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THE MORNING STAR PACKING COMPANY, L.P.

BEFORE THE STATE WATER RESOURCES CONTROL BOARD

In Re: PETITION OF THE MORNING STAR PACKING COMPANY, L.P. FOR REVIEW OF WASTE DISCHARGE REQUIREMENTS NO. R5-2013-0144	**PETITION FOR REVIEW OF WASTE DISCHARGE REQUIREMENTS NO. R5-2013-0144** **[File _____]** Water Code section 13320; 23 C.C.R. section 2050 *et seq.*

Petitioner THE MORNING STAR PACKING COMPANY, L.P. ("Morning Star" or "Petitioner"), by and through its counsel of record, Stoel Rives LLP, in accordance with Water Code section 13320 and California Code of Regulations, title 23, section 2050 *et seq.*, hereby petitions the State Water Resources Control Board ("State Board") for review of certain provisions of Waste Discharge Requirements Order No. R5-2013-0144 ("WDRs" or "Order No. R5-2013-0144"; attached hereto as Exhibit A), adopted by the Regional Water Quality Control Board, Central Valley Region ("Regional Board") on December 5, 2013.

The issues raised by the petition, a summary of the bases for the petition, and a preliminary statement of points and authorities are set forth below, as required by California Code of Regulations, title 23, section 2050(a). Within this petition, Morning Star further requests the State Board to conduct a hearing to permit presentation of additional evidence, testimony, and argument pertaining to this petition.

The name and address of the petitioner is:

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I. BACKGROUND

The Morning Star Tomato Packing Plant (the "Facility") is a tomato processing facility located south of the City of Williams in the County of Colusa. The Facility began operating in 1995 and was previously governed by Waste Discharge Requirements Order No. 95-160. The Facility operates approximately from June to mid-October. Wastewater (i.e., washwater) is discharged first to a soil Settling Pond and is shortly thereafter disposed to approximately 695 acres of land application areas through surface irrigation. The land application areas are divided into pasture land cropped with sudan grass, hay, alfalfa, and/or corn with some cattle grazing. Solids in the bottom of the Settling Pond are removed prior to the start of the processing season and applied to the land application areas as a soil amendment, and in the past, have been used to build farm roads around the Facility. Water softener reject, condensate from the evaporation process, and boiler blowdown is discharged into a Cooling Pond for later reuse in the tomato processing operations or irrigation of the land application areas.

Pursuant to a Cease and Desist Order issued in 2005 (Cease and Desist Order No. R5-2005-0003, "CDO"), Morning Star was required to submit a Report of Waste Discharge by December 30, 2005. Morning Star timely submitted the Report of Waste Discharge, and timely

submitted numerous additional reports required by the CDO.[1] Following submittal of the Report of Waste Discharge and the other reports required by the CDO, Morning Star received no requests for additional information from the Regional Board. It was not until October 2012 that Morning Star received any meaningful communication from the Regional Board regarding the WDRs. (Declaration of Chris Rufer ("Rufer Decl."), ¶ 2; attached hereto as Exhibit B; see also letter from Anne Olson to Chris Rufer re Complete Report of Waste Discharge, The Morning Star Packing Company, L.P., Colusa County, dated July 7, 2006, attached hereto as Exhibit C.) Despite this lack of action from the Regional Board, Regional Board staff has suggested that Morning Star has delayed in its submittal of information and failed to provide requested information. (Transcript, 4:19-23; a copy of the Transcript is attached as Exhibit D.) To the contrary, Morning Star timely submitted all requested information, Regional Board staff failed to provide any meaningful response for nearly eight years, and then provided Morning Star an extremely short period of time with an intervening holiday to provide a substantive response.

Regional Board staff prepared proposed tentative WDRs, which Morning Star received on October 2, 2013. Prior to submitting comments on the proposed WDRs, representatives of Morning Star met with Regional Board staff to discuss various concerns with the proposed tentative WDRs. Morning Star then submitted comments on the tentative WDRs on October 30, 2013 ("October 30 Comment Letter"; attached hereto as Exhibit E). Of particular note is that Morning Star objected to the conclusion in the tentative WDRs that the discharge has caused or is causing groundwater degradation and/or pollution. On November 19, 2013, Regional Board staff distributed revised tentative WDRs. The revised tentative WDRs contained new information regarding staff's conclusions that the discharge has caused or is causing groundwater degradation and/or pollution. Based on this new information, at the end of October and beginning of November Morning Star engaged two separate, independent engineering firms to analyze the Facility's groundwater and soil data and make a determination of whether the discharge has caused or is causing groundwater degradation and/or pollution. (Transcript, 24:18-28.) Two

[1] The Regional Board has noticed the planned rescission of the CDO for its February 6/7, 2014 meeting. (See Transcript, 8:9-14.)

technical reports were prepared and submitted to the Regional Board on December 4, 2013 and both reports conclude that the facility has not caused groundwater degradation. (Letter from Kristen Castaños to Anne Olson dated December 4, 2013, attached as Exhibit F.) In light of the short amount of time between the November 19, 2013 release of the revised tentative WDRs and the December 5, 2013 Regional Board meeting, and due to the intervening Thanksgiving holiday, Morning Star requested the Regional Board continue its consideration of the tentative WDRs to allow time for Morning Star and staff to discuss the new information in the November 19, 2013 revised tentative WDRs and the two technical reports. (Transcript, 5:14 – 6:8.) In particular, Morning Star sought an opportunity to discuss with staff the basis for their conclusions regarding groundwater impacts in light of the contrary conclusions in the two consulting engineers' technical reports.

On December 5, 2013, the Regional Board denied Morning Star's request to continue the matter and adopted Order No. R5-2013-0144 approving the revised tentative WDRs as presented by staff. At the hearing, Regional Board staff presented more new information attempting to explain staff's conclusions in the revised tentative WDRs regarding impacts to groundwater. In addition, at the hearing Regional Board staff made several inaccurate statements regarding the Facility and the area surrounding the discharge. Despite the conflicting evidence presented by Morning Star and staff's apparent confusion about the discharge, the Regional Board accepted staff's recommendation and adopted Order No. R5-2013-0144.

Morning Star requests review of the following issues in the WDRs:

- The conclusions that the Facility has caused or is causing groundwater degradation and/or pollution, and the associated conditions based on those conclusions
- The prohibitions on discharging during precipitation
- The requirements governing discharge of collected stormwater
- The requirement to excavate the Settling Pond by November 15 of each year
- The requirements governing solids handling, and
- The requirements governing number of cattle that may graze on site

Morning Star's right to pursue administrative appeals is expressly allowed under California law and is protected by the state Constitution. (*See, e.g., De Anza Santa Cruz Mobile Estates Homeowners Assn. v. De Anza Santa Cruz Mobile Estates* (2001) 94 Cal.App.4th 890; *Matossian v. Fahmie* (1980) 101 Cal.App.3d 128; Water Code, §§ 13320(a), 13330; 23 Cal. Code Regs. § 2050.) "The right to petition for redress of grievances is a basic right guaranteed by the state and federal constitution. [Moreover,] [a] person's right of access to judicial and quasi-judicial bodies to decide controversies is a fundamental component of our society and cannot be impaired by the threat of punishment or retaliation." (*De Anza Santa Cruz, supra,* 94 Cal.App.4th at 919 (citing *California Teachers Assn. v. State of California,* 20 Cal. 4th 327, 339, 356 (1999)).)

II. PRELIMINARY STATEMENT OF POINTS AND AUTHORITIES

A. Standard of Review

Pursuant to Water Code section 13320(c), the State Board may find that the actions of the Regional Board were inappropriate or improper. (Water Code, § 13320(c).) Upon finding that the actions of the Regional Board were inappropriate or improper, the State Board may direct that the appropriate action be taken by the Regional Board, refer the matter to any other state agency having jurisdiction, take the appropriate action itself, or take any combination of those actions.

In determining whether an action of the Regional Board was appropriate and/or proper, the State Board must weigh whether there was substantial evidence in the record, taken as a whole, to support the Regional Board's action. (*See, e.g., In re Ventura County Citizens to Stop Toland Landfill* (Apr. 16, 1998) SWRCB Order No. WQ 98-02; *see also Topanga Association for a Scenic Community v. County of Los Angeles* ("*Topanga Association*") (1974) 11 Cal.3d 506, 514-515.) Moreover, under California law, the Regional Board must support its decisions with specific findings based on the evidence in the record. In particular, the Regional Board must "set forth findings to bridge the analytical gap between the raw evidence and the ultimate decision or order." (*Topanga Association, supra,* 11 Cal.3d at 515; see also *In re Petition of the City and County of San Francisco, et al.* (Sept. 21, 1995) SWRCB Order No. WQ 95-4 at pp. 10, 13.)

Notably, the Regional Board has cited to no evidence in the record to support its conclusions that the discharge has caused or is causing groundwater degradation and/or pollution

and has made no findings to explain how any evidence supports the conclusions regarding groundwater impacts. The Regional Board has failed to "adequately consider[] *all relevant factors*" and demonstrate "a rational connection between those factors, the choice made, and the purposes of the enabling statute." (*California Hotel & Motel Assn. v. Industrial Welfare Commission* (1979) 25 Cal.3d 200, 212 (emphasis added).)

B. The WDRs Are Not Based on Substantial Evidence in the Record and are Not Supported by Findings

With respect to the issues raised in this petition, the Regional Board failed to cite to substantial evidence in the record to support its decision and, in some cases, failed to make findings to bridge the analytical gap between the raw data and the ultimate decision.

1. Groundwater Degradation Conclusions in the WDRs are Not Supported by the Evidence

The Regional Board concluded that the discharge is impacting groundwater in two areas: (1) discharges to the Settling Pond have caused groundwater degradation from chloride, and (2) discharges to the land application areas have caused groundwater degradation from TDS and chloride, and pollution from manganese and nitrate. To reach these conclusions, the Regional Board staff apparently compared monitoring wells upgradient of the Settling Pond to those downgradient of the Settling Pond. (Staff Response to Written Comments for the Morning Star Packing Company ("Response to Comments"; attached as Exhibit F), Response to Morning Star Comment No. 1.) Yet, the Regional Board acknowledged that the upgradient wells are influenced by a nearby canal (Order No. R5-2013-0144, Finding 40; Transcript, 10:26-28), and therefore do not accurately reflect background groundwater quality. At the hearing, staff stated that it had conducted an intra-well analysis for the Settling Pond, evaluating changes in the downgradient monitoring wells over time. (Transcript, 10:28-11:3.) As discussed more fully below, the Regional Board's conclusions are not supported, as additional analysis prepared by independent consultants demonstrates that the groundwater changes in downgradient wells are not connected to the discharge.

With respect to the land application area, the Regional Board compared "background" monitoring well samples to downgradient monitoring well samples. (Transcript, 12:5-6.)

However, the Regional Board failed to point to any evidence to support the conclusion that the change in groundwater quality from background wells to downgradient wells is caused by the Facility. (See, State Water Resources Control Board Resolution No. 68-16.) In particular, Regional Board staff admitted that "[s]hallow groundwater conditions at the site are complicated by numerous sources of groundwater recharge (some of it high quality and some of it not)." (Response to Comments, Response to Morning Star Comment No. 1.) Yet, at the hearing, staff failed to point to any data to support that the Facility has caused the changes in groundwater quality and instead stated simply, "We can only conclude" that the discharge is causing groundwater degradation. (Transcript, 12:22-23; see also Response to Comments, Response to Morning Star Comment No. 1 ("it is reasonable to conclude").)

The evidence, however, demonstrates otherwise. Morning Star submitted two technical reports to the Regional Board in advance of the December 5, 2013 hearing: (1) Hydrometrics WRI report regarding Review of the Morning Star Packing Company's Williams Facility Tentative Order, dated December 1, 2013 ("Hydrometrics Report"), and (2) Provost & Pritchard report regarding The Morning Star Packing Company, LP Williams Facility Groundwater Analysis - Summary Report, dated December 4, 2013 ("P&P Report"). Both the Hydrometrics Report and the P&P Report provide ample evidence to support the conclusion that the Facility is not the cause of groundwater degradation in the area. (Both reports are attached hereto as attachments to Exhibit E.)

The Hydrometrics Report analyzes the monitoring data for chloride, TDS and nitrate and correlates that data to effluent quality. The Hydrometrics Report concludes that chloride, TDS and nitrate degradation are not related to the discharge because the concentrations in the downgradient wells are consistent with the pattern observed in the background wells, and because concentrations in the downgradient wells are not correlated with changes in effluent quality or with plant operations. (Hydrometrics Report; see also Transcript, 27:9-23, 28:4-13.)

The P&P Report evaluates soil data to reach the same conclusion that the discharge is not causing groundwater degradation. Specifically, the P&P Report evaluates the Regional Board's conclusions regarding groundwater impacts from chloride, TDS, nitrate, and iron and manganese.

The P&P Report explains that the soil samples do not indicate TDS degradation and, therefore, there is no correlation between the Facility application of wastewater and TDS degradation in the groundwater. With respect to chloride, the P&P Report concludes that there is no correlation between the discharge and groundwater degradation. (See, Transcript, 28:17-28.) Similarly, with respect to iron and manganese, the timing of manganese concentrations does not correlate to the application of wastewater. Finally, as to nitrates, the P&P Report notes that background wells also show elevated nitrates and there is no apparent link between the discharge and elevated nitrates. (P&P Report.)

While the Regional Board "could only conclude" that the discharge is causing the degradation reflected in the monitoring data, the Hydrometrics Report and P&P Report provide evidence that the Facility discharge is not the source of such degradation. Without evidence and findings connecting the raw groundwater data to the Facility discharge and explaining the link between that data and the conclusion that the Facility is causing degradation, the Regional Board's action is not supported.

Moreover, the Regional Board's conclusion appears to be based on several inaccuracies and inconsistencies. First, in comparing "background" water quality to downgradient water quality at the Settling Pond, staff identified monitoring wells number 1 (MW1) and number 4 (MW4) as background (Response to Comments, Response to Morning Star Comment No. 1), but also acknowledged that MW1 and MW4 are affected by a nearby canal and do not accurately reflect background groundwater quality. (Transcript, 10:26-28; see also, Order No. R5-2013-0144, Finding 40.) Any conclusions regarding groundwater degradation and/or pollution that rely on MW1 or MW4 as a background well, therefore, are not supported. Second, staff characterized the groundwater depth as being shallowest at the south end of the site and deepest at the north end of the site (Transcript, 17:11-13), but in fact the opposite is true (Transcript, 27:26-27).[2] The Regional Board also characterized the groundwater depth as one foot (Transcript, 31:18), which is

[2] Quarterly groundwater monitoring reports for the facility also confirm the groundwater depth is approximately 6-15 feet in the southern portion of the facility and 3-4 feet in the northern portion of the facility

not accurate (Transcript, 32: 25-26). These inconsistencies and inaccuracies contributed to the Regional Boards' misunderstanding of the existing groundwater and incorrect conclusions about the Facility's impacts to groundwater.

For the foregoing reasons, Morning Star requests the State Board grant this petition for review and either modify the WDRs or direct the Regional Board to modify the WDRs to remove the conclusions that the discharge has caused or is causing groundwater degradation and/or pollution.

2. The Prohibition on Discharges During Precipitation is Not Supported by the Evidence

The WDRs provide "Discharge to the [land application areas] shall not be performed during rainfall or when the ground is saturated." (Order No. R5-2013-0144, Land Application Area Specifications F.11.) Morning Star objected to this requirement because it will create significant impacts on Facility operations with no groundwater quality benefits. The Facility operates from July through October, and during the latter part of this processing season, minimal rain events may occur. The Regional Board has acknowledged that such rain events are not significant. (Transcript, 20:22-24.) Notwithstanding the minimal rain that is likely to fall during the processing season, the Settling Pond does not have sufficient capacity to store wastewater from the facility during such a precipitation event. (October 30 Comment Letter, p. 2.) Accordingly, compliance with this prohibition could require an expensive and time-consuming complete shut-down of operations, and potentially lengthen the processing season, requiring the destruction of crops. (October 30 Comment Letter, p. 2.) In order to comply with this prohibition, if Morning Star were prohibited from discharging for a 24 hour period, for example, Morning Star would have to expand its Settling Pond from 1.25 acres to nearly 20 acres of land. (Rufer Decl., ¶ 3.) Such a requirement is not reasonable in light of the low likelihood of precipitation during the processing season and the lack of evidence that discharging during these unusual precipitation events will impact groundwater quality. Moreover, such a vast Settling Pond would entail extended periods of BOD concentrations and likely generate unfavorable conditions such as odors. (*Ibid.*)

The Regional Board imposed this requirement without citing evidence that any discharge during precipitation has caused or will cause an impact to water quality. Regional Board staff stated the prohibition on discharge during precipitation was an industry standard and a pre-existing requirement (Transcript, 20:13-14), but that assumption was incorrect (Transcript, 36:4-7). Morning Star's prior WDRs, Order No. 95-160, do not prohibit discharge during precipitation. (See, Order No. 95-160.) There is no basis to conclude that discharge during any precipitation event, no matter how small, will cause impacts to groundwater quality.

Despite Regional Board staff's statements otherwise (Transcript, 16:12-13) the prohibition on discharge during precipitation is not a standard requirement for food processors. It is not unusual for WDRs for similar facilities to allow wastewater application during precipitation, so long as such application is controlled. (See Order No. R5-2010-0038, Campbell Soup Supply Company Dixon Facility, Section E.12 (prohibiting discharge when soils are saturated, but not during any precipitation and providing mechanism to distribute wastewater to dry areas prior to next wastewater application).) In fact, other WDRs for similar facilities contain no prohibition on discharges during precipitation at all. (Order No. R5-2008-0067, J.G. Boswell Tomato Company, Buttonwillow Tomato Processing Facility; Order No. R5-2008-0015, J.G. Boswell Corcoran Tomato Processing Facility.) The prohibition on discharging during precipitation is not standard and there is no evidence that a complete prohibition on discharge during precipitation is necessary to prevent impacts to water quality.

3. The Requirements Governing Discharge of Collected Storm Water are Not Supported by the Evidence

The WDRs provide, "Effective on 30 October 2014, discharge of storm water runoff from the LAAs to surface water drainage courses is prohibited unless and until the Executive Officer has approved a *Storm Water Runoff Evaluation and Management Plan*..." (Order No. R5-2013-0144, Land Application Area Specifications F.13.) The Regional Board has failed to provide evidence and adopt findings supporting this prohibition. The WDRs state that Morning Star's storm water management practice may violate the existing Cease and Desist Order[3], which

[3] The facility is currently subject to Cease and Desist Order No. R5-2005-0003, adopted on January 27, 2005. The Regional Board has, however, provided notice of planned rescission of

prohibits discharge of "storm water containing waste to surface water." (Order No. R5-2005-0003, Section 2.a (emphasis added); Order No. R5-2013-0144, Finding 27.) Morning Star's practice is to test storm water collected in the tailwater ditches to characterize pH and EC in the storm water. If the quality is similar to that of the water in the drainage ditch, Morning Star discharges the collected storm water to the drainage ditch. Thus, only discharging storm water that is of similar quality to existing water in the drainage ditch. The Regional Board has cited to no evidence that the storm water discharged to the drainage ditch "contain[s] waste".[4]

Moreover, the Regional Board has presented no evidence to demonstrate that Morning Star's storm water discharge practice impacts water quality and, therefore, there is no support for prohibiting this on-going practice. Indeed, there are many examples of similar discharges allowing discharge of storm water under certain circumstances and Morning Star should be subject to a similar requirement. For example, the WDRs for Campbell Soup's Dixon Facility allows discharge of stormwater offsite if certain protocols are followed to allow for soil stabilization or capture of the first flush of salts and nutrients. (Order No. R5-2010-0038, Section E.12.) A similar approach at Morning Star will achieve the goals of protecting water quality while avoiding overly burdensome storm water controls. Alternatively, in light of the Regional Board's concern that Morning Star has not historically tested the storm water for BOD and nitrogen, Morning Star proposes to modify its practice to test for pH, EC, BOD and nitrogen and only discharge if each of these constituent levels in the storm water are of similar quality as the

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the Cease and Desist Order, which is scheduled for consideration by the Regional Board at its February 6/7, 2014 meeting.

[4] In addition, stormwater arising from the Facility's land application areas is regulated in accordance with the Irrigated Lands Waiver, as Morning Star is a member of the local Coalition (Colusa Glenn Subwatershed Program (CGSP)). Morning Star joined the Coalition in 2005 and is covered by Resolution No. R5-2011-0032 (renewal of Order No. 2006-0053, Coalition Group Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands). (Rufer Decl., ¶ 4.) Although Morning Star's 1995 WDRs did not address stormwater, Morning Star has been an active member of the Coalition since 2005 and has been adhering to the Waiver's requirements as part of the Coalition for over eight years. By the express terms of the Waiver, discharges of waste from irrigated lands includes stormwater runoff flowing from irrigated lands. (Order No. R5-2006-0053 at Attachment A, Items 3 & 12.) It is improper for Board Staff to now attempt to further regulate Morning Star's storm water discharge practice without any evidence in support thereof.

receiving drain. Indeed, other WDRs for similar facilities contain no prohibition on stormwater discharges at all. (Order No. R5-2008-0067, J.G. Boswell Tomato Company, Buttonwillow Tomato Processing Facility.)

In light of the lack of support and evidence of impacts to groundwater resulting from the controlled discharge of storm water, Morning Star requests modification of the storm water prohibition to allow such discharges under circumstances designed to protect water quality, as more specifically requested below in Section IV.

4. The Requirements to Excavate the Settling Pond by a Date Certain are Not Supported by the Evidence

The WDRs provide that at the end of each processing season, "and no later than 15 November each year, the Settling Pond shall be drained and accumulated sludge and sediments shall be removed." (Order No. R5-2013-0144, Residual Solids Disposal Specifications G.1.) The requirement to remove accumulated sludge and sediments by November 15 of each year did not appear in the original tentative WDRs, but was added without explanation in the revised tentative WDRs. The Regional Board has provided no explanation for this requirement, and has failed to meet its obligation to make findings that bridge the gap between any evidence and this requirement. (*Topanga Association, supra,* 11 Cal.3d at 515.)

This requirement creates a significant burden on the Facility operations with no groundwater quality benefits. At that time of year, the Settling Pond remains very wet and unmanageable. It is not possible to evenly spread sludge excavated from the Settling Pond. Allowing the material in the Settling Pond to dry prior to excavation and disposal is consistent with industry practice and should be allowed to continue as there is no explanation or basis for the November 15 excavation deadline. (Rufer Decl., ¶ 5.)

5. The Requirements Governing Solids Handling are Not Supported by the Evidence

The WDRs provide, "Application of residual solids (i.e., cull tomatoes, vines and tomato pomace) to the LAAs is prohibited unless and until the Executive Officer approves a *Residual Solids Management Plan* submitted pursuant to Provision H.3 of this Order." (Order No. R5-2013-0144, Discharge Prohibitions A.5.) Again, there is no explanation or evidence to support

this prohibition. Rather, as clearly stated in the WDRs, the prohibition is apparently based on a lack of information, rather than on evidence showing actual impacts to groundwater. (Order No. R5-2013-0144, Finding 31.) In light of this lack of information, the practice of applying solids to the land application areas should be allowed to continue unless there is evidence of impacts to groundwater. (*Topanga Association, supra,* 11 Cal.3d at 514-515.)

As with many of the other provisions in the WDRs, a prohibition on application of solids to land application areas is not standard. (*See, e.g.,* Order No. R5-2006-0047, Section E.2 (allowing application of solids to land except during precipitation); Order No. R5-2008-0015, Section E.1; Order No. R5-2008-0067, Section E.1 ("Any handling and storage of solids and sludge at the Facility or in the Use Area shall be temporary, and controlled and contained in a manner that minimizes leachate formation and precludes infiltration of waste constituents into soils in a mass or concentration that will violate groundwater limitations of this Order.") Providing for solids discharge at Morning Star is appropriate to protect water quality in light of the lack of evidence that Morning Star's standard practice has resulted in impacts.

Moreover, the facility has not historically applied pomace, culls, and other organic matter to the land application areas. Rather, sediment from the Settling Pond is applied to the land application areas and no adverse effects from this application have been observed. The revised Monitoring and Reporting Program requires Morning Star to track the loading rates from Settling Pond solids for BOD and nitrogen. This will increase the complexity and testing requirements. BOD and nitrogen in the soils is less likely to leach through the soil because it is bound to soil particles and will not be applied by flood irrigation water. For this reason, Morning Star requests revision to the monitoring requirements as set forth below.

6. The Limitation on the Number of Cattle Allowed to Graze on Land Application Areas Violates Water Code Section 13360

The WDRs provide:

> The number of cattle allowed to graze on the LAAs shall not exceed 160 head per year and grazing shall be limited to Fields MS5, MS15, MS16, MS17, MS18, and MS24 unless and until the Executive Officer approves a *Livestock Management Plan* submitted pursuant to

> Provision H.2 of this Order and the Discharger implements the approved plan.

(Order No. R5-2013-0144, Land Application Area Specifications F.14.) Water Code section 13360(a) provides that "[n]o waste discharge requirement or other order of a regional board or the state board or decree of a court issued under this division shall specify the design, location, type of construction, or particular manner in which compliance may be had with that requirement, order, or decree, and the person so ordered shall be permitted to comply with the order in any lawful manner." The express limit of 160 head of cattle per year violates section 13360, as it mandates a particular manner by which the discharger must meet specific mass loading limits outlined in the WDRs. Thus, the 160 head limit should be removed from the WDRs, as more specifically requested in Section IV, *infra*.

III. MORNING STAR REQUESTS A HEARING AND PRESENTATION OF SUPPLEMENTAL EVIDENCE

The Regional Board's inappropriate action is in large part due to the failure to allow sufficient opportunity for comment on staff's conclusions regarding groundwater impacts. The original tentative WDRs contained only summary conclusions regarding groundwater impacts, with virtually no explanation of the basis for those conclusions. The revised tentative WDRs contained some additional information regarding staff's conclusions pertaining to groundwater impacts, but still failed to specifically explain the basis for concluding that the Facility is the source of groundwater degradation. It was not until Staff's presentation during the December 5, 2013 Regional Board hearing that Morning Star was provided some explanation for staff's conclusions, yet the explanations still failed to explain the connection between the Facility and the groundwater data. Moreover, staff and the Regional Board wholly failed to address the technical reports submitted by Morning Star, that demonstrate that the Facility has not caused groundwater degradation.[5] Because of the lack of analysis presented in the tentative WDRs, the new information in the revised tentative WDRs, the short time between the release of the revised

[5] These reports were accepted by the Regional Board into evidence, but staff provided no response to the reports. (Transcript, 7:17.)

tentative WDRs and the Regional Board hearing, and the yet additional new information presented by staff at the hearing, the Regional Board did not have the opportunity to hear and evaluate adequate evidence, testimony, and discussion on the conclusions regarding groundwater.

For this reason, Morning Star requests that the State Board grant a hearing to provide an opportunity for presentation of additional evidence, testimony and discussion of these matters. (Cal. Code Regs., tit. 23, § 2052.) Alternatively and/or concurrently, Morning Star reserves the right to submit additional written evidence and testimony in support of this petition. (Cal. Code Regs., tit. 23, § 2050.6.) Specifically, Morning Star intends to submit additional technical analysis of the Facility's relationship to groundwater quality. (Rufer Decl., ¶ 6.)

IV. THE SPECIFIC ACTION BY THE STATE BOARD OR REGIONAL BOARD THAT PETITIONER REQUESTS

For the reasons stated herein, Petitioner requests that the State Board modify the WDRs as follows:

- Delete all findings and conclusions that the discharge of wastewater from the Morning Star Facility has caused or is causing groundwater degradation or groundwater pollution. (Order No. R5-2013-0144, paragraphs 21, 43.b, 45.b, 45.c, 45.e, 58.a, 58.b, 58.d, 58.e, 59.a, 59.b, 59.d, 59.e, 61, 62.)
- Modify Land Application Area Specification F.11 to read as follows: "The Discharger may not discharge process wastewater to the land application areas when soils are saturated. Wastewater distribution to the land application area shall be optimized to allow saturated fields, either from the last wastewater application or a previous precipitation event, to dry before the next wastewater application."[6]
- Modify Land Application Area Specification F.13 to read as follows: "After all processing wastewater has been land applied and prior to allowing stormwater to flow offsite, the Discharger shall wait three weeks from the date of last land applied wastewater to allow for soil stabilization or capture the first flush of salts

[6] This is the same language included in Order No. R5-2010-0038 for the Campbell Soup Supply Company Dixon Facility.

and nutrients by retaining and reapplying the first 0.5 inches of rainwater, whichever comes first. Any captured stormwater must be evenly reapplied to the land application area for infiltration."[7] Alternatively, modify Land Application Specification F.13 to read as follows: "Discharge of storm water runoff from the LAAs to surface water drainage courses is prohibited unless monitoring of the stormwater demonstrates that the quality of the stormwater is of similar quality of the receiving drainage courses for pH, EC, BOD and nitrogen." (See, Transcript, 37:17-26.)

- Delete Provision H.1.c.
- Modify Residual Solids Disposal Specification G.1 to delete the stricken language as follows: "~~At the end of~~ Following each processing season and prior to subsequent processing, ~~and no later than 15 November each year,~~ the Settling Pond shall be drained and accumulated sludge and sediments shall be removed. The waste may be applied to the LAAs as a soil amendment or disposed of off-site."
- Modify Discharge Prohibition A.5 to read as follows: "Any handling and storage of solids or sludge at the Facility or in the Use Area 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 groundwater limitations of this Order."[8] Alternatively, modify Discharge Prohibition A.5 to read, "Solids shall not be applied to land within 24 hours before predicted precipitation, during periods of precipitation, within 24 hours after

[7] This language mirrors language included in Order No. R5-2010-0038 for the Campbell Soup Supply Company Dixon Facility.

[8] This language mirrors language in Order No. R5-2008-0015 and Order No. R5-2008-0067

precipitation, or when the land application area is saturated and shall not cause a nuisance."[9]

- Delete Provision H.3.
- Modify the second paragraph of Facility and Discharge Finding 20 to delete the stricken language as follows: "Currently, approximately 160 head are rotated between each field designated as pasture from mid-May to early November. Grazing cattle returns nutrients to the LAAs in their waste products, which could result in nitrogen overloading and increased potential for nitrate to be transported into the groundwater. Waste products from cattle grazing are included in loading factors. This Order allows the Discharger to continue grazing cattle on the LAA fields ~~currently specified for pasture use in Finding 19, but limits the number of head to the current practice of 160 head rotated among the fields listed above. If the Discharger proposes changes to the current grazing operations locations, this Order requires a *Livestock Management Plan* to be approved by the Executive Officer prior to any change~~.
- Delete Land Application Area Specification F.14.
- Delete Provision H.2.
- Delete "Settling Pond solids" from the Land Application Area Monitoring Requirements for BOD_5 and Total Nitrogen loading rates on page 3 of Monitoring and Reporting Program No. R5-2013-0144 ("MRP").

V. STATEMENT OF TRANSMISSION OF PETITION TO REGIONAL BOARD.

A copy of this Petition is being concurrently transmitted to the Executive Officer of the Sacramento branch office of the Central Valley Regional Water Quality Control Board concurrently with the filing of this document.

[9] This language mirrors language in Order No. R5-2006-0047 for SK Foods and Colusa County Canning Company Williams Tomato Processing Facility

VI. STATEMENT REGARDING WHETHER THE SUBSTANTIVE ISSUES OR OBJECTIONS CONTAINED HEREIN WERE RAISED BEFORE THE REGIONAL BOARD.

The substantive issues and objections contained herein were raised before the Regional Board. As noted herein, however, due to the lack of explanation and analysis presented by Regional Board staff, and the limited time between release of the revised tentative WDRs and the Regional Board hearing, Morning Star was not provided adequate time to fully respond to the revised tentative WDRs. Morning Star, therefore, requests a hearing on this matter to submit additional evidence, testimony and discussion in support of this petition.

DATED: January 6, 2014

STOEL RIVES LLP

By: _____
KRISTEN T. CASTAÑOS
Attorneys for Petitioner
THE MORNING STAR PACKING COMPANY, L.P.

EXHIBIT A

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER R5-2013-0144

WASTE DISCHARGE REQUIREMENTS

FOR
MORNING STAR PACKING COMPANY, L.P.
AND FRED GOBEL
THE MORNING STAR TOMATO PACKING PLANT
COLUSA COUNTY

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

1. On 30 December 2005, Morning Star Packing Company, L.P. submitted a Report of Waste Discharge (RWD) that describes facility improvements made to its Williams tomato processing facility to comply with Cease and Desist Order (CDO) R5-2005-0003. Additional information to update the RWD was submitted on 30 November 2012, 3 April 2013, 24 April 2013, and 29 August 2013.

2. Morning Star Packing Company, L.P. owns and operates the tomato processing facility (Facility), including approximately 609 acres of associated land application areas (LAAs). An additional 95 acres of LAA (Field MS1) is owned by Fred Gobel and leased to Morning Star Packing Company, L.P. Morning Star Packing Company, L.P. and Fred Gobel (hereafter known as "Discharger") are responsible for compliance with these Waste Discharge Requirements (WDRs).

3. The Facility, which consists of a tomato processing facility and associated LAAs, is located south of the City of Williams, east of Interstate 5 in rural Colusa County (Sections 19, 20, 29 and 30, T15N, R2W, MDB&M), as shown on Attachment A, which is attached hereto and made part of this Order by reference.

4. WDRs Order 95-160, adopted by the Central Valley Water Board on 23 June 1995, prescribes requirements for the discharge of tomato processing wastewater. Order 95-160 allows a maximum discharge from the wastewater Settling Pond not to exceed 4.3 million gallons per day (mgd) and a maximum discharge to the Cooling Pond not to exceed 58 mgd. The WDRs are no longer adequate to regulate the discharge. Therefore, it is appropriate that WDRs Order 95-160 be rescinded and replaced with this Order.

Enforcement History

5. A Notice of Violation (NOV) was issued in September 2003 due to non-compliance with the Monitoring and Reporting Program (MRP) and inadequacy of the monitoring network to detect groundwater degradation. The NOV required the installation of additional monitoring wells and improved sampling and reporting. A Revised MRP was finalized in October 2003. Based on the limited groundwater data from the new

wells and groundwater data from monitoring wells installed in 1995, it appeared that groundwater beneath the Facility and LAAs had been degraded.

6. On 27 January 2005, the Central Valley Water Board adopted CDO R5-2005-0003 as a result of the following:

   a. Discharges of wastewater to surface water.

   b. Non-compliance with the dissolved oxygen (DO) requirement in the upper zone (1 foot) of wastewater in the Settling Pond.

   c. Evidence of groundwater degradation with calcium, chloride, nitrate, sulfate, and total dissolved solids (TDS) due to the discharge.

   d. Monthly monitoring reports for July through November 2004 indicated over-application of nitrogen and salts to the LAAs. Nitrogen and TDS loading rates ranged from 296 to 811 pounds per acre (lb/ac) and 5,600 to 14,800 lb/ac, respectively. Few crops can consume more than 400 lb/ac of nitrogen per year.

7. The 2005 CDO required that the Discharger immediately comply with the following new requirements:

   a. The discharge of wastewater and tailwater or storm water containing waste to surface water drainage courses is prohibited.

   b. There must be at least 2-feet of freeboard at the concrete weir during periods when wastewater is being used for irrigation and/or when tailwater in the ditch results from irrigation with wastewater.

   c. Irrigation water, regardless of the source, must be applied at agronomic rates for the crops grown. The frequency and depth of irrigation must be determined based on actual weather conditions and crop needs.

   d. Nitrogen and other nutrients, regardless of the source, must be applied at agronomic rates for crops grown. All nitrogen applied must be considered "plant available".

   e. Loading rates for biochemical oxygen demand (BOD) must not exceed 100 lb/ac/day or 300 lb/ac/irrigation cycle.

   f. Comply with Discharge Specification B.5 of the WDRs - irrigation and drainage ditches must be maintained free of weeds and aquatic plants.

8. The 2005 CDO required that the Discharger comply with a schedule for submittal of the following technical reports:

a. 2005 Cropping Plan – to describe how the fields will be planted with suitable crops and managed, including loading rates (hydraulic loading, BOD, nitrogen, and TDS) for both the packing season and on an annual basis.

b. Dissolved Oxygen Compliance Report – to contain (a) feasibility study of methods to ensure that the waste in the Settling Pond contains at least 1.0 mg/L of dissolved oxygen to prevent nuisance conditions and, (b) the preferred alternative for achieving compliance.

c. Salinity Reduction Study Workplan – to contain a discussion of all chemicals used at the Facility, chemical characterization and estimated generation rate for each identified waste stream, methods available to reduce the concentration of TDS in each waste stream discharged to the Settling Pond and Cooling Pond, and calculations estimating the mass of salinity removed by the crops.

d. Flow Metering Systems Improvements Report – to describe the design, construction, and operation of the flow metering systems for each flow monitoring point and include a final report verifying that the metering systems are adequate and fully operational.

e. Field MS11 Irrigation System Report – to document the management and/or physical changes that have been made to the manner in which wastewater is supplied to Field MS11.

f. Results of the Salinity Reduction Study – to contain a discussion of each element required by the Salinity Reduction Study.

g. Background Groundwater Quality Study and Groundwater Impacts Assessment Report – to present a summary of all historical monitoring data, concentration in background monitoring wells, and comparison of background quality to that in wells used to monitor groundwater beneath the ponds and land application areas.

h. Report of Waste Discharge – to describe all improvements required to comply with the 2005 CDO and prevent groundwater degradation.

9. The Discharger submitted the required reports and implemented the Facility and operational improvements required under the 2005 CDO. However, compliance with the BOD and nitrogen loading rate limits has not been consistent, as discussed later in these findings.

Facility and Discharge

10. The Facility operates during the tomato harvest season from approximately June to mid-October. Processing operations occur 24 hours per day, every day during the harvest season. The Facility is designed to produce aseptic tomato paste and diced

tomatoes in bulk packaging. The Discharger has only produced tomato paste to date, but plans to include diced tomato operations in the future.

11. Tomatoes are received in trucks, transported into the Facility by flumes, processed into tomato paste, and packaged in bulk packaging. A site plan is included in Attachment B, which is attached hereto and made part of this Order by reference.

12. The Facility produces five wastewater streams. Four of the five wastewater streams are discharged to either the 5 acre-feet (ac-ft) Settling Pond or 210 ac-ft Cooling Pond. A portion of the wash water from the flume system is discharged into the Settling Pond prior to use as irrigation water for the LAAs. The Cooling Pond receives water softener reject, condensate from the evaporation process, and boiler blowdown. Cooling Pond water is used to irrigate the LAAs or reused in the flume system. Water from plant sanitation and cleaning activities make up the fifth waste stream. Sodium hydroxide is used in the sanitation and cleaning practices. This wastewater is collected in floor drains, then gravity flows into a sump, and is later combined with Settling Pond water in a conveyance ditch for use as irrigation water. A wastewater process flow diagram is included on Attachment C, which is attached hereto and made part of this Order by reference.

13. The Settling Pond was constructed with clay soils compacted in lifts and includes a mechanical aerator. The Settling Pond receives wastewater during the processing season and is typically empty during the non-processing season. Currently, any solids that have settled at the bottom of the pond are removed at the end of the processing season and applied to the LAAs as a soil amendment or used to build up farm roads around the Facility.

    The 1995 WDRs allow solid wastes from the Settling Pond to be discharged to land as a soil amendment; however, they do not allow solids use on farm roads at the site as currently practiced by the Discharger (and as described in the December 2005 RWD). Settling Pond solids include soil washed off the tomatoes in the flume system and tomato waste, so the solids are likely high in BOD and nitrogen. The RWD did not specify which onsite roads receive these solids, nor did it include a description of management practices to prevent discharge of storm water runoff containing waste constituents to surface water drainage courses. This Order prohibits the use of Settling Pond solids on farm roads until a *Settling Pond Solids Management Plan* is approved by the Executive Officer.

14. The flume system is supplied with water from the facility supply wells or condensate from the evaporation process. A small amount of chlorine is added to the well water prior to use as make-up water in the flume system. In 2005, the Discharger began using low-salinity condensate in the flumes in lieu of well water to reduce salinity concentrations in the wastewater. The November 2005 *Salinity Reduction Study Report* included a comparison of the condensate, Cooling Pond, supply well, and Settling Pond water quality which is summarized in the table below.

Water Description	EC [1], µmhos/cm	TDS, mg/L
Condensate	20	N/A
Cooling Pond (2004 Processing Season)	457	256
Cooling Pond (2005 Processing Season)	391	283
Supply Well [2]	785	418
Settling Pond (2004 Processing Season)	1,177	1,489
Settling Pond (2005 Processing Season)	905	620

[1] EC denotes electrical conductivity.
[2] Average of Plant Well 1 and Plant Well 2.

15. The wastewater character discharged from the Settling Pond is summarized in the table below for select parameters. Wastewater samples are collected at the flow metering station just outside the Settling Pond, which also captures plant sanitation and clean-up water collected from the facility floor drains. Potentially applicable Water Quality Objectives (WQOs) are shown for comparison.

	Annual Average Wastewater Quality						
	pH	EC	TDS	FDS	BOD	TKN	Nitrate Nitrogen
Year	pH units	µmhos/cm	mg/L	mg/L	mg/L	mg/L	mg/L
WQO	6.5-8.5[1]	700[4]-2,200[2]	450[4]-1,500[2]	--	--	--	10[3]
1996	6.3	1,520	--	--	--	--	--
1997	6.6	1,688	--	--	--	--	--
1998	6.6	1,290	--	--	--	--	--
1999	5.6	1,257	--	--	--	--	--
2000	5.0	1,620	--	--	--	--	--
2001	5.7	1,338	1,118	--	885	--	--
2002	6.2	3,164	1,886	--	1,473	75.3	0.1
2003	5.1	1,267	1,397	--	1,342	58.6	0.0
2004	4.5	1,177	1,489	901	1,059	69.7	1.8
2005	5.7	906	620	374	527	58.1	0.4
2006	6.2	756	646	397	389	27.5	3.8
2007	5.4	954	847	459	840	48.2	0.4
2008	6.0	901	760	491	647	52.8	1.2
2009	6.1	1,017	923	550	850	43.5	2.1
2010	5.5	986	882	565	650	51.2	2.5
2011	5.6	1,011	877	607	241	67.1	2.4

	Annual Average Wastewater Quality						
	pH	EC	TDS	FDS	BOD	TKN	Nitrate Nitrogen
Year	pH units	µmhos/cm	mg/L	mg/L	mg/L	mg/L	mg/L
WQO	6.5-8.5[1]	700[4]-2,200[2]	450[4]-1,500[2]	--	--	--	10[3]
2012	5.5	1,219	1,173	849	849	80.8	1.9

"—" denotes no data available.
[1] Secondary Maximum Contaminant Level (MCL).
[2] Upper Secondary MCL.
[3] Primary MCL.
[4] Agricultural Water Quality Goal.

Wastewater pH measurements from the Settling Pond have frequently been below 6.0 and occasionally as low as 4.0. However, the discharge to the Settling Pond has caused only limited degradation of groundwater with respect to pH, and this degradation does not appear to have impacted beneficial uses.

Based on the data above, wastewater quality improved with respect to salinity and BOD concentrations after the 2005 modifications, but average FDS concentrations have increased steadily since 2007. More recent data from 2012 show higher salinity and nitrogen concentrations that are more consistent with pre-CDO values. This Order does not require further salinity control but does not allow the wastewater salinity to increase significantly above current concentrations.

16. The Cooling Pond is generally full of water (a mixture of water softener reject, condensate from the evaporation process, and boiler blowdown) throughout the year; however, the pond is occasionally emptied for maintenance. After the processing season, water in the Cooling Pond is drained to achieve 4 feet of freeboard to accommodate direct precipitation during the rainy season. Based on a 100-year return 365-day precipitation event, reasonable estimates for evaporation, and minimal percolation, adequate capacity (with a minimum of 2-foot freeboard) is maintained during the wet weather months.

17. When the Facility operates daily, approximately 728,800 gallons per month of boiler blowdown is generated (which represents less than 1 percent of the 81.9 million gallons (mgal) of total wastewater discharged by the Facility during the peak months of August and September). The boiler blowdown has an average EC of 1,200 to 1,400 µmhos/cm.

18. The Facility has two water softeners. The water softener regeneration cycle occurs after 200,000 gallons of soft water has been produced. There are four stages to a cycle. Water quality and discharge rates from each cycle are summarized below:

Cycle and Description	Flow During Cycle, gpm	EC, mg/L	Total Monthly Flow, gallons	% of Total WW Flow [1]
Backwash - water flows backwards to loosen bed and remove foreign matter	145	850	52,171	0.06
Brine - between 600 and 1,000 lb of salt introduced to softener	24	7,300	19,275	0.02
Slow Rinse - slowly distributes remaining sodium through softener	145	8,600	44,718	0.05
Final Rinse - Compacts resin and removes excess brine	220	3,463	113,080	0.14

[1] Based on approximately 81.9 million gallons of wastewater discharged to the LAAs during the peak months of August and September. Wastewater includes water from Settling Pond, Cooling Pond, and plant sanitation and cleanup activities.

19. Approximately 695 acres of LAAs are available for irrigation with wastewater from the Settling Pond and/or Cooling Pond. Supplemental water is provided by the Glen-Colusa Irrigation District (GCID). The various crops grown on the LAAs include sudan grass hay, alfalfa, pasture grass and corn. A description of the LAAs is summarized below.

LAA Field	Acreage	Land Use	Land Owner
MS1	95	Crop	Gobel
MS2, MS3	82.1	Crop	Morning Star
MS5	24.6	Pasture	Morning Star
MS6	21.4	Crop	Morning Star
MS11	35.6	Crop	Morning Star
MS14	44.5	Crop	Morning Star
MS15	26.7	Pasture	Morning Star
MS16	18	Pasture	Morning Star
MS17	18.7	Pasture	Morning Star
MS18	78.2	Pasture	Morning Star
MS20	64.6	Crop	Morning Star
MS21	25.9	Crop	Morning Star
MS24	159.8	Pasture	Morning Star

20. Although the 1995 WDRs did not envision cattle grazing, the Discharger began using Fields MS5, MS15, MS16, MS17, MS18, and MS24 in 2005 to graze cattle. The 2005 Cropping Plan required by the CDO stated that pasture grasses are grown on some of the LAA fields. However, the projected mass loading rates presented in the Cropping Plan do not account for any additional BOD and nutrient loadings associated with the cattle grazing. The 2005 RWD also stated that some LAAs are used for pasture, but it was unclear whether the projected nutrient loading rates included in the RWD accounted for cattle manure.

    Currently, approximately 160 head are rotated between each field designated as pasture from mid-May to early November. Grazing cattle returns nutrients to the LAAs in their waste products, which could result in nitrogen overloading and increased potential for nitrate to be transported into the groundwater. This Order allows the Discharger to continue grazing cattle on the LAA fields currently specified for pasture use in Finding 19, but limits the number of head to the current practice of 160 head rotated among the fields listed above. If the Discharger proposes changes to the current grazing operations, this Order requires a *Livestock Management Plan* to be approved by the Executive Officer prior to any change.

    Cattle can also damage earthen structures such as berms used to control irrigation and ditches used to convey wastewater, tailwater, and other irrigation supplies. The Discharger states that the irrigation and tailwater ditches that convey the wastewater to these fields are located outside the perimeter fences and away from the cattle. This Order requires that fences be maintained on all fields where cattle are grazed to prevent damage that might cause discharges of waste to surface water drainage courses.

21. The LAAs are surface irrigated (border check method) using breakouts in the irrigation ditch berms or siphon hoses from the ditches to the fields. Each field contains several checks that are separated by berms. Each check is typically 20 feet wide, and the current check lengths typically range from approximately 1,000 to 2,600 feet.

    On any given day during the processing season, multiple checks within a field and multiple LAA fields may be receiving water at the same time. The number of checks receiving wastewater at any one time depends on process wastewater flow rates, which vary from day to day. For a particular field, the checks are irrigated sequentially until the entire field has been irrigated. The field is then allowed to rest until the next irrigation cycle begins. Because of the long check lengths, it typically takes one to two days of continuous irrigation to ensure that the lower end of the each check receives sufficient water to sustain the crop, and it may take up to 10 days or more to irrigate one field.

    Fields with long check lengths may not be able to ensure irrigation uniformity, due to higher application rates and longer infiltration periods at the top end of the field in comparison to the bottom end of the field. The Discharger states that reducing check

lengths to improve uniformity in water and waste constituent application rates would require extensive work to reconfigure the existing irrigation and tailwater ditch system. This Order allows the Discharger to continue using the LAAs in their current configuration and to calculate waste constituent loading rates as a field wide average as long as monitoring reports clearly demonstrate best efforts to achieve uniform application field-wide and compliance with this Order. However, this Order also requires that the Discharger employ methods to rectify existing conditions of pollution by 2018. Reconfiguring the existing irrigation and tailwater ditch system may be required to achieve ultimate compliance with applicable water quality objectives.

22. Earth dams and additional ditches (temporary and permanent) are used to separate the Discharger's irrigation distribution and tailwater collection system from the GCID easement drain and other public drainage courses that traverse the LAAs. The GCID drain is located along the western boundary of Fields MS11 and MS21 and crosses through the LAAs near Fields MS3, MS5, MS6, and MS14 as shown on Attachment B. A parallel ditch is used in lieu of the GCID drain to provide irrigation to Fields MS11 and MS21. The temporary tailwater collection ditch parallel to the public drain along the eastern boundary of Fields MS5, MS16, MS17, and MS18 isolates the public drain and the concrete weir east of MS5 from wastewater discharges. At the end of the processing season, temporary tailwater ditches are filled in, storm water culverts to the GCID are restored, and storm water is allowed to discharge into the GCID drain.

23. Based on the Discharger's Annual Monitoring Reports, the average monthly wastewater applied to the LAAs is summarized below. No supplemental irrigation water from GCID was used during the 2009 through 2012 processing seasons.

	Average Monthly Discharges to the LAAs, mgd	
Processing Year	From Settling Pond	From Cooling Pond
2009 [1]	2.0 – 2.4	0.8 – 1.1
2010 [2]	1.8 - 2.4	0.3 – 0.9
2011 [3]	1.5 – 2.3	0 – 0.4
2012 [4]	0.7 – 2.8	0 – 0.5

[1] Processing season July through October.
[2] Processing season August through October.
[3] Processing season August through October.
[4] Processing season July through October.

24. Nitrogen is introduced to the LAAs through process wastewater and manure from grazing cattle. Annual nitrogen uptake values vary from 150 to 350 lb/ac depending on the crop grown and whether the LAAs are pasture lands. A nitrogen balance for each LAA was provided by the Discharger in the 30 November 2012 submittal, which is summarized below.

Fields	Land Use	Average Nitrogen Loading, lb/ac/yr (Minimum/Maximum from 2009 through 2011)			
		Wastewater	Other Sources [1]	Crop Uptake [2]	Nitrogen Balance [3]
MS1	Crop	0 / 107	--	0 / 230	0 / -123
MS2, MS3	Crop	59 / 182	--	230 / 350	-171 / -168
MS5	Pasture	115 / 164	30 / 30	150	-5 / 44
MS6	Crop	63 / 150	--	230 / 350	-167 / -200
MS11	Crop	95 / 142	--	350	-255 / -208
MS14	Crop	98 / 217	--	290 / 350	-192 / -133
MS15	Pasture	69 / 144	38 / 18	150	-43 / 12
MS16, MS17	Pasture	90 / 156	30 / 18	150	-30 / 24
MS18, CH1	Pasture	69 / 165	38 / 30	150	-43 / 45
MS18, CH2	Pasture	30 / 112	38 / 30	150	-82 / -8
MS20, CH1	Crop	48 / 77	--	350 / 230	-302 / -153
MS20, CH2	Crop	44 / 161	--	350	-306 / -189
MS21	Crop	52 / 142	--	230 / 350	-178 / -208
MS24, CH1	Pasture	97 / 189	30 / 38	150	-23 / 77
MS24, CH2	Pasture	139 / 257	30 / 18	150	19 / 125

[1] Range of nitrogen loadings from cattle manure during 2009, 2010, and 2011 based on nitrogen excreted per season: approximately 30 lb/ac in 2009, 38 lb/ac in 2010, 18 lb/ac in 2011.

[2] Typical crop uptake rates: 350 lb/ac for alfalfa, 230 lb/ac for corn, 230 lb/ac for sudan hay grass, 290 lb/ac for alfalfa/grass, and 150 lb/ac for pasture land.

[3] Nitrogen applied from wastewater plus nitrogen applied from other source minus crop root uptake. Positive number indicates overloading of nitrogen.

The data above show that some of the fields received more nitrogen than could be consumed by the crop, which is a violation of CDO R5-2005-0003. CDO R5-2005-0003 requires that nitrogen and other nutrients, regardless of source, be applied at agronomic rates for the crops grown. Review of these results in concert with reported irrigation rates during the same period indicates that the nitrogen overloading is primarily associated with fields used for pasture and fields that were over-irrigated with wastewater. This Order requires the application of wastewater and nutrients at reasonable rates to preclude creation of a nuisance condition or degradation of groundwater. In addition, this Order requires the Discharger to improve operational controls to prevent nitrogen overloading.

25. Based on the 30 November 2012 RWD Addendum, the maximum daily BOD loading rates during the 2009 to 2011 processing season (July through October) were as high as 700 lb/ac/day. High BOD daily loading rates occurred during the 2009 season, specifically during the months of July and August. Ranges indicate the variation

between the different field sizes. Review of the 2012 BOD loading data (July through October) indicated maximum daily BOD loading rates up to 220 lb/ac/day. Therefore, the Discharger has occasionally exceeded the daily maximum BOD limit of 100 lb/ac/day imposed by CDO R5-2005-0003.

Based on additional information submitted on 29 August 2013 in response to a Notice of Violation, maximum daily BOD loadings were calculated for each field, rather than each check as required by Revised MRP 95-160. Calculations were based on monthly average BOD loadings and the assumption that wastewater was distributed uniformly across each field. This Order prescribes protective BOD loading limits and requires submittal of a plan to better control and monitor BOD loading rates from wastewater and cattle manure and ensure compliance with this Order.

26. The California League of Food Processors' *Manual of Good Practice for Land Application of Food Processing/Rinse Water* [1] 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, but recommends that additional safety factors be used for sites with heavy and/or compacted soils. The *Manual of Good Practice* also states that the use of surface irrigation (border check method) makes uniform application difficult, especially for coarse textured soils.

27. 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. Based on facility- and site-specific information, the discharge falls in Risk Category 3. On 29 August 2013, the Discharger submitted an oxygen transfer model that demonstrated a cycle average BOD loading of

[1] Brown and Caldwell and Kennedy/Jenks Consultants, Second Edition, February 2007.

139 lb/ac/day that would maintain aerobic conditions within the LAA soils. However, as discussed below, uneven loading of water and waste constituents is inherent with border check irrigation, especially with the long checks used by this Discharger. The resulting uneven BOD application rates pose and increase threat of reducing conditions. Therefore, this Order limits the BOD loading rate to 100 lb/ac/day as an irrigation cycle average and requires that the Discharger improve irrigation efficiency.

28. The Discharger plans to increase production by up to 65 percent in the future and states that the planned expansion is not expected to change wastewater character or cause exceedance of the wastewater flow limits of this Order (which are the same as those in WDRs Order 95-160). The flow limits of this Order allow the discharge of up to 422 MG of process wastewater combined with Cooling Pond water each year. For 695 acres of land application areas, this is equivalent to approximately 22 inches of water over four months from July through October. Average reference evapotranspiration (ET_o) rates in the Williams area for that period are typically 24 inches. Although the crop evapotranspiration rates will typically be less than ET_o, the inherent inefficiency of border check irrigation requires some over application of water to ensure good crop yield. Although increases in wastewater flows up to the flow limits of this Order would likely not lead to gross over irrigation of the LAA fields, those flow increases will be accompanied by increased BOD and total nitrogen mass loadings. If wastewater flows increase to the flow limits of this Order, it is possible that the Discharger will not be able to comply with the loading rate limits of this Order without eliminating the cattle grazing, eliminating land application of residual solids, and/or implementing wastewater treatment to reduce BOD and/or total nitrogen loading rates.

29. During the processing season, any storm water or irrigation runoff (tailwater) from the LAAs is collected in the irrigation and tailwater ditches for reuse in the irrigation system.

30. Storm water generated at the processing Facility is contained on-site. Drains collect and convey storm water to several storm water collection basins onsite for percolation or evaporation. The storm water basins have a total capacity of approximately 4.7 million gallons and their locations are shown on Attachment B.

31. In the Discharger's 30 October 2013 comments on the tentative WDRs, the Discharger stated that any standing water remaining in the irrigation and tailwater ditches at the end of the processing season, including runoff from the first 2 inches of rainfall, is applied to the LAAs. LAA runoff from the next rain event collected in the tailwater ditches is analyzed and compared to analytical results for water in the nearby GCID drain. The Discharger stated that if the results for the two sources are similar, the earthen dams that separate the tailwater ditches from other drainage courses are removed and subsequent storm water runoff is allowed to drain offsite for the remainder of the rainy season.

This practice may be a violation of the 1995 WDRs and the 2005 CDO. The 2005 CDO specifically prohibits the discharge of storm water containing waste to surface water drainage courses. In a 6 January 2009 letter, the Discharger proposed that this practice be allowed and provided an analysis comparing the quality of storm water runoff from the LAAs and runoff collected from the GCID drain. However, the samples were only analyzed for pH and electrical conductivity, whereas the wastewater discharged to the LAAs characteristically contains high concentrations of BOD and nitrogen as well. Staff did not approve the proposed practice.

This Order provisionally allows the current storm water management practice for the 2013-2014 rainy season only and requires the Discharger to submit a *Storm Water Runoff Evaluation and Management Plan* that demonstrates through monitoring that the current practices are not in violation of the WDRs. If the Executive Officer does not approve the plan, this Order requires that the Discharger not release storm water runoff from the LAAs in subsequent years unless and until a revised plan is approved.

32. Currently, cull tomatoes and vines (approximately 3,000 to 6,000 tons per year) and tomato pomace including seeds and skins (approximately 12,000 tons per year) are transported off-site for use as animal feed or soil amendment. The Discharger requested that the WDRs be revised to allow these residual solids to be applied to the LAAs, but did not provide information regarding the character of the solids. Land application of residual solids may represent a significant new source of BOD and nitrogen loading to the LAAs, which are already occasionally overloaded. Therefore, this Order prohibits that use until a *Residual Solids Management Plan* that demonstrates that nutrient loading will not result in exceedances of water quality objectives is approved by the Board's Executive Officer.

33. Three flow metering stations measure wastewater flows to the LAAs. Station 1 is located in the main irrigation supply ditch that carries Settling Pond and plant sanitation/clean-up water to the LAAs. Station 2 is located in the conveyance ditch that carries Cooling Pond water to the main irrigation supply ditch. Station 3 is located on the main irrigation supply ditch downstream of the Cooling Pond discharge point and measures the total irrigation flow (a blend of plant sanitation/clean-up, Settling Pond, Cooling Pond, and GCID supplemental water) applied to the LAAs. The flow metering stations are also used as sampling points, and their locations are shown on Attachment B.

34. Domestic wastewater generated at the Facility is discharged to a septic tank and leachfield system regulated by the Colusa County Environmental Health Department. Its location is shown on Attachment B.

Site-Specific Conditions

35. The processing facility is supplied with water from two wells located on the property. Plant Well 1 is designated as the primary water source. Plant Well 2 is used as a back-up water source. The process supply water quality is summarized below for select constituents.

Constituent	Average Water Quality Data [1], mg/L unless specified	
	Plant Well 1	Plant Well 2
pH, std units	7.4	7.7
EC, µhmos	664	746
TDS	410	420
Calcium	48	42
Chloride	45	57
Iron, µg/L	70	60
Magnesium	20	26
Manganese, µg/L	<10	<10
Potassium	1	2
Sulfate	62	70
Nitrate – NO_3,	5.7	3.1

[1] Based on data obtained 29 October 2012.

36. The Facility and LAAs are relatively flat with a mild downward slope toward the north-east. Drainage within the area is towards the GCID drainage ditch, which is tributary to the Colusa Basin Drain.

37. Based on the 15 May 2003 Flood Insurance Rate Map, the Facility is located within an area determined to be outside the 0.2 percent annual chance (or 500-year) flood.

38. Surrounding land uses are primary agricultural. The nearest California Irrigation Management Information System climate data station (Station #32) is located near Colusa. The annual average precipitation is approximately 18 inches, the 100-year total annual precipitation is approximately 33 inches, and the reference evapotranspiration rate is approximately 54 inches per year.

Groundwater Conditions

39. Based on information from the United States Department of Agriculture Colusa County Soil Survey, soils below the Facility and LAAs are predominantly loam and clay loam soils. According to the United States Department of Agriculture Natural

Resources Conservation Service data, near-surface soils at the Facility are classified as Westfan loam. These soils are characterized as well drained soils.

40. Groundwater beneath the Facility and associated LAAs is relatively shallow, approximately 5 to 15 feet below ground surface, and generally flows towards the north to north-east. Groundwater gradient and background groundwater quality are likely influenced by infiltration of high quality water from the GCID Canal, which is adjacent to the southern site boundary (see Attachment B). This unlined canal carries high quality Sacramento River water used to irrigate farmland. Percolation from this canal most likely produces localized improvements in groundwater quality. The unlined Cooling Pond also recharges the shallow groundwater immediately upgradient of the LAAs with relatively low salinity water year-round.

41. Nine groundwater monitoring wells monitor the shallow groundwater at the site, as shown on Attachment B. Groundwater monitoring near the Settling Pond was established just prior to operation of the Facility in 1995 and includes wells MW1, MW2, MW3 (installed in 1995) and MW4 (installed in 2004). Monitoring wells near the LAAs were installed in 2004 several years after the discharge began (wells MW5, MW6, MW7, MW8 and MW9).

42. The Discharger submitted the *Background Groundwater Quality Study and Groundwater Impacts Assessment Report* as required by CDO R5-2005-0003 on December 2005. An intra-well analysis and upper control limits were established for wells MW1 through MW3. At that time, groundwater monitoring results indicated high spatial variability between wells, but low temporal variability within each well. The report concluded that salinity and nitrate concentrations were below the respective intra-well upper control limits. Therefore, the report concluded, there was no evidence of groundwater degradation caused by the discharge to the Settling Pond at that time. However, the report stated that nitrate nitrogen concentrations exceeded the upper control limit, particularly in wells MW1 and MW3. This apparent degradation was attributed to either contamination or an innocuous cause, such as sampling, transcription, or lab error. In this case, because this occurred in both an upgradient and downgradient well, the report concluded that the increased concentrations were not attributed to the Settling Pond and therefore there was no evidence of degradation.

43. Since the 2005 report, the Discharger has continued to monitor shallow groundwater quality near the Settling Pond. In general, shallow groundwater quality has continued to show high spatial variability between wells and low short-term temporal variability within each well. A comparison of the current groundwater quality to groundwater quality prior to discharge operations is summarized in the table below. Because of the low short-term temporal variability, average concentrations are considered representative of the data.

	Average Groundwater Concentration, mg/L							
	Background				Compliance Wells			
	MW1		MW4		MW2		MW3	
Constituent	1995	2012	2004	2012	1995	2012	1995	2012
TDS	206	147	350	318	453	477	490	507
Chloride	21	5.5	29	20	35	56	26	30
Iron	--	< 0.1 [1]	0.1	< 0.1 [1]	--	< 0.1 [1]	--	< 0.1 [1]
Manganese	--	< 0.1 [1]	< 0.1 [1]	< 0.1 [1]	--	< 0.1 [1]	--	< 0.1 [1]
Nitrate Nitrogen	0.2	1.8	6.0	6.4	11	3.9	10	19

"—" denotes no data available.
[1] The laboratory reporting limit for iron and manganese is 0.1 mg/L.

Groundwater quality in wells MW1 and MW4, which are upgradient of the Settling Pond, exhibits high spatial variability, possibly due to influences from the nearby GCID canal. MW1 is located immediately downgradient from this canal and exhibits higher quality water when compared to MW4, which is also upgradient of the Settling Pond but farther north of the canal.

In general, groundwater quality in wells MW1 through MW4 has been relatively constant over time for salinity constituents and nitrate nitrogen since just before the discharge began:

a. TDS concentrations have been relatively constant over time in all four wells, so there is no significant evidence of degradation from the pond.

b. Chloride concentrations in MW2 have increased in the last two years, indicating groundwater degradation caused by the discharge. However, the concentrations do not exceed the lowest agricultural water quality goal for chloride.

c. Use of the Settling Pond has apparently not caused degradation from iron and manganese. However, the Discharger's laboratory's reporting limit for manganese is 0.1 mg/L, which is two times the secondary MCL of 0.05 mg/L. This Order requires that all laboratory reporting limits be no greater than the applicable water quality objectives for all monitored constituents.

d. Nitrate nitrogen concentrations have been relatively constant over time, indicating no evidence of degradation from the pond. Nitrate nitrogen concentrations in MW3 have historically exceeded the primary MCL since before discharge operations began. This apparent pollution appears to be highly localized (i.e., nitrate levels in wells further downgradient do not exceed the water quality objective).

44. As noted above, wells MW-5 through MW9 monitor shallow groundwater at the LAAs. Because wells MW5 though MW9 were installed several years after the discharge began and limited data were available at the time of the 2005 study, a comparison between the average water quality results was performed to determine if upgradient well MW5 had lower constituent levels than the downgradient wells, MW6 through MW9. The 2005 report concluded that the groundwater monitoring results near the LAAs indicated spatial variability but no evidence of degradation from wastewater application operations at that time.

45. The Discharger has continued to monitor shallow groundwater quality near the LAAs. With the additional data, the potential for degradation at the LAAs was re-evaluated. A comparison of 2005 groundwater quality and current (2012) groundwater quality is summarized in the table below.

	Average Groundwater Concentration, mg/L									
	Background		Compliance Wells							
	MW5		MW6		MW7		MW8		MW9	
Constituent	**2005**	**2012**	**2005**	**2012**	**2005**	**2012**	**2005**	**2012**	**2005**	**2012**
TDS	488	700	735	748	537	674	730	885	987	1012
Chloride	24 [3]	55	54 [3]	75	76 [3]	98	63 [3]	139	39 [3]	156
Iron	2.2 [2]	< 0.1 [1]	7.4	< 0.1 [1]	1.0 [2]	< 0.1 [1]	9.6	< 0.1 [1]	2.0	< 0.1 [1]
Manganese	0.6	< 0.1 [1]	0.2	< 0.1 [1]	0.7	0.5	1.0	0.8	0.1	< 0.1 [1]
Nitrate Nitrogen	6.8	39	11	5.9	9.7	4.1	2.4	1.8	23	17

[1] The laboratory reporting limit for iron and manganese was reported as 0.1 mg/L.
[2] The February 2005 groundwater samples resulted in iron concentrations of 88 mg/L and 56 mg/L in MW5 and MW7 respectively, which appear to be outliers; therefore these results were not used to calculate the averages.
[3] The November 2005 chloride data for MW6, MW7, MW8, and MW9 appear to be outliers; therefore they were not included in the yearly average.

In general, groundwater quality near the LAAs, indicates salinity constituents and nitrate nitrogen concentrations increase as groundwater moves northward away from the GCID canal. Concentrations of constituents of concern within each well have been relatively constant over time with a few exceptions:

a. TDS, chloride, and nitrate nitrogen concentrations in background well MW5 have increased in the last two years. More significantly, background nitrate concentrations, have exceeded the primary MCL since 2010. Prior to 2010, background nitrate concentrations were below 10 mg/L. Well MW5 is located away from the influence of the GCID canal and upgradient to side-gradient of the LAA discharge. Temporally variable background concentrations are likely due to natural variations and/or upgradient land uses that are not controlled by the Discharger, which are primarily irrigated agriculture.

b. TDS concentrations in wells MW6, MW7, MW8 and MW9 indicate degradation caused by the discharge. Increased concentrations were observed in wells MW8 and MW9 between 2010 and 2012. In particular, TDS concentrations in MW9 were at an all-time high. Annual average TDS concentrations exceeded the lowest agricultural water quality goal of 450 mg/L; however they did not exceed the upper secondary MCL of 1,000 mg/L.

c. Chloride concentrations in wells MW6, MW7, MW8 and MW9 indicate degradation caused by the discharge. Between 2010 and 2012, higher than normal chloride concentrations were observed in wells MW8 and MW9. In particular, chloride concentrations in MW9 were at an all-time high. Annual average chloride concentrations in MW9 did not exceed the lowest secondary MCL of 250 mg/L. However, concentrations exceeded 250 mg/L on two sampling events in 2011. Chloride increases were also observed in background well MW5 during the same period, but the degree of increase was less than the increases observed in MW8 and MW9.

d. Iron and manganese concentrations that exceed the secondary MCLs were sporadic in most of the compliance monitoring wells. In the case of manganese, concentrations in MW7 and MW8 exceeded the secondary MCL multiple times in 2012. In addition, multiple exceedances have been observed in well MW8 since its installation in 2004. As mentioned previously, the laboratory reporting limit for manganese is 0.1 mg/L, which is two times the secondary MCL. Lowering the reporting limits to below water quality objectives will be necessary to determine potential degradation from the LAAs.

e. Nitrate nitrogen concentrations in wells MW6, MW7, and MW8 have been relatively steady since 2010 and remain below the primary MCL. In contrast, nitrate nitrogen concentrations in MW9 indicate apparent pollution not evidenced in any other well within or downgradient of the LAAs. Concentrations in MW9 that exceed the primary MCL were sporadic prior to 2010. However, since 2010, concentrations have consistently exceeded the primary MCL. Nitrate concentrations in background well MW5 were relatively constant prior to 2010, but have significantly increased since 2010. However concentrations in other wells within or downgradient of the LAAs remained constant, with the exception of MW9.

Basin Plan, Beneficial Uses, and Regulatory Considerations

46. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins,* Fourth Edition (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting waters of the basin, and incorporates by reference plans and policies adopted by the State Water Board. Pursuant to Water Code section 13263(a), waste discharge requirements must implement the Basin Plan.

47. Local drainage is to the Colusa Basin Drain. The beneficial uses of Colusa Basin Drain as stated in the Basin Plan, are agricultural supply; water contact recreation; warm freshwater habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; and wildlife habitat.

48. The Basin Plan designates the beneficial uses of underlying groundwater as municipal and domestic supply, agricultural supply, and industrial supply.

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

50. The Basin Plan's numeric water quality objective for bacteria requires that the most probable number (MPN) of coliform organisms over any seven-day period shall be less than 2.2 per 100 mL in MUN groundwater.

51. The Basin Plan's narrative water quality objectives for chemical constituents, at a minimum, require waters designated as domestic or municipal supply to meet the MCLs specified in Title 22 of the California Code of Regulations (hereafter Title 22). The Basin Plan recognizes that the Central Valley Water Board may apply limits more stringent than MCLs to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses.

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

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

54. In the absence of specific numerical water quality limits, the Basin Plan methodology is to consider any relevant published criteria. General salt tolerance guidelines, such as *Water Quality for Agriculture* by Ayers and Westcot and similar references indicate that yield reductions in nearly all crops are not evident when irrigation water has an EC less than 700 µmhos/cm. There is, however, an eight- to ten-fold range in salt tolerance for agricultural crops and the appropriate salinity values to protect agriculture in the Central Valley are considered on a case-by-case basis. It is possible to achieve full yield potential with waters having EC up to 3,000 µmhos/cm if the proper leaching fraction is provided to maintain soil salinity within the tolerance of the crop.

Antidegradation Analysis

55. State Water Resources Control Board Resolution 68-16 ("Policy with Respect to Maintaining High Quality Waters of the State") (hereafter Resolution 68-16) prohibits degradation of groundwater unless it has been shown that:

    a. The degradation is consistent with the maximum benefit to the people of the state.

    b. The degradation will not unreasonably affect present and anticipated future beneficial uses.

    c. The degradation does not result in water quality less than that prescribed in state and regional policies, including violation of one or more water quality objectives, and

    d. The discharger employs best practicable treatment or control (BPTC) to minimize degradation.

56. 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. The Discharger aids in the economic prosperity of the community by direct employment of full time and seasonal personnel. In addition, the Discharger provides a needed service for local growers, fertilizer, and equipment manufacturers as well as provides a tax base for local and county governments. The economic prosperity of valley communities and associated industry is of maximum benefit to the people of the State, and provides sufficient justification for allowing the limited groundwater degradation that may occur pursuant to this Order.

57. The Discharger has been monitoring groundwater quality at the site since the beginning of facility operations in 1995. Based on the data available, it is not possible to determine pre-1968 groundwater quality. Therefore, determination of compliance with Resolution 68-16 for this Facility must be based on existing groundwater quality at the time that the discharge began.

58. Constituents of concern that have the potential to degrade groundwater include salts (primarily TDS and chloride), nutrients (nitrate nitrogen), and metals (iron and manganese) as summarized below:

    a. **Total Dissolved Solids.** Groundwater data indicate degradation caused by the discharge in LAA monitoring wells MW6, MW7, MW8, and MW9. TDS concentrations in these wells exceed the lowest agricultural water quality goal of 450 mg/L, but do not exceed the least stringent secondary MCL, which is the short-term level of 1,500 mg/L. Changes in effluent quality with respect to TDS are not anticipated. This Order includes an effluent limit that does not allow the salinity of the wastewater to increase significantly over the current level, and sets a

groundwater limitation that prohibits exceedance of a water quality objective. The Monitoring and Reporting Program (MRP) also establishes a numeric groundwater trigger concentration that is below the water quality objective to serve as a means of assessing whether the discharge might potentially cause a violation of the groundwater limitation at some later date. If the annual evaluation of groundwater quality performed pursuant to the MRP shows that the annual average exceeds the applicable trigger concentration in any compliance well during the calendar year, the Discharger is required to submit a technical report that either shows that the increase will not cause a violation of the Groundwater Limitation, or that proposes specific additional treatment or control to prevent exceedance of the Groundwater Limitation.

b. **Chloride.** The current monitoring program does not require analysis of chloride in wastewater, but chloride is known to be a key salinity constituent in food processing wastewater. Groundwater data indicate degradation caused by the discharge in Settling Pond well MW2 and LAA monitoring wells MW6, MW7, MW8, and MW9. However, the degradation does not exceed the least stringent secondary MCL of 250 mg/L.

   No additional modifications to the wastewater management system or expansion of the LAAs are anticipated; and effluent quality is not expected to change. This Order sets a groundwater limitation that prohibits an exceedance of the water quality objective in any compliance well, and the Board expects that compliance with the effluent limitation for FDS and other provisions of this Order will ensure that chloride concentrations in the wastewater do not increase significantly. If future monitoring data indicate further degradation, the Provisions require that the Discharger submit an *Action Workplan* to determine additional treatment or control measures for each waste constituent that exceeds a Groundwater Limitation.

c. **Iron.** Based on the character of process water supply and nature of typical food processing operations, wastewater at the site is not expected to contain significant iron concentrations. However, excessive BOD loading rates can deplete oxygen, resulting in anoxic conditions that can solubilize naturally occurring metals in soil, resulting in reducing conditions that favor dissolution of iron from native soil. In general, for the LAA monitoring wells, iron was not detected at or above the laboratory reporting limit of 0.1 mg/L in the background groundwater or groundwater downgradient of the LAAs. However, there were sporadic concentrations that exceeded the secondary MCL of 0.3 mg/L.

   No additional modifications to the wastewater management system or expansion of the LAAs are anticipated, and effluent quality is not expected to change. This Order sets a BOD loading limit for the LAAs to prevent potential anoxic conditions that could result in high iron detection levels in the groundwater. This Order sets a Groundwater Limitation that prohibits an exceedance of the water quality objective in any compliance well. The MRP also establishes a numeric groundwater trigger concentration that is below the water quality objective to serve as a means of

assessing whether the discharge might potentially cause a violation of the groundwater limitation at some later date. If the annual evaluation of groundwater quality performed pursuant to the MRP shows that the annual average exceeds the applicable trigger concentration in any compliance well during the calendar year, the Discharger is required to submit a technical report that either shows that the increase will not cause violation of the Groundwater Limitation, or that proposes specific additional treatment or control to prevent exceedance of the Groundwater Limitation.

d. **Manganese.** Based on the character of process water supply and nature of typical food processing operations, wastewater at the site is not expected to contain significant manganese concentrations. However, as with iron, excessive BOD loading rates can deplete oxygen, resulting in anoxic conditions that can solubilize naturally occurring metals in soil. It appears that BOD overloading has caused reducing conditions that favor dissolution of manganese from native soil. For the LAA monitoring wells, manganese was not detected at or above the laboratory reporting limit of 0.1 mg/L in the background groundwater. However, the secondary MCL for manganese is 0.05 mg/L, and manganese concentrations downgradient of the LAAs average 0.3 mg/L, indicating pollution caused by the discharge.

   No additional modifications to the wastewater management system or expansion of the LAAs are proposed, and effluent quality is not expected to change. However, current irrigation practices using long durations for border check irrigation of most of the LAAs has resulted in exceeding both the daily maximum and cycle maximum BOD loading limits. It is likely that the extended periods of soil saturation with high BOD wastewater has caused and/or contributed to an exceedance of the secondary MCL for manganese. To prevent potential anoxic conditions, this Order sets a protective BOD loading limit for the LAAs. This Order sets a Groundwater Limitation that prohibits an exceedance of the water quality objective in any compliance well. However, for compliance wells MW7 and MW8, where the discharge has already caused pollution, this Order sets a groundwater limit that prohibits any increases. The apparent localized pollution is expected to resolve once new and better-controlled irrigation operational practices have been implemented. If future monitoring data show that the manganese concentrations are not decreasing, the Provisions require that the Discharger submit an *Action Workplan* to evaluate and implement further treatment or control.

e. **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 any excess nitrogen to nitrogen gas before it reaches the water table. Most of the nitrogen in the process wastewater is present as TKN, which can readily mineralize and convert to nitrate with some loss via ammonia volatilization, in the LAAs. Grazing cattle add additional nitrogen. The average wastewater total nitrogen concentration is approximately 54 mg/L. Background groundwater quality is poor

with a nitrate nitrogen concentration averaging 15 mg/L in MW5. The poor quality background groundwater is likely due to the predominantly agricultural land use in the area. In contrast, nitrate nitrogen concentrations in monitoring wells within and downgradient of the LAAs generally average 3.0 to 8.0 mg/L mg/L, with the exception of MW9. As stated in a previous finding, there appears to be localized pollution caused by the discharge in this well. Except for MW9, the current level of degradation is acceptable.

As discussed above, the Discharger has historically over-applied wastewater to the LAAs and started using some of the LAAs as cattle pasture, resulting in uneven nutrient loading across the fields with some fields receiving more nitrogen than is reasonably expected to be consumed by the crop. Therefore, this Order requires that nutrients associated with the wastewater and other sources be applied to the LAAs at rates consistent with crop demand, and sets a groundwater limitation that prohibits any statistically significant increase in nitrate concentrations in any compliance well. For MW9, the apparent localized pollution is expected to resolve once new and better controlled irrigation operational practices have been implemented. If future monitoring data show that the nitrate concentrations are not decreasing, the Provisions require that the Discharger submit an *Action Workplan* to evaluate and implement further treatment or control.

59. This Order establishes effluent and groundwater limitations for the Facility that will not unreasonably threaten present and anticipated beneficial uses or result in groundwater quality that exceeds water quality objectives set forth in the Basin Plan:

    a. For TDS, current groundwater monitoring data indicate that groundwater has been degraded by the discharge, but the degradation has not caused an exceedance of a water quality objective.

    b. For chloride, current groundwater monitoring data indicate that groundwater has been degraded by the discharge, but the degradation has not caused an exceedance of a water quality objective. This Order does not allow an exceedence of the secondary MCL.

    c. For iron, current groundwater monitoring data indicate a potential for groundwater degradation. This Order requires the Discharger to implement improved source control by controlling BOD loading rates and does not allow an exceedance of the secondary MCL.

    d. For manganese, current groundwater monitoring data indicate pollution as a result of the discharge. This Order requires the Discharger to implement improved source control by controlling BOD loading rates and does not allow any further degradation.

e. For nitrate, current groundwater monitoring data indicate isolated pollution in MW9. This Order requires the Discharger to implement best management practices (BMPs) and does not allow any further degradation to occur.

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

a. Salinity source control in the processing plant.

b. Wastewater screening to reduce BOD.

c. Low salinity condensate water used in lieu of well water as make-up water in the flume system.

d. BOD loading rate control.

e. Use of higher quality water for supplemental irrigation, which dilutes salinity.

f. Approximately 695 acres of LAAs are available. Crops are grown on the LAAs and will take up the nutrients found in the wastewater if wastewater application rates are carefully controlled.

g. A tailwater return system that captures all irrigation runoff for reapplication as irrigation water.

61. The Discharger currently employs treatment and control practices that are typical of those utilized in the food processing industry, but these practices may not be sufficient to rectify impacts to groundwater. If that is the case, the Discharger will be required to evaluate practicable alternatives that could be more effective at limiting the amount of degradation caused by the discharge. In particular, the Discharger will need to carefully evaluate whether the following practices should be altered:

a. Wastewater is currently applied to the LAAs by surface irrigation using extremely long irrigation checks, and this can result in higher application rates and longer infiltration periods at the top end of the field in comparison to the bottom end of the field;

b. The Settling Pond does not have sufficient storage capacity to allow the Discharger to cease irrigation during rain or control daily flows to the LAA fields, other than varying the number of checks being irrigated at one time;

c. Pasture grasses are a low-nitrogen crop and grazing cattle recycle some of the nitrogen removed by grazing in the form of cattle waste left in the LAAs.

62. The suite of treatment or control methodologies required by this Order, including those that require the implementation of additional control practices for iron, manganese, and nitrate, is expected to remedy groundwater pollution issues at the Facility over

time. If groundwater concentrations worsen, or if concentrations of nitrate-nitrogen and manganese in the wells specified in Groundwater Limitation E.1 have not decreased to levels below the respective water quality objectives by 30 December 2018, the Discharger must take appropriate action(s) to bring the discharge into compliance with applicable provisions of the Basin Plan on a time schedule that is as short as practicable. This Order therefore imposes requirements upon the Discharger that will result in the best practicable treatment or control of the waste constituents associated with this discharge. The Board therefore finds that the limited groundwater degradation allowed by this Order is consistent with the Antidegradation Policy.

Other Regulatory Considerations

63. In compliance with Water Code section 106.3, it is the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes. This order promotes that policy by requiring discharges to meet maximum contaminant levels designed to protect human health and ensure that water is safe for domestic use.

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

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

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

65. Title 27 of the California Code of Regulations (hereafter Title 27) contains regulatory requirements for the treatment, storage, processing, and disposal of solid waste. However, Title 27 exempts certain activities from its provisions. Discharges regulated by this Order are exempt from Title 27 pursuant to provisions that exempt wastewater. Title 27, section 20090 states in part:

    > The following activities shall be exempt from the SWRCB-promulgated provisions of this subdivision, so long as the activity meets, and continues to meet, all preconditions listed:
    >
    > (...)(b) Wastewater - Discharges of wastewater to land, including but not limited to evaporation ponds, percolation ponds, or subsurface leachfields if the following conditions are met:

(1) the applicable RWQCB has issued WDRs, reclamation requirements, or waived such issuance;

(2) the discharge is in compliance with the applicable water quality control plan; and

(3) the wastewater does not need to be managed according to Chapter 11, Division 4.5, Title 22 of this code as a hazardous waste.(...)

66. The Settling Pond, Cooling Pond, and LAAs are exempt pursuant to Title 27, section 20090(b), because they are used for the discharge of wastewater to land, and:

i. The Central Valley Water Board is issuing WDRs;

ii. This Order prescribes requirements that will ensure compliance with the Basin Plan; and

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

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

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

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

68. The State Water Board adopted Order 97-03-DWQ (NPDES General Permit CAS000001) specifying waste discharge requirements for discharges of storm water associated with industrial activities, and requiring submittal of a Notice of Intent by all affected industrial dischargers. The Discharger prevents all storm water from leaving the tomato processing plant during the processing season. All storm water is collected in the storm water retention basin for evaporation and percolation. Therefore, the Discharger is not required to obtain coverage under the NPDES General Permit CAS000001.

69. Water Code section 13267(b) states:

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

The technical reports required by this Order and the attached Monitoring and Reporting Program R5-2013-0144 are necessary to ensure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges the waste subject to this Order.

70. The California Department of Water Resources sets standards for the construction and destruction of groundwater wells (hereafter DWR Well Standards), as described in *California Well Standards Bulletin 74-90* (June 1991) and *Water Well Standards: State of California Bulletin 94-81* (December 1981). These standards, and any more stringent standards adopted by the state or county pursuant to Water Code section 13801, apply to all monitoring wells used to monitor the impacts of wastewater storage or disposal governed by this Order.

71. As stated in Finding 9 of WDRs Order 95-160, Colusa County certified a Final Environmental Impact Report (EIR), in accordance with the California Environmental Quality Act (CEQA)(Pub. Resources Code, § 21000 et seq.) prior to the construction of the Facility. Because this Order does not envision or allow any significant change in the Facility or the discharge, the action to update the WDRs is exempt from CEQA in accordance with California Code of Regulations, title 14, section 15301, which exempts the "operation, repair, maintenance, [and] permitting ... of existing public or private structures, facilities, mechanical equipment, or topographical features" from environmental review.

72. Pursuant to Water Code section 13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.

Public Notice

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

74. The Discharger(s) and interested agencies and persons have been notified of the Central Valley Water Board's intent to prescribe waste discharge requirements for this

discharge, and they have been provided an opportunity to submit written comments and an opportunity for a public hearing.

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

IT IS HEREBY ORDERED that WDRs Order 95-160 is rescinded, and pursuant to Water Code sections 13263 and 13267, the Morning Star Packing Company, LP and Fred Gobel, their agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the Water Code and regulations adopted hereunder, shall comply with the following:

A. Discharge Prohibitions

1. Discharge of wastes to surface waters or surface water drainage courses, including irrigation ditches outside the control of the Discharger, is prohibited.

2. Discharge of waste classified as 'hazardous', as defined in the California Code of Regulations, title 23, section 2510 et seq., is prohibited.

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

4. Discharge of toxic substances into land application areas such that biological treatment mechanisms are disrupted is prohibited.

5. Application of residual solids (i.e., cull tomatoes, vines and tomato pomace) to the LAAs is prohibited unless and until the Executive Officer approves a *Residual Solids Management Plan* submitted pursuant to Provision H.3 of this Order.

6. Application of Settling Pond solids on areas other than the LAAs is prohibited unless and until the Executive Officer approves a *Settling Pond Solids Management Plan* submitted pursuant to Provision H.4 of this Order.

7. Discharge of domestic wastewater to the Cooling Pond, Settling Pond, LAAs, or any surface waters is prohibited.

8. Discharge of process wastewater to the domestic wastewater treatment system (septic system) is prohibited.

B. Flow Limitations

1. **Effectively immediately**, the maximum daily industrial process wastewater [1] flow to the land application areas shall not exceed the following limits:

Flow Measurement	Flow Limit [1]
Average Daily Flow [2]	4.3 million gallons per day
Total Annual Flow [3]	422 million gallons per year

[1] Industrial process wastewater flow shall include any discharges from the Settling Pond, Cooling Pond, and wastewater generated from the plant sanitation and cleaning activities.
[2] As determined by the total flow during the calendar month divided by the number of days in that month.
[3] As determined by the total flow during the calendar year.

C. Effluent and Mass Loading Limitations

1. Prior to application to the land application areas, wastewater collected from Flow Metering Station 1, which is representative of Settling Pond water and any plant sanitation and clean-up water, shall not exceed the following effluent limit:

Constituent	Units	Daily Maximum	Annual Average
Average FDS Concentration [1]	mg/L	--	900

[1] Flow-weighted annual average.

a. The flow-weighted annual average FDS concentration shall be calculated using the following formula:

$$C_a = \frac{\sum_{1}^{12}(C_{P_i} \times V_{P_i})}{\sum_{1}^{12}(V_{P_i})}$$

Where: C_a = Flow-weighted annual average FDS concentration in mg/L

i = the number of the month (e.g., January = 1, February = 2, etc.)

C_{Pi} = Monthly average process wastewater FDS concentration for calendar month i in mg/L

V_{Pi} = volume of process wastewater applied to LAAs during calendar month i in million gallons

2. Wastewater applied to each LAA field shall not exceed the following mass loading limits:

Constituent	Units	Maximum	Annual Maximum
Total Nitrogen Mass Loading [1]	lb/ac/year	--	Crop Demand
BOD Mass Loading [1]	lb/ac/day	100 [2]	--

[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.

Compliance with the above requirements shall be determined as specified below:

a. The mass of total nitrogen applied to each LAA field on an annual basis shall be calculated using the following formula and compared to published crop demand for the crop(s) actually grown within that field:

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

Where:
M = mass of nitrogen applied to each LAA field in lb/ac/yr
C_i = concentration of total nitrogen in mg/L based on the average of the three most recent wastewater monitoring results for month i
V_i = volume of wastewater applied to each LAA field during calendar month i in million gallons
A = area of the LAA field irrigated in acres
i = the number of the month (e.g., January = 1, February = 2, etc.)
M_x = nitrogen mass from other sources (e.g., Settling Pond solids, residual solids, cattle manure and fertilizer) in pounds
8.345 = unit conversion factor

b. The mass of BOD applied to each LAA field as an irrigation cycle average shall be calculated using the following formula:

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

Where:
M = mass of BOD applied to 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 per day during the irrigation cycle
A = area of the LAA field irrigated in acres
CT = cycle time (i.e., irrigation cycle length)
M_x = BOD mass from other sources (e.g., cattle manure, Settling Pond solids, and residual solids) in pounds
8.345 = unit conversion factor

D. Discharge Specifications

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

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

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

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

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

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. As a means of discerning compliance with Discharge Specification D.7, the dissolved oxygen (DO) content in the upper one foot of any wastewater pond shall not be less than 1.0 mg/L for three consecutive weekly sampling events. If the DO in any single pond is below 1.0 mg/L for three consecutive sampling events, the Discharger shall report the findings to the Regional Water Board in writing within 10 days and shall include a specific plan to resolve the low DO results within 30 days.

9. The Discharger shall operate and maintain all ponds sufficiently to protect the integrity of containment dams and berms and prevent overtopping and/or structural failure. Unless a California-registered civil engineer certifies (based on design, construction, and conditions of operation and maintenance) that less freeboard is adequate, the operating freeboard in any pond shall never be less than two feet (measured vertically from the lowest possible point of overflow). As a means of management and to discern compliance with this requirement, the Discharger shall install and maintain in each pond a permanent staff gauge with calibration marks that clearly show the water level at design capacity and enable determination of available operational freeboard.

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

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

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

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

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

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

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

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

14. Wastewater contained in the Cooling Pond shall not have a pH less than 6.0 or greater than 9.0. Wastewater contained in the Settling Pond shall not have a pH less than 4.0 or greater than 9.0.

15. Storage of residual solids, including cull tomatoes, vines, and pomace (seeds and skins) on areas not equipped with means to prevent storm water infiltration, or a paved leachate collection system is prohibited.

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 Report Program.**

Constituent	Units	Water Quality Objective	Maximum Allowable Concentration
Nitrate nitrogen	mg/L	10	Current groundwater quality or the Water Quality Objective, whichever is greater [1,2]
Nitrate nitrogen	mg/L	10	Current groundwater quality [1,2]
Manganese	mg/L	0.05	Current groundwater quality or the Water Quality Objective, whichever is greater [1,2]
Manganese	mg/L	0.05	Current groundwater quality [1,2]

[1] "Current groundwater quality" means the quality of groundwater as evidenced by monitoring completed as of the date of this Order for each of the specified compliance monitoring wells listed in the Monitoring and Reporting Program.
[2] Applies only to the specific compliance monitoring wells listed in the Monitoring and Reporting Program.

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

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

F. Land Application Area Specifications

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

2. The Discharger shall ensure that water, BOD, and nitrogen are applied and distributed uniformly across each LAA field. The Discharger shall implement changes to the irrigation system and/or operational practices as needed to ensure compliance with this requirement.

3. Tailwater runoff and spray from the wastewater shall not be discharged outside of the LAAs.

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

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

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

   a. There shall be no standing water 48 hours after irrigation ceases;

   b. Tailwater ditches shall be maintained essentially free of emergent, marginal, and floating vegetation; and

   c. Low-pressure and unpressurized pipelines and ditches accessible to mosquitoes shall not be used to store recycled water.

7. 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 domestic water supply well	100

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

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

10. Any irrigation runoff (tailwater) shall be confined to the LAAs or returned to the irrigation system and shall not enter any surface water drainage course or storm water drainage system.

11. Discharge to the LAAs shall not be performed during rainfall or when the ground is saturated.

12. At the end of each processing season and no later than **15 November** each year, any standing water remaining in the irrigation and tailwater ditches shall be removed and applied to the LAAs.

13. **Effective on 30 October 2014**, discharge of storm water runoff from the LAAs to surface water drainage courses is prohibited unless and until the Executive Officer has approved a *Storm Water Runoff Evaluation and Management Plan* submitted pursuant to Provision H.1.c, the Discharger implements the approved plan, and the Discharger complies with Land Application Area Specifications F.11 and F.12 above.

14. The number of cattle allowed to graze on the LAAs shall not exceed 160 head per year and grazing shall be limited to Fields MS5, MS15, MS16, MS17, MS18, and MS24 unless and until the Executive Officer approves a *Livestock Management Plan* submitted pursuant to Provision H.2 of this Order and the Discharger implements the approved plan.

G. Residual Solids Disposal Specifications

Sludge, as used in this document, means the solid, semisolid, and liquid organic matter removed from wastewater treatment, settling, and storage vessels or ponds. Solid waste refers to solid inorganic matter removed by screens and soil sediments from washing of unprocessed fruit or vegetables. Except for waste solids originating from meat processing, residual solids means organic food processing byproducts such as culls, pulp, stems, leaves, and seeds that will not be subject to treatment prior to disposal or land application. Cull tomatoes, vines, and tomato pomace (including seeds and skins) are the residual solids generated from the Discharger's Facility.

1. At the end of each processing season and no later than **15 November** each year, the Settling Pond shall be drained and accumulated sludge and sediments shall be removed. The waste may be applied to the LAAs as a soil amendment or disposed of off-site.

2. Except as specified in Residual Solids Disposal Specifications G.1 above, sludge, solid waste, or residual solids shall be removed from screens, sumps, and ponds as needed to ensure optimal operation and adequate storage capacity.

3. Any handling and storage of residual solids at the Facility shall be temporary (i.e), no longer than 3 months), 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.

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

5. Prior to any use of residual solids as a soil amendment on the LAAs or use of Settling Pond solids on areas other than the LAAs, the Discharger shall obtain the Executive Officer's written approval of the *Residual Solids Management Plan* Provisions H.3 and *Settling Pond Solids Management Plan* Provision H.4, respectively. Any proposed change in solids management or disposal practices shall be reported in writing to the Executive Officer at least 90 days in advance of the proposed change.

H. Provisions

1. The following reports shall be submitted pursuant to Water Code section 13267 and shall be prepared as described in Provision H.8:

   a. By **1 March 2014**, the Discharger shall submit a *BOD and Nitrogen Application and Irrigation Management Report* that describes and evaluates the efficiency of the existing irrigation operations and proposes structural and/or operational changes as needed to ensure compliance with the Mass Loading Limitations, Groundwater Limitations, and other requirements prescribed by this Order. The report shall evaluate the appropriateness of the current irrigation system, alternatives that would provide more even distribution of water and waste constituents, crops grown, and application rates. The report shall address mass loading rates (BOD and total nitrogen) from wastewater and all other sources including residual solids from the processing facility, Settling Pond solids, cattle manure, and commercial fertilizers; and include BOD and nitrogen removal calculations. If reduced loading rates are necessary to ensure compliance with this Order, the report shall propose treatment and/or an increase of the LAA acreage, describe operational and/or physical improvements that will be implemented to ensure compliance with this Order, and provide a schedule for completion of those improvements that does not extend beyond **30 May 2015**.

   b. By **1 July 2014**, the Discharger shall submit a *Groundwater Limitations Compliance Assessment Plan*. The plan shall describe and justify the statistical methods proposed for use to evaluate compliance with Groundwater Limitation E.1, E.2, and E.3 of this Order for the specified compliance wells and constituents. Compliance shall be determined using appropriate statistical methods that have been selected based on site-specific information and the U.S. EPA Unified Guidance document cited in Finding 68 of this Order. The

report shall explain and justify the selection of the appropriate statistical methods.

c. By **31 July 2014**, the Discharger shall submit a *Storm Water Runoff Evaluation and Management Plan* that describes the proposed operational procedures for closing the LAAs at the end of the processing season and demonstrating through monitoring that no significant waste constituents are present in the storm water runoff to be released. Effective upon adoption of this Order and continuing through **30 June 2014**, the Discharger shall monitor storm water runoff contained in the LAA tailwater ditches and water collected from a nearby storm water drainage ditch not influenced by the Discharger's irrigation system. Samples from each location shall be obtained twice monthly during or following a precipitation event that generates runoff. The samples shall be analyzed for BOD, TDS, FDS, chloride, sodium, TKN, and nitrate nitrogen. The plan shall include a map showing the locations of the processing facility, LAAs, sample locations and all irrigation, tailwater, and drainage ditches. The plan shall include the monitoring results and propose specific procedures that will be used at the end of each processing season to clean out the irrigation and tailwater ditches and determine when and if storm water runoff from the LAAs will be released to off-site drainage courses.

d. By **30 May 2015**, the Discharger shall submit an *Irrigation Management Implementation Report*. The report shall describe operational improvements that have been implemented and/or physical improvements that have been completed pursuant to the approved *BOD and Nitrogen Application and Irrigation Management Report* to ensure even distribution of water and waste constituents to the LAAs and compliance with the Mass Loading Limitations of the Order.

2. If the Discharger requests an increase in the number of cattle and/or use of any LAA other than MS5, MS15, MS16, MS17, MS18, and MS24 as additional pasture land for grazing, the Discharger shall submit a *Livestock Management Plan* **at least 150 days prior to the proposed change** for approval by the Executive Officer. The report shall evaluate historical irrigation practices and nitrogen loading rates (maximum daily and cycle averages) for each LAA from 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.

3. If the Discharger requests to apply residual solid waste (including cull tomatoes, vines, and tomato pomace generated at the tomato processing facility) to the LAAs, the Discharger shall submit a *Residual Solids Management Plan* to the Board's Executive Officer **at least 90 days prior to the planned application of residual solid waste to the LAAs**. The Plan shall describe the specific loading rates, temporary storage, management and application practices, application area(s), and operational procedures that will be used to ensure that the land application of waste solids does not cause nutrient overloading, nuisance odors, or promote vector breeding. Consistent with Prohibition A.5 and Residual Solids Disposal Specifications G.5, the application of residual solids to LAAs is prohibited unless and until the Executive Officer provides written approval of this *Residual Solids Management Plan*.

4. If the Discharger requests to apply Settling Pond solids to areas other than the LAAs, the Discharger shall submit a *Settling Pond Solids Management Plan* to the Board's Executive Officer **at least 90 days prior to the planned application of Settling Pond solids to areas other than the LAAs**. The plan shall characterize the solid wastes for BOD, salinity constituents, and nitrates; describe the specific method of application, spreading, and incorporation; propose loading rates for BOD and total nitrogen applied; provide a map showing the locations where the solids are to be applied; and describe application, operational, and management practices that will be used to ensure no release of waste constituents into surface water drainage courses. Consistent with Prohibition A.6 and Residual Solids Disposal Specifications G.5, the application of Settling Pond solids to areas other than the LAAs is prohibited unless and until the Executive Officer provides written approval of this *Settling Pond Solids Management Plan*.

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

action, as appropriate, to ensure that discharges from the Facility comply with the Basin Plan on a time schedule that is as short as practicable.

6. If concentrations of nitrate-nitrogen and manganese in the wells specified in Groundwater Limitation E.1 have not decreased to levels below the respective water quality objectives by **30 December 2018**, the *Action Workplan* described in Provision 5 shall be submitted by **30 June 2019**.

7. 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**.

8. In accordance with California Business and Professions Code sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. All technical reports specified herein that contain workplans for investigations and studies, that describe the conduct of investigations and studies, or that contain technical conclusions and recommendations concerning engineering and geology shall be prepared by or under the direction of appropriately qualified professional(s), even if not explicitly stated. Each technical report submitted by the Discharger shall bear the professional's signature and stamp.

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

10. The Discharger shall comply with Monitoring and Reporting Program R5-2013-0144, which is part of this Order, and any revisions thereto as ordered by the Executive Officer. The submittal dates of Discharger self-monitoring reports shall be no later than the submittal date specified in the MRP.

11. The Discharger shall comply with the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements", dated 1 March 1991, which are attached hereto and made part of this Order by reference. This attachment and its individual paragraphs are commonly referenced as "Standard Provision(s)."

12. The Discharger shall comply with all conditions of this Order, including timely submittal of technical and monitoring reports. On or before each report due date,

the Discharger shall submit the specified document to the Central Valley Water Board or, if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is being reported, then the Discharger shall state the reasons for such noncompliance and provide an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Central Valley Water Board in writing when it returns to compliance with the time schedule. Violations may result in enforcement action, including Central Valley Water Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of this Order.

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

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

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

16. The Discharger shall report to the Central Valley Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to Know Act of 1986."

17. At least **90 days** prior to termination or expiration of any lease, contract, or agreement involving disposal or recycling areas or off-site reuse of effluent, used to justify the capacity authorized herein and assure compliance with this Order, the Discharger shall notify the Central Valley Water Board in writing of the situation and of what measures have been taken or are being taken to assure full compliance with this Order.

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

19. To assume operation as Discharger under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the

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

20. A copy of this Order including the Monitoring and Reporting Program, Information Sheet, Attachments, and Standard Provisions, shall be kept at the discharge facility for reference by operating personnel. Key operating personnel shall be familiar with its contents.

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

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

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

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

or will be provided upon request.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify that the foregoing is a full true, and correct copy of an Order adopted by the California Regional Water Quality Control Board on 5 December 2013.

Original signed by

PAMELA C. CREEDON, Executive Officer

LLA: 111513

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2013-0144

FOR
MORNING STAR PACKING COMPANY, LP. AND FRED GOBEL
MORNING STAR TOMATO PACKING PLANT
COLUSA COUNTY

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

Central Valley Water Board staff shall approve specific sampling locations prior to any sampling activities. All samples shall be representative of the volume and nature of the discharge. The time, date, and location of each grab sample shall be recorded on the sample chain of custody form.

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

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

Analytical procedures shall comply with the methods and holding times specified in the following: *Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater* (EPA); *Test Methods for Evaluating Solid Waste* (EPA); *Methods for Chemical Analysis of Water and Wastes* (EPA); *Methods for Determination of Inorganic Substances in Environmental Samples* (EPA); *Standard Methods for the Examination of Water and Wastewater* (APHA/AWWA/WEF); and *Soil, Plant and Water Reference Methods for the Western Region* (WREP 125). Approved editions shall be those that are approved for use by the United States Environmental Protection Agency or the California Department of Public Health's Environmental Laboratory Accreditation Program. The Discharger may propose alternative methods for approval by the Executive Officer. Where technically feasible, laboratory reporting limits shall be lower than the applicable water quality objectives for the constituents to be analyzed.

POND MONITORING

The Settling Pond and Cooling Pond shall each be monitored during periods when process wastewater is generated and/or stored in the pond. If a pond is dry and/or no wastewater was generated, the monitoring report shall so note.

Constituent	Units	Type of Sample	Sample Frequency	Reporting Frequency
Dissolved oxygen [1]	mg/L	Grab	Weekly/Monthly [2]	Monthly
pH	pH units	Grab	Weekly/Monthly [2]	Monthly
Freeboard	0.1 feet	Measurement	Weekly/Monthly [2]	Monthly
Odors	--	Observation	Weekly/Monthly [2]	Monthly
Berm/levee condition	--	Observation	Monthly	Monthly

[1] Samples shall be collected at a depth of one foot from each pond in use, opposite the inlet.
[2] Sample frequency shall be weekly during the processing season and monthly during the non-processing season.

FLOW MONITORING

The Discharger shall monitor wastewater and supplemental irrigation water flows discharged to each land application area field as depicted on Attachment B as follows:

Flow Source	Units	Type of Measurement	Monitoring Frequency	Reporting Frequency
Station 1 - Settling Pond, (includes plant sanitation and clean-up)	gallons	Meter	Daily [1]	Monthly, Annually
Station 2 - Cooling Pond	gallons	Meter	Daily [1]	Monthly, Annually
Supplemental irrigation (GCID)	gallons	Calculation	Daily [1,2]	Monthly, Annually
Station 3 - Total discharge to LAAs	gallons and inches	Meter	Daily [3]	Monthly, Annually

[1] Report as total daily flow from the flow source to each LAA Field.
[2] Supplemental irrigation flow amounts shall be calculated based on total discharge minus Cooling Pond discharge minus Settling Pond discharge.
[3] Includes all Settling Pond, plant sanitation/clean-up, Cooling Pond, and supplemental irrigation water discharged to the LAAs.

WASTEWATER MONITORING

Wastewater samples shall be collected from the flow metering Station 1 as shown on Attachment B and shall be representative of wastewater from the Settling Pond (including plant sanitation and clean-up water) prior to discharge to the land application areas. Sampling is not required during periods when no wastewater is discharged to the land application areas. At a minimum, wastewater monitoring shall include the following:

Constituents	Units	Type of Sample	Sample Frequency	Reporting Frequency
BOD_5 [1]	mg/L	Grab	Weekly	Monthly
FDS	mg/L	Grab	Weekly	Monthly
Total nitrogen	mg/L	Grab	Weekly	Monthly

BOD denotes Biochemical oxygen demand. FDS denotes Fixed dissolved solids.
[1] 5-day, 20 degrees Celsius biochemical oxygen demand.

LAND APPLICATION AREA MONITORING

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

The Discharger shall perform the following routine monitoring and loading calculations for each LAA field during all months when land application occurs, and shall present the data in the Monthly and Annual Monitoring Reports. If irrigation does not occur during a reporting period, the monitoring report shall so indicate.

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Precipitation	0.1 in	Rain gauge [1]	Daily	Monthly
Hydraulic loading rate (from each source)	in	Calculated [2]	Daily	Monthly, Annually
BOD_5 loading rate as an irrigation cycle average (including Settling Pond solids, residual solids, manure and commercial fertilizers)	lb/ac/day	Calculated [3,4]	Daily	Monthly
Total nitrogen loading rate (including Settling Pond solids, residual solids, manure and commercial fertilizers)	lb/ac	Calculated [3,5]	Monthly	Monthly, Annually

[1] Data obtained from the nearest National Weather Service, California Irrigation Management Information System (CIMIS), or on-site 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. 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.
[5] Total nitrogen loading rates shall be calculated using the applied volume of wastewater (representative of Settling Pond and plant sanitation/clean-up water), 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.

At least **once per week** when wastewater is being applied to the land application areas, the application areas in use shall be inspected to identify any equipment malfunction or other circumstance that might allow wastewater or irrigation runoff to leave each LAA and/or create conditions that violate the Waste Discharge Requirements. A log of these inspections shall be kept at the facility and summarized for submittal with the monthly monitoring reports.

APPLICABILITY OF GROUNDWATER LIMITATIONS

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

MW1 [1]	MW2 [2]	MW3 [2]	MW4 [1]	MW5 [1]	MW6 [2]	MW7 [2]	MW8 [2]	MW9 [2]

[1] Background well not used for compliance monitoring.
[2] Compliance well.

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

Constituent	Groundwater Limitation	Compliance Wells to which Limitation Applies
Nitrate nitrogen	10 mg/L [1]	MW2, MW-6, MW7, MW8
Nitrate nitrogen	Current Groundwater Quality [1,2]	MW3, MW9
Manganese	0.05 mg/L [1]	MW2, MW3, MW6, MW9
Manganese	Current Groundwater Quality [1,2]	MW7, MW8
All Others	Concentrations that exceed either the Primary or Secondary MCL.	MW2, MW3, MW6, MW7, MW8, MW9
All Others	Contain taste or odor-producing constituents, toxic substances, or any other constituents in concentrations that cause nuisance or adversely affect beneficial uses.	MW2, MW3, MW6, MW7, MW8, MW9

[1] Compliance with this requirement shall be determined on an intrawell basis for each of the specified wells using approved statistical methods.
[2] "Current groundwater quality" means the quality of groundwater in the well as evidenced by monitoring completed as of the date of WDRs.

GROUNDWATER MONITORING

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.

Low or no-purge sampling methods are acceptable, if described in an approved Sampling and Analysis Plan. Groundwater monitoring for all monitoring wells shall include, at a minimum, the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Depth to groundwater	0.01 feet	Measurement	Semi-annual [3]	Semi-annual [3]
Groundwater elevation [1]	feet	Calculated	Semi-annual [3]	Semi-annual [3]
Gradient magnitude	feet/feet	Calculated	Semi-annual [3]	Semi-annual [3]
Gradient direction	degrees	Calculated	Semi-annual [3]	Semi-annual [3]
pH	pH units	Grab	Semi-annual [3]	Semi-annual [3]
TDS	mg/L	Grab	Semi-annual [3]	Semi-annual [3]
TKN	mg/L	Grab	Semi-annual [3]	Semi-annual [3]
Nitrate nitrogen	mg/L	Grab	Semi-annual [3]	Semi-annual [3]
Iron [2]	mg/L	Grab	Semi-annual [3]	Semi-annual [3]
Manganese [2]	mg/L	Grab	Semi-annual [3]	Semi-annual [3]

TDS denotes Total dissolved solids. TKN denotes Total Kjeldahl nitrogen.

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

[2] Samples for metals shall be filtered with a 0.45-micron filter prior to sample preservation. Analytical methods shall be selected to provide reporting limits below the Water Quality Limit for each constituent.

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

Groundwater Trigger Concentrations

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

Constituent	Compliance Wells	Trigger Concentration, mg/L
TDS	MW2, MW3	700
TDS	MW6, MW7, MW8, MW9	1,200
Iron	MW2, MW3, MW6, MW7, MW8, MW9	0.2

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

a. A technical evaluation of the reason[s] for the concentration increase[s] and a technical demonstration on a constituent-by-constituent 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.

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

RESIDUAL SOLIDS MONITORING

The Discharger shall monitor the residual solids generated and disposed of on a monthly basis. The following shall be monitored and reported:

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

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, sample type (e.g., effluent, pond, etc.), and reported analytical result for each sample

are readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with waste discharge requirements and spatial or temporal trends, as applicable. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall be reported to the Central Valley Water Board.

As required by the California Business and Professions Code sections 6735, 7835, and 7835.1, all Groundwater Monitoring Reports shall be prepared under the direct supervision of a Registered Professional Engineer or Geologist and signed by the registered professional.

A. Monthly Monitoring Reports

Daily, weekly, and monthly monitoring data shall be reported in the monthly monitoring reports. Monthly reports shall be submitted to the Central Valley Water Board on the **1st day of the second month following sampling** (i.e. the January Report is due by 1 March). At a minimum, the reports shall include:

1. Tabulated pond monitoring data.

2. Tabulated daily flow measurements from each wastewater source and supplemental irrigation water to each check in each LAA field.

3. The cumulative annual wastewater (Station 1 and Station 2) flow discharged to the LAAs to date, the average daily flow for the month, and comparison to the average daily flow limit.

4. Tabulated wastewater monitoring data and calculation of the running average for each group of three consecutive sample results for BOD and total nitrogen.

5. A current site plan depicting the irrigation checks within each LAA field that will be used during the calendar year, including all water conveyance ditches and internal berms that divide each LAA (where applicable).

6. Tabulated update cropping information for each LAA field that includes at least:

   a. The crop that will be grown in each field;

   b. Planned and actual planting dates;

   c. Planned and actual harvest dates;

   d. Planned and actual cattle grazing schedule, location of cattle grazing, including the number of head on each field.

   e. Typical maximum expected and actual yield at harvest in applicable crop units per acre;

f. Crop total nitrogen demand; and

g. Crop average evapotranspiration rate in inches.

7. Tabulated land application area monitoring data for each LAA field, including; calculation of the hydraulic loading, irrigation cycle average BOD loading, and total nitrogen loading to date from all sources. The average of the three most recent monitoring results shall be used to determine irrigation cycle average BOD and total nitrogen loading. Loading rates for Settling Pond solids, residuals solids, cattle manure and commercial fertilizers shall be calculated separately using actual load analytical results and application areas.

8. A summary of the daily pre-application inspection reports for the month.

9. Calculation of the flow-weighted average FDS concentration to date (representative of the Settling Pond and plant sanitation/clean-up water) as monitored at Station 1.

10. Residual solids monitoring data and monthly mass of residual solids generated and applied to each LAA field and/or disposed of off-site.

11. A comparison of monitoring data to the flow limitations, effluent limitations; mass loading limitations (for each LAA field), and discharge specifications, and an explanation of any violation of those requirements.

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

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

B. Semi-Annual Monitoring Reports

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

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

2. A narrative description of all preparatory, monitoring, sampling, and analytical testing activities for the groundwater monitoring. The narrative shall be sufficiently detailed to verify compliance with the WDR, this MRP, and the Standard Provisions and Reporting Requirements. The narrative shall be supported by field logs for each well documenting depth to groundwater; parameters measured before, during, and after purging; method of purging; calculation of casing volume; and total volume of water purged;

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

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

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

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

C. Annual Monitoring Report

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

1. A description of the following work conducted after the end of the processing season:

   a. Irrigation/tailwater ditch draining procedures prior to the release of storm water runoff from the LAAs;

   b. Depth of total precipitation between dates of last discharge and first off-site release of storm water runoff from the LAAs; and

   c. Draining and cleaning of the Settling Pond, including the disposal method and location of off-site and/or on-site disposal.

2. Total annual flow measurements from each wastewater source and supplemental irrigation water to the LAAs for the calendar year and comparison to the annual maximum flow limit.

3. Flow-weighted annual average FDS concentration from the Settling Pond (including plant sanitation/clean-up water) for the calendar year with supporting data and calculations and comparison to the effluent limit.

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

5. A nitrogen mass balance (from all sources) for the calendar year with supporting data and calculations. Include description of the types of crops planted and dates of planting and harvest for each crop. For each LAA field used for pasture, include description of the number of grazing cattle, start and finish dates of grazing operations, agricultural practices of the pasture land including types of crops planted, and total

nitrogen applied and comparison to the loading limits of the WDRs. If the mass balance indicates that nitrogen has been applied in excess of the agronomic rate, include a discussion of any corrective action performed during the year and a detailed plan and schedule for additional corrective actions that will be implemented to ensure future compliance with the land application area specifications of the WDRs.

6. Concentration vs. time graphs for each monitored constituent using all historic groundwater monitoring data. Each graph shall show the background groundwater concentration range, the trigger concentration specified above (where applicable), and the Groundwater Limitation as horizontal lines at the applicable concentration.
7. An evaluation of the groundwater quality beneath the site and determination of whether any trigger concentrations were exceeded in any compliance well at any time during the calendar year. This shall be determined by comparing the annual average concentration for each well during the calendar year to the corresponding trigger concentration specified above. If any groundwater trigger concentrations were exceeded, include acknowledgment that the technical report described in the Groundwater Trigger Concentrations section of this MRP will be submitted in accordance with the specified schedule.
8. An evaluation of the groundwater quality beneath the site and determination of Compliance with Groundwater Limitation E.1 of the WDRs based on statistical analysis for each constituent monitored for each compliance well in accordance with the approved *Groundwater Limitations Compliance Assessment Plan*. Include all calculations and data input/analysis tables derived from use of statistical software as applicable.
9. A discussion of compliance and the corrective actions taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the waste discharge requirements.
10. 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.
11. A discussion of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program.

A letter transmitting the self-monitoring reports shall accompany each report. The letter shall include a discussion of requirement violations found during the reporting period, and actions

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

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

Ordered by: Original signed by
PAMELA C. CREEDON, Executive Officer
5 December 2013
(Date)

LLA:111513

INFORMATION SHEET

ORDER R5-2013-0144
MORNING STAR PACKING COMPANY, L.P. AND MR. FRED GOBEL
THE MORNING STAR TOMATO PACKING PLANT
COLUSA COUNTY

Background

The Morning Star Tomato Packing Plant, which began operating in 1995, is a tomato processing facility located just south of the City of Williams. The facility operates from approximately June to mid-October. Wastewater is generated from processing tomatoes into aseptic tomato paste and bulk packaging. Wastewater is discharged into an unlined Settling Pond for later disposal to approximately 695 acres of land application areas (LAAs) through surface irrigation (border check method). Approximately 95 acres of the LAAs (Field MS1) is owned by Fred Gobel and leased to Morning Star Packing Company, L.P. Water softener reject, condensate from the evaporation process, and boiler blowdown is discharged into an unlined Cooling Pond for later reuse in the tomato processing operations or irrigation of the LAAs. The LAAs are divided into pasture lands for cattle grazing or cropped with sudan grass hay, alfalfa, and/or corn. Solids that have settled at the bottom of the Settling Pond are removed at the end of the processing season and applied to the LAAs as a soil amendment or used to build up farm roads around the facility. Residual solid wastes generated at the processing facility are transported off-site for use as animal feed or as a soil amendment. Fred Gobel and Morning Star Packing Company, L.P. ("Dischargers") are responsible for compliance with the WDRs.

The facility is regulated by WDRs Order 95-160 which prescribes a maximum discharge from the Settling Pond not to exceed 4.3 mgd and a maximum discharge to the Cooling Pond not to exceed 58 mgd.

Cease and Desist Order (CDO) R5-2005-0003 was adopted due to discharges of wastewater to surface water, non-compliance with the dissolved oxygen requirement, evidence of groundwater degradation, and over-application of nitrogen and salts to the LAAs. The CDO required compliance with new requirements including:

- No discharge of wastewater and tailwater or storm water containing waste to surface water drainage courses;
- Irrigation application at agronomic rates for the crop grown;
- Nitrogen application, regardless of source, at agronomic rates for the crops grown;
- BOD loading rates; and
- Maintaining the irrigation and drainage ditches free of weeds and aquatic plants;

In addition, the CDO required a number of technical reports to demonstrate completion of improvements which the Discharger has submitted. With the exception of nitrogen and BOD overloading, the Discharger has complied with the CDO.

Site-Specific Conditions

The facility is supplied with water from two wells, Plant Well 1 and 2, located on the property. The facility and the LAAs are relatively flat with a mild downward slope toward the north-east. Drainage within the area is towards the Glenn-Colusa Irrigation District Canal drainage ditch, which is tributary to the Colusa Basin Drain. Surrounding land uses are primary agricultural.

Groundwater Considerations

Groundwater within the area is relatively shallow, approximately 5 to 15 feet below ground surface, and generally flows towards the north to north-east. Groundwater gradient and background groundwater quality are likely influenced by infiltration of high quality water from the Glen Colusa Irrigation District Canal (GCID), located adjacent to the southern site boundary. Percolation from this canal most likely produces localized improvements in groundwater quality. The unlined Cooling Pond recharges the shallow groundwater immediately upgradient of the LAAs with relatively low salinity water year-round.

Nine groundwater monitoring wells monitor the shallow groundwater at the site. Groundwater monitoring near the Settling Pond was established just prior to operation of the facility in 1995 and include wells MW1, MW2, MW3 (installed in 1995) and MW4 (installed in 2004). Monitoring wells near the LAAs were installed in 2004 several years after the discharge began (wells MW5, MW6, MW7, MW8, and MW9).

Groundwater quality in MW1 and MW4 exhibit high spatial variability, possibly due to influences from the nearby GCID canal. In general, groundwater quality in wells MW1 through MW4 has been relatively constant over time for salinity constituents and nitrate nitrogen since just before the discharge began, with a few exceptions.

- Chloride concentrations in MW2 have increased in the last two years, indicating groundwater degradation caused by the discharge. However, concentrations do not exceed the lowest agricultural water quality goal for chloride.
- Use of the Settling Pond has apparently not caused degradation from iron and manganese. However, the laboratory reporting limit for manganese is 0.1 mg/L, which is two times the water quality limit of 0.05 mg/L.
- Nitrate nitrogen concentrations in MW3 have historically exceeded the primary MCL since before discharge operations began. This apparent pollution appears to be highly localized.

In general, groundwater quality near the LAAs, indicates salinity constituents and nitrate nitrogen concentrations increase as groundwater moves northward away from the GCID canal. Concentrations within each well have been relatively constant over time with a few exceptions.

- TDS, chloride, and nitrate nitrogen concentrations in background well MW5 have increased in the last two years. Nitrate concentrations have exceeded the primary MCL since 2010. Temporally variable background concentrations are believed to be due to natural variations and/or other upgradient land uses that are not controlled by the Discharger.
- TDS concentrations in wells MW8 and MW9 indicate degradation caused by the discharge. Increased concentrations were observed in wells MW8 and MW9 between 2010 and 2012. Annual average TDS concentrations exceed the lowest agricultural water quality goal of 450 mg/L; however they do not exceed the upper secondary MCL of 1,000 mg/L.
- Chloride concentrations in wells MW8 and MW9 indicate degradation caused by the discharge. Between 2010 and 2012, higher than normal chloride concentrations were observed in these wells. Similar chloride increases were observed in background well MW5 during the same period.
- Iron and manganese concentrations exceeding the secondary MCL were sporadic in most of the compliance monitoring wells. In the case of manganese, concentrations in wells MW7 and MW8 exceeded the secondary MCL multiple times in 2012. Multiple exceedances were observed in MW8 since its installation in 2004. The laboratory reporting limit for manganese is 0.1 mg/L, which is two times the water quality limit.
- Nitrate nitrogen concentrations in wells MW6, MW7, and MW8 have been relatively steady since 2010 and remain below the primary MCL. In contrast, nitrate nitrogen concentrations in MW9 indicate apparent pollution not evidenced in any other well within or downgradient of the LAAs. Concentration levels in MW9 that exceed the primary MCL were sporadic prior to 2010. However, since 2010, concentrations have consistently exceeded the primary MCL.

Basin Plan, Beneficial Uses, and Regulatory Considerations

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

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

Antidegradation Analysis

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

- The degradation is consistent with the maximum benefit to the people of the state.

- The degradation will not unreasonably affect present and anticipated future beneficial uses.
- The degradation does not result in water quality less than that prescribed in state and regional policies, including violation of one or more water quality objectives, and
- The discharger employs best practicable treatment or control (BPTC) to minimize degradation.

The Discharger has been monitoring groundwater quality near the Settling Pond since just prior to operation of the facility in 1995, but monitoring of groundwater at the LAAs did not begin until 2004, nine years later. Determination of compliance with Resolution 68-16 for this facility must be based on existing groundwater quality at the time that the discharge began.

Degradation of groundwater by some of the typical waste constituents associated with discharge from food processing facilities, after effective source control, treatment, and control measures are implemented, is consistent with the maximum benefit to the people of the state. The economic prosperity of the community by direct employment of fulltime and seasonal personnel and associated industry is of maximum benefit to the people of the State, and provides sufficient justification for allowing limited groundwater degradation that may occur pursuant to this Order.

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

- Salinity source control in the processing plant.
- Wastewater screening to reduce BOD.
- Low salinity condensate water used in lieu of well water as make-up water in the flume system.
- BOD loading rate control.
- Use of higher quality water for supplemental irrigation, which dilutes salinity.
- Approximately 695 acres of LAAs are available.
- Tailwater return system captures all irrigation runoff for reapplication as irrigation water.

The Discharger currently employs treatment and control practices that are typical of those utilized in the food processing industry, but these practices may not be sufficient to rectify impacts to groundwater. If that is the case, the Discharger will be required to evaluate practicable alternatives that could be more effective at limiting the amount of degradation caused by the discharge. In particular, the Discharger will need to carefully evaluate whether the following practices should be altered:

- Wastewater is currently applied to the LAAs by surface irrigation using extremely long irrigation checks, and this can result in higher application rates and longer infiltration periods at the top end of the field in comparison to the bottom end of the field;

- The Settling Pond does not have sufficient storage capacity to allow the Discharger to cease irrigation during rain or control daily flows to the LAA fields, other than varying the number of checks being irrigated at one time;
- Pasture grasses are a low-nitrogen crop and grazing cattle recycle some of the nitrogen removed by grazing in the form of cattle waste left in the LAAs.

The suite of treatment or control methodologies required by this Order, including those that require the implementation of additional control practices for iron, manganese, and nitrate, is expected to remedy groundwater pollution issues at the Facility over time. If groundwater concentrations worsen, or if concentrations of nitrate-nitrogen and manganese in the wells specified in Groundwater Limitation E.1 have not decreased to levels below the respective water quality objectives by 30 December 2018, the Discharger must take appropriate action(s) to bring the discharge into compliance with applicable provisions of the Basin Plan on a time schedule that is as short as practicable. This Order therefore imposes requirements upon the Discharger that will result in the best practicable treatment or control of the waste constituents associated with this discharge. The Board therefore finds that the limited groundwater degradation allowed by this Order is consistent with the Antidegradation Policy.

To assure protection of the beneficial uses of groundwater, this Order establishes flow limitations, effluent and mass loading limitations, groundwater limitations, discharge specifications, land application area requirements, solids disposal specifications, and groundwater monitoring requirements.

Flow Limitations

Effectively immediately, the maximum daily industrial process wastewater [1] flow to the land application areas shall not exceed the following limits:

Flow Measurement	Flow Limit [1]
Average Daily Flow [2]	4.3 million gallons per day
Total Annual Flow [3]	422 million gallon per year

[1] Industrial process wastewater flow shall include any discharges from the Settling Pond, Cooling Pond, and wastewater generated from the plant sanitation and cleaning activities.
[2] As determined by the total flow during the calendar month divided by the number of days in that month.
[3] As determined by the total flow during the calendar year.

Effluent and Mass Loading Limitations

Prior to application to the land application areas, wastewater collected from Flow Metering Station 1, which is representative of Settling Pond water and any plant sanitation and clean-up water, shall not exceed the following effluent limit:

Constituent	Units	Daily Maximum	Annual Average
Average FDS Concentration [1]	mg/L	--	900

[1] Flow-weighted annual average.

Wastewater applied to each LAA field shall not exceed the following mass loading limits:

Constituent	Units	Daily Maximum	Annual Maximum
Total Nitrogen Mass Loading [1]	lb/ac/year	--	Crop Demand
BOD Mass Loading [1]	lb/ac/day	100 [2]	--

[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.

Provisions

By **1 March 2014**, the Discharger shall submit a *BOD and Nitrogen Application and Irrigation Management Report.*

By **1 July 2014**, the Discharge shall submit a *Groundwater Limitations Compliance Assessment Plan.*

By **31 July 2014**, the Discharger shall submit a *Storm Water Runoff Evaluation and Management Plan.*

By **30 May 2015**, the Discharger shall submit an *Irrigation Management Implementation Report.*

If the Discharger requests an increase in the number of cattle and/or use of any other LAA as additional pasture land for grazing, a *Livestock Management Plan* shall be submitted at least **150 days prior to and proposed change** for approval by the Executive Officer.

If the Discharger requests to apply residual solid waste (including cull tomatoes, vines, and tomato pomace generated at the tomato processing facility) to the LAAs, the Discharger shall submit a *Residual Solids Management Plan* to the Board's Executive Officer **at least 90 days prior to the planned application of residual solid waste to the LAAs.**

If the Discharger requests to apply Settling Pond solids to areas other than the LAAs, the Discharger shall submit a Settling Pond Solids Management Plan to the Board's Executive Officer **at least 90 days prior to the planned application of Settling Pond solids to areas other than the LAAs.**

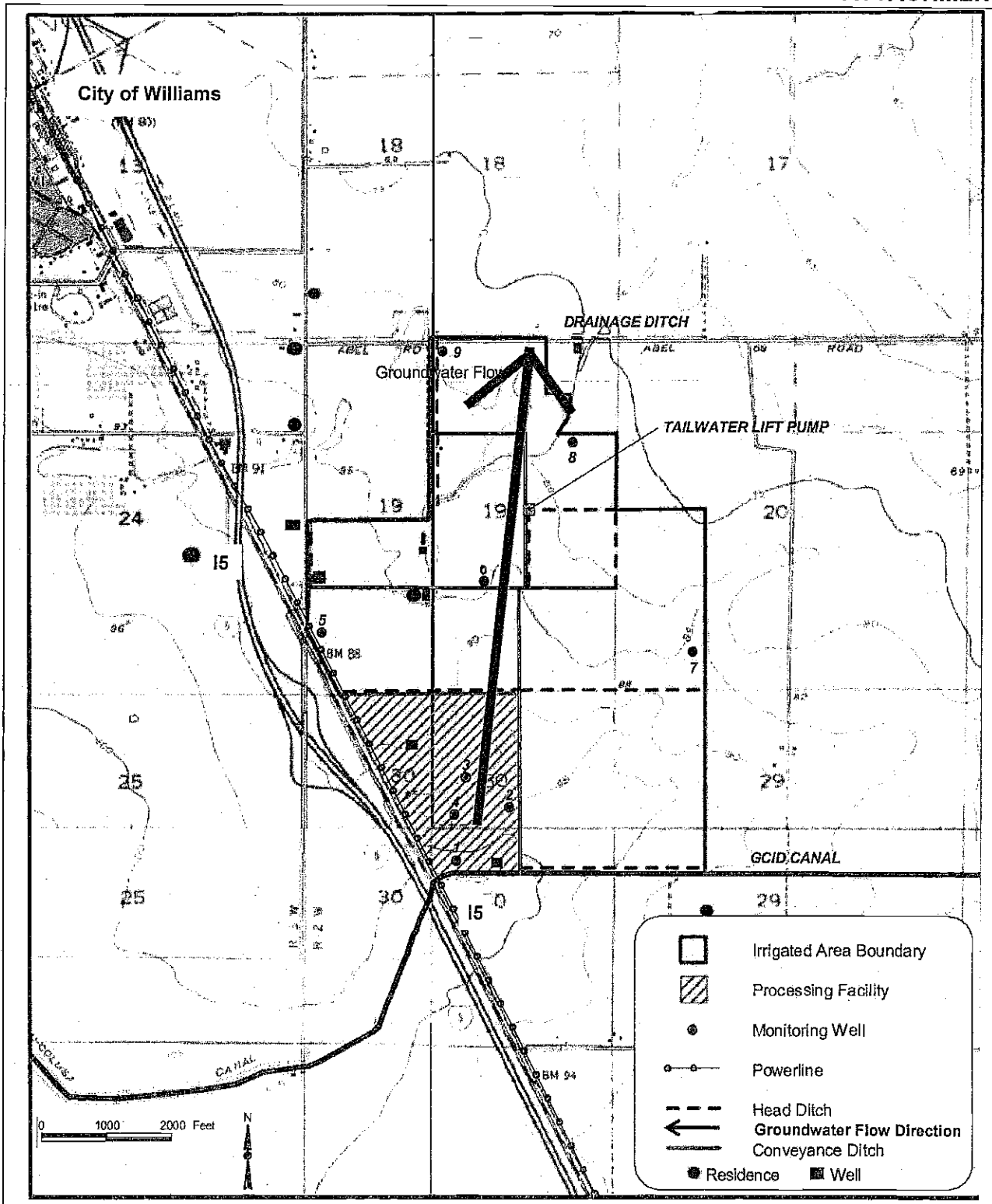
If groundwater monitoring results show that the discharge of waste is causing groundwater to contain any waste constituents in concentrations not in compliance with the Groundwater Limitations of this Order, **within 120 days of receiving notice that the Facility is out of compliance** the Discharger shall submit an *Action Workplan*.

If concentrations of nitrate-nitrogen and manganese in the wells specified in Groundwater Limitation E.1 have not decreased to levels below the respective water quality objectives by **30 December 2018**, the *Action Workplan* shall be submitted by **30 June 2019**.

Monitoring Requirements

The Monitoring and Reporting Program is designed to verify compliance with the flow and effluent limitations and operational requirements of the WDRs. The Order requires monitoring of the ponds, wastewater flows to the land application areas, wastewater quality, land application area, groundwater, and residual solids. Groundwater limitations are necessary to protect the municipal and domestic use of groundwater. If results of the monitoring reveal a previously undetected threat to water quality or indicate a change in waste character such that the threat to water quality is significantly increased, the Central Valley Water Board may reopen this Order to reconsider groundwater limitations and other requirements to comply with Resolution 68-16.

LLA:111513



Drawing Reference:
U.S.G.S
Cortina Creek, Arbuckle
TOPOGRAPHIC MAP
7.5 MINUTE QUAD

VICINITY MAP
MORNING STAR PACKING COMPANY, L.P.
MORNING STAR TOMATO PACKING PLANT
COLUSA COUNTY

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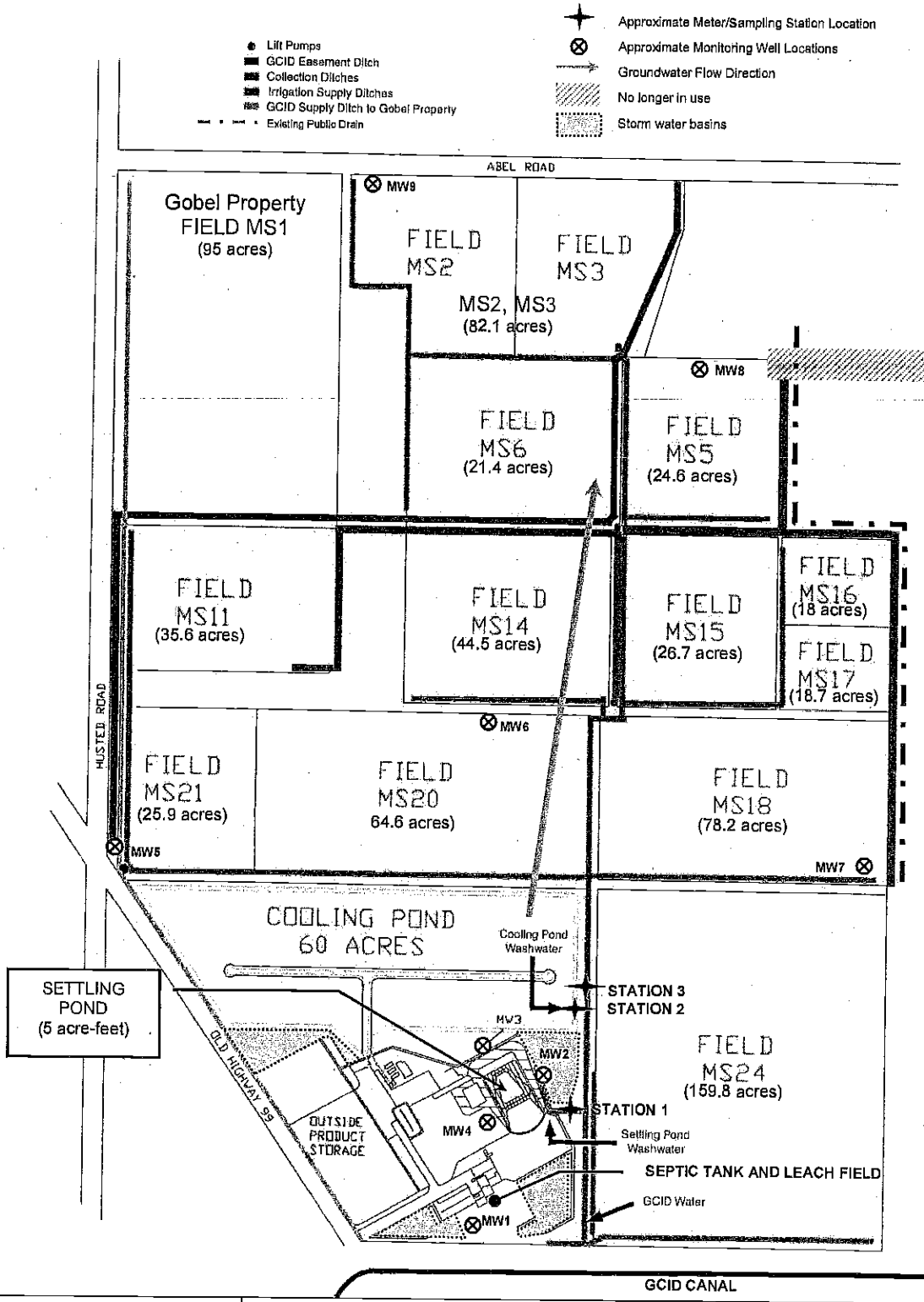

Drawing Reference:
Davids Engineering, Inc.
2005

FACILITY SITE PLAN
MORNING STAR PACKING COMPANY, L.P.
MORNING STAR TOMATO PACKING PLANT
COLUSA COUNTY

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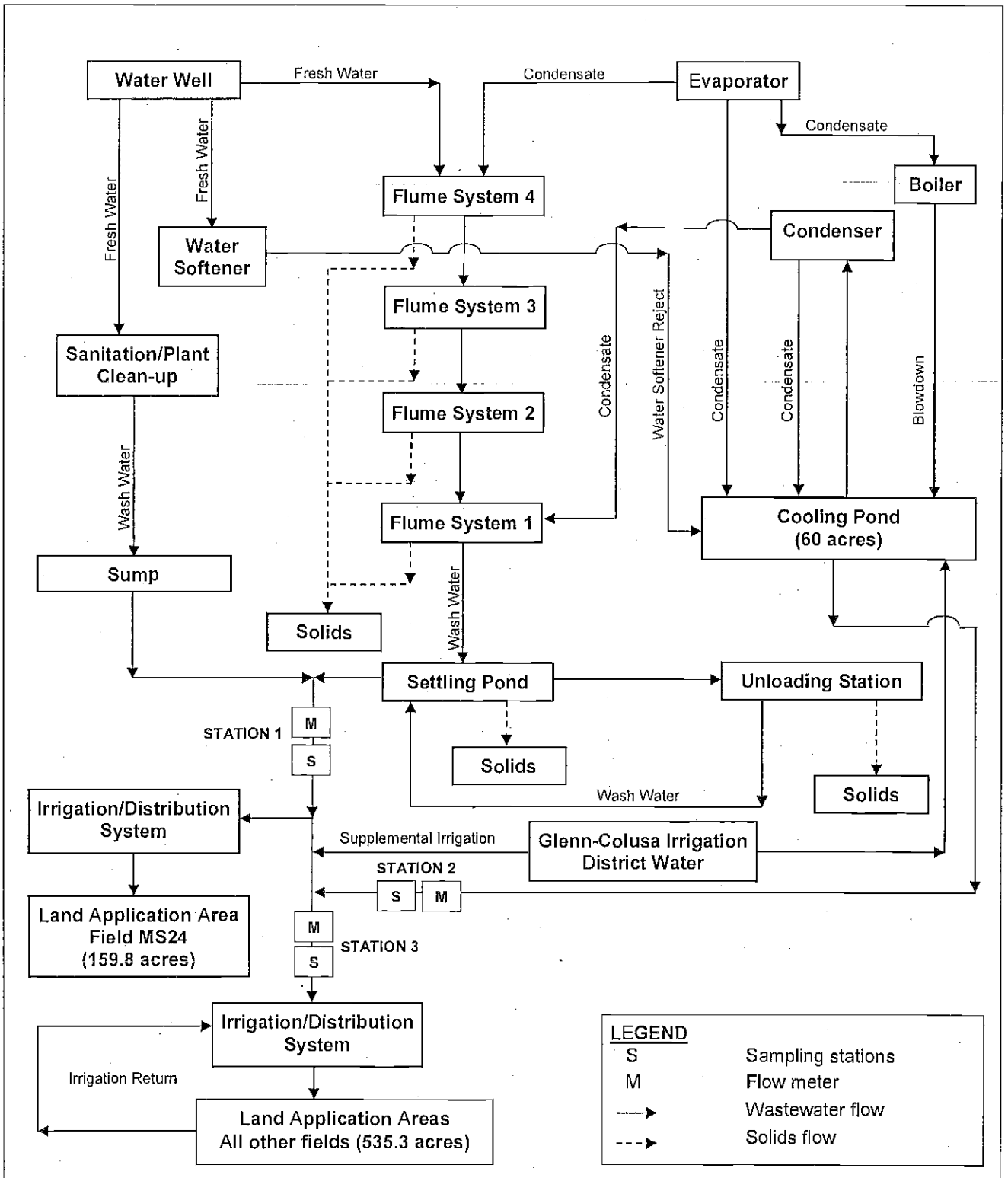

Drawing Reference:
Report of Waste Discharge
30 December 2005

PROCESS FLOW DIAGRAM
MORNING STAR PACKING COMPANY, L.P.
MORNING STAR TOMATO PACKING PLANT
COLUSA COUNTY

EXHIBIT B

KRISTEN T. CASTAÑOS (SB #198672)
MELISSA FOSTER (SB #226755)
PARISSA EBRAHIMZADEH (SB #289521)
STOEL RIVES LLP
500 Capitol Mall, Suite 1600
Sacramento, CA 95814
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Attorneys for Petitioner
THE MORNING STAR PACKING COMPANY, L.P.

BEFORE THE STATE WATER RESOURCES CONTROL BOARD

In Re: PETITION OF THE MORNING STAR PACKING COMPANY, L.P. FOR REVIEW OF WASTE DISCHARGE REQUIREMENTS NO. R5-2013-0144

DECLARATION OF CHRIS RUFER IN SUPPORT OF PETITION FOR REVIEW OF WASTE DISCHARGE REQUIREMENTS NO. R5-2013-0144

[File _____]

Water Code section 13320;
23 C.C.R. section 2050 *et seq.*

I, Chris Rufer, hereby declare as follows:

1. I am the founder and owner of The Morning Star Packing Company, L.P. I have reviewed and am familiar with Order No. R5-2013-0144. I am also familiar with the operations at Morning Star's Williams Facility, in Colusa County, and with the impacts that the requirements of Order No. R5-2013-0144 will have on such operations.

2. As required by Cease and Desist Order R5-2005-0003, Morning Star submitted its Report of Waste Discharge by December 30, 2005. Morning Star also timely submitted the various other reports and studies required by Cease and Desist Order R5-2005-0003. The Regional Board did not request additional analysis, information, or reports following submittal of the Report of Waste Discharge or any of the other reports required by the Cease and Desist Order. It was not until October 2012 when the Regional Board released the tentative Waste Discharge

Requirements that Morning Star received any meaningful communications from the Regional Board regarding the Waste Discharge Requirements.

3. Compliance with the prohibition on discharge during precipitation provides no environmental or water quality benefit and could require an expensive and time-consuming shut-down of operations, and potentially lengthen the processing season. Compliance with this prohibition could require Morning Star to expand its Settling Pond from 1.25 acres to nearly 20 acres, if 24 hour storage is required. Such a large Settling Pond would entail extended periods of BOD concentrations and likely create additional odors at the facility.

4. Morning Star has been participating in the Irrigated Land Program as a member of the local Colusa Glenn Subwatershed Program Coalition, since 2005.

5. The requirement in Order No. R5-2013-0144 to drain and excavate the Settling Pond by November 15 each year provides no environmental or water quality benefit and creates a significant burden on facility operations because, at that time of year, the Settling Pond is very wet and unmanageable. It is not possible to evenly spread sludge excavated from the Settling Pond. Allowing the material to dry in the Settling Pond prior to excavation and disposal is more efficient and consistent with industry practice.

6. Morning Star has engaged Kleinfelder (a third independent professional) to conduct additional analysis of the groundwater data to evaluate whether the facility is causing or contributing to groundwater degradation. Because of the late changes to the tentative WDRs and the information contained therein, as well as the new information presented by Regional Board staff at the December 5, 2013 Regional Board meeting, Morning Star had insufficient time to obtain all desired analyses of the groundwater before the Regional Board hearing on December 5, 2013. Morning Star has presented reports from two consultants regarding the Facility's lack of negative impacts on groundwater, and Morning Star is committed to developing the best and most comprehensive analysis of groundwater impacts. Morning Star has, therefore, engaged Kleinfelder to conduct additional analysis. Kleinfelder's work is on-going and their conclusions are not yet available. For this reason, Morning Star reserves the right to submit Kleinfelder's report when it is complete and requests that the State Water Resources Control Board grant

Morning Star's request for hearing so that the groundwater data and analysis can be fully presented and evaluated.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct. Executed on the 6th of January, 2014 at Sacramento, California.

CHRIS RUFER

EXHIBIT C

California Regional Water Quality Control Board
Central Valley Region
Robert Schneider, Chair

Linda S. Adams
Secretary for
Environmental
Protection

Sacramento Main Office
11020 Sun Center Drive #200, Rancho Cordova, California 95670-6114
Phone (916) 464-3291 • FAX (916) 464-4780
http://www.waterboards.ca.gov/centralvalley

Arnold
Schwarzenegger
Governor

7 July 2006

Mr. Chris Rufer, President
The Morning Star Packing Company L.P.
724 Main Street
Woodland, CA 95695

COMPLETE REPORT OF WASTE DISCHARGE, THE MORNING STAR PACKING COMPANY L.P., COLUSA COUNTY

I have reviewed the subject report, which was submitted on 3 January 2006 to comply with Task 11 of Cease and Desist Order (CDO) No. R5-2005-0003. Although the Report of Waste Discharge (RWD) does not contain the level of detail typically required, we recognize that most of the information needed is contained in previously submitted monitoring reports and CDO task submittals. Therefore, the RWD is considered complete.

It may be several months before we complete the tentative Waste Discharge Requirements, and it is not unusual for questions to arise during permit development. Such requests typically require only clarification of process equipment, processing procedures, and waste management practices, and do not require additional testing or technical evaluation. We would appreciate it if you would direct your designated employees and/or your consultant to respond to any questions as needed.

If you have any questions, please call me at (916) 464-4740.

ANNE L. OLSON, P.E.
Water Resources Control Engineer

cc: Colusa County Environmental Health Department, Colusa
Rich Rostomily, Morning Star Packing Company, Woodland
Marc Haywood, Morning Star Packing Company, Williams
Hillary Reinhard, Madison

EXHIBIT D

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

December 5, 2013 at 9:00 a.m.
11020 Sun Center Drive, #200
Rancho Cordova, CA 95670

* * * * * * * * * * * *

Executive Officer:	Pamela C. Creedon
Board Chair:	Karl E. Longley
Board Member:	Carmen L. Ramirez
Board Member:	Jennifer Lester Moffitt
Board Member:	Jon Costantino
Board Member:	Robert Schneider
Board Member:	Sandra Meraz
Staff Counsel:	Patrick Pulupa
Assistant Exec. Officer:	Andrew Altevogt
Senior Engineer:	Anne Olson
Staff Engineer:	Lani Andam
Supervising Geologist:	Robert Busby
Stoel Rives Counsel:	Kristen Castaños
Facility Owner:	Chris Rufer
Hydrogeologist:	Linda Sloan
Consultant:	Hilary Reinhard

* * * * * * * * * * * *

Chair: Good morning, ladies and gentlemen. Welcome to the 529th Regular Meeting of the California Regional Water Quality Control Board, Central Valley Region. Uh, I would like to introduce the Board Members at this time. Uh, Carmen Ramirez, who will be sitting on, on my far left will be joining us later in the day. Uh,

sitting, uh, sitting on my far left at this moment is, uh, Jon Costantino of Grass Valley. Next on my left is Jenny Lester Moffitt of Davis. On my far right is Bob Schneider of Davis, and sitting directly to my right is Sandra Meraz of Alpaugh. My name is Karl Longley and I hail from, uh, Fresno. Is Tam, we have some Fresno State rooters in the audience, even though they lost to San Jose. So be it after winning nine straight, but that's another topic. Um, is Tam Doduc in the audience? Uh, we suspect that Tam, who is our liaison from the State Water Board will be, uh, joining us later. I'd now like to introduce, uh, Pamela Creedon, the executive officer who will be introducing her staff.

Creedon: Good morning Chair Longley and members of the Board. Uh, yes, uh, member, uh, State Board member Tam Doduc will be here later this morning. She let us know she has been delayed today. Um, so, directly across from me is Andrew Altevogt, uh, Assistant Executive Officer in the Sacramento office, and next to Andrew will be Patrick Pulupa, Staff Counsel. He'll be here in about 20 minutes or so, he's running a little late as well. To my immediate right is Alex Mayer, Staff Counsel for the Board. To my far left is Kiran Lanfranchi-Rizzardi, uh, Executive Assistant for the Board, and to Kiran's right is Ken Landau, Assistant Executive Officer in the Sacramento office, and to my immediate left is David Coupe, Senior Staff Counsel for the Board. In the audience, we have Clint Synder, Assistant Executive Officer in our Redding office, Clay Rodgers, Assistant Executive Officer in our Fresno office, and Richard Loncarovich, Assistant Executive Officer in the Sacramento, and we have a number of staff in the audience as well. Thank you.

Chair: Thank you very much. Uh, Jenny, would you please lead us in the Pledge of Allegiance?

[Pledge of Allegiance]

* * * * * * * * * * * *

[Agenda Item #9]

Chair: Very good. Thank you very much, and we have an interested party, Andrew Grinberg. Apparently, he left. We're now ready to go to, then, to the next item in the agenda, which is Morning Star, item number nine, but before we do that, I have a little bit of, first of all, I have to recognize, I should have did, did it, I should have done it a long time ago, Tam Doduc, who has set through our, we introduced you this morning, before you came.

Doduc: [Inaudible]

Chair: Who sat here through all of this, and I have another housekeeping, um, item that I have to take care of. And it goes all the way back to item number one on the agenda. We didn't approve the minutes this, this morning.

Doduc: [Inaudible]

Chair: Is this for tomorrow?

Doduc: Yeah.

Chair: Okay. We'll do it tomorrow, then. Thank you. Uh, we're ready now for agenda item nine. This is the time and place…

Ramirez: And Karl, can I just jump in? Um, I'm going to abstain from this item, and actually I'm going to, um, actually not abstain. I'm going to…

Pulupa: Recuse.

Ramirez …recuse myself. And I'm going to go sit in the audience for a little while, and then I'm going to skip out early on all you guys.

Chair: Oh… that's not very nice …

Ramirez: Is this the last item today?

Chair: You're denied. Yes, it is the last item.

Ramirez: So, I'm, so I'm just gonna recuse myself.

Chair: Okay. Thank you, Carmen. This is time and place for hearing to consider adoption of updated waste discharge requirements for the Morning Star Tomato Packing Plant in Colusa County. Is there anyone present who is contesting the

proposed action and wishes to present evidence or testimony on this matter? Since there are persons present wishing to contest this item, we will proceed with a hearing. This hearing will be conducted in accordance with the notice of hear, public hearing and meeting procedures published with the meeting agenda. This time, evidence should be introduced on whether the proposed action should be taken. All persons expecting to testify, please stand at this time, raise your right hand, and take the following oath: Do you swear the testimony you are about to give is the truth? If so, answer I do.

Group: I do.

Chair: Thank you. Designated party on, on this agenda item is Morning Star Packing Company. The total times allowed for testimony and cross-examination are as follows: Regional Board staff 30 minutes and the Morning Star Packing Company 15 minutes. All other persons or interested persons shall limit their testimony to three minutes, and a timer will be used. Please state your name, address, affiliation, and whether you've taken the oath before you testify. Does counsel have any legal issues to discuss at this time?

Pulupa: I do. And, uh, it's actually gonna be a very similar issue as you've heard me talk about before. This involves the late submittal of documents not in accordance with the hearing procedure. Uh, this time, these, this, these documents are not necessarily rebuttal, uh, they're pretty much the same, uh, documents that we requested in the original rounds of public notice. Uh, these issues have been ongoing, I believe for years now, uh, with this site, in terms of repeated re, requests for reports of waste discharge. We just had so, a, again, I think the submittal was yesterday afternoon, uh, staff got additional, uh, evidence. Uh, I think, in this case, staff wants to stick to the, uh, stick to the hearing notice deadline, uh, and not admit this, this into the, into the record. I think, uh, as with the case earlier, it's probably best if you give staff, uh, an opportunity to comment on this, and if you give the discharger an opportunity to comment on this, as well.

Chair: And then we'll ask for your recommendation.

Pulupa: Absolutely.

Chair: Thank you. Uh, staff comment on the, on the late submittal?

Altevogt: Uh, Dr. Longley?

Chair: Yes.

Altevogt: [Inaudible], um, so we have taken, uh, staff has taken a preliminary look at the materials that were submitted yesterday. We don't believe that they contain any new information that would cause us to, uh, to, to change the, the conclusions that we have. Um, I think there is somewhat of a fundamental disa, disagreement around, uh, whether the discharger has caused the degradation or pollution of the groundwater, and I don't, I don't think these documents change anything.

Chair: Thank you. Uh, discharger's representative, want to make a statement?

Castaños: Good afternoon, Dr. Longley, members of the Board. Uh, my name is Kristen Castaños. I'm with Stoel Rives, counsel for Morning Star. Um, we prepared these analyses after receiving the revised tentative WDRs, which differed significantly in the information that they included regarding the, um, analysis supporting staff's degradation conclusions. And it was based on those revised tentatives which we received on November 19th that we asked our consultants to do additional analysis to evaluate staff's conclusions there. We had a very short period of time to develop that information, in light of the Thanksgiving holiday, in particular. And, um, that is why we, um, were not able to submit those, that, that information until late yesterday, and we apologize for the, that late submittal. We do believe that there is opportunity for resolution here, and we are committed to working with staff to come up with, uh, mutually agreeable WDRs, and we would love to be here before you at your next meeting with uncontested WDRs. And it is for that reason that in our letter yesterday we requested that this item be continued to your next meeting so we have an opportunity to work with staff, not only on the degradation conclusions, but also on some of the other issues that were raised in

our initial comment letter, and that we've received some in, input and feedback from staff that, um, that there may be opportunity for resolution of those issues, as well. And I would also note that, um, due to a noticing issue, the cease and desist order that's currently at issue on this, um, Facility is, um, that was going to be rescinded today, cannot be rescinded today because of a noticing issue. It, I understand, will be put off to your February meeting, and to us it makes a lot of sense to, to, um, push this item off to February, as well, and give us an opportunity to try and to work through these issues.

Chair: And…

Castaños: Thank you.

Chair: …what is staff's response?

Altevogt: Um, well, we would like to proceed today with the, with this matter.

Chair: Wh, what about this issue on the cease and desist order?

Altevogt: Yeah, uh, yeah, and I think Patrick had addressed that. But that is part of a, a late revision to the, uh, to the WDRs, because of that, that noticing issue that was mentioned.

Pulupa: As I mentioned, there's, there's a, there's a couple things going on, here. Um, Andrew, if you could comment a little bit more, uh, about, uh, whether y, y, you feel the need to, if we're gonna proceed with a hearing today, uh, if we can go forward with admitting this into the record, whether that would be uh, would that be an option to us? Um, whether admitting e, e, essentially, uh, if you could comment on whether admitting this into the record, uh, would preclude us from hearing the item today, uh, so that the Board can understand what the options are.

Altevogt: I, I, I think, at least based on our preliminary look at this, um, which we haven't obviously had a lot of time to do, I think we, we could proc, could potentially have these, uh, materials admitted into the record and proceed with what we have, 'cause as, as I mentioned, I don't, I don't believe it changes our fundamental conclusions, from what, from what we've had a chance to look at.

Chair: So, what, what I've heard is, is you would be, staff would be, um, agreeable to permitting those materials into the record. Is that correct?

Pulupa: That's correct. And, and, and then the issue then becomes whether we wanna go forward with the hearing today or not to resolve the issues, and I think you've, or you've heard from Andrew, uh, that we, their staff recommendation, even after doing a review of the materials that came in just yesterday is just the same. Uh, I think that we're hearing from staff that, uh, we're not going to resolve these issues by the next Board meeting, such that we have an uncontested Board, uh, agenda item. And frankly, with the short timeline for the February Board meeting, this wouldn't be able, I, I don't know if this could go ahead in February. I'm getting a no, um, from Anne, who would actually have to go, uh, a couple Board meetings being continued. And that, of course, is, uh, a, a pretty big impact on staff's, uh, work schedule.

Chair: Any time we continue, it impacts work schedule. Um, any comments, questions by Board Members? We're going to go ahead with the hearing, then.

Pulupa: Uh, and, admit the…

Chair: And we will admit, since I got agreement from staff to admit. Very good. Now we're ready for the Board, uh, presentation, for the staff presentation.

Andam: Good afternoon, Mr. Chairman and members of the Board. My name is Lani Andam. I'm a staff engineer in the Sacramento office. I have taken the oath. I'm here today to present revised waste discharge requirements for the Morning Star Packing Company's tomato packing plant. The proposed order is being contested by Morning Star. The Morning Star Facility is located in Colusa County. It's about 50 miles north of Sacramento, off of Interstate 5, and just southeast of the City of Williams. The Glenn-Colusa Irrigation District canal is adjacent to the southern site boundary. From this point on, I'll just call it the GCID canal. In 1995, the Board adopted the first permit to regulate the land discharge of tomato processing wastewater to two unlined ponds and 700 acres of land application

areas. Morning Star's tomato processing operations began that same year. Tomatoes are processed to make tomato paste, which is packaged in bulk containers, and the Facility operates only during the harvest season from about June through October. The Board adopted a cease and desist order in 2005 because of major permit violations.

There were discharges of wastewater to surface water; Morning Star did not comply with a dissolved oxygen requirement in the Settling Pond; there was over-application of nitrogen and salts to the land application areas; and there was evidence of groundwater degradation due to the discharge. Morning Star completed Facility improvements and implemented operational improvements to comply with the CDO. And they submitted the technical reports that were also required. We had planned to ask you to rescind the CDO today, but we did not provide proper public notice for the rescission. So we will ask you to rescind the CDO at the February 2014 Board meeting.

This figure shows the layout of the Morning Star Facility. The GCID canal is adjacent to the southern site boundary. This unlined canal carries high quality water for local farmers. Here is the processing Facility. And here's the wastewater Settling Pond. Wastewater from the Settling Pond is used to irrigate the land application areas. The Cooling Pond receives water softener reject, condensate from the evaporation process and boiler blow-down. Some of the water from the Cooling Pond is also used to irrigate the land application areas. The land application areas are divided into 14 separate fields. These six fields have been used as cattle pasture since 2005. The various crops are grown on the remaining eight fields.

The land application area irrigation system is very complex. The red lines are Morning Star's irrigation ditches that convey wastewater to the fields; the yellow line represents the tailwater ditches that collect wastewater run-off from the fields; the light green line is the GCID drainage ditch that traverses the land application

area fields; the medium green line is the GCID supply ditch, used to irrigate field MS1 with fresh water; and this dark green line is a public drainage ditch, which drains to the Colusa National Wildlife Refuge. Wastewater from the Settling Ponds is applied to the land application areas. The Settling Pond is unlined, and this table summarizes the wastewater quality. The BOD of the wastewater ranges from 600-1400 milligrams per liter, total nitrogen range is from 30-80 milligrams per liter, and fixed dissolved solids ranges from 400-850 milligrams per liter. The land application areas are surface irrigated using the border check method.

This concept is important later, so I'll spend some time to explain how it works at the Morning Star site. Each land application area field contains several checks that are separated by berms. In this example, there are six checks. Each check is about 20 feet wide and currently most of the fields have checks that are a, that are 1,000 to 200, to 2,600 feet long with very little slope. Wastewater is applied to the field from a head ditch. It flows across the surface until it reaches the bottom of the check, where excess wastewater is collected by a tailwater ditch. Usually, three or four checks are irrigated at the same time and it takes one to two days for the wastewater to reach the bottom of the check. When they are done, other groups of checks are irrigated in sequence, until the entire field has received enough water. The field is then allowed to rest until the next irrigation cycle begins. Depending on the weather, it may take, it may be two to three weeks before the crop needs water again. Border check irrigation is simple, but it causes uneven application. Here's a cross-section of an irrigation check so you can see why. Wastewater flows onto the check when the irrigator makes a break in the head ditch berm. The field has little slope, so it takes one to two days for the wastewater to make it from the top of the check to the bottom. During that time, the upper end of the check becomes saturated, and the wastewater continues to percolate through the soil. By the time the whole check has been irrigated, the upper end of the check has received much more water than the crop needs. Any water that percolates below

the root zone carries waste constituents to ground water. If the wastewater has a lot of organic matter, this inefficiency can cause groundwater degradation or pollution.

First, the excess water takes salts and nutrients, such as nitrogen, below the root zone, and possibly all the way to shallow groundwater. Second, the waste, second, after the wastewater percolates below the oxygen transfer zone, it doesn't take more than a day for the BOD to use up all of the available oxygen in the soil. Once the oxygen is gone, reducing conditions take over. Reducing conditions cause metals that occur naturally in the soil to dissolve. In such cases, we often see pollution due to iron, manganese, or arsenic.

For this reason, we impose limits on BOD loading rates and require adequate rests between wastewater applications to allow the soil to dry out so oxygen can return.

During development of the revised permit, we reviewed historical groundwater monitoring data for the site. Groundwater is only five to fifteen feet below ground surface and generally flows towards the north. The shallow groundwater flow direction and quality are influenced by infiltration of high quality water from the GCID canal, which is upgradient.

The unlined Cooling Pond also recharges the shallow groundwater downgradient of the Settling Pond with relatively low salinity water year-round. And, there are nine shallow groundwater monitoring wells that monitor the Settling Pond and the land application areas. Because there are two potential sources of groundwater degradation, we evaluated groundwater quality at the Settling Pond and land application areas separately.

I'll talk about the Settling Pond first. Four wells have been used to monitor groundwater around the Settling Pond since 1995. MW1 and MW4 are upgradient of the Settling Pond. And MW2 and MW3 are downgradient. The upgradient wells have high quality water, which is likely due to percolation from the GCID canal. Because groundwater monitoring at the Settling Pond started before the

discharge began, we can look at changes over time in the downgradient wells to determine whether the Settling Pond has degraded groundwater quality. This approach is called intra-well analysis.

This graph charts the groundwater, the groundwater nitrate nitrogen concentrations over time. The pink line is the water quality objective for nitrate nitrogen, which is the m, which is the primary MCL of 10 milligrams per liter. The black line is nitrate in upgradient in well MW1. Monitoring began in 1995, and nitrate concentrations were fairly constant until 2003. Since then, it has been more variable. But overall, the nitrogen concentrations in the upgradient well hasn't changed muc, much since the last 20 years. The green line is nitrate concentrations in MW3. From the beginning, this well has had higher nitrate levels than the upgradient well. But that's not surprising, because the GCID canal dilutes the true background groundwater quality. And that's why we used an intra-well analysis to evaluate degradation from the Settling Pond. Looking at MW3 data, we see that nitrate concentrations didn't change much over time until 2002. Between 2002 and 2010, we started seeing what appears to be seasonal changes. Between 2011 and now, the seasonal variation has continued, but the overall trend has been an increase in nitrate concentrations in MW3, while the upgradient well, excuse me, while the upgradient water quality has stayed pretty much the same. This is strong evidence of degradation caused by percolation from the unlined Settling Pond.

Here's the Facility map showing the monitoring locations near the Settling Pond, just so that you have an idea where M3 is. Because the concentrations in MW3 now exceed the primary M, MCL, this level of degradation is considered pollution. There is also evidence of degradation with TDS and chloride, but the degradation has not caused exceedances of a water quality objective. We have prepared similar graphs for those constituents, but we, but we won't go over them, unless, unless you ask us to.

Next, we evaluated groundwater degradation from the land application areas. Monitoring wells near the land application areas were installed several years after the discharge began. Since we don't know what groundwater quality was in the wells before the discharge began, we use a different approach to evaluate degradation. The inter-well approach requires comparison of data from a compliance well with data from a background well.

Five monitoring wells, five wells monitor the land application areas. MW5 is the background well, because it is upgradient and side-gradient of the land application areas. Concentrations in MW5 have been much more variable, but we believe that it is likely due to the upgradient land uses, which are primarily irrigated agriculture. Because of this background variability, we looked at groundwater quality in MW5, but also trends over time within each compliance well to determine if the discharge has caused degradation.

MW6 through MW9 are the compliance wells. They are all within or downgradient of the land application areas. Here's the graph for manganese in shallow groundwater. The pink line is the water quality objective for manganese, which is the secondary MCL of 0.05 milligrams per liter. The black line is the manganese concentration in the background well. This point in 2005 is probably an outlier. But otherwise, manganese has rarely been detected in the background well. The green line represents manganese in MW7. There has been a lot of seasonal variability in this compliance well since monitoring began.

Based on the data, we can only conclude that the discharge has caused degradation, even if it's only seasonal. In this case, the discharge caused seasonal exceedances of the water quality objective. The red line represents manganese concentrations in MW8. The variability and results are similar, similar to MW7, but the seasonal pollution is more pronounced. Because manganese concentrations in the background well have not increased over time, it is reasonable to conclude that the increases in the compliance wells are the result of the discharge. Here's

the Facility map showing the locations, the well locations near the land application areas, so you can see where MW7 and MW8 are. The level of manganese degradation in MW7 and MW8 is considered pollution, because groundwater in these wells exceed the secondary MCL. Because this discharge has caused groundwater pollution, the proposed permit requires that Morning Star take action to restore groundwater quality to the acceptable level of degradation.

There's also evidence of degradation with TDS and chloride, but the degradation has not caused exceedances of a water quality objective. Again, we have prepared similar graphs for these constituents, but we won't go over them, unless you ask us to.

The proposed permit includes flow limits, effluent limits, loading limits, groundwater limits, and a time schedule to stop the pollution. We are continuing the previous flow limits that was in the 1995 permit, which is 4.3 million gallons per day, during the processing season. We set a fixed dissolve limit that will not allow the salinity of the wastewater to increase, and this limit is 900 milligrams per liter as a flow weighted annual average.

We also set protective loading rate limits for nitrogen and BOD. The nitrogen applied cannot exceed crop uptake, and we set a BOD loading limit of 100 pounds per acre per day to prevent reducing conditions that have caused pollution. For constituents where groundwater has been polluted, the groundwater limits do not allow any increases over current concentrations. We included a time schedule in the provisions that requires that the pollution be stopped by December 2018. For constituents where groundwater has been degraded, the groundwater limits allows the degradation, but not exceedance, of a water quality objective. Because the discharge has cause groundwater pollution, the proposed permit includes a time schedule to come into compliance with the Basin Plan water quality objectives. Morning Star must develop and implement operational and/or structural improvements to achieve uniform wastewater application, stop the pollution, and

prevent further degradation of groundwater. The irrigation management plan is due by March 2014, and the irrigation imple, management implementation report is due by May 2015. If groundwater does not meet water quality objectives by December 2018, Morning Star must submit an action plan by June 2019 and implement it by June 2020.

Morning Star met with us and then submitted written comments that identified certain issues. We made several revisions to the permit as requested, but some issues remain. All of their comments were addressed in the response to comments, in the agenda package, and the outs, and the outstanding issues are discussed in the following slides.

First, Morning Star strongly disagrees with any finding that its discharge has caused any degradation of groundwater quality. We respectfully dis, disagree. We carefully analyzed the available site-specific hydrogeological information and Morning Star's groundwater monitoring data. As we showed you in the previous slides, there is strong evidence that the discharge has caused groundwater degradation and pollution. We also showed you in graphics that illustrates how surface irrigation of fields with long check lengths can cause pollution through uneven wastewater application. We believe that higher water, excuse me, we believe that higher waste constituent loading rates and longer infiltration times at the top end of the fields have caused this problem.

Morning Star has not told us why they disagree with us, but they may explain their position in their presentation today. In their second comment, Morning Star asked to continue their current storm water management practices at the land application areas. After the processing season ends and the first two inches of rain have fallen, wastewater and storm water in the irrigation and tailwater ditches is pumped and applied to the land application areas. Runoff from the next rain event that collects in the tailwater ditches is then analyzed, and the results are compared to analytical results for water from a nearby GCID drainage ditch. If the results for the two

sources are similar, earthen dams that separate the tailwater ditches from the public drains are removed, and storm water runoff from the land application areas is allowed to drain off site for the remainder of the rainy season.

We have some concerns about this practice. First, Morning Star analyzed the runoff samples from the ditch for pH and electrical conductivity only. However, the wastewater is characteristically high in BOD and nitrogen. Second, Morning Star's current storm water management practices may be a violation of the 2005 CDO, which prohibits the discharge of tailwater or storm water containing waste to surface drainage courses. We revised the proposed permit to allow the current storm water manager, management practices for the current rainy season only. However, the provisions require Morning Star to submit a Storm Water Evaluation and Management Plan in mid-2014 to demonstrate through monitoring that their current practices are protective of storm water quality. If the executive officer does not approve the plan, Morning Star cannot release storm water runoff from the land application areas unless and until a revised plan is approved. In their third comment, Morning Star requested that they be allowed to land apply tomato processing residual solids. The residual solids includes culled tomatoes, vines, seeds and skins. Currently, these wastes are disposed of off-site. Land application of residual solids at food processing facilities is not uncommon. In this case, we are concerned that the additional source, we are concerned that this additional source of BOD and nitrogen may pose a problem, because the land application areas are already occasionally overloaded.

However, we revised the proposed permit to allow the land application of residual solids if a Residual Solids Management Plan is approved by the executive officer. In their fourth comment, Morning Star requested a higher BOD loading rate limit. They provided calculations to show that the loading rate could be increased based on an atmospheric oxygen transfer during irrigation events. We are concerned that any increase in the BOD loading rate may only make the manganese pollution

worse. As I showed you earlier, Morning Star's irrigation system results in uneven wastewater application with higher BOD applica, application rates at the upper end of the field. The site-specific soil conditions and the uneven BOD application rates inherent to the current irrigation system pose a threat of reducing conditions, which we believe are demonstrated by the manganese pollution in two land application area monitoring wells.

Morning Star's estimate of oxygen transfer assumes uniform loading across the entire field, which is not the case. Therefore, the requested change has not been made. In their fifth comment, Morning Star requested that the land application of wastewater be allowed during the rainy events during the processing season. Some years, it does rain during the later part of the processing season. We did not make the requested change. It is our usual practice to prot, to prohibit discharges during rain, because the crop does not need additional water when it's raining. The purpose of this requirement is to prevent excess percolation of waste constituents, which is especially important at this site because groundwater is very shallow. And although the Settling Pond does not have the capacity to store wastewater for more than one day, it could be expanded to provide one or two days of storage, which should be enough to comply with this requirement.

In closing, based on our review and analysis of the groundwater monitoring data, Morning Star has caused some groundwater degradation and pollution. While the degradation is acceptable, the pollution is not. The proposed order allows Morning Star to continue most of their current operational practices, but it also includes a time schedule for them to improve some of their practices so that the groundwater pollution is corrected, and the degradation that does remain is in compliance with the basin plan. We believe that the order is reasonable and flexible.

We have one late revision to propose. Last week, we discovered that we did, we had not provided proper legal notice for rescission of the 2005 CDO. Although

our intent was stated in the permit, we did not include it in the subject line of the Notice of Public Hearing, or the agenda title. Although there are some compliance problems, the 2005 CDO is no longer relevant and contains some requirements that conflict with the proposed permit. We will follow up and propose rescission of the CDO at the next Board meeting. We recommend that the Board adopt the revised permit as proposed with the late revision. I'd like to enter the case file and this presentation into the record, and we'd be happy to answer any of your questions.

Chair: Uh, thank you for your presentation. Um, in the, uh, land application area, how deep is it to, uh, the ground water?

Olson: This is Anne Olson, uh, senior engineer, and I have taken the oath. The groundwater generally, I believe, is shallowest, uh, down at the south end by the GCID canal, where it tends to be three to five feet below the ground surface, and as you move north across the site, it gets a little bit deeper to the point where it's about 10 to 12 feet below ground surface.

Chair: And the soils are what type of soil?

Olson: Primarily the, the clays that are, I think found mostly in Colusa County. Um, they're m, they're…

Chair: Um, oh.

Olson: … it's probably a loamy…

Chair: Okay.

Olson: …yeah.

Chair: Okay. Um, it's not surprising that you have a, a very poor distribution uniformity with, with the long check runs, 'cause typically what we're looking for, surge or, you, you can get as good, uh, uniformity with, with, uh, check irrigation or rows as you can with drip, uh, but you have to use surge, and you have to have short runs. Um, the, um, is, is there anything in this order, I can't find it, which, uh, gives some idea, monitors how deep the, uh, the, the water is percolating? Uh, in other

words, you know, in many fields, uh, particularly I know where I last saw it was the almond industry. They were using technology whereby they have moisture meters at various depths so they can control, uh, the water in, within the root zone. I'm wondering, is something similar is, is happening here?

Olson: We haven't thought to require something like that. Um, however, I, you may wanna check in with Morning Star's consultants. I think they do some soil monitoring, and that may include some moisture monitoring…

Chair: We'll ask them that…

Olson: …or they may have that capability.

Chair: …'cause certainly, that would give us some idea, particularly at the head of the checks, of what kind of, um, percolation depths we're getting. Do you have any, any other comment, yes, go ahead, Jenny?

Moffitt: Um, just wanted to know, um, what is the source of the manganese? Is it from the processed water, is it from the boiler water, where is it?

Busby: Yeah, that, that's, we're seeing this quite frequently at a lot of sites…

Chair: Please identify yourself.

Busby: Oh, I'm sorry, this is Rob Busby, supervising engineering geologist. And I've taken the oath. Um, the manganese is naturally occurring, and it's in the soil, and when you have a, uh, a high nutrient load applied to land, it leeches through the vadose zone and in, and sometimes into groundwater, which is likely the case here, that creates reducing conditions. So the EH, the oxidation potential is reducing conditions, so that causes the manganese to go into the soluble form, which you detect in groundwater, and so that's what you, that's, manganese is one of the classic examples of a constituent that indicates anaerobic conditions from over-application of BOD.

Moffitt: Okay, and then, um, and so that's found in, especially in the field where there's grazing going on? Is it cattle grazing, and is that perhaps the source of some of the nitrogen?

Busby: Uh, well, there, there is some, some grazing here, but in this case, they, I would suspect that most of the manganese we're seeing is because the reducing environment or, created by the, the tomato waste process...

Chair: I think the question pertained to nitrogen.

Busby: To what?

Moffitt: Well, the manganese, I, I bel, uh, from what I understand, is, uh, resulting from excess nitrogen. Is that correct?

Busby: Yeah, well what happens, is the excess nitrogen causes, it takes up the oxygen, and then you end up with reducing conditions which mobilize the manganese.

Olson: I think what happens to, uh, actually there's, there's kind of an inter-relationship between the BOD, and the nitrogen and the metals possibly dissolving. The BOD, the bio, biochemical oxygen demand, is, it's basically, um, organic matter that wants to biodegrade very, very badly, and as soon as it comes into contact with the soil microbes that would facilitate that, that transformation takes place very rapidly consuming the oxygen. Um, and that's what causes the manganese, and sometimes we've seen iron and sometimes we see arsenic. It varies from site to site depending on the soil types, but that's what causes the manganese to dissolve out of the soil molecules. But an interesting side effect of that that we often see is when we see these highly reducing conditions, we may see iron and manganese pollution, but we often won't see nitrate pollution because those same reducing conditions favor de-nitrification.

Moffitt: Mm-hmm.

Olson: And so it so happens that at this particular Facility, we don't really have a big complaint about nitrate in ground water. Uh, we see a little bit of pollution at the Settling Pond, but it doesn't travel beyond that one well where we detected at the Settling Pond.

Busby: And the reason we may see it at the Settling Pond is because that's getting a lot of recharge from the canal which is oxygen rich. And that's a very small, uh, Settling

Pond so that oxygen rich, so that's why you still see some nitrate in that area, but that's very localized.

Moffitt: Okay. Thank you.

Chair: Any further questions?

Costantino: Yes, so, uh, thank you for the presentation. Uh, there was a, a one note that on the rainy events they could probably expand the, uh, the holding pond, uh, as, as a mitigation measure. I was wondering how else do we, how else do they solve some of these problems? Do, is this a, a very solvable problem that we're giving them?

Olson: You know this is an interesting one where we have actually changed our, our, ah, relatively standard, uh, permit requirements over the years. It used to be that we actually would prohibit any discharge 24 hours before forecasted rain, during rain, 24 hours after a rain event, or when the soil was saturated. And that requirement was in Morning Star's previous permit. Um, and we never heard any concerns about it and they never said, hey, we, we have no choice but to violate this requirement, so frankly, we're a little surprised.

We did revise it to our more current practice, which is okay we're not gonna force you to predict a rainfall event, just don't irrigate when it's raining and don't irrigate when the ground is already saturated. The crops don't need the water, ground water is shallow. Um, it does require, in order to be able to do that, you do have to, if you'll pardon the pun, you have to be able to hold your water for a couple of days. Um, it typically, you know, sometimes we'll see a couple little storms in October. They usually don't amount to much, but you might have to be able to hold enough water for the eight hours that that little storm might take place. Most of the facilities that we work with don't have a problem with that. They have that storage capacity, short-term storage capacity. As it turns out, Morning Star does not, um, but we believe that it's, it's probably not a big deal to do some earth

work and you know, make the pond a little bit bigger to accommodate a little more holding time.

Costantino: Okay and I think they, they could probably respond to that as well. And, but my, my question was a little broader. So, the, the whole permit, I mean the, um, the, our RBOD was 100, I think 100 pounds and theirs was, their request was 140, what's the difference? What's the practical difference for what we're asking them to do?

Olson: What we're asking them to do is to operate pretty much in line with what the California League of Food Processors has recommended in their manual of good practice. Um, the manual of good practice, um, does put forth a, a fairly simple oxygen transfer calculation and, and Morning Star's consultants have used that here. However, the League of Food Processors manual also points out that, um, surface irrigation with food processing wastewaters is not recommended for this particular reason because of the uneven uniformity in calculating these loading rates to determine compliance with the limits. We allow them to average the loading rate across the entire field. So 100 pounds per acre per day averaged across this entire field, that would be compliant, but we also understand that, well at the bottom end of the field it's probably more like 50, and at the top end of the field it's more like 200. We've already seen that that causes a problem. Um, I'm frankly not aware that they can't comply with 100. I believe that they simply wanted the higher limit because they thought they could justify it through the calculations.

Costantino: And then more of a, thank you, and more of a general question. Um, one of the, the requirements is, is a, some sort of management plan. I was just, it, it struck me, how, how does, uh, somebody like this get regulated compared to, or are, is, how does the overlap work for the Irrigated Lands program? I mean is this…

Olson: That's…

Costantino: …in the Irrigated Lands Program or…

Olson: No they are not. Um, our land discharges, um, the food processors, um, and some of the wineries that are big enough that they have significant acreage like Morning Star does, 700 acres is no small piece of the pie. The discharge is exclusively regulated under waste discharge requirements. So they are, as far as I know, not required to be part of the Irrigated Lands Coalition. We don't allow any discharge of tailwater at all. It can't leave the site. And we impose whatever controls we think are necessary with regard to storm water runoff, and that's another one of the issues that they're concerned about.

Costantino: Okay. And do they have the option to go the other way or, or no, because they're, they're, they're a discharger?

Olson: It's never come up. Um, I would say no. Um, because they're discharging waste, the primary purpose of this discharge is to dispose of waste. The nice thing about it is they're recycling that waste for a beneficial use, but the primary purpose is not to grow a crop, but to safely dispose of a waste.

Chair: Are there any further questions? Does, uh, Morning Star wish to cross examine? Then we're ready for Morning Star's testimony.

Man: Wait for the other, uh, member?

Man: Can we take two minutes?

Chair: I've been asked for a short break. Two minute break is fine.

[Break]

Chair: Go ahead, sir.

Rufer: My name is Chris Rufer.

Chair: You need to turn on the, yeah.

Rufer: My name is Chris Rufer and I, uh, am the founder and the owner and the operator of, um, this company and these Facilities. I have, uh, over 30 years built, uh, three Facilities from scratch. Uh, one is a Brownfield, uh, uh, Facility. I've operated about two or three other facilities in the, uh, industry over that period of time. I uh, uh, have a Master's degree in Ag Sciences, as close as I can get to any

scientific credentials. Uh, but I personally wrote and, uh, filed and processed the three-quarters, uh, of all those wasted charts, uh, permit requests, uh, in my history. I personally do follow the results of all the facilities on this, not on a monthly basis, but, uh, every year or so I want to, let me see that stuff, I wanna look at it. And I look at these, uh, these results. Uh, a, a trained eye would look at the graphs and come to no conclusion that there's any contamination let alone pollution here, and there never has been, not from the beginning and this, uh, cease and desist order is also, uh, highly suspect.

Ah, I tried to decrease the, uh, the consumption of water one year and maybe it was too much because then you added concentration and we got an odor complaint. Okay, one in 17 years. And it was because it was trying to do something, was supposedly good. The uh, we, we had some, some rats go, and you see that red line through there, and put some holes in, in the ditch that goes through there, and it was gallons.

We had one major spill where at the end of our property, the south end, there's a, um, uh, a valve, and somebody opened that valve and, and let a lot of water through. We'll say it wasn't us, we don't know what happened, there's a path across from the other farmer there, that maybe when that ditch gets full his, his uh, it builds up groundwater or something, but we don't think we let it through. So it's this, it's a, a controversy on what happened there. Um, so all those things right there are fine.

I think this Facility's been operated just fine for all these years, uh, but a trained eye would just look at this information, say no, I can't see it. You know, there was pointed out here, I'll, I'll just point out, uh, technically, that she pointed out well number one, and not having much variability there. Uh, but and she also said that uh, the ditch right next to it, that as you could see she had the canal, GCID canal, majorly influenced that well. But she used that as the background number. She didn't use well number four, which we put in about 2005, so that there would be a

direct, before the Settling Pond, well, and, to, to compare the two ones, the two of them, that are behind and downgradient from the Settling Pond. She only compared it with one. So she compared the wrong two, uh, wells.

Uh, so I have a significant interest in, uh, maintaining the quality of our ground, maintaining the value of our facilities. Uh, I don't want to, uh, our up, upgradient neighbors to pollute our water. I don't want to pollute our downgradient neighbors with water. So I don't see a pollution thing here, but we must have got a little heavy, and they said there was pollution in one well, or, contamination in one well. Uh, then the, there was another visit, uh, with folks here, the, from our, our side, and not the consultants that we use here, although Provost & Pritchard, we use, uh, Hilary here as the, as the one that does the uh, repots for us, uh, annually, or and monthly, and whatnot. Uh, and then instead of one well, some reason, after that meeting there was three wells, or four wells or whatever, that were contaminated. Well if there's such thorough analysis why wasn't it done right the first time?

So what I did is I had, after that, and they came back with, we thought we had a good meeting, decent meeting, okay good. And, but it didn't come out like that at all. And it still said contamination. And we have not seen any data, statistical data showing us any of this. So I asked, uh, another person at the company, company here, Ross, that does this kind of work and follows up on it, well let's have Provost & Pritchard do a, an, a total analysis of the, of what the, what you might call contamination or is there any at all, and they hadn't done that before, statistically. You know, they're doing reports but not thoroughly looked at it to look at the full contamination across the years. So I had them do it, and I said well, maybe the Board won't trust them because they're, they're working for us all the time, so get another one. And we got another, uh, professional engineering firm to evaluate the entire site for any contamination. Both reports are here, and they say there's no contamination. So we have a difference with professionals, and I think that should be worked out.

When I'm wrong, I fess up and pay. When I'm right, I'll fight for what's right. And that's what I believe I'm doing here. Now, I can be convinced easily with information that there is contamination. But uh, and again, you saw the manganese, okay that was well number one, didn't have anything. Well those, those other two wells, six and seven or whatever they were, uh, you notice the trend was very consistent across ten years. Well if there's pollution, why isn't there an increasing amount of manganese in the, in the ground? We do soils analysis too. And you see nothing in the soils.

Uh, there was questions about the Settling Pond and how much it would hold. That's a, that requirement I'm not familiar with. We'll have to look at it. We'll look at it. We don't recall the requirement on that rain, and if that's, uh, strictly enforced across this industry, there will be no more industry. Uh, our Settling Pond holds two hours, so 48 hours we have to increase the Settling Pond 24 times, of a 50-acre Settling Pond, and that would really stink. And that just won't work.

Uh, those checks? Those are easy to fix. We can fix those. I mean you just bring down the water, the feed water, and go down so many, uh, feet, where you think it might work, and you're right. Charge it, and uh, get it down there quick, little bit of a, you know you don't want too much of a grade, but uh, you want some grade. And, and then you have the water return coming back and you split the field into pieces. That's no big deal. We can do that. And I'm glad that the staff admitted that uh, that would solve the problem.

By the way, on BOD, on the average, if you look at the whole season, uh, we talked about the hundred, we talked about the 139, the average for the season application is 58 pounds per acre per day. So we're not pushed on that at all. I can understand if we, if we uh, putting too much on at one given time, very short, that can be a problem, but again, uh, we don't see a problem with the, with the uh, testing that we did.

So I hired these other two folks to come in and do this professional analysis, and uh, I've got an individual here, Linda, to uh, to review that for a few minutes on what they've come up with, so I'd appreciate if you would give them some consideration to see that there's very significant work by, by decent, good professionals, that show totally otherwise. And like I said, uh, this, this uh, uh, when you don't look at all the upgradient wells, and you don't look at all the downgradient wells, and you pick a couple that you want, you can come to pretty erroneous conclusions.

Um, that's all I've got for the moment but, uh, ah, we're here, and if I'm proven wrong, great, but if not, this facil-, site has been, has been operated well. There's always some mistakes here or there, but there's no pollution on the site that I can see, and I'd like to see it through to, so we are cleared of what I consider the, uh, wrongful, uh, wrongfully-considered a pollutant, uh, in the industry. Thank you.

Chair: Is there further testimony from, uh, for Morning Star?

Rufer: Yes, I'd like, uh, uh, Linda here to come up, and then we have Kristen here would like to say a few words.

Chair: Okay I don't have a card from you. Have uh, you taken the oath?

Sloan: Yes.

Chair: Okay and if you could give us, give us your full information when you, so we can get it into the record, please.

Sloan: Sure, my name is Linda Sloan, I am a hydrogeologist with Provost & Pritchard Consulting Group. Um, I work out of the Visalia, California, office. Anything else? And I did take the oath.

Chair: I think that takes care of it, thank you.

Sloan: Okay. And I need to figure out how you work your, oh, yeah start the slideshow please. Your mouse is not working very well. There we go.

Woman: There you go.

Sloan: Thank you very much. As, uh, Chris pointed out he did contract with two different firms, Provost & Pritchard Consulting Group and Hydrometrics Water Resources, and both of us did independent reviews of monitoring well data, soil sample data, um, the drainage data, the loading rates, and came up with some conclusions and I'd like to just go through those real quick for you. I know we don't have much time.

Both of us did independently conclude that we didn't see degradation caused by the application of wastewater to the land application areas. We did not talk to each other. We came up with this independently. Hydrometrics compared the downgradient and midgradient monitoring well data to the upgradient monitoring well as defined in the information sheet as MW5, and then also complare, compared that to the effluent data. The TDS nitrate and chloride in the downgradient, midgradient wells, Hy-, Hydrometrics said is well within the parameters for the background wells. So we have this very variable MW5 in the upgradient direction that typically has higher concentrations than any of the wells on the site.

So we take MW5 and the variation in the on-site wells is within the range of the variation in MW5. So that's what I mean by that bullet point. These spikes and increases observed in the downgradient wells were also observed in the upgradient wells, MW5. And so this was what led Hydrometrics to believe that the spikes and increases do not coincide with the changes in the effluent wells, not what led 'em to, but the spikes and increases in the wells on site did not coincide with the changes in the effluent.

You have to understand that the depth to groundwater is, I saw some, eh, shallow as one foot. So it's one foot to five foot when it's really shallow, it's eight to 10, maybe to 15 when it's not. But um, contrary to what you said, the shallowest water is actually on the north end of the side, site, not groundwater elevation, but depth water. So it may just be a, a function of monitoring well location or field

height, but when you only have one foot to groundwater there's not much vadose zone, and that probably needs to be taken into consideration. So that would be the north end of the site.

Hydrometrics had decided that the application timing also did not coincide with the spikes and increases. This is one of the graphs that Hydrometrics put together. It shows the chloride concentrations in MW6 and 7 after subtracting out the chloride concentrations in MW5, which is your background well. Note that's a very flat trend.

Hydrometrics also compared the nitrate concentrations in MW9 with the nitrate concentrations in background well MW5, and this is a graph of that after MW5 values are subtracted, and the line up above with the red and the blue is MW9. Note that the spikes and decreases have no correlation to the, um, effluent spikes in, and, decreases. There's just no timing correlation here. Hilary and I went through more than just the monitoring well data, we also looked at, um, soil data, and um, went to Geotrack, I'm sorry, I really need water.

It's been a long day. We went to Geotracker to see what regional water quality's like in the area. So for the constituents of concern, TDS chloride, nitrate, iron and manganese, we could not correlate the spikes in those concentrations with the application timing. Again, it just doesn't match up, and, and with the shallow groundwater, as shallow as one foot at times, you'd think that that would be pretty immediately evident. Soil samples were also compared from cropped areas to uncropped areas, and there were no differences, very little differences, between these two areas. So the uncropped were not receiving application, correct?

Reinhard: Yes.

Sloan: The uncropped areas don't receive applications. If the two, if the applications are degrading the cropped area yet the cropped area soil samples are the same as the uncropped area soil samples, then I don't understand how degradation can be occurring if they're the same. There is no correlation there.

Finally from the Geotracker database, again the water quality's highly variable in the area. I found 139 exceedences of chloride in the area, including a City of Williams well, water supply well. It's just not uncommon in the area. And with the spikes that we see in the upgradient well MW5, which is, um, downgradient of the City of Williams, um, I'm just, I'm not seeing that this degradation is caused by Morning Star. I believe that a lot of it's coming from offsite.

This is a comparison of the historical TDS concentrations in MW8, um, compared to the effluent TDS loading rates. The blue line is the monitoring well, and the loading rates are the other three lines. Again, the monitoring well data does not correspond with the loading application rates or timing. Oops.

Last graph, um, historical nitrate concentrations in the land application area monitoring wells. Note this is wells 5, 6, 7, 8 and 9. Well 5 is the thin red line with the highest spikes, and well 9, which is really not a downgradient well, it's really more crossgradient, if you look at the groundwater flow direction, and well 9 spikes correspond more with MW5 than they do with anything else. So I just wanted you to consider that, after Hydrometrics and Provost & Pritchard looked at more than just two or three monitoring wells, or six monitoring wells, we looked at soil sample data, we looked at effluent data, we looked at regional groundwater quality, and we don't see any evidence of degradation that can be directly attributed to the activities of this Facility.

Chair: Thank you. Questions? Yes, Jenny?

Moffitt: Uh, how often are monitoring wells tested? Is it monthly? Annually?

Sloan: Quarterly?

Reinhard: Quarterly.

Moffitt: And they're, qua-, they're tested even when there's, um, when there's not land application from…

Reinhard: Yes. They're tested for…

Chair: Uh, could you come forward and identify yourself, please?

Reinhard: I'm Hilary Reinhard, I'm a consultant with Provost & Pritchard and I've also helped Morning Star with, uh, their ongoing, um, monitoring.

Chair: And you've taken the oath?

Reinhard: I have taken the oath.

Chair: Thank you.

Reinhard: The soil samples occur quarterly, so four times a year, spaced evenly throughout the year.

Moffitt: Groundwater?

Reinhard: Oh groundwater, sorry. Soil samples occur once a year, during the off-season.

Moffitt: Okay. Thank you.

Chair: Any further questions?

Pulupa: If I, if I could, ask a couple questions here.

Chair: Certainly.

Pulupa: Um, first I, I, I really want to clarify that, you know, we, we're, we're tossing around a few terms. Uh, contamination was mentioned a lot, uh, pollution was mentioned a lot and degradation was mentioned a lot and sometimes it seems like they were being used interchangeably. Just for the record, uh, degradation, while it sounds imposing at times, as something really bad happening at a Facility. Uh, degradation isn't that bad at all. Uh, it, it just is any type of, um, impact to water quality, uh, from a baseline that's been determined as the best water quality that's existed since 1968. So that is an extraordinarily sensitive standard, uh, but it doesn't necessarily mean there's been any impacts to water quality and it certainly doesn't mean that there's been any pollution. Uh, contamination, furthermore, and, and this has surprised some folks, contamination is a, is the level of pollution, uh, that is quite extraordinary, and, uh, the Board has never said that there's been actual contamination, which usually is a threat of sickness or poisoning, uh, uh, by, by those, by those particular constituents. Uh, it is significantly more serious than, than what typical pollution would be. And so these three terms are being tossed

around a lot here, and uh, I, I just want to emphasize that when we say that there's been degradation, uh, we say that there's, there's been some fluctuations, ah, ba-, uh, from a, from a naturally-occurring baseline, are, are the best water quality that we've seen since 1968 and where there's been pollution, uh, it's really been quite limited, at least, uh, with what we see at the Facility, it's, it's very, very low, low impacts and, and fairly localized. Uh, and that gets to kind of what I wanna talk about in terms of where the debate goes from here. Uh, I haven't heard really what the si-, significant changes are that you're proposing to the practices out there. It sounds like we're all pretty much in agreement that Morning Star's got a pretty well-run Facility and, and has made improvements recently, uh, and perhaps even with the, the modifications that get, uh, the irrigation water applied a little bit more evenly, we're gonna see the problems disappear and, you know, we're, we're pretty much in agreement with, with how the Facility is run.

Chair: Well Pat, Patrick, uh, you say that, but, uh, I did have some questions I was gonna bring up later on and, maybe you can answer this. Um, I am somewhat concerned about, uh, land application where you have such shallow groundwater. And what has been the Board's practice in the past on this? There needs to be some sort of a buffer, I would think and of, one foot is not gonna give you a buffer.

Pulupa: Well I, I think that's exactly what's asked for in the order, is an investigation into how, uh, uniform you're applying those, those, uh…

Chair: Well that doesn't get to the uniformity, that just gets to th-, uniform, the distribution uniformity is, um, is another issue.

Pulupa: Um, I, I mean I, I, I, I think that's an issue that staff might be able to answer there, uh, but, you know, again, I, er, I will let you know, defer to you.

Olson: Um, yeah, I think, you know, we encounter these existing facilities from time to time where frankly we're a little surprised at the location. It seems far f-, you know, far from ideal. Um, and even CLFP, eh, has addressed this in their manual of, of, of best practices, where they talk about, you know, different risk categories

for food processing discharges. If groundwater is very shallow, then it's that much more reason to limit your BOD, um, loading rates. And of course the underlying, um, requirement that we always require is that the nitrogen has to go out there at rates that are consistent with crop demand, and the way we, the way we kind of, create a little bit of a safety factor, Dr. Longley, is by requiring that they consider all of the nitrogen plants available. So all that total nitrogen, even though some of it's organic form that's maybe a little bit less labile, more or less, I'm, we require that they consider all of the plants available when they're calculating. And they also have to account for any supplemental fertilizer sources, including the cattle, including the residual solids, um, including any chemical fertilizers they may use. So, we, we're less than thrilled at the location, you know, with regard to not having any real groundwater separation at some parts of the sites, but we have seen many facilities with similar circumstances where you end up with just an acceptable level of degradation. But it requires super-diligent management practices and possibly it may turn out that, uh, surface irrigation is just not appropriate here for that reason.

Chair: Well, we've…

Olson: It's a little hard to be certain about how effective a change would be.

Chair: Uh, uh, it's gonna take a lot of management, I would agree. You, you have to keep, keep the, uh, nutrients within the root zone, and, and that organic nitrogen will degrade or mineralize to, to plant-available nitrogen over time, as long as it's during the time when the plants are uptake. Um, and you need uniformity, and, and I'm concerned about both of these with what I see here. Yes sir, uh, you're out of time but I'll let you talk.

Rufer: Uh, there's a chance of, I think there were more like three, four, five feet, six feet, uh, during the time. So the one foot was, you know, eh, extreme, uh, on a, on that …

Chair: Well I feel more comfortable with a, six feet…

Rufer: Yeah, so we get the specific number, we have, you can statistically…

Chair: Yeah.

Rufer: …you know, we can calculate that number, of course, if we really needed it.

Chair: Right.

Rufer: But I think, eh, the thing about the implication of degradation, whatever the word is, is that, that's driving that, we have to call to approve how many cows we're gonna have on a field. Or, if you're gonna discharge the, and the tougher parts are the discharge of water after the season when it's been shown to be clean, and, and then, and the, uh, rainfall issue…

Chair: Right.

Rufer: …which could really, really back things up a week on a processing system.

Chair: Thank you sir. Now, just stay right there. Does staff wish to cross examine? Then we're ready for final, for your closing statement. And you're out of time, but I'll give you a couple minutes.

Castaños: So you've heard the, the testimony from our, um, from the owner and from our consultants. We do think that these additional analyses demonstrate that there's not a correlation between the discharge and the degradation in the groundwater, and, um, we also believe that there is still opportunity to work with staff on the issues related to the storm water and related to um, you know, discharge during precipitation times, and come up to a solution that will not significantly impact the management of this Facility. So we would urge you to not adopt the tentative WDRs that are before you today and, and allow us to work with staff on that. Thank you.

Chair: Can you respond to the, the assertion that the precipitation condition was already there? Um, before?

Castaños: I cannot. I am not familiar with the, with the, with that permit of…

Man: Yeah. We don't think so, but we don't [inaudible].

Chair: Well, that's, let's uh, we need a specific answer one way or the other, so. Thank you. Uh, staff, closing statement?

Altevogt: Yeah, hi. Um, we've, this situation isn't too much of a surprise. We have situations, other food processors and the like, where there's, as you're aware of, Dr. Longley, where you have a high nutrient load going to, to land and, what makes this a little more challenging, as we just talked about and Patrick expressed very clearly, is when you have a shallow depth of groundwater, then that makes it a little more challenging. And there are operational changes that could be very beneficial to improve the situation here, and I think that's what this WDR is requesting them to look further into. Um, clearly, you know, the manganese shows pollution, and we have other graphs that show that.

And then there's some, some, some marginal degradation associated with salts, but mostly it's about the BOD going out there and mobilizing manganese and constituents like that. Um, but we're also hopeful that they can make some management practices that will improve this greatly. Um, the CDO in 2005, you know, brought up these issues. That's why it was written, and they, they complied with the concepts of the CDO in terms of submitting technical reports. And that, that was fortunate. Unfortunately, um, there's still evidence of degradation, and we've also noticed that in the CDO, the CDO itself, the 2005 CDO requires the even distribution, uh, in the fields. And they have acknowledged, in their report, a waste discharge, and I think today, acknowledged that that's not what's happening. So again that's what was asked for in the CDO and that's what's being asked for again in the WDRs, and the evidence, like our presentation showed, there's a, there's a rationale behind this, this, um, if you put it all in one area that's where you're gonna have the problems and you'll have less of a problem farther downgradient.

Um, and then the other thing that they acknowledged, that the CDO said, there's no irrigation during the precipitation and they acknowledged that they've been

doing that, which is out of compliance with the CDO. But again, we're hopeful that now with the WDRs that won't be a practice that they will continue irrigating during the rainy, when it's raining.

Um, so we just need them to review their management practices, take a careful look at that, maybe shorter check lanes, we'll make, let them make, do that evaluation, and it's not some draconian requirement. And we're hopeful that that will improve the results. And in this case since it's shallow groundwater, we might actually see those results relatively quickly like you don't see with some other sites where it's, you know, 20 feet to groundwater. Here at least we're five feet to groundwater or less. You might actually see improvements, hopefully you'll see more improvements if those are followed appropriately, more, more, more quickly. Um, so again, we need the, an actual plan, in the WDRs, to, to implement the requisite improvements, and I think, I think that would be a, a positive way forward, and we recommend you adopt the WDRs.

Chair: Thank you. And I assume the executive officer concurs?

Creedon: I, I do, Dr. Longley. I do, I do want to remind the Board that, um, in terms of the ap-, land application areas that the groundwater monitoring that staff was referring to occurred much later after the operation began. So it's, it's really difficult to decide what the qua-, ambient water quality happened to be, before they began their operation. Um, and they spoke a lot about, uh, the chlorides and the TDS and others, but really what is of major concern to the Board is that was reducing conditions and that's associated with the BOD, which they are handling through proper application rates and fixing the irrigation system. So the focus was sort of turned a little bit. The other question you had, um, Member Costantino, was about, um, if they can contain their waste onsite. We don't allow discharge if, if they want to allow to apply it to where it could possibly run off, which in cases when it's saturated soil it won't go into the soil, um, then, then they can do that, but they have to apply for an NPS permit. That's their option. Otherwise, if they

wanted to stay with the waste discharge requirements, then they have to be able to contain their waste onsite.

Chair: Thank you. Carl.

Olson: Excuse me Dr. Longley? I'm sorry, I, I apologize. I'm, I was mistaken when I said that their current permit does not allow them to discharge during the rainy season. That requirement is not in the current WDRs, nor is it in the cease and desist order. However, it is our standard to normally require that. So I apologize, I just wanted to clean up the record. I didn't want to be lying. Pardon me?

Creedon: We're allowing them to discharge during the rainy season?

Olson: No this, this, the WDRs prohibit it, but it is a new, it is a new requirement that was not previously on them.

Creedon: Oh, I, okay. So it was…

Olson: So I, if, if I implied that they were in violation or, I might have even directly said it, I would like to take that back.

Creedon: I can't remember.

Pulupa: I had a question, I was just curious if quarterly monitoring of these wells is adequate to, determine what's going on here.

Altevogt: Um, in, in my opinion I think it is because yes, there's, there's, if you could look at this as a complicated site but you could also look at it as quite simple in some regards. Yes, there's variability, but that variability still shows clear degradation and some cases pollution. There's ups and downs, but as, as the, some of the charts we showed before we have ten years of data.

Pulupa: So the trending's fine, you think.

Altevogt: Yeah, you know, it goes up and down. It is, like they said, it is cyclical, it goes up and down, you know, sometimes that might be that the groundwater gets up and mobilizes more constituents in the vadose zone. But I don't think we need to be too precise with this. I think we have enough information that I don't think we need more than a quarterly.

Pulupa: So, so back to the precipitation question, um, I mean, it, in general it sounds like it's a BOD management issue that we're really headed after but, um, this rainfall capture capacity question, um, is it in, well staff first, do you, do we think it's, uh, moving some dirt around I think is how the, the term was, was suggested or is it much more significant, um, issue that, uh, it's gonna have to be engineered and it's gonna take, uh, a lot of space, uh, as was contested. Uh, what, what, what do we think is gonna happen before we approve something?

Olson: This is a hard one. Um, many of our food processors, um, who have year-round operations, simply don't discharge storm water runoff from their fields at all. The seasonal, the seasonal operators, they'd like to be able to walk away from these sites in the wintertime because they have other things going on. They shutter the Facility. If anything there's a skeleton crew there. Um, and I think it is potentially problematic. You are leaving salt in the soil, you're leaving BOD, you're leaving nitrogen. Unfortunately, due to the timing of their processing season, they're really putting all this nitrogen out there, it's not exactly the peak of the growing season, it kinda is and it kinda isn't, but frankly they probably leave a little bit behind to winter over in the soil. And so if there is storm water runoff, I would be most interested in seeing, is there BOD in it? Is there nitrogen in it? Because those are things that probably have the biggest potential to have an impact on the beneficial uses of surface water as opposed to a little variation in pH or, or, or salinity, which is what they have been measuring. So we'd like to see what they have, and see how it compares to drainage from fields that aren't irrigated with wastewater. And then, we're very open-minded. Let's see what the data show, and then, if necessary, we can work things out and maybe come back with an amendment. I mean, there's all sorts of different ways we can work with them, to resolve the problem.

Creedon: So there are two issues. The, the one you're talking about is allowing storm water runoff…

Olson: Right.

Creedon: ...after land application period...

Olson: Right.

Creedon: ...and we're giving that year to study.

Olson: Right.

Creedon: The other one is where we're not allowing them to land apply their waste stream if, if their soil is...

Olson: Yeah.

Creedon: ...saturated. And that need, that will need an expansion of a pond, how much is that going to be in the immediate...

Olson: I'm, you know in terms of the cost, I'm not exactly sure. Um, I believe they have the land available, although right now that pond is tucked, um, into some earthen ramps that th-, um, they use to get the trucks up to the top of the flumes. And so it's actually kind of utilizing this earthworks that's already there. So, how quickly they could expand that I'm not exactly sure. You know the truth is I, I don't really think that this should be a big deal.

Um, Lani pointed out to me just a minute ago, no, it's not prohibited in the WDRs or the CDO, but the CDO said, in your ROWD, you're gonna show us how you're gonna manage your wastewater this way. You're not gonna irrigate during rain, and you're not going to, um, irrigate when the soil is saturated. So the CDO didn't impose that requirement on them immediately, but required them when they submitted their Report of Waste Discharge to show that they were going to manage it that way in the future. So, although I misspoke in saying it was a requirement that they comply with it, it was a requirement that they be able to comply with it in the future, is correct. So, they did have notice of it, apparently it slipped their minds or we didn't catch 'em, whatever. Um, but it is a fairly standard requirement and there's a good reason for it. Um, although truthfully, there's probably not, every year, a whole lot of rain in Williams in October. I

would venture a guess it's probably less than a half an inch. But you just don't know. So…

Chair: Sir, you've, we're gonna proceed on. Um, very good. Any further questions? I'm gonna close the hearing then, at this point, and confine discussion to Board members and to our, our counsel. Um, you know, I noticed that on the provisions of, of this permit, uh, these various questions are addressed. There's, they are going to be subject to, uh, study, they were gonna be subject to, um, uh, reports submitted to, to staff which, at some point in time, um, we will become aware of, of these and, and conceivably have some, some role in it. Certainly there's a Storm Water Evaluation, a Runoff Evaluation, and Management Plan report by 31 July 2014. There are Irrigation Management Reports, uh, required and times for implementation. I think that, you know, there, there are some question marks that, that have come up while we've been talking today, but in my opinion, um, there's provisions in here for addressing those question marks and coming up with, with a, with the plans to manage them. And obviously, the discharger can come back to us as a Board if, if, if the discharger feels that, uh, that these issues are not being properly addressed. So, I, I think that the, that the permit is good, as staff has proposed it to us. Any other questions, members of the Board? Asking for a motion?

Moffitt: I so move.

Chair: It's been moved, do I have a second?

Schneider: I'll second that.

Chair: Jenny's moved, Bob seconded. Any further discussion? This is a voice vote. All in favor of the motion say so by saying aye.

Group: Aye.

Chair: Opposed saying no? Motion carries. Thank you. And we begin at what, nine tomorrow? So, we're adjourned until 9:00 tomorrow morning.

[End of meeting]

CERTIFICATION OF TRANSCRIPT

The undersigned hereby certify that the foregoing document is transcribed from tape recordings of the meeting of the Central Valley Regional Water Quality Control meeting dated December 5, 2013. The pages herein constitute said transcript; that the same is a complete and accurate transcript of the aforementioned tape recorded meeting to the best of my ability.

/s/ TERRI LOWREY
IPC Specialist, Stoel Rives LLP

EXHIBIT E

THE MORNING STAR PACKING COMPANY
13448 Volta Rd, Los Banos, CA 93635

30 October 2013

Ms. Anne Olson
Central Valley Regional Water Quality Control Board
11020 Sun Center Drive #200
Rancho Cordova, CA 95695

Re: NOTICE TENTATIVE WASTE DISCHARGE REQUIREMENTS FOR MORNING STAR PACKING COMPANY, COLUSA COUNTY

Dear Ms. Olson,

We appreciate the discussions we've had regarding our washwater disposal facility in Williams. In addition, we appreciate the compliments your staff have made relative to our operations. As we discussed, we sincerely and professionally believe we have not degraded our groundwater in the least.

The Morning Star Packing Company intends to appeal the tentative Waste Discharge Requirements (WDR's), Monitoring and Reporting Program (MRP) and the Information Sheet for our facility that were dated 30 September 2013 and will be voted on by the Board at the December Meeting. We request the maximum allowable time limit for our presentation as it relates to the degradation statements written in the WDR's, MRP and the Information Sheet. We feel confident that groundwater degradation has not occurred from our operations.

Attached to this letter are our recommended changes to the WDR's and MRP without discussion of the degradation statements, as this will be discussed further at the Board Meeting. In addition to the concerns regarding the degradation statements, we have the following issue of concern and recommendations for the WDR's.

Issue 1: Storm Water Operations

Pg.10.#30 *"Any water remaining in the irrigation and tailwater ditches at the end of the processing season is pumped to the storm water retention basins. The ditches are then flushed with GCID water to remove residual wastewater prior to removing earth dams and allowing storm water runoff to drain offsite during the winter months. During the non-processing season, stormwater from the LAAs drains to the Glenn –Colusa Canal."*

Water from the farm grounds drains toward the GCID drain, not the GCID canal. Storm water from the land application area (LAA) is pumped from the collection ditches and applied to the LAA for the first 2" of rainfall. During the next rain event, the collected storm water is tested and compared to the water quality in the GCID drain. If the stormwater is of similar quality to the drain water or better, the water is then released offsite.

Issue 2: Solids Handling

Pg.11.#31 *"Residual soil wastes from the Settling Pond, cull tomatoes and vines (approximately 3,000-6,000 tons per year), and tomato pomace including seeds and skins (approximately 12,000 tons per year) are transported off-site for use as animal feed or soil amendment."*

Solids from the settling pond are either applied to the LAA as a soil amendment or used to build up farm roads. Solids from processing activities (pomace, cull tomatoes and vines) have historically been hauled off-site, but we would like to reserve the right to apply residual solids to the LAA at agronomic rates.

Issue 3: BOD Loading Calculations

Pg.27.C.2) *BOD loading shall not exceed 100 lb/ac/irrigation cycle.*

BOD loading rates should be based on the cycle average BOD loading. The mass loading calculation needs to be modified to include the number of days the irrigation cycle occurred over. Furthermore, the cycle average BOD loading rate should be increased to 139 lb/acre/day, which was demonstrated appropriately in a report submitted on August 29, 2013.

Issue 4: Wastewater pH Limitation

Pg.30.D.14) *"Wastewater contained in any pond shall not have a pH less than 6.0 or greater than 9.0."*

The pH of wastewater in the settling pond frequently falls below 6.0. No negative impacts to the LAA have been observed from this pH. A pH range of 4.0-9.0 is appropriate for this discharger.

Issue 5: Discharge during Precipitation

Pg.32.F.9) *"Discharge to the LAAs shall not be performed within 24 hours of forecasted rain, during rainfall, within 24 hours after any measureable rainfall event, or when the ground is saturated."*

Discharge from the facility occurs seasonally from July through October. During the later part of the processing season, the area typically experiences a minimal rain event. The settling pond does not have the capacity to store wastewater from the facility. Because of the facility's operations, it cannot cease processing without causing an expensive and time consuming full clean up and restart. We suggest that the wording be modified to prohibit discharge of wastewater when fields are saturated due to rainfall.

Issue 6: Monitoring and Reporting Requirements

Pg.7.7) Further discussions with the Regional Board are necessary to determine an appropriate and reasonable method of calculated mass loading rates. The fields are broken into 20 wide checks that run the length of the field. Irrigators irrigate a varying number of checks each day depending on the soil moisture depletion and flow rates from the facility. Tracking the nitrogen and BOD cycle loading rates for each check throughout the season will cause a large amount of paperwork. Calculating the loading rates on a field basis provides a good estimate of these loadings.

A copy of the redlined version of the WDR's is included as **Attachment A** and the redlined version of the MRP is included as **Attachment B.**

If you have any questions, please contact me at (916)719-5650.

Respectfully yours,

Ross Oliveira

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2211 Old HWY 99
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95987

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EXHIBIT F

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December 4, 2013

VIA EMAIL (aolson@waterboards.ca.gov)

Ms. Anne Olson
Central Valley Regional Water Quality Control Board
11020 Sun Center Drive, Suite #200
Rancho Cordova, CA 95670-6114

Dear Ms. Olson,

As you are aware, on October 2, 2013 Morning Star Packing Company ("Morning Star") received proposed tentative waste discharge requirements (WDRs) for the Morning Star Tomato Packing Plant in Williams, Colusa County, CA (the "facility"). Prior to submitting comments on the WDRs, representatives of Morning Star met with Board Staff on October 25, 2013 to discuss various issues with the original tentative WDRs. Morning Star believed that meeting was productive and that many of Morning Star's concerns would be addressed in revised tentative WDRs. On October 30, 2013, Morning Star filed comments to document its concerns with the original tentative WDRs (Attachment A). On November 19, 2013 Staff issued revised tentative WDRs and a response to Morning Star's comments. While many of the issues raised in Morning Star's October 30, 2013 comment letter have been satisfactorily addressed, Morning Star still objects to several conclusions and requirements in the revised tentative WDRs. Specifically, Morning Star objects to the conclusion that the discharge is causing groundwater degradation, and provides evidence herewith to support its position. Morning Star also continues to object to the WDRs requirements regarding stormwater operations, solids handling, discharge during precipitation and a few other substantial items that Morning Star raised in its October 30, 2013 comment letter.

Given the extensive revisions incorporated in the revised tentative WDRs circulated on November 19, 2013, as well as the additional information provided herein, Morning Star requests that the consideration of the tentative WDRs by the full Board be continued and the agenda item removed from the December 5/6 meeting agenda so that Staff and the Board have adequate time to consider such comments, reports, and evidence provided herein. In light of the short time period between release of the revised tentative WDRs and the December 5/6 Board meeting, and due to the intervening Thanksgiving holiday, inadequate time has been provided for Morning Star to work with staff to resolve the outstanding issues in the WDRs.

In particular, Morning Star continues to maintain that the facility's discharge has not caused any degradation of groundwater quality and respectfully provides additional information herein[1] that constitutes substantial evidence in support of Morning Star's position that the facility's discharge is not degrading groundwater. Staff's response to comments, on the other hand, fails to provide any analysis to support the degradation conclusions in the revised tentative WDRs. Instead Staff's response to Comments admits that "[s]hallow groundwater conditions at the site are complicated by numerous sources of groundwater recharge (some of it high quality and some of it not)."

Attachments B and C included herewith confirm that the background groundwater quality conditions are highly variable and definitively demonstrate that there is no correlation between Morning Star's discharge and concentrations of chloride, TDS, or nitrate in groundwater. Hence, contrary to language in the revised tentative WDRs, Morning Star's discharge is not degrading groundwater.

Morning Star acknowledges that State Water Resources Control Board Resolution 68-16 ("Policy with Respect to Maintaining High Quality Waters of the State") (hereafter Resolution 68-16) prohibits degradation of groundwater unless it has been shown that: (a) the degradation is consistent with the maximum benefit to the people of the state; (b) the degradation will not unreasonably affect present and anticipated future beneficial uses; (c) the degradation does not result in water quality less than that prescribed in state and regional policies, including violation of one or more water quality objectives, and (d) the discharger employs best practicable treatment or control (BPTC) to minimize degradation. While Morning Star does not dispute that the constituents of concern associated with its discharge that have the potential to degrade groundwater include salts (primarily TDS and chloride), nitrate, and metals (iron and manganese), the Reports provided herewith demonstrate that the facility's discharge is not in fact degrading groundwater for any of the aforementioned constituents. Therefore, no analysis of Resolution 68-16 is necessary because the discharge is not degrading groundwater.

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[1] Included herewith as Attachment B is a Memorandum prepared by HydroMetrics entitled *Review of The Morning Star Packing Company's Williams Facility Tentative Order*, dated December 1, 2013. Included herewith as Attachment C is *The Morning Star Packing Company, L.P. Williams Facility Groundwater Analysis - Summary Report* prepared by Provost & Pritchard, dated December 4, 2013.

Moreover, Morning Star reiterates its comments regarding the issues of stormwater operations, solids handling, discharge during precipitation and a few other substantial items that Morning Star raised in its October 30, 2013 comment letter, but which have not been satisfactorily resolved. The revised tentative WDRs require conditions related to these issues that will substantially impair facility operations. Morning Star believes these issues can be resolved if given time to discuss them further with staff, but given the short time period for consideration of the revised tentative WDRs, there has not been sufficient opportunity for such discussions.

If the Board does not continue consideration of this item to a future Board meeting date[2], Morning Star will be discussing these issues in person during the December 5/6 Board meeting. If this agenda item is not continued, Morning Star respectfully requests that all references to degradation of groundwater caused by its discharge be removed from the tentative WDRs and the additional revisions requested by Morning Star in its October 30, 2013 comment letter be incorporated prior to approval of the same. If the item is not continued and Morning Star's requested modifications are not made, Morning Star will have no choice but to appeal the WDRs to the State Water Resources Control Board.

Very truly yours,

Kristen T. Castaños

cc: Ross Oliveira
Lani Andam (Lani.Andam@waterboards.ca.gov)
Robert Busby (Robert.Busby@waterboards.ca.gov)

[2] Morning Star has also been advised by staff that, due to a noticing error, rescission of the existing Cease and Desist Order for this facility will not be considered at the December 5/6 meeting, but is expected to be considered at the Board's February meeting. In light of this, and the insufficient time to work with staff to evaluate the information presented herein and to attempt to achieve mutually satisfactory resolution, Morning Star believes it is appropriate to continue the WDRs to the February meeting as well.

ATTACHMENT A

THE MORNING STAR PACKING COMPANY
13448 Volta Rd, Los Banos, CA 93635

30 October 2013

Ms. Anne Olson
Central Valley Regional Water Quality Control Board
11020 Sun Center Drive #200
Rancho Cordova, CA 95695

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Water from the farm grounds drains toward the GCID drain, not the GCID canal. Storm water from the land application area (LAA) is pumped from the collection ditches and applied to the LAA for the first 2" of rainfall. During the next rain event, the collected storm water is tested and compared to the water quality in the GCID drain. If the stormwater is of similar quality to the drain water or better, the water is then released offsite.

Issue 2: Solids Handling

Pg.11.#31 *"Residual soil-wastes from the Settling Pond, cull tomatoes and vines (approximately 3,000-6,000 tons per year), and tomato pomace including seeds and skins (approximately 12,000 tons per year) are transported off-site for use as animal feed or soil amendment."*

Solids from the settling pond are either applied to the LAA as a soil amendment or used to build up farm roads. Solids from processing activities (pomace, cull tomatoes and vines) have historically been hauled off-site, but we would like to reserve the right to apply residual solids to the LAA at agronomic rates.

Issue 3: BOD Loading Calculations

Pg.27.C.2) *BOD loading shall not exceed 100 lb/ac/irrigation cycle.*

BOD loading rates should be based on the cycle average BOD loading. The mass loading calculation needs to be modified to include the number of days the irrigation cycle occurred over. Furthermore, the cycle average BOD loading rate should be increased to 139 lb/acre/day, which was demonstrated appropriately in a report submitted on August 29, 2013.

Issue 4: Wastewater pH Limitation

Pg.30.D.14) *"Wastewater contained in any pond shall not have a pH less than 6.0 or greater than 9.0."*

The pH of wastewater in the settling pond frequently falls below 6.0. No negative impacts to the LAA have been observed from this pH. A pH range of 4.0-9.0 is appropriate for this discharger.

Issue 5: Discharge during Precipitation

Pg.32.F.9) *"Discharge to the LAAs shall not be performed within 24 hours of forecasted rain, during rainfall, within 24 hours after any measureable rainfall event, or when the ground is saturated."*

Discharge from the facility occurs seasonally from July through October. During the later part of the processing season, the area typically experiences a minimal rain event. The settling pond does not have the capacity to store wastewater from the facility. Because of the facility's operations, it cannot cease processing without causing an expensive and time consuming full clean up and restart. We suggest that the wording be modified to prohibit discharge of wastewater when fields are saturated due to rainfall.

Issue 6: Monitoring and Reporting Requirements

Pg.7.7) Further discussions with the Regional Board are necessary to determine an appropriate and reasonable method of calculated mass loading rates. The fields are broken into 20 wide checks that run the length of the field. Irrigators irrigate a varying number of checks each day depending on the soil moisture depletion and flow rates from the facility. Tracking the nitrogen and BOD cycle loading rates for each check throughout the season will cause a large amount of paperwork. Calculating the loading rates on a field basis provides a good estimate of these loadings.

A copy of the redlined version of the WDR's is included as **Attachment A** and the redlined version of the MRP is included as **Attachment B.**

If you have any questions, please contact me at (916)719-5650.

Respectfully yours,

Ross Oliveira

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER __

WASTE DISCHARGE REQUIREMENTS

FOR
MORNING STAR PACKING COMPANY, L.P.
AND FRED GOBEL
THE MORNING STAR TOMATO PACKING PLANT
COLUSA COUNTY

TENTATIVE

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

1. On 30 December 2005, Morning Star Packing Company, L.P. submitted a Report of Waste Discharge (RWD) that describes facility improvements made to its Williams tomato processing facility to comply with Cease and Desist Order (CDO) R5-2005-0003. Additional information to update the RWD was submitted on 30 November 2012, 3 April 2013, 24 April 2013, and 29 August 2013.

2. Morning Star Packing Company, L.P. owns and operates the tomato processing facility, including approximately 609 acres of associated land application areas (LAAs). An additional 95 acres of LAAs (Field MS1) is owned by Fred Gobel and leased to Morning Star Packing Company, L.P. Morning Star Packing Company, L.P. and Fred Gobel (hereafter known as "Discharger") are responsible for compliance with these Waste Discharge Requirements (WDRs).

3. The facility, which consists of a tomato processing facility and associated LAAs, is located south of the City of Williams, east of Interstate 5 in rural Colusa County (Sections 19, 20, 29 and 30, T15N, R2W, MDB&M), as shown on Attachment A, which is attached hereto and made part of this Order by reference.

4. WDRs Order 95-160, adopted by the Central Valley Water Board on 23 June 1995, prescribes requirements for facility discharge of tomato processing wastewater. Order 95-160 allows a maximum discharge from the wastewater Settling Pond not to exceed 4.3 million gallons per day (mgd) and a maximum discharge to the Cooling Pond not to exceed 58 mgd. The WDRs are no longer adequate to regulate the discharge. Therefore, it is appropriate that WDRs Order 95-160 be rescinded and replaced with this Order.

Enforcement History

5. A Notice of Violation (NOV) was issued in September 2003 due to non-compliance with the Monitoring and Reporting Program (MRP) and inadequacy of the monitoring network to detect groundwater degradation. The NOV required the installation of additional monitoring wells and improved sampling and reporting. A Revised MRP was finalized in October 2003. Based on the limited groundwater data from the new

wells and groundwater data from monitoring wells installed in 1995, it appeared that groundwater beneath the facility and land application areas had been degraded.

6. On 27 January 2005, the Central Valley Water Board adopted CDO R5-2005-0003 as a result of the following:

   a. Discharges of wastewater to surface water.

   b. Non-compliance with the dissolved oxygen (DO) requirement in the upper zone (1 foot) of wastewater in the Settling Pond.

   c. Evidence of groundwater degradation with calcium, chloride, nitrate, sulfate, and total dissolved solids (TDS) due to the discharge.

   d. Monthly monitoring reports for July through November 2004 indicated over-application of nitrogen and salts to the LAAs. Nitrogen and TDS loading rates ranged from 10 to 811 pounds per acre (lb/ac) and 13 to 14,800 lb/ac, respectively. Few crops can consume more than 400 lb/ac of nitrogen per year.

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7. The 2005 CDO required that the Discharger immediately comply with the following new requirements:

   a. The discharge of wastewater and tailwater or storm water containing waste to surface water drainage courses is prohibited.

   b. There must be at least 2-feet of freeboard at the concrete weir during periods when wastewater is being used for irrigation and/or when tailwater in the ditch results from irrigation with wastewater.

   c. Irrigation water, regardless of the source, must be applied at agronomic rates for the crops grown. The frequency and depth of irrigation must be determined based on actual weather conditions and crop needs.

   d. Nitrogen and other nutrients, regardless of the source, must be applied at agronomic rates for crops grown. All nitrogen applied must be considered "plant available".

   e. Loading rates for biochemical oxygen demand (BOD) must not exceed 100 lb/ac/day or 300 lb/ac/irrigation cycle.

   f. Comply with Discharge Specification B.5 of the WDRs - irrigation and drainage ditches must be maintained free of weeds and aquatic plants.

8. The 2005 CDO required that the Discharger comply with a schedule for submittal of the following technical reports:

a. 2005 Cropping Plan – to describe how the fields will be planted with suitable crops and managed, including loading rates (hydraulic loading, BOD, nitrogen, and TDS) for both the packing season and on an annual basis.

b. Dissolved Oxygen Compliance Report - to contain (a) feasibility study of methods to ensure that the waste in the Settling Pond contains at least 1.0 mg/L of dissolved oxygen to prevent nuisance conditions and, (b) the preferred alternative for achieving compliance.

c. Salinity Reduction Study Workplan - to contain a discussion of all chemicals used at the facility, chemical characterization and estimated generation rate for each identified waste stream, methods available to reduce the concentration of TDS in each waste stream discharged to the Settling Pond and Cooling Pond, and calculations estimating the mass of salinity removed by the crops.

d. Flow Metering Systems Improvements Report - to describe the design, construction, and operation of the flow metering systems for each flow monitoring point and include a final report verifying that the metering systems are adequate and fully operational.

e. Field MS11 Irrigation System Report - to document the management and/or physical changes that have been made to the manner in which wastewater is supplied to Field MS11.

f. Results of the Salinity Reduction Study - to contain a discussion of each element required by the Salinity Reduction Study.

g. Background Groundwater Quality Study and Groundwater Impacts Assessment Report - to present a summary of all historical monitoring data, concentration in background monitoring wells, and comparison of background quality to that in wells used to monitor groundwater beneath the ponds and land application areas.

h. Report of Waste Discharge – to describe all improvements required to comply with the 2005 CDO and prevent groundwater degradation.

9. The Discharger submitted the required reports and implemented the facility and operational improvements required under the 2005 CDO. However, compliance with the BOD and nitrogen loading rate limits has not been consistent, as discussed later in these findings.

Facility and Discharge

10. The facility operates during the tomato harvest season from approximately June to mid-October. Processing operations occur 24 hours per day, every day during the harvest season. The facility is designed to produce aseptic tomato paste and diced tomatoes in bulk packaging. However, the Discharger has only produced tomato

paste to date. The facility has plans to expand the processing operations by 65% in the future. The expansion is not anticipated to change wastewater characteristics or cause flow limits to be exceeded. Tomatoes are received in trucks, transported into the facility by flumes, processed into tomato paste, and packaged in bulk packaging. A facility site plan is included in Attachment B, which is attached hereto and made part of this Order by reference.

11. The facility produces five wastewater streams. Four of the five wastewater streams are discharged to either the 5 acre-feet (ac-ft) Settling Pond or 210 ac-ft Cooling Pond. A portion of wash water from the flume system is discharged into the Settling Pond prior to use as irrigation water for the LAAs. The Cooling Pond receives water softener reject, condensate from the evaporation process, and boiler blowdown. Cooling Pond water is used to irrigate the LAAs or reused in the flume system. Water from plant sanitation and cleaning activities make up the fifth waste stream. Sodium hydroxide is used in the sanitation and cleaning practices. This wastewater is collected in floor drains, then gravity flows into a sump, and is later combined with Settling Pond water in a conveyance ditch for use as irrigation water. A wastewater process flow diagram is included on Attachment C, which is attached hereto and made part of this Order by reference.

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12. The Settling Pond was constructed with clay soils compacted in lifts and includes a mechanical aerator. The Settling Pond receives wastewater during the processing season and is typically empty during the non-processing season. Any solids that have settled at the bottom of the pond are removed at the end of the processing season and incorporated into the facility's farmland as a soil amendment or used to build up farmroads around the facility.

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13. The flume system is supplied with water from the facility supply wells or condensate from the evaporation process. A small amount of chlorine is added to the well water prior to use as make-up water in the flume system. In 2005, the Discharger began using low-salinity condensate in the flumes in lieu of well water to reduce salinity concentrations in the wastewater. The November 2005 *Salinity Reduction Study Report* included a comparison of the condensate, Cooling Pond, supply well, and Settling Pond water quality which is summarized in the table below.

Water Description	EC [1], µmhos/cm	TDS, mg/L
Condensate	20	N/A
Cooling Pond (2004 Processing Season)	457	256
Cooling Pond (2005 Processing Season)	391	283
Supply Well [2]	785	418
Settling Pond (2004 Processing Season)	1,177	1,489
Settling Pond (2005 Processing Season)	905	620

[1] EC denotes electrical conductivity.
[2] Average of Plant Well 1 and Plant Well 2.

14. The wastewater character discharged from the Settling Pond is summarized in the table below for select parameters. Wastewater samples are collected at the flow metering station just outside the Settling Pond, which also captures plant sanitation and clean-up water collected from the facility floor drains. Potentially applicable Water Quality Objectives (WQOs) are shown for comparison.

	Annual Average Wastewater Quality						
	pH	EC	TDS	FDS	BOD	TKN	Nitrate Nitrogen
Year	pH units	µmhos/cm	mg/L	mg/L	mg/L	mg/L	mg/L
WQO	6.5-8.5[1]	700[4]-2,200[2]	450[4]-1,500[2]	--	--	--	10[3]
1996	6.3	1,520	--	--	--	--	--
1997	6.6	1,688	--	--	--	--	--
1998	6.6	1,290	--	--	--	--	--
1999	5.6	1,257	--	--	--	--	--
2000	5.0	1,620	--	--	--	--	--
2001	5.7	1,338	1,118	--	885	--	--
2002	6.2	3,164	1,886	--	1,473	75.3	0.1
2003	5.1	1,267	1,397	--	1,342	58.6	0.0
2004	4.5	1,177	1,489	901	1,059	69.7	1.8
2005	5.7	906	620	374	527	58.1	0.4
2006	6.2	756	646	397	389	27.5	3.8
2007	5.4	954	847	459	840	48.2	0.4
2008	6.0	901	760	491	647	52.8	1.2
2009	6.1	1,017	923	550	850	43.5	2.1
2010	5.5	986	882	565	650	51.2	2.5
2011	5.6	1,011	877	607	241	67.1	2.4
2012	5.5	1,219	1,173	849	849	80.8	1.9

"--" denotes no data available.
[1] Secondary Maximum Contaminant Level (MCL).
[2] Upper Secondary MCL.
[3] Primary MCL.
[4] Agricultural Water Quality Goal.

Based on the data above, wastewater quality improved with respect to salinity and BOD concentrations after the 2005 modifications, but more recent data from 2012 shows higher salinity and nitrogen concentrations.

15. The Cooling Pond is generally full of water (a mixture of water softener reject, condensate from the evaporation process, and boiler blowdown) throughout the year; however, the pond is occasionally emptied for maintenance. After the processing season, water in the Cooling Pond is drained to achieve 4 feet of freeboard to accommodate direct precipitation during the rainy season. Based on a 100-year return 365-day precipitation event, reasonable estimates for evaporation, and minimal percolation, adequate capacity (with a minimum of 2-foot freeboard) is maintained during the wet weather months.

16. When the facility operates daily, approximately 728,800 gallons per month of boiler blowdown is generated (which represents less than 1 percent of the 81.9 million gallons (mgal) of total wastewater discharged by the facility during the peak months of August and September). The boiler blowdown has an average EC of 1,200 to 1,400 µmhos/cm.

17. The facility has two water softeners. The water softener regeneration cycle occurs after 200,000 gallons of soft water has been produced. There are four stages to a cycle. Water quality and discharge rates from each cycle are summarized below:

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Cycle and Description	Flow During Cycle, gpm	EC, mg/L	Total Monthly Flow, gallons	% of Total WW Flow [1]
Backwash - water flows backwards to loosen bed and remove foreign matter	145	850	52,171	0.06
Brine - between 600 and 1,000 lb of salt introduced to softener	24	7,300	19,275	0.02
Slow Rinse - slowly distributes remaining sodium through softener	145	8,600	44,718	0.05
Final Rinse - Compacts resin and removes excess brine	220	3,463	113,080	0.14

[1] Based on approximately 81.9 million gallons of wastewater discharged to the LAAs during the peak months of August and September. Wastewater includes water from Settling Pond, Cooling Pond, and plant sanitation and cleanup activities.

18. Approximately 695 acres of LAAs are available for irrigation with wastewater from the Settling Pond and/or Cooling Pond. Supplemental water is provided by the Glen-Colusa Irrigation District (GCID). The various crops grown on the LAAs include sudan grass hay, alfalfa, pasture grass and corn. Fields MS5, MS15, MS16, MS17, MS18, and MS24 are pasture lands for cattle grazing. A description of the LAAs is summarized below.

LAA Field	Acreage	Land Use	Land Owner
MS1	95	Crop	Gobel
MS2, MS3	82.1	Crop	Morning Star
MS5	24.6	Pasture	Morning Star
MS6	21.4	Crop	Morning Star
MS11	35.6	Crop	Morning Star
MS14	44.5	Crop	Morning Star
MS15	26.7	Pasture	Morning Star
MS16	18	Pasture	Morning Star
MS17	18.7	Pasture	Morning Star
MS18	78.2	Pasture	Morning Star
MS20	64.6	Crop	Morning Star
MS21	25.9	Crop	Morning Star
MS24	159.8	Pasture	Morning Star

19. The LAAs are flood irrigated using a series of breakouts in the irrigation ditches or with siphon hoses from the ditches to the fields. Each field contains 3 to 9 blocks, and each block contains several checks. Larger fields are typically split into two sections. Checks are strips of cropland separated by berms, typically 20 feet wide with varying lengths. The number of checks per block varies by field and changes from year to year. The berms separating each check contain the wastewater and help ensure even distribution of the wastewater.

20. Earth dams and additional ditches (temporary and permanent) are used to separate the Discharger's irrigation distribution and tailwater collection system from the GCID easement drain and other public drainage courses that traverse the LAAs. The GCID drain is located along the western boundary of Fields MS11 and MS21 and crosses through the LAAs near Fields MS3, MS5, MS6, and MS14 as shown on Attachment B. A parallel ditch is used in lieu of the GCID drain to provide irrigation to Fields MS11 and MS21. The temporary tailwater collection ditch parallel to the public drain along the eastern boundary of Fields MS5, MS16, MS17, and MS18 isolates the public drain and the concrete weir east of MS5 from wastewater discharges. At the end of the processing season, temporary tailwater ditches are filled in, storm water culverts to the GCID are restored, and storm water is allowed to discharge into the GCID drain.

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21. Based on the Discharger's Annual Monitoring Reports, the average monthly wastewater applied to the LAAs is summarized below. No supplemental irrigation water from GCID was used during the 2009 through 2012 processing seasons.

	Average Monthly Discharges to the LAAs, mgd	
Processing Year	From Settling Pond	From Cooling Pond
2009 [1]	2.0 – 2.4	0.8 – 1.1
2010 [2]	1.8 - 2.4	0.3 – 0.9
2011 [3]	1.5 – 2.3	0 – 0.4
2012 [4]	0.7 – 2.8	0 – 0.5

[1] Processing season July through October.
[2] Processing season August through October.
[3] Processing season August through October.
[4] Processing season July through October.

22. The Discharger began using Fields MS5, MS15, MS16, MS17, MS18, and MS24 in 2005 to graze cattle. Currently, approximately 160 head are rotated between each field designated as pasture from mid-May to early November. Irrigation and tailwater ditches that convey the wastewater to these fields are located outside the perimeter fences and away from the cattle.

23. Nitrogen is introduced to the LAAs through process wastewater and manure from grazing cattle. Annual nitrogen uptake values vary from 150 to 350 lb/ac depending on the crop grown and whether the LAAs are pasture lands. A nitrogen balance for each LAA was provided by the Discharger in the 30 November 2012 submittal, which is summarized below.

		Average Nitrogen Loading, lb/ac/yr (Minimum/Maximum from 2009 through 2011)			
Fields	Land Use	Wastewater	Other Sources [1]	Crop Uptake [2]	Nitrogen Balance [3]
MS1	Crop	0 / 107	--	0 / 230	0 / -123
MS2, MS3	Crop	59 / 182	--	230 / 350	-171 / -168
MS5	Pasture	115 / 164	30 / 30	150	-5 / 44
MS6	Crop	63 / 150	--	230 / 350	-167 / -200
MS11	Crop	95 / 142	--	350	-255 / -208
MS14	Crop	98 / 217	--	290 / 350	-192 / -133
MS15	Pasture	69 / 144	38 / 18	150	-43 / 12
MS16, MS17	Pasture	90 / 156	30 / 18	150	-30 / 24
MS18, CH1	Pasture	69 / 165	38 / 30	150	-43 / 45
MS18, CH2	Pasture	30 / 112	38 / 30	150	-82 / -8
MS20, CH1	Crop	48 / 77	--	350 / 230	-302 / -153
MS20, CH2	Crop	44 / 161	--	350	-306 / -189
MS21	Crop	52 / 142	--	230 / 350	-178 / -208

Fields	Land Use	Average Nitrogen Loading, lb/ac/yr (Minimum/Maximum from 2009 through 2011)			
		Wastewater	Other Sources [1]	Crop Uptake [2]	Nitrogen Balance [3]
MS24, CH1	Pasture	97 / 189	30 / 38	150	-23 / 77
MS24, CH2	Pasture	139 / 257	30 / 18	150	19 / 125

[1] Nitrogen loading from cattle manure based on nitrogen excreted per season: approximately 30 lb/ac in 2009, 38 lb/ac in 2010, 18 lb/ac in 2011.
[2] Typical crop uptake rates: 350 lb/ac for alfalfa, 230 lb/ac for corn, 230 lb/ac for sudan hay grass, 290 lb/ac for alfalfa/grass, and 150 lb/ac for pasture land.
[3] Nitrogen applied from wastewater plus nitrogen applied from other source minus crop root uptake. Positive number indicates overloading of nitrogen.

The data above show that some of the fields received more nitrogen than could be consumed by the crop, which is a violation of CDO R5-2005-0003. CDO R5-2005-0003 requires that nitrogen and other nutrients, regardless of source, be applied at agronomic rates for the crops grown. Review of these results in concert with reported irrigation rates during the same period indicates that the nitrogen overloading is primarily associated with fields used for pasture and fields that were over-irrigated with wastewater. This Order requires the application of wastewater and nutrients at reasonable agronomic rates to preclude creation of a nuisance condition or degradation of groundwater. In addition, this Order requires the Discharger to improve operational controls to prevent nitrogen overloading.

24. Based on the 30 November 2012 submittal, the maximum daily BOD loading rates during the 2009 to 2011 processing season (July through October) ranged from 10 lb/ac/day to 700 lb/ac/day. High BOD loading rates occurred during the 2009 season, specifically during the months of July and August. Ranges indicate the variation between the different field sizes. Review of the 2012 BOD data (July through October) indicated maximum BOD loading rates ranging from 10 lb/ac/day to 220 lb/ac/day. The Discharger has occasionally exceeded the daily maximum BOD limit of 100 lb/ac/day as imposed by CDO R5-2005-0003.

25. Based on information submitted on 29 August 2013, maximum daily BOD loadings were calculated for each field, rather than each check or block. Fields are irrigated in blocks, and the number of blocks varies depending on size of the field. Each block consists of a number of checks with varying lengths. Calculations were based assuming that the total number of days that each field was irrigated was split equally among the blocks. Revised MRP 95-160, requires loading rates be calculated for each irrigation check. This Order prescribes BOD loading limits and submittal of a plan to better control BOD loading rates from wastewater and cattle manure and ensure compliance with this Order.

26. The California League of Food Processors' *Manual of Good Practice for Land Application of Food Processing/Rinse Water* 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, but recommends that additional safety factors be used for sites with heavy and/or compacted soils.

27. 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. Based on facility- and site-specific information, the discharge falls in Risk Category 3. On 29 August 2013, the Discharger submitted an oxygen transfer model that demonstrated a cycle average BOD loading of 139 lb/ac/day that would maintain aerobic conditions within the LAA soils.

28. During the processing season, any storm water or irrigation runoff (tailwater) from the LAAs is collected in the irrigation and tailwater ditches for reuse in the irrigation system.

29. Storm water generated at the processing facility is contained on-site. Drains collect and convey storm water to several storm water collection basins onsite for percolation or evaporation. The storm water basins have a total capacity of approximately 4.7 million gallons and their locations are shown on Attachment B.

30. Any water remaining in the irrigation and tailwater ditches at the end of the processing season is pumped back onto the LAA. During the first two inches of rain, storm water is pumped back onto the LAA to flush the irrigation ditches. After two inches of rain, the storm water collected in the facility's ditches is tested and compared to the water quality in the GCID drainage ditch. If the water quality is equal to or better than the drainage water, the earthen dams are removed and storm water is allowed to drain into the GCID drainage ditch.

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31. Residual solid wastes from the Settling Pond are applied to the LAA as a soil amendment or used to build up roads. Cull tomatoes and vines (approximately 3,000 to 6,000 tons per year), and tomato pomace including seeds and skins (approximately 12,000 tons per year) are typically transported off-site for use as animal feed or soil amendment, but may be applied to the LAA at agronomic rates.

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32. Three metering stations measure wastewater flows to the LAAs. Station 1 is located in the conveyance ditch that carries Settling Pond and plant sanitation/clean-up water. Station 2 is located in the conveyance ditch that carries Cooling Pond water. Station 3 is located on the main irrigation supply ditch and measures the total irrigation flow (blend of plant sanitation/clean-up, Settling Pond, Cooling Pond, and GCID supplemental water) applied to the LAAs. The metering station locations are shown on Attachment B.

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33. Domestic wastewater generated at the facility is discharged to a septic tank and leachfield system regulated by the Colusa County Environmental Health Department. Its location is shown on Attachment B.

Site-Specific Conditions

34. The processing facility is supplied with water from two wells located on the property. Plant Well 1 is designated as the primary water source. Plant Well 2 is used as a back-up water source. The process supply water quality is summarized below for select constituents.

	Average Water Quality Data [1], mg/L unless specified	
Constituent	**Plant Well 1**	**Plant Well 2**
pH, std units	7.4	7.7
EC, µhmos	664	746
TDS	410	420
Calcium	48	42
Chloride	45	57
Iron, µg/L	70	60
Magnesium	20	26
Manganese, µg/L	<10	<10
Potassium	1	2
Sulfate	62	70
Nitrate – NO_3,	5.7	3.1

[1] Based on data obtained 29 October 2012.

35. The facility and LAAs are relatively flat with a mild downward slope toward the north-east. Drainage within the area is towards the Glenn-Colusa drainage ditch, which is tributary to the Colusa Basin Drain.

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36. Based on the 15 May 2003 Flood Insurance Rate Map, the facility is located within an area determined to be outside the 0.2 percent annual chance (or 500-year) flood.

37. Surrounding land uses are primary agricultural. The nearest California Irrigation Management Information System climate data station (Station #32) is located near Colusa. The annual average precipitation is approximately 18 inches, the 100-year total annual precipitation is approximately 33 inches, and the reference evapotranspiration rate is approximately 54 inches per year.

Groundwater Conditions

38. Based on information from the United States Department of Agriculture Colusa County Soil Survey, soils below the facility and LAAs are predominantly loam and clay loam soils. According to the United States Department of Agriculture Natural Resources Conservation Service data, near-surface soils at the facility are classified as Westfan loam. These soils are characterized as well drained soils.

39. Groundwater beneath the facility and associated LAAs is relatively shallow, approximately 5 to 15 feet below ground surface, and generally flows towards the north to north-east. Groundwater gradient and background groundwater quality are likely influenced by infiltration of high quality water from the GCID Canal, which is adjacent to the southern site boundary (see Attachment B). This unlined canal carries high quality Sacramento River water used to irrigate farmland. Percolation from this canal most likely produces localized improvements in groundwater quality. The unlined Cooling Pond also recharges the shallow groundwater immediately upgradient of the LAAs with relatively low salinity water year-round.

40. Nine groundwater monitoring wells monitor the shallow groundwater at the site, as shown on Attachment B. Groundwater monitoring near the Settling Pond was established just prior to operation of the facility in 1995 and includes wells MW1, MW2, MW3 (installed in 1995) and MW4 (installed in 2004). Monitoring wells near the LAAs were installed in 2004 several years after the discharge began (wells MW5, MW6, MW7, MW8 and MW9).

41. The Discharger submitted the *Background Groundwater Quality Study and Groundwater Impacts Assessment Report* as required by CDO R5-2005-0003 on December 2005. An intra-well analysis and upper control limits were established for wells MW1 through MW3. At that time, groundwater monitoring results indicated high spatial variability between wells, but low temporal variability within each well. The report concluded that salinity and nitrate concentrations were below the respective intra-well upper control limits. Therefore, the report concluded, there was no

evidence of groundwater degradation caused by the discharge to the Settling Pond at that time. However, the report stated that nitrate nitrogen concentrations exceeded the upper control limit, particularly in wells MW1 and MW3. This apparent degradation was attributed to either contamination or an innocuous cause, such as sampling, transcription, or lab error. In this case, because this occurred in both an upgradient and downgradient well, the report concluded that the increased concentrations were not attributed to the Settling Pond and therefore there was no evidence of degradation.

42. Since the 2005 report, the Discharger has continued to monitor shallow groundwater quality near the Settling Pond. In general, shallow groundwater quality has continued to show high spatial variability between wells and low short-term temporal variability within each well. A comparison of the current groundwater quality to groundwater quality prior to discharge operations is summarized in the table below. Because of the low short-term temporal variability, average concentrations are considered representative of the data.

	Average Groundwater Concentration, mg/L							
	Background				Compliance Wells			
	MW1		MW4		MW2		MW3	
Constituent	1995	2012	2004	2012	1995	2012	1995	2012
TDS	206	147	350	318	453	477	490	507
Chloride	21	5.5	29	20	35	56	26	30
Iron	--	< 0.1 [1]	0.1	< 0.1 [1]	--	< 0.1 [1]	--	< 0.1 [1]
Manganese	--	< 0.1 [1]	< 0.1 [1]	< 0.1 [1]	--	< 0.1 [1]	--	< 0.1 [1]
Nitrate Nitrogen	0.2	1.8	6.0	6.4	11	3.9	10	19

"—" denotes no data available.
[1] The laboratory reporting limit for iron and manganese is 0.1 mg/L.

Groundwater quality in wells MW1 and MW4, which are upgradient of the Settling Pond, exhibits high spatial variability, possibly due to influences from the nearby GCID canal. MW1 is located immediately downgradient from this canal and exhibits higher quality water when compared to MW4, which is also upgradient of the Settling Pond but farther north of the canal.

In general, groundwater quality in wells MW1 through MW4 has been relatively constant over time for salinity constituents and nitrate nitrogen since just before the discharge began:

a. TDS concentrations have been relatively constant over time in all four wells, so there is no significant evidence of degradation from the pond.

b. Chloride concentrations in MW2 have increased in the last two years, indicating groundwater degradation caused by the discharge. However, the concentrations do not exceed the lowest agricultural water quality goal for chloride.

c. Use of the Settling Pond has apparently not caused degradation from iron and manganese. However, the Discharger's laboratory's reporting limit for manganese is 0.1 mg/L, which is two times the secondary MCL of 0.05 mg/L. This order requires that all laboratory reporting limits be no greater than the applicable water quality objectives for all monitored constituents.

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d. Nitrate nitrogen concentrations have been relatively constant over time, indicating no evidence of degradation from the pond. Nitrate nitrogen concentrations in MW3 have historically exceeded the primary MCL since before discharge operations began. This apparent pollution appears to be highly localized (i.e., nitrate levels in wells further downgradient do not exceed the water quality objective).

43. As noted above, wells MW-5 through MW9 monitor shallow groundwater at the LAAs. Because wells MW5 though MW9 were installed several years after the discharge began and limited data were available at the time of the 2005 study, a comparison between the average water quality results was performed to determine if upgradient well MW5 had lower constituent levels than the downgradient wells, MW6 through MW9. The 2005 report concluded that the groundwater monitoring results near the LAAs indicated spatial variability but no evidence of degradation from wastewater application operations at that time.

44. The Discharger has continued to monitor shallow groundwater quality near the LAAs. With the additional data, the potential for degradation at the LAAs was re-evaluated. A comparison of 2005 groundwater quality and current (2012) groundwater quality is summarized in the table below.

	Average Groundwater Concentration, mg/L									
	Background		Compliance Wells							
	MW5		MW6		MW7		MW8		MW9	
Constituent	2005	2012	2005	2012	2005	2012	2005	2012	2005	2012
TDS	488	700	735	748	537	674	730	885	987	1012
Chloride	18	55	41	75	58	98	47	139	29	156
Iron	2.2[2]	< 0.1[1]	7.4	< 0.1[1]	1.0[2]	< 0.1[1]	9.6	< 0.1[1]	2.0	< 0.1[1]
Manganese	0.6	< 0.1[1]	0.2	< 0.1[1]	0.7	0.5	1.0	0.8	0.1	< 0.1[1]
Nitrate Nitrogen	6.8	39	11	5.9	9.7	4.1	2.4	1.8	23	17

[1] The laboratory reporting limit for iron and manganese was reported as 0.1 mg/L.
[2] The February 2005 groundwater samples resulted in iron concentrations of 88 mg/L and 56 mg/L in MW5 and MW7 respectively, which appear to be outliers; therefore these results were not used to calculate the averages.

In general, groundwater quality near the LAAs, indicates salinity constituents and nitrate nitrogen concentrations increase as groundwater moves northward away from the GCID canal. Concentrations of constituents of concern within each well have been relatively constant over time with a few exceptions:

a. TDS, chloride, and nitrate nitrogen concentrations in background well MW5 have increased in the last two years. More significantly, background nitrate concentrations, have exceeded the primary MCL since 2010. Prior to 2010, background nitrate concentrations were below 10 mg/L. Well MW5 is located away from the influence of the GCID canal and upgradient of the LAA discharge. Temporally variable background concentrations are likely due to natural variations and/or upgradient land uses that are not controlled by the Discharger, which are primarily irrigated agriculture.

b. TDS concentrations in wells MW8 and MW9 indicate degradation caused by the discharge. Increased concentrations were observed in wells MW8 and MW9 between 2010 and 2012. In particular, TDS concentrations in MW9 were at an all-time high. Annual average TDS concentrations exceeded the lowest agricultural water quality goal of 450 mg/L; however they did not exceed the upper secondary MCL of 1,000 mg/L.

c. Chloride concentrations in wells MW8 and MW9 indicate degradation caused by the discharge. Between 2010 and 2012, higher than normal chloride concentrations were observed in these wells. In particular, chloride concentrations in MW9 were at an all-time high. Annual average chloride concentrations in MW9 did not exceed the lowest secondary MCL of 250 mg/L. However, concentrations exceeded 250 mg/L on two sampling events in 2011. Chloride increases were also observed in background well MW5 during the same period, but the degree of increase was less than the increases observed in MW8 and MW9.

d. Iron and manganese concentrations that exceed the secondary MCLs were sporadic in most of the compliance monitoring wells. In the case of manganese, concentrations in MW7 and MW8 exceeded the secondary MCL multiple times in 2012. In addition, multiple exceedences have been observed in well MW8 since its installation in 2004. As mentioned previously, the laboratory reporting limit for manganese is 0.1 mg/L, which is two times the secondary MCL. Lowering the reporting limits to below water quality objectives will be necessary to determine potential degradation from the LAAs.

e. Nitrate nitrogen concentrations in wells MW6, MW7, and MW8 have been relatively steady since 2010 and remain below the primary MCL. In contrast, nitrate nitrogen concentrations in MW9 indicate apparent pollution not evidenced in any other well within or downgradient of the LAAs. Concentrations in MW9 that exceed the primary MCL were sporadic prior to 2010. However, since 2010, concentrations have consistently exceeded the primary MCL. Nitrate concentrations in background well MW5 were relatively constant prior to 2010, but

have significantly increased since 2010. However concentrations in other wells within or downgradient of the LAAs remained constant, with the exception of MW9.

Basin Plan, Beneficial Uses, and Regulatory Considerations

45. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins,* Fourth Edition (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting waters of the basin, and incorporates by reference plans and policies adopted by the State Water Board. Pursuant to Water Code section 13263(a), waste discharge requirements must implement the Basin Plan.

46. Local drainage is to the Colusa Basin Drain. The beneficial uses of Colusa Basin Drain as stated in the Basin Plan, are agricultural supply; water contact recreation; warm freshwater habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; and wildlife habitat.

47. The Basin Plan designates the beneficial uses of underlying groundwater as municipal and domestic supply, agricultural supply, and industrial supply.

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

49. The Basin Plan's numeric water quality objective for bacteria requires that the most probable number (MPN) of coliform organisms over any seven-day period shall be less than 2.2 per 100 mL in MUN groundwater.

50. The Basin Plan's narrative water quality objectives for chemical constituents, at a minimum, require waters designated as domestic or municipal supply to meet the MCLs specified in Title 22 of the California Code of Regulations (hereafter Title 22). The Basin Plan recognizes that the Central Valley Water Board may apply limits more stringent than MCLs to ensure that waters do not contain chemical constituents in concentrations that adversely affect beneficial uses.

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

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

53. In the absence of specific numerical water quality limits, the Basin Plan methodology is to consider any relevant published criteria. General salt tolerance guidelines, such as *Water Quality for Agriculture* by Ayers and Westcot and similar references indicate that yield reductions in nearly all crops are not evident when irrigation water has an EC less than 700 µmhos/cm. There is, however, an eight- to ten-fold range in salt tolerance for agricultural crops and the appropriate salinity values to protect agriculture in the Central Valley are considered on a case-by-case basis. It is possible to achieve full yield potential with waters having EC up to 3,000 µmhos/cm if the proper leaching fraction is provided to maintain soil salinity within the tolerance of the crop.

Antidegradation Analysis

54. State Water Resources Control Board Resolution 68-16 ("Policy with Respect to Maintaining High Quality Waters of the State") (hereafter Resolution 68-16) prohibits degradation of groundwater unless it has been shown that:

    a. The degradation is consistent with the maximum benefit to the people of the state.

    b. The degradation will not unreasonably affect present and anticipated future beneficial uses.

    c. The degradation does not result in water quality less than that prescribed in state and regional policies, including violation of one or more water quality objectives, and

    d. The discharger employs best practicable treatment or control (BPTC) to minimize degradation.

55. 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. The Discharger aids in the economic prosperity of the community by direct employment of full time and seasonal personnel. In addition, the Discharger provides a needed service for local growers, fertilizer, and equipment manufacturers as well as provides a tax base for local and county governments. The economic prosperity of valley communities and associated industry is of maximum benefit to the people of the State, and provides sufficient justification for allowing the limited groundwater degradation that may occur pursuant to this Order.

56. The Discharger has been monitoring groundwater quality at the site since the beginning of facility operations in 1995. Based on the data available, it is not possible to determine pre-1968 groundwater quality. Therefore, determination of compliance with Resolution 68-16 for this facility must be based on existing groundwater quality at the time that the discharge began.

57. Constituents of concern that have the potential to degrade groundwater include salts (primarily TDS and chloride), nutrients (nitrate nitrogen), and metals (iron and manganese) as summarized in the following table and discussion below:

	Average Concentrations, mg/L unless noted			
Constituent	Effluent [1]	Background Groundwater [2]	Compliance Wells [3]	Potential WQO
TDS	863	613	823	450 [5] - 1,500 [7]
Chloride	--	39	115	106 [4] – 600 [7]
Iron	--	0.1	0.1	0.3 [6]
Manganese	--	< 0.1 [8]	0.3	0.05 [6]
TKN	52	0.5	0.4	--
Nitrate Nitrogen	2.1	15	3.0	10 [5]

"WQO" denotes water quality objective. "—" denotes no data available.
[1] Based on 2006 – 2012 Settling Pond data, post 2005 modifications.
[2] Based on MW5 data collected from 2006 – 2012 (upgradient of the LAAs).
[3] Based on MW8 data collected from 2006 – 2012 (within the LAAs).
[4] Lowest Agricultural Water Quality Goal.
[5] Primary MCL.
[6] Secondary MCL.
[7] Upper Secondary MCL.
[8] Laboratory analytical reports specified 0.1 mg/L as the reporting limit for manganese.

a. **Total Dissolved Solids.** Groundwater data indicate degradation caused by the discharge. TDS concentrations exceed the lowest agricultural water quality goal of 450 mg/L, but do not exceed the least stringent secondary MCL, which is the short-term level of 1,500 mg/L. Changes in effluent quality with respect to TDS are not anticipated. Based on good quality source water, groundwater recharge from high quality recharge sources, consistent effluent concentrations, and a lack of concentration increases in compliance wells over several years, a TDS effluent limit is not required to protect groundwater quality. However, this Order sets a groundwater limitation that prohibits exceedance of a water quality objective. The Monitoring and Reporting Program (MRP) also establishes a numeric groundwater trigger concentration that is below water quality objectives to serve as a means of assessing whether the discharge might potentially cause a violation of the groundwater limitation at some later date. If the annual evaluation of groundwater quality performed pursuant to the MRP shows that the annual average exceeds the applicable trigger concentration in any compliance well during the calendar year, the Discharger is required to submit a technical report that either shows that the increase will not cause a violation of the Groundwater Limitation, or that proposes specific additional treatment or control to prevent exceedance of the Groundwater Limitation.

b. **Chloride.** The current monitoring program does not require analysis of chloride in wastewater, but chloride is known to be a key salinity constituent in food

processing wastewater. Groundwater data indicate degradation caused by the discharge. However, the degradation does not exceed the least stringent secondary MCL of 250 mg/L.

No additional modifications to the wastewater management system or expansion of the LAAs are anticipated; and effluent quality is not expected to change. This Order sets a groundwater limitation that prohibits an exceedance of the water quality objective in any compliance well. If future monitoring data indicate further degradation, the Provisions require that the Discharger submit an *Action Workplan* to determine best practical treatment and control for each waste constituent that exceeds a Groundwater Limitation.

c. **Iron.** Based on the character of process water supply and nature of typical food processing operations, wastewater at the site is not expected to contain significant iron concentrations. However, excessive BOD loading rates can deplete oxygen, resulting in anoxic conditions that can solubilize naturally occurring metals in soil; therefore resulting in reducing conditions that favor dissolution of iron from native soil. In general, for the LAAs, iron was not detected at or above the laboratory reporting limit of 0.1 mg/L in the background groundwater or groundwater downgradient of the LAAs. However, there were sporadic concentrations that exceeded the secondary MCL of 0.3 mg/L.

   No additional modifications to the wastewater management system or expansion of the LAAs are anticipated; and effluent quality is not expected to change. This Order sets a BOD loading limit for the LAAs to prevent potential anoxic conditions that could result in high iron detection levels in the groundwater. This Order sets a Groundwater Limitation that prohibits an exceedance of the water quality objective in any compliance well. The MRP also establishes a numeric groundwater trigger concentration that is below the water quality objective to serve as a means of assessing whether the discharge might potentially cause a violation of the groundwater limitation at some later date. If the annual evaluation of groundwater quality performed pursuant to the MRP shows that the annual average exceeds the applicable trigger concentration in any compliance well during the calendar year, the Discharger is required to submit a technical report that either shows that the increase will not cause violation of the Groundwater Limitation, or that proposes specific additional treatment or control to prevent exceedance of the Groundwater Limitation.

d. **Manganese.** Based on the character of process water supply and nature of typical food processing operations, wastewater at the site is not expected to contain significant manganese concentrations. However, excessive BOD loading rates can deplete oxygen, resulting in anoxic conditions that can solubilize naturally occurring metals in soil. It appears that BOD overloading has caused reducing conditions that favor dissolution of manganese from native soil. For the LAAs, manganese was not detected at or above the laboratory reporting limit of 0.1 mg/L in the background groundwater. However, the secondary MCL for manganese is

0.05 mg/L, and manganese concentrations downgradient of the LAAs average 0.3 mg/L, indicating pollution caused by the discharge.

No additional modifications to the wastewater management system or expansion of the LAAs are proposed; and effluent quality is not expected to change. However, current irrigation practices using long durations for flood irrigation of most of the LAAs has resulted in exceeding both the daily maximum and cycle maximum BOD loading limits. It is likely that the extended periods of soil saturation with high BOD wastewater has caused and/or contributed to an exceedance of the MCL for manganese. To prevent potential anoxic conditions, this Order sets a BOD loading limit for the LAAs based on the oxygen transfer model submitted by the Discharger. This Order sets a Groundwater Limitation that prohibits an exceedance of the water quality objective in any compliance well. However, for compliance wells MW7 and MW8, where the discharge has already caused pollution, this Order sets a groundwater limit that prohibits any increases. The apparent localized pollution is expected to resolve once new and better controlled irrigation operational practices have been implemented. If future monitoring data show that the manganese concentrations are not decreasing, the Provisions require that the Discharger submit an *Action Workplan* to determine further treatment or control.

e. **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 any excess nitrogen to nitrogen gas before it reaches the water table. Most of the nitrogen in the process wastewater is present as TKN, which can readily mineralize and convert to nitrate with some loss via ammonia volatilization, in the LAAs. Grazing cattle add additional nitrogen. The average wastewater total nitrogen concentration is approximately 54 mg/L. Background groundwater quality is poor with a nitrate nitrogen concentration averaging 15 mg/L. The poor quality background groundwater is likely due to the predominantly agricultural land use in the area. In contrast, nitrate nitrogen concentrations downgradient of the LAAs generally average 3.0 to 8.0 mg/L mg/L, with the exception of MW9. As stated in a previous finding, there appears to be localized pollution caused by the discharge. Except for MW9, the current level of degradation is acceptable.

As discussed above, the Discharger has historically over-applied wastewater to the LAAs and started using some of the LAAs as cattle pasture, resulting in some fields receiving more nitrogen than is reasonably expected to be consumed by the crop. Therefore, this Order requires that nutrients associated with the wastewater and other sources be applied to the LAAs at rates consistent with crop demand, and sets a groundwater limitation that prohibits any statistically significant increase in nitrate concentrations in any compliance well. For MW9, the apparent localized pollution is expected to resolve once new and better controlled irrigation operational practices have been implemented. If future monitoring data show that

the nitrate concentrations are not decreasing, the Provisions require that the Discharger submit an *Action Workplan* to determine further treatment or control.

58. This Order establishes effluent and groundwater limitations for the facility that will not unreasonably threaten present and anticipated beneficial uses or result in groundwater quality that exceeds water quality objectives set forth in the Basin Plan:

    a. For TDS, current groundwater monitoring data indicate that groundwater has been degraded by the discharge, but the degradation has not caused an exceedance of a water quality objective. The Discharger has implemented BPTC, so the degradation is allowable under Resolution 68-16.

    b. For chloride, current groundwater monitoring data indicate that groundwater has been degraded by the discharge, but the degradation has not caused an exceedance of a water quality objective. The Discharger has implemented BPTC so the degradation is allowable under Resolution 68-16. This Order does not allow an exceedence of the secondary MCL.

    c. For iron, current groundwater monitoring data indicate a potential for groundwater degradation. This Order requires the Discharger to implement improved source control by controlling BOD loading rates and does not allow an exceedance of the secondary MCL.

    d. For manganese, current groundwater monitoring data indicate pollution as a result of the discharge. This Order requires the Discharger to implement improved source control by controlling BOD loading rates and does not allow any further degradation.

    e. For nitrate, current groundwater monitoring data indicate isolated pollution in MW9. This Order requires the Discharger to implement best management practices (BMPs) and does not allow any further degradation to occur.

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

    a. Salinity source control in the processing plant.

    b. Wastewater screening to reduce BOD.

    c. Low salinity condensate water used in lieu of well water as make-up water in the flume system.

    d. BOD loading rate control.

    e. Use of higher quality water for supplemental irrigation, which dilutes salinity.

f. Approximately 695 acres of LAAs are available. Crops are grown on the LAAs and will take up the nutrients found in the wastewater if wastewater application rates are carefully controlled.

g. A tailwater return system that captures all irrigation runoff for reapplication as irrigation water.

60. This Order requires the Discharger to implement additional control practices for iron, manganese, and nitrate, which include nutrient loading consistent with the vegetation grown on the LAAs and BOD loading rates that prevent nuisance conditions and degradation of groundwater.

The Board considers these measures to constitute "best practicable treatment or control" and "best management practices" of the waste constituents associated with this discharge, and finds that the limited groundwater degradation allowed by this Order is consistent with the Antidegradation Policy.

61. With respect to nitrate and manganese, an unacceptable degree of groundwater degradation has occurred. Therefore this Order does not authorize any continued degradation beyond that which exists today for those constituents. The Groundwater Limitations are effective immediately and allow no degradation beyond existing groundwater quality in any compliance monitoring well and this Order requires intrawell analysis of compliance well groundwater monitoring data to determine compliance with the Groundwater Limitations. If the required improvements do not result in significantly improved groundwater quality within five years of adoption of this Order, the Provisions require that the Discharger implement additional treatment or control as necessary to bring the discharge into compliance with the Basin Plan water quality objectives.

62. This Order also requires any additional measures that will be required to comply with the Groundwater Limitations of this Order, and which are expected to result in significant improvements in the shallow groundwater quality beneath the site. This Order imposes effluent and mass loading rate limitations and contains a time schedule for the implementation of additional treatment or control to ensure that the highest water quality consistent with the maximum benefit to the people of the State will be achieved while minimizing any degradation that may occur pending completion of the required tasks. Following completion of the time schedule, this Order will be reopened if necessary to reconsider effluent limitations and other requirements to comply with Resolution 68-16. Based on the existing record, the discharge authorized by this Order is consistent with the antidegradation provisions of Resolution 68-16.

Other Regulatory Considerations

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

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

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

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

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

65. Title 27 of the California Code of Regulations (hereafter Title 27) contains regulatory requirements for the treatment, storage, processing, and disposal of solid waste. However, Title 27 exempts certain activities from its provisions. Discharges regulated by this Order are exempt from Title 27 pursuant to provisions that exempt domestic sewage, wastewater, and reuse. Title 27, section 20090 states in part:

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

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

        (1) the applicable RWQCB has issued WDRs, reclamation requirements, or waived such issuance;

        (2) the discharge is in compliance with the applicable water quality control plan; and

        (3) the wastewater does not need to be managed according to Chapter 11, Division 4.5, Title 22 of this code as a hazardous waste.(...)

66. The discharge authorized herein, and the treatment and storage facilities associated with the discharge, are exempt from the requirements of Title 27 as follows:

    a. The Settling Pond, Cooling Pond, and LAAs are exempt pursuant to Title 27, section 20090(b) because they are used for the discharge of wastewater to land, and:

i. The Central Valley Water Board is issuing WDRs;

ii. This Order prescribes requirements that will ensure compliance with the Basin Plan; and

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

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

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

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

68. The State Water Board adopted Order 97-03-DWQ (NPDES General Permit CAS000001) specifying waste discharge requirements for discharges of storm water associated with industrial activities, and requiring submittal of a Notice of Intent by all affected industrial dischargers. The Discharger prevents all storm water from leaving the tomato processing plant during the processing season. All storm water is collected in the storm water retention basin for evaporation and percolation. Therefore, the Discharger is not required to obtain coverage under the NPDES General Permit CAS000001.

69. Water Code section 13267(b) states:

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

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

70. The California Department of Water Resources sets standards for the construction and destruction of groundwater wells (hereafter DWR Well Standards), as described in *California Well Standards Bulletin 74-90* (June 1991) and *Water Well Standards: State of California Bulletin 94-81* (December 1981). These standards, and any more stringent standards adopted by the state or county pursuant to Water Code section 13801, apply to all monitoring wells used to monitor the impacts of wastewater storage or disposal governed by this Order.

71. As stated in Finding 9 of WDRs Order 95-160, Colusa County certified a Final Environmental Impact Report (EIR), in accordance with the California Environmental Quality Act (CEQA), (Public Resources Code Section 2100, et seq.) and the State CEQA Guidelines prior to construction of the facility. Because this Order does not envision or allow any significant change in the facility or the discharge, the action to update the WDRs is exempt from CEQA pursuant to CEQA Guidelines Section 15301 (Class I: operation or minor alteration of facilities not expanding existing uses).

72. Pursuant to Water Code section 13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.

Public Notice

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

74. The Discharger(s) and interested agencies and persons have been notified of the Central Valley Water Board's intent to prescribe waste discharge requirements for this discharge, and they have been provided an opportunity to submit written comments and an opportunity for a public hearing.

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

IT IS HEREBY ORDERED that WDRs Order 95-160 and CDO R5-2005-0003 are rescinded, pursuant to Water Code sections 13263 and 13267, the Morning Star Packing Company, LP and Fred Gobel, their agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the Water Code and regulations adopted hereunder, shall comply with the following:

A. Discharge Prohibitions

1. Discharge of wastes to surface waters or surface water drainage courses including irrigation ditches outside the control of the Discharger is prohibited.

2. Discharge of waste classified as 'hazardous', as defined in the California Code of Regulations, title 23, section 2510 et seq., is prohibited.

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

4. Discharge of toxic substances into land application areas such that biological treatment mechanisms are disrupted is prohibited.

5. Discharge of domestic wastewater to the Cooling Pond, Settling Pond, LAAs, or any surface waters is prohibited.

6. Discharge of process wastewater to the domestic wastewater treatment system (septic system) is prohibited.

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B. Flow Limitations

1. **Effectively immediately**, the maximum daily industrial process wastewater [1] flow to the land application areas shall not exceed the following limits:

Flow Measurement	Flow Limit [1]
Average Daily Flow [2]	4.3 million gallons per day
Total Annual Flow [3]	422 million gallons per year

[1] Industrial process wastewater flow shall include any discharges from the Settling Pond, Cooling Pond, and wastewater generated from the plant sanitation and cleaning activities.

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

[3] As determined by the total flow during the calendar year.

C. Effluent and Mass Loading Limitations

1. Prior to application to the land application areas, wastewater collected from Flow Metering Station 1, which is representative of Settling Pond water and any plant sanitation and clean-up water, shall not exceed the following effluent limit:

Constituent	Units	Daily Maximum	Annual Maximum
Average FDS Concentration [1]	mg/L	--	900

[1] Flow-weighted average based on total flow and concentration.

a. The flow-weighted annual average FDS concentration shall be calculated using the following formula:

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

Where: C_a = Flow-weighted annual average FDS concentration in mg/L

i = the number of the month (e.g., January = 1, February = 2, etc.)

C_{Pi} = Monthly average process wastewater FDS concentration for calendar month i in mg/L

V_{Pi} = volume of process wastewater applied to LAAs during calendar month i in million gallons

2. Wastewater applied to each irrigation block of each LAA field shall not exceed the following mass loading limits:

Constituent	Units	Maximum	Annual Maximum
Total Nitrogen Mass Loading [1]	lb/ac/year	--	Crop Demand
BOD Mass Loading [1]	lb/ac/day/irrigation cycle	139	--

[1] Based on all sources, including commercial fertilizers and cattle manure, as well as water from the Settling Pond and plant sanitation and cleaning activities.

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Compliance with the above requirements shall be determined as specified below:

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

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

Where: M = mass of nitrogen applied to the block in lb/ac/yr

C_i = concentration of total nitrogen in mg/L based on the average of the three most recent wastewater monitoring results for month i

V_i = volume of wastewater applied to the block during calendar month i in million gallons

A = area of the block irrigated in acres

I = the number of the month (e.g., January = 1, February = 2, etc.)
M_x = nitrogen mass from other sources (e.g., cattle manure and fertilizer) in pounds
8.34 = unit conversion factor
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b. The mass of BOD applied to each block within each LAA field on a daily basis shall be calculated using the following formula:

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

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Comment: Need to add in cycle days to the equation.

Where:

M = mass of BOD applied to the block in lb/ac/day
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 block in millions of gallons per day
A = area of the block irrigated in acres
M_x = BOD mass from other sources (e.g., cattle manure and fertilizer) in pounds
8.345 = unit conversion factor

D. **Discharge Specifications**

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

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

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

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

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

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. As a means of discerning compliance with Discharge Specification D.7, the dissolved oxygen (DO) content in the upper one foot of any wastewater pond shall not be less than 1.0 mg/L for three consecutive weekly sampling events. If the DO in any single pond is below 1.0 mg/L for three consecutive sampling events, the Discharger shall report the findings to the Regional Water Board in writing within 10 days and shall include a specific plan to resolve the low DO results within 30 days.

9. The Discharger shall operate and maintain all ponds sufficiently to protect the integrity of containment dams and berms and prevent overtopping and/or structural failure. Unless a California-registered civil engineer certifies (based on design, construction, and conditions of operation and maintenance) that less freeboard is adequate, the operating freeboard in any pond shall never be less than two feet (measured vertically from the lowest possible point of overflow). As a means of management and to discern compliance with this requirement, the Discharger shall install and maintain in each pond a permanent staff gauge with calibration marks that clearly show the water level at design capacity and enable determination of available operational freeboard.

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

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

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

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

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

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

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

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

14. Wastewater contained in any pond shall not have a pH less than 4.0 or greater than 9.0.

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15. Storage of residual solids, including cull tomatoes, vines, and pomace (seeds and skins) on areas not equipped with means to prevent storm water infiltration, or a paved leachate collection system is prohibited.

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 Report Program.**

Constituent	Units	Water Quality Objective	Maximum Allowable Concentration
Nitrate nitrogen	mg/L	10	Current groundwater quality or the Water Quality Objective, whichever is greater [1,2]
Nitrate nitrogen	mg/L	10	Current groundwater quality [1,2]
Manganese	mg/L	0.05	Current groundwater quality or the Water Quality Objective, whichever is greater [1,2]
Manganese	mg/L	0.05	Current groundwater quality [1,2]

[1] "Current groundwater quality" means the quality of groundwater as evidenced by monitoring completed as of the date of this Order for each of the specified compliance monitoring wells listed in the Monitoring and Reporting Program.

[2] Applies only to ths specific compliance monitoring wells listed in the Monitoring and Reporting Program.

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

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

F. **Land Application Area Specifications**

1. Tailwater runoff and spray from the wastewater shall not be discharged outside of the LAAs.

2. Crops and 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 LAAs shall be managed to prevent breeding of mosquitoes. In particular:

   a. There shall be no standing water 48 hours after irrigation ceases;

   b. Tailwater ditches shall be maintained essentially free of emergent, marginal, and floating vegetation; and

   c. Low-pressure and unpressurized pipelines and ditches accessible to mosquitoes shall not be used to store recycled water.

5. 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 domestic water supply well	100

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

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

8. Any irrigation runoff (tailwater) shall be confined to the LAAs or returned to the irrigation system and shall not enter any surface water drainage course or storm water drainage system.

9. Discharge to the LAAs shall not be performed when the ground is saturated by precipitation.

10. At the end of each processing season: a. Any water remaining in the irrigation and tailwater ditches shall be pumped onto the LAA. b. Ditches shall be flushed with the first two inches of rainfall to remove residual wastewater prior to allowing subsequent storm water runoff to drain offsite during the winter months. c. The

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Deleted: within 24 hours of forecasted rain, during rainfall, within 24 hours after any measureable rainfall event, or

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Deleted: to the storm water retention basins

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Deleted: GCID water

Settling Pond shall be drained and visible sludge and solids shall be removed and applied to the LAA as a soil amendment or used to build up farmroads.

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11. Discharge of storm water runoff from the LAAs to off-site land or surface water drainage courses is allowed if the Discharger complies with Land Application Area Specifications F.9 and F.10 above.

12. The number of cattle allowed to graze shall not exceed 160 head per year unless expressly authorized by the Executive Officer. Grazing shall be limited to Fields MS5, MS15, MS16, MS17, MS18, and MS24. Approval by the Executive Officer is required prior to increasing the number of cattle and/or use of any other LAA as additional pasture land.

G. Residual Solids Disposal Specifications

Sludge, as used in this document, means the solid, semisolid, and liquid organic matter removed from wastewater treatment, settling, and storage vessels or ponds. Solid waste refers to solid inorganic matter removed by screens and soil sediments from washing of unprocessed fruit or vegetables. Except for waste solids originating from meat processing, residual solids means organic food processing byproducts such as culls, pulp, stems, leaves, and seeds that will not be subject to treatment prior to disposal or land application. Cull tomatoes, vines, and tomato pomace (including seeds and skins) are the residual solids generated from the facility.

1. At the end of each processing season, the Settling Pond shall be emptied for sludge and solids removal and applied to the LAA as a soil amendment or used to build up farmroads.

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2. Except as specified in Residual Solids Disposal Specifications G.1, sludge, solid waste, or residual solids shall be removed from screens, sumps, and ponds as needed to ensure optimal operation and adequate storage capacity.

3. Any handling and storage of residual solids at the facility shall be temporary (i.e), no longer than 3 months), 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.

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

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

H. **Provisions**

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

   a. By **1 March 2014**, the Discharger shall submit a *BOD and Nitrogen Application Management Report* that evaluates the efficiency of the existing irrigation operations to ensure compliance with the Mass Loading Limitations prescribed by this Order. The report shall evaluate crops grown, application rates, and irrigation schedule. The report shall address mass loading rates (BOD and nitrate) from wastewater, cattle manure, and commercial fertilizers; include BOD and nitrate removal calculations; and options for improved irrigation management to comply with those limits. If reduced loading limits are necessary to ensure compliance with this Order, the report shall propose treatment and/or an increase of the LAA acreage, describe operational and/or physical improvements required to ensure compliance with this Order, and provide a schedule for completion of those improvements that does not extend beyond **30 May 2015**.

   b. By **1 July 2014**, the Discharger shall submit a *Groundwater Limitations Compliance Assessment Plan*. The plan shall describe and justify the statistical methods used to evaluate compliance with Groundwater Limitation E.1, E.2, and E.3 of this Order for the specified compliance wells and constituents. Compliance shall be determined using appropriate statistical methods that have been selected based on site-specific information and the U.S. EPA Unified Guidance document cited in Finding 67 of this Order. The report shall explain and justify the selection of the appropriate statistical methods.

2. If the Discharger requests an increase in the number of cattle and/or use of any existing LAA as additional pasture land for grazing, the Discharger shall submit a *Nutrient Evaluation Report* **at least 150 days prior to each processing season** for approval by the Executive Officer. The report shall evaluate historical irrigation practices and nitrogen loading rates (maximum daily and cycle averages) for each LAA from wastewater and cattle manure, 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.

3. If groundwater monitoring results show that the discharge of waste is causing groundwater to contain any waste constituents in concentrations not in compliance with the Groundwater Limitations of this Order, **within 120 days of the request of the Executive Officer**, the Discharger shall submit an *Action Workplan* that sets forth the scope and schedule for a systematic and comprehensive technical evaluation of each component of the facility's waste treatment and disposal system to determine best practicable treatment and control for each waste constituent that exceeds a Groundwater Limitation. The workplan shall contain a preliminary

evaluation of each component of the WWTF and effluent disposal system and propose a time schedule for completing the comprehensive technical evaluation. The schedule to complete the evaluation shall be as short as practicable, and shall not exceed one year.

4. If concentrations of nitrate-nitrogen and manganese in the wells specified in Groundwater Limitation E.1 have not decreased to levels below the respective water quality objectives by **30 December 2018**, the report described in Provision 3 shall be submitted by **30 June 2019**.

5. 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**.

6. In accordance with California Business and Professions Code sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. All technical reports specified herein that contain workplans for investigations and studies, that describe the conduct of investigations and studies, or that contain technical conclusions and recommendations concerning engineering and geology shall be prepared by or under the direction of appropriately qualified professional(s), even if not explicitly stated. Each technical report submitted by the Discharger shall bear the professional's signature and stamp.

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

8. The Discharger shall comply with Monitoring and Reporting Program R5-_____, which is part of this Order, and any revisions thereto as ordered by the Executive Officer. The submittal dates of Discharger self-monitoring reports shall be no later than the submittal date specified in the MRP.

9. The Discharger shall comply with the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements", dated 1 March 1991, which are attached hereto and made part of this Order by reference. This attachment and its individual paragraphs are commonly referenced as "Standard Provision(s)."

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

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

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

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

14. The Discharger shall report to the Central Valley Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "Emergency Planning and Community Right to Know Act of 1986."

15. At least 90 days prior to termination or expiration of any lease, contract, or agreement involving disposal or recycling areas or off-site reuse of effluent, used to justify the capacity authorized herein and assure compliance with this Order, the Discharger shall notify the Central Valley Water Board in writing of the situation and of what measures have been taken or are being taken to assure full compliance with this Order.

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

17. To assume operation as Discharger under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Central Valley Water Board, and a statement. The statement shall comply with the signatory paragraph of Standard Provision B.3 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the CWC. 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.

18. A copy of this Order including the Monitoring and Reporting Program, Information Sheet, Attachments, and Standard Provisions, shall be kept at the discharge facility for reference by operating personnel. Key operating personnel shall be familiar with its contents.

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

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

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

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

or will be provided upon request.

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

_____
PAMELA C. CREEDON, Executive Officer

LLA: 092713

ATTACHMENT B

HydroMetrics WRI

519 17th Street, Suite 500
Oakland, CA 94612

Mr. Ross Oliveira
The Morning Star Packing Company
2211 Old Highway 99
Williams, CA 95987

December 1, 2013

Subject: Review of the Morning Star Packing Company's Williams Facility Tentative Order

Mr. Oliveira:

HydroMetrics WRI is pleased to present our review of the Morning Star Packing Company's (Morning Star's) Williams Facility tentative order. At the request of Morning Star's counsel, we have reviewed data from all monitoring wells and the facility's land application area.

Background

The Central Valley Regional Water Quality Control Board (CVRWQCB) has issued a tentative Waste Discharge Order (Order) to Morning Star for its Williams, California tomato packing plant. The Order asserts that the plant has caused groundwater degradation from its discharges. This memorandum addresses and refutes the claims that the plant's discharges have caused groundwater contamination. Our memorandum first addresses issues with the variability in background concentrations of Total Dissolved Solids (TDS) and chloride.

Range and Variance in Background Groundwater Quality

The CVRWQCB identified three monitoring wells at the site that represent background conditions: wells MW1, MW4 and MW5. Background chloride, TDS, and nitrate concentrations have been monitored since 1995 (Figure 1 through Figure 3). Historical

groundwater quality data from these wells indicate that background conditions are highly variable, both temporally and spatially. The range in background concentrations for each of these parameters is presented in Table 1.

Prior to 2004, background concentrations were only measured in well MW1. Concentrations in this well show low variability over the monitoring period. This consistency is most likely due to seepage from the nearby Glenn-Colusa Irrigation District (GCID) ditch that lies approximately 160 feet upgradient of well MW1. Therefore, the background concentrations seen in well MW1 are likely not representative of the variability in regional groundwater quality.

Background wells MW4 and MW5, which are not located directly downgradient of the GCID ditch, display greater seasonal and yearly variability in chloride, TDS, and nitrate concentrations. The variability in background wells MW4 and MW5 appears to have a seasonal pattern, with increases in concentrations in the spring and fall. These observed seasonal responses begin in May, prior to initiation of plant operations. In addition, the magnitude of the response to these seasonal variations is different for each well, indicating considerable spatial variability at the Site. While trends in background concentrations differ among these background wells, the total range and variance in background chloride, TDS and nitrate concentrations increased beginning in 2011.

Table 1: Range of Background Concentrations

Parameter	Range
Chloride (mg/L)	2 – 95
TDS (mg/L)	130 – 930
Nitrate, as N (mg/L)	0.2 – 84

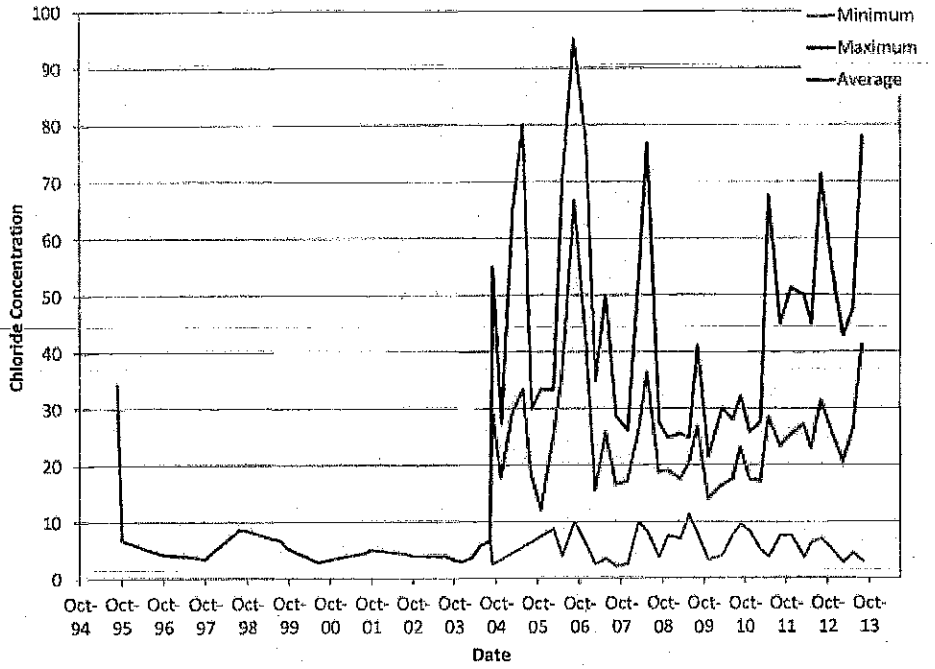

Figure 1: Historical Range of Background Chloride Concentrations

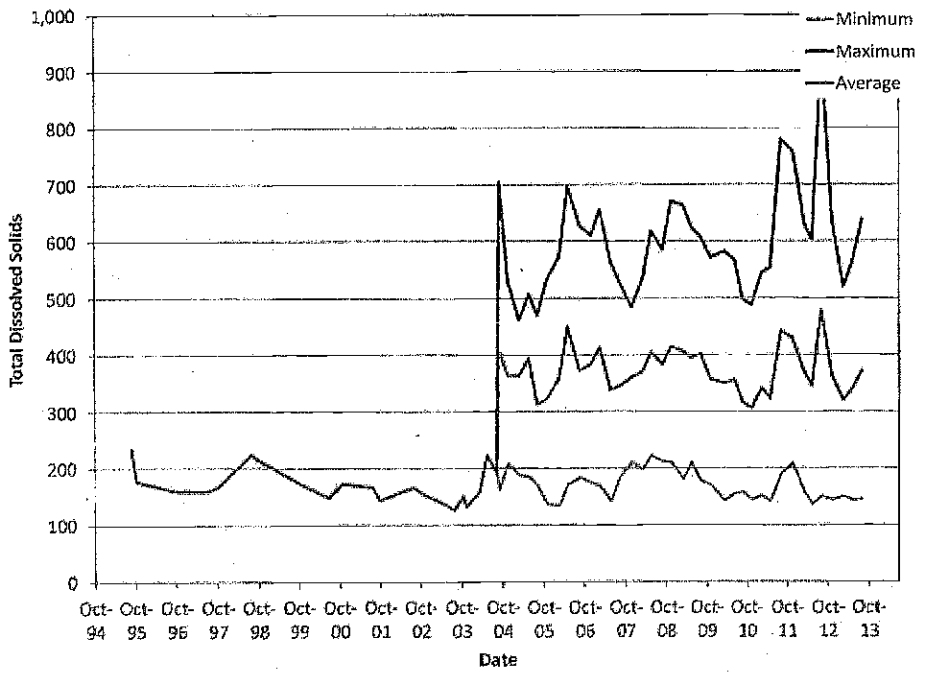

Figure 2: Historical Range of Background TDS Concentrations

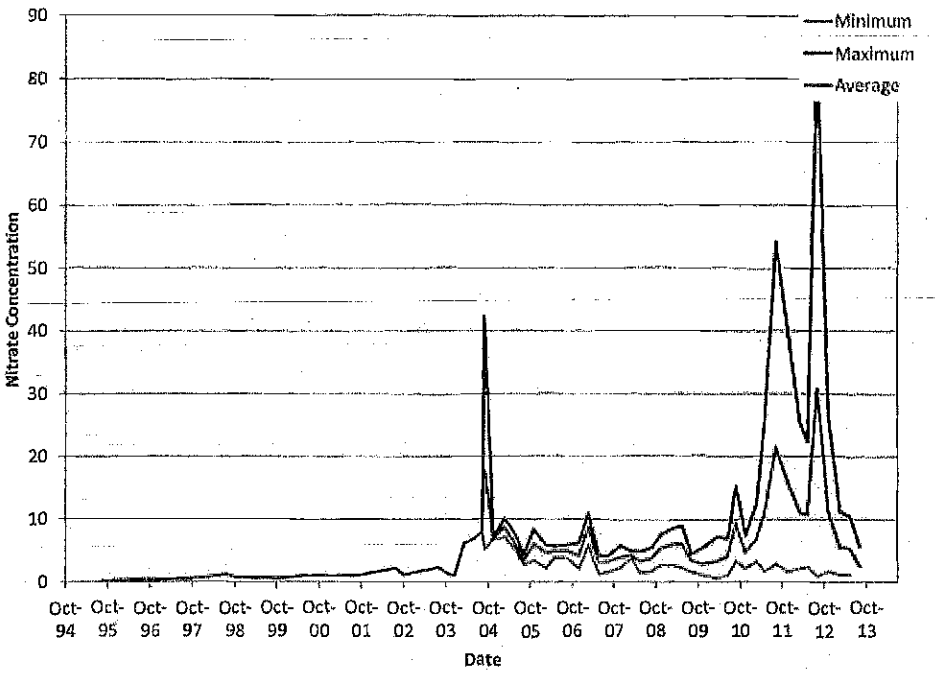

Figure 3: Historical Range of Background Nitrate Concentrations

Groundwater Water Quality Comparison to Facility Effluent

The water quality of the facility effluent was analyzed and graphed to assess the possibility that irrigation with facility effluent caused groundwater degradation. If irrigation with facility effluent is responsible for groundwater degradation, there should be a correlation between changes in effluent quality and groundwater quality. No such correlation is observed: average effluent electrical conductivity and TDS concentrations varied little between 2007 and 2011, and average effluent nitrate concentrations have decreased since 2010.

The historical range of electrical conductivity in the facility effluent is plotted on Figure 4. The historical range of TDS concentrations in the facility effluent is plotted on Figure 5. The historical range of nitrate concentrations in the facility effluent is plotted on Figure 6. Average historical nitrate concentrations in the facility effluent are very low, and have never exceeded 4 milligrams per Liter.

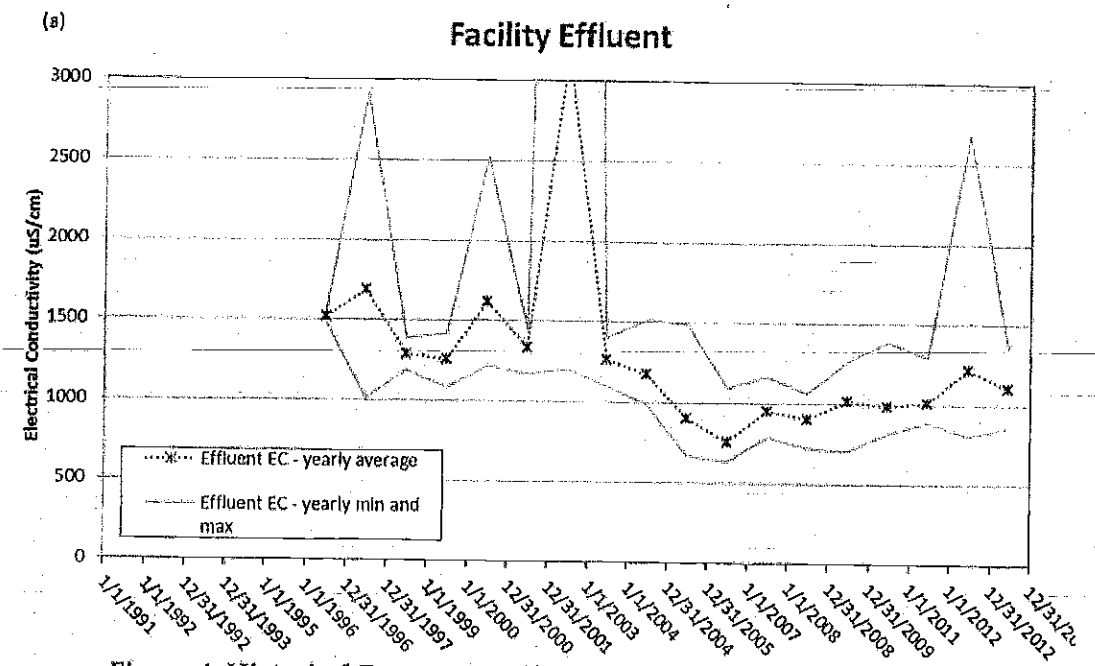

Figure 4: Historical Range of Facility Effluent Electrical Conductivity

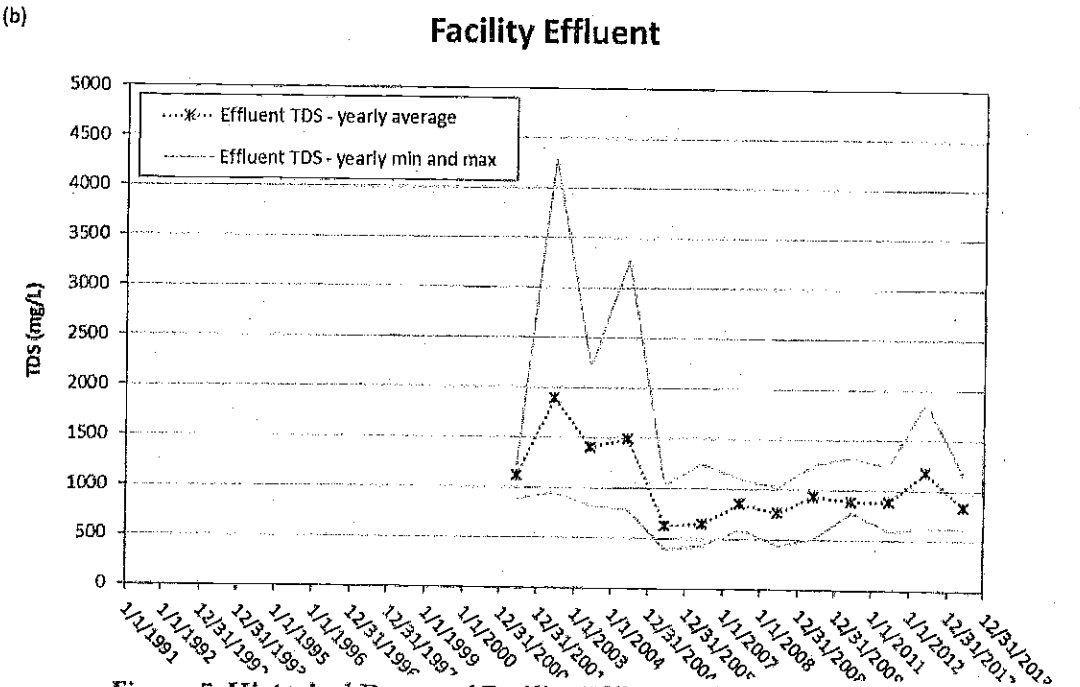

Figure 5: Historical Range of Facility Effluent TDS Concentration

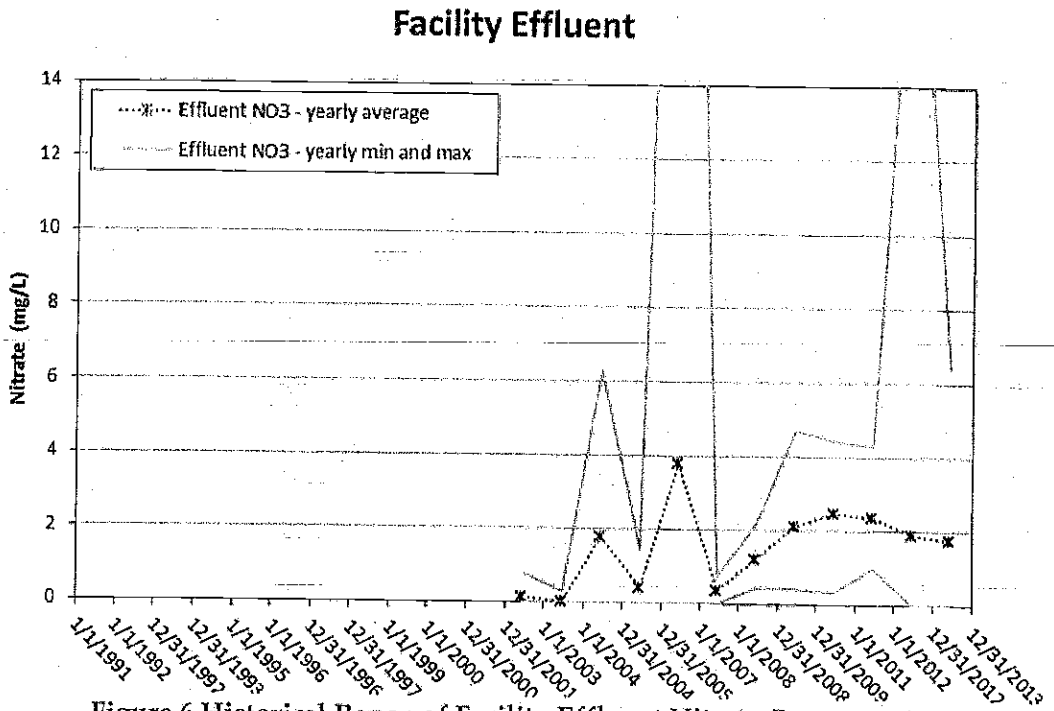

Figure 6 Historical Range of Facility Effluent Nitrate Concentration

Chloride Concentrations in Groundwater do not Suggest Degradation

Section 42.b of the Order states, "Chloride concentrations in MW2 have increased in the last two years, indicating groundwater degradation caused by the discharge" and Section 44c of the Order states, "Chloride concentrations in Wells MW8 and MW9 indicate degradation caused by the discharge. Between 2010 and 2012, higher than normal chloride concentrations were observed in these wells." The data suggest that there is no degradation of chloride at Site wells caused by discharge. Chloride concentrations at each monitoring well are discussed below.

PROCESSING FACILITY WELLS (MW2 AND MW3)

The range in chloride concentrations for well MW2 is 5–70 mg/L, well within the observed range in background concentrations (Figure 7). The chloride concentrations observed in well MW2 corresponds closely to the trend of the average observed chloride concentrations in the background wells (Figure 1), with a concentration spike in 2006 and a concentration rise in 2010-2011. In addition, the chloride concentrations reached a maximum concentration in 2010-2011, and have steadily decreased since that

time, remaining within the range of expected variability. Finally, the pattern of chloride concentrations observed in well MW2 is inconsistent with the pattern of electrical conductivity from the facility effluent (Figure 4), indicating that the changes in chloride concentrations do not result from facility operations.

The range in chloride concentrations for well MW3 is 5–48 mg/L, well within the observed range in background concentrations (Figure 7). The chloride concentrations observed in well MW3 corresponds closely to the trend of the average observed chloride concentrations in the background wells (Figure 1), with a concentration spike in 2006 and a concentration rise in 2010-2011. Finally, the pattern of chloride concentrations observed in well MW3 is inconsistent with the pattern of electrical conductivity from the facility effluent (Figure 4), indicating that the changes in chloride concentrations do not result from facility operations.

Therefore, chloride concentrations in wells MW2 and MW3 do not appear to be related to discharge for the following reasons:

- Chloride concentrations in well MW2 are within the range observed in background wells, and the chloride increases observed between 2010 and 2011 is consistent with the trend in chloride concentrations observed in the background wells;
- Chloride concentrations in MW2 have declined since 2011;
- Chloride concentrations in well MW3 are within the range observed in background wells and corresponds closely to the average background concentrations;
- Chloride concentrations in wells MW2 and MW3 are not correlated with changes in facility discharge electrical conductivity, and;
- Variability in chloride concentrations observed in well MW2 is observed throughout the year, and are not correlated with plant operations (June through October).

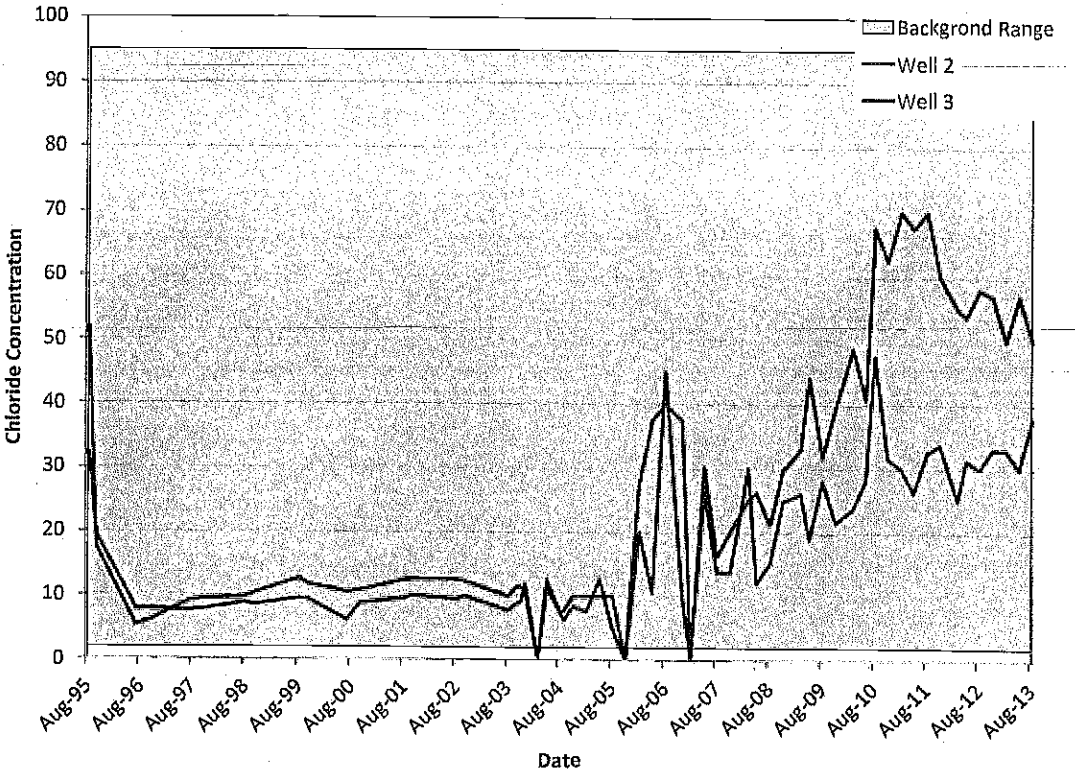

Figure 7: Well MW2 and MW3 Chloride Concentrations Compared to Background

EASTERN FIELDS WELLS (MW6 AND MW7)

The pattern of chloride concentrations in both MW6 and MW7 is consistent with the pattern observed in the background wells (Figure 1): the major single sample increases in 2006 and 2011are mirrored by increases in background chloride concentrations. If the magnitude of the increase in background observed in well MW5 is subtracted from the observed chloride concentrations in MW6 and MW7, no increasing trend in chloride concentrations is observed for these wells (Figure 8).

Therefore, changes in well MW6 and MW7 chloride concentrations do not appear to be related to discharge for the following reasons:

- Increases in chloride concentrations resulted from increased chloride concentrations in background wells;
- The increases in chloride concentrations in wells MW6 and MW7 do not appear to be consistent with the pattern of TDS effluent from the facility (Figure 4), and;

- Chloride concentrations in wells MW6 and MW7 are not correlated with changes in facility discharge electrical conductivity.

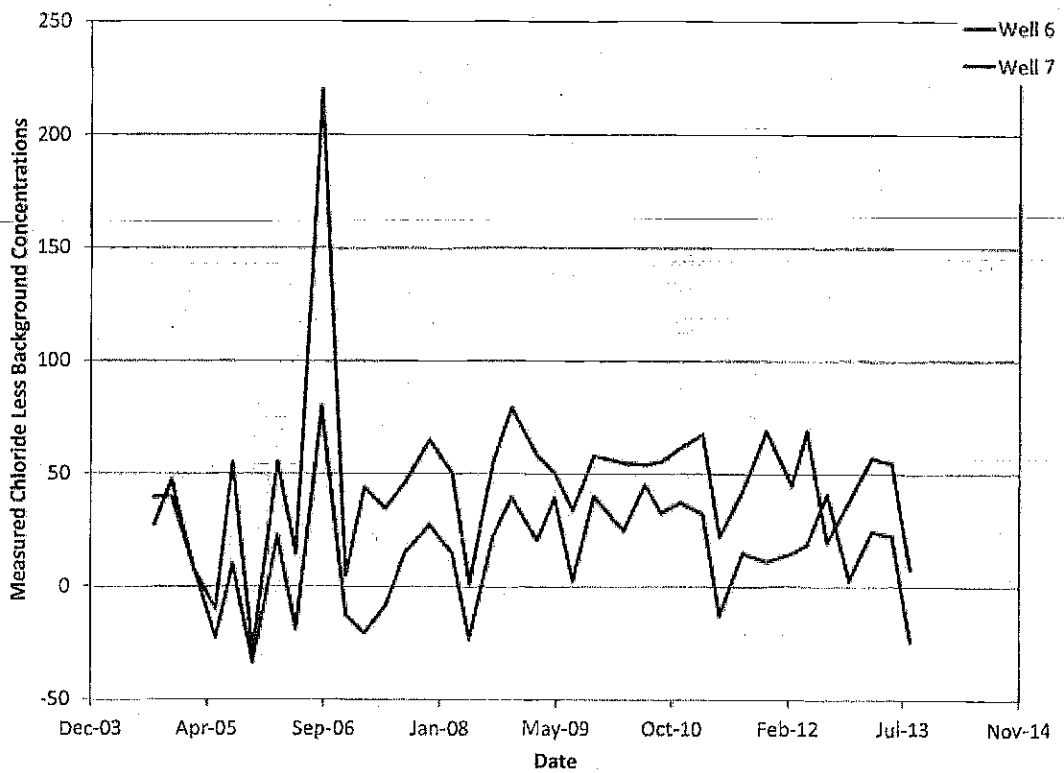

Figure 8: Well MW6 and MW7 Chloride Concentrations less Background Concentrations

NORTHERN FIELDS WELLS (MW8 AND MW9)

The chloride concentration in monitoring well MW8 increased in 2011; however, this increase mirrored an increase in chloride concentrations in the background wells (Figure 1). If the increase in background concentrations observed in well MW5 is subtracted from the observed chloride concentrations in well MW8, the sharp increase in chloride concentrations in well MW8 observed in August 2012 disappears (Figure 9). Although the 2011 increase in well MW8 chloride concentrations was not the exact same as increases observed in background wells, the high spatial variability in background chloride concentrations make it unlikely that any one background well reflects the exact background groundwater quality influencing well MW8. The fact that chloride concentrations in background wells rose at the same time that chloride concentrations

rose in well MW8 proves that the increase results from changes in background concentrations.

Chloride concentrations in well MW9 increased in 2011, even when compensated for the increase in chloride concentrations observed in the background wells. This chloride increase, however, is not correlated to an increase in electrical conductivity from plant effluent.

Therefore, changes in well MW8 and MW9 chloride concentrations do not appear to be related to discharge for the following reasons:

- The sharp increase in chloride concentrations in well MW8 observed after 2010 resulted from increases in background chloride concentration;
- The increases in chloride concentrations in wells MW8 and MW9 do not appear to be consistent with the pattern of effluent from the facility (Figure 4), and;
- Variability in chloride concentrations observed in wells MW8 and MW9 are observed throughout the year, and are not correlated with plant operations (June through October).

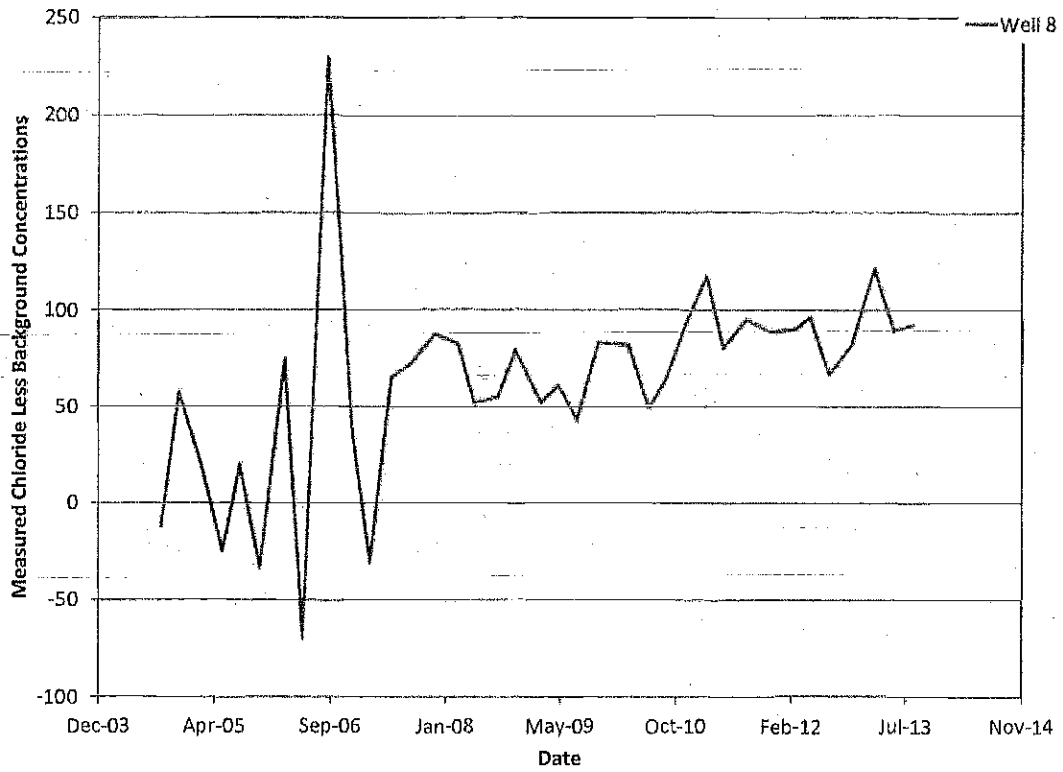

Figure 9: Well MW8 Chloride Concentrations less Background Concentrations

Total Dissolved Solids (TDS) Concentrations in Groundwater do not Suggest Degradation

Section 44b of the Order states, "TDS concentrations in Wells MW8 and MW9 indicate degradation caused by the discharge. Increased concentrations were observed in Wells MW8 and MW9 between 2010 and 2012." The data suggest that there is no degradation of TDS at Site wells caused by discharge. TDS concentrations at each monitoring well are discussed below.

PROCESSING FACILITY WELLS (MW2 AND MW3)

The ranges in TDS concentrations in the Processing Facility Area wells MW2 and MW3 are 350–560 mg/L and 250–630 mg/, respectively, well within the observed range in background (Figure 10). The pattern of TDS concentrations observed in wells MW2 and MW3 correspond closely to the pattern of the average observed TDS concentrations in the background wells (Figure 2). Finally, the pattern of TDS concentrations observed in

wells MW2 and MW3 is inconsistent with the pattern of TDS concentrations from the facility effluent (Figure 5).

Therefore, TDS concentrations in wells MW2 and MW3 do not appear to be related to discharge for the following reasons:

- TDS concentrations in wells MW2 and MW3 are within the range observed in background wells
- The pattern of TDS concentrations is consistent with the pattern observed in the background wells, and;
- TDS concentrations in wells MW2 and MW3 do not appear to be consistent with the pattern of effluent from the facility (Figure 5).
- TDS concentrations have remained essentially constant since sampling began in 1995.

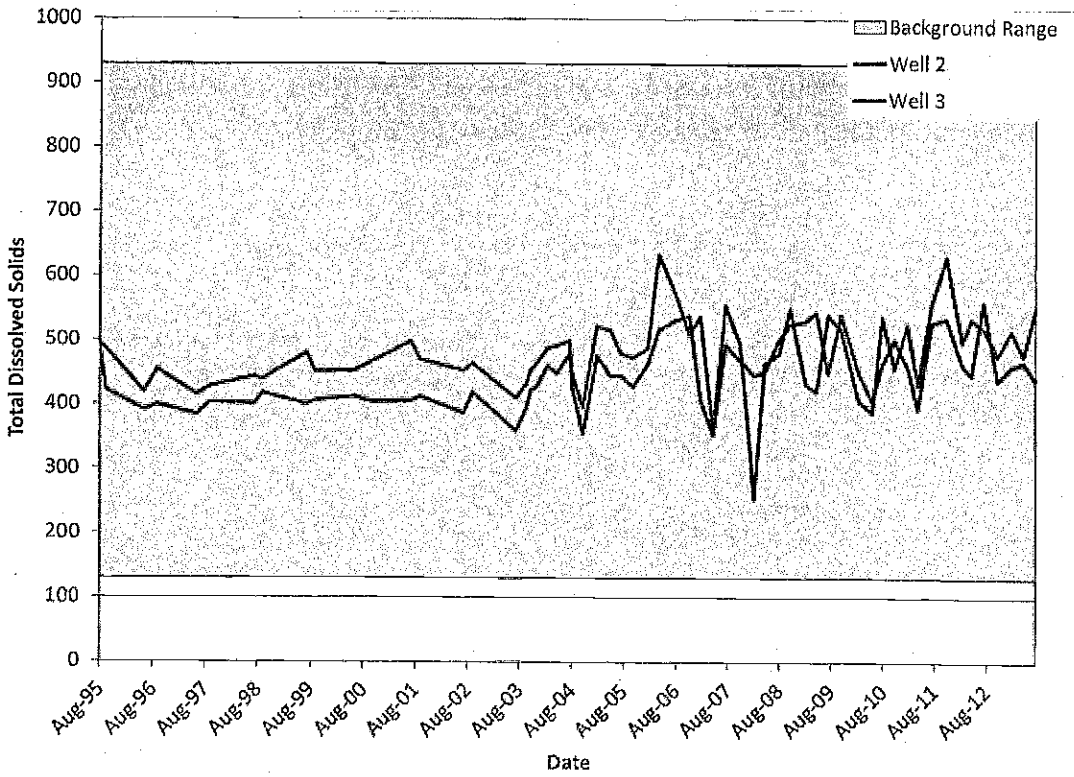

Figure 10: Well MW2 and MW3 TDS Concentrations Compared to Background

EASTERN FIELDS WELLS (MW6 AND MW7)

The ranges in TDS concentrations in the Eastern Fields wells MW6 and MW7 are 600–840 mg/L and 530–830 mg/L, respectively, within the observed range in background (Figure 11). The pattern of TDS concentrations observed in wells MW6 and MW7 corresponds to the pattern of the average observed TDS concentrations in the background wells (Figure 2). Finally, the pattern of TDS concentrations observed in wells MW6 and MW7 is inconsistent with the TDS concentrations of the facility effluent (Figure 5).

Therefore, TDS concentrations in wells MW6 and MW7 do not appear to be related to discharge for the following reasons:

- TDS concentrations in well MW6 and MW7 are within the range observed in background wells
- The pattern of TDS concentrations is consistent with the pattern observed in the background wells, and;
- TDS concentrations in wells MW6 and MW7 do not appear to be consistent with the pattern of effluent from the facility (Figure 5).

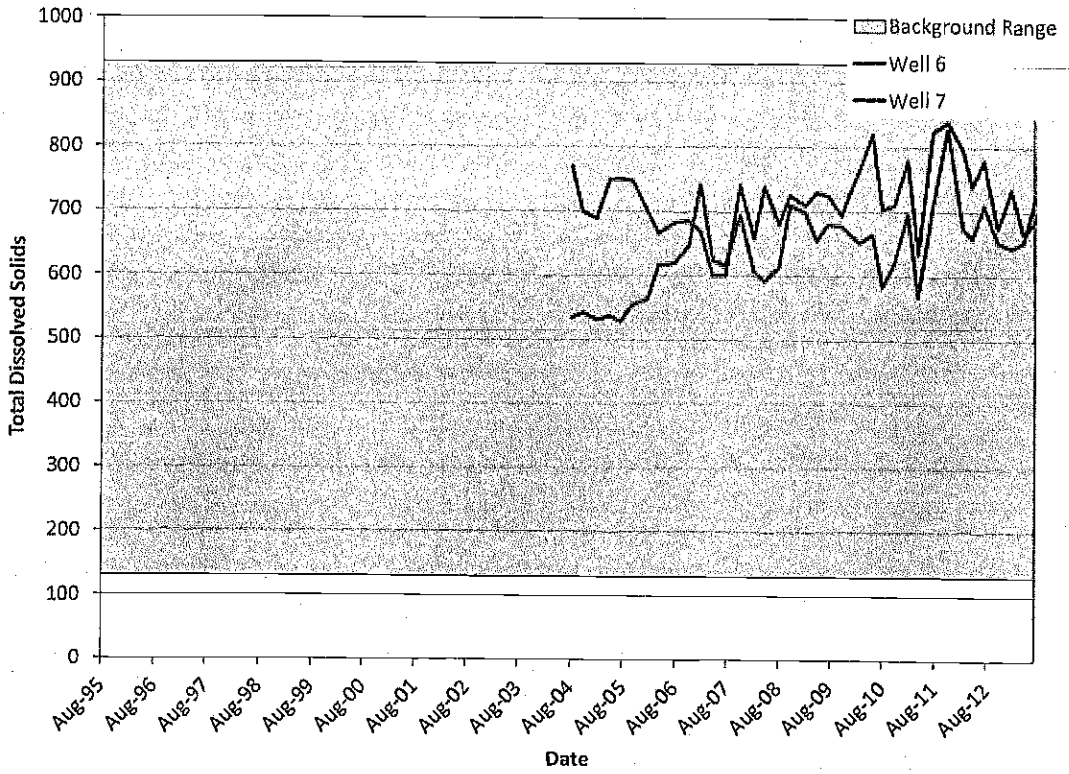

Figure 11: Well MW6 and MW7 TDS Concentrations Compared to Background

NORTHERN FIELDS WELLS (MW8 AND MW9)

TDS concentration in well MW8 increased in 2011, however, this increase mirrored an increase in TDS concentrations in the background wells (Figure 2); indicating that the increase in TDS concentration in 2011 is related to increases in background. Although the 2011 increase in well MW8 TDS concentrations was not the exact same as increases observed in background wells, the high spatial variability in background TDS concentrations make it unlikely that any one background well reflects the exact background groundwater quality influencing well MW8. The fact that TDS concentrations in background wells rose at the same time that TDS concentrations rose in well MW8 proves that the increase results from changes in background concentrations. In addition, the distribution of TDS data between 2005 and 2010 is statistically the same as the distribution of TDS data after 2010.

TDS concentration in monitoring well MW9 increased in 2011, however, this increase mirrored an increase in TDS concentrations in the background wells (Figure 2); indicating that the increase in TDS concentration after 2010 is related to increases in

background. Similar to well MW8, the high spatial variability in background TDS concentrations make it unlikely that any one background well reflects the exact background groundwater quality influencing well MW9. The fact that TDS concentrations in background wells rose at the same time that TDS concentrations rose in well MW9 proves that the increase results from changes in background concentrations.

Therefore, changes in well MW8 and MW9 TDS concentrations do not appear to be related to discharge for the following reasons:

- The increase in TDS concentrations in wells MW8 and MW9 observed after 2010 result from increases in background TDS concentration;
- The increases in TDS concentrations in wells MW8 and MW9 do not appear to be consistent with the pattern of effluent from the facility (Figure 5);
- The distribution of TDS in well MW8 before 2010 is similar to the distribution of TDS after 2010 when changes in background TDS are taken into account, and;
- Variability in TDS concentrations observed in wells MW8 and MW9 are observed throughout the year, and are not correlated with plant operations (June through October).

Nitrate Concentrations in Groundwater do not Suggest Degradation

Section 44e of the Order states, "... nitrate nitrogen concentrations in MW9 indicate apparent pollution not evidenced in any other well within or down gradient of the LAAs." The data suggest that there is no degradation of nitrate at Site wells caused by discharge. Nitrate concentrations at each monitoring well are discussed below.

Processing Facility Wells (MW2 and MW3)

The range in nitrate concentration in well MW2 is 2 – 12 mg/L, well within the observed range in background (Figure 12). In addition, the concentration of nitrate in well MW2 has steadily decreased since 1995 (from 11 mg/L in 1995 to 1.4 mg/L in 2013). Finally, the pattern of nitrate concentrations observed in well MW2 is inconsistent with the nitrate concentrations of the facility effluent (Figure 6).

The range of nitrate concentration in well MW3 is 4 – 52 mg/L, within the observed range in background (Figure 12). The pattern of nitrate concentrations in well MW3 corresponds to the pattern of nitrate in the background wells (Figure 3). Observed

increases in nitrate in well MW3 after 2010 are mirrored by increases in background concentrations. Finally, the pattern of nitrate concentrations observed in well MW3 is inconsistent with the nitrate concentrations of the facility effluent (Figure 6).

Therefore, nitrate concentrations in wells MW2 and MW3 do not appear to be related to discharge for the following reasons:

- Nitrate concentrations in wells MW2 and MW3 are within the range observed in background wells;
- Nitrate concentrations in well MW2 have steadily decreased since 1995;
- The pattern of nitrate increases observed in well MW3 are mirrored by increases in background wells, and;
- The pattern of nitrate concentrations observed in wells MW2 and MW3 is inconsistent with the nitrate concentrations of the facility effluent (Figure 6).

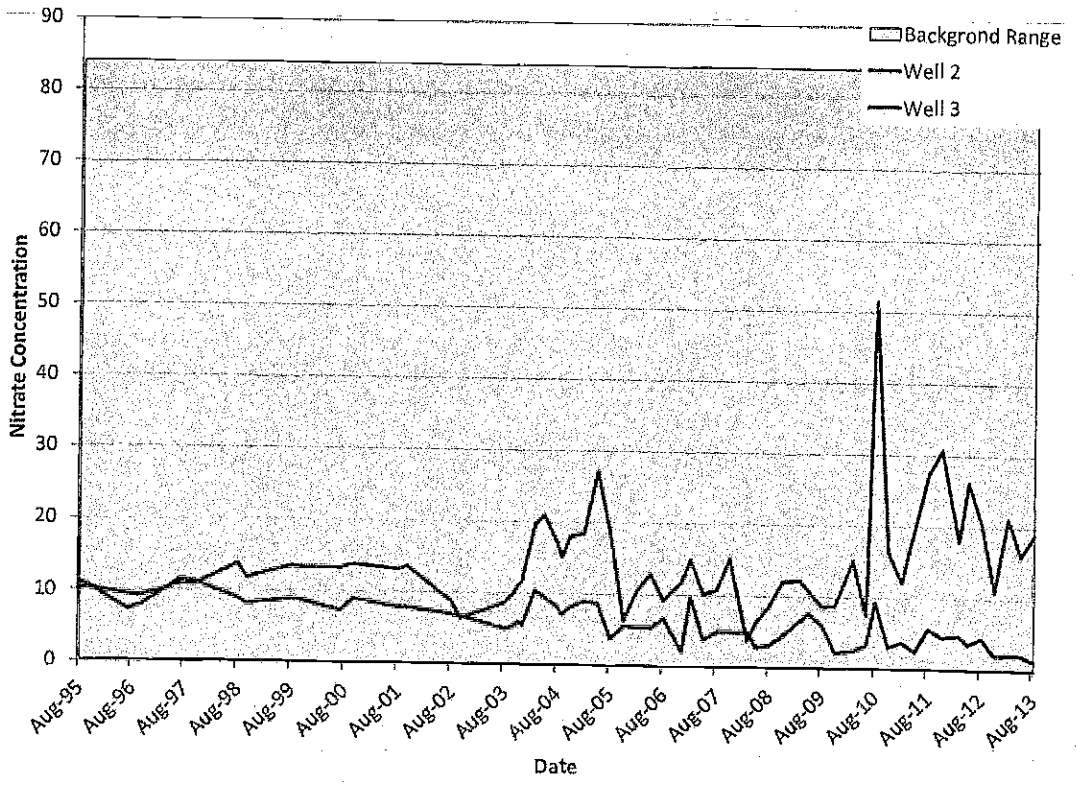

Figure 12: Well MW2 and MW3 Nitrate Concentrations Compared to Background

EASTERN FIELDS WELL (MW6 AND MW7)

The range in nitrate concentrations in Eastern Field wells MW6 and MW7 are 3 – 17 mg/L and 1 – 15 mg/L, respectively, well within the range of observed background nitrate concentrations (Figure 13). In addition, nitrate concentrations in wells MW6 and MW7 have steadily decreased since 2004 even when background nitrate concentrations increased in 2010. Finally, the pattern of nitrate concentrations observed in the wells MW6 and MW7 is inconsistent with the pattern of nitrate concentrations of the facility effluent (Figure 6).

Therefore, nitrate concentrations in wells MW6 and MW7 do not appear to be related to discharge for the following reasons:

- Nitrate concentrations in wells MW6 and MW7 are within the range observed in background wells;
- Nitrate concentrations in wells MW6 and MW7 have steadily decreased since 2004, and;
- The pattern of nitrate concentrations observed in wells MW6 and MW7 is inconsistent with the nitrate concentrations of the facility effluent (Figure 6).

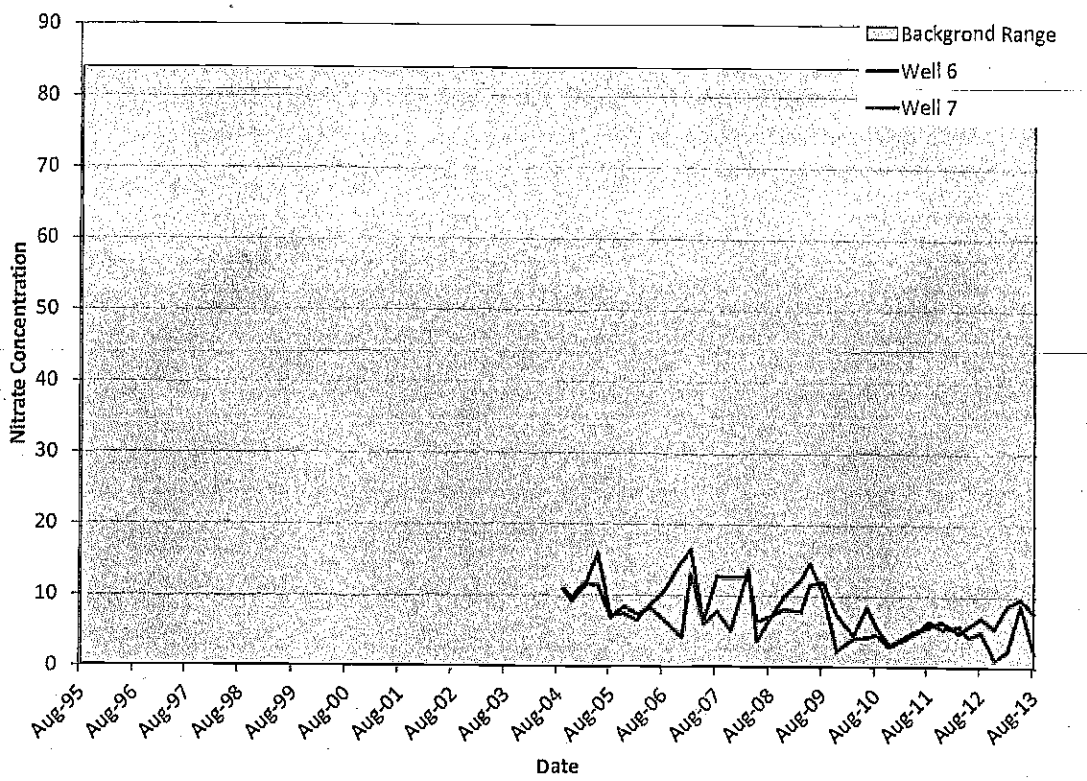

Figure 13: Well MW6 and MW7 Nitrate Concentrations Compared to Background

NORTHERN FIELDS WELLS (MW8 AND MW9)

The range in nitrate concentrations in well MW8 is 0.3 – 9 mg/L, well with the observed range of background nitrate concentrations (Figure 14). In addition, the concentration of nitrate in well MW8 has varied little from the average concentration of 3 mg/L between 2004 and 2013, even when the concentration of nitrate increased in the background wells in 2010. Finally, the pattern of nitrate concentrations observed in well MW8 is inconsistent with the nitrate concentrations of the facility effluent (Figure 6).

The range in nitrate concentrations in well MW9 is 4 – 37 mg/L, within the range of observed background nitrate concentrations (Figure 14). The nitrate concentration in monitoring well MW9 increased in 2010, however, nitrate concentrations in the background wells also increased during this time. Evaluating the difference between nitrate concentrations in well MW9 and background concentrations (Figure 15) indicates that nitrate concentrations in well MW9 actually decreased compared to background concentrations after 2010: relatively less nitrate was added to the

groundwater after 2010. This is directly counter to the Water Board's assertion that the plant activities resulted in an increase in nitrate concentrations. While natural variations in nitrate concentrations (both temporal and spatial) complicate comparisons of absolute concentrations between background and well MW9, the data indicate that nitrate concentrations in well MW9 did not increase compared to background after 2010.

Furthermore, well MW9 is located downgradient of fields that have received only minimal effluent from Morning Star. Additionally this field did not have over-applied fertilizer between 2009 and 2012 based on the minimum and maximum nitrogen loading from 2009-2011 (Section 23 of the Order).

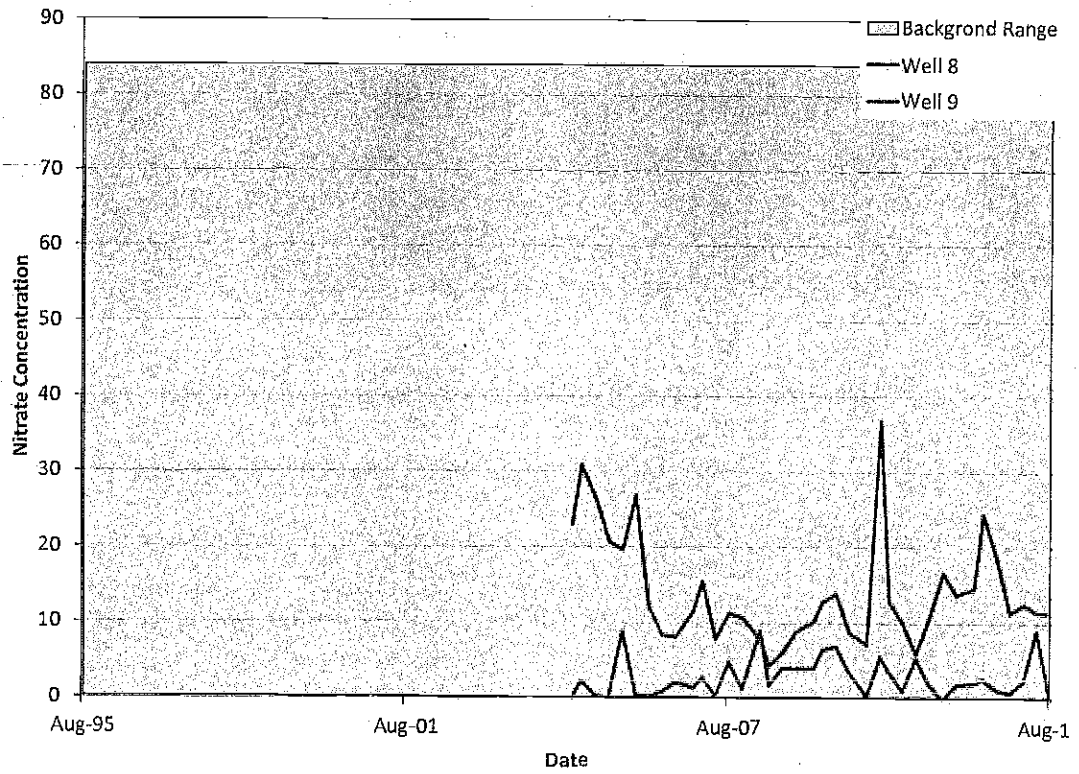

Figure 14: Well MW8 and MW9 Nitrate Concentrations Compared to Background

Therefore, changes in wells MW8 and MW9 nitrate concentrations do not appear to be related to discharge for the following reasons:

- The nitrate concentration in well MW8 has varied little between 2004 and 2013;

- The increase in nitrate concentrations in well MW9 observed after 2010 result from increases in background nitrate concentration. The relative contribution of nitrate to groundwater from Morning Star land actually decreases after 2010;
- Well MW9 is downgradient of fields that did not have any record of over-applied fertilizer between 2009 and 2012. Therefore there is no source of increased nitrate from Morning Star, and;
- The increase in nitrate concentration in well MW9 does not appear to be consistent with the pattern of effluent from the facility (Figure 6).

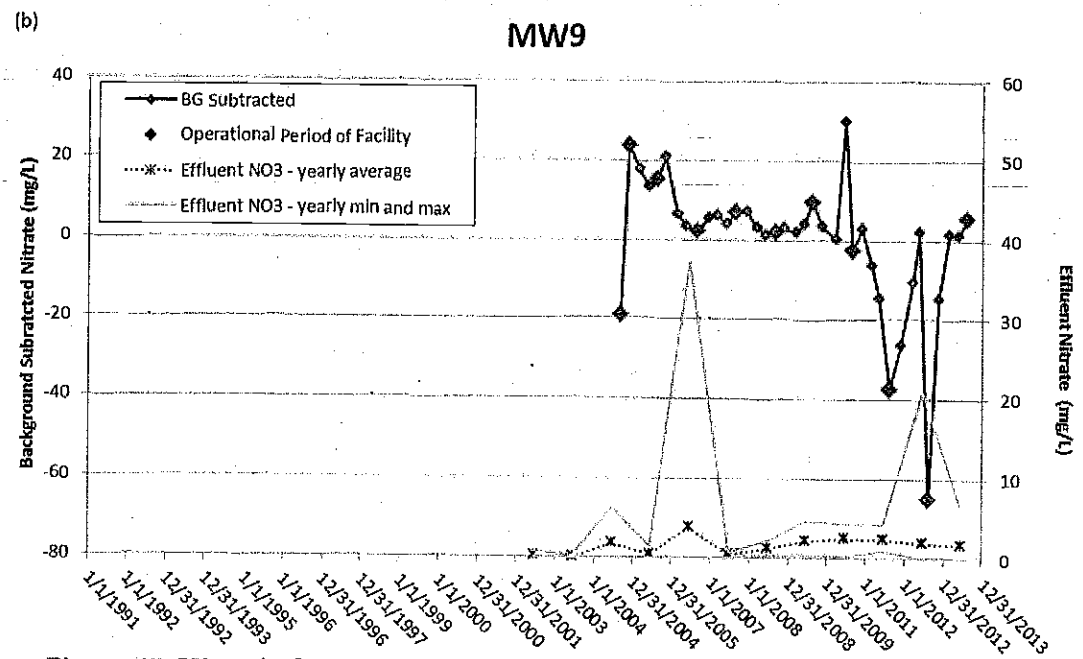

Figure 15: Historical Concentrations of Nitrate in Well MW9, Less Background Nitrate in Well MW5

We will be happy to talk with you further about our results. Do not hesitate to call us with any questions.

Sincerely,

Derrik Williams

Derrik Williams
President, HydroMetrics Water Resources Inc.

ATTACHMENT C

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December 4, 2013

Ross Oliveira
The Morning Star Packing Company
2211 Old Highway 99
Williams, CA 95987

Re: The Morning Star Packing Company, L.P. Williams Facility
Groundwater Analysis - Summary Report

Dear Mr. Oliveira:

Provost & Pritchard (P&P) was retained to provide an analysis of groundwater conditions at the Morning Star Packing Company, L.P. (**Morning Star**) tomato processing facility located in Williams in Colusa County (**County**). The Central Valley Regional Water Quality Control Board (**Water Board**) issued Tentative Waste Discharge Requirements (**TWDRs**).

The Water Board has prepared Tentative WDRs that will be presented to their Governing Board on December 5, 2013. The anti-degradation analysis prepared by the Water Board and included in the Tentative WDRs describes findings by the Water Board of degradation and pollution of the facility's groundwater caused by facility operations. This summary report is to supporting our determination that Morning Star Packing has maintained groundwater quality.

A. 1 - Background Information

1. The facility includes the tomato processing facility and 695 acres of cropped land application areas (LAA). The facility has a cooling pond where condensate from the facility is discharged, and cools while traveling through the cooling pond. The cooled condensate is then pumped out of the cooling pond and reused within the facility.

2. Semi-trailers of tomatoes are emptied using water and transported into the facility through a system of flumes. Water used to empty the trailers is discharged to the settling pond. The water travels through the settling pond where soil and organic matter from the tomato trailers is settled out of the washwater. A portion of this water is then recycled and used to empty additional trailers while a portion is discharged to the LAA.

3. Typical crops grown include Sudan grass and alfalfa. The pastures are also grazed by cattle. Wastewater is applied to the LAA via flood irrigation using border checks.

4. Groundwater in the vicinity is shallow, ranging from 3 to10 feet deep. First encountered groundwater generally flows toward the northeast. Shallow regional wells (<200 feet) indicate an eastward flow direction.

5. The facility began operations in 1995. Three monitoring wells (MW1, MW2 and MW3) were installed at that time near the settling pond. MW1 is upgradient of the settling pond, while MW2 and MW3 are downgradient. Additional monitoring wells were installed in 2004. These include MW4, located upgradient of the settling pond, and five additional wells which were installed to monitor groundwater in the LAA. It has been since determined by groundwater data that MW5 is located upgradient of the LAA. MW 6 is located near the center of the LAA with MW7, MW8 and MW9 located on the downgradient edges of the LAA. A map showing the locations of the monitoring wells is included as **Exhibit A**.

6. The facility has collected annual soil samples since 2004 at designated locations and had them analyzed for various constituents including nitrogen and salinity. Samples are collected from both cropped and non-cropped locations to provide a comparison of land in the vicinity that has not been irrigated with wastewater and cropland that has been irrigated with wastewater. A map of the fields, soil sampling locations, and monitoring well locations is provided as **Exhibit A**.

B. Tentative WDR's Assessment

1. **Total Dissolved Solids** (58.a. page 20) – "Groundwater data indicate degradation caused by the discharge in LAA monitoring wells MW6, MW7, MW8, and MW9."

   Addressed in Table 1.

2. **Chloride** (58.b. page 21) – "Groundwater data indicate degradation caused by the discharge in Settling Pond well MW2 and LAA monitoring wells MW6, MW7, MW8, and MW9."

   Addressed in Table 2. Chloride is not sampled in the effluent, so loading rates for the LAA are not available. However, chloride is a component of TDS, so TDS loading rates were compared to determine if there is a correlation between LAA TDS loading rates and chloride concentrations in the monitoring wells.

3. **Iron and Manganese** (58.c. and 58.d. page 21 and 22) – "In general, for the LAA monitoring wells, iron was not detected at or above the laboratory reporting limit of 0.1 mg/L in the background groundwater or groundwater downgradient of the LAAs. However, there were sporadic concentrations that exceeded the secondary MCL of 0.3 mg/L." and "However, for compliance wells MW7 and MW8, where the discharge has already caused pollution, this Order sets a groundwater limit that prohibits any increases. The apparent localized pollution is expected to resolve..."

   Addressed in Table 3.

4. **Nitrate** (58.e. page 23) – "Background groundwater quality is poor with a nitrate nitrogen concentration averaging 15 mg/L in MW5. The poor quality background groundwater is likely due to the predominately agricultural land use in the area. In contrast, nitrate nitrogen concentrations in monitoring wells within and downgradient of the LAAs generally average 3.0 to 8.0 mg/L, with the exception of MW9. As stated in the previous finding, there appears to be localized pollution caused by the discharge in this well."

   Addressed in Table 4.

C. Summary

The timing of groundwater constituent concentration increases was compared with loading rates for the upgradient fields. Because of the shallow first encountered groundwater at the site, over application of wastewater or degradation caused by the wastewater irrigations to the upgradient fields would be expected to show up almost immediately in the downgradient wells. But, this was not the case.

Additionally, soil sample results from both cropped and un-cropped areas were compared to their corresponding monitoring wells. The soil columns are not indicating any differences between the cropped and uncropped areas. Degradation caused by wastewater applications is not evident.

Lastly, Geotracker was used to obtain water quality information from other wells within the area. This information was compiled and compared to the monitoring wells water quality. The Geotracker information showed that background water quality in the vicinity is highly variable with numerous elevated TDS, manganese and chloride concentrations. These elevated constituent concentrations are the result of other natural or existing causes and not from Morning Star's discharges. It can be concluded that these same influences are contributing to the concentrations of the Morning Star monitoring wells.

Respectfully,

Linda G. Sloan, PG 8299, CHG 930

Hilary Reinhard, RCE 64,379

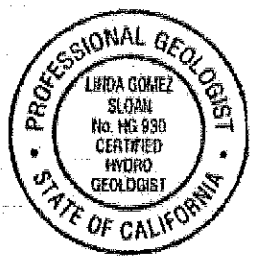


Table 1. Water Board's Assumption of TDS Degradation

Background Water Quality			
Geotracker	• There have been three detections of TDS ranging from 500 to 2,011 mg/L or over in the last four years in supply wells, one of which is located at the Morning Star (measured at 500 mg/L in 2009) site upgradient of the LAA.		
Monitoring Well	**Location**	**Data Analysis**	**Conclusion**
MW6	• MW6 is centrally located in the LAA, downgradient of MS20 ch1 and ch2. • MW6 is located directly north of soil sample location #6C.	• TDS loading rates exceeded the recommendations of the Water Board in 2008 and 2012 for MS 20 ch1 and in 2009 for MS 20 ch2. • TDS concentrations in MW6 increased in June of 2010 and the last two quarters of 2011 and first quarter of 2012, but have subsequently dropped. These increases do not coincide with the over application of wastewater in 2008, 2009 and 2012 (which only occurs between July and October). • The loading rates for MS20 were less than 1,500 lbs/acre during 2011. There does not appear to be a correlation between TDS loading rates and the TDS concentrations in MW6.	• Any over application of wastewater to the LAA upgradient of MW6 that would have caused degradation should also be evident in the soil samples. • The graph of the TDS for Soil Sample 6C shows that TDS has remained relatively constant during the past 8 years. No upward trends are evident at any depth. Therefore, soils near MW6 do not show evidence of TDS degradation.
MW7	• MW7 is located downgradient of MS24 ch1 and MS 24 ch2.	• TDS loading rates exceeded the recommended loading rates in 2007, 2009, 2010, and 2012. • MS 24 ch2 TDS loading rates exceeded the recommended loading rates in 2007-2012. The highest TDS loading rates for MS 24 ch1 occurred in 2007 with the maximum for MS24 ch2 occurring in 2010. • TDS in MW7 increased in 2006, and has remained relatively constant with a downward spike in May 2011 and an upward spike in November 2011. • TDS loadings were higher in 2010, just prior to the low point, than they were in 2011 after the lower annual application rate. • Soil sample location #8C is located in close proximity to MW7. TDS concentrations in Soil Sample #8C have remained relatively constant with the exception of a higher result in the 4-5 ft depth in 2011. The concentration returned to their previous lower levels in the 2012 results. The 2011 reading appears to be an anomaly.	• There doesn't appear to be a correlation between the MW7 TDS and the TDS application rates applied to the upgradient field. • Based on the soil sample results for TDS no degradation is apparent.
MW8	• MW8 is located	• MS5 had loading rates greater than 2,000 lbs/acre in 2007, 2009, 2010	• Although a spike was observed during

	directly downgradient of MS5.	and 2012 with the highest loading rates in 2009 and 2012. • TDS concentrations in MW8 have been highly variable from February 2011 through August 2013. The peaks occurred in February 2011, August and November 2011, August 2012, and August 2013. The lows occurred in May 2011, March 2012, and February 2013. • The majority of the peaks occurred during late summer/fall with decreases during the winter months. The recent variability may be tied to the time of year.	the 2012 season, no increase was observed during the 2009 processing season though similar TDS loading rates were applied. • Therefore, there is not a strong correlation between the loading rates applied and TDS concentrations in MW8.
MW9	MW9 is located downgradient of MS1 and cross gradient of MS 2/3.	• MS1 has had only a small amount of wastewater applied to it with the majority of the wastewater applied in 2012. • MS2/3 has exceeded the 2,000 lbs/acre loading rate in 2007, 2009 and 2012. • TDS results for MW9 were initally high then decreased. An increase occurred in August 2011, and subsequently returned to previous levels. • MW 9 is located near two soil sampling locations. Soil sample location #11NC is located west of MW9 in field MS1 where wastewater has been infrequently applied. Wastewater was applied to MS1 in 2008-2009 and 2011-2012. Soil sample location #11C is located east of MW9 and is located within field MS2/3 where wastewater has been applied each season. • With the exception of the initial samples collected in 2004 which showed higher TDS concentrations in the MS2/3 sample location, both sample sites have similar TDS concentrations.	• The peak TDS concentration does not coincide with the TDS loading rates that exceeded recommendations. • No correlation between TDS loading rates and the MW 9 TDS concentrations is apparent. • The TDS of both soil samples has remained relatively constant at all depths with the MS2/3 location being slightly higher. • Based on this comparison, there is no evidence that the application of wastewater has impacted TDS concentrations.

Table 2. Water Board's Assumption of Chloride Degradation

Background Water Quality			
Geotracker	• According to Geotracker, there have been 53 instances of chloride detections in Colusa County ranging from 50 to 626 mg/L between 2006 and 2012 inclusive, 31 of which have been 100 mg/L or higher.		
Monitoring Well	**Location**	**Data Analysis**	**Conclusion**
MW2	• MW2 is located east of the settling pond.	• MW2 chloride concentrations have been sampled since August 1995. • Chloride concentrations began increasing in 2007, with highs during 2010-2011 with concentrations ranging from 60-70 mg/L. Concentrations have subsequently dropped to 50-60 mg/L. • To determine if the chloride concentrations in MW2 are related to the TDS of the wastewater in the settling pond the values were compared. In 2003 and 2004 the average TDS of the effluent in the settling pond was approximately 1,400 mg/L. From 2005 to 2011, the average TDS dropped below 1,000 mg/L. Effluent TDS concentrations increased in 2012 to slightly above 1,100 mg/L and dropped to below 850 mg/L in 2013.	• The increase in chloride in MW2 does not coincide with an increase in effluent TDS. However, chloride testing of the effluent would be necessary to determine if there is a correlation.
MW6	• MW6 is centrally located in the LAA, downgradient of MS20 ch1 and ch2. • MW6 is located directly north of soil sample location #6C.	• TDS loading rates exceeded the recommendations of the Water Board in 2008 and 2012 for MS 20 ch1 and in 2009 for MS 20 ch2. • During the past six years, chloride concentrations in MW6 remained relatively constant with the exception of an increased concentration in August 2012. The chloride concentrations subsequently decreased back to the levels that had previously been observed. • The highest loading rate on MS 20 ch2 (3,349 lbs/acre) in 2009 did not cause a similar spike to groundwater chloride.	• Chloride concentrations in MW6 do not appear to be correlated to the LAA loading rates. • The chloride results for soil sample 6C were also reviewed. Chloride concentrations have been variable during the sampling period, but there are no trends evident in the data. Based on the soil samples near MW6, there is no evidence of chloride degradation.
MW7	• MW7 is located downgradient of MS24 ch1 and MS 24 ch2.	• TDS loading rates exceeded the recommended loading rates in 2007, 2009, 2010, 2012 in MS 24 ch1. MS 24 ch2 TDS loading rates exceeded the recommended loading rates in 2007-2012. The highest TDS loading rates for MS 24 ch1 occurred in 2007 with the maximum for MS24 ch2	• There doesn't appear to be a correlation between the MW7 chloride and the TDS application rates applied to the upgradient field.

	• MW7 is located directly north of soil sample location #8C.	occurring in 2010. • MW7 experienced an isolated chloride spike in August of 2006. Chloride concentrations during the years that experienced the highest TDS loading rates (2007 and 2010) were no higher than those seen during the other years. Based on this comparison there is no correlation between the chloride concentration of MW7 and the TDS loading rates on the upgradient field. • Chloride results for soil sample location #8C are variable with upward readings followed by downward readings. No clear upward or downward trends are evident in the data.	• Chloride levels in the soil samples and do not show evidence of degradation.
MW8	• MW8 is located directly downgradient of MS5. • MW8 is located directly north of soil sample location #10C.	• MS5 had loading rates greater than 2,000 lbs/acre in 2007, 2009, 2010 and 2012 with the highest loading rates in 2009 and 2012. • Chloride concentrations in MW8 were variable from August 2004 through February 2011. The concentration then stabilized and has remained relatively constant with two small upward spikes in February 2013 and August 2013. • Chloride results for sample location 10C showed an increase during 2005 and a subsequent decrease during the subsequent years. Chloride samples have been relatively constant for the past four years. There is no upward trend evident in the chloride result and no evidence of degradation in this sample location.	• A comparison of when these excessive loading rates occurred to the chloride concentrations in MW8 shows no correlation in the timing of the chloride increase that occurred in February 2011. • There is not a strong correlation between the loading rates applied and chloride concentrations in MW8.
MW9	• MW9 is located crossgradient of MS2/3 and downgradient of MS1. • MW9 is located west of soil sample location #11NC and east of soil sample	• MS1 has had only a small amount of wastewater applied to it with the majority of the wastewater applied in 2012. • MS2/3 has exceeded the 2,000 lbs/acre loading rate in 2007, 2009 and 2012. • Chloride concentrations in MW9 increased primarily during 2011, a year that does not coincide with an overapplication of TDS to the upgradient or cross gradient fields. MS2/3 had the highest loading rates in 2009, a period when concentrations of chloride in MW9 were at their lowest. • MW 9 is located near two soil sampling locations. Soil sample location #11NC is located west of MW9 in field MS1 where wastewater has been	• Based on this comparison, the chloride concentrations of MW9 do not correlate with the application of TDS from the wastewater. • The TDS of both samples has remained relatively constant at all depths with the MS2/3 location being slightly higher. • Based on a comparison of chloride results from the two soil sampling locations, there is no evidence of

	location #11C.	infrequently applied. Chloride results from the soil samples for the two locations are provided below. Samples from both locations are within a similar range, however a chloride spike occurred in the 11NC sample in 2009, with a subsequent decrease. An increase was also found in sample location 11C, but this sample location has been slower to reduce.	degradation caused by wastewater applications.

Table 3. Water Board's Assumption of Iron and Manganese Degradation

Background Water Quality			
Geotracker	• According to Geotracker, there have been 129 reported exceedances of the manganese MCL in water supply wells in Colusa County since 2006 ranging from 50 to 602 ug/L, and 66 exceedances in monitoring wells ranging from 50 to 3,600 ug/L for the same area and time period. Manganese is a regional issue with several hot spots throughout the County.		
Monitoring Well	**Location**	**Data Analysis**	**Conclusion**
MW6	• MW6 is centrally located in the LAA, downgradient of MS20 ch1 and ch2. • MW6 is located directly north of soil sample location #6C.	• MW6 has had non-detects for iron since the May 2006 sample. • MW6 has had one manganese detection since the November 2005 sample.	• The vast majority of the groundwater results for iron and manganese have been non-detects. There is no evidence of iron or manganese degradation in this well.
MW7	• MW7 is located downgradient of MS24 ch1 and MS 24 ch2. • MW7 is located directly north of soil sample location #8C. • Soil sample location #1NC is located outside of the LAA in an uncropped area that doesn't	• Manganese has been consistently detected in MW 7. The timing of the positive samples for wells is primarily the February and November samples, a period when wastewater is not being applied to the LAA. Most of the August samples, a period when wastewater is applied to the LAA, are non-detects. The shallow groundwater at the site should cause any leached constituents to show up in the groundwater sample almost immediately. • The facility has manganese soil sample results from soil sample locations #8C and from a non-cropped area (soil sample location #1NC). Soil samples from these two locations are consistent with each other.	• The timing of the manganese concentrations does not correlate with the applications of wastewater. • Soil manganese results are consistent with background soil conditions. • Results for iron and manganese from the past 3 samples have been non-detects.

	receive wastewater.		
MW8	• MW8 is located directly downgradient of MS5. • MW8 is located directly north of soil sample location #10C.	• Manganese has been consistently detected in MW 8. The timing of the positive samples is primarily the February and November samples, a period when wastewater is not being applied to the LAA. Most of the August samples, a period when wastewater is applied to the LAA, are non-detects. The shallow groundwater at the site should cause any leached constituents to show up in the groundwater sample almost immediately. • The facility has manganese soil sample results from soil sample locations #8C and from a non-cropped area (soil sample location #1NC). Soil samples from these two locations are consistent with each other.	• The timing of the manganese concentrations does not correlate with the applications of wastewater. • Soil manganese results are consistent with background soil conditions. • Iron and manganese concentrations from the past 3 samples have been non-detects.
MW9	• MW9 is located downgradient of MS1 and cross gradient of MS 2/3. • MW9 is located west of soil sample location #11NC and east of soil sample location #11C.	• The majority of iron and manganese concentration results for MW9 have been non-detects. • There have been eight manganese detections since sampling began in September 2004. Seven of these have occurred during the late fall, winter and spring when wastewater is not applied to the LAA.	• There is no evidence that iron and manganese concentrations have been impacted by wastewater applications.

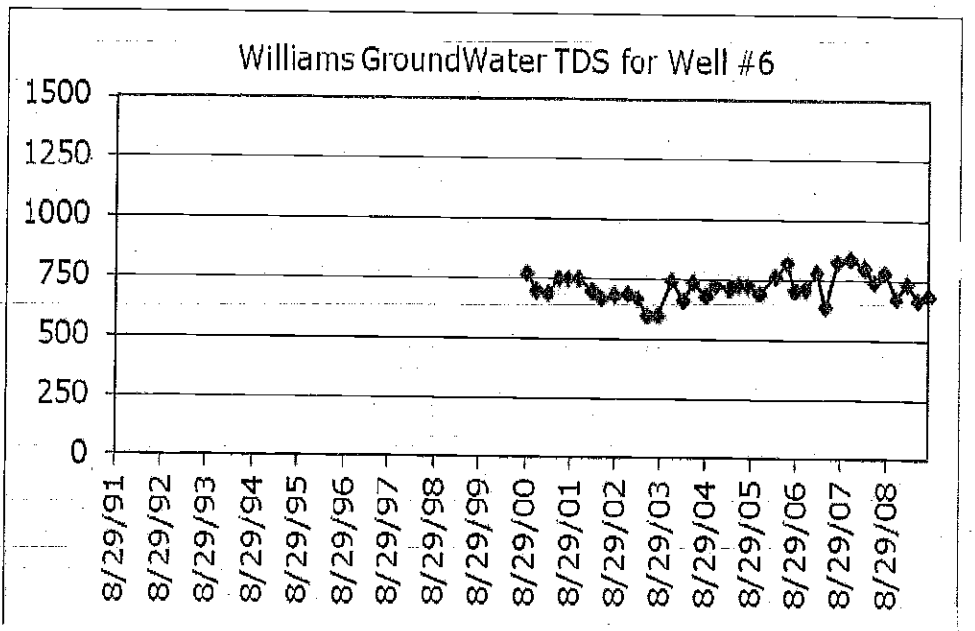
Table 4. Water Board's Assumption of Nitrogen Degradation

Monitoring Well	Location	Data Analysis	Conclusion
MW9	• MW9 is located downgradient of MS1 and cross gradient of MS2/3. • MW9 is located west of soil sample location #11NC and east of soil sample location #11C.	• With the exception of 2009 and 2012, there was an under application of nitrogen to the fields MS 1 and MS 2/3. • MW9 nitrate concentrations have generally decreased since sampling began in 2004. A spike was observed in June 2010. Levels have since dropped to concentrations consistent with historical results, but remain slightly above the 10 mg/L MCL for Nitrates. • The facility has an upgradient monitoring well MW5, located southeast of MW9. MW5 has also shown elevated nitrates. MW5 is located upgradient of the LAA and is not influenced by the application of wastewater to any of the fields. The cause of the elevated nitrates in this well is unknown but demonstrates that factors other than the application of wastewater can cause localized nitrate concentration increases. • Additionally, the topographic map shows a historical natural drainage immediately upgradient of MW9. This drain appears to have been altered with water channeled to the public drain that runs through the property and the area leveled and turned to cropland. The filling in of natural drains was historically accomplished by turning under the vegetation in the drain and filling it with soil. The residual vegetation and organic matter can cause localized increases in groundwater nitrates.	• Nitrogen increases in MW9 do not appear to be linked to wastewater applications and may be attributed to factors outside the control of the Facility.

Background Information

TDS Loading Rates (lbs/acre)

	Acreage	2007	2008	2009	2010	2011	2012
MS1	95	-	1,833	90	-	1,790	2,329
MS2/3	82.1	2,614	1,958	3,681	1,055	1,569	2,713
MS 5	24.6	2,858	1,624	3,454	2,339	1,845	3,417
MS6	21.4	2,391	1,568	3,360	1,370	1,569	1,070
MS11	35.6	2,157	3,978	2,733	2,256	1,330	654
MS14	44.5	2,513	3,445	4,912	1,940	2,203	1,768
MS15	26.7	3,839	2,002	3,297	1,465	1,845	3,417
MS16/17	36.7	3,256	1,216	2,418	2,577	2,028	3,092
MS18 ch1	39.1	2,633	1,648	3,630	1,365	1,576	3,010
MS18 ch2	39.1	1,882	1,475	2,358	576	1,353	1,566
MS20 ch1	32.3	1,071	2,464	1,209	984	1,137	2,105
MS20 ch2	32.3	1,332	1,594	3,349	1,015	1,491	506
MS21	25.9	2,455	3,978	1,383	2,180	1,348	525
MS24 ch1	79.9	3,398	1,955	2,427	3,150	1,914	2,815
MS24 ch2	79.9	3,747	3,770	3,218	3,853	3,196	2,854
Weighted Avg.		2,725	2,323	2,631	2,050	1,855	2,284


Williams GroundWater TDS for Well #6
1500
1250
1000
750
500
250
0
8/29/91
8/29/92
8/29/93
8/29/94
8/29/95
8/29/96
8/29/97
8/29/98
8/29/99
8/29/00
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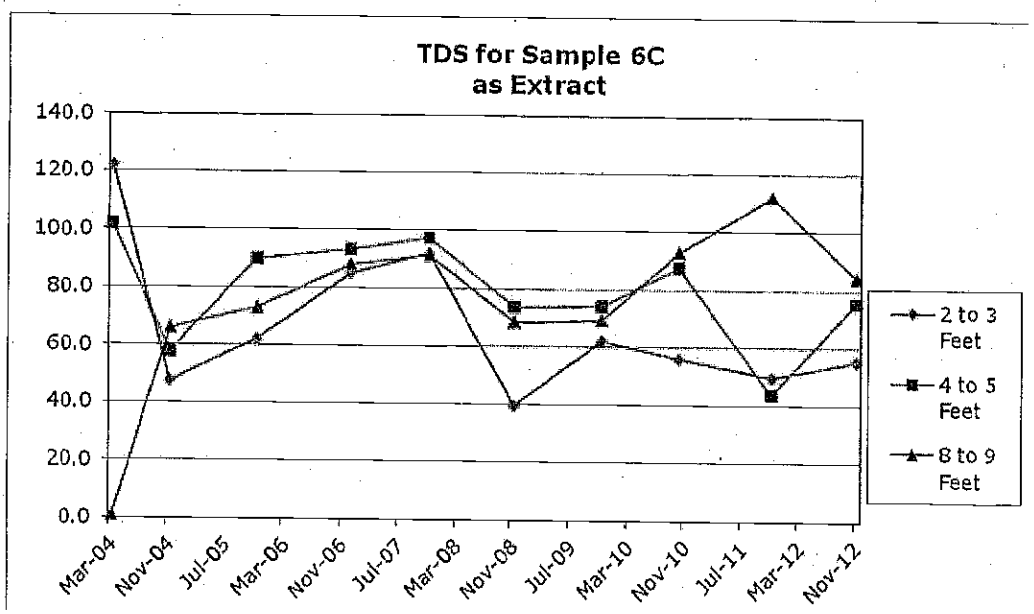
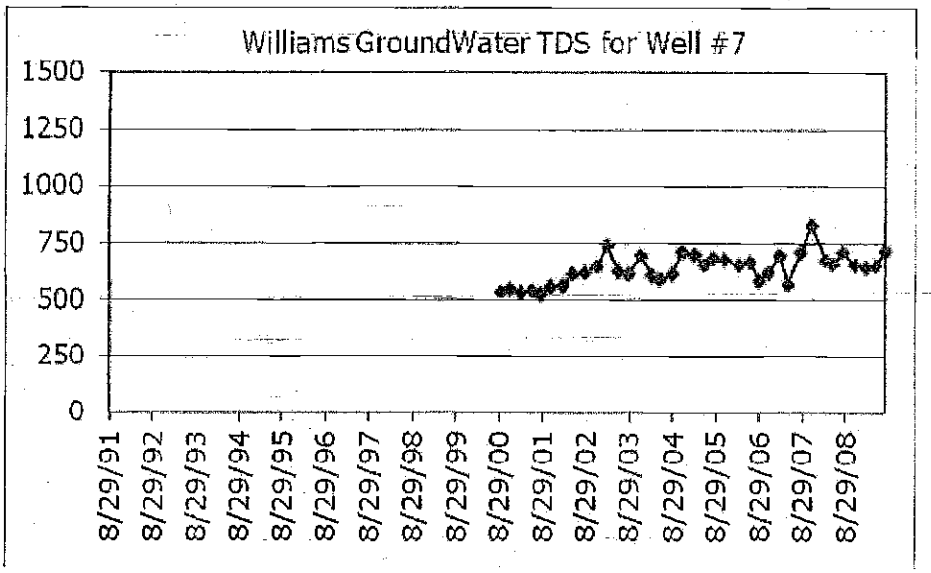
8/29/05
8/29/06
8/29/07
8/29/08


TDS for Sample 6C
as Extract
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
Mar-04
Nov-04
Jul-05
Mar-06
Nov-06
Jul-07
Mar-08
Nov-08
Jul-09
Mar-10
Nov-10
Jul-11
Mar-12
Nov-12
2 to 3 Feet
4 to 5 Feet
8 to 9 Feet


Williams GroundWater TDS for Well #7
1500
1250
1000
750
500
250
0
8/29/91
8/29/92
8/29/93
8/29/94
8/29/95
8/29/96
8/29/97
8/29/98
8/29/99
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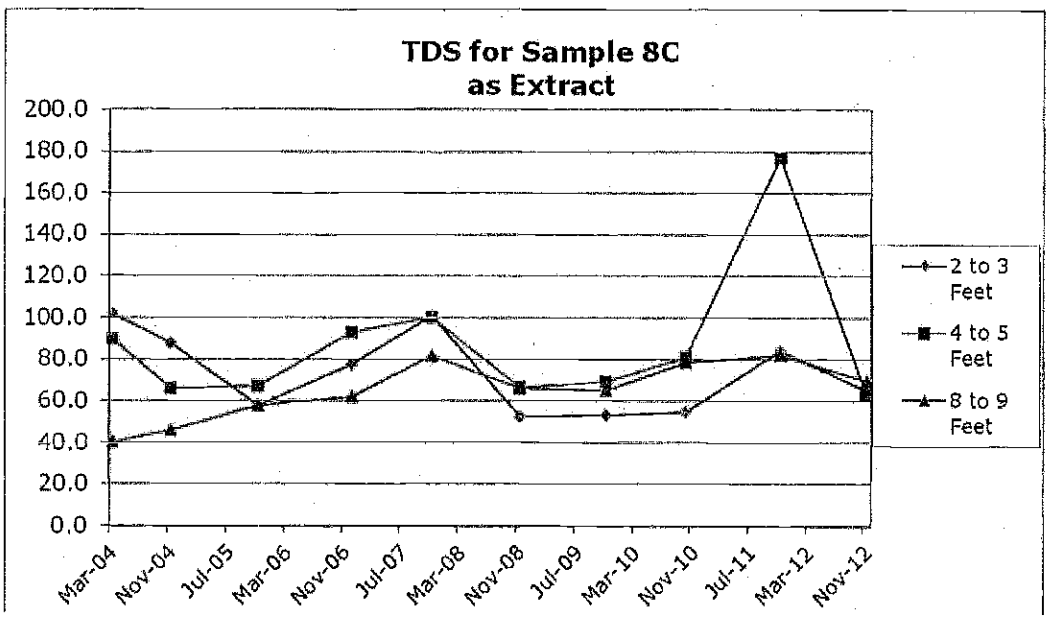
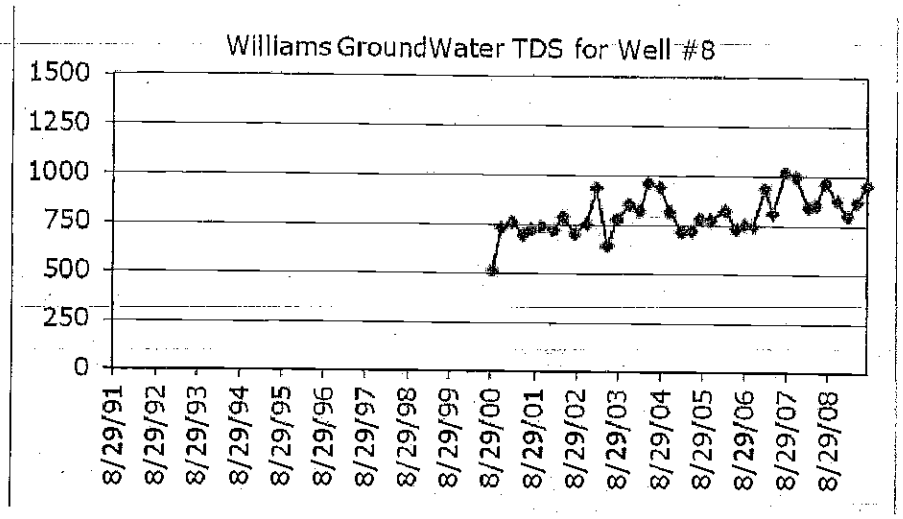
8/29/05
8/29/06
8/29/07
8/29/08


TDS for Sample 8C
as Extract
200.0
180.0
160.0
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
Mar-04
Nov-04
Jul-05
Mar-06
Nov-06
Jul-07
Mar-08
Nov-08
Jul-09
Mar-10
Nov-10
Jul-11
Mar-12
Nov-12
2 to 3 Feet
4 to 5 Feet
8 to 9 Feet


Williams GroundWater TDS for Well #8
1500
1250
1000
750
500
250
0
8/29/91
8/29/92
8/29/93
8/29/94
8/29/95
8/29/96
8/29/97
8/29/98
8/29/99
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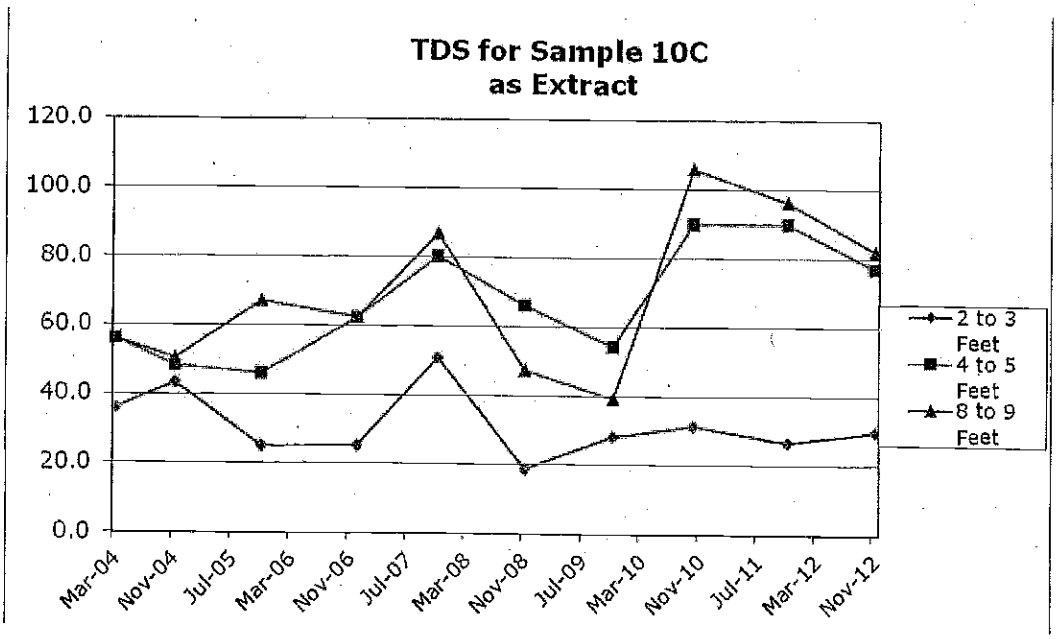
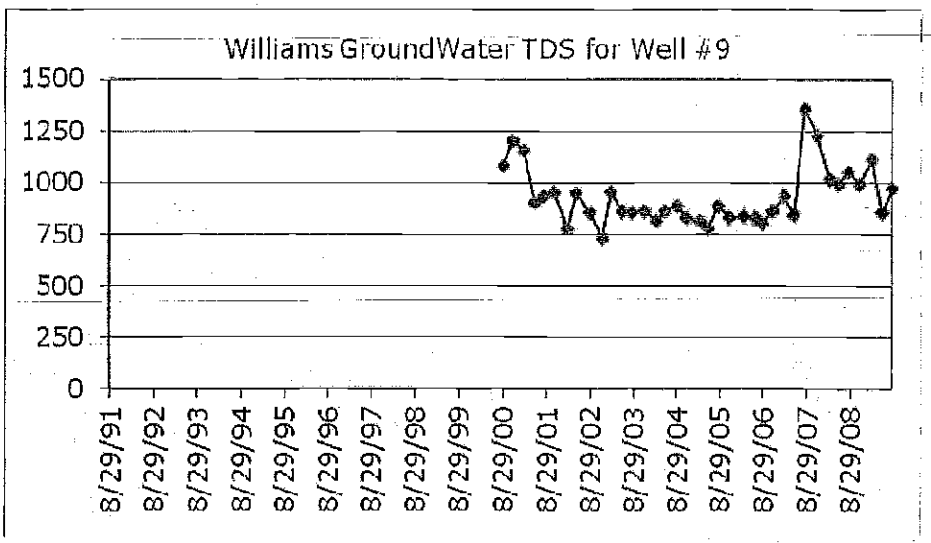
8/29/05
8/29/06
8/29/07
8/29/08


TDS for Sample 10C
as Extract
120.0
100.0
80.0
60.0
40.0
20.0
0.0
Mar-04
Nov-04
Jul-05
Mar-06
Nov-06
Jul-07
Mar-08
Nov-08
Jul-09
Mar-10
Nov-10
Jul-11
Mar-12
Nov-12
2 to 3 Feet
4 to 5 Feet
8 to 9 Feet


Williams GroundWater TDS for Well #9
1500
1250
1000
750
500
250
0
8/29/91
8/29/92
8/29/93
8/29/94
8/29/95
8/29/96
8/29/97
8/29/98
8/29/99
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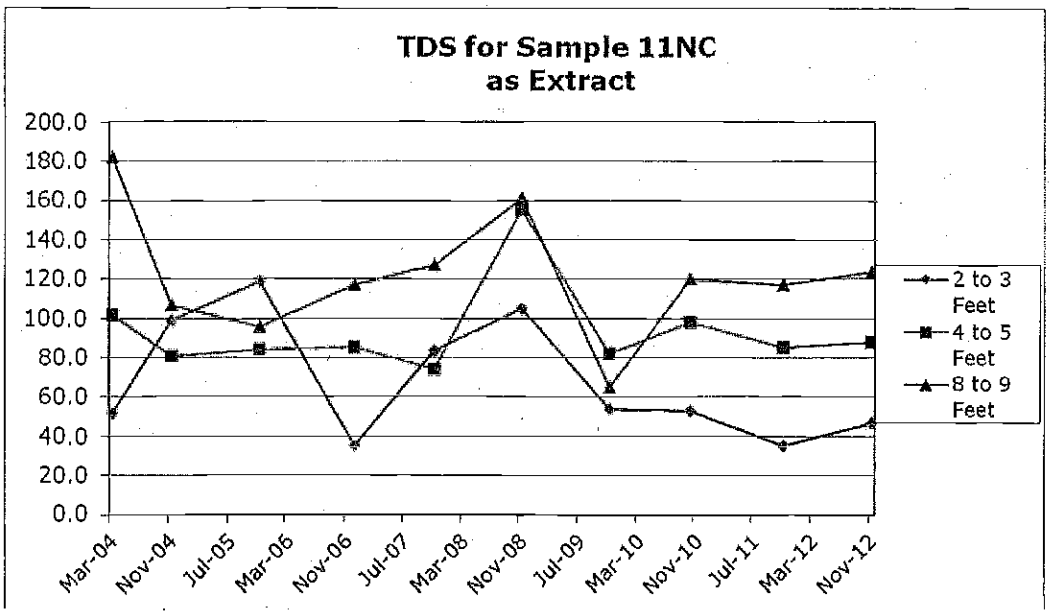
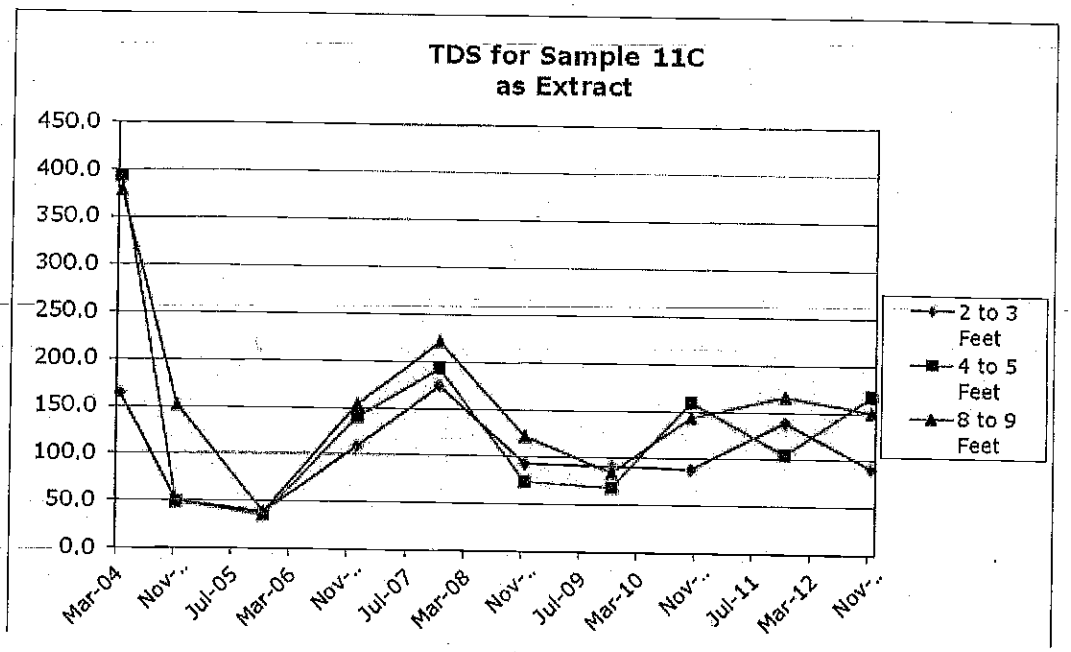
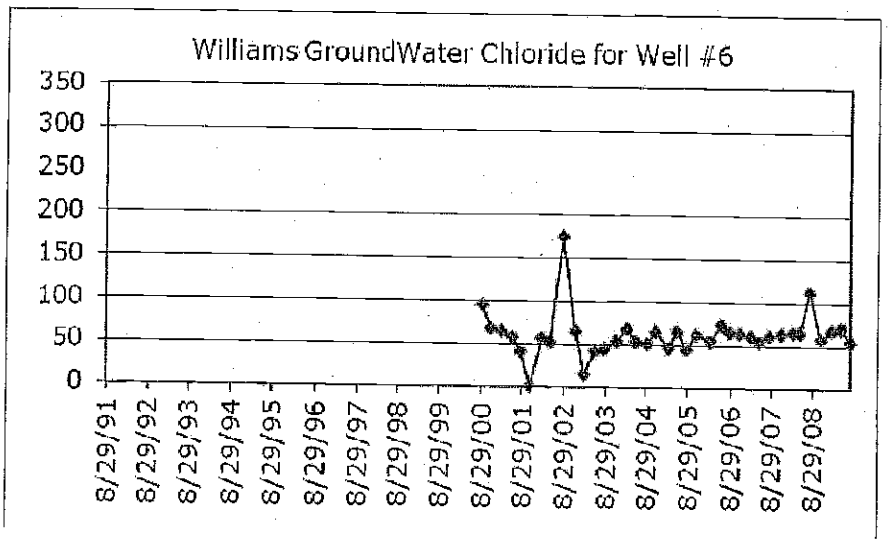
8/29/05
8/29/06
8/29/07
8/29/08


TDS for Sample 11NC
as Extract
200.0
180.0
160.0
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
Mar-04
Nov-04
Jul-05
Mar-06
Nov-06
Jul-07
Mar-08
Nov-08
Jul-09
Mar-10
Nov-10
Jul-11
Mar-12
Nov-12
2 to 3 Feet
4 to 5 Feet
8 to 9 Feet


TDS for Sample 11C
as Extract
450.0
400.0
350.0
300.0
250.0
200.0
150.0
100.0
50.0
0.0
Mar-04
Nov-..
Jul-05
Mar-06
Nov-..
Jul-07
Mar-08
Nov-..
Jul-09
Mar-10
Nov-..
Jul-11
Mar-12
Nov-..
2 to 3 Feet
4 to 5 Feet
8 to 9 Feet


Williams GroundWater Chloride for Well #6
350
300
250
200
150
100
50
0
8/29/91
8/29/92
8/29/93
8/29/94
8/29/95
8/29/96
8/29/97
8/29/98
8/29/99
8/29/00
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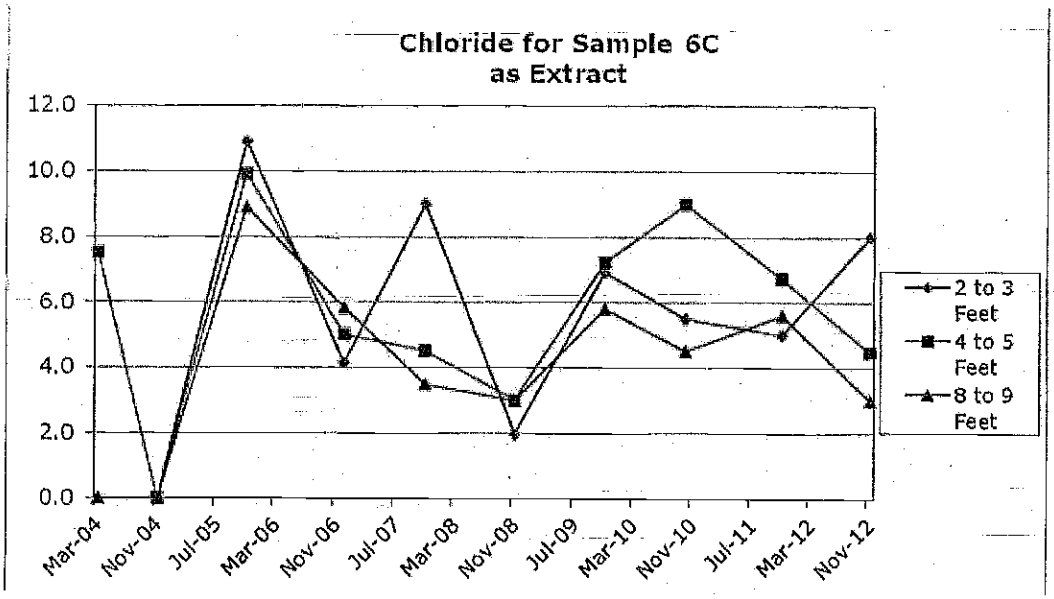
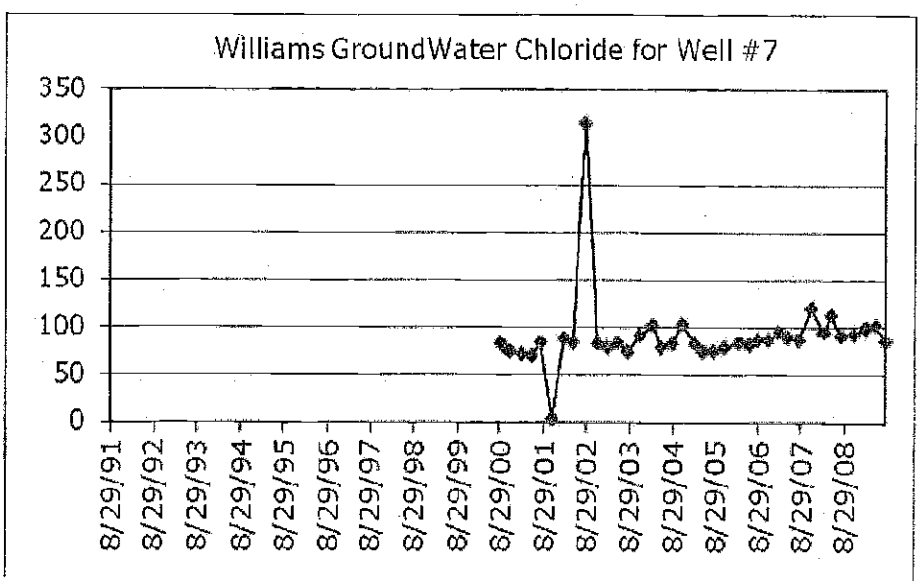
8/29/05
8/29/06
8/29/07
8/29/08


Chloride for Sample 6C
as Extract
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Mar-04
Nov-04
Jul-05
Mar-06
Nov-06
Jul-07
Mar-08
Nov-08
Jul-09
Mar-10
Nov-10
Jul-11
Mar-12
Nov-12
2 to 3 Feet
4 to 5 Feet
8 to 9 Feet


Williams GroundWater Chloride for Well #7
350
300
250
200
150
100
50
0
8/29/91
8/29/92
8/29/93
8/29/94
8/29/95
8/29/96
8/29/97
8/29/98
8/29/99
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8/29/05
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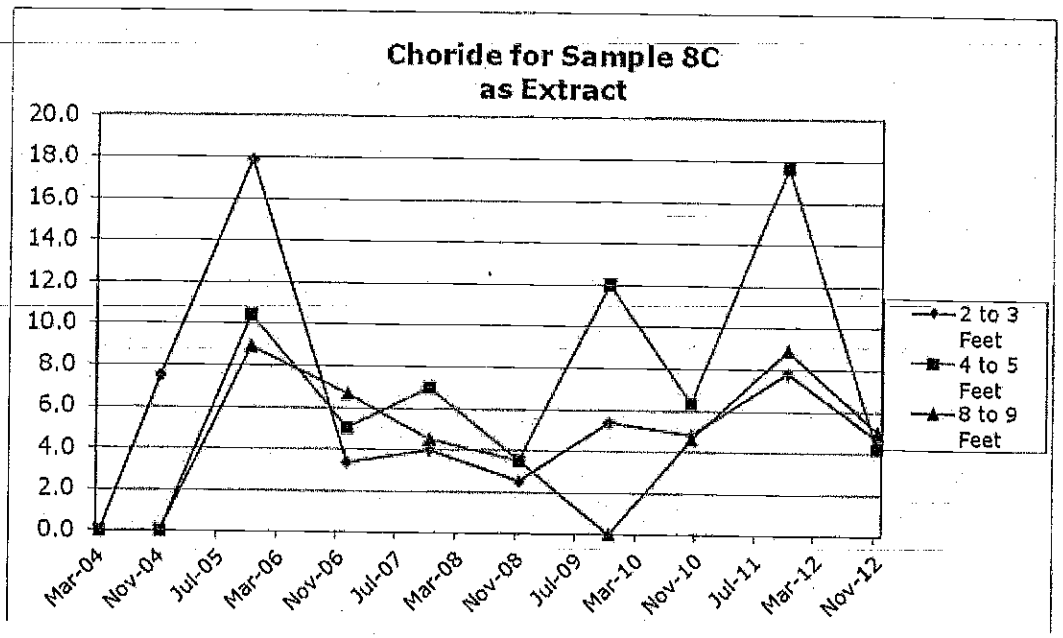
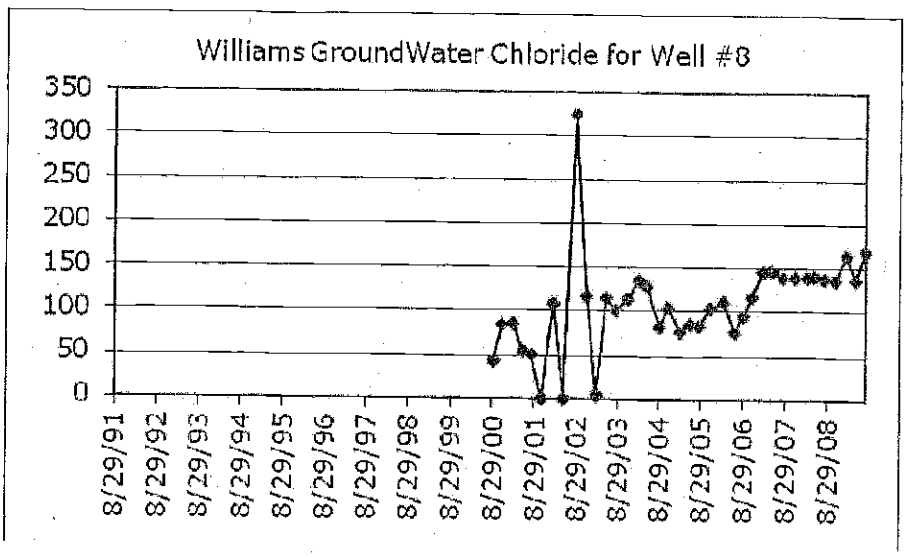
8/29/08


Choride for Sample 8C
as Extract
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Mar-04
Nov-04
Jul-05
Mar-06
Nov-06
Jul-07
Mar-08
Nov-08
Jul-09
Mar-10
Nov-10
Jul-11
Mar-12
Nov-12
2 to 3 Feet
4 to 5 Feet
8 to 9 Feet


Williams GroundWater Chloride for Well #8
350
300
250
200
150
100
50
0
8/29/91
8/29/92
8/29/93
8/29/94
8/29/95
8/29/96
8/29/97
8/29/98
8/29/99
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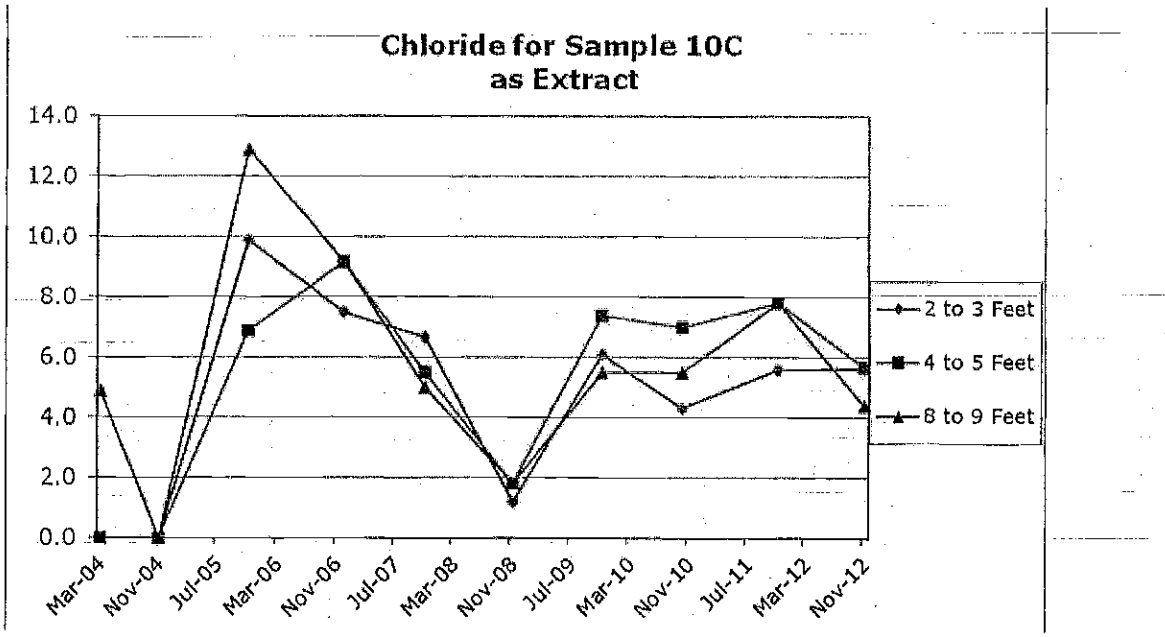
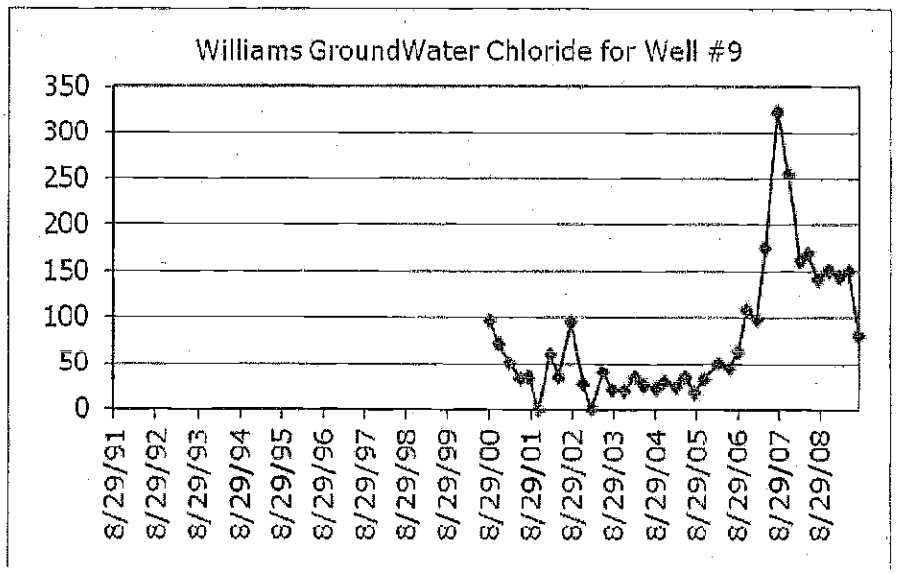
8/29/08


Chloride for Sample 10C
as Extract
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Mar-04
Nov-04
Jul-05
Mar-06
Nov-06
Jul-07
Mar-08
Nov-08
Jul-09
Mar-10
Nov-10
Jul-11
Mar-12
Nov-12
2 to 3 Feet
4 to 5 Feet
8 to 9 Feet


Williams GroundWater Chloride for Well #9
350
300
250
200
150
100
50
0
8/29/91
8/29/92
8/29/93
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8/29/95
8/29/96
8/29/97
8/29/98
8/29/99
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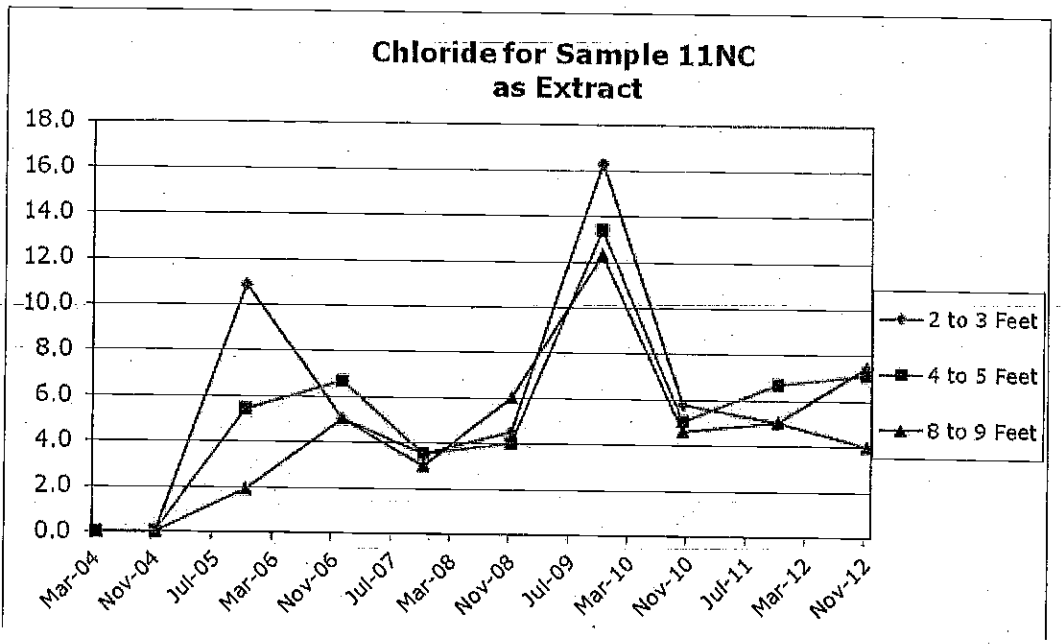
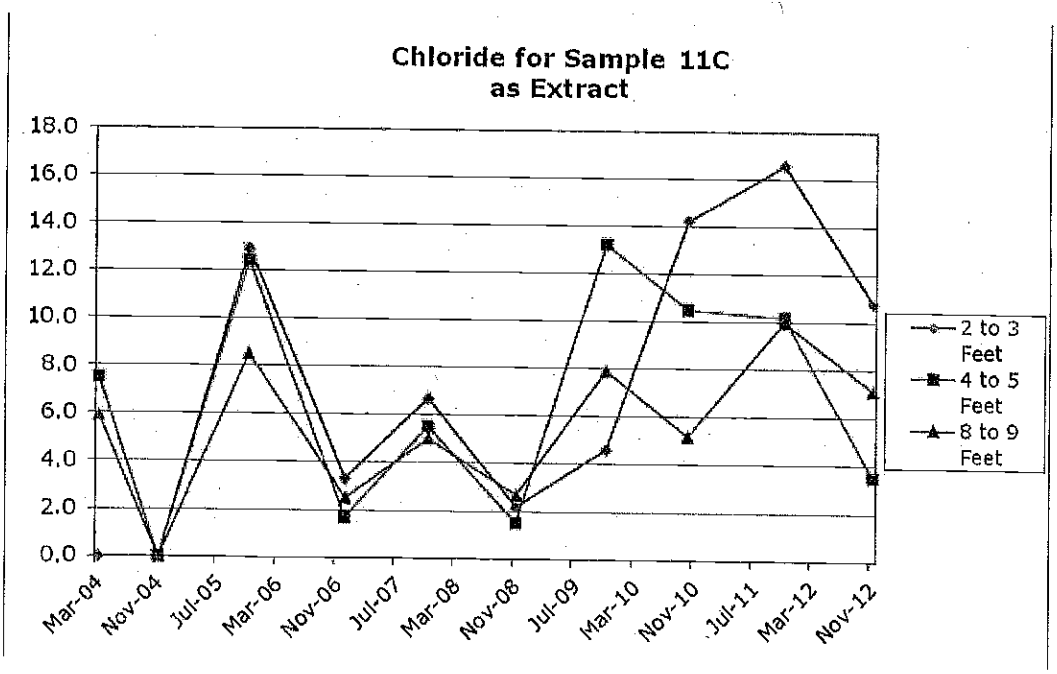
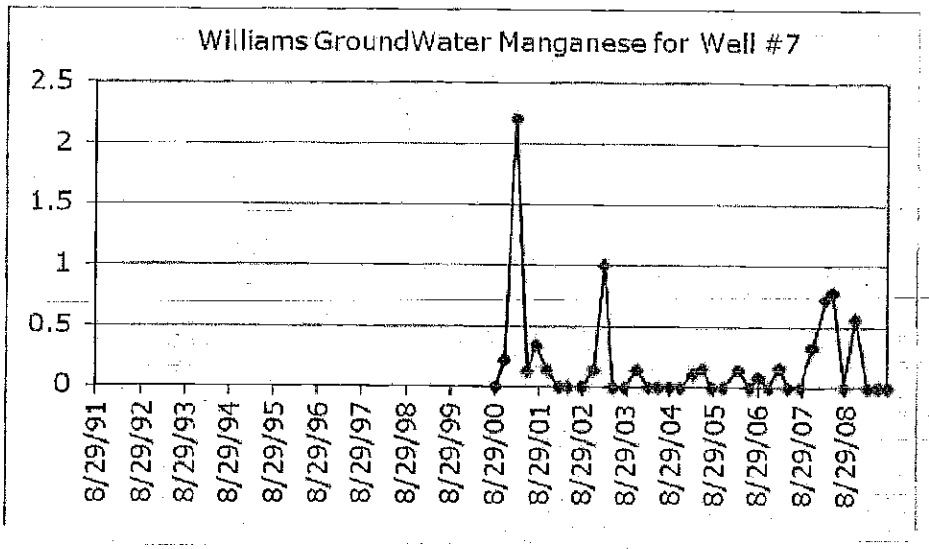
8/29/05
8/29/06
8/29/07
8/29/08


Chloride for Sample 11NC
as Extract
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Mar-04
Nov-04
Jul-05
Mar-06
Nov-06
Jul-07
Mar-08
Nov-08
Jul-09
Mar-10
Nov-10
Jul-11
Mar-12
Nov-12
2 to 3 Feet
4 to 5 Feet
8 to 9 Feet


Chloride for Sample 11C
as Extract
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Mar-04
Nov-04
Jul-05
Mar-06
Nov-06
Jul-07
Mar-08
Nov-08
Jul-09
Mar-10
Nov-10
Jul-11
Mar-12
Nov-12
2 to 3 Feet
4 to 5 Feet
8 to 9 Feet


Williams GroundWater Manganese for Well #7
2.5
2
1.5
1
0.5
0
8/29/91
8/29/92
8/29/93
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8/29/95
8/29/96
8/29/97
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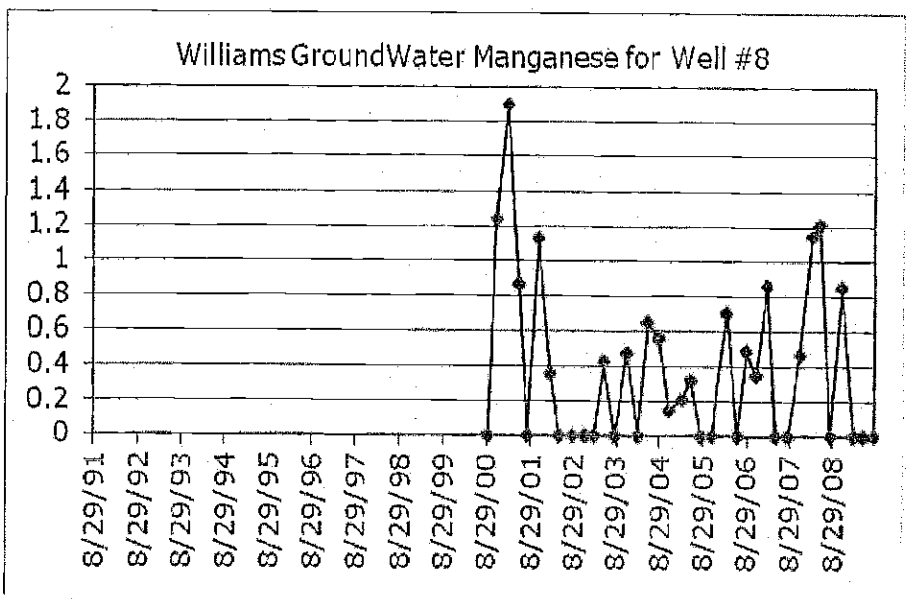
8/29/07
8/29/08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2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
8/29/91
8/29/92
8/29/93
8/29/94
8/29/95
8/29/96
8/29/97
8/29/98
8/29/99
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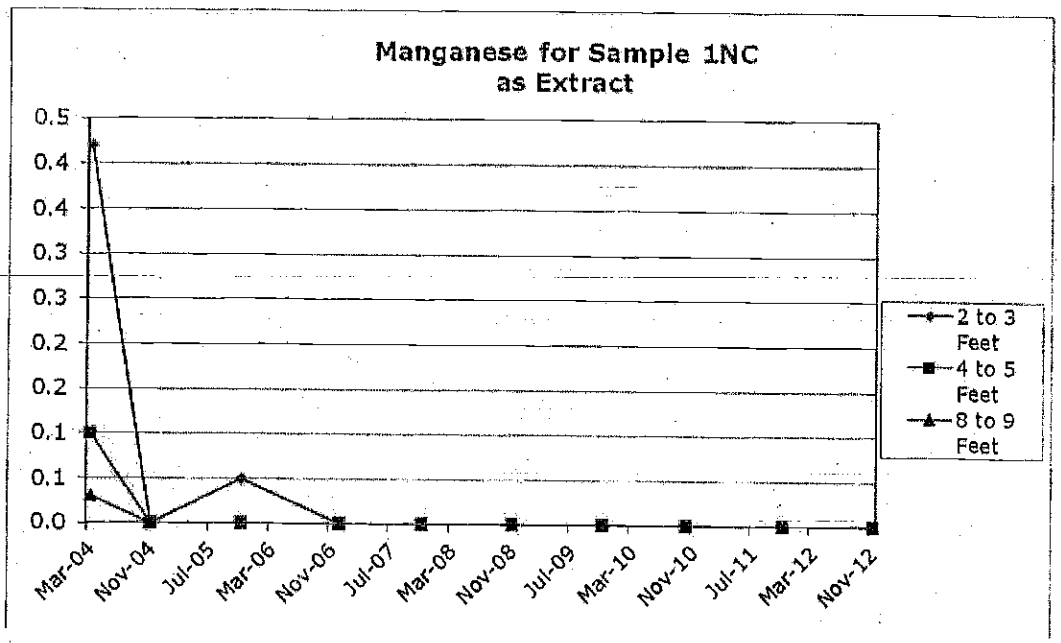
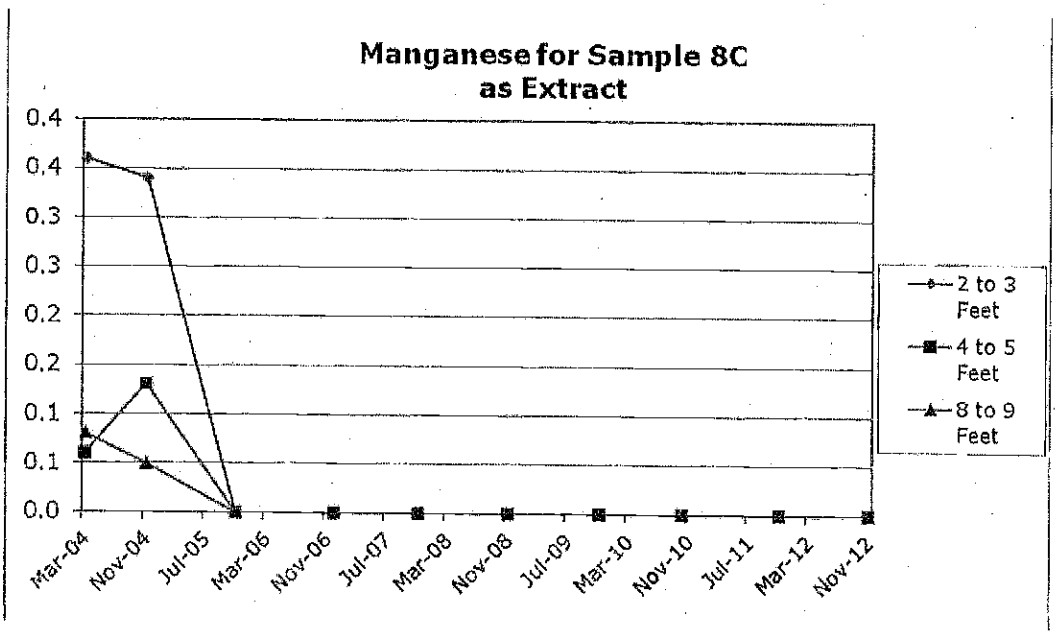
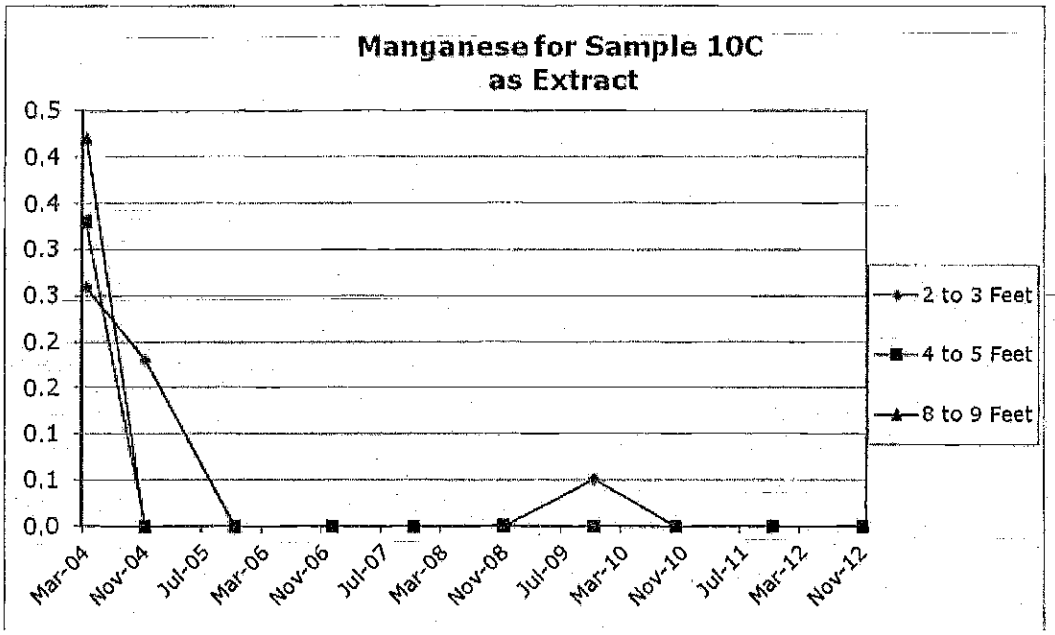

Manganese for Sample 1NC
as Extract
0.5
0.4
0.4
0.3
0.3
0.2
0.2
0.1
0.1
0.0
Mar-04
Nov-04
Jul-05
Mar-06
Nov-06
Jul-07
Mar-08
Nov-08
Jul-09
Mar-10
Nov-10
Jul-11
Mar-12
Nov-12
2 to 3 Feet
4 to 5 Feet
8 to 9 Feet

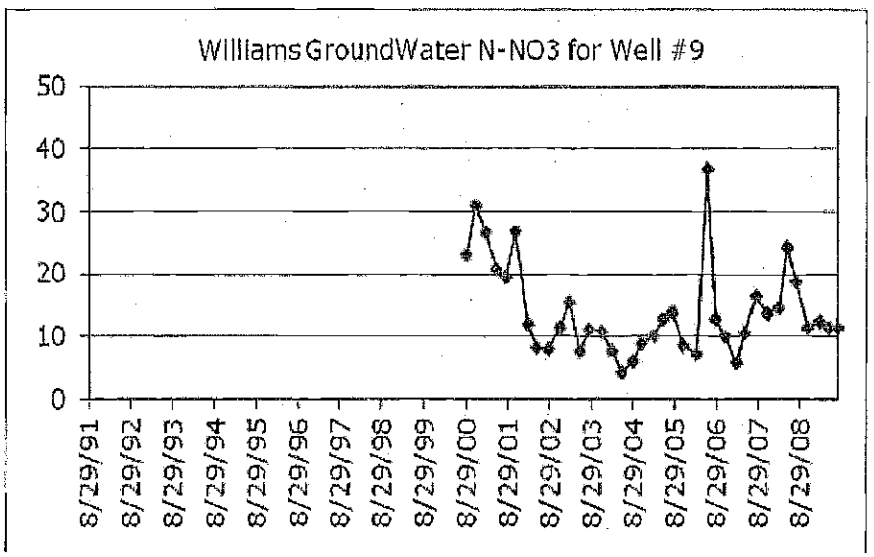

Manganese for Sample 8C
as Extract
0.4
0.4
0.3
0.3
0.2
0.2
0.1
0.1
0.0
Mar-04
Nov-04
Jul-05
Mar-06
Nov-06
Jul-07
Mar-08
Nov-08
Jul-09
Mar-10
Nov-10
Jul-11
Mar-12
Nov-12
2 to 3 Feet
4 to 5 Feet
8 to 9 Feet



Nitrogen Balance Results (lbs/acre)

	2007	2008	2009	2010	2011	2012
MS1	*	-127	4	*	-123	-59
MS2/3	-193	-149	-168	-171	-126	98

**No wastewater was applied during this year.*



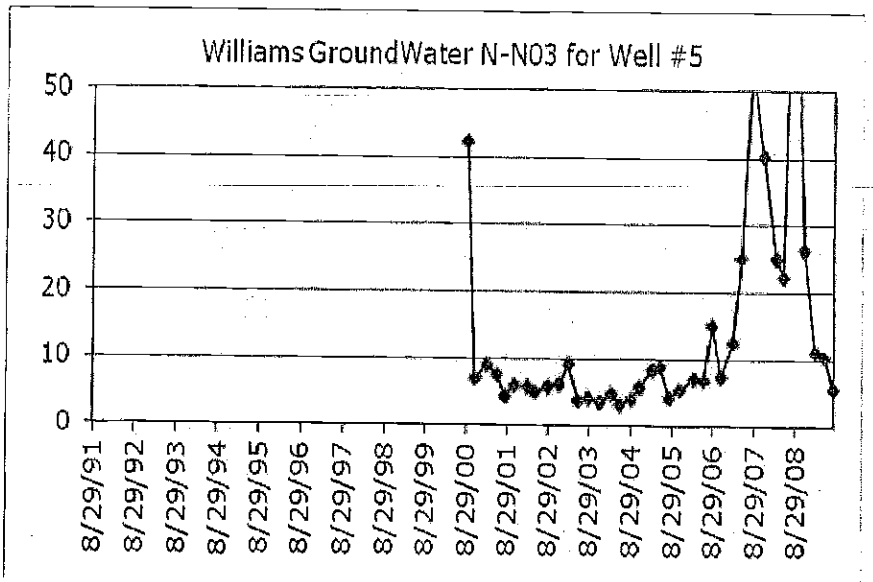

Williams GroundWater N-N03 for Well #5
50
40
30
20
10
0
8/29/91
8/29/92
8/29/93
8/29/94
8/29/95
8/29/96
8/29/97
8/29/98
8/29/99
8/29/00
8/29/01
8/29/02
8/29/03
8/29/04
8/29/05
8/29/06
8/29/07
8/29/08

EXHIBIT G

Regional Water Quality Control Board
Central Valley Region
Board Meeting – 5-6 December 2013

Response to Written Comments for the Morning Star Packing Company Tentative Waste Discharge Requirements

At a public hearing scheduled for 5 and 6 December April 2013, the Regional Water Quality Control Board, Central Valley Region ("Central Valley Water Board") will consider adoption of Waste Discharge Requirements ("WDRs") for discharges from The Morning Star Packing Company's Williams tomato packing facility. This document contains responses to written comments received from interested parties regarding the tentative WDRs and CDO. Written comments from interested parties were required by public notice to be received by the Central Valley Water Board by 30 October 2013 to receive full consideration. Comments were received from The Morning Star Packing Company.

Written comments from the above interested parties are summarized below, followed by the responses of Central Valley Water Board staff. Based on the comments, Central Valley Water Board staff made some changes to the tentative WDRs. Central Valley Water Board staff also made some changes to correct typographical errors and to improve clarity.

THE MORNING STAR PACKING COMPANY'S COMMENTS

The Morning Star Packing Company (Morning Star) and the Central Valley Water Board staff met prior to the close of the public comment period. On 30 October 2013, Moring Star submitted written comments regarding the tentative WDRs. The comments identified several issues and requested certain specific changes to the tentative WDRs. Some of the changes were made as requested and some were not.

Morning Star Comment No. 1: Morning Star strongly disagrees with any finding that its discharge has caused any degradation of groundwater quality.

RESPONSE: Shallow groundwater conditions at the site are complicated by numerous sources of groundwater recharge (some of it high quality and some if it not). The available site-specific hydrogeologic information and Morning Star's groundwater monitoring data were carefully reviewed and analyzed, and staff's evaluation is discussed at length in Findings 40 through 45 of the proposed Order.

As noted in those findings, discharges to the unlined wastewater settling pond have caused the chloride concentration to increase in one shallow monitoring well downgradient of the pond (MW2) in the last two years. Because the chloride concentrations in the two wells that best represent background groundwater quality for the Settling Pond (MW1 and MW4) did not increase during that period, it is reasonable to conclude that the chloride increase in MW2 is due to percolation of waste constituents from the Settling Pond. The degradation is recent and coincides with increases in wastewater salinity over the last several years. However, it has not caused exceedance of the lowest potentially-applicable water quality objective, which is the agricultural water quality goal (106 mg/L). This level of degradation is relatively minor, and the Order does not propose that the Discharger implement additional treatment or control measures to limit chloride degradation from the Settling Pond. However, State Water Board Resolution 68-16, the Statement of Policy with Respect to Maintaining High Quality of Waters in California (*State Anti-Degradation Policy*) requires that the Board consider all degradation caused by regulated facilities, and does not set a *de minimis* level

that would exempt Board staff from providing their professional opinion as to whether degradation has occurred and whether that level of degradation is consistent with the *State Anti-Degradation Policy*.

With regard to the land application areas (LAAs), we determined that four of the LAA monitoring wells (MW6, MW7, MW8, and MW9) show degradation for some constituents as summarized in the following table.

Monitoring Well	Current Degradation Status			
	TDS	Chloride	Manganese	Nitrate
MW6	Slight Degradation	Slight Degradation	Inadequate Data	No Degradation
MW7	Degradation	Slight Degradation	Pollution	No Degradation
MW8	Degradation	Degradation	Pollution	No Degradation
MW9	Degradation	Degradation	Inadequate Data	Pollution

Board staff believes that the degradation and pollution can be attributed to localized overloading of water, BOD and nitrogen due to the current irrigation system.

The LAAs are surface irrigated using the border check method. Each field contains several checks that are separated by berms. Each check is typically 20 feet wide, and the check lengths are typically 1,000 to 2,600 feet with minimal slope. For a particular field, the checks are irrigated sequentially until the entire field has been irrigated. The field is then allowed to rest until the next irrigation cycle begins. Because of the long check lengths, it typically takes one to two days of continuous irrigation to ensure that the lower end of the each check receives sufficient water to sustain the crop. Surface irrigation of fields with long check lengths such as these results in poor irrigation uniformity, with higher water and waste constituent loading rates and longer infiltration times at the top end of the field in comparison to the bottom end of the field. Both MW7 and MW9 are at the upper end of two different fields, and MW8 is located at mid-check length in another field. In contrast, MW6, which shows evidence of only minor degradation with TDS and chloride, is near the bottom end of a field.

The WDRs were not revised to change the findings of degradation and pollution, but some clarification was added to those findings and the technical information above was added to the findings to clarify that the current irrigation system may need to be modified to ensure compliance with the groundwater limitations. The proposed WDRs allow the Discharger to continue using the current irrigation system and to calculate waste constituent loading rates as field wide averages as long as the monthly monitoring reports clearly demonstrate best efforts to achieve uniform application field-wide and compliance with the WDRs. If the pollution does not resolve over time with improved operational practices, physical improvements to the irrigation system or other treatment/control may be needed. Such improvements might include creation of smaller fields with shorter check lengths, switching to sprinkler irrigation, wastewater pretreatment to reduce BOD, removing cattle from the LAAs, and/or additional land application areas.

Morning Star Comment No. 2: Morning Star requested revision of Finding 30 (now Finding 31) to clarify its current storm water runoff management practices for the wastewater land application areas, stating:

> *"Storm water from the land application area (LAA) is pumped from the collection ditches and applied to the LAA for the first 2" of rainfall. During the next rain event, the collected storm water is tested and compared to the water quality in the [Glenn-Colusa Irrigation District] drain. If the storm water is of similar quality to the drain water or better, the water is then released offsite."*

RESPONSE: The findings were revised to describe the Discharger's current storm water management practices as requested. However, the 1995 WDRs prohibit the discharge of wastes to surface water drainage courses and the 2005 CDO reinforces this prohibition by prohibiting the discharge of tailwater or storm water containing waste to surface drainage courses. Additional information was added to the findings to explain why the current storm water management practices are a concern and may be in violation of the CDO. Specifically, although the Discharger submitted analytical data for storm water runoff from the LAAs and water collected in a nearby GCID drain to support a change in practices in 2009, the samples were only analyzed for pH and electrical conductivity. The analysis did not account for BOD or nitrogen, which are both characteristic of food processing wastewater and cattle grazing operations.

Additionally, the change in practices proposed in 2009 was not approved by staff and approval would likely have required revision to, or rescission of, the CDO. The Discharger has not demonstrated that the current storm water management practices comply with the requirements of the WDRs or CDO. The tentative WDRs were revised to allow the Discharger to continue its current storm water practices. However, the Discharger is required to submit a *Storm Water Runoff Evaluation and Management Plan* that clearly demonstrates through monitoring this winter that the runoff being released does not pose a significant threat to surface water quality. If the Executive Officer does not approve the plan, the Order would require that the Discharger not release storm water runoff from the LAAs in the subsequent years unless and until a revised plan is approved.

Morning Star Comment No. 3: Morning Star requested revision of Finding 31 (now Finding 32) to clarify its current Settling Ponds solids management practices and request that land application of residuals solids be allowed. Specifically, the comment stated:

> *"Solids from the settling pond are either applied to the LAA as a soil amendment or used to build up farm roads. Solids from processing activities (pomace, cull tomatoes and vines) have historically been hauled off-site, but we would like to reserve the right to apply residual solids to the LAA at agronomic rates."*

RESPONSE: Finding 13 (previously Finding 12) was revised to reflect the current Settling Pond solids disposal practices. The 1995 WDRs allow for land application of solids as a soil amendment; however they do not allow solids use on farm roads at the site as currently practiced by the Discharger. Settling Pond solids include soil washed off the tomatoes and tomato waste, and therefore likely contain BOD and nitrogen. The Discharger has not characterized the waste, provided a description of management practices to prevent

discharge of storm water runoff containing waste constituents to surface water drainage courses, or specified site roads that have received these solids. The proposed Order prohibits the application of Settling Pond solids on areas other than the LAAs as a soil amendment until a *Settling Pond Solids Management Plan* is approved by the Executive Officer.

Finding 32 (previously Finding 31) was revised to reflect the current residual solids practices and note the Discharger's request to apply these solids to the LAAs. The Discharger has not characterized this waste, which may represent a significant new source of BOD and nitrogen loading to the LAAs (which are already occasionally overloaded). This new source of BOD and nitrogen loading may potentially cause nutrient overloading, nuisance conditions (such as odors or fly breeding), or reducing conditions that mobilize iron and manganese in soil. The WDRs were revised to allow land application of residual solids after a *Residual Solids Management Plan* is approved by the Executive Officer.

Morning Star Comment No. 4: Morning Star requested revision of Effluent and Mass Loading Limitation C.2, stating:

> *"[Biochemical Oxygen Demand] loading rates should be based on the cycle average BOD loading. The mass loading calculation needs to be modified to include the number of days the irrigation cycle occurred over. Furthermore, the cycle average BOD loading rate should be increased to 139 lb/acre/day, which was demonstrated appropriately in a report submitted on August 29, 2013."*

RESPONSE: We agree that the loading rate should be based on the irrigation cycle average loading, and changes were made to the WDRs and MRP to clarify this. However, the requested change to the loading rate limit was not made. The Discharger's current irrigation practices involve surface irrigation with extremely long irrigation check lengths. Long check lengths result in poor irrigation uniformity, with higher wastewater application rates and longer infiltration rates at the top end of the field in comparison to the bottom end of the field. Although the Discharger's calculations indicate that the loading rate could be increased to 139 lb/ac/day based on atmospheric oxygen transfer, the calculations inherently assume uniform loading. Additionally, the California League of Food Processors' *Manual of Good Practice for Land Application of Food Processing/Rinse Water* recommends that additional safety factors be used for sites with heavy and/or compacted soils. The Manual of Good Practice also states that the use of surface irrigation (border check method) makes uniform application difficult, especially for coarse textured soils. The site specific soil conditions and the uneven BOD application rates inherent to the current irrigation system pose a threat of reducing conditions, which we believe are demonstrated by the manganese pollution in two of the LAA monitoring wells. Therefore, the request change was not been made. The proposed Order prescribes a limit of 100 lb/ac/day as an irrigation cycle average. We believe that the Discharger can comply with this limit.

Morning Star Comment No. 5: Morning Star requested revision of Discharge Specification D.14, stating:

> *"The pH of wastewater in the settling pond frequently falls below 6.0. No negative impacts to the LAA have been observed from this pH. A pH range of 4.0-9.0 is appropriate for this discharger."*

RESPONSE: Based on historical groundwater monitoring data for the Settling Pond, there is no evidence of unreasonable degradation of groundwater with respect to pH. Therefore, Discharge Specification D.14 was revised to set separate pH limits for water in the Settling Pond and Cooling Pond. Discharge Specification D.14 now states:

> *"Wastewater contained in the Cooling Pond shall not have a pH less than 6.0 or greater than 9.0. Wastewater contained in the Settling Pond shall not have a pH less than 4.0 or greater than 9.0."*

Morning Star Comment No. 6: Morning Star requested revision of Land Application Area Specification F.9 (now Land Application Area Specification F.11), stating:

> *"Discharge from the facility occurs seasonally from July through October. During the later part of the processing season, the area typically experiences a minimal rain event. The settling pond does not have the capacity to store wastewater from the facility. Because of the facility's operations, it cannot cease processing without causing an expensive and time consuming full clean up and restart. We suggest that the wording be modified to prohibit discharge of wastewater when fields are saturated due to rainfall."*

RESPONSE: The version of Land Application Area Specification F.11 that was included in the tentative WDRs was a requirement of the 2005 CDO.

WDRs typically prohibit waste discharges to land application or water recycling areas during rain or when the soil is saturated. This is a reasonable requirement to prevent excess percolation of water containing waste constituents, especially at this site where groundwater is very shallow. Land Application Area Specification F.11 was revised as follows:

> *"Discharge to the LAAs shall not be performed during rainfall or when the ground is saturated."*

It should be noted that the Settling Pond could be expanded to provide one to two days storage, which should accommodate all but the most extreme wet weather during the July-October processing season.

Morning Star Comment No. 7: Morning Star requested revision of the Monitoring and Reporting Program with respect to calculation of BOD and nitrogen loading rates to determine compliance with Effluent and Mass Loading Limitation C.2, stating:

"Further discussions with the Regional Board are necessary to determine an appropriate and reasonable method of calculated mass loading rates. The fields are broken into 20[-foot] wide checks that run the length of the field. Irrigators irrigate a varying number of checks each day depending on the soil moisture depletion and flow rates from the facility. Tracking the nitrogen and BOD cycle loading rates for each check throughout the season will cause a large amount of paperwork. Calculating the loading rates on a field basis provides a good estimate of these loadings."

RESPONSE: Effluent and Mass Loading Limitation C.2.b and the Monitoring and Reporting Program were revised as requested to clarify loading rate calculations based on a cycle average and field basis, and allow determination of compliance based on field wide average loadings for each LAA. The proposed Order also requires the Discharger to ensure that the application of wastewater is distributed uniformly across each LAA field. In addition, the proposed Order prescribes protective BOD and total nitrogen loading limits and requires submittal of a plan to better control and monitor these rates from wastewater and other supplemental sources to ensure compliance with the proposed Order.

Morning Star Comment No. 8: In proposed text revisions to the tentative WDRs, Morning Star requested revision of Finding 10 to reflect plans for future expansion, stating

"The facility has plans to expand the processing operations by 65% in the future. The expansion is not anticipated to change wastewater characteristics or cause flow limits to be exceeded."

RESPONSE: Finding 28 was added to address plans for future expansion and compliance with the proposed Order as requested. Although the Discharger anticipates no changes to the wastewater quality or an exceedance of the flow limits as a result of any future expansion, any significant increase in wastewater flows will increase BOD and nitrogen loading to the LAAs. The wastewater flow limits of the proposed Order are the same as those in WDRs Order 95-160 and allow the discharge of up to 422 MG of process wastewater combined with Cooling Pond water each year.

For 695 acres of land application areas, this is equivalent to approximately 22 inches of water over four months from July through October. Average reference evapotranspiration (ET_o) rates in the Williams area for that period are typically 24 inches. Although the crop evapotranspiration rates will typically be less than ET_o, the inherent inefficiency of border check irrigation requires some over application of water to ensure good crop yield. Although increases in wastewater flows up to the flow limits of the proposed Order would likely not lead to gross over irrigation of the LAA fields, those flow increases will be accompanied by increased BOD and total nitrogen mass loadings.

If wastewater flows increase to the flow limits of the proposed Order, it is possible that the Discharger will not be able to comply with the loading rate limits without eliminating the cattle grazing, eliminating land application of residual solids, and/or implementing wastewater treatment to reduce BOD and/or total nitrogen loading rates. The proposed Order requires that the Discharger ensure that such violations do not occur.