CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2017-0020

WASTE DISCHARGE REQUIREMENTS

FOR
COLUSA INDUSTRIAL PROPERTIES, INC.
COLUSA INDUSTRIAL PROPERTIES WASTEWATER TREATMENT FACILITY
COLUSA COUNTY

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

1. Colusa Industrial Properties, Inc. (hereafter "CIP" or "Discharger") submitted a Technical Memorandum dated 16 June 2015, requesting approval of a new waste stream, to be discharged into the process wastewater land application system at the Colusa Industrial Park. The proposed waste was characterized based on two sampling events conducted in 3 March 2015 and 2 April 2015. Additional sampling events were performed and submitted on 18 April 2016. In response to the Central Valley Water Board's 22 July 2016 letter, additional information was submitted on 20 September 2016 including a new water balance for the process wastewater land application system dated 13 September 2016.

2. The Discharger owns and operates the Colusa Industrial Park, which includes a domestic wastewater disposal system, a process wastewater land application system, and over 600 acres of land application areas (LAAs) that consist of the Davis Property and Fields 1 through 4. CIP is responsible for compliance with these Waste Discharge Requirements (WDRs).

3. The Industrial Park is located next to Highway 20 on Niagra Road, approximately 1 mile south of the City of Colusa and adjacent to the Colusa County Airport (Section 8, T15N, R1W, MDB&M) as shown on Attachment A, which is attached hereto and made part of this Order by reference. The Industrial Park and its associated land application areas occupy Assessor's Parcel Numbers (APN) 017-030-100 (Davis property), 017-030-083, 017-030-084, 017-030-099, and 017-140-003, -004, -005, -006, -007, and -008 as shown on Attachment B, which is attached hereto and made part of this Order by reference.

4. WDRs Order 5-01-250, adopted by the Central Valley Water Board on 19 October 2001, prescribed requirements for the discharge of process wastewater to an emergency evaporation/percolation pond, direct discharge of process wastewater to designated LAAs, and discharge of domestic wastewater from the industrial park complex septic tanks to an evaporation/percolation pond (Pond 1).

   The Discharger submitted a Report of Waste Discharge (RWD) on 13 May 2013 proposing operational changes including a new source of process wastewater, limited year-round process wastewater application to the LAAs used for rice decomposition,

and additional domestic wastewater disposal capacity. In 2012, the Discharger converted the emergency evaporation/percolation pond into two separate ponds: one for domestic wastewater (Pond 2) and one for industrial process wastewater (Pond 3). Therefore, Order 5-01-250 was rescinded and replaced with WDRs Order R5-2014-0067.

5. Order R5-2014-0067, adopted by the Central Valley Water Board on 6 June 2014, regulates the discharge of domestic wastewater from the industrial park complex septic tanks to lined Ponds 1 and 2 and the discharge of process wastewater to a separate lined Pond 3 prior to application to the LAAs. Order R5-2014-0067 prescribes domestic flow limits to Ponds 1 and 2, industrial process wastewater flow limits to Pond 3 and to the LAAs during specific months of the year, and allows the application of process wastewater to the LAAs for the purpose of rice straw decomposition only from 1 November through 31 March.

   The Discharger proposes a new source of process wastewater for disposal to the process wastewater land application system and requests additional domestic wastewater disposal capacity to accommodate future industrial park tenants. Therefore, Order R5-2014-0067 will be rescinded and replaced with this Order.

Existing Facility and Industrial Process Wastewater Discharge

6. CIP operates a separate land application system to manage process wastewater generated at the Industrial Park. Process wastewater is discharged to Pond 3 prior to application to the LAAs. The location of Pond 3 and the LAAs is shown on Attachment B. A process flow diagram of the industrial process wastewater system is shown on Attachment C, which is attached hereto and made part of this Order by reference.

7. Pond 3 is approximately 335 feet by 553 feet with a maximum depth of approximately 7 feet. Installation of a 60-mil high density polyethylene (HPDE) synthetic membrane liner was completed in November 2012.

8. The LAAs consist of approximately 500 acres of a 575-acre parcel referred to as the Davis Property and approximately 118 acres of agricultural land referred to as Fields 1 through 4. Application of process wastewater is conveyed to the LAAs using pumps and a pipeline network. The Discharger has been using a phased approach for the incorporation of the Davis Property for application of process wastewater based on crop water demands and volume of wastewater generated. Phase I discharges to the Davis Property consists of 150 acres. The remainder of the Davis Property has not been used for land application, but is available as a LAA if future disposal capacity is needed due to increased process wastewater flows.

9. Process wastewater from a tomato processing operation was directly discharged to the LAAs from 1999 until late 2003 when the tomato facility closed. Process wastewater for direct application to the LAAs consisted of 96 percent from tomato

processing and four percent from seed washing operations. Direct discharge of process wastewater from the seed washing operation to the LAAs occurred between 1999 and 2012. The Discharger has eliminated direct discharge of process wastewater to the LAAs since Pond 3 was lined in November 2012.

10. The Industrial Park is not fully occupied and the industrial nature of future tenants will vary. Currently, three tenants discharge process wastewater to Pond 3: two seed processing operations and a mushroom growing operation (Premier Mushrooms, hereafter Premier). Various other process wastewaters may be discharged as the Industrial Park attracts new tenants. The waste character of the process wastewater and flows from future tenants are unknown. However, the LAAs have capacity for higher wastewater flows and constituent loading than currently operated.

11. The seed processing operations are seasonal and only generate a small volume of wastewater. These discharges are intermittent and generally of short duration during the summer. Process wastewater flow generated from seed processing operations discharged to the LAAs is summarized below.

	Seed Process Wastewater Discharges to the LAAs							
	2009		**2010**		**2011**		**2012**	
Month	**Daily Max, mgd**	**Monthly Total, mgal**	**Daily Max, mgd**	**Monthly Total, mgal**	**Daily Max, mgd**	**Monthly Total, mgal**	**Daily Max, mgd**	**Monthly Total, mgal**
Aug	--	--	--	--	0.007	0.012	0.034	0.128
Sep	0.010	0.020	0.011	0.021	0.028	0.156	0.052	0.237
Oct	0.025	0.038	0.039	0.087	--	--	0.050	0.050
Nov	--	--	--	--	0.020	0.020	--	--
Annual Total:	**--**	**0.058**	**--**	**0.108**	**--**	**0.188**	**--**	**0.415**

12. Hydraulic and constituent loading rates applied to the LAAs are summarized below.

	Process Wastewater Applied, mgal	**LAAs Loading Summary**		
Year		**Avg. BOD (lb/ac/day)**	**Total Nitrogen (lb/ac/year)**	**TDS/FDS [1] (lb/ac/year)**
2008	0.29	3	2.8	177
2009	0.06	21	1.7	161
2010	0.11	31	3.7	140
2011	0.19	54	7.5	385
2012	0.41	12	5.0	123

[1] Only TDS was reported for 2008 and 2009. FDS was reported for year 2010 and thereafter.

13. Process wastewater generated by the current seed washing tenants is characterized below for select constituents.

Constituents	Annual Average Wastewater Quality, mg/L unless specified			
	2009	2010	2011	2012 [1]
pH, pH units	--	6.8	7.3	7.8
BOD_5	1,020	910	1,490	1,170
EC, µmhos/cm	--	1,080	1,370	1,250
FDS	--	500	900	600
Chloride	--	150	120	130
Sodium	--	150	170	160
Nitrate as N	0.40	0.23	0.25	0.51
TKN	12.0	16.3	16.8	20
Total Nitrogen	--	16.3	17.0	20

"--" denotes data not available.
[1] Flow-weighted average from two processing facilities.

14. Premier grows a variety of mushrooms in 64 growing rooms. Premier's process wastewater discharged to Pond 3 consists of storm water runoff from the uncovered concrete slabs outside of their growing rooms during the months of November through April. During wet weather months, the concrete slabs receive direct precipitation. Based on a 100-year 365-day return period and at full build out to 96 growing rooms, approximately 2.2 mgal of storm water runoff would be generated. Approximately 1.9 mgal of storm water runoff would be generated during the months of November through April, which is approximately four percent of the water needed per 100 acres for rice decomposition during that period.

15. The quality of Premier's storm water runoff was characterized based on three samples collected within one or two days of a rain event from the concrete slab storm water drain pipe in 2012. The data are summarized below for select parameters. Based on a 100-year 365-day return period, approximately 3.29 mgal of direct precipitation will be collected in Pond 3, which will further dilute the stored process wastewater.

Constituents	Premier Mushrooms' Storm Water Runoff Quality			
	Concentration, mg/L unless specified			
	3/15/12	3/19/12	3/29/12	4/5/12
BOD_5	70	240	30	100
FDS	840	1,640	1,630	1,690
TDS	1,290	2,540	1,890	2,320
Chloride	410	800	470	800
Sodium	--	170	230	150
Total Nitrogen	30	50	30	40

"--" denotes no data available.

16. Premier operates a concrete sump and HDPE-lined pond to manage their composting operations. Aged compost is the growing medium for mushrooms and is produced at the Premier facility. Composting is conducted inside a building referred to as the wharf that is equipped with air scrubbers and a biofilter to remove odors generated during the composting process. Leachate from the composting process and wash-down water from the clean-up activities of the growing rooms and uncovered concrete slab outside the growing rooms is collected and stored in the concrete sump and HDPE-lined pond prior to reuse in their composting cycle. The HDPE-lined pond is equipped with aeration piping to reduce objectionable odors. This is a closed-loop zero-discharge operation that is not managed by the Discharger or regulated under Order R5-2014-0067. Premier monitors the concrete sump and HDPE-lined pond in accordance with Revised Monitoring and Reporting Program (MRP) No. R5-2004-0832.

17. Premier has received multiple odor complaints from the neighboring community regarding their operation. Premier has developed and implemented an Odor Impact Minimization Plan dated January 2015, which provides standard operating procedures for the handling, storage, and removal of compost-like substrate materials, including odor control strategies and odor complaint response protocols. On 7 November 2016, Regional Board staff conducted an inspection of the Industrial Park and Premier's operation. Minimal to moderate odors were observed adjacent to the concrete sump and HDPE-lined pond and stronger objectionable odors were observed at the material mixing area (a concrete/asphalt apron) adjacent to the entrance of the composting building. However, these odors were not observed outside the perimeter of the Industrial Park at the time of the inspection. Regional Board staff was unable to conclusively determine during the inspection if Premier's operation was the primary source of nuisance odors reported.

    The Discharger may be responsible and/or subject to local, state, and/or federal regulations for odor complaints related to the activities of any CIP tenant if odors are perceivable beyond the limits of the CIP property boundary. However, only odors associated with wastewater handling or disposal activities that pose a potential threat to water quality are regulated under the Discharge Specifications of this Order. Material handling and processing activities occurring at Premier's compost mixing area and inside the composting building do not pose a threat to water quality and are therefore not subject to the requirements set forth in this Order or Premier's Revised MRP.

18. Other current Industrial Park tenants include rice drying and storage facilities, a milling facility and warehouse, a cold storage facility, and an equipment yard. These tenants are considered dry operations and do not generate industrial process wastewater.

19. In May 2016, a new composting operation leased approximately 20 acres of Industrial Park property. The composting operation occurs on open and uncovered land, exposed to precipitation which is subject to regulation under the General Waste Discharge Requirements for Composting Operations, Order WQ 2015-0121-DWQ.

20. In preparation of the 2014 WDRs, the Discharger initially proposed a new waste source for land discharge from a planned biomass combustion plant that was concurrently in the initial planning and permitting stages. The plant would utilize a 300,000 pound per hour boiler to generate electricity for the electric grid. This process would require a cooling tower/condenser that would generate wastewater. The estimated average daily wastewater outflow from the plant was 1,800 gpd. The estimated peak daily outflow was 3,000 gpd. The biomass plant would discharge to Pond 3, where the wastewater would be commingled with other process wastewaters prior to being applied to the LAAs.

    However, the Colusa County Department of Planning and Building Administration did not approve a Use Permit for the biomass combustion plant, which means that it is still possible that the design of the plant could change significantly. Though an initial evaluation of the wastewater's volume and character indicates that CIP would have the capacity to accept wastewater from the biomass plant without creating any significant threat to water quality, the Report of Waste Discharge (RWD) did not adequately characterize the wastewater quality, and the design of the facility is still subject to change. Therefore, until the Colusa County Department of Planning and Building Administration approves a final design for the biomass plant and until the Board receives a new or updated RWD that adequately characterizes the volume and character of the wastewater generated by the biomass plant, the WDRs will prohibit CIP from accepting this waste stream.

21. Crop and wastewater application activity at the LAAs that occurred between 2008 and 2012 is summarized in the table below. Discharges of process wastewater to the Phase I Davis Property were limited to the 2003 tomato processing season, which corresponds to the last year the tomato processing facility was in operation. Since installation of the Pond 3 liner in 2012, all process wastewater is discharged to Pond 3 prior to application to the LAAs. Due to low volumes of process wastewater generated in 2014 and 2015, no process wastewater was discharged from Pond 3 to the LAAs during those years.

LAAs Designation	Area, acres	Crops	2008 – 2012 Wastewater Application
Field 1A	20	Fallow	N/A [1]
Field 1B	20	Fallow	N/A [1]
Field 2 North	17	Rice [2]	2008, 2009
Field 2 South	17	Rice [2]	2012
Field 3A	6	Fallow	N/A [1]
Field 3B	18	Rice [2]	2010, 2011
Field 4 North	10	Fallow	N/A [1]
Field South	10	Fallow	N/A [1]
Phase 1 Davis Property	150	Rice [3]	N/A [1]
Remainder of Davis Property	425	Rice [3]	N/A [1]

[1] No land application occurred between 2008 and 2012.
[2] Rice did not reach maturity and therefore was not harvested. The field was burned.
[3] Cropped with rice but not irrigated with process wastewater.

22. The LAAs are typically cropped with rice, but some LAAs can also be cropped with sudan grass and various row crops. Currently, the entire Davis Property and Field 2 are dedicated to rice growing. The rice fields are typically constructed with a 2-foot berm, are flood irrigated, and operated as a closed loop system. A network of pipes and valves make up the irrigation conveyance system. Water return and recovery systems are in place to recycle the water within each rice field. The LAAs can be irrigated from an agricultural well known as the Kalfsbeck Well.

23. Based on agronomic best management practices, the crop-specific nitrogen requirements are summarized below:

Crop	Nitrogen Uptake, lbs/ac
Rice [1]	150 - 160
Sudan Grass [2]	200 - 400

[1] Includes growth and decomposition of rice, *"Long-term Studies Find Benefits, Challenges in Alternative Rice Straw Management",* Bird et al, California Agriculture, March – April 2002.

[2] Based on an average 70 lbs/ac per harvest cycle and two to five harvests per year.

24. Order R5-2014-0067 allows the discharge of process wastewater during the winter months (November through April) to the LAAs for rice straw decomposition only. During the wet weather months, wastewater collected in Pond 3 is primarily Premier's storm water runoff, limited wet season industrial process wastewater flows from other tenants, and direct precipitation into the pond. Rice straw decomposition involves flooding the rice fields with 2 to 6 inches of water immediately after harvest and maintaining the water level during the decomposition period, which occurs typically between November through March. Approximately 50 mgal of water per 100 acres of rice fields is needed during these months during a normal rainfall year. The water used for irrigation and decomposition infiltrates and the fields will not be drained to surface waters prior to rice planting or harvest. As previously stated, no process wastewater has been discharged to the LAAs due to low volumes of process wastewater generated since the adoption of the 2014 WDRs.

25. Crop and food processing residual solids include pulp, seeds, and recovered material from wastewater screens. Food processing residual solids generated by the Discharger's tenants are collected and handled at their respective facilities and disposed of off-site. This Order does not regulate those activities and does not allow application of residual solids unless a *Residual Solids Management Plan* is approved by the Executive Officer.

Existing Facility and Domestic Wastewater Discharge

26. The Discharger operates a separate wastewater system to manage domestic wastewater. The system provides domestic wastewater disposal services for the Industrial Park tenants as shown on Attachment B. Domestic wastewater from each tenant is collected in one or more septic tanks, and then pumped to Pond 1 or Pond 2.

Pond 1 is approximately 325 feet by 175 feet (measured from the top edges of the pond slope) with a maximum depth of approximately 6 feet. A 60-mill HDPE liner was installed in Pond 1 in July 2005. Pond 2 is approximately 267 feet by 330 feet (measured from the top edges of the pond slope) with a maximum depth of approximately 7 feet. Pond 2 was lined with a 60-mil HDPE liner in June 2014. Evaporation is the sole means of disposal. No domestic wastewater is discharged to the LAAs. A process flow diagram of the domestic wastewater system is shown on Attachment C.

27. Domestic wastewater flows to Pond 1 from 2008 to 2012 is summarized in the table below.

	Annual Domestic Wastewater Flows, mgal				
Month	**2008**	**2009**	**2010**	**2011**	**2012**
January	0.032	0.057	0.059	0.077	0.078
February	0.051	0.053	0.058	0.071	0.059
March	NA	0.060	0.074	0.087	0.074
April	0.063	0.063	0.073	0.088	0.075
May	NA	0.067	0.082	0.104	0.069
June	NA	0.073	0.086	0.102	0.074
July	0.050	0.074	0.091	0.112	0.097
August	0.132	0.082	0.101	0.115	0.102
September	0.143	0.087	0.111	0.100	0.103
October	0.148	0.079	0.109	0.098	0.101
November	0.144	0.066	0.067	0.083	0.091
December	0.107	0.061	0.072	0.075	NA
Annual Total:	**0.870**	**0.822**	**0.983**	**1.114**	**0.922**

"NA" denotes data not available.

28. Domestic wastewater flows to Pond 1 and Pond 2 reported in 2015 and 2016 are summarized in the table below. Monthly monitoring reports show exceedances of the flow limits and 2-foot freeboard requirement as prescribed by the 2014 WDRs. Based on 2015 and 2016 reported data, the average daily flow was approximately 9,500 gpd and a maximum of approximately 15,000 gpd was reported in 2015.

	Domestic Wastewater							
	2015 - Pond 1		**2015 – Pond 2**		**2016 – Pond 1**		**2016 – Pond 2**	
Month	**Flow mgal**	**Average Freeboard[2]**	**Flow mgal**	**Average Freeboard[2]**	**Flow mgal**	**Average Freeboard[2]**	**Flow mgal**	**Average Freeboard[2]**
January	0	2.40	0.202	2.55	0	1.56	0.205	2.87
February	0	2.35	0.232	2.03	0	1.46	0.197	2.34
March	0	2.42	0.276	1.76	0	1.19	0.253	1.64
April	0	2.84	0.284	1.64	0	1.47	0.342	1.41
May	0	3.40	0.227	1.76	0	1.96	0.261	1.41
June	0.123[1]	4.04	0.123[1]	4.61	0	2.58	0.290	1.50
July	0.262	4.01	0	2.58	0.330	2.79	0	1.79
August	0.468	3.34	0	3.28	0.333	2.44	0	2.47
September	0.387	2.50	0	3.87	0.338	2.05	0	2.99

	Domestic Wastewater							
	2015 - Pond 1		2015 – Pond 2		2016 – Pond 1		2016 – Pond 2	
Month	Flow mgal	Average Freeboard[2]	Flow mgal	Average Freeboard[2]	Flow mgal	Average Freeboard[2]	Flow mgal	Average Freeboard[2]
October	0.173[1]	1.79	0.170[1]	4.20	0.422	1.32	0	3.29
November	0	1.74	0.273	3.78	0	1.26	0.251	2.6
December	0	1.76	0.168	3.39	NA	NA	NA	NA
Annual Total:	**1.41**		**1.96**		**1.42**		**1.80**	

"NA" denotes data not available.
[1] Total flow based on reported daily flow during half of the number of days during that calendar month.
[2] Freeboard measured in feet.

Changes in the Facility and Discharge

29. To accommodate Premier's production of organic mushrooms, the Discharger proposes to accept year-round wastewater generated from Premier's planned organic growing rooms into Pond 3. Organic production standards require that wash down water from non-organic growing rooms cannot be comingled and re-applied to organic growing rooms. Premier anticipates wastewater flows consisting of the wash down water from their planned organic growing rooms not to exceed 20,000 gpd.

30. Seven water samples obtained between March 2015 and February 2016 were analyzed to characterize the wastewater generated in Premier's growing rooms. The samples were taken prior to discharge to Premier's concrete sump. This wastewater was captured from non-organic growing rooms and likely represents the worst case quality for organic mushroom wastewater. The analytical results are summarized in the table below.

	Premier Mushroom Wastewater Quality, mg/L							
Sample Date	BOD	FDS	Chloride	Sodium	Nitrate NO3	Nitrate as N	Manganese	Iron
3/3/2015	140	1,150	ND [2] / 1.0	222	1.6	NA [1]	0.19	0.80
4/2/2015	ND / 65	660	176	170	0.4	NA [1]	0.13	0.53
10/9/2015	40	710	243	187	0.4	0.1	0.22	3.11
12/2/2015	40	840	259	146	ND[2]/0.5	ND [2]	0.21	0.70
12/8/2015	6.0	540	161	159	1.2	0.3	0.33	1.95
1/29/2016	44	830	278	238	2.5	0.6	0.18	0.81
2/3/2016	23	1,430	549	361	ND [2] / 0.4	ND [2]	0.14	0.46
Average:	**51**	**880**	**238**	**212**	**1.0**	**0.3**	**0.20**	**1.19**

[1] NA denotes not analyzed. No data reported.
[2] ND denotes non-detect, practical quantitation limit provided if available.

31. The sampled wastewater has variable BOD and FDS concentrations. However, the proposed waste will represent the single-pass wastewater from the organic growing rooms and will likely consist of lower BOD and FDS concentrations than what is depicted above. The Discharger relies on dilution from other process wastewater discharged into Pond 3 and the ability to blend with supplemental irrigation water within Pond 3 to meet the effluent limits prescribed in the 2014 WDRs and the water demands of the crop.

32. The Discharger submitted a water balance for the industrial process wastewater system. The 13 September 2016 water balance which is based on the crop requirement for 268 acres for rice decomposition shows adequate storage and disposal capacity to accommodate Premier's additional flow and supplemental irrigation water in Pond 3.

33. The 2001 WDRs prescribed an average daily process wastewater flow of 3.4 mgd (for rice) and 4.1 mgd (for sudan grass) to the Davis Property. The Discharger's 13 September 2016 water balance demonstrates that anticipated process wastewater flows from Pond 3 to the LAAs during the months of April through October would not exceed the flow limits prescribed by the 2001 WDRs.

34. In response to Central Valley Water Board's concerns regarding current domestic pond disposal capacity, on 6 December 2016, the Discharger submitted four water balances to demonstrate adequate capacity under current and future domestic wastewater disposal conditions for a 100-year return period and average precipitation. However, because disposal relies entirely on evaporation, under existing conditions with two disposal ponds, the year following may reflect less than 2 feet of freeboard. If this condition occurs, the Discharger is required to prevent the release of domestic wastewater that could pose a threat to waters of the state.

    a. Two water balances were based on current influent flows, constructed pond dimensions for Pond 1 and 2, and reasonable estimates of precipitation and evaporation during a 100-year return period and average precipitation.

    b. To accommodate for future tenants, the Discharger proposes to install an additional lined pond, Pond 2A, just north of the existing domestic ponds. Pond 2A will have a disposal capacity of approximately 1.87 MG at 2-feet of freeboard and a maximum water depth of approximately 4.0 feet. Two additional water balances were prepared to demonstrate the combined disposal capacity of Ponds 1, 2, and 2A based on reasonable estimates of influent flows, precipitation, and evaporation. Location of Pond 2A is shown on Attachment B.

Site-Specific Conditions

35. The Industrial Park provides domestic and process water supply to its tenants from two onsite groundwater wells, Well 1 and Well 2. The water supply was analyzed for select constituents on 12 December 2013. A summary of the data is shown below.

	2013 Water Supply Quality	
Constituent	**Well 1**	**Well 2**
EC, umhos/cm	776	493
TDS, mg/L	470	330
Chloride, mg/L	114	16
Sodium	121	87
Nitrate nitrogen	< 0.1	< 0.1
Iron	0.13	0.11
Manganese	0.08	0.04

36. Two agricultural wells supply supplemental irrigation water to the LAAs. Wells CRC and Kalfsbeck are located north of Field 1A and the Davis Property Phase 1, respectively. Water sampled from these wells on 31 January 2014 was analyzed for TDS and nitrate nitrogen, as summarized in the table below:

	Supplemental Irrigation Water Quality, mg/L	
Constituent	**Well CRC**	**Well Kalfsbeck**
TDS, mg/L	750	2,410
Nitrate nitrogen, mg/L	0.4	< 0.4

37. The Industrial Park is located on gently sloping agricultural land at approximately 42 to 48 feet above sea level. The Sacramento River is located approximately 1.3 miles from the Industrial Park.

38. The Federal Emergency Management Agency floodplain map included in the 2013 RWD, shows the Industrial Park property in the 0.2 percent (or 500-year) Annual Hazard Flood Zone, and therefore outside the 100-year flood zone.

39. The surrounding land uses are agricultural, typically consisting of fields planted to rice, walnuts, tomatoes, and various other field crops. Based on data obtained from weather station Colusa 2 SSW, the 100-year return period annual precipitation is approximately 28.9 inches. Based on data obtained from the California Irrigation Management Information System Station No. 32, the annual average precipitation is approximately 17.1 inches and the reference evapotranspiration rate is approximately 52.3 inches per year.

Groundwater Conditions

40. Based on a site-specific soil investigation performed in 1983, the general soil conditions consist of the Colusa and Marvin Series. The soils are slightly to

moderately alkaline, with low permeability, and comprised of poorly drained clay loam and clay soils.

41. Groundwater beneath the CIP site is relatively shallow, approximately 1 to 15 feet below ground surface, and generally flows towards the north. Nine groundwater monitoring wells monitor shallow groundwater: well MW-1 through MW-6 (installed before 1999), MW-7 and MW-8 (installed in 2002), and MW-9 and MW-10 (installed in 2004). MW-2 was abandoned in 2000 due to its proximity to the on-site irrigation canal. MW-4 is at the cross-gradient boundary of LAA Field 1A and is primarily influenced by agricultural lands that do not and will not receive any discharge; therefore is not suitable for use as a compliance monitoring well. MW-8 is located upgradient of the LAAs and is not suitable for use as a compliance monitoring well. MW-9 is at the cross-gradient boundary of the Davis Property Phase I LAAs and is not suitable for use as a compliance monitoring well until such time when wastewater is applied to the remaining Davis Property. Well locations are shown on Attachment B.

42. Groundwater has been monitored in selected onsite wells since just prior to the first land application of process wastewater. Pre-discharge groundwater quality was established for wells MW-1, MW-3, MW-4, MW-5, MW-6, MW-7, and MW-8 for TDS and nitrate nitrogen only as summarized in the table below.

	Average Pre-Discharge Groundwater Quality, mg/L unless specified						
Constituents	**MW-1**	**MW-3**	**MW-4**	**MW-5**	**MW-6**	**MW-7**	**MW-8**
TDS	1,410[1]	1,370[2]	2,160[3]	1,280[3]	1,000[3]	1,030[4]	3,330[4]
Nitrate Nitrogen	2.3[3]	1.4[3]	2.7[3]	4.6[3]	2.2[3]	0.5[4]	0.5[4]

[1] Data from February 1996 to July 1999.
[2] Data from August 1996 to July 1999.
[3] Data from March and July 1999.
[4] Data from April 2002 to December 2002.

The data shows that pre-discharge groundwater quality was highly spatially variable between the wells. Based on the data above, groundwater TDS concentrations were typically high and in some wells exceeded the short-term level secondary MCL of 1,500 mg/L, indicating poor groundwater quality prior to any discharge. Pre-discharge TDS concentrations in MW-4 and MW-8 are particularly higher than those observed in the other wells. Pre-discharge nitrate nitrogen concentrations in all the wells were below 5 mg/L.

43. The Discharger continues to monitor groundwater quality. The groundwater monitoring data from 2008 through 2012 are summarized below for select constituents:

Monitoring Well	2008-2012 Average Groundwater Quality, mg/L					
	TDS	Na	Cl	Nitrate Nitrogen	Fe	Mn
MW-1	1,220	420	160	0.1	0.7	0.2
MW-3	1,240	500	270	4.2	0.1	0.01
MW-4	2,430	810	380	2.9	0.2	0.01
MW-5	1,470	460	140	16	0.1	0.4
MW-6	770	220	75	0.4	1.2	0.4
MW-7	1,290	210	190	0.1	0.3	0.2
MW-8	3,460	540	230	0.1	0.2	0.2
MW-9	3,310	810	240	0.2	0.1	0.02
MW-10	1,950	450	220	0.2	0.1	0.3
WQO	**450 [1] – 1,500 [4]**	**69 [1]**	**106 [1]- 250 [3]**	**10 [2]**	**0.3 [3]**	**0.05 [3]**

"WQO" denotes Water Quality Objective. "TDS" denotes total dissolved solids. "Na" denotes sodium. "Cl" denotes chloride. "Fe" denotes iron. "Mn" denotes manganese.

[1] Lowest agricultural water quality goal.
[2] Primary Maximum Contaminant Level.
[3] Secondary Maximum Contaminant Level.
[4] Secondary Maximum Contaminant Short-term Level.

The historical groundwater monitoring data show that:

a. TDS. TDS concentrations have continued to be spatially variable and, for the most part, have been relatively constant over time in each well. TDS concentrations are typically high and in some cases exceed the short-term maximum secondary MCL of 1,500 mg/L, indicating poor quality groundwater. This is evident in wells MW-4, MW-8, MW-9, and MW-10 with TDS concentrations ranging from 2,000 to 3,500 mg/L. Although pre-discharge quality is unknown in wells MW-9 and MW-10, based on the limited wastewater discharges to the Davis Property, it appears that the existing TDS groundwater quality is naturally poor and not the result of the discharge.

b. Chloride. Chloride concentration trends are similar to those of TDS, which is a surrogate for all salinity constituents. Chloride concentrations have been relatively constant over time with a few exceptions. Chloride concentrations in MW-3 and MW-4 indicate an upward trend beginning in 2008 and 2006, respectively. However, there have been no discharges to the adjacent LAAs from 2008 through 2012.

c. Nitrate nitrogen. Nitrate nitrogen has been relatively constant over time, with the exception of MW-5. Nitrate nitrogen concentrations in MW-5 have exceeded the primary MCL of 10 mg/L since 2003. Because MW-5 is surrounded by the LAAs and pre-discharge concentrations were below 10 mg/L, it appears that groundwater at this single location has been degraded by the discharge.

d. Iron. Based on nature of typical food processing operations, the process wastewater is not expected to contain significant iron concentrations. However, excessive BOD loading rates can deplete oxygen, resulting in anoxic conditions

that can solubilize naturally occurring metals in soil; therefore resulting in reducing conditions that favor dissolution of iron from native soil. In general, iron concentrations in groundwater have been spatially variable but relatively constant within each monitoring well, with a few exceptions. Iron concentrations in MW-1 exceeded the secondary MCL, which is 0.3 mg/L on two occasions in November 2008 and February 2009. Iron concentrations in MW-6 have consistently exceeded the secondary MCL for iron. However, MW-6 data does indicate a decreasing trend, with concentrations below the secondary MCL beginning in 2011. Analysis for iron began in 2004 after the first discharge to the LAAs. Based on the limited discharges, there appears to be no correlation with discharge activities and high iron concentrations observed in some of the compliance wells. Therefore, the high iron concentrations are likely naturally occurring and not the result of discharges to the LAAs.

e. Manganese. Similar to iron, the process wastewater is not expected to contain significant manganese concentrations. Current groundwater quality in MW-1, MW-5, MW-6, MW-7, MW-8, and MW-10 exceed 0.05 mg/L, the secondary MCL for manganese. Analysis for manganese began in 2004 after the first discharge to the LAAs. Based on limited discharges, there appears to be no correlation with discharge activities and the high manganese concentrations observed in the compliance wells. Therefore, the high manganese concentrations are likely naturally occurring and not the result of the discharges to the LAAs.

Basin Plan, Beneficial Uses, and Regulatory Considerations

44. 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 Water Code section 13263(a), waste discharge requirements must implement the Basin Plan.

45. Local drainage is to the Colusa Basin Drain. The beneficial uses of the Colusa Basin Drain, as stated in the Basin Plan, are municipal and domestic supply; agricultural supply; water contact recreation; non-contact water recreation; commercial and sport fishing; aquaculture; warm freshwater habitat; cold freshwater habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; and wildlife habitat.

46. 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.

47. 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.

48. 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.

49. 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.

50. 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.

51. 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.

52. 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 µmhos/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 µmhos/cm if the proper leaching fraction is provided to maintain soil salinity within the tolerance of the crop.

Antidegradation Analysis

53. 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.

54. Degradation of groundwater by some of the typical waste constituents associated with discharges from food processing facilities, after effective source control, treatment, and control measures are implemented, is consistent with the maximum benefit to the people of the state. The Discharger aids in the economic prosperity of the community by direct employment of full-time and part-time personnel at the Industrial Park. In addition, the Discharger provides a needed service for a range of businesses and industries; including manufacturing, process, and distribution companies, as well as those that produce materials and equipment used at these businesses. 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.

55. The Discharger has been monitoring groundwater quality at the site since 1999. 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 pre-discharge background groundwater quality established prior to discharge operations that began in 1999.

56. Process wastewater discharges to the LAAs have been infrequent since 2012. Constituents of concern that have the potential to degrade groundwater include salts (primarily TDS, sodium, and chloride), and nutrients, as discussed below:

	Average Concentrations, mg/L unless specified			
Constituents	**Industrial Process Wastewater [1]**	**Pre-discharge Groundwater [2]**	**Current Groundwater [3]**	**Potential WQO**
TDS	--	1,000 - 3,300	1,200 - 3,500	450 [4] -1,500 [7]
FDS	600	--	--	--
Sodium	160	--	200 - 800	69 [4]
Chloride	130	--	75 - 380	106 [4] – 600 [7]
Nitrate nitrogen	24 [8]	0.5 – 4.6	0.1 - 16	10 [5]
Iron	--	--	0.1 – 1.2	0.30 [6]
Manganese	--	--	0.01 – 0.4	0.05 [6]

"—"No data available.

[1] Flow-weighted average concentrations based on 2012 process wastewater quality from two seasonal seed processing facilities.

[2] Based on range of data prior to the first discharge to the LAAs from select wells MW-1, MW-3, MW-4, MW-5, MW-6, MW-7, and MW-8.

[3] Based on range of data during 2008 to 2012 from all wells MW-1, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8, MW-9, and MW-10.

[4] Lowest agricultural water quality goal.

[5] Primary Maximum Contaminant Level.

[6] Secondary Maximum Contaminant Level.

[7] Secondary Maximum Contaminant Short-term Level.

[8] Representative of total nitrogen, which is the best indicator of the potential for nitrate groundwater degradation.

a. **Total Dissolved Solids.** Since 2010, the process wastewater has been analyzed for FDS. The average wastewater FDS concentration is 600 mg/L, based on 2012 wastewater characteristics from two seasonal seed processing facilities. However, in previous years, the FDS concentration ranged from 500 to 900 mg/L, based on a single operating seasonal seed processing facility. Pre-discharge groundwater TDS concentrations were spatially variable and high, ranging from 1,000 to 3,300 mg/L. In some wells, pre-discharge concentrations exceeded the least stringent potential water quality objective for protection of MUN beneficial uses, which is the short-term maximum secondary MCL of 1,500 mg/L, indicating poor groundwater quality. This is true for groundwater in wells MW-4, MW-8, MW-9, and MW-10. Since discharge operations began, groundwater TDS concentrations have been fairly constant within each well. In the case of MW-4, TDS concentrations have increased in recent years, despite no discharges to adjacent LAAs from 2008 through 2012. As stated in Finding 41, MW-4 is not suitable for use as a compliance monitoring well.

   Because pre-discharge groundwater quality for TDS exceeds the water quality objective, the shallow groundwater at this site is considered not “high quality water”, and the Antidegradation Policy does not apply. Based on the limited discharges to the LAAs, and in some cases where the LAAs fields have not received any wastewater in the last five years, the spatial and temporal variability in the adjacent compliance wells is likely not due to the discharge. In consideration of the relatively low salinity of the wastewater and pre-discharge groundwater quality, it appears that the discharge does not pose a threat of degradation with respect to TDS. To protect groundwater, this Order does impose a numeric groundwater limitation for TDS and includes a performance-based FDS effluent limit that will not cause groundwater quality to get any worse.

b. **Sodium.** Pre-discharge groundwater sodium concentrations are unknown. The average sodium concentration in the process wastewater is 160 mg/L and sodium is known to be a key salinity constituent in food processing wastewater. The average groundwater sodium concentrations range from 200 to 800 mg/L, which exceeds the most stringent potential water quality objective for sodium, the agricultural water quality goal of 69 mg/L. However, that goal is intended to protect the most salt sensitive crops, such as beans, nuts, and deciduous fruits. There is a taste and odor threshold for sodium, which ranges from 300 to 600 mg/L. Groundwater sodium concentrations that exceed the taste and odor threshold are observed in MW-1, MW-3, MW-5, MW-8, MW-9, and MW-10.

   For the most part, groundwater quality data from 2005 through 2012 show increasing sodium concentrations in all the wells with the exception of MW-7, MW-8, and MW-9, which are located along the perimeter of the Davis Property Phase 1. Based on the small volumes of wastewater generated each processing

season, only a few acres of a specified LAA field have been irrigated with wastewater. Between 2008 and 2012, wastewater discharges occurred on LAA Fields 2 North, 2 South, and 3B. Approximately 0.5 to 2.2 inches of wastewater have been applied on these fields. The compliance wells that show increases in sodium concentrations are not adjacent to the LAAs that have received wastewater. Therefore, it appears that the discharge does not pose a threat of degradation with respect to sodium. To protect groundwater, this Order does impose a numeric groundwater limitation for sodium and includes a performance-based FDS effluent limit that will effectively restrict the sodium concentration of the process wastewater so that the discharge will not cause groundwater quality to get any worse.

c. **Chloride.** Pre-discharge groundwater chloride concentrations are unknown. Chloride concentrations in shallow groundwater at the site are spatially variable, ranging from 75 to 375 mg/L. Chloride concentrations have been fairly constant over time and below the secondary MCL of 250 mg/L within each well with a few exceptions. MW-3 groundwater data from 2009 and 2012 indicate elevated chloride concentrations that exceed 250 mg/L. MW-3 is located downgradient of LAA Field 4 north, which has not received wastewater in the last five years. MW-4 groundwater data from 2004 and 2012 indicate an increasing trend with concentrations in the upwards of 400 mg/L. However, MW-4 is not suitable for use as a compliance monitoring well. Chloride concentrations in the process wastewater range from 100 to 150 mg/L.

   It appears that there is no correlation between discharge activities and chloride concentrations observed in some of the compliance wells. Therefore, the discharge does not pose a threat of degradation with respect to chloride. To protect groundwater, this Order does impose a numeric groundwater limitation for chloride and includes a performance-based FDS effluent limit that will effectively restrict the chloride concentration of the process wastewater so that the discharge will not cause groundwater quality to get any worse.

d. **Nitrate.** For nutrients such as nitrate, the potential for groundwater degradation depends on wastewater quality; crop uptake, and the ability of the vadose zone below the LAAs to support nitrification and denitrification to convert the nitrogen to nitrogen gas before it reaches the water table. Most of the nitrogen in the process wastewater is present as TKN, which can readily mineralize and convert to nitrate (with some loss via ammonia volatilization) in the LAAs. The average total nitrogen concentration in the process wastewater is 24 mg/L. Pre-discharge nitrate nitrogen concentrations in shallow groundwater were spatially variable, ranging from 0.5 to 5.0 mg/L and do not exceed the primary MCL for nitrate, which is 10 mg/L. Groundwater nitrate nitrogen concentrations have been relatively constant, with the exception of MW-5, which has exhibited concentrations exceeding the primary MCL since 2003. Because MW-5 is

surrounded by land application areas, it appears that the discharge is the only potential source of this limited pollution.

This Order requires that nutrients associated with the wastewater and other sources be applied to the LAAs at rates consistent with crop demand, and prohibits any statistically significant increase in groundwater nitrate concentrations due to the discharge. The provisions of this Order require best practicable treatment and control measures.

e. **Manganese**. The current monitoring program does not require analysis of manganese in wastewater. Based on the character of the process water supply and nature of food processing operations, wastewater at the site is not expected to contain significant manganese concentrations. However, excessive BOD loading rates can deplete oxygen, resulting in anoxic conditions that can solubilize naturally occurring metals in soil. Groundwater monitoring for manganese began in 2004 after discharge operations began. Groundwater manganese concentrations are spatially and temporally variable. Average manganese concentrations in MW-1, MW-5, MW-6, MW-7, MW-8, and MW-10 exceed the secondary MCL of 0.05 mg/L. An increasing trend is observed in MW-7, MW-8, and MW-10. However, these wells are located along the perimeter of the Davis Property Phase 1, which has not received any wastewater since 2003. Although pre-discharge quality is unknown, based on limited discharge activity, including low wastewater application rates (0.5 to 2 in/ac), and low BOD loading rates (10 to 55 lbs/ac/day), it appears unlikely that the discharge caused or contributed to the high groundwater manganese concentrations.

It appears that there is no correlation with discharge activities and manganese concentrations observed in some of the compliance wells. Therefore, the discharge does not pose a threat of degradation with respect to manganese. This Order does impose a numeric groundwater limitation for manganese and includes BOD effluent and mass loading limits that will effectively prevent reducing conditions so that the discharge will not cause groundwater quality to get any worse.

f. **Iron.** The current monitoring program does not require analysis of iron in wastewater. Based on the character of process water supply and nature of food processing operations, wastewater at the site is not expected to contain significant iron concentrations. However, excessive BOD loading rates can deplete oxygen, resulting in anoxic conditions that can solubilize naturally occurring metals in soil. Groundwater monitoring for iron began after the first discharge. In general, groundwater iron concentrations have been relatively constant and below the secondary MCL of 0.3 mg/L with the exception of MW-6. MW-6 is located approximately 1,000 feet downgradient of the nearest land application area, Field 3B, which has received wastewater in 2010 and 2011.

Although iron concentrations in MW-6 have generally been high since the first sampling event; groundwater data does indicate a decreasing trend. More recent data indicate concentrations below the secondary MCL beginning in mid-2011.

Similar to iron, it appears that there is no correlation with discharge activities and high iron concentrations observed in the compliance wells. Therefore, the discharge does not pose a threat of degradation with respect to iron. This Order does impose a groundwater limitation for iron and includes BOD effluent and mass loading limits that will not cause groundwater quality to get any worse.

57. Due to the spatial variability of groundwater quality below the facility, the numeric Groundwater Limitations of this Order were established based on groundwater data from wells MW-7 through MW-10, which are located around the Davis Property Phase I LAAs. Wastewater was only applied to those LAAs during the 2003 processing season and no wastewater discharges have taken place since then. Additionally, all four wells are upgradient of the LAAs that have been regularly used. These data were therefore used as representative of background groundwater to establish numeric limits. All data from these well locations were analyzed together to determine a 95 percent upper tolerance limit (UTL) for specific constituents of concern as shown in the table below. Non-detects were substituted using a random number less than the detection limit. Outliers were determined using the modified Thompson Tau technique, a statistical method for deciding whether to keep or discard suspected outliers in a sample of a single variable. A normality test using the Shapiro-Wilk test was used to determine if the data set is well-modeled by a normal distribution. This test showed that the data were not normally distributed (except for iron); therefore it is appropriate to set site-specific groundwater limitations at either the nonparametric 95 percent UTL or the water quality objectives set forth in the Basin Plan, whichever is greater. The calculated 95 percent UTL values are tabulated below.

Constituent	Units	95 Percent Upper Tolerance Limit
TDS	mg/L	4,080
Chloride	mg/L	290
Sodium	mg/L	980
Iron	mg/L	0.23[1]
Manganese	mg/L	0.39

[1] Parametric upper tolerance limit.

58. This Order establishes effluent, mass loading rate, and groundwater limitations for the facility 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, chloride, sodium, manganese, and iron, current groundwater monitoring data indicates that groundwater is not high quality water and therefore the Antidegradation Policy does not apply to these constituents. However, the

requirements of this Order require the Discharger to implement best efforts, which will prevent further degradation of groundwater quality due to the discharge

For nitrate, current groundwater monitoring data indicates that the discharge has caused (or contributed to) exceedance of a water quality objective in MW-5. The provisions of this Order require that the Discharger implement BPTC and contain a time schedule to bring the discharge into compliance with water quality objectives.

59. The Discharger provides treatment and control of the discharge that incorporates the following:

a. Screening to reduce the BOD concentration of food processing wastewater;

b. HDPE lined ponds for both process and domestic wastewater;

c. Nitrogen and BOD loading rate control for the LAAs;

d. Up to 600 acres of LAAs available for industrial process wastewater disposal; and

e. Tailwater return and recovery systems to recycle the wastewater within each designated LAA.

With respect to nitrate nitrogen, an unacceptable degree of groundwater degradation has occurred in the limited area monitored by MW-5. Therefore, this Order does not authorize any continued degradation beyond that which exists today in that well. The Groundwater Limitations are effective immediately and allow no degradation beyond existing groundwater quality in any compliance monitoring well and this Order requires intra-well analysis of compliance well groundwater monitoring data to determine compliance with the Groundwater Limitations. If groundwater quality in MW-5 with respect to nitrate is not significantly improved by **30 December 2019**, the Provisions require that the Discharger implement additional treatment or control as necessary to bring the discharge into compliance with the Basin Plan water quality objective.

60. This Order imposes effluent and mass loading rate limitations to ensure that the highest water quality consistent with the maximum benefit to the people of the State will be achieved. Based on the existing record, the discharge authorized by this Order is consistent with the antidegradation provisions of Resolution 68-16 and the controllable factors policy to the extent that each is applicable.

Other Regulatory Considerations

61. 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 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.

62. 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:
>
> (a) Sewage - Discharges of domestic sewage or treated effluent which are regulated by WDRs issued pursuant to Chapter 9, Division 3, Title 23 of this code, or for which WDRs have been waived, and which are consistent with applicable water quality objectives, and treatment or storage facilities associated with municipal wastewater treatment plants, provided that residual sludges or solid waste from wastewater treatment facilities shall be discharged only in accordance with the applicable SWRCB-promulgated provisions of this division.
>
> (b) Wastewater - Discharges of wastewater to land, including but not limited to evaporation ponds, percolation ponds, or subsurface leach fields 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…

63. The discharge authorized herein, and the treatment and storage facilities associated with the discharge, are exempt from the requirements of Title 27. The domestic wastewater ponds are exempt pursuant to Title 27, section 20090(a) because they are facilities associated with a discharge of domestic sewage regulated under waste discharge requirements.

The process wastewater pond and LAAs are exempt pursuant to Title 27, section 20090(b) because they are discharges of wastewater to land and:

a. The Central Valley Water Board is issuing WDRs;
b. This Order prescribes requirements that will ensure compliance with the Basin Plan; and

c. The wastewater discharged to the LAAs does not need to be managed as hazardous waste.

64. 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.

65. 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 Discharger is exempt from coverage under NPDES General Permit CAS000001. However, the Discharger's tenants are required to obtain coverage under the NPDES General Permit CAS000001 based on their Standard Industrial Classification (SIC) codes.

66. Water Code section 13267(b) 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 discharging, or who proposes to discharge 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 R5-2017-0020 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.

67. 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 94-81* (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.

68. On 27 October 1999, Colusa County Department of Planning and Building approved a Negative Declaration for the proposed expansion of 575 acres known as the Davis Property as a land treatment area for industrial process wastewater to Colusa Industrial Properties in accordance with the provisions of the California Environmental Quality Act (CEQA)(Pub. Resources Code, § 21000 et seq.) and the State CEQA Guidelines.

69. On 7 August 2000, Colusa County Department of Planning and Building certified a Negative Declaration for the land application of increased flows of tomato processing wastewater generated at Colusa Industrial Properties in accordance with the provisions of CEQA.

70. On 11 June 2001, the Colusa County Planning Commission held a public hearing for the proposed amendment to the Use Permit clarifying the intent of the use of the Davis Property for the disposal of wastewater changing from disposal of tomato process wastewater to industrial process wastewater. Colusa County as Lead Agency determined that since a negative declaration had already been prepared and adopted, there is no substantive evidence in the record that would require a new environmental document.

71. The action to adopt revised discharge requirements for this existing facility is exempt from the provisions of CEQA, in accordance with the California Code of Regulations, title 14, section 15301 because this Order does not authorize any significant changes in the discharge envisioned in the prior analyses.

72. 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

73. 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.

74. 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.

75. All comments pertaining to the discharge were heard and considered in a public hearing.

IT IS HEREBY ORDERED that Order R5-2014-0067 is rescinded and, pursuant to Water Code sections 13263 and 13267, Colusa Industrial Properties, Inc., its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the Water Code and regulations adopted hereunder, shall comply with the following:

A. Discharge Prohibitions

1. Discharge of wastes to surface waters or surface water drainage courses, including irrigation ditches outside the control of the Discharger, 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. Discharge of toxic substances into the wastewater treatment system or land application areas such that biological treatment mechanisms are disrupted is prohibited.

6. Application of crop and food processing residual solids to the LAAs is prohibited unless and until the Executive Officer approves a *Residual Solids Management Plan* submitted pursuant to Provision I.1.j of this Order.

7. Storage of residual solids from crop and food processing on areas not equipped with means to prevent storm water infiltration, or a paved leachate collection system, is prohibited.

8. Discharge of process wastewater to the domestic wastewater ponds is prohibited.

9. Discharge of domestic wastewater to the process wastewater pond, land application area, or any surface waters is prohibited.

10. The Discharger is prohibited from accepting flows from the planned biomass plant unless and until the local planning and building agency has

approved a final design and until the Regional Water Board has received a new or updated RWD.

B. Flow Limitations

1. **Effective immediately,** domestic flows to the domestic wastewater ponds shall not exceed the following limits:

Flow Measurement	Flow Limit
Average Daily Flow [1]	13,000 GPD
Annual Flow [2]	3.10 MG

[1] As determined by the total flow during the calendar month divided by the number of days in the month for each pond.
[2] As determined by the combined total flow to each domestic pond during the calendar year.

2. **Effective on the date** of the Executive Officer's approval of each successive *Domestic Pond Expansion Report* pursuant to Provision I.1.d and *Domestic Pond Expansion Completion Report* pursuant to Provision I.1.e, domestic flows greater than 13,000 gpd monthly average flow and a 3.10 MG total combined annual flow will be approved subject to the following conditions:

   a. The Executive Officer shall not approve a maximum allowable total combined annual flow rate that exceeds 4.30 MG.

   b. The Discharger shall demonstrate through a water balance capacity analysis that sufficient domestic wastewater storage and disposal capacity is available at the proposed flow limit to ensure compliance with this Order.

3. **Effective immediately**, industrial process wastewater flows to Pond 3 from **1 November through 31 March** shall not exceed the following limits:

Flow Measurement	Flow Limit
Average Daily Influent Flow [1] to Pond 3	0.090 MGD

[1] As determined by the total flow during the calendar month divided by the number of days in that month.

4. **Effective immediately**, industrial process wastewater flows from Pond 3 to the land application areas from **1 April through 31 October** each year shall not exceed the following limits:

Flow Measurement	Flow Limit
Average Daily Flow [1] to LAAs Fields 1 through 4	0.69 MGD
Average Daily Flow [1] to the Davis Property (cropped with rice)	4.10 MGD

Flow Measurement	Flow Limit
Average Daily Flow [1] to the Davis Property (cropped with sudan grass or crop with similar nitrate uptake demands)	3.40 MGD

[1] As determined by the total flow during the calendar month divided by the number of days in that month.

5. **Effective immediately**, industrial process wastewater flows from Pond 3 to the land application areas only for the purpose of rice straw decomposition from **1 November through 31 March** each year shall not exceed the following limits:

Flow Measurement	Flow Limit
Average Daily Flow [1] to the land application area (cropped with rice)	0.200 MGD

[1] As determined by the total flow during the calendar month divided by the number of days in that month.

C. Effluent and Mass Loading Limitations

1. Process wastewater applied to the LAAs cropped with rice shall not exceed the following effluent and mass loading limits:

Constituent	Units	Annual Maximum
Average FDS Concentration	mg/L	960 [1]
Average BOD Concentration	mg/L	100 [1]
Total Nitrogen Mass Loading	lb/ac/year	Crop Demand

[1] Flow-weighted annual average based on total flow (from all sources including supplemental irrigation water) and concentration of blended wastewater discharged.

2. Process wastewater applied to the LAAs cropped with sudan grass or crop with similar nitrate uptake demands shall not exceed the following effluent and mass loading limits:

Constituent	Units	Cycle Average	Annual Maximum
Average FDS Concentration	mg/L	--	960 [1]
BOD Mass Loading	lb/ac/day	100	--
Total Nitrogen Mass Loading	lb/ac/year	--	Crop Demand

[1] Flow-weighted annual average based on total flow (from all sources including supplemental irrigation water) and concentration of blended wastewater discharged.

D. Discharge Specifications

1. No waste constituent shall be released, discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of the Groundwater Limitations of this Order.

2. The discharge shall not cause degradation of any water supply.

3. Wastewater treatment, storage, and disposal shall not cause pollution or a nuisance as defined by Water Code section 13050.

4. The discharge shall remain within the permitted waste treatment/containment structures and land application areas at all times.

5. The Discharger shall operate all systems and equipment to optimize the quality of the discharge to the LAAs.

6. All conveyance, 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.

7. Objectionable odors shall not be perceivable beyond the limits of the Industrial Park property where the waste is generated, treated, and/or discharged at an intensity that creates or threatens to create nuisance conditions. If unpleasant odors due to wastewater generation, storage, and or disposal originating from any tenant within the facility are noticed beyond the property boundary or if the Discharger receives one or more odor complaints, the Discharger shall report the finding to the Regional Water Board and other local enforcement agencies in writing within 10 days and shall report the corrective action that took place or shall include a specific plan to resolve the odors and to reduce future occurrences.

8. As a means of discerning compliance with Discharge Specification D.7, the dissolved oxygen (DO) content in the upper one foot of any wastewater 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, the Discharger 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.

9. The Discharger 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, the Discharger 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.

10. 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 continuous 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.

11. On or about **1 October** of each year, available capacity shall at least equal the volume necessary to comply with Discharge Specifications D.9 and D.10.

12. 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. The Discharger shall consult and coordinate with the local Mosquito Abatement District to minimize the potential for mosquito breeding as needed to supplement the above measures.

13. 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.

14. Wastewater contained in any unlined pond shall not have a pH less than 6.0 or greater than 9.0.

15. The Discharger shall monitor sludge accumulation in each domestic wastewater disposal pond at least every five years beginning in **2019** and shall periodically remove sludge as necessary to maintain adequate storage capacity. Specifically, if the estimated volume of sludge in any pond exceeds ten percent of the permitted reservoir capacity, the Discharger shall complete sludge cleanout for that pond within **12 months** after the date of the estimate.

16. The Discharger shall monitor sludge accumulation in each process wastewater storage pond at least every five years beginning in **2019** and shall periodically remove sludge as necessary to maintain adequate storage capacity. Specifically, if the estimated volume of sludge in any pond exceeds five percent of the permitted reservoir capacity, the Discharger shall complete sludge cleanout for that pond within **12 months** after the date of the estimate.

E. Groundwater Limitations

Release of waste constituents from any portion of the Facility shall not cause groundwater to:

1. Contain any of the specified constituents in a concentration statistically greater than the maximum allowable concentration tabulated below. The wells to which these requirements apply are specified in the Monitoring and Reporting Program.

Constituent	Units	Maximum Allowable Concentration	Effective Dates
TDS	mg/L	4,080	• Effective immediately for all compliance wells.
Chloride	mg/L	290	• Effective immediately for all compliance wells.
Sodium	mg/L	980	• Effective immediately for all compliance wells.
Iron	mg/L	0.30	• Effective immediately for all compliance wells.
Manganese	mg/L	0.39	• Effective immediately for all compliance wells.
Nitrate nitrogen	mg/L	10	• Effective immediately for all compliance wells, except for Well MW-5. • Effective 30 December 2019 for Well MW-5.

2. Except as specified in Groundwater Limitation E.1 above, contain constituents in concentrations that exceed either the Primary or Secondary MCLs established in Title 22 of the California Code of Regulations.

3. Except as specified in Groundwater Limitation E.1 above, contain taste or odor-producing constituents, toxic substances, or any other constituents in concentrations that cause nuisance or adversely affect beneficial uses.

Compliance with these limitations shall be determined annually based on intra-well analysis of data from the monitoring wells specified in the Monitoring and Reporting Program, using approved statistical methods.

F. Land Application Area Specifications

1. Crops and vegetation shall be grown in each LAA that receives wastewater discharges.

2. Land application of wastewater shall be managed to minimize erosion.

3. The LAAs shall be managed to prevent breeding of mosquitoes. In particular:

   a. With the exception of LAAs cropped with rice, 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 recycled water.

4. LAAs shall be designed, maintained, and operated to comply with the following setback requirements:

Setback Definition	Minimum Irrigation Setback (feet)
Edge of LAA to property boundary	25
Edge of LAA to manmade or natural surface water drainage course	25
Edge of LAA to domestic water supply well	100

5. Irrigation of the LAAs shall occur only when appropriately trained personnel are on duty.

6. LAAs shall be inspected as frequently as necessary to ensure continuous compliance with the requirements of this Order.

7. Any irrigation runoff (tailwater) including water released from the rice fields irrigated with process wastewater shall be confined to the LAAs or returned to the industrial process wastewater pond and shall not enter any surface water drainage course or storm water drainage system.

8. Irrigation using process wastewater shall not be performed during rainfall or when the ground is saturated, except when applied for rice straw decomposition. Application of process wastewater to rice fields for the purpose of rice straw decomposition is allowed from 1 November through 31 March.

9. Discharge of storm water runoff from the LAAs to off-site land or surface water drainage courses is prohibited.

G. Crop and Food Processing Residual Solids Disposal Specifications

Sludge, as used in this document, means the solid, semisolid, and liquid organic matter removed from wastewater treatment, settling, and storage vessels or ponds. Solid waste refers to solid inorganic matter removed by screens and soil sediments from

washing of unprocessed fruit or vegetables. Except for waste solids originating from meat processing, residual solids means organic crop or food processing byproducts such as culls, pulp, stems, leaves, and seeds that will not be subject to treatment prior to disposal or land application.

1. Sludge and solid waste shall be removed from screens, sumps, and ponds as needed to ensure optimal operation and adequate storage capacity.

2. Any handling and storage of sludge, solid waste, and residual solids shall be 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. Upon the Executive Officer's approval of the *Residual Solids Management Plan* pursuant to Provision I.1.j, residual solids may be discharged to land in accordance with the Land Application Area Specifications of this Order.

4. If removed from the site, sludge, solid waste, and residual solids shall be disposed of in a manner approved by the Executive Officer and consistent with Title 27, division 2. Removal for reuse as animal feed, or land disposal at facilities (i.e., landfills, composting facilities, soil amendment sites) operated in accordance with valid waste discharge requirements issued by a Regional Water Board will satisfy this specification.

5. Any proposed change in solids management or disposal practices shall be reported in writing to the Executive Officer at least 90 days in advance of the proposed change.

H. Sewage Sludge Disposal Specifications

The following specifications apply to biosolids and domestic wastewater treatment sludge.

1. Sewage sludge shall be removed from the domestic wastewater ponds as needed to comply with this Order.

2. Sewage sludge removed from the domestic wastewater ponds 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, WWTFs, composting sites, soil amendment sites) operated in accordance with valid waste discharge requirements issued by a Regional Water Board will satisfy this specification.

I. Provisions

1. The following reports shall be submitted pursuant to Water Code section 13267 and shall be prepared as described in Provision I.3:

a. **By 1 May each year**, the Discharger shall submit a *Cropping Plan*. The plan shall identify the crops to be grown on the LAAs and how they will be managed such that use of the available cropland is maximized and the discharge complies with all requirements of this Order. The plan shall evaluate the effect of applying wastewater to the land application areas. The evaluation shall include a description of the irrigation schedule, water usage of recommended crops, quality of the wastewater application, evapotranspiration rates, infiltration rates, planting/harvesting schedules, and the long term impact to soil. Loadings for the following shall be calculated for both the processing season and on an annual basis for each land application area field, and shall include all supporting calculations:

   i. Hydraulic loading (gpd, inches/month), including evapotranspiration rates, wastewater flows, freshwater flows, and tailwater return;

   ii. Maximum and average BOD_5 loadings (lbs/acre/day) using actual acreage and wastewater volumes applied on each day of discharge; and

   iii. Nitrogen loading (lbs/acre/year) using actual acreage and wastewater volumes applied on each day of discharge, assuming no denitrification and including the use of any commercial fertilizers.

   iv. Total dissolved solids (TDS) loading (lbs/ac/yr) using actual acreage and wastewater volumes applied on each day of discharge.

b. **At least 90 days prior** to operation of any new industrial park tenant that has the potential to emit odors from operational activities, the Discharger shall submit documentation that the tenant has an *Odor Monitoring and Management Plan* in place. The Plan shall identify potential odor sources due to wastewater generation, storage, and disposal; describes the methods and practices to minimize air emissions beyond the limits of the industrial park property; and describes the facility's complaint response protocols when odor complaints are received. The plan shall describe standard monitoring practices, data collection, and reporting procedures and forms.

c. **At least 90 days prior** to new industrial park tenants discharging their process wastewater to the facility's industrial process wastewater land application system, the Discharger shall submit a *New Wastewater Source Report*. The report shall include a description of the waste character; projected flow; operating season; process including pre-treatment processes or chemicals used; and salinity source and odor control measures. The report shall provide justification that the additional waste source will not cause exceedances with the limitations prescribed in the WDRs or cause a material change in the character or location of the waste.

d. **At least 180 days** prior to any planned flow increases to the domestic ponds, the Discharger shall submit a *Domestic Pond Expansion Report* which shall contain the following:

i. Reason(s) for the pond expansion, including identification of anticipated new tenants and their domestic flow rates.

ii. Pond dimensions and location, including pond capacity at 2-feet of freeboard.

iii. Proposed liner specifications.

iv. Proposal for new average daily and total annual flow rates.

v. Updated water balance that demonstrates adequate disposal capacity for the 100-return period 365-day precipitation event followed by the average rainfall year.

e. **Upon completion of any domestic pond(s) construction and at least 90 days prior to operational use**, the Discharger shall submit a *Domestic Pond Expansion Completion Report*. The report shall certify the domestic pond(s) construction, installation of pond liner, and that the pond(s) are fully functional and ready to receive wastewater in compliance with the requirements of this Order. The report shall include as-built drawings; final pond dimensions; liner specifications including liner thickness, seaming methods, and details of anchorage and typical penetrations; and a *Liner Construction Quality Assurance Report* that documents all construction observations, testing, and test results for the pond lining system.

f. **At least 90 days prior to conveying process wastewater to any future LAAs within the remaining Davis Property**, the Discharger shall submit a *New Land Application Area Use Report*. The report shall identify the amount of acres available for land discharge, include a map showing the specific boundaries of the LAAs, identify the type of vegetation/crops to which process wastewater will be applied to, and estimate anticipated volume of wastewater to be used. In addition, the report shall include an assessment of pre-discharge groundwater conditions based on at least three quarterly groundwater monitoring events.

g. **At least 180 days prior to initiation of process wastewater to any future land application areas,** the Discharger shall submit a *Groundwater Monitoring Well Installation Workplan* that proposes monitoring wells to ensure representative monitoring of the specified land application area. The workplan shall be prepared in accordance with, and include the items listed in, the first section of Attachment D: “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 proposed LAAs.

h. **At least 30 days prior to the first sampling event for any new monitoring wells at any planned LAAs**, the Discharger shall submit a *Groundwater*

Monitoring Well Installation Report for any new groundwater monitoring wells constructed to comply with Provision I.1.g. The report shall be prepared in accordance with, and including the items listed in, the second section of Attachment D: "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 all new monitoring wells at planned LAAs, explain any deviation from the approved workplan, and include a map with the new well locations.

i. **At least 12 months prior to any planned application of biomass wastewater to the industrial process wastewater land application system**, the Discharger shall submit a new or updated Report of Waste Discharge (RWD). The RWD shall include a completed Form 200; a demonstration that the requirements of CEQA have been met by a lead agency; a characterization of the expected wastewater flows and quality; and a process wastewater flow schematic showing all of the biomass wastewater waste streams and daily flow rates. The biomass wastewater streams shall each be characterized with respect to total dissolved solids, total nitrogen, sodium, chloride, iron, manganese, and any other constituents that may be present. The new or updated RWD shall include a description and analysis demonstrating that the new wastewater source will not cause violation of this Order including the groundwater limitations. The Discharger may not accept wastewater from the biomass combustion plant for application to the LAAs unless and until the Board revises these WDRs, following the submittal of the new or updated RWD.

j. **At least 90 days prior to any planned application of residual solid waste to the LAAs,** the Discharger shall submit a *Residual Solids Management Plan* to the Board's Executive Officer. The Plan shall describe the specific mass, BOD, and nitrogen loading rates, temporary storage, management and application practices, application area(s), and operational procedures that will be used to ensure that the land application of residual solids does not cause nutrient overloading, nuisance odors, or promote vector breeding. Consistent with Prohibition A.6 and Crop and Food Processing Residual Solids Disposal Specification G.3, the application of residual solids to LAAs is prohibited unless and until the Executive Officer provides written approval of this *Residual Solids Management Plan.*

k. **At least 180 days prior to any process wastewater pond sludge removal and disposal**, the Discharger shall submit a *Process Wastewater Pond Sludge Cleanout Plan*. The plan shall include a detailed plan for sludge removal and disposal. The plan shall describe the phasing of the project, measures to be used to control runoff or percolate from the sludge if it will be dried on site, and a schedule that shows how all dried sludge will be removed from the site prior to the onset of the rainy season (1 October).

l. **At least 180 days prior to any domestic wastewater pond sludge removal and disposal**, the Discharger shall submit a *Domestic Pond Sludge Cleanout Plan*. The plan shall include a detailed plan for sludge removal and disposal. The plan shall describe the phasing and schedule of the project that shows how the accumulated sludge will be removed and transported to an offsite permitted facility. The plan shall include the name of the hauling company and the facility that will receive the solids.

m. If groundwater monitoring indicates that the discharge is not in compliance with the Groundwater Limitations of this Order, then the Discharger shall submit an *Action Workplan* to the Board's Executive Officer **within 120 days of receiving notice that the Facility is out of compliance**. The *Action Workplan* must set forth a schedule for the Discharger to conduct a comprehensive technical evaluation of each component of the facility's waste treatment and disposal system along with proposals for additional treatment or control measures for each waste constituent that exceeds a Groundwater Limitation. The *Action Workplan* must not only provide for the evaluation of the ability of additional treatment or control measures to achieve compliance with the applicable groundwater limitation, but must also provide for the evaluation of the practicability of installing or implementing additional treatment or control measure(s) and a time schedule under which those measure(s) could be installed or implemented. The schedule proposed in the *Action Workplan* shall not exceed one year. The Discharger must begin the evaluation delineated in the *Action Workplan* immediately upon the Executive Officer's approval of the workplan. The results of the studies conducted pursuant to the *Action Workplan* will be used by the Board to modify these WDRs or take other action, as appropriate, to ensure that discharges from the Facility comply with the Basin Plan on a time schedule that is as short as practicable.

n. If concentrations of nitrate-nitrogen in the wells specified in Groundwater Limitation E.1 have not decreased to levels below the respective water quality objectives by **30 December 2019**, the *Action Workplan* described in Provision I.1.m shall be submitted by **30 June 2020**.

2. 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 last 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**.

3. 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 the Discharger shall bear the professional's signature and stamp.

4. The Discharger 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, the Discharger shall proceed with all work required by the foregoing provisions by the due dates specified.

5. The Discharger shall comply with Monitoring and Reporting Program (MRP) R5-2017-0020, 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.

6. The Discharger 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)."

7. The Discharger 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.

8. The Discharger 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.

9. The Discharger shall use the best practicable cost-effective control technique(s) including proper operation and maintenance, to comply with this Order.

10. As described in the Standard Provisions, the Discharger shall report promptly to the Central Valley Water Board any material change or proposed change in the character, location, or volume of the discharge.

11. The Discharger 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."

12. 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, the Discharger 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.

13. In the event of any change in control or ownership of the facility, the Discharger 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.

14. 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.

15. A copy of this Order including the Monitoring and Reporting Program, 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.

16. 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

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 24 February 2017.

- Original signed by -

PAMELA C. CREEDON, Executive Officer

LLA: 012417

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2017-0020

FOR
COLUSA INDUSTRIAL PROPERTIES
COLUSA INDUSTRIAL PROPERTIES WASTEWATER TREATMENT FACILITY
COLUSA COUNTY

This Monitoring and Reporting Program (MRP) describes requirements for monitoring the ponds, industrial process wastewater, domestic wastewater, land application areas, groundwater, and crop and food residual solids. This MRP is issued pursuant to Water Code section 13267. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer.

All samples shall be representative of the volume and nature of the discharge. The time, date, and location of each grab sample shall be recorded on the sample chain of custody form.

Field test instruments (such as those used to test pH and electrical conductivity) may be used provided that:

1. The operator is trained in proper use and maintenance of the instruments;
2. The instruments are calibrated prior to monitoring event;
3. 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 this MRP.

Analytical procedures shall comply with the methods and holding times specified in the following: *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/AWWA/WEF); 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. 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.

GENERAL POND MONITORING

All ponds shall be monitored as follows. 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.

Constituent	Units	Type of Sample	Sample Frequency	Reporting Frequency
Dissolved oxygen [1]	mg/L	Grab	Weekly	Monthly
Freeboard	0.1 feet	Measurement	Weekly	Monthly
Odors	--	Observation	Weekly	Monthly
Berm/levee condition	--	Observation	Monthly	Monthly

[1] Samples shall be collected at a depth of one foot from each pond in use, opposite the inlet. Samples shall be collected between 0700 and 0900 hours.

INDUSTRIAL PROCESS WASTEWATER MONITORING

The Discharger shall monitor industrial process wastewater flows as follows:

Flow Source	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Total process wastewater discharged to Pond 3 [2]	Gallons	Meter	Daily	Monthly, Annually
Discharge from Pond 3 to land application areas	Gallons	Meter	Daily	Monthly, Annually
Daily subtotal to each irrigation field or check	gallons and inches	Calculation	Daily [1]	Monthly, Annually

[1] Calculated based on total daily flows, flow rates, checks in use, and length of set time for each check.
[2] Flow shall be representative of the volume from all waste sources including supplemental irrigation water discharged to Pond 3.

The Discharger shall monitor process wastewater in accordance with the following. Grab samples shall be obtained from Pond 3 near the outlet to the land application areas. Process wastewater monitoring is only required during periods when process wastewater is applied to the land application areas. If the pond is dry and/or no wastewater was discharged to the land application areas, the corresponding monitoring report shall so state. Process wastewater monitoring shall include, at a minimum, the following:

Constituents	Units	Type of Sample	Sample Frequency	Reporting Frequency
pH	pH units	Grab	Weekly [2]	Monthly
BOD_5 [1]	mg/L	Grab	Weekly [2]	Monthly
FDS	mg/L	Grab	Weekly [2]	Monthly
Chloride	mg/L	Grab	Weekly [2]	Monthly
Sodium	mg/L	Grab	Weekly [2]	Monthly
Total Nitrogen	mg/L	Grab	Weekly [2]	Monthly

[1] Five-day, 20 degrees Celsius biochemical oxygen demand.
[2] During each week that wastewater is discharged to the LAAs.

DOMESTIC WASTEWATER MONITORING

All domestic wastewater ponds shall be monitored in accordance with the following:

Constituent	Units	Type of Sample	Sample Frequency	Reporting Frequency
Influent Flow [1]	gallons per day	Continuous	Daily	Monthly, Annually
Sludge Depth	inches	Measurement	Annually	Annually

[1] Report as an average daily flow for the calendar month for each pond. Annual flow is determined as the combined flow to all domestic wastewater ponds.

LAND APPLICATION AREA MONITORING

The Discharger shall monitor the land application areas **daily during operation**, and shall submit the results in the corresponding monthly monitoring reports. Evidence of erosion, field saturation, runoff, or the presence of nuisance conditions shall be noted in the report. The report shall also document any corrective actions taken based on observations made.

The Discharger shall perform the following routine monitoring and loading calculations for each LAA and irrigation check during all months when land application occurs, and shall present the data in the Monthly and Annual Monitoring Reports. The Discharger shall clearly show what crop was grown on the land application area that was irrigated with process wastewater and whether the loading limits were met for that crop. If no wastewater was land applied during a reporting period, the monitoring report shall so state.

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Supplemental Irrigation Water Flow	gallons	Meter [1]	Daily	Monthly
Precipitation	0.1 in	Rain gauge [2]	Daily	Monthly, Annually
Checks Receiving Wastewater	--	Observation	Daily	Monthly
Hydraulic Loading Rate	in	Calculated [3]	Daily	Monthly, Annually
Flow-weighted Annual Average FDS Concentration [6,7]	mg/L	Calculated	Monthly	Monthly, Annually
Flow-weighted Annual Average BOD_5 Concentration [6]	mg/L	Calculated	Monthly	Monthly, Annually
BOD_5 Loading Rate [7]	lb/ac/day	Calculated [3,4]	Daily	Monthly, Annually
Total Nitrogen Loading Rate [6,7]	lb/ac	Calculated [3,5]	Monthly	Monthly, Annually

[1] Monitoring requires daily meter reading or automated data collection and shall define the volume of supplemental water discharged to the land application areas.

[2] Data obtained from the nearest National Weather Service, California Irrigation Management Information System (CIMIS), or on-site rain gauge is acceptable.

[3] Designate identification numbers for discrete checks within each disposal site or area. Indicate crop in each land application areas that received process wastewater. Rate shall be calculated for each field or discrete check based on combined loading from wastewater and supplemental irrigation water.

[4] BOD_5 shall be calculated using the daily applied volume of wastewater, actual application area, and most recent BOD_5 results for the wastewater.

[5] Total nitrogen loading rates shall be calculated using the applied volume of wastewater, actual application area, and most recent total nitrogen results for the wastewater. Loading rates for supplemental nitrogen (including commercial fertilizers, manure from cattle, etc.) shall be calculated using the actual load and application area.

[6] For LAAs cropped with rice.

[7] For LAAs cropped with sudan grass or row crops with similar nitrate uptake demands.

At least once per week when wastewater is being applied to the land application areas, the entire application area shall be inspected to identify any equipment malfunction or other circumstance that might allow irrigation runoff to leave the area and/or create ponding conditions that violate the Waste Discharge Requirements. A log of these inspections shall be kept at the facility and summarized for submittal with the monthly monitoring reports. If wastewater was not applied to the land application area, then the monthly monitoring reports shall so state.

APPLICABILITY OF GROUNDWATER LIMITATIONS

Prior to construction and/or sampling of any groundwater monitoring wells, the Discharger shall submit plans and specifications to the Central Valley Water Board for review and approval. Once installed, all new wells shall be added to the compliance monitoring network. The following table lists all existing monitoring wells and designates the purpose of each well.

MW1 [1]	MW3 [1]	MW4 [2]	MW5 [1]	MW6 [1]	MW7 [1]	MW8 [2]	MW9 [3]	MW10 [1]

[1] Compliance well.

[2] Not suitable for use as a compliance well.

[3] Not suitable for use as a compliance well until such time when wastewater is applied to the remaining Davis Property LAAs.

The Groundwater Limitations set forth in Section E of the WDRs shall apply to the specific compliance monitoring wells tabulated below. This table is subject to revision by the Executive Officer following construction of any new compliance monitoring wells.

Constituent	Groundwater Limitation	Compliance Wells to which Limitations Applies
Nitrate nitrogen	Current groundwater quality, 16 mg/L [1,2]	MW-5
All others, except for TDS, chloride, sodium, iron, and manganese	Concentrations that exceed either the Primary or Secondary MCL.	MW-1, MW-3, MW-5, MW-6, MW-7, MW-9, MW-10
All others, except for TDS, chloride, sodium, iron, and manganese	Contain taste or odor-producing constituents, toxic substances, or any other constituents in concentrations that cause nuisance or adversely affect beneficial uses.	MW-1, MW-3, MW-5, MW-6, MW-7, MW-9, MW-10

[1] Compliance with this requirement shall be determined on an intra-well basis for each of the specified wells using approved statistical methods.

[2] "Current groundwater quality" means the quality of groundwater in the well as evidenced by monitoring completed during 2008 to 2012.

GROUNDWATER MONITORING

Prior to sampling, depth to groundwater measurements shall be measured in each compliance monitoring well (as listed in the above table) to the nearest 0.01 feet. Groundwater elevations shall then be calculated to determine groundwater gradient and flow direction.

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 for all monitoring wells shall include, at a minimum, the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Depth to groundwater	0.01 feet	Measurement	Semi-annual [2]	Semi-annual [2]
Groundwater elevation [1]	0.01 feet	Calculated	Semi-annual [2]	Semi-annual [2]
Gradient magnitude	feet/feet	Calculated	Semi-annual [2]	Semi-annual [2]
Gradient direction	degrees	Calculated	Semi-annual [2]	Semi-annual [2]
pH	pH units	Grab	Semi-annual [2]	Semi-annual [2]
TDS	mg/L	Grab	Semi-annual [2]	Semi-annual [2]
Chloride	mg/L	Grab	Semi-annual [2]	Semi-annual [2]
Sodium	mg/L	Grab	Semi-annual [2]	Semi-annual [2]
Nitrate nitrogen	mg/L	Grab	Semi-annual [2]	Semi-annual [2]

[1] Groundwater elevation shall be determined based on depth-to-water measurements using a surveyed measuring point elevation on the well and surveyed reference elevation.

[2] Semi-annual groundwater monitoring shall occur in the first (January – March) and third (July - September) quarter of each calendar year.

Groundwater Trigger Concentrations

The following groundwater trigger concentrations are intended only to serve as a means of assessing whether the discharge might potentially cause a violation of one or more of the Groundwater Limitations of the WDRs at some later date.

Constituent	Compliance Wells	Trigger Concentration, mg/L
Nitrate Nitrogen	MW-1, MW-3, MW-6, MW-7, MW-9, MW-10	5.0

If the annual evaluation of groundwater quality performed pursuant to this MRP shows that the annual average of the trigger concentration has been exceeded in any compliance well during the calendar year, the Discharger shall submit either of the following technical reports by **1 May of the following calendar year** (e.g., if the trigger concentration is exceeded for calendar year 2020, the appropriate report is due by 1 May 2021):

a. A technical evaluation of the reason(s) for the concentration increase[s] and a technical demonstration that, although the nitrate concentration has increased more than expected in one or more compliance wells, continuing the discharge without additional treatment or control will not result in exceedance of the applicable groundwater limitation.

b. An Action Plan that presents a systematic technical evaluation of each component of the facility's waste treatment and disposal system to determine whether additional treatment or control is feasible for each waste constituent that exceeds a trigger concentration. The plan shall evaluate each component of the wastewater treatment, storage, and disposal system (as applicable); describe available treatment and/or control technologies; provide preliminary capital and operation/ maintenance cost estimates for each; designate the preferred option[s] for implementation; and specify a proposed implementation schedule. The schedule for full implementation shall not exceed one year, and the Discharger shall immediately implement the proposed improvements.

CROP AND FOOD PROCESSING RESIDUAL SOLIDS MONITORING

The Discharger shall monitor the crop and food processing residual solids generated and disposed of on a monthly basis. The following shall be monitored and reported for each month:

1. Volume of Solids Generated. Solids may include pomace, seeds, stems, hulls, straw, screenings, and sump solids, or other material.

2. Volume Disposed of Off-site. Describe the disposal method (e.g. animal feed, land application, off-site composting, landfill, etc.), the amount disposed (tons), and the name of the hauling company.

3. Volume Disposed of On-site: Describe the amount of disposed (tons); location of on-site disposal (e.g., land application area field); method of application, spreading, and incorporation; application rate (tons/acre); BOD (lb/ac/application) and total nitrogen (lb/ac/year) loading rates; and weekly grab sample analysis for total nitrogen.

REPORTING

All regulatory documents, submissions, materials, data, monitoring reports, and correspondence 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

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

To ensure that your submittals are routed to the appropriate staff, the following information block should be included in any correspondence used to transmit documents to this office:

Colusa Industrial Properties Wastewater Treatment Facility, Colusa County		
Program: Non-15 Compliance	Order: R5-2017-0020	CIWQS Place ID: 215223

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 to the Central Valley Water Board.

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

Daily, weekly, and monthly monitoring data shall be reported in the monthly monitoring reports. Monthly reports shall be submitted to the Central Valley Water Board on the

1st day of the second month following sampling (i.e. the January Report is due by 1 March). At a minimum, the reports shall include:

1. Tabulated pond monitoring data for each month of the calendar year.

2. Tabulated industrial process wastewater monitoring data, including cumulative flow to date, and comparison to the Flow Limitations and Effluent Limitations of the WDRs.

3. Tabulated domestic wastewater monitoring data for each month of the calendar year, including cumulative flow to date, and comparison to the Flow Limitations of the WDRs.

4. Tabulated land application area monitoring data, including at least the following:
   a. Hydraulic loading rate for each disposal field.
   b. Flow-weighted monthly average FDS concentration from all sources including supplemental irrigation.
   c. Flow-weighted monthly average BOD concentration from all sources including supplemental irrigation.
   d. Daily BOD_5 loading rate for each disposal field and/or irrigation check using the total volume applied on the day of application, estimated application area, and the most recent sample results for BOD_5 and comparison to the Mass Loading Limitations of the WDRs.
      i. For LAAs cropped with sudan grass or row crops, the mass of BOD applied to each LAA as an irrigation cycle average shall be calculated using the following formula:

$$M = \frac{8.345(CV) + M_x}{A(CT)}$$

Where:
- M = mass of BOD applied to a LAA in lb/ac/irrigation cycle
- C = concentration of BOD in mg/L based on the most recent wastewater monitoring results
- V = volume of wastewater applied to the LAA field in millions of gallons during the irrigation cycle
- A = area of the LAA field irrigated in acres
- CT = Cycle time (i.e., irrigation cycle length in days)
- M_x = BOD mass from other sources (e.g., cattle manure, residual solids, etc.) in pounds
- 8.345 = unit conversion factor

   e. Total nitrogen loading rates shall be calculated for each disposal field and/or irrigation check using the total volume applied on the day of application,

estimated application area, and the most recent sample results for total nitrogen and cumulative loading to date for the year.

5. Tabulated residual solids monitoring data and the required off-site and/or on-site disposal information.

6. Daily precipitation data in tabular form accompanied by starting and ending dates of irrigation for each field or check, except those cropped with rice.

7. A statement that summarizes the daily application inspection reports for the month.

8. A comparison of monitoring data to the flow limitations, effluent and mass loading limitations, and discharge specifications and an explanation of any violation of those requirements.

9. If requested by staff, copies of laboratory analytical report(s).

10. Copies of current calibration logs for all field test instruments.

11. A summary of odor complaints related to wastewater reported each month to include an odor plume map; description of the frequency, intensity, duration, and offensiveness of the odor; description of the weather conditions during the odor complaint; and a description of the corrective actions taken.

B. Semi-Annual Monitoring Report

The Semi-Annual Report shall establish a sampling schedule for groundwater monitoring such that samples are obtained during the first and third quarter of each calendar year and obtained approximately every six months. Groundwater monitoring reports shall be submitted to the Central Valley Water Board by the **1st day of the second month after the reporting period** (i.e., the January-June semi-annual report is due by 1 August each year). The monitoring report shall include the following:

1. Results of the semi-annual monitoring of the groundwater in tabular format.

2. A narrative description of all preparatory, monitoring, sampling, and analytical testing activities for the 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;

3. Calculation of groundwater elevations, determination of groundwater flow direction and gradient on the date of measurement, comparison of previous flow direction and gradient data, and discussion of seasonal trends if any;

4. Summary data tables of historical and current groundwater elevations;

5. For the first Semi-Annual Report due by **1 August**, provide a description of the work conducted after the end of each rice decomposition season to prepare the fields for planting, including irrigation draining procedures of each rice land application area field and location of discharge (if any).

6. A scaled map showing relevant structures and features of the facility, land application areas and irrigation check boundaries, locations of monitoring wells and any other sampling stations, and groundwater elevation contours referenced to mean sea level datum; and

7. Copies of laboratory analytical report(s) for groundwater monitoring.

C. Annual Monitoring Report

An Annual Report shall be submitted to the Central Valley Water Board by **1 February** each year and shall include the following:

1. Total annual industrial process wastewater flow to the LAAs for the calendar year and comparison to the annual maximum flow limit.

2. Total annual domestic wastewater flow to the domestic wastewater disposal pond(s) for the calendar year and comparison to the annual maximum flow limit.

3. Total annual supplemental irrigation water flow to the LAAs. Specify total flow for specific discharge location (i.e., for LAAs cropped with rice, sudan grass, or row crops).

4. Flow-weighted annual average BOD concentration (from all sources including supplemental irrigation water) discharged to the LAAs for the calendar year with supporting data and calculation and comparison to the Effluent Limitations.

    a. For LAAs cropped with rice, the flow weighted annual average BOD concentration shall be calculated using the following formula:

$$C_a = \frac{\sum_{1}^{12}\left[\left(C_{Pi} \times V_{Pi}\right) + \left(C_{Si} \times V_{Si}\right)\right]}{\sum_{1}^{12}\left(V_{Pi} + V_{Si}\right)}$$

Where: C_a = Flow-weighted average annual BOD concentration in mg/L
$_i$ = the number of the month (e.g., January = 1, February = 2, etc.)
C_{Pi} = Monthly average process wastewater BOD concentration for calendar month *i* in mg/L
C_{Si} = Monthly average supplemental irrigation water BOD concentration for calendar month *i* in mg/L (considering each supplemental source separately)
V_{Pi} = Volume of process wastewater applied to LAAs during calendar month *i* in million gallons
V_{Si} = Volume of supplemental irrigation water applied to LAAs during calendar month *i* in million gallons (considering each supplemental source separately)

5. Flow-weighted annual average FDS concentration (from all sources including supplemental irrigation water) discharged to the LAAs for the calendar year with supporting data and calculations and comparison to the Effluent Limitations.

   a. For all LAAs, the flow-weighted annual average FDS concentration shall be calculated using the following formula:

$$C_a = \frac{\sum_{1}^{12}\left[\left(C_{Pi} \times V_{Pi}\right) + \left(C_{Si} \times V_{Si}\right)\right]}{\sum_{1}^{12}\left(V_{Pi} + V_{Si}\right)}$$

Where: C_a = Flow-weighted average annual FDS concentration in mg/L
$_i$ = the number of the month (e.g., January = 1, February = 2, etc.)
C_{Pi} = Monthly average process wastewater FDS concentration for calendar month *i* in mg/L
C_{Si} = Monthly average supplemental irrigation water FDS concentration for calendar month *i* in mg/L (considering each supplemental source separately)
V_{Pi} = Volume of process wastewater applied to LAAs during calendar month *i* in million gallons
V_{Si} = Volume of supplemental irrigation water applied to LAAs during calendar month *i* in million gallons (considering each supplemental source separately)

6. Total hydraulic loading rate and total nitrogen loading rate applied to each LAA field for the calendar year with supporting data and calculations and comparison to crop evapotranspiration rate and nitrogen demand.

a. For all LAAs, the mass of total nitrogen applied to each LAA field on an annual basis shall be calculated using the following formula and compared to published crop demand for the crops actually grown within that field:

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

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

7. A nitrogen mass balance (from all sources) for the calendar year with supporting data and calculations. Include description of the types of crops planted and dates of planting and harvest for each crop. If the mass balance indicates that nitrogen has been applied in excess of the agronomic rate, include a discussion of any corrective action performed during the year and a plan and schedule for additional corrective actions if needed to ensure future compliance with the land application area specifications of the WDRs.

8. Concentration vs. time graphs for each monitored constituent using all historic groundwater monitoring data. Each graph shall show the pre-discharge groundwater concentration (where applicable), the trigger concentration specified above (where applicable), and the Groundwater Limitation as horizontal lines at the applicable concentration.

9. An evaluation of the groundwater quality beneath the site and determination of whether any trigger concentrations were exceeded in any compliance well at any time during the calendar year. This shall be determined by comparing the annual average concentration for each well during the calendar year to the corresponding trigger concentration specified above. If any groundwater trigger concentrations were exceeded, include acknowledgment that the technical report described in the Groundwater Trigger Concentrations section of this MRP will be submitted in accordance with the specified schedule.

10. An evaluation of the groundwater quality beneath the site and determination of compliance with the Groundwater Limitations E.1 of the WDRs based on statistical analysis for each constituent monitored for each compliance well in accordance with the approved *Groundwater Limitations Compliance Assessment Plan*. Include all calculations and data input/analysis tables derived from use of statistical software, as applicable.

11. In the event that additional processors begin discharging their industrial process wastewater to the LAAs, provide a description of the wastewater character, flow and date of first discharge operation.

12. 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.

13. 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; and

    c. Based on monitoring data, an evaluation of the effectiveness of the treatment or control measures implemented to date.

    d. Evaluation of the current operations, corrective actions, and or control measures to reduce odor concerns regarding wastewater generated, stored, and disposed of on site.

14. A discussion of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program.

A letter transmitting the self-monitoring reports shall accompany each report. The letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain the penalty of perjury statement by the Discharger, or the Discharger's authorized agent, as described in the Standard Provisions General Reporting Requirements Section B.3.

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

Ordered by: *- Original signed by -*
PAMELA C. CREEDON, Executive Officer

24 February 2017
(Date)

LLA: 122116

INFORMATION SHEET

ORDER R5-2017-0020
COLUSA INDUSTRIAL PROPERTIES, INC.
COLUSA INDUSTRIAL PROPERTIES WASTEWATER TREATMENT FACILITY
COLUSA COUNTY

Background

Colusa Industrial Properties, Inc. (CIP) owns and operates an Industrial Park, which includes two separate wastewater management systems; one for domestic wastewater and one for industrial process wastewater. WDRs Order R5-2014-0067 prescribes requirements for the discharge of process wastewater to a lined pond (Pond 3) prior to discharge to the land application areas (LAAs) and for the discharge of domestic wastewater from the industrial complex septic tanks to two lined ponds (Pond 1 and 2). Evaporation is the sole means of disposal for domestic wastewater. No domestic wastewater is discharged to the LAAs.

The Industrial Park is not fully occupied and the industrial nature of future tenants will vary. Currently, three tenants discharge process wastewater to Pond 3: two seed processing operations and a mushroom growing operation (Premier Mushrooms, hereafter Premier). Various other process wastewaters may be discharged as the Industrial Park attracts new tenants. The waste character of the process wastewater and flows from future tenants are unknown. However, the LAAs have capacity for higher wastewater flows and constituent loading than currently operated.

Seed processing operations are seasonal and only generate small volumes of wastewater. Discharges from the seed operations are intermittent and generally of short duration in the summer. Premier's wastewater consists of storm water runoff from the uncovered concrete slabs outside of the mushroom growing rooms during the months of November through April. Crop and food processing residual solids generated by the Discharger's tenants are collected and handled at their respective facilities and disposed of off-site.

Premier operates a concrete sump and HDPE-lined pond to manage their composting operations. Aged compost is the growing medium for mushrooms and is produced at the Premier facility. Composting is conducted inside a building referred to as the wharf that is equipped with air scrubbers and a biofilter to remove odors generated during the composting process. Leachate from the composting process and wash-down water from the clean-up activities of the growing rooms and uncovered concrete slab outside the growing rooms is collected and stored in the concrete sump and HDPE-lined pond prior to reuse in their composting cycle. The HDPE-lined pond is equipped with aeration piping to reduce objectionable odors. This is a closed-loop zero-discharge operation that is not managed by the Discharger or regulated under Order R5-2014-0067. Premier monitors the concrete sump and HDPE-lined pond in accordance with Revised Monitoring and Reporting Program (MRP) No. R5-2004-0832.

Premier has received multiple odor complaints from the neighboring community regarding their operation. Premier has developed and implemented an Odor Impact Minimization Plan dated January 2015, which provides standard operating procedures for the handling, storage, and removal of compost-like substrate materials, including odor control strategies

and odor complaint response protocols. On 7 November 2016, Regional Board staff conducted an inspection of the Industrial Park and Premier's operation. Minimal to moderate odors were observed adjacent to the concrete sump and HDPE-lined pond and stronger objectionable odors were observed at the material mixing area (a concrete/asphalt apron) adjacent to the entrance of the composting building. However, these odors were not observed outside the perimeter of the Industrial Park at the time of the inspection. Regional Board staff was unable to conclusively determine during the inspection if Premier's operation was the primary source of nuisance odors reported.

The Discharger may be responsible and/or subject to local, state, and/or federal regulations for odor complaints related to the activities of any CIP tenant if odors are perceivable beyond the limits of the CIP property boundary. However, only odors associated with wastewater handling or disposal activities that pose a potential threat to water quality are regulated under the Discharge Specifications of this Order. Material handling and processing activities occurring at Premier's compost mixing area and inside the composting building do not pose a threat to water quality and are therefore not subject to the requirements set forth in this Order or Premier's Revised MRP.

Changes in the Facility and Discharge

The Discharger proposes a new source of process wastewater for land discharge and requests additional domestic wastewater disposal capacity to accommodate future industrial park tenants. CIP proposes to accept year-round wastewater generated from Premier's planned organic growing rooms for land discharge. The wastewater will be discharged to Pond 3, where it would be commingled with other process wastewaters and supplemental irrigation water prior to application to the LAAs.

WDRs Order R5-2014-0067 will be rescinded and replaced with this Order.

Site-Specific Conditions

The Industrial Park is supplied with water from two onsite groundwater wells, Well 1 and Well 2. The water supply is fairly good quality water with respect to salinity constituents and nitrate. Supplemental irrigation water is supplied from agricultural wells, Well CRC and Well Kalfsbeck. Salinity concentrations in the supplemental irrigation water were 750 and 2,410 mg/L respectively.

The Industrial Park is located on gently sloping agricultural land at approximately 42 to 48 feet above sea level and approximately 0.3 miles from the Sacramento River. The surrounding land uses are agricultural, typically consisting of fields planted to rice, walnuts, tomatoes, and various other field crops.

Groundwater Conditions

The general soil conditions are slightly to moderately alkaline, with low permeability, and comprised of poorly drained clay loam and clay soils. Groundwater beneath the site is

relatively shallow, approximately 1 to 15 feet below ground surface, and generally flows towards the north.

Nine groundwater monitoring wells monitor shallow groundwater: wells MW-1 through MW-10.

- MW-2 was abandoned in 2000 due to its proximity to the on-site irrigation canal.
- MW-4 is at the cross-gradient boundary of LAA Field 1A and is primarily influenced by agricultural lands that do not and will not receive any discharge; therefore is not suitable for use as a compliance monitoring well.
- MW-8 is located upgradient of the LAAs and is not suitable for use as a compliance monitoring well.
- MW-9 is at the cross-gradient boundary of the Davis Property Phase I LAAs and is not suitable for use as a compliance monitoring well until such time when wastewater is applied to the remaining Davis Property.

Groundwater has been monitored since just prior to the first application of process wastewater in certain monitoring wells. Pre-discharge groundwater quality was established for wells MW-1, MW-3, MW-4, MW-5, MW-6, MW-7, and MW-8 for TDS and nitrate nitrogen only.

In general, pre-discharge groundwater quality was highly spatially variable between the wells. Groundwater TDS concentrations were typically high and in some wells exceeded the short-term level secondary MCL of 1,500 mg/L, indicating poor groundwater quality prior to any discharge. Pre-discharge TDS concentrations in MW-4 and MW-8 are particularly higher than those observed in the other wells. Pre-discharge nitrate nitrogen concentrations in all the wells were below 5 mg/L.

The Discharger continues to monitor groundwater quality. In general, groundwater monitoring data from 2008 through 2012 indicate concentrations to be spatially variable and relatively constant over time with a few exceptions.

- TDS concentrations in MW-4, MW-8, MW-9, and MW-10 were typically high, ranging from 2,000 to 3,500 mg/L. Although pre-discharge quality is unknown in MW-9 and MW-10, based on the limited wastewater discharges to the adjacent LAAs (Davis Property), it appears that the existing TDS groundwater quality is naturally poor and not the result of the discharge.
- Chloride concentration trends are similar to those of TDS, which is a surrogate for all salinity constituents. Chloride concentrations in MW-3 and MW-4 indicate an upward trend beginning in 2008 and 2006, respectively. However, there have been no discharges to the adjacent LAAs during 2008 through 2012.
- Nitrate nitrogen concentrations in MW-5 have exceeded the primary MCL of 10 mg/L since 2003. Because MW-5 is surrounded by the LAAs and pre-discharge

concentrations were below 10 mg/L, it appears that groundwater at this single location has been degraded by the discharge.

- Iron concentrations in MW-1 exceeded the secondary MCL, which is 0.3 mg/L on two occasions in November 2008 and February 2009. Iron concentrations in MW-6 have consistently exceeded the secondary MCL for iron. However, MW-6 data does indicate a decreasing trend, with concentrations below the secondary MCL beginning in 2011. Based on the limited discharges to the adjacent LAAs, there appears to be no correlation with discharge activities and high iron concentrations observed in the compliance wells. The high iron concentrations are likely naturally occurring and not the result of discharges to the LAAs.
- Current groundwater quality in MW-1, MW-5, MW-6, MW-7, MW-8, and MW-10 exceed 0.05 mg/L, the secondary MCL for manganese. Similar to iron, the high manganese concentrations are likely naturally occurring and the not result of the discharges to the LAAs.

Basin Plan, Beneficial Uses, and Regulatory Considerations

Local drainage is to the Colusa Basin Drain. The Basin Plan designates the beneficial uses of the Colusa Basin Drain as municipal and domestic supply; agricultural supply; water contact recreation; non-contact water recreation; commercial and sport fishing; aquaculture; warm freshwater habitat; cold freshwater habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; and wildlife habitat.

The Basin Plan designated the beneficial uses of underlying groundwater as municipal and domestic supply, agricultural supply, industrial service supply and industrial process supply.

Antidegradation Analysis

State Water Resources Control Board Resolution 68-16 prohibits degradation of groundwater unless it has been shown that:

- The degradation is consistent with the maximum benefit to the people of the state.
- The degradation will not unreasonably affect present and anticipated future beneficial uses.
- 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
- The discharger employs best practicable treatment or control (BPTC) to minimize degradation.

The Discharger has been monitoring groundwater quality at the site since 1999. Determination of compliance with Resolution 68-16 for this facility must be based on pre-discharge background groundwater quality established prior to discharge operations that began in 1999.

Degradation of groundwater by some of the typical waste constituents associated with discharges from crop and food processing facilities, after effective source control, treatment, and control measures are implemented, is consistent with the maximum benefit to the people of the state. The economic prosperity of the community by direct employment of full-time and part-time personnel at the Industrial Park 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.

Due to the spatial variability of groundwater quality below the facility, the numeric Groundwater Limitations of this Order were established based on groundwater data from wells MW-7 through MW-10, which are located around the Davis Property Phase I LAAs. Wastewater was only applied to those LAAs during the 2003 processing season and no wastewater discharges have taken place since then. Additionally, all four wells are upgradient of the LAAs that have been regularly used. The data was therefore used as representative of background groundwater to establish numeric limits. All data from these well locations were analyzed together to determine a 95 percent upper tolerance limit for specific constituents of concern as shown in the table below. Non-detects were substituted using a random number less than the detection limit. Outliers were determined using the modified Thompson Tau technique, a statistical method for deciding whether to keep or discard suspected outliers in a sample of a single variable. A normality test using the Shapiro-Wilk test was used to determine if the data set is well-modeled by a normal distribution. This test showed that the data were not normally distributed (except for iron); therefore it is appropriate to set site-specific groundwater limitations at either the nonparametric 95 percent UTL or the water quality objectives set forth in the Basin Plan, whichever is greater. The calculated 95 percent UTL values are tabulated below.

Constituent	Units	95 Percent Upper Tolerance Limit
TDS	mg/L	4,080
Chloride	mg/L	290
Sodium	mg/L	980
Iron	mg/L	0.23[1]
Manganese	mg/L	0.39

[1] Parametric UTL

For TDS, chloride, sodium, manganese, and iron, current groundwater monitoring data indicates that groundwater is not high quality water and therefore the Antidegradation Policy does not apply to these constituents. However, the requirements of this Order require the Discharger to implement best efforts, which will prevent further degradation of groundwater quality due to the discharge

For nitrate, current groundwater monitoring data indicates that the discharge has caused (or contributed to) exceedance of a water quality objective in MW-5. The provisions of this

Order require that the Discharger implement BPTC and contain a time schedule to bring the discharge into compliance with water quality objectives.

The following treatment and control measures are implemented at the facility:

- Screening to reduce the BOD concentration of food processing wastewater;
- HDPE lined ponds for both process and domestic wastewater;
- Nitrogen and BOD loading rate control for the LAAs;
- Up to 600 acres of LAAs available for industrial process wastewater disposal; and
- Tailwater return and recovery systems to recycle the wastewater within each designated LAA.

With respect to nitrate nitrogen, an unacceptable degree of groundwater degradation has occurred in the limited area monitored by MW-5. This Order does not authorize any continued degradation beyond that which exists today in that well. The Groundwater Limitations are effective immediately and allow no degradation beyond existing groundwater quality in any compliance monitoring well and this Order requires intra-well analysis of compliance well groundwater monitoring data to determine compliance with the Groundwater Limitations. If groundwater quality in MW-5 with respect to nitrate is not significantly improved by **30 December 2019**, the Provisions require that the Discharger implement additional treatment or control as necessary to bring the discharge into compliance with the Basin Plan water quality objective.

This Order imposes effluent and mass loading rate limitations to ensure that the highest water quality consistent with the maximum benefit to the people of the State will be achieved. Based on the existing record, the discharge authorized by this Order is consistent with the antidegradation provisions of Resolution 68-16 and the controllable factors policy to the extent that each is applicable.

Effluent and Mass Loading Limitations

Process wastewater applied to the LAAs cropped with rice shall not exceed the following effluent and mass loading limits:

Constituent	Units	Annual Maximum
Average FDS Concentration	mg/L	960 [1]
Average BOD Concentration	mg/L	100 [1]
Total Nitrogen Mass Loading	lb/ac/year	Crop Demand

[1] Flow-weighted annual average based on total flow (from all sources including supplemental irrigation water) and concentration of blended wastewater discharged.

Process wastewater applied to the LAAs cropped with sudan grass or crops with similar nitrate uptake demand shall not exceed the following effluent and mass loading limits:

Constituent	Units	Cycle Average	Annual Maximum
Average FDS Concentration	mg/L	--	960 [1]
BOD Mass Loading	lb/ac/day	100	--
Total Nitrogen Mass Loading	lb/ac/year	--	Crop Demand

[1] Flow-weighted annual average based on total flow (from all sources including supplemental irrigation water) and concentration of blended wastewater discharged.

Groundwater Limitations

Release of waste constituents from any portion of the Facility shall not cause groundwater to:

1. Contain any of the specified constituents in a concentration statistically greater than the maximum allowable concentration tabulated below. The wells to which these requirements apply are specified in the Monitoring and Reporting Program.

Constituent	Units	Maximum Allowable Concentration	Effective Dates
TDS	mg/L	4,080	• Effective immediately for all compliance wells.
Chloride	mg/L	290	• Effective immediately for all compliance wells.
Sodium	mg/L	980	• Effective immediately for all compliance wells.
Iron	mg/L	0.30	• Effective immediately for all compliance wells.
Manganese	mg/L	0.39	• Effective immediately for all compliance wells.
Nitrate nitrogen	mg/L	10	• Effective immediately for all compliance wells, except for Well MW-5. • Effective 30 December 2019 for Well MW-5.

2. Except as specified in Groundwater Limitation E.1, contain constituents in concentrations that exceed either the Primary or Secondary MCLs established in Title 22 of the California Code of Regulations.

3. Except as specified in Groundwater Limitation E.1, contain taste or odor-producing constituents, toxic substances, or any other constituents in concentrations that cause nuisance or adversely affect beneficial uses.

Compliance with these limitations shall be determined annually based on intra-well analysis of data from the monitoring wells specified in the Monitoring and Reporting Program, using approved statistical methods.

Provisions

By 1 May each year, the Discharger shall submit a *Cropping Plan*.

At least 90 days prior to operation of any new industrial park tenant that has the potential to emit odors from operational activities, the Discharger shall submit documentation that the tenant has an *Odor Monitoring and Management Plan* in place.

At least 90 days prior to new industrial park tenants discharging their process wastewater to the facility's industrial process wastewater land application system, the Discharger shall submit a *New Wastewater Source Report*.

At least 180 days prior to any planned flow increases to the domestic ponds, the Discharger shall submit a *Domestic Pond Expansion Report*

Upon completion of any domestic pond(s) construction and at least 90 days prior to operational use, the Discharger shall submit a *Domestic Pond Expansion Completion Report*.

At least 90 days prior to conveying process wastewater to any future LAAs within the remaining Davis Property, the Discharger shall submit a *New Land Application Area Use Report*.

At least 180 days prior to initiation of process wastewater to any future land application areas, the Discharger shall submit a *Groundwater Monitoring Well Installation Workplan.*

At least 30 days prior to the first sampling event for any new monitoring wells at any planned LAAs, the Discharger shall submit a *Groundwater Monitoring Well Installation Report* for any new groundwater monitoring wells constructed to comply with Provision I.1.g.

At least 12 months prior to any planned application of biomass wastewater to the industrial process wastewater land application system, the Discharger shall submit a new or updated Report of Waste Discharge.

At least 90 days prior to any planned application of residual solid waste to the LAAs, the Discharger shall submit a *Residual Solids Management Plan* to the Board's Executive Officer.

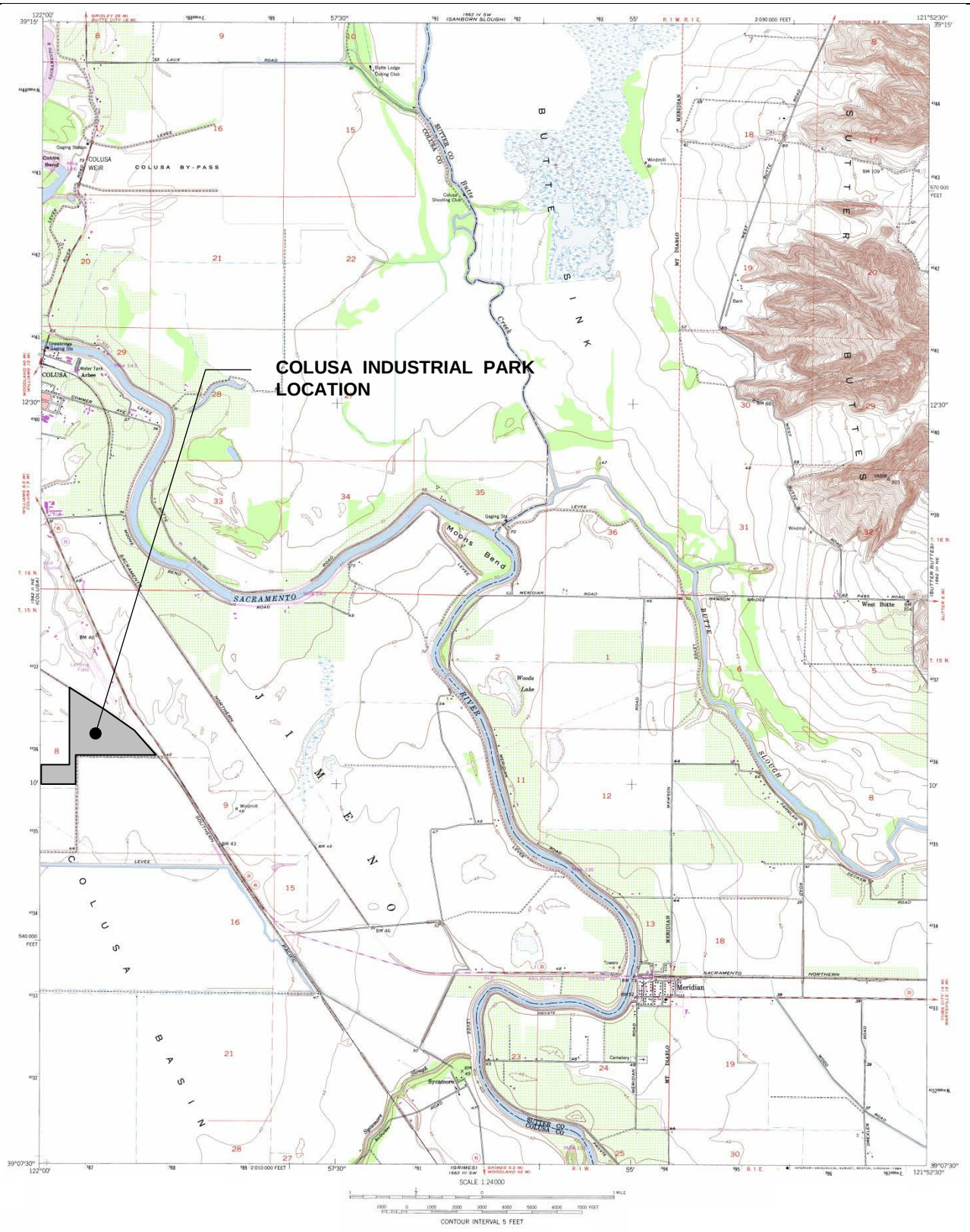
At least 180 days prior to any process wastewater pond sludge removal and disposal, the Discharger shall submit a *Process Wastewater Pond Sludge Cleanout Plan*.

At least 180 days prior to any domestic wastewater pond sludge removal and disposal, the Discharger shall submit a *Domestic Pond Sludge Cleanout Plan*.

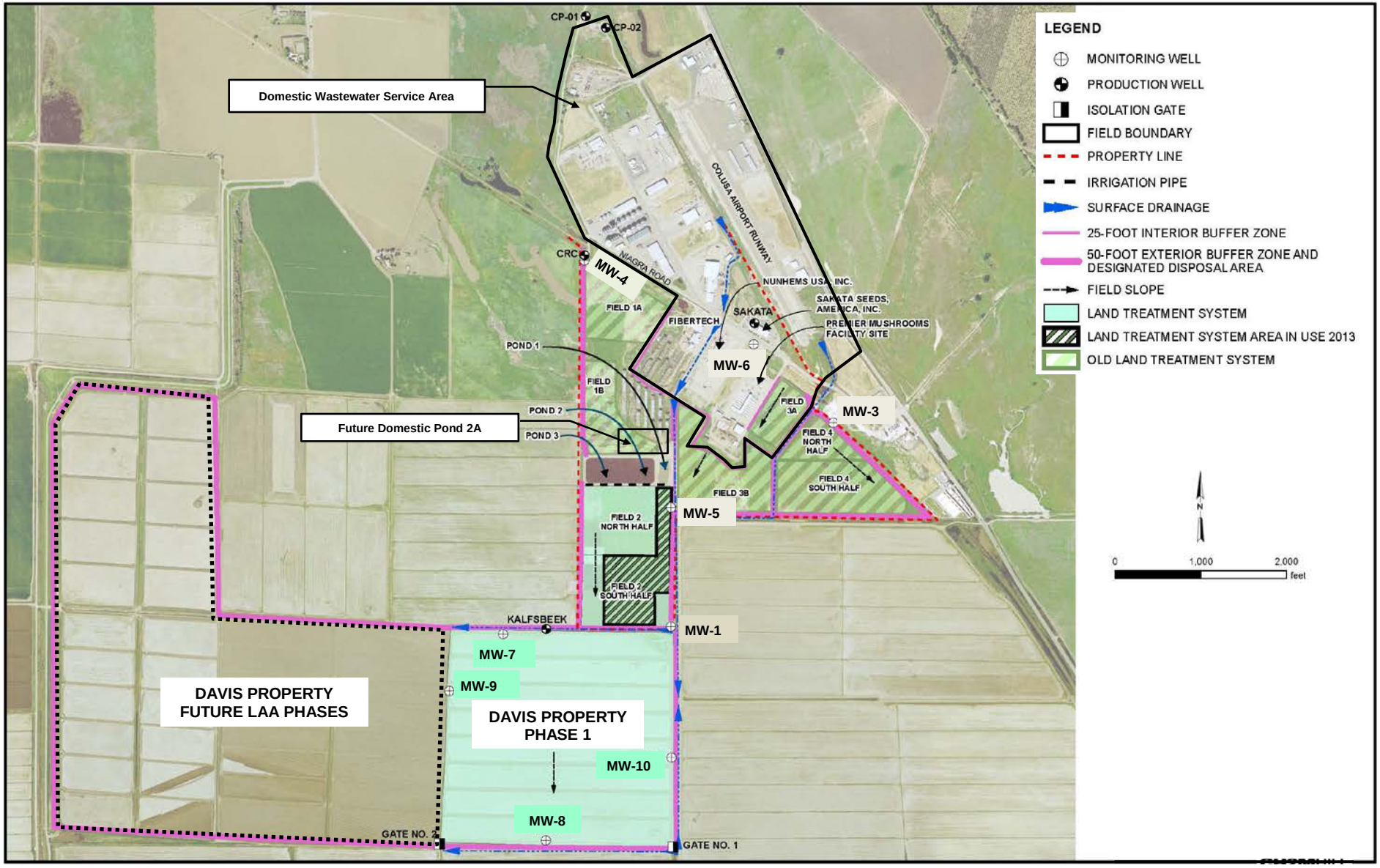
If groundwater monitoring indicates that the discharge is not in compliance with the Groundwater Limitations of this Order, then the Discharger shall submit an *Action Workplan* to the Board's Executive Officer within 120 days of receiving notice that the Facility is out of compliance.

If concentrations of nitrate-nitrogen in the wells specified in Groundwater Limitation E.1 have not decreased to levels below the respective water quality objectives by 30 December 2019, the *Action Workplan* shall be submitted by 30 June 2020.

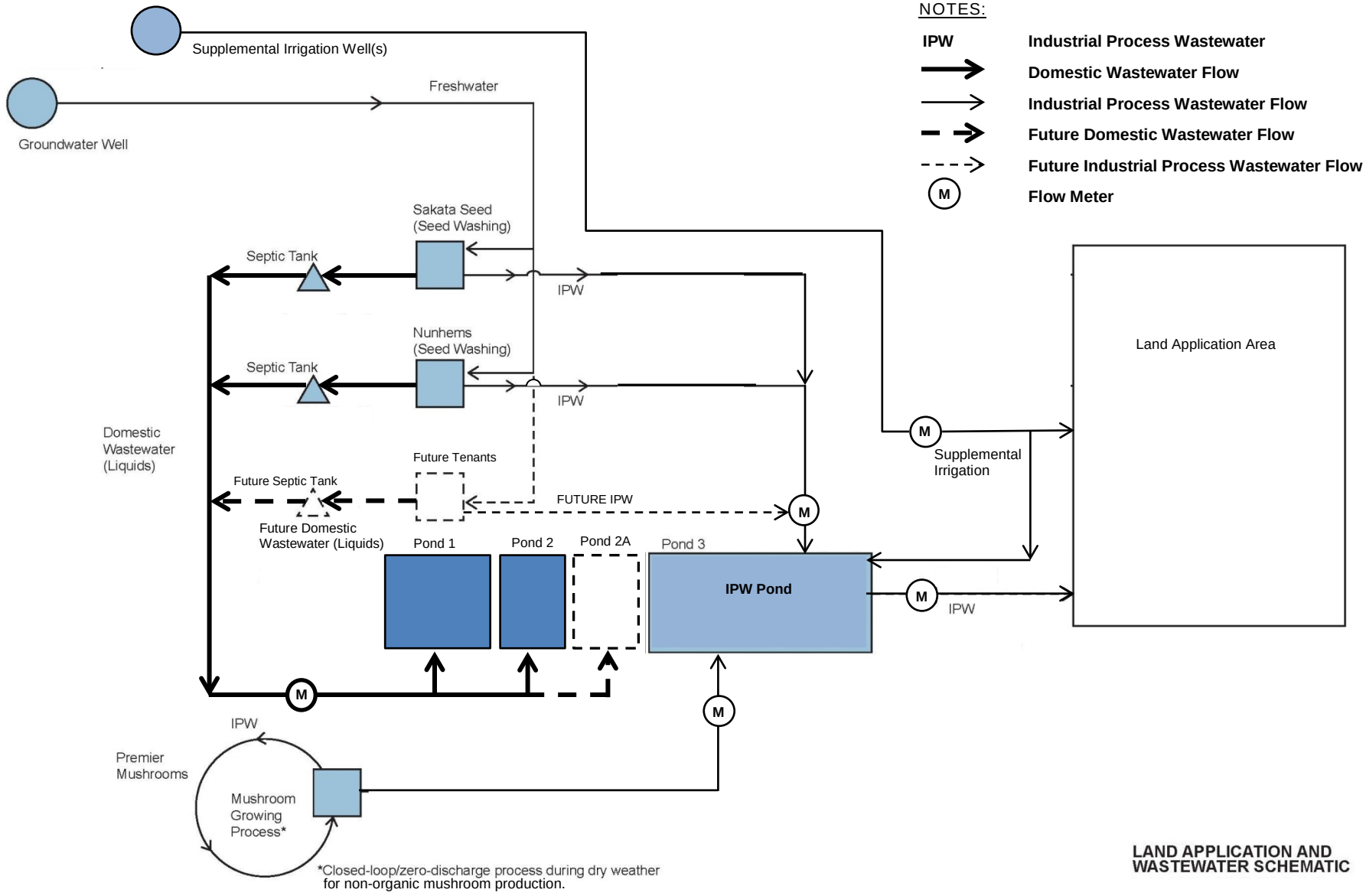
LLA: 012417



Drawing Reference: U.S.G.S Meridian Quadrangle Topographic Map 7.5 Minute Series	**SITE LOCATION MAP** COLUSA INDUSTRIAL PROPERTIES, INC COLUSA INDUSTRIAL PROPERTIES WWTF COLUSA COUNTY	N W E S approx. scale AS NOTED ABOVE



Approximate Scale As Noted Above N W E S	Drawing Reference: RWD 2014	**SITE FACILITY MAP** COLUSA INDUSTRIAL PROPERTIES, INC COLUSA INDUSTRIAL PROPERTIES WWTF COLUSA COUNTY



Approximate Scale: NO SCALE	Drawing Reference: Report of Waste Discharge May 2013 CH2MHILL	**PROCESS FLOW DIAGRAM** COLUSA INDUSTRIAL PROPERTIES, INC COLUSA INDUSTRIAL PROPERTIES WWTF COLUSA COUNTY

ATTACHMENT D

REQUIREMENTS FOR MONITORING WELL INSTALLATION WORKPLANS AND MONITORING WELL INSTALLATION REPORTS

Prior to installation of groundwater monitoring wells, the Discharger shall submit a workplan containing, at a minimum, the information listed in Section 1 below. Wells may be installed after staff approves the workplan. Upon installation of the monitoring wells, the Discharger shall submit a well installation report that includes the information contained in Section 2 below. All workplans and reports must be prepared under the direction of, and signed by, a registered geologist or civil engineer licensed by the State of California.

SECTION 1 - Monitoring Well Installation Workplan and Groundwater Sampling and Analysis Plan

The monitoring well installation workplan shall contain the following minimum information:

A. General Information:
   Purpose of the well installation project.
   Brief description of local geologic and hydrogeologic conditions.
   Proposed monitoring well locations and rationale for well locations.
   Topographic map showing facility location, roads, and surface water bodies.
   Large scaled site map showing all existing on-site wells, proposed wells, surface drainage courses, surface water bodies, buildings, waste handling facilities, utilities, and major physical and man-made features.

B. Drilling Details:
   On-site supervision of drilling and well installation activities.
   Description of drilling equipment and techniques.
   Equipment decontamination procedures.
   Soil sampling intervals (if appropriate) and logging methods.

C. Monitoring Well Design (in narrative and/or graphic form):
   Diagram of proposed well construction details:
   - Borehole diameter.
   - Casing and screen material, diameter, and centralizer spacing (if needed).
   - Type of well caps (bottom cap either screw on or secured with stainless steel screws).
   - Anticipated depth of well, length of well casing, and length and position of perforated interval.
   - Thickness, position and composition of surface seal, sanitary seal, and sand pack.
   - Anticipated screen slot size and filter pack.

D. Well Development (not to be performed until at least 48 hours after sanitary seal placement):
   Method of development to be used (i.e., surge, bail, pump, etc.).

Parameters to be monitored during development and record keeping technique.
Method of determining when development is complete.
Disposal of development water.

E. Well Survey (precision of vertical survey data shall be at least 0.01 foot):
Identify the Licensed Land Surveyor or Civil Engineer that will perform the survey.
Datum for survey measurements.
List well features to be surveyed (i.e. top of casing, horizontal and vertical coordinates, etc.).

F. Schedule for Completion of Work

G. Appendix: Groundwater Sampling and Analysis Plan (SAP)
The Groundwater SAP shall be included as an appendix to the workplan, and shall be utilized as a guidance document that is referred to by individuals responsible for conducting groundwater monitoring and sampling activities.

Provide a detailed written description of standard operating procedures for the following:

- Equipment to be used during sampling.
- Equipment decontamination procedures.
- Water level measurement procedures.
- Well purging (include a discussion of procedures to follow if three casing volumes cannot be purged).
- Monitoring and record keeping during water level measurement and well purging (include copies of record keeping logs to be used).
- Purge water disposal.
- Analytical methods and required reporting limits.
- Sample containers and preservatives.
- Sampling:
  - General sampling techniques.
  - Record keeping during sampling (include copies of record keeping logs to be used).
  - QA/QC samples.
- Chain of Custody.
- Sample handling and transport.

SECTION 2 - Monitoring Well Installation Report

The monitoring well installation report must provide the information listed below. In addition, the report must also clearly identify, describe, and justify any deviations from the approved workplan.

A. General Information:
Purpose of the well installation project.
Brief description of local geologic and hydrogeologic conditions encountered during installation of the wells.

Number of monitoring wells installed and copies of County Well Construction Permits.
Topographic map showing facility location, roads, surface water bodies.
Scaled site map showing all previously existing wells, newly installed wells, surface water bodies, buildings, waste handling facilities, utilities, and other major physical and man-made features.

B. Drilling Details (in narrative and/or graphic form):
On-site supervision of drilling and well installation activities.
Drilling contractor and driller's name.
Description of drilling equipment and techniques.
Equipment decontamination procedures.
Soil sampling intervals and logging methods.
Well boring log:
- Well boring number and date drilled.
- Borehole diameter and total depth.
- Total depth of open hole (same as total depth drilled if no caving or back-grouting occurs).
- Depth to first encountered groundwater and stabilized groundwater depth.
- Detailed description of soils encountered, using the Unified Soil Classification System.

C. Well Construction Details (in narrative and/or graphic form):
Well construction diagram, including:
- Monitoring well number and date constructed.
- Casing and screen material, diameter, and centralizer spacing (if needed).
- Length of well casing, and length and position of perforated interval.
- Thickness, position and composition of surface seal, sanitary seal, and sand pack.
- Type of well caps (bottom cap either screw on or secured with stainless steel screws).

E. Well Development:
Date(s) and method of development.
How well development completion was determined.
Volume of water purged from well and method of development water disposal.
Field notes from well development should be included in report.

F. Well Survey (survey the top rim of the well casing with the cap removed):
Identify the coordinate system and datum for survey measurements.
Describe the measuring points (i.e. ground surface, top of casing, etc.).
Present the well survey report data in a table.
Include the Registered Engineer or Licensed Surveyor's report and field notes in appendix.