CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2010-0038

WASTE DISCHARGE REQUIREMENTS
FOR
CAMPBELL SOUP SUPPLY COMPANY, LLC
CAMPBELL SOUP SUPPLY COMPANY DIXON FACILITY
SOLANO COUNTY

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

1. Campbell Soup Supply Company, LLC (hereafter referred to as Discharger) submitted a Report of Waste Discharge (RWD) dated 9 May 2008 to obtain revised Waste Discharge Requirements (WDRs) for the discharge of tomato and vegetable processing wastewater at the facility at 8380 Pedrick Road, Dixon, CA, 95620. Supplemental information was received on 9 December 2008 and an Amended RWD was received 5 June 2009.

2. The Discharger's Dixon facility is in Section 6, 7, and 8, T7N, R2E MDB&M. This facility is shown on Attachment A, which is attached hereto and made part of this Order by reference. The Dixon facility is about 2 miles northeast from the City of Dixon and surrounded by agricultural land on all sides. The processing plant is identified as Solano County Assessor's Parcel Number (APN) 111-005-01, which is owned by the Discharger.

3. The Discharger has owned and operated the tomato processing facility, including land application of process wastewater to about 555 acres, since it was opened in 1975.

4. Order No. 95-101, adopted by the Central Valley Water Board on 28 April 1995, prescribes requirements for the discharge of tomato processing wastewater to irrigate crop and pasture land owned by Mr. Henry Stone, Mr. Stanley Bauer, and Mr. Albert Silva.

5. The Discharger has purchased the land that comprises all of the land application areas. The useable land application area designated for wastewater disposal is 606.9 acres of the total 633.5 acres, and includes the following APN: 111-005-005, 111-010-004, 111-010-011, 111-010-012 and 111-010-013.

6. The Discharger has applied for revised WDRs to increase the land discharge area and include an additional vegetable processing line that will extend the processing season. The Discharger has not requested and the revised WDRs do not allow an increase in the permitted annual discharge flow rate. The additional land application area is named NW Bauer, and is the northern 72.8 acres of the Bauer field as shown in Attachment B, which is attached hereto and made part of this Order by reference.

Domestic Water Supply and Domestic Wastewater Disposal

7. Water for employees is supplied by a domestic well. The RWD provides the following table that summarizes the well and domestic use water supply characteristics:

Parameter	Units	Domestic Well [1]
Diameter	inches	8
Well Depth	feet bgs [2]	385
Screen Interval	feet bgs [2]	355 - 380
Depth to Water	feet bgs [2]	77 [3]
pH	Std units	7.91
EC	µmhos/cm	740
BOD	mg/L	1.5
NO_3	mg/L	26
NO_3-N	mg/L	5.9
TKN	mg/L	0.1
Total N	mg/L	6.0
TDS	mg/L	420
FDS	mg/L	330
TSS	mg/L	2.5
$CaCO_3$	mg/L	365
Total P	mg/L	0.063
SO_4	mg/L	37
Cl	mg/L	12
B	mg/L	0.6
Ca	mg/L	42
Mg	mg/L	52
K	mg/L	1.7
Na	mg/L	36
Mn	mg/L	5

[1] Average of samples collected October 2 and October 9, 2007, except where noted.
[2] Feet below ground surface.
[3] Single sample collected September 6, 2007.

8. Five restrooms serve 15 to 20 full-time employees and 200 seasonal employees. Domestic wastewater is presently discharged to unlined wastewater ponds for disposal by percolation and evaporation. The system was designed for 300 employees at 3,000 gallons per day for usage during peak season operations. The pond system is located on the eastern edge of the process plant and consists of a primary pond for disposal and two ponds for backup, which the Discharger states are rarely used. Monitoring data for the domestic wastewater stream has not been collected.

9. In 2009, the Discharger began working with Solano County Department of Resource Management Environmental Health Division to install and permit a septic tank and subsurface leachfield in place of the wastewater disposal ponds. The Discharger currently is in the design and planning process and will continue to seek a county permit for domestic wastewater disposal.

10. This Order includes regulations and monitoring requirements for the disposal of domestic wastewater until the Discharger provides evidence that the proper permit(s) have been obtained from Solano County. If a county permit is not obtained, this Order requires the Discharger to complete the design and installation of the septic tank and subsurface leachfield, cease discharging to the domestic wastewater ponds, and submit a Domestic Wastewater Pond Closure Workplan describing how the ponds will be decommissioned. If the Discharger obtains a domestic wastewater disposal permit from the Solano County Environmental Health Department, the Discharger is required to submit a Completion Report for Executive Officer approval. Once approved, the domestic wastewater disposal specifications within this Order will sunset.

Facility Processing Source Water

11. Two deep agricultural wells, named North and South Agriculture Wells, supply source water for the processing lines. The original South Agriculture Well built in 1984 was reconditioned in 2006. The North Agriculture Well is intermittently screened from about 340 feet below ground surface (bgs) to about 892 feet bgs. The South Agriculture Well is intermittently screened from about 430 feet bgs to about 1450 feet bgs. The wells are depicted as North Ag Well and South Ag Well in Attachment B.

12. The North and South Agriculture Wells operate 24 hours a day during the processing season and are turned off during the off-season. Well water is chlorinated at the well head.

13. The following table summarizes the well water supply and well construction characteristics:

Parameter	Units	North Ag Well [1]	South Ag Well [1]
Diameter	inches	16	20
Well Depth	feet bgs[2]	907	1470
Depth to Water	feet bgs[2]	75.5 [3]	81.3 [3]
Screen Interval	feet bgs[2]	340 - 892	430 - 1450
pH	Std units	8.04	7.26
EC	µmhos/cm	588 [4]	500 [6]
BOD	mg/L	1.5	1.5
NO_3-N	mg/L	2.4 [5]	1.1 [7]
TKN	mg/L	0.1	0.1
Total N	mg/L	1.5	2.1
TDS	mg/L	285	290
FDS	mg/L	235	230
TSS	mg/L	2.5	2.0

Parameter	Units	North Ag Well [1]	South Ag Well [1]
$CaCO_3$	mg/L	220	205
Total P	mg/L	0.055	0.053
SO_4	mg/L	30	28
Cl	mg/L	14	14
B	mg/L	0.58	0.57
Ca	mg/L	24	21
Mg	mg/L	26	23
K	mg/L	2.1	2.1
Na	mg/L	48	57
Mn	mg/L	5	5
Total coliforms	MPN/100 mL	0	0
E. coli	MPN/100 mL	0	0

[1] Average of samples collected October 2 and October 9, 2007 unless otherwise noted.
[2] Feet below ground surface.
[3] Average of samples collected September 6 and November 13, 2007.
[4] Average of annual samples collected 1998 to 2006 and three samples in 2007.
[5] Average of annual samples collected 1998 to 2006 and five samples in 2007.
[6] Average of annual samples collected 2000 to 2006 and three samples in 2007 (includes original South Ag Well and reconditioned well data).
[7] Average of annual samples collected 2000 to 2006 and five samples in 2007 (includes original South Ag Well and reconditioned well data).

14. Well water is used onsite for washing tomatoes, equipment, the processing areas, and will be used to wash fresh fruits and vegetables that are processed as part of the new vegetable line.

Existing Processing Facility and Wastewater Discharge

15. The Discharger seasonally processes tomatoes. The finished tomato products (tomato paste and diced tomatoes) are shipped in bulk to other Campbell Soup processing facilities for use as ingredients in its final products for market.

16. Tomato season typically starts in July and ends by mid-October. During the processing season, the paste and dice lines operate 24 hours a day, 7 days a week as the Discharger processes up to 5,500 tons of raw tomatoes a day. Approximately 10 to 15 percent is used for dice production and 85 to 90 percent is used in the paste line.

17. During an average season, the dice line operates 85 days a year, processing 750 tons per day of raw tomato to generate about 17,500 tons of finished product each season. The paste line operates 90 days a year, processing 4,250 tons per day of raw tomato to generate about 50,000 tons of finished product. The paste line typically starts earlier and ends later in the year.

18. As tomatoes are brought into the processing facility they are delivered to either the tomato paste or tomato dice flumes. The tomato paste and tomato dice lines have separate flume

systems that convey tomatoes into the processing facility. Tomatoes that pass through the paste flume are washed and the overflow water is screened and transferred to Pond A (Settling Pond). Tomato dice flume overflow water is discharged through the lift sump, along with any cleaning and wash wastewater. Thus, all wastewater is directed to either Pond A or the lift sump where wastewater is commingled prior to being discharged to the land application area.

19. The Settling Pond allows for solids settling and is unlined. The capacity of the Settling Pond is about 1.6 million gallons and is roughly 280 feet in diameter and 4 feet deep. The Settling Pond has three aerators for odor control and uses a detention time of 4 days to remove heavy grit, sand, and loose organics. The Settling Pond is periodically dredged to minimize the build up of organic matter and the occurrence of odorous conditions. About 300 gallons per minute of paste flume water overflow flows from the settling pond to the lift station where it is commingled with process wastewater prior to being land applied.

20. The Settling Pond is currently used for flume water settling. Pond B and Pond C are used for emergency or incidental storage of wastewater. They are not necessary in daily operations of the facility but generally are used during each processing season. Pond B provides emergency storage for Settling Pond overflow. Pond C provides emergency storage for Pond B overflow and emergency pressure relief storage for the main wastewater line leading to the land application area from the lift station. Once emergency conditions have subsided, wastewater from Pond B and Pond C is discharged to the lift sump for land application.

    Pond B and Pond C contain weed overgrowth and animal burrows and will require rehabilitation prior to being used for incidental or emergency storage. Therefore, this Order requires the Discharger to discuss all ponds located at the facility in their Operation and Management Plan and detail their scheduled regular maintenance. This Order also requires that the Discharger submit a Pond B and Pond C Rehabilitation Workplan prior to being placed into service during the 2011 processing season.

21. The processing system including both flumes is cleaned at the beginning and end of each season and periodically during processing. At the beginning of each season, hot water is passed through the entire system. A chemical sanitization of the processing equipment occurs at the end of the season. During operations, the processing lines have individual cleaning schedules. The hot break tanks are cleaned every other week and the cold break equipment is cleaned every 60 days. Caustic is used on the evaporators about every 30 days or as needed. The dice equipment is cleaned for 4 hours every 4 days.

    The supply water is softened using a regenerated ion exchange matrix prior to being used for boiler feed make-up. The primary source of boiler feed make-up is supplied by evaporator condensate. Softened water is used when evaporators are not in operation and evaporator condensate is not available. Softened water also supplies water for pump seals. Ion exchange flush water is currently commingled in the lift sump and discharged to the land application area. This Order requires that ion exchange saline wastewater no longer be discharged to the land application area and that the Discharger must complete a Salinity Reduction Workplan to investigate best practicable treatment and control (BPTC) of saline waste. Alternatives may include replacing the water softener with technology that

does not create saline waste or segregating saline waste and disposing it at an off-site facility permitted to accept saline waste.

The RWD contains the following table for annual usage of chemicals in excess of 20 gallons per year. The Discharger states that chemical usage is distributed equally throughout the season.

Product Name	Quantity (gal/year)	Usage	Active Ingredient	
			Compound	%
ChemTreat BL-4350	1,300-1,500	Boilers	1-Hydroxyethlidene-1,1-diphosphoric acid, tetrapotassium salt Sodium polyacrylate Polyacrylate, copolymer	1-5% 5-10% 5-10%
ChemTreat BL-122	1,300-1,500	Boilers	Sodium bisulfite	15-40%
ChemTreat BL-1541	600-700	Boilers	Cyclohexylamine 1,2-diethylaminoethanol	7-13% 7-13%
Series 708 Caustic Sludge Conditioner	400	Boilers	Sodium hydroxide	
ChemTreat CL-16	330	Boilers, Water Softeners	Citric acid Hydroxyethylidene-1, diphosphoric acid	15% 4.2%
Sodium chloride	140 ton/yr	Water Softeners	Sodium chloride (dry)	
Bromide L-102	1,800-2,100	Cleaning	Sodium bromide	40%
Cleaner M.S.R. Acid	700	Cleaning	Phosphoric acid	
Tsunami 200	700	Cleaning	Acetic acid Hydrogen peroxide Peroxyacetic acid Organic acids mixture	42% 4% 9% 5-20%
Caustic Soda	3,300 gal/yr (liquid) 4 ton/yr (powder)	Cleaning	Sodium hydroxide	50%
Chlor 12 ½	4,300-4,600	Cleaning, Well Chlorination	Sodium hydroxide Sodium hypochlorite	
Chlorine	1,000	Well Chlorination	Chlorine	
Chlorinated Foamer #3	150	Anti-foaming agent	Potassium hydroxide Sodium hypochlorite	

22. A process wastewater flow diagram is shown as Attachment C, which is attached hereto and made part of this Order by reference. Dice flume overflow water and tomato paste and dice line cleaning and wash water (hereby collectively referred to as plant effluent) is collected by floor drains and directed to a central waste disposal sump. The plant effluent is screened and pumped from the central sump to a lift sump.

Tomato paste flume water and paste line evaporator condensate are not collected by the floor drains and is each separately conveyed to the lift sump. Paste line evaporator condensate flows directly to the lift sump, while tomato paste flume overflow water is discharged to the Settling Pond. Settling Pond overflow can also be conveyed to the lift sump.

The commingled water from the lift sump (hereby, referred to as process wastewater) is pumped to the land application area for surface irrigation. The RWD provides the following table of water quality:

Constituent	Units	Paste Flume [1]	Settling Pond Overflow [1]	Plant Effluent [1]	Process Wastewater[1]
BOD	mg/L	245	32	275	635 [2]
EC	µmhos/cm	665	1000	1500	902 [2]
pH	std units	6.58	8.42	6.31	6.06 [2]
NO_2-N + NO_3-N	mg/L	0.11	0.15	0.09	0.51 [3]
TKN	mg/L	17	27	16	21 [3]
Total N	mg/L	17	27	16	25 [2]
COD	mg/L	--	--	--	516 [3]
TOC	mg/L	--	--	--	201 [3]
TDS	mg/L	430	590	1485	754 [4]
FDS	mg/L	240	410	1145	586 [4]
TSS	mg/L	1950	68	925	1150
$CaCO_3$	mg/L	245	495	180	195
Total P	mg/L	3.3	3.8	4.3	3.0
SO_4	mg/L	35.5	14	34	28
B	mg/L	0.60	0.73	0.58	0.5
Ca	mg/L	34	39	47	31
Cl	mg/L	28	37	334	257
Mg	mg/L	36	40	41	30
K	mg/L	35	73	38	27
Na	mg/L	54	63	409	167

Constituent	Units	Paste Flume [1]	Settling Pond Overflow [1]	Plant Effluent [1]	Process Wastewater[1]
Mn	mg/L	0.73	0.88	0.40	0.38

[1] Average of samples collected October 2 and 9, 2007 unless otherwise noted.
[2] Average of monthly samples during processing collected 1998 through 2008: between 37 and 39 samples.
[3] Average of monthly samples collected Aug and Sep 2005; and Aug, Sep, and Oct 2006
[4] Average of monthly samples collected Aug and Sep 2005; Aug, Sep, and Oct 2006; and Oct 2 and 9, 2007.

The settling pond provides stabilization of collected flume water. However, its overflow is a small fraction of the process wastewater and thus has a negligible effect on effluent quality discharged to the land application fields. The large proportion of FDS to TDS in the process wastewater indicates that dissolved solids are predominately inorganic. Sampling results collected on October 9, 2007 for paste flume and process wastewater were in addition to sampling requirements of the Monitoring and Reporting Program Order No. 95-101. The Discharger states that sampling results on October 9, 2007 for TDS, FDS, sodium, and chloride were unusually high because sampling may have occurred during a cleaning cycle at the end of the season and were not diluted by processing wastewater.

23. Previously, the process wastewater was sampled using a grab method. Because this method subjects monitoring results to bias during system cleaning and chemical sanitization events, this Order requires the Discharger to utilize composite sample collection.

Facility Changes

24. The Discharger added a fresh fruit and vegetable (i.e. produce such as carrots, celery, beets, parsley, lettuce, watercress, and spinach) processing line in addition to the tomato paste and diced tomato processing lines. The fresh fruit and vegetable processing line is designated as the “V7 line” and processes produce, other than tomatoes. Products from the V7 line will be shipped to other Campbell Soup Facilities as bulk ingredients for use in products such as V8 or V-Fusion.

25. The construction of the V7 line was completed in June 2009. Construction included installation of a vegetable flume and modifying the process wastewater piping network to include the V7 line. The vegetable process wash and rinse water will be collected with the existing plant effluent by floor drains and directed to the central waste disposal sump, as shown in Attachment C. Flume overflow water from the V7 line is directed to the Settling Pond.

26. The V7 line will use the source water from the North and South Agriculture Wells for vegetable processing. To measure total flow from the supply wells, a flow meter has been installed downstream of the well water supply line merger.

27. The Discharger states that the V7 line is not expected to significantly change the process wastewater quality applied to land because the same cleaning/washing chemicals and concentrations will be used.

28. The Discharger may begin the operating season in March and end the operating season in November processing produce during its harvest season. Peak flows typically occur in August during the height of tomato processing. Based on the water balance, wastewater flows will increase as the processing season progresses and then begin to taper off after tomato processing.

Pretreatment and Source Control

29. Plant effluent is screened to remove wet and dry tomato solids prior to commingling with wastewater in the lift sump. Similarly, tomato paste flume water is screened to remove tomato solids prior to being sent to the Settling Pond. The Settling Pond also provides grit removal before commingling with wastewater in the lift sump.

30. Collected wet and dry tomato solids from the screens are trucked off site for disposal to land application or reuse as cattle feed. The paste line produces an average of 585 tons screened solids during the cold break season and about 2,380 tons screened solids during the hot break season. The paste line produces an average of 1,400 tons screened solids. The V7 line is expected to produce about 2,835 tons screened solids

31. Solids are excavated every few years from the Settling Pond at the end of the processing season when the Settling Pond has dried. The solids, roughly two to three thousand cubic yards, are land applied to approximately half an acre of land directly north of the Settling Pond, which totals about two acres.

32. A brine recovery system was installed with the water softener system in 2007. The brine recovery system works by capturing the last 10 percent of the regeneration flush stream and returning it to the regeneration supply. The remaining 90 percent is discharged to the lift sump for land application. The Discharger estimates that sodium chloride usage has been reduced by 1,332 pounds per day based on average operating conditions. However, despite the estimated reduction, 140 tons of sodium chloride associated with water softening is land applied per year. Therefore, this Order requires the Discharger to investigate methods for salinity minimization in a Salinity Reduction Plan.

33. Historical process wastewater monitoring data show spikes in EC levels that exceed 900 µmhos/cm. Based on information provided by the Discharger, these spikes may be the result of discharging after scheduled cleaning. Improved discharge management of highly saline cleaning wastewater is expected to mitigate peak EC levels below 1,000 µmhos/cm. Improvements will require the Discharger to investigate established best management practices and implement methods for the facility to achieve salinity reduction. This Order requires the Discharger to submit a Salinity Reduction Workplan to identify and implement site specific best practicable treatment and control.

Land Application

34. The process wastewater flow is expected to range between 1.0 million gallons per day (MGD) during V7 line operation and 5.0 MGD during the peak of tomato processing typically in August. Staff agrees with the Discharger's January 2010 water balance showing that the land application area provides adequate capacity (when the percolation reduction factor is omitted for wet season months without a discharge) to handle an annual flow of 490 MG during a 100 year storm event.

35. The Discharger purchased the 72.8 acre northern portion of Bauer field (NW Bauer) in 2002 and plans to include the acreage in their land application program in 2009. The Discharger states that NW Bauer is ready and prepared to accept process wastewater.

36. Six land application areas are available for wastewater application. The usable land application acreage will total 606.9 acres. The total acreage for each land application is summarized in the table below. The six land application areas are subdivided into management units for irrigation rotation. The managed units range in size from 16.8 acres to 72.8 acres. The land application areas and their associated management units are depicted in Attachment B. During each irrigation cycle, water is applied onto one management unit before rotation to another unit within the same field. Due to its large size, two management units within the Runge field are typically irrigated at the same time.

Land App. Area	APN	Total Acres	Usable Acres	Managed Units [1]
NW Bauer	111-005-005	163.7	72.8	1
SW Bauer	111-005-005		83.0	4
N Silva	111-010-004	156.4	79.6	4
S Silva	111-010-004		71.8	1
Corral	111-010-011	156.4	145.1	5
Runge	111-010-012 & 111-010-013	157.0	154.6	8
Total		**633.5**	**606.9**	**23**

[1] See Attachment B

37. A 16 inch transmission line conveys water from the lift sump to the land application fields east of the facility. The transmission pipeline branches into 12 inch pipes conveying process wastewater to the head of individual fields, which are border strip irrigated.

38. Supplemental irrigation is typically required from March through July to meet crop demands prior to the availability of processing water. Supplemental irrigation water is supplied from three deep agriculture wells (SW-1, SW-2 and SW-3 depicted in Attachment B). SW1 supplies water to the Bauer fields, SW2 to the Siva and Corral fields, and SW3 to the Runge field. Supplemental water irrigation is conveyed through the same transmission pipeline as the processing water and applied to the fields in the same manner (border strip irrigation). While possible, process and supplemental irrigation water are not blended

because the process wastewater volume is sufficient to meet crop demands in the summer. The RWD provides the following table for water quality of SW1, which was sampled on 17 April 2008 and anticipated to be similar to water quality of SW-2 and SW-3:

Parameter	Units	SW-1
EC	µmhos/cm	500
pH	Std units	7.8
NO_3-N	mg/L	1.4
TKN	mg/L	0.1
Total N	mg/L	1.5
BOD	mg/L	1.5
TDS	mg/L	300
FDS	mg/L	240
TSS	mg/L	2.5
$CaCO_3$	mg/L	210
Total P	mg/L	0.057
SO_4	mg/L	30
Cl	mg/L	14
As	mg/L	0.0041
B	mg/L	0.62
Fe	mg/L	0.05
Ca	mg/L	22
Mg	mg/L	24
K	mg/L	2.6
Na	mg/L	57
Mn	mg/L	0.005

39. Based on the normal-year water balance the annual salinity load to the land application area is 5,974 lb/acre total dissolved solids (TDS) and 4,660 lb/acre fixed dissolved solids (FDS) contributed by both supplemental irrigation water and process wastewater. If supplemental irrigation water was used to accommodate the entire water demand of the land application area, the base annual salinity load would be 3,141 lb/acre TDS and 2,513 lb/acre FDS.

    The process wastewater FDS concentration (586 mg/L) falls within Risk Category 2 of the Mineral Salinity Concentration Risk Categories in the California League of Food Processors (CLFP) Manual. Risk Category 2 consists of process water with a FDS concentration (586 mg/L) that is less than the sum of the local irrigation TDS concentration (300 mg/L) plus 320 mg/L and no more than 640 mg/L.

40. Food process wastewater typically contains elevated concentrations of TDS resulting from the fruit and vegetable products or from materials used for production. Typically forty to seventy percent of the TDS is organic and broken down in the soil. In contrast, the FDS are inorganic and can accumulate in the soil. Excess salt loading can lead to FDS

accumulation reducing plant yields and salinity leaching to the underlying groundwater. Growing harvest crops provide a means to remove some soil bound recalcitrant FDS by crop uptake.

Harvest crops are expected to remove a portion of the FDS from the soil, particularly the calcium, magnesium, potassium, phosphorus, nitrate, and ammonia. Beneficial ions such as calcium, magnesium, and potassium improve the physical properties of the soil and are essential for plant growth. Removing these three beneficial ions through crop uptake would reduce the annual salt load by 725 lb/acre, resulting in a total TDS and FDS loading rate of 5,249 lb/acre and 3,935 lb/acre, respectively.

41. Nitrogen is introduced to the land application area from three sources: process wastewater, cattle excrement, and fertilizer. Fertilizer is applied to meet the crop nitrogen demand not met by process wastewater application or cattle. Cattle are maintained on the land application area at a density of about one cow per acre and have an estimated manure application rate of 48 pounds per acre per year. It is estimated that there is about fifty percent reduction in the process wastewater nitrogen concentration from flood irrigation practices. Based on the provided nitrogen balance the crops will obtain approximately fifty percent of their required nitrogen from the process wastewater and cattle grazing. Fertilizer currently accounts for twenty percent of the nitrogen demand but may fluctuate to ensure a healthy pasture.

42. SW Bauer, N Silva, Corral and Runge fields are dedicated to pasture and cattle grazing. Pasture grasses include ryegrass, fescue, orchard grass and trefoil. Cattle grazing typically occur from April through October and follow the irrigation rotation. Pasture fields are periodically aerated to alleviate compaction and improve water permeability.

43. The S Silva field is planted with winter wheat and milo, which are cut into hay for commercial sale. The NW Bauer field may be double cropped to grow ryegrass and sudangrass or may be planted with pasture grass. In the future, the Discharger may switch to other crops for higher water utilization and crop yield.

44. Tailwater from process wastewater and supplemental irrigation water application is contained within the land application area by tailwater ditches. The Discharger constructed a 5 acre, 25 acre-foot tailwater pond in 2008, which is used in emergencies to temporarily store collected tailwater if the land application area becomes saturated. The collected water is reapplied when soil conditions permit. The Discharger contracts out the operations of field irrigation and maintenance, but the Discharger remains ultimately responsible for compliance with this Order.

45. Tailwater ditches adjacent to the roadside are owned by the Discharger, who conducts maintenance on the ditches. The tailwater ditches have the capability to convey collected water, whether tailwater or stormwater, off the Discharger's property. The Discharger has granted an easement to Solano County to allow surface drainage of stormwater through its property via the tailwater ditches. The Discharger has installed irrigation gates to retain tailwater and stormwater on site during the processing season. This Order prohibits land applied wastewater to flow offsite. This Order requires the Discharger to create a Land Application Area Management Plan that describes the property boundaries, irrigation

protocols, tailwater collection system, and tailwater collection protocols. The plan must demonstrate control of the land applied wastewater such that it does not pool or course off of the Dischargers property. The Order requires the plan be submitted for approval by the Executive Officer.

46. The RWD states that during operation, stormwater runoff from the land application area is captured and returned with the process water via the tailwater collection system. During the off season, typically starting in October or November, the Discharger plans to allow stormwater to flow off site until the start of the next processing season. Prior to allowing any off site flow, including stormwater, this Order requires that the Discharger wait three weeks from the date of last land applied wastewater to allow for soil stabilization or capture the first flush of salts and nutrients by retaining and reapplying the first 0.5 inches of rainwater, which ever comes first. Any captured stormwater must be evenly reapplied to the land application area for infiltration.

Site-Specific Conditions

47. The Dixon facility is at an elevation approximately at 10 feet mean sea level (MSL), and the area is relatively flat with drainage west to east. Surface water in the area drains into adjacent road side drainage ditches and agricultural irrigation ditches. The closest body of surface water is Putah Creek, which is 3 miles north and runs east to west.

48. The average annual precipitation in the vicinity is approximately 19.5 inches per year. The 100-year total annual precipitation is approximately 34.5 inches per year. The mean evapotranspiration rate is approximately 54.1 inches per year.

49. Approximately 1.1 acres along the eastern edge of the land application area is within the 100-year flood plain based on FEMA flood zone boundaries dated 4 May 2009. The Discharger also states that a perimeter levee protects the fields from inundation.

50. Based on the Solano County Soil Survey (1977), the soils underlying the facility and land application area are classified within the Yolo-Brentwood and Capay-Clear Lake soil associations. The underlying soils consist primarily of Capay clay and Brentwood clay loam, and Capay and Yolo silty clay loams to a lesser extent.

51. The RWD states that the soils are well suited for land application and have a high available water capacity and an effective rooting depth of more than 60 inches. They are characterized as having a slow runoff and slight hazard for erosion. Tomatoes, alfalfa, grain sorghum and pasture are typically grown in other regional areas with these soil types.

52. Published infiltration rates for the soils range from 0.06 to 0.20 in/hr (0.12 to 0.40 feet per day).

53. Surrounding land uses are agricultural with a few nearby rural residences as shown in Attachment B.

Groundwater Considerations

54. The RWD states that, the typical depth to groundwater underlying the facility is 14 feet bgs and 19 to 26 feet bgs of the land application area.

55. Groundwater has been monitored by three monitoring wells since 1998 and process wastewater has been land applied since 1975. Based on the historical trend of depth to groundwater, groundwater flows from west to east.

56. Electrical conductivity, pH, and nitrate have been measured quarterly from March 1998 to December 2007. The following table provides the range and average values for these constituents along with additional constituents sampled in 2005 and/or 2007. Monitoring well MW-3 is upgradient of the land application area and provides an indication of background groundwater quality. However, MW-3 is located adjacent to Pond C lying to the north and a surface water drainage ditch to the south. Because the groundwater quality monitored by MW-3 may be impacted by the surface water bodies, this Order requires the Discharger to evaluate whether MW-3's representation of background groundwater quality is compromised and, if so, identify an alternate background monitoring location.

Constituent	Units	Range of Analytical Results [1]		
		MW-1	MW-2	MW-3 [2]
Diameter	inches	1.5	1.5	1.5
Depth to Water [3]	feet	26.2 (8-39)	19.3 (8.5-27.7)	13.8 (3.8-20.0)
EC [3]	µmhos/cm	1177 (630-1350)	1059 (830-1270)	896 (710-1020)
pH [3]	Std units	7.52 (7.23-7.85)	7.52 (7.21-8.03)	7.43 (7.14-7.84)
NO_3 (as N) [3]	mg/L	7.4 (6.4-9.3)	9.2 (7.3-12.4)	8.6 (6.4-11.3)
TKN [4]	mg/L	0.1	0.1	0.1
BOD [4]	mg/L	1.5	1.5	1.5
TDS [5]	mg/L	723 (640-770	625 (450-790)	527 (510-550)
FDS [5]	mg/L	503 (450-540)	442 (330-510)	365 (340-390)
TSS [4]	mg/L	14 (13-15)	2.5	24 (17-30)
Total alkalinity [6]	mg/L	507 (490-520)	497 (460-530)	403 (400-410)
Bicarbonate as $CaCO_3$ [5]	mg/L	522 (490-560)	496 (460-530)	406 (400-420)
Carbonate as $CaCO_3$ [6]	mg/L	2.5	2.5	2.5
Hydroxide as $CaCO_3$ [6]	mg/L	2.5	2.5	2.5
Fe [6]	mg/L	105 (50-190)	168 (50-520)	247 (50-460)
Mn [5]	mg/L	5.8 (5-10)	5.8 (5-10)	413 (5-1700)
Total P [4]	mg/L	0.082 (0.081-0.082)	0.100	0.13 (0.10-0.15)
SO_4 [4]	mg/L	77 (76-78)	60 (59-61)	47 (46-48)
B [4]	mg/L	0.71 (0.68-0.73)	1.03 (0.96-1.10)	0.54 (0.52-0.55)
Ca [5]	mg/L	72 (52-79)	57 (50-77)	48 (47-50)
Mg [5]	mg/L	100 (87-110)	90 (79-110)	83 (79-86)

Constituent	Units	Range of Analytical Results [1]		
		MW-1	MW-2	MW-3 [2]
K [7]	mg/L	1.5 (1.4-1.7)	1.2 (1.1-1.3)	1.2
Na [8]	mg/L	44 (42-48)	62 (57-69)	31 (29-34)
Cl [9]	mg/L	66 (56-74)	41 (30-52)	23 (17-31)
Residual Cl_2 [10]	mg/L	0.05	0.05	0.29

[1] Average value with min and max range in parenthesis. A range did not exist for single value entries.
[2] Upgradient background well.
[3] Quarterly monitoring data from 1998 through 2008.
[4] Single samples collected on October 2 and 9, 2007.
[5] Single samples collected in June, July, September, and October 2005 and October 2 and 9, 2007.
[6] Single samples collected in June, September, and October 2005.
[7] Single samples collected in June 2005 and October 2 and 9, 2007.
[8] Single samples collected in June and July 2005 and October 2 and 9, 2007.
[9] Single samples collected in July and September 2005 and October 2 and 9, 2007.
[10] Single samples collected in September 2005.

The downgradient groundwater monitoring data indicate the groundwater quality beneath the land application area exceeds water quality objectives and background water quality for electrical conductivity (EC) and total dissolved solids (TDS). The groundwater quality in downgradient monitoring wells is also greater than upgradient water quality for fixed dissolved solids (FDS), total alkalinity, sulfate, calcium, magnesium, sodium, and chloride.

57. The nitrate as nitrogen (NO_3-N) concentration in the background monitoring well MW-3 has ranged from 6.4 to 11.3 mg/L NO_3-N from March 1998 to December 2007. The background water quality exceeded the applicable US EPA Primary MCL of 10 mg/L NO_3-N in January, June and July 2002 and December 2006. Since December 2006, background water quality has averaged 9.1 mg/L NO_3-N. This Order requires the Discharger to complete a Nutrient Management Plan to ensure adequate nutrient loading and prevent downgradient nitrate concentrations from exceeding background groundwater quality.

58. This Order utilizes electrical conductivity (EC) as the basis to evaluate the extent of salinity groundwater degradation and to set a limit on salinity loading to the land application area. Historical monitoring provides an abundance of EC data but lacks wastewater specific data for TDS and FDS monitoring. It is recognized that EC may not accurately indicate the extent of mobile, recalcitrant solids posing a threat to groundwater. Therefore, this Order establishes the requirement to monitor TDS and FDS for future site specific evaluations of salinity reduction and threat to groundwater quality.

59. The EC concentrations in monitoring wells downgradient of the land application area have consistently exceeded the EC concentration in the upgradient monitoring well MW-3. The downgradient monitoring wells MW-1 and MW-2 have had an average EC concentration from March 1998 to March 2008 of 1177 µmhos/cm and 1059 µmhos/cm, respectively. Upgradient monitoring well MW-3 has had an average EC concentration of 896 µmhos/cm. This Order requires the discharger to complete a Salinity Reduction Workplan to reduce the salinity load to groundwater. Additionally, an updated Antidegradation Analysis is required to substantiate the Discharger's assertions that the land application of wastewater does not

pose a threat to groundwater quality. Long term groundwater monitoring is needed to verify whether implemented salinity reduction methods have reduced the salinity impact to groundwater.

60. This Order requires additional monitoring to evaluate potential groundwater impacts. The monitoring requirements of this Order are also established to determine whether groundwater quality meets the antidegradation requirements set in State Water Resources Control Board Resolution No. 68-16 and the exemption requirements of *Consolidated Regulation for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in Title 27, CCR, Division 2, Subdivision 1, Section 20005, et seq.

Other Considerations for Food Processing Waste

61. Excessive application of food processing wastewater to land application areas can create objectionable odors, soil conditions that are harmful to crops, and degradation of underlying groundwater by overloading the shallow soil profile and causing waste constituents (organic carbon, nitrate, other salts, and metals) to percolate below the root zone. It is reasonable to expect some attenuation of various waste constituents that percolate below the root zone within the vadose (unsaturated) zone. Specifically, excess nitrogen can be mineralized and denitrified by soil microorganisms, organic constituents (measured as both BOD and volatile dissolved solids) can be oxidized, and the cation exchange capacity of the soil may immobilize some salinity species.

62. Irrigation with high strength wastewater results in high BOD loading on the day of application. If the rate of oxygen transfer into the soil is not adequate, anaerobic conditions may result and lead to nuisance conditions. Loading of BOD should be carefully managed and in no case cause nuisance conditions. The maximum BOD loading rate that can be applied to land without creating nuisance conditions can vary significantly depending on the operation of the land application system. *Pollution Abatement in the Fruit and Vegetable Industry*, published by the United States Environmental Protection Agency (US EPA Publication No. 625/3-77-0007) (hereafter *Pollution Abatement*), cites BOD loading rates in the range of 36 to 600 lbs/acre/day but indicates the loading rates can be even higher under certain conditions.

63. Acidic and/or reducing soil conditions can be detrimental to land treatment system function, and may cause groundwater degradation if the buffering capacity of the soil is exceeded. If the soil pH decreases below 5 and the soil remains in a reducing state for prolonged periods, naturally occurring metals (including iron and manganese) may dissolve and degrade underlying groundwater. In practice, prolonged reducing conditions may not occur because: a) the annual cycle of lowered pH during loading with either process water or fertilizer is followed by pH recovery during cropping and organic matter cycling and; b) the dose and rest cycling for process water application either in spreading basins or using irrigation creates alternate anoxic and aerobic conditions. *Pollution Abatement* recommends that water applied to crops have a pH within 6.4 to 8.4 to protect crops. The pH of process wastewater has an average of 6.1. The soils and underlying groundwater are expected to adequately buffer the discharge.

Basin Plan, Beneficial Uses, and Water Quality Objectives

64. 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 Board. These requirements implement the Basin Plan.

65. Surface water drainage from the site eventually flows into the Cache Slough. The Basin Plan designates the beneficial uses of the Cache Slough as municipal and domestic supply (MUN); agricultural supply (AGR); industry process (PROC); industry power (POW); water contact recreation (REC-1); noncontact water recreation (REC-2); warm freshwater habitat (WARM); cold freshwater habitat (COLD); spawning, reproduction and/or early development of cold freshwater aquatic organisms (SPWN); and wildlife habitat (WILD).

66. The Basin Plan designates the beneficial uses of underlying groundwater as municipal and domestic supply (MUN), agricultural supply (AGR), industrial service supply (IND), and industrial process supply (PRO).

67. 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.

68. The Basin Plan's narrative water quality objective for chemical constituents, at a minimum, requires waters designated as domestic or municipal supply to meet the MCLs specified in 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.

69. In summary, the narrative toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life associated with designated beneficial uses. 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.

70. 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. The applicability of this objective to groundwater designated as MUN has been affirmed by State Water Board Order No. WQO-2003-0014 and by subsequent decisions of the Sacramento County Superior Court and California Court of Appeal, 3rd Appellate District.

71. Groundwater limitations are the naturally occurring background water quality or the applicable Water Quality Objective, which ever is greater. This Order requires the discharger to identify priority pollutants most likely to be present and provide data so that the Central Valley Water Board can establish final groundwater limits for the identified pollutants.

72. Naturally occurring background concentrations have not been studied and concentrations present prior to human activities have not been determined. The determination of naturally

occurring background groundwater quality shall be made using the methods approved by the Executive Officer as submitted in the Background Groundwater Quality Workplan. Until naturally occurring background groundwater quality has been determined for the constituents of concern and identified priority pollutants, this Order establishes the following priority pollutants and their associated groundwater quality limits.

a. The EC Agricultural Water Quality Goal of 700 µmhos/cm is the applicable groundwater quality limit to minimize salinity stress on salt sensitive crops. Harvest crops with a low salinity tolerance grown in Solano County include almonds, apricots, edible dry beans and strawberries. Because the historical MW-3 background groundwater EC concentration exceeds the Agricultural Water Quality Goal, MW-3 monitoring data has been used to establish the interim groundwater quality limit. This Order establishes an interim EC groundwater limit that is effective immediately and provides a time schedule to determine and implement the appropriate groundwater EC concentration through review and approval by the by the Executive Officer.

b. The US EPA Primary MCL of 10 mg/L NO_3-N is the applicable water quality limit to protect human health for municipal consumption of groundwater. This Order establishes an interim NO_3-N groundwater limit that is effective immediately and provides a time schedule to determine the naturally occurring background concentration and implement the appropriate groundwater limit through review and approval by the by the Executive Officer.

73. Pursuant to California Water Code Section 13263(g), discharge is a privilege, not a right, and issuance of this Order does not create a vested right to continue the discharge. Failure to provide best practicable treatment and control; preclude conditions that threaten pollution, degradation, or nuisance; and protect groundwater quality will be sufficient reason to enforce this Order, modify it, or revoke it and prohibit further discharge.

Antidegradation Analysis

74. State Water Resources Control Board Resolution No. 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.

75. The facility has been in operation since 1975 and limited groundwater degradation caused by prior activities at the facility may require corrective action. However, economic prosperity of valley communities and associated industry is of maximum benefit to the people of the State, and therefore sufficient reason to accommodate growth and

groundwater degradation provided terms of the Basin Plan are met. When allowed, the degree of degradation permitted depends upon many factors (i.e., background water quality, the waste constituent, the beneficial uses and water quality objectives, management practices, source control measures, waste constituent treatability). This Order sets a limit on the monthly average wastewater flow and the yearly total wastewater flow in contrast to the daily maximum limit (5.0 million gallons per day) allowed in Order 95-101. Based on 154 days of yearly operation, the yearly limit reduces the potential yearly hydraulic load from 720 million gallons (MG) to 490 MG. Additionally, this Order sets effluent limits on EC, BOD, and total nitrogen compared to no limits set in Order 95-101. This Order therefore does not allow any increased degradation of groundwater.

76. The Discharger included an amended *Antidegradation Analysis* in the June 2009 RWD. The *Antidegradation Analysis* discusses salinity, nitrogen, and organic matter as constituents of concern that may have the potential to degrade groundwater. The *Antidegradation Analysis* makes the following assertions, which are summarized below:

    a. The travel time for process wastewater to reach the first groundwater after land application was determined to be approximately 4.3 years. Therefore, there will be a lag time before changes in process wastewater quality can affect groundwater quality. Assuming that salinity in the land applied process wastewater is not retained by soil, the lag time will be determined by the infiltration rate of the process wastewater. The lag time of 4.3 years was calculated by applying site specific data to a vadose zone model developed at the Laboratory for Energy Related Health Research (LERHR) South Campus Disposal Site, which was located approximately 4 miles from the Discharger and based on similar soils (Yolo clay loom).

    b. The process wastewater discharged to land has an average BOD concentration of 594 mg/L (monthly average from 1998 through 2007 processing seasons). Under maximum designed loading conditions (5 MGD) and a maximum BOD concentration of 930 mg/L, the instantaneous BOD loading rate would be 139 lb/acre/day and the cycle average would be 38 lb/acre/day. This cycle average BOD loading rate is below the lowest risk category limit in the California League of Food Processors (CFLP) Manual and within the Organic Loading Rate Risk Category 1. Therefore, no impact to groundwater is anticipated.

    c. Based on comparing the process wastewater discharged to land and the supplemental irrigation water, the food process wastewater falls within Risk Category 2 of the Mineral Salinity Concentration Risk Categories in the CFLP Manual. This indicates that the Dischargers irrigation operations are similar to local agriculture and that best practical treatment and control (BPTC) measures need to be implemented to reduce the risk of impacting groundwater. As part of BPTC, the Discharger has installed the brine recovery system discussed above and additional efforts are underway to reduce the salt needed to regenerate the ion exchange resins.

    d. An analysis of variance (ANOVA) comparing the historical groundwater EC concentration in the background groundwater monitoring well MW-3 to the upgradient monitoring wells MW-1 and MW-2 suggests that EC concentrations are significantly different between the wells. By graphing the EC concentration over time and

performing a linear regression for each well, the slightly negative slope of the linear regression line suggests that the EC concentration in all wells is declining over time.

e. Approximately, two-thirds of the nitrogen crop demand is met by process wastewater application, supplemental fertilizer, and livestock excrement. The process wastewater contributes less than fifty percent of the agronomic crop requirement, which brings the Discharger's wastewater reuse operations within Nitrogen Loading Rate Risk Category 1, the lowest category of the CFLP Manual. Additionally, a large portion of the nitrogen is lost through the irrigation process and another significant amount is taken up by the crops. Therefore, there is minimal risk to the underlying groundwater.

f. Graphing groundwater nitrate data from monitoring wells MW-1, MW-2, and MW-3 versus time indicates nitrate concentrations in both downgradient wells are lower than the background well. A linear regression of the data indicates that the background concentration has been increasing over time. The increase is not due to the Discharger's operations but likely due to farming practices upgradient of the facility. A downward regression trend in the upgradient well MW-2 suggests that the current operations may be potentially improving groundwater quality, perhaps by the crops utilizing available nitrate.

77. In addition to the amended *Antidegradation Analysis* and further information in the RWD, the following observations can be made:

a. Based on a monthly average effluent flow rate of 5.0 MGD, a maximum BOD concentration of 930 mg/L, application to seven management units averaging about 23 acres each, and an 18 day irrigation cycle that includes 5 days of application and 13 days of drying, the instantaneous loading rate would be 213 lb/acre/day and the cycle average loading rate would be 60 lb/acre/day. The US EPA Pollution Abatement cites that BOD loading rates upward of 600 lbs/acre/day can be applied to land without creating nuisance conditions depending on the site specific criteria. The daily and cycle average BOD loading limits, as established in this Order, account for site specific criteria that will prevent nuisance conditions.

b. Based on historical groundwater data, the EC concentration in monitoring wells downgradient from the land application area have consistently been greater than the EC concentrations observed in the background monitoring well, which may indicate degradation. However, the same data indicates that this profile has existed since monitoring data was first collected in March 1998 and potentially before. This Order requires the Discharger to determine natural background groundwater quality. Based on best professional judgment, 1,000 µmhos/cm of EC is the highest concentration that can be allowed without risking further degradation of groundwater. Because, it is not uncommon for the process waste water to exceed 1,000 µmhos/cm of EC, this Order establishes a time schedule to comply with the 1,000 µmhos/cm limit.

c. Nutrients, such as nitrate, are introduced into the land application area by means of process wastewater disposal, livestock grazing, and fertilizer make-up. Based on the RWD's nitrogen balance, these three sources account for about two-thirds of the nitrogen crop demand. The potential for unreasonable degradation depends not only

on properly managing loading rates, but the crop nutrient uptake and the ability of the vadose zone below the land application area to provide an environment conducive to nitrification and denitrification to prevent nitrate from reaching the water table. Groundwater monitoring results in downgradient well MW-2 show groundwater has been impacted by nitrate from 1998 to 2006. However, starting in 2006 nitrate levels have subsided below background and as long as application rates are managed properly, minimal risk of future groundwater degradation is expected. Therefore, this Order requires the Discharger to submit annual nitrogen balances to ensure that the nitrogen assimilation capacity of the land application is not exceeded.

d. The Discharger has estimated that the average total nitrogen concentration for tomato and vegetable processing wastewater is 24 mg/L. Based on the total annual wastewater flow for tomato processing (420 MG) and vegetable processing (70 MG), the total application area of 606.9 acres, and accounting for additional nitrogen loading from supplemental irrigation water, applied fertilizer, and cattle, approximately 168 lbs/acre of total nitrogen will be applied per year. The crop uptake of the land application areas is estimated to be 227 lbs/acre/year. Therefore, the annual nitrogen loading rate limit of 250 lbs/acre, as established in this Order, will protect groundwater quality.

Other Regulatory Considerations

78. Federal regulations for storm water discharges were promulgated by the U.S. Environmental Protection Agency on 16 November 1990 (40 CFR Parts 122, 123, and 124). The State Board adopted Order No. 97-03-DWQ (General Permit No. CAS000001) specifying waste discharge requirements for discharges of storm water associated with industrial activities for the manufacturing facility area, and requiring submittal of a Notice of Intent by all affected industrial dischargers. This Order requires the Discharger to apply for coverage or submit a *Notice of Non-Applicability of Coverage under the NPDES General Permit for Discharges of Stormwater*.

    The stormwater arising from the land application areas during the off season is to be regulated in accordance with the local Coalition (Dixon/Solano Resource Conservation District Water Quality Coalition), which was joined by the Discharger in 2003 and is covered by Resolution No. R5-2005-0137 Conditional Waivers of Waste Discharge Requirements for Discharges from Irrigated Lands within the Central Valley.

79. Section 13267(b) of the California Water Code (CWC) provides that: *"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, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of discharging, or who proposes to discharge waste outside of its region that could affect the quality of the waters of the state 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."

80. The technical reports required by this Order and the attached Monitoring and Reporting Program No. R5-2010-0038 are necessary to assure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges the waste subject to this Order.

81. Based on the threat and complexity of the discharge, the facility is determined to be classified as 2-B as defined below:

    a. Category 2 threat to water quality, defined as, "Those discharges of waste that could impair the designated beneficial uses of the receiving water, cause short term violation of water quality objectives, cause secondary drinking water standards to be violated, or cause a nuisance."

    b. Category B complexity, defined as, "Any discharger not included [as Category A] that has physical, chemical, or biological treatment systems (except for septic systems with subsurface disposal) or any Class 2 or Class 3 waste management units."

82. 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 CWC Section 13801, apply to all monitoring wells.

83. The action to adopt waste discharge requirements for this existing facility is exempt from the provisions of the California Environmental Quality (CEQA), in accordance with Title 14 CCR, Section 15301.

84. State regulations that prescribe procedures for detecting and characterizing the impact of waste constituents from waste management units on groundwater are found in Title 27 CCR Section 20380. While the WWTF is exempt from Title 27, the data analysis methods of Title 27 may be appropriate for determining whether the discharge complies with the terms for protection of groundwater specified in this Order.

85. The discharge meets two of three of the criteria for an exemption from the requirements of *Consolidated Regulation for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in Title 27, CCR, Division 2, Subdivision 1, Section 20005, et seq., (Title 27). In addition, a time schedule is included in this Order to require the Discharger to implement salinity reduction that will allow compliance with the third criterion.

    a. The Regional Water Board has issued waste discharge requirements,

    b. The groundwater data indicate that the permitted discharge under Order 95-101 seems to indicate violations with the Basin Plan. However monitoring well, MW-3 which is used to establish upgradient background groundwater quality is located adjacent to a surface water drainage ditch to the south. Therefore, these WDRs are

being issued to require the Discharger to complete the necessary studies to evidence their assertions of not degrading groundwater and to bring the discharge into compliance with the Basin Plan by requiring the Discharger to comply with effluent limits, groundwater limits, management practices, and established time schedules. This Order contains a time schedule for the Discharger to minimize the salinity of process water discharged to the land application area. In addition, this Order requires the Discharger to further investigate groundwater quality and determine background groundwater quality. Following submittal and review of this information, the applicability of Title 27 for the facility will be determined and, if needed, this Order will be reopened and further revisions to the Order will be made to protect groundwater quality.

c. The wastewater does not need to be managed according to Title 22 CCR, Division 4.5, and Chapter 11, as a hazardous waste.

86. Pursuant to CWC 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

87. All the above and the supplemental information and details in the attached Information Sheet, which is incorporated by reference herein, as well as the Central Valley Water Board's administrative record, were considered in establishing the following conditions of discharge.

88. 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.

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

IT IS HEREBY ORDERED that, pursuant to Sections 13263 and 13267 of the California Water Code, Order No. 95-101 is rescinded and Campbell Soup Supply Company, their agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted there under, shall comply with the following*:*

[Note: Other prohibitions, conditions, definitions, and some methods of determining compliance are contained in the attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements" dated 1 March 1991.]

A. Discharge Prohibitions

1. Discharge of wastes to surface waters or surface water drainage courses, including irrigation ditches outside of control of the Discharger is prohibited.
2. Discharge of waste classified as 'hazardous,' defined in Section 20164 of Title 27, CCR, or 'designated', as defined in Section 13173 of the CWC, is prohibited.

3. The discharge of wastewater in a manner other than as described in the Findings is prohibited.
4. The discharge of toxic substances into the Discharger's process wastewater ponds or to the land application area such that biological mechanisms are disturbed is prohibited.
5. The discharge of process wastewater offsite or other than to the approved land application areas identified in Finding No. 36 is prohibited.
6. After **15 May 2011**, the discharge of any spent regeneration flush water from regeneration of the ion exchange matrix to the wastewater pond or the land application area is prohibited.
7. The discharge of domestic wastewater to the process wastewater ponds, land application area or any surface waters is prohibited.
8. Storage of solids on areas without means to prevent leachate generation and infiltration into the ground is prohibited.
9. Application of vegetable and tomato solids to the land application areas is prohibited.

B. Process Wastewater Discharge Specifications

1. The average monthly flow of wastewater to the land application area shall not exceed 5.0 million gallons per day and the total annual flow to the land application area shall not exceed 490 million gallons.
2. Neither the treatment nor the discharge of wastewater shall cause a nuisance or condition of pollution as defined by the CWC, Section 13050.
3. The discharge shall not cause the degradation of any groundwater.
4. No wastewater constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of the Groundwater Limitations.
5. Objectionable odors originating at this facility shall not be perceivable beyond the limits of the property owned by the Discharger.
6. Sufficient dissolved oxygen must be maintained in the upper zone (one foot) of any pond in order to prevent objectionable odors.
7. The Discharger shall operate all systems and equipment to maximize treatment of wastewater and optimize the quality of the discharge.
8. Public contact with wastewater shall be precluded or controlled through such means as fences, signs, or acceptable alternatives.
9. All ponds shall be managed to prevent the breeding of mosquitoes. In particular:
    a. An erosion control program should assure 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, and/or use of herbicides.
    c. Dead algae, vegetation, and debris shall not accumulate on the water surface.

10. All ponds shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.
11. The freeboard in each pond shall not be less than two feet, as measured vertically from the water surface to the lowest point of overflow.
12. The land application system shall have sufficient capacity to accommodate wastewater flow and seasonal precipitation. 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.

C. Domestic Wastewater Discharge Specifications

1. The average daily dry weather flow shall not exceed 3,000 gallons per day.
2. No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of the Groundwater Limitations.
3. Wastewater treatment, storage, and disposal shall not cause pollution or a nuisance as defined by Section 13050 of the California Water Code (CWC).
4. The Discharger shall operate all systems and equipment to optimize the quality of the treated effluent.
5. Public contact with wastewater shall be precluded or controlled through such means as fences, signs, or acceptable alternatives.
6. Objectionable odors originating at the facility shall not be perceivable beyond the limits of the wastewater treatment, storage or P/E ponds at an intensity that creates or threatens to create nuisance conditions.
7. As a means of discerning compliance with Discharge Specification B.6, the dissolved oxygen 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.
8. All P/E ponds shall be managed to prevent breeding of mosquitoes. In particular,
    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.

9. All treatment and storage facilities shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.

10. The WWTF shall have sufficient treatment, storage, and disposal capacity to accommodate allowable wastewater flow and design seasonal precipitation and ancillary inflow and infiltration during the winter months. 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. The Discharger shall operate and maintain all ponds sufficiently to protect the integrity of containment levees 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 Provision, the Discharger shall install and maintain in each pond permanent staff gauges with calibration marks that indicate the water level at design capacity and enable determination of available operational freeboard.

12. On or about **15 April** of each year, available pond storage capacity shall at least equal the volume necessary to comply with Discharge Specifications B.10 and B.11.

D. Process Wastewater Effluent Limitations

Wastewater shall not be applied to the land application area in quantities or with constituent concentrations that exceed the following effluent limits or in other concentrations that cause noncompliance with any Discharge Specification or as determined in accordance with Provision G.1.h to ensure compliance with the Groundwater Limitations.

Constituent	Units	Compliance Date	Daily	18-day Average	Monthly Average	Annual Average
EC [1]	µmhos/cm	Immediately	2000	--	1350	1250
EC [1]	µmhos/cm	12 November 2010	1500	--	1000	900
BOD	lbs/ac/day	Immediately	300	100	--	--
Total Nitrogen	lbs/ac/year	Immediately	--	--	--	250

[1] The Discharger is required to collect effluent FDS data and may request to replace the EC effluent limit with a FDS limit once two years of FDS effluent and groundwater data have been collected.

E. Land Application Area Requirements

1. The discharge shall be distributed uniformly on adequate acreage in compliance with the Discharge Specifications and Effluent Limitations.

2. Crops shall be grown on the land application area. Crops shall be selected based on nutrient uptake capacity, tolerance to high soil moisture conditions, consumptive use of water, and irrigation requirements. Cropping activities shall be sufficient to take up the nitrogen applied, and crops shall be harvested and removed from the land at least on an annual basis.
3. Discharge of treated wastewater, including runoff, spray or droplets from the irrigation system, shall not occur outside the boundaries of the land application area.
4. Hydraulic loading of treated wastewater and irrigation water shall be at reasonable agronomic rates designed to minimize the potential impact to groundwater quality by percolation of wastewater and irrigation water below the root zone (i.e., deep percolation).
5. The land application area wastewater distribution system shall be designed and maintained to prevent human consumption of wastewater.
6. The land application areas shall be managed to prevent breeding of mosquitoes. More specifically:
    a. All applied irrigation water must infiltrate completely within 48 hours after application ceases.
    b. Ditches not serving as wildlife habitat should be maintained free of emergent, marginal, and floating vegetation.
    c. Low pressure pipelines, unpressurized pipelines, and ditches that are accessible to mosquitoes shall not be used to store wastewater.
7. The application of wastewater to the LAA shall comply with the following setback requirements:

Setback Definition[1]	Minimum Irrigation Setback (feet)
Edge of land application area [2] to public property boundary (e.g. street)	5 [3]
Edge of land application area [2] to other agriculture property	0
Edge of land application area [2] to property with an occupied residence	50
Edge of land application area [2] to an irrigation well	25 [3]
Edge of land application area [2] to domestic well	100 [3]

[1] Additional setbacks may be needed to comply with other requirements of this Order.
[2] As defined by the wetted area produced during irrigation
[3] Unless otherwise approved by the Executive Officer.

8. Discharges to land application areas shall be managed to minimize both erosion and runoff from the irrigated area.

9. Irrigation flood gates shall remain closed and berms shall be maintained around the perimeter of the land application areas to prevent the runoff of treated wastewater or stormwater during the processing season.

10. The resulting effect of the wastewater discharge on the soil pH shall not exceed the buffering capacity of the soil profile and shall not cause significant mobilization of soil constituents such as iron and manganese.

11. Application of treated wastewater to the land application areas via flood irrigation shall only occur on furrows graded or irrigation checks configured so as to achieve uniform distribution, minimize ponding, and provide for tailwater control. Furrow runs and irrigation checks shall not be longer and slopes shall not be greater than what permits reasonably uniform infiltration and maximum practical irrigation efficiency.

12. The Discharger may not discharge process wastewater to the land application areas when soils are saturated. Wastewater distribution to the land application area shall be optimized to allow saturated fields, either from the last wastewater application or a previous precipitation event, to dry before the next wastewater application.

13. After all processing wastewater has been land applied and prior to allowing stormwater to flow offsite, the Discharger shall wait three weeks from the date of last land applied wastewater to allow for soil stabilization or capture the first flush of salts and nutrients by retaining and reapplying the first 0.5 inches of rainwater, which ever comes first. Any captured stormwater must be evenly reapplied to the land application area for infiltration. If necessary, the flush water can be stored in the tailwater pond until conditions, as defined in this Order, permit land application.

F. Process Wastewater Solids Disposal Requirements

1. Collected screenings and other solids removed from tomato and vegetable processing wastewater shall be disposed of offsite in a manner that is consistent with Title 27, Division 2, Subdivision 1 of the CCR or in a manner approved by the Executive Officer.

2. Tomato and vegetable sludge and other solids shall be removed from sumps, screens, wastewater ponds, etc. as needed to ensure optimal operation and adequate hydraulic capacity. Tomato and vegetable solids drying operations, if any, shall be designed and operated to prevent leachate generation.

3. Sludge shall be removed from the Settling Pond as needed to ensure optimal operation and adequate hydraulic capacity. Settling Pond sludge applied to on-site land areas must be disced and indiscernible from the native soil.

G. Domestic Wastewater Solids Disposal Requirements

1. Use and disposal of biosolids shall comply with the self-implementing Federal regulations of 40 CFR 503, which are subject to enforcement by the U.S. EPA, not the Regional Water Board. If during the life of this Order, the state accepts primacy for implementation of 40 CFR 503, the Regional Water Board may also initiate enforcement where appropriate.

2. Storage and disposal of domestic wastewater sludge (septage) shall comply with existing Federal, State, and local laws and regulations, including permitting requirements and technical standards.
3. Sludge and other solids shall be removed from screens, sumps, ponds, and septic tanks as needed to ensure optimal operation and adequate hydraulic capacity. A duly authorized carrier shall haul sludge, septage, and domestic wastewater.
4. Any proposed change in solids use or disposal practice from a previously approved practice shall be reported to the Executive Officer at least 90 days in advance of the change.

H. Groundwater Limitations

Effective immediately as an interim groundwater limitation, the discharge, in combination with other sources, shall not cause underlying groundwater to contain waste constituents in concentrations statistically greater than existing background groundwater quality. Background groundwater quality shall be determined using the methods provided in Title 27 Section 20415 (e)(10). Background values must be updated annually as described in the MRP.

Effective **30 November 2018**, the final groundwater limits will be the groundwater quality objectives or the background groundwater quality (as determined by required studies approved by the Executive Officer), whichever is greater. If background values are not determined, the groundwater water quality objectives listed below will be the final groundwater limitations. If necessary to meet groundwater limits, the Discharger shall upgrade its wastewater treatment before the effective date. The groundwater quality objectives are presented below:

Constituent	Units	Limitation
Boron	mg/L	0.7
Chloride	mg/L	106
Iron	mg/L	0.3
Manganese	mg/L	0.05
Sodium	mg/L	69
Total Dissolved Solids	mg/L	450 [1]
Total Nitrogen	mg/L	10
Nitrate (as N)	mg/L	10
Ammonia (as NH_4)	mg/L	1.5
Bromoform	µg/L	4
Bromodichloromethane	µg/L	0.27
Chloroform	µg/L	1.1
Dibromochloromethane	µg/L	0.37

[1] A cumulative impact limit that accounts for several dissolved constituents in addition to those listed here separately [e.g., alkalinity (carbonate and bicarbonate), calcium, hardness, phosphate, and potassium].

I. Provisions

All of the following reports shall be submitted pursuant to Section 13267 of the California Water Code and shall be prepared as described in Provision G.2.

a. By **30 June 2010**, the Discharger shall apply for coverage or submit a Notice of Non-Applicability for *Order No. 97-03-DWQ, Discharges of Storm Water Associated with Industrial Activities* or provide a reevaluation of the Notice of Non-Applicability previously issued.

b. A composite sampler is required to provide unbiased monitoring results resulting from system cleaning and chemical sanitization events. Composite samples require collection at regular intervals and proportional to the existing flow to form a combined sample representative of wastewater character over the sampling period. By **30 June 2010**, the Discharger shall submit evidence that a composite sampler has been installed to collect process wastewater prior to land application. The submitted material needs to provide the specifications of the sampler, implemented sampling frequency and volume.

c. By **1 April 2011**, the Discharger shall submit and implement a finalized *Operation and Maintenance Plan* (*O&M Plan*) that addresses operation of the wastewater treatment and disposal facility. At a minimum, the *O&M Plan* needs to describe (a) the daily operation and maintenance of the treatment system, (b) the practices used to treat the wastewater within limits specified in this Order, (c) the locations of the land application areas, and procedures to prevent excessive BOD, nitrogen, or dissolved solids loading of land application areas, (d) the locations of flow and effluent sampling points, (e) quality control sampling procedures necessary to obtain representative samples, (f) maintenance schedule and practices for the land application areas, (g) maintenance schedule and practices for all ponds, (h) the locations of solid waste disposal areas, methods of disposal, the daily practices associated with the disposal and drying of solid waste, and the means of compliance with Prohibition A.9, (i) means to secure the land application areas and control wastewater or stormwater from discharging offsite (i.e., installation of fencing or notification signs, installation of berms to prevent runoff, configuration of checks to control application rates), (j) the current Land Application Area Management Plan including an up-to-date map clearly depicting tailwater ditches and property boundaries and nearby surface water drainage ditches, (k) planning for response to a potential natural disaster, (l) institutional controls such as Best Management Practices (BMPs), (m) Standard Operating Procedures (SOPs), (n) specific procedures to ensure that contaminated stormwater remains onsite, (o) employee orientation and training. A copy of the *O&M Plan* shall be kept at the facility for reference by operating personnel and personnel in charge of land application management, who shall be familiar with its contents. The O&M Plan shall be kept up to date with current practices and any changes shall be submitted to the Central Valley Regional Water Board.

d. Ponds B and C require rehabilitation prior to being used for intermittent or emergency wastewater or stormwater storage.

   i. By **30 September 2010**, the Discharger shall submit a *Pond Operation Plan* that describes the planned use, operation, and maintenance of all ponds on site associated with stormwater process wastewater. If the *Pond Operation Plan* identifies that Pond B and/or C are needed for future operations then the *Pond Operation Plan* must provide a workplan for their rehabilitation. Rehabilitation shall include at a minimum clearing ponds of vegetation, repairing berm damage, ensuring wastewater transfer piping functionality and installing staff gauges. If ponds are planned to be taken out of service the *Pond Operation Plan* needs to provide pond closure recommendations and a schedule to submit a decommissioning workplan.

   ii. By **29 March 2011**, the Discharger shall have completed all planned work described in the *Pond Operation Plan* and submit a *Pond Operation Report* that describes the work performed and the pond operation and maintenance protocol, which needs to be incorporated into the *O & M Manual*,

e. By **30 November 2010**, the Discharger shall submit a *Land Application Area Management Plan*. The plan must:

   i. Comply with the requirements of this Order and be approved by the Executive Officer,

   ii. Describe protocols for the land application of irrigation water and process wastewater, and the protocol for tailwater management, and shows compliance with Prohibition A.5,

   iii. Describe protocols for cattle grazing management,

   iv. Describe protocols for land application area maintenance including, aeration, grading, and tailwater ditch maintenance,

   v. Provide a land application map that indicates the boundaries of the land application area, fences, tailwater ditches, nearby surface water drainage ditches, public property boundaries (e.g. roads), and shows compliance with Prohibition A.1 and Requirement D.8. The map needs to be provided in hard copy (at least 22 inches by 34 inches) and as an electronic PDF file on CD, and

   vi. Provide evidence of land application area ownership, such as a copy of the grant deed, for each land application area. The report needs to show whether Campbell Soup Supply Co. or other subsidiary company owns the land.

f. By **1 April 2011**, The Discharger shall have converted its domestic wastewater treatment disposal practice from pond disposal to leachfield disposal with septic treatment. The Discharger plans to obtain a domestic wastewater disposal permit from the Solano County Environmental Health Department. The Discharger shall provide status updates to the Central Valley Regional Board within the monthly monitoring reports.

i. By **30 August 2010**, the Discharger shall submit a project schedule outlining the work necessary to install a septic tank and convert pond disposal of domestic wastewater to leachfield disposal. The submitted schedule will be made part of this Order by reference. The Discharger must also provide evidence that the Solano County Environmental Health Department will review the leachfield disposal system and permit the disposal of domestic wastewater.

ii. The Discharger must comply with Provisions I.f.ii.1 and I.f.ii.2 described below if the Discharger does not obtain a County domestic wastewater discharge permit.

1. By **15 October 2010**, the Discharger shall submit and immediately implement a *Domestic Wastewater Treatment Conversion Workplan* to accomplish the work necessary to convert pond disposal of domestic wastewater to leachfield disposal, and to properly close the domestic wastewater ponds. The Workp*lan* must:

    a. Describes the specifications of the newly designed septic tank and subsurface domestic wastewater disposal system. The specifications need to include typical flow rates accounting for seasonal variation, the size of the septic tank, description of the subsurface disposal system, and a map indicating the location of the septic tank, subsurface disposal area, and piping.

    b. Provide an expected completion date that the septic tank and subsurface disposal system will be operational and online.

    c. Provide a Wastewater Pond Closure Workplan that describes how the ponds will be decommissioned, sludge removed, and the criteria that will be used to determine if additional investigation is warranted. The workplan shall provide a timeline for expected completion.

2. By **1 April 2011**, the Discharger shall have converted its domestic wastewater treatment to leachfield disposal and closed the ponds. The Discharger shall submit a *Domestic Wastewater Treatment Conversion and Pond Closure Report* that describes the work performed.

iii. The Discharger shall comply with Provision I.f.iii.1 below if the Discharger obtains a County domestic wastewater discharge permit.

1. By **1 April 2011**, the Discharger shall have converted its domestic wastewater treatment to leachfield disposal and closed the ponds. The Discharger shall submit a *Completion Report* that describes the work performed and provide evidence of the issued Solano County permit. After Executive Officer approval of the *Completion Report,* requirements set forth in the Domestic Wastewater Discharge Specifications C.1 through 12 and Domestic Wastewater Solids Disposal Specifications G.1 through 4 will no longer be applicable.

g. By **28 February 2013**, the Discharger shall have completed and be implementing all facility upgrades necessary to improve best practical treatment and control. Necessary upgrades shall be investigated and identified as part of the workplans described below:

   i. By **31 March 2011**, the Discharger shall submit a *Salinity Reduction Workplan* that proposes to investigate best practicable treatment and control of salinity. The workplan shall consider implementing achievable management practices, reducing salinity overloading to crops, and preventing groundwater degradation. The workplan shall at a minimum propose improvements in the usage and disposal of chemicals involved in clean-in-place operations. Such improvements must consider replacing the ion exchange water softener with technology that does not create saline wastewater or segregating the ion exchange saline wastewater and disposing it at an off-site facility permitted to accept saline waste. The workplan also needs to describe how the facility will comply with Discharge Prohibition A.6.

   ii. By **30 April 2012**, the Discharger shall submit a *Salinity Reduction Report* that provides the results of the recommendations contained in the *Salinity Reduction Workplan*. The report shall include the results of the investigation methods established to compare the selected best practicable treatment and control of salinity. The report shall provide a narrative rational for the methods that have been implemented to reduce salinity loading. The report shall also provide a salinity mass balance that shows the facilities salinity loading to the land application area before and after the chosen methods have been implemented. Tabular and graphical representations of the process wastewater before and after salinity reduction improvements shall be used for supportive evidence.

   iii. By **31 December 2010**, the Discharger shall submit a *Nutrient Management Workplan.* The workplan shall describe a study designed to determine the amount of FDS and nitrogen that crops grown in the land application area will take up, and will be removed during harvest. The objective of the study is to identify and utilize site specific data to determine the pounds per acre of process wastewater that may be applied to the land application area that will not cause these constituents in underlying groundwater to increase over background groundwater quality and identify the appropriate protocol for the application of any supplemental fertilizer. The study shall be completed over at least two process seasons.

   iv. By **31 December 2012**, the Discharger shall submit a *Nutrient Management Report* that provides the results of the *Nutrient Management Workplan* analysis. The results shall include a recommended loading rate for FDS and nitrogen for the land application area. The loading rate shall be developed to prevent degradation to groundwater and shall limit “storage” of waste constituents in the soil for long-term sustainability.

h. By **31 January 2017**, the Discharger shall have established a groundwater monitoring well network and determined background groundwater quality. The

following workplans provide progressive compliance dates to achieve this requirement.

i. By **30 September 2010**, the Discharger shall submit a *Background Groundwater Quality and Monitoring Well Network Assessment Workplan* that includes the Discharger's proposal for determining naturally occurring background groundwater quality and evaluates and proposes changes to the current monitoring well network. Additional well installation, if necessary, shall meet the requirements of Section 1 of Attachment D, which is attached hereto and made part of this Order by reference, and describe the criteria that will be utilized to determine whether a monitoring well can be considered to provide reliable groundwater quality data. The plan needs to provide for the evaluation of monitoring well MW-3 and nearby surface water features that may impact data reliability, and propose appropriate location for establishing upgradient water quality. The criteria also need to consider aquifer continuity between monitoring wells. If new monitoring wells are necessary, the workplan needs to include conclusions, recommendations, and a rationale for the location of each additional monitoring well. The rationale needs to consider both the potential impacts from wastewater and tailwater ponds and the requirements of the *Background Groundwater Quality Report* and updated *Antidegradation Analysis* described below and if necessary, include a *Monitoring Well Installation Workplan.* The determination of naturally occurring background groundwater quality shall be made using the methods proposed by the Discharger and approved by the Executive Officer.

ii. Within **180 Days** of approval by the Executive Officer of the Central Valley Water Board of the methodology to determine background groundwater quality and the Dischargers conclusions and recommendations contained in the *Assessment Workplan*, if necessary, the Discharger shall submit a *Monitoring Well Installation Report* that satisfies the requirements of Section 2 of Attachment D.

iii. By **30 April 2015**, the Discharger shall submit a *Background Groundwater Quality Report* that provides an updated *Antidegradation Analysis*. The report shall present a summary of all monitoring data (including data obtained prior to adoption of this Order). The determination of background groundwater quality based on data from at least 12 consecutive groundwater monitoring events. For each monitoring constituent listed in Groundwater Limitations F.2 the report shall compare the measured concentration in each downgradient monitoring well with the concentration found in the upgradient monitoring well and background water quality. The report shall identify constituents of concern, propose a natural groundwater concentration for the identified constituents, and evaluate the effectiveness of facility improvements made as result of the *Salinity Reduction Workplan* and *Nutrient Management Workplan*. Background concentrations will be used to determine the need to reopen the order and revise annual average effluent limits described in Effluent Limitation C.1. If on **31 May 2015**, the determination indicates, on a constituent by constituent basis, that:

1. Background groundwater concentrations are greater than the annual average effluent limits specified in Effluent Limitation C.1, the Discharger may petition the Central Valley Water Board for consideration of establishing higher annual average effluent limits or take no action.

2. Background groundwater concentrations are lower than the annual average effluent limit specified in Effluent Limitation C.1, the Discharger shall submit a Facility Improvement Workplan by **31 January 2016** that will describe the improvements or operational changes it will implement at the facility and a schedule to allow the discharge to comply with Groundwater Limitation F.1. The workplan shall contain a preliminary evaluation of each component of the WWTF and effluent disposal system and propose a time schedule for implementing best practicable treatment and control for each constituent of concern. The schedule to complete the evaluation shall be as short as practicable, and shall not exceed one year.

2. 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.

3. The Discharger shall comply with Monitoring and Reporting Program No. R5-2010-0038, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.

4. 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)."

5. 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.

6. Upon the reduction, loss, or failure of the domestic sewer system resulting in a domestic sewer overflow, the Discharger shall take any necessary remedial action to (a) control or limit the volume of sewage discharged, (b) terminate the sewage discharge as rapidly as possible, and (c) recover as much as possible of the sewage discharged (including wash down water) for proper disposal. The Discharger shall implement all applicable remedial actions including, but not limited to, the following:

   a. Interception and rerouting of sewage flows around the sewage line failure.

   b. Vacuum truck recovery of domestic sewer overflow and wash down water.

c. Use of portable aerators where complete recovery of the domestic sewer overflows are not practicable and where severe oxygen depletion is expected in surface waters.

d. Cleanup of sewage-related debris at the overflow site.

7. 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."

8. The Discharger shall submit to the Central Valley Water Board on or before each compliance report due date, the specified document 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.

9. In the event of any change in control or ownership of the facility or wastewater land application areas, 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 this office. 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 California Water Code. Transfer shall be approved or disapproved by the Executive Officer.

10. The Discharger must comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. 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 recession of this Order.

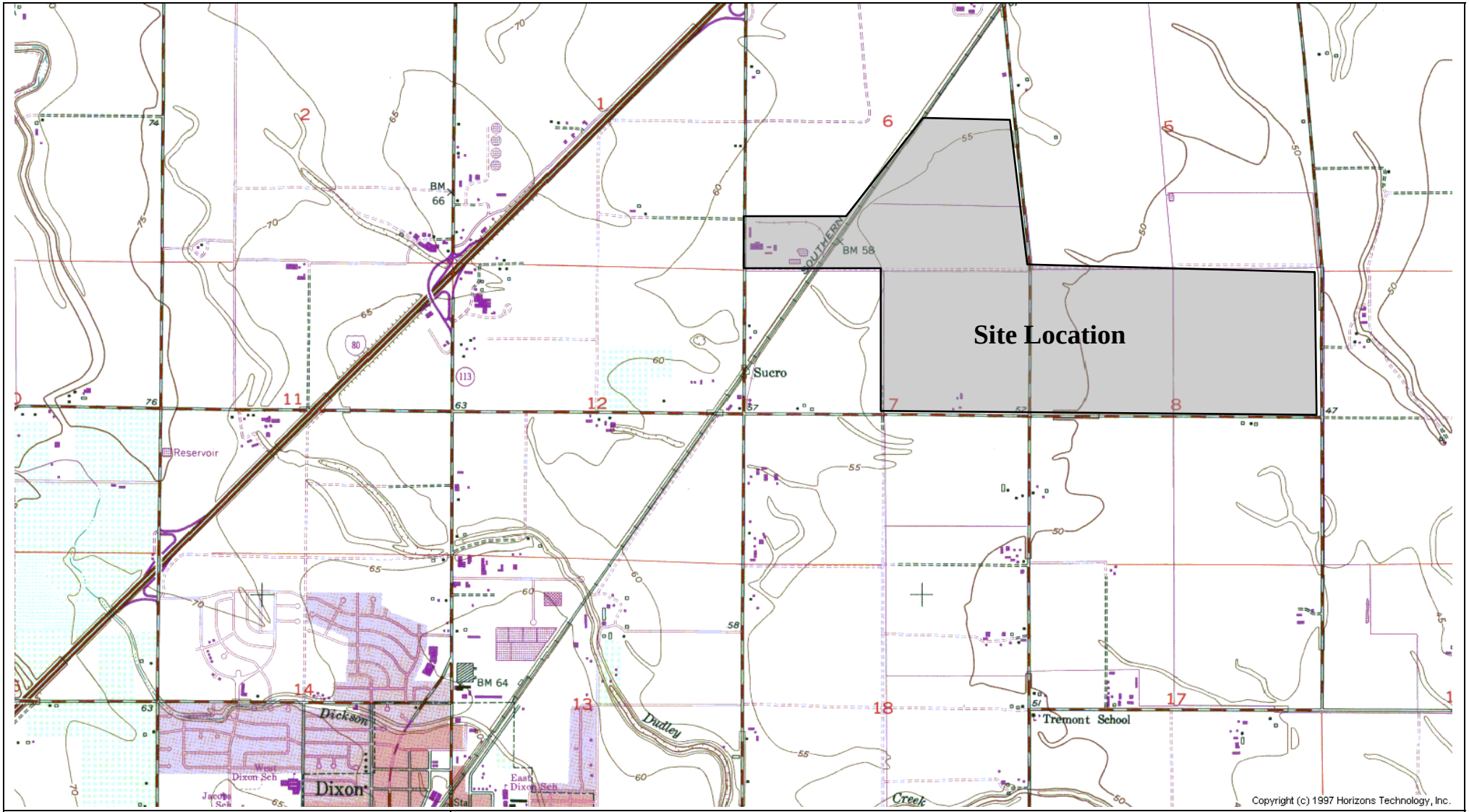
11. A copy of this Order shall be kept at the discharge facility for reference by operating personnel. Key operating personnel shall be familiar with its contents.

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

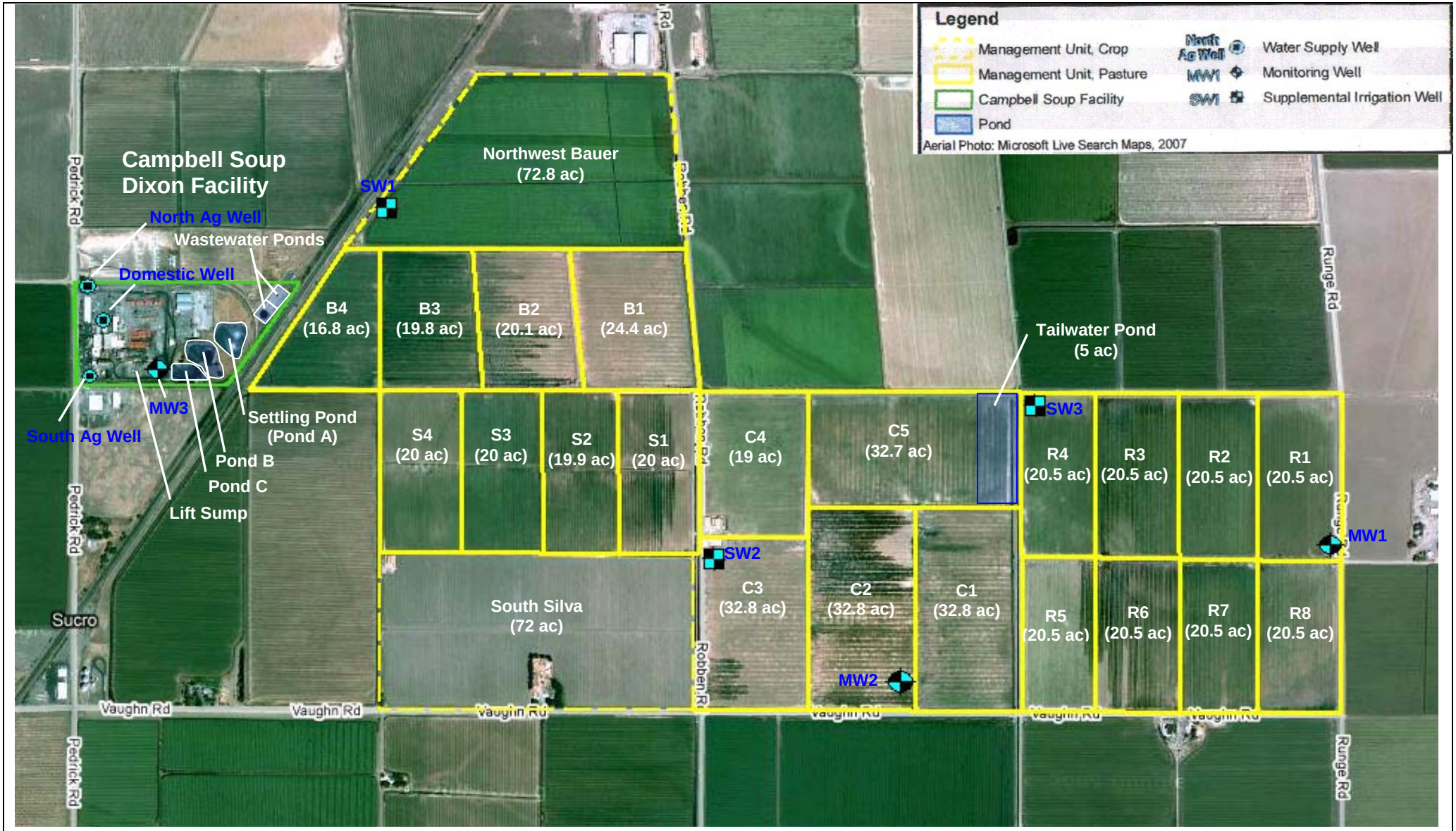
I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Central Valley Water Quality Control Board, Central Valley Region, on 18 March 2010.

Original signed by Pamela C. Creedon

PAMELA C. CREEDON, Executive Officer



Drawing Reference: **U.S.G.S** **Dixon, California** **TOPOGRAPHIC MAPS** **7.5 MINUTE QUAD**	**REGIONAL MAP** **CAMPBELL SOUP SUPPLY COMPANY, DIXON, CA** **SOLANO COUNTY**

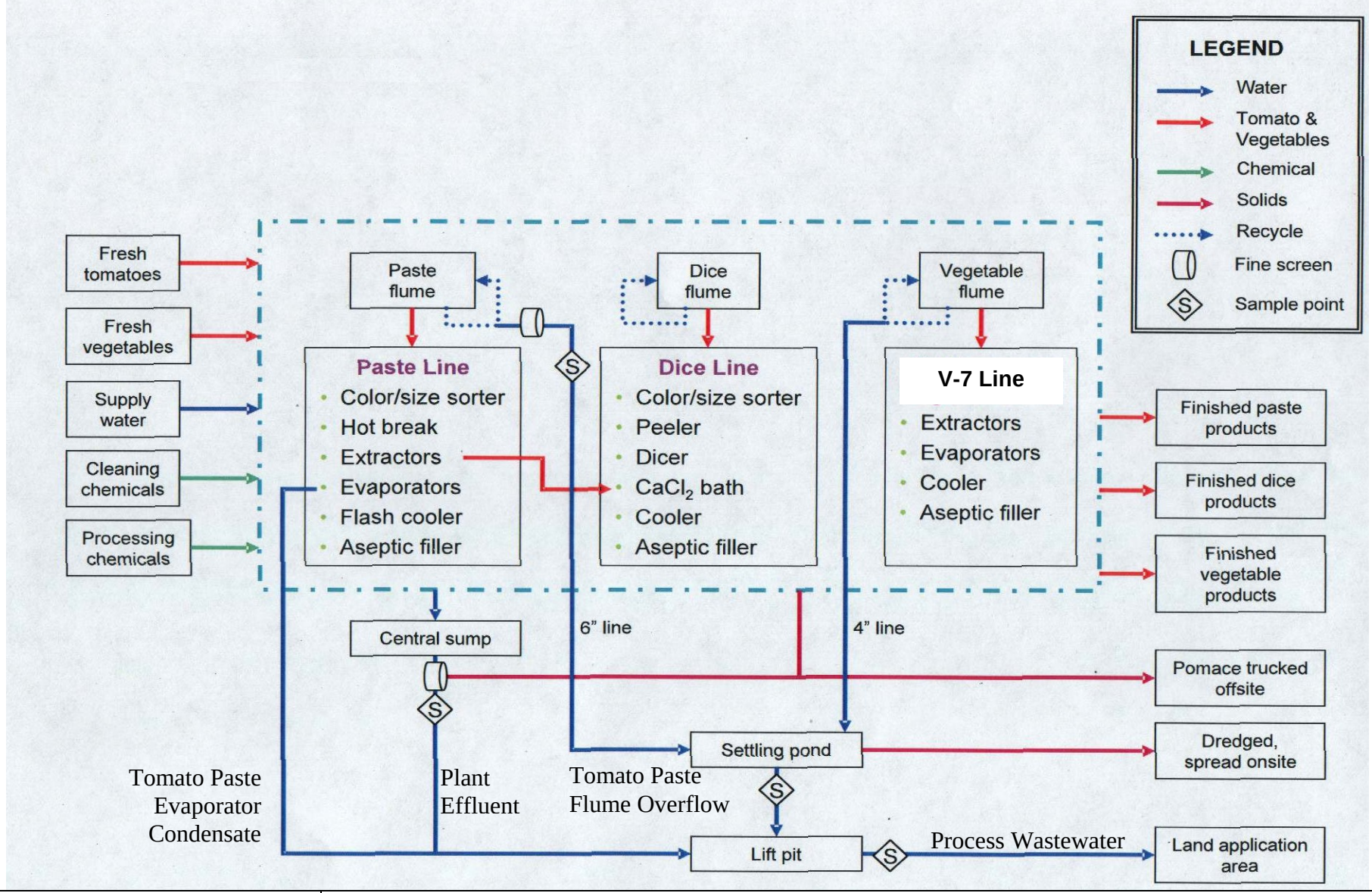


Drawing Reference:
Brown and Caldwell

SITE MAP

CAMPBELL SOUP SUPPLY COMPANY, DIXON, CA

SOLANO COUNTY



Drawing Reference: Brown and Caldwell	**PROCESS FLOW DIAGRAM** **CAMPBELL SOUP SUPPLY COMPANY, DIXON, CA** **SOLANO COUNTY**

ATTACHMENT D
WDR ORDER N0. R5-2010-0038
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

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2010-0038

FOR
CAMPBELL SOUP SUPPLY COMPANY, LLC
CAMPBELL SOUP SUPPLY COMPANY DIXON FACILITY
SOLANO COUNTY

This Monitoring and Reporting Program (MRP) incorporates requirements for monitoring of tomato and vegetable processing wastewater, domestic wastewater, process wastewater ponds, a tailwater pond, land application areas, solids, and groundwater. 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 wastewater samples should 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. Land applied wastewater flow monitoring shall be conducted continuously using a flow meter and shall be reported in cumulative gallons per day.

Field test instruments (such as pH and dissolved oxygen) may be used provided that:

1. The operator is trained in the proper use of the instrument;
2. The instruments are field calibrated prior to each use;
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.

EFFLUENT PROCESS WASTEWATER MONITORING

Upon annual startup and continuing throughout the process season, processing wastewater samples shall be collected after being commingled in the lift pit and prior to discharge to the land application area. Monitoring shall include at least the following:

Constituents	Units	Type of Sample [1]	Sampling Frequency	Reporting Frequency [2]
Flow	gallons	Continuous	Daily	Monthly
Total Flow [3]	gallons	Continuous	Totalizer	Monthly
Biochemical Oxygen Demand [4]	mg/L	Composite	Monthly	Monthly
Nitrate as Nitrogen	mg/L	Composite	Monthly	Monthly
Total Kjeldahl Nitrogen	mg/L	Composite	Monthly	Monthly
Electrical Conductivity	umhos/cm	Composite	Monthly	Monthly
Total Dissolved Solids	mg/L	Composite	Monthly	Monthly
Fixed Dissolved Solids	mg/L	Composite	Monthly	Monthly
Sodium	mg/L	Composite	Monthly	Monthly

Constituents	Units	Type of Sample [1]	Sampling Frequency	Reporting Frequency [2]
Chloride	mg/L	Composite	Monthly	Monthly
Standard Minerals [5]	mg/L	Composite	Annually	Annually

[1] Continuous monitoring requires daily meter reading or automated data collection using a meter equipped with a totalizer. Composite samples require collection at regular intervals in proportion to the existing flow and combined to form a sample representative of flow over a period of time.
[2] Monthly monitoring reports are due to the Central Valley Water Board even if the plant is not operating.
[3] Total flow means the cumulative total for the calendar year.
[4] Five-day, 20° Celsius Biochemical Oxygen Demand.
[5] Standard minerals include the following: boron, calcium, iron, magnesium, manganese, potassium, sulfate, total alkalinity (including alkalinity series), and hardness.

PROCESS WASTEWATER POND MONITORING

All ponds associated with storage or handling of process wastewater, including Pond A (Settling Pond), Pond B and Pond C, shall be monitored whenever wastewater is present. If the ponds have not been used during the reporting period, and do not contain more than 2 feet of water, the report shall so state. Samples shall be collected from an established sampling station located in an area that will provide representative samples of the water in the pond. Freeboard shall be measured vertically from the surface of the pond water to the lowest elevation of the surrounding berm and shall be measured to the nearest 0.1 feet. Monitoring of the ponds shall include, at a minimum, the following:

Constituent	Units	Type of Sample	Sampling Frequency [1]	Reporting Frequency [2]
Presence/Absence of Water	--	Observation	Weekly	Monthly
Odors	--	Observation	Weekly	Monthly
Freeboard	feet (±0.1)	Measurement	Weekly	Monthly
pH	pH Units	Grab	Weekly	Monthly
Dissolved Oxygen [3]	mg/L	Grab	Weekly	Monthly
Electrical Conductivity	umhos/cm	Grab	Monthly	Monthly
Biochemical Oxygen Demand	mg/L	Grab	Monthly	Monthly
Nitrate as Nitrogen	mg/L	Grab	Monthly	Monthly
Total Kjeldahl Nitrogen	mg/L	Grab	Monthly	Monthly
Total Dissolved Solids	mg/L	Grab	Monthly	Monthly
Fixed Dissolved Solids	mg/L	Grab	Monthly	Monthly
Sodium	mg/L	Grab	Monthly	Monthly
Chloride	mg/L	Grab	Monthly	Monthly

[1] Samples shall be collected when more than 2 feet of wastewater is present.
[2] Monthly monitoring reports are due to the Central Valley Water Board even if the processing plant is not operating.
[3] Samples shall be collected at a depth of one foot, opposite the inlet. Samples shall be collected between 0700 and 0900 hours.

TAILWATER POND MONITORING

The Tailwater Pond shall be monitored when standing water is present during the operating season, which typically starts in March and ends in November. During the off season the monitoring report shall report whether the pond is being used for stormwater storage. If the pond has not been used during the reporting period the report shall so state. 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. Outflow from the Tailwater Pond to the land application area shall be reported as 'Tailwater Pond Flow' in the Land Application Area Monitoring section of this MRP. Monitoring of the Tailwater Pond shall include, at a minimum, the following:

Constituent	Units	Type of Sample	Sampling Frequency [1]	Reporting Frequency [2]
Presence/Absence of Water	--	Observation	Daily	Monthly
Odors	--	Observation	Daily	Monthly
Freeboard	feet (±0.1)	Measurement	Weekly	Monthly

[1] Monitoring shall occur when standing water is present during the operation season, which typically occurs from March to November.
[2] Monthly monitoring reports are due to the Central Valley Water Board even if the processing plant is not operating.
[3] Samples shall be collected at a depth of one foot, opposite the inlet. Samples shall be collected between 0700 and 0900 hours.

LAND APPLICATION AREA MONITORING

The Discharger shall monitor process wastewater discharged for irrigation to the land application area. Monitoring shall be conducted **daily during operation** and the results shall be included in the monthly monitoring report. Evidence of erosion, field saturation, runoff, or the presence of nuisance conditions shall be noted in the report. Loading rates for the land application areas shall be calculated. Monitoring of the land application areas shall include the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Process Wastewater Flow	Gallons	Continuous [1]	Daily	Monthly
Supplemental Irrigation Flow	Gallons	Calculated [2]	Daily	Monthly
Tailwater Pond Flow	Gallons	Calculated [2]	Daily	Monthly
Local Rainfall	Inches	Rain Gauge Observation [3]	Daily	Monthly
Acreage Applied [4]	Acres	Calculated	Daily	Monthly
Application Rate	gal/acre•day	Calculated	Daily	Monthly
BOD Loading Rate [5]	lbs/acre•day	Calculated	Daily	Monthly
Total Nitrogen Loading Rate [6]	lbs/acre•month [7]	Calculated	Monthly	Monthly
TDS Loading Rate	lbs/acre•month [7]	Calculated	Monthly	Monthly
FDS Loading Rate	lbs/acre•month [7]	Calculated	Monthly	Monthly
LAA Berm Condition	NA	Observation	Monthly	Monthly

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Crop Removal Mass	pounds	Estimated [8]	Monthly	Monthly

[1] Continuous monitoring requires daily meter reading or automated data collection and shall define the volume of wastewater discharged to the land application areas from the lift pit.
[2] Supplemental irrigation and tailwater pond flow volumes shall be metered or calculated.
[3] Using either a properly calibrated and maintained on-site rain gauge or daily results from an appropriately sited precipitation observation station operated by others (specify station name; location; owner; and data source contact information, e.g., internet address).
[4] Land Application Area(s) in use shall be identified by management unit name and the acreage provided. If a portion of an area is used, then the acreage shall be estimated.
[5] Calculate the daily application rate and the 18-day cycle average application rate.
[6] Total nitrogen applied from all sources, including fertilizers and supplemental irrigation water if used.
[7] Report the monthly-total and cumulative-annual to date.
[8] Report either the weight of crops harvested and removed or the crop consumption by grazing animals.

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 be submitted with the monthly monitoring reports. If wastewater was not applied to the land application area, then the monthly monitoring reports shall so state.

DOMESTIC WASTEWATER DISCHARGE[1]

DOMESTIC EFFLUENT MONITORING

The Discharger shall monitor effluent wastewater in accordance with the following. Samples shall be representative of the effluent discharged to the percolation/evaporation ponds. Grab samples are considered representative. Effluent monitoring shall include, at a minimum, the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Biochemical Oxygen Demand	mg/L	Grab	Monthly	Monthly
Total Dissolved Solids	mg/L	Grab	Monthly	Monthly
Electrical Conductivity	umhos/cm	Grab	Monthly	Monthly
Total Suspended Solids	mg/L	Grab	Monthly	Monthly
Sodium	mg/L	Grab	Monthly	Monthly
Chloride	mg/L	Grab	Monthly	Monthly
pH	pH Units	Grab	Monthly	Monthly
Total Nitrogen (as N)	mg/L	Grab	Monthly	Monthly

DOMESTIC WASTEWATER POND MONITORING

The Discharger shall monitor the domestic wastewater ponds as follows. Samples shall be collected from permanent monitoring locations that will provide samples representative of the wastewater in each pond. Freeboard shall be measured vertically from the water surface to the lowest elevation of the pond berm, and shall be measured to the nearest 0.10 feet. Pond monitoring shall include, at a minimum, the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Presence/Absence of Water	--	Observation	Weekly	Monthly
Odors	--	Observation	Weekly	Monthly
Pond Berm Condition	pH Units	Observation	Weekly	Monthly
Burrowing Animals [1]	umhos/cm	Observation	Weekly	Monthly
Freeboard	feet (±0.1)	Measurement	Weekly	Monthly
Dissolved Oxygen [2]	mg/L	Grab	Monthly	Monthly

[1] The presence or absence of burrowing animals or animal burrows shall be noted.
[2] Samples shall be collected at a depth of one foot, opposite the inlet. Samples shall be collected between 0700 and 0900 hours.

[1] Domestic wastewater monitoring is required until the Discharger acquires a domestic wastewater disposal permit from Solano County. Domestic wastewater pond monitoring is required if a county permit is not acquired and until the disposal system has been converted to a subsurface leachfield system and disposal to the ponds has ceased.

SOLIDS MONITORING

The Discharger shall record and report annually the date, quantity, drying location, storage location, disposal location, and method of disposal of solids disposed of during the processing season, as well as during the off-season, if applicable. If solid waste is shipped offsite during the reporting period, then an estimated amount and location of disposal shall be reported in the monthly report and the hauler identified.

GROUNDWATER MONITORING

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 approval. Once installed, all new wells shall be added to the monitoring network (which currently consists of Monitoring Wells Nos. MW-1, MW-2, and MW-3) and shall be sampled and analyzed according to the schedule below. All samples shall be collected using approved EPA methods. Water table elevations shall be calculated to determine groundwater gradient and direction of flow.

Prior to sampling, the groundwater elevations shall be measured and the wells shall be purged of at least three well volumes until temperature, pH, and electrical conductivity have stabilized. Depth to groundwater shall be measured to the nearest 0.01 feet. Groundwater monitoring shall include, at a minimum, the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Depth to Groundwater	±0.01 feet	Measurement	Quarterly	Quarterly
Groundwater Elevation[1]	±0.01 feet	Calculated	Quarterly	Quarterly
Gradient	feet/feet	Calculated	Quarterly	Quarterly
Gradient Direction	Degrees	Calculated	Quarterly	Quarterly
pH	pH units	Grab	Quarterly	Quarterly
Boron	mg/L	Grab	Quarterly	Quarterly
Chloride	mg/L	Grab	Quarterly	Quarterly
Iron	mg/L	Grab	Quarterly	Quarterly
Manganese	mg/L	Grab	Quarterly	Quarterly
Sodium	mg/L	Grab	Quarterly	Quarterly
Total Nitrogen	mg/L	Grab	Quarterly	Quarterly
Nitrate as Nitrogen	mg/L	Grab	Quarterly	Quarterly
Ammonia (as NH_4)	mg/L	Grab	Quarterly	Quarterly
Bromoform	ug/L	Grab	Quarterly	Quarterly
Bromodichloromethane	ug/L	Grab	Quarterly	Quarterly
Chloroform	ug/L	Grab	Quarterly	Quarterly
Dibromochloromethane	ug/L	Grab	Quarterly	Quarterly
Total Kjeldahl Nitrogen	mg/L	Grab	Quarterly	Quarterly
Total Dissolved Solids	mg/L	Grab	Quarterly	Quarterly
Fixed Dissolved Solids	mg/L	Grab	Quarterly	Quarterly
Electrical Conductivity	umhos/cm	Grab	Quarterly	Quarterly

[1] Groundwater elevation shall be determined based on depth-to-water measurements from a surveyed measuring point elevation on the well.
[2] Sampling may cease if constituent are not detected after four quarters of sampling

REPORTING

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

Reporting domestic wastewater effluent and pond monitoring data is required until disposal ceases to the domestic wastewater ponds and the disposal system has been converted to a subsurface leachfield system.

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 and stamped by the registered professional.

A. Monthly Monitoring Reports

Monthly reports shall be submitted to the Regional Board by the **1st day of the second month** following the end of the reporting period (i.e. the January monthly report is due by 1 March), even if processing does not occur during that month. Monthly reports for the months of March, June, September, and December may be submitted as part of the Quarterly Monitoring Report, if desired. The monthly reports shall include the following:

1. Results of processing wastewater, domestic wastewater, pond, land application area, and solids monitoring;
2. Status updates for the domestic wastewater treatment system conversion from pond disposal to septic tank treatment with leachfield disposal. Updates shall include the permitting status with Solano County until this conversion is complete by 1 April 2011.
3. A comparison of monitoring data to the discharge specifications and effluent limitations, disclosure of any violations of the WDRs, and an explanation of any violation of those requirements. Data shall be presented in tabular format. An average concentration of FDS in treated wastewater shall be calculated based on the following:
    i. On a month to month basis beginning each year in January the simple arithmetic average value shall be calculated. (The sum of all the concentration data shall be divided by the number of months data was collected). If for any reason, more than one data point is available for any month, that data shall be averaged before use in the running average calculation. No data shall be excluded from the calculation without a written explanation from the analytical laboratory.
4. If requested by staff, copies of laboratory analytical report(s);
5. A calibration log verifying calibration of all hand held monitoring instruments and devices used to comply with the prescribed monitoring program;
6. The cumulative volume of wastewater generated during the year to date;
7. The total pounds of total dissolved solids and fixed dissolved solids (year to date) that have been applied to the land application areas, as calculated from the sum of monthly loadings; and
8. The total pounds of nitrogen (year to date, from all sources including fertilizer) applied to the land application area as calculated from the sum of monthly loadings.
9. A summary of the quantity of tomato and vegetable solid waste generated and disposed of off-site.
10. A summary of the quantity of liquid waste (spent ion exchange flush water, etc.) generated and disposed of off-site. Include a description of the disposal location for the material. If such waste is not generated, a statement needs to be included stating so.
11. During the period that process wastewater land application ceases and prior to allowing stormwater to flow offsite, the corresponding report(s) shall state whether the land application area was stabilized by waiting three weeks or the land application was flushed. If the land application area was flushed, the report shall state how much rainwater was collected and list the fields where collected water was reapplied.

B. Quarterly Report

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

1. Results of the quarterly monitoring of processing wastewater and tailwater ponds (standard minerals analysis).
2. Results of groundwater monitoring;
3. 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 WDR, 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;
4. Calculation of groundwater elevations, an assessment 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;
5. A narrative discussion of the analytical results for all groundwater locations monitored including spatial and temporal tends, with reference to summary data tables, graphs, and appended analytical reports (as applicable);
6. A comparison of monitoring data to the groundwater limitations and an explanation of any violation of those requirements;
7. Summary data tables of historical and current water table elevations and analytical results;
8. A scaled map showing relevant structures and features of the facility, the locations of monitoring wells and any other sampling stations, and groundwater elevation contours referenced to mean sea level datum; and
9. Copies of laboratory analytical report(s) for groundwater monitoring.

C. Annual Report

The December Monthly Report and the fourth Quarterly Report may be included as part of Annual Report. The Annual Report shall be submitted to the Regional Board by **1 February** each year. In addition to the data normally presented, the Annual Report shall include the following:

1. The contents of a regular December monthly monitoring report.
2. The contents of the regular quarterly monitoring report for the last quarter of the year.
3. Tabular and graphical summaries of all data collected during the year.

4. Tabular and graphical summaries of historical monthly total loading rates for wastewater generation, process water used for irrigation (hydraulic loading in gallons/acre and inches), total nitrogen, total dissolved solids, and fixed dissolved solids.
5. An annual nitrogen loading balance that accounts for all nitrogen sources and losses. The objective of the nitrogen balance is to make a determination of:
    a. The annual mass load of nitrogen percolating from the ground surface to the underlying groundwater, and
    b. Whether that mass of percolating nitrogen will cause significant and/or unacceptable degradation of the groundwater.
6. A comprehensive evaluation of the effectiveness of the past year's wastewater application operation in terms of odor control and groundwater protection, including consideration of application management practices (e.g. waste constituent and hydraulic loadings, application cycles, drying times, and cropping practices), and groundwater monitoring data.
7. A summary of the vegetative material (crops) removed from the LAAs. The summary shall include harvest dates, crop type, disposal area, and estimated ash content of the harvest.
8. A summary of the quantity of solid waste generated, how it was dried, and disposed of off-site.
9. An evaluation of the groundwater quality beneath the land application area.
10. Updated ambient groundwater values using data from site wells, and detail the data analysis methods utilized. A comparison of the ambient groundwater concentration and annual average effluent FDS concentrations as described in the Monthly Monitoring Reports Item A.2.i.
11. A description of source control methods that have been implemented in the calendar year.
12. Estimated flows for the next calendar year.
13. A discussion of compliance and corrective actions taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the waste discharge requirements.
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. Such a 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 a statement by the Discharger, or the Discharger's authorized agent, under penalty of perjury, that to the best of the signer's knowledge the report is true, accurate and complete.

The Discharger shall implement the above monitoring program as of 18 March 2010.

Ordered by: Original signed by Pamela C. Creedon
PAMELA C. CREEDON, Executive Officer

Original signed on March 18, 2010
(Date)

INFORMATION SHEET

ORDER NO. R5-2010-0038
CAMPBELL SOUP SUPPLY COMPANY, LLC
SOLANO COUNTY

Campbell Soup Supply Company, LLC owns and operates a tomato processing facility located at 8380 Pedrick Road, Dixon, Solano County. The facility was opened in 1975. The facility presently only processes tomatoes for tomato paste and diced tomato end products, which are shipped in bulk to other Campbell Soup facilities for ingredients in commercial products. The Discharger plans to increase the land application area and expand the facility to process additional fruits and vegetables such as carrots, celery, beets, parsley, lettuce, watercress, and spinach (referred to as the V7 Line) for ingredients in the formulation of V8. The Discharger land applies their process wastewater and is not requesting to increase their total annual discharge flow.

Report of Waste Discharge Submittal

The Report of Waste Discharge (RWD) was submitted to allow an expansion of activities at the site. The Discharger submitted an RWD dated 9 May 2008 to expand the wastewater land application area to accommodate an increase in the facility's operations to process additional fruits and vegetables. Additional information was submitted on 9 December 2008 and an Amended RWD was received 5 June 2009 that addressed the construction of a tailwater pond and stormwater management not described in the original RWD.

Wastewater Generation

Process wastewater is generated by the cleaning and washing of processing equipment, flume overflow, evaporator condensate, and water softener backwash. All wastewater is commingled in a lift pit prior to being discharged to the land application area. Wastewater generation and land application occur during the processing season. With the addition of the V7 line, processing will begin in mid May and wind down with the harvest season in November.

Wastewater flow rates are anticipated to vary from approximately 1.0 to 5.0 million gallons per day (MGD). The highest wastewater flows are expected during the peak of the tomato processing season in August and September. Waste Discharge Requirements (WDRs) Order No. 95-101 allowed maximum daily flow of 5.0 MGD. The tentative WDRs allow a monthly average maximum flow limit of 5.0 MGD and an annual total of 490 million gallons.

The flow limit will provide the Discharger with management flexibility of wastewater application because, as indicated in the water balance, wastewater generation will be less than the monthly average limit. The total flow limit is designed to control the total loading rate of the land application area with waste constituents. The Order includes Discharge Prohibitions, Specifications, Effluent Limitations, and Land Application Area Requirements that will prevent overloading the land application areas and potential nuisance conditions.

Land Application Areas

Historically, 547 acres of land were available for wastewater application. An additional 73 acres can be used for land application once configured to comply with the Order. The total land application acreage will be divided into 23 management units. At a given time, 7 management units will be in rotation for wastewater flood irrigation. The Discharger's water

balance indicates that the land application area provides adequate capacity to handle a monthly average discharge of 5.0 MGD during the peak processing month of August, and a 100 year storm event. During the processing season, a tailwater pond will serve as emergency storage for wastewater and stormwater tailwater until it can be reapplied.

The fixed dissolved solids (FDS) loading rate is estimated to be 4,660 lbs/ac•year of which the applied wastewater contributes about 70 percent and supplemental irrigation water contributes the remaining 30 percent. Supplemental irrigation water is acquired from three deep groundwater wells. Considerable effort to maintain a low FDS concentration in the process wastewater will be required to minimize the loading rate and protect groundwater quality. Because historical monitoring provides an abundance of electrical conductivity (EC) data but lacks wastewater specific monitoring data for FDS and total dissolved solids (TDS), EC is used as the basis to set a limit on salinity loading and to evaluate the extent of salinity groundwater degradation.

Domestic Wastewater

The domestic wastewater disposal system was designed for 300 employees at 3,000 gallons per day for usage during peak season operations and is presently discharged to unlined wastewater ponds. In 2009, the Discharger began working with Solano County Department of Resource Management Environmental Health Division to install and permit a septic tank and subsurface leachfield in place of the wastewater disposal ponds. The Discharger is currently in the design and planning process and will continue to seek a county permit for domestic wastewater disposal. This Order includes regulations and monitoring requirements for the disposal of domestic wastewater until the discharger acquires a county permit. This Order also sets forth a time schedule to convert the treatment system in the case that the Discharger does not obtain a County disposal permit.

Stormwater

Stormwater runoff from the land application area is captured and returned with the process water via the tailwater collection system. During the off season, typically starting in October or November, the Discharger plans to allow stormwater to flow off site into roadside drainage ditches until the start of the next processing season. Prior to allowing stormwater to flow off site, the WDRs require the Discharger to wait three weeks from the date of last land applied wastewater to allow for soil stabilization or capture the first flush of salts and nutrients by retaining and reapplying the first 0.5 inches of rainwater, which ever comes first..

Solids Disposal

Generated wastewater either undergoes sedimentation or screening prior to commingling in the lift pit. Collected solids are hauled off site for use as soil amendment or cattle feed.

Groundwater Quality

Groundwater has been monitored by three monitoring wells since 1998 and process wastewater has been land applied since 1975. The typical depth to groundwater underlying the facility is 14 feet below ground surface and 19 to 26 feet below ground surface of the land application area.

The groundwater data indicate that in respect to nitrate as nitrogen (NO_3-N), downgradient groundwater quality exceeded background quality until June 2006. Since December 2006, background water quality has averaged 9.1 mg/L NO_3-N. This Order requires the Discharger to complete a Nutrient Management Plan to ensure adequate nutrient loading and prevent downgradient nitrate concentrations from exceeding background groundwater quality.

In respect to salinity measured as EC, the EC concentration in monitoring wells downgradient of the land application area (averaging 1120 µmhos/cm) have consistently exceeded the EC concentration in the background monitoring well (averaging 896 µmhos/cm). This Order requires the discharger to complete a Salinity Reduction Workplan to reduce the salinity load to groundwater. Additionally, an updated Antidegradation Analysis is required to substantiate the Discharger's assertions that the land application of wastewater does not pose a threat to groundwater quality. Long term groundwater monitoring is needed to verify whether implemented salinity reduction methods have reduced the salinity impact to groundwater.

Basin Plan, Beneficial Uses, and Regulatory Considerations

Surface water drainage from the site eventually flows into the Cache Slough. The *Water Quality Control Plan for the California Regional Water Quality Control Board Central Valley Region, Fourth Edition* (Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin. Beneficial uses often determine the water quality objectives that apply to a water body. For example, waters designated as municipal and domestic supply must meet the Maximum Contaminant Levels (MCLs) for drinking waters. The Basin Plan sets forth the applicable beneficial uses (industrial, agricultural, and domestic and municipal supply in this instance) of groundwater, procedure for application of water quality objectives, and the process for and factors to consider in allocating waste assimilation capacity.

Antidegradation

The antidegradation directives of State Water Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality Waters in California," or "Antidegradation Policy" require that waters of the State that are better in quality than established water quality objectives be maintained "consistent with the maximum benefit to the people of the State." Waters can be of high quality for some constituents or beneficial uses and not others. Policies and procedures for complying with this directive are set forth in the Basin Plan.

Resolution 68-16 is applied on a case-by-case, constituent-by-constituent basis in determining whether a certain degree of degradation can be justified. It is incumbent upon the Discharger to provide technical information for the Regional Board to evaluate and fully characterize:

- All waste constituents to be discharged;
- The background quality of the uppermost layer of the uppermost aquifer;
- The background quality of other waters that may be affected;
- The underlying hydrogeologic conditions;
- Waste treatment and control measures;

- How treatment and control measures are justified as best practicable treatment and control;
- The extent the discharge will impact the quality of each aquifer; and
- The expected degree of degradation below water quality objectives.

In allowing a discharge, the Regional Board must comply with CWC Section 13263 in setting appropriate conditions. The Regional Board is required, relative to the groundwater that may be affected by the discharge, to implement the Basin Plan and consider the beneficial uses to be protected along with the water quality objectives essential for that purpose. The Regional Board need not authorize the full utilization of the waste assimilation capacity of the groundwater (CWC 13263(b)) and must consider other waste discharges and factors that affect that capacity.

The Discharger prepared an antidegradation study as part of the RWD. The study reports that in regard to nitrogen and organic matter, land application of wastewater will pose minimal or no risk of groundwater degradation, respectively. In regards to salinity, the study reports that the discharge is similar to local irrigation and best practical treatment and control should be implemented to reduce the risk of impacting groundwater. The Discharger currently has installed a brine recovery system to reduce salt usage of the water softener system that feeds the boilers. Additionally, hot condensate water is primarily used to feed the boilers and softened water is only used for boiler make-up water, which reduces the need to regenerate the ion exchange resins of the water softener and, hence, salt usage.

Effluent Limitations

An effluent limitation for EC is included in the WDRs. An EC effluent limit time schedule is established to bring the process wastewater effluent into compliance. Historical process wastewater monitoring data show spikes in EC levels that exceed 900 µmhos/cm. Information provided by the Discharger suggests that these spikes may be the result of discharging after scheduled cleaning. Improved discharge management of highly saline cleaning wastewater will mitigate spikes in EC levels. EC limits are set on a daily maximum, monthly average, and annual average. The initial EC limits are expected to be achievable based on past performance and set to maintain effluent EC concentrations at their current level without further degradation of groundwater. The final EC limits are expected to be achievable with source control and set to reduce effluent EC concentrations to levels that will return groundwater EC concentrations to that of background groundwater conditions.

Nitrogen compounds are not expected to degrade groundwater quality because the proposed nitrogen loading rate is less than the likely crop uptake rate. The nitrogen loading rate is estimated to be 168 lbs/ac•year, which includes applied process wastewater, supplemental irrigation water, fertilizer, and manure application from cattle grazing. The process wastewater accounts for approximately 48 percent of the total nitrogen load. The nitrogen crop uptake rate is estimated to be 227 lbs/ac•year. Uptake of nitrogen should not pose a problem for the Discharger unless the character of the wastewater changes in the future or higher loading rates occur.

Treatment Technology and Control

Given the character of food processing wastewater, slow rate land treatment or secondary treatment technology is generally sufficient to control degradation of groundwater from decomposable organic constituents. But slow rate treatment may not control all waste constituents such as FDS.

Food processing wastewater typically contains nitrogen in concentrations greater than water quality objectives, which vary according to the form of nitrogen. Groundwater degradation by nitrogen can be controlled by an appropriate screening, settling, and slow rate land application with cropping activities when crops are harvested and removed from the land application area. The effectiveness varies, but generally best practicable treatment and control is able to control nitrogen degradation of groundwater at a concentration well below the water quality objectives. The WDRs require that the Discharger submit a Nutrient Management Workplan that proposes a study designed to determine the amount of FDS and nitrogen that crops grown in the land application area will take up, and will be removed during harvest. The objective of the study is to identify and utilize site specific data to determine the pounds per acre that may be applied to the land application area that will not cause these constituents in underlying groundwater to increase over background groundwater quality.

Dissolved solids can pass through the treatment process and soil profile; effective control of such constituents relies primarily upon source control and pretreatment measures. If not managed carefully, long-term land discharge of food processing wastewater is likely to degrade groundwater with dissolved solids (as measured by FDS). Source control is an effective means to prevent groundwater degradation by FDS. The WDRs require the Discharger to develop a Salinity Reduction Workplan and propose improvements to be made in the usage and disposal of chemicals involved in clean-in-place and water softening operations. The Discharger is also required to submit a follow up report that describes the implementation of chemical usage reductions and disposal improvements that have reduced salinity loading.

A discharge of wastewater that overloads soils with nutrients and organics can result in anaerobic conditions in the soil profile, which in turn creates organic acids and decreases soil pH. Under conditions of low soil pH (below 5), iron and manganese compounds in the soil can solubilize and leach into groundwater. Overloading the land application areas is preventable. However, soil is expected to provide adequate buffering of acidic or basic wastewater.

Title 27

Title 27, CCR, Section 20005 et seq. (“Title 27”), contains regulations to address certain discharges to land. Title 27 establishes a waste classification system, specifies siting and construction standards for containment of classified waste, requires extensive monitoring of groundwater and the unsaturated zone for any indication of failure of containment, and specifies closure and post-closure maintenance requirements. Generally, no degradation of groundwater quality by any waste constituent is acceptable under Title 27 regulations.

The discharge of wastewater and the operation of storage facilities associated with a wastewater application can be allowed without requiring compliance with Title 27 only if groundwater degradation complies with the Basin Plan, Resolution No. 68-16 (Antidegradation Policy), and does not violate any water quality objectives.

The groundwater data indicate that the permitted discharge under Order 95-101 seems to indicate violations with the Basin Plan bring into question the facility's exemption from the requirements of *Consolidated Regulation for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in Title 27, CCR, Division 2, Subdivision 1, Section 20005, et seq., (Title 27). However monitoring well, MW-3 which is used to establish upgradient background groundwater quality is located adjacent to a surface water drainage ditch to the south. Therefore, the WDRs are being issued to require the Discharger to complete the necessary studies to evidence its assertions and to bring the discharge into compliance with the Basin Plan by requiring the Discharger to comply with effluent limits, groundwater limits, management practices, and established time schedules. The Order contains a time schedule for the Discharger to segregate the high salinity wastewater from its ion exchange water softener for off-site disposal at a permitted facility. In addition, this Order requires the Discharger to further investigate groundwater quality and determine background groundwater quality. Following receipt of this information, the applicability of Title 27 will be determined and, if needed, this Order will be reopened and further revisions to the Order will be made to protect groundwater.

Monitoring Requirements

Section 13267 of the CWC authorizes the Regional Board to require monitoring and technical reports as necessary to investigate the impact of a waste discharge on waters of the state. In recent years there has been increased emphasis on obtaining all necessary information, assuring the information is timely as well as representative and accurate, and thereby improving accountability of any discharger for meeting the conditions of discharge. Section 13268 of the CWC authorizes assessment civil administrative liability where appropriate.

The proposed Order includes monitoring requirements for effluent process wastewater, tailwater pond, stormwater pond, land application area, solids, and groundwater. In order to adequately characterize wastewater, the Discharger is required to monitor for BOD, pH, nitrogen compounds, EC, dissolved solids (TDS and FDS), sodium, chloride, and standard minerals.

Title 27 regulations pertaining to groundwater monitoring and the detection and characterization of waste constituents in groundwater have been in effect and successfully implemented for many years. No regulation currently specifies similar criteria more suitable for a situation where extensive land application of food processing wastewater occurs. It is appropriate that the Title 27 groundwater monitoring procedures be extended and applied on a case-by-case basis under Water Code Section 13267.

The Discharger must monitor groundwater for wastewater constituents expected to be present in the discharge, capable of reaching groundwater, and violating groundwater limitations if treatment, control, and environmental attenuation prove to be inadequate. Groundwater quality has not been characterized to make a formal determination of background conditions. This Order requires the formal determination of background groundwater quality. The determination of naturally occurring background groundwater quality shall be made using the methods approved by the Executive Officer as submitted in the Background Groundwater Quality Workplan.