

Dr. Bob Harrington  
Inyo County Water Department  
135 South Jackson Street  
Independence, CA 93526

March 8, 2018

**RE: Summary of Hydrologic Monitoring Activities, February 2018**  
Rose Valley, Inyo County, California  
Hay Ranch Project Conditional Use Permit #2007-03

Dear Dr. Harrington:

This letter summarizes hydrologic monitoring activities conducted in February 2018 by TEAM Engineering & Management, Inc. (TEAM), related to the Hay Ranch Water Extraction Project and CUP #2007-03.

### **Background**

As outlined in the Hay Ranch Water Extraction Final EIR's Hydrologic Monitoring and Mitigation Plan (HMMP), *Phase 1: Monitoring System Setup and Supplemental Data Collection* occurred prior to December 25, 2009 at monitoring points throughout Rose Valley. With the initiation of pumping by Coso Operating Company, LLC (COC) on December 25, 2009, the Hay Ranch Water Extraction Project entered into the *Phase 2: Startup Monitoring and Reporting* period. *Phase 3: Model Recalibration and Redefinition of Pumping Rates and Durations* occurred from September 2010 to April 2011, with recalibration of the groundwater model by Daniel B. Stephens & Associates (DBS&A) and with redefinition of pumping rates and durations by Inyo County Water Department (ICWD). With the April 1, 2011 issuance of the ICWD's "Addendum to the HMMP for CUP#2007-003/Coso Operating Company, LLC" (2011 ICWD Addendum) the project entered *Phase 4: Ongoing Monitoring, Mitigation and Reporting*. In 2013 further model revision occurred with results and new trigger levels detailed in ICWD's August 30, 2013 letter to COC regarding Conditional Use Permit #2007-003/Coso. In June 2014 further model revision was conducted by DBS&A with results and new trigger levels detailed in ICWD's June 27, 2014 letter to COC regarding Conditional Use Permit #2007-003/Coso. On June 20, 2016 the ICWD extended the June 30, 2016 cessation of pumping date to September 30, 2016 which allowed COC to pump up to the remaining volume from the 1,614 AF allowed for the previous year, as long as all other conditions of the CUP #2007-03 were adhered to.

In mid-2017 re-evaluation of pumping rates and duration based on recalibration of the model was conducted by DBS&A. Continuation of pumping, at a rate not to exceed 1,611 acre-feet annually beginning on June 1, 2017, was approved in ICWD's July 27, 2017 letter to COC regarding Conditional Use Permit #2007-003/Coso. Revised Maximum Acceptable Drawdown and Drawdown at Cessation of Pumping values were provided in the DBS&A report titled "Third Updated Groundwater Flow Model and Predictive Simulation Results, Coso Operating Company, Hay Ranch Water Extraction and Delivery System" dated August 24, 2017.

### **Monitoring and Reporting**

During the February 2018 monthly hydrologic data collection event at the monitoring locations in the Rose Valley area, static depth-to-water (DTW) measurements, one visual observation of the Little Lake Ranch (LLR) Siphon Well Outflow and three sets of flow rates were collected by TEAM, as summarized in the attached table (Table 1). Data for this monthly field event was collected on February 21 and 26, 2018. Pressure transducer data was

downloaded from monitoring units including one “BaroTroll” which records barometric pressure. Also in February, measurements from LADWP 816 Well were requested from LADWP personnel.

Figure 1 presents the combined amount of groundwater pumped from the Hay Ranch North and South wells, in acre-feet, from December 25, 2009 through February 21, 2018 compared to the maximum allowable pumping amounts. The total amount of groundwater extracted from the Hay Ranch property from December 25, 2009 to February 21, 2018 (Hay Ranch CUP project total) is approximately 17,287 AF. The maximum allowable pumping rate was 3,000 acre-feet per year (AFY) for December 25, 2009 through December 31, 2010; was 4,839 AFY from January 1, 2011 through August 30, 2013; was 3,040 AFY from September 2013 through June 2014; was 1,614 AFY from July 1, 2014 to June 30, 2016, extended by ICWD to September 30, 2016; and is 1,611 AFY from June 1, 2017 to May 31, 2019.

For the current pumping rate period (June 1, 2017 to May 31, 2018) an estimated 775 AF of groundwater, of the 1,611 AF allowable, have been extracted from the Hay Ranch Property as of February 21, 2018.

### **Trigger Levels and Maximum Acceptable Drawdowns**

In Table 4 of the August 24, 2017 DBS&A report, Drawdown at Cessation of Pumping Trigger Levels (Trigger Levels) and Maximum Acceptable Drawdowns were recommended for specific monitoring wells, based on a maximum allowable pumping rate of 1,611 AFY starting on June 1, 2017.

Based on data collected by TEAM during the December 2017 to February 2018 monitoring period, none of the Trigger Levels were exceeded at Hay Ranch Project monitoring wells which have baselines and trigger levels established (Table 2). No Maximum Acceptable Drawdown levels have been reached during COC pumping under CUP #2007-03.

### **Operational Notes**

In February, transducer data was unable to be collected from the weirs at the Little Lake Ranch due to a reprogramming error. The error was resolved and transducers were logging properly upon leaving site, and it is anticipated that transducer data will be able to be retrieved during the next monthly monitoring event. A backup transducer is installed in the LLR North Culvert (RV-245) and it is anticipated that data for the current period will be able to be retrieved from this location during the next monthly monitoring event. There were no other significant operational issues observed during the reporting period.

### **Data Transmittal**

TEAM posted updates to the “Coso” database on the ICWD web server. Current Hay Ranch Project hydrographs in PDF form were uploaded to the ICWD website ([www.inyowater.org](http://www.inyowater.org)).

If you have any questions or require additional information, please contact TEAM at your convenience.

Sincerely,

TEAM Engineering & Management, Inc.



Greg M. Foote  
Senior Environmental Scientist

**TABLE 1**  
**Field Observations of Rose Valley Hydrologic Monitoring Points**  
**February 2018**

|               |                          |                            |
|---------------|--------------------------|----------------------------|
| Project Name: | Hay Ranch Project HMMP   | Date: February 21-26, 2018 |
| Location:     | Rose Valley, Inyo County |                            |
| Observer(s):  | G. Foote                 | Page: 1 of 1               |

| Well ID | Monitoring Point                 | Date     | Time  | DTW (ft) | Flow (cfs) | GWE (ft amsl) | Method            | Transducer Log Interval | Notes   |
|---------|----------------------------------|----------|-------|----------|------------|---------------|-------------------|-------------------------|---|
| RV-10   | Dews                             | NM       | NM    | NM       | NA         | NM            | TEAM manual read  | NA                      |   |
| RV-20   | LADWP 816                        | NM       | NM    | NM       | NA         | NM            | LADWP manual read | NA                      | Data provided by LADWP                                  |
| RV-30   | Cal Pumice                       | 02/21/18 | 9:38  | 235.45   | NA         | 3270.44       | TEAM manual read  | Hourly                  |   |
| RV-40   | Dunmovin                         | NM       | NM    | NM       | NA         | NM            | TEAM manual read  | NA                      | Discontinued due to new in-well infrastructure          |
| RV-50   | Hay Ranch North                  | 02/21/18 | 12:58 | NM       | NA         | NM            | TEAM manual read  | NA                      | 3,595,142,620 gallons (11,033 AF) pumped since 12/25/09 |
| RV-60   | Hay Ranch 1A                     | 02/21/18 | 13:09 | 195.28   | NA         | 3236.89       | TEAM manual read  | Hourly                  |   |
| RV-61   | Hay Ranch 1B                     | 02/21/18 | 13:06 | 209.35   | NA         | 3222.50       | TEAM manual read  | Hourly                  |   |
| RV-62   | Hay Ranch 1C                     | 02/21/18 | 13:03 | 204.12   | NA         | 3227.38       | TEAM manual read  | NA                      |   |
| RV-70   | Hay Ranch South                  | 02/21/18 | 12:59 | NM       | No         | NM            | TEAM manual read  | NA                      | 2,037,811,906 gallons (6,254 AF) pumped since 12/25/09  |
| RV-80   | Hay Ranch 2A                     | 02/21/18 | 13:32 | 200.05   | NA         | 3232.95       | TEAM manual read  | Hourly                  |   |
| RV-81   | Hay Ranch 2B                     | 02/21/18 | 13:27 | 210.69   | NA         | 3221.94       | TEAM manual read  | Hourly                  |   |
| RV-82   | Hay Ranch 2C                     | 02/21/18 | 13:23 | 203.33   | NA         | 3228.77       | TEAM manual read  | NA                      |   |
| RV-90   | Coso Jct Ranch                   | 02/21/18 | 10:34 | 175.52   | NA         | 3227.61       | TEAM manual read  | NA                      |   |
| RV-100  | Coso Jct Store #1                | 02/21/18 | 9:54  | 146.67   | NA         | 3225.45       | TEAM manual read  | Hourly                  |   |
| RV-110  | Davis Ranch North Well           | 02/21/18 | 10:47 | 6.57     | NA         | 3886.49       | TEAM manual read  | Hourly                  |   |
| RV-111  | Davis Ranch South Well           | 02/21/18 | 10:52 | 13.30    | NA         | 3884.76       | TEAM manual read  | Hourly                  | Pump installed in DR South well                         |
| RV-112  | Davis Ranch South Flow           | NM       | NM    | NM       | NM         | NM            | TEAM manual read  | NA                      | Discontinued: Flow actively managed                     |
| RV-120  | Red Hill Well (BLM)              | 02/21/18 | 10:07 | 141.18   | NA         | 3199.65       | TEAM manual read  | Hourly                  | Well inaccessible in January 2018                       |
| RV-130  | G-36                             | 02/21/18 | 12:35 | 182.86   | NA         | 3197.16       | TEAM manual read  | NA                      |   |
| RV-140  | Lego                             | 02/21/18 | 12:20 | 224.87   | NA         | 3197.98       | TEAM manual read  | Hourly                  |   |
| RV-150  | Cinder Road                      | 02/26/18 | 12:03 | 192.03   | NA         | 3185.93       | TEAM manual read  | Hourly                  | Blockage in well, DTW not possible                      |
| RV-160  | 18-28 GTH                        | 02/21/18 | 12:00 | 175.04   | NA         | 3187.54       | TEAM manual read  | NA                      |   |
| RV-170  | Fossil Falls Campground          | 02/21/18 | 11:23 | 142.03   | NA         | 3174.74       | TEAM manual read  | NA                      |   |
| RV-180  | LLR North Well                   | 02/26/18 | 10:20 | 40.77    | NA         | 3158.33       | TEAM manual read  | Hourly                  |   |
| RV-210  | LLR Dock Well                    | 02/26/18 | 10:43 | 6.24     | NA         | 3147.90       | TEAM manual read  | NA                      | Surveyed measuring point removed, DTW measured to TOC   |
| RV-220  | LLR Stilling Well (lake surface) | 02/26/18 | 10:35 | 3.74     | NA         | 3147.30       | TEAM manual read  | Hourly                  |   |
| RV-230  | LLR Little Lake Outflow          | 02/26/18 | 10:57 | NA       | 0.00       | NA            | TEAM manual read  | Hourly                  |   |
| RV-240  | LLR Coso Springs Flow            | 02/26/18 | 11:11 | NA       | 0.43       | NA            | TEAM manual read  | Hourly                  |   |
| RV-245  | LLR North Culvert Flow           | 02/26/18 | 11:35 | NA       | 0.04       | NA            | TEAM manual read  | Hourly                  |   |
| RV-250  | LLR Siphon Discharge             | 02/26/18 | 11:24 | NA       | Yes        | NA            | TEAM visual read  | NA                      | Siphon Well flowing into Pond 2                         |
| RV-260  | LLR Hotel Well                   | 02/26/18 | 10:02 | -0.04    | NA         | 3138.82       | TEAM manual read  | NA                      | Artesian  |

NM - not measured; NA - not applicable; IO - Inoperative; UA - Data currently unavailable

DTW - Depth to water in feet (ft) below top of casing or other reference point; a negative DTW indicates that the groundwater elevation is above the surveyed reference point

Flow - In cubic feet per second (cfs)

GWE- Groundwater elevation in feet above mean sea level (ft amsl)

**TABLE 2**  
**Hay Ranch Project Groundwater Baselines and Trigger Levels**  
**February 2018**

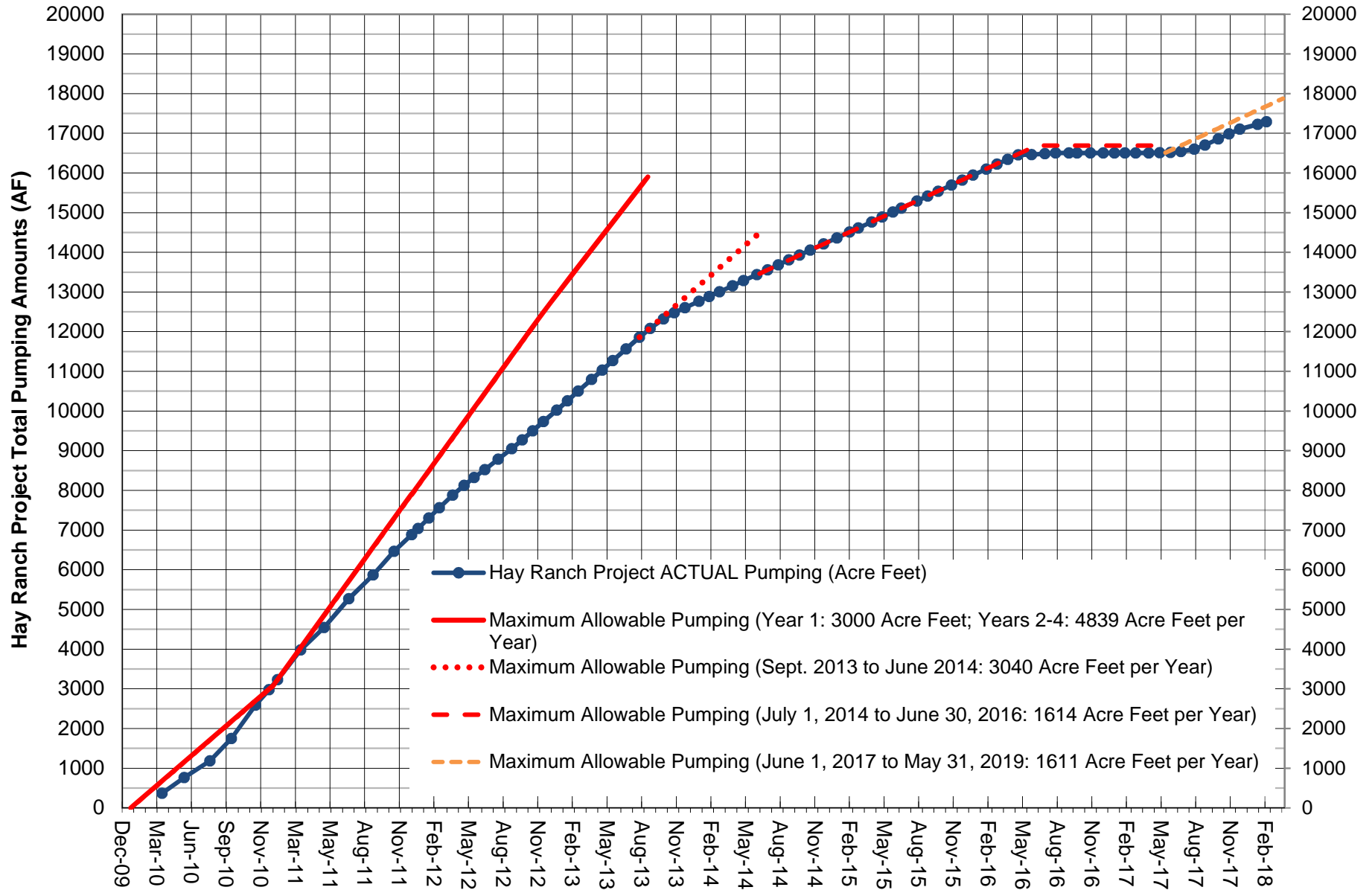
| Well ID | Monitoring Point  | Baseline GWE <sup>1</sup><br>(feet amsl) | Recent Date<br>of Measurement | Recent GWE<br>(feet amsl) | Recent GWE<br>Compared to Baseline<br>(feet) | Drawdown<br>Trigger Level <sup>2</sup><br>(feet) | Recent GWE<br>Compared to Trigger Level<br>(feet) | Recent GWE<br>Above Max DD <sup>2</sup><br>(feet) |
|---------|-------------------|--|-------------------------------|---------------------------|--|--|---|---|
| RV-80   | HR 2A             | 3240.92                                  | 02/21/18                      | 3232.95                   | -7.97  | 16.9   | 8.93  | 9.63  |
| RV-90   | Coso Jct Ranch    | 3230.65                                  | 02/21/18                      | 3227.61                   | -3.04  | 9.60   | 6.56  | 6.66  |
| RV-100  | Coso Jct Store #1 | 3227.59                                  | 02/21/18                      | 3225.45                   | -2.14  | 8.60   | 6.46  | 6.56  |
| RV-120  | Red Hill Well     | 3200.66                                  | 02/21/18                      | 3199.65                   | -1.01  | 3.40   | 2.39  | 2.99  |
| RV-130  | G-36              | 3198.35                                  | 02/21/18                      | 3197.16                   | -1.19  | 2.70   | 1.51  | 2.41  |
| RV-140  | Lego              | 3199.21                                  | 02/21/18                      | 3197.98                   | -1.23  | 1.30   | 0.07  | 1.47  |
| RV-150  | Cinder Road       | 3186.92                                  | 2/26/18 (3)                   | 3185.93                   | -0.99  | 1.50   | 0.51  | 1.41  |
| RV-160  | 18-28 GTH         | 3187.67                                  | 02/21/18                      | 3187.54                   | -0.13  | 1.20   | 1.07  | 2.17  |
| RV-180  | LLR North Well    | 3158.88                                  | 02/26/18                      | 3158.33                   | -0.55  | 0.70   | 0.15  | 0.85  |

1) GWE: Groundwater elevation measured in feet above mean sea level. Baseline GWEs set January 2010 and March 2011 and approved by Inyo County Water Department (ICWD)

2) Max DD and Trigger Level: Maximum Acceptable Drawdown and Drawdown Trigger Level from Table 4 of the "Third Updated Groundwater Flow Model and Predictive Simulation Results, Coso Operating Company Hay Ranch Water Extraction and Delivery System, Conditional Use Permit (CUP) 2007-003" Dated August 24, 2017.

3) Cinder Road well damaged in October 2017, surveyed measuring point removed. Accuracy of GWE calculation may be reduced.

**FIGURE 1**  
ACTUAL AND MAXIMUM ALLOWABLE PUMPING AMOUNTS (TOTALS) FOR HAY RANCH PROJECT



Note: The "maximum allowable pumping" is based on a pumping rate of 3000 AF/yr for 12/09 to 12/10, 4839 AF/yr for 1/11 to 8/13, 3040 AF/yr from 9/13 to 6/14, 1,614 AF/yr from 7/14 to 6/16 and 1611 AFY for 6/17 to 5/19.