by the Central Valley Water Board on 28 April 2000, prescribes requirements for the WWTP, and wastewater conveyance systems from the Preston Youth Correctional Facility and California Department of Forestry Fire Academy. Order 5-00-088 contains flow limits of 0.74 million gallons per day (MGD) as an average dry weather discharge flow and 2.2 MGD as a peak wet weather flow. Order 5-00-088 allows the discharge of treated wastewater to 260 acres of land application areas (LAAs).

6. CDCR is currently constructing a 1,584-inmate Mule Creek Infill Complex (MCIC) within an area historically used for land disposal of treated effluent. Approximately 57 out of the original 260 acres of LAAs have been developed for the MCIC site. In order to replace the LAAs lost due to MCIC construction, CDCR proposed 47 acres of new LAAs onsite. CDCR also proposed to make some improvements at the WWTP. Therefore, Order 5-00-088 will be replaced with this Order.

### Existing Facility and Discharge

7. Mule Creek State Prison opened in June 1987, occupying 866 acres. The prison currently contains approximately 2,800 inmates. Wastewater generated at the facility is a mixture of domestic and industrial wastewater.
8. The onsite industrial-type activities associated with the Prison Industries Authority include meat packing operations, laundry service, and some dry industries such as coffee roasting and packaging, and textiles manufacturing. There is no dry cleaning service onsite. The industrial wastewater is mainly generated at the meat packing operation and the laundry service. Pre-treatment of the meat packing operation wastewater consists of grease separators that are regularly pumped by a waste hauler for off-site disposal. There are no flow meters to measure the volume of the industrial wastewater. However, the estimated water usage for the meeting packing and laundry operations is approximately 0.13 MGD.
9. The meat packing operation consists of meat trimming, washing and seasoning of certain products with liquid smoke and spices. The annual meat production is approximately 7,000,000 lbs per year. The laundry operations include a total of fifteen washers, two of which are currently not operable. The following table lists typical sanitization cleaners used in the two operations.

| Existing Laundry Service Products and Use |                              | Existing Meat Packing Products and Use |                              |
|---|------------------------------|--|------------------------------|
| Laundry Service Product                   | Annual Volume Used (gals/yr) | Meat Packing Cleaner Products          | Annual Volume Used (gals/yr) |
| Bleach                                    | 340                          | MX 815 Degreaser                       | 1,900                        |
| Detergent                                 | 370                          | Chlorinated Degreaser                  | 2,300                        |
| Neutralizer                               | 200                          | 101 Smokehouse Cleaner                 | 1,000                        |
| Breakup                                   | 680                          | Haze Bleach                            | 800                          |

10. Based on the influent flow data for 2013 and 2014, the annual average flow is approximately 0.35 MGD. Flows from the Mule Creek State Prison represent approximately 95% of the current wastewater flow to the WWTP. CDFFA typically contributes up less than 5% of the influent flow based on data from 2009, 2010,

and 2013. CDDFA has a peak flow of approximately 25,000 gallons per day (gpd) during the months of June through October, and an average flow of less than 10,000 gpd during the remaining months. Based on limited pre-2011 data, the Preston Youth Correctional Facility appears to have contributed approximately 16% to 20% of the influent flow to the WWTP. Since 2011, the Preston Youth Correctional Facility has been in a warm-shutdown state with an annual average daily influent flow of approximately 1,000 gpd primarily influenced by winter month infiltration and inflow (I/I).

11. The WWTP consists of two bar screenings, an oxidation ditch, two parallel clarifiers, a 84-inch chlorine contact pipe, a sludge belt press, sludge drying beds, an Effluent Storage Reservoir, and LAAs, as shown on Attachments B and C, which are attached hereto and made part of this Order by reference.
12. The total area of the LAAs was 260 acres prior to construction of MCIC. All LAAs have native grasses, shrubs and trees. Tilling is done perpendicular to the direction of runoff to limit the runoff from the LAAs. Each LAA has an earthen berm constructed along the downslope perimeter to provide tailwater containment.
13. The effluent storage reservoir is formed by two earthen embankment dams. At two feet of freeboard, Effluent Storage Reservoir has a capacity of approximately 475 acre-feet. A synthetic liner was installed on the two embankment dams. The bottom and natural sides of the reservoir are not lined.
14. After treatment in the oxidation ditch and clarifiers, the wastewater is disinfected in the chlorine contact pipe. The secondary disinfected effluent is discharged to the LAAs, Effluent Storage Reservoir, or Preston Reservoir. The treatment process is shown schematically on Attachment D, which is attached hereto and made part of this Order by reference.
15. The effluent is disposed of via spray irrigation on the LAAs. Effluent Storage Reservoir typically provides seasonal storage of effluent during the wet season. In addition, Mule Creek State Prison is under contract to deliver up to a maximum of 350 acre-feet of wastewater annually to Preston Reservoir. Preston Reservoir serves as a means of conveyance of effluent flows from the Amador Regional Sanitation Authority (ARSA) system and the Mule Creek WWTP to the City of Lone wastewater disposal system or to the Lone Tertiary Treatment Plant for further treatment and reuse at the Castle Oaks Golf Course (under Water Reclamation Requirements Order No. 93-240). Preston Reservoir is controlled through the lease agreement and operated by ARSA.

16. There are three unlined sludge drying beds with a total area of 0.61 acres. The sludge drying beds consist of sand and gravel and have an underdrain system with return flow to the oxidation ditch. All screenings and waste sludge is collected and transported to a public landfill for disposal.
17. The following table summarizes recent influent flow rates:

| Influent Flow Rate |                          |                               |
|--------------------|--------------------------|-------------------------------|
| <u>Year</u>        | <u>Annual Total (MG)</u> | <u>ADWF<sup>1</sup> (MGD)</u> |
| 2009               | 228                      | 0.6                           |
| 2010               | 204                      | 0.6                           |
| 2011               | 175                      | 0.5                           |
| 2012               | 165                      | 0.4                           |
| 2013               | 158                      | 0.4                           |
| 2014               | 133                      | 0.3                           |

<sup>1</sup> As determined by the total flow for the months of July through September, inclusive, divided by 92 days.

The influent flow rates have steadily decreased in the recently years due to inmate population reduction. The total inmate population has been reduced from 3,965 in 2006 to 2,800 in 2015. In addition, CDCR has implemented water conservation programs at the prison since 2007 in order to reduce the influent flow.

18. The effluent quality is summarized below based on the discharger's monthly monitoring reports:

| Effluent Quality         |             |                |                |                            |
|--------------------------|-------------|----------------|----------------|----------------------------|
| <u>Constituent</u>       | <u>Unit</u> | <u>Minimum</u> | <u>Maximum</u> | <u>Average<sup>1</sup></u> |
| Biological Oxygen Demand | mg/L        | 1              | 54             | 8.2                        |
| Total Dissolved Solids   | mg/L        | 146            | 417            | 244                        |
| Chloride                 | mg/L        | 1              | 109            | 53                         |
| Sodium                   | mg/L        | 5.5            | 242            | 55                         |
| Nitrate Nitrogen         | mg/L        | 1.4            | 40             | 14                         |
| Total Kjeldahl Nitrogen  | mg/L        | 0.2            | 18             | 2.6                        |
| Total Coliform Organisms | MPN/100 mL  | <1             | 1,600          | 9 (median)                 |

<sup>1</sup> Flow weighted average from January 2009 through October 2014.

19. According to the Monitoring and Report Program 5-00-088, influent and effluent are monitored for volatile organic compounds (VOCs) on a monthly basis. The RWD summaries the averages of the VOCs shown on the following table.

| Summary Influent/Effluent VOC Characterization |       |                     |          |
|--|-------|---------------------|----------|
| Constituent                                    | Units | Average (2010-2014) |          |
|  |       | Influent            | Effluent |
| 1,1,1-Trichloroethane                          | µg/L  | 0.1                 | <RL      |
| 1,2,4-Trimethylbenzene                         | µg/L  | 0.1                 | <RL      |
| 1,1-Dichloroethane                             | µg/L  | <RL                 | 0.1      |
| 1,2-Dichloroethane                             | µg/L  | 0.1                 | <RL      |
| 1,3-Dichloropropane                            | µg/L  | 0.3                 | <RL      |
| 2-Butanone                                     | µg/L  | 5.0                 | 0.6      |
| 2-Chlorotoluene                                | µg/L  | 0.1                 | 0.1      |
| 2-Hexanone                                     | µg/L  | 0.4                 | <RL      |
| 4-Isopropyltoluene                             | µg/L  | 2.1                 | <RL      |
| 4-Methyl-2-pentanone                           | µg/L  | 2.5                 | <RL      |
| Acetone  | µg/L  | 47.8                | 11.8     |
| Bromodichloromethane                           | µg/L  | 0.8                 | 1.4      |
| Bromoform                                      | µg/L  | <RL                 | 0.1      |
| Bromomethane                                   | µg/L  | <RL                 | 0.5      |
| Carbon disulfide                               | µg/L  | 0.2                 | 0.2      |
| Carbon tetrachloride                           | µg/L  | 0.2                 | 0.4      |
| Chlorobenzene                                  | µg/L  | <RL                 | 0.1      |
| Chloroform                                     | µg/L  | 19.0                | 35.0     |
| Chloroethane                                   | µg/L  | <RL                 | 0.2      |
| Chloromethane                                  | µg/L  | 0.4                 | 1.1      |
| Dichlorodifluoromethane                        | µg/L  | 0.2                 | <RL      |
| Iodomethane                                    | µg/L  | <RL                 | 1.4      |
| m,p-Xylene                                     | µg/L  | 0.1                 | <RL      |
| Methyl ethyl ketone                            | µg/L  | 1.4                 | <RL      |
| Methyl isobutyl ketone                         | µg/L  | 5.5                 | <RL      |
| Methylene chloride                             | µg/L  | 0.2                 | 0.4      |
| Naphthalene                                    | µg/L  | 0.2                 | 0.3      |
| n-Butylbenzene                                 | µg/L  | 0.7                 | <RL      |
| o-Xylene                                       | µg/L  | 0.1                 | <RL      |
| p-Isopropyltoluene                             | µg/L  | 0.9                 | <RL      |
| Tetrachloroethene                              | µg/L  | 0.4                 | 0.2      |
| Toluene  | µg/L  | 5.4                 | 0.8      |
| Trichlorofluoromethane                         | µg/L  | 0.2                 | <RL      |
| Vinyl chloride                                 | µg/L  | <RL                 | 0.1      |
| Xylenes, total                                 | µg/L  | 0.2                 | <RL      |

<RL = Constituent less than report limit.

20. Based on effluent VOCs data from November 2010 to October 2014, the notable VOCs are acetone, toluene and chloroform.
- a) The effluent had an average acetone concentration of 11.8  $\mu\text{g/L}$  with a range from 3.4  $\mu\text{g/L}$  (in July, 2013) to 28.4  $\mu\text{g/L}$  (in September-October, 2012). Acetone concentrations peaked in late 2012 at 28.4  $\mu\text{g/L}$ , but decreased with time thereafter. Effluent acetone concentrations are well below USEPA IRIS Reference Dose as a drinking water level of 6,300  $\mu\text{g/L}$ . No specific source of acetone has been identified, but it is expected that the source may be from its typical use as a tool cleaner or possibly degreaser, or in paints and thinner products.
  - b) The effluent had an average toluene concentration of 0.8  $\mu\text{g/L}$  with a range from 0.1  $\mu\text{g/L}$  (in July, 2013) to 3.4  $\mu\text{g/L}$  (in June, 2013). Most of the test results were “non-detect”, indicating that the concentrations were typically less than the reporting limit of 0.5  $\mu\text{g/L}$ . Effluent toluene concentrations are well below EPA Primary Maximum Contaminant Level (MCL) of 1,000  $\mu\text{g/L}$ . No specific source of toluene has been identified, but it is expected that the source may be from its typical use in paint thinners, silicone sealants, lacquers, or fuel additive.
  - c) Chloroform is a common water treatment chlorine disinfection byproduct, and is included within the category of total trihalomethanes (TTHMs). The effluent TTHMs is well below the MCL of 80  $\mu\text{g/L}$  for TTHMs.

### **Enforcement History**

21. On 8 December 2006, Cease and Desist Order (CDO) R5-2006-0130 was adopted in response to violations of WDRs Order 5-00-088. The CDO required CDCR to complete the following tasks:
- a. Comply with the WDRs, with the exception of the dry weather flow;
  - b. Report all sewer overflows from any treatment, storage, or disposal component;
  - c. Submit and implement a Spill Contingency Plan;
  - d. Implement and document hourly monitoring of the sprayfields;
  - e. Submit and implement a Sprayfield Improvement Report and Management Plan;

- f. Submit a Staffing Analysis Report for the wastewater treatment, storage and disposal system;
- g. Submit a report documenting the installation of water cannons around the effluent storage reservoir;
- h. Submit two reports documenting that the influent flows to the plant have been reduced;
- i. Submit a report certifying installation of an alarm feature for the filter belt press;
- j. Submit an Effluent Flow Meter Installation and Calibration Report, documenting installation, operation, and certification of a new effluent flow meter after the clarifier;
- k. Submit and implement an Operation and Maintenance Plan for the WWTP and land application facilities;
- l. Submit an Influent Flow Meter Installation and Calibration report;
- m. Submit a Groundwater Monitoring Well Installation Workplan and Report, and begin monitoring groundwater;
- n. Submit a Reservoir Seepage Evaluation Report;
- o. Submit a Revised Water Balance;
- p. Submit a Flow Reduction Evaluation Report;
- q. Submit a Long Term Wastewater Facilities Upgrade and Financing Plan;
- r. Submit a Report of Waste Discharge, and
- s. Submit Quarterly Compliance Status Reports.

CDCR has achieved compliance by completing the tasks in the CDO and is currently in compliance with effluent limits. Therefore, the CDO was rescinded by the Central Valley Water Board on 26 July 2013.

- 22. Administrative Civil Liability Complaint R5-2007-0505, in the amount of \$50,000, was issued to CDCR on 2 March 2007 due to violation of WDRs Order 5-00-088 and CDO R5-2006-0130. The WWTP discharged waste to surface waters and outside of the designated disposal area with a total flow of 54,750 gallons during July 2006 through January 2007. CDCR and the Executive Officer agreed to settle the civil liability through completion of a Supplemental Environmental Project, as documented in Administrative Civil Liability Order R5-2007-0518.

### Planned Changes in the Facility and Discharge

23. Due to loss of 57 acres of LAAs for the MCIC project, CDCR proposed to prepare new LAAs . In addition, CDCR proposed to make improvements to the WWTP. All the modifications and improvements will be completed by April, 2017. After completion of the MCIC project, the total inmate population will increase from current 2,800 to approximately 4,400. CDCR did not request to increase the existing flow limits in WDRs Order 5-00-088.
24. CDCR proposes to install new LAAs 8 through 11 with a total area of 47 acres. The total net area of the LAAs will be 247 acres, which is 13 acres less than the total areas of the LAAs prior to MCIC project. The historical and proposed LAAs are listed below.

| <u>LAA Number</u> | <u>Historical LAAs (pre-MCIC) (acres)</u> | <u>Proposed LAAs (post-MCIC) (acres)</u> | <u>Net Change (Historical vs. Proposed)</u> | <u>Notes</u>  |
|-------------------|---|--|---|---|
| 1 (existing)      | 32  | 28                                       | -4  | Area loss to electrical sub station / Property offsets        |
| 2 (existing)      | 26  | 28                                       | 2   | Gained area adjacent to Effluent Reservoir                    |
| 3 (existing)      | 32  | 31                                       | -1  | Reconciled areas / Property offsets                           |
| 4 (existing)      | 40  | 39                                       | -1  | Net loss due to MCIC  |
| 5 (existing)      | 47  | 0  | -47   | Net loss due to MCIC  |
| 6 (existing)      | 40  | 31                                       | -9  | Net loss due to MCIC  |
| 7 (existing)      | 43  | 43                                       | 0   | Field 7 is untouched in Design                                |
| 8 (New)           | --  | 7  | 7   | Adjacent to Preston Reservoir                                 |
| 9 (New)           | --  | 19                                       | 19  | At existing temporary construction facilities                 |
| 10 (New)          | --  | 16                                       | 16  | Adjusted to meet setback requirements to biological resources |
| 11 (New)          | --  | 5  | 5   | Adjusted to meet setback requirements to biological resources |
| Total             | 260                                       | 247                                      | -13   |   |



The new LAAs will be planted with a pasture grass mixture. Tailwater control systems will be installed at the down-slope extend of each new LAA, including earthen ditches and earthen containment basins. All collected tailwater will be re-applied to the LAAs.

25. During a 4 November 2015 meeting, CDCR proposed alternative new LAAs. Instead of constructing 47 acres of on-site LAAs, CDCR may propose to construct approximately 100 acres of off-site contiguous agricultural land located west of Lone. If CDCR pursues this proposal, the WDRs Order will be reopened for this change.
26. The Water Balance included in the RWD indicates that after installation of the new LAAs, the WWTP will have an adequate disposal capacity for the proposed average dry weather influent flow limit of 0.74 MGD.
27. Proposed improvements to the wastewater treatment facilities consist of reliability and performance improvements to the existing treatment processes, including:
  - a. Addition of aeration to the existing oxidation ditch;
  - b. Addition of a third larger clarifier;
  - c. Replacement of the chlorine contact pipe with a chlorine contact basin to improve disinfection efficiency;
  - d. Replacement of the existing sand and gravel sludge drying beds with concrete sludge drying beds. The new beds will be located at the existing Bed No.1 and a portion of Bed No.2 with a total area of approximately 0.35 acre, as shown on Attachment C. The remaining of the existing sludge beds will no longer be used.
  - e. Use of effluent for treatment process instead of potable water. The existing WWTP system design uses potable water for various process purposes, including the belt filter press wash and clarifier spray/wash.

The proposed wastewater treatment and disposal facilities will be located within the WWTP site.

### **Site-Specific Conditions**

28. Potable water supply is provided by the Amador Water Agency (AWA) Lone System. The AWA Lone System is surface water fed from the Mokelumne River. Water supply analytical results are summarized below.

| Water Supply Analytical Results<br>(2009 through 2014) |             |                |
|--|-------------|----------------|
| <u>Constituent</u>                                     | <u>Unit</u> | <u>Average</u> |
| TDS  | mg/L        | 43             |
| EC   | umhos/cm    | 48.6           |
| Nitrate as N   | mg/L        | 0.038          |
| Hardness   | mg/L        | 22             |
| Magnesium  | mg/L        | 1.5            |
| Chloride   | mg/L        | 2.4            |
| Sodium   | mg/L        | 2.8            |
| Sulfate  | mg/L        | 1.6            |
| Arsenic  | µg/L        | 1              |
| Iron   | µg/L        | 94             |
| Manganese  | µg/L        | 8.4            |

29. The site topography is gently rolling hills with surface elevations ranging from approximately 250 feet to over 660 feet above sea level.
30. The LAAs are bisected by Mule Creek, which has been designated as a FEMA Zone A. All existing and proposed facilities above grade at the WWTP are outside of the 100-year flood zone.
31. Annual precipitation in the vicinity averages approximately 22 inches. The 100-year total annual precipitation is approximately 40 inches. Average annual evapotranspiration rate is approximately 54 inches.
32. According to the USDA Natural Resource Conservation Service, the LAAs are predominantly underlain by the Auburn, Honcut, and Red Bluff-Mokelumne soil series. The LAAs are underlain by the Red Bluff-Mokelumne (LAAs 1, 2, 5, and 6) and Auburn complexes (LAAs 3 and 4) which are indicative of very low permeability, shallow soils (no more than 10 inches), and a near surface clay or low permeability layer. LAA 7 is primarily underlain by the Honcut soil that is reported to have a depth of up to 60 inches of silt loam and loam soils.
33. According to the Double-Ring Infiltrometer Testing and Rippability Assessment Report dated 1 May, 2015, the infiltration rates in the existing and proposed LAAs ranged from 1.5 to 4.8 in/hr, with an average of approximately 2.9 in/hr. This measured infiltration rate was much greater than expected based on record information from the Natural Resource Conservation Service.

34. Land uses adjacent to the site are predominantly rangeland. Beyond the immediately adjacent properties, the alluvial areas between Mule Creek and Dry Creek tend to include limited agricultural land uses, with crop types consisting primarily of pasture grasses.

### **Groundwater Conditions**

35. The depth to groundwater generally ranges between 4 to 42 feet below ground surface due to local topography. Groundwater generally flows in a westerly to southwesterly direction at gradients ranging from 0.04 to 0.007 feet per foot.
36. Ten groundwater monitoring wells were installed in March 2007, including three background wells B-2, B-3 and B-4 and seven downgradient wells S-1, S-2, S-6, S-7E, S-7W, R-1, and R-2, as shown on Attachment B. Based on the Discharger's 11 July 2007 *Groundwater Monitoring Well Installation Report*, Wells B-2, B-3, B-4, S-1, S-6, and R-1 were completed in bedrock; Wells S-2 and S-7E were completed in the lone formation; and Wells S-7W and R-2 were completed in alluvium. Because these wells were completed in different types of soils, groundwater quality may vary greatly from well to well onsite, especially for wells constructed in the bedrock fractures.
37. Monitoring well depths range from 22 to 43 feet below ground surface. Groundwater monitoring wells B-2, B-3, and B-4 monitor the groundwater entering the property from the north, northeast, and east (background); monitoring wells S-1, S-2, S-6, S-7E, S-7W, R-1 and R-2 monitor groundwater downgradient of spray fields and reservoirs. Based on the Discharger's quarterly groundwater monitoring reports, Well S-1 has consistently been dry since August 2008, and Wells B-3 and R-2 have been occasionally dry.
38. A summary of groundwater monitoring data for select constituents is presented in the table below.

| Groundwater Average Concentration                  |                  |                            |                  |                          |                           |               |                             |                           |   |
|--|------------------|----------------------------|------------------|--------------------------|---------------------------|---------------|-----------------------------|---------------------------|---|
|  |                  | TDS<br>(mg/L)              | Sodium<br>(mg/L) | Chloride<br>(mg/L)       | Nitrate<br>as N<br>(mg/L) | TKN<br>(mg/L) | Iron <sup>7</sup><br>(µg/L) | Mn <sup>7</sup><br>(µg/L) | Total<br>Coliform<br>(MPN/<br>100 mL)<br>(Median) |
| Potential MUN Water<br>Quality Objective           |                  | 500-<br>1,500 <sup>1</sup> | --               | 250-<br>600 <sup>2</sup> | 10 <sup>3</sup>           | --            | 300 <sup>4</sup>            | 50 <sup>4</sup>           | 2.2   |
| Lowest Potential<br>AGR Water Quality<br>Objective |                  | 450                        | 69               | 106                      | --                        | --            | 5,000                       | 200                       | --  |
| Background<br>Well <sup>5</sup>                    | B-2              | 1,111                      | 70               | 379                      | 0.2                       | 0.7           | 200                         | 59                        | <2  |
|  | B-3              | 647                        | 40               | 96                       | 19                        | 2.5           | 110                         | 163                       | <2  |
|  | B-4              | 352                        | 35               | 29                       | 0.8                       | 1.0           | 81                          | 798                       | <2  |
| Down-<br>gradient<br>Wells <sup>5</sup>            | S-1 <sup>6</sup> | 666                        | 72               | 82                       | 2.1                       | <1            | <20                         | 33                        | <2  |
|  | S-2              | 398                        | 18               | 36                       | 4.2                       | 1.0           | 47                          | 6                         | <2  |
|  | S-6              | 341                        | 42               | 14                       | 0.1                       | 1.0           | 93                          | 68                        | <2  |
|  | S-7E             | 541                        | 96               | 91                       | 5.6                       | 8.2           | 45                          | 11                        | 16  |
|  | S-7W             | 309                        | 32               | 44                       | 1.3                       | 1.8           | 335                         | 10                        | <2  |
|  | R-1              | 526                        | 62               | 65                       | 0.1                       | 1.2           | 37                          | 132                       | <2  |
|  | R-2              | 287                        | 25               | 15                       | 1.4                       | 1.1           | 1,225                       | 948                       | 8   |

<sup>1</sup> Secondary Maximum Contaminant Level range, Recommended level = 500;  
 Upper level = 1000 mg/L; Short-term level = 1,500 mg/L.

<sup>2</sup> Secondary Maximum Contaminant Level range, Recommended level = 250;  
 Upper level = 500 mg/L; Short term level = 600 mg/L.

<sup>3</sup> Primary Maximum Contaminant Level.

<sup>4</sup> Secondary Maximum Contaminant Level.

<sup>5</sup> Data collected quarterly from April 2007 through September 2014 except S-1.

<sup>6</sup> Four data sets collected quarterly from April 2007 through May 2008; this well has been  
 dired since August 2008.

<sup>7</sup> Dissolved concentrations.

39. Background wells B-3 and B-4 contain average TDS concentrations of 647 mg/L and 352 mg/L, respectively. However background well B-2 has an average TDS concentration of 1,111 mg/L, which exceeded the upper level secondary maximum concentration limit (MCL) of 1,000 mg/L for TDS. For the differences of TDS concentrations in the background wells, the Discharger's December 2009 *Technical Report Assignment of Groundwater Quality and Degradation Potential* stated that groundwater in bedrock fracture systems may or may not be

extensively interconnected. The average TDS concentrations in the downgradient wells ranged from 297 to 541 mg/L. The effluent average TDS concentration of 244 mg/L is less than the TDS concentrations in the background and downgradient wells. The discharge may have contributed to lowering the TDS concentrations in the downgradient wells.

40. Background wells B-2 and B-4 contain average nitrate nitrogen concentrations of 0.2 mg/L and 0.8 mg/L, respectively. However, background well B-3 has an average nitrate nitrogen concentration of 19 mg/L, which exceeded the Primary MCL of 10 mg/L for nitrate nitrogen. The source has not been identified. The average nitrate nitrogen concentrations in all downgradient wells were less than the Primary MCL of 10 mg/L with a range from 0.2 to 5.8 mg/L. Therefore, the groundwater in the downgradient wells has not been degraded to exceed the Primary MCL for nitrate nitrogen.
41. Sodium concentrations in background well B-2 and downgradient well S-7E are slightly greater than the Agriculture Water Quality Objective of 69 mg/L for sodium. This may naturally occur or be affected by other sources, because the average sodium concentration in the effluent is 55 mg/L, which is less than the Agriculture Water Quality Objective for sodium.
42. Chloride concentrations in all background and downgradient wells are less than the upper level of Secondary MCL of 500 mg/L. Therefore, the groundwater in the downgradient wells has not been degraded to exceed the upper level Secondary MCL for chloride.
43. Iron concentrations in all background and downgradient wells except S-7W and R-2 are less than the Secondary MCL of 300 µg /L. The elevated iron concentrations in S-7W and R-2 may represent naturally occurring conditions or be affected by other sources. Iron impacts to groundwater are also attributable to the presence of degradable organic matter in the wastewater, which depletes oxygen and creates reducing conditions that favor dissolution of iron from the native soil minerals. However, the average effluent BOD concentration is low as 8.3 mg/L, which is unlikely to cause reducing conditions in the groundwater beneath the WWTP.
44. Manganese concentrations in all background wells exceed the Secondary MCL of 50 µg /L for manganese. Manganese concentrations in the downgradient wells except S-2, S-7E and S-7W are greater than the Secondary MCL for manganese. The manganese exceedances in these wells may be naturally occurring or affected by other sources. The effluent manganese concentration of 28 µg/L was

less than the MCL based on the Discharger's 2014 Annual Report. In addition, the low effluent BOD concentration is unlikely to cause reducing condition in the groundwater beneath the WWTP.

45. The medians of total coliform in S-7E and R-2 were 16 and 8 MPN/100 mL, respectively, exceeding the Basin Plan's numeric water quality objective of 2.2 MPN/100 mL. The effluent is disinfected and it is unlikely to cause coliform exceedance in groundwater. It is not known whether the groundwater coliform detections are due to cross-contamination of the monitoring wells during construction and/or subsequent sampling. This Order requires CDCR to disinfect these two monitoring wells.
46. The Discharger's Quarterly Groundwater Monitoring Reports include historical data for total trihalomethanes and toluene concentrations. Based on data collected quarterly from April 2007 through September 2014, the total trihalomethanes concentrations in the most monitoring wells have been reported at less than the reporting limit. Occasionally, some monitoring wells had very low levels that were far below the MCL of 80 ug/L for total trihalomethanes. Since 2007, toluene concentrations have been less than the reporting limit of 0.50 ug/L in most of the monitoring wells. During one sampling event in November of 2007, toluene concentrations in monitoring wells S-1, S-2, S-6, S7-E, S7-W, and R-2 ranged from 1.3 to 6.9 ug/L, which were below the water quality goal of 40 ug/L. These toluene levels may be related to industrial activities during that time period or laboratory errors. Since December 2008, groundwater toluene concentrations in the downgradient wells have been below the reporting limit.

### **Basin Plan, Beneficial Uses, and Regulatory Considerations**

47. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins*, Fourth Edition (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting waters of the basin, and incorporates by reference plans and policies adopted by the State Water Board. Pursuant to California Water Code section 13263(a), waste discharge requirements must implement the Basin Plan.
48. Local drainage is to Mule Creek, a tributary to Dry Creek, and then the Sacramento-San Joaquin Delta.
49. The Regional Water Board's Water Quality Control Plan (Fourth Edition) for the Sacramento River and San Joaquin River Basins (Basin Plan) establishes the beneficial uses of the waters of the Sacramento-San Joaquin Delta. These

beneficial uses are municipal and domestic supply; agricultural supply; industrial process and service supply; water contact recreation; non-contact water recreation; warm freshwater habitat; cold freshwater habitat; migration for aquatic organisms; spawning, reproduction, and/or early development; wildlife habitat; and navigation. The beneficial uses of underlying groundwater are municipal and domestic water supply, agricultural supply, and industrial service and process supply.

50. The beneficial uses of underlying groundwater as set forth in the Basin Plan are municipal and domestic supply, agricultural supply, industrial service supply and industrial process supply.
51. The Basin Plan establishes narrative water quality objectives for chemical constituents, tastes and odors, and toxicity in groundwater. It also sets forth a numeric objective for total coliform organisms.
52. The Basin Plan's numeric water quality objective for bacteria requires that the most probable number (MPN) of coliform organisms over any seven-day period shall be less than 2.2 per 100 mL in MUN groundwater.
53. The Basin Plan's narrative water quality objectives for chemical constituents, at a minimum, require waters designated as domestic or municipal supply to meet the MCLs specified in Title 22 of the California Code of Regulations (hereafter Title 22). The Basin Plan recognizes that the Central Valley Water Board may apply limits more stringent than MCLs to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses.
54. The narrative toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, animal, plant, or aquatic life associated with designated beneficial uses.
55. Quantifying a narrative water quality objective requires a site-specific evaluation of those constituents that have the potential to impact water quality and beneficial uses. The Basin Plan states that when compliance with a narrative objective is required to protect specific beneficial uses, the Central Valley Water Board will, on a case-by-case basis, adopt numerical limitations in order to implement the narrative objective.
56. In the absence of specific numerical water quality limits, the Basin Plan methodology is to consider any relevant published criteria. General salt tolerance

guidelines, such as *Water Quality for Agriculture* by Ayers and Westcot and similar references indicate that yield reductions in nearly all crops are not evident when irrigation water has an EC less than 700  $\mu\text{mhos/cm}$ . There is, however, an eight- to ten-fold range in salt tolerance for agricultural crops and the appropriate salinity values to protect agriculture in the Central Valley are considered on a case-by-case basis. It is possible to achieve full yield potential with waters having EC up to 3,000  $\mu\text{mhos/cm}$  if the proper leaching fraction is provided to maintain soil salinity within the tolerance of the crop.

### **Antidegradation Analysis**

57. State Water Resources Control Board Resolution 68-16 ("Policy with Respect to Maintaining High Quality Waters of the State") (hereafter Resolution 68-16) prohibits degradation of groundwater unless it has been shown that:
  - a. The degradation is consistent with the maximum benefit to the people of the state.
  - b. The degradation will not unreasonably affect present and anticipated future beneficial uses.
  - c. The degradation does not result in water quality less than that prescribed in state and regional policies, including violation of one or more water quality objectives, and
  - d. The discharger employs best practicable treatment or control (BPTC) to minimize degradation.
58. Degradation of groundwater by some of the typical waste constituents associated with discharges from a wastewater utility, after effective source control, treatment, and control measures are implemented, is consistent with the maximum benefit to the people of the state. The technology, energy, water recycling, and waste management advantages of utility service far exceed any benefits derived from reliance on numerous, concentrated individual wastewater systems, and the impact on water quality will be substantially less. The economic prosperity of valley communities and associated industry is of maximum benefit to the people of the State, and provides sufficient justification for allowing the limited groundwater degradation that may occur pursuant to this Order.
59. The Discharger has been monitoring groundwater quality at the site since March 2007. Based on the data available, it is not possible to determine pre-1968 groundwater quality. Therefore, determination of compliance with



Resolution 68-16 for this facility must be based on existing background groundwater quality.

60. Constituents of concern that have the potential to degrade groundwater include salts (primarily TDS, sodium, and chloride), and nutrients as discussed below.

| Constituent             | Average Concentrations |                                     |                                       |   |
|-------------------------|------------------------|-------------------------------------|---------------------------------------|---|
|                         | Effluent <sup>1</sup>  | Background Groundwater <sup>2</sup> | Downgradient Groundwater <sup>3</sup> | Potential Water Quality Objective         |
| TDS (mg/L)              | 244                    | 352 to 1,111                        | 287 to 541                            | 500-1,500 <sup>6</sup> / 450 <sup>4</sup> |
| BOD (mg/L)              | 8.2                    | --                                  | --                                    | --  |
| Nitrate Nitrogen (mg/L) | 14                     | 0.2 to 19                           | 0.2 to 5.8                            | 10 <sup>5</sup>                           |
| TKN (mg/L)              | 2.6                    | 0.7 to 2.5                          | 1.0 to 8.2                            | --  |
| Sodium (mg/L)           | 55                     | 35 to 70                            | 18 to 96                              | 69 <sup>4</sup>                           |
| Chloride (mg/L)         | 53                     | 29 to 379                           | 14 to 91                              | 250- 600 <sup>7</sup> /106 <sup>4</sup>   |

<sup>1</sup> Flow weighted average from January 2009 through October 2014.

<sup>2</sup> Compiled from B-2, B-3 and B-4; data collected from April 2007 through September 2014.

<sup>3</sup> Compiled from S-2, S-6, S-7E, S-7W, R-1, and R-2; data collected from April 2007 through September 2014. Data for S-1 are not used because the well has been dry since August 2008.

<sup>4</sup> Agricultural water quality goal.

<sup>5</sup> Primary Maximum Contaminant Level.

<sup>6</sup> Secondary Maximum Contaminant Level range, Recommended level = 500; Upper level = 1000 mg/L; Short term level = 1500 mg/L.

<sup>7</sup> Secondary Maximum Contaminant Level range, Recommended level = 250; Upper level = 500 mg/L; Short term level = 600 mg/L.

- a. **Total Dissolved Solids.** Except for the background Well B-2, all onsite wells have TDS concentrations less than the upper level MCL for TDS. The effluent average TDS concentration of 244 mg/L is less than the TDS concentrations in the background and downgradient wells. Therefore, the discharge is not likely to degrade groundwater quality for TDS. This Order includes an effluent TDS limit of 450 mg/L, which is the effluent TDS limit in the existing WDRs.
- b. **Nitrate.** For nutrients such as nitrate, the potential for degradation depends not only on the quality of the treated effluent, but the ability of the vadose zone below the effluent disposal ponds to provide an environment conducive to nitrification and denitrification to convert the effluent nitrogen to nitrate and the nitrate to nitrogen gas before it reaches the water table. The nitrate nitrogen concentration in the background Well B-3 exceeded the Primary MCL of 10 mg/L for nitrate nitrogen. Although the average effluent nitrate nitrogen concentration of 14 mg/L exceeded the Primary MCL of 10 mg/L for nitrate nitrogen, the effluent total nitrogen loading rate of 41 lb/acre/year is less than the nitrogen uptaking rate for

forage crops, which range from 150 to 480 lb/acre/year<sup>1</sup>. The average nitrate nitrogen concentrations in all downgradient wells were less than the Primary MCL of 10 mg/L with a range from 0.2 to 5.8 mg/L. Therefore, the groundwater nitrate nitrogen concentrations in the downgradient wells have not been degraded to exceed the Primary MCL for nitrate nitrogen.

The RWD states that the effluent nitrate concentration is expected to remain the same after completion of proposed WWTP improvements. Due to use of MCIC, the influent flow rates will be higher than the current level. The effluent nitrogen loading rate will also increase from the current 41 lb/acre/year to 240 lb/acre/year, which is within the range of the nitrogen uptake rate for forage crops. However, Effluent Storage Reservoir is unlined and treated wastewater in the reservoir may have the potential to degrade groundwater for nitrate nitrogen. Therefore, this Order includes an effluent nitrate nitrogen limit of 30 mg/L to protect groundwater quality.

61. This Order establishes effluent and groundwater limitations for the WWTP that will not unreasonably threaten present and anticipated beneficial uses or result in groundwater quality that exceeds water quality objectives set forth in the Basin Plan. For TDS, current groundwater monitoring data indicate that groundwater has not been degraded beyond the MCLs by the discharge and that the discharge does not pose a threat of degradation in the future. For nitrate nitrogen, the discharge has not caused exceedance of the water quality objective. The Discharger has implemented BPTC, so the degradation is allowable under Resolution 68-16.
62. The Discharger provides treatment and control of the discharge that incorporates:
  - a. Implementation of water conservation measures to reduce the influent flow;
  - b. Tailwater control systems in the LAAs;
  - c. Proposed additional aeration in oxidation ditch and new larger clarifier;
  - d. Proposed new chlorine contact basin, and
  - e. Proposed new concrete sludge drying beds.

### **Other Regulatory Considerations**

63. In compliance with Water Code section 106.3, it is the policy of the State of California that every human being has the right to safe, clean, affordable, and

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<sup>1</sup> California Fertilizer Association, "Western Fertilizer Handbook", 6<sup>th</sup> Edition, page 60, 1980.

accessible water adequate for human consumption, cooking, and sanitary purposes. This order promotes that policy by requiring discharges to meet maximum contaminant levels designed to protect human health and ensure that water is safe for domestic use.

64. Based on the threat and complexity of the discharge, the facility is determined to be classified as 2B as defined below:
- a. Category 2 threat to water quality: "Those discharges of waste that could impair the designated beneficial uses of the receiving water, cause short-term violations of water quality objectives, cause secondary drinking water standards to be violated, or cause a nuisance."
  - b. Category B complexity, defined as: "Any discharger not included [as Category A] that has physical, chemical, or biological treatment systems (except for septic systems with subsurface disposal) or any Class 2 or Class 3 waste management units."
65. Title 27 of the California Code of Regulations (hereafter Title 27) contains regulatory requirements for the treatment, storage, processing, and disposal of solid waste. However, Title 27 exempts certain activities from its provisions. Discharges regulated by this Order are exempt from Title 27 pursuant to provisions that exempt domestic sewage, wastewater, and reuse. Title 27, section 20090 states in part:

The following activities shall be exempt from the SWRCB-promulgated provisions of this subdivision, so long as the activity meets, and continues to meet, all preconditions listed:

(b) Wastewater - Discharges of wastewater to land, including but not limited to evaporation ponds, percolation ponds, or subsurface leachfields if the following conditions are met:

- (1) the applicable RWQCB has issued WDRs, reclamation requirements, or waived such issuance;
- (2) the discharge is in compliance with the applicable water quality control plan; and
- (3) the wastewater does not need to be managed according to Chapter 11, Division 4.5, Title 22 of this code as a hazardous waste.

66. The discharge authorized herein, and the treatment and storage facilities associated with the discharge, are exempt from the requirements of Title 27 as follows:
- a. Effluent Storage Reservoir and LAAs are exempt pursuant to Title 27, section 20090(b) because they are discharges of wastewater to land and:
    - i. The Central Valley Water Board is issuing WDRs.
    - ii. The discharge is in compliance with the Basin Plan, and;
    - iii. The treated effluent discharged to the Effluent Storage Reservoir and LAAs does not need to be managed as hazardous waste.

67. The U.S. EPA published *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* (hereafter "Unified Guidance") in 2009. As stated in the Unified Guidance, the document:

...is tailored to the context of the RCRA groundwater monitoring regulations ... [however, t]here are enough commonalities with other regulatory groundwater monitoring programs ... to allow for more general use of the tests and methods in the Unified Guidance... Groundwater detection monitoring involves either a comparison between different monitoring stations ... or a contrast between past and present data within a given station... The Unified Guidance also details methods to compare background data against measurements from regulatory compliance points ... [as well as] techniques for comparing datasets against fixed numerical standards ... [such as those] encountered in many regulatory programs.

The statistical data analysis methods in the Unified Guidance are appropriate for determining whether the discharge complies with Groundwater Limitations of this Order.

68. The State Water Board adopted Order 97-03-DWQ (NPDES General Permit CAS000001) specifying waste discharge requirements for discharges of storm water associated with industrial activities, and requiring submittal of a Notice of Intent by all affected industrial dischargers. The wastewater treatment facility has a design capacity of less than 1.0 MGD. The Discharger is therefore not required to obtain coverage under NPDES General Permit CAS000001.
69. On 2 May 2006, the State Water Board adopted Statewide General Waste Discharge Requirements for Sanitary Sewer Systems General Order 2006-0003-DWQ (the General Order). The General Order requires all public agencies that own or operate sanitary sewer systems greater than one mile in

length to comply with the Order. The Discharger's collection systems exceed one mile in length and the WWTP is regulated under the General Order.

70. Water Code section 13267(b)(1) states:

In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region ... shall furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.

The technical reports required by this Order and the attached Monitoring and Reporting Program R5-2015-0129 are necessary to ensure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges the waste subject to this Order.

71. The California Department of Water Resources sets standards for the construction and destruction of groundwater wells (hereafter DWR Well Standards), as described in *California Well Standards Bulletin 74-90* (June 1991) and *Water Well Standards: State of California Bulletin 74-81* (December 1981). These standards, and any more stringent standards adopted by the state or county pursuant to Water Code section 13801, apply to all monitoring wells used to monitor the impacts of wastewater storage or disposal governed by this Order.
72. CDCR completed the Final Environmental Impact Report (EIR) for Level II Infill Correctional Facilities Project on 28 October 2013 in accordance with the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.). The Final Environmental Impact Report states that impacts related to long term water quality as a result of operation of Level II Infill Correctional Facilities would be less than significant. On 24 November 2015, CDCR certified a Subsequent EIR for modifications to the Level II Infill Correctional Facilities Project, including the proposed onsite LAAs. The Subsequent EIR determined that the proposed modifications would result no new significant and unavoidable project level or cumulative impacts. The Board, acting as a responsible agency, was consulted during the development of these documents.

73. CDCR has previously determined that the proposed WWTP improvements are exempt from the provisions of CEQA in accordance with California Code of Regulations, title 14, section 15301, which exempts the “operation, repair, maintenance, [and] permitting ... of existing public or private structures, facilities, mechanical equipment, or topographical features” from environmental review.
74. The United States Environmental Protection Agency (EPA) has promulgated biosolids reuse regulations in 40 CFR 503, *Standard for the Use or Disposal of Sewage Sludge*, which establishes management criteria for protection of ground and surface waters, sets application rates for heavy metals, and establishes stabilization and disinfection criteria.
75. The Central Valley Water Board is using the Standards in 40 CFR 503 as guidelines in establishing this Order, but the Central Valley Water Board is not the implementing agency for 40 CFR 503 regulations. The Discharger may have separate and/or additional compliance, reporting, and permitting responsibilities to the EPA.
76. Pursuant to Water Code section 13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.

### **Public Notice**

77. All the above and the supplemental information and details in the attached Information Sheet, which is incorporated by reference herein, were considered in establishing the following conditions of discharge.
78. The Discharger and interested agencies and persons have been notified of the Central Valley Water Board’s intent to prescribe waste discharge requirements for this discharge, and they have been provided an opportunity to submit written comments and an opportunity for a public hearing.
79. All comments pertaining to the discharge were heard and considered in a public hearing.

**IT IS HEREBY ORDERED** that WDRs Order 5-00-088 is rescinded, pursuant to Water Code sections 13263 and 13267, the California Department of Corrections and the California Department of Forestry Fire Academy, their agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the Water Code and regulations adopted thereunder, shall comply with the following:

### A. Discharge Prohibitions

1. Discharge of wastes to surface waters or surface water drainage courses is prohibited.
2. Discharge of waste classified as 'hazardous', as defined in the California Code of Regulations, title 23, section 2510 et seq., is prohibited.
3. Treatment system bypass of untreated or partially treated waste is prohibited, except as allowed by Standard Provision E.2 of the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements*.
4. Discharge of waste at a location or in a manner different from that described in the Findings is prohibited.
5. CDCR and CDFFA shall not allow toxic substances to be discharged into the wastewater treatment system such that biological treatment mechanisms are disrupted.

### B. Flow Limitations

1. Effectively immediately, influent flows to the WWTP shall not exceed the following limits:

| Flow Measurement                      | Flow Limit |
|---------------------------------------|------------|
| Total Annual Flow <sup>1</sup>        | 274 MG     |
| Average Dry Weather Flow <sup>2</sup> | 0.74 MGD   |

<sup>1</sup> As determined by the total flow for the calendar year.

<sup>2</sup> As determined by the total flow for the months of August through October, inclusive, divided by 92 days.

### C. Effluent Limitations

1. Effluent discharged to the Effluent Storage Reservoir/ LAAs/Preston Reservoir shall not exceed the following limits:

| Constituent                   | Units | Limit | Basis of Compliance Determination |
|-------------------------------|-------|-------|-----------------------------------|
| BOD <sub>5</sub> <sup>1</sup> | mg/L  | 40    | Monthly Average                   |
| BOD <sub>5</sub>              | mg/L  | 80    | Monthly Maximum                   |

| Constituent              | Units     | Limit | Basis of Compliance Determination |
|--------------------------|-----------|-------|-----------------------------------|
| Total Coliform Organisms | MPN/100mL | 23    | 7-day Median                      |
| Total Coliform Organisms | MPN/100mL | 240   | Monthly Maximum                   |
| Total Dissolved Solids   | mg/L      | 450   | Annual Average                    |
| Nitrate Nitrogen         | mg/L      | 30    | Annual Average                    |

<sup>1</sup> 5-day biochemical oxygen demand at 20°C.

- The total nitrogen mass loading to the LAAs shall not exceed the agronomic rate for the vegetation. Compliance with this requirement shall be determined using published nitrogen uptake rates for the vegetation/crops grown. The mass of total nitrogen applied to each LAA on an annual basis shall be calculated using the following formula:

$$M = \sum_{i=1}^{12} \frac{(8.345(C_i V_i) + M_x)}{A}$$

- Where:
- $M$  = mass of nitrogen applied to LAA in lb/ac/yr
  - $C_i$  = Monthly average concentration of total nitrogen for month  $i$  in mg/L
  - $V_i$  = volume of wastewater applied to the LAA during calendar month  $i$  in million gallons
  - $A$  = area of the LAA irrigated in acres
  - $i$  = the number of the month (e.g., January = 1, February = 2, etc.)
  - $M_x$  = nitrogen mass from other sources (e.g., fertilizer and compost) in pounds
  - 8.345 = unit conversion factor

#### D. Discharge Specifications

- CDCR shall be responsible for the operation and maintenance of the WWTP, and all conveyance lines on its property. CDCR is also responsible for the maintenance of the sewer line, bar screen, pump stations at the Preston Youth Correctional Facility.
- CDFFA shall be responsible for the maintenance of all conveyance lines and appurtenances associated with the transport of wastewater from its facilities to the CDCR Manhole No. CF-1 at the edge of LAA 7.
- CDCR and CDFFA shall operate all systems and equipment to optimize the quality of the discharge.



4. No waste constituent shall be released, discharged, or placed where it will cause a violation of the Groundwater Limitations of this Order.
5. Wastewater treatment, storage, and disposal shall not cause pollution or a nuisance as defined by Water Code section 13050.
6. The discharge shall remain within the permitted waste treatment/containment structures and land application areas at all times.
7. All treatment, storage, and disposal systems shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.
8. Public contact with wastewater at the WWTP shall be prevented through such means as fences, signs, or acceptable alternatives.
9. Objectionable odors shall not be perceivable beyond the limits of the WWTP property at an intensity that creates or threatens to create nuisance conditions.
10. As a means of discerning compliance with Discharge Specification D.9, the dissolved oxygen (DO) content in the upper one foot of any wastewater treatment or storage pond shall not be less than 1.0 mg/L for three consecutive weekly sampling events. If the DO in any single pond is below 1.0 mg/L for three consecutive sampling events, CDCR shall report the findings to the Regional Water Board in writing within 10 days and shall include a specific plan to resolve the low DO results within 30 days.
11. CDCR shall operate and maintain all ponds sufficiently to protect the integrity of containment dams and berms and prevent overtopping and/or structural failure. Unless a California-registered civil engineer certifies (based on design, construction, and conditions of operation and maintenance) that less freeboard is adequate, the operating freeboard in any pond shall never be less than two feet (measured vertically from the lowest possible point of overflow). As a means of management and to discern compliance with this requirement, CDCR shall install and maintain in each pond a permanent staff gauge with calibration marks that clearly show the water level at design capacity and enable determination of available operational freeboard.
12. Wastewater treatment, storage, and disposal ponds or structures shall have sufficient capacity to accommodate allowable wastewater flow, design seasonal precipitation, and ancillary inflow and infiltration during the winter while ensuring

compliance with all requirements of this Order. Design seasonal precipitation shall be based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns.

13. On or about **1 October** of each year, available capacity shall at least equal the volume necessary to comply with Discharge Specifications D.11 and D.12.
14. All ponds and open containment structures shall be managed to prevent breeding of mosquitoes. Specifically:
  - a. An erosion control program shall be implemented to ensure that small coves and irregularities are not created around the perimeter of the water surface.
  - b. Weeds shall be minimized through control of water depth, harvesting, or herbicides.
  - c. Dead algae, vegetation, and debris shall not accumulate on the water surface.
  - d. CDCR shall consult and coordinate with the local Mosquito Abatement District to minimize the potential for mosquito breeding as needed to supplement the above measures.
15. Newly constructed or rehabilitated berms or levees (excluding internal berms that separate ponds or control the flow of water within a pond) shall be designed and constructed under the supervision of a California Registered Civil Engineer.
16. Wastewater contained in any unlined pond shall not have a pH less than 6.0 or greater than 10.

#### **E. Groundwater Limitations**

1. Release of waste constituents from any portion of the WWTP shall not cause or contribute to groundwater containing concentrations of waste constituents in excess of concentrations specified below.
  - a. Nitrate (as nitrogen) of 10 mg/L.
  - b. Total coliform organism level of 2.2 MPN/100 mL over any seven-day period.

- c. Contain constituents in concentrations that exceed either the Primary or Secondary MCLs established in Title 22 of the California Code of Regulations.
2. Contain taste or odor-producing constituents, toxic substances, or any other constituents in concentrations that cause nuisance or adversely affect beneficial uses.

**F. Land Application Area Specifications**

1. Wastewater shall be applied to the LAAs at agronomic rates.
2. Discharge to the LAAs shall not be performed during rainfall or when the ground is saturated.
3. Each LAA shall have a tailwater collection system such that all tailwater shall be reapplied to the LAAs.
4. Tailwater runoff and spray of wastewater shall not be discharged outside of the LAAs including to the effluent storage reservoirs.
5. Vegetation (which may include pasture grasses, native grasses and trees, and/or ornamental landscaping) shall be grown in the LAAs.
6. Land application of wastewater shall be managed to minimize erosion.
7. The LAAs shall be managed to prevent breeding of mosquitoes. In particular:
  - a. There shall be no standing water 48 hours after irrigation ceases;
  - b. Tailwater ditches shall be maintained essentially free of emergent, marginal, and floating vegetation; and
  - c. Low-pressure and unpressurized pipelines and ditches accessible to mosquitoes shall not be used to store wastewater.
8. LAAs shall be designed, maintained, and operated to comply with the following setback requirements:

| <b>Setback Definition</b>               | <b>Minimum Irrigation Setback (feet)</b> |
|---|--|
| Edge of LAA to property boundary        | 25 <sup>1</sup>                          |
| Edge of LAA to public road right of way | 30 <sup>1</sup>                          |

| <b>Setback Definition</b>   | <b>Minimum Irrigation Setback (feet)</b> |
|---|--|
| Edge of LAA to manmade or natural surface water drainage course   | 50 <sup>1</sup>                          |
| Edge of LAA to domestic water supply well   | 100                                      |
| Edge of LAA to residence  | 100                                      |
| Edge of LAA using spray irrigation to public park, playground, school yard, or similar place of potential public exposure | 100                                      |

<sup>1</sup> The setbacks not specifically mandated by Title 22. The setback requirements are necessary to protect the health of neighbors and to prevent pollution of nearby waterways.

9. Irrigation of the LAAs shall occur only when appropriately trained personnel are on duty.
10. LAAs shall be inspected as frequently as necessary to ensure compliance with the requirements of this Order.
11. Spray irrigation with wastewater is prohibited when wind speed (including gusts) exceeds 30 mph.
12. Sprinkler heads shall be designed, operated and maintained to prevent migration of mist beyond the boundaries of the LAAs.

### **G. Solids Disposal Specifications**

Sludge, as used in this document, means the solid, semisolid, and liquid residues removed during primary, secondary, or advanced wastewater treatment processes. Solid waste refers to grit and screenings generated during preliminary treatment. Residual sludge means sludge that will not be subject to further treatment at the WWTP. Biosolids refers to sludge that has been treated and tested and shown to be capable of being beneficially used as a soil amendment for agriculture, silviculture, horticulture, and land reclamation activities pursuant to federal and state regulations

1. Sludge and solid waste shall be removed from screens, sumps, ponds, and clarifiers as needed to ensure optimal plant operation.
2. Any handling and storage of residual sludge, solid waste, and biosolids at the WWTP shall be temporary (i.e., no longer than six months) and controlled and contained in a manner that minimizes leachate formation and precludes

infiltration of waste constituents into soils in a mass or concentration that will violate the groundwater limitations of this Order.

3. Residual sludge, biosolids, and solid waste shall be disposed of in a manner approved by the Executive Officer and consistent with Title 27, division 2. Removal for further treatment, disposal, or reuse at disposal sites (i.e., landfills, WWTPs, composting sites, soil amendment sites) operated in accordance with valid waste discharge requirements issued by a Regional Water Board will satisfy this specification.
4. Use of biosolids as a soil amendment shall comply with valid waste discharge requirements issued by a regional water board or the State Water Board except in cases where a local (e.g., county) program has been authorized by a regional water board. In most cases, this will mean the General Biosolids Order (State Water Resources Control Board Water Quality Order 2004-12-DWQ, "General Waste Discharge Requirements for the Discharge of Biosolids to Land for Use as a Soil Amendment in Agricultural, Silvicultural, Horticultural, and Land Reclamation Activities"). For a biosolids use project to be covered by Order 2004-12-DWQ, CDCR must file a complete Notice of Intent and receive a Notice of Applicability for each project.
5. Use and disposal of biosolids shall comply with the self-implementing federal regulations of 40 Code of Federal Regulations part 503, which are subject to enforcement by the U.S. EPA, not the Central Valley Water Board. If during the life of this Order, the State accepts primacy for implementation of part 503, the Central Valley Water Board may also initiate enforcement where appropriate.
6. Any proposed change in sludge use or disposal practice shall be reported in writing to the Executive Officer at least 90 days in advance of the change.

## H. Provisions

1. The following reports shall be submitted pursuant to Water Code section 13267 and shall be prepared as described in Provision H.4:
  - a. By **1 June 2016**, CDCR shall submit a *Groundwater Monitoring Well Disinfection Workplan and Sampling and Analysis Plan*. The disinfection workplan shall provide detailed procedures for disinfecting monitoring wells S-7E and R-2, and will include a schedule to complete the work by **1 September 2016**. The Sampling and Analysis Plan shall propose effluent and groundwater sampling techniques designed to minimize cross-

contamination of the monitoring wells and water samples with coliform organisms.

- b. **By 1 June 2016**, CDCR shall submit a *Groundwater Monitoring Well Installation Workplan* that proposes an additional monitoring well to replace existing Well S-1, which is downgradient of Effluent Storage Reservoir and LAAs. The workplan shall be prepared in accordance with, and include the items listed in, the first section of Attachment F: "Requirements for Monitoring Well Installation Workplans and Monitoring Well Installation Reports", which is attached hereto and made part of this Order by reference. The groundwater monitoring wells shall be designed to yield samples representative of the uppermost portion of the first aquifer underlying the reservoir and land application areas.
  - c. **By 30 November 2016**, CDCR shall submit a *Groundwater Monitoring Well Installation Completion Report* for the new groundwater monitoring well, which will be constructed to comply with Provision H.1.b. The report shall be prepared in accordance with, and including the items listed in, the second section of Attachment F: "Monitoring Well Workplan and Monitoring Well Installation Report Guidance", which is attached hereto and made part of this Order by reference. The report shall describe the installation and development of the new monitoring well, and explain any deviation from the approved workplan.
  - d. **By 1 June 2017**, CDCR shall submit a *Wastewater Treatment Plant Improvements Completion Report* that certifies that construction and start-up testing of the wastewater treatment system has been completed, and certifies that the WWTP will comply with the applicable effluent limitations. If CDCR decides to install the new on-site LAAs, **by 1 December 2017**, CDCR shall submit a *New Spray Field Completion Report*, which shall document and certify that the new LAAs are fully functional and ready to receive wastewater in compliance with the requirements of this Order. All reports shall include as-built drawings of the WWTP modifications. If CDCR decides to install new off-site LAAs, this Order shall be reopened.
2. If groundwater monitoring results show that the discharge of waste is causing groundwater to contain any waste constituents in concentrations statistically greater than the Groundwater Limitations of this Order, within 120 days of the request of the Executive Officer, CDCR shall submit an Action Workplan that sets forth the scope and schedule for a systematic and comprehensive technical evaluation of each component of the facility's waste treatment and disposal system to determine best practicable treatment and control for each waste

constituent that exceeds a Groundwater Limitation. The workplan shall contain a preliminary evaluation of each component of the WWTP and effluent disposal system and propose a time schedule for completing the comprehensive technical evaluation. The schedule to complete the evaluation shall be as short as practicable, and shall not exceed one year.

3. A discharger whose waste flow has been increasing, or is projected to increase, shall estimate when flows will reach hydraulic and treatment capacities of its treatment, collection, and disposal facilities. The projections shall be made in January, based on the previous three years' average dry weather flows, peak wet weather flows and total annual flows, as appropriate. When any projection shows that capacity of any part of the facilities may be exceeded in four years, the discharger shall notify the Central Valley Water Board by **31 January**.
4. In accordance with California Business and Professions Code sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. All technical reports specified herein that contain workplans for investigations and studies, that describe the conduct of investigations and studies, or that contain technical conclusions and recommendations concerning engineering and geology shall be prepared by or under the direction of appropriately qualified professional(s), even if not explicitly stated. Each technical report submitted by CDCR shall bear the professional's signature and stamp.
5. CDCR shall submit the technical reports and work plans required by this Order for consideration by the Executive Officer, and incorporate comments the Executive Officer may have in a timely manner, as appropriate. Unless expressly stated otherwise in this Order, CDCR shall proceed with all work required by the foregoing provisions by the due dates specified.
6. CDCR and CDFFA shall comply with Monitoring and Reporting Program R5-2015-0129, which is part of this Order, and any revisions thereto as ordered by the Executive Officer. The submittal dates of Discharger self-monitoring reports shall be no later than the submittal date specified in the MRP.
7. CDCR and CDFFA shall comply with the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements", dated 1 March 1991, which are attached hereto and made part of this Order by reference. This attachment and its individual paragraphs are commonly referenced as "Standard Provision(s)."

8. CDCR and CDFFA shall comply with all conditions of this Order, including timely submittal of technical and monitoring reports. On or before each report due date, the Discharger shall submit the specified document to the Central Valley Water Board or, if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is being reported, then the Discharger shall state the reasons for such noncompliance and provide an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Central Valley Water Board in writing when it returns to compliance with the time schedule. Violations may result in enforcement action, including Central Valley Water Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of this Order.
9. CDCR and CDFFA shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems that are installed by the Discharger when the operation is necessary to achieve compliance with the conditions of this Order.
10. CDCR and CDFFA shall use the best practicable cost-effective control technique(s) including proper operation and maintenance, to comply with this Order.
11. CDCR shall provide certified wastewater treatment plant operators in accordance with Title 23, division 3, chapter 26.
12. As described in the Standard Provisions, CDCR and CDFFA shall report promptly to the Central Valley Water Board any material change or proposed change in the character, location, or volume of the discharge.
13. CDCR and CDFFA shall report to the Central Valley Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to Know Act of 1986."
14. CDCR and CDFFA shall comply with the requirements of the Statewide General Waste Discharge Requirements (General WDRs) for Sanitary Sewer Systems (Water Quality Order 2006-0003), the Revised General WDRs Monitoring and



Reporting Program (Water Quality Order 2008-0002-EXEC), and any subsequent revisions thereto. Water Quality Order 2006-0003 and Order 2008-0002-EXEC require the Discharger to notify the Central Valley Water Board and take remedial action upon the reduction, loss, or failure of the sanitary sewer system resulting in a sanitary sewer overflow.

15. CDCR and CDFFA shall not allow pollutant-free wastewater to be discharged into the wastewater collection, treatment, and disposal systems in amounts that significantly diminish the system's capability to comply with this Order. Pollutant-free wastewater means rainfall, groundwater, cooling waters, and condensates that are essentially free of pollutants.
16. At least **90 days** prior to termination or expiration of any lease, contract, or agreement involving disposal or recycling areas or off-site reuse of effluent, used to justify the capacity authorized herein and assure compliance with this Order, CDCR and CDFFA shall notify the Central Valley Water Board in writing of the situation and of what measures have been taken or are being taken to assure full compliance with this Order.
17. In the event of any change in control or ownership of the WWTP, CDCR must notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Central Valley Water Board.
18. To assume operation as Discharger under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Central Valley Water Board, and a statement. The statement shall comply with the signatory paragraph of Standard Provision B.3 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the Water Code. If approved by the Executive Officer, the transfer request will be submitted to the Central Valley Water Board for its consideration of transferring the ownership of this Order at one of its regularly scheduled meetings.
19. A copy of this Order including the MRP, Information Sheet, Attachments, and Standard Provisions, shall be kept at the discharge facility for reference by operating personnel. Key operating personnel shall be familiar with its contents.


20. The Central Valley Water Board will review this Order periodically and will revise requirements when necessary.

If, in the opinion of the Executive Officer, the Discharger fails to comply with the provisions of this Order, the Executive Officer may refer this matter to the Attorney General for judicial enforcement, may issue a complaint for administrative civil liability, or may take other enforcement actions. Failure to comply with this Order may result in the assessment of Administrative Civil Liability of up to \$10,000 per violation, per day, depending on the violation, pursuant to the Water Code, including sections 13268, 13350 and 13385. The Central Valley Water Board reserves its right to take any enforcement actions authorized by law.

Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at:

[http://www.waterboards.ca.gov/public\\_notices/petitions/water\\_quality](http://www.waterboards.ca.gov/public_notices/petitions/water_quality)  
or will be provided upon request.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify that the foregoing is a full true, and correct copy of an Order adopted by the California Regional Water Quality Control Board on 11 December 2015.



PAMELA C. CREEDON, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2015-0129

FOR  
CALIFORNIA DEPARTMENT OF CORRECTIONS AND REHABILITATION  
CALIFORNIA DEPARTMENT OF FORESTRY FIRE ACADEMY  
MULE CREEK STATE PRISON  
AMADOR COUNTY

This Monitoring and Reporting Program (MRP) is issued pursuant to Water Code section 13267. The Discharger shall not implement any changes to this MRP unless and until the Central Valley Water Board adopts, or the Executive Officer issues, a revised MRP.

All samples shall be representative of the volume and nature of the discharge or matrix of material sampled. Except as specified otherwise in this MRP, grab samples will be considered representative of water, wastewater, soil, solids/sludges, and groundwater.

The time, date, and location of each sample shall be recorded on the sample chain of custody form. All analyses shall be performed in accordance with the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements*, dated 1 March 1991 (Standard Provisions). Field test instruments (such as those used to measure pH electrical conductivity, dissolved oxygen, wind speed, and precipitation) may be used provided that:

1. The operator is trained in proper use and maintenance of the instruments;
2. The instruments are field calibrated at the frequency recommended by the manufacturer;
3. The instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and
4. Field calibration reports are submitted as described in the "Reporting" section of the MRP.

Laboratory analytical procedures shall comply with the methods and holding times specified in the following (as applicable to the medium to be analyzed):

- *Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater* (EPA);
- *Test Methods for Evaluating Solid Waste* (EPA);
- *Methods for Chemical Analysis of Water and Wastes* (EPA);
- *Methods for Determination of Inorganic Substances in Environmental Samples* (EPA);
- *Standard Methods for the Examination of Water and Wastewater* (APHA/AWWAWEF); and
- *Soil, Plant and Water Reference Methods for the Western Region* (WREP 125).

Approved editions shall be those that are approved for use by the United States Environmental Protection Agency or the California Department of Public Health's Environmental Laboratory Accreditation Program (ELAP). The Discharger may propose alternative methods for approval by the Executive Officer. Where technically feasible, laboratory reporting limits shall be lower than the applicable water quality objectives for the constituents to be analyzed.

### WASTEWATER TRANSMISSION LINE

The California Department of Forestry Fire Academy shall monitor the collection system and wastewater pipeline on its property on a monthly basis for pipe anomalies, cracks, overflows, or leaks. A copy of all monitoring inspections shall be submitted to California Department of Corrections and Rehabilitation (CDCR) and shall be included in the CDCR's monthly reports to the Central Valley Water Board.

### INFLUENT MONITORING

Influent monitoring shall include, at a minimum, the following:

| <u>Constituent/Parameter</u>  | <u>Units</u> | <u>Sample Type</u> | <u>Monitoring Frequency</u> | <u>Reporting Frequency</u> |
|-------------------------------|--------------|--------------------|-----------------------------|----------------------------|
| Flow                          | gpd          | Meter Observation  | Continuous                  | Monthly                    |
| BOD <sub>5</sub> <sup>1</sup> | mg/L         | Grab               | Monthly                     | Monthly                    |

<sup>1</sup> 5-day biochemical oxygen demand.

### EFFLUENT MONITORING

CDCR shall collect effluent samples immediately downstream from the last connection through which wastes can be admitted to the storage reservoirs and/or land application areas, but prior to these facilities. At a minimum, effluent monitoring shall include the following:

| <u>Constituent</u>                      | <u>Units</u> | <u>Sample Type</u> | <u>Sampling Frequency</u> | <u>Reporting Frequency</u> |
|---|--------------|--------------------|---------------------------|----------------------------|
| Flows <sup>1</sup>                      | gpd          | Meter Observation  | Continuous                | Monthly                    |
| Total Coliform Organisms <sup>2</sup>   | MPN /100 mL  | Grab               | Weekly                    | Monthly                    |
| BOD <sub>5</sub>                        | mg/L         | Grab               | Monthly                   | Monthly                    |
| Total Dissolved Solids                  | mg/L         | Grab               | Monthly                   | Monthly                    |
| Nitrate Nitrogen                        | mg/L         | Grab               | Monthly                   | Monthly                    |
| Total Kjeldahl Nitrogen                 | mg/L         | Grab               | Monthly                   | Monthly                    |
| Sodium Chloride                         | mg/L         | Grab               | Monthly                   | Monthly                    |
| pH                                      | Standard     | Grab               | Monthly                   | Monthly                    |
| Volatile Organic Compounds <sup>3</sup> | µg/L         | Grab               | Monthly                   | Monthly                    |
| Standard Minerals <sup>4</sup>          | mg/L         | Grab               | Annually                  | Annually                   |

- <sup>1</sup> Flows sent to Preston Reservoir, Effluent Storage Reservoir and each LAAs, respectively.
- <sup>2</sup> Using a minimum of 15 tubes or three dilutions
- <sup>3</sup> Volatile Organic Compounds shall include benzene, acetone, and toluene.
- <sup>4</sup> Standard minerals shall include, at a minimum, the following elements/compounds: arsenic, boron, calcium, dissolved iron, magnesium, dissolved manganese, potassium, sulfate, total alkalinity (including alkalinity series), and hardness.

### EFFLUENT STORAGE RESERVOIR MONITORING

CDCR shall collect samples from an established sampling station located in an area that will provide a sample representative of the wastewater in the effluent storage reservoir. Freeboard shall be measured vertically from the surface of the pond water to the lowest elevation of the surrounding berm and shall be measured to the nearest 0.1 feet. Monitoring of the storage reservoir shall include, at a minimum, the following:

| <u>Constituent</u>            | <u>Units</u> | <u>Sample Type</u> | <u>Monitoring E<br/>quency</u> | <u>Reporting Fr<br/>equency</u> |
|-------------------------------|--------------|--------------------|--------------------------------|---------------------------------|
| Dissolved Oxygen <sup>1</sup> | mg/L         | Grab               | Weekly                         | Monthly                         |
| pH                            | Standard     | Grab               | Weekly                         | Monthly                         |
| Freeboard                     | 0.1 feet     | Measurement        | Weekly                         | Monthly                         |
| Odors                         | --           | Observation        | Weekly                         | Monthly                         |
| Levee Condition               | --           | Observation        | Weekly                         | Monthly                         |

- <sup>1</sup>. Samples shall be collected at a depth of one foot from each pond in use, opposite the inlet.
- <sup>2</sup>. Containment levees shall be observed for signs of seepage or surfacing water along the exterior toe of the levees. If surfacing water is found, then a sample shall be collected and tested for total coliform organisms and total dissolved solids.

### LAND APPLICATION AREA MONITORING

CDCR shall monitor the LAAs on an **hourly basis** when the LAAs are used. Evidence of erosion, field saturation, irrigation runoff, or the presence of nuisance conditions shall be noted in a daily log and be submitted with the monthly monitoring reports. If the LAAs are not used, then the monthly monitoring reports shall state so. Effluent monitoring results shall be used in calculations to ascertain loading rates at the LAAs. Monitoring of the LAAs shall include the following:

| <u>Constituent</u>                       | <u>Units</u> | <u>Sample Type</u> | <u>Sampling<br/>Frequency</u> | <u>Reporting<br/>Frequency</u> |
|--|--------------|--------------------|-------------------------------|--------------------------------|
| Flow to Each LAA <sup>1</sup>            | gpd          | Meter observation  | Daily                         | Monthly                        |
| Acreage Applied <sup>1</sup>             | acres        | Calculated         | Daily                         | Monthly                        |
| Water Application Rate <sup>2</sup>      | inches/day   | Calculated         | Daily                         | Monthly                        |
| Total Nitrogen Loading Rate <sup>2</sup> | lbs./ac/mont | Calculated         | Monthly                       | Monthly                        |
| Rainfall <sup>3</sup>                    | inches       | Observation        | Daily                         | Monthly                        |
| Tailwater Runoff                         | --           | Observation        | Daily                         | Monthly                        |

- <sup>1</sup>. Specific LAAs shall be identified.
- <sup>2</sup>. Calculated average for each LAA.

3. Rainfall data to be collected from the weather station that is nearest to the LAAs. Alternatively, a rain gauge may be installed at the site.

### **GROUNDWATER MONITORING**

CDCR shall conduct the following groundwater monitoring program. This groundwater sampling and analysis program applies to all groundwater monitoring wells installed at the site.

Prior to sampling, depth to groundwater measurements shall be measured in each monitoring well to the nearest 0.01 feet. Groundwater elevations shall then be calculated to determine groundwater gradient and flow direction. Monitoring wells to be sampled shall be purged of at least three well volumes until temperature, pH, and electrical conductivity have stabilized. Low or no-purge sampling methods are acceptable, if described in an approved Sampling and Analysis Plan. Samples shall be collected and analyzed using standard EPA methods. Groundwater monitoring shall include, at a minimum, the following:

| <u>Constituent</u>                      | <u>Units</u> | <u>Sample Type</u> | <u>Sampling Frequency</u> | <u>Reporting Frequency</u> |
|---|--------------|--------------------|---------------------------|----------------------------|
| Groundwater Elevation <sup>1</sup>      | 0.01 feet    | Calculated         | Quarterly                 | Quarterly                  |
| Depth to Groundwater                    | 0.01 feet    | Measurement        | Quarterly                 | Quarterly                  |
| Gradient                                | feet/foot    | Calculated         | Quarterly                 | Quarterly                  |
| Gradient Direction                      | degrees      | Calculated         | Quarterly                 | Quarterly                  |
| pH                                      | Standard     | Grab               | Quarterly                 | Quarterly                  |
| Total Dissolved Solids                  | mg/L         | Grab               | Quarterly                 | Quarterly                  |
| Nitrate as Nitrogen                     | mg/L         | Grab               | Quarterly                 | Quarterly                  |
| Total Kjeldahl Nitrogen                 | mg/L         | Grab               | Quarterly                 | Quarterly                  |
| Total Coliform Organisms <sup>2</sup>   | MPN/100 mL   | Grab               | Quarterly                 | Quarterly                  |
| Volatile Organic Compounds <sup>3</sup> | µg/L         | Grab               | Quarterly                 | Quarterly                  |
| Trihalomethanes <sup>4</sup>            | µg/L         | Grab               | Annually                  | Annually                   |
| Standard Minerals <sup>5</sup>          | mg/L         | Grab               | Annually                  | Annually                   |

<sup>1</sup> Groundwater elevations shall be based on depth-to-water using a surveyed measuring point elevation on the well and a surveyed reference elevation.  
<sup>2</sup> Using a minimum of 15 tubes or three dilutions.  
<sup>3</sup> VOCs samples only need to be collected at monitoring wells S-1 (replaced well), S-2, R-2, S-7W and S-7E. VOCs shall include benzene, acetone, and toluene.  
<sup>4</sup> Individual trihalomethane constituent concentrations shall be reported (EPA Method 8260B or equivalent).  
<sup>5</sup> Standard Minerals shall include, at a minimum, the following elements and compounds: arsenic, boron, calcium, chloride, dissolved iron, magnesium, dissolved manganese, potassium, sodium, sulfate, total alkalinity (including alkalinity series), and hardness. Samples for metals shall be filtered prior to preservation and digestion using a 0.45-micron filter.

### **SOLIDS/SLUDGE DISPOSAL MONITORING**

CDCR shall keep records regarding the quantity of biosolids and residual sludge generated by the treatment processes; any sampling and analytical data; the quantity of biosolids and residual sludge stored on site; and the quantity removed for disposal. The records shall also

indicate the steps taken to reduce odor and other nuisance conditions. Records shall be stored onsite and available for review during inspections.

If biosolids are transported off-site for disposal, then the Discharger shall submit records identifying the hauling company, the amount of biosolids transported, the date removed from the facility, the location of disposal, and copies of all analytical data required by the entity accepting the waste. All records shall be submitted as part of the Annual Monitoring Report.

### WATER SUPPLY MONITORING

CDCR shall complete the following water supply monitoring. Sampling station shall be established where a representative sample of the municipal water supply can be obtained. Water supply monitoring shall include at least the following for each water source used during the previous year. As an alternative to annual water supply monitoring, CDCR may submit results of the most current water supply monitoring data for Division of Drinking Water Program.

| <u>Constituent</u>             | <u>Units</u> | <u>Sampling Frequency</u> | <u>Reporting Frequency</u> |
|--------------------------------|--------------|---------------------------|----------------------------|
| Total Dissolved Solids         | mg/L         | Annually                  | Annually                   |
| pH                             | pH units     | Annually                  | Annually                   |
| Standard Minerals <sup>1</sup> | mg/L         | Annually                  | Annually                   |

<sup>1</sup>. Standard Minerals shall include, at a minimum, the following elements/compounds: boron, calcium, chloride, iron, magnesium, manganese, nitrate as nitrogen, potassium, sodium, sulfate, total alkalinity (including alkalinity series), and hardness. Include verification that the analysis is complete (i.e., cation/anion balance).

### REPORTING

All monitoring reports should be converted to a searchable Portable Document Format (PDF) and submitted electronically. Documents that are less than 50MB should be emailed to: [centralvalleysacramento@waterboards.ca.gov](mailto:centralvalleysacramento@waterboards.ca.gov).

Documents that are 50 MB or larger should be transferred to a CD, DVD, or flash drive and mailed to the following address:

Central Valley Regional Water Quality Control Board  
ECM Mailroom  
11020 Sun Center Drive, Suite 200  
Rancho Cordova, California 95670

Please include a transmittal sheet that includes the following:

Attention: Compliance/Enforcement Section  
California Department of Corrections and Rehabilitation  
Mule Creek State Prison Wastewater Treatment Plant  
Amador County  
Place ID: 241842

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, sample type (e.g., effluent, pond, etc.), and reported analytical result for each sample are readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with waste discharge requirements and spatial or temporal trends, as applicable. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall be reported in the next scheduled monitoring report.

Laboratory analysis reports do not need to be included in the monitoring reports; however, all laboratory reports must be retained for a minimum of three years in accordance with Standard Provision C.3. For a Discharger conducting any of its own analyses, reports must also be signed and certified by the chief of the laboratory.

In addition to the requirements of Standard Provision C.3, monitoring information shall include the method detection limit (MDL) and the Reporting limit (RL) or practical quantitation limit (PQL). If the regulatory limit for a given constituent is less than the RL (or PQL), then any analytical results for that constituent that are below the RL (or PQL) but above the MDL shall be reported and flagged as estimated.

As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, all groundwater monitoring reports shall be prepared under the direct supervision of a registered professional engineer or geologist and signed by the registered professional.

#### **A. Monthly Monitoring Reports**

CDCR shall submit Monthly Monitoring Reports to the Central Valley Water Board by the **1<sup>st</sup> day of the second month** following the end of the reporting period (i.e. the January monthly report is due by 1 March). At a minimum, the reports shall include:

1. Results of the collection system, pump stations, wastewater transmission line, influent, effluent, storage reservoir, and land application area monitoring;
2. Copies of inspection logs;
3. A comparison of the monitoring data to the discharge specifications and an explanation of any violation of those requirements;
4. If requested by staff, copies of laboratory analytical report(s);and



5. A calibration log verifying calibration of all hand held monitoring instruments and devices used to comply with the prescribed monitoring program.

## **B. Quarterly Monitoring Reports**

CDCR shall establish a quarterly sampling schedule for groundwater monitoring such that samples are obtained approximately every three months. Quarterly monitoring reports shall be submitted to the Board by the **1<sup>st</sup> day of the second month after the quarter** (i.e. the January-March quarter is due by May 1<sup>st</sup>) each year. The Quarterly Report shall include the following:

1. Results of groundwater monitoring;
2. A narrative description of all preparatory, monitoring, sampling, and sample handling for groundwater monitoring. The narrative shall be sufficiently detailed to verify compliance with the WDRs, this MRP, and the Standard Provisions and Reporting Requirements. The narrative shall be supported by field logs for each well documenting depth to groundwater; parameters measured before, during, and after purging; method of purging; calculation of casing volume; and total volume of water purged; sample preparation (e.g., filtering); and sample preservation.
3. Calculation of the groundwater elevation at each monitoring well, and determination of groundwater flow direction and gradient on the date of measurement.
4. Summary data tables of historical and current water table elevations and analytical results.
5. A scaled map showing relevant structures and features of the facility, the locations of monitoring wells, surface waters, and groundwater elevation contours referenced to an appropriate datum (e.g., NGVD).
6. A comparison of monitoring data to the discharge specifications and an explanation of any violation of those requirements.
7. Copies of laboratory analytical report(s) for groundwater monitoring.

## **C. Annual Monitoring Reports**

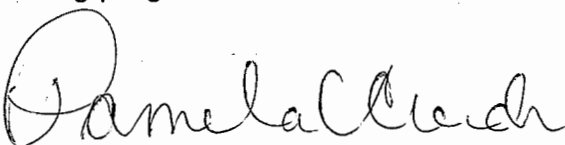
CDCR shall submit an Annual Monitoring Report to the Central Valley Water Board by **1 February** of each year. This report shall be submitted separately from monthly and quarterly monitoring reports. The Annual Report shall include the following:

1. The annual total influent flow and average dry weather influent flow for the year; and a comparison of these results to the flow limitations of this Order;

2. Summary of the monthly and annual total effluent flow discharged to the LAAs and the ARSA system;
3. An evaluation of the wastewater quality and comparison to the groundwater quality. Determination of whether the results reveal a previously unidentified threat to water quality or indicate a change in waste character such that the discharge poses a threat to water quality. This shall be determined by comparing the annual average concentration of the effluent quality during the calendar year to the corresponding concentration of the groundwater.
4. A digital database (Microsoft Excel) containing historic groundwater, influent and effluent data;
5. Concentration vs. time graphs for each monitored constituent using all historic groundwater monitoring data. Each graph shall show the background groundwater concentration range and the Groundwater Limitation as horizontal lines at the applicable concentration;
6. An evaluation of the groundwater quality beneath the site and determination of Compliance with Groundwater Limitations of the WDRs based on statistical analysis for each constituent monitored for each downgradient well. Include all calculations and data input/analysis tables derived from use of statistical software as applicable;
7. A discussion of compliance and the corrective action taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the waste discharge requirements.
8. A discussion of the following:
  - a. Waste constituent reduction efforts implemented in accordance with any required workplan;
  - b. Other treatment or control measures implemented during the calendar year either voluntarily or pursuant to the WDRs, this MRP, or any other Order;
  - c. Based on monitoring data, an evaluation of the effectiveness of the treatment or control measures implemented to date.
9. A discussion of any data gaps and potential deficiencies or redundancies in the monitoring system or reporting program.
10. A forecast of influent flows predicted for the next year.
11. Summary of information on the disposal of sludge and/or solid waste, including the quantity, disposal locations and dates, and the hauler names; and
12. Monitoring equipment maintenance and calibration records, as described in Standard Provision C.4.

A transmittal letter shall accompany each monitoring report. The letter shall include a discussion of all violations of the WDRs and this MRP during the reporting period and actions taken or planned for correcting each violation. If the Discharger has previously submitted a report describing corrective actions taken and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. Pursuant to Section B.3 of the Standard Provisions and General Reporting Requirements, the transmittal letter shall contain a statement by the Discharger or the Discharger's authorized agent certifying under penalty of perjury that the report is true, accurate and complete to the best of the signer's knowledge.

The Discharger shall implement the above monitoring program as of the date of this Order.

Ordered by:   
PAMELA C. CREEDON, Executive Officer

11 December 2015

(Date)

## INFORMATION SHEET

WASTE DISCHARGE REQUIREMENTS ORDER R5-2015-0129  
CALIFORNIA DEPARTMENT OF CORRECTIONS AND REHABILITATION  
CALIFORNIA DEPARTMENT OF FORESTRY FIRE ACADEMY  
MULE CREEK STATE PRISON WASTEWATER TREATMENT PLANT  
AMADOR COUNTY

### **Background**

The Mule Creek State Prison Wastewater Treatment Plant (WWTP) provides wastewater treatment and disposal to CDCR Mule Creek State Prison, the Preston Youth Correctional Facility (a Division of CDCR), and the California Department of Forestry Fire Academy. CDCR owns and operates the WWTP.

WDRs Order 5-00-088, adopted by the Central Valley Water Board on 28 April 2000, allows an average dry weather discharge flow of 0.74 million gallons per day (MGD) with a peak wet weather flow of 2.2 MGD. Based on the influent flow data for 2013 and 2014, the annual average flow is approximately 0.35 MGD. Flows from the Mule Creek State Prison represent approximately 95% of the current wastewater flow to the WWTP.

CDCR is currently constructing a 1,584-inmate Mule Creek Infill Complex (MCIC) within an area historically used for land disposal of treated effluent. Approximately 57 out of original 260 acres of land application areas (LAAs) have been developed for the new MCIC site. In order to replace the LAAs lost due to MCIC construction, CDCR proposed 47 acres of new LAAs onsite. CDCR also proposed to make some improvements at the WWTP. Therefore, Order 5-00-088 will be replaced with this Order.

### **Existing Facility and Discharge**

The WWTP consists of two bar screenings, an oxidation ditch, two parallel clarifiers, a chlorine contact pipe, a sludge belt press, sludge drying beds, an Effluent Storage Reservoir, and LAAs. The effluent is disposed of via spray irrigation on the LAAs and by evaporation and percolation from Effluent Storage Reservoir. Effluent Storage Reservoir typically provides seasonal storage of effluent during the wet season. In addition, Mule Creek State Prison is under contract to deliver up to a maximum of 350 acre-feet of wastewater annually to Preston Reservoir. Preston Reservoir serves as a means of conveyance of effluent flows from the Amador Regional Sanitation Authority (ARSA) system and the Mule Creek WWTP to the City of Lone wastewater disposal system or to the Lone Tertiary Treatment Plant for further treatment and reuse at the Castle Oaks Golf Course.

### **Planned Changes in the Facility and Discharge**

Due to loss of the LAAs for the MCIC project, CDCR proposed to install 47 acres of new LAAs. In addition, CDCR proposed to make improvements to the WWTP. All the modifications and improvements will be completed by April 2017. After completion of the MCIC project, the total inmate population will increase from current 2,800 to approximately 4,400. CDCR does not request to increase the existing flow limits in WDRs Order 5-00-088.

Proposed improvements to the wastewater treatment facilities consist of reliability and performance improvements to the existing treatment processes, including:

- a. Addition of aeration to the existing oxidation ditch;
- b. Addition of a third larger clarifier;
- c. Replacement of the chlorine contact pipe with a chlorine contact basin to improve disinfection efficiency;
- d. Replacement of the existing sand and gravel sludge drying beds with concrete sludge drying beds, and
- e. Use of effluent for treatment process instead of potable water.

### **Discharge Prohibitions, Specifications and Provisions**

The Provisions also require submittal of the following technical reports: *Wastewater Treatment Plant Improvements Completion Report, Groundwater Monitoring Well Disinfection Workplan and Sampling and Analysis Plan, Groundwater Monitoring Well Installation Workplan and Groundwater Monitoring Well Installation Completion Report.*

The Monitoring and Reporting Program is designed to verify compliance with effluent limitations, groundwater limitations, and operational requirements of the WDRs.