# RESPONSES TO COMMENTS
# LETTER #11
# LISA PATTERSON

11-1 This comment is noted and will be forwarded to the Agency decision-makers for consideration before a decision is made to allow a specific project or facility to be implemented.

11-2 This comment is noted and will be forwarded to the Agency decision-makers for consideration before a decision is made to allow a specific project or facility to be implemented. Please refer to page 3-34 which contains a discussion of the brine management facility. This facility has not yet been designed, which is consistent with the programmatic nature of the RWMP. First, it is assumed that a pond liner will be required. However, the type of liner, type of detection systems and nature of the long-term operation and maintenance of this evaporation system have not yet been defined, primarily because the character of the reject water and the ultimate residual evaporite have not yet been defined. Because the area where the ponds are proposed to be installed occurs in the vicinity of a known potable water production zone, the underlying water resource will have to be protected. Second, the type of liner will be consistent with protection requirements and the design will have to be evaluated for potential environmental impacts once it is completed. Liners may include plastic, clay or concrete, depending upon requirements from the Regional Water Quality Control Board, and the engineering of the liners must be approved by the Regional Board prior to their installation.

11-3 This comment is noted and will be forwarded to the Agency decision-makers for consideration before a decision is made to allow a specific project or facility to be implemented. An exterior berm already exists around the periphery of the existing BBARWA treatment facility. BBARWA will design the evaporation pond berms at a height consistent with the existing exterior berm around the property. As a result, the new evaporation pond berm will be lower in height than the existing berm and will not intrude into the existing visual setting, which is defined by the existing treatment plant facilities. Based on these data, the visual impact will be less than significant and will not substantially modify any view or affect a scenic vista.

11-4 This comment is noted and will be forwarded to the Agency decision-makers for consideration before a decision is made to allow a specific project or facility to be implemented. Please refer to response to comment 11-2. The potential for leaks is an important issue, but cannot be fully evaluated until the specific reject water and evaporite have been characterized. The data available indicate that the reject water will not be hazardous and the evaporite is unlikely to be hazardous. See Chapter 3 and Subchapter 4.9. If this remains the case after further testing of the reject water, then the configuration of the system will be different. Under either circumstance, the evaporation pond liner system will be designed to have a secondary containment and monitoring system in accordance with requirements to protect the underlying potable water aquifer. In such systems, once a leak is detected, the operations at the ponds would be stopped and the liner repaired so any leak would be repaired. If a leak gets beyond the leak detection system, then BBARWA would have to conduct a remedial removal program under the Regional Board's direction to remove any contaminants. All of these decisions must be made only after the quality of the reject water is characterized.

11-5 Please refer to response to comment 11-3. Based on the anticipated design of the evaporation ponds, it is doubtful whether any tourist would notice them as they drive along North Shore Drive, the closest roadway to the project site.

11-6 Please refer to responses to comments 2-4, 7-1, 8-4 through 8-6 and 8-16. The potential impacts of brine (residual evaporite and reject water) have been thoroughly analyzed and determined to be easily controlled through identified mitigation. Wildlife access to the evaporation system will be fully controlled and will not present a forage location for bald eagles that may forage in the general area.

11-6 cont.

access to the pond. In particular, how will the evaporation pond impact the bald eagles who forage in the area of the proposed pond?

vi. The document does not adequately address the potential for malodor. It mentions that there would be minimal odor due to cold temperatures, but the ponds require sun and high temperatures to serve their purpose.

11-7

11-8

- The impacts of the construction of 34 miles of pipeline in the valley have not been adequately addressed.

11-9

- The risk of intentional contamination of the groundwater drinking supplies due to the exposed nature of the percolation basis is not analyzed.

11-10

- The document states that the RO process removes all dangerous chemicals and pharmaceuticals, but there is no evidence to support this assertion.
- The alternatives section insufficiently evaluates the various alternatives presented and excludes other viable alternatives. Why is it not logical to continue to repair leaks in the sewer system, for example? I also understand there are opportunities to treat municipal wells for excess minerals with filtering systems which could be more cost effective. Why is this alternative not explored? I also understand that the CSD has excess water supply that could be sold to the DWP. This option also is not explored.

11-11

- In addition, my detailed evaluation (I'm a Certified Public Accountant) of the assumptions underlying the consultant's financial projections supporting a cost of $8.38 per month per EDU surfaced some disturbing information. For example, that this low cost is predicated on the fact that BBARWA will raise its rates by 50% (or 40% if the grant comes through) in 2008. I don't believe this rate increase has been fully disclosed to the public by BBARWA. How will these kind of rate increases impact the citizens of the valley on fixed incomes? Further, the financial projections do not sufficiently budget for the various mitigations proposed by the DPEIR.

11-12

- The impact of losing 500 acre-feet per year of drinking water for mixing for 9 to 18 months has not been analyzed. How is this justified given the extreme water resource issues that allegedly exist in the valley today?

11-13

Overall, the DPEIR is wholly unsatisfying and insufficient in the details provided to support its assertions. Further, the DPEIR indicates that an acceptable "adaptive management" strategy to address future impacts could include terminating the recycling project. It is totally unacceptable to forgo a full and through evaluation of the potential impacts, mitigations and alternatives on the front end before spending significant amounts of money and putting our environment, tourism economy and water quality at risk. Thus, I urge you and the BBARWA Board to postpone any decision on the project until a thorough DPEIR is prepared. Further, I support a full and open public disclosure and discussion of the true and full costs of the project (including the projected 50% BBARWA rate increase).

11-14

Best Regards,

*Lisa Patterson*
PO Box 412
Big Bear Lake, CA 92315
909-866-1067

11-7 This comment is noted and will be forwarded to the Agency decision-makers for consideration before a decision is made to allow a specific project or facility to be implemented. Please refer to responses to comments 8-10 through 8-12 which address the odor issue. The data presently indicate that neither the recycled water or the reject water should contain inherent odors. Management actions required to control odors will be implemented during operations, primarily to control the growth of algae or other organic matter. Ample measures are available that are already used by BBARWA to control existing plant odors and these, plus ongoing maintenance of ponds, are sufficient to control any potential odor sources.

11-8 This comment is noted and will be forwarded to the Agency decision-makers for consideration before a decision is made to allow a specific project or facility to be implemented. The pipeline installation impacts have been fully disclosed. The pipeline construction impacts are addressed in the following subchapters of the Draft PEIR 4.2, 4.4, 4.5, 4.6, 4.7, 4.8, 4.9, 4.10, 4.12 and 4.16. Pipelines will not all be installed at one time, and are estimated to be a few miles of pipelines installed per average year. Pipeline installation is routine and can be installed to avoid resources at fixed locations, such as biological or cultural resources. Adequate mitigation has been identified to ensure that the installation of pipelines will not cause significant adverse impacts.

11-9 CEQA requires an evaluation of potential impacts, but not those that are speculative. If a criminal wants to contaminate the groundwater or the local water supply at present, there is more than ample opportunity to contaminate water stored in reservoirs or in pipelines. In addition, groundwater can be contaminated by pouring toxic material into a stream channel where percolation already occurs. The recharge ponds will be fenced and access controlled. Speculation regarding intentional contamination of the recharge ponds does not address any reasonable impact likely to result from project implementation that could not already occur.

11-10 RO is very effective in reducing very small polar molecules (i.e., sodium, magnesium, sulfate and other ions) and non-polar large molecular compounds with a typical size of 100 Daltons or more). The majority of endocrine DISRUPTORS are large compounds (>100 Dalton) and can be effectively captured by the RO membrane. However, UV with advanced oxidation provides an additional redundant and effective barrier for trace organics and endocrine DISRUPTORS. The successful removal of these compounds with RO and combination of RO and advanced oxidation is shown in the Appendix B to this document which is provided as Attachment 2.

11-11 Please refer to responses to comments 7-4 and 8-26 through 8-29. Fundamentally, the alternatives identified in this comment solely reflect methods of seeking alternative water supplies. The proposed project's objectives are described in Subchapter 1.3 of the Draft PEIR and the primary goal is to conserve and use the water resources being transported out of the Valley for the existing and future Valley residents. Water resources, including recycled water, are deemed essential to the survival of any community and the primary goal of the RWMP is to eliminate the continued loss of this valuable resource. None of the alternatives listed in this comment or previous comments, can meet these objectives.

11-12 This comment is noted and will be forwarded to the Agency decision-makers for consideration before a decision is made to allow a specific project or facility to be implemented. Economic issues are very important to local residents and decision-makers, but economic issues that do not cause physical impacts are not the focus of evaluations under CEQA. See Section 15131 of the State CEQA Guidelines.

11-13 None of the water used for blending will be lost. Please refer to responses to comments 8-23 and 8-24. At most BBARWA modeling (see Appendices 2, 2A and 5) indicate that the water used to blend with the recycled water will be unavailable for an initial six month period and after that it would be permanently available based on continue recharge of the aquifer beneath the Green Spot recharge site.

11-14 This comment is noted and will be forwarded to the Agency decision-makers for consideration before a decision is made to allow a specific project or facility to be implemented.

**From:** Patty Byrd [byrdhousebb@verizon.net]
**Sent:** Thursday, January 05, 2006 10:05 PM
**To:** gm@bbarwa.org
**Subject:** recharge project

**Attachments:** _AVG certification_.txt

Greetings Mr. Schindler,

12-1 I have been wanting to express my support for BBARWA's recharge project, and finally I am. This only makes sense. Reviewing the information on the web site and from what has been printed in the Grizzly, our valley would be irresponsible in continuing to send billions more gallons of useable water down to the alfalfa fields in Lucerne.

12-2 Additional treatment processes which dilute the purified water into recharge ponds where it blends with rain, snow or blend water and filters naturally into the aquifer through the soil, just as rainwater does is a proven filtration procedure. Groundwater recharge simply accelerates the natural water cycle process. A recent study concluded that the addition of purified recycled water to the aquifer will actually improve the quality of our groundwater.

12-3 Since groundwater recharge is a proven technology that is already being used in a variety of California communities including Orange County, Chino Basin and Los Angeles County, it is time that Big Bear starts implementing this technology. Thank you BBARWA officials for finally taking charge of a recharge project and providing a solution to our wasteful water habits. Please send, or tell me where to send, this or additional notes of support.

Sincerely,

Patricia Byrd, P.O. Box 458, Big Bear City, 92314 585-8443

# RESPONSES TO COMMENTS
# LETTER #12
# PATRICIA BYRD

12-1 This comment is noted and will be forwarded to the Agency decision-makers for consideration before a decision is made to allow a specific project or facility to be implemented.

12-2 The data on the quality of the recycled water that will be produced by the proposed treatment train (Subchapter 4.9 and Appendix 1) support the conclusion presented in this comment.

12-3 This comment is noted and will be forwarded to the Agency decision-makers for consideration before a decision is made to allow a specific project or facility to be implemented.

COMMENT LETTER #13

United States Department of Agriculture | Forest Service | San Bernardino National Forest Supervisor's Office
1824 S Commercenter Circle
San Bernardino, CA 92408-3430
Phone: 909-382-2600
Fax: 909-383-5770
TTD: 909-383-5616

File Code: 2500/2520
Date: JAN - 6 2006

Mr. Steve Schindler
Big Bear Area Regional Water Agency
121 Palomino Drive
Big Bear City, CA 92314

JAN 10 2006

Mr. Schindler:

13-1 Thank you for allowing the San Bernardino National Forest the opportunity to review the "Draft Program Environmental Impact Report for the Big Bear Area Regional Wastewater Agency's Recycled Water Master Plan SCH#2005041114." We look forward to working with you during the evaluation of these comments, providing any clarification you may need.

We would appreciate a full and complete review of the provided comments. Please contact Robert Taylor, Forest Hydrologist, 909-382-2660, with any concerns.

Jeanne Wade Evans

JEANNE WADE EVANS
Forest Supervisor

Enclosure

# RESPONSES TO COMMENTS
# LETTER #13
# U.S. FOREST SERVICE

13-1 This comment is noted and will be forwarded to the Agency decision-makers for consideration before a decision is made to allow a specific project or facility to be implemented.

#01 **General comment, multiple locations in document (e.g. Page 1-5 Hydrology, Page 4-173)**: The document uses the phrase "adaptive management" in multiple locations, many of which refer to the concept of being able to stop recharge at any time. However, BBARWA has also disclosed that water delivery to the Lucern watershed is to be reduced and the agricultural use will be modified or discontinued in response.

13-2

- If recharge were to suddenly stop and could not continue for several weeks or months, then the recharge water would have to be routed somewhere else. Presumably, one location for routing the water would be towards the Lucern watershed. If the agricultural interests have modified or discontinued the use of the water, then how will the water be handled at that end?
- The concern is that if an alternate use of the water separate from recharge or agricultural use is not developed now, then stopping recharge might not be able to be implemented quickly for lack of another usage of the water. If the stoppage of the water as recharge were due to the buildup of other non-traditional contaminants, then the water would need to be routed somewhere where the concern for non-traditional contaminants was not as great.

13-3

#02 **Section 3.5.1, Page 3-7, ¶ 5; Section 3.5.3.2, Page 3-29; Section 4.5.3.2, Page 4-70, Section 4.5.4, Page 4-73:** Use of tertiary water for habitat improvement of the unarmored threespine stickleback at Shay Creek would likely require considerable literature review and scientific study before it could be implemented. Listing this example for a demand of recycled water may lead some to believe that tertiary water has already been determined suitable for this use. We suggest clarifying these statements regarding current scientific knowledge of the use of tertiary water and the effect on the ecosystem and the biology of the organism in question. If a study is to be conducted by BBARWA, then coordination with the San Bernardino National Forest would be appreciated to take into account affected National Forest System lands and the administration of special use permits issued to BBARWA and each of it's member water agencies. Are the study design and timeline known at this time?

13-4

#03 **Section 3.5.4, Page 3-31, ¶ 1:** Please clarify and coordinate these statements with the modeled results. The new wells are to be installed at a distance greater than 500 feet. The model used a distance of 2000 feet. If the water is to stay in the aquifer a minimum of six (6) months and the estimated hydraulic conductivity is nine (9) feet per day, then a minimum of 1638 feet would be needed.

13-5

- On Page 4-130, the "initial range" of hydraulic conductivity values used in the model ranged from 2 ft/day to 20 ft.day. Was this range used to justify the use of 500 feet and the minimum time of six months? If so, what was the final range of hydraulic conductivity values? Was a parameter estimation algorithm used in the modeling process?

#04 **Section 3.5.4, Page 3-31, ¶ 2:** Will the new wells be required to be sealed with bentonite to limit cross contamination between aquifer layers?

13-6

13-2 Under the assumptions contain in this comment, the advanced treatment system would be shut down and the treated effluent would be delivered to the site in Lucerne. At Lucerne, one of two alternatives would be implemented. Either the treated effluent would replace groundwater at the lease site to support ongoing agricultural operations, or any unplanted areas would be planted and irrigated with the treated effluent. In either case, the treated effluent would still be delivered to the Lucerne Valley site. This issue will be addressed in the operational manual developed for the project in compliance with CDHS and the RWQCB requirements. BBARWA does have substantial storage capacity in the Lucerne Valley for effluent flows if the recycled water had to be diverted from the groundwater recharge project.

13-3 This comment is noted and will be forwarded to the Agency decision-makers for consideration before a decision is made to allow a specific project or facility to be implemented. As noted in the response above, BBARWA has a viable alternative for managing a condition where recycled water could not be used for recharge or irrigation in the Valley.

13-4 The BBARWA Board has expressed some concerns about using advanced treated effluent for habitat management of the stickleback, but the option of using the effluent for this purpose was raised in the original comments on the Notice of Preparation (see comment letter #1). There was not literature search at this stage because a decision by BBARWA to consider using recycled water for stickleback habitat support would be a future program decision. Consequently, a decision was made to define a mitigation measure that would have to be implemented before such habitat support could be implemented. Mitigation measure 4.5-8 outlines the procedure that would be required at a general level. Such a program would obviously involve a number of agencies (USFWS, USFS, CDFG and others) and scientists in the conduct of a detailed study that would verify the stickleback would survive, even flourish, in the recycled water over many generations before recycled water could be used in the remaining habitat for this very limited population. The Forest Service would be invited to participate, but at this time there is no study design or time line, which would be dependent upon the BBARWA Board bringing this project forward under the RWMP at some undefined point in the future.

13-5 For a recycled water recharge project utilizing surface spreading basins, the DHS requires that the recycled water be retained underground for a minimum of six months, and shall not be extracted within 500 ft of the artificial recharge basins (Title 22, California Code of Regulations, Division 4 Environmental Health, Chapter 3 Recycling Criteria, Section 60320.010(c). The analysis of recycled water recharge subsurface travel time is provided in Technical Appendix V, entitled "Analysis of Ground Water Flow Model Simulations for the Proposed Green Spot Artificial Recharge Site," prepared by GEOSCIENCE Support Services, Inc., dated 14-Jul-05. In summary, it was concluded that the regulatory requirement for minimum underground travel time of recycled water between the Green Spot artificial recharge site and existing downgradient extraction wells (shown on Figure 16 of the referenced report) is met. Furthermore, additional wells required to extract recharged water can be located to comply with the travel time criteria. By default, the proposed extraction wells meet the 500 ft minimum distance criteria.

The final range of hydraulic conductivity values used in the model was obtained using Parameter Estimation software (PEST) as described in Technical Appendix II, "Geohydrologic Evaluation of Artificial Recharge Potential in the Big Bear Valley, California," Section 9.6.2 Calibration Process. The final range of hydraulic conductivity used in the model, following calibration, was 0.5 to 20 ft/day.

13-6 Although each new well will have a 50 ft deep sanitary seal, in accordance with DHS requirements, they will not be required to have bentonite seals between aquifers because no contamination will be allowed to be introduced to the aquifer system as a result of the project.

13-7 #05 **Section 3.5.7, Page 3-35, #8**: "The Master Plan envision up to six wells". What is the minimum number of wells that could be drilled? Would a number less than six still support the modeled results?

#06 **Section 4.5.3.2, Page 4-68; Page 4-172; Page 4-162:** Mitigation measure 4.9-6: BBARWA will develop monitoring program including specific chemicals and thresholds.

13-8
- o When will this program be developed?
- o What specific chemicals will be included?
- o How are thresholds going to be determined?
- o What will be the frequency of monitoring?
- o Will this information be open for public comment and review?

13-9 #07 **Section 4.7.2, Page 4-88**: Given the fractured nature of the geology, the potential exists for fractures to bypass the perforations of wells. Has or will a geophysical assessment be done between the location of the recharge and the downstream monitoring wells?

13-10 #08 **Section 4.9.2.2, Page 4-134**: Has an assessment been done of the natural subsurface biota (e.g. bacteria) and the effects that recharge water will have on their life cycle? If not, why not? If so, please provide references to the study.

#09 **Section 4.9.3.1, Page 4-142/143**, regarding the discussion of environmental impacts from "non traditional or unregulated pollutants/contaminants."

13-11
- o The suggestion is made that comparison can be made with other recharge projects, yet no specific references are given to scientific literature. Is there any specific literature to support the claim that other similar projects have caused no health hazards? Please provide such references.

13-12
- o The suggestion is made that BBARWA can monitor concentrations of non-traditional constituents and modify operations in response. Is there a plan in place to monitor these constituents? If so, where can it be accessed? If not, a timetable should be provided to address this suggested plan. In either case, the plan should have a public review and comment period.

13-13
- o A discussion of acceptable levels of risk is present in the document. What specifically are the acceptable levels of risk for each contaminant? How were these levels determined? Please provide references.

13-14
- o The paraphrasing regarding the comparison of one part per trillion trivializes the risk associated with certain chemicals at very low levels (e.g. "Each year, these instruments get more sensitive and we are far outrunning toxicity."). The final sentence of Page 4-143, ¶ 1 is not needed.

#10 **Section 4.9.3.2, P 4-147**: Is the assumption of pumping 24 hours per day, 7 days a week reasonable given the current conditions. A seasonal scenario seems more reasonable. Was

13-15 the model run in a transient fashion to take into account the cycling of the wells? Is there enough redundancy in the wells' zones of influence so the loss of one or two wells due to maintenance will not result in contaminants getting past the extraction well line?

13-7 For the Green Spot artificial recharge project, it is not necessary to "capture" molecule for molecule all of the recycled water that is introduced as recharge. Hydraulically, it will be necessary to have the capability to pump out as much groundwater from the extraction wells as is recharged in order to manage groundwater levels north of the extraction wells. Accordingly, if the aquifer system in the vicinity of the proposed extraction wells were capable of yielding greater than 100 gallons per minute at each well site, it would be possible to meet the requirements of the project with less than six wells.

13-8 The monitoring program will be developed as part of the Engineering Report, which is required by CDHS and the RWQCB. This report has to be submitted and a permit issued prior to implementation of a GWR project. The monitoring plan is developed in conjunction with CDHS and the RWQCB and specifies the frequency, limits, and chemicals to be monitored. Title 22 of the California Code of Regulations, Division 4, Environmental Health, Chapter 3 Recycling Criteria, Section 60320.080 outlines the requirements of the engineering report. There will be several opportunities for public input to the program. The sampling and monitoring program has been designed to match the California Department of Health Services, Office of Drinking Water program. The program must be approved by the CDHS and will be subject to public input at the RWQCB level as well as at regular BBAWRA meetings.

13-9 The aquifer system beneath and downgradient of the proposed artificial recharge basins consists of unconsolidated alluvium, not fractured bedrock (see Technical Appendix II, Sections 7.1.1 and 7.1.2). As such, the potential for preferential groundwater flow in fractures to bypass wells is not an issue and further geophysical assessment is not warranted.

13-10 There have been very few studies of the whole soil biota ecosystem at very few locations. The recycled water (see Chapter 3) will have a mineral content lower than the native groundwater and surface runoff water at most locations, about 100 mg/L. With very little organic matter and no toxics, the recycled water should function similar to surface runoff from natural precipitation. However, the fundamental issue is whether there are any significant biological resources in the soil biota ecosystem that require a detailed evaluation. BBARWA and the project team are not aware of any sensitive soil biota resources that could be adversely impacted by recharging recycled water. Therefore, with a lack of toxic materials, it has been assumed that the presence of water will foster positive activity in the soil biota, as long as anaerobic conditions are not allowed to develop. By managing the groundwater table at a maximum of 30 bgs, the soil biota in the vadose zone is expected to function much as it does now or even better due to more available water.

13-11 The Los Angeles County Sanitation Districts have been providing recycled water to spreading basins for more than 40 years. They have performed numerous health effects studies including human health monitoring. No impacts have been found. Orange County and utilities in Texas have also performed similar studies. The body of references is vast. Artificial groundwater recharge using recycled water has been ongoing since the 1960s in Los Angeles County at the Montebello Forebay. This project supplies 50,000 acre-ft (3 year average) of secondary treated water (multimedia filtration and chlorination). The health effects of this project have been studied since the 1980s. Studies performed have made the following conclusions regarding groundwater recharge at this site:

- 1978-84 Health Effects Study – This study found no measurable adverse effects to the groundwater basin or health of people from the project.

- 1986 Scientific Advisory Panel –This panel found risks associated with the project are not dissimilar from those associated with commonly used surface water.
- 1996 and 1999 Rand Corporation Study – These studies found that after almost 30 years of groundwater recharge, no association exists between reclaimed water and higher rates of cancer, mortally, infectious disease, or adverse birth outcomes."

In addition, groundwater recharge has been ongoing since 1976 in Orange County, California. The Orange County Water District has been operating Water Factory 21, an internationally renowned groundwater recharge project. This pioneering effort was initiated to protect the groundwater basin from saltwater intrusion – which previously had encroached as far as five miles inland – and to replenish the local aquifers, which supply 75 percent of the water needs for nearly 2.5 million residents. Appendix B (Attachment 2 to this Final PEIR) provides a copy of a study performed at the OCWD project.

Also, please refer to response to comment 13-8 which address the preparation, review and approval of the monitoring plan for this project.

13-12 Please refer to response to comment 13-8. The monitoring plan is required to be developed in conjunction with the regulatory agencies, and this includes the opportunity for public input. Specific non-traditional constituents can be included in the monitoring plan to provide an early warning that such constituents may be occurring in the recycled water. The selection of these specific organic chemicals would be made by the Agency after conferring with the agencies and public.

13-13 Levels of risk for specific contaminants is determined by the regulatory agencies which establish maximum contaminant levels (MCL) to protect the public health for specific contaminants. Since the specific contaminants that may occur in the recycled water are not yet known (all organics were non-detect in the pilot scale test recycled water), the specific tests and contaminant levels would be determined in the future. Where a future contaminant occurs without any MCL, the Agency would confer with the regulatory agencies to establish a health protective concentration. Again, not that this process would not be implemented until further testing is completed and a commitment is made to proceed with Phase 1 of the project.

13-14 This comment is noted and will be forwarded to the Agency decision-makers for consideration before a decision is made to allow a specific project or facility to be implemented. The point being made by including this quote from the referenced article is that the ability to measure a chemical does not relate to its chemical toxicity.

13-15 The extraction wells for the Green Spot artificial recharge project would not be operated 24 hrs/day, 7 days a week. However, the data is not available to calibrate the groundwater flow model to daily time steps as would be necessary to address the daily or weekly cycling of extraction wells (the model is constructed with monthly time steps). In the context of this comment, this is not an issue because the groundwater flow model was developed to address the lateral distribution and magnitude of groundwater level changes that could be expected from the project under a range of possible operational scenarios. Groundwater contamination was not addressed using the model because all contaminants associated with the recycled water will either be removed to a non-detectable level or to within a detected, allowable regulatory limit by the advanced treatment process at the BBARWA treatment plant (see Response to Comment 9-61). As such, it was not necessary to set the model up to address the daily cycling of production wells.

13-16 #11 **Section 4.9.3.2, Page 4-163:** "Based on the data available, the concentrations of any pharmaceuticals will be too low to harm wildlife downstream of the recharge sites." Specifically, what data is being used to make this assertion? Please provide scientific literature references to support these determinations.

13-16 There are two reasons for this assumption. First, the recycled water will not surface and be available to wildlife downstream of the recharge site. See Appendices 2, 2a and 5 of the Draft PEIR. Second, see Table 3.5-3 and response to comment 11-10, which address RO capability to eliminate organics contained in treated effluent. Based on this removal rate and lack of future exposure, the conclusion was reached that wildlife would not be exposed to harmful concentrations of pharmaceuticals.

STATE OF CALIFORNIA - THE RESOURCES AGENCY
ARNOLD SCHWARZENEGGER, *Governor*

**DEPARTMENT OF FISH AND GAME**
http://www.dfg.ca.gov
Eastern Sierra-Inland Deserts Region
3602 Inland Empire Blvd. Suite C-220
Ontario, CA 91764
Phone (909) 484-0459
Fax (909) 481-2945

January 5, 2006

Steven Schindler
Big Bear Area Regional Wastewater Agency
121 Palomino Drive
Big Bear City, CA 92314

**Re: Draft Program Environmental Impact Report SCH #2005041114**
**Big Bear Area Regional Wastewater Agency Recycled Water Master Plan**

Dear Mr. Schindler:

The California Department of Fish and Game (Department) appreciates this opportunity to comment on the Draft Program Environmental Impact Report (DPEIR) for the above-referenced project with regards to impacts to biological resources. The proposed project is a Master Plan Project (Project) consisting of five components: identification of future recycle water users; upgrading the existing secondary wastewater treatment facility to further treat secondary wastewater; installation of transmission facilities for recycled water distribution, percolation basins for recharging groundwater and to desalinate wastewater, construction of
14-1 storage facilities; a delivery system within the Big Bear Area Regional Wastewater Agency service area; and in reduction in wastewater deliveries to your agency's Lucerne Valley facilities.

The Department is responding as a Trustee Agency for fish and wildlife resources [Fish and Game Code sections 711.7 and 1802 and the California Environmental Quality Act Guidelines (CEQA) section 15386] and as a Responsible Agency regarding any discretionary actions (CEQA Guidelines section 15381), such as a Lake and Streambed Alteration Agreement and California Endangered Species Act (CESA) Incidental Take Permit.

**Special Status Species & Habitat**

The DPEIR states that the anticipated impacts to biological resources include unavoidable and permanent habitat loss, but it is not documented whether any of the listed and/or sensitive species of the DPEIR occur within the permanent project footprint. The DPEIR
14-2 does not address potential effects to the bald eagle, listed plant species, and/or migratory waterfowl from many of the proposed actions. The DPEIR states that any evaluation of potential effects to listed and/or sensitive biological resources and migratory waterfowl is deferred to future project planning in accordance with the programmatic nature of the Project. The Department recommends that a Final PEIR be developed and circulated that includes an evaluation of how project components that are to be developed over time will be

# RESPONSES TO COMMENTS
# LETTER #14
# CALIFORNIA DEPARTMENT OF FISH AND GAME

14-1 This comment is noted and will be forwarded to the Agency decision-makers for consideration before a decision is made to allow a specific project or facility to be implemented.

14-2 Please refer to responses to comments 2-2, 2-3, 2-4 and 8-14 through 8-19). The comments do not accurately reflect the actual content of the Draft PEIR regarding biological resources. For the treatment plant, pipeline alignment and recharge basins, sufficient biology evaluation has been completed (see Subchapter 4.5 and Appendix 4) to conclude that no listed species will be impacted by the proposed project and two sensitive plant species will require collection and transplanting at the recharge site. However, for the evaporation pond location (specific size and site not yet identified) additional investigations will be required to determine whether adverse impacts on certain species, such as bald eagles, may occur or not, but such impacts will be determined prior to any decision to approve the site, design and construction of the evaporation ponds. In addition, future facilities, where the location is not yet determined, will be given evaluation in accordance with the programmatic concept of this project. For future programmatic impacts, mitigation measures have been identified so regulatory agencies will understand how mitigation will be implemented for potential biology impacts in the future. Based on the type of facilities and their location, the conclusion reached regarding biological resource impacts is that they can be avoided or mitigated.

14-2 cont. integrated should environmental and biological information obtained in the future preclude project options as now stated.

14-3 The Department is also concerned that the operation of basins and/or brine ponds containing secondary treated wastewater could result in an attractive nuisance for migratory waterfowl. The DPEIR did not include data to indicate whether birds attracted to these basins or brine ponds would be affected by contact with the wastewater or from feeding on vegetation and/or invertebrates. Migratory waterfowl are common prey for bald eagles, and if waterfowl are using the basins or brine ponds, bald eagles will likely be attracted to these areas. No evaluation of potential effects to bald eagles from feeding on waterfowl using the basins or brine ponds is available in the DPEIR. The Department recommends that a Final PEIR be developed that includes some evaluation of the potential effects of the basins or brine ponds on migratory waterfowl and/or the bald eagle

14-4 The Department also recommends that a Final PEIR be developed that includes and evaluation of groundwater levels and storage capacity within the aquifer and potential Project effects from water recharge and extraction on habitat with the range of the state and fully-protected unarmored threespine stickleback fish (*Gasterosteus aculeatus williamsoni*), and/or sensitive habitats such as wet meadow and pebble plain; all of which could be affected by significant changes in groundwater levels over time.

14-5 A CESA Incidental Take Permit must be obtained for the impacts to a State listed species. CESA permits are required for a project if the project has the potential to result in "take" of species of plants or animals listed under CESA, either during construction or over the life of the project. CESA permits are issued to conserve, protect, enhance and restore State-listed threatened or endangered species and their habitats.

14-6 The Department recommends the project applicant meet with the Department to discuss project impacts and appropriate mitigation measures. Early consultation with the Department is recommended since modification of the proposed project and proposed mitigation measures may be required to avoid or reduce impacts to the endangered species and so that we may assist in the development of an acceptable mitigation plan.

Thank you for this opportunity to comment, please contact Don Copeland at (909)945-3294, if you have any questions regarding this letter or need further coordination on these issues.

Sincerely,

Scott Dawson
Senior Environmental Scientist
Habitat Conservation Planning

cc: Nancy Ferguson, USFWS, Carlsbad
State Clearinghouse, Sacramento

14-3 Please refer to response to comment 14-2. The specific program will be implemented to control access to all of the ponds if deemed necessary. Specific mechanisms, such as netting and fencing, or other controls are available to accomplish such control of wildlife access. However, after careful review of the quality of the recycled water, the Department may conclude that this highly polished, advanced treated water may be suitable for wildlife access at the Green Spot site. Regarding the evaporation ponds, the wildlife access controls will be installed to prevent any impact to wildlife. These impacts and controls are discussed in the Draft PEIR in Subchapter 4.5.

14-4 Please refer to responses to comments 13-4, 13-5 13-7 and 13-8 and Appendices 2, 2a and 5. There will be no direct or indirect impact on the stickleback or wet meadow and pebble plain habitats based on the management of the local groundwater aquifer downstream from the recharge site. Groundwater levels will be maintained so they do not exceed 30 fee bgs and will not result in increased rising water downstream of the recharge site.

14-5 This comment is noted and will be forwarded to the Agency decision-makers for consideration before a decision is made to allow a specific project or facility to be implemented. Please refer to mitigation measures 4.5-1 and 4.5-7 that will be implemented for any future project-related environmental evaluation. Measure 4.5-1 ensures that the presence of any sensitive or listed species will be identified and measure 4.5-7 ensures that adequate mitigation, in accordance with both CESA and FESA requirements for incidental take permits.

14-6 This comment is noted and will be forwarded to the Agency decision-makers for consideration before a decision is made to allow a specific project or facility to be implemented. Where biological resource impacts are identified and mitigation will be implemented, BBARWA will consult with both the USFWS and CDFG to address appropriate mitigation. For example, it is known that two sensitive (not listed) plants occur at the Green Spot recharge site. The objective is to collect the plants and/or seed bank, as appropriate, and replant them on the banks of the recharge pond berms. This will be done in consult with the two agencies, if the recharge pond project is funded and implemented by the BBARWA Board.

# California Regional Water Quality Control Board
## Santa Ana Region

Alan C. Lloyd, Ph.D.
*Agency Secretary*

3737 Main Street, Suite 500, Riverside, California 92501-3348
Phone (951) 782-4130 – FAX (951) 781-6288 – TTY (951) 782-3221
http://www.waterboards.ca.gov/santaana

Arnold Schwarzenegger
*Governor*

December 27, 2005

Steve Schindler
Big Bear Area Regional Wastewater Agency
121 Palomino Drive
Big Bear City 92314

JAN 23 2006

**DRAFT PROGRAM ENVIRONMENTAL IMPACT REPORT (PEIR) FOR RECYCLED WATER MASTER PLAN, BIG BEAR AREA REGIONAL WASTEWATER AGENCY, SCH# 2005041114**

Dear Mr. Schindler:

Staff of the Regional Water Quality Control Board, Santa Ana Region (RWQCB), have reviewed the above-referenced DPEIR and Appendices for the Big Bear Area Regional Wastewater Agency's (BBARWA) Recycled Water Master Plan.

15-1 BBARWA proposes a phased expansion of the infrastructure and operations of the Regional Wastewater Treatment Plant at Baldwin Lake (STP) to improve existing disinfected tertiary treatment capability and distribution. We understand that the reclaimed wastewater would be used to recharge the Big Bear Valley Groundwater Management Zone (BBVGMZ). It would be extracted and distributed through an expanded pipeline network to groundwater and surface water consumers, or perhaps distributed directly to certain uses. The DPEIR states that eventually up to 2,000 acre-feet per year (afy) of tertiary-treated recycled wastewater would be discharged from the STP to consumers, including 1,500 afy to groundwater recharge basins. In Phase 1, a pilot program will initially discharge 500 afy at the Greenspot recharge basin located adjacent to the STP. As identified by the DPEIR, the only significant adverse environmental impact posed by the project was to the local area's aesthetic quality (Executive Summary, 1.5 Impacts).

The PEIR should incorporate the following comments in order for the project to best protect water quality standards (water quality objectives, beneficial uses, and an appropriate antidegradation policy) contained in the Water Quality Control Plan for the Santa Ana River Basin (Region 8 Basin Plan):

15-2 1) On June 24, 2005, Order No. 00-012, revised waste discharge requirements (WDRs) were adopted by the Regional Board for the STP. The Order recognized the existing discharge of disinfected secondary effluent to a groundwater recharge facility/pond at Baldwin Lake, the discharge of non-disinfected secondary effluent for irrigation in the Lucerne Valley (Region 7), and the distribution of disinfected tertiary effluent for local surface irrigation. Order No. 00-012 does not include the current proposal to expand artificial groundwater recharge use. Revised WDRs will be needed before subsequent phases of the master plan are implemented, such as those listed in DPEIR Table 1-1, Appendix 1. Revised WDRs will also need to consider relevant wastewater recycling criteria regulations in California Code of Regulations,Title 22. Please contact the Regional Board's Permitting Section at (951) 782-4130 regarding when submittal of a new Report of Waste Discharge to obtain revised WDRs will be necessary.

# RESPONSES TO COMMENTS
# LETTER #15
# CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
# SANTA ANA REGION (REGIONAL BOARD)

15-1 This comment is noted and will be forwarded to the Agency decision-makers for consideration before a decision is made to allow a specific project or facility to be implemented.

15-2 This comment is noted and will be forwarded to the Agency decision-makers for consideration before a decision is made to allow a specific project or facility to be implemented. BBARWA engineers have contacted the Regional Board staff to discuss this project and ensure that the level of treatment being proposed will allow the recycled water to meet the Basin Plan beneficial uses and water quality objectives. If the RWMP is adopted and a decision made to proceed with Phase 1, the Agency will prepare the requisite engineering reports, revised WDRs and other materials required to meet both the Regional Board's and DHS recycled water use criteria.

15-3 2) The PEIR reports that the California Department of Health Services (DHS) issued BBARWA three permits for separate recycled water uses. The State Water Resources Control Board and Regional Boards have a Memorandum of Understanding (MOU) with DHS to consult with one another on issues of mutual concern, including implementation of recycled water programs. In keeping with this MOU, Board staff requests that the PEIR process should specifically solicit DHS for comments on the BBARWA Master Plan, since implementation of the plan takes place in the watershed of Big Bear Lake, a drinking water reservoir. The PEIR should model water quality constituent levels (in particular, TDS) for the additional tertiary treatment train, for comparison with DHS drinking water standards, Order No. 00-012 numeric and narrative limitations, and likely, Total Maximum Daily Loads (TMDLs). It is unclear whether the anticipated "high-quality purified water" (p. 4-140), which would protect the beneficial uses for local water bodies, is based on assumptions of the technology proposed or on actual data provided by a pilot program.

15-4 3) The Region 8 Basin Plan contains a Prohibition on discharges of recycled water to waters designated MUN (municipal supply beneficial use), unless approved by DHS. Tables 4.9-1 and 4.9-2, which accurately list beneficial uses for specific surface water bodies, indicate that Baldwin Lake is excepted from MUN. However, the PEIR should evaluate impacts to MUN for subsequent phases of the Master Plan that will involve discharges to Big Bear Lake and its tributaries. Further, the PEIR must note that the 2004 Basin Plan Amendments designate MUN and PROC (Industrial Process Supply) for the entire groundwater recharge area, now the BBVGMZ. DHS would have to approve proposed recharges.

15-5 4) The Greenspot pilot program will include installation of approximately six extraction wells 500 feet downgradient of the recharge site, for recapture and use of recharged water. Pump tests will be conducted for those wells. The PEIR should reflect that test water discharges and monitoring must be conducted in accordance with Order No. R8-2003-061-017. BBARWA is currently authorized to discharge under this Order.

15-6 5) The PEIR should address how potential increased surface flows, from the influence of new discharges of recycled water either across the ground surface or as rising groundwater from infiltration, could increase sediment and nutrient loadings on receiving waters.

15-7 Analyses of pipeline route alternatives are not apparent in the PEIR. Impacts to water quality standards of surface waters of the State, including channels and ephemeral drainages, must be avoided or minimized by pipeline construction whenever possible. Best Management Practices must be deployed around pipeline installation trenches to retain sediment on site. Where avoidance is not practicable, impacts must be mitigated to replace the full water quality function and value of the impacted waters. The PEIR should address the steps that will be taken to avoid impacting beneficial uses of waters of the state and of the U.S. that may occur as a result of the construction of project facilities.

If you have any questions, contact Glenn Robertson at (951) 782-3259, or me at (951) 782-3234.

Sincerely,

Glenn Robertson, for

Mark G. Adelson, Chief
Regional Planning Programs Section

Cc: California Department of Health Services, Ventura - Jeff Stone

15-3 The CDHS has been presented an overview of the BBARWA Master plan at a meeting held in conjunction with the RWQCB on October 17, 2004. The BBARWA is currently pilot testing the MF and RO treatment train to analyze water quality constituent levels in the proposed treatment train. The current sampling and monitoring program will completely characterize the quality of the water and provide information on the water quality. Approval will have to be obtained from the California Department of Health Services as well as the RWQCB and other interested parties. Compliance will be based upon actual data produced by the project. The Draft PEIR was provided to DHS for review and comment as indicated in this comment. The detailed water quality of pilot scale tests to date are provided in Table 3.5-3 of the Draft PEIR, and the comparison with DHS drinking standards indicates a quality that can fully comply with these standards.

15-4 The BBARWA is working with and will meet all requirements set by the CDHS and RWQCB, including undertaking any studies to evaluate the impacts of reuse on BBVGMZ. Any discharges to bodies of surface water designated as MUN must be approved by the RWQCB in consultation with the CDHS. However, there are numerous cases in California where treated wastewater is discharged into drinking water sources. One example is the Sacramento Regional Wastewater Agency which discharges into the Sacramento-San Joaquin Delta and provides water to the San Francisco Bay area as well as Central and Southern California. Regardless, the treatment process identified in the RWMP and evaluated in the Draft PEIR has been designed to meet drinking water standards and this will be verified prior to allowing discharges to any surface water designated as MUN.

15-5 In accordance with the comment, BBARWA understands and commits to work with the local water purveyors that may drill the wells to ensure that test water discharges and monitoring will be conducted in accordance with Order No. 48-2003-061-017.

15-6 All artificial recharge activities would be contained within artificial recharge surface spreading basins, constructed with 5-ft high berms. At no time would recycled water or diluent water conveyed to the spreading basins be allowed to flow on the land surface outside the basins. Further, the recycled water introduced to the artificial recharge basins would be advanced treated through a process of microfiltration, reverse osmosis, ultraviolet disinfection and advanced oxidation. This process will remove all suspended sediment and nutrients and will lower the total dissolved solids to concentrations below that of the native groundwater. Based on the modeling of the recharge at the Green Spot site, this project will capture groundwater downstream of the recharge site and ensure that rising water does not occur downstream of from the recharge ponds.

15-7 The only specific pipelines evaluated in this document are the pipelines in Phase 1 that would extend from the treatment facility to the Green Spot recycled water recharge ponds, see Figures 4.4-1 and Appendix 4. Specific measures are identified in the Draft PEIR (Subchapter 4.5 (Mitigation Measure 4.5-4); Subchapter 4.8 (Mitigation Measure 4.8-3); and Subchapter 4.9 (Mitigation Measures 4.9-1 and 4.9-2) to avoid channels and to ensure that waters of the state and U.S. will not be degraded during construction or over the long-term.