INFORMATION SHEET

ORDER R5-2015-XXXX
GRIMMWAY ENTERPRISES, INC.
SHAFTER CARROT WASHING PLANT AND
NORTH KERN WATER STORAGE DISTRICT
KERN COUNTY

Background

Grimmway Enterprises, Inc. (Grimmway), owns and operates the Shafter Carrot Packing Plant in Shafter near the intersection of State Highway 99 and Lerdo Highway in Kern County. The Plant is strictly for washing and packing carrots (no grinding, chopping, juicing, etc.). The packed carrots are either delivered to buyers or further processed offsite at another Grimmway facility. The Plant was built in 1973, regulated by Waste Discharge Requirements (WDRs) Order 73-149. Grimmway purchased the Plant in 1991 from Belridge Farms, Inc. The Central Valley Water Board adopted WDRs Order 5-01-140 on 14 June 2001, which regulates the discharge of up to 0.300 mgd of wash water to unlined ponds on the Plant property, followed by discharge to the Minter Field Airport District community sewer system for treatment at the Minter Field WWTF.

The Minter Field WWTF is closing down soon. Minter Field and Grimmway's Plant are in the City of Shafter, which is transitioning sewer service for the area to the North of River Sanitary District No. 1 WWTF, about 10 miles southwest of the Plant. Grimmway will not be able to dispose of carrot washing wastewater in the sewer. On 25 July 2014, Grimmway submitted a Report of Waste Discharge, including a technical report, proposing to install a pipeline to convey its wastewater to the North Kern Water Storage District (North Kern) Rosedale spreading grounds. The spreading grounds is an approximately 592-acre groundwater recharge project about a mile and a half south of the Plant.

Plant and Discharge

The Plant receives fresh, whole carrots, packs them, and ships them to buyers or to another Grimmway facility for processing. Grimmway typically operates the Plant five days per week for 16-hour days. The 79-acre Plant property includes office buildings, truck parking, truck unloading, carrot washing facilities, a storm water basin, and a system of unlined wastewater ponds.

Trucks haul carrots from the field to soaker sheds at the Plant where carrots are initially rinsed with well water. The carrots are then flushed from the trailers at the washout area to a flume using recycled wash water pumped from an initial wastewater settling pond, which Grimmway calls the recycle pond. The carrots are then conveyed to the packing shed, where they are cleaned using brush washers and fresh chlorinated water. The final wash occurs during the hydro-cooling process using more fresh chlorinated water. Grimmway packs and stores the clean carrots.

All carrot washing wastewater is combined in the recycle pond for settling of sand and silt. Water from the recycle pond is pumped back to the Plant for reuse in the washout area and flume. Grimmway has not recorded wastewater flow from the Plant to the unlined ponds or the flow of wastewater recycled back to the Plant. The RWD does not include estimates of evaporation or percolation from the ponds.

Valve settings control whether the ponds are in series or parallel, and allow Grimmway to take particular ponds out of service for maintenance while continuing to use the remaining ponds. The effluent pump controls the water level in the final pond. The water level in all the other ponds is generally fixed at the elevation each outflow pipe. Grimmway has occasionally reconfigured the unlined ponds to optimize operation and maintenance without significantly changing the purpose or location of the pond system.

Grimmway's current discharge from the last unlined pond into the Minter Field WWTF collection system will be replaced with discharge to a wastewater line connected to LAAs at the North Kern recharge project. In 2013, the average flow into the collection system was about 0.14 mgd.

Grimmway had previously operated a citrus packing plant on the Plant property concurrent with carrot washing operations. The citrus packing building remains on the property and Grimmway reports it will likely be used to expand the carrot washing and packing activities, resulting in the proposed increase in wastewater flow to 0.700 mgd. Grimmway no longer accepts any citrus fruit and only washes and packs carrots.

The domestic wastewater stream at the Plant is entirely separate from the wash water stream. Wastewater from evaporative cooling processes at the Plant is discharged to the domestic system rather than to the wastewater ponds. The RWD states that the domestic wastewater system, currently connected to the Minter Field WWTF, will be connected to the City of Shafter community sewer line in preparation for closure of the Minter Field WWTF.

Supply water for the Plant is provided by an onsite well. The supply water is relatively poor quality with respect to salinity. The table below presents the average results of quarterly water supply monitoring from September 2011 through August 2014.

Parameters	Units	Average	Range
EC [1]	umhos/cm	1,550	1,350 – 2,100
TDS [2]	mg/L	1,030	930 – 1,120
Nitrate (as N)	mg/L	< 0.1	< 0.1 - 0.1
Sodium	mg/L	285	254 - 308
Chloride	mg/L	285	247 - 305
Sulfate	mg/L	384	320 - 420
Boron	mg/L	< 0.1	< 0.1 - 0.2
Hardness (as $CaCO_3$)	mg/L	209	152 - 571

[1] Electrical conductivity.
[2] Total dissolved solids.

As required by WDRs Order 5-01-140, Grimmway monitors wastewater quality prior to discharge to the Minter Field WWTF. The table below presents the average results of quarterly wastewater monitoring from September 2011 through August 2014.

Parameters	Units	Average	Range
BOD [1]	mg/L	161	27 – 690
EC	umhos/cm	2,130	1,902 – 2,250
TDS	mg/L	1,560	1,280 – 1,920
Total Nitrogen	mg/L	3.6	< 1.0 – 10

Sodium	mg/L	329	280 – 409
Chloride	mg/L	388	330 – 420
Sulfate	mg/L	456	330 – 800
Boron	mg/L	0.4	< 0.1 – 2.3
Hardness (as $CaCO_3$)	mg/L	577	218 – 2,120

[1] Five-day biochemical oxygen demand.

Grimmway submitted Materials Safety Data Sheets describing the chemicals used at the Plant for sanitation and disinfection. The active ingredients in the chemicals include: acetic acid, citric acid, phosphoric acid, peroxyacetic acid, hydrogen peroxide, 2-butoxyethanol, lauramine oxide, n-alkyl dimethyl benzyl ammonium chlorides, n-alkyl dimethyl ethylbenzyl ammonium chlorides, polyethylene glycol mono(nonyl phenol) ether, tetrasodium ethylenediaminetetraacetate, sodium hypochlorite, sodium hydroxide, potassium hydroxide, sodium metasilicate, sodium tripolyphosphate, and surfactants. The organic chemicals are commonly used and considered low toxicity. Grimmway has not provided estimated chemical usage rates for these chemicals, other than for sodium hypochlorite, which it uses at a rate of about one ton per week (approximately 250 gallons) in a concentration of 12.5 percent.

Grimmway and North Kern were actively negotiating the terms of an agreement during preparation of this Order. The agreement is expected to authorize Grimmway's long-term discharge to the Rosedale recharge area and define the roles and responsibilities of each party. Grimmway has indicated it will accept responsibility for compliance with all the terms and conditions of this Order. North Kern reportedly intends to allow Grimmway access to its facilities. This Order requires the Discharger to submit, for Executive Officer approval, documentation that the parties have a certified agreement consistent with compliance with this Order

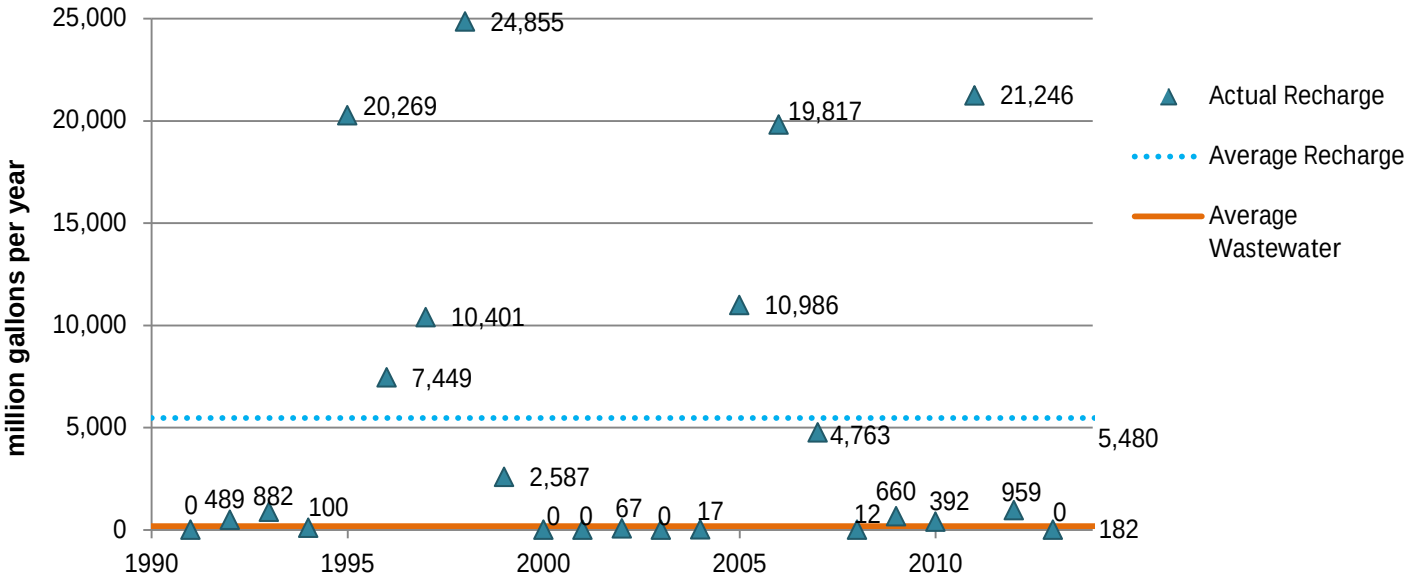
Grimmway intends to grow orchard grass to increase atmospheric nitrogen losses in the LAAs, but it will not harvest a crop. The RWD describes LAAs varying in size from 17 acres to 440 acres. The wastewater may be blended with surface water at times, but will generally be applied unblended. According to availability of supplemental water (i.e., surface water), North Kern will apply it to the same areas that will receive wastewater. This Order requires the Discharger to submit a Land Application Area Management Plan describing how it will minimize localized groundwater degradation by rotating wastewater application through different LAAs within the North Kern recharge project.

North Kern reportedly refers to individual recharge basins as "ponds". To aide in distinguishing between discharges to the Plant property from those at the Rosedale recharge area, the proposed Order refers to the ponds near the Plant as "wastewater ponds" and those at the recharge area as "recharge basins" or LAAs. Pond monitoring requirements only apply to the wastewater ponds at the Plant property. LAA monitoring requirements only apply to the recharge basins at the recharge area.

Organic matter in the discharge increases the biochemical oxygen demand (BOD). Overloading of LAAs with high organic strength wastewater can create objectionable odors and induce soil conditions leading to groundwater degradation with metals and other constituents. BOD concentrations in the discharge are high enough that the discharge must be managed to prevent overloading. Based on the

average proposed flow and proper rotation of LAAs across the available area, the cycle average BOD loading will be less than 50 pounds per acre per day. Based on the maximum recorded effluent BOD concentration of 690 mg/L (December 2011) and the smallest LAA described in the RWD (17 acres), the maximum instantaneous BOD loading rate is expected to be less than about 250 pounds per acre per day.

North Kern has agreements with various parties for access to water for groundwater recharge. The availability of water for recharge depends primarily on precipitation in the region. The figure below presents recharge flows applied per year in millions of gallons (MG) from 1991 through 2013, calculated from data presented in the RWD.



The average annual recharge volume reported for the period of 1991 through 2013 is about 5,480 MG (about 16,800 acre-feet), or 28.4 feet of water spread over the 592-acre recharge area. Over the same 23-year period, there were six years when no water was applied and four years when North Kern applied over 100 feet of surface water to the area. At the proposed maximum wastewater flow (182 MG/year), Grimmway's proposed discharge would average less than one foot of water over the 592 acres of application areas, which represents about three percent of the total water applied.

The table below presents average surface water quality data from the Beardsley canal used for recharge in 2012 and 2013.

Parameters	Units	Average	Range
EC	umhos/cm	192	140 - 250
TDS	mg/L	112	42 - 170
Nitrate (as N)	mg/L	< 0.5	< 0.5 - 0.8
Sodium	mg/L	17	13 – 26

Parameters	Units	Average	Range
Chloride	mg/L	7.0	4.1 – 11
Sulfate	mg/L	20	9.9 – 38
Boron	mg/L	< 0.2	< 0.1 - 0.2

Site-Specific Conditions
The Plant and Land Application Area are at an elevation of approximately 415 feet and 375 feet above mean sea level, respectively. The climate is arid, with hot summers and mild winters. The rainy season generally extends from November through March. Occasional rains occur during the spring and fall months, but summer months are dry. Average annual precipitation and evaporation (Class 'A' pan) in the area are about 6.0 inches and 64.8 inches, respectively, according to information published by the California Department of Water Resources (DWR). The California Irrigation Management Information System (CIMIS) database reports an annual average potential evapotranspiration (ETo) of 57 inches for Shafter.

According to United States Department of Agriculture, Natural Resources Conservation Service soil survey maps, soils in the vicinity of the Plant, including areas containing the unlined ponds, and the majority of the LAA, are Driver series coarse sandy loam. These soils are described as nonsaline, well drained, moderately high hydraulic conductivity, and prime farmland when irrigated. The land capability classification of the soil for irrigation is II-s, which has little or no restrictions on cultivation.

According to Federal Emergency Management Agency (FEMA) map number 06029C1800E, updated 26 September 2008, the Plant and application area are outside of the 100-year return frequency flood zones.

The commodities (crops) identified in the 2013 Kern County pesticide permitting database within two miles of the Plant and land application areas are: almond, grape, alfalfa, potato, pistachio, apple, cotton, wheat, carrot, garlic, tomato, cherry, onion, oat, and safflower. The most recent DWR land use survey for Kern County (dated 2006) identifies the same crops, as well as green beans, dry beans, carrots, and olives.

Groundwater Conditions
The Plant is in the North Kern Hydrologic Area (No. 558.80) of the South Valley Floor Hydrologic Unit, as depicted on hydrologic maps prepared by State Water Resources Control Board in August 1986.

According to United States Geologic Survey maps, the unconfined aquifer underlying the Plant and application area extends to a depth of over 2,000 feet below ground surface. The discharges are outside the Corcoran Clay area and the alluvium is not expected to contain any continuous, low-permeability confining layers.

Groundwater underlying the LAAs is generally first encountered at about 250 feet below ground surface (bgs) in the area of the Plant and LAAs, and flows north according to *Lines of Equal Elevation of Water in Wells in Unconfined Aquifer*, published by DWR in Spring 2010. No site-specific groundwater gradient information is available.

In December 2011, North Kern constructed one groundwater monitoring well onsite (MW-004). The six-inch diameter well is screened from 70 to 240 feet bgs with a gravel pack from 60 to 270 feet bgs. The well provides a means of monitoring first-encountered groundwater near the center of the recharge area. The proposed Order includes monitoring of MW-004 on a quarterly basis.

The 2007 Annual Water Supply Report from the Kern County Water Agency includes a map with lines of equal concentration of total dissolved solids based on data from samples of first encountered groundwater collected prior to 1991. The map shows that a zone of groundwater in the vicinity of the Grimmway Plant, approximately 10 miles long and 6 miles wide, has elevated total dissolved solids ranging from about 500 mg/L to 2,500 mg/L. Based on the map, groundwater beneath the Plant has a concentration of total dissolved solids of about 2,000 mg/L, which corresponds to an EC of about 3,000 umhos/cm. The source of the elevated salinity has not been identified, but is likely historical oil field discharges. Published data from nearby groundwater wells show the high concentrations of saline constituents (largely sulfate, sodium, and chloride) in the vicinity of the Plant date back to at least 1936.

North Kern has operated the groundwater recharge project at the application area since the 1950s. North Kern applies surface water from the Kern River and, to a lesser extent, from other surface water sources to the LAAs, where it percolates to recharge groundwater. During wet years like 1995, 1998, 2006, and 2011, North Kern applied more than 100 feet of water to the LAAs (about 10 billion gallons). North Kern monitors water quality during dry years when it draws water from its network of groundwater extraction wells. Monitoring data from the North Kern wells show the significant influence of the recharge project on local groundwater quality.

Based on electric logs of nearby wells and considering sources of recharge in the area, groundwater near the surface is expected to be of poorer quality than deeper groundwater near the Plant. However, near the recharge project and unlined canals (i.e., the Lerdo Canal), first encountered groundwater is expected to be of better quality than deeper groundwater.

The table below summarizes published groundwater quality data for wells near the Plant and discharge area. The data show that groundwater near the Plant is of much poorer quality than groundwater underlying the application area (groundwater recharge area). None of the data necessarily represents first-encountered groundwater, but the top of the screened intervals is thought to be within 200 feet of the groundwater surface.

		Groundwater Near the Plant		*Groundwater at the Application Area*
Parameters	Units	North Kern Well [1]	USGS Well [2]	North Kern Wells [3]
pH [4]	std.	7.7	7.8	8.2
EC	umhos/cm	2,650	2,960	472
TDS	mg/L	1,740	1,980	295
Nitrate (as N)	mg/L	13	8.1	1.3
Sodium	mg/L	307	52	73

		Groundwater Near the Plant		*Groundwater at the Application Area*
Parameters	Units	North Kern Well [1]	USGS Well [2]	North Kern Wells [3]
Chloride	mg/L	371	480	52
Sulfate	mg/L	712	750	88
Boron	mg/L	0.1	0.1	0.1
Hardness (as $CaCO_3$)	mg/L	608	680	53

[1] Average of all results from 1977 through 2013 for North Kern well 8-03-009, near the western boundary of the Plant property.

[2] Results of a single sample collected in 1955 from USGS well 028S026E15F001M (total depth 522 feet below ground surface), immediately north of the Plant property.

[3] Average of all results from 1977 through 2013 for seven North Kern wells within the LAAs (99-00-017, 99-00-018, 99-00-022, 99-02-004, 99-02-006, 99-02-008, and 99-04-005).

[4] Value shown for pH is the median, rather than average.

The Antidegradation Analysis submitted as part of the RWD states that nearby well tests show the transmissivity of the aquifer is 160,000 to 460,000 gallons per day per foot and the hydraulic conductivity is 441 to 1,270 gallons per day per foot. It indicates that at an average gradient of 17 feet per mile, the flow of groundwater underlying the application area is between 3.8 mgd and 11 mgd. The analysis demonstrates that groundwater flow beneath the discharge area will likely affect the fate of waste in groundwater.

Basin Plan, Beneficial Uses, and Regulatory Considerations

The *Water Quality Control Plan for the Tulare Lake Basin,* 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.

Local drainage is to Valley Floor Waters. The beneficial uses of Valley Floor Waters, as stated in the Basin Plan for Hydrologic Area No. 558, are agricultural supply; industrial service supply; industrial process supply; groundwater recharge; water contact recreation; non-contact water recreation; warm freshwater habitat; cold freshwater habitat; wildlife habitat; preservation of biological habitats of special significance; and enhancement of rare, threatened, or endangered species.

The beneficial uses of underlying groundwater, as stated in the Basin Plan for Detailed Analysis Unit 256 within the Kern County Basin hydrologic unit, are municipal and domestic supply, agricultural supply, industrial service supply and industrial process supply.

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.

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

The 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.

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.

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.

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.

The Basin Plan identifies the greatest long-term problem facing the entire Tulare Lake Basin as the increase in salinity in groundwater, which has accelerated due to the intensive use of soil and water resources by irrigated agriculture. The Basin Plan recognizes that degradation is unavoidable until a mechanism to carry salts out of the basin is established. To limit the degradation, the Basin Plan establishes several salt management requirements. Industrial dischargers shall be required to limit the increase in EC of a point source discharge to surface water or land to a maximum of 500 umhos/cm. A lower limit may be required to assure compliance with water quality objectives. Also, discharges of municipal and domestic wastewater to areas that may recharge good quality groundwater shall not exceed an EC of 1,000 umhos/cm, a chloride content of 175 mg/L, or a boron content of 1.0 mg/L. The Basin Plan states that effluent limits established for municipal waste discharges will generally apply to industrial wastes.

The Basin Plan allows an exception to the EC limit of source water plus 500 umhos/cm when the discharger technically demonstrates that allowing a greater net incremental increase in EC will result in lower mass emissions of salt and in conservation of water, provided that beneficial uses are protected. Grimmway has reportedly implemented water saving measures (recycle flows) that result in lower mass emissions of salt at the Plant. In December 2013, Grimmway reportedly began reducing recycle flows in order to reduce final effluent EC. As a result, Grimmway reduced the difference in EC between the supply well and wastewater from an average of almost 700 umhos/cm in 2013 to less

than 400 umhos/cm in 2014. While Grimmway has not presented a full technical demonstration that it meets the criteria for exception from the incremental EC limit, there is enough information in the record to justify the exception. The proposed Order implements a performance-based effluent limit for EC of no more than 700 umhos/cm over source water. In combination with implementation of a Salinity Control Plan (required by the proposed Order), the limit is consistent with maximizing water reuse and minimizing salt discharge from the Plant, and is expected to maintain a lower EC in the onsite ponds than receiving groundwater EC.

Monitoring and Reporting Program (MRP) R5-2015-####, which is attached hereto and made part of this Order by reference, requires Grimmway to submit salt balance calculations, quantifying the mass emissions of salt saved through water conservation at the Plant on an on-going basis.

Since the discharge meets the conditions for exception from the Basin Plan incremental EC limit for EC, which includes the expectation that potential groundwater degradation will not adversely affect beneficial uses of groundwater, the specific effluent limits for EC and chloride do not appear to be appropriate in this case. The effluent for boron appears to be applicable, but unnecessary given the low concentrations of boron in the discharge.

The Basin Plan states that groundwater shall not contain chemical constituents in concentrations that adversely affect beneficial uses. As groundwater salinity increases, the first adverse effects generally impact agricultural beneficial use of water for irrigation of salt-sensitive crops. The list of crops identified herein is not intended as a definitive inventory of crops that are or could be grown in the area affected by the discharge, but it is representative of current and historical agricultural practices in the area. Growers rely on groundwater supplies for irrigation of salt-sensitive crops in the area.

Antidegradation Analysis

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: 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.

Degradation of groundwater quality by some of the typical waste constituents associated with discharges from food processing plants, after effective source control, treatment, and control measures are implemented, is consistent with the maximum benefit to the people of the state. The Discharger’s operation provides 420 local jobs, with more anticipated with the planned expansion. 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.

There are two discharge areas where underlying groundwater may be affected by discharge from the Plant: the unlined ponds on the Plant property and the LAAs at the North Kern recharge basins. Groundwater quality differs between these two areas. Assessment of potential groundwater degradation requires a separate analysis for each discharge location.

The table below summarizes the available data for constituents of concern in the discharge, groundwater underlying both discharge locations, and the projected long-term average quality of the discharge.

Parameters	Units	Discharge [1]	Plant Property Groundwater [2]	LAA Groundwater [3]	Projected Long-Term Average of Applied Water [4]
EC	umhos/cm	2,130	2,650	472	256
TDS	mg/L	1,560	1,740	295	154
Total Nitrogen	mg/L	3.6	13	1.3	2.0
Nitrate (as N)	mg/L	< 1	13	1.3	1.3
Sodium	mg/L	329	307	73	27
Chloride	mg/L	388	371	52	19
Sulfate	mg/L	456	712	88	37
Boron	mg/L	0.4	0.1	0.1	0.2

[1] Average from October 2009 through September 2014.

[2] Average of results from 1977 through 2013 for North Kern well 8-03-009, near the western boundary of the Plant property.

[3] Average of all results from 1977 through 2013 for North Kern wells within the application area (99-00-017, 99-00-018, 99-00-022, 99-02-004, 99-02-006, 99-02-008, and 99-04-005).

[4] Calculated flow-weighted average values using average recharge flows from 1991 through 2013 with the maximum annual wastewater flow of 182 MG.

The table above shows that groundwater underlying the Plant property is generally poorer quality than the discharge. As the record does not yet contain shallow groundwater monitoring data, the groundwater data in the table represents deeper groundwater. The characterization is thought to approximate groundwater conditions. Groundwater underlying the Plant is expected to be poorer quality near the surface. However, the available data shows concentrations of chloride and boron in the wastewater are near and may be slightly higher than receiving groundwater concentrations.

All of the wastewater ponds are unlined with unknown percolation rates. Grimmway's water balance did not include an estimate of total wastewater production at the Plant, nor estimated percolation or evaporation from the unlined ponds. This Order requires sufficient monitoring to characterize the discharge to the ponds, but there is currently enough data in the record (table above) to conclude that there is limited potential for discharges to the unlined ponds to degrade groundwater quality.

Constituents of concern having potential to degrade groundwater underlying the Plant property include chloride and boron.

a. **Chloride**. Groundwater chloride concentrations already exceed the Recommended Secondary MCL for chloride of 250 mg/L. The difference between the chloride concentrations for groundwater and wastewater appear to be insignificant and groundwater degradation with chloride is unlikely. If the discharge to unlined ponds causes groundwater degradation with chloride, it will not exceed the Upper Secondary MCL for chloride of 500 mg/L.

b. **Boron**. While some degradation of groundwater quality with boron may occur, the discharge does not threaten to cause groundwater to exceed the lowest potential water quality goal for boron of 0.5 mg/L.

Assessment of potential groundwater degradation at the LAAs needs to consider that dilution with recharge flows will occur intermittently, depending primarily on surface water availability. Recharge flow data from North Kern for the period of 1991 through 2013 show an average of 5,760 million gallons per year with highs of over 20 billion gallons per year. Based on the average for this period, the maximum proposed annual wastewater discharge (182 MG) represents about three percent of the average annual recharge flow over the long term. At current discharge flows (about 52 MG in 2013), the wastewater represents less than one percent of the average applied water.

Groundwater underlying the LAAs is significantly better quality than water quality goals for the designated beneficial uses. Discharge to the LAAs over extended dry periods (i.e., five years or more) may result in some degradation of groundwater with salts. However, recharge during wet years will dilute the concurrent wastewater discharge, and dilute groundwater affected by percolating/percolated wastewater from previous dry years. The long-term viability of discharge to the LAAs depends on surface water flows to maintain suitable groundwater quality before the discharge adversely affects beneficial uses. This Order, by MRP R5-2015-####, requires the Discharger to monitor the North Kern extraction well network and groundwater monitoring well in order to track trends in groundwater quality.

Constituents of concern in the discharge that have the potential to degrade groundwater quality underlying the LAAs include salts (EC, TDS, and specific ions including sodium, chloride, and sulfate), nitrogen (organic nitrogen that can convert to nitrate), and boron.

a. **Electrical Conductivity, Total Dissolved Solids, Chloride, Sulfate and Sodium.** The discharge, if not properly managed, has potential to degrade groundwater with EC, TDS, chloride, and sulfate. However, dilution of these constituents will prevent the discharge from causing excessive degradation. This Order implements limits and requires sufficient monitoring to prevent the discharge from causing degradation in excess of water quality objectives.

b. **Nitrate.** The discharge has very limited potential to degrade groundwater quality with nitrate. The average concentration of total nitrogen in the wastewater, primarily present in the form of organic nitrogen, is less than 5 mg/L and does not threaten to cause groundwater to contain nitrate above the Primary MCL of 10 mg/L as nitrogen.

c. **Boron**. In the same way as the unlined pond discharge at the Plant property, while some degradation of groundwater quality with boron may occur, the discharge does not threaten to cause groundwater to exceed the lowest potential water quality goal for boron of 0.5 mg/L.

This Order establishes effluent and groundwater limitations for the Plan 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.

The Discharger provides treatment and control of the discharge that incorporates: segregation of domestic wastewater from industrial wastewater; wastewater reuse; wastewater settling basins; appropriate solids management practices; blending of wastewater with good quality water for groundwater recharge; preparation and implementation of a Salinity Management Plan; and

preparation and implementation of a Land Application Management Plan. These treatment and control practices are reflective of BPTC of the discharge.

This Order imposes effluent and groundwater limitations and requires monitoring 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. Depending on monitoring results, 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
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.

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 land application of wastewater; specifically, those for which the Central Valley Water Board has issued WDRs, the discharge is in compliance with the Basin Plan, and the wastewater does not need to be managed according to Chapter 11, Division 4.5, Title 22 of this code as a hazardous waste.

Although the discharge is exempt from Title 27, the statistical data analysis methods of Title 27, section 20415(e) are appropriate for determining whether the discharge complies with Groundwater Limitations specified in this Order.

The State Water Board adopted Order 97-03-DWQ (NPDES General Permit CAS000001) specifying waste discharge requirements for discharges of storm water associated with industrial activities, and requiring submittal of a Notice of Intent by all affected industrial dischargers. The Discharger is exempt from coverage under NPDES General Permit CAS000001 because all storm water is contained onsite.

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.

CEQA
The City of Shafter certified a negative declaration on 7 October 2014 in accordance with the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.). The negative declaration describes the project as moving the discharge of carrot wash water from the Minter Field WWTF to LAAs at the North Kern recharge project, using the City right-of-way to install a pipeline parallel to Zerker Road, and increasing the discharge flow from 0.300 mgd to 0.700 mgd. The City of

Shafter performed an initial study and found that potential impacts to groundwater quality due to the project would be less than significant. Compliance with this Order will mitigate or avoid significant impacts to water quality.

Proposed Order Terms and Conditions

Discharge Prohibitions, Effluent Limitations, Discharge Specifications, and Provisions
The proposed Order would prohibit discharge to surface waters and surface water drainage courses.

The proposed Order would limit the daily maximum discharge flow to 700,000 gpd (or 0.700 mgd), and set a maximum annual flow limit of 182 million gallons.

The proposed Order includes provisions requiring the Discharger to prepare and implement a Salinity Control Plan and a Land Application Management Plan.

The proposed Order would prescribe groundwater limitations that implement water quality objectives for groundwater from the Basin Plan. The limitations require that the discharge not cause or contribute to exceedance of these objectives or natural background water quality, whichever is greatest, and sets a specific limit for nitrate of 10 mg/L as nitrogen, consistent with the Primary MCL.

Monitoring Requirements
Section 13267 of the Water Code authorizes the Central Valley Water Board to require monitoring and technical reports as necessary to investigate the impact of waste discharges on waters of the State. Water Code Section 13268 authorizes assessment of civil administrative liability where appropriate.

The proposed Order includes monitoring of effluent, source water, ponds, groundwater, supplemental water, and land application areas. This monitoring is necessary to evaluate the potential for degradation resulting from the discharge.

Reopener
The conditions of discharge in the proposed Order were developed based on currently available technical information and applicable water quality laws, regulations, policies, and plans, and are intended to assure conformance with them. The proposed Order would set limitations based on the information provided thus far. If applicable laws and regulations change, or once new information is obtained that will change the overall discharge and its potential to impact groundwater, it may be appropriate to reopen the Order.