

## INFORMATION SHEET

ORDER R5-  
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 5-01-250 prescribes requirements for the discharge of process wastewater to an evaporation/percolation pond, direct discharge of process wastewater to approximately 600 acres of land application areas (LAAs), and for the discharge of domestic wastewater from the industrial complex septic tanks to a lined evaporation pond.

Domestic wastewater is collected in one or more septic tanks, then gravity flows to a 1.12 mgal capacity (with a 2-foot freeboard) domestic wastewater disposal pond. The pond is lined and relies on evaporation as the sole means of disposal. No domestic wastewater is discharged to the LAAs.

Currently, two seed processing operations make up the industrial process wastewater discharged to the LAAs. Seed processing operations are seasonal and only generate small volumes of wastewater. Discharges are intermittent and generally of short duration in the summer. Therefore, only a small portion of the LAAs are used each year, and the remaining fields are fallow. 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.

The Industrial Park is not fully occupied and the industrial nature of future tenants will vary. Wastewater character and flows from future tenants are unknown. However, the LAAs have capacity for much higher wastewater flows and constituent loading than currently operated.

The Discharger proposes operational changes including new sources of process wastewater, collection and management of all industrial process wastewater in a single pond, year round process wastewater disposal for rice straw decomposition, and additional domestic wastewater disposal capacity. CIP proposes to accept process wastewater from a planned biomass combustion plant that is currently in the initial planning and permitting stage. The biomass plant wastewater would be a year round discharge to the process wastewater pond (Pond 3), where it would be commingled with other process wastewaters and ultimately be applied to the LAAs.

The Colusa County Department of Planning and Building Administration has not approved the Use Permit for the biomass combustion plant and the quality of the biomass plant wastewater has not been sufficiently characterized to determine whether it would contribute significant pollutant loading to the LAAs. Therefore, wastewater discharges from the biomass plant to CIP's industrial wastewater disposal system are prohibited until approval of the Use Permit and submittal of an updated Report of Waste Discharge that completely

characterizes the wastewater flow and quality. WDRs Order 5-01-250 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 in the last five years.
- 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. 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 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 <sup>1</sup>
Manganese	mg/L	0.39

<sup>1</sup> 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 within **five** years of adoption of this Order, 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.

**Flow Limitations**

**Effective immediately**, domestic flows to the domestic disposal Pond 1 shall not exceed the following limits:

Flow Measurement	Flow Limit
Average Daily Flow <sup>1</sup>	3,700 GPD
Annual Flow <sup>2</sup>	1.01 MG

<sup>1</sup> As determined by the total flow during the calendar month divided by the number of days in the month.

<sup>2</sup> As determined by the total flow during the calendar year.

**Effective on the date** of the Executive Officer’s approval of the certification completion report for the installation of the HPDE liner in domestic disposal Pond 2, the total combined domestic flow to Ponds 1 and 2 shall not exceed the following limits:

Flow Measurement	Flow Limit
Average Daily Flow <sup>1</sup>	5,500 GPD
Annual Flow <sup>2</sup>	1.51 MG

<sup>1</sup> As determined by the total flow during the calendar month divided by the number of days in the month.

<sup>2</sup> As determined by the total flow during the calendar year.

**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 <sup>1</sup> to Pond 3	0.02 MGD

<sup>1</sup> As determined by the total flow during the calendar month divided by the number of days in that month.

**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 <sup>1</sup> to the 118-acre LAAs	0.69 MGD
Average Daily Flow <sup>1</sup> to the Davis Property (cropped with rice)	4.10 MGD
Average Daily Flow <sup>1</sup> to the Davis Property (cropped with sudan grass)	3.40 MGD

<sup>1</sup> As determined by the total flow during the calendar month divided by the number of days in that month.

**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 <sup>1</sup>
Average BOD Concentration	mg/L	100 <sup>2</sup>
Total Nitrogen Mass Loading	lb/ac/year	Crop Demand

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

<sup>2</sup> 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 row crops shall not exceed the following effluent and mass loading limits:

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

<sup>1</sup> 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 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.

### **Provisions**

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

By **1 November 2014**, the Discharger shall submit a *Groundwater Limitations Compliance Assessment Plan*.

By **1 December 2014**, the Discharger shall submit a *Wastewater Pond Design and Pond Liner Construction Quality Assurance (CQA) Plan*.

By **1 January 2015**, the Discharger shall submit a *Wastewater System Improvements Completion Report*.

By **1 March 2015**, the Discharger shall submit and implement a *Salinity Source Control Evaluation and Minimization Plan*.

If the Discharger wishes to accept wastewater from the biomass combustion plant for application to the LAAs, the Discharger shall submit evidence that the CEQA evaluation of the biomass plant has been completed and a Report of Waste Discharge **at least 1 year prior to the planned application of biomass wastewater to the LAAs**.

If the Discharger wishes to apply crop and food processing residual solids to the LAAs, the Discharger shall submit a *Residual Solids Management Plan* to the Board's Executive Officer **at least 90 days prior to the planned application of residual solid waste to the LAAs**.

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*.



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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: 050614