CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2019-0013

WASTE DISCHARGE REQUIREMENTS

FOR

MORNING STAR PACKING COMPANY, L.P. AND FRED GOBEL
THE MORNING STAR PACKING COMPANY — WILLIAMS FACILITY
COLUSA COUNTY

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

1. On 29 December 2017, Morning Star Packing Company, L.P. (Morning Star) submitted a Report of Waste Discharge (RWD) to obtain revised Waste Discharge Requirements (WDRs) for the discharge of tomato processing wastewater at the Morning Star Packing Company—Williams tomato processing plant (Plant) and adjacent land application areas (LAAs) (collectively, Facility). Additional information submitted on 12 June 2018, 16 July 2018, and 10 August 2018 included revised water balances and additional Facility details.

2. Morning Star owns and operates the Plant and all but one of the LAAs (Field MS1 is leased from Fred Gobel). Morning Star and Fred Gobel are named as Dischargers and are responsible for compliance with these WDRs.

3. The Facility is located south of the City of Williams, at 2211 Old Highway 99 in Colusa County (Sections 19, 20, 29, and 30, T15N, R2W, MDB&M), and is comprised of the Colusa County Assessor's Parcel Numbers (APNs) listed below. The Facility occupies approximately 225 acres and has 996 acres of LAAs. Approximately 49 acres consists of other facility grounds, such as roadways and other areas not used for the application of solids or wastewater. The Facility is shown on Attachment A, which is attached herein.

APNs

017-090-074	017-050-059	005-250-003
017-090-072	017-050-070	005-250-002
017-090-061	017-050-056	005-250-001
017-050-036	017-050-038	017-050-046
017-050-058	017-050-016	017-050-012 [1]
[1] Owned by Fred Gobel		

4. Central Valley Water Board WDRs Order R5-2013-0144, adopted on 5 December 2013, prescribes requirements for wastewater discharges to land. Specifically, Order R5-2013-0144 allows a monthly average wastewater flow of up to 4.3 million gallons per day. In light of several Facility changes occurring since December 2013, Order R5-2013-0144, which no longer adequately reflects changes to the wastewater system, will be rescinded and replaced with this Order.

Existing Facility and Discharge

5. The Facility operates seasonally, June through November, including weekends and holidays, and operates 24 hours a day. Tomato processing currently consists of the production of bulk, aseptic tomato paste, and may include diced tomatoes in the future.

6. The wastewater treatment system consists primarily of a processing facility sump, a Settling Pond, a Cooling Pond, screens, and 996 acres of LAAs (divided into 23 fields) for disposal of wastewater and solids. Site features are shown on Attachment B, which is incorporated herein.

7. Source water used for the Facility is from two distinct water sources: potable groundwater from three supply wells (Plant Wells 1-3); and surface water from the Glenn-Colusa Irrigation District (GCID).

8. Plant Wells 1, 2, and 3 are used for tomato processing operations, fire suppression, and irrigation canal flushing with Plant Well 1 as the primary source. In water samples collected from Plant Wells 1 and 2, concentrations of constituents commonly associated with food processors (e.g., total dissolved solids [TDS], nitrate as nitrogen, sodium, and chloride) are less than concentrations protective of beneficial uses for groundwater. However, the average manganese concentration (0.06 milligrams per liter [mg/L]) in samples collected between 1995 and 2007 exceeded Secondary Maximum Contaminant Recommended Level (0.05 mg/L). Water quality data for Plant Wells 1 and 2 are shown below. Plant Well 3 became operational in October 2018, upon approval by the Department of Drinking Water.

Water Supply Characterization [1]

Constituents	Plant Well 1 [2] (1995-2007 Average)	Plant Well 2 [3] (1995-2007 Average)	GCID (2017)
	Concentrations		
Arsenic (µg/L)	NA	NA	DNQ 1.06
Boron (µg/L)	NA	NA	DNQ 12.0
Copper (µg/L)	NA	NA	3.74
Fluoride (mg/L)	NA	NA	ND < 0.027
Iron (µg/L)	NA	NA	DNQ 18.1
Manganese (µg/L)	60	< 30	DNQ 0.213
Alkalinity (mg/L)	244	240	45.9
Total Hardness (mg/L)	NA	NA	42.8
Bicarbonate (mg/L)	NA	NA	45.8
Carbonate (mg/L)	NA	NA	ND < 10
Calcium (mg/L)	47	49	9.84
Magnesium (mg/L)	25	30	4.44
Chloride (mg/L)	54	38	1.81
Potassium (mg/L)	NA	NA	0.971
Sodium (mg/L)	NA	88	4.5
Sulfate (mg/L)	NA	NA	3.27
Total Anions (meq/L)	NA	NA	1.02
Total Cations (meq/L)	NA	NA	1.08
TDS (mg/L)	410	420	99.4

Water Supply Characterization [1]

Constituents	Plant Well 1 [2] (1995-2007 Average)	Plant Well 2 [3] (1995-2007 Average)	GCID (2017)
	Concentrations		
FDS (mg/L)	NA	NA	54.1
TKN (mg/L)	NA	NA	ND < 0.19
Nitrate + Nitrite (mg/L)	3.7 [4]	3.1 [4]	ND <0.034
Total Nitrogen (mg/L)	NA	NA	ND < 0.019

[1] Table Reference: Table 1 in the 2017 RWD (Robertson-Bryan, Inc., 2017).
[2] Plant Well 1 is 720 feet deep and is the primary water source.
[3] Plant Well 2 is 540 feet deep and Plant Well 3 is 424 feet deep. Analytical data for this well were not available for inclusion in this Order.
[4] Result shown for nitrate as nitrogen only.
DNQ = detected, not quantifiable
meq/L = milliequivalents per liter
NA = not available
ND = non-detect

9. GCID water is delivered through a canal owned and maintained by GCID that runs along the southern boundary of the Facility. GCID water is used during tomato processing season startup operations to replenish the Cooling Pond, to irrigate the LAAs, and to flush irrigation canals, if needed. Concentrations of common constituents associated with food processors, including TDS, nitrate as nitrogen, sodium, and chloride, are less than concentrations protective of beneficial use in the GCID water. Water quality data for the GCID water are shown in the table above.

10. Chemicals used at the Facility during processing operations which may impact wastewater quality are listed below. Although the Dischargers minimize chemical use to the most practicable extent possible, some chemicals are required for sanitation, equipment maintenance, odor and mold control, and other processing and food-safety needs. Chemical usage at the Facility is provided in the table below.

Chemicals Used at the Processing Plant [1]

Chemical	Purpose	Gallons			
		2014	2015	2016	2017
Sodium Hypochlorite (12.5% Cl)	Plant Sanitation	4,744	7,932	6,863	8,328
Caustic Cleaner (50% NaOH)	Plant Sanitation	36,391	48,057	43,844	32,826
ADOX 8125 (25% $NaClO^2$)	Mold Control, Disinfection	8,221	11,158	9,253	8,544
ADOX 750 (7.5% $NaClO^2$)	Odor Control	NU	19,195	8,494	10
Hypochloric Acid (15% solution)	Plant Sanitation, Cleaning	3,593	5,128	6,308	9,438
Calcium Hypochlorite	Odor Control	NU	NU	23,840	22,050
Total Salts Added from Chemicals (pounds)		*153,283*	*212,926*	*188,371*	*144,365*

Chemicals Used at the Processing Plant [1]

Chemical	Purpose	Gallons			
		2014	2015	2016	2017

[1] Table Reference: Table 3 in 2017 RWD (Robertson-Bryan, Inc., 2017)
NU = not used

11. To reduce the potential for odors at the LAAs, calcium hypochlorite, ADOX 750, or other oxidizing chemicals have been added to the wastewater before discharging to the LAAs to partially oxidize the most volatile and easily oxidizable compounds. ADOX 750 has been used in prior years to mitigate off-site odors; however, use has subsided in recent years due to other plant improvements implemented to reduce odors and improve wastewater quality.

12. The Plant has two water softeners that provide softened water to the boilers to minimize scaling and for use in some process equipment. Electronic controls for the water softeners were recently installed to reduce salinity loading to the LAAs.

13. Wastewater at the processing plant is generated from:

- Plant cleanup wash water;
- Boiler blowdown;
- Seal water;
- Seed recovery;
- Water softener reject;
- Flume system wash water;
- Evaporator condensate overflow;
- Tomato grading station drainage;
- Silage mixing pad and storage pad runoff;
- Tomato trailer water unloading station; and
- Tomato trailer washing station.

14. Process wastewater is discharged to a facility processing sump, Settling Pond, and Main Wastewater Conveyance Channel, all of which discharge to the LAAs. The Cooling Pond receives evaporator condensate and boiler blowdown (only in Plant startup or emergency conditions such as a power outage). A process wastewater flow schematic is shown on Attachment C, which is incorporated herein.

15. The processing facility sump is a 7,660-gallon capacity concrete structure equipped with sump pumps. The sump collects wastewater from plant cleanup activities, equipment sanitation, boiler blowdown, seal water, seed recovery, and water softener reject. The sump conveys water through a rotary screen where is it then discharged to an open water channel where it mixes with discharges from the Settling Pond upstream of Flow Meter Station 1. Although the processing facility sump can also discharge to an overflow ditch located just south of the Cooling Pond (see Attachment B), this operation is not typical; overflow ditch discharges are a contingency operation that only occurs during facility upsets (e.g., sump pump failures). If the processing facility sump discharges to the overflow ditch, the water is pumped via submersible pump to the Settling Pond discharge ditch upstream of Flow Meter Station 1. Additionally, the overflow ditch can discharge directly to the Main Wastewater Conveyance Channel upstream of Flow Meter Station 3 through a weir gate. The weir gate for

the overflow ditch to the Main Wastewater Conveyance Channel is typically closed and locked to prohibit any uncontrolled discharges directly to the channel.

16. Processing facility sump wastewater quality and field parameters measured during the 2017 processing season are shown below.

Constituents (Units)	8/10/2017 Sampling Event	9/7/2017 Sampling Event
Arsenic (µg/L)	1.98	ND <4.20
Boron (µg/L)	242	328
Iron (µg/L)	262	223
Manganese (µg/L)	76.1	106
Magnesium (mg/L)	18	18.4
Chloride (mg/L)	124	69.1
Sodium (mg/L)	137	110
Sulfate (mg/L)	101	80.6
FDS (mg/L)	538	378
TKN (mg/L as N)	14.5	12.6
Nitrate + Nitrite (mg/L as N)	0.1	0.057
Total Nitrogen (mg/L as N)	14.6	12.7

FDS = fixed dissolved solids
mg/L = milligrams per liter
N = nitrogen
ND = not detected (half the reporting limit used for averaging)
TKN = Total Kjeldahl Nitrogen
µg/L = micrograms per liter
Note: Results for select constituents are shown. A complete list of constituents is in Table 4 of the 2017 RWD (Robertson-Bryan, Inc., 2017)

17. The 2-acre Settling Pond is unlined and approximately 440 feet long by 196 feet wide and 7.7 feet deep with an estimated capacity of 3.8 million gallons (MG), not including 2 feet of freeboard. The Settling Pond collects, clarifies, and recirculates flume system washwater from the flumes used to wash and transport tomatoes to downstream processing units. Tomato flume water is also supplied from the plant wells and evaporator condensate.

18. Solids in the Settling Pond consist mostly of dirt on the tomatoes from the fields and some tomato solids. Solids that settle out require removal during the tomato processing season as necessary to maintain sufficient volume and settling capacity in the pond. The Settling Pond is equipped with two aerators which can be used as needed in the event odors are present at unacceptable levels at or beyond the property boundary. As wastewater flows through the Settling Pond, it is either recirculated to the tomato flume system for reuse or discharged from the Settling Pond though a weir and into an open water channel where it is combined with the discharge from the processing facility sump. The combined wastewater then passes through Flow Meter Station 1 and enters the Main Wastewater Conveyance Channel.

19. Field parameters for the Settling Pond are measured at the southwest corner of the pond, as shown on Attachment B. Field parameters measured for the 2016 and 2017 processing seasons are summarized below.

	Annual Averages	
Constituents (Units)	**2016**	**2017**
DO (mg/L)	2.15	3.51
ORP (mV)	81.1	1.6
Freeboard (feet)	2.9	3.3
pH	4.61 / 8.3 (min / max)	4.94 / 8.52 (min / max)

Table Reference: Table 10 and Appendix J in the 2017 RWD (Robertson-Bryan, Inc., 2017)

20. The 100-acre unlined Cooling Pond is used to cool evaporator condensate prior to recycling for reuse. The Cooling Pond is approximately 8.5 feet deep from the top of the berm and has a volume of approximately 228 MG. Condensate water from the evaporators and condensers discharges to the Cooling Pond, where it circulates until cooled from approximately 120-130º F to approximately 95-100º F. The Cooling Pond generally contains water year-round except when emptied for maintenance. The evaporator condensate contains minimal amounts of residual material that leave the evaporating tomato paste as volatile organic compounds and aerosols, but tomato solids (e.g., tomato peels, seeds) are not discharged to the pond. After the processing season, Cooling Pond water can be used for Main Wastewater Conveyance Channel and tailwater ditch flushing and LAA irrigation as needed. Controlled discharges from the Cooling Pond pass through Flow Meter Station 2 before entering the Main Wastewater Conveyance Channel, as shown on Attachment C. Discharges from the Cooling Pond did not occur in 2016 and 2017.

21. Boiler blowdown water containing elevated salinity is discharged via a continuous blowdown line to the processing facility sump, where it is commingled with other processing wastewater. Small amounts of boiler blowdown are also discharged to the Cooling Pond during startup operations. During facility upset conditions, such as a power outage, boiler blowdown may be directed to the Cooling Pond. An estimated 138,000 gallons per season of boiler blowdown from facility upset conditions could potentially be routed to the Cooling Pond. However, the volume of boiler blowdown discharged to the Cooling Pond each season is *de minimis* (approximately 0.06% of the total volume).

22. Water quality and measured field parameters for the Cooling Pond for the 2016 and 2017 processing seasons are shown below. Samples were collected from the northwest corner of the pond.

Constituents (units)	**2016 Annual Average**	**2017 Annual Average**
DO (mg/L)	5	5.8
ORP (mV)	49.1	6.1
pH	7.1 / 9 (min/max)	7.97 / 9.58 (min/max)
Freeboard (feet)	2	3.4
Ammonia (mg/L as N)	NA	0.46
TKN (mg/L as N)	3.25	3.39
Nitrate + Nitrite (mg/L as N)	0.1	0.12
BOD (mg/L)	18.13	15.72
COD (mg/L)	89	NA
FDS (mg/L)	257	274

Constituents (units)	2016 Annual Average	2017 Annual Average
TDS (mg/L)	409 [1]	454 [1]

[1] TDS concentrations in Cooling Pond are the same as those reported in source wells.
BOD = biochemical oxygen demand
mV = millivolts
NA = not available
TKN = Total Kjeldahl Nitrogen
Table Reference: Table 9 and Appendix G of the 2017 RWD (Robertson-Bryan, Inc., 2017).

23. A *Supplemental Slope Stability Analysis* dated 3 October 2016, submitted by Morning Star's consultant, recommends that the "freeboard water height be maintained greater than one foot below the crest to protect the berm from erosion by wave action and other factors that may decrease stability." Accordingly, this Order requires at least 1.5 feet of freeboard in the Cooling Pond (as measured from the top of the berm).

24. The California Department of Water Resources (DWR) conducted an inspection of the Cooling Pond on 23 June 2017 to determine whether the pond dikes constitute a jurisdictional dam. DWR found the dikes to be in satisfactory condition and safe to impound water. However, there was insufficient information to classify the dikes. DWR is working with Morning Star to complete the evaluation and determine whether the dikes form a jurisdictional dam.

25. Several drains are located along the west and north sides of the Cooling Pond to control maximum groundwater elevations, which in some low-surface elevation areas of the site, can be less than 1 foot below ground surface (bgs). The drain system intercepts and collects shallow groundwater and submersible pumps collect and discharge any intercepted groundwater back into the Cooling Pond.

26. A tomato grading station is located near the tomato unloading area and is manned independently by a third party. Grading station discharges flow directly to the Main Wastewater Conveyance Channel upstream of Flow Meter Station 1.

27. A concrete paved silage mixing pad (Silage Mixing Pad) is located southeast of the Settling Pond. Leachate and runoff from the Silage Mixing Pad flow directly into the Main Wastewater Conveyance Channel upstream from Flow Meter Station 3.

28. A silage storage area (Silage Storage Area), consisting of a chip-sealed surface over a lime treated soil base, is located on the southwest corner of LAA field number MS24. During the processing season, leachate and runoff from this area are discharged to the Main Wastewater Conveyance Channel upstream of Flow Meter Station 3. Offseason storm water discharges from this area are directed to a sump and then pumped to the sprinkler system at Field MS24 for irrigation.

29. In 2018, Morning Star constructed a tomato trailer water unloading station consisting of a graded asphalt pad where the water accumulated inside of tomato-hauling trailers is allowed to empty from the trailers. This water accumulates in the trailers during the tomato unloading process. Morning Star estimates that each trailer unloads about 10-20 gallons of water. This water is collected and channeled into a drainage ditch and conveyed to the overflow ditch on the southern end of the Cooling Pond for subsequent discharge to the Main Wastewater Conveyance Channel upstream of Flow Meter Station 1.

30. In 2018, Morning Star implemented an automated tomato trailer washing station to clean dirt off the exterior of tomato trailers between hauls. Water for the washing station is provided by well water and no detergents or other cleaning chemicals are currently added to the wash water; however, biodegradable cleaning agents may be used in the future. Wash water collected at the washing station is conveyed to a wet well equipped with surface skimmer to remove any floating material. The floating material is collected in a drum and disposed of off-site. The wet well also provides for some settling of heavier particles, such as dirt, in the wash water. After floating material is removed, wash water is conveyed to a ditch connected to the overflow ditch located south of the Cooling Pond, and subsequently conveyed to the Main Wastewater Conveyance Channel upstream of Flow Meter Station 1.

31. All wastewater generated from tomato processing activities is discharged to the LAAs. In 2017, Fields MS25 to MS36 were added as LAAs (MS36 does not receive wastewater) per the Central Valley Water Board approval letter dated 22 June 2018. The total LAA acreage is 996 acres, divided into 23 fields, as shown on Attachment D, which is incorporated herein. Wastewater is applied using border strip irrigation and sprinkler systems. Alternative irrigation systems, such as drip irrigation, may be used in the future to meet crop demands while still meeting effluent discharge requirements included in this Order. While some of the fields have been converted to sprinkler irrigation, the LAA fields maintain the ability to be flood irrigated, depending on operational scenarios or changes in cropping practices. GCID water or source water is used for supplemental irrigation to meet crop irrigation demands.

32. Various crops grown at the LAAs typically include (without limitation) grass hay, teff grass, rye grass, alfalfa, pasture grass, and corn. Most LAA fields are double-cropped and some perennial crops have been established in certain fields. Some of the fields are left fallow during the non-processing season to allow for application of solids as a soil amendment. Additional LAA field details are provided below.

LAA Field	**Acreage**	**Land Use [1]**	**Irrigation Type [2]**
MS1 (Gobel property)	95 [3]	Rice (by Gobel; no WW application)	NA
MS2	41.5	Teff Grass / Rye Grass	Flood
MS3	41.5	Teff Grass / Rye Grass	Flood
MS5	24.6	Teff Grass / Rye Grass	Sprinkler
MS6	24.1	Teff Grass / Rye Grass	Flood
MS11	35.6	Teff Grass / Rye Grass	Flood
MS14	47.4	Teff Grass / Rye Grass	Sprinkler
MS15	28.9	Teff Grass / Rye Grass	Sprinkler
MS16	36.7	Teff Grass / Rye Grass	Sprinkler
MS18a	39.1	Teff Grass / Rye Grass	Sprinkler
MS18b	39.1	Teff Grass / Rye Grass	Sprinkler
MS24	146	Teff Grass / Rye Grass	Sprinkler
MS25	74.9	Sudan Grass	Flood
MS26	19.8	Sudan Grass	Flood
MS27	73.1	Sudan Grass	Flood
MS29	32.7	Sudan Grass	Flood
MS30	20.9	Sudan Grass	Flood
MS31	21	Fallow	NA
MS32	7.2 [3]	Fallow	NA

LAA Field	Acreage	Land Use [1]	Irrigation Type [2]
MS33	15.7	Sudan Grass	Flood
MS34	28.7	Sudan Grass	Flood
MS35	73.3	Sudan Grass	Flood
Total Acreage	**996**		

[1] The list of crop types is not intended as a definitive inventory of crops that are or could be grown in the area affected by the discharge, but it is representative of current and historical agricultural practices in the area.

[2] Irrigation types shown represent current practices as of the 2017 processing season; the Dischargers may choose to convert fields to flood, sprinkler, or drip irrigation as long as effluent requirements are met, including BOD loading limits between sprinkler and flood irrigated fields.

[3] These fields are not included in the total acreage used for the water balance because they are not currently designated for irrigation with wastewater. However, they remain available for application of wastewater.

Table reference: Table 11 in 2017 RWD (Robertson-Bryan, Inc., 2017) and 2018 RWD Addendum (Robertson-Bryan, Inc., 2018)

33. During the processing season, storm water runoff from the LAAs is captured in surrounding tailwater ditches, and then pumped to the Main Wastewater Conveyance Channel for application at the LAAs. During the offseason, after the ditches have been flushed, storm water runoff from the LAAs is collected in the ditches and then discharged to the GCID drain in accordance with the approved 31 July 2014 *Storm Water Runoff Evaluation and the Management Plan* and 30 January 2015 addendum thereto, and also in accordance with the 15 September 2016 *Industrial Activities Storm Water Pollution Prevention Plan*.

34. Wastewater flow rates are measured at the following flow meter stations:

Measuring Point	Measured Discharges
Flow Meter Station 1	Discharges from the Settling Pond, processing facility sump, Tomato Grading Station, Trailer Water Unloading, Trailer Wash Water, and overflow ditch
Flow Meter Station 2	Discharges from Cooling Pond
Flow Meter Station 3	Discharges to LAAs (includes all wastewater and supplemental water)

35. The Main Wastewater Conveyance Channel runs north-south (east of the Cooling Pond). All water, including wastewater and GCID water, used on the LAAs is measured through Meter Station 3. After Meter Station 3, wastewater enters a pump station for distribution to the LAAs or is sent to the supply ditches for the LAAs. Checks are used on the flood irrigated fields to direct and evenly spread the wastewater.

36. Annual flow rates for the 2016 and 2017 processing seasons are shown below.

Total Annual Flow in Millions of Gallons (MG)

Year	Supplemental GCID Irrigation Water [1]	Flow Meter Station 1	Flow Meter Station 2	Flow Meter Station 3	Wastewater Discharged to LAAs [2]
2016	72.5	175	0	250.2	173.2
2017	160.8	231.4	0	306.8	224.0
			Permitted Discharge to LAAs [3]:		422

[1] Calculated from a combination of irrigation records and flow meter readings, due to flow meters not in operation for the entire GCID irrigation period.
[2] Excludes GCID irrigation and recovered groundwater.
[3] As permitted in the 2013 WDRs.
Table reference: Table 5 of the 2017 RWD (Robertson-Bryan, Inc., 2017)

37. Wastewater quality samples were collected at Flow Meter Stations 1 and 3. Wastewater quality data are summarized below for the 2016 and 2017 processing seasons.

Constituent	Average Concentrations 2016	2017
METER STATION 1 [1]		
BOD (mg/L)	900	--
Total Nitrogen (mg/L as N)	36.1	--
Nitrate as N (mg/L)	0.31	--
FDS (mg/L)	579	524
TDS (mg/L)	1,143	--
METER STATION 3		
BOD (mg/L)	1,445	654
Total Nitrogen (mg/L as N)	48	25
Nitrate as N (mg/)	0.37	0.13
FDS (mg/L)	605	507
TDS (mg/L)	1,512	545

-- = not analyzed
Note: Morning Star has made several improvements to the wastewater system prior to 2016. The results from 2016 and 2017 are considered representative of current wastewater quality.
Table reference: Table 6 and Appendix E of the 2017 RWD (Robertson-Bryan, Inc., 2017)

38. Morning Star has five types of solid waste (referred to as residual solids): wet waste, pomace, silage, rock dump material, and Settling Pond solids. Wet waste is organic material byproduct of tomato processing, consisting of cull tomatoes, stems, seeds, and pomace. Currently, wet waste is hauled off-site for use as livestock feed. Wet waste can be temporarily stored on either the Silage Mixing Pad or the Silage Storage Area.

39. Pomace, an organic component of wet waste, may be either hauled off-site or dried on-site. If pomace is dried on-site, pomace is placed directly into trailers and hauled to the Silage Mixing Pad where it is loaded into a spreader. The pomace is then taken to LAAs and spread out on tarps to dry. Each year, up to 100 acres may be taken out of the available LAA acreage used for wastewater disposal and used for pomace drying. The location of the acres used for drying may vary year to year. For the 2018 processing season, Field MS35 was used for drying. Dried pomace is then sent off-site for further processing. Alternatively, wet pomace may be hauled off-site, or temporarily stored in “ag” bags in the Silage Storage Area and either sent off site or hauled to the specified pomace drying area.

40. Silage can be a mixture of tomato wet waste, including pomace, and other raw materials such as rice hulls, almond hulls, or rice straw. Prior to 2017, Morning Star produced silage on-site; however, silage production was not performed in 2017. In future processing seasons, silage materials will be mixed on the Silage Mixing Pad and then stored in “ag” bags in the Silage Storage Area. The Silage Storage Area is bermed to contain a 25-year, 24-hour storm event.

41. Rock dump material consists of solids screened during the tomato unloading process and may include rocks, dirt, tomato solids, and any other large material. Rock dump material collects in floor grates beneath the flumes. The grates are programmed to dump the collected material on a timed schedule, at which point the material is dumped into a chute that conveys the material to the unlined rock dump area for temporary storage during the processing season. Rock dump material is then directly applied to the LAAs as a soil amendment or moved to the north side of the Cooling Pond or the Silage Storage Area for temporary storage prior to being applied to the LAAs. The storage area north of the Cooling Pond is bermed, lined underground, and consists of sandy clay soils compacted to a minimum of 90% dry density compaction rate to a depth of 1 to 7 feet, depending on location, to minimize infiltration of waste constituents. Runoff is collected in an intercept drain and conveyed to the tailwater return system. Discharges from the storage area north of the Cooling Pond have not occurred.

42. Settling Pond solids are excavated during and after the processing season. The solids consist of soil from the tomato washing process and some tomato solids. Solids are either disposed of directly to the LAAs as a soil amendment or are temporarily stored along the north side of the Cooling Pond or in the Silage Storage Area prior to disposal at the LAAs.

43. Constituent loading rates to the LAAs are characterized by constituent concentration measurements at Meter Station 1 (FDS; 2017 only) and Meter Station 3 (BOD loading and total nitrogen; and FDS in 2016) and flow measurements at Meter Station 3. A summary of constituent loadings to the LAA for the 2016 and 2017 processing seasons is shown below.

Loading Rates

Constituent	2016 Season (487 acres)			2017 Season (799 acres)		
	Total Mass Applied (lbs)	Loading (lbs/acre)	Site-wide Average Loading (lbs/ac/day)	Total Mass Applied (lbs)	Loading (lbs/acre)	Site-wide Average Loading (lbs/ac/day)
BOD	2,160,000	4,430	58	1,240,000	1,549	20
Total Nitrogen	131,900	271	4	109,880	137	2
FDS	926,300	1,902	25	930,931	1,165	15

Table reference: Table 12 of the 2017 RWD (Robertson-Bryan, Inc., 2017).

44. Water balances were included in the 2017 RWD; a revised water balance supporting a flow rate increase was submitted in June 2018; and one additional water balance was submitted in August 2018 supporting the seasonal use of some LAAs for pomace drying, which reduces the acreage available for wastewater application.

45. Calculations for the LAA water balances were based on wastewater flows, total crop irrigation needs, and acreage of LAAs for used for summer and winter crops. The water balances show that total crop irrigation demand exceeds the volume of wastewater available for irrigation. Supplemental irrigation, in addition to the wastewater, is used as needed to meet crop irrigation demands for the LAAs.

46. The water balances for the Cooling Pond show sufficient capacity for the 100-year return period.

47. The 2013 WDRs allow grazing of up to 160 head of livestock on LAA Fields MS5, MS15, MW16, MS18, and MS24. Morning Star plans to maintain the same number of allowable livestock for the foreseeable future.

48. There are four designated unlined storm water ponds on-site for retention of storm water runoff generated at the Plant. These four storm water ponds, identified as Ponds A, B, D, and E, are shown on Attachment B. Storm water drainage from the processing area flows through a series of subsurface and surface drainage systems. Collectively, the storm water ponds have 75.4 acre-feet of storage volume and all storm water is typically kept on site; however, storm water can be discharged off-site through Morning Star's coverage under General Order No. 2014-0057-DWQ (NPDES No. CAS000001).

49. All domestic waste from the Facility is discharged to a single on-site septic system, which then discharges to an approximately 0.25-acre leach field west of storm water pond B. Morning Star's operation of the on-site septic system, which is separately-regulated by the Colusa County Environmental Health Department, is not subject to WDRs per this Order.

Site-Specific Conditions

50. The Facility is relatively flat, sloping gradually towards the northeast. The elevation of the processing facility ranges from 103 feet above mean sea level (msl) in the southwest corner of the site, to approximately 79 feet msl in the northeast portion of the facility. Surface drainage at the Plant currently flows to four storm water collection ponds.

51. The Facility is not located within a 100-year flood zone, according to the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map.

52. Based on information from the U.S. Department of Agriculture's (USDA) *Colusa County Soil Survey*, soils below the Plant and LAAs are predominantly loam and clay loam soils. According to data from the USDA Natural Resources Conservation Service, near-surface soils in the area are classified as "Westfan loam," characterized as well-drained soils.

53. Annual average precipitation is approximately 17 inches. (Department of Water Resources (DWR) Colusa SSW Weather Station.) The 100-year total annual precipitation is approximately 28 inches, and the reference evapotranspiration rate is approximately 54 inches per year (Williams - Station 250).

54. The processing plant is located approximately 2 miles southeast of the urban and residential regions of Williams, CA.

Groundwater Conditions

55. Groundwater beneath the Facility is relatively shallow (typically 5 to 15 feet bgs) and the downgradient direction is north-northeast. High-quality water from the GCID Canal produces localized improvement in groundwater quality.

56. Sixteen groundwater monitoring wells (MWs) are used to monitor shallow groundwater at the Facility. MW locations are shown on Attachment D. Well screen intervals generally begin at 5-15 feet bgs and generally end at 20-30 feet bgs. Well construction details are shown below.

Monitoring Well Construction Details

Well ID	Install Date	Screen Interval (feet bgs)	Area Monitored	Function
MW-1	9/1995	5.5 – 19 [1]	Settling Pond	Background
MW-2	9/1995	5.5 – 19 [1]	Settling Pond	Compliance
MW-3	9/1995	10.5 – 24 [1]	Settling Pond	Compliance
MW-4	9/2004	5 – 20 [1]	Settling Pond	Background
MW-5	9/2004	5 – 20 [1]	LAAs	Background
MW-6	9/2004	5 – 20 [1]	Cooling Pond	Compliance
MW-7	9/2004	5 – 20 [1]	LAAs	Compliance
MW-8	9/2004	5 – 20 [1]	LAAs	Compliance
MW-9 [4]	9/2004	5 – 20 [1]	LAAs	Compliance
MW-10	5/2016	10 – 30 [2]	Cooling Pond	Background
MW-11	5/2016	5 – 25 [2]	Cooling Pond	Compliance
MW-12	5/2016	5 – 25 [2]	LAAs	Background
MW-13	5/2016	5 – 25 [2]	LAAs	Compliance
MW-14	6/2017	15 – 30 [3]	LAAs	Compliance
MW-15	6/2017	15 – 30 [3]	LAAs	Compliance
MW-16	7/2017	15 – 30 [3]	LAAs	Background

[1] Source: GW MW Installation WP (Provost & Pritchard, 2016)
[2] Source: Post Construction MWs MW-10, MW-11, MW-12, MW-13 (Provost & Pritchard, 2016)
[3] Source: Monitoring Well Installation Report Final (Brown and Caldwell, 2017)
[4] MW-9 shall be regulated as a compliance well once wastewater or solids are applied to Field MS1.
Source: MW Installation Report (Brown and Caldwell, 2017)

57. Monitoring wells MW-1, MW-2, and MW-3 were installed in 1995 (prior to Facility operations), and well MW-4 was installed in 2004 to monitor groundwater near the Settling Pond. MW-1 is identified as upgradient wells for the Settling Pond and MW-2 and MW-3 are downgradient wells. The average constituent concentrations for upgradient and downgradient Settling Pond monitoring wells are summarized below.

Average Concentrations of Constituents in Settling Pond Monitoring Wells (mg/L)

Background Wells							
Constituent (mg/L)	**MW-1**			**MW-4**			**Concentration Protective of Beneficial Use**
	1995 [1]	**2012 [1]**	**2017 [2]**	**1995 [1]**	**2012 [1]**	**2017 [2]**	
TDS	206	147	218.8	350	318	308.8	1,000 [3]
Chloride	21	5.5	NA	29	20	NA	500 [3]
Iron	--	<0.1	<0.005	0.1	<0.1	<0.005	0.3 [4]
Manganese	--	<0.1	0.0004	<0.1	<0.1	0.0004	0.05 [4]
Nitrate Nitrogen	0.2	1.8	0.2	6	6.4	1.65	10 [5]

Average Concentrations of Constituents in Settling Pond Monitoring Wells (mg/L)

Downgradient Wells							
Constituent (mg/L)	**MW-2**			**MW-3**			**Concentration Protective of Beneficial Use**
	1995 [1]	**2012 [1]**	**2017 [2]**	**1995 [1]**	**2012 [1]**	**2017 [2]**	
TDS	453	477	461	490	507	608	1,000 [3]
Chloride	35	56	NA	26	30	NA	500 [3]
Iron	--	<0.1	<0.005	--	<0.1	<0.005	0.3 [4]
Manganese	--	<0.1	0.0003	--	<0.1	0.0255	0.05 [4]
Nitrate Nitrogen	**11**	3.9	1.4	**10**	**19**	**18.7**	10 [5]

Concentrations in **bold** exceed a concentration protective of beneficial use.
NA = not analyzed

1 Concentrations were presented in Finding 43 of the 2013 WDRs

2 Reference: Semi-Annual Groundwater Monitoring Report, July-December 2017 (Robertson-Bryan, Inc.); concentrations shown are average concentrations for 2017. This was the most recent groundwater data available for inclusion in this Order.

3 Secondary Maximum Contaminant Upper Level

4 Secondary Maximum Contaminant Recommended Level

5 Primary Maximum Contaminant Level

58. Morning Star submitted a *Background Groundwater Quality Study and Groundwater Impacts Assessment Report* in December 2005. Intra-well analyses were conducted, and upper control limits were established for wells MW-1, MW-2 and MW-3. Contemporaneous groundwater monitoring results indicated high spatial variability between wells, but moderate temporal variability within each well. The 2005 report concluded that salinity and nitrate concentrations were less than respective intra-well upper control limits, indicating there was no evidence of groundwater degradation caused by discharges to the Settling Pond at that time. However, the 2005 report stated that the nitrate nitrogen concentrations exceeded the upper control limit, particularly in wells MW-1 and MW-3. This apparent degradation was attributed to either contamination or an innocuous cause (e.g., sampling, transcription, or lab errors). Given the occurrences in upgradient and downgradient wells, the 2005 report concluded that the increased concentrations were not attributed to the Settling Pond, and there was therefore no evidence of degradation, as stated in the 2005 report.

59. In recent years (2010 to present), concentrations of iron and manganese, have been relatively stable in MW-1 and MW-4. Nitrate as nitrogen concentrations in MW-1 and MW-4 have been highly temporally variable; however, have shown a general decreasing trend since 2010. TDS shows an increasing concentration trend in upgradient well MW-1, likely due to upgradient conditions not in the Dischargers' control. Concentrations of TDS reported in MW-4 have been stable over time.

60. In downgradient wells MW-2 and MW-3, concentrations of iron and manganese, have been stable over time. Nitrate as nitrogen in MW-2 has shown a general decreasing trend in recent years (2010 to present). Nitrate as nitrogen concentrations in downgradient well MW-3 exceed the primary MCL (10 mg/L); however, concentrations in recent years (2010 to present) have been decreasing. There is some uncertainty in identifying a specific source or

sources that may be impacting the groundwater around MW-3. MW-3 is located downgradient of the Settling Pond, adjacent to a wastewater overflow ditch just south of the Cooling Pond, and near the temporary rock dump storage area. The area around MW-3 may be impacted as a result of discharges to all three areas near the well and the result of high spatial variabilities of constituents in the area.

61. TDS concentrations in MW-2 and MW-3 have remained relatively stable. It is possible that discharges to the Settling Pond have had a localized effect on groundwater; however, other potential sources are also impacting groundwater, including the long-term agricultural use of the area and potential naturally occurring conditions.

62. Three groundwater monitoring wells are used to monitor the groundwater near the Cooling Pond: MW-10 (upgradient), MW-6 (downgradient), and MW-11 (downgradient). The average concentrations of select constituents in monitoring wells associated with the Cooling Pond are shown below.

Average Concentrations of Constituents in Cooling Pond Monitoring Wells (mg/L)

Constituent	Background Well		Downgradient Wells					Concentration Protective of Beneficial Use
	MW-10 [1]		MW-6			MW-11 [1]		
	2016	2017 [6]	2005 [2]	2012 [2]	2017 [6]	2016	2017 [6]	
TDS	266	250	735	748	441	445	458	1,000 [3]
Iron	0.174	<0.005	**7.4**	<0.1	<0.005	<0.005	<0.005	0.3 [4]
Manganese	0.0024	0.0005	**0.2**	<0.1	0.01	**1.14**	**1.05**	0.05 [4]
Nitrate Nitrogen	2	2.7	11	5.9	<0.12	0.04	0.05	10 [5]

Concentration in **bold** exceed a concentration protective of beneficial use.

1 MW-10 and MW-11 were installed in 2016.

2 Concentrations were presented in Finding 45 of the 2013 WDRs

3 Secondary Maximum Contaminant Upper Level

4 Secondary Maximum Contaminant Recommended Level

5 Primary Maximum Contaminant Level

6 Reference: Semi-Annual Groundwater Monitoring Report, July-December 2017 (Robertson-Bryan, Inc.); concentrations shown are average concentrations for 2017. This was the most recent groundwater data available for inclusion in this Order.

< = laboratory reporting limits.

63. When comparing upgradient TDS concentrations to downgradient, concentrations are lower in MW-10 (upgradient) than MW-6 (downgradient); however, concentrations in both wells are less than the Secondary Maximum Contaminant Upper Level (1,000 mg/L) and TDS concentration trends in downgradient well MW-6 have been decreasing over time. An insufficient number of samples have been collected from MW-11 to determine concentration trends; however, all TDS concentrations from MW-11 since its installation in 2016 have been less than the Secondary Maximum Contaminant Upper Level of 1,000 mg/L.

64. Manganese concentrations in wells upgradient of the Cooling Pond are generally less than concentrations in the downgradient wells. Manganese in MW-11 (downgradient) exceeds the Secondary Maximum Contaminant Recommended Level (0.05 mg/L). MW-11 was recently

installed (2016) and an insufficient number of samples have been collected to determine long-term groundwater concentration trends. It is uncertain if the manganese is the result of the Cooling Pond, naturally occurring conditions, or the long-term agricultural use in the area. As discussed in Finding 8, manganese at concentrations exceeding the protection of beneficial use has been reported in source water (Plant Wells 1 and 2, which are also upgradient of the facility), indicating impacts in area are likely due to other sources not in the Dischargers' control.

65. Nitrate as nitrogen and manganese concentrations are less than concentrations protective of beneficial uses in all three wells (MW-6, MW-10, and MW-11). Concentration trends for nitrate as nitrogen and manganese in downgradient well MW-6 are decreasing. An insufficient number of samples have been collected from MW-11 to determine concentration trends.

66. Two upgradient wells and four downgradient wells are used to monitor groundwater conditions associated with the LAAs, prior to the addition of new LAA fields acquired in 2017. The annual average concentrations of select constituents in upgradient wells and downgradient wells associated with LAAs are shown below.

Annual Average Concentrations in LAA Monitoring Wells (mg/L)

	TDS [1]			**Iron [2]**			**Manganese [2]**			**Nitrate as N [3]**		
	2005	**2012**	**2017 [4]**	**2005**	**2012**	**2017 [4]**	**2005**	**2012**	**2017 [4]**	**2005**	**2012**	**2017 [4]**
Upgradient Wells												
MW-5	488	700	642	**2.2**	<0.1	<0.005	**0.6**	<0.1	0.02	6.8	**39**	4
MW-12	--	--	537	--	--	<0.005	--	--	0.03	--	--	4.1
Downgradient Wells												
MW-7	537	674	684	**1.0**	<0.1	<0.005	**0.7**	**0.5**	**0.5**	9.7	4.1	1.8
MW-8	730	885	867	**9.6**	<0.1	<0.005	**1.0**	**0.8**	**0.7**	2.4	1.8	4.1
MW-9	987	**1,012**	**1,117**	**2**	<0.1	<0.005	**0.1**	<0.1	**0.13**	**23**	**17**	**10**
MW-13	--	--	593	--	--	<0.005	--	--	0.004	--	--	4.2

Sampling results from 2005 and 2012 were presented in Finding 43 of the 2013 WDRs
Concentrations in **bold** exceed a concentration protective of beneficial use.

[1] TDS = 1,000 mg/L (Secondary Maximum Contaminant Upper Level)

[2] Iron = 0.3 mg/L (Secondary Maximum Contaminant Recommended Level)
Manganese = 0.05 mg/L (Secondary Maximum Contaminant Recommended Level)

[3] Nitrate as Nitrogen = 10 mg/L (Primary Maximum Contaminant Level)

[4] Reference: Semi-Annual Groundwater Monitoring Report, July-December 2017 (Robertson-Bryan, Inc.); concentrations shown are average concentrations for 2017. This was the most recent groundwater data available for inclusion in this Order.

< = reporting limit
-- = not available. Wells were installed in 2016.

67. Wells MW-5 (upgradient), MW-7, MW-8, and MW-9 (all downgradient) were installed in 2004 to monitor groundwater associated with LAAs in use at the time. Concentrations in MW-5 (upgradient) for each constituent shown in the table above indicate stable (iron and manganese), decreasing (nitrate as nitrogen), or slightly increasing (TDS) concentration trends. In MW-7 to MW-9 (downgradient), concentrations of constituents shown in the table above are highly variable both spatially and temporally, but general trends are decreasing or stable, with the exception of TDS and manganese. TDS is stable in MW-7 but increasing in MW-8 and MW-9. However, recent (2016 to present) TDS concentration measurements in MW-8 and MW-9 have shown decreasing trends. Manganese concentrations from 2010 to present are increasing in all three wells and are greater than the concentration protective of beneficial use, but all three wells have also shown decreasing trends in manganese concentration since 2016. MW-9 is located downgradient of Field MS1, which has not

received wastewater in recent years. While the discharge has impacted groundwater, the source of degradation is likely due to multiple conditions, including the application of wastewater, the long-term agricultural use of the area and possibly naturally occurring conditions.

68. In 2016, wells MW-12 (upgradient) and MW-13 (downgradient) were installed to provide additional data points for upgradient/downgradient comparisons and concentration trends. An insufficient number of samples have been collected from these MWs to determine concentration trends. Concentrations of TDS, nitrate, manganese, and iron reported in these wells are less than concentrations protective of beneficial uses. This Order requires continued groundwater monitoring.

69. Prior to the 2017 processing season, the Dischargers added Fields MS25 to MS36 for use as additional LAAs. MS36 remains part of the Dischargers' property; however, it does not receive wastewater. MW-14, MW-15, and MW-16 were sampled twice prior to wastewater application and one sample was collected after the application of wastewater in 2017. Results for the 2017 samples collected from the upgradient well and downgradient wells are shown below.

Concentrations in New LAA Upgradient and Downgradient Wells (mg/L)

	TDS	Iron	Manganese	Nitrate as N
MW-16 (Upgradient)				
7/20/2017 [4]	570	ND <0.005	0.028	**26.7**
8/17/2017 [4]	579	ND <0.005	**0.131**	**26.8**
11/21/2017	599	ND <0.005	**0.0402**	**37.1**
MW-14 (Downgradient)				
7/20/2017 [4]	**1,410**	ND <0.005	**0.142**	0.05
8/17/2017 [4]	**1,370**	ND <0.005	**0.216**	0.08
11/21/2017	**1,300**	ND <0.005	**0.0912**	0.05
MW-15 (Downgradient)				
7/20/2017 [4]	**1,400**	ND <0.005	**0.189**	0.1
8/17/2017 [4]	**1,450**	ND <0.005	**0.316**	0.1
11/21/2017	**1,420**	ND <0.005	**0.3**	0.1
Concentrations Protective of Beneficial Use	1,000 [1]	0.2 [2]	0.05 [2]	10 [3]

[1] Secondary Maximum Contaminant Upper Level
[2] Secondary Maximum Contaminant Recommended Level
[3] Primary Maximum Contaminant Level
[4] Pre-discharge samples
Concentrations in **bold** exceed a concentration protective of beneficial use.
ND = not detected greater than the method detection limit

70. In upgradient well MW-16, nitrate as nitrogen and manganese exceed concentrations protective of beneficial use, indicating degradation from an upgradient source not in the Dischargers' control.

71. TDS concentrations exceed the concentration protective of beneficial use in downgradient wells, including samples collected prior to wastewater discharges. Since concentrations of constituents (TDS and manganese) in upgradient and downgradient wells exceed concentrations protective of beneficial uses in samples collected before discharges to the LAAs occurred, groundwater degradation in this area is likely the result of local agricultural

land uses, including rice farming[1], and a natural area of high salinity identified by CV-SALTS and prior reports[2]. Continued monitoring of these wells is required, which will provide additional data to determine if discharges to new LAAs pose unacceptable threats to groundwater quality.

72. Based on concentration trends and intra- and interwell evaluations conducted on all monitoring wells, there is a high variability in concentrations of constituents between wells, uncertainty in specific sources impacting groundwater, and the amount of impact each source has on degradation. Naturally occurring conditions, long-term agricultural use of the area, including rice farming, and discharges from the Facility have all impacted groundwater to some degree.

Basin Plan, Beneficial Uses, and Regulatory Considerations

73. The Central Valley Water Board's operative *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins* (*Basin Plan*) designates beneficial uses for water, establishes water quality objectives (WQOs) necessary to sustain such uses; contains implementation plans and policies for protecting waters of the basin; and incorporates State Water Board plans and policies. Per Water Code section 13263(a), WDRs implement the *Basin Plan*.

74. Local drainage is to the Colusa Basin Drain, the beneficial uses of which (per the *Basin Plan*) include: agricultural supply (AGR); water contact recreation (REC-1); warm freshwater habitat (WARM); migration of aquatic organisms (MIGR); spawning, reproduction and/or early development (SPAWN); and wildlife habitat (WILD).

75. Per the *Basin Plan*, beneficial uses of underlying groundwater at the Facility are: municipal and domestic supply (MUN); agricultural supply (AGR); industrial service supply (IND); and industrial process supply (PRO).

76. The *Basin Plan* establishes narrative water quality objectives (WQO) for chemical constituents, tastes and odors, and toxicity in groundwater. It also sets forth a numeric objective for total coliform organisms.

77. The *Basin Plan*'s numeric WQO 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-designated groundwater.

78. The *Basin Plan*'s narrative WQOs for chemical constituents require MUN-designated waters to at least meet the MCLs specified in California Code of Regulations, title 22 (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.

[1] CH2MHILL and Plantierra, 2013. Rice-Specific Groundwater Assessment Report. July.
[2] CH2MHILL, 2014. Sacramento Valley Water Quality Coalition Groundwater Quality Assessment Report. June; and Regional Water Quality Control Board, Central Valley Region, Amendments to the Water Quality Control Plans for the Sacramento River and San Joaquin River Basins and Tulare Lake Basin to Incorporate a Central Valley-wide Salt and Nitrate Control Program, Final Staff Report, May 2018.

79. The narrative toxicity WQO requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, animal, plant, or aquatic life associated with designated beneficial uses.

80. Quantifying a narrative WQO requires a site-specific evaluation of those constituents that have the potential to impact water quality and beneficial uses. The *Basin Plan* states that when compliance with a narrative objective is required to protect specific beneficial uses, the Central Valley Water Board will, on a case-by-case basis, adopt numerical limitations to implement the narrative objective.

81. In the absence of specific numerical water quality limits, the *Basin Plan* methodology is to consider any relevant published criteria. General salt tolerance guidelines, such as *Water Quality for Agriculture* by Ayers and Westcot and similar references indicate that yield reductions in nearly all crops are not evident when irrigation water has an electrical conductivity (EC) less than 700 µmhos/cm. However, there is an eight-to-ten-fold range in salt tolerance for agricultural crops and the appropriate salinity values to protect agriculture in the Central Valley are considered on a case-by-case basis. It is possible to achieve full yield potential with waters having EC up to 3,000 µmhos/cm if the proper leaching fraction is provided to maintain soil salinity within the tolerance of the crop. The list of crops in Finding 32 is not intended as a definitive inventory of crops that are or could be grown in the area affected by the discharge, but it is representative of current and historical agricultural practices in the area.

82. The Central Valley Water Board adopted Basin Plan amendments incorporating new programs for addressing ongoing salt and nitrate accumulation in the Central Valley at its 31 May 2018 Board Meeting. These programs, once effective, could change how the Central Valley Water Board permits discharges of salt and nitrate. For nitrate, dischargers that are unable to comply with stringent nitrate requirements will be required to take on alternate compliance approaches that involve providing replacement drinking water to persons whose drinking water is affected by nitrates. Dischargers could comply with the new nitrate program either individually or collectively with other dischargers. For salinity, dischargers that are unable to comply with stringent salinity requirements would instead need to meet performance-based requirements and participate in a basin-wide effort to develop a long-term salinity strategy for the Central Valley. This Order may be amended or modified to incorporate any newly-applicable requirements.

83. The stakeholder-led Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) initiative has been coordinating efforts to implement the new salt and nitrate management strategies. The Central Valley Water Board expects dischargers that may be affected by new salt and nitrate management policies to coordinate with the CV-SALTS initiative.

Special Considerations for High Strength Waste

84. For the purposes of this Order, “high strength waste” is defined as wastewater that contains concentrations of readily degradable organic matter exceeding typical concentrations for domestic sewage. Such wastes contain greater than 500 mg/L BOD and often contain commensurately high levels of TKN, which is a measure of organic nitrogen and ammonia nitrogen. Typical high strength wastewaters include septage, some food processing wastes, winery wastes, and rendering plant wastes.

85. Excessive application of high organic strength wastewater to land can create objectionable odors, soil conditions that are harmful to crops, and degradation of underlying groundwater with nitrogen species and metals, as discussed below. Such groundwater degradation can be prevented or minimized through implementation of best management practices which include planting crops to take up plant nutrients and maximizing oxidation of BOD to prevent nuisance conditions.

86. Unless groundwater is very shallow, groundwater degradation with nitrogen species such as ammonia and nitrate can be prevented by minimizing percolation below the root zone of the crops and ensuring that the nitrogen load does not exceed crop needs over the course of a typical year. Where there is sufficient unsaturated soil in the vadose zone, excess nitrogen can be mineralized and subsequently denitrified in anoxic zones or microsites by soil microorganisms.

87. With regard to BOD, excessive application can deplete oxygen in the vadose zone and lead to anoxic conditions. At the ground surface, this can result in nuisance odors and fly-breeding. When insufficient oxygen is present below the ground surface, anaerobic decay of the organic matter can create reducing conditions that convert metals that are naturally present in the soil as relatively insoluble (oxidized) forms to more soluble reduced forms. This condition can be exacerbated by acidic soils and/or acidic wastewater. If the reducing conditions do not reverse as the percolate travels down through the vadose zone, these dissolved metals (primarily iron, manganese, and arsenic) can degrade shallow groundwater quality. Many aquifers contain enough dissolved oxygen to reverse the process, but excessive BOD loading over extended periods may cause beneficial use impacts associated with these metals.

88. Typically, irrigation with high strength wastewater results in high BOD loading on the day of application. It is reasonable to expect some oxidation of BOD at the ground surface, within the evapotranspiration zone and below the root zone within the vadose (unsaturated) zone. The maximum BOD loading rate that can be applied to land without creating nuisance conditions or leaching of metals can vary significantly depending on soil conditions and operation of the land application system.

89. The U.S. Environmental Protection Agency's (U.S. EPA) *Pollution Abatement in the Fruit and Vegetable Industry* recommends BOD loading rates in the range of 36 to 600 lb/acre-day to prevent nuisance conditions but indicates the loading rates can be even higher under certain conditions. The studies that supported this report did not evaluate actual or potential groundwater degradation associated with those rates. There are few studies that have attempted to determine maximum BOD loading rates for protection of groundwater quality. Those that have been done are not readily adapted to the varying soil, groundwater, and climate conditions that are prevalent throughout the region.

90. The California League of Food Processors' *Manual of Good Practice for Land Application of Food Processing/Rinse Water* (*Manual of Good Practice*) proposes risk categories associated with particular BOD loading rate ranges as follows:

    a. Risk Category 1: (less than 50 lb/ac/day; depth to groundwater greater than 5 feet) Indistinguishable from good farming operations with good distribution important.

    b. Risk Category 2: (less than 100 lb/ac/day; depth to groundwater greater than 5 feet) Minimal risk of unreasonable groundwater degradation with good distribution more important.

c. Risk Category 3: (greater than 100 lb/ac/day; depth to groundwater greater than 2 feet) Requires detailed planning and good operation with good distribution very important to prevent unreasonable degradation, as well as use of oxygen transfer design equations that consider site-specific application cycles and soil properties and special monitoring.

The *Manual of Good Practice* recommends allowing a 50 percent increase in the BOD loading rates in cases where sprinkler irrigation is used on well-drained soil but recommends that additional safety factors be used for sites with heavy and/or compacted soils.

91. Although it has not been subject to a scientific peer review process, the *Manual of Good Practice* provides science-based guidance for BOD loading rates that, if fully implemented, are considered a best management practice to prevent groundwater degradation due to reduced metals.

92. This Order sets an irrigation cycle average BOD loading rate for the flood irrigated LAAs of 100 lb/acre/day consistent with Risk Category 2 in the *Manual of Good Practice* and requires dischargers to ensure the even application of wastewater over the available land application areas. For sprinkler irrigated fields, this Order sets an irrigation cycle average BOD loading rate for the LAAs of 150 lb/acre/day, consistent with Risk Category 3 in the *Manual of Good Practice*.

Antidegradation Analysis

93. State Water Resources Control Board's (State Water Board) *Statement of Policy with Respect to Maintaining High Quality Waters of the State*, Resolution 68-16 (Antidegradation Policy) prohibits degradation of groundwater unless it has been shown that such degradation:

a. Is consistent with the maximum benefit to the people of the State of California;

b. Will not unreasonably affect present and anticipated future beneficial uses of water;

c. Will not result in water quality less than as prescribed in State Water Board and Central Valley Water Board policies (including violation of WQOs); and

d. Is minimized through application of best practicable treatment or control (BPTC).

94. Degradation of groundwater by some of the typical waste constituents associated with discharges from a food processing facility, after effective source control, treatment, and control measures are implemented, is consistent with the maximum benefit to the people of the State. Morning Star's operation provides full time and seasonal employment at the Facility to process tomatoes and produce tomato products. In addition, Morning Star provides a needed service for local growers and farmers, fertilizer, and equipment manufactures as well as provides a tax base of local and county governments. The economic prosperity of Central Valley communities and associated industry is of maximum benefit to the people of the State, and provides sufficient justification for allowing the limited groundwater degradation that may occur pursuant to this Order.

95. Because Morning Star began monitoring groundwater quality at the site in 1995, it is impossible to determine pre-1968 groundwater quality with existing data. Therefore, determination of compliance with the Antidegradation Policy for the Facility must be based on readily available background groundwater quality. Constituents of concern that have the

potential to degrade groundwater include TDS, nutrients (nitrate as nitrogen), and metals (iron and manganese) as discussed below.

Constituent	Average Concentrations (mg/L)			
	Wastewater Effluent [1]	Upgradient Groundwater [2]	Downgradient Groundwater [3]	Concentrations Protective of Beneficial Use
TDS	1,298	374	762	1,000 [4]
FDS	696	NM	NM	NE
Nitrate as Nitrogen	0.26	<6.3	6.0	10 [5]
Manganese	NM	0.05	0.33	0.05 [6]
Iron	NM	0.07	0.07	0.30 [6]

NE = not established
NM = not monitored
[1] Flow weighted average from 2015 to 2017
[2] Compiled from MW-1, MW-4, MW-5, MW-10, MW-12, and MW-16; mean of data collected between 2010-2017.
[3] Compiled from MW-2, MW-3, MW-6, MW-7, MW-8, MW-9, MW-11, MW-13, MW-14, and MW-15; mean of data collected between 2010-2017.
[4] Secondary Maximum Contaminant Upper Level
[5] Primary Maximum Contaminant Level
[6] Secondary Maximum Contaminant Recommended Level

a. **Total Dissolved Solids.** For the purpose of evaluation TDS is representative of overall salinity and is the best measure for total salinity in groundwater. FDS is the inorganic fraction of TDS and is the best measure of salinity in process water. The average FDS concentration in effluent is 696 mg/L, which has remained relatively stable since 2014, and is less than the permitted effluent limit of 900 mg/L required in the 2013 WDRs. The average concentration of TDS in upgradient groundwater is 370 mg/L, while the average TDS concentration in downgradient groundwater is 749 mg/L, less than the concentration protective of beneficial use of 1,000 mg/L. Discharges from the Facility have degraded groundwater in some locations; however, the Facility is not the only source of degradation, as indicated by an increasing TDS concentration trend in upgradient well MW-1 and prior reports on area groundwater quality.

   Discharges from the facility to the LAAs, along with influences from surrounding land uses and naturally occurring conditions, have caused degradation of shallow groundwater with regards to TDS. To protect groundwater from further degradation from discharges of wastewater and solids to land by the Dischargers, this Order establishes a performance-based FDS effluent limit as a flow-weighted annual average to prevent significant increases of TDS concentrations in groundwater. In addition, this Order does not allow a statistically significant increase of TDS in groundwater or an exceedance of the concentration protective of beneficial use for TDS.

b. **Nitrate.** For nutrients such as nitrate, the potential for groundwater degradation depends on wastewater quality, crop uptake, and the ability of the vadose zone below the LAAs to support nitrification and denitrification to convert the nitrogen to nitrogen gas before it reaches the water table. Most of the nitrogen in the process wastewater is present as TKN, which can readily mineralize and convert to nitrate (with some loss via ammonia volatilization and incorporated into long-lived humic compounds) in the LAAs. TKN concentrations in groundwater are low (less than 3 mg/L). Concentrations of nitrate as nitrogen in effluent has consistently been less than 1 mg/L in samples collected during

the 2015 through 2017 processing seasons. In groundwater, concentrations of nitrate as nitrogen in upgradient well MW-16 exceed the Primary Maximum Contaminant Level (MCL) of 10 mg/L, indicating an off-site source may be influencing groundwater in this area. Because effluent concentrations are less than those reported in groundwater and concentrations of TKN in groundwater are low, it does not appear that the discharge of wastewater to the LAAs is impacting groundwater with regards to nitrate. The degradation is likely the result of long-term agricultural use of the area. For the continued protection of groundwater from discharges to land, this Order limits the application of wastewater to be consistent with the plant available nitrogen (PAN) for the crop type to be grown on the LAAs. In addition, this Order does not allow a statistically significant increase of nitrate as nitrogen in groundwater or an exceedance of the concentration protective of beneficial use for nitrate as nitrogen.

c. **Manganese**. The current monitoring program does not require analysis of manganese in wastewater. Based on the character of source water and nature of typical operations, manganese in wastewater at the site is not expected to have a direct effect on groundwater concentrations. However, manganese concentrations exceeding the concentration protective of beneficial use have been reported in shallow groundwater monitoring wells. Manganese concentrations in MW-5 (upgradient) have been stable over time, while concentrations in wells downgradient of the LAAs (MW-8 and MW-9) show increasing trends and exceed concentrations protective of beneficial use. Excessive BOD loading rates can deplete oxygen, resulting in anoxic conditions that can solubilize naturally-occurring metals in soil, such as manganese. Recent improvements to the wastewater system have resulted in BOD loading rates in 2016 and 2017 that were less than the loading rate of 100 lbs/ac/day as required in the 2013 WDRs. The recent improvements in wastewater application and reduced BOD loading rates may reduce the likelihood of further impacts to groundwater from the discharge. In addition, manganese concentrations in the source water from Plant Wells 1 and 2 exceed concentrations protective of beneficial use, indicating manganese in the area is likely due to other sources in addition to discharges of wastewater. Because the Dischargers only recently improved wastewater quality and discharge practices, potential improvements in groundwater quality will not be evident immediately. For the continued protection of groundwater, this Order sets a BOD loading limit to minimize wastewater discharges from causing reducing conditions below the LAAs and does not allow a statistically significant increase of manganese in groundwater or concentrations exceeding the protection of groundwater for beneficial use.

d. **Iron.** The current monitoring program does not require analysis of iron in wastewater. Based on the character of process water supply and nature of typical operations, wastewater at the site is not expected to contain significant iron concentrations. Concentrations of iron in upgradient and downgradient MWs have generally been decreasing. Although excessive BOD loading rates can deplete oxygen, resulting in anoxic conditions that can solubilize naturally occurring metals in soil, such as iron, the BOD loading rates in 2016 and 2017 were less than 100 lbs/ac/day. Recent improvements to the wastewater system have resulted in reduced loading rates. For the continued protection of groundwater, this Order sets a BOD loading limit to minimize wastewater discharges from causing reducing conditions below the LAAs.

96. This Order establishes effluent and groundwater limitations for the Facility that will not unreasonably affect present and anticipated beneficial uses or result in groundwater quality that exceeds WQOs set forth in the *Basin Plan*.

97. The Dischargers provide treatment and control of the discharges described herein. Since the adoption of the 2013 WDRs, the Dischargers have improved wastewater quality and management by:

    a. Installing additional screening devices to the LAA wastewater stream prior to discharge to prevent tomato solids discharging to the LAAs;

    b. Reducing the volume of softened water usage at the Facility;

    c. Installing electronic controls for better water softener management;

    d. Increasing the reuse of low salinity condensate water;

    e. Converting some flood irrigated LAAs to sprinkler irrigation;

    f. Improving wastewater application for more even distribution;

    g. Increasing LAA acreage; and

    h. Developing and implementing several wastewater and groundwater management plans to improve wastewater management and quality, including:

        i. *Salinity Reduction Plan*;

        ii. *Field Flow Monitoring Plan*;

        iii. *Residual and Settling Pond Solids Management Plan*;

        iv. *Sampling and Analysis Plan*;

        v. *Groundwater Pollution Mitigation Plan*;

        vi. *Groundwater Limitations Compliance Assessment Plan*;

        vii. *Groundwater Nitrate and Manganese Limitations Compliance Assessment Plan*;

        viii. *Industrial Activities Storm Water Pollution Prevention Plan;*

        ix. *Storm Water Runoff Evaluation and Management Plan;* and

        x. *Cooling Pond BOD Compliance Report*.

98. The Dischargers' implementation of the above management plans has resulted in improved wastewater quality, a reduction in the potential for odor generation, improved wastewater management at the LAAs, and a reduction in the potential for further groundwater degradation from the discharge. Improvements to groundwater quality as a result of Facility improvements

are not likely going to be evident immediately. Continued groundwater evaluations and monitoring are required in this Order.

99. The activities described above represent BPTC of the discharges of wastewater authorized under this Order.

Other Regulatory Considerations

100. Pursuant to Water Code section 106.3, subdivision (a), it is "the established policy of the state that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes." Although this Order is not necessarily subject to Water Code section 106.3 because it does not revise, adopt or establish a policy, regulation or grant criterion (see § 106.3, subd. (b)), it nevertheless promotes that policy by requiring discharges to meet MCLs designed to protect human health and ensure that water is safe for domestic use.

101. For the purposes of California Code of Regulations, title 23 (Title 23), Facility's discharges have a threat-complexity rating of "2B," where:

a. Threat Category 2 reflects "discharges of waste that could impair the designated beneficial uses of the receiving water, cause short-term violations of water quality objectives, cause secondary drinking water standards to be violated, or cause a nuisance."

b. Complexity Category B is assigned to "[a]ny 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."

102. This Order, which prescribes WDRs for discharges of wastewater, is exempt from the prescriptive requirements of California Code of Regulations, title 27, section 20005 et seq. (See Cal. Code Regs., tit. 27, § 20090, subd. (b).)

103. Statistical data analysis methods in the U.S. EPA's 2009 *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance* (*Unified Guidance*) are appropriate for determining whether the discharge complies with Groundwater Limitations of this Order.

104. With respect to storm water, the Facility is currently covered under the statewide *General Permit for Storm Water Discharges Associated with Industrial Activities*, State Water Board Order 2014-0057-DWQ (NPDES General Permit CAS000001).

105. Water Code section 13267, subdivision (b)(1) states:

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

106. The technical reports required by this Order and the attached Monitoring and Reporting Program R5-2019-0013 are necessary to ensure compliance with these WDRs. The burden of producing such reports is also reasonable relative to the need for their submission.

107. Existing Department of Water Resources (DWR) standards for the construction and destruction of groundwater wells, as well as any more stringent standards that are subsequently adopted, shall apply to all MWs used to monitor impacts of wastewater storage or disposal governed by this Order. (See Cal. *Well Stds. Bulletin 74-90* [DWR, June 1991]; *Water Well Stds. Bulletin 94-81* [DWR, Dec. 1981].)

108. The Central Valley Water Board's adoption of this Order, which prescribes WDRs for existing discharges from an existing facility, is exempt from the California Environmental Quality (CEQA), in accordance with the CEQA Guidelines. (See Cal. Code Regs., tit. 14, § 15301.)

109. In accordance with CEQA, environmental impacts associated with creating new Facility LAAs (Fields MS25–MS35) were addressed through a Mitigated Negative Declaration adopted by the Colusa County Planning Commission on 1 November 2017.

110. Compliance with this Order will mitigate or avoid significant impacts to water quality.

111. Pursuant to Water Code section 13263, subdivision (g), the ability to discharge waste is a privilege, not a right, and adoption of this Order shall not be construed as creating a vested right to continue discharging waste.

Public Notice

112. All the above and the supplemental information and details in the attached Information Sheet, which is incorporated herein, were considered in establishing the following conditions of discharge.

113. The Dischargers 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.

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

IT IS HEREBY ORDERED that: Order R5-2013-0144 is rescinded; and, pursuant to Water Code sections 13263 and 13267, the Dischargers, as well as their agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the Water Code and regulations adopted thereunder, shall comply with the following:

A. Discharge Prohibitions

1. Discharge of wastes to surface waters or surface water drainage courses (including irrigation ditches outside of Dischargers' control) is prohibited.

2. Discharge of "hazardous waste," as defined per Title 22, section 66261.1 et seq., is prohibited.

3. Except as authorized pursuant to Section E.2 of the *Standard Provisions and Reporting Requirements for WDRs*, 1 March 1991 ed. (SPRRs), treatment system bypasses of untreated or partially-treated waste are prohibited.

4. Discharge of waste at a location or in a manner different from that described in the Findings is prohibited.

5. Discharge of toxic substances into any wastewater treatment system or LAA, if disruptive of biological treatment mechanisms, is prohibited.

6. Discharge of domestic wastewater to process wastewater treatment systems, ponds, LAAs, or any surface waters is prohibited.

7. Discharge of industrial wastewater to septic systems is prohibited.

B. Flow Limitations

1. **Effectively immediately**, process wastewater flow to the LAAs shall not exceed the following limits when 996 acres are available for wastewater application:

996 Acres Available for Wastewater Application	
Flow Measurement	**Flow Limit**
Total Annual Flow [1]	735 MG
Maximum Average Daily Flow for *June through August* [2]	8.2 MGD
Maximum Average Daily Flow for *September through November* [2]	5.6 MGD
Maximum Monthly Flow during the off season [3]	15 MG/month

[1] As determined by the total flow for the calendar year.
[2] As determined by the total flow during the calendar month divided by the number of days in month.
[3] Off-season is defined as months when tomato processing is not occurring, generally December to May, but may vary depending on tomato seasons.

If any LAA acres are removed from the 996 acres available for wastewater application (as described in Finding 39 for pomace drying), the annual effluent flow limit would decrease by 0.82 MG for every acre removed. A maximum of 100 acres may be removed for pomace drying each year corresponding to a total annual flow of 653 MG.

C. Effluent and Mass Loading Limitations

1. The blend of treated wastewater, storm water, and supplemental irrigation water applied to the LAAs shall not exceed the following effluent and mass loading limits:

Constituent	Units	Daily Maximum	Annual Maximum
Avg. FDS Concentration	mg/L	--	900 [4]
BOD Mass Loading [1]	lb/ac/day	100 [2] / 150 [2,3]	--

Constituent	Units	Daily Maximum	Annual Maximum
Nitrogen Mass Loading [5]	lb/ac/year	--	Crop Demand

[1] Based on all sources, including residual solids, commercial fertilizers, and cattle manure, as well as water from the Settling Pond and plant sanitation and cleaning activities.
[2] This limit applies as an irrigation cycle average. For the purpose of this Order, "irrigation cycle" is defined as the time period between the start of an irrigation event for a single field and the start of the next irrigation event for the same field.
[3] BOD mass loading maximums are 150 lb/ac/day for sprinkler irrigated fields on well-drained soil, as allowed in the *Manual of Good Practice*.
[4] Flow weighted average based on total flow and concentration for each source of water discharge.
[5] Based on plant available nitrogen (PAN) for the type of crop to be grown.

Compliance with the above requirements shall be determined as specified in the Monitoring and Reporting Program.

D. Discharge Specifications

1. No waste constituent shall be released, discharged, or placed where it will cause a violation of the Groundwater Limitations of this Order.

2. ADOX 750 shall only be used as a last resort to manage off-site odors. If used, ADOX 750 must be included in the calculations to determine compliance with the FDS effluent limit.

3. Wastewater treatment, storage, and disposal shall not cause pollution or a nuisance, as defined by Water Code section 13050, subdivisions (l)-(m).

4. At all times, discharged waste shall remain within permitted treatment/containment structures and LAAs.

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

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

7. Objectionable odors shall not be perceivable beyond the limits of the property where the waste is generated, treated, and/or discharged at an intensity that creates or threatens to create nuisance conditions.

8. The Dischargers shall operate and maintain all ponds to sufficiently protect the integrity of containment dams and berms, and to prevent overtopping and/or structural failure. Operating freeboard for the Settling Pond shall never be less than two feet (measured vertically from the lowest possible point of overflow), and, for the Cooling Pond, never be less than 1.5 feet. As a means of management and to discern compliance with this requirement, the Dischargers shall install and maintain in each pond a permanent staff gauge with calibration marks (or other applicable means) that clearly show the water level at design capacity and enable determination of available operational freeboard.

9. Wastewater treatment, storage, and disposal ponds or structures shall have sufficient capacity to accommodate allowable wastewater flow, design seasonal precipitation, and ancillary inflow and infiltration during the winter while ensuring continuous compliance with all requirements of this Order. Design seasonal precipitation shall be based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns.

10. On or about **1 October** of each year, available capacity shall at least equal the volume necessary to comply with Discharge Specifications D.8 and D.9.

11. All ponds and open containment structures shall be managed to prevent breeding of mosquitoes. Specifically:

    a. An erosion control program shall be implemented to ensure that small coves and irregularities are not created around the perimeter of the water surface.

    b. Weeds shall be minimized through control of water depth, harvesting, or herbicides.

    c. Dead algae, vegetation, and debris shall not accumulate on the water surface.

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

12. Rehabilitated berms or levees (excluding internal berms that separate ponds or control the flow of water) shall be designed and constructed under the supervision of a California Registered Civil Engineer.

13. Storage of residual solids, including cull tomatoes, vines, and pomace (seeds and skins) on areas not equipped with means to manage leachate is prohibited.

14. The Dischargers shall monitor residual solids accumulation in the Settling Pond as necessary to maintain adequate storage capacity. Specifically, if the estimated volume of solids in the Settling Pond exceeds **the design storage capacity of the ponds,** the Dischargers shall complete solids cleanout within **12 months** after the date of the estimate.

E. Groundwater Limitations

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

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

Constituent (mg/L)	**Maximum Allowable Concentration [1]**
TDS	Current groundwater quality [2] or Concentrations Protective of Beneficial Use, whichever is greater
Manganese (dissolved)	
Nitrate as Nitrogen	

[1] Applies to all compliance monitoring wells listed in the MRP and groundwater quality evaluations are intrawell evaluations.
[2] Current groundwater quality is identified in the 2017 Groundwater Nitrate and Manganese Limitations Compliance Assessment Plan but may be redefined using approved statistical methods described in the Groundwater Limitation Compliance Assessment Plan (Provision H.1.a. of this Order).

2. For all constituents, except as specified in E.1 above, contain constituents in concentrations that exceed either the Title 22 Primary or Secondary MCLs.

3. For all compliance monitoring wells, contain taste or odor-producing constituents, toxic substances, or any other constituents in concentrations that cause nuisance or adversely affect beneficial uses.

Compliance with these limitations shall be determined as specified in the MRP using approved statistical methods, including an evaluation of upgradient conditions to determine if constituent concentration increases in compliance wells are the result of poor quality upgradient groundwater impacting the groundwater beneath the LAAs.

F. Land Application Area Specifications

1. The Dischargers shall ensure that all water and residual solids are applied and distributed with reasonable uniformity across each LAA field, consistent with good agricultural irrigation practices. The Dischargers shall implement changes to the irrigation system and/or operational practices as needed to ensure compliance with this requirement.

2. Crops or other vegetation (which may include pasture grasses, native grasses and trees, and/or ornamental landscaping) shall be grown in the LAAs.

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

4. The Dischargers shall maximize the use of available land application areas to minimize waste constituent loadings.

5. The LAAs shall be managed to prevent nuisance conditions, such as off-site odors and breeding of mosquitoes or other vectors, which includes keeping tailwater ditches essentially free of emergent, marginal, and floating vegetation.

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

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

7. LAAs shall be inspected to determine compliance with the requirements of this Order. If an inspection reveals noncompliance or threat of noncompliance with this Order, the Dischargers shall temporarily stop the discharge immediately and implement corrective actions to ensure compliance with this Order.

8. Sprinkler heads shall be designed, operated and maintained to create a minimum amount of mist, consistent with good agricultural irrigation practices.

9. Any irrigation runoff (tailwater) shall be confined to the LAAs or returned to the LAAs.

10. Discharge to the LAAs shall not be initiated when the ground is saturated.

11. Discharge of storm water runoff from the LAAs to off-site land or surface water drainage courses is prohibited, except as specified in Finding 33.

12. Residual solids shall not be applied to land when the land application areas are saturated.

13. The nitrogen loading rate from residual solids, wastewater, and any other source shall not exceed the plant available nitrogen for the type of crop to be grown.

14. Perimeter fencing shall be maintained around each LAA field used for pasture to prevent irrigation, tailwater, and drainage ditches from damage by livestock.

15. The number of cattle allowed to graze on the LAAs shall not exceed 160 head per year and grazing shall be limited to LAA Fields MS5, MS15–MS18, and MS24, unless and until the Dischargers implement an Executive Officer-approved *Livestock Management Plan* submitted pursuant to Provision H.1.c. herein.

G. Solids Disposal Specifications

For the purpose of this Order, residual solids are defined in accordance with Findings 38 to 42.

1. Residual solids shall be removed from screens, sumps, ponds, and clarifiers as needed to ensure optimal operation, prevent nuisance conditions, and maintain adequate storage capacity.

2. Any handling and storage of residual solids shall be controlled and contained in a manner that minimizes leachate formation and precludes infiltration of waste constituents into soils in a mass or concentration that will violate the groundwater limitations of this Order.

3. Residual solids may be discharged to land in accordance with the Land Application Area Specifications of this Order.

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

5. Any proposed change in solids use or disposal practices shall be reported in writing to the Executive Officer at least 14 days in advance of the change.

H. Provisions

1. The following reports shall be submitted pursuant to Water Code section 13267, and shall be prepared as described in Provision H.5:

    a. By **31 December 2019,** Morning Star shall submit an updated *Groundwater Limitations Compliance Assessment Plan*. The plan shall propose and justify the statistical methods used to evaluate compliance with the groundwater limitations of this Order and specific constituents in the MRP. The plan shall also include an evaluation of upgradient groundwater quality and factor in regional and local variability. Compliance shall be determined according to appropriate statistical methods selected based on site-specific information and the U.S. EPA's Unified Guidance (see Finding 104). "Current groundwater quality", as defined in this Order, is groundwater conditions as presented in the 2017 Annual Monitoring Report and developed in the 2017 Groundwater Nitrate and Manganese Limitations Compliance Assessment Plan but may be redefined by the Dischargers and documented in the approved updated *Groundwater Limitation Compliance Assessment Plan*.

    b. **By 30 June 2019**, the Dischargers shall submit an *Odor Monitoring and Mitigation Plan* that describes how odor monitoring will be conducted and if odors are present, what measures will be taken to mitigate and prevent off-site nuisance odors.

    c. **At least 90 days** prior to an increase in the number of cattle and/or use of any LAA other than MS5, MS15 to MS18, and MS24 as additional pasture land for grazing, the Dischargers shall submit a *Livestock Management Plan* for approval by the Executive Officer. The plan shall evaluate historical irrigation practices and nitrogen loading rates (maximum daily and cycle averages) for each LAA for all sources, propose cattle unit type (cattle head, animal unit, etc.) and basis for unit concept, determine the additional amount of cattle that will not result in nitrogen application in excess of the agronomic rate, and describe operational and/or physical improvements required to ensure compliance with this Order.

    d. **At least 90 days** prior to using chemical cleaning agents or detergents at the tomato trailer washing station, the Dischargers shall submit a report the Central Valley Water Board. The report shall include information on how the use of a cleaning agent may impact wastewater quality and how the discharge will stay incompliance with this Order.

    e. **At least 90 days** prior to implementing alternative means to measure freeboard (other than the staff gauge included in Discharge Specification D.7), the Discharger shall submit a report describing the use of an alternative method for measuring freeboard and justify how the new method will ensure compliance with operating freeboard requirements (1.5 feet for the Cooling Pond and 2 feet for the Settling Pond, measured vertically from the lowest possible point of overflow).

    f. **At least 30 days** prior to the start of each processing season, the amount of acreage to be used for pomace drying and acreage available for wastewater disposal with the corresponding flow rate, as described in the Flow Limitations of this Order, shall be reported to the Central Valley Water Board.

g. **At least 30 days** prior to using a flood irrigated field that has been converted to sprinkler irrigation, the Dischargers shall notify the Central Valley Water Board of the change. The Dischargers shall also report the change in corresponding quarterly monitoring reports.

h. **Within 48 hours** of boiler blowdown discharging to the Cooling Pond during a facility upset, a composite wastewater sample shall be collected from the Cooling Pond. The composite sample shall consist of at least three sample locations from the Cooling Pond and shall be considered representative of Cooling Pond water quality. Samples will be analyzed, at a minimum, for TDS. Analytical data, estimated volume of blowdown discharge and date and duration of blowdown discharge shall be reported in the corresponding quarterly report for Pond Monitoring, as required in the MRP. The reported information shall include a discussion of potential impacts to Cooling Pond water quality. After four sampling events (a total of four composite samples collected after emergency boiler blowdown discharges to the Cooling Pond), if no statistically significant increase in TDS concentrations is observed, sampling shall be discontinued. If statistically significant increases are observed after four sampling events, the Dischargers shall submit a technical report within 120 days of the collection of the last sample to address the increasing TDS concentrations.

i. **Within 180 days** of DWR finalizing the evaluation on the Cooling Pond to determine if the pond dikes constitute a jurisdiction dam, Morning Star shall notify the Central Valley Water Board of DWR's determination and if there are any actions to be taken.

2. If groundwater monitoring results show that the discharge of waste is causing groundwater to contain any waste constituents in concentrations greater than the Groundwater Limitations of this Order, based on intrawell evaluations, within 120 days of the request of the Executive Officer, the Dischargers shall submit a *BPTC Evaluation Workplan* that sets forth the scope and schedule for a systematic and comprehensive technical evaluation of each component of Morning Star's waste treatment and disposal system to determine best practicable treatment and control (BPTC) for each waste constituent exceeding Groundwater Limitations. The workplan shall include a preliminary evaluation of each component of the wastewater treatment, storage and disposal system and a proposed time schedule for completing the comprehensive technical evaluation. The time schedule to complete the evaluation shall be as short as practicable, and not exceeding one year.

3. A discharger whose waste flow has been increasing, or is projected to increase, shall estimate when flows will reach hydraulic and treatment capacities of its treatment, collection, and disposal facilities. The projections shall be made in January, based on the last three years' average dry weather flows, peak wet weather flows and total annual flows, as appropriate. When any projection shows that capacity of any part of the facilities may be exceeded in four years, the discharger shall notify the Central Valley Water Board by **31 January**.

4. In accordance with 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 Dischargers shall bear the professional's signature and stamp.

5. The Dischargers shall submit the technical reports and work plans required by this Order for consideration by the Executive Officer, and incorporate comments the Executive Officer may have in a timely manner, as appropriate. Unless expressly stated otherwise in this Order, the Dischargers shall proceed with all work required by the foregoing provisions by the due dates specified.

6. Morning Star shall comply with MRP No. R5-2019-0013, as well as any subsequent revisions thereto, which shall be incorporated herein. Submittal dates of self-monitoring reports shall be no later than those specified in the operative MRP.

7. The Dischargers shall comply with the SPRRs, which are fully incorporated herein.

8. The Dischargers shall comply with all conditions of this Order, including timely submittal of technical and monitoring reports. On or before each report due date, the Dischargers shall submit the specified document to the Central Valley Water Board or, if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is being reported, then the Dischargers shall state the reasons for such noncompliance and provide an estimate of the date when they will be in compliance. The Dischargers shall notify the Central Valley Water Board in writing when returning to compliance with the time schedule. Violations may result in enforcement action, including Central Valley Water Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of this Order.

9. The Dischargers shall, at all times, properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems that are installed by the Dischargers when the operation is necessary to achieve compliance with the conditions of this Order.

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

11. Per the SPRRs, the Dischargers shall report promptly to the Central Valley Water Board any material change or proposed change in the character, location, or volume of the discharge.

12. In the event that the Dischargers report toxic chemical release data to the State Emergency Response Commission (SERC) pursuant to section 313 of the Emergency Planning and Community Right to Know Act (42 U.S.C. § 11023), the Dischargers shall also report the same information to the Central Valley Water Board within 15 days of the report to the SERC.

13. At least **90 days** prior to termination or expiration of any lease, contract, or agreement involving disposal or recycling areas or off-site reuse of effluent, used to justify the capacity authorized herein and assure compliance with this Order, the Dischargers shall notify the

Central Valley Water Board in writing of the situation and of what measures have been taken or are being taken to assure full compliance with this Order.

14. In the event of any change in control or ownership of the facility, the Dischargers must notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Central Valley Water Board.

15. To assume operation as a "discharger" under this Order, a succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Central Valley Water Board, and a statement. The statement shall comply with the signatory paragraph of Standard Provision B.3 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the Water Code. If approved by the Executive Officer, the transfer request will be submitted to the Central Valley Water Board for its consideration of transferring the ownership of this Order at one of its regularly scheduled meetings.

16. A copy of this Order (including attachments, Information Sheet, and SPRRs) and the operative MRP shall be kept at the Facility for reference by operating personnel. Key operating personnel shall be familiar with its contents.

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

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

Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board for review in accordance with Water Code section 13320 and Title 23, section 2050 et seq. The State Water Board must receive the petition by 5 pm on the 30th day after the date of this Order; if the 30 day falls on a Saturday, Sunday or state holiday, the petition must be received by the State Water Board by 5 pm on the next business day. Copies of the law and regulations applicable to filing petitions are published online (at the address below), and provided upon request.

http://www.waterboards.ca.gov/public_notices/petitions/water_quality

I, PATRICK PULUPA, Executive Officer, do hereby certify that the foregoing is a full true, and correct copy of an Order adopted by the California Regional Water Quality Control Board on 8 February 2019.

--original signed by--
PATRICK PULUPA, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2019-0013

FOR

THE MORNING STAR PACKING COMPANY, L.P. AND FRED GOBEL
THE MORNING STAR PACKING COMPANY—WILLIAMS FACILITY
COLUSA COUNTY

This Monitoring and Reporting Program (MRP) for Morning Star Packing Company, L.P. (Morning Star) and Fred Gobel (collectively, Dischargers) is issued pursuant to Water Code section 13267. A glossary of terms used in this MRP is included on the last page.

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

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

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

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

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

Approved editions shall be those that are approved for use by the U.S. Environmental Protection Agency or the State Water Resources Control Board's Environmental Laboratory Accreditation Program (ELAP). The Dischargers may propose alternative methods for approval by the Executive Officer. Where technically feasible, laboratory reporting limits shall be lower than concentrations that implement applicable water quality objectives/limits for the constituents to be analyzed.

If monitoring consistently shows no significant variation in a constituent concentration or parameter after at least 8 consecutive groundwater monitoring events, the Dischargers may request this MRP be revised to reduce monitoring frequency, constituent analyses, or monitoring parameters. The proposal must include adequate technical justification for reduction in monitoring frequency. The Dischargers

shall not implement any changes to this MRP unless and until the Central Valley Water Board adopts, or the Executive Officer issues, a revised MRP.

SOURCE WATER MONITORING

Samples of source water shall be from each source (Plant Wells 1-3 and/or GCID water). At a minimum, the Dischargers shall monitor the source water as follows, beginning in the 2019 processing season:

Constituent	Units	Sample Type	Sampling and Reporting Frequency [2]
pH	pH units	Grab	Every three years
Electrical Conductivity	µmhos/cm	Grab	Every three years
Total Dissolved Solids	mg/L	Grab	Every three years
Fixed Dissolved Solids	mg/L	Grab	Every three years
Nitrate as Nitrogen	mg/L	Grab	Every three years
Metals/Inorganics [1]	mg/L	Grab	Every three years

[1] Metals/Inorganics shall include, at a minimum, the following: boron, chloride, sodium, sulfate, iron (dissolved), manganese (dissolved)
[2] Data shall be reported in the corresponding annual monitoring report.

SETTLING AND COOLING POND MONITORING

Morning Star shall monitor the Settling Pond and Cooling Pond in accordance with the following. Sampling and monitoring will be conducted from permanent locations that will provide representative samples and observations of the ponds. Freeboard shall be measured vertically from the water surface to the lowest elevation of pond berm (or spillway/overflow pipe invert) and shall be measured to the nearest 0.10 feet. If any pond is dry, the monitoring report shall so state. Pond monitoring shall include, at a minimum, as specified below:

Condition/ Constituent	Units	Type of Sample	Sampling and Monitoring Frequency		Reporting Frequency
			Processing Season	Offseason	
Freeboard	0.1 feet	Measurement	Weekly	Monthly	Quarterly
Odors	--	Observation	Weekly	Monthly	Quarterly
Berm Condition	--	Observation	Weekly	Monthly	Quarterly
Settling Pond Dissolved Oxygen [1]	mg/L	Grab	Weekly	Not required	Quarterly

[1] Dissolved oxygen monitoring is required for the Settling Pond only. Samples shall be collected from the southwest corner of the pond, as shown on Attachment B in the WDRs.

Consistent with Provision H.1.h of the WDRs (Order R5-2019-0013), when boiler blowdown is discharged to the Cooling Pond during a facility upset, a composite water sample shall be collected from the Cooling Pond. The sample shall consist of at least three sample locations from the Cooling Pond and shall be considered representative of Cooling Pond water quality. Samples shall be analyzed, at a minimum, for TDS. Results shall be reported in the corresponding quarterly monitoring reports.

FLOW MONITORING

The Dischargers shall monitor wastewater and supplemental irrigation water flows discharged to each land application area (LAA) field depicted on Attachment D as follows:

Flow Source	Units	Sample Type	Sampling Frequency	Reporting Frequency [4]
Flow Meter Station 1 (Settling Pond and Facility Sump)	Gallons	Meter	Daily [1]	Quarterly
Flow Meter Station 2 (Cooling Pond)	Gallons	Meter	Daily [1]	Quarterly
Supp. Irrigation (GCID)	Gallons	Calculation	Daily [1,2]	Quarterly
Flow Meter Station 3 (Total Discharge to LAAs)	Gallons/ Inches	Meter	Daily [3]	Quarterly

[1] Report as total daily flow.
[2] Supplemental irrigation flow amounts shall be calculated based on total discharge minus Cooling Pond discharge minus Settling Pond discharge.
[3] Includes all wastewater and supplemental irrigation water discharged to the LAAs.
[4] The Fourth Quarter Monitoring Report can be included in the Annual Monitoring Report.

WASTEWATER MONITORING

Wastewater samples shall be collected from Flow Meter Station 3 (see Attachment D for location) and shall be representative of wastewater quality discharged to the LAAs. Sampling is not required during periods when no wastewater is discharged to the LAAs. At a minimum, wastewater monitoring shall include the following:

Constituents	Units	Sample Type	Sample Frequency [1]	Reporting Frequency
pH	pH units	Grab	Weekly	Quarterly
Electrical Conductivity	µmhos/cm	Grab	Weekly	Quarterly
BOD_5 [2]	mg/L	Grab	Weekly	Quarterly
FDS	mg/L	Grab	Monthly	Quarterly
Total Nitrogen	mg/L	Grab	Monthly	Quarterly
TKN	mg/L	Grab	Monthly	Quarterly
Nitrate as Nitrogen	mg/L	Grab	Monthly	Quarterly
Standard Minerals [3]	mg/L	Grab	Annually	Annually [4]

BOD_5 = biochemical oxygen demand
FDS = fixed dissolved solids

[1] Samples are to be collected when wastewater is discharged to the LAAs.
[2] 5-day, 20º Celsius biochemical oxygen demand.
[3] Standard minerals shall include at a minimum, the following: boron, chloride, sodium, sulfate, and dissolved manganese. Manganese samples shall be filtered with a 0.45-micron filter prior to sample preservation.
[4] The annual report can include the fourth quarter report.

LAND APPLICATION AREA MONITORING

A. Field Inspections

The Dischargers shall inspect the LAAs at least once weekly during irrigation events, and observations from those inspections shall be documented for inclusion in the quarterly monitoring reports. The following items shall be documented for field to be irrigated on that day:

1. Berm condition;
2. Condition of each standpipe and flow control valve (if applicable);
3. Condition of all ditches used for the conveyance of wastewater and tailwater;
4. Ponding;
5. Condition of tailwater ditches and potential runoff to off-site areas;
6. Potential and actual discharge to surface water; and
7. Odors that have the potential to be objectionable at or beyond the property boundary.

Temperature, wind direction, relative humidity, and other relevant field conditions shall also be observed and recorded. The notations shall also document any corrective actions taken based on observations made. A copy of entries made in the log shall be submitted as part of the Quarterly Monitoring Report.

B. Routine Monitoring

The Dischargers shall perform the following routine monitoring and loading calculations during all months when land application occurs and shall present the data in the Quarterly and Annual Monitoring Reports.

Constituent	Units	Measurement	Measurement Frequency	Reporting Frequency
Precipitation	0.1 inch	Rain Gauge [1]	Daily	Quarterly
Irrigation fields	--	Observation	Daily	Quarterly
Hydraulic Loading Rate (from each source)	inch	Calculated [2]	Daily	Quarterly

Constituent	Units	Measurement	Measurement Frequency	Reporting Frequency
BOD_5 Loading Rate	lb/ac/day	Calculated [3,4]	Daily	Quarterly
Total Nitrogen Loading	lb/ac/year	Calculated [3,5]	Monthly	Quarterly
Flow-weighted FDS Concentration [6]	mg/L	Calculated	Monthly	Quarterly

1 Data obtained from the nearest National Weather Service rain gauge is acceptable.
2 Rate shall be calculated for each check within each LAA field. Volumes for each check can be estimated based on the duration of flow, the number of checks being irrigated at any one time, and the daily flow rates for each field. Calculations and assumptions shall be clearly documented.
3 Rate shall be calculated for each LAA field.
4 BOD_5 shall be calculated using the daily applied volume of wastewater (representative of Settling Pond and plant sanitation/clean-up water), actual application area, average of the three most recent BOD_5 results for the wastewater, and the number of days per irrigation cycle.
5 Total nitrogen loading rates shall be calculated using the applied volume of wastewater, actual application area, and average of the three most recent total nitrogen results for the wastewater. Loading rates for Settling Pond solids, residual solids, and supplemental nitrogen (including commercial fertilizers, manure from cattle, etc.) shall be calculated using the actual load and application area.
6 Flow-weighted FDS concentration when wastewater is applied to the LAAs.

CHEMICAL OXIDANT (SODIUM CHLORITE) MONITORING

Morning Star shall document uses of chemical oxidants, including ADOX 750. At minimum, the Dischargers shall monitor each month: date(s) of use, specific location(s) of use, and equivalent FDS mass applied. The equivalent FDS mass must be included in calculation of the flow weighted annual FDS concentration to determine compliance with the FDS effluent limit. Monitoring results shall be included in the quarterly monitoring reports.

GROUNDWATER MONITORING

Morning Star shall maintain the groundwater monitoring well network. If a groundwater monitoring well is dry for more than four consecutive sampling events or is damaged, Morning Star shall submit to the Central Valley Water Board a workplan and proposed time schedule for its replacement, and the well shall be replaced following approval of the workplan. Alternatively, Morning Star shall submit a report with supporting evidence that a replacement well is not needed.

Prior to construction of any additional groundwater monitoring wells, Morning Star shall submit plans and specifications to the Central Valley Water Board for review and approval. Once installed, all new monitoring wells shall be appropriately incorporated into monitoring conducted under this MRP and shall be monitored on a semiannual basis for a minimum of eight consecutive sampling events before a reduction in monitoring frequency, parameters, or constituents can be considered.

The groundwater monitoring program applies to groundwater monitoring wells tabulated below and any wells subsequently installed under approval of the Central Valley Water Board.

Location	Monitoring Well	Well Function
Settling Pond	MW-1	background
	MW-4	
	MW-2	**compliance**
	MW-3	
Cooling Pond	MW-10	background
	MW-6	**compliance**
	MW-11	
LAAs	MW-5	background
	MW-12	
	MW-16	
	MW-7	**compliance**
	MW-8	
	MW-9	**compliance** [1]
	MW-13	**compliance**
	MW-14	
	MW-15	

[1] MW-9 shall only be regulated as a compliance well after wastewater or solids are applied to MS1.

Prior to sampling, depth to groundwater measurements shall be measured in each monitoring well to the nearest 0.01 feet. Groundwater elevations shall then be calculated to determine groundwater gradient and flow direction. Sampling activities shall be conducted in accordance with an approved Sampling and Analysis Plan. Samples shall be collected and analyzed using standard EPA methods. Groundwater monitoring shall include, at a minimum, the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Depth to Groundwater	0.01 feet	Measurement	Semi-Annually	Annually
Groundwater Elevation[1]	feet	Calculated	Semi-Annually	Annually
Gradient	feet/feet	Calculated	Semi-Annually	Annually
Gradient Direction	degrees	Calculated	Semi-Annually	Annually
pH	pH units	Grab	Semi-Annually	Annually
ORP	millivolts	Grab	Semi-Annually	Annually
TDS	mg/L	Grab	Semi-Annually	Annually
TKN	mg/L	Grab	Semi-Annually	Annually
Nitrate Nitrogen	mg/L	Grab	Semi-Annually	Annually
Dissolved Manganese [2]	mg/L	Grab	Semi-Annually	Annually

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Standard Minerals [3]	mg/L	Grab	Annually	Annually

ORP = oxidation reduction potential

[1] Groundwater elevation shall be determined based on depth-to-water measurements using a surveyed measuring point elevation on the well and a surveyed reference elevation.
[2] Samples shall be filtered with a 0.45-micron filter prior to sample preservation.
[3] Standard minerals shall include, at a minimum, the following: boron, chloride, sodium, and sulfate.

GROUNDWATER LIMITATIONS

The Groundwater Limitations set forth in Section E of WDRs Order R5-2019-0013 shall apply to the specific compliance monitoring wells identified below. Groundwater quality and compliance with Groundwater Limitations will be conducted using intrawell evaluations. This table is subject to revision by the Executive Officer following construction of any new compliance monitoring wells. Groundwater quality evaluations are

Constituent	Groundwater Limitation (mg/L) [1]	Compliance Wells
TDS	Current groundwater quality [2] or 1,000 mg/L [3], whichever is greater	MW-2, MW-3, MW-6, MW-7, MW-8, MW-9 [6], MW-11, MW-13, MW-14, MW-15
Nitrate as Nitrogen	Current groundwater quality [2] or 10 mg/L [4], whichever is greater	
Manganese	Current groundwater quality [1] or 0.05 mg/L [5], whichever is greater	

[1] Groundwater Limitations apply to all compliance wells and compliance is determined by intrawell evaluations.
[2] Current groundwater quality as defined in the 2017 Groundwater Nitrate and Manganese Compliance Assessment Plan, or in an approved updated or amended Groundwater Limitations Compliance Assessment Plan (see Provision H.1.a in this Order.)
[3] Secondary Maximum Contaminant Upper Level
[4] Primary Maximum Contaminant Level
[5] Secondary Maximum Contaminant Recommended Level
[6] MW-9 shall only be regulated as a compliance well after wastewater or solids are applied to field MS1.

If groundwater quality performed pursuant to this MRP shows that an exceedance of the Groundwater Limitation is occurring, as defined in an updated approved Groundwater Limitation Compliance Assessment Plan (Provision H.1.a in this Order), the Dischargers shall submit a technical evaluation of the reason for the exceedance and a discussion on possible mitigation measures that could be taken.

BPTC Evaluation Workplan that sets forth the scope and schedule for a systematic and comprehensive technical evaluation of each component of the Dischargers' waste treatment and disposal system to determine best practicable treatment and control for each waste constituent that exceeds a Groundwater Limitation, as required per Provision H.2 of WDRs Order R5-2019-0013.

Groundwater Trigger Concentrations

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

Constituent	Trigger Concentration (mg/L)	Compliance Wells
TDS	700	MW-2, MW-6, MW-11, MW-13

If the annual evaluation of groundwater quality performed pursuant to this MRP shows that the annual average of the trigger concentration has been exceeded in a compliance well listed above during the calendar year, the Dischargers shall submit one or both of the following technical reports by **1 May of the following calendar year** (i.e., if the trigger concentration is exceeded for calendar year 2022, the appropriate report is due by 1 May 2023):

a. A technical evaluation of the reason[s] for the concentration increase[s] and a technical demonstration that, although the concentration has increased more than expected in one or more compliance wells, continuing the discharge without additional treatment or control will not result in exceedance of the applicable groundwater limitation (1,000 mg/L) If groundwater monitoring results show that the discharge of waste is causing groundwater to contain any waste constituents in concentrations greater than the Groundwater Limitations of this Order, see requirements in Order R5-2019-0013, Provision H.2.

RESIDUAL SOLIDS MONITORING

Morning Star shall monitor residual solids generated and disposed of monthly. The following shall be monitored and reported in quarterly monitoring reports:

1. Volume of Solids Generated. Solids may include pomace, seeds, stems, diatomaceous earth, screenings, pond solids, and sump solids, or other material.

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

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

REPORTING

All regulatory documents, submissions, materials, data, monitoring reports, and correspondence should be converted to a searchable Portable Document Format (PDF) and submitted electronically. Documents that are less than 50MB should be emailed to:

centralvalleysacramento@waterboards.ca.gov

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

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

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

The Morning Star Packing Company, L.P., Morning Star Packing Company—Williams, Colusa County		
Program: Non-15 Compliance	Order: R5-2019-0013	CIWQS Place ID: 272617

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

As required by the 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 Professional Geologist and signed by the registered professional.

A. Quarterly Monitoring Reports

Daily, weekly, and monthly monitoring data shall be reported in the quarterly monitoring report. Quarterly reports shall be submitted to the Central Valley Water Board on the **1st day of the second month following the quarter** (i.e. the January - March quarterly report is due by **1 May**). The fourth quarter monitoring report may be submitted as part of the corresponding annual monitoring report. At a minimum, the report shall include:

1. Results of Pond Monitoring in tabular format for each month during the reported quarter.

2. Results of samples collected during a facility upset when boiler blowdown is discharged to the Cooling Pond and a discussion of potential impacts to Cooling Pond water quality. Estimated volume of blowdown discharge and date and duration of blowdown discharge shall also be reported.

3. Results of Wastewater Monitoring in tabular format for each week and month during the reported quarter.

4. Results of Flow Monitoring in tabular format for each month during the reported quarter, including calculated values for the total flow and average daily flow for each month and total annual flow to date.

5. Results of Residual Solids Monitoring.

6. Irrigation methods used for each LAA and crop type grown.

7. Results of LAA Monitoring, including:

   a. Calculated hydraulic loading rate for each month during the reported quarter and cumulative annual loading.

   b. Calculated **irrigation cycle average BOD loading rate** for each LAA using the following formula:

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

Where:
- M = mass of BOD applied to each LAA field in lb/ac/day/irrigation cycle
- C = concentration of BOD in mg/L based on the average of the three most recent wastewater monitoring results
- V = volume of wastewater applied to the LAA field in millions of gallons during the irrigation cycle
- A = area of the LAA field irrigated in acres
- T = Irrigation cycle length in days (from the first day water was applied to the last day of the drying time)
- M_x = BOD mass from other sources (e.g., cattle manure, Settling Pond solids, and residual solids) in pounds
- 8.345 = unit conversion factor

   c. Calculated **nitrogen loading rate** for each LAA using the following formula:

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

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

The plant available nitrogen (PAN) shall be calculated as 73 percent of the applied nitrogen and compared with the Effluent Limitation of the WDRs.

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

9. A calibration log verifying calibration of all handheld monitoring instruments and devices used to comply with the prescribed monitoring program; and

10. Copies of the laboratory analytical data reports shall be maintained by Morning Star and provided upon request by the Central Valley Water Board.

B. Annual Monitoring Reports

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

Flow Monitoring

1. Total annual flow discharged to LAAs and determination of compliance with the annual flow limitation of the WDRs.

Process Supply Water Monitoring

1. Analytical data table showing historical and current results. A narrative description of changes in water quality over time, if any, and the potential impact on the wastewater quality.

Groundwater Monitoring

1. A narrative description of all preparatory, monitoring, sampling, handling, and analytical testing for groundwater monitoring. The narrative shall be sufficiently detailed to verify compliance with the WDRs Order R5-2019-0013, this MRP, and the SPRRs.

2. A field log for each well documenting depth to groundwater; method of purging, parameters measured before, during, and after purging; sample preparation (e.g., filtering); and sample preservation. Low or no-purge sampling methods are acceptable if described in an approved Sampling and Analysis Plan.

3. Summary data tables of historical and current water table elevations and analytical results, comparison with previous flow direction and gradient data, and discussion of seasonal trends if any.

4. 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 an appropriate datum (e.g., NGVD).

5. An evaluation of the groundwater quality beneath the site and determination of compliance with the Groundwater Limitations per WDRs Order R5-2019-0013, based on statistical analysis for each constituent monitored for each compliance well in accordance with the approved Groundwater Limitations Compliance Assessment Plan. Include all calculations and data input/analysis tables derived from use of statistical software, as applicable.

6. Copies of the laboratory analytical data reports shall be maintained by Morning Star and provided upon request by the Central Valley Water Board.

Land Application Area Monitoring

1. Calculated flow-weighted annual average FDS effluent concentration and determination of compliance with Effluent Limitations of the WDRs. The **flow-weighted annual average FDS effluent concentration** shall be calculated using the following formula:

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

Where:

C_a	=	Flow-weighted average annual FDS concentration in mg/L.
i	=	the number of the month (e.g., Jan. = 1, Feb. = 2, etc.).
C_{Pi}	=	Monthly average wastewater FDS concentration for calendar month *i* in mg/L.
C_{Si}	=	Monthly average supplemental irrigation water FDS concentration for calendar month *i* in mg/L (considering each supplemental source separately).
V_{Pi}	=	Volume of wastewater applied to LAA during calendar month *i* in millions of gallons.
V_{Si}	=	Volume of supplemental irrigation water applied to LAA during calendar month *i* in millions of gallons (considering each supplemental source separately).

Additional Reporting

1. A discussion of compliance and the corrective action taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the WDRs.

2. Monitoring equipment maintenance and calibration records, as described in Section C.4 of the SPRRs, shall be maintained by Morning Star and provided upon request by the Central Valley Water Board.

3. A discussion of the following:

   a. Waste constituent reduction efforts implemented in accordance with any required workplan;

   b. Other treatment or control measures implemented during the calendar year either voluntarily or pursuant to the WDRs, this MRP, or any other Order; and

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

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

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

I, PATRICK PULUPA, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of the Monitoring and Reporting Program issued by the California Regional Water Quality Control Board, Central Valley Region on 8 February 2019.

Ordered by: --original signed by--
PATRICK PULUPA, Executive Officer

GLOSSARY

BOD_5	Five-day biochemical oxygen demand
EC	Electrical conductivity at 25° C
FDS	Fixed dissolved solids
TKN	Total Kjeldahl nitrogen
TDS	Total dissolved solids
Daily	Every day except weekends or holidays
Weekly	Once per week
Monthly	Once per calendar month
Quarterly	Once per calendar quarter
Semiannually	Once every six calendar months (i.e., two times per year) during non-consecutive quarters
Annually	Once per year
µg/L	Micrograms per liter
µmhos/cm	Micromhos per centimeter
gpd	Gallons per day
mgd	Million gallons per day

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2019-0013

WASTE DISCHARGE REQUIREMENTS

FOR

MORNING STAR PACKING COMPANY, L.P. AND FRED GOBEL
THE MORNING STAR PACKING COMPANY—WILLIAMS FACILITY
COLUSA COUNTY

INFORMATION SHEET

Facility Description

The Morning Star Packing Company, L.P. (Morning Star) currently processes tomatoes for aseptic tomato paste at its plant in Colusa County. Although the plant only operates seasonally, it runs 24-hours/day, 7 days/week (including weekends and holidays) from approximately June through November.

The Facility's wastewater treatment system principally consists of a processing facility sump, Cooling Pond, Settling Pond, and land application areas (LAAs). With the exception of one LAA (Field MS1 is leased from Fred Gobel), the entire Facility is owned and operated by Morning Star.

On 5 December 2013, the Central Valley Water Board adopted Order R5-2013-0144, which prescribes waste discharge requirements (WDRs) for the discharge of the plant's tomato processing wastewater to LAAs. Under Order R5-2013-0144, the Dischargers were permitted to discharge up to 4.3 million gallons per day (mgd). In light of several subsequent changes to the facility, Order R5-2013-0144 will now be rescinded and replaced by this Order.

Wastewater

Wastewater is generated from tomato washing and processing and plant cleanup activities. Three onsite wells, Plant Wells 1-3, provide the source water for the facility and the Glenn-Colusa Irrigation District (GCID) provides irrigation water via canal.

Plant wastewater is discharged to the unlined Settling Pond and processing facility sump. Effluent from the Settling Pond and processing facility sump are commingled prior to entering the Main Wastewater Conveyance Channel that discharges to the LAAs where it is used for irrigation. The flow rate for this wastewater stream is measured at Meter Station 1. In samples collected from the processing facility sump, concentrations of constituents typically associated with food processors, including fixed dissolved solids (FDS), nitrate as nitrogen, sodium, and chloride, are less than concentrations protective of beneficial use.

Several other waste streams generated from tomato processing and facility cleanup discharge to the Main Wastewater Conveyance Channel. Total flow rates for discharges to the LAAs are measured at Meter Station 3, where wastewater samples are collected.

A 100-acre, unlined Cooling Pond is located just north of the processing plant. The pond is used to cool evaporator condensate prior to recycling back into the processing plant for reuse. Condensate water from the evaporators and condensers discharges to the Cooling Pond, where the water is cooled from approximately 120-130º F down to approximately 95-100º F. The Cooling Pond usually contains water throughout the year, except when emptied for maintenance. After the processing season, water in the pond can be used to flush the Main Wastewater Conveyance Channel and tailwater ditches, as well as flushing irrigation ditches and irrigating LAAs. Flows from the Cooling Pond are measured at Meter Station 2. The evaporator condensate contains minimal of residual material that leave the evaporating tomato paste as volatile organic compounds and aerosols, but tomato solids (e.g., tomato peels, seeds) are not discharged to the pond. Small amounts of boiler blowdown during facility startup operations are discharged to the pond. During facility upset conditions, such as a power outage, boiler blowdown may be discharged to the pond. Given the small volume of boiler blowdown from facility startup conditions, such discharges are unlikely to impact water quality in the Cooling Pond. However, sampling and monitoring of discharges occurring during facility upset conditions is required.

Currently, 996 acres are available for the application of wastewater and solids, which are divided into 23 fields. Crops grown on the LAAs typically, but not exclusively, include grass hay, teff grass, rye grass, alfalfa, pasture grass, and corn. Some fields (up to 100 acres), may be removed from the available LAA acreage and used for pomace drying. The water balances for 996 acres with a total annual flow of 735 million gallons (MG) and for the 896 acres with a total annual flow of 653 MG for a 100-year precipitation event, show supplemental irrigation would be needed to meet crop demands.

Annual wastewater flow for wastewater discharged to the LAAs measured in 2016 and 2017 were 173 MG and 224 MG, respectively, less than the permitted total annual flow of 422 MG in the 2013 WDRs.

Site-Specific Conditions

Surrounding land uses are primarily agricultural. The annual average precipitation in the Williams area is approximately 17 inches and the 100-year annual precipitation is approximately 28 inches. The evapotranspiration rate is approximately 54 inches per year.

Groundwater Conditions

The depth-to-groundwater beneath the processing plant and LAAs ranges from 5 to 15 feet below ground surface (bgs). The horizontal direction of groundwater flow is towards the north-northeast. There are currently 16 groundwater monitoring wells used to monitor shallow groundwater at the site.

Based on groundwater data and concentrations trends, discharges to the Cooling Pond do not appear to be negatively impacting groundwater. Groundwater samples collected from monitoring well MW-3, located near the Settling Pond, contain constituent concentrations greater than concentrations protective of beneficial uses. These concentrations may be partially the result of discharges to the Settling Pond, the rock dump area, and/or the overflow discharge ditch; however, the Dischargers have made several improvements to wastewater quality and

management. Potential improvements to groundwater quality will not likely occur immediately. Continued monitoring is required, and groundwater limitations have been set for MW-2 and MW-3, both downgradient of the Settling Pond.

Previous discharges to the LAAs have likely impacted groundwater. In recent years, the Dischargers have improved wastewater discharge practices, increased the LAA acreage, and implemented numerous management plans which have improved the quality of the wastewater and may have reduced impacts to groundwater quality. It should be noted that improvements in groundwater quality or stabilization of concentration trends due to improved application of wastewater and wastewater quality will not result in immediate improvements in groundwater. In addition to discharges to the LAAs, groundwater impacts are also the result of local agricultural land uses (i.e., rice farming) and naturally occurring conditions. Continued groundwater monitoring is required and groundwater limitations are set for compliance wells.

Legal Effect of Rescission of Prior WDRs or Orders on Existing Violations

The Board's rescission of prior waste discharge requirements and/or monitoring and reporting orders does not extinguish any violations that may have occurred during the time those waste discharge requirements or orders were in effect. The Central Valley Water Board reserves the right to take enforcement actions to address violations of prior prohibitions, limitations, specifications, requirements, or provisions of rescinded waste discharge requirements or orders as allowed by law.

Monitoring and Reporting Program

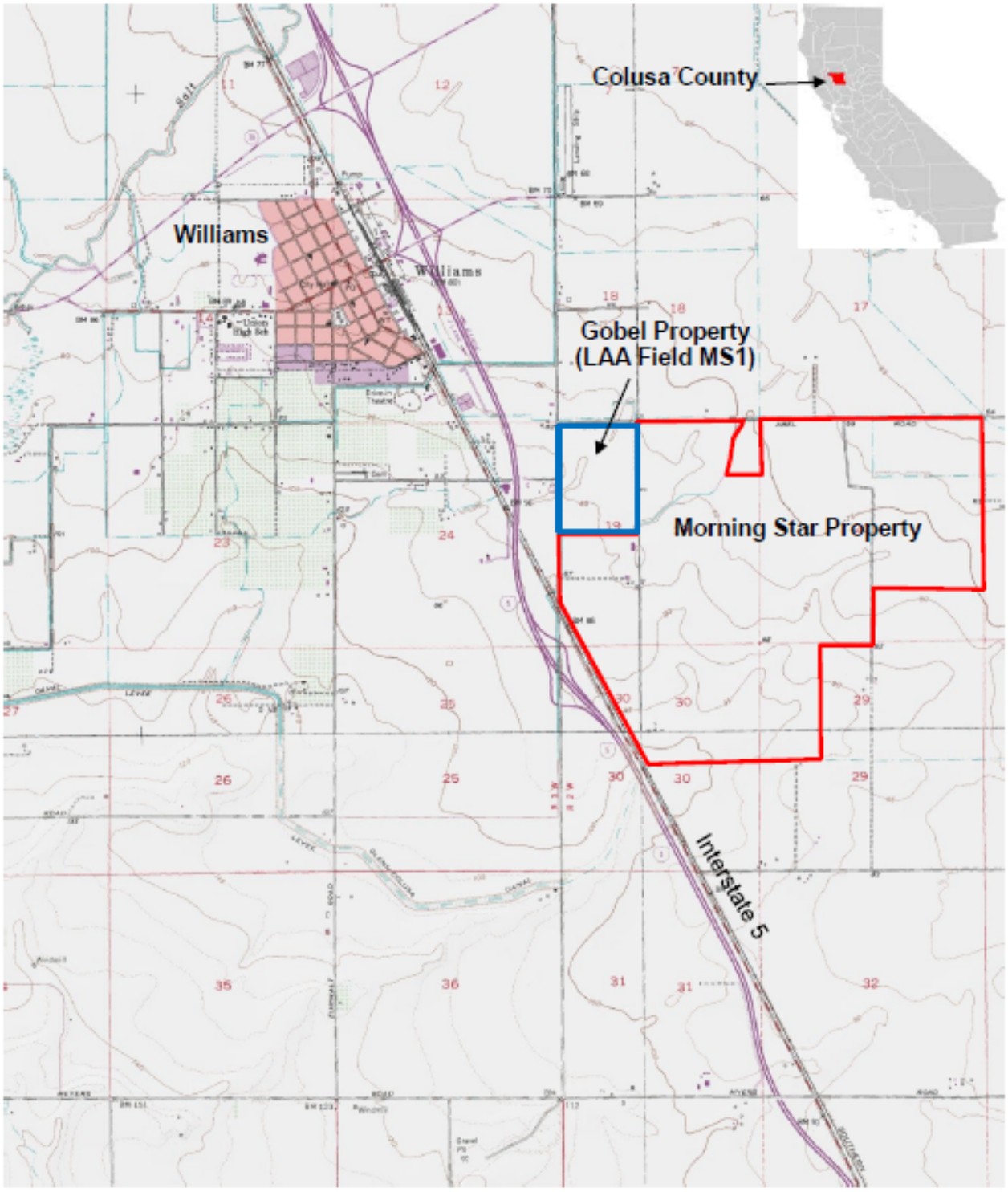
The Monitoring and Reporting Program accompanying this Order is designed to verify compliance with effluent and groundwater limitations and operational requirements of the WDRs.

Other Regulatory Considerations (CV-SALTS)

The Central Valley Water Board is developing amendments to the Basin Plan to incorporate new strategies for addressing ongoing salt and nitrate accumulation in the waters and soils of the Central Valley as part of the Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS) initiative. The CV-SALTS Salinity Control Program currently being developed would subject dischargers that do not meet stringent salinity numeric values (700 µS/cm EC as a monthly average to protect the AGR beneficial use and 900 µS/cm EC as an annual average to protect the municipal and domestic beneficial uses of water) to performance-based salinity requirements, and would require these dischargers to participate in a basin-wide Prioritization and Optimization Study to develop a long-term strategy for addressing salinity accumulation in the Central Valley.

The level of participation required of dischargers whose discharges do not meet stringent salinity requirements will vary based on factors such as the amount of salinity in the discharge, local conditions, and type of discharge. The Central Valley Water Board anticipates that the CV-SALTS initiative will result in regulatory changes that will be implemented through conditional prohibitions and modifications to many WDRs region-wide, including the WDRs that regulate discharges from the Facility regulated under this Order. More information regarding this regulatory planning process can be found online (at the address below).

https://www.waterboards.ca.gov/centralvalley/water_issues/salinity/



Note:
LAA = land application area

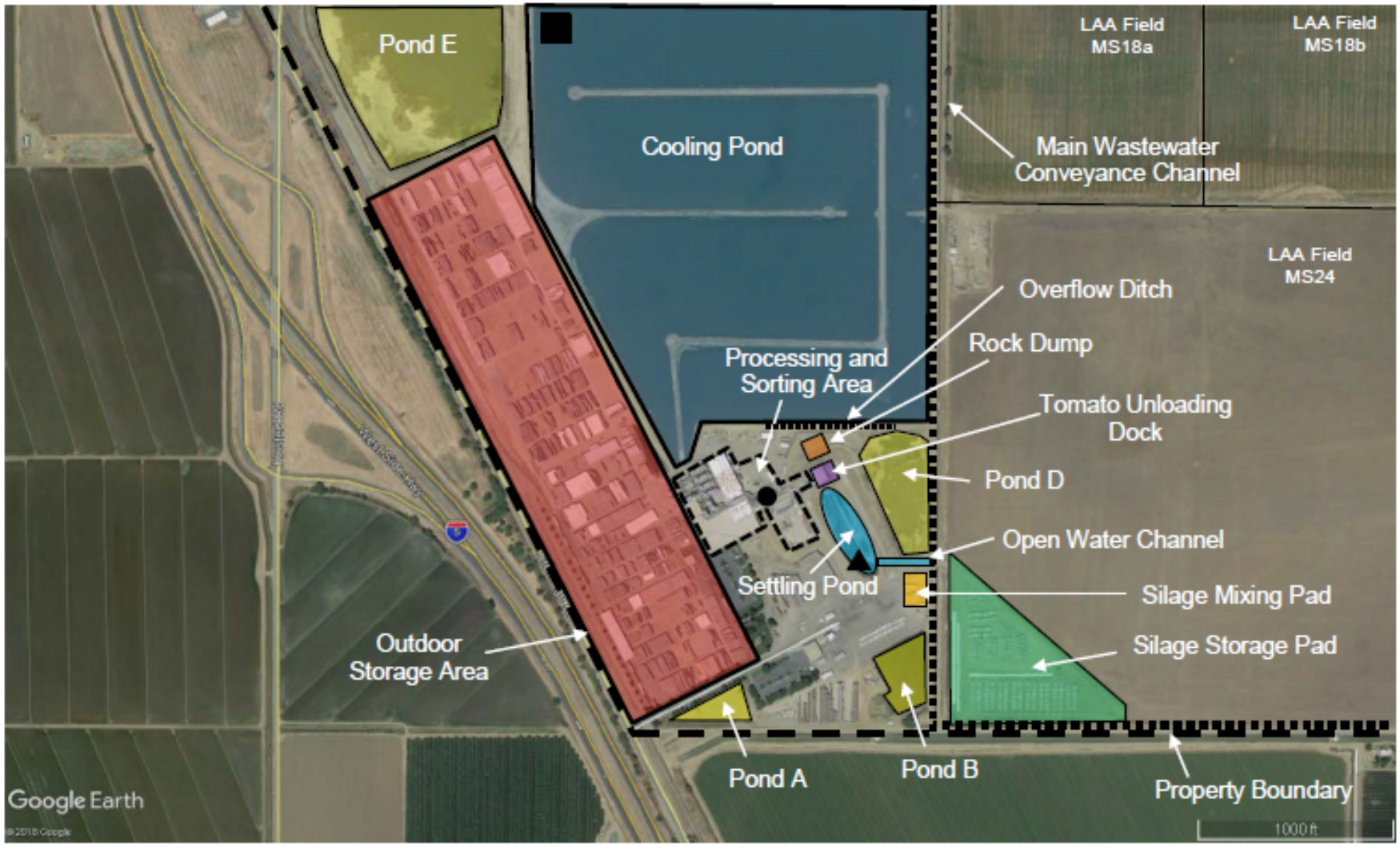
Figure Reference:
USGS Topographic Map
Figure A-1 in the 2017 RWD
(Robertson-Bryan, Inc.)

N
W E
S

Approximate
Scale
1 inch = 2,000

SITE LOCATION MAP

MORNING STAR PACKING COMPANY, LP. AND FRED GOBEL
MORNING STAR PACKING COMPANY – WILLIAMS
COLUSA COUNTY



Legend

- Processing Facility Sump (not to scale)
- Settling Pond Monitoring Location
- Cooling Pond Monitoring Location

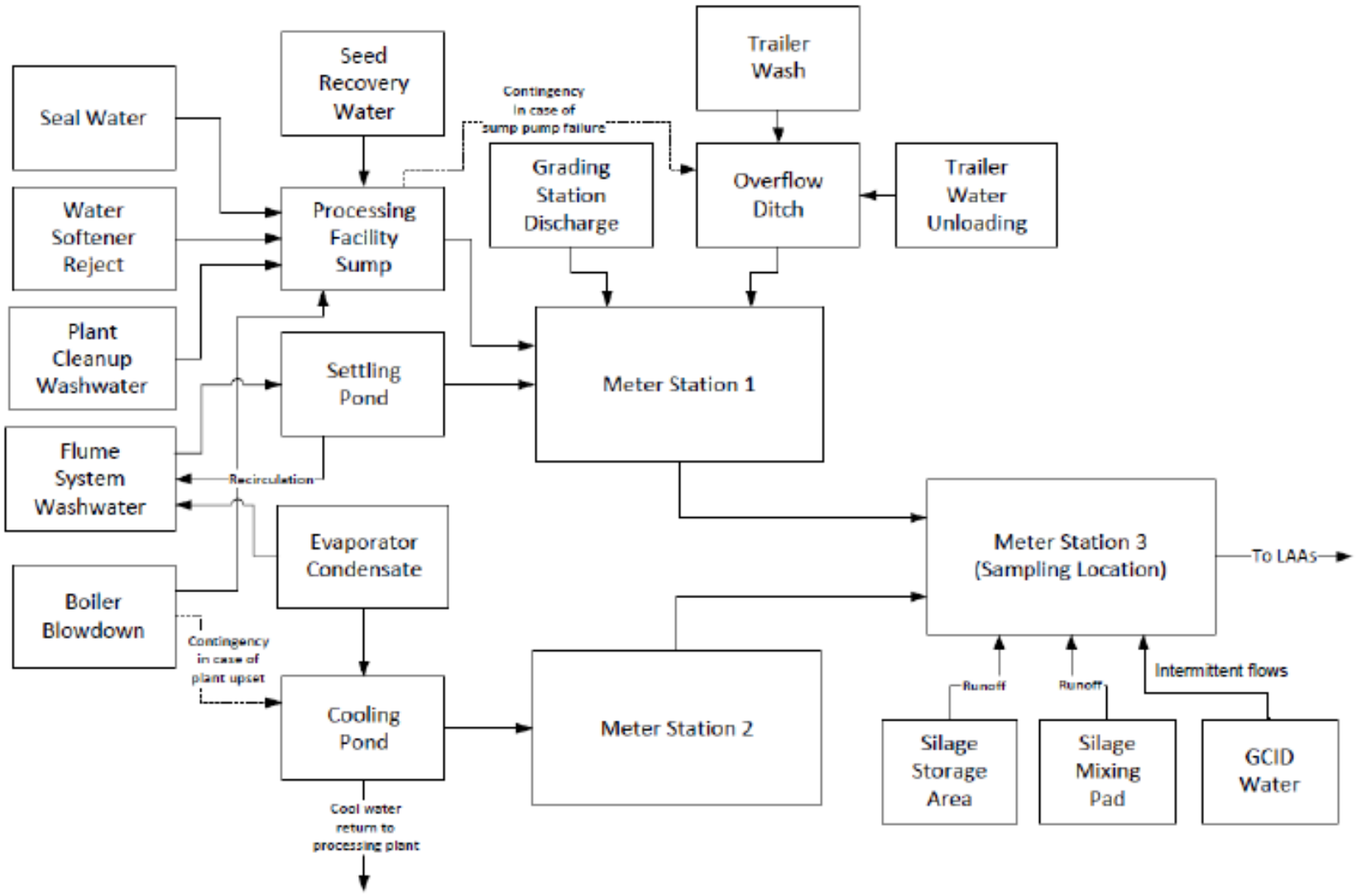
Figure References:
Google Earth, 2018
Figures A-2, A-3 & A-4 in Appendix A, Figure O (Site Map) in Appendix O of the 2017 RWD (Robertson-Bryan, Inc.)

N W E S

~ 1,000 feet

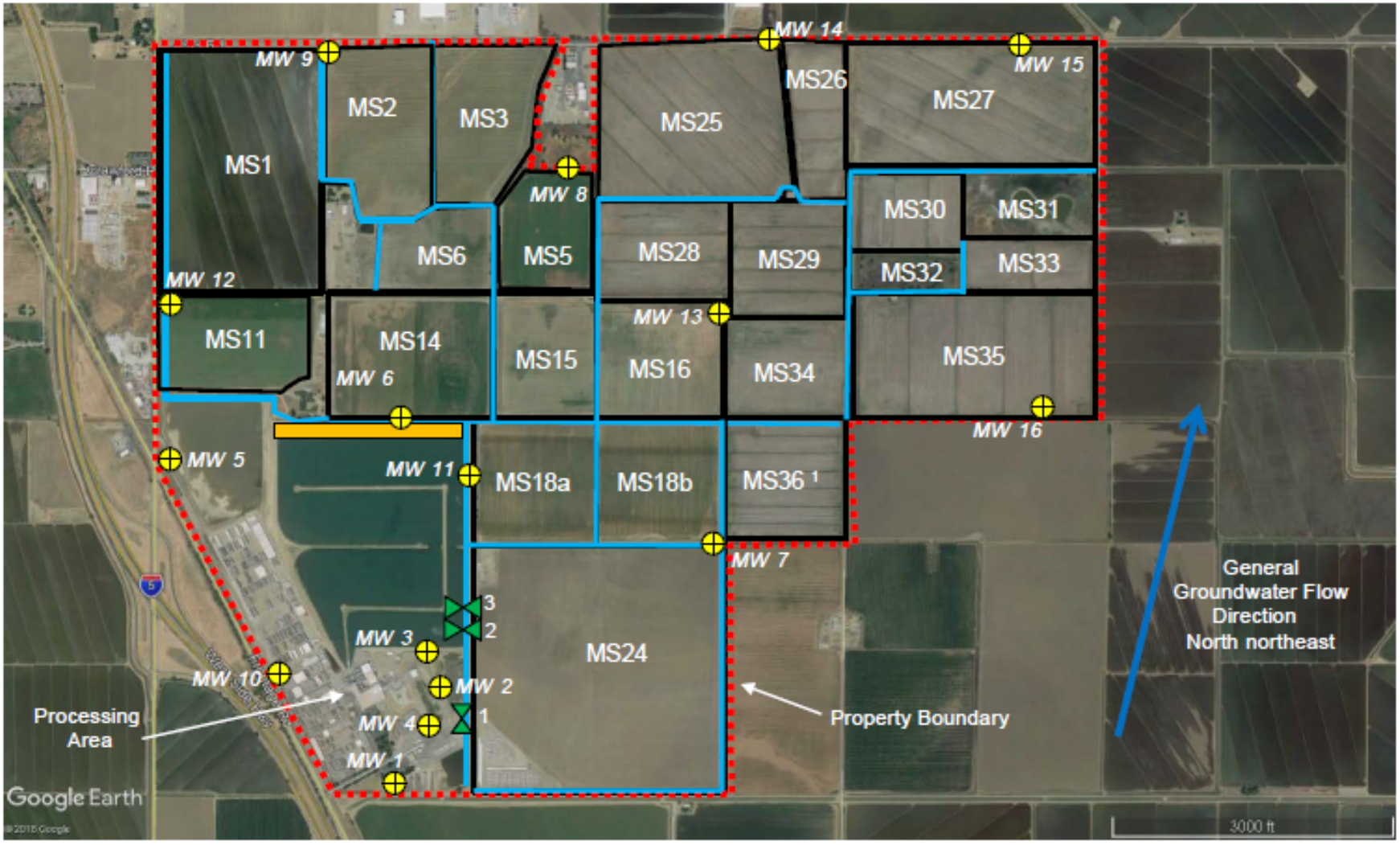
SITE FEATURES MAP

MORNING STAR PACKING COMPANY, LP. AND FRED GOBEL
MORNING STAR PACKING COMPANY – WILLIAMS
COLUSA COUNTY



Not to scale
Figure Reference: RWD Addendum, 2018

WASTEWATER FLOW SCHEMATIC
MORNING STAR PACKING COMPANY, L.P. AND FRED GOBEL
MORNING STAR PACKING COMPANY - WILLIAMS
COLUSA COUNTY



Legend

Flow Meter Stations 1, 2, & 3; sampling location at station 3

Irrigation Supply Channel

Groundwater Monitoring Well

Settling Pond/Rock Dump Solids Stockpile Area

[1] MW36 does not receive wastewater and is not included in the total LAA acreage.

Figure References: Figures A-2 & A-5 of the 2017 RWD (Robertson-Bryan, Inc.)

N W E S

~ 3,000 feet

All locations are approximate.

LAND APPLICATION AREAS AND GROUNDWATER MONITORING WELLS

MORNING STAR PACKING COMPANY, LP.
MORNING STAR PACKING COMPANY – WILLIAMS
COLUSA COUNTY