

**San Diego County Water Authority
Twin Oaks Valley Water Treatment Plant
Working Group
Summary Report
November 2004**



San Diego County Water Authority

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Overview

San Diego County faces an immediate challenge in meeting its treated water needs. Up to 90 percent of the water used in the county comes from the Colorado River and Northern California and is imported by the Water Authority. This imported water must be purified at a water treatment plant before it can be used for drinking and other potable water uses. Nearly half the treated water serving the San Diego region is purified at the Skinner Water Treatment Plant in Riverside County, owned by the Metropolitan Water District of Southern California.

Growth in Southern Riverside County has increased the demand for treated water from the Skinner facility. During warm periods, the facility often operates at or above its rated production capacity so it can meet the demands for treated water.

A new, Water Authority-owned regional treatment plant will mitigate treated water shortages for San Diego County by increasing the amount of treated water that can be produced locally. It will also provide more local control of this important resource.

To address these needs, the San Diego County Water Authority plans to build a regional water treatment plant in Twin Oaks Valley north of the city of San Marcos. The plant will be constructed on Water Authority property near existing Water Authority facilities.

The Water Authority selected the Twin Oaks Valley site for several reasons:

- The Water Authority property in Twin Oaks can accommodate a plant large enough to produce enough treated water to meet expected future demands through 2030.
- Water from the treatment plant can be delivered to the majority of the Water Authority's service area.
- Treated water can be delivered by gravity from this location to the Water Authority's existing aqueduct system without the need for energy-intensive pump stations or new pipelines.
- From this site, treated water can be conveyed through the Water Authority's emergency water delivery system. This system will keep water flowing in the event of an earthquake or other interruptions in imported water deliveries.

The water treatment plant will produce up to 100 million gallons of treated water per day, enough to meet the needs of up to 220,000 typical households each year.

To garner community feedback, clarify community concerns regarding the design and construction of the water treatment plant and identify ways to address those concerns, the Water Authority assembled the Twin Oaks Valley Water Treatment Plant Working Group. The working group participated in three meetings, held at the Twin Oaks High School, and one tour of the R. M. Levy Water Treatment Plant near Lakeside.

The Water Authority scheduled this series of meetings to ensure that community input could be finalized by mid-October 2004. Feasible community suggestions could then be incorporated into the request for proposals for the consulting team that will design, build and operate the treatment plant.

Purpose and Principles of Participation

The working group received the following purpose and principles of participation:

Working Group Purpose

The Twin Oaks Valley Working Group is convened to provide informed input to the San Diego County Water Authority regarding the planned Twin Oaks Valley Water Treatment Plant. The role of the working group is to:

- Ensure the community concerns regarding the water treatment plant are identified.
- Propose ways to avoid or minimize concerns associated with the plant construction and operation.
- Identify a priority for these suggestions.

Participants

To ensure representation from a wide range of perspectives in the community as well as consistent attendance at meetings, the project team has invited community members to participate in a series of up to four meetings. The working group includes four Twin Oaks Valley residents, a business owner, a representative from the Twin Oaks Valley Sponsor Group and a representative from the Twin Oaks Valley Property Owners' Association.

Working group members are being asked to:

- Assist the Water Authority in identifying potential impacts of the proposed water treatment plant and feasible options to address them.
- Participate in all scheduled meetings.
- Keep an open mind.
- Work collaboratively with other working group members.
- Represent the Twin Oaks Valley community, while keeping a regional perspective in mind when identifying options to address anticipated project impacts.

Observers

The public is welcome at working group meetings. However, meetings are intended for the benefit of the working group members to promote balanced, constructive interaction. Observers will be asked to introduce themselves and the organization they represent, if any.

Work Product

The outcome of the working group will be documented in a written report at the conclusion of the planned meetings. The written report will contain the following:

- The scope and content of the working group's discussions, in the form of meeting summaries.
- A list of suggestions identified and prioritized by the working group to minimize or avoid project impacts.
- Identification of suggestions the Water Authority plans to implement and will include in the project specifications.
- Individual opinions and observations that may not be reflected in the main body of the report.

A draft report will be presented to the working group for review and comment. The report will be posted on the Water Authority's Web site. It may also be reproduced as a stand-alone document.

Working Group Members

John Driessen, Twin Oaks Valley resident
Stan Mathes, Twin Oaks Valley resident
Barry Dzindzio, Twin Oaks Valley resident
Carol Dzindzio, Twin Oaks Valley resident
Jerry Harrison, Twin Oaks Valley business representative
Ben Morris, Twin Oaks Valley Community Sponsor Group
Elaine Coleman, Twin Oaks Valley Property Owners' Association

Meeting Attendance

In order for the process to work effectively, full participation of members was essential. Working group members were expected to attend all meetings.

Support

A neutral third-party facilitator conducted all working group meetings. The role of the facilitator was to ensure all perspectives were heard through a collaborative discussion process. Staff from the Water Authority and appropriate consultants provided technical and logistical support, including making presentations, answering questions, coordinating meetings and documenting meeting content.

Meeting Schedule

Meeting One	Tuesday, Sept. 14, 2004, 6 - 8:30 p.m.
■ <i>Introductions</i>	
■ <i>Working group process, mission and objectives</i>	
■ <i>Water treatment project details:</i>	
◆ <i>Water treatment processes</i>	
◆ <i>Design / build / operate (DBO) approach to establishing plant</i>	
◆ <i>Project timeline and design parameters</i>	
■ <i>Community concerns about water treatment plant</i>	
Meeting Two	Tuesday, Sept. 28, 2004, 6 - 8:30 p.m.
■ <i>Measuring noise levels</i>	
■ <i>Finalize list of community concerns</i>	
■ <i>Brainstorm/clarify list of ideas about how to minimize water treatment plant impacts</i>	
■ <i>Put list in priority order</i>	
Tour of Levy Water Treatment Plant	Saturday, Oct. 9, 2004, 9:30 a.m.
Meeting Three	Tuesday, Oct. 12, 2004, 6 - 8:30 p.m.
■ <i>Complete prioritizing list</i>	
■ <i>Next steps in design process</i>	
■ <i>Future community outreach activities</i>	

Working Group Meetings

Identifying community concerns

At the first working group meeting, members reviewed a list of community concerns previously identified by the Water Authority during community meetings and discussions with community members. Working group members then expanded this list with additional concerns. Between the first and second meeting, members were to discuss the draft list of concerns with other members of the Twin Oaks Valley community to solicit additional input.

Generating suggestions for addressing community concerns

At the second meeting, the group added new items to the draft list of concerns. Once the group felt the list was complete, members began suggesting ways to address or minimize community concerns and issues.

At the third meeting, the group reviewed additional suggestions provided by the Twin Oaks Valley Community Sponsor Group for addressing community concerns. Of the 50 suggestions identified by the working group, staff identified 11 that the Water Authority could commit to implementing without further analysis. These pre-approved suggestions are listed in Table 1.

Table 1

Pre-Approved Suggestions
<ul style="list-style-type: none">• No truck noise before 7 a.m.• No Saturday or Sunday construction - <i>except during 10-day pipeline shutdown and other schedule emergencies</i>• Provide advance warning of blasting• Prohibit blasting on weekends - <i>except during a schedule emergency</i>• Establish complaint phone number during construction• Host frequent public meetings during construction• Use sodium hypochlorite, ultraviolet light and/or ozone in place of chlorine gas for disinfection• No bulk chlorine deliveries (use maximum of 1-ton cylinders instead of 17-ton cylinders)• Generate chlorine on site if use of chlorine cannot be avoided• Control stormwater runoff from plant• Increase communication and coordination between Water Authority and Vallecitos Water District, especially regarding access road and use of fill material from VWD reservoir project

The group then participated in a voting exercise to identify their top priorities among the remaining 39 suggestions. Table 2 presents these suggestions in priority order. Staff explained the project team would evaluate these suggestions to determine which could be incorporated into the project and addressed in the request for proposals for the design-build-operate team.

The Water Authority staff explained that a summary report, outlining the working group's findings, would be drafted and distributed to the group for its review. The Water Authority project team will then present the final report and the list of adopted community suggestions at the Nov. 17, 2004, Twin Oaks Valley Community Sponsor Group meeting. This final list of adopted suggestions is provided in Table 3.

Table 2

Prioritized Suggestions for Addressing Community Concerns

Facility Design		
<i>Ranking</i>	<i>Recommendation</i>	<i>Votes</i>
1	<i>Lighting:</i> <ul style="list-style-type: none">▪ Outdoor lighting should not block ability to observe stars; maintain dark skies▪ Put motion sensors on exterior lighting▪ Point exterior lighting downward to ensure light does not shine on adjacent properties	9
2 -- Tie	<i>Noise:</i> <ul style="list-style-type: none">▪ Enclose noisy plant components in buildings▪ Double-insulate noisy equipment; use sound attenuation materials in buildings▪ Ventilate buildings without generating noise; avoid noise-escape paths and fans	8
2 -- Tie	<i>Architecture:</i> <ul style="list-style-type: none">▪ Buildings should blend into landscape▪ Implement architectural standards – make facility blend with surroundings (perhaps use rocks on walls); do not build facility that resembles diversion structure; bury clearwell▪ Break up walls and roof into smaller panels at different levels to lessen visual impact of structures	8
3	<ul style="list-style-type: none">▪ Aqueduct right of way should be open for equestrian use	6
4	<i>Landscaping:</i> <ul style="list-style-type: none">▪ No tall, skinny trees; use native plants if possible; use low water use type with big canopy▪ Provide trees that shade buildings and provide visual cover▪ Install landscaping as soon as possible to lessen visual impact during construction	5
5 – Tie	<ul style="list-style-type: none">▪ Bury new electrical power lines to plant	3
5 -- Tie	<ul style="list-style-type: none">▪ Develop water conservation education center, garden or other community resource at plant	3
6	<ul style="list-style-type: none">▪ Install wrought iron fencing instead of chain link with barbed wire where fence is visible to community (chain link may be OK at back of plant where not visible)	2
7 – Tie	<ul style="list-style-type: none">▪ Remove rejection tower – move up hill and bury it	1
7 -- Tie	<ul style="list-style-type: none">▪ Maintain wildlife corridors (coyote traffic allowance)	1
Other items	<ul style="list-style-type: none">▪ Control run-off when water escapes or is drained for maintenance	

Facility Construction

<i>Ranking</i>	<i>Recommendation</i>	<i>Votes</i>
1	<ul style="list-style-type: none"> ▪ Repave or assure all access roads are in good condition after construction 	5
2 – Tie	<ul style="list-style-type: none"> ▪ Limit hour of construction to 7 a.m. – 4 p.m. 	4
2 -- Tie	<ul style="list-style-type: none"> ▪ If mitigation land is required by environmental impact report, purchase land in Twin Oaks Valley 	4
3 – Tie	<ul style="list-style-type: none"> ▪ Limit equipment delivery to construction hours only 	3
3 – Tie	<ul style="list-style-type: none"> ▪ Improve safety of access road curve at electrical pole near Schetne house (by relocating or widening road, etc.) 	3
3 -- Tie	<ul style="list-style-type: none"> ▪ Stage or manage truck traffic to ensure trucks do not drive in one after the other 	3
4	<ul style="list-style-type: none"> ▪ Set up Web site to provide updates on impacts during construction 	2
5	<ul style="list-style-type: none"> ▪ Clean truck traffic debris from roadways daily 	1
Other items	<ul style="list-style-type: none"> ▪ Prohibit recreational radios or boom boxes ▪ Use e-mail to provide residents construction updates 	

Plant Operation

<i>Ranking</i>	<i>Recommendation</i>	<i>Votes</i>
1	<ul style="list-style-type: none"> ▪ Minimize chemical bulk deliveries 	5
2 – Tie	<i>Noise:</i> <ul style="list-style-type: none"> ▪ No recreational radios or boom boxes ▪ No public address or loudspeaker 	4
2 -- Tie	<i>Deliveries:</i> <ul style="list-style-type: none"> ▪ Limit deliveries and facility maintenance to 7 a.m. to 4 p.m., Monday through Friday 	4
3	<i>Lighting:</i> <ul style="list-style-type: none"> ▪ All lights should be on a separate circuit ▪ Only light areas where staff has to work at night ▪ Turn off all nonessential exterior lights when not in use 	3
4	<ul style="list-style-type: none"> ▪ Limit chemical storage on site 	2
Other items	<ul style="list-style-type: none"> ▪ Use safer containers for chemical deliveries even if this requires more truck trips 	

Table 3

Recommendations Addressed in Request for Proposals for Design – Build – Operate Team

<i>Facility Design Recommendations</i>	<i>Outcome of Staff Evaluation</i>
<p><i>Lighting:</i></p> <ul style="list-style-type: none"> ▪ Put motion sensors on exterior lighting ▪ Point exterior lighting downward to ensure light does not shine on adjacent properties 	<p>RFP requires motion sensors, low-level lighting pointing down on all exterior lighting. Lighting will comply with county of San Diego’s dark skies ordinance.</p>
<p><i>Noise:</i></p> <ul style="list-style-type: none"> ▪ Enclose noisy plant components in buildings 	<p>RFP requests designs that reduce noise level at property line to meet the county noise ordinance and that provide noise attenuation by enclosing noisy plant components. RFP notes significant community concern about noise from water cascading into sedimentation basin overflow channels.</p>
<p><i>Architecture:</i></p> <ul style="list-style-type: none"> ▪ Buildings should blend into landscape ▪ Implement architectural standards – make facility blend with surroundings (perhaps use rocks on walls) ▪ Break up walls and roof into smaller panels at different levels to lessen visual impact of structures 	<p>RFP invites architectural treatment using natural materials and color to break up broad surfaces and help facilities blend in to surroundings.</p>
<p><i>Landscaping:</i></p> <ul style="list-style-type: none"> ▪ No tall, skinny trees; use native plants if possible; use low water use type with big canopy ▪ Provide trees that shade buildings and provide visual cover 	<p>RFP requests landscape design to employ low-water-use plants, native plants when practical, and large-canopy trees. When possible, trees and shrubs will be placed where they can provide visual cover of facilities. Container plants will be used to accelerate growth of new landscaping.</p> <p><i>Note:</i> Placement of trees and shrubs must be consistent with Water Authority security policies.</p>
<ul style="list-style-type: none"> ▪ Bury new electrical power lines to plant 	<p>RFP specifies new power line to be buried on Water Authority property between existing power pole near vent stack and treatment plant.</p>

<ul style="list-style-type: none"> Install wrought iron fencing instead of chain link with barbed wire where fence is visible to community 	RFP requires wrought iron fencing without barbed wire where fence is visible to community.
<ul style="list-style-type: none"> Control run-off when water escapes or is drained for maintenance 	RFP requires this to be addressed in facility design.
<i>Facility Construction Recommendations</i>	<i>Outcome of Staff Evaluation</i>
<ul style="list-style-type: none"> Repave or assure all access roads are in good condition after construction 	Condition of Twin Oaks Valley Road will be documented before and after construction. RFP requires repaving road sections damaged as result of construction, including Twin Oaks Valley Road.
<ul style="list-style-type: none"> Hours of construction 7 a.m. – 4 p.m. 	RFP specifies construction to be limited to 8 hours between 7 a.m. and 7 p.m. per county ordinance, except during Water Authority pipeline shutdowns.
<ul style="list-style-type: none"> Limit equipment delivery to construction hours only 	RFP requires routine, non-emergency deliveries during construction hours only. Violations will result in fines to design-build-operate team.
<ul style="list-style-type: none"> Improve safety of access road curve at electrical pole near Schetne house (by relocating or widening road, etc.) 	RFP includes widening of access road at southeast corner of Water Authority property to meet requirements of Vista Fire Protection District and Deer Springs Fire Protection Department.
<ul style="list-style-type: none"> Set up Web site to provide updates on impacts during construction 	Staff will establish project Web site during construction and will review monthly for needed updates.
<ul style="list-style-type: none"> Clean truck traffic debris from roadways daily 	Environmental impact report now in development may require roadways to be cleaned of construction debris.
<ul style="list-style-type: none"> Prohibit recreational radios or boom boxes 	RFP requires noise levels of optional activities, such as radios, to be acceptable to neighbors during construction. DBO team will be fined if it fails to address unacceptable optional noise within one hour of being notified by the Water Authority.
<ul style="list-style-type: none"> Use e-mail to provide residents construction updates 	Staff will provide construction updates via e-mail.

<i>Plant Operation Recommendations</i>	<i>Outcome of Staff Evaluation</i>
<ul style="list-style-type: none"> ▪ Minimize chemical bulk deliveries 	<p>RFP requires DBO team to maintain a minimum of 30-day chemical storage capacity on site. <i>Note:</i> An estimated eight trucks per week will be required to deliver chemicals to the plant.</p>
<p><i>Noise:</i></p> <ul style="list-style-type: none"> ▪ No recreational radios or boom boxes ▪ No public address or loudspeaker 	<p>RFP requires noise levels of optional activities to be acceptable to neighbors during operation. DBO team will be fined if it fails to address unacceptable optional noise within one hour of being notified by the Water Authority. Loudspeaker will be used for emergencies but not during routine operations. Operators are to use person-to-person communication devices for routine activities.</p>
<ul style="list-style-type: none"> ▪ Limit deliveries and facility maintenance to 7 a.m. to 4 p.m., Monday through Friday 	<p>RFP requires normal facility deliveries and maintenance to be limited to 7 a.m. to 5 p.m. Monday through Friday. Exceptions will be made for Water Authority pipeline shutdowns.</p>
<p><i>Lighting:</i></p> <ul style="list-style-type: none"> ▪ Only light areas where staff has to work at night ▪ Turn off all nonessential exterior lights when not in use 	<p>RFP allows low-level lighting between administration building and employee parking lot at night. All non-essential exterior lights will be turned off when not in use. When lighting is required for emergency or urgent activities, it will be used only in the areas requiring illumination.</p>

Appendix A

Twin Oaks Valley Working Group

Agenda

Meeting One

Tuesday, Sept. 14, 2004

6 - 8:30 p.m.

- 1. Welcome**

- 2. Introductions**
 - a. Patricia Tennyson, facilitator*
 - b. Working group members*
 - c. Project team members*

- 3. Review agenda**

- 4. Working group process, mission and objectives**

- 5. Staff Presentation**
 - a. Water treatment processes*
 - b. Design / build / operate (DBO) approach to establishing plant*
 - c. Project timeline and design parameters*

- 6. Discuss community concerns about water treatment plant**



**PROPOSED TWIN OAKS VALLEY WATER TREATMENT PLANT
TWIN OAKS VALLEY WORKING GROUP
MEETING SUMMARY**

DATE: September 14, 2004

TIME: 6 p.m. to 8:30 p.m.

ORGANIZATION: Twin Oaks Valley Working Group

MEETING LOCATION: Twin Oaks Valley High School, Room 8

PRESENTERS: Tim Suydam, San Diego County Water Authority

STAFF RESOURCES: San Diego County Water Authority: Kelley Gage and Gina Molise
Katz & Associates: Patricia Tennyson and Jill Pasqualetto

PRESENTATION SUMMARY: Discussion of need for additional water treatment capacity in San Diego County; community concerns about the planned Twin Oaks Valley Water Treatment Plant

Twin Oaks Valley Working Group Members

Elaine Coleman, Twin Oaks Valley Property Owners' Association

John Driessen, Resident

Barry Dzindzio, Resident

Carol Dzindzio, Resident

Jerry Harrison, Twin Oaks Nursery

Stan Mathes, Resident

Ben Morris, Twin Oaks Valley Community Sponsor Group

Welcome/Introductions

Meeting facilitator Patricia Tennyson welcomed the Twin Oaks Valley Working Group members and explained the goals and purpose of the working group.

Presentation Summary

Tim Suydam used a Power Point presentation to describe:

- the Water Authority's role as a water wholesaler
- the need for additional treated water in San Diego County
- two treatment plant designs options under consideration -- conventional and membrane
- why the Water Authority is using the design-build-operate (DBO) approach to select a single entity to establish the new water treatment plant
- the project timeline
- parameters for the project

Questions and Answers

Q 1: What is the capacity for the Metropolitan Water District treatment plant in Riverside County that supplies San Diego County?

A: This facility provides nearly half the treated water used in San Diego County. It operates at 500 million gallons per day (mgd). Metropolitan is expanding its capacity by an additional 100 million gallons per day, which is due to be complete by 2006.

Q-2: Is an additional expansion of the Metropolitan treatment plant an option for increasing treated water availability in San Diego County?

A: No. The treated water pipelines from Riverside are at capacity (full), so even though Metropolitan is expanding its plant, there will be no way to transport additional treated water to our region.

Q-3: Could raw (untreated) water pipes be converted to carry treated water to our region?

A: No, because the Water Authority's member agencies depend on the untreated water pipelines to supply their water treatment plants. They want to continue to operate their treatment plants to produce their own treated water because it is more economical.

Q-4: Is the Twin Oaks water treatment being proposed because of the increased growth in Riverside?

A: The Twin Oaks water treatment plant is needed because of growth both in southern Riverside County and in San Diego County.

Q-5: Are only the treated water pipelines at capacity?

A: The treated water pipelines are frequently at capacity during warm periods when demand is high, and the untreated pipelines are nearly at capacity during those high demand periods.

Q-6: Why not create a new reservoir to hold treated water?

A: It is difficult to manage treated water reservoirs for disease control; this is why reservoirs store untreated water.

Q-7: Why are we carrying the burden for San Diego County?

A: A water treatment plant is needed to serve the northern portion of the county. Member agencies to the south are meeting their own demand for treated water.

Q-8: Who will pay for the Twin Oaks Valley plant?

A; This plant will be funded through water rates, so every person who uses our water will contribute. The cost will be spread throughout San Diego County.

Q-9: Are water rates going to increase because of this project?

A: By the year 2016, the monthly water rates for the typical residential customer will increase by less than four dollars for 22 new Water Authority projects needed to meet the future water demands of San Diego. The cost to customers for this project will be a small proportion of that combined increase.

Q-10: How large is the Water Authority's site where the plant will be constructed?

A: The site is about 45 acres.

Q-11: Is the plant expandable beyond 100 million gallons per day?

A: No, we could not expand this plant past 100 mgd because of the size limitations of our property. This is true for both membrane and conventional plant designs.

Q-12: Has most of the grading already occurred?

A: No. Construction will require additional grading.

Q-13: Will the plant be enclosed?

A: Most of the facilities will be enclosed, but the flocculation and sedimentation processes will be open-air.

Q-14: What is the noise level during flocculation?

A: The flocculation process uses gravity, so it will sound somewhat like running water.

Q-15: Right now, all of the trees around your property are growing. Will there be vegetation and landscaping on the site?

A: Yes, there will be landscaping, and we would like the community's input for the landscaping.

Q-16: Does it cost less to build a membrane plant?

A: No, a membrane plant is newer technology and, therefore, more expensive to build. The technology is maturing quickly, however, so costs may come down.

Q-17: Why are you considering two designs, membrane and conventional?

A: Both designs provide the same water quality and have their own pros and cons. The Water Authority does not yet have the water treatment expertise to choose between the two designs. The teams who will bid on the projects do have this expertise, however, and we want them to have both options.

Q-18: Which type of plant uses more energy? Which plant is more cost effective?

A: The membrane plant uses more energy. Our conceptual design indicates a conventional plant is more cost effective.

Q-19: How and when will you decide which type of plant to build?

A: The staff of the Water Authority, with input from an expert proposal review committee, will make a recommendation to the board. The board will decide about mid-2005.

Q-20: Are you going to bring in any membrane specialists to your proposal review committee?

A: Since membrane plants are new technology, there are not a lot of membrane experts yet. Our primary consultant does have membrane experience, and a representative who has significant membrane experience will be attending our next working group meeting.

Q-21: Why did they build a membrane plant at Olivenhain Municipal Water District?

A: We will find out the answer to this question for our next meeting.

Q-22: Would the plant use chlorine? Would it be in solid or gaseous form?

A: The plant would use a gaseous form of chlorine. Currently, we are studying other chlorination processes besides chlorine gas.

Q-23: Is chlorine used in the water treatment plants that use membrane technology?

A: Yes, chlorine is used in both membrane and conventional plants.

Q-24: Do both plants use the same amount of ammonia and chlorine?

A: In the residual disinfection process, both types of plants use the same amount of ammonia and chlorine. A conventional plant may also use chlorine for primary disinfection.

Q-25: Who makes the choice on whether to use bleach or chlorine at the plant?

A: The Water Authority will make that choice, and we expect to know this by the end of October.

Q-26: Do you have to use ammonia?

A: Yes, ammonia must be used for residual disinfection. This keeps the water safe after it leaves the treatment plant and travels through pipelines to reach homes and businesses.

Q-27: What chemical do you use to adjust the pH level of water treated at the plant?

A: Sodium hydroxide.

Q-28: Are you going to be able to compare the noise and light levels of the membrane plant versus the conventional plant?

A: Yes. This information will be gathered and included in the environmental impact report, which will be available to the public for review in early 2005.

Q-29: How long does it take to treat water?

A: It takes about four hours for water to pass through a conventional treatment plant.

Q-30: After the plant is constructed and is being operated by the design-build-operate team, if we wanted to complain about truck traffic, for example, can we still contact the Water Authority?

A: Yes, it is our plant and we will be accountable for it.

Q-31: What prevents the design-build-operate team from making as much money as possible with this plant, and not properly taking care of the plant?

A: The Water Authority is building performance standards into the contract for the project, so the design-build-operate team will have to demonstrate that they are operating and maintaining the plant to our requirements and standards.

Q-32: Is the request for proposals already out?

A: No. It will be released in November, to prequalified DBO teams whose qualifications are being evaluated.

Q-33: Do you know the staffing requirements for the plant?

A: For a 50-million-gallon-per-day conventional plant, we estimate about 16 staff members, and about 14 staff members for a 50-million-gallon-per-day membrane plant.

Q-34: What roads will the construction traffic use?

A: We are considering into two options for access during construction and operation of the plant: El Paso Alto and the Vallecitos Water District road to the north of El Paso Alto.

Q-35: Is there a possibility that agriculture can receive untreated water?

A: You would have to discuss this with your water agency, the Vallecitos Water District. The Water Authority could provide untreated water to Vallecitos, but doesn't serve individual water users. To provide agriculture untreated water, Vallecitos would have to construct a dual pipeline system to keep treated and untreated water supplies separated.

Q-36: Is there a similar-sized water treatment plant in San Diego County?

A: There are a few treatment plants of similar size, like the city of San Diego's plant at Miramar, but none exactly the same size to compare to this proposed plant.

Q-37: Would it be possible to visit a local water treatment plant?

A: We will look into this option.

Discussion on community concerns about the water treatment plant:

The working group identified concerns the community has about the water treatment plant. The current list of community concerns includes:

1. Noise during construction and operation
2. Hours of construction
3. Hours of operation
4. Use of chlorine and public safety
 - a. Amount of chlorine delivered to the site
 - b. Frequency and time of deliveries
 - c. Amount of chlorine stored at the plant
5. Emergency response to protect community
6. Lighting
7. Volume of traffic during construction and operation
8. Traffic safety with quarry and water treatment plant trucks on Twin Oaks Valley Road
9. Dust control during construction
10. Ingress/Egress – easements for the plant and residents, both present and future, are confusing and need to be cleared up
11. Liability issues related to easements
12. Condition of Twin Oaks Valley Road after construction
13. Potential damage from earthquake and the effect on nearby properties
14. Visual impact of facility
15. Security
16. Rain runoff
17. Accountability of the design-build-operate party
18. Communication and coordination between Vallecitos Water District and San Diego County Water Authority
19. Electric post near house may be a driving hazard

20. Adequacy of electrical power
 - a. When Vallecitos Water District pump station turns on now, neighbors' lights dim.
 - b. Does there need to be a power line upgrade?
 - c. Is SDG&E aware of the proposed plant?
21. Importance of maintaining the rural character of Twin Oaks Valley Road
22. Membrane plant appears to be less intrusive – how can community provide input into the choice of conventional vs. membrane treatment?
23. Need to ensure all residents and businesses get information about the proposed plant

Working group members agreed to share this list of concerns with their neighbors and members of various community organizations before the next meeting to ensure that all concerns have been identified. The next task for the group is to develop ideas on how to minimize community impacts and address community concerns. This will be addressed at the next meeting on Sept. 28, 2004.

Closing:

Kelley Gage distributed a handout about noise and the ways noise is measured. The members of the working group were asked to read the handout before the next meeting as background information for a discussion about noise.

Appendix B

Twin Oaks Valley Working Group

Agenda

Meeting Two

Tuesday, Sept. 28, 2004

6 - 8:30 p.m.

Patsy Tennyson, facilitator

- 1. Welcome**

- 2. Review and approve meeting summary and agenda**

- 3. Project update and follow-up from Meeting One**
 - a. Tim Suydam & Gina Molise

- 4. Noise levels**
 - a. Kelley Gage

- 5. Finalize list of community concerns**

- 6. Brainstorm / clarify list of suggestions to minimize water treatment plant impacts**



**PROPOSED TWIN OAKS VALLEY WATER TREATMENT PLANT
TWIN OAKS VALLEY WORKING GROUP
MEETING SUMMARY**

DATE: September 28, 2004

TIME: 6 p.m. to 8:30 p.m.

ORGANIZATION: Twin Oaks Valley Working Group

MEETING LOCATION: Twin Oaks Valley High School, Room 8

PRESENTERS: Tim Suydam and Kelley Gage

STAFF RESOURCES: San Diego County Water Authority: Gina Molise, Tim Suydam and Kelley Gage
Malcolm Pirnie Inc: Kyle B. Rhorer, Aziz Ahmed and Brent Alspach
Katz & Associates: Patricia Tennyson and Jill Pasqualetto

PRESENTATION SUMMARY: Tim Suydam responded to questions raised at the previous meeting. Kelley Gage presented background information on noise and how noise is measured.

Twin Oaks Valley Working Group Members

Elaine Coleman, Twin Oaks Valley Property Owners' Association
John Driessen, Resident
Barry Dzindzio, Resident
Carol Dzindzio, Resident
Jerry Harrison, Twin Oaks Nursery
Stan Mathes, Resident
Ben Morris, Twin Oaks Valley Community Sponsor Group

Welcome/Introductions

Meeting facilitator Patricia Tennyson welcomed the Twin Oaks Valley Working Group members and reviewed the agenda. The first working group meeting summary will be approved next meeting to allow the members time to review the summary.

Presentation Summary

Tim Suydam addressed a question from the previous meeting about why the Olivenhain Municipal Water District built a membrane water treatment plant. The site at Olivenhain had space constraints in which a conventional plant was not feasible. Also, the Olivenhain district anticipates that a membrane plant will be more effective at meeting future water quality regulations. This type of plant also allows for easier remote operation and uses smaller quantities of chemicals -- a cost saving measure.

Tim updated the working group on the San Diego County Water Authority's current activities for the proposed water treatment plant. The Water Authority is negotiating with the Shinnerl family to purchase its property for the termination point of the future Pipeline 6 in 2025. This pipeline, which

will bring more untreated water to the region from the Metropolitan Water District of Southern California, is included in the Water Authority's Regional Water Facilities Master Plan.

Gina Molise offered to schedule a workshop on October 28 at 5:15 p.m. with John Crayton from the Water Authority's right of way department regarding the roads that provide access to the project site. Members of the group decided that a separate meeting was not necessary since John is meeting individually with John Driessen and Stan Mathes to discuss their specific questions.

Gina Molise extended an invitation to the working group to tour the Levy Water Treatment Plant owned and operated by Helix Water District. The tour date was set for Saturday, October 9. The group agreed to meet in the parking lot of the Twin Oaks Valley High School at 9:30 a.m. The Water Authority will provide transportation and lunch.

Gina also asked if the working group members would agree to allow a photographer to document the tour and the next working group meeting. Gina explained that working group members would need to sign a photo release form. The photos will be used to illustrate the Water Authority's work with the community. Members agreed to this request.

Kelley Gage discussed how noise is measured. By understanding how noise measurements are defined, the working group members will be able to review the environmental impact report for the water treatment plant with a better knowledge base. Kelley explained the following points:

- Sound is a fluctuation of air pressure, which is transmitted as a wave through air.
- Noise is measured in decibels using a device called a sound level meter. When written, the symbol dB means decibels.
- The human ear is not as effective hearing low frequency sounds as it is hearing high frequency sounds, so an electronic filter is used on the sound level meter to replicate the human response of the ear – filtering out those sounds that would not be perceptible to the human ear. This electronic filter is called the “A” filter, so sounds measured with this filter are denoted as “dBA”.
- Average noise levels over a period of minutes or hours are expressed as dBA L(eq), or the equivalent noise level for that period of time. [Example: average traffic noise of 45 dBA over an 8-hour period would be expressed as 45 dBA 8 hr L(eq).
- Doubling the amount of energy produces a 3 dB increase in the sound level; it does not double the decibel level. [Example: A vacuum cleaner at 10 feet may measure at 70 dBA. When another, identical vacuum cleaner is turned on at 10 feet, the total sound level increases to 73 dBA, not 140 dBA]
- Sound coming from a single point source drops in level at 6dB per doubling of distance. If you start measuring sound at 50 feet from the source and move to 100 feet from the source you will have a 6dB drop in sound level. Each time you double the distance, an additional 6dB decrease occurs.
- A change in noise level is noticeable at an increase or decrease of 5 dBA.

The water treatment plant will adhere to the county of San Diego noise ordinances. Members of the working group can find the ordinances on the county of San Diego Web site, www.sdcountry.ca.gov. On the county's home page, use the search box and type in “noise ordinance”.

According to the ordinance, during operations the water treatment plant must remain below 45 dBA for 1 hr L(eq), a one hour average, measured from the property line. During construction, the average noise level over an 8-hour period must remain below 75 dBA [denoted as 75 dBA 8 hr L(eq)] measured from the closest zoned residential line. Since Twin Oaks Valley is a rural area, the construction measurement will be taken from the closest sensitive receptor, which is probably the closest home.

Questions and Answers

Q 1: Do the noise measurements take into account the amphitheater effect in the valley? I see a problem in measuring only from your property line.

A: We do measurements at the property line in accordance with the county noise ordinance because when you double the distance the noise level drops 6 dB. If we measure noise farther away than at our property line, the noise level from our property will decrease and noise pollution from other sources (traffic on Twin Oaks Valley Road, for example) will be included in the reading. By measuring at the property line, the reading is more accurate.

Q-2: How many people will staff this plant?

A: We estimate there will be 16 full time staff members who will work regular business hours and two or three people who will work the night shift.

Q-3: Have you looked more into lighting issues? Could we learn more about lighting at our next meeting?

A: Yes, we will bring more information to our next meeting.

Q-4: Could we have a larger aerial photo of the site?

A: Yes, we will provide one at the next meeting.

Q-5: Will construction require blasting? If so, please prohibit blasting on weekends, and give us advance warning.

A: Blasting may be required. We will provide advance notification of each blast.

Q-6: How much ammonia will be used at the plant in the disinfection process? How much sodium hydroxide will be used to adjust the pH level of the treated water?

A: We will bring this information to our next meeting.

Updating List of Concerns

After reviewing the list of community concerns about the planned water treatment plant, the working group added two new concerns.

- Can the aqueduct right of way be open for equestrian use?
- Can trucks go up Twin Oaks Valley Road and out Gopher Canyon?

Brainstorm -- Minimizing Potential Impacts of Water Treatment Plant

Patsy facilitated a brainstorming session to identify ways to address the concerns raised by the community. The working group members developed a list of suggestions, below. The list will be e-mailed to the working group; working group members agreed to share it with their neighbors. At the

next working group meeting, the members will put this list into priority order. The Water Authority will do its best to meet the reasonable requests within their project parameters.

Closing

The Water Authority will present information about lighting at the next meeting on October 12, 2004. Also, staff will present renderings of the water treatment plant with very preliminary architectural and landscaping enhancements. These renderings will serve as a starting point for discussing landscaping and architectural design options.

Brainstorm List: Addressing Community Concerns Sept. 28, 2004

Plant Construction

- No truck noise before 7 a.m.
- Limit hours of construction from 7 a.m. – 4 p.m.
- No Saturday or Sunday construction
- Provide advance warning of blasting
- No blasting on weekends
- Stage or manage truck traffic to ensure trucks don't drive in one after the other
- Prohibit recreational radios or boom boxes
- Clean truck traffic debris from roadways daily
- Repave or assure all access roads are in good condition at end of construction
- Limit equipment delivery to construction hours only
- Host frequent community meetings during construction
- Improve safety of the access road curve at electrical pole near Schetne house (by relocating or widening the road, etc.)
- Establish complaint phone number during construction
- Set up Web site updates for road closures, other impacts during construction
- If mitigation land is required by environmental impact report, purchase land in Twin Oaks Valley
- Increase communication and coordination between the Water Authority and Vallecitos Water District, especially regarding access roads and use of fill material from VWD reservoir project

Facility Design

- Buildings should blend into landscape
- Implement architectural standards -- make facility blend with community (perhaps use rocks on the walls); do not build facility that looks like the diversion structure
- Landscaping – no tall, skinny trees; use native plants if possible; use low water use type with a big canopy

- Landscaping -- Italian cypress trees, 3' on center, to camouflage the fencing
- Remove rejection tower – move up the hill and bury it
- Enclose noisy components of the plant in buildings
- Maintain wildlife corridors (coyote traffic allowance)
- Bury additional electrical power lines to plant
- Install wrought iron fencing instead of chain link with barbed wire where fence is visible to community (might be okay to have chain link at the back of the plant where it not visible)
- Outdoor lighting should not block ability to observe stars; maintain dark skies
- Aqueduct right of way should be open for equestrian use
- Develop a water conservation education center, garden or some other community resource at the facility

Plant Operation

- All lights should be on a separate circuit
- Only light areas where staff has to work at night
- No recreational radios or boom boxes
- No public address or loudspeaker
- Minimize chemical bulk deliveries, maybe by selecting an alternate treatment method
- Use safer containers (especially for chlorine), even if this requires more trucks to deliver supplies
- Limit chemical storage on site
- Control stormwater runoff from plant
- No bulk chlorine (use a maximum of 1 ton cylinders)

Appendix C

Twin Oaks Valley Working Group

Agenda

Meeting Three
Tuesday, October 12, 2004
6 - 8:30 p.m.

Patsy Tennyson, facilitator

- 1. Welcome**
- 2. Review and approve meeting summary and agenda**
- 3. Project update and follow-up from Meeting Two – Tim Suydam**
- 4. Review and prioritize community suggestions – Patsy Tennyson**
 - a. Additional input from the Twin Oaks Valley Sponsor Group – Ben Morris**
- 5. Overview of next steps – Tim Suydam**
 - a. Description of procurement process**
 - b. EIR milestones**
 - c. Reconvening next year to discuss aesthetic design**
- 7. Future outreach activities – Gina Molise**



TWIN OAKS VALLEY WORKING GROUP **DRAFT MEETING SUMMARY**

DATE: October 12, 2004

TIME: 6 p.m. to 8:30 p.m.

ORGANIZATION: Twin Oaks Valley Working Group

MEETING LOCATION: Twin Oaks Valley High School, Room 8

PRESENTER: Tim Suydam

STAFF RESOURCES: San Diego County Water Authority: Tim Suydam and Gina Molise
Malcolm Pirnie: Zaid Chowdhury and Kyle Rhorer
Katz & Associates: Patricia Tennyson and Jill Pasqualetto

PRESENTATION SUMMARY: Tim answered questions from the previous meeting and presented information regarding lighting.

Twin Oaks Valley Working Group Members

Elaine Coleman, Twin Oaks Valley Property Owners' Association
John Driessen, Resident
Barry Dzindzio, Resident
Carol Dzindzio, Resident
Stan Mathes, Resident
Ben Morris, Twin Oaks Valley Community Sponsor Group

Absent

Jerry Harrison, Twin Oaks Nursery

Welcome/Introductions

Meeting facilitator Patricia Tennyson welcomed the Twin Oaks Valley Working Group members and reviewed the agenda. There were no additions or corrections to the agenda and meeting summary from the first meeting. Members will review the second meeting summary and e-mail Gina Molise with any corrections or additions.

Presentation Summary

Tim Suydam addressed questions and requests received at the previous meeting. He clarified the two access roads the Water Authority is considering for use during plant construction and operation. One route is El Paso Alto, and the other, more desirable, option is a road immediately north of El Paso Alto. Vallecitos Water District owns the northern road, with the exception of a small portion that is owned by a private party. The Water Authority's use of this road is contingent on the outcome of discussions with Vallecitos and the private party. The environmental impact report for the water treatment plant will review both options.

In response to another earlier question, Tim explained that ammonia in liquid form will be used for chloramination and disinfection at the water treatment plant. Liquid ammonia is more stable than

gaseous ammonia. The water treatment plant will use approximately 300 gallons of ammonia per day and will store approximately 9,000 gallons on site. The plant will also use approximately 260 gallons per day of sodium hydroxide, with approximately 7,800 gallons stored on site. Tim also distributed an aerial photograph of the project site that was requested at the previous meeting.

Next, Tim provided information on outdoor lighting. The county of San Diego's "dark sky" ordinance defines outdoor lighting requirements. The intent of the ordinance is to prevent interference with astronomical research. It can be found on the county's Web site, www.sdcounty.ca.gov/dplu/index.htm. In addition, the county's building and electrical codes regulate outdoor lighting. Although the Water Authority is exempt from the ordinance and the county's building and electrical codes, it will voluntarily comply. The EIR will address lighting impacts and identify appropriate mitigation measures. A requirement to follow the dark sky ordinance will be included in the request for proposals for the DBO team.

Tim presented preliminary architectural renderings for both the conventional and membrane conceptual designs for the plant. He emphasized that these renderings illustrate just one approach to addressing the working group's architectural and landscaping suggestions. When the DBO team begins designing the plant, it will have the working group's input on how the plant can blend in with the surrounding area.

Tim announced the Water Authority has decided to eliminate the use of chlorine gas for residual disinfection at the plant. In response to community concerns about the use of chlorine gas, in September the Water Authority conducted a technical study of the costs, reliability and operations of disinfection options. Staff concluded from the study that on-site generation of sodium hypochlorite would be more cost effective than chlorine gas. Sodium hypochlorite is similar to household bleach and presents no risk to the public. The DBO team will be directed to use sodium hypochlorite generated onsite, which requires only salt to be delivered to the plant. This will eliminate transportation of chlorine gas in canisters.

Questions and Answers

- Q-1:** Previously, Tim stated that 96,000 yards of fill dirt will be required for this project. I think that is about 20,000 truck trips. Why is this necessary? Can this be mitigated?
- A:** I am not sure the 96,000 yards is 100 percent accurate. It is a very preliminary figure based on the worst-case scenario in the conceptual design. We are creating a gravity flow plant, which means we have to bring fill to the site so we can build the plant at the correct elevation. This will avoid the need for pumping.
- Q-2:** Even if you only need half the amount of fill material, it will still increase traffic too much. Twin Oaks Valley Road was not designed for that amount of traffic. I am extremely concerned about this issue.
- A:** Delivery of fill dirt can be completed within three to six months. Traffic impacts will be addressed in the EIR; please make this comment during the public comment period during the EIR process. Keep in mind that we are still looking into the option of using some of the fill that Vallecitos Water District will excavate for its reservoir project next to our project.

- Q-3:** Will the on-site staff be trained in hazardous materials?
- A: Yes, we are required by law to train the staff in hazardous materials handling.
- Q-4:** Could you use an access route through the quarry?
- A: No, we cannot use that access route because it is private property.
- Q-5:** Could you place dirt on top the structures? Then you could place small trees on the structure to break up the visual impact.
- A: We will look into this possibility.
- Q-6:** What access road will you use during construction?
- A: We want to use the same access road for construction and operation. *[Additional note: As described earlier, the Water Authority is examining two access road alternatives: El Paso Alto and the Vallecitos Water District road to the north of El Paso Alto.]*
- Q-7:** Would you ultimately deed the road to the County of San Diego?
- A: No, we would keep the rights to the road.
- Q-8:** Could you bury the sedimentation tank?
- A: It would be extremely costly and would require even more fill material to be brought to the site.
- Q-9:** I am concerned about an increase of traffic on Twin Oaks Valley Road. How much traffic, other than staff, will operation of the water treatment plant create?
- A: For a 50-million-gallon-per-day plant, create an increase of 8 to 10 additional trucks on Twin Oaks Valley Road per week. These trucks would be delivering chemicals and general office, maintenance and laboratory testing supplies, and hauling residuals (solids removed from the water) to a landfill. *[Additional note: A 100 million-gallon-per-day plant would create an increase of 10 to 12 additional trucks per week.]*
- C:** We would like public meetings quarterly with the Water Authority and the DBO team.

Prioritizing List of Concerns

Gina Molise distributed a revised list of the working group's list of suggestions to address community concerns (see Page 31). The revised list included additional ideas provided by the Twin Oaks Valley Community Sponsor Group. Ben Morris reviewed the additional ideas, most of which provided detail to suggestions already received.

Patsy explained the exercise of prioritizing the list of suggestions. The purpose of the exercise was to inform the Water Authority of the suggestions that are most important to the community. At the first working group meeting, staff explained that the project must stay within its budget. A priority ranking will help the Water Authority make choices since it is unlikely every suggestion can be implemented. Patsy emphasized that community concerns that do not rank as top priorities will still be reviewed and considered by the Water Authority.

During the exercise, working group members identified the suggestions they believed were most important by placing colored dots next to their top priorities from a list displayed on flip charts. Each member received fifteen dots and was instructed to use five per category: plant design, plant

construction and plant operations. Members did not include pre-approved suggestions in their ranking because the Water Authority has already committed to implementing them in the project. Table 2 on Page 6 presents the outcome of this prioritized ranking exercise.

Overview of the next steps

Gina Molise announced that the Water Authority will present a full report on the outcome of the Twin Oaks Valley Working Group on Nov. 17, 2004, to the Twin Oaks Valley Community Sponsor Group. Staff will send a copy of the report to members of the working group for review and comment before it is presented to the sponsor group.

Tim reviewed the design-build-operate procurement process for the project. The Water Authority has selected three prequalified teams that will receive the request for proposals to design, build and operate the water treatment plant. The request for proposals will be issued in November; the teams will have four months to prepare their proposals. Next year, the Water Authority will rank the proposals, negotiate with the selected firm and execute a contract. This process will be complete in fall 2005.

The Draft EIR will be released in January 2005. During a 45-day review process, the public can comment on the Draft EIR. Before the Draft EIR is released, the Water Authority will host a workshop about the EIR process to assist the public in reviewing and commenting on the document. In February 2005, the Water Authority will host a public hearing for the Draft EIR at the Water Authority's office in San Diego. Staff anticipates the Final EIR will be certified by the board of directors in May 2005. Members of the working group are encouraged to attend all public meetings during the EIR process.

The Twin Oaks Valley Working Group will reconvene in March or April 2006. At that time, staff will present architectural renderings and address other community suggestions. *[Additional note: Staff recently revised this schedule. The working group will be invited to review and comment on preliminary designs in the summer or fall of 2005.]*

Closing:

Staff thanked the participants of the Twin Oaks Valley Working Group and asked if anyone had any suggestions about improving this process for future projects. The members expressed their appreciation for the opportunity to provide input early in the planning of the water treatment project.

Twin Oaks Valley Working Group
Twin Oaks Valley Water Treatment Plant
BRAINSTORM LIST: ADDRESSING COMMUNITY CONCERNS
Sept. 28, 2004
Revised Oct. 11, 2004

Suggestions Already Implemented

- No truck noise before 7 a.m.
- No Saturday or Sunday construction – *except during 10-day pipeline shutdown and other schedule emergency*
- Provide advance warning of blasting
- Prohibit blasting on weekends – *except during schedule emergency*
- Establish complaint phone number during construction
- Host frequent public meetings during construction
- Use sodium hypochlorite, ultraviolet light and/or ozone in place of chlorine gas for disinfection
- No bulk chlorine (use a maximum of 1 ton cylinders)
- Generate chlorine on site if use of chlorine cannot be avoided
- Control stormwater runoff from plant
- Increase communication and coordination between the Water Authority and Vallecitos Water District, especially regarding access roads and use of fill material from VWD reservoir project

Plant Construction

- Hours of construction 7 a.m. – 4 p.m.
- Stage or manage truck traffic to ensure trucks don't drive in one after the other
- Prohibit recreational radios or boom boxes
- Clean truck traffic debris from roadways daily
- Repave or assure all access roads are in good condition at end of construction
- Limit equipment delivery to construction hours only
- Improve safety of the access road curve at electrical pole near Schetne house (by relocating or widening road, etc.)
- Set up Web site updates for road closures, other impacts during construction
- If mitigation land is required by environmental impact report, purchase land in Twin Oaks Valley

New input:

- Set up an e-mail announcement system to inform residents of construction updates

Facility Design

- Buildings should blend into landscape

- Implement architectural standards – make facility blend with community (perhaps use rocks on the walls); do not build a facility that looks like the diversion structure
- Landscaping -- no tall, skinny trees; use native plants if possible; use low water use type with a big canopy
- Landscaping – Italian cypress trees, 3’ on center, to camouflage the fencing
- Remove rejection tower – move up the hill and bury it
- Enclose noisy components of the plant in buildings
- Maintain wildlife corridors (coyote traffic allowance)
- Bury new electrical power lines to plant
- Install wrought iron fencing instead of chain link with barbed wire where the fence is visible to the community (might be okay to have chain link at the back of the plant where it is not visible)
- Outdoor lighting should not block ability to observe stars; maintain dark skies
- Aqueduct right of way should be open for equestrian use
- Develop a water conservation education center, garden or some other community resource at the facility

New input:

- Control run-off when water from the site escapes or is drained for maintenance
- Double-insulate noisy equipment (use sound attenuation materials in buildings plus maybe lift-off noise attenuating covers or small noise-reducing sheds)
- Put motion sensors on all exterior lighting
- Point all exterior lighting downward to ensure the light does not shine on adjacent properties
- Provide trees that shade the treatment plant buildings and provide visual cover
- Ventilate buildings without generating noise (avoid noise escape paths and fans)
- Break up walls and roofs into smaller panels at different levels to lessen visual impact of structures
- Install landscaping as soon as possible to lessen visual impact during construction

Plant Operation

- All lights should be on a separate circuit
- Only light areas where staff has to work at night
- No recreational radios or boom boxes
- No public address or loudspeaker
- Minimize chemical bulk deliveries
- Use safer containers (especially for chlorine), even if this requires more trucks to deliver supplies
- Limit chemical storage on site

New input:

- Turn off all nonessential exterior lights when not in use
- Limit deliveries and facility maintenance to 7 a.m. to 4 p.m., Monday through Friday