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November 3, 2014

Joseph Douglas
Compliance Unit
Siting, Transmission and Environmental Protection (STEP) Division
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Re: High Desert Power Project (97-AFC-1C): Compliance Filing: SOIL&WATER-1

Dear Mr. Douglas:

Pursuant to Condition SOIL&WATER-1, High Desert Power Project, LLC ("HDPP"), hereby submits the attached compliance filing, "*High Desert Power Project Recycled Water Feasibility Study Report.*"

If you have any questions, please contact Randy Cullison at (402) 691-9586. Thank you.

Sincerely,

A handwritten signature in black ink that reads "Bradley K. Heisey". The signature is written in a cursive, flowing style.

Bradley K. Heisey
Senior Vice President
High Desert Power Project, LLC

**High Desert Power Project Recycled Water Feasibility Study Report
November 1, 2014**

Table of Contents

EXECUTIVE SUMMARY 4

1 1 Introduction and Background 8

1.1 High Desert Power Project..... 8

1.2 HDPP Petition to Use Recycled Water..... 8

1.3 Requirement to Study the Feasibility of Using 100% Recycled Water..... 8

1.4 Plant Consumptive Water Uses for Industrial Purposes..... 8

1.5 Facility Systems Impacted by Recycled Water Use..... 9

1.6 Facility Water Supply Requirements..... 10

1.7 Facility Water Sources..... 10

2 Recycled Water Feasibility Study..... 15

2.1 Recycled Water Feasibility Study Scope..... 15

2.2 Recycled Water Supply Adequacy..... 16

2.3 Recycled Water Supply Reliability..... 16

2.4 Recycled Water Technical Feasibility..... 17

2.5 Recycled Water Economic Feasibility..... 19

2.6 Recycled Water Feasibility Study Conclusions..... 20

3 HDPP Commitment to Maximize Use of Recycled Water..... 21

Exhibit A. Cardno Entrix Report - Availability and Use of Recycled Water at the High Desert Power Project (Confidential)

Exhibit B. Kiewit Power Engineers Exhibit - Recycled Water Technical Feasibility Study (Confidential)

Exhibit C. Recycled Water Delivery and Use Logs (Confidential)

Exhibit D. HDPP Report - Recycled Water Economic Analysis (Confidential)

Exhibit E. Discussion of the Applicable California Legal Authorities

Exhibit F. Impact of 100% Recycled Water Use on Facility Operations and Maintenance Costs (Confidential)

Exhibit G. Monthly and Annual Energy Production since Becoming Operational (Confidential)

HDPP Recycled Water Feasibility Study Report

Exhibit H. HDPP Recycled Water Feasibility Study Report in CEC Conditions of Certification Format

EXECUTIVE SUMMARY

High Desert Power Trust, LLC (“HDPT”) owns an 830-megawatt (“MW”) combined-cycle power plant (the “Facility”) located in the City of Victorville within San Bernardino County, which is operated by High Desert Power Project, LLC (“HDPP”). The Facility was certified by the California Energy Commission (“CEC”) on May 3, 2000 and commenced commercial operations in April 2003 using State Water Project (“SWP”) water as its only source of water supply. That source of water could be used immediately by the Facility for cooling or other industrial purposes (“SWP Water”) or treated and injected into an aquifer for later use (“Banked SWP Water”). The Facility was expressly prohibited from using recycled water at the time of the 2000 certification.

The Facility’s primary consumptive water uses for industrial purposes include: (i) water evaporated from the cooling tower which is used to cool exhaust steam from the steam turbine generator, and (ii) water evaporated in the combustion turbines evaporative coolers when the evaporative coolers are in service. Consumption from cooling tower evaporation is significantly higher than consumption from the combustion turbine evaporative coolers.

Because the Facility was originally prohibited from using recycled water, the Facility’s water treatment systems were designed and constructed to treat SWP Water and Banked SWP Water, which are higher quality water sources with lower amounts of impurities compared to recycled water. As a result of evaporation in the cooling tower, the impurities in the Facility’s supply waters are concentrated in the cooling tower basin water because they do not evaporate and are left behind. In addition to evaporation, a very small amount of unevaporated cooling tower water droplets are carried out of the cooling tower (commonly called cooling tower drift) that have the same amount of impurities as water in the cooling tower basin. The impurities entrained within the cooling tower drift droplets are treated as PM₁₀ emissions and these emissions are limited by the Facility’s environmental permits. One of the primary purposes of the Facility’s water treatment systems is to remove the impurities from the cooling tower basin water such that the Facility PM₁₀ emissions can be maintained within its permitted limits. If the Facility’s water treatment systems cannot remove a sufficient amount of impurities and the Facility’s PM₁₀ emissions approach the permitted limit, the Facility must reduce its power output or completely shut down in order to maintain compliance with its environmental permits. In addition to helping control PM₁₀ emissions from the cooling tower, removing impurities from the cooling tower basin water is important because the high concentration of impurities can result in harmful deposits and fouling in Facility systems that use cooling tower water such as the cooling tower, the Facility cooling water piping systems, the steam turbine’s condenser and certain water treatment system equipment.

The design basis for the Facility’s annual water requirement for producing power is 4,000 acre-feet (“AF”) per year (“AFY”). The design basis for the Facility’s instantaneous water requirement is up to 4,000 gallons per minute (“gpm”), 24 hours per day on all days of the year excluding days when the Facility takes planned maintenance outages. A reliable water supply for the Facility must be able to meet both the annual and instantaneous requirements in order for the Facility to maintain a high availability for every hour of every day each year excluding days when the Facility is undergoing planned maintenance.

HDPP Recycled Water Feasibility Study Report

In 2008, HDPP petitioned the CEC requesting approval to use recycled water to the extent the Facility's existing water treatment system could treat recycled water. At that time, HDPP estimated the Facility could use and treat about 33% recycled water when it was blended with SWP Water. In 2009, the CEC approved HDPP's petition to use recycled water conditioned upon a requirement to study the feasibility of using up to 100% recycled water for evaporative cooling and other industrial uses at the Facility (the "Recycled Water Feasibility Study"). In 2014, the Mojave Water Authority reduced the Facility's SWP Water supply significantly for the 2014 water year due to drought-induced shortages of SWP Water. In September 2014, the CEC authorized HDPP to use up to 2,000 acre-feet per year of Mojave River Basin groundwater ("MRB Water") for water years 2015 and 2016.

The City of Victorville, through its Victorville Water District ("VWD"), is the provider of recycled water to the Facility. VWD provides recycled water produced at its Industrial Wastewater Treatment Plant (the "IWWTP") and at the Victor Valley Wastewater Reclamation Authority's ("VWVRA") Shay Road wastewater treatment plant (the "VWVRA Shay Road Plant"). These two sources provide 100% of the recycled water delivered to the Facility (individually or in aggregate, "Recycled Water").

After receiving the CEC's 2009 approval to use Recycled Water, the facilities required to deliver Recycled Water to the Facility and the facilities needed within the Facility to receive recycled water were completed in 2011 and at that time, HDPP began receiving, testing and studying the use of Recycled Water at the Facility. To assist with the study, HDPP retained third-party, independent services from two respected firms: (1) Kiewit Power Engineers ("Kiewit"), the engineering company that originally designed the Facility when it was constructed, was retained to study several options which would enable the Facility to use 100% Recycled Water; and (2) Cardno ENTRIX ("Cardno") was retained to study the availability of Recycled Water and determine whether sufficient amounts of Recycled Water are available to meet the Facility's requirements under various scenarios. HDPP further evaluated the Facility's operations in the energy market to evaluate the economic component of the Recycled Water Feasibility Study.

This Recycled Water Feasibility Study concludes that it is not feasible for the Facility to operate using 100% Recycled Water for cooling and other industrial purposes because:

- (i) HDPP's Recycled Water supplier is projected in some years in the future to not have sufficient Recycled Water supply as required to meet the Facility's 4,000 AFY design basis requirement.
- (ii) HDPP's Recycled Water supplier is unable to provide Recycled Water in quantities and qualities on a 24 hours per day on all days of the year as required by the Facility for it to maintain high availability for generating power.
- (iii) The Facility's water treatment system cannot operate reliably on a 100% Recycled water supply because its existing water treatment system was not designed to treat and remove the higher amount of impurities associated with using 100% Recycled Water as required to maintain cooling tower PM₁₀ emissions within the Facility's permitted limits and to protect the Facility's cooling systems and equipment from harmful deposits associated with high amounts of impurities in cooling tower water.

- (iv) The capital costs to upgrade the water treatment system are extremely high and the costs of further treating additional quantities of Recycled Water so that is of adequate quality for use at the Facility are significantly higher than the cost of the other sources of water to the Facility. Unlike utilities in California who have a retail customer base upon which it can recover the incremental capital and operating and maintenance costs associated with using Recycled Water, HDPP is a merchant generating facility and the amount of revenue it earns to pay for its costs is subject to market forces. Using 100% Recycled Water will not provide HDPP with increased energy or increased capacity revenue opportunities therefore it is not economically feasible for HDPP to incur these additional costs associated with the use of 100% Recycled Water. Accordingly, additional Recycled Water may not be furnished for a reasonable cost and the use of additional Recycled Water at the Facility is not mandated by California Water Code section 13550.

HDPP has already demonstrated a commitment to maximizing the use of Recycled Water at the Facility by petitioning and receiving permission from the CEC to use Recycled Water for cooling purposes. From 2009 through the present, HDPP has invested in the costs for permitting, engineering, design and construction of new on-site and off-site infrastructure, upgrades to the Facility's existing water treatment systems, and for third party experts, in seeking to maximize the use of Recycled Water.

Although this Recycled Water Feasibility Study finds it is not feasible for HDPP to convert the Facility to using 100% Recycled Water, HDPP is committed to using as much Recycled Water as feasible given the limitations on the Facility's existing water treatment systems, Recycled Water quantities and quality, Recycled Water delivery infrastructure, and Recycled Water delivery reliability. To this end, regarding the Petition to Amend that the CEC has required HDPP to file no later than November 1, 2015, HDPP will propose criteria describing how the Facility will maximize use of Recycled Water to the extent feasible.

Table of Acronyms and Abbreviations

ABS	– Aquifer Banking System
AF	– acre-feet
AFY	– acre-feet per year
CAISO	– California Independent System Operator
CARB	– California Air Resources Board
CEC	– California Energy Commission
CTBD System	– Cooling Tower Blowdown System
FERC	– Federal Energy Regulatory Commission
GPM	– gallons per minute
HDPP	– High Desert Power Project, LLC
HDPT	– High Desert Power Trust
IWWTP	– Industrial Wastewater Treatment Plant
MRB Water	– Mojave River Basin Groundwater
MW	– megawatts
MWA	– Mojave Water Authority
NPDES	– National Pollutant Discharge Elimination System
O&M	– operations and maintenance
PM ₁₀	– particulate matter up to 10 microns
RA	– Resource adequacy
RO	– Reverse osmosis
SWP Water	– State Water Project Water
TDS	– Total Dissolved Solids
VVWRA	– Victor Valley Wastewater Reclamation Authority
VWD	– Victorville Water District
ZLD	– Zero Liquid Discharge

1 1 Introduction and Background

1.1 High Desert Power Project.

High Desert Power Trust (“HDPT”) owns, and High Desert Power Project, LLC (“HDPP”) operates an 830-megawatt (“MW”) combined-cycle power plant (the “Facility”) located in the City of Victorville within San Bernardino County. The Facility was certified by the California Energy Commission (“CEC”) on May 3, 2000 and commenced commercial operation in April 2003. The Facility’s steam turbine generator exhaust steam is cooled by a heat transfer process using a water-cooled condenser and an induced draft cooling tower. Water evaporated from the cooling tower must be made up from the Facility’s makeup water supply sources.

1.2 HDPP Petition to Use Recycled Water.

In 2008, HDPP petitioned the CEC requesting approval to use Recycled Water for cooling purposes to the extent the Facility’s existing water treatment system could treat Recycled Water. At that time, HDPP estimated the Facility could use and treat approximately 33% Recycled Water when it was blended with SWP Water. In 2009, the CEC approved HDPP’s petition.

1.3 Requirement to Study the Feasibility of Using 100% Recycled Water.

As part of the CEC’s approval for the Facility to use Recycled Water, the CEC required HDPP to study the feasibility of using up to 100% Recycled Water for evaporative cooling and other industrial uses (the “Recycled Water Feasibility Study”).

1.4 Plant Consumptive Water Uses for Industrial Purposes.

The Facility is not permitted to discharge wastewater. As a result, the Facility was designed to be a zero liquid discharge (“ZLD”) plant where process wastewater streams are treated, water is recovered and reused while solids and other impurities are collected and disposed off-site in a manner consistent with the plant’s environmental permits. The Facility’s primary consumptive water uses include: (i) water evaporated from the cooling tower which is used to cool exhaust steam from the steam turbine generator and (ii) water evaporated in the combustion turbines evaporative coolers when the evaporative coolers are in service. A description of these two major water uses is provided below including the design basis instantaneous consumption, expressed in gallons per minute (“gpm”), on a 98 degree Fahrenheit (“F”) day.

1.4.1 Cooling Tower Evaporation (3,584 gpm).

The cooling tower provides cold water to the Facility’s steam turbine condenser so it can cool and condense the steam turbine’s exhaust steam. The warm water returning to the cooling tower from the steam turbine condenser is cooled by exchanging heat in the water to air circulating through the cooling tower. Some of the warm water evaporates which cools the remaining water in the cooling tower. Impurities in the cooling tower water do not evaporate and gradually increase in concentration as more cooling tower water evaporates and more impurities are left behind. Water evaporated from the cooling tower is not recovered by the Facility and must be replaced by new sources of supply water (i.e.: Recycled Water, SWP Water, Banked SWP Water, MRB Water or a combination of these waters).

1.4.2 Combustion Turbine Evaporative Coolers (123 gpm when in service).

The combustion turbine evaporative coolers evaporate high quality water upstream of the combustion turbine inlets, reducing the air temperature to the inlets, which results in the combustion turbines producing higher power output. Water evaporated in the evaporative coolers is not recovered by the plant and must be replaced by new sources of supply water. The combustion turbine evaporative coolers typically operate when the plant ambient temperature is above 59 degrees F during the months of May through November of each year.

1.5 Facility Systems Impacted by Recycled Water Use.

Because Recycled Water has higher amounts of impurities than SWP Water, Banked SWP Water and MRB Water, use of Recycled Water will impact certain Facility systems that directly or indirectly use or treat Recycled Water. The following sections describe the impact the use of Recycled Water will have on the existing Facility water systems.

1.5.1 Cooling Tower.

As water evaporates from the cooling tower, the concentration of impurities left behind in the water will increase if the impurities are not removed. As the concentration of impurities increases, a small portion of those impurities are emitted to the atmosphere in the form of PM₁₀ emissions contained within small water droplets entrained in the air that is forced through the cooling tower. These entrained water droplets are known as cooling tower “drift”. PM₁₀ emissions from the cooling tower drift are calculated based on the amount of impurities in the cooling tower basin water. If the cooling tower PM₁₀ emissions approach HDPP’s permitted 1.2 lb PM₁₀/hour emission limit, the Facility’s power output must be curtailed, or the Facility must be shut down in order to maintain compliance with the emission limit.

1.5.2 Cooling Tower Blowdown Water Treatment System (“CTBD System”).

To maintain the amount of impurities in the cooling tower basin water and the amount of cooling tower PM₁₀ emissions within acceptable limits, a stream of water with concentrated impurities from the cooling tower basin is withdrawn and replaced with less concentrated waters (i.e.: Recycled Water, SWP Water, Banked SWP Water or MRB Water). This stream of water is known as cooling tower blowdown water. The CTBD System removes impurities (dissolved and suspended solids) from the concentrated cooling tower blowdown stream by water softening, filtration and reverse osmosis (“RO”) processes.

1.5.3 Crystallizer.

The crystallizer receives water with highly concentrated dissolved solids (brine) from the CTBD System RO units. The dissolved solids are precipitated out in the crystallizer and are discharged as a slurry to a centrifuge for further water removal. The solids are discharged from the centrifuge and the remaining high quality feed water is returned to the Facility

water systems. The more impurities in the water supplies, the greater the load on the Crystallizer.

1.5.4 Aquifer Banking System (“ABS”).

The ABS consists of gravity filters to remove coarse suspended solids and ultrafiltration to remove smaller suspended solids. The ABS treats clarified SWP Water and sends it to a nearby City of Victorville well system for injection into an underground aquifer (“Banked SWP Water”). When SWP Water, Recycled Water, or MRB Water of sufficient quantity or quality is not available to the Facility, the City of Victorville uses the well system to withdraw Banked SWP Water from the aquifer and delivers it to the Facility.

1.5.5 Other Facility Systems.

Other Facility water systems can be potentially impacted by the use of Recycled Water if the Facility’s water treatment system is not effective in removing the impurities found in Recycled Water. The impurities that are not removed can cause harmful deposits and can foul Facility systems such as water piping systems, the steam turbine condenser, heat exchangers and other Facility equipment cooled by water from the cooling tower.

1.6 Facility Water Supply Requirements.

A reliable water supply for the Facility must be able to meet both of the annual supply and instantaneous requirements described below in order for the Facility to maintain high availability for every hour of every day each year excluding days when the Facility is undergoing planned maintenance.

1.6.1 Annual Requirement.

The Facility’s design basis annual water requirement for producing power (excluding water for banking) is 4,000 AFY.

1.6.2 Instantaneous Requirement.

The Facility’s design basis instantaneous water requirement (excluding banking) is up to 4,000 gpm 24 hours per day on all days of the year excluding days when the Facility takes one planned maintenance outage in the spring and one planned outage in the fall. The length of most of the Facility’s planned outages is 10 days. The Facility’s instantaneous requirement is dependent upon the Facility power output level and on the ambient temperature at the Facility. At higher Facility power output levels, more steam passes through the steam turbine which requires more cooling load from the Facility steam turbine condenser and more cooling load on the cooling tower. The higher cooling load on the cooling tower results in more evaporation requiring higher volumes of makeup water supply to the cooling tower. When ambient temperatures at the Facility are higher, more evaporation occurs in the cooling tower requiring higher volumes of makeup water supply to the cooling tower.

1.7 Facility Water Sources.

The Facility currently is authorized to use the four water sources described below.

1.7.1 Recycled Water.

1.7.1.1 Recycled Water History.

The CEC originally prohibited HDPP from using Recycled Water for cooling purposes. During HDPP's initial application for certification proceedings in the year 2000, there were concerns about the availability of Recycled Water and the impacts of reduced discharge of Recycled Water to the Mojave River and the groundwater basin and uncertainty about the effectiveness of the Mojave River Basin adjudication to reduce the overdraft of the groundwater basin. The Mojave River Basin adjudication was finalized after the Facility was certified, and the Mojave Water Authority ("MWA") now manages the basin to maintain a sustainable yield. Given this stability in the Mojave River Basin, in 2008, HDPP petitioned the CEC requesting approval to use Recycled Water to the extent the Facility's existing water treatment system could treat Recycled Water. At that time, HDPP estimated the Facility could use and treat approximately 33% Recycled Water when it was blended with SWP Water. In 2009, the CEC approved HDPP's petition.

As part of the CEC's approval for HDPP to use Recycled Water, the CEC required HDPP to study the feasibility of using up to 100% Recycled Water for evaporative cooling and other industrial uses (the "Recycled Water Feasibility Study").

1.7.1.2 Recycled Water Supply Agreement.

Recycled Water is delivered to the Facility under an agreement between HDPT and the Victorville Water District ("VWD"). VWD provides recycled water produced at its Industrial Wastewater Treatment Plant (the "IWWTP") and the Victor Valley Wastewater Reclamation Authority's ("VWRA") Shay Road wastewater treatment plant (the "VWRA Shay Road Plant").

1.7.1.3 Recycled Water Quality.

Recycled Water contains more impurities (TDS, silica, and other impurities) than SWP Water, Banked SWP Water and MRB Water as further discussed below. See Kiewit's confidential report in Exhibit B for detailed analysis of the composition of Recycled Water.

Recycled Water from the VWRA Shay Road Plant has generally met the water quality specifications in the Recycled Water supply agreement between HDPT and the VWD.

The IWWTP's Recycled Water generally does not meet the water quality specifications in the Recycled Water supply agreement between HDPT and the VWD. In February 2014, due to the California drought and HDPP's desire to preserve its Banked SWP Water supply, HDPP temporarily waived the water quality specification because blending the IWWTP's relatively low volume of Recycled Water with Banked SWP Water

resulted in a water quality that the Facility's water treatment system could treat. The Facility began receiving Recycled Water from the IWWTP plant on February 11, 2014.

1.7.1.4 Recycled Water Compatibility with Existing Facility Water Treatment Systems.

Since the existing Facility water treatment system was designed to treat the higher quality SWP Water and Banked SWP Water, the existing Facility water treatment system was not designed to remove the higher amount of impurities associated with the Facility running on 100% Recycled Water.

1.7.1.5 Recycled Water Cost.

The current cost for Recycled Water is provided in confidential Exhibit F. Recycled Water, without further treatment, is the lowest-cost existing water supply for the Facility.

1.7.2 State Water Project Water ("SWP Water")

1.7.2.1 SWP Water History.

SWP Water was the Facility's only industrial water source when the Facility was originally certified by the CEC in 2000.

1.7.2.2 SWP Water Supply Agreement.

SWP Water is delivered to the Facility under an agreement between HDPP and the City of Victorville. The City receives SWP Water from the MWA.

1.7.2.3 SWP Water Quality.

SWP Water contains fewer impurities (TDS, Silica, and other impurities) than Recycled Water but more impurities than Banked SWP Water and MRB Water. SWP Water quality varies seasonally such that removing the impurities from the water requires continuous analysis of the water quality and changes to the water treatment process. See Kiewit's report in Exhibit B for detailed analysis of the composition of SWP Water.

1.7.2.4 SWP Water Compatibility with Existing Plant Water Treatment Systems.

The Facility's existing water treatment system was designed to treat SWP Water. However, when the quality of SWP Water decreases materially, for example due to seasonal variations, the Facility's water treatment system's performance can degrade.

1.7.2.5 SWP Water Cost.

SWP Water cost has historically been more than Recycled Water but less than Banked SWP Water (due to the costs of receiving, treating, injecting, and re-delivering SWP Water). The current cost of SWP Water delivered to the Facility is provided in confidential Exhibit F.

1.7.2.6 SWP Water Annual Volumes Available.

HDPP's maximum annual allocation of SWP Water available for use for power production and for producing Banked SWP Water is 8,000 AF which is based on the Facility using 4,000 AF for power production purposes and 4,000 AF for treating SWP Water and producing Banked SWP Water. For 2008-2010, HDPP requested an allocation of 8,000 AF but, due to lower amounts of SWP Water available in California, received only 3,280, 2,706 and 3,486 AF respectively. For 2011-2013, HDPP requested and received an allocation of 6,500 AF. For 2014, HDPP requested an allocation of 6,500 AF, but received an allocation of 565 AF due to drought conditions in the State.

1.7.2.7 SWP Water Supplier's Delivery Capability.

The City of Victorville's and the MWA's SWP Water delivery infrastructure has demonstrated an ability to deliver the Facility's 4,000 gpm design basis volume requirement 24 hours per day.

1.7.2.8 SWP Water Delivery Reliability.

When the City of Victorville and the MWA have SWP Water to deliver to the Facility, the reliability of their systems to deliver SWP Water to the Facility has been good. From 2007 through November 2013, the MWA experienced relatively few unplanned curtailment of SWP Water and the curtailments that did occur did not significantly impact the Facility's reliability to generate power. The MWA curtailed delivery of SWP Water for the entire month of December 2013 due to planned maintenance on their system. During this period, the Facility operated on Banked SWP Water.

1.7.3 Banked SWP Water

1.7.3.1 Banked SWP Water History.

HDPP was originally certified by the CEC to produce and store Banked SWP Water for use when SWP Water was not available to the Facility. HDPP began banking SWP Water when the Facility began commercial operation in 2003.

1.7.3.2 Banked SWP Water Agreement.

Banked SWP Water is received, treated, injected, and re-delivered to the Facility under an agreement between HDPP and the VWD. Under that agreement, VWD owns and operates a group of four wells that are used to inject and extract Banked SWP Water for the Facility. The wells are located approximately 4 to 5 miles from the Facility. HDPP reimburses VWD for the cost to maintain and operate the wells.

1.7.3.3 Banked SWP Water Quality.

Banked SWP Water has a lower amount of impurities than Recycled Water, and therefore is a higher quality water compared to Recycled Water. See Kiewit's report in Exhibit B for detailed analysis of the composition of Banked SWP Water.

1.7.3.4 Banked SWP Water Compatibility with Existing Plant Water Treatment Systems.

Because Banked SWP Water has a lower amount of impurities and is a higher quality water compared to SWP Water, the Facility's existing cooling tower blowdown system and crystallizer can reliably treat the cooling tower blowdown streams that occur when the Facility runs on Banked SWP Water.

1.7.3.5 Banked SWP Water Cost.

The current cost of Banked SWP Water delivered to the Facility is provided in confidential Exhibit F. The water cost component of Banked SWP Water is already paid by HDPP under the SWP Water supply agreement. The costs under the Banked SWP Water agreement include the cost for VWD to maintain and operate the well system used to bank and withdraw water from the aquifer for the use by the Facility.

1.7.3.6 Banked SWP Water Annual Volumes Available.

The volume of Banked SWP Water available to the Facility is limited to the volume of water HDPP has injected into the aquifer less 1,000 AF and less the amount of dissipated groundwater in accordance with SOIL&WATER-6. The Facility is prohibited from banking SWP Water if any one of multiple water quality limits exceed a permitted threshold. This limitation on banking has reduced the amount of Banked SWP Water available to the Facility. During the ongoing 2014 drought period when the Facility received only a fraction of its historical SWP Water allocation, HDPP has demonstrated the ability to blend Recycled Water with Banked SWP Water in order to minimize the use of its Banked SWP Water supply.

1.7.3.7 Banked SWP Water Supplier's Delivery Capability.

The VWD's well and pipeline delivery system is designed to deliver 100% of the Facility's instantaneous water requirement of 4,000 gpm.

1.7.3.8 Banked SWP Water Delivery Reliability.

The historical delivery reliability of the Banked SWP Water supply to the Facility has been good. Prior to December 2013, the Banked SWP Water was used infrequently and for short periods of time. During December 2013 when the SWP Water system was unavailable due to planned maintenance, and from February 2014 through the present when SWP Water was unavailable due to the 2014 drought, the Banked SWP Water delivery system has been used continuously and has performed with good reliability.

1.7.4 Mojave River Basin Groundwater.

1.7.4.1 MRB Water History.

On September 10, 2014, in response to a drought induced curtailment of SWP Water, the CEC approved an amendment to the Facility's CEC conditions of certification allowing HDPP to obtain an alternative water supply. The amendment allows HDPP to obtain water rights consistent with the "Judgment After Trial" dated January, 1996, in City of Barstow, et al. v. City of Adelanto, et al. as administered by MWA (the

“Judgment”). The Judgment allows any party, including HDPP, to intervene to become a Party to the Judgment and (i) acquire and use existing water rights adjudicated under the Judgment, or (ii) pay applicable Replacement Water Assessments (collectively, “MRB Water”). The CEC limited HDPP’s consumption of MRB Water to no more than 2,000 AF in water year 2014/2015 and no more than 2,000 AF in water year 2015/2016.

1.7.4.2 MRB Water Agreement.

Because MRB Water will physically come from the same underground aquifer that holds Banked SWP Water, HDPP anticipates MRB Water will be delivered to the Facility by the same well system that delivers Banked SWP Water to the Facility. HDPP is seeking to enter into a new agreement with the VWD for delivery of MRB Water to the Facility.

1.7.4.3 MRB Water Quality.

Because MRB Water will physically come from the same underground aquifer that holds Banked SWP Water, MRB Water quality will be identical to the quality of Banked SWP Water.

1.7.4.4 MRB Water Compatibility with Existing Facility Water Treatment System.

Similar to Banked SWP Water, MRB Water has a lower amount of impurities and is a higher quality water compared to SWP Water. The Facility’s existing cooling tower blowdown system and crystallizer can reliably treat the cooling tower blowdown streams that occur when the plant runs on MRB Water.

1.7.4.5 MRB Water Cost.

HDPP has not yet acquired MRB Water from third parties or as provided for under the Judgment. For the purposes of the Recycled Water Feasibility Study, HDPP assumes the delivered cost of MRB Water will be the same as the delivered cost of Banked SWP Water.

1.7.4.6 MRB Water Delivery Capability.

The delivery capability of the well and pipeline system is adequate to meet the Facility’s needs as described in Section 1.7.3.7 above.

2 Recycled Water Feasibility Study.

2.1 Recycled Water Feasibility Study Scope.

In 2011, the facilities required by the VWD to deliver Recycled Water and the facilities needed within the Facility to receive Recycled Water were completed, the Facility began receiving Recycled Water and HDPP began studying the use of Recycled Water (“the Recycled Water Feasibility Study”). The Recycled Water Feasibility Study consisted of the following scope:

HDPP Recycled Water Feasibility Study Report

- (i) Recycled Water Supply Adequacy – A study of HDPP’s Recycled Water supplier’s current and projected Recycled Water supplies to determine if there is sufficient supply to meet the Facility’s 4,000 AFY annual requirement.
- (ii) Recycled Water Supply Reliability – A study of HDPP’s Recycled Water supplier’s delivery and storage infrastructure capability to deliver the Facility’s instantaneous water requirement of up to 4,000 gpm, 24 hours per day, 365 days per year excluding periods when the Facility is undergoing planned maintenance.
- (iii) Technical Feasibility – A study of the most feasible method to manage the additional amount of impurities found in the cooling tower blowdown water when the Facility operates on 100% Recycled Water.
- (iv) Economic Feasibility – A study of the economic feasibility of implementing capital improvement projects required and the impact on operations and maintenance costs for the Facility to operate on 100% Recycled Water.

2.2 Recycled Water Supply Adequacy.

HDPP engaged Cardno ENTRIX (“Cardno”) to study the availability of Recycled Water in amounts sufficient to meet the Facility’s requirements. As described in their report in Exhibit A, Cardno studied three forecast scenarios regarding the amount and reliability of Recycled Water available to the Facility including (1) assuming that the Recycled Water supply will increase based upon anticipated residential and commercial growth in the service area, (2) assuming that the Recycled Water supply will have lower growth rates than assumed in Scenario (1) and 10% lower flows in the Mojave River, and (3) assuming that both the HDPP Facility and the Victorville 2 Hybrid Power Project are built and both use 100% Recycled Water. Cardno’s report concluded:

- (i) Based upon the assumptions in Scenario 1, in 3 years out of 10 there would be insufficient Recycled Water to meet the full 4,000 AFY of the Facility’s demand (30%).
- (ii) Based upon the assumptions in Scenario 2, there would be shortages of Recycled Water in 5 years out of 10 years (50%).
- (iii) Based upon the assumptions in Scenario 3, operation of both the Facility and the CEC-approved Victorville 2 project would cause there to be insufficient Recycled Water availability in 8 out of 10 years (80%).

Cardno’s report also stated “Outages at either the VVWRA Shay Road Plant or IWWTP will continue to occur in the future with potential durations of days, to several weeks, or even months. These future outages, whether planned or unplanned, coupled with uncertainty about Mojave River flows and potential diversion of supply to the new subregional wastewater reclamation facilities, compel the Facility to continue to have access to and to use an alternative source of water supply to sustain operations. Having a portfolio of usable water supplies to draw upon on an instantaneous basis is important to the Facility’s reliability.”

2.3 Recycled Water Supply Reliability.

HDPP Recycled Water Feasibility Study Report

From July 2011 through September 2014, HDPP maintained logs of the quantity, quality and reliability of Recycled Water used by the Facility (see Exhibit C). HDPP's experience during this period concluded that:

- (i) The VVWRA Shay Road Plant, one of two wastewater treatment plants that provide Recycled Water to the Facility, can deliver about 1,650 gpm of Recycled Water on a continuous basis when the plant is available to provide Recycled Water to the Facility.
- (ii) From mid-April 2012 through June 2013 and from September 2013 through January 2014, the VVWRA Shay Road Plant did not deliver Recycled Water to the Facility. It is HDPP's understanding the first outage was related to planned capital upgrades at the VVWRA Shay Road Plant and the second outage was due to equipment problems that prevented the plant from being able to produce Title 22 Recycled Water.
- (iii) From March 1, 2014 through September 30, 2014, the VVWRA Shay Road plant fully or partially curtailed delivery of Recycled Water to the Facility on 38 days (18% of the days) during the period. HDPP understands the curtailments are generally due to planned and unplanned maintenance events at the VVWRA Shay Road Plant.
- (iv) The IWWTP, the other wastewater treatment plant that provides Recycled Water to the Facility, can provide about 350 gpm of Recycled Water on a continuous basis when the plant is available to provide Recycled Water to the Facility.
- (v) From February 11, 2014 through September 30, 2014, the IWWTP reliably delivered about 350 gpm of Recycled Water to the Facility without interruption.
- (vi) The maximum average Recycled Water delivery rate VWD sustained over a 24 hour period when both the VVWRA Shay Road Plant and the IWWTP were available was 2406 gpm on July 31, 2014.
- (vii) On March 18, 2014, HDPP ran a "maximum flow test" by opening the Facility's Recycled Water inlet valve and measuring the maximum flow VWD could deliver on an instantaneous basis from its one million gallon storage tank. The maximum flow observed was greater than 5,250 gpm for a one minute period.
- (viii) Based on HDPP's experience receiving Recycled Water from March 2014 through September 2014, and the maximum flow rate test in March 2014, the piping supplying the Facility from the VWD one million gallon storage tank is capable of supplying more than 4,000 gpm. However, the existing piping, pumping capacity and storage facilities are not capable of delivering 4,000 gpm 24 hours per day.

2.4 Recycled Water Technical Feasibility.

HDPP retained Kiewit Power Engineers ("Kiewit"), the engineering company that originally designed the Facility when it was constructed, to study several options for the Facility to use 100% Recycled Water. Kiewit's study is attached as confidential Exhibit B. Kiewit studied how to treat or dispose of cooling tower blowdown water containing higher amounts of impurities due to higher amounts of impurities found in Recycled Water compared to SWP Water and Banked SWP Water. Kiewit initially considered on-site or off-site discharge options including discharging the

cooling tower blowdown water off-site under a new National Pollutant Discharge Elimination System (“NPDES”) permit, discharging to an off-site wastewater treatment plant, discharging by deep well injection, and by treating the blowdown water on-site by adding new water treatment facilities and/or by upgrading the Facility’s existing water treatment system. After Kiewit’s initial consideration of on-site or off-site cooling tower blowdown disposal options, they concluded that treating the cooling tower blowdown water on-site was the best option for HDPP after taking into consideration costs, permitting requirements and concerns about third parties controlling a key function of the Facility’s process.

Kiewit studied the impact of using Recycled Water in the Facility’s existing water treatment system from 2011 through September 2014 so it could identify what improvements were needed to allow the Facility to use 100% Recycled Water.

Kiewit concluded that the most optimal process for the Facility to use 100% Recycled Water was to upgrade the existing Facility water treatment systems using any one of the three upgrade projects described below:

- (i) 100% Makeup Pretreatment Option. This option provides for the pre-treatment of 100% of the Recycled Water supplied to the Facility to remove a considerable portion of the higher amounts of impurities found in Recycled Water before it is used in the Facility’s cooling tower. The estimated capital cost for this option is provided in confidential Exhibit B. The estimated schedule for obtaining local permits and approvals, designing, procuring equipment and installing this option is 147 weeks. This schedule allows for 24 weeks to obtain the CEC and environmental permits. Any additional time required to secure those permits will result in a day-for-day increase in total project schedule.
- (ii) Side-stream Treatment Option. This option provides for Recycled Water with higher amounts of impurities to be supplied into the cooling tower basin water while concurrently taking a small, constant volume (a “side-stream”) of the cooling tower basin water from the basin and treating it to remove a portion of the incremental impurities found in the cooling tower due to the use of Recycled Water. The estimated capital cost of this option is provided in confidential Exhibit B. The estimated schedule for obtaining permits and approvals, designing, procuring equipment and installing this option is 147 weeks. This schedule allows for 24 weeks to obtain the CEC and environmental permits. Any additional time required to secure those permits will result in a day-for-day increase in total project schedule.
- (iii) Cooling Tower Blowdown Evaporator Option. This option would replace an existing portion of the Facility’s water treatment system that was not designed to remove the increased amount of impurities associated with Recycled Water and replace it with a new evaporator. The new evaporator would be sized to evaporate all of the cooling tower discharge water separating most of the impurities from the evaporated water. The estimated capital cost for this option is provided in confidential Exhibit B. The estimated schedule for obtaining permits and approvals, designing, procuring equipment and installing this option is 164 weeks. This schedule allows for 24 weeks to

obtain the CEC and environmental permits. Any additional time required to secure those permits will result in a day-for-day increase in total project schedule.

Kiewit's report noted that the existing Facility site may not be large enough to accommodate the upgrade projects described above and that HDPP may need to acquire additional land. The costs and schedules noted above do not include the time or cost required to acquire or lease additional land.

Confidential Exhibit F provides details on the incremental costs of chemicals, labor, and disposal fees associated with the Facility using 100% Recycled Water. These costs were based on the incremental chemical and waste disposal requirements, the additional staffing required and the incremental Facility energy (auxiliary load) requirements identified in Kiewit's Exhibit B.

2.5 Recycled Water Economic Feasibility.

Condition SOIL&WATER-1 lists very specific economic information required for this Recycled Water Feasibility Study. Some of the requested information is more suited for a regulated investor-owned utility than for independent power producers like HDPP. HDPP is an exempt wholesale generator pursuant to the Federal Energy Regulatory Commission's ("FERC's") regulations and is authorized to sell energy and capacity pursuant to its market-based rate tariff. Unlike a regulated investor-owned utility, HDPP does not have a retail customer base from which it can charge rates based upon a "revenue requirement" that is based upon its costs including a rate of return on investor equity. Rather, HDPP's ability to earn revenues from energy and capacity sales is subject to market forces. HDPP is not guaranteed revenue upon which to recover its costs and to earn a return on its invested capital. Thus, many of the items outlined in Section IV of SOIL&WATER-1 are not applicable to HDPP's business structure. In confidential Exhibit D, HDPP provides economic information including information on the availability of revenues to fund major capital projects.

The information provided in Exhibit D dictates two primary conclusions: (1) as a merchant energy generator without the guarantee of long term energy and capacity contracts that provide sufficient revenues to fund large capital expenditures, HDPP is facing economic uncertainty in California's power markets, and (2) based on HDPP's recent historical and future forecasted estimate of cash flows, there are insufficient revenues available from its operations to allow HDPP to fund the large capital expenditures and increased operating and maintenance costs required for HDPP to operate using 100% Recycled Water.

As discussed in Exhibit E, the economic feasibility of Recycled Water use at the Facility is further evaluated against the backdrop of applicable State laws governing the use of recycled water, principally Water Code section 13350. Water Code section 13350 states that the use of potable domestic water for nonpotable uses, including industrial uses, is a waste or an unreasonable use of the water within the meaning of Section 2 of Article X of the California Constitution if recycled water is available which is "of adequate quality for these uses and is available for these uses" and "may be furnished for these uses at a reasonable cost to the user." The determination of whether recycled water is of adequate quality requires consideration of all relevant factors, including the level and types of specific constituents in the recycled water affecting these uses, on a user-by-user basis. (Water Code § 13350 (a)(1).)

Recycled water is of “reasonable cost” when the “cost of supplying the treated recycled water is comparable to, or less than, the cost of supplying potable domestic water,” after having considered all relevant factors, including, but not limited to, the “present and projected costs of supplying, delivering, and treating potable domestic water for these uses and the present and projected costs of supplying and delivering recycled water for these uses.” (Water Code § 13550 (a)(2).)

The Facility currently uses all Recycled Water that is made available by VWD and VVWRA and that is capable of being used at the Facility with existing infrastructure. The current supply of Recycled Water is not of adequate quality for use at the Facility without blending with higher quality MRB Groundwater and SWP Water.

The costs of further treating additional quantities of Recycled Water such that it is of adequate quality for use at the Facility is significantly higher than the cost of supplying the other sources of water to the Facility. Accordingly, additional Recycled Water may not be furnished for a reasonable cost, and the use of additional Recycled Water at the facility is not mandated by California Water Code section 13550.

2.6 Recycled Water Feasibility Study Conclusions.

Based on the information provided in this report, the Recycled Water Feasibility Study concludes it is not feasible for the Facility to convert to using 100% Recycled Water because:

- (i) HDPP’s Recycled Water supplier is projected in some years in the future to not have sufficient Recycled Water supply as required to meet the Facility’s 4,000 AFY design basis requirement. A reliable water supply for the Facility must be able to meet this annual requirement in order for the Facility to maintain high availability for generating power.
- (ii) HDPP’s Recycled Water supplier is unable to provide Recycled Water in quantities and qualities required by the Facility on a 24 hours per day, 7 days per week and 12 months per year basis. A reliable water supply for the Facility must be able to meet this instantaneous requirements in order for the Facility to maintain high availability for generating power.
- (iii) The Facility’s water treatment system cannot operate on a 100% Recycled water supply because the water treatment system was not designed to treat and remove the higher amount of impurities associated with using 100% Recycled Water as required to maintain the amount of impurities in the cooling tower basin water at acceptable levels to control PM10 emissions within the Facility’s permitted limits and to protect the Facility’s cooling systems and equipment from harmful deposits associated with high amounts of impurities in cooling tower water.
- (v) The capital costs to upgrade the water treatment system are extremely high and the costs of further treating additional quantities of Recycled Water so that is of adequate quality for use at the Facility are significantly higher than the cost of the other sources of water to the Facility. Unlike utilities in California who have a retail customer base upon which it can recover the incremental capital and operating and maintenance costs associated with

using Recycled Water, HDPP is a merchant generating facility and the amount of revenue it earns to pay for its costs is subject to market forces. Using 100% Recycled Water will not provide HDPP with increased energy or increased capacity revenue opportunities therefore it is not economically feasible for HDPP to incur these additional costs associated with the use of 100% Recycled Water. Accordingly, additional Recycled Water may not be furnished for a reasonable cost and the use of additional Recycled Water at the Facility is not mandated by California Water Code section 13550.

3 HDPP Commitment to Maximize Use of Recycled Water.

HDPP has demonstrated a commitment to maximizing the use of Recycled Water at the Facility. As described above, HDPP was originally prohibited from using Recycled Water and in 2008 and 2009, petitioned and received the CEC's permission to use Recycled Water. From 2009 through the present, HDPP has invested in the costs for permitting, engineering, design and construction of new on-site and off-site infrastructure, upgrades to the Facility's existing water treatment systems, and for third party experts, in seeking to maximize the use of Recycled Water. In 2014, HDPP sought approval from the CEC to modify the Facility to allow it to discharge certain wastewaters to the IWWTP. The volume of discharged wastewaters would be returned by the IWWTP as Recycled Water thereby increasing the amount of Recycled Water available for the Facility's use. In addition, this modification would enable the Facility to treat and bank SWP Water when the Facility is not generating power. Finally, in 2014, HDPP sought and received approval from the CEC to modify the Facility to provide for more effective treatment of cooling tower blowdown water when the Facility is using SWP Water and Recycled Water.

Although this Recycled Water Feasibility Study finds it is not feasible for HDPP to convert the Facility to using 100% Recycled Water, HDPP is committed to using as much Recycled Water as feasible given the limitations on the Facility's existing water treatment system, Recycled Water quantities and quality, Recycled Water delivery infrastructure, and Recycled Water delivery reliability. To this end, in the Petition to Amend that the CEC has required HDPP to file no later than November 1, 2015, HDPP will propose criteria describing how the Facility will maximize use of Recycled Water to the extent feasible.

Exhibit A.
**Cardno Entrix Report - Availability and Use of Recycled Water at the High
Desert Power Project**

**FILED CONCURRENTLY WITH AN APPLICATION FOR CONFIDENTIAL
DESIGNATION**

Exhibit B.
Kiewit Power Engineers Exhibit - Recycled Water Technical Feasibility Study

**FILED CONCURRENTLY WITH AN APPLICATION FOR CONFIDENTIAL
DESIGNATION**

**Exhibit C.
Recycled Water Delivery and Use Logs**

**FILED CONCURRENTLY WITH AN APPLICATION FOR CONFIDENTIAL
DESIGNATION**

Exhibit D.
HDPP Report - Recycled Water Economic Analysis

**FILED CONCURRENTLY WITH AN APPLICATION FOR CONFIDENTIAL
DESIGNATION**

Exhibit E.
Discussion of the Applicable California Legal Authorities

Exhibit E. Discussion of the Applicable California Legal Authorities

1. Applicable California Legal Authorities.

This section summarizes California regulations related to the use of recycled water by both the supplier, or discharger, (VWRA, which operates the Shay Road Plant, and VWD, which operates the IWWTP) and the user (HDPP). These regulations are from the California Water Code (CWC), Titles 17, 22, and 23 of the California Code of Regulations (CCR), and the Health and Safety Code. It is State policy to promote the use of recycled water to the maximum extent in order to supplement existing surface and groundwater supplies to help meet water needs (CWC sections 13510-13512). One of the primary conditions on the use of recycled water is protection of public health (CWC sections 13521, 13522, 13550(a)(3)). Recycled water is defined in CWC Section 13050, and reclaimed water is defined in CWC Section 13523; they are synonymous and refer to treated wastewater suitable for reuse.

CWC Section 13523 provides the authority by which the Water Board can prescribe water reclamation (recycling) requirements for users and/or producers of recycled water, following consultation with the California Department of Public Health (CDPH). Title 22 establishes the requirements for recycled water treatment, quality, and allowable use. Approved uses of recycled water under Title 22 depend on the level of treatment, disinfection, and potential for public contact. Title 22 Sections 60301 through 60355 include the California Water Recycling Criteria, which address the following:

- (i) Recycled water quality and wastewater treatment requirements for the various types of uses.
- (ii) Reliability features required in the treatment facilities to ensure safe performance.
- (iii) Use area requirements pertaining to the actual recycled water use location.

Title 17 establishes the requirements for backflow protection of the potable water supply and cross-connection regulations. Title 23 addresses the need for pretreatment programs.

2. VWRA and VWD (Discharger) Requirements.

VWRA and VWD, which operate the Shay Road Plant and IWWTP, respectively, are required to produce water that satisfies Title 22 requirements and are responsible for monitoring the quality of the recycled water. If the water quality does not achieve the Title 22 recycled water criteria, VWRA and VWD are not allowed to provide recycled water for distribution to the HDPP. VWRA must report any noncompliance with the water recycling requirements to the Water Board, San Bernardino County Department of Public Health, and the CDPH. VWD has similar reporting requirements.

3.1 California Water Code.

The CWC has specific requirements for notifications to the Water Board involving changes in conditions and identifies penalties for failing to provide or falsifying information that apply to both the VWRA and the VWD.

Section 13267(b) specifies that the Discharger shall immediately notify the Water Board whenever adverse conditions have occurred as a result of discharge (e.g., spills of petroleum products or damage to control facilities that could affect compliance). All sampling and analytical results are to be provided to the Water Board upon request. Additionally, pursuant to CWC

13267(b), the VVWRA must comply with the Monitoring and Reporting Program in Board Order No. R6V-2009-0138 (Water Board 2009). VWD must comply with the Monitoring and Reporting Program specified in Board Order R6V-2014-0002 (Water Board 2014).

Section 13260(c) specifies that any proposed material change in the character of the waste, manner of treatment or disposal, increase of discharge, or location of discharge, shall be reported to the Water Board at least 120 days in advance.

Section 13268 indicates that any person failing or refusing to furnish technical or monitoring reports or falsifying information provided therein is guilty of a misdemeanor and may be liable for civil penalties. Civil liability and criminal penalties also are discussed in the CWC for violations or threatened violations of the Waste Discharge Requirements.

3.2 Title 22, California Code of Regulations.

Recycling criteria are included in Title 22, Sections 60301 through 60355, and the recycled water supplied by the producer (VVWRA and VWD) to the user must meet all requirements of Title 22, Section 60306 (use of recycled water for cooling), and related sections of Title 22. An agreement has been established per Board Order No. R6V-2009-0138 (Water Board 2009) assuring that recycled water from VVWRA to HDPP is delivered and used in conformance with these criteria, which include water recycling specifications, such as maximum instantaneous flow rate, treatment processes and standards, personnel qualifications, contingency planning, preventive maintenance, records and reports, alarms, emergency storage or disposal, and monitoring. Board Order R6V-2014-0002 (Water Board 2014) also includes similar provisions that apply to VWD.

Section 60321 specifies sampling and analysis protocols to be followed. Section 60323 requires the submittal of an Engineering Report to CDPH, and obtaining CDPH approval for the production, distribution, and use of recycled water. An amended Title 22 Engineering Report also would need to be submitted for any changes or expansions of recycled water and must describe how the project will comply with the Title 22 Water Recycling Criteria. These sections are applicable to both the VVWRA and VWD.

3.3 Title 17, California Code of Regulations.

Title 17 focuses on measures to prevent cross-connections and backflow and are applicable to both the VVWRA and VWD facilities.

Section 7585 specifies that the water supplier shall evaluate the degree of potential health hazard to the public water supply, which may be created as a result of conditions existing on a user's premises. The water supplier, however, shall not be responsible for abatement of cross-connections, which may exist within a user's premises. At a minimum, the evaluation should consider the existence of cross-connections, the nature of materials handled on the property, the probability of a backflow occurring, the degree of piping system complexity and the potential for piping system modification.

Section 7601 requires backflow preventers to pass laboratory and field evaluation tests performed by a recognized testing organization, which has demonstrated their competency to perform such tests to the CDPH.

Sections 7602 through 7604 provide standards for backflow preventers, the location of backflow preventers, and the type of protection required to ensure prevention of backflow into the public water supply.

3.4 Title 23, California Code of Regulations.

Under Section 2233(a), the Water Board may require a discharger to have and enforce a pretreatment program. VVWRA produces recycled water from municipal wastewater that has gone

through sedimentation, oxidation, coagulation, filtration, and disinfection processes after having passed through screening, primary, and secondary treatment processes to ensure that it meets Title 22 requirements (Water Board 2009).

Per Board Order No. R6V-2014-0002 (Water Board 2014), according to the Report of Waste Discharge, the IWWTP design is for 60 percent of the facility flow from domestic wastewater and 40 percent from industrial wastewater at the SCLA complex. Currently, the largest industrial source to the IWWTP is the Dr. Pepper/Snapple plant. Future industrial sources have yet to be identified. Industrial sources may contribute constituents at concentrations that, if not controlled by the Discharger, will have the potential to pass through or interfere with the facility, and may cause degradation or pollution in the receiving groundwater. Given the need to protect the groundwater resource, Board Order No. R6V-2014-0002 requires the Discharger to have and implement a pretreatment program that may include salinity control methods to achieve the effluent and receiving water limitations specified in the Order.

The U.S. Environmental Protection Agency (EPA) standards for an adequate pretreatment program are specified in 40 CFR 403.9 and are applicable to both the VVWRA and the IWWTP. Section 2233(c) requires an annual report on the effectiveness of the pretreatment program.

3.5 California Health and Safety Code.

Section 116805 states that local health officers may maintain programs, in cooperation with water suppliers, to protect against backflow through service connections into the public water supply, and, with the consent of the water supplier, may collect fees from the water supplier to offset the costs of implementing these programs. Requirements to prevent backflow are applicable to the VVWRA and the VWD.

3.6 State Water Board Resolutions.

State Water Board Resolution 68-18 is the Board's policy statement intended to implement the Legislature's intent that waters of the state shall be regulated to achieve the highest water quality consistent with the maximum benefit to the people of the state (the "Anti-Degradation Policy").

State Water Board's Recycled Water Policy, Resolution 2013-003, establishes a mandate to increase the use of recycled water in California by 200,000 afy by 2020 and by an additional 300,000 afy by 2030 to be achieved through the cooperation and collaboration of the State Water Board, the Regional Water Boards, the environmental community, water purveyors and the operators of publicly owned treatment works. The Policy provides that agencies producing recycled water that is available for reuse and not being put to beneficial use shall make that recycled water available to water purveyors for reuse on reasonable terms and conditions. Such terms and conditions may include payment by the water purveyor of a fair and reasonable share of the cost of the recycled water supply and facilities. The Recycled Water Policy encourages groundwater recharge with recycled water for later extraction and use in accordance with this Policy and state and federal water quality law provided that compliance with the State's Anti-Degradation Policy is demonstrated. Groundwater recharge is consistent with the Anti-Degradation Policy if it complies with the applicable salt/nutrient management plan for the basin or alternative criteria specified in the Recycled Water Policy.

a. HDPP (User) Requirements

3.7 California Water Code.

Section 13550 states that the use potable domestic water for nonpotable uses, including industrial uses, is a waste or an unreasonable use of the water within the meaning of Section 2 of Article X of the California Constitution if the State Water Board finds that recycled water is available which is "of adequate quality for these uses and is available for these uses" and "may be furnished for these

uses at a reasonable cost to the user.” Recycled water is of adequate quality if, after having considered all relevant factors, including the level and types of specific constituents in the recycled water affecting these uses, on a user-by-user basis. (CWC 13550 (a)(1).) In determining whether recycled water is of adequate quality for the use, the State Water Board shall also consider the effect of the use of recycled water in lieu of potable water on the generation of hazardous waste and on the quality of wastewater discharges subject to regional, state, or federal permits. (CWC 13550 (a)(1).) Recycled water is of “reasonable cost” when the “cost of supplying the treated recycled water is comparable to, or less than, the cost of supplying potable domestic water,” after having considered all relevant factors, including, but not limited to, the “present and projected costs of supplying, delivering, and treating potable domestic water for these uses and the present and projected costs of supplying and delivering recycled water for these uses.” (CWC 13550 (a)(2).) The Water Board will not mandate the use of recycled water if such use will adversely affect downstream water rights, degrade water quality, or be injurious to plantlife, fish, and wildlife. (CWC 13550 (a)(3).) In making the determination of whether the use of recycled water shall be mandated, the State Board will consider the impact of the cost and quality of the recycled water on the specific individual user. (CWC 13550 (b).

Section 13552.8(a) indicates that any public agency may require the use of recycled water in cooling towers if all of the following requirements are met:

- (i) Recycled water is available to the user and meets the requirements set forth in Section 13550, as determined by the State Board after notice and a hearing.
- (ii) The use of recycled water does not cause any loss or diminution of any existing water right.
- (iii) If public exposure to aerosols, mist, or spray may occur, appropriate mist mitigation or mist control is provided.
- (iv) The person intending to use recycled water has prepared an Engineering Report pursuant to Section 60323 of Title 22 of the CCR.

Therefore, use of recycled water in cooling towers is an approved use and its expanded use would not affect an existing water right or expose the public to mist or spray because appropriate controls are in place. CDPH and the Water Board approved the Engineering Report submitted for the use of a blend of recycled water and treated SWP water for cooling tower makeup water in a letter dated September 24, 2009. An amended Title 22 Engineering Report (approved by the CDPH and the Water Board) must also be submitted for any changes or expansions of recycled water and must describe how the project will comply with the Title 22 Water Recycling Criteria.

The Facility currently uses all recycled water that is made available by VWD and VVWRA and that is capable of being used at the Facility with existing infrastructure. The current supply of recycled water is not of adequate quality for use at the Facility without blending with higher quality MRB Water and SWP water.

Consistent with the Section 13550(a)(1) standard that the State Water Board may require use of recycled water that it is of “adequate quality” and “available” to serve uses at the Facility, this HDPT feasibility analysis examines changes to facilities and processes to improve the quality of the recycled water in order to allow HDPT to use greater quantities of recycled water at the Facility. Consistent with Section 13550(a)(2), additional recycled water “may be furnished for these uses [at the Facility] at a reasonable cost” if the projected costs of treating and delivering additional quantities of recycled water to Facility is comparable to, or less than, HDPT’s cost of supplying potable domestic water to the Facility. The potential effects from increased sludge generated from the additional treatment of recycled water (CWC 13550 (a)(1)) and reduced discharge of recycled water to the Mojave River (CWC 13550 (a)(3)) are also relevant factors for evaluating the feasibility of increased use of recycled water at the Facility.

3.8 Title 22, California Code of Regulations.

The use of recycled water for industrial purposes, such as makeup for cooling towers, is specifically permitted by Section 60306 under the following conditions:

- a. Recycled water used for industrial or commercial cooling or air conditioning that involves the use of a cooling tower, evaporative condenser, spraying or any mechanism that creates a mist shall be a disinfected tertiary recycled water.
- b. Use of recycled water for industrial or commercial cooling or air conditioning that does not involve the use of a cooling tower, evaporative condenser, spraying, or any mechanism that creates a mist shall be at least disinfected secondary-23 recycled water.
- c. Whenever a cooling system, using recycled water in conjunction with an air conditioning facility, utilizes a cooling tower or otherwise creates a mist that could come into contact with employees or members of the public, the cooling system shall comply with the following:
 1. A drift eliminator shall be used whenever the cooling system is in operation.
 2. A chlorine, or other, biocide shall be used to treat the cooling system recirculating water to minimize the growth of Legionella and other microorganisms.

Such requirements are incorporated into the design and operation of the HDPP, along with detailed specifications described in Board Order No. R6V-2009-0138 (Water Board 2009).

Section 60315 indicates that the public water supply shall not be used as a backup or supplemental source of water for a dual-plumbed recycled water system unless the connection between the two systems is protected by an air gap separation which complies with the requirements of sections 7602 (a) and 7603 (a) of CCR Title 17, and approval of the public water system has been obtained.

Section 60316 requires periodic inspections of dual plumbed systems for possible cross connections with the potable water system. The recycled water system shall also be tested for possible cross connections at least once every four years. The recycled water agency shall notify the department of any incidence of backflow from the dual-plumbed recycled water system into the potable water system within 24 hours of the discovery of the incident. Any backflow prevention device installed to protect the public water system serving the dual-plumbed recycled water system shall be inspected and maintained in accordance with Section 7605 of CCR Title 17.

Section 60323 requires the submittal of an Engineering Report to the CDPH for any proposed wastewater reuse; refer to the discussion under Section 7.2.1.

3.9 Title 17, California Code of Regulations.

The sections of Title 17 requiring the prevention of backflow and cross-connection described in Section 7.1.3 are applicable to the HDPP. As discussed under Section 6.2, no cross-connections are possible given the plant's configuration, and the plant is in compliance with all applicable regulations.

3.10 California Health and Safety Code.

Section 116800 states that local health officers may maintain programs for the control of cross-connections by water users, within the users' premises where public exposure to drinking water contaminated by backflow may occur. The programs may include inspections within water users' premises to identify cross-connection hazards and determine appropriate backflow protection. Water users shall comply with all orders, instructions, regulations, and notices from the local health officer with respect to installation, testing, and maintenance of backflow prevention devices. The

local health officer may collect fees from those water users subject to inspection to offset the costs of implementing cross-connection control programs. As discussed under Section 6.2, no cross-connections are possible given the plant's configuration, and the plant is in compliance with all applicable regulations.

3.11 State Water Board Resolutions.

State Water Board Resolution 75-58 establishes the Board policy that powerplant cooling water should come from the following sources in this order of priority depending on site specifics such as environmental, technical and economic feasibility consideration: (1) wastewater being discharged to the ocean, (2) ocean, (3) brackish water from natural sources or irrigation return flow, (4) inland wastewaters of low TDS, and (5) other inland waters. The State Water Board will approve an application to appropriate fresh inland surface waters for power plant cooling if other sources or other methods of cooling would be environmentally undesirable or economically unsound. Resolution 75-58 also states that the State Board encourages the use of wastewater for powerplant cooling where it is appropriate. A January 20, 2010 letter from the Water Board to the California Energy Commission clarifies that Board Resolution 75-58 does not apply to the use of groundwater, and that the use of recycled water for power plant cooling should be evaluated consistent with Water Code section 13550.

State Water Board Resolution 88-63 declares that all groundwater and surface water of the state are considered suitable for municipal or domestic water supply with the exception of those waters that exceed a TDS of 3,000 mg/L or meet other specified conditions.

Exhibit F.
Impact of 100% Recycled Water Use on Facility Operations and Maintenance
Costs

FILED CONCURRENTLY WITH AN APPLICATION FOR CONFIDENTIAL
DESIGNATION

Exhibit G.
Monthly and Annual Energy Production since Becoming Operational
FILED CONCURRENTLY WITH AN APPLICATION FOR CONFIDENTIAL
DESIGNATION

Exhibit H
HDPP Recycled Water Feasibility Study Report in CEC Conditions of Certification
Format

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CEC Feasibility Study Report Requirement	HDPP Response
<p>I Water Supply</p> <p>A. Potential sources of recycled water, its current and projected use, and alternative pipeline routes</p> <p>B. Adequacy of recycled water supplies to meet plant operation demand (provide future projections of supply and demand considering annual volumes, monthly patterns of plant water use vs. availability of water supply, and peak day supply and demand)</p> <p>C. Quality of existing and recycled water supplies Water treatment requirements for existing and recycled water supplies</p> <p>D. Water treatment requirements for existing and recycled water supplies</p> <p>E. Cooling cycles of concentration for existing and potential recycled water supplies</p>	<p>A. See Exhibit A.</p> <p>B. See Exhibit A.</p> <p>C. See Exhibit B.</p> <p>D. See Exhibit B.</p> <p>E. See Exhibit B.</p>
<p>II Cooling & Process Needs</p> <p>A. Consumptive water uses e.g.: cooling tower make-up, evaporation cooling of CTG inlet air, CTG compressor intercooling, and STG condensation; CTG NOx control; CTG power augmentation; boiler water makeup</p> <p>B. Space requirements for additional treatment of recycled water supplies vs. space available on the plant sit</p> <p>C. Water balance diagrams for recycled water use and wastewater discharge for average and peak conditions to include distinctions in using existing vs. recycled water</p>	<p>A. See Exhibit A</p> <p>B. See Exhibit B</p> <p>C. See Exhibit B.</p>

High Desert Recycled Water Feasibility Study Report – Exhibit H

CEC Feasibility Study Report Requirement	HDPP Response
<p>III Wastewater Treatment & Disposal</p> <p>A. Method (existing discharge via sewer system to WWTP, dedicated brine return line, deep well injection, or zero liquid discharge (ZLD) recovery)</p> <p>B. Available capacity & operating limitations</p>	<p>A. Zero liquid discharge.</p> <p>B. See Exhibit B.</p>
<p>IV Economic Costs of Existing Source and Recycled Sources (where applicable)</p> <p>A. Capital Costs</p> <ol style="list-style-type: none"> 1. water supply lines 2. water supply pumping station(s) 3. well(s) 4. water treatment system 5. wastewater pipeline & facility capacity charge 6. permitting (PM10, Legionella, discharge quality and quantities) 7. Right of Way and Easement acquisitions 8. engineering, procurement, construction inspection and testing 9. biologic surveys/environmental assessment reports <p>B. Annual (operating and maintenance) Costs</p> <ol style="list-style-type: none"> 1. existing and recycled water purchase cost 2. chemicals (cooling tower & water treatment) 3. labor 4. energy (water supply pumping, water treatment) 5. wastewater discharge fee 6. solids disposal (class of waste, transportation & landfill fees) 	<p>A. See Exhibit B.</p> <p>B. See Exhibit F.</p>

High Desert Recycled Water Feasibility Study Report – Exhibit H

CEC Feasibility Study Report Requirement	HDPP Response
<p>IV (cont'd)</p> <p>C. Project Life – Identify project life</p> <p>D. Total Project Cost (base case)</p> <p>E. Installed cost per watt</p> <p>F. Total Annualized Cost – expressed as the uniform end-of-year payment (A/P) of Capital Costs + Annual Costs</p> <p>G. Cost of Capital</p> <p>H. Debt to equity ratio</p> <p>I. Average debt service coverage ratio</p> <p>J. Identify internal rate of return</p> <p>K. Monthly and annual energy production since becoming operational</p>	<p>C – E. See Exhibit B.</p> <p>F – J. See Exhibit D.</p> <p>K. See Exhibit G.</p>
<p>V. Expected Effects on Electric Customers</p> <p>A. Description of existing electricity rate structure and current rates to customers using existing water source</p> <p>B. Description of expected electricity rates to customers using recycled water over remaining life of the plant</p>	<p>A. See Exhibit D.</p> <p>B. See Exhibit D.</p>

High Desert Recycled Water Feasibility Study Report – Exhibit H

CEC Feasibility Study Report Requirement	HDPP Response
<p>VI Environmental Considerations for the use of Recycled Water</p> <p>A. Describe the potential effects of recycled water use on the generation of hazardous waste and on the quality of its wastewater discharge</p> <p>B. Describe the potential impacts to public health through the use and discharge of recycled water Describe the potential effects of recycled water use and discharge on the degradation of water quality and its potential to be injurious to plant life, fish, and wildlife.</p> <p>C. Describe potential effects on existing water rights or entitlements</p> <p>D. Describe potential effects on existing water rights or entitlements.</p>	<p>A. through D. See Exhibit A.</p>
<p>VII. Discussion of applicable California Water Code provisions</p>	<p>See Exhibit E.</p>