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June 24, 2011

VIA HAND DELIVERY

Mr. David Kirn
California Regional Water Quality Control Board
Central Valley Region
11020 Sun Center Dr. Suite 200
Rancho Cordova, CA 95670-6114

Re: Bear Valley Water District - Comments on Proposed Renewal of NPDES Permit No CA0085146 and Time Schedule Order

Dear Mr. Kirn:

On behalf of Bear Valley Water District (District), we are submitting the following comments on the Proposed Renewal of the NPDES Permit No. CA 0085146 and Time Schedule Order scheduled for public hearing on 3/4/5 August 2011. The proposed renewal contains both a recommended Tentative Permit with a Time Schedule Order and a Tentative Permit Alternative with Time Schedule Order based upon the alternative.

The Tentative Permit contains effluent limitations requiring secondary level treatment with disinfection for discharge to Bloods Creek for the period of 1 January through 30 June. The Tentative Time Schedule Order provides an opportunity for the District to perform studies and complete treatment modifications, if required, to meet the permit requirements. The District has reviewed the Tentative Permit and concurs with the proposed secondary treatment limits for discharge to Bloods Creek. The District's specific comments regarding effluent limits, permit findings, toxicity and the time schedule order are contained in Attachment A.

The Tentative Permit Alternative requires Title 22 tertiary treatment requirements including filtration, coagulation and disinfection for discharges to Bloods Creek. The proposed time schedule order would require the District to comply with the tertiary standards within 5 years of adoption of the order. The District strongly disagrees with both the proposed tertiary treatment alternative and its time schedule order. The District's complete comments and analysis are included in Attachment B. The District's objection to the Tentative Permit Alternative can be briefly summarized as follows:

- The Water Quality Based Effluent Limits (WBELs) are based upon technology equivalent requirements to meet water quality standards. The Tentative Permit Alternative analysis incorrectly establishes Water Quality Objectives (WQOs) for Bloods Creek and does not properly follow the implementation plan contained in the Sacramento San Joaquin River Basin Plan (Basin Plan).

- The Tentative Permit Alternative disregards the recommendation of the California Department of Health (DPH) that secondary treatment with a 20:1 dilution ratio is protective of public health for discharge to Bloods Creek.

- The Tentative Permit Alternative does not consider factors required by California Water Code Section 13241 in setting WQOs in excess of those required in the Basin Plan.

The District appreciates the opportunity to comment on the proposed permit and time schedule order. The District looks forward to working with the Board to ensure that the District's discharge fully protects the beneficial uses of Bloods Creek.

If you have any questions or comments, please contact me.

Very truly yours,

Loren J. Harlow

Loren J. Harlow

LJH:mrd
Attachments

cc: Julio Guerra, District Manager, Bear Valley Water District
Gary Ghio, District Engineer

ATTACHMENT A

ATTACHMENT A

Bear Valley Water District Comments to the Tentative Permit and Associated Time Schedule Order

Pursuant to Bear Valley Water District's (District) transmittal letter, the District submits the following comments on the Tentative Permit for the renewal of NPDES NO. CA 00085146.

I. ***Tentative Permit Comments & Analysis***

1. *Effluent Limitations for Aluminum, Copper, Lead, and Ammonia*

a. Aluminum

The District requests that the Board re-consider the proposed effluent limits for aluminum based on the recent results of a Water Effect Ratio (WER) study completed by the City of Auburn. The Auburn study indicates that the use of the current USEPA aquatic life criteria for aluminum is overprotective in Central Valley foothill streams. Previous WER studies by the cities of Manteca, Yuba City and Modesto have confirmed that the use of the USEPA aluminum criteria is significantly overprotective for other types of surface waters in the Central Valley. The use of the aluminum WER results for the City of Auburn in the District's permit would be an appropriate and reasonable exercise of the Central Valley Water Board's best professional judgment in interpreting the Basin Plan's narrative objective for toxicity, as it applies to aluminum.

The Board is required when utilizing U.S. EPA's recommended ambient water quality criteria to consider other relevant information to determine their applicability (40 C.F.R., § 122.44(d) (1) (vi) (B)). U.S. EPA's recommended ambient water quality criteria for aluminum includes a recommended 4-day average (chronic) criterion of 87 μg/L, which is based on studies conducted on waters with low pH (6.5 to 6.8) and hardness (<10 mg/L as $CaCO_3$). As indicated in the Fact Sheet, hardness of Bloods Creek ranges between 10 mg/L and 91 mg/L (Tentative Order, p. F-34). For receiving waters that do not experience such conditions, U.S. EPA indicates that the aluminum criterion of 750 μg/L is protective of aquatic life. Accordingly, the Board should not consider the chronic criterion of 87 μg/L applicable and should use the criterion of 750 μg/L for the protection of aquatic life. Further justification for not applying the chronic criterion would be the extremely rare (when precipitation is at or near a 1-25 year return cycle) and intermittent (continuous daily discharge not required) nature of potential discharge.

b. Copper and Lead

The District requests revisions in the proposed effluent limits for copper and lead. The proposed effluent limits were derived on the assumptions described in Table

F-6 and F-8 of the permit fact sheet. The controlling fraction of effluent as illustrated in these tables in setting the proposed limits was 100% for each trace metal. Since the permit only allows discharge to Bloods Creek during periods of high creek flow where dilution exceeds 20:1, the appropriate effluent fraction to use in effluent limit derivation is 5%. The condition where the effluent fraction would theoretically be 100% will not be allowed under the proposed permit. Use of the 5% effluent fraction values would result in slightly higher effluent limits for copper and lead than are proposed in the Tentative Order. As previously addressed, the application of the chronic criterion is not appropriate in the case of the District due to the extremely rare (when precipitation is at or near a 1-25 year return cycle) and intermittent (continuous daily discharge not required) nature of potential discharge.

c. Ammonia

The ammonia effluent limits are based on an effluent limit value of pH 8.5 (the receiving water objective), since there is no reasonable potential (and therefore no effluent limit) for pH. The District's effluent based upon its water source has low alkalinity and pH values of 7 or lower.

The District requests the Board include a maximum effluent pH of 8.0 for the discharge to Bloods Creek In the derivation of ammonia effluent limits, a pH value of 8.0 will result in a higher limit.

2. *Numeric WET chronic toxicity trigger*

The District requests reconsideration of the proposed chronic toxicity trigger of 1 TUc. The permit prohibits discharge during periods when dilution in the Bloods Creek is less than 20:1. It is therefore reasonable and appropriate that the chronic toxicity trigger be set at 20 TUc, since toxicity below the trigger will always be protective of the aquatic life uses in the creek and will always result in compliance with the Basin Plan narrative toxicity objective.

The District may be significantly harmed by the use of the proposed 1 TUc toxicity value as a trigger for accelerated monitoring and, depending on the outcome of that testing, a Toxicity Reduction Evaluation. Both the accelerated testing and TRE efforts are costly and resource intensive, especially for a small community such as the District. As a result, this testing and special study should only be required where a violation of the narrative toxicity objective could reasonably be expected to occur. For the District, setting the trigger at 1/20th of the level at which the District's effluent could possibly cause toxicity in the receiving water is not reasonable.

3. *Compliance Schedules for Final Effluent Limits for Aluminum and Ammonia.*

The identified tasks with corresponding due dates contained in schedule are too specific and do not provide needed flexibility. To assure compliance with the Tentative Order,

the District requests that the compliance schedule provisions be revised by eliminating tasks v, vi, vii, and viii. This level of detail is appropriate for inclusion in the District's Method of Compliance Work plan/Schedule but should not be included in the Tentative Order.

4. *i. Domestic Supply and Agricultural Supply*. Page F-17

This finding is not reflective of actual domestic and agricultural supply beneficial uses on Bloods Creek.

Page F-17 of the Fact Sheet Section in Section IV.C.2.a.i., states:

"In addition, the State Water Board has issued water rights to existing water users along Bloods Creek and the North Fork Stanislaus River downstream of the discharge for domestic and irrigation uses". However, the water rights cited in the TWDR Fact Sheet Section IV.C.2.a.i. are upstream of the BVWD discharge point.[1]

Also at page F-17, Fact Sheet Section IV.C.2.a.i. incorrectly asserts: "In addition to existing uses, growth in the area downstream of the of the discharge is expected to continue, which presents a potential for increased domestic and agricultural uses of the water in Bloods Creek."

The probability that new water rights will be secured on Bloods Creek downstream of the BVWD discharge point is low because the Stanislaus River and its tributaries, including Bloods Creek, are listed on the most recent (November 19, 1998) State Water Resources Control Board Declaration of Fully Appropriated Streams. Furthermore, lands downstream of the discharge are U.S. Forest Service property managed as forest habitat and no new uses are anticipated. [2]

The nearest water right, F006737S, of 100 gallons per day held by the United States Forest Service on the North Fork of the Stanislaus River at Sand Flat Campground is approximately 4 miles downstream of the discharge point.[3]

Boy Scout Camp Wolfboro, located downstream of the Sand Flat Campground, uses well water. The next downstream rights available for consumptive use are over 10 miles downstream from the discharge point, and the only active one is approximately 21 miles

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[1] See attached letter date June 22, 2011 from Condor Earth Technologies by John H. Kramer, PhD, Certified Hydrogeologist No, 182. (Attachment A 1)

[2] Ibid.

[3] See attached memorandum from Julio Guerra, District Manager, dated 16 April 2011 analyzing existing water rights on Bloods Creek and letter date June 22, 2011 from CondorEarth Technologies by John H. Kramer, PhD, Certified Hydrogeologist No, 182.(Attachment A 2)

downstream. This take out point is for raw water subsequently treated at certified treatment plants operated by UPUD, the City of Angels Camp and CCWD[4].

The area downstream of the BVWD discharge is public forest lands for tens of miles with no potential for private development. This fact was documented in an EIR certified by Alpine County (SCH#2006012049) and accepted by the State Water Resources Control Board – Division of Water Rights in their Decision 1648 dated March 17, 2009. Water uses that could be measurably affected by BVWD discharges are fixed and will not increase in any significant manner.[5]

5. i. *Water Contact and Non-contact Recreation.* Page F-18

This finding is not reflective of actual water contact and non-contact beneficial uses on Bloods Creek during the permitted discharge period.

F-18, the Fact in Section IV.C.2.a.ii., the Tentative Permit states: "There is ready public access to Bloods Creek, exclusion of the public is unrealistic and contact recreation activities currently exist along the North Fork Stanislaus River (downstream of discharge point) and these uses are likely to increase as the population in the area grows."

The conclusion that Bloods Creek and the downstream recreational uses on the North Fork and main stem of the Stanislaus are readily accessible is generally not true at times of permitted discharge to Bloods Creek (1 January through 30 June). At these times, recreational use is dominated by cross country skiers who do not contact the flowing stream. Trails close when conditions are too wet. Nearest vehicle access to the Bloods Creek drainage downstream of the District's discharge is a campground operated by the Northern California Power Authority near the crossing of the Spicer Access Road approximately 2.5 miles downstream of the discharge point. This campground is closed to public access until June. Prior to that time accumulated snow typically restricts access to the stream. Furthermore it is very unlikely that early season recreational users in June would experience exposure to Bloods Creek due to high flows and cold water temperatures[6]

6. *iii. Groundwater Recharge. Page F-18*

The finding indicates it is reasonable to assume that Bloods Creek would contribute to groundwater recharge. The finding should be reflective of the permitted discharge period.

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[4] Ibid. 1.

[5] Ibid 1.

[6] Ibid, 1

While it is true at times that groundwater elevation is below the bottom of the creek, it should not be cited in a fact sheet to suggest that the District's discharges to the creek threaten groundwater quality. The District's discharges would occur only rarely during annual snowmelt prior to 1 July, when the ground is completely saturated. Any discharge would not have an opportunity to affect groundwater because Bloods Creek will be a gaining stream with positive flow into the creek from groundwater throughout its reach during the District discharge events.[7]

7. *i. Hardness-dependent CTR Metals. Page F-20*

This finding references Sacramento Superior Court Order (Case No. 34-2009-80000309). The District was not a party to this decision. This order is not citable and is only applicable to the parties involved in the litigation.

8. *(a) WQO. Page F-41*

The statement in the last paragraph of page F-41 : "Consequently, Order No R5-2005-0139 included Title 22-level limitations for discharges to the storage/polishing reservoir, including a 7-day median limitation for total coliform organisms of 2.2 MPN/100 mL" is not reflective of the Order No R5-2005-0139 (Order) findings.

The Order No R5-2005-0139 contains no findings reflecting concerns raised by the DPH on April 13, 2005. In finding 24 of the Order on pages 15-16 under the heading **Pathogens,** the Board found:

> "The DHS has recommended that secondary treatment with a minimum dilution of 20:1 provides an equivalent protection of human health as does tertiary treatment. Therefore, the Discharger is required to establish an in-stream flow measuring system so that the effluent discharge rate can be controlled to comply with a 30-day average effluent dilution ration of at least 20:1. The BOD and TSS effluent limitations for secondary treatment with a dilution of 20:1 are set at 30 mg/l as a monthly average and the total coliform organisms limitation is 23 MPN/100 ml as a 7-day median."

The only reference in the Order to tertiary treatment standards are for a discharge to unrestricted recreational impoundments.

40 CFR 122.45(a) prohibits effluent limitations on internal waste streams unless it is infeasible to apply effluent limitations at the outfall. It is more reasonable based upon the Order's findings and 40 CFR 122.45(a) that the storage reservoir was incorrectly assumed to be a recreational impoundment subject to Title 22 standards.

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[7] Ibid. 1.

9. *3. Satisfaction of Anti-Backsliding Requirements. Pages F50 & F51*

The statement in the last paragraph on page F-51: "*The requirements were established based on a 13 April 2005 recommendation from DPH*" as discussed in comment F. above, is not reflective of the Order.

II. ***Time Schedule Order Accompanying Tentative Permit***

1. *Copper and Lead Effluent Limitations*

a. The identified tasks with corresponding due dates contained in schedule are too specific and do not provide needed flexibility. To assure compliance with the Tentative Order, the District requests that the compliance schedule provisions be revised by eliminating tasks iv, v, vi, and vii. This level of detail is appropriate for inclusion in the District's Method of Compliance Work plan/Schedule but should not be included in the Tentative Order.

b. Task iv. and v. have different compliance dates for construction of treatment plant upgrades and/ or diffuser than contained in the compliance schedule for compliance with effluent limits for Aluminum and Ammonia. These dates need to be coordinated since they will not be separate projects. The dates of compliance if included should be the same as for Aluminum and Ammonia.

A-1

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Condor Project No. 6204

June 22, 2011

Directors
Bear Valley Water District
P.O. Box 5027
Bear Valley, CA 95223

RE: Comments on memoranda from General Manager Julio Guerra
Memorandum on Water Rights dated 16 April 2011
Memorandum on Recreation Survey dated 21 April 2011

Dear Sirs:

In accordance with the agreement between Condor Earth Technologies, Inc. (Condor) and the Bear Valley Water District (BVWD) dated June 13, 2011, Condor provides this review and analysis of memoranda prepared by the General Manager of BVWD concerning water rights and recreational uses in the vicinity of the BVWD discharge point. Condor understands the memoranda were prepared to support comments on Tentative Waste Discharge Requirements (TWDR) circulated by staff of the Regional Water Quality Control Board.

For this work Condor reviewed the following documents.

1. *Memorandum Water Rights 16 April 2011* from General Manager to Loren Harlow, Special Counsel, Stoel-Rives
2. *Memorandum Recreational Survey 21 April 2011* from General Manager to Loren Harlow, Special Counsel, Stoel-Rives, without attachments.
3. Letter from Loren Harlow to Dr. James D. Marshall, P.E. dated April 29, 2011.
4. *Notice of Public Hearing concerning Renewal of Waste Discharge Requirements (WDR) National Pollutant Discharge Elimination System (NPDES) Permit No. CA0085146 and Time Schedule Order for Bear Valley Water District Wastewater Treatment Plant*, part specifying comment submittal by June 24.
5. *Tentative Time Schedule Order for Bear Valley Water District Wastewater Treatment Plant, and Tentative TSO Alternative*, Findings 1-30 only.
6. *Tentative Waste Discharge Requirements for the Bear Valley Water District Order No. R5-2011-XXXX NPDES No. CA0085146*, Fact Sheet Section IV.A.5. and Sections IV.C.2.a.i, ii, and iii, only.
7. *Declaration of Fully Appropriated Stream Systems,* November 19, 1998. California State Water Resources Control Board

Project Understanding and Qualifications

Condor understands the District desires a third party to verify factual information provided by the General Manager to support comments to be submitted by June 24, 2011. Condor is

qualified for this work. Condor has appropriate California Licensed Professionals familiar with water rights and recreation in the Bear Valley area. Specifically, Condor prepared an Environmental Impact Report for the County of Alpine and Lake Alpine Water Company Petition for Partial Assignment of State-Filed Application 5648, Petitions to Change State-Filed Application, and Application 31523 related to water rights within the BVWD service area. Condor prepared accurate and objective analysis certified by Alpine County in compliance with the California Environmental Quality Act. Analysis included cumulative impacts on downstream municipal, recreational and agricultural users. Condor provided expert testimony at a subsequent water rights public hearing before the State Water Resources Control Board.

Memorandum Water Rights dated 16 April 2011

Condor reviewed Mr. Guerra's research on water rights downstream of the BVWD outfall. His supporting documents include maps from the California State Water Resources Control Board's eWRIMS (Electronic Water Rights Information Management System), and copies of documents pertaining to the water rights listed in the Table "Water Rights Summary Stanislaus River" accompanying his memorandum. Condor confirmed the locations and distances cited in his memorandum and concurs with his other findings.

The water rights cited in the TWDR Fact Sheet Section IV.C.2.a.i. is upstream of the BVWD discharge point. The probability that new water rights will be secured on Bloods Creek downstream of the BVWD discharge point is low because the Stanislaus River and its tributaries, including Bloods Creek, are listed on the most recent State Water Resources Control Board Declaration of Fully Appropriated Streams, dated November 19, 1998. Furthermore, lands downsteam of the discharge are U.S. Forest Service property managed as forest habitat and no new uses are anticipated. Fact Sheet Section IV.C.2.a.i. asserts that "In addition to existing uses, growth in the area downstream of the discharge is expected to continue, which presents a potential for increased domestic and agricultural uses of the water in Bloods Creek." The area downstream of the BVWD discharge is public forest lands for tens of miles with no potential for private development. This fact was documented in an EIR certified by Alpine County (SCH#2006012049) and accepted by the State Water Resources Control Board – Division of Water Rights in their Decision 1648 dated March 17, 2009. We conclude that water uses that could be measurably affected by BVWD discharges are fixed and will not increase in any significant manner.

The nearest existing legal water right is held by the U.S. Forest Service for 100 gallons a day on the North Fork of the Stanislaus River at Sand Flat Campground, approximately 4 miles downstream of the BVWD discharge point. This campground is typically not used during high runoff in May and June when BVWD might need to discharge. The nearby Boy Scout Camp Wolfboro uses well water. The next downstream rights available for consumptive use are over 10 miles downstream from the BVWD discharge point, and the only active one is approximately 21 miles downstream. This take out point is for raw water subsequently treated at certified treatment plants operated by Union Public Utility District (UPUD), the City of Angels Camp, and Calaveras County Water District (CCWD). The potential for BVWD discharges to degrade these waters is insignificant.

As a general observation, the hydrology of the area at times when BVWD discharges would occur is characterized by high flows dominated by snowmelt runoff with frothy whitewater for tens of miles, providing aeration and dilution many times the NPDES 20:1 requirement.

Memorandum Recreation Survey 21 April 2011

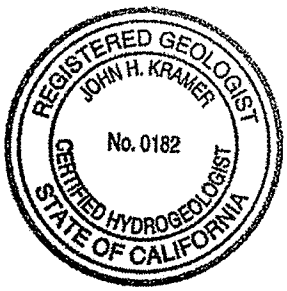
Condor reviewed Mr. Guerra's memorandum and back-up data, including photographs of private property postings and road closure and parking restrictions. Mr. Guerra's memorandum is factually correct and describes restricted public access on private land through the cow pasture and meadow downstream of the discharge point to the U.S. Forest Service boundary. These areas are identified in TWDR, Section IV.C.2.a.ii. as having ready public access. The contention that Bloods Creek and the downstream recreational uses on the North Fork and main stem of the Stanislaus are readily accessible is generally not true at times of permitted discharge to Bloods Creek (December 31 through July 1). At these times, recreational use is dominated by cross country skiers who do not contact the flowing stream. Trails close when conditions are too wet. Nearest vehicle access to the Bloods Creek drainage downstream of the BVWD discharge is at a campground operated by the Northern California Power Authority near the crossing of the Spicer Access Road, approximately 2.5 miles downstream of the discharge point. This campground is closed to public access until June. Prior to that time accumulated snow typically restricts access to the stream. Furthermore, it is very unlikely that early season recreational users in June would experience exposure to Bloods Creek due to high flows and cold water temperatures.

Comments on Groundwater Recharge

In reviewing the TWDR related to water rights and uses downstream of the BVWD discharge location, Condor noted that the Fact Sheet Section IV.C.2.a.iii indicated it is reasonable to assume that Bloods Creek would contribute to groundwater recharge. While this conjecture is true at times when groundwater elevation is below the bottom of the creek, it should not be cited in a fact sheet to suggest that BVWD discharges to the creek threaten groundwater quality. BVWD discharges would occur only rarely during annual snowmelt prior to July 1, when the ground is completely saturated. Any BVWD discharges would not have an opportunity to affect groundwater because Bloods Creek will be a gaining stream with positive flow into the creek from groundwater throughout its reach during BVWD discharge events.

Respectfully submitted,

CONDOR EARTH TECHNOLOGIES, INC



John H. Kramer, PhD
California Certified Hydrogeologist No. 182

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CONDOR

ATTACHMENT B

B-1

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Bear Valley Water District
Memorandum
Water Rights
16 April 2011

From: General Manager
To: Loren Harlow, Special Counsel, Stoel-Rives
Subject: Water Rights Review
CC: Directors
Gary Ghio, District Engineer

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Loren,

Per your request I have researched the matter of potential water users downstream of our facilities on Bloods Creek, the North Fork of the Stanislaus River, and the main stem of the Stanislaus River.

In the process I have reviewed the 14 December 1929 San Joaquin County Superior Court decision on Stanislaus River water rights, the September 1997 SWRCB Order, 97-05, issued to CCWD to update water rights in the Stanislaus watershed, SWRCB Water Right Order 98-08 of 19 November 1998 which updated the Declaration of Fully Appropriated Stream Systems, the SWRCB public record on individual Stanislaus watershed water rights, and SWRCB Decision 1648 which modified water rights held by the Lake Alpine Water Company.

To summarize my findings

1. There are no existing water rights or any evidence of users on Bloods Creek downstream of our discharge point;
2. The confluence of Bloods Creek and the North Fork of the Stanislaus River is approximately 3.212 miles downstream of our discharge point;
3. There is a USFS water right, F006737S, to 100 gallons per day from the North Fork of the Stanislaus at a point approximately 0.8 miles downstream of the Bloods Creek confluence, or about 4 miles from our discharge point;
4. CCWD has a water right, A012912, on the North Fork of the Stanislaus approximately 11.442 miles from our discharge point, but, according to Bill Perley, Operations Director, there are no plans to exercise this right;
5. USFS has another water right, F006735S, to 14,410 gallons per day, approximately 16.4 miles downstream of our discharge point. This one is listed as source unspecified, but may be from the North Fork of the Stanislaus;

6. CCWD has a water right, A012912A_02, on the North Fork of the Stanislaus approximately 18 miles from our discharge point, but according to Bill Perley, Operations Director, there are no plans to exercise this right;
7. At approximately 21.7 miles from our discharge point is the McKay's Point Diversion Dam on the North Fork of the Stanislaus, one of two diversion points to the Collierville Tunnel (the other is from Beaver Creek). CCWD has water right A012912A_01, this one is for 3 CFS and is conjunctively used with water right A019148 that authorizes CCWD to divert 340 CFS from Beaver Creek to the dam. This basically squares with Bill Perley's verbal communication to me that the North Fork is only relied on 3 days of the year for their water supply. An additional, non-consumptive water right pertains to this location, S016205, held by the Northern California Power Authority.

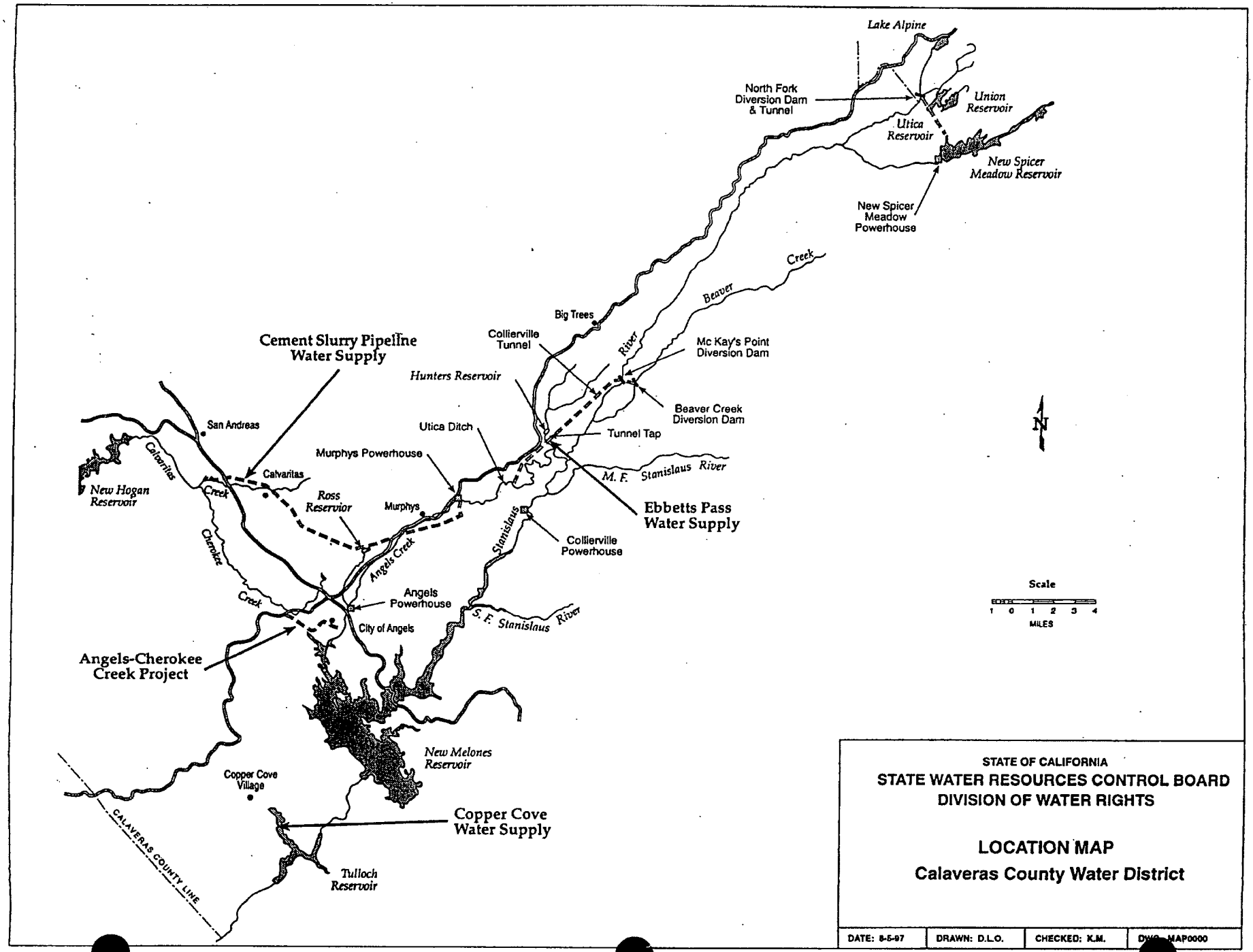
The next downstream water rights identified were on the main stem of the Stanislaus River at New Melones Reservoir. Upstream of the Bloods Creek confluence with the North Fork of the Stanislaus there is hydroelectric power generation at Utica, Union, and Spicer Reservoirs, consequently there are additional water rights held by Northern California Power Authority, Utica Power Authority, and CCWD in conjunction with that activity.

In closing, no water rights holders were identified on Bloods Creek. No agricultural withdrawals were identified on the Stanislaus River above New Melones Reservoir; the Oakdale Irrigation District and Stockton East Water District withdraw water from New Melones Reservoir or even further downstream.

Additionally, in the course of this investigation, we have been assured by Bill Perley, Operations Manager for CCWD that they support our efforts and will not challenge our NPDES renewal if tertiary standards are not implemented.

Julio S. Guerra
General Manager

Attachment



STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD
DIVISION OF WATER RIGHTS

LOCATION MAP
Calaveras County Water District

DATE: 8-5-97	DRAWN: D.L.O.	CHECKED: K.M.	DWG: MAP0000

Figure 1

WATER RIGHTS SUMMARY
STANISLAUS RIVER

POD_ID	APPL_ID	APPL_POD	SOURCE_NAME	COUNTY	QUAD_MAP_NAME	DIRECT_DIV_AMOUNT	DIVERSION_STORAGE_AMOUNT	DIVERSION_AC_FT	P_PLACE_ID	POD_STATUS	FACE_VALUE_AMOUNT	DIVERSION_TYPE	WR_STATUS	STORAGE_TYPE	POD_UNIT	LAST_NAME
32259	F006737S	F006737S_01	NORTH FORK STANISLAUS RIVER	Calaveras	TAMARACK	100	0	0	692593	Active	0	Direct Diversion	Claimed	Diversion point	Gallons per Day	USFS
25701	A012912	A012912_01	NORTH FORK STANISLAUS RIVER	Tuolumne	BOARDS CROSSING	7	0	0	682304	Active	3373.9	Storage	Permitted	Diversion point	Cubic Feet per Second	CCWD
9352	F006735S	F006735S_01	UNSP	Tuolumne	BOARDS CROSSING	14400	0	0	665841	Active	0	Storage	Claimed	Diversion point	Gallons per Day	USFS
34771	A012912A	A012912A_02	NORTH FORK STANISLAUS RIVER	Tuolumne	DORINGTON	3	0	0	691374	Active	1446	Storage	Permitted	Diversion point	Cubic Feet per Second	CCWD
34772	A012912A	A012912A_01	NORTH FORK STANISLAUS RIVER	Tuolumne	STANISLAUS	3	0	0	691375	Active	1446	Storage	Permitted	Diversion point	Cubic Feet per Second	CCWD
17700	A001081	A001081_01	STANISLAUS RIVER	Calaveras	MELONES DAM	0	96195	0	674303	Active	96195	Storage	Licensed	Diversion point	Gallons per Day	OID
31721	A002460	A002460_01	STANISLAUS RIVER	Calaveras	MELONES DAM	1500	132450	0	692055	Revoked	0	Direct Diversion	Revoked	Diversion point	Cubic Feet per Second	
6456	A002524	A002524_01	STANISLAUS RIVER	Calaveras	KNIGHTS FERRY	0	36000	0	661232	Active	36000	Storage	Licensed	Diversion point	Gallons per Day	SSJID
12197	A003091	A003091_01	STANISLAUS RIVER	Calaveras	MELONES DAM	0	10754	0	671465	Active	10754	Direct Diversion	Licensed	Diversion point	Gallons per Day	OID
43516	A005648	A005648_01	STANISLAUS RIVER	Calaveras		0	0	0	701942	Active	0	Storage	State Filing	Diversion point	Gallons per Day	SWRCB
34427	A010872	A010872_01	STANISLAUS RIVER	Tuolumne	MELONES DAM	0	80000	0	691030	Active	80000	Direct Diversion	Licensed	Diversion point	Gallons per Day	OID
38020	A010978	A010978_01	STANISLAUS RIVER	Calaveras	MELONES DAM	0	25000	0	693024	Active	25000	Direct Diversion	Licensed	Diversion point	Gallons per Day	OID
34899	A013310	A013310_01	STANISLAUS RIVER	Tuolumne	MELONES DAM	1500	80000	0	694167	Active	1165966.3	Storage	Licensed	Diversion point	Cubic Feet per Second	OID
22891	A014858	A014858_01	STANISLAUS RIVER	Calaveras	MELONES DAM	8800	0	0	677895	Active	0	Direct Diversion	State Filing	Diversion point	Cubic Feet per Second	SWRCB
25944	A014858A	A014858A_01	STANISLAUS RIVER	Calaveras	MELONES DAM	0	980000	0	682547	Active	980000	Storage	Permitted	Diversion point	Gallons per Day	USBR
11665	A014858B	A014858B_01	STANISLAUS RIVER	Calaveras	MELONES DAM	2250	0	1000000	670933	Active	1000000	Storage	Permitted	Diversion point	Cubic Feet per Second	USBR
11664	A014858B	A014858B_02	STANISLAUS RIVER	Calaveras	KNIGHTS FERRY	2250	0	1000000	670932	Active	1000000	Storage	Permitted	Diversion point	Cubic Feet per Second	USBR
11667	A014858B	A014858B_03	STANISLAUS RIVER	Calaveras	MELONES DAM	2250	0	1000000	670935	Active	1000000	Storage	Permitted	Diversion point	Cubic Feet per Second	USBR
28621	A014859	A014859_01	STANISLAUS RIVER	Calaveras	MELONES DAM	6000	980000	0	687889	Active	5323865	Storage	Permitted	Diversion point	Cubic Feet per Second	USBR
28978	A019303	A019303_01	STANISLAUS RIVER	Calaveras	MELONES DAM	0	1420000	0	688246	Active	1420000	Storage	Permitted	Diversion point	Gallons per Day	USBR
12002	A019304	A019304_01	STANISLAUS RIVER	Calaveras	MELONES DAM	0	1420000	0	671270	Active	1420000	Storage	Permitted	Diversion point	Gallons per Day	USBR
4120	A026791	A026791_01	STANISLAUS RIVER	Calaveras	KNIGHTS FERRY	1800	0	0	663464	Active	1303159.5	Direct Diversion	Permitted	Diversion point	Cubic Feet per Second	OID
26981	A027319	A027319_01	STANISLAUS RIVER	Calaveras	MELONES DAM	4000	0	0	686249	Active	2895910	Direct Diversion	Permitted	Diversion point	Cubic Feet per Second	USBR
21620	A030603	A030603_01	STANISLAUS RIVER	Calaveras	MELONES DAM	750	155000	252000	680888	Canceled	407000	Storage	Cancelled	Diversion point	Cubic Feet per Second	SEWD
21619	A030603	A030603_02	STANISLAUS RIVER	Calaveras	KNIGHTS FERRY	750	155000	252000	680887	Canceled	407000	Storage	Cancelled	Diversion point	Cubic Feet per Second	SEWD

WATER RIGHTS SUMMARY
STANISLAUS RIVER

27993	A030603A	A030603A_01	STANISLAUS RIVER	Calaveras	NEW MELONES DAM	750	60000	0	687261	Active	111900	Storage	Pending	Both diversion and rediversion point	Cubic Feet per Second	SEWD
27992	A030603A	A030603A_02	STANISLAUS RIVER	Calaveras	KNIGHTS FERRY	750	60000	51900	687260	Active	111900	Storage	Pending	Both diversion and rediversion point	Cubic Feet per Second	SEWD
39754	A030603B	A030603B_01	STANISLAUS RIVER	Tuolumne	NEW MELONES DAM	750	251000	156000	700088	Active	407000	Storage	Pending	Both diversion and rediversion point	Cubic Feet per Second	SEWD
39753	A030603B	A030603B_02	STANISLAUS RIVER	Calaveras	KNIGHTS FERRY	750	155000	252000	700087	Active	407000	Storage	Pending	Both diversion and rediversion point	Cubic Feet per Second	SEWD
4622	S004683	S004683_01	STANISLAUS RIVER	Calaveras	KNIGHTS FERRY	1816	500	0	663966	Active	0	Direct Diversion	Claimed	Diversion point	Cubic Feet per Second	OID
27869	T030724	T030724_01	STANISLAUS RIVER	Calaveras		215	0	19617	687137	Revoked	19617	Storage	Revoked	Diversion point	Cubic Feet per Second	
39000	X000254	X000254_01	STANISLAUS RIVER	Tuolumne		0	0	0	694004	Canceled	0	Direct Diversion	Cancelled	Diversion point	Gallons per Day	
40719	A013093	A013093_01	NORTH FORK STANISLAUS RIVER	Alpine	TAMARACK	0	350	0	697322	Active	50050	Direct Diversion	Permitted	Diversion point	Gallons per Day	CCWD
6062	A018727	A018727_01	NORTH FORK STANISLAUS RIVER	Tuolumne	STANISLAUS	640	0	0	660838	Active	506809.3	Direct Diversion	Permitted	Diversion point	Cubic Feet per Second	CCWD
11917	A018728	A018728_01	NORTH FORK STANISLAUS RIVER	Tuolumne	STANISLAUS	590	0	0	671185	Canceled	0	Direct Diversion	Cancelled	Diversion point	Cubic Feet per Second	
40563	A019148	A019148_01	NORTH FORK STANISLAUS RIVER	Alpine	TAMARACK	600	52000	0	700897	Active	732538.9	Storage	Permitted	Diversion point	Cubic Feet per Second	CCWD
34649	A019149	A019149_01	NORTH FORK STANISLAUS RIVER	Alpine	TAMARACK	0	37350	0	691252	Active	50050	Storage	Permitted	and rediversion point	Gallons per Day	CCWD
32259	F006737S	F006737S_01	NORTH FORK STANISLAUS RIVER	Calaveras	TAMARACK	100	0	0	692593	Active	0	Direct Diversion	Claimed	Diversion point	Gallons per Day	USFS
19752	S000998	S000998_01	NORTH FORK STANISLAUS RIVER	Calaveras	STANISLAUS	90	0	0	679020	Active	0	Direct Diversion	Claimed	Diversion point	Cubic Feet per Second	UTICA POWER AUTHORITY
2660	S001003	S001003_01	NORTH FORK STANISLAUS RIVER	Alpine	SPICER MEADOW RES	0	3130	0	662004	Active	0	Direct Diversion	Claimed	Diversion point	Gallons per Day	NCPA
42902	S001004	S001004_01	NORTH FORK STANISLAUS RIVER	Alpine	TAMARACK	0	2334	0	701328	Active	0	Direct Diversion	Claimed	Diversion point	Gallons per Day	NCPA
51419	S016205	S016205_1	NF STANISLAUS RIVER	Calaveras	STANISLAUS	0	0	0	750149	Active	0	Direct Diversion	Claimed	and rediversion point	Acre-feet per Year	NCPA
18765	E000039	E000039_01	BEAVER, HIGHLAND CREEKS & NF STANISLAUS RIVER	Tuolumne	SPICER MEADOW RES	0	0	0	675368	Active	0	Storage	Certified	Diversion point	Gallons per Day	CCWD
50213	A031770	A031770_1		Tuolumne	NEW MELONES DAM	700	0	0	739282	Active	506784	Direct Diversion	Pending	and rediversion point	Acre-feet per Year	OID

B-2

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Bear Valley Water District
Memorandum
Recreation Survey
21 April 2011

From: General Manager
To: Loren Harlow, Special Counsel, Stoel-Rives
Subject: Recreation Survey
CC: Directors
Gary Ghio, District Engineer

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Loren,

Per your request I have researched the matter of potential recreation downstream of our facilities on Bloods Creek.

To answer your questions, there is no general public access through the private property that Bloods Creek flows through directly downstream of the discharge point. The meadows referred to in the draft permit are on the private property adjacent to our facilities and public access is prohibited. Then there is National Forest Land that begins approximately 1 mile downstream of our facilities. There is public access and camping in the vicinity of where the Spicer Road is traversed by the creek, about 2.4 miles downstream, for about a 0.8 mile reach to the Bloods Creek confluence with the North Fork of the Stanislaus. The Wolfeboro Boy Scout Camp is downstream from this point another 0.8 miles.

The overriding considerations in this regard are that, during our discharge season, which will of necessity occur following very heavy winters, with streams at maximum dilution, and snow still melting, there will be no camping, and, access on Spicer Road is restricted to Snow Park permit holders until 1 June in any case.

Julio S. Guerra
General Manager

B-3

BEAR VALLEY
WATER DISTRICT
P.O. Box 5027
Bear Valley, CA 95223
(209) 753-2112

BOARD OF DIRECTORS:
JIM D. BISSELL
PHILL A. COFFMAN
JOHN R. DRALLA
BARBARA J. GOODRICH
JERRY J. NELSON

February 1, 2011

Jim Marshall
Regional Water Quality Control Board
11020 Sun Center Drive, #200
Rancho Cordova, CA 95670-6114

RE Bear Valley Water District
NPDES Application

Jim, as discussed during our telephone conversation last week, the District's current Waste Discharge Requirements No. 05-10-2008 impose a maximum annual average Wastewater Treatment Plant (WWTP) influent flow of 100,000 GPD (36.5 MG/YR). Based upon this limitation I have revised the District's water balance projections to provide some guidance on the likelihood of required Bloods Creek discharge under the various precipitation water year assumptions. To this end, please find the following attached items:

1. Summary of Wastewater Treatment Plant Influent Flows 2001 through 2010.
2. Water Year 2010 Average Year Precipitation Water Balance Projection.
3. Water Year 2010 1-in-5 Year Precipitation Water Balance Projection.
4. Water Year 2010 1-in-10 Year Precipitation Water Balance Projection.
5. Water Year 2010 1-in-25 Year Precipitation Water Balance Projection.
6. Water Year 2010 1-in-50 Year Precipitation Water Balance Projection.
7. Water Year 2010 1-in-100 Year Precipitation Water Balance Projection.

The attached Water Balance Projections were developed by the District's previous Engineer, ECO:LOGIC, in support of the District's original NPDES permit. The assumptions on precipitation levels, percolation, evaporation, spray disposal levels, etc. contained in the Projections are consistent with the previous Projections approved by the Regional Board as part of the NPDES permit application process.

In order to determine a monthly distribution of the 100,000 GPD average daily influent flows, actual WWTP influent flows for 2001 through 2010 were analyzed to determine the average monthly percentage of the annual flow. These percentages were then utilized to develop the distribution of anticipated influent flows based upon the 100,000 GPD yearly average limit. This information is contained in Item 1 attached. In addition it should be noted the 10 year average yearly flow from 2001

to 2010 was approximately 26.4 MG per year with a peak of approximately 31.9 MG in 2005 which was an approximate 1-in-10 year precipitation event for both total rainfall and snow water content. It should also be noted the year 2006 was a 1-in-100 year total precipitation event although the snow water content was a 1-in-5 year precipitation event. The following is a summary of predicted required discharges to Bloods Creek based upon each water year precipitation assumption:

Water Year Precipitation	Discharge to Bloods Creek (MG)
Average Year	0
1-in-5 Year	0
1-in-10 Year	0
1-in-25 Year	9
1-in-50 Year	18
1-in-100 Year	54

As is evident from the above summary, the District does not anticipate discharges to Bloods Creek with the current WDR limitation of 100,000 GPD yearly average WWTP influent flow until the water precipitation year approaches or exceeds the 1-in-25 year precipitation level. This has also been verified during the past ten years during which time no discharges were required to Bloods Creek.

Due to the unique environmental setting of the Bear Valley Water District's facilities, the majority of treated effluent in the District's polishing pond consists of water from precipitation or snow influx directly in the treatment/polishing ponds. Based upon the 1-in-25 year, 1-in-50 year, and 1-in 100 year Projections, the amount of actual wastewater contained in any potential discharge is projected to be approximately 30%. Combining this already diluted wastewater with the proposed NPDES requirement of 20:1 dilution for any discharge to Bloods Creek would result in actual dilution levels of approximately 69:1 for any potential discharge.

Due to the current state of the economy, significant growth within the Bear Valley Water District is not anticipated during the next five years. As is evident from the summary of flows from 2001 through 2010, the District's current WWTP influent flows are considerably less than the permitted maximum per the District's WDRs. Any anticipated growth during this time period would not result in the District exceeding its WDR limitations.

As is evident from the accompanying analysis, discharge to Bloods Creek is not anticipated except in events exceeding the 1-in-25 year precipitation year and at dilution levels that far exceed the proposed NPDES requirement of 20:1. For the Department of Public Health to recommend a requirement that the District construct a tertiary treatment plant in order to discharge to Bloods Creek is extremely unreasonable given the anticipated need for this discharge being only in water year events of greater than in 1-in-25 years and projected high dilution levels. The imposition of this requirement would place an undue financial burden on the rate payers of the District without any significant benefit to the District users or any potential downstream water users due to the anticipated, infrequent use of the Bloods Creek discharge itself.

Should you require any additional information, please contact me at your convenience.

Gary S. Ghio, District Engineer

REGISTERED PROFESSIONAL ENGINEER
G. S. GHIO
No. 34693
Exp. 9-30-11
CIVIL
STATE OF CALIFORNIA

Attachments
Cc Julio Guerra, District Manager
BVWD Board of Directors

#2322/nlm
Marshall_Letter_2-1-11

BEAR VALLEY WATER DISTRICT
WWTP INFLUENT FLOWS 2001 THRU 2010
1/26/2011

	2010 (MG)	2009 (MG)	2008 (MG)	2007 (MG)	2006 (MG)	2005 (MG)	2004 (MG)	2003 (MG)	2002 (MG)	2001 (MG)	AVG (MG)	AVG. DAILY FLOW (GAL/DAY)	MONTHLY PERCENTAGE OF ANNUAL FLOW	100,000 GPD YEAR AVG. MONTHLY FLOW DISTRIBUTION (GAL/MONTH)	100,000 GPD YEAR AVG. DAILY FLOW DISTRIBUTION (GAL/DAY)
DEC	2.395	1.166	1.144	1.088	1.300	2.404	2.658	1.375	1.629	1.831	1.699	54809	6.43%	2346835	75704
NOV	0.875	0.480	0.650	0.522	0.860	0.909	1.073	0.858	1.179	0.852	0.826	27526	3.12%	1140622	38021
OCT	0.923	0.677	0.565	0.700	0.833	0.832	0.870	0.953	0.984	0.834	0.817	26362	3.09%	1128791	36413
SEPT	0.864	0.815	0.766	1.228	0.814	1.035	1.003	1.178	1.269	1.035	1.001	33355	3.79%	1382160	46072
AUG	1.554	1.379	1.500	1.517	1.085	1.708	1.618	1.938	1.941	2.108	1.635	52732	6.19%	2257934	72837
JULY	2.365	1.618	1.472	1.593	1.143	2.283	1.568	2.125	1.989	2.001	1.816	58570	6.87%	2507875	80899
JUNE	4.845	1.963	2.071	1.792	2.079	3.900	1.755	2.460	2.280	1.746	2.489	82969	9.42%	3438008	114600
MAY	5.584	4.597	4.391	3.328	5.078	6.945	2.958	4.280	4.539	3.816	4.551	146822	17.22%	6286757	202799
APRIL	3.599	4.461	4.815	3.837	3.551	4.015	4.420	3.250	5.549	4.113	4.161	138702	15.75%	5747452	191582
MARCH	1.806	3.105	1.972	3.214	3.071	3.275	3.975	3.597	3.109	2.744	2.987	96349	11.30%	4125557	133082
FEB	1.369	1.732	1.321	1.528	3.551	2.448	1.842	3.120	2.862	1.765	2.154	76918	8.15%	2974814	106243
JAN	1.368	1.594	4.815	1.315	3.086	2.135	1.752	2.658	2.366	1.812	2.290	73874	8.67%	3163195	102039
TOTAL:	27.546	23.587	25.483	21.662	26.450	31.887	25.492	27.792	29.696	24.657	26.425		100.00%	36500000	

10 YEAR AVERAGE YEARLY FLOW: 26.425 MG

BEAR VALLEY WATER DISTRICT WASTEWATER TREATMENT AND DISPOSAL SYSTEM 2/1/2011 11:23

Water Year 2010 Average Year Precipitation Water Balance Projection Assuming 100,000 GPD Yearly Average WWTP Inflow Per BVWD existing WDR #5-10-2008

INPUT DATA

TREATMENT POND CHARACTERISTICS		STORAGE RESERVOIR		IRRIGATION AREA CHARACTERISTICS		CLIMATOLOGICAL FACTORS	
GROSS AREA (ac)	3.2	GROSS AREA (ac)	21.3	DISTRICT DISPOSAL LAND (AC)	80	PRECIP/AVG PRECIP RATIO	1.00
WATER SURFACE AREA (ac)	2.9	MAX. WATER SURFACE (ac)	14.7	SOIL WATER DEFICIT BEFORE IRRIGATION (IN)	n/a	OCT-APR EVAP/AVG EVAP RATIO	1.00
				FRACT OF LAND IRRIGATED	n/a	MAY-SEP EVAP/AVG EVAP RATIO	1.00
		STORAGE CAPACITY (MG)	106	IRRIGATION EFFICIENCY (DECIMAL FRACT)	n/a	PAN COEFFICIENT	0.80
FRACTION OF ESTIMATED PERC RATE	0.1	FRAC EST. PERC	1.0	FRACTION OF EST. PERC RATE	n/a	LAND PRECIP COLLECTED (FRAC)	0.9

PARAMETER / MONTH	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DAYS IN MONTH	31	30	31	31	28	31	30	31	30	31	31	30	365
AVG PAN EVAP (IN)	3.05	0.89	0.61	0.76	0.83	2.14	3.69	5.34	6.64	7.63	6.87	5.17	43.62
AVG PRECIP (IN)	2.3	5.3	7.5	9.3	7.5	6.9	3.8	1.8	0.6	0.1	0.2	0.7	46.0
ESTD. SNOW ACCUM (IN Water)	2	5	12	22	26	32	33	27	9	0	0	0	
ESTIMATED MAX PERCOLATION (IN)(a)	8.6	18.1	11.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	78.5	125.0	241.4
PROJECTED INFLUENT FLOW (Avg. GAL/D)	36,413	38,021	75704	102,039	106,243	133,082	191,582	202,799	114,600	80,899	72,837	46,072	

CALCULATIONS

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
WASTEWATER VOLUME (gal)	1,128,791	1,140,622	2,346,835	3,163,195	2,974,814	4,125,557	5,747,452	6,286,757	3,438,008	2,507,875	2,257,934	1,382,160	36,500,000
EVAPORATION (IN)	2.4	0.7	0.5	0.6	0.7	1.7	3.0	4.3	5.3	6.1	5.5	4.1	34.9
PRECIPITATION (IN)	2.3	5.3	7.5	9.3	7.5	6.9	3.8	1.8	0.6	0.1	0.2	0.7	46.0
TREATMENT PONDS													
PERCOLATION (IN)	0.9	1.8	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.9	12.5	24.1
PERC VOLUME (gal)	67,440	142,484	88,407	0	0	0	0	0	0	0	618,234	984,343	1,900,908
EVAP. VOLUME (gal)	188,994	55,123	39,374	47,248	55,123	133,871	236,242	338,614	417,361	480,359	433,111	322,864	2,748,285
PRECIP. VOLUME (gal)	197,982	456,219	645,593	800,536	645,593	593,946	327,101	154,942	51,647	8,608	17,216	60,255	3,959,638
TREATMENT DISPOSAL(GAIN)/ (gal)	58,452	(258,612)	(517,812)	(753,287)	(590,470)	(460,075)	(90,858)	183,672	365,714	471,751	1,034,129	1,246,952	689,556
STORAGE RESERVOIR													
PERCOLATION (IN)	8.56	18.09	11.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	78.51	125.00	241.39
PERC VOLUME (gal)	360,454	761,555	472,522	0	0	0	0	0	0	0	26,008,468	5,261,143	32,864,142
W.S. AREA (ac)(b)	1.55	1.55	1.55	1.55	1.55	2.47	6.02	10.36	12.41	12.84	12.2	1.55	
EVAP. VOLUME (gal)	101,014	29,462	21,045	25,253	29,462	114,021	490,406	1,209,669	1,786,019	2,126,832	1,822,053	172,565	7,927,802
PRECIP. VOLUME (gal)	1,206,940	2,781,210	3,935,674	4,880,236	3,935,674	3,620,820	1,994,075	944,562	314,854	52,476	104,951	367,330	24,138,803
MONTHLY AVAIL. SNOWMELT (IN)(c)	0	0	0	0	0	0	6	18	9	0	0	0	33
ESTIMATED SNOW CONTR. (%)(d)	0%	0%	0%	0%	0%	0%	100%	41%	41%	25%	0%	0%	
ESTIMATED AREA OF INFLUENCE (ac)	50	50	50	50	50	50	50	50	50	50	50	50	
ESTIMATED INFLUX TO STORAGE (gal)(e)	0	0	0	0	0	0	8,146,286	9,906,307	5,009,966	0	0	0	23,062,559
RESERVOIR DISPOSAL(GAIN) (gal)	(745,473)	(1,990,193)	(3,442,108)	(4,854,983)	(3,906,212)	(3,506,800)	(9,649,954)	(9,641,200)	(3,538,801)	2,074,357	27,725,570	5,066,379	(6,409,417)
IRRIGATION													
IRRIGATION DISPOSAL (gal)(f)	0	0	0	0	0	0	0	0	0	9,015,000	23,748,000	25,422,000	58,185,000
STORAGE													
BEGINNING STORAGE (gal)	0	1,815,812	5,205,238	11,511,993	20,283,458	27,754,954	35,847,386	51,335,650	67,079,935	73,691,031	64,637,797	14,388,032	
CALCULATED STORAGE GAIN (gal)	1,815,812	3,389,426	6,306,755	8,771,465	7,471,496	8,092,431	15,488,265	15,744,285	6,611,095	-9,053,233	-50,249,765	-30,353,170	
ESTIMATED FINAL STORAGE (gal)	1,815,812	5,205,238	11,511,993	20,283,458	27,754,954	35,847,386	51,335,650	67,079,935	73,691,031	64,637,797	14,388,032	0	
AMOUNT DISCHARGED TO BLOODS CREEK (gal)	0	0	0	0	0	0	0	0	0	0	0	0	0
PREDICTED FINAL STORAGE (GAL)	1,815,812	5,205,238	11,511,993	20,283,458	27,754,954	35,847,386	51,335,650	67,079,935	73,691,031	64,637,797	14,388,032	0	

MAXIMUM STORAGE (MG) 74
AVAILABLE STORAGE (MG) 106

SUMMARY

ANNUAL INFLOW (MG)	
WASTEWATER	36.5
PRECIPITATION	28.1
SNOW INFLUX (MG)	23.1
TOTAL	87.7

ANNUAL OUTFLOW POTENTIAL (MG)	
BLOODS CREEK DISCHARGE	0
EVAPORATION	10.7
PERCOLATION	34.8
IRRIGATION	58.2
TOTAL	103.6

OVERALL BALANCE	
UNUSED DISPOSAL CAPACITY (MG) (MUST NOT BE NEGATIVE)	16
UNUSED STORAGE CAPACITY (MG) (MUST NOT BE NEGATIVE)	32

(a) Maximum estimated net percolation based on 2006 estimated disposal season percolation rate by month.
(b) Reservoir water surface area is a function of storage volume at start of month.
(c) Estimated snowmelt volume available for influx to storage reservoir.
(d) Estimated percentage of snowmelt contributing to influx to reservoir.
(e) Estimated based on fraction of accumulated snow within reservoir "area of influence" entering the reservoir during snowmelt months.
(f) Disposal capacity based on 1-in-100 Year maximum estimated land disposal volumes.

BEAR VALLEY WATER DISTRICT WASTEWATER TREATMENT AND DISPOSAL SYSTEM 2/1/2011 11:23

Water Year 2010 1-in-5 Year Precipitation Water Balance Projection Assuming 100,000 GPD Yearly Average WWTP Inflow Per BVWD existing WDR #5-10-2008

INPUT DATA

TREATMENT POND CHARACTERISTICS		STORAGE RESERVOIR		IRRIGATION AREA CHARACTERISTICS		CLIMATOLOGICAL FACTORS	
GROSS AREA (ac)	3.2	GROSS AREA (ac)	21.3	DISTRICT DISPOSAL LAND (AC)	80	PRECIP/AVG PRECIP RATIO	1.20
WATER SURFACE AREA (ac)	2.9	MAX. WATER SURFACE (ac)	14.7	SOIL WATER DEFICIT BEFORE IRRIGATION (IN)	n/a	OCT-APR EVAP/AVG EVAP RATIO	1.00
				FRACT OF LAND IRRIGATED	n/a	MAY-SEP EVAP/AVG EVAP RATIO	1.00
		STORAGE CAPACITY (MG)	106	IRRIGATION EFFICIENCY (DECIMAL FRACT)	n/a	PAN COEFFICIENT	0.80
FRACTION OF ESTIMATED PERC RATE	0.1	FRAC EST. PERC	0.8	FRACTION OF EST. PERC RATE	n/a	LAND PRECIP COLLECTED (FRAC)	0.9

PARAMETER / MONTH	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DAYS IN MONTH	31	30	31	31	28	31	30	31	30	31	31	30	365
AVG PAN EVAP (IN)	3.05	0.89	0.61	0.76	0.83	2.14	3.69	5.34	6.64	7.63	6.87	5.17	43.62
AVG PRECIP (IN)	2.3	5.3	7.5	9.3	7.5	6.9	3.8	1.8	0.6	0.1	0.2	0.7	46.0
ESTD. SNOW ACCUM (IN Water)	2	7	14	27	32	39	40	33	11	0	0	0	
ESTIMATED MAX PERCOLATION (IN)(a)	8.6	18.1	11.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	78.5	125.0	241.4
PROJECTED INFLUENT FLOW (Avg. GAL/D)	36,413	38,021	75704	102,039	106,243	133,082	191,582	202,799	114,600	80,899	72,837	46,072	

CALCULATIONS

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
WASTEWATER VOLUME (gal)	1,128,791	1,140,622	2,346,835	3,163,195	2,974,814	4,125,557	5,747,452	6,286,757	3,438,008	2,507,875	2,257,934	1,382,160	36,500,000
EVAPORATION (IN)	2.4	0.7	0.5	0.6	0.7	1.7	3.0	4.3	5.3	6.1	5.5	4.1	34.9
PRECIPITATION (IN)	2.8	6.4	9.0	11.2	9.0	8.3	4.6	2.2	0.7	0.1	0.2	0.8	55.2
TREATMENT PONDS													
PERCOLATION (IN)	0.9	1.8	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.9	12.5	24.1
PERC VOLUME (gal)	67,440	142,484	88,407	0	0	0	0	0	0	0	618,234	984,343	1,900,908
EVAP. VOLUME (gal)	188,994	55,123	39,374	47,248	55,123	133,871	236,242	338,614	417,361	480,359	433,111	322,864	2,748,285
PRECIP. VOLUME (gal)	237,578	547,463	774,712	960,643	774,712	712,735	392,521	185,931	61,977	10,329	20,659	72,306	4,751,566
TREATMENT DISPOSAL(GAIN)/ (gal)	18,855	(349,855)	(646,931)	(913,394)	(719,589)	(578,864)	(156,278)	152,683	355,384	470,030	1,030,686	1,234,901	(102,372)
STORAGE RESERVOIR													
PERCOLATION (IN)	7.11	15.02	9.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.16	103.75	200.36
PERC VOLUME (gal)	299,176	632,091	392,193	0	0	0	0	0	0	0	22,807,935	6,536,037	30,667,431
W.S. AREA (ac)(b)	1.55	1.55	1.55	1.55	1.55	4.42	7.72	11.44	12.96	13.29	12.89	2.32	
EVAP. VOLUME (gal)	101,014	29,462	21,045	25,253	29,462	204,037	628,893	1,335,774	1,865,174	2,201,371	1,925,103	258,292	8,624,880
PRECIP. VOLUME (gal)	1,448,328	3,337,452	4,722,809	5,856,283	4,722,809	4,344,984	2,392,890	1,133,474	377,825	62,971	125,942	440,796	28,966,563
MONTHLY AVAIL. SNOWMELT (IN)(c)	0	0	0	0	0	0	7	22	11	0	0	0	40
ESTIMATED SNOW CONTR. (%)(d)	0%	0%	0%	0%	0%	0%	100%	41%	41%	25%	0%	0%	
ESTIMATED AREA OF INFLUENCE (ac)	50	50	50	50	50	50	50	50	50	50	50	50	
ESTIMATED INFLUX TO STORAGE (gal)(e)	0	0	0	0	0	0	9,504,000	12,107,709	6,123,291	0	0	0	27,735,001
RESERVOIR DISPOSAL(GAIN) (gal)	(1,048,138)	(2,675,899)	(4,309,571)	(5,831,030)	(4,693,347)	(4,140,947)	(11,267,997)	(11,905,410)	(4,635,943)	2,138,400	24,607,096	6,353,533	(17,409,252)
IRRIGATION													
IRRIGATION DISPOSAL (gal)(f)	0	0	0	0	0	0	0	0	0	9,015,000	23,748,000	25,422,000	58,185,000
STORAGE													
BEGINNING STORAGE (gal)	0	2,158,074	6,324,450	13,627,787	23,535,406	31,923,156	40,768,524	57,940,251	75,979,734	83,698,301	74,582,746	27,454,897	
CALCULATED STORAGE GAIN (gal)	2,158,074	4,166,376	7,303,337	9,907,620	8,387,750	8,845,368	17,171,727	18,039,483	7,718,567	-9,115,555	-47,127,848	-31,628,273	
ESTIMATED FINAL STORAGE (gal)	2,158,074	6,324,450	13,627,787	23,535,406	31,923,156	40,768,524	57,940,251	75,979,734	83,698,301	74,582,746	27,454,897	0	
AMOUNT DISCHARGED TO BLOODS CREEK (gal)	0	0	0	0	0	0	0	0	0	0	0	0	0
PREDICTED FINAL STORAGE (GAL)	2,158,074	6,324,450	13,627,787	23,535,406	31,923,156	40,768,524	57,940,251	75,979,734	83,698,301	74,582,746	27,454,897	0	

MAXIMUM STORAGE (MG) 84
AVAILABLE STORAGE (MG) 106

SUMMARY

ANNUAL INFLOW (MG)	
WASTEWATER	36.5
PRECIPITATION	33.7
SNOW INFLUX (MG)	27.7
TOTAL	98.0

ANNUAL OUTFLOW POTENTIAL (MG)	
BLOODS CREEK DISCHARGE	0
EVAPORATION	11.4
PERCOLATION	32.6
IRRIGATION	58.2
TOTAL	102.1

OVERALL BALANCE	
UNUSED DISPOSAL CAPACITY (MG) (MUST NOT BE NEGATIVE)	4
UNUSED STORAGE CAPACITY (MG) (MUST NOT BE NEGATIVE)	22

(a) Maximum estimated net percolation based on 2006 estimated disposal season percolation rate by month.
(b) Reservoir water surface area is a function of storage volume at start of month.
(c) Estimated snowmelt volume available for influx to storage reservoir.
(d) Estimated percentage of snowmelt contributing to influx to reservoir.
(e) Estimated based on fraction of accumulated snow within reservoir "area of influence" entering the reservoir during snowmelt months.
(f) Disposal capacity based on 1-in-100 Year maximum estimated land disposal volumes.

BEAR VALLEY WATER DISTRICT WASTEWATER TREATMENT AND DISPOSAL SYSTEM 2/1/2011 11:24

Water Year 2010 1-in-10 Year Precipitation Water Balance Projection Assuming 100,000 GPD Yearly Average WWTP Inflow Per BVWD existing WDR #5-10-2008

INPUT DATA

TREATMENT POND CHARACTERISTICS		STORAGE RESERVOIR		IRRIGATION AREA CHARACTERISTICS		CLIMATOLOGICAL FACTORS	
GROSS AREA (ac)	3.2	GROSS AREA (ac)	21.3	DISTRICT DISPOSAL LAND (AC)	80	PRECIP/AVG PRECIP RATIO	1.40
WATER SURFACE AREA (ac)	2.9	MAX. WATER SURFACE (ac)	14.7	SOIL WATER DEFICIT BEFORE IRRIGATION (IN)	n/a	OCT-APR EVAP/AVG EVAP RATIO	0.76
				FRACT OF LAND IRRIGATED	n/a	MAY-SEP EVAP/AVG EVAP RATIO	1.00
		STORAGE CAPACITY (MG)	106	IRRIGATION EFFICIENCY (DECIMAL FRACT)	n/a	PAN COEFFICIENT	0.80
FRACTION OF ESTIMATED PERC RATE	0.1	FRAC EST. PERC	0.7	FRACTION OF EST. PERC RATE	n/a	LAND PRECIP COLLECTED (FRAC)	0.9

PARAMETER / MONTH	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DAYS IN MONTH	31	30	31	31	28	31	30	31	30	31	31	30	365
AVG PAN EVAP (IN)	3.05	0.89	0.61	0.76	0.83	2.14	3.69	5.34	6.64	7.63	6.87	5.17	43.62
AVG PRECIP (IN)	2.3	5.3	7.5	9.3	7.5	6.9	3.8	1.8	0.6	0.1	0.2	0.7	46.0
ESTD. SNOW ACCUM (IN Water)	2	8	17	31	37	45	46	38	12	0	0	0	
ESTIMATED MAX PERCOLATION (IN)(a)	8.6	18.1	11.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	78.5	125.0	241.4
PROJECTED INFLUENT FLOW (Avg. GAL/D)	36,413	38,021	75704	102,039	106,243	133,082	191,582	202,799	114,600	80,899	72,837	46,072	

CALCULATIONS

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
WASTEWATER VOLUME (gal)	1,128,791	1,140,622	2,346,835	3,163,195	2,974,814	4,125,557	5,747,452	6,286,757	3,438,008	2,507,875	2,257,934	1,382,160	36,500,000
EVAPORATION (IN)	1.9	0.5	0.4	0.5	0.5	1.3	2.2	4.3	5.3	6.1	5.5	4.1	32.6
PRECIPITATION (IN)	3.2	7.4	10.5	13.0	10.5	9.7	5.3	2.5	0.8	0.1	0.3	1.0	64.4
TREATMENT PONDS													
PERCOLATION (IN)	0.9	1.8	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.9	12.5	24.1
PERC VOLUME (gal)	67,440	142,484	88,407	0	0	0	0	0	0	0	618,234	984,343	1,900,908
EVAP. VOLUME (gal)	149,620	39,374	31,499	39,374	39,374	102,372	173,244	338,614	417,361	480,359	433,111	322,864	2,567,166
PRECIP. VOLUME (gal)	277,175	638,707	903,830	1,120,750	903,830	831,524	457,941	216,919	72,306	12,051	24,102	84,358	5,543,493
TREATMENT DISPOSAL(GAIN)/ (gal)	(60,115)	(456,849)	(783,924)	(1,081,376)	(864,457)	(729,152)	(284,696)	121,695	345,055	468,308	1,027,243	1,222,850	(1,075,419)
STORAGE RESERVOIR													
PERCOLATION (IN)	6.08	12.85	7.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	55.74	88.75	171.39
PERC VOLUME (gal)	255,922	540,704	335,491	0	0	0	0	0	0	0	20,161,253	18,074,572	39,367,941
W.S. AREA (ac)(b)	1.55	1.55	1.55	1.55	1.99	6.13	9.14	12.24	13.35	13.75	13.32	7.5	
EVAP. VOLUME (gal)	79,969	21,045	16,836	21,045	27,019	216,393	546,018	1,429,184	1,921,302	2,277,566	1,989,323	834,994	9,380,692
PRECIP. VOLUME (gal)	1,689,716	3,893,694	5,509,944	6,832,331	5,509,944	5,069,149	2,791,705	1,322,387	440,796	73,466	146,932	514,261	33,794,324
MONTHLY AVAIL. SNOWMELT (IN)(c)	0	0	0	0	0	0	8	26	12	0	0	0	46
ESTIMATED SNOW CONTR. (%)(d)	0%	0%	0%	0%	0%	0%	100%	41%	41%	25%	0%	0%	
ESTIMATED AREA OF INFLUENCE (ac)	50	50	50	50	50	50	50	50	50	50	50	50	
ESTIMATED INFLUX TO STORAGE (gal)(e)	0	0	0	0	0	0	10,997,486	14,088,971	6,902,620	0	0	0	31,989,076
RESERVOIR DISPOSAL(GAIN) (gal)	(1,353,825)	(3,331,945)	(5,157,618)	(6,811,286)	(5,482,926)	(4,852,756)	(13,243,172)	(13,982,173)	(5,422,114)	2,204,100	22,003,644	18,395,304	(17,034,766)
IRRIGATION													
IRRIGATION DISPOSAL (gal)(f)	0	0	0	0	0	0	0	0	0	9,015,000	23,748,000	25,422,000	58,185,000
STORAGE													
BEGINNING STORAGE (gal)	0	2,542,731	7,472,146	15,760,523	26,816,381	36,138,577	45,846,042	65,121,363	85,268,598	93,783,665	84,604,132	40,083,178	
CALCULATED STORAGE GAIN (gal)	2,542,731	4,929,416	8,288,377	11,055,857	9,322,197	9,707,465	19,275,321	20,147,235	8,515,067	-9,179,533	-44,520,953	-43,657,994	
ESTIMATED FINAL STORAGE (gal)	2,542,731	7,472,146	15,760,523	26,816,381	36,138,577	45,846,042	65,121,363	85,268,598	93,783,665	84,604,132	40,083,178	0	
AMOUNT DISCHARGED TO BLOODS CREEK (gal)	0	0	0	0	0	0	0	0	0	0	0	0	0
PREDICTED FINAL STORAGE (GAL)	2,542,731	7,472,146	15,760,523	26,816,381	36,138,577	45,846,042	65,121,363	85,268,598	93,783,665	84,604,132	40,083,178	0	

MAXIMUM STORAGE (MG) 94
AVAILABLE STORAGE (MG) 106

SUMMARY

ANNUAL INFLOW (MG)	
WASTEWATER	36.5
PRECIPITATION	39.3
SNOW INFLUX (MG)	32.0
TOTAL	107.8

ANNUAL OUTFLOW POTENTIAL (MG)	
BLOODS CREEK DISCHARGE	0
EVAPORATION	11.9
PERCOLATION	41.3
IRRIGATION	58.2
TOTAL	111.4

OVERALL BALANCE	
UNUSED DISPOSAL CAPACITY (MG) (MUST NOT BE NEGATIVE)	4
UNUSED STORAGE CAPACITY (MG) (MUST NOT BE NEGATIVE)	12

(a) Maximum estimated net percolation based on 2006 estimated disposal season percolation rate by month.
(b) Reservoir water surface area is a function of storage volume at start of month.
(c) Estimated snowmelt volume available for influx to storage reservoir.
(d) Estimated percentage of snowmelt contributing to influx to reservoir.
(e) Estimated based on fraction of accumulated snow within reservoir "area of influence" entering the reservoir during snowmelt months.
(f) Disposal capacity based on 1-in-100 Year maximum estimated land disposal volumes.

BEAR VALLEY WATER DISTRICT WASTEWATER TREATMENT AND DISPOSAL SYSTEM 2/1/2011 11:25

Water Year 2010 1-in-25 Year Precipitation Water Balance Projection Assuming 100,000 GPD Yearly Average WWTP Inflow Per BVWD existing WDR #5-10-2008

INPUT DATA

TREATMENT POND CHARACTERISTICS		STORAGE RESERVOIR		IRRIGATION AREA CHARACTERISTICS		CLIMATOLOGICAL FACTORS	
GROSS AREA (ac)	3.2	GROSS AREA (ac)	21.3	DISTRICT DISPOSAL LAND (AC)	80	PRECIP/AVG PRECIP RATIO	1.60
WATER SURFACE AREA (ac)	2.9	MAX. WATER SURFACE (ac)	14.7	SOIL WATER DEFICIT BEFORE IRRIGATION (IN)	n/a	OCT-APR EVAP/AVG EVAP RATIO	0.76
				FRACT OF LAND IRRIGATED	n/a	MAY-SEP EVAP/AVG EVAP RATIO	1.00
		STORAGE CAPACITY (MG)	106	IRRIGATION EFFICIENCY (DECIMAL FRACT)	n/a	PAN COEFFICIENT	0.80
FRACTION OF ESTIMATED PERC RATE	0.1	FRAC EST. PERC	0.6	FRACTION OF EST. PERC RATE	n/a	LAND PRECIP COLLECTED (FRAC)	0.9

PARAMETER / MONTH	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DAYS IN MONTH	31	30	31	31	28	31	30	31	30	31	31	30	365
AVG PAN EVAP (IN)	3.05	0.89	0.61	0.76	0.83	2.14	3.69	5.34	6.64	7.63	6.87	5.17	43.62
AVG PRECIP (IN)	2.3	5.3	7.5	9.3	7.5	6.9	3.8	1.8	0.6	0.1	0.2	0.7	46.0
ESTD. SNOW ACCUM (IN Water)	3	9	19	36	42	52	53	44	14	0	0	0	
ESTIMATED MAX PERCOLATION (IN)(a)	8.6	18.1	11.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	78.5	125.0	241.4
PROJECTED INFLUENT FLOW (Avg. GAL/D)	36,413	38,021	75704	102,039	106,243	133,082	191,582	202,799	114,600	80,899	72,837	46,072	

CALCULATIONS

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
WASTEWATER VOLUME (gal)	1,128,791	1,140,622	2,346,835	3,163,195	2,974,814	4,125,557	5,747,452	6,286,757	3,438,008	2,507,875	2,257,934	1,382,160	36,500,000
EVAPORATION (IN)	1.9	0.5	0.4	0.5	0.5	1.3	2.2	4.3	5.3	6.1	5.5	4.1	32.6
PRECIPITATION (IN)	3.7	8.5	12.0	14.9	12.0	11.0	6.1	2.9	1.0	0.2	0.3	1.1	73.6
TREATMENT PONDS													
PERCOLATION (IN)	0.9	1.8	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.9	12.5	24.1
PERC VOLUME (gal)	67,440	142,484	88,407	0	0	0	0	0	0	0	618,234	984,343	1,900,908
EVAP. VOLUME (gal)	149,620	39,374	31,499	39,374	39,374	102,372	173,244	338,614	417,361	480,359	433,111	322,864	2,567,166
PRECIP. VOLUME (gal)	316,771	729,951	1,032,949	1,280,857	1,032,949	950,313	523,361	247,908	82,636	13,773	27,545	96,409	6,335,421
TREATMENT DISPOSAL(GAIN)/ (gal)	(99,711)	(548,092)	(913,043)	(1,241,483)	(993,575)	(847,941)	(350,117)	90,706	334,725	466,587	1,023,800	1,210,799	(1,867,346)
STORAGE RESERVOIR													
PERCOLATION (IN)	5.35	11.31	7.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.07	78.13	150.87
PERC VOLUME (gal)	225,283	475,972	295,326	0	0	0	0	0	0	0	17,827,526	18,350,357	37,174,465
W.S. AREA (ac)(b)	1.55	1.55	1.55	1.55	3.52	7.52	10.22	12.74	13.37	13.84	13.38	8.65	
EVAP. VOLUME (gal)	79,969	21,045	16,836	21,045	47,792	265,460	610,537	1,487,566	1,924,180	2,292,473	1,998,284	963,027	9,728,213
PRECIP. VOLUME (gal)	1,931,104	4,449,936	6,297,079	7,808,378	6,297,079	5,793,313	3,190,520	1,511,299	503,766	83,961	167,922	587,727	38,622,084
MONTHLY AVAIL. SNOWMELT (IN)(c)	0	0	0	0	0	0	9	29	14	0	0	0	53
ESTIMATED SNOW CONTR. (%)(d)	0%	0%	0%	0%	0%	0%	100%	41%	41%	25%	0%	0%	
ESTIMATED AREA OF INFLUENCE (ac)	50	50	50	50	50	50	50	50	50	50	50	50	
ESTIMATED INFLUX TO STORAGE (gal)(e)	0	0	0	0	0	0	12,643,530	16,197,732	7,935,766	0	0	0	36,777,029
RESERVOIR DISPOSAL(GAIN) (gal)	(1,625,851)	(3,952,919)	(5,984,917)	(7,787,333)	(6,249,287)	(5,527,852)	(15,223,513)	(16,221,465)	(6,515,353)	2,208,512	19,657,888	18,725,657	(28,496,435)
IRRIGATION													
IRRIGATION DISPOSAL (gal)(f)	0	0	0	0	0	0	0	0	0	9,015,000	23,748,000	25,422,000	58,185,000
STORAGE													
BEGINNING STORAGE (gal)	0	2,854,354	8,495,987	17,740,782	29,932,794	40,150,471	50,651,821	71,972,903	85,690,418	95,309,054	86,126,830	43,955,076	
CALCULATED STORAGE GAIN (gal)	2,854,354	5,641,634	9,244,795	12,192,012	10,217,677	10,501,350	21,321,082	22,417,515	9,618,636	-9,182,224	-42,171,754	-43,976,295	
ESTIMATED FINAL STORAGE (gal)	2,854,354	8,495,987	17,740,782	29,932,794	40,150,471	50,651,821	71,972,903	94,390,418	95,309,054	86,126,830	43,955,076	0	
AMOUNT DISCHARGED TO BLOODS CREEK (gal)	0	0	0	0	0	0	0	8,700,000	0	0	0	0	8,700,000
PREDICTED FINAL STORAGE (GAL)	2,854,354	8,495,987	17,740,782	29,932,794	40,150,471	50,651,821	71,972,903	85,690,418	95,309,054	86,126,830	43,955,076	0	

MAXIMUM STORAGE (MG) 95
AVAILABLE STORAGE (MG) 106

SUMMARY

ANNUAL INFLOW (MG)	
WASTEWATER	36.5
PRECIPITATION	45.0
SNOW INFLUX (MG)	36.8
TOTAL	118.2

ANNUAL OUTFLOW POTENTIAL (MG)	
BLOODS CREEK DISCHARGE	9
EVAPORATION	12.3
PERCOLATION	39.1
IRRIGATION	58.2
TOTAL	118.3

OVERALL BALANCE	
UNUSED DISPOSAL CAPACITY (MG) (MUST NOT BE NEGATIVE)	0
UNUSED STORAGE CAPACITY (MG) (MUST NOT BE NEGATIVE)	11

(a) Maximum estimated net percolation based on 2006 estimated disposal season percolation rate by month.
(b) Reservoir water surface area is a function of storage volume at start of month.
(c) Estimated snowmelt volume available for influx to storage reservoir.
(d) Estimated percentage of snowmelt contributing to influx to reservoir.
(e) Estimated based on fraction of accumulated snow within reservoir "area of influence" entering the reservoir during snowmelt months.
(f) Disposal capacity based on 1-in-100 Year maximum estimated land disposal volumes.

BEAR VALLEY WATER DISTRICT WASTEWATER TREATMENT AND DISPOSAL SYSTEM 2/1/2011 11:25

Water Year 2010 1-in-50 Year Precipitation Water Balance Projection Assuming 100,000 GPD Yearly Average WWTP Inflow Per BVWD existing WDR #5-10-2008

INPUT DATA

TREATMENT POND CHARACTERISTICS		STORAGE RESERVOIR		IRRIGATION AREA CHARACTERISTICS		CLIMATOLOGICAL FACTORS	
GROSS AREA (ac)	3.2	GROSS AREA (ac)	21.3	DISTRICT DISPOSAL LAND (AC)	80	PRECIP/AVG PRECIP RATIO	1.70
WATER SURFACE AREA (ac)	2.9	MAX. WATER SURFACE (ac)	14.7	SOIL WATER DEFICIT BEFORE IRRIGATION (IN)	n/a	OCT-APR EVAP/AVG EVAP RATIO	0.76
				FRACT OF LAND IRRIGATED	n/a	MAY-SEP EVAP/AVG EVAP RATIO	1.00
		STORAGE CAPACITY (MG)	106	IRRIGATION EFFICIENCY (DECIMAL FRACT)	n/a	PAN COEFFICIENT	0.80
FRACTION OF ESTIMATED PERC RATE	0.1	FRAC EST. PERC	0.6	FRACTION OF EST. PERC RATE	n/a	LAND PRECIP COLLECTED (FRAC)	0.9

PARAMETER / MONTH	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DAYS IN MONTH	31	30	31	31	28	31	30	31	30	31	31	30	365
AVG PAN EVAP (IN)	3.05	0.89	0.61	0.76	0.83	2.14	3.69	5.34	6.64	7.63	6.87	5.17	43.62
AVG PRECIP (IN)	2.3	5.3	7.5	9.3	7.5	6.9	3.8	1.8	0.6	0.1	0.2	0.7	46.0
ESTD. SNOW ACCUM (IN Water)	3	9	20	38	44	55	56	46	15	0	0	0	
ESTIMATED MAX PERCOLATION (IN)(a)	8.6	18.1	11.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	78.5	125.0	241.4
PROJECTED INFLUENT FLOW (Avg. GAL/D)	36,413	38,021	75704	102,039	106,243	133,082	191,582	202,799	114,600	80,899	72,837	46,072	

CALCULATIONS

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
WASTEWATER VOLUME (gal)	1,128,791	1,140,622	2,346,835	3,163,195	2,974,814	4,125,557	5,747,452	6,286,757	3,438,008	2,507,875	2,257,934	1,382,160	36,500,000
EVAPORATION (IN)	1.9	0.5	0.4	0.5	0.5	1.3	2.2	4.3	5.3	6.1	5.5	4.1	32.6
PRECIPITATION (IN)	3.9	9.0	12.8	15.8	12.8	11.7	6.5	3.1	1.0	0.2	0.3	1.2	78.2
TREATMENT PONDS													
PERCOLATION (IN)	0.9	1.8	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.9	12.5	24.1
PERC VOLUME (gal)	67,440	142,484	88,407	0	0	0	0	0	0	0	618,234	984,343	1,900,908
EVAP. VOLUME (gal)	149,620	39,374	31,499	39,374	39,374	102,372	173,244	338,614	417,361	480,359	433,111	322,864	2,567,166
PRECIP. VOLUME (gal)	336,569	775,573	1,097,508	1,360,910	1,097,508	1,009,708	556,071	263,402	87,801	14,633	29,267	102,434	6,731,385
TREATMENT DISPOSAL(GAIN)/ (gal)	(119,509)	(593,714)	(977,602)	(1,321,537)	(1,058,135)	(907,336)	(382,827)	75,212	329,561	465,726	1,022,078	1,204,773	(2,263,310)
STORAGE RESERVOIR													
PERCOLATION (IN)	5.05	10.68	6.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.32	73.75	142.42
PERC VOLUME (gal)	212,668	449,317	278,788	0	0	0	0	0	0	0	16,615,361	15,460,293	33,016,426
W.S. AREA (ac)(b)	1.55	1.55	1.55	1.55	4.23	8.13	10.67	12.92	13.17	13.59	13.21	7.72	
EVAP. VOLUME (gal)	79,969	21,045	16,836	21,045	57,431	286,994	637,420	1,508,584	1,895,396	2,251,063	1,972,895	859,487	9,608,164
PRECIP. VOLUME (gal)	2,051,798	4,728,057	6,690,646	8,296,401	6,690,646	6,155,395	3,389,927	1,605,755	535,252	89,209	178,417	624,460	41,035,964
MONTHLY AVAIL. SNOWMELT (IN)(c)	0	0	0	0	0	0	10	31	15	0	0	0	56
ESTIMATED SNOW CONTR. (%)(d)	0%	0%	0%	0%	0%	0%	100%	41%	41%	25%	0%	0%	
ESTIMATED AREA OF INFLUENCE (ac)	50	50	50	50	50	50	50	50	50	50	50	50	
ESTIMATED INFLUX TO STORAGE (gal)(e)	0	0	0	0	0	0	13,359,202	17,114,585	8,384,961	0	0	0	38,858,747
RESERVOIR DISPOSAL(GAIN) (gal)	(1,759,161)	(4,257,695)	(6,395,023)	(8,275,357)	(6,633,215)	(5,868,401)	(16,111,710)	(17,211,756)	(7,024,816)	2,161,855	18,409,838	15,695,320	(37,270,121)
IRRIGATION													
IRRIGATION DISPOSAL (gal)(f)	0	0	0	0	0	0	0	0	0	9,015,000	23,748,000	25,422,000	58,185,000
STORAGE													
BEGINNING STORAGE (gal)	0	3,007,462	8,999,493	18,718,953	31,479,042	42,145,206	53,046,499	75,288,487	80,711,788	90,845,052	81,710,347	40,788,364	
CALCULATED STORAGE GAIN (gal)	3,007,462	5,992,031	9,719,460	12,760,089	10,666,164	10,901,294	22,241,988	23,423,301	10,133,264	-9,134,706	-40,921,983	-40,939,933	
ESTIMATED FINAL STORAGE (gal)	3,007,462	8,999,493	18,718,953	31,479,042	42,145,206	53,046,499	75,288,487	98,711,788	90,845,052	81,710,347	40,788,364	0	
AMOUNT DISCHARGED TO BLOODS CREEK (gal)	0	0	0	0	0	0	0	18,000,000	0	0	0	0	18,000,000
PREDICTED FINAL STORAGE (GAL)	3,007,462	8,999,493	18,718,953	31,479,042	42,145,206	53,046,499	75,288,487	80,711,788	90,845,052	81,710,347	40,788,364	0	

MAXIMUM STORAGE (MG) 91
AVAILABLE STORAGE (MG) 106

SUMMARY

ANNUAL INFLOW (MG)	
WASTEWATER	36.5
PRECIPITATION	47.8
SNOW INFLUX (MG)	38.9
TOTAL	123.1

ANNUAL OUTFLOW POTENTIAL (MG)	
BLOODS CREEK DISCHARGE	18
EVAPORATION	12.2
PERCOLATION	34.9
IRRIGATION	58.2
TOTAL	123.3

OVERALL BALANCE	
UNUSED DISPOSAL CAPACITY (MG) (MUST NOT BE NEGATIVE)	0
UNUSED STORAGE CAPACITY (MG) (MUST NOT BE NEGATIVE)	15

(a) Maximum estimated net percolation based on 2006 estimated disposal season percolation rate by month.
(b) Reservoir water surface area is a function of storage volume at start of month.
(c) Estimated snowmelt volume available for influx to storage reservoir.
(d) Estimated percentage of snowmelt contributing to influx to reservoir.
(e) Estimated based on fraction of accumulated snow within reservoir "area of influence" entering the reservoir during snowmelt months.
(f) Disposal capacity based on 1-in-100 Year maximum estimated land disposal volumes.

BEAR VALLEY WATER DISTRICT WASTEWATER TREATMENT AND DISPOSAL SYSTEM 2/1/2011 11:26

Water Year 2010 1-in-100 Year Precipitation Water Balance Projection Assuming 100,000 GPD Yearly Average WWTP Inflow Per BVWD existing WDR #5-10-2008

INPUT DATA

TREATMENT POND CHARACTERISTICS		STORAGE RESERVOIR		IRRIGATION AREA CHARACTERISTICS		CLIMATOLOGICAL FACTORS	
GROSS AREA (ac)	3.2	GROSS AREA (ac)	21.3	DISTRICT DISPOSAL LAND (AC)	80	PRECIP/AVG PRECIP RATIO	1.80
WATER SURFACE AREA (ac)	2.9	MAX. WATER SURFACE (ac)	14.7	SOIL WATER DEFICIT BEFORE IRRIGATION (IN)	n/a	OCT-APR EVAP/AVG EVAP RATIO	0.76
				FRACT OF LAND IRRIGATED	n/a	MAY-SEP EVAP/AVG EVAP RATIO	1.00
		STORAGE CAPACITY (MG)	106	IRRIGATION EFFICIENCY (DECIMAL FRACT)	n/a	PAN COEFFICIENT	0.80
FRACTION OF ESTIMATED PERC RATE	0.1	FRAC EST. PERC	1.0	FRACTION OF EST. PERC RATE	n/a	LAND PRECIP COLLECTED (FRAC)	0.9

PARAMETER / MONTH	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DAYS IN MONTH	31	30	31	31	28	31	30	31	30	31	31	30	365
AVG PAN EVAP (IN)	3.05	0.89	0.61	0.76	0.83	2.14	3.69	5.34	6.64	7.63	6.87	5.17	43.62
AVG PRECIP (IN)	2.3	5.3	7.5	9.3	7.5	6.9	3.8	1.8	0.6	0.1	0.2	0.7	46.0
ESTD. SNOW ACCUM (IN Water)	3	10	22	41	48	59	60	49	16	0	0	0	
ESTIMATED MAX PERCOLATION (IN)(a)	96.1	37.5	14.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.1	168.2
PROJECTED INFLUENT FLOW (Avg. GAL/D)	36,413	38,021	75704	102,039	106,243	133,082	191,582	202,799	114,600	80,899	72,837	46,072	

CALCULATIONS

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
WASTEWATER VOLUME (gal)	1,128,791	1,140,622	2,346,835	3,163,195	2,974,814	4,125,557	5,747,452	6,286,757	3,438,008	2,507,875	2,257,934	1,382,160	36,500,000
EVAPORATION (IN)	1.9	0.5	0.4	0.5	0.5	1.3	2.2	4.3	5.3	6.1	5.5	4.1	32.6
PRECIPITATION (IN)	4.1	9.5	13.5	16.7	13.5	12.4	6.8	3.2	1.1	0.2	0.4	1.3	82.8
TREATMENT PONDS													
PERCOLATION (IN)	9.6	3.7	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	16.8
PERC VOLUME (gal)	757,089	295,268	113,490	0	0	0	0	0	0	0	0	158,380	1,324,227
EVAP. VOLUME (gal)	149,620	39,374	31,499	39,374	39,374	102,372	173,244	338,614	417,361	480,359	433,111	322,864	2,567,166
PRECIP. VOLUME (gal)	356,367	821,194	1,162,068	1,440,964	1,162,068	1,069,102	588,781	278,896	92,965	15,494	30,988	108,460	7,127,348
TREATMENT DISPOSAL(GAIN)/ (gal)	550,342	(486,553)	(1,017,079)	(1,401,590)	(1,122,694)	(966,731)	(415,537)	59,718	324,396	464,865	402,122	372,785	(3,235,955)
STORAGE RESERVOIR													
PERCOLATION (IN)	96.14	37.50	14.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.11	168.16
PERC VOLUME (gal)	4,046,509	1,578,157	606,584	0	0	0	0	0	0	0	0	846,516	7,077,766
W.S. AREA (ac)(b)	1.55	1.55	1.55	1.55	2.68	7.25	10.23	12.87	12.47	11.2	9.55	1.55	
EVAP. VOLUME (gal)	79,969	21,045	16,836	21,045	36,387	255,929	611,134	1,502,745	1,794,654	1,855,181	1,426,279	172,565	7,793,769
PRECIP. VOLUME (gal)	2,172,492	5,006,178	7,084,214	8,784,425	7,084,214	6,517,477	3,589,335	1,700,211	566,737	94,456	188,912	661,193	43,449,845
MONTHLY AVAIL. SNOWMELT (IN)(c)	0	0	0	0	0	0	11	33	16	0	0	0	60
ESTIMATED SNOW CONTR. (%)(d)	0%	0%	0%	0%	0%	0%	100%	41%	41%	25%	0%	0%	
ESTIMATED AREA OF INFLUENCE (ac)	50	50	50	50	50	50	50	50	50	50	50	50	
ESTIMATED INFLUX TO STORAGE (gal)(e)	0	0	0	0	0	0	14,313,431	18,337,055	8,983,887	0	0	0	41,634,372
RESERVOIR DISPOSAL(GAIN) (gal)	1,953,986	(3,406,976)	(6,460,794)	(8,763,381)	(7,047,827)	(6,261,548)	(17,291,631)	(18,534,521)	(7,755,970)	1,760,725	1,237,367	357,888	(70,212,681)
IRRIGATION													
IRRIGATION DISPOSAL (gal)(f)	0	0	0	0	0	0	0	0	0	9,015,000	23,748,000	25,422,000	58,185,000
STORAGE													
BEGINNING STORAGE (gal)	0	0	5,034,150	14,858,858	28,187,024	39,332,359	50,686,194	74,140,814	67,902,374	56,271,956	47,539,241	24,409,686	
CALCULATED STORAGE GAIN (gal)	-1,375,537	5,034,150	9,824,708	13,328,166	11,145,335	11,353,835	23,454,620	24,761,560	10,869,582	-8,732,715	-23,129,555	-24,770,513	
ESTIMATED FINAL STORAGE (gal)	0	5,034,150	14,858,858	28,187,024	39,332,359	50,686,194	74,140,814	98,902,374	78,771,956	47,539,241	24,409,686	0	
AMOUNT DISCHARGED TO BLOODS CREEK (gal)	0	0	0	0	0	0	0	31,000,000	22,500,000	0	0	0	53,500,000
PREDICTED FINAL STORAGE (GAL)	0	5,034,150	14,858,858	28,187,024	39,332,359	50,686,194	74,140,814	67,902,374	56,271,956	47,539,241	24,409,686	0	

MAXIMUM STORAGE (MG) 74
AVAILABLE STORAGE (MG) 106

SUMMARY

ANNUAL INFLOW (MG)	
WASTEWATER	36.5
PRECIPITATION	50.6
SNOW INFLUX (MG)	41.6
TOTAL	128.7

ANNUAL OUTFLOW POTENTIAL (MG)	
BLOODS CREEK DISCHARGE	54
EVAPORATION	10.4
PERCOLATION	8.4
IRRIGATION	58.2
TOTAL	130.4

OVERALL BALANCE	
UNUSED DISPOSAL CAPACITY (MG) (MUST NOT BE NEGATIVE)	2
UNUSED STORAGE CAPACITY (MG) (MUST NOT BE NEGATIVE)	32

(a) Maximum estimated net percolation based on 2006 estimated disposal season percolation rate by month.
(b) Reservoir water surface area is a function of storage volume at start of month.
(c) Estimated snowmelt volume available for influx to storage reservoir.
(d) Estimated percentage of snowmelt contributing to influx to reservoir.
(e) Estimated based on fraction of accumulated snow within reservoir "area of influence" entering the reservoir during snowmelt months.
(f) Disposal capacity based on 1-in-100 Year maximum estimated land disposal volumes.

B-4

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Bear Valley Water District
Memorandum
Recreation Survey
21 April 2011

From: General Manager
To: Loren Harlow, Special Counsel, Stoel-Rives
Subject: Recreation Survey
CC: Directors
Gary Ghio, District Engineer

****

Loren,

Per your request I have researched the matter of potential recreation downstream of our facilities on Bloods Creek.

To answer your questions, there is no general public access through the private property that Bloods Creek flows through directly downstream of the discharge point. The meadows referred to in the draft permit are on the private property adjacent to our facilities and public access is prohibited. Then there is National Forest Land that begins approximately 1 mile downstream of our facilities. There is public access and camping in the vicinity of where the Spicer Road is traversed by the creek, about 2.4 miles downstream, for about a 0.8 mile reach to the Bloods Creek confluence with the North Fork of the Stanislaus. The Wolfeboro Boy Scout Camp is downstream from this point another 0.8 miles.

The overriding considerations in this regard are that, during our discharge season, which will of necessity occur following very heavy winters, with streams at maximum dilution, and snow still melting, there will be no camping, and, access on Spicer Road is restricted to Snow Park permit holders until 1 June in any case.

Julio S. Guerra
General Manager

B-5

State of California—Health and Human Services Agency
California Department of Public Health

Howard Backer, MD, MPH
Interim Director

EDMUND G. BROWN JR.
Governor

March 1, 2011

Diana C. Messina, Supervising Engineer
Point Source Permitting Section
Central Valley Water Board
11020 Sun Center Drive, Suite 200
Rancho Cordova, CA 95670

Dear Ms. Messina:

RE: Bear Valley Water District NPDES Permit

This letter is in response to your memorandum to me, dated February 23, 2011, which provides additional information regarding the estimated frequency of discharge and the projected water quality of the discharge. Based on the information in your memorandum, our office will forgo our tertiary treatment recommendation provided that the following permit requirements are included, some of which are outlined in your memorandum:

1. Allow discharge only as a last resort
2. Shorten the allowed discharge season
3. Require the District to conduct an infiltration/inflow study
4. Require the District to evaluate alternatives to increase land disposal capacity
5. Require water quality sampling of the storage reservoir during the discharge season
6. Require the District to notify our office whenever a discharge is planned

If you have any questions regarding this matter, please contact me at (559) 447-3132.

Sincerely,

Carl L. Carlucci, P.E.
Supervising Sanitary Engineer
Central California Section
SOUTHERN CALIFORNIA BRANCH
DRINKING WATER FIELD OPERATIONS

cc: Cindy Forbes – Chief, Southern California Drinking Water Field Operations Branch
Carl Lischeske – Chief, Northern California Drinking Water Field Operations Branch
Stefan Cajina – Supervising Sanitary Engineer, North Coastal Section, DWFOB
Betty Graham – Senior Sanitary Engineer, San Francisco District, DWFOB

B-6

The costs discussed above, the additional capital expenses that are going to be incurred, and the total capital cost for this project are summarized in Table 5-3.

Table 5-3
Opinion of Probable Capital Cost

Capital Expense	Capital Expenditure
Total Construction Cost (Elements 1 and 2)	$8,387,500
Design Engineering Allowance (at 10%)	$839,000
Engineering Services During Construction (at 4%)	$336,000
Construction Management, Inspection, and System Startup (at 8%)	$671,000
Incurred Capital Costs plus administration/legal (at 1%)	$359,000
Total Capital Cost	$10,592,500

5.5 IMPLEMENTATION SCHEDULE

Table 5-4 and Appendix 5-C represent the proposed revised implementation schedule. This revised implementation schedule includes completion of the I-Bank Loan Application and notice regarding the proposed rate increase to occur during the July 2007 Board Meeting. This revised schedule also presents the first phase of construction proposed for the fall of 2007 to include earthwork and preparation of a building pad for the Tertiary Treatment Building.

B-7

BEAR VALLEY WATER DISTRICT

MEMORANDUM

REGISTERED PROFESSIONAL ENGINEER
G. S. GHIO
No. 34693
Exp. 9-30-11
CIVIL
STATE OF CALIFORNIA

TO JULIO GUERRA, DISTRICT MANAGER

FROM GARY S. GHIO, DISTRICT ENGINEER

RE ECONOMIC IMPACTS OF TERTIARY WASTEWATER TREATMENT PLANT

DATE June 20, 2011

Julio, as requested I have examined the economic cost of construction of a tertiary wastewater treatment plant in terms of cost per residential living unit (RLU) should the Regional Water Quality Control Board impose the requirement of the tertiary plant on the District as part of the current NPDES renewal process. Attached to this memorandum is a summary of the various financing options available to the District, as well as a cost per RLU for existing customers based upon the type of financing which would be pursued.

To summarize the attached calculations:

A. The Phase I Tertiary Facilities Pre-Design Report prepared by Eco:Logic estimated the construction cost to be $10,592,500 in June 2007. Adjusting this estimated construction cost to June 2011 utilizing the ENR San Francisco Construction Cost Index yields a present day estimated construction cost of $11,882,616.

B. Various financing options available to the District which are analyzed as part of this analysis are a USDA loan, a Clean Water State Revolving Fund Loan, as well as the formation of an Assessment District. (The interest rate and time period for the assessment district are based upon previous work done by Eco:Logic.)

C. The estimated monthly cost per RLU for each of these financing options is as follows:

USDA Loan	$ 80.17 per RLU/month
CWSRF Loan	$ 94.50 per RLU/month
Assessment District	$106.92 per RLU/month

As you are fully aware, the customers within the Bear Valley Water District have equivalent RLUs ranging from 3 up to 9.9 depending on the number of bedrooms and bathrooms within a particular residence. Utilizing this range of RLUs results in a cost increase utilizing the USDA financing of between $240.51 per month and $793.68 per month per residence depending on the number of RLUs associated with said residence.

Utilizing the same process for an assessment district yields cost increases per residence of between $320.76 per month and $1,058.51 per month, again depending upon the number of RLUs associated with the residence.

It should be noted that both the USDA and assessment district financing would result in a total approximate cost including interest of $25,650,000 as compared to $15,111,840 for the Clean Water State Revolving Fund Loan due to a lower interest rate and shorter loan repayment period. Should the CWSRF loan be the preferred method of financing, as it minimizes interest charges, the cost increases per residence would range from $283.50 per month up to $935.55 per month depending upon the size of the residence.

As can be seen by this analysis, the required increases in current customer rates to pay for a tertiary treatment plant would be unsustainable due to the high levels of funding required. (Especially in light of the fact that the tertiary plant would only be used once in a 25 year period based upon the current District water balances.)

Should you require any additional information, please contact me at your convenience.

#2322/nlm
DistMgr_Memo-6-20-11

BEAR VALLEY WATER DISTRICT
TERTIARY WASTEWATER TREATMENT PLANT
DETERMINATION OF COST PER RESIDENTIAL LIVING UNIT

A.) Per June 2007 Eco:Logic Phase I Tertiary Facilities Pre-Design Report: Construction Cost = $10,592,500

B.) Utilizing ENR San Francisco June 2007 CCI (9063.41) and June 2011 CCI (10167.29):

Present Day Cost = ($10,592,500)(10167.29/9063.41) = $11,882,616

C.) Financing Options:

USDA Loan : 4.5% for 40 years
CWSRF Loan: 2.5 % for 20 years
Assessment District: 6% for 30 years

D.) Cost per RLU:

USDA Loan: ($53,420/mth)/(666.3 RLU) = $80.17/RLU/month — Total Cost = $25,641,600
CWSRF Loan: ($62,966/mth)/(666.3 RLU) = $94.50/RLU/month — Total Cost = $15,111,840
Assessment District: ($71,242/mth)/(666.3 RLU) = $106.92/RLU/month — Total Cost = $25,647,120

E.) Monthly Cost Increase per Current District Customers RLU basis:

	Cost Range:		
No. of RLU	USDA	CWSRF	Assess. Dist.
3	$ 240.51	$ 283.50	$ 320.76
4	$ 320.68	$ 378.00	$ 427.68
5	$ 400.85	$ 472.50	$ 534.60
6	$ 481.02	$ 567.00	$ 641.52
7	$ 561.10	$ 661.50	$ 748.44
9	$ 721.53	$ 850.50	$ 962.28
9.9	$ 793.68	$ 935.55	$ 1,058.51

B-8

BEAR VALLEY
WATER DISTRICT
P.O. Box 5027
Bear Valley, CA 95223
(209) 753-2112

BOARD OF DIRECTORS:
JIM D. BISSELL
PHILL A. COFFMAN
JOHN R. DRALLA
BARBARA J. GOODRICH
JERRY J. NELSON

February 1, 2011

Jim Marshall
Regional Water Quality Control Board
11020 Sun Center Drive, #200
Rancho Cordova, CA 95670-6114

RE Bear Valley Water District
NPDES Application

Jim, as discussed during our telephone conversation last week, the District's current Waste Discharge Requirements No. 05-10-2008 impose a maximum annual average Wastewater Treatment Plant (WWTP) influent flow of 100,000 GPD (36.5 MG/YR). Based upon this limitation I have revised the District's water balance projections to provide some guidance on the likelihood of required Bloods Creek discharge under the various precipitation water year assumptions. To this end, please find the following attached items:

1. Summary of Wastewater Treatment Plant Influent Flows 2001 through 2010.
2. Water Year 2010 Average Year Precipitation Water Balance Projection.
3. Water Year 2010 1-in-5 Year Precipitation Water Balance Projection.
4. Water Year 2010 1-in-10 Year Precipitation Water Balance Projection.
5. Water Year 2010 1-in-25 Year Precipitation Water Balance Projection.
6. Water Year 2010 1-in-50 Year Precipitation Water Balance Projection.
7. Water Year 2010 1-in-100 Year Precipitation Water Balance Projection.

The attached Water Balance Projections were developed by the District's previous Engineer, ECO:LOGIC, in support of the District's original NPDES permit. The assumptions on precipitation levels, percolation, evaporation, spray disposal levels, etc. contained in the Projections are consistent with the previous Projections approved by the Regional Board as part of the NPDES permit application process.

In order to determine a monthly distribution of the 100,000 GPD average daily influent flows, actual WWTP influent flows for 2001 through 2010 were analyzed to determine the average monthly percentage of the annual flow. These percentages were then utilized to develop the distribution of anticipated influent flows based upon the 100,000 GPD yearly average limit. This information is contained in Item 1 attached. In addition it should be noted the 10 year average yearly flow from 2001

to 2010 was approximately 26.4 MG per year with a peak of approximately 31.9 MG in 2005 which was an approximate 1-in-10 year precipitation event for both total rainfall and snow water content. It should also be noted the year 2006 was a 1-in-100 year total precipitation event although the snow water content was a 1-in-5 year precipitation event. The following is a summary of predicted required discharges to Bloods Creek based upon each water year precipitation assumption:

Water Year Precipitation	Discharge to Bloods Creek (MG)
Average Year	0
1-in-5 Year	0
1-in-10 Year	0
1-in-25 Year	9
1-in-50 Year	18
1-in-100 Year	54

As is evident from the above summary, the District does not anticipate discharges to Bloods Creek with the current WDR limitation of 100,000 GPD yearly average WWTP influent flow until the water precipitation year approaches or exceeds the 1-in-25 year precipitation level. This has also been verified during the past ten years during which time no discharges were required to Bloods Creek.

Due to the unique environmental setting of the Bear Valley Water District's facilities, the majority of treated effluent in the District's polishing pond consists of water from precipitation or snow influx directly in the treatment/polishing ponds. Based upon the 1-in-25 year, 1-in-50 year, and 1-in 100 year Projections, the amount of actual wastewater contained in any potential discharge is projected to be approximately 30%. Combining this already diluted wastewater with the proposed NPDES requirement of 20:1 dilution for any discharge to Bloods Creek would result in actual dilution levels of approximately 69:1 for any potential discharge.

Due to the current state of the economy, significant growth within the Bear Valley Water District is not anticipated during the next five years. As is evident from the summary of flows from 2001 through 2010, the District's current WWTP influent flows are considerably less than the permitted maximum per the District's WDRs. Any anticipated growth during this time period would not result in the District exceeding its WDR limitations.

As is evident from the accompanying analysis, discharge to Bloods Creek is not anticipated except in events exceeding the 1-in-25 year precipitation year and at dilution levels that far exceed the proposed NPDES requirement of 20:1. For the Department of Public Health to recommend a requirement that the District construct a tertiary treatment plant in order to discharge to Bloods Creek is extremely unreasonable given the anticipated need for this discharge being only in water year events of greater than in 1-in-25 years and projected high dilution levels. The imposition of this requirement would place an undue financial burden on the rate payers of the District without any significant benefit to the District users or any potential downstream water users due to the anticipated, infrequent use of the Bloods Creek discharge itself.

Should you require any additional information, please contact me at your convenience.

Gary S. Ghio, District Engineer

REGISTERED PROFESSIONAL ENGINEER
G. S. GHIO
No. 34693
Exp. 9-30-11
CIVIL
STATE OF CALIFORNIA

Attachments
Cc Julio Guerra, District Manager
BVWD Board of Directors

#2322/nlm
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BEAR VALLEY WATER DISTRICT
WWTP INFLUENT FLOWS 2001 THRU 2010
1/26/2011

	2010 (MG)	2009 (MG)	2008 (MG)	2007 (MG)	2006 (MG)	2005 (MG)	2004 (MG)	2003 (MG)	2002 (MG)	2001 (MG)	AVG (MG)	AVG. DAILY FLOW (GAL/DAY)	MONTHLY PERCENTAGE OF ANNUAL FLOW	100,000 GPD YEAR AVG. MONTHLY FLOW DISTRIBUTION (GAL/MONTH)	100,000 GPD YEAR AVG. DAILY FLOW DISTRIBUTION (GAL/DAY)
DEC	2.395	1.166	1.144	1.088	1.300	2.404	2.658	1.375	1.629	1.831	1.699	54809	6.43%	2346835	75704
NOV	0.875	0.480	0.650	0.522	0.860	0.909	1.073	0.858	1.179	0.852	0.826	27526	3.12%	1140622	38021
OCT	0.923	0.677	0.565	0.700	0.833	0.832	0.870	0.953	0.984	0.834	0.817	26362	3.09%	1128791	36413
SEPT	0.864	0.815	0.766	1.228	0.814	1.035	1.003	1.178	1.269	1.035	1.001	33355	3.79%	1382160	46072
AUG	1.554	1.379	1.500	1.517	1.085	1.708	1.618	1.938	1.941	2.108	1.635	52732	6.19%	2257934	72837
JULY	2.365	1.618	1.472	1.593	1.143	2.283	1.568	2.125	1.989	2.001	1.816	58570	6.87%	2507875	80899
JUNE	4.845	1.963	2.071	1.792	2.079	3.900	1.755	2.460	2.280	1.746	2.489	82969	9.42%	3438008	114600
MAY	5.584	4.597	4.391	3.328	5.078	6.945	2.958	4.280	4.539	3.816	4.551	146822	17.22%	6286757	202799
APRIL	3.599	4.461	4.815	3.837	3.551	4.015	4.420	3.250	5.549	4.113	4.161	138702	15.75%	5747452	191582
MARCH	1.806	3.105	1.972	3.214	3.071	3.275	3.975	3.597	3.109	2.744	2.987	96349	11.30%	4125557	133082
FEB	1.369	1.732	1.321	1.528	3.551	2.448	1.842	3.120	2.862	1.765	2.154	76918	8.15%	2974814	106243
JAN	1.368	1.594	4.815	1.315	3.086	2.135	1.752	2.658	2.366	1.812	2.290	73874	8.67%	3163195	102039
TOTAL:	27.546	23.587	25.483	21.662	26.450	31.887	25.492	27.792	29.696	24.657	26.425		100.00%	36500000	

10 YEAR AVERAGE YEARLY FLOW: 26.425 MG

BEAR VALLEY WATER DISTRICT WASTEWATER TREATMENT AND DISPOSAL SYSTEM 2/1/2011 11:23

Water Year 2010 Average Year Precipitation Water Balance Projection Assuming 100,000 GPD Yearly Average WWTP Inflow Per BVWD existing WDR #5-10-2008

INPUT DATA

TREATMENT POND CHARACTERISTICS		STORAGE RESERVOIR		IRRIGATION AREA CHARACTERISTICS		CLIMATOLOGICAL FACTORS	
GROSS AREA (ac)	3.2	GROSS AREA (ac)	21.3	DISTRICT DISPOSAL LAND (AC)	80	PRECIP/AVG PRECIP RATIO	1.00
WATER SURFACE AREA (ac)	2.9	MAX. WATER SURFACE (ac)	14.7	SOIL WATER DEFICIT BEFORE IRRIGATION (IN)	n/a	OCT-APR EVAP/AVG EVAP RATIO	1.00
				FRACT OF LAND IRRIGATED	n/a	MAY-SEP EVAP/AVG EVAP RATIO	1.00
		STORAGE CAPACITY (MG)	106	IRRIGATION EFFICIENCY (DECIMAL FRACT)	n/a	PAN COEFFICIENT	0.80
FRACTION OF ESTIMATED PERC RATE	0.1	FRAC EST. PERC	1.0	FRACTION OF EST. PERC RATE	n/a	LAND PRECIP COLLECTED (FRAC)	0.9

PARAMETER / MONTH	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DAYS IN MONTH	31	30	31	31	28	31	30	31	30	31	31	30	365
AVG PAN EVAP (IN)	3.05	0.89	0.61	0.76	0.83	2.14	3.69	5.34	6.64	7.63	6.87	5.17	43.62
AVG PRECIP (IN)	2.3	5.3	7.5	9.3	7.5	6.9	3.8	1.8	0.6	0.1	0.2	0.7	46.0
ESTD. SNOW ACCUM (IN Water)	2	5	12	22	26	32	33	27	9	0	0	0	
ESTIMATED MAX PERCOLATION (IN)(a)	8.6	18.1	11.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	78.5	125.0	241.4
PROJECTED INFLUENT FLOW (Avg. GAL/D)	36,413	38,021	75704	102,039	106,243	133,082	191,582	202,799	114,600	80,899	72,837	46,072	

CALCULATIONS

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
WASTEWATER VOLUME (gal)	1,128,791	1,140,622	2,346,835	3,163,195	2,974,814	4,125,557	5,747,452	6,286,757	3,438,008	2,507,875	2,257,934	1,382,160	36,500,000
EVAPORATION (IN)	2.4	0.7	0.5	0.6	0.7	1.7	3.0	4.3	5.3	6.1	5.5	4.1	34.9
PRECIPITATION (IN)	2.3	5.3	7.5	9.3	7.5	6.9	3.8	1.8	0.6	0.1	0.2	0.7	46.0
TREATMENT PONDS													
PERCOLATION (IN)	0.9	1.8	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.9	12.5	24.1
PERC VOLUME (gal)	67,440	142,484	88,407	0	0	0	0	0	0	0	618,234	984,343	1,900,908
EVAP. VOLUME (gal)	188,994	55,123	39,374	47,248	55,123	133,871	236,242	338,614	417,361	480,359	433,111	322,864	2,748,285
PRECIP. VOLUME (gal)	197,982	456,219	645,593	800,536	645,593	593,946	327,101	154,942	51,647	8,608	17,216	60,255	3,959,638
TREATMENT DISPOSAL(GAIN)/ (gal)	58,452	(258,612)	(517,812)	(753,287)	(590,470)	(460,075)	(90,858)	183,672	365,714	471,751	1,034,129	1,246,952	689,556
STORAGE RESERVOIR													
PERCOLATION (IN)	8.56	18.09	11.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	78.51	125.00	241.39
PERC VOLUME (gal)	360,454	761,555	472,522	0	0	0	0	0	0	0	26,008,468	5,261,143	32,864,142
W.S. AREA (ac)(b)	1.55	1.55	1.55	1.55	1.55	2.47	6.02	10.36	12.41	12.84	12.2	1.55	
EVAP. VOLUME (gal)	101,014	29,462	21,045	25,253	29,462	114,021	490,406	1,209,669	1,786,019	2,126,832	1,822,053	172,565	7,927,802
PRECIP. VOLUME (gal)	1,206,940	2,781,210	3,935,674	4,880,236	3,935,674	3,620,820	1,994,075	944,562	314,854	52,476	104,951	367,330	24,138,803
MONTHLY AVAIL. SNOWMELT (IN)(c)	0	0	0	0	0	0	6	18	9	0	0	0	33
ESTIMATED SNOW CONTR. (%)(d)	0%	0%	0%	0%	0%	0%	100%	41%	41%	25%	0%	0%	
ESTIMATED AREA OF INFLUENCE (ac)	50	50	50	50	50	50	50	50	50	50	50	50	
ESTIMATED INFLUX TO STORAGE (gal)(e)	0	0	0	0	0	0	8,146,286	9,906,307	5,009,966	0	0	0	23,062,559
RESERVOIR DISPOSAL(GAIN) (gal)	(745,473)	(1,990,193)	(3,442,108)	(4,854,983)	(3,906,212)	(3,506,800)	(9,649,954)	(9,641,200)	(3,538,801)	2,074,357	27,725,570	5,066,379	(6,409,417)
IRRIGATION													
IRRIGATION DISPOSAL (gal)(f)	0	0	0	0	0	0	0	0	0	9,015,000	23,748,000	25,422,000	58,185,000
STORAGE													
BEGINNING STORAGE (gal)	0	1,815,812	5,205,238	11,511,993	20,283,458	27,754,954	35,847,386	51,335,650	67,079,935	73,691,031	64,637,797	14,388,032	
CALCULATED STORAGE GAIN (gal)	1,815,812	3,389,426	6,306,755	8,771,465	7,471,496	8,092,431	15,488,265	15,744,285	6,611,095	-9,053,233	-50,249,765	-30,353,170	
ESTIMATED FINAL STORAGE (gal)	1,815,812	5,205,238	11,511,993	20,283,458	27,754,954	35,847,386	51,335,650	67,079,935	73,691,031	64,637,797	14,388,032	0	
AMOUNT DISCHARGED TO BLOODS CREEK (gal)	0	0	0	0	0	0	0	0	0	0	0	0	0
PREDICTED FINAL STORAGE (GAL)	1,815,812	5,205,238	11,511,993	20,283,458	27,754,954	35,847,386	51,335,650	67,079,935	73,691,031	64,637,797	14,388,032	0	

MAXIMUM STORAGE (MG) 74
AVAILABLE STORAGE (MG) 106

SUMMARY

ANNUAL INFLOW (MG)	
WASTEWATER	36.5
PRECIPITATION	28.1
SNOW INFLUX (MG)	23.1
TOTAL	87.7

ANNUAL OUTFLOW POTENTIAL (MG)	
BLOODS CREEK DISCHARGE	0
EVAPORATION	10.7
PERCOLATION	34.8
IRRIGATION	58.2
TOTAL	103.6

OVERALL BALANCE	
UNUSED DISPOSAL CAPACITY (MG) (MUST NOT BE NEGATIVE)	16
UNUSED STORAGE CAPACITY (MG) (MUST NOT BE NEGATIVE)	32

(a) Maximum estimated net percolation based on 2006 estimated disposal season percolation rate by month.
(b) Reservoir water surface area is a function of storage volume at start of month.
(c) Estimated snowmelt volume available for influx to storage reservoir.
(d) Estimated percentage of snowmelt contributing to influx to reservoir.
(e) Estimated based on fraction of accumulated snow within reservoir "area of influence" entering the reservoir during snowmelt months.
(f) Disposal capacity based on 1-in-100 Year maximum estimated land disposal volumes.

BEAR VALLEY WATER DISTRICT WASTEWATER TREATMENT AND DISPOSAL SYSTEM 2/1/2011 11:23

Water Year 2010 1-in-5 Year Precipitation Water Balance Projection Assuming 100,000 GPD Yearly Average WWTP Inflow Per BVWD existing WDR #5-10-2008

INPUT DATA

TREATMENT POND CHARACTERISTICS		STORAGE RESERVOIR		IRRIGATION AREA CHARACTERISTICS		CLIMATOLOGICAL FACTORS	
GROSS AREA (ac)	3.2	GROSS AREA (ac)	21.3	DISTRICT DISPOSAL LAND (AC)	80	PRECIP/AVG PRECIP RATIO	1.20
WATER SURFACE AREA (ac)	2.9	MAX. WATER SURFACE (ac)	14.7	SOIL WATER DEFICIT BEFORE IRRIGATION (IN)	n/a	OCT-APR EVAP/AVG EVAP RATIO	1.00
				FRACT OF LAND IRRIGATED	n/a	MAY-SEP EVAP/AVG EVAP RATIO	1.00
		STORAGE CAPACITY (MG)	106	IRRIGATION EFFICIENCY (DECIMAL FRACT)	n/a	PAN COEFFICIENT	0.80
FRACTION OF ESTIMATED PERC RATE	0.1	FRAC EST. PERC	0.8	FRACTION OF EST. PERC RATE	n/a	LAND PRECIP COLLECTED (FRAC)	0.9

PARAMETER / MONTH	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DAYS IN MONTH	31	30	31	31	28	31	30	31	30	31	31	30	365
AVG PAN EVAP (IN)	3.05	0.89	0.61	0.76	0.83	2.14	3.69	5.34	6.64	7.63	6.87	5.17	43.62
AVG PRECIP (IN)	2.3	5.3	7.5	9.3	7.5	6.9	3.8	1.8	0.6	0.1	0.2	0.7	46.0
ESTD. SNOW ACCUM (IN Water)	2	7	14	27	32	39	40	33	11	0	0	0	
ESTIMATED MAX PERCOLATION (IN)(a)	8.6	18.1	11.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	78.5	125.0	241.4
PROJECTED INFLUENT FLOW (Avg. GAL/D)	36,413	38,021	75704	102,039	106,243	133,082	191,582	202,799	114,600	80,899	72,837	46,072	

CALCULATIONS

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
WASTEWATER VOLUME (gal)	1,128,791	1,140,622	2,346,835	3,163,195	2,974,814	4,125,557	5,747,452	6,286,757	3,438,008	2,507,875	2,257,934	1,382,160	36,500,000
EVAPORATION (IN)	2.4	0.7	0.5	0.6	0.7	1.7	3.0	4.3	5.3	6.1	5.5	4.1	34.9
PRECIPITATION (IN)	2.8	6.4	9.0	11.2	9.0	8.3	4.6	2.2	0.7	0.1	0.2	0.8	55.2
TREATMENT PONDS													
PERCOLATION (IN)	0.9	1.8	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.9	12.5	24.1
PERC VOLUME (gal)	67,440	142,484	88,407	0	0	0	0	0	0	0	618,234	984,343	1,900,908
EVAP. VOLUME (gal)	188,994	55,123	39,374	47,248	55,123	133,871	236,242	338,614	417,361	480,359	433,111	322,864	2,748,285
PRECIP. VOLUME (gal)	237,578	547,463	774,712	960,643	774,712	712,735	392,521	185,931	61,977	10,329	20,659	72,306	4,751,566
TREATMENT DISPOSAL(GAIN)/ (gal)	18,855	(349,855)	(646,931)	(913,394)	(719,589)	(578,864)	(156,278)	152,683	355,384	470,030	1,030,686	1,234,901	(102,372)
STORAGE RESERVOIR													
PERCOLATION (IN)	7.11	15.02	9.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.16	103.75	200.36
PERC VOLUME (gal)	299,176	632,091	392,193	0	0	0	0	0	0	0	22,807,935	6,536,037	30,667,431
W.S. AREA (ac)(b)	1.55	1.55	1.55	1.55	1.55	4.42	7.72	11.44	12.96	13.29	12.89	2.32	
EVAP. VOLUME (gal)	101,014	29,462	21,045	25,253	29,462	204,037	628,893	1,335,774	1,865,174	2,201,371	1,925,103	258,292	8,624,880
PRECIP. VOLUME (gal)	1,448,328	3,337,452	4,722,809	5,856,283	4,722,809	4,344,984	2,392,890	1,133,474	377,825	62,971	125,942	440,796	28,966,563
MONTHLY AVAIL. SNOWMELT (IN)(c)	0	0	0	0	0	0	7	22	11	0	0	0	40
ESTIMATED SNOW CONTR. (%)(d)	0%	0%	0%	0%	0%	0%	100%	41%	41%	25%	0%	0%	
ESTIMATED AREA OF INFLUENCE (ac)	50	50	50	50	50	50	50	50	50	50	50	50	
ESTIMATED INFLUX TO STORAGE (gal)(e)	0	0	0	0	0	0	9,504,000	12,107,709	6,123,291	0	0	0	27,735,001
RESERVOIR DISPOSAL(GAIN) (gal)	(1,048,138)	(2,675,899)	(4,309,571)	(5,831,030)	(4,693,347)	(4,140,947)	(11,267,997)	(11,905,410)	(4,635,943)	2,138,400	24,607,096	6,353,533	(17,409,252)
IRRIGATION													
IRRIGATION DISPOSAL (gal)(f)	0	0	0	0	0	0	0	0	0	9,015,000	23,748,000	25,422,000	58,185,000
STORAGE													
BEGINNING STORAGE (gal)	0	2,158,074	6,324,450	13,627,787	23,535,406	31,923,156	40,768,524	57,940,251	75,979,734	83,698,301	74,582,746	27,454,897	
CALCULATED STORAGE GAIN (gal)	2,158,074	4,166,376	7,303,337	9,907,620	8,387,750	8,845,368	17,171,727	18,039,483	7,718,567	-9,115,555	-47,127,848	-31,628,273	
ESTIMATED FINAL STORAGE (gal)	2,158,074	6,324,450	13,627,787	23,535,406	31,923,156	40,768,524	57,940,251	75,979,734	83,698,301	74,582,746	27,454,897	0	
AMOUNT DISCHARGED TO BLOODS CREEK (gal)	0	0	0	0	0	0	0	0	0	0	0	0	0
PREDICTED FINAL STORAGE (GAL)	2,158,074	6,324,450	13,627,787	23,535,406	31,923,156	40,768,524	57,940,251	75,979,734	83,698,301	74,582,746	27,454,897	0	

MAXIMUM STORAGE (MG) 84
AVAILABLE STORAGE (MG) 106

SUMMARY

ANNUAL INFLOW (MG)	
WASTEWATER	36.5
PRECIPITATION	33.7
SNOW INFLUX (MG)	27.7
TOTAL	98.0

ANNUAL OUTFLOW POTENTIAL (MG)	
BLOODS CREEK DISCHARGE	0
EVAPORATION	11.4
PERCOLATION	32.6
IRRIGATION	58.2
TOTAL	102.1

OVERALL BALANCE	
UNUSED DISPOSAL CAPACITY (MG) (MUST NOT BE NEGATIVE)	4
UNUSED STORAGE CAPACITY (MG) (MUST NOT BE NEGATIVE)	22

(a) Maximum estimated net percolation based on 2006 estimated disposal season percolation rate by month.
(b) Reservoir water surface area is a function of storage volume at start of month.
(c) Estimated snowmelt volume available for influx to storage reservoir.
(d) Estimated percentage of snowmelt contributing to influx to reservoir.
(e) Estimated based on fraction of accumulated snow within reservoir "area of influence" entering the reservoir during snowmelt months.
(f) Disposal capacity based on 1-in-100 Year maximum estimated land disposal volumes.

BEAR VALLEY WATER DISTRICT WASTEWATER TREATMENT AND DISPOSAL SYSTEM 2/1/2011 11:24

Water Year 2010 1-in-10 Year Precipitation Water Balance Projection Assuming 100,000 GPD Yearly Average WWTP Inflow Per BVWD existing WDR #5-10-2008

INPUT DATA

TREATMENT POND CHARACTERISTICS		STORAGE RESERVOIR		IRRIGATION AREA CHARACTERISTICS		CLIMATOLOGICAL FACTORS	
GROSS AREA (ac)	3.2	GROSS AREA (ac)	21.3	DISTRICT DISPOSAL LAND (AC)	80	PRECIP/AVG PRECIP RATIO	1.40
WATER SURFACE AREA (ac)	2.9	MAX. WATER SURFACE (ac)	14.7	SOIL WATER DEFICIT BEFORE IRRIGATION (IN)	n/a	OCT-APR EVAP/AVG EVAP RATIO	0.76
				FRACT OF LAND IRRIGATED	n/a	MAY-SEP EVAP/AVG EVAP RATIO	1.00
		STORAGE CAPACITY (MG)	106	IRRIGATION EFFICIENCY (DECIMAL FRACT)	n/a	PAN COEFFICIENT	0.80
FRACTION OF ESTIMATED PERC RATE	0.1	FRAC EST. PERC	0.7	FRACTION OF EST. PERC RATE	n/a	LAND PRECIP COLLECTED (FRAC)	0.9

PARAMETER / MONTH	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DAYS IN MONTH	31	30	31	31	28	31	30	31	30	31	31	30	365
AVG PAN EVAP (IN)	3.05	0.89	0.61	0.76	0.83	2.14	3.69	5.34	6.64	7.63	6.87	5.17	43.62
AVG PRECIP (IN)	2.3	5.3	7.5	9.3	7.5	6.9	3.8	1.8	0.6	0.1	0.2	0.7	46.0
ESTD. SNOW ACCUM (IN Water)	2	8	17	31	37	45	46	38	12	0	0	0	
ESTIMATED MAX PERCOLATION (IN)(a)	8.6	18.1	11.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	78.5	125.0	241.4
PROJECTED INFLUENT FLOW (Avg. GAL/D)	36,413	38,021	75704	102,039	106,243	133,082	191,582	202,799	114,600	80,899	72,837	46,072	

CALCULATIONS

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
WASTEWATER VOLUME (gal)	1,128,791	1,140,622	2,346,835	3,163,195	2,974,814	4,125,557	5,747,452	6,286,757	3,438,008	2,507,875	2,257,934	1,382,160	36,500,000
EVAPORATION (IN)	1.9	0.5	0.4	0.5	0.5	1.3	2.2	4.3	5.3	6.1	5.5	4.1	32.6
PRECIPITATION (IN)	3.2	7.4	10.5	13.0	10.5	9.7	5.3	2.5	0.8	0.1	0.3	1.0	64.4
TREATMENT PONDS													
PERCOLATION (IN)	0.9	1.8	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.9	12.5	24.1
PERC VOLUME (gal)	67,440	142,484	88,407	0	0	0	0	0	0	0	618,234	984,343	1,900,908
EVAP. VOLUME (gal)	149,620	39,374	31,499	39,374	39,374	102,372	173,244	338,614	417,361	480,359	433,111	322,864	2,567,166
PRECIP. VOLUME (gal)	277,175	638,707	903,830	1,120,750	903,830	831,524	457,941	216,919	72,306	12,051	24,102	84,358	5,543,493
TREATMENT DISPOSAL(GAIN)/ (gal)	(60,115)	(456,849)	(783,924)	(1,081,376)	(864,457)	(729,152)	(284,696)	121,695	345,055	468,308	1,027,243	1,222,850	(1,075,419)
STORAGE RESERVOIR													
PERCOLATION (IN)	6.08	12.85	7.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	55.74	88.75	171.39
PERC VOLUME (gal)	255,922	540,704	335,491	0	0	0	0	0	0	0	20,161,253	18,074,572	39,367,941
W.S. AREA (ac)(b)	1.55	1.55	1.55	1.55	1.99	6.13	9.14	12.24	13.35	13.75	13.32	7.5	
EVAP. VOLUME (gal)	79,969	21,045	16,836	21,045	27,019	216,393	546,018	1,429,184	1,921,302	2,277,566	1,989,323	834,994	9,380,692
PRECIP. VOLUME (gal)	1,689,716	3,893,694	5,509,944	6,832,331	5,509,944	5,069,149	2,791,705	1,322,387	440,796	73,466	146,932	514,261	33,794,324
MONTHLY AVAIL. SNOWMELT (IN)(c)	0	0	0	0	0	0	8	26	12	0	0	0	46
ESTIMATED SNOW CONTR. (%)(d)	0%	0%	0%	0%	0%	0%	100%	41%	41%	25%	0%	0%	
ESTIMATED AREA OF INFLUENCE (ac)	50	50	50	50	50	50	50	50	50	50	50	50	
ESTIMATED INFLUX TO STORAGE (gal)(e)	0	0	0	0	0	0	10,997,486	14,088,971	6,902,620	0	0	0	31,989,076
RESERVOIR DISPOSAL(GAIN) (gal)	(1,353,825)	(3,331,945)	(5,157,618)	(6,811,286)	(5,482,926)	(4,852,756)	(13,243,172)	(13,982,173)	(5,422,114)	2,204,100	22,003,644	18,395,304	(17,034,766)
IRRIGATION													
IRRIGATION DISPOSAL (gal)(f)	0	0	0	0	0	0	0	0	0	9,015,000	23,748,000	25,422,000	58,185,000
STORAGE													
BEGINNING STORAGE (gal)	0	2,542,731	7,472,146	15,760,523	26,816,381	36,138,577	45,846,042	65,121,363	85,268,598	93,783,665	84,604,132	40,083,178	
CALCULATED STORAGE GAIN (gal)	2,542,731	4,929,416	8,288,377	11,055,857	9,322,197	9,707,465	19,275,321	20,147,235	8,515,067	-9,179,533	-44,520,953	-43,657,994	
ESTIMATED FINAL STORAGE (gal)	2,542,731	7,472,146	15,760,523	26,816,381	36,138,577	45,846,042	65,121,363	85,268,598	93,783,665	84,604,132	40,083,178	0	
AMOUNT DISCHARGED TO BLOODS CREEK (gal)	0	0	0	0	0	0	0	0	0	0	0	0	0
PREDICTED FINAL STORAGE (GAL)	2,542,731	7,472,146	15,760,523	26,816,381	36,138,577	45,846,042	65,121,363	85,268,598	93,783,665	84,604,132	40,083,178	0	

MAXIMUM STORAGE (MG) 94
AVAILABLE STORAGE (MG) 106

SUMMARY

ANNUAL INFLOW (MG)	
WASTEWATER	36.5
PRECIPITATION	39.3
SNOW INFLUX (MG)	32.0
TOTAL	107.8

ANNUAL OUTFLOW POTENTIAL (MG)	
BLOODS CREEK DISCHARGE	0
EVAPORATION	11.9
PERCOLATION	41.3
IRRIGATION	58.2
TOTAL	111.4

OVERALL BALANCE	
UNUSED DISPOSAL CAPACITY (MG) (MUST NOT BE NEGATIVE)	4
UNUSED STORAGE CAPACITY (MG) (MUST NOT BE NEGATIVE)	12

(a) Maximum estimated net percolation based on 2006 estimated disposal season percolation rate by month.
(b) Reservoir water surface area is a function of storage volume at start of month.
(c) Estimated snowmelt volume available for influx to storage reservoir.
(d) Estimated percentage of snowmelt contributing to influx to reservoir.
(e) Estimated based on fraction of accumulated snow within reservoir "area of influence" entering the reservoir during snowmelt months.
(f) Disposal capacity based on 1-in-100 Year maximum estimated land disposal volumes.

BEAR VALLEY WATER DISTRICT WASTEWATER TREATMENT AND DISPOSAL SYSTEM 2/1/2011 11:25

Water Year 2010 1-in-25 Year Precipitation Water Balance Projection Assuming 100,000 GPD Yearly Average WWTP Inflow Per BVWD existing WDR #5-10-2008

INPUT DATA

TREATMENT POND CHARACTERISTICS		STORAGE RESERVOIR		IRRIGATION AREA CHARACTERISTICS		CLIMATOLOGICAL FACTORS	
GROSS AREA (ac)	3.2	GROSS AREA (ac)	21.3	DISTRICT DISPOSAL LAND (AC)	80	PRECIP/AVG PRECIP RATIO	1.60
WATER SURFACE AREA (ac)	2.9	MAX. WATER SURFACE (ac)	14.7	SOIL WATER DEFICIT BEFORE IRRIGATION (IN)	n/a	OCT-APR EVAP/AVG EVAP RATIO	0.76
				FRACT OF LAND IRRIGATED	n/a	MAY-SEP EVAP/AVG EVAP RATIO	1.00
		STORAGE CAPACITY (MG)	106	IRRIGATION EFFICIENCY (DECIMAL FRACT)	n/a	PAN COEFFICIENT	0.80
FRACTION OF ESTIMATED PERC RATE	0.1	FRAC EST. PERC	0.6	FRACTION OF EST. PERC RATE	n/a	LAND PRECIP COLLECTED (FRAC)	0.9

PARAMETER / MONTH	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DAYS IN MONTH	31	30	31	31	28	31	30	31	30	31	31	30	365
AVG PAN EVAP (IN)	3.05	0.89	0.61	0.76	0.83	2.14	3.69	5.34	6.64	7.63	6.87	5.17	43.62
AVG PRECIP (IN)	2.3	5.3	7.5	9.3	7.5	6.9	3.8	1.8	0.6	0.1	0.2	0.7	46.0
ESTD. SNOW ACCUM (IN Water)	3	9	19	36	42	52	53	44	14	0	0	0	
ESTIMATED MAX PERCOLATION (IN)(a)	8.6	18.1	11.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	78.5	125.0	241.4
PROJECTED INFLUENT FLOW (Avg. GAL/D)	36,413	38,021	75704	102,039	106,243	133,082	191,582	202,799	114,600	80,899	72,837	46,072	

CALCULATIONS

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
WASTEWATER VOLUME (gal)	1,128,791	1,140,622	2,346,835	3,163,195	2,974,814	4,125,557	5,747,452	6,286,757	3,438,008	2,507,875	2,257,934	1,382,160	36,500,000
EVAPORATION (IN)	1.9	0.5	0.4	0.5	0.5	1.3	2.2	4.3	5.3	6.1	5.5	4.1	32.6
PRECIPITATION (IN)	3.7	8.5	12.0	14.9	12.0	11.0	6.1	2.9	1.0	0.2	0.3	1.1	73.6
TREATMENT PONDS													
PERCOLATION (IN)	0.9	1.8	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.9	12.5	24.1
PERC VOLUME (gal)	67,440	142,484	88,407	0	0	0	0	0	0	0	618,234	984,343	1,900,908
EVAP. VOLUME (gal)	149,620	39,374	31,499	39,374	39,374	102,372	173,244	338,614	417,361	480,359	433,111	322,864	2,567,166
PRECIP. VOLUME (gal)	316,771	729,951	1,032,949	1,280,857	1,032,949	950,313	523,361	247,908	82,636	13,773	27,545	96,409	6,335,421
TREATMENT DISPOSAL(GAIN)/ (gal)	(99,711)	(548,092)	(913,043)	(1,241,483)	(993,575)	(847,941)	(350,117)	90,706	334,725	466,587	1,023,800	1,210,799	(1,867,346)
STORAGE RESERVOIR													
PERCOLATION (IN)	5.35	11.31	7.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.07	78.13	150.87
PERC VOLUME (gal)	225,283	475,972	295,326	0	0	0	0	0	0	0	17,827,526	18,350,357	37,174,465
W.S. AREA (ac)(b)	1.55	1.55	1.55	1.55	3.52	7.52	10.22	12.74	13.37	13.84	13.38	8.65	
EVAP. VOLUME (gal)	79,969	21,045	16,836	21,045	47,792	265,460	610,537	1,487,566	1,924,180	2,292,473	1,998,284	963,027	9,728,213
PRECIP. VOLUME (gal)	1,931,104	4,449,936	6,297,079	7,808,378	6,297,079	5,793,313	3,190,520	1,511,299	503,766	83,961	167,922	587,727	38,622,084
MONTHLY AVAIL. SNOWMELT (IN)(c)	0	0	0	0	0	0	9	29	14	0	0	0	53
ESTIMATED SNOW CONTR. (%)(d)	0%	0%	0%	0%	0%	0%	100%	41%	41%	25%	0%	0%	
ESTIMATED AREA OF INFLUENCE (ac)	50	50	50	50	50	50	50	50	50	50	50	50	
ESTIMATED INFLUX TO STORAGE (gal)(e)	0	0	0	0	0	0	12,643,530	16,197,732	7,935,766	0	0	0	36,777,029
RESERVOIR DISPOSAL(GAIN) (gal)	(1,625,851)	(3,952,919)	(5,984,917)	(7,787,333)	(6,249,287)	(5,527,852)	(15,223,513)	(16,221,465)	(6,515,353)	2,208,512	19,657,888	18,725,657	(28,496,435)
IRRIGATION													
IRRIGATION DISPOSAL (gal)(f)	0	0	0	0	0	0	0	0	0	9,015,000	23,748,000	25,422,000	58,185,000
STORAGE													
BEGINNING STORAGE (gal)	0	2,854,354	8,495,987	17,740,782	29,932,794	40,150,471	50,651,821	71,972,903	85,690,418	95,309,054	86,126,830	43,955,076	
CALCULATED STORAGE GAIN (gal)	2,854,354	5,641,634	9,244,795	12,192,012	10,217,677	10,501,350	21,321,082	22,417,515	9,618,636	-9,182,224	-42,171,754	-43,976,295	
ESTIMATED FINAL STORAGE (gal)	2,854,354	8,495,987	17,740,782	29,932,794	40,150,471	50,651,821	71,972,903	94,390,418	95,309,054	86,126,830	43,955,076	0	
AMOUNT DISCHARGED TO BLOODS CREEK (gal)	0	0	0	0	0	0	0	8,700,000	0	0	0	0	8,700,000
PREDICTED FINAL STORAGE (GAL)	2,854,354	8,495,987	17,740,782	29,932,794	40,150,471	50,651,821	71,972,903	85,690,418	95,309,054	86,126,830	43,955,076	0	

MAXIMUM STORAGE (MG)	95
AVAILABLE STORAGE (MG)	106

SUMMARY

ANNUAL INFLOW (MG)	
WASTEWATER	36.5
PRECIPITATION	45.0
SNOW INFLUX (MG)	36.8
TOTAL	118.2

ANNUAL OUTFLOW POTENTIAL (MG)	
BLOODS CREEK DISCHARGE	0
EVAPORATION	12.3
PERCOLATION	39.1
IRRIGATION	58.2
TOTAL	118.3

OVERALL BALANCE	
UNUSED DISPOSAL CAPACITY (MG) (MUST NOT BE NEGATIVE)	0
UNUSED STORAGE CAPACITY (MG) (MUST NOT BE NEGATIVE)	11

(a) Maximum estimated net percolation based on 2006 estimated disposal season percolation rate by month.
(b) Reservoir water surface area is a function of storage volume at start of month.
(c) Estimated snowmelt volume available for influx to storage reservoir.
(d) Estimated percentage of snowmelt contributing to influx to reservoir.
(e) Estimated based on fraction of accumulated snow within reservoir "area of influence" entering the reservoir during snowmelt months.
(f) Disposal capacity based on 1-in-100 Year maximum estimated land disposal volumes.

BEAR VALLEY WATER DISTRICT WASTEWATER TREATMENT AND DISPOSAL SYSTEM 2/1/2011 11:25

Water Year 2010 1-in-50 Year Precipitation Water Balance Projection Assuming 100,000 GPD Yearly Average WWTP Inflow Per BVWD existing WDR #5-10-2008

INPUT DATA

TREATMENT POND CHARACTERISTICS		STORAGE RESERVOIR		IRRIGATION AREA CHARACTERISTICS		CLIMATOLOGICAL FACTORS	
GROSS AREA (ac)	3.2	GROSS AREA (ac)	21.3	DISTRICT DISPOSAL LAND (AC)	80	PRECIP/AVG PRECIP RATIO	1.70
WATER SURFACE AREA (ac)	2.9	MAX. WATER SURFACE (ac)	14.7	SOIL WATER DEFICIT BEFORE IRRIGATION (IN)	n/a	OCT-APR EVAP/AVG EVAP RATIO	0.76
				FRACT OF LAND IRRIGATED	n/a	MAY-SEP EVAP/AVG EVAP RATIO	1.00
		STORAGE CAPACITY (MG)	106	IRRIGATION EFFICIENCY (DECIMAL FRACT)	n/a	PAN COEFFICIENT	0.80
FRACTION OF ESTIMATED PERC RATE	0.1	FRAC EST. PERC	0.6	FRACTION OF EST. PERC RATE	n/a	LAND PRECIP COLLECTED (FRAC)	0.9

PARAMETER / MONTH	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DAYS IN MONTH	31	30	31	31	28	31	30	31	30	31	31	30	365
AVG PAN EVAP (IN)	3.05	0.89	0.61	0.76	0.83	2.14	3.69	5.34	6.64	7.63	6.87	5.17	43.62
AVG PRECIP (IN)	2.3	5.3	7.5	9.3	7.5	6.9	3.8	1.8	0.6	0.1	0.2	0.7	46.0
ESTD. SNOW ACCUM (IN Water)	3	9	20	38	44	55	56	46	15	0	0	0	
ESTIMATED MAX PERCOLATION (IN)(a)	8.6	18.1	11.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	78.5	125.0	241.4
PROJECTED INFLUENT FLOW (Avg. GAL/D)	36,413	38,021	75704	102,039	106,243	133,082	191,582	202,799	114,600	80,899	72,837	46,072	

CALCULATIONS

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
WASTEWATER VOLUME (gal)	1,128,791	1,140,622	2,346,835	3,163,195	2,974,814	4,125,557	5,747,452	6,286,757	3,438,008	2,507,875	2,257,934	1,382,160	36,500,000
EVAPORATION (IN)	1.9	0.5	0.4	0.5	0.5	1.3	2.2	4.3	5.3	6.1	5.5	4.1	32.6
PRECIPITATION (IN)	3.9	9.0	12.8	15.8	12.8	11.7	6.5	3.1	1.0	0.2	0.3	1.2	78.2
TREATMENT PONDS													
PERCOLATION (IN)	0.9	1.8	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.9	12.5	24.1
PERC VOLUME (gal)	67,440	142,484	88,407	0	0	0	0	0	0	0	618,234	984,343	1,900,908
EVAP. VOLUME (gal)	149,620	39,374	31,499	39,374	39,374	102,372	173,244	338,614	417,361	480,359	433,111	322,864	2,567,166
PRECIP. VOLUME (gal)	336,569	775,573	1,097,508	1,360,910	1,097,508	1,009,708	556,071	263,402	87,801	14,633	29,267	102,434	6,731,385
TREATMENT DISPOSAL(GAIN)/ (gal)	(119,509)	(593,714)	(977,602)	(1,321,537)	(1,058,135)	(907,336)	(382,827)	75,212	329,561	465,726	1,022,078	1,204,773	(2,263,310)
STORAGE RESERVOIR													
PERCOLATION (IN)	5.05	10.68	6.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.32	73.75	142.42
PERC VOLUME (gal)	212,668	449,317	278,788	0	0	0	0	0	0	0	16,615,361	15,460,293	33,016,426
W.S. AREA (ac)(b)	1.55	1.55	1.55	1.55	4.23	8.13	10.67	12.92	13.17	13.59	13.21	7.72	
EVAP. VOLUME (gal)	79,969	21,045	16,836	21,045	57,431	286,994	637,420	1,508,584	1,895,396	2,251,063	1,972,895	859,487	9,608,164
PRECIP. VOLUME (gal)	2,051,798	4,728,057	6,690,646	8,296,401	6,690,646	6,155,395	3,389,927	1,605,755	535,252	89,209	178,417	624,460	41,035,964
MONTHLY AVAIL. SNOWMELT (IN)(c)	0	0	0	0	0	0	10	31	15	0	0	0	56
ESTIMATED SNOW CONTR. (%)(d)	0%	0%	0%	0%	0%	0%	100%	41%	41%	25%	0%	0%	
ESTIMATED AREA OF INFLUENCE (ac)	50	50	50	50	50	50	50	50	50	50	50	50	
ESTIMATED INFLUX TO STORAGE (gal)(e)	0	0	0	0	0	0	13,359,202	17,114,585	8,384,961	0	0	0	38,858,747
RESERVOIR DISPOSAL(GAIN) (gal)	(1,759,161)	(4,257,695)	(6,395,023)	(8,275,357)	(6,633,215)	(5,868,401)	(16,111,710)	(17,211,756)	(7,024,816)	2,161,855	18,409,838	15,695,320	(37,270,121)
IRRIGATION													
IRRIGATION DISPOSAL (gal)(f)	0	0	0	0	0	0	0	0	0	9,015,000	23,748,000	25,422,000	58,185,000
STORAGE													
BEGINNING STORAGE (gal)	0	3,007,462	8,999,493	18,718,953	31,479,042	42,145,206	53,046,499	75,288,487	80,711,788	90,845,052	81,710,347	40,788,364	
CALCULATED STORAGE GAIN (gal)	3,007,462	5,992,031	9,719,460	12,760,089	10,666,164	10,901,294	22,241,988	23,423,301	10,133,264	-9,134,706	-40,921,983	-40,939,933	
ESTIMATED FINAL STORAGE (gal)	3,007,462	8,999,493	18,718,953	31,479,042	42,145,206	53,046,499	75,288,487	98,711,788	90,845,052	81,710,347	40,788,364	0	
AMOUNT DISCHARGED TO BLOODS CREEK (gal)	0	0	0	0	0	0	0	18,000,000	0	0	0	0	18,000,000
PREDICTED FINAL STORAGE (GAL)	3,007,462	8,999,493	18,718,953	31,479,042	42,145,206	53,046,499	75,288,487	80,711,788	90,845,052	81,710,347	40,788,364	0	

MAXIMUM STORAGE (MG) 91
AVAILABLE STORAGE (MG) 106

SUMMARY

ANNUAL INFLOW (MG)	
WASTEWATER	36.5
PRECIPITATION	47.8
SNOW INFLUX (MG)	38.9
TOTAL	123.1

ANNUAL OUTFLOW POTENTIAL (MG)	
BLOODS CREEK DISCHARGE	18
EVAPORATION	12.2
PERCOLATION	34.9
IRRIGATION	58.2
TOTAL	123.3

OVERALL BALANCE	
UNUSED DISPOSAL CAPACITY (MG) (MUST NOT BE NEGATIVE)	0
UNUSED STORAGE CAPACITY (MG) (MUST NOT BE NEGATIVE)	15

(a) Maximum estimated net percolation based on 2006 estimated disposal season percolation rate by month.
(b) Reservoir water surface area is a function of storage volume at start of month.
(c) Estimated snowmelt volume available for influx to storage reservoir.
(d) Estimated percentage of snowmelt contributing to influx to reservoir.
(e) Estimated based on fraction of accumulated snow within reservoir "area of influence" entering the reservoir during snowmelt months.
(f) Disposal capacity based on 1-in-100 Year maximum estimated land disposal volumes.

BEAR VALLEY WATER DISTRICT WASTEWATER TREATMENT AND DISPOSAL SYSTEM 2/1/2011 11:26

Water Year 2010 1-in-100 Year Precipitation Water Balance Projection Assuming 100,000 GPD Yearly Average WWTP Inflow Per BVWD existing WDR #5-10-2008

INPUT DATA

TREATMENT POND CHARACTERISTICS		STORAGE RESERVOIR		IRRIGATION AREA CHARACTERISTICS		CLIMATOLOGICAL FACTORS	
GROSS AREA (ac)	3.2	GROSS AREA (ac)	21.3	DISTRICT DISPOSAL LAND (AC)	80	PRECIP/AVG PRECIP RATIO	1.80
WATER SURFACE AREA (ac)	2.9	MAX. WATER SURFACE (ac)	14.7	SOIL WATER DEFICIT BEFORE IRRIGATION (IN)	n/a	OCT-APR EVAP/AVG EVAP RATIO	0.76
				FRACT OF LAND IRRIGATED	n/a	MAY-SEP EVAP/AVG EVAP RATIO	1.00
		STORAGE CAPACITY (MG)	106	IRRIGATION EFFICIENCY (DECIMAL FRACT)	n/a	PAN COEFFICIENT	0.80
FRACTION OF ESTIMATED PERC RATE	0.1	FRAC EST. PERC	1.0	FRACTION OF EST. PERC RATE	n/a	LAND PRECIP COLLECTED (FRAC)	0.9

PARAMETER / MONTH	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
DAYS IN MONTH	31	30	31	31	28	31	30	31	30	31	31	30	365
AVG PAN EVAP (IN)	3.05	0.89	0.61	0.76	0.83	2.14	3.69	5.34	6.64	7.63	6.87	5.17	43.62
AVG PRECIP (IN)	2.3	5.3	7.5	9.3	7.5	6.9	3.8	1.8	0.6	0.1	0.2	0.7	46.0
ESTD. SNOW ACCUM (IN Water)	3	10	22	41	48	59	60	49	16	0	0	0	
ESTIMATED MAX PERCOLATION (IN)(a)	96.1	37.5	14.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.1	168.2
PROJECTED INFLUENT FLOW (Avg. GAL/D)	36,413	38,021	75704	102,039	106,243	133,082	191,582	202,799	114,600	80,899	72,837	46,072	

CALCULATIONS

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ANNUAL
WASTEWATER VOLUME (gal)	1,128,791	1,140,622	2,346,835	3,163,195	2,974,814	4,125,557	5,747,452	6,286,757	3,438,008	2,507,875	2,257,934	1,382,160	36,500,000
EVAPORATION (IN)	1.9	0.5	0.4	0.5	0.5	1.3	2.2	4.3	5.3	6.1	5.5	4.1	32.6
PRECIPITATION (IN)	4.1	9.5	13.5	16.7	13.5	12.4	6.8	3.2	1.1	0.2	0.4	1.3	82.8
TREATMENT PONDS													
PERCOLATION (IN)	9.6	3.7	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	16.8
PERC VOLUME (gal)	757,089	295,268	113,490	0	0	0	0	0	0	0	0	158,380	1,324,227
EVAP. VOLUME (gal)	149,620	39,374	31,499	39,374	39,374	102,372	173,244	338,614	417,361	480,359	433,111	322,864	2,567,166
PRECIP. VOLUME (gal)	356,367	821,194	1,162,068	1,440,964	1,162,068	1,069,102	588,781	278,896	92,965	15,494	30,988	108,460	7,127,348
TREATMENT DISPOSAL(GAIN)/ (gal)	550,342	(486,553)	(1,017,079)	(1,401,590)	(1,122,694)	(966,731)	(415,537)	59,718	324,396	464,865	402,122	372,785	(3,235,955)
STORAGE RESERVOIR													
PERCOLATION (IN)	96.14	37.50	14.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.11	168.16
PERC VOLUME (gal)	4,046,509	1,578,157	606,584	0	0	0	0	0	0	0	0	846,516	7,077,766
W.S. AREA (ac)(b)	1.55	1.55	1.55	1.55	2.68	7.25	10.23	12.87	12.47	11.2	9.55	1.55	
EVAP. VOLUME (gal)	79,969	21,045	16,836	21,045	36,387	255,929	611,134	1,502,745	1,794,654	1,855,181	1,426,279	172,565	7,793,769
PRECIP. VOLUME (gal)	2,172,492	5,006,178	7,084,214	8,784,425	7,084,214	6,517,477	3,589,335	1,700,211	566,737	94,456	188,912	661,193	43,449,845
MONTHLY AVAIL. SNOWMELT (IN)(c)	0	0	0	0	0	0	11	33	16	0	0	0	60
ESTIMATED SNOW CONTR. (%)(d)	0%	0%	0%	0%	0%	0%	100%	41%	41%	25%	0%	0%	
ESTIMATED AREA OF INFLUENCE (ac)	50	50	50	50	50	50	50	50	50	50	50	50	
ESTIMATED INFLUX TO STORAGE (gal)(e)	0	0	0	0	0	0	14,313,431	18,337,055	8,983,887	0	0	0	41,634,372
RESERVOIR DISPOSAL(GAIN) (gal)	1,953,986	(3,406,976)	(6,460,794)	(8,763,381)	(7,047,827)	(6,261,548)	(17,291,631)	(18,534,521)	(7,755,970)	1,760,725	1,237,367	357,888	(70,212,681)
IRRIGATION													
IRRIGATION DISPOSAL (gal)(f)	0	0	0	0	0	0	0	0	0	9,015,000	23,748,000	25,422,000	58,185,000
STORAGE													
BEGINNING STORAGE (gal)	0	0	5,034,150	14,858,858	28,187,024	39,332,359	50,686,194	74,140,814	67,902,374	56,271,956	47,539,241	24,409,686	
CALCULATED STORAGE GAIN (gal)	-1,375,537	5,034,150	9,824,708	13,328,166	11,145,335	11,353,835	23,454,620	24,761,560	10,869,582	-8,732,715	-23,129,555	-24,770,513	
ESTIMATED FINAL STORAGE (gal)	0	5,034,150	14,858,858	28,187,024	39,332,359	50,686,194	74,140,814	98,902,374	78,771,956	47,539,241	24,409,686	0	
AMOUNT DISCHARGED TO BLOODS CREEK (gal)	0	0	0	0	0	0	0	31,000,000	22,500,000	0	0	0	53,500,000
PREDICTED FINAL STORAGE (GAL)	0	5,034,150	14,858,858	28,187,024	39,332,359	50,686,194	74,140,814	67,902,374	56,271,956	47,539,241	24,409,686	0	

MAXIMUM STORAGE (MG) 74
AVAILABLE STORAGE (MG) 106

SUMMARY

ANNUAL INFLOW (MG)	
WASTEWATER	36.5
PRECIPITATION	50.6
SNOW INFLUX (MG)	41.6
TOTAL	128.7

ANNUAL OUTFLOW POTENTIAL (MG)	
BLOODS CREEK DISCHARGE	54
EVAPORATION	10.4
PERCOLATION	8.4
IRRIGATION	58.2
TOTAL	130.4

OVERALL BALANCE	
UNUSED DISPOSAL CAPACITY (MG) (MUST NOT BE NEGATIVE)	2
UNUSED STORAGE CAPACITY (MG) (MUST NOT BE NEGATIVE)	32

(a) Maximum estimated net percolation based on 2006 estimated disposal season percolation rate by month.
(b) Reservoir water surface area is a function of storage volume at start of month.
(c) Estimated snowmelt volume available for influx to storage reservoir.
(d) Estimated percentage of snowmelt contributing to influx to reservoir.
(e) Estimated based on fraction of accumulated snow within reservoir "area of influence" entering the reservoir during snowmelt months.
(f) Disposal capacity based on 1-in-100 Year maximum estimated land disposal volumes.

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RESOLUTION NO. 482

A RESOLUTION DECLARING POLICY AS REGARDS DISCHARGE TO SURFACE WATERS BY THE BEAR VALLEY WATER DISTRICT

WHEREAS, on October 20, 2005, the California Regional Water Quality Control Board adopted Waste Discharge Requirements Order No. R5-2005-0139 for NPDES Permit No. CA0085146 governing discharge to surface waters by the Bear Valley Water District;

WHEREAS, said Waste Discharge Requirements and NPDES Permit were for a term of five years and are currently in process of being updated and renewed;

WHEREAS, said Waste Discharge Requirements and NPDES Permit as issued in 2005 included provisions requiring construction of tertiary treatment facilities, and the preliminary draft of the proposed permit as under current consideration by staff of the California Regional Water Quality Control Board contains an alternative proposal that eliminates the requirement to construct tertiary treatment facilities, but also proposes an option that continues the tertiary treatment requirement;

WHEREAS, the Bear Valley Water District has not, during the term of the permit, utilized the privilege to discharge granted by said Waste Discharge Requirements and NPDES Permit;

WHEREAS, the Bear Valley Water District has not discharged to surface waters since 1999;

WHEREAS, the Bear Valley Water District has produced engineering studies that predict discharge to surface waters will only be necessary when precipitation rates approach a one in twenty-five year return frequency:

WHEREAS, tertiary treatment, should it be required, will only be applicable to discharge to surface waters;

WHEREAS, the construction of a tertiary treatment plant would be an immense financial burden on current ratepayers for facilities that would rarely be utilized;

NOW, THEREFORE, IT IS HEREBY RESOLVED THAT:

1. The Bear Valley Water District Board of Directors sets forth the clear and unambiguous policy that land application of effluent is the District's primary and preferred method of disposal.

2. The Bear Valley Water District Board of Directors hereby declares that there will be no discharge to surface waters except as an emergency measure as deemed by the General Manager to maintain design conditions of District facilities and prevent uncontrolled releases of effluent.

RESOLUTION NO. 482

A RESOLUTION DECLARING POLICY AS REGARDS DISCHARGE TO SURFACE WATERS BY THE BEAR VALLEY WATER DISTRICT

PASSED AND ADOPTED this 16th day of May 2011 by the following vote of the Board of Directors of the Bear Valley Water District, to wit:

AYES, and in favor thereof: Bissell, Coffmann, Dralla, Goodrich, Nelson

NOES: None

ABSENT: None

Jim Bissell 5/16/11
President
Bear Valley Water District

I hereby certify that this is a correct copy of the foregoing resolution that was duly and regularly passed and adopted by the Board of Directors of the Bear Valley Water District, Alpine County, California, at a meeting thereof held on the 16th day of May 2011

Jearl Nelson 6/2011
Secretary
Bear Valley Water District