Borrego Water District Board of Directors
Regular Meeting
October 25, 2017 @ 9:00 a.m.
806 Palm Canyon Drive
Borrego Springs, CA 92004

I. OPENING PROCEDURES

- **A.** Call to Order
- **B.** Pledge of Allegiance
- **C.** Roll Call
- **D.** Approval of Agenda
- **E.** Approval of Minutes
    1. September 19, 2017 Special Board Meeting Minutes (3-6)
    2. September 27, 2017 Regular Board Meeting Minutes (7-9)
- **F.** Comments from the Public & Requests for Future Agenda Items (may be limited to 3 min)
    1. Letter from Terry Considine (10)
- **G.** Comments from Directors

II. ITEMS FOR BOARD CONSIDERATION AND POSSIBLE ACTION

A. Proposition One Grant Application Priorities/Budget – G Poole (11- 42)
B. Proposition One Resolution Authorizing GM to Submit Application – G Poole (43-44)
C. Draft Tertiary Treatment Study: Dudek Engineering – G Poole (45-174)
D. Draft Hydrogen Sulfide Odor Study: Dudek Engineering – G Poole (175-265)
E. State Water Resources Board Discharge Permit 2017 Application – G Poole (266)
F. FY 2017-18 Professional Services Assistance from Jerry Rolwing – G Poole (267-268)
G. Excessive Use Forgiveness Policy – G Poole (269-270)
H. Excessive Water Use: Gary Otto – G Poole (271-272)
I. Sponsor Group Support Letter Regarding Groundwater Issues and Land Use Decisions – B Hart (273-276)
J. Resolution for November 2017 and December 2017 Board Meeting Dates – G Poole (277-279)
K. Acceptance of nomination of Diane Johnson as Borrego Valley Stewardship Council Representative on the Borrego Valley Groundwater Plan Advisory Committee – G Poole (280-283)

All Documents for public review on file with the District's secretary located at 806 Palm Canyon Drive, Borrego Springs CA 92004
Any public record provided to a majority of the Board of Directors less than 72 hours prior to the meeting, regarding any item on the open session portion of this agenda, is available for public inspection during normal business hours at the Office of the Board Secretary, located at 806 Palm Canyon Drive, Borrego Springs CA 92004.
The Borrego Springs Water District complies with the Americans with Disabilities Act. Persons with special needs should call Geoff Poole – Board Secretary at (760) 767 – 5806 at least 48 hours in advance of the start of this meeting, in order to enable the District to make reasonable arrangements to ensure accessibility.
If you challenge any action of the Board of Directors in court, you may be limited to raising only those issues you or someone else raised at the public hearing, or in written correspondence delivered to the Board of Directors (c/o the Board Secretary) at, or prior to, the public hearing.

III. STAFF REPORTS

A. General Manager
   1. Well Drilling Legislation (285-288)
   2. Borrego Springs Resort and Santiago Estates Stand by Fees - Verbal
   3. Ray Burnand Fallowing Request Status Update - Verbal
   4. With the exception of the General Manager's Report all others will be deferred one month in order to present a more complete Board Package. - Verbal

IV. CLOSED SESSION: Conference with legal counsel-anticipated litigation: Initiation of litigation pursuant to subdivision (d) (4) of Government Code Section 54956.9: two (2) cases

V. CLOSING PROCEDURE

A. Suggested Items for Next/Future Agenda
B. The next Meeting of the Board of Directors is scheduled for November 15, 2017 at the Borrego Water District

All Documents for public review on file with the District's secretary located at 806 Palm Canyon Drive, Borrego Springs CA 92004
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Borrego Water District

MINUTES

Special Meeting of the Board of Directors

Tuesday, September 19, 2017

9:00 AM

806 Palm Canyon Drive

Borrego Springs, CA 92004

I. OPENING PROCEDURES

A. Call to Order: President Hart called the meeting to order at 9:00 a.m.

B. Pledge of Allegiance: Those present stood for the Pledge of Allegiance.

C. Roll Call: Directors: Present: President Hart, Secretary/Treasurer Tatusko, Delahay, Ehrlich

Absent: Vice-President Brecht

Staff: Geoff Poole, General Manager

Kim Pitman, Administration Manager (Item II.F only)

Steve Anderson, Best, Best & Krieger

Wendy Quinn, Recording Secretary

Public:

Susan Percival, Club Circle East HOA

Dave Duncan

Martha Deichler, BSUSD

Wendy Basara, Mesquite Trails, Inc.

Kathy Dice

Ray Burnand

Doug Wilson, Mesquite Trails, Inc.

Diane Johnson, Stewardship Council

Ann Bogart

Betsy Knaak, Friends of the Library

Michael Sadler, *Borrego Sun*

D. Approval of Agenda: ***MSC: Delahay/Ehrlich approving the Agenda as written.***

E. Comments from Directors: President Hart introduced Steve Anderson, new District Counsel.

F. Comments from the Public and Requests for Future Agenda Items: None

II. ITEMS FOR BOARD CONSIDERATION AND POSSIBLE ACTION

A. Excessive Water Use Forgiveness Policy: Geoff Poole reported that after Fred Jee brought up at the July workshop the issue of forgiving excessive water bills once a year, if it is through no fault of the ratepayer, rather than the current once-in-a-lifetime, staff investigated. Their report included data on the usage and bill adjustments since November 2016 and some policies from other districts. Director Tatusko requested that the item be continued to a future meeting when a draft policy prepared by Kim Pittman could be reviewed. He noted that the Operations and Infrastructure Committee had suggested offering the waiver once every five years. Discussion followed, including the need for customers to be diligent concerning their systems and the advantage of leaving some discretion to the General Manager. Director Ehrlich requested that a proposed written policy be brought back at the next meeting for discussion and possible approval.

B. Request for BWD Signature on Letter of Water Availability – Mesquite Ranch: Mr. Poole reported that Doug Wilson had requested the District's signature on a County Letter of Water Availability for a new development, Mesquite Trails Ranch. Because the project will require new infrastructure, District approval is required. Mr. Wilson reported that he had already paid $817,179 in sewer fees. He explained that the tentative map was originally approved in 1994, but the project was delayed numerous times due to changes in requirements and economic conditions. Mr. Wilson was now seeking an additional extension to address drainage issues. He presented an updated map of the proposed development, which was approved in 2011. Projected water consumption has been reduced below the 25 percent requirement, and a Master Meter will be installed to minimize impact on District operations. Mesquite Trails will also extend 2,721 feet of water main in Tilting T to serve their property. ***MSC: Ehrlich/Tatusko authorizing the General Manager to sign the County's Letter of Availability for Mesquite Trails Ranch.***

C. Process for Prioritization of Prop One Projects: Mr. Poole announced that the State is opening up a new round of Proposition 1 Grant applications for SGMA-related projects. These grants could provide up to $1 million for Severely Disadvantaged Communities like Borrego Springs. The County wants to spend $500,000 on legal and environmental documents for the GSP, and has suggested that BWD apply for $500,000 in funding for another project of its choice. The LeSar firm has been retained to assist with socioeconomic issues, and the SGMA Core Team is considering options. The grant application period closes on November 10, but it is to the District's advantage to apply early. Several members of the Advisory Committee and others have encouraged public input.

Director Tatusko explained that he would like to meet with Director Ehrlich and our local State Assembly Representative to discuss the grant application and project prioritization. Director Ehrlich suggested that members of the public work with the appropriate Committee, and Mr. Poole recommended that the Committee meeting be public. Mr. Wilson noted that he had been involved with recycling, and agreed to provide information to Mr. Poole which might be useful in the grant application projects. Director Delahay pointed out that Raftelis had studied the economic impact of SGMA, and Mr. Poole agreed to provide a copy to Diane Johnson, per her request.

Discussion followed regarding the possibility of using the grant funds for installation of meters on private wells, which had been discussed previously. Mr. Poole explained that he had sent out 120 letters to private pumpers. Sixteen responded, and they were evenly split between those who were interested and those who were not. Ms. Johnson expressed her support and the support of the Stewardship Council for a workshop with community involvement and a focus on socioeconomic issues. Martha Deichler pointed out that data from the Free and Reduced Lunches Program at the schools were more accurate than the census data on the Disadvantaged Community status, and offered to provide statistics. President Hart requested that a target date be established for the Committee to bring these issues back to a workshop meeting for further discussion.

D. Notice of Exemption Wastewater Treatment Plant Upgrades: Mr. Poole requested Board approval of a Notice of Exemption for improvements to the Wastewater Treatment Plant. The improvements are funded by a Proposition 1 grant in the amount of $280,000. ***MSC: Ehrlich/Tatusko approving the Notice of Exemption.***

E. Notice of Exemption Wilcox Diesel Motor & Reservoir Replacement: Mr. Poole requested Board approval of a Notice of Exemption for upgrades and replacements in the water system. ***MSC: Ehrlich/Delahay approving the Notice of Exemption.***

President Hart announced that a committee would be formed at the next meeting to recruit a new District Engineer.

F. Postage, Folding and Billing Equipment Purchase: Mr. Poole reported that the District's postage equipment is over ten years old, and Kim Pittman has been investigating various suppliers, lease versus purchase, and possible outsourcing. She worked with the Operations and Infrastructure Committee. Outsourcing was not recommended because it is important for staff to maintain a relationship with the customers. Purchase would be more cost effective than a lease, a total of $46,302 including maintenance. Director Tatusko reported that the Committee and staff had submitted some questions to Springbrook, the District's software provider, including whether the new system would be compatible with Go Daddy, the server. Ms. Pittman explained that the postage system would operate without software compatibility, but compatibility would streamline the process. ***MSC: Tatusko/Ehrlich approving a $46,302 expenditure to Neopost for postage, folding and billing equipment.***

President Hart declared a recess at 10:30 a.m., and the meeting reconvened at 10:40 a.m.

III. INFORMATIONAL ITEMS

A. Letter from Director Tatusko regarding $3,000 Library Contribution: Director Tatusko referred to the Board's approval last May of an expenditure up to $3,000 for water conservation activities associated with the new library. Groundbreaking will take place in October, and completion is anticipated in November 2018. Two thousand dollars will be donated to the Board of Supervisors, which provides a matching contribution. The other $1,000 will go to the Friends of the Library for student education and coordination with the project architect and builder relative to environmental issues and publicity.

B. Ray Burnand Request to Fallow Farmland: Mr. Poole reported that he had been working with Ray Burnand on Mr. Burnand's request to fallow farmland and obtain water credits. Mr. Burnand has submitted all the necessary information, and he is awaiting a response from the County as to whether he will qualify for AG-1 credits.

Mr. Burnand, a third generation Borregan, explained that he was ready to retire and the grove he plans to fallow is 30 years old. He spoke about some of Borrego's history, the current concerns about agricultural water use, and the fact that some farmers want to stay in the Valley and are working to conserve water. Mr. Poole explained that if the County will not issue AG-1 credits, the District will need to decide whether to issue AG-2 credits. He hoped to have a response from the County by next week. Mr. Burnand expressed his hope that the District would bless his proposal once the County position is clarified.

C. BWD Financing Plan – Fieldman Rolapp and Assoc.: Director Ehrlich reported that Mr. Fieldman would attend a Board meeting in October to discuss his model depicting financial impacts. **D.** Stand-by Fees for BSR and Santiago Estates: Mr. Poole reported that he was continuing to research the history of the fees imposed on residents of the Borrego Springs Resort area, Club Circle and Santiago Estates for maintenance of the Club Circle Golf

Course. The fees were initiated by the Borrego Springs Park Community Services District, which has now merged with BWD. David Aladjem is reviewing CSD Minutes and a response is expected soon.

E. Raftelis Affordability Study: Director Ehrlich reported that he was awaiting the report.

F. Water Bond Update: Mr. Poole reported that signature gathering for the 2018 water bond is about to begin. The other water bond issue has passed the Legislature, so it will not be combined with BWD's.

G. 900 Tank Update: Mr. Poole reported that demolition of the 800 Tank has been completed, and the crew is working on the new pad. Director Tatusko requested a milestone schedule for the next Agenda.

H. Borrego Wastewater Treatment Plant Discharge Permit Renewal: Mr. Poole reported that the Wastewater Treatment Plant discharge permit is about to expire, and JC Labs is working on securing a new ten-year permit from the State Water Resources Control Board.

I. Dudek Sewer Odor Assessment Update: Mr. Poole reported that the sewer odor control assessment near the intersection of Borrego Springs Road and Yaqui Pass/Borrego Valley is nearing completion.

J. Dudek Wastewater Treatment Plant Tertiary Treatment Study Update: Mr. Poole reported that the Wastewater Treatment Plant Tertiary Treatment Study is nearing completion. The District received a $75,000 grant for this project.

K. Flood Control Evaluation: Mr. Poole reported that he had located all the design drawings for the Rams Hill flood control system and forwarded them to Dudek. Another report will be presented to the Board in October.

L. BWD Office/Warehouse Solar: Mr. Poole announced that the solar system at the BWD office and warehouse is fully functional.

M. Website Update: Mr. Poole reported that the new BWD website is ready to be activated, tentatively by October 1. The old site will then be used for archives.

N. BWD Calendar: The calendar was included in the Board package. Director Tatusko inquired about the annual audit, and Mr. Poole replied that information gathering was not yet complete.

IV. CLOSED SESSION

A. Significant Exposure to Litigation pursuant to paragraph (2) of subdivision (d) of Government Code, section 54956.9 (2 or more cases): The Board adjourned to closed session at 11:45 a.m., and the open session reconvened at 1:15 p.m. There was no reportable action.

V. CLOSING PROCEDURE

A. Suggested Items for Next/Future Agenda: Future Agenda items were discussed earlier in the meeting.

B. The next Meeting of the Board of Directors is scheduled for 9:00 a.m., September 27, 2017 at the Borrego Water District: There being no further business, the Board

Borrego Water District Board of Directors

MINUTES

Regular Meeting

Wednesday, September 27, 2017 @ 9:00 AM

806 Palm Canyon Drive

Borrego Springs, CA 92004

II. OPENING PROCEDURES

A. Call to Order: President Hart called the meeting to order at 9:00 a.m.

B. Pledge of Allegiance: Those present stood for the Pledge of Allegiance.

C. Roll Call: Directors: Present: President Hart, Secretary/Treasurer Tatusko, Delahay, Ehrlich

Absent: Vice-President Brecht

Staff: Geoff Poole, General Manager

Greg Holloway, Operations Manager

Jeff Ballinger, Best Best & Krieger

Wendy Quinn, Recording Secretary

Public: Julian Peabody J.C. Bambach, Borrego Springs Resort

Nick Bozick

Geoff Poole introduced attorney Jeff Ballinger of Best Best & Krieger, who will be serving as District Counsel along with Steve Anderson.

D. Approval of Agenda: ***MSC: Tatusko/Ehrlich approving the Agenda as written.*** **E.** Approval of Minutes:

1. July 18, 2017 Special Board Meeting Minutes

MSC: Tatusko/Ehrlich approving the Minutes of the Special Meeting of July 18, 2017 as written.

2. July 26, 2017 Regular Board Meeting Minutes

MSC: Ehrlich/Tatusko approving the Minutes of the Regular Meeting of July 26, 2017 as corrected (at end of Item VI, Closed Session, delete "There was no reportable action" and add "Regarding Item VI.A, the Board conducted the evaluation, met with the General Manager, and announced that the evaluation was complete. The President of the Board and the General Manager were authorized to sign the evaluation"; at end of Item III.H, add "as its task was completed").

F. Comments from the Public and Requests for Future Agenda Items: None

G. Comments from Directors: Director Tatusko requested an update of CIP operations at the second meeting in October. At the October workshop, he requested an update and possible action on the Proposition 1 grant application.

II. ITEMS FOR BOARD CONSIDERATION AND POSSIBLE ACTION

A. Forgiveness Policy for Excessive Water Use: Mr. Poole referred to Fred Jee's previous presentation to the Board, requesting that the District's once-in-a-lifetime unwritten forgiveness policy for excessive water bills resulting from no fault of the owner be revised to allow more frequent forgiveness. A draft revised policy developed by staff was included in the Board package, providing for forgiveness every five years. The bill would be reduced to an average of the prior 12 months, and the customer would sign a document indicating that the necessary repairs had been made. Mr. Poole will work with Mr. Ballinger on the document. Director Delahay requested that Item i in the proposed policy be placed at the end. Director Ehrlich requested that a provision be added that the General Manager will provide a status report each June and December of the number and amount of the forgiveness adjustments. Greg Holloway recommended that the adjustments be based on water use in the same month as the adjustment for the past five years, rather than the prior twelve consecutive months. ***MSC: Ehrlich/Tatusko approving the Water Leak Adjustment Policy with the modifications discussed.*** Director Tatusko suggested putting notification of the policy in the *Borrego Sun.*

B. Discussion and Possible Action to Increase the Compensation of the General Manager Based Upon the Recent Annual Performance Evaluation: President Hart announced that Mr. Poole celebrated his first anniversary with the District on July 11, 2017 and following a positive review the Board recommended a salary increase to $120,000 per year. ***MSC: Tatusko/Ehrlich approving a salary increase to $120,000 per year (approximately $8,000/yr) for the General Manager effective on the Employees Annual Review/Anniversary Date of July 11th, 2017.***

C. BWD Wastewater Treatment Plant Discharge Permit Application: Environmental: Mr. Poole explained that the discharge permit for the wastewater treatment plant must be renewed every ten years. JC Labs is currently assisting with the process, and the application has been submitted to the State. However, Section V, concerning the California Environmental Quality Act, has not been completed. Mr. Poole requested a Board determination that the project is exempt from CEQA. ***MSC: Ehrlich/Delahay determining that the upcoming Rams Hill Wastewater Treatment Facility Discharge Permit Application is exempt from CEQA and authorizing staff to complete the Application.*** Director Ehrlich requested a report when the State has ruled on the application.

III. STAFF REPORTS

A. Financial Reports – June 2017 and August 2017: The Financial Reports were included in the Board package.

B. Water and Wastewater Operations Report – July 2017 and August 2017: Mr. Holloway reported that a boulder in one of the mains caused a break. Extra flushing was required in IDs 1 and 3.

C. Water Production/Use Records – July 2017 and August 2017: Mr. Holloway pointed out that in June, approximately 12 percent of the water in ID-1 was unaccounted for; then down to 3 percent in July and back up to 12 percent in August. The 12-month average is 10 percent. In response to Director Ehrlich's inquiry, Mr. Holloway reported that water quality testing would begin in the fourth quarter. Director Ehrlich requested a report when it has been completed. Director Delahay asked whether Well 12 was up and running, and Mr. Holloway reported that it was. The motor was rebuilt and the pump replaced. The cost was approximately $90,000, so he recommended including $100,000 in future budgets for well rehabilitation.

D. General Manager: Mr. Poole reported that a second BWD ratepayer constituent meeting was held last week. Fifteen people attended. The group discussed issues to be addressed by the Advisory Committee, which will meet tomorrow. Mandatory metering was discussed, as well as alternative monitoring methods. The benchmark on which future conservation will be based, and possible projects for the Proposition 1 grant application, were also discussed. Director Ehrlich noted that there was some concern about how slowly the GSP process was moving. Mr. Poole assured

him that the AC would eventually have a policy recommendation, and President Hart had developed a step-by-step process to that end, as well as a schedule, which she and Dudek will monitor.

Director Delahay announced that the farmers' market would reopen in November. He asked Mr. Poole to provide weekly updates on the GSP process to assist him in responding to questions when he mans the BWD booth.

Mr. Poole reported that he participated in a conference call recently with LeSar Design Consultants, along with Diane Johnson, Gina Moran and Suzanne Lawrence, regarding the Proposition 1 grant application socioeconomic elements. The group plans to continue weekly or biweekly meetings with continued public participation. The County has also requested a meeting with LeSar.

Mr. Poole reported that the statewide water bond is at the signature-gathering stage. Another water bond has passed through the Legislature and is awaiting the Governor's signature. It is important to inform our local Legislators of the importance of Dr. Meral's bond to our community.

Mr. Poole invited the Board's attention to new wording at the bottom of today's Agenda, recommended by legal counsel. Director Tatusko asked that the section regarding accommodations pursuant to the Americans with Disabilities Act list Mr. Poole as the contact, rather than him. Mr. Ballinger made some recommendations regarding changes to the District's committee structure, and will bring back a detailed proposal for action at the next meeting.

IV. CLOSING PROCEDURE

A. Suggested Items for Next Agenda: Items for the next Agenda will include a schedule for the 900 Tank, a report on the LeSar contract, a report on the wastewater treatment plant tertiary treatment study, a CIP operations update, review of the District's committee structure, the search for a new District Engineer, adoption of a resolution authorizing the Proposition 1 grant application, and a report on the Raftelis water affordability study.

B. The next Meeting of the Board of Directors is scheduled for October 17, 2017 at the Borrego Water District. There being no further business, the Board adjourned at 10:35 a.m.

September 12, 2017

Mr. Geoff Poole
Board of Directors
Borrego Water District
PO Box 1870
Borrego Springs, CA 92004

Ladies and Gentlemen:

First, thank you for your service on the Board of Directors of the Borrego Water District. The future of Borrego Springs depends on your decisions and the questions are not easy.

Second, here are three questions that I ask you to consider:

1. While you are working on a long-term plan, does it make sense to slow or stop the over-pumping of the aquifer by requiring a pumping fee? Once a cost is associated with pumping water, there will be economic discipline on the use of that water. If the costs to buy out the current overuse are estimated at $15-$30M, then the implicit price of that unsustainable pumping is $3650- $7300 per afy. Annual pumping fees, paid by all users of Borrego Valley Groundwater Basin water, of $73-$146 per afy would represent a charge of 2% of the value of the excess water being used. What is your view regarding the current policy where there is no charge? Does the fact that water is "free" encourage its overuse?

2. What rule can be adopted now that will provide businesses guidance as to what current uses can be counted on as available going forward? What rule can be adopted now that will provide businesses assurance that fallowing or other such investments will be recognized in the final plan? Will such rules permit markets and voluntary transactions to work more effectively to sort out what water will be available in the future? Without such rules, will there be continuing depletion of the aquifer and slower investment in the Borrego Springs economy?

3. For businesses which rely on the Borrego Water District ("BWD") for future service, have you a good measure of what are BWD's existing commitments to provide future service, whether that obligation is based on contracts (service agreements, water credits) or reliance (water availability fees, long-time zoning)? Have you a plan how BWD will accumulate any additional resources required to meet its future obligations?

Thank you for your consideration of these questions.

Sincerely,

Terry Considine

cc: Lyle Brecht

BORREGO WATER DISTRICT

BOARD OF DIRECTORS MEETING – OCTOBER 25, 2017

AGENDA BILL 2.A

October 19, 2017

TO: Board of Directors, Borrego Water District

FROM: Geoff Poole, General Manager

SUBJECT: Proposition One Grant Application Priorities/Budget – G Poole

RECOMMENDED ACTION:

Receive report from Ad Hoc Committee Members, discuss priorities and budgets and direct staff accordingly

ITEM EXPLANATION:

BWD (Staff, Ad Hoc Committee and Citizen Group), the County, Le Sar Development Consultants, Trey Driscoll, and Dr Jay Jones have all been working on the final refinements to the proposed Prop One Grant Application package for GSP implementation activities. The projects that will be reviewed by recommended by the Ad Hoc Committee follows:

Staff will be working with the Consultant, ad Hoc Committee and Citizen Group on developing the Final Concept Memo language on the Project descriptions and will present any recommended changes to the Board at the meeting. A conference call with LeSar and a meeting of the Citizens Group is being scheduled for Monday, October 23rd.

FISCAL IMPACT:

N/A

ATTACHMENTS:

1. Project Concept Memo
2. Project description from Director Tatusko

Borrego Water District SDAC Engagement and Identification/Assessment of Water Supply and Needs

Project Summary for Category 1 Funding

Context

Borrego Springs is located within an area designated as a severely disadvantaged community (SDAC) in which the bulk of the residents and workforce are connected to agriculture, golf courses, business that support them, and tourism. The area is constrained in terms of growth and tourism due to extremely limited groundwater availability and a projected sustainability goal of 70% water use reduction by 2040. As part of the area's Groundwater Sustainability Plan (GSP) planning and implementation, the Borrego Water District (BWD) must understand potential impacts to all of Borrego's rate payers and ensure that they are educated about and able to provide feedback regarding SGMA-related projects and management actions as part of GSP implementation.

Therefore, Sustainable Groundwater Planning (SGWP) Grant funding would focus on: 1) establishing baseline data on SDAC rate payers and the economic structure of Borrego, 2) impacts to the SDAC based on potential water reduction scenarios, 3) a robust SDAC engagement process through both the GSP planning and implementation phases, and 4) well metering and well location (vulnerability) assessment activities that will provide BWD with important information to aid sustainable groundwater management activities during GSP implementation.

Task	Topic	Timeline	Responsible Parties	Budget
1	SDAC Impact Data Gathering and Outreach	Dec 2017-Dec 2019	LeSar Development Consultants	$125,000
2	SDAC Impact/Vulnerability Analysis	Dec 2017-Apr 2018	ENSI/Dudek	$50,000-$75,000
3	Decision Management Analysis	Dec 2017-Apr 2018	ENSI/Dudek	$50,000-$75,000
4	Well Metering Assessment and Installation	Jan 2018-Mar 2018	Borrego Water District	$72,000
5	BWD Water Vulnerability/New Well Site Assessment	TBD	Borrego Water District	$265,000
			Estimated Total Funds Requested	**$562,000-$612,000**

Task 1

1. **SDAC Impact Data Gathering and Outreach – $125,000** **Dec 2017 – Dec 2019**

Objectives: This outreach process focuses specifically on identifying and accessing community members and residents of the SDAC. It is designed to complement ongoing GSA efforts, which include the establishment of a SGMA community advisory committee, outreach to community organizations and local businesses, and public noticing activities.

The outreach team will design and conduct a robust SDAC engagement process to:

- Educate community members about present and future groundwater sustainability management efforts and implications for water supply and usage;
- Assess present and potential future needs throughout the GSP planning and implementation process related to the SDAC impact analyses.

Dec 2017 – Jan 2018

a. Community Characteristics Baseline Data Gathering
    i. **Approach**: A comprehensive demographic report and an economic overview of the GSA management area that will integrate with information from ongoing GSP planning efforts and include the following research:
        1. Identify population and household information, including:
            a. Median household income distribution
            b. Retired versus working population; full-time, part-time, or seasonal residency; immigration status
            c. Other SDAC indicators, e.g., distribution of low-income households and within sub-populations, high unemployment, low levels of homeownership, high rent burdens, public health issues, low educational attainment levels, literacy/linguistic barriers, and digital isolation
        2. Explore local and regional economic landscapes, including:
            a. Industries, e.g., agriculture, recreation, education, small businesses
            b. Workforce composition, i.e., full-time, part-time, and seasonal
            c. Wage composition
            d. Housing affordability, both homeownership and rental
            e. Present land uses (e.g., county zoning, development permits)
        3. Drinking water assessment – public and private
            a. Public – BWD municipal data
            b. Private
                i. Estimated number of private wells
                ii. Number of public wells (present and future), including well locations and configurations
    ii. **Tools**: Census demographic and employment data; County demographic, industry, and employment data; U.S. Geological Survey data and report; current Groundwater Sustainability Plan data-gathering efforts (San Diego County, Dudek); California Department of Water Resources; GIS mapping, CalEnviroscreen
        1. Additional outreach within local economy to obtain needed data (e.g., wage and workforce structures) as needed

iii. **Deliverable 1:** Reference document to assist GSP planning and implementation that describes the economic structure of the town, e.g., documenting the key revenue sources and total wages and wage structure of Borrego, including SDAC employment in local industries such as agriculture, recreation, and tourism.
iv. **Deliverable 2:** Literature review and catalog of relevant research and other efforts related to water reduction planning for the Borrego area. This deliverable will complement Deliverable 1 by providing context when developing tools for SDAC engagement and identification of water supply and other needs in the SDAC.

Dec 2017 – May 2018

a. SDAC Engagement for GSP Planning Activities
   i. **Approach:** Provide overview of GSP planning activities to date and an educational module on groundwater sustainability management in accessible workshops and informal settings (e.g., door-to-door engagement.)
      a) As part of the SDAC outreach process, lead facilitators LeSar Development Consultants (LDC) will engage members of the SDAC to assist with developing culturally appropriate engagement tools and effective strategies for information dissemination, education, needs assessment, and ongoing feedback.
      b) LDC and its facilitation team will solicit feedback from attendees through discussion and breakout groups to identify knowledge gaps, concerns related to GSP implementation, feedback on overall management efforts, assessment of needs, and what they would like to see in their community following implementation of the GSP.
      c) An additional online community feedback component in both English and Spanish may be employed to maximize the ability of diverse stakeholders to participate in the SDAC outreach process.
   i. **Tools:** Groundwater Sustainability Plan Stakeholder Communication and Guidance Document[1], the Borrego Valley Groundwater Basin Stakeholder Engagement Plan[2], SDAC impact/vulnerability analysis reference materials
   ii. **Deliverables:** Materials from all workshops and other forms of engagement (e.g., door-to-door interview questions, survey instruments, etc.) and an SDAC engagement summary report describing outreach efforts and identified needs, concerns, and issues, as well as tools for ongoing engagement.

June 2018 – Dec 2019

a. SDAC Engagement for GSP Implementation Activities
   i. **Approach:** This phase will continue to engage the SDAC after the GSP draft is released in June 2018. Engagement efforts will provide updates and solicit feedback about GSP implementation and associated adaptive management strategies.
      a) Again, members of the SDAC community will be engaged to assist with developing culturally appropriate engagement tools and effective educational and feedback solicitation strategies.
      b) LDC will provide facilitation services and effective engagement and feedback tools.
   ii. **Tools:** Groundwater Sustainability Plan Stakeholder Communication and Guidance Document, the Borrego Valley Groundwater Basin Stakeholder Engagement Plan, SDAC impact/vulnerability analysis reference materials

[1] http://www.water.ca.gov/groundwater/sgm/pdfs/GD_C&E_Final_2017-06-29.pdf
[2] http://www.sandiegocounty.gov/content/dam/sdc/pds/SGMA/StakeholderEngagement.pdf

iii. **Deliverables:** Materials from all workshops and other forms of engagement (e.g., door-to-door interview questions, survey instruments, etc.) and an SDAC engagement summary report describing outreach efforts and identified needs, concerns, and issues, as well as establishment of a communication plan for ongoing SDAC engagement throughout implementation.

Task 2

2. SDAC Impact/Vulnerability Analysis – $50,000-$75,000 **Dec 2017 – Apr 2018**

Jan – April 2018

a. Baseline Data Compilation on Water Use
   i. **Approach**
      1. Drinking water
         a. Water quality analyses and data – as related to standards
         b. Water storage (reservoirs, tanks)
         c. Water supply treatment (present and future)
         d. SDAC accessibility
         e. SDAC affordability and cost threshold
         f. Drinking water system issues, particularly related to water quality
         g. Assessment of groundwater extension to adjacent sub-basins/aquifers
      2. Wastewater treatment
         a. Type of system
         b. Insufficient wastewater system issues
         c. Opportunities for wastewater reuse (gray water, local sewage treatment with reclamation, etc.)
      3. Storm water
         a. Issues related to storm water, urban water runoff, flood management
         b. Opportunities for storm water catchment (cistern to large-scale) and treatment or groundwater recharge
         c. Community impacts related to enhanced storm water recharge for groundwater sustainability
      4. Other issues
         a. Regulatory and compliance
         b. Climate (climate change, drought, El Nino/La Nina cycle, etc.)
   ii. **Tools**: To be identified
   iii. **Deliverable:** Reference document to assist with GSP planning and implementation efforts.

b. Preliminary Water Impact/Vulnerability Analysis
   i. **Approach:** To be determined through discussion with County of San Diego
   ii. **Tools:** GoldSim, additional tools to be identified
   iii. **Deliverable:** Reference document to assist with GSP planning and implementation efforts.

c. SDAC: GSP Impacts Analysis
   i. **Approach:** To be determined through discussion with County of San Diego
   ii. **Tools**: GoldSim, additional tools to be identified
   iii. **Deliverable:** Reference document to assist with GSP planning and implementation efforts.

d. SDAC: Revised Impacts Analysis
   i. **Approach:** To be determined through discussion with County of San Diego
   ii. **Tools**: GoldSim, additional tools to be identified
   iii. **Deliverable**: Reference document to assist with GSP planning and implementation efforts.

Task 3

3. Decision Management Analysis – $50,000-$75,000 **Dec 2017 – Apr 2018**

a. Water Supply Uncertainties (3 Scenarios)
   i. **Approach**: To be determined through discussion with County of San Diego
   ii. **Tools**: GoldSim, additional tools to be identified
   iii. **Deliverable**: Reference document to assist with GSP planning and implementation efforts.

b. BWD Cost and Rate Structure (3 Scenarios)
   i. **Approach**: An analysis of the potential impacts of various water reduction scenarios on the SDAC, rate payers, and Borrego Water District infrastructure. This work will also focus on water system financing models, which will:
      1. Identify rate structure scenarios (i.e., block, tiered) and constraints (e.g., Prop 218)
      2. Describe system financing needs (i.e., operation and maintenance costs, both present and potential future)
      3. Describe SDAC-related constraints to BWD rates and financing
      4. Describe potential future cost impacts related to groundwater extraction, treatment, and distribution, as well as extended groundwater explorations, monitoring, and chemical (water quality) analyses.
      5. Describe potential future BWD costs for obtaining water and/or water rights for areas (e.g., need to purchase fallowed agricultural land)
   ii. **Tools**: GoldSim, additional tools to be identified
   iii. **Deliverable**: Reference document to assist with GSP planning and implementation efforts.

c. SGMA/Environmental
   i. **Approach**: To be determined through discussion with the County of San Diego. May include environmental impacts, including potential for PM2.5 emissions (deeply respirable dust) to increase with agricultural land fallowing, especially in the northern portion of the GSA
   ii. **Tools**: GoldSim, additional tools to be identified
   iii. **Deliverable**: Reference document to assist with GSP planning and implementation efforts.

d. SDAC Economic Impacts (3 Scenarios)
   i. **Approach**: To be determined through discussion with the County of San Diego
   ii. **Tools**: GoldSim, additional tools to be identified
   iii. **Deliverable**: Reference document to assist with GSP planning and implementation efforts.

e. Societal/Government Impacts (3 Scenarios)
   i. **Approach**: To be determined through discussion with the County of San Diego
   ii. **Tools**: GoldSim, additional tools to be identified
   iii. **Deliverable**: Reference document to assist with GSP planning and implementation efforts.

Task 4

4. Well Metering Assessment and Installation – $72,000 Jan – Nov 2018

a. **Approach**: An assessment of all 17 BWD wells for purposes of installing well meters to monitor compliance with the State Sustainable Groundwater Management Act of 2014 (SGMA) and the eventual Groundwater Sustainability Plan (GSP) for the basin. Activities will include:
    i. Assessment of wells through an information-gathering phase in which all 17 BWD wells will be inspected, photographed, and mapped for well meter installation.
    ii. Utilizing stakeholder feedback to determine well pumper meter needs.
    iii. Determining electrical connections and pipe size needs at each site.
    iv. Ordering wireless remote meters, cloud transmitters with environmental enclosures for appropriate well site electrical sources.
    v. Installations of water meters and electrical connections at each site
    vi. Software setup for BWD meter monitoring
b. **Tools**: Monitoring software, additional tools to be identified
c. **Deliverable**: A preliminary report on water usage that will inform the rate structure scenarios and constraints.

Task 5

5. BWD Water Vulnerability/New Well Site Assessment – $40,021 Jan – June 2018

a. **Approach**: An assessment of nine active BWD production wells that are nearing the end of their practical usage to determine the possible risks to reliable, potable drinking water provided to the nearly 2,200 ratepayers in Borrego. This assessment, in partnership with the hydrology firm Dudek, will include:
    i. Surveying locations for potential fresh water well sites
    ii. Evaluating proximity of site locations to existing pipe distributions
    iii. Evaluating proximity of site locations to existing fresh water tank storage
    iv. Studying potential drilling depth for each location to determine vulnerability of fresh water
    v. Reviewing and utilizing recent basin publications created for BWD to inform assessments.
    vi. Initiate test drilling on preferred location
b. **Tools**: To be identified
c. **Deliverable**: A report determining the most feasible and most beneficial location(s) for new well(s) based on location, depth, etc. to inform test drilling process.

Borrego Water District Socioeconomic Assessment, SDAC Engagement, and Sustainable Groundwater Management Project

Prop 1 Category 1 Well Metering Project

The Borrego Water District (BWD) including Agriculture, Golf Courses, Commercial and the State Park water users have been task to reduce consumption by 70% by 2040. A GSA arrangement between San Diego County and BWD team is currently creating a Groundwater Sustainability Plan (GSP) that will define the methods to achieve this reduction goal.

The Borrego basin 7-024-01 is defined by figure 1, per DWR Bulletin 118.

The wireless remote well metering project for 2 A/F per year well pumpers or more will benefit the SDAC community by scientifically, accurately monitoring compliance to the State Sustainable Groundwater Management Act (SGMA) of 2014 and the GSP. Related to this is monitoring the water quality of the BWD nine production wells. We understand that over production can affect water quality. Currently BWD well production fresh water meets State requirements and does not need to be treated.

As the Co-GSA letters of SDAC support for this project are contained within the Prop 1 submittal package.

BWD has the technical and personnel capability to specify, order, install, monitor and report the meters readings to the State and SDAC community. The meters will be checked for calibration on a service schedule.

Attachment 3 Project Justification

Page 1

Borrego Water District Socioeconomic Assessment, SDAC Engagement, and Sustainable Groundwater Management Project

Prop 1 Category 1 Well Metering Project

The Borrego Water District (BWD) including Agriculture, Golf Courses, Commercial and the State Park water users have been task to reduce consumption by 70% by 2040. The work plan to achieve active wireless remote well monitoring is as follows:

1) Well and well pipe assessment, photos, GPS location mapping
2) Written installation equipment such as connections, pipe size needed, power available
3) Order wireless remote meters, cloud transmitters with environmental enclosures for appropriate well site electrical source
4) The specific water meters would be Stainless Steel such as from EKM Metering, wired to an EKM Omnimeter Pulse V4 unit, signal sent from to a EKM Push communication converter and signal sent to a BWD computer to monitor well production. (see attached proposal from EKM Metering dated 10/5/17)
5) Site Installation of water meter and electrical connection
6) Setup Borrego Water District (BWD) computer with software to receive meter signals and CAD map location of each meter.
7) Begin monitoring well pump times, days, length of service and create reports with water quantity

Attachment 4 Work Plan

Page 1

Print | Close Window

Subject: Re: EKM Metering Contact Form
From: EKM Metering Customer Support <support@ekmmetering.com>
Date: Thu, Oct 05, 2017 11:04 am
To: joe@borregowd.org

Joe,

Thanks for getting back to us.

It sounds like you will need:

60 x 2" water meters discounted to $364.00 each (normally $520)

From 20 to 60 x **Omnimeter Pulse v.4** discounted to $154.00 each (normally $220):
You can connect one Omnimeter Pulse v.4 to each water meter, or if physically possible you may be able to connect up to 3 water meters per one Omnimeter Pulse v.4 unit.

From 20 to 60 x Enclosures/mounting brackets for the Omnimeter Pulse v.4 discounted to $24 each (normally $40 each): **Enclosures**
Do you want indoor or watertight models?

From 1 to 60 x **EKM Push**:
If these Omnimeter Pulse v.4 units can have their serial data connections daisy chained together then you could wire all these together and then use just one EKM Push to connect them all to. The Push would need to be connected to an internet connection on site. EKM Push units are $100.

1 x **Dash software** ($30):
You can use this to read as many meters as you like, on as many computers as you like.

Here are some accessories you may or may not need:

-Wire for RS-485 and/or pulse communications. This connects the Omnimeter Pulse v.4 to the Push ($35 for 50'): **CAT5 Wire**
-485Bee wireless connections (you will need at least 2 if you choose to use these). These wirelessly bridge the communication between multiple Omnimeter Pulse v.4 units or between the Omnimeter Pulse v.4 and the Push ($100 each): **485Bee**
-Ethernet cable to connect the EKM Push to the router ($6): **Cable**
-**EKM-Blink USB converter** ($25) for on site reading of the Omnimeter units

More info here:
https://help.ekmmetering.com/support/solutions/folders/6000200168

Please provide us with the following info and we can get you an invoice:
1. Total products and quantities
2. Your complete shipping address
3. Your payment method:

We can accept the following payment options:
-PayPal and Credit Card (these both will probably have a 3.5% fee attached to them for bulk orders).
-Bank wire transfer (usually $40 flat fee for this). (May take an additional couple days for payment to process.)
-Physical check in the mail.
-If you are setup for ACH payment, we can take ACH payments to our bank account (free) -Slow (3-5 days depending on your financial institution)

Let us know how you would like to proceed.

For more details on how these all connect please see my previous email.

Thanks again,

Seth
EKM Metering
Santa Cruz, California
ekmmetering.com

Ticket: https://help.ekmmetering.com/helpdesk/tickets/48781

On Thu, 5 Oct at 9:47 AM , Joe Tatusko <joe@borregowd.org> wrote:

Thanks, please provide a quote:
60, 2 inch dia. stainless wireless remote water meters with 120/240 cloud transmiters and any other hardware/software to allow efficent computer remote monitoring.
Joe Tatusko
Borrego Water District Director

> -------- Original Message --------
> Subject: Re: EKM Metering Contact Form
>
> From: EKM Metering Customer Support <support@ekmmetering.com>
> Date: Wed, October 04, 2017 1:12 pm
> To: joe@borregowd.org
>
> Joe,
>
> Thanks for contacting us.
>
> If you still have any questions:
>
> Please reply to this email with any specific questions you may have and we will get right back to you. The best, fastest way to reach us is right here via support@ekmmetering.com.
>
> Thanks again,
>
> Seth
> EKM Metering
> Santa Cruz, California
> ekmmetering.com
>
> Ticket: https://help.ekmmetering.com/helpdesk/tickets/48781

On Mon, 2 Oct at 1:58 PM , EKM Metering Customer Support <support@ekmmetering.com> wrote:
Joe,

Thanks for contacting us. Take a look at the below info and let us know what quantities you will use and we can get back to you with a quote, as we have quantity discount pricing available.

It sounds like you will need:

50 x 2" water meters

From 17 to 50 x **Omnimeter Pulse v.4**:
You can connect one Omnimeter Pulse v.4 to each water meter, or if physically possible you may be able to connect up to 3 water meters per one Omnimeter Pulse v.4 unit.

From 1 to 50 x **EKM Push**:
If these Omnimeter Pulse v.4 units can have their serial data connections daisy chained together then you could wire all these together and then use just one EKM Push to connect them all to. The Push would need to be connected to an internet connection on site. EKM Push units are $100.

1 x **Dash software** ($30):
You can use this to read as many meters as you like, on as many computers as you like.

Here are some accessories you may or may not need:

-From 17 to 50 x Enclosures/mounting brackets for the Omnimeter Pulse v.4 - the Omnimeter Pulse v.4 units need to be protected from moisture and the elements: **Enclosures**
-Wire for RS-485 and/or pulse communications. This connects the Omnimeter Pulse v.4 to the Push ($35 for 50'): **CAT5 Wire**
-485Bee wireless connections (you will need at least 2 if you choose to use these). These wirelessly bridge the communication between multiple Omnimeter Pulse v.4 units or between the Omnimeter Pulse v.4 and the Push ($100 each): **485Bee**
-Ethernet cable to connect the EKM Push to the router: **Cable**
-**EKM-Blink USB converter** ($25) for on site reading of the Omnimeter units

More info here:
https://help.ekmmetering.com/support/solutions/folders/6000200168

- - -

To review how our system works:

Each of our water meters would be wired (using most any kind of wire) to one of our Omnimeter Pulse v.4 units. Each Omnimeter Pulse v.4 can read up to 3 water meters individually. So you could either get the same number of water meters and Omnimeter Pulse v.4 units — or you could get 1 of our Omnimeter Pulse v.4 units for every 3 of our water meters, depending on if you can wire multiple water meters to one Omnimeter

Pulse v.4. The max distance for the pulse wire from the water meters to the Omnimeter Pulse v.4 is 200 feet. The Omnimeter Pulse v.4 unit, to be able to read the water meters, needs to be connected to any AC voltage from 100V to 400V.

The Omnimeter Pulse v.4 units have a wired data output that you can connect to one of our communication converters to read on your computer (more on this in a moment). You can "daisy chain" multiple Omnimeter Pulse v.4 units (up to 50 of them) and then finally connect the last one in the series to the communication converter. Connect the "A" and "B" terminals on one Omnimeter Pulse v.4 to the "A" and "B" terminals on the next Omnimeter Pulse v.4, respectively. Keep doing this until all the Omnimeter Pulse v.4 units are all wired together and then finally continue the 2 wires to the communication converter. Use twisted pair wire for this. Twisted pair wire is easily obtained from inside CAT5 cable. CAT5 cable actually has 4 sets of twisted pair wire inside. The max distance between the Omnimeter Pulse v.4 units and the communication converter altogether is 4,000 feet. You can also install one of our EKM-485Bee radios at each Omnimeter Pulse v.4 unit and also at the communication converter and so wirelessly connect these. The EKM-485Bee radio requires 6 - 42 volts DC to power it up. The max distance between the EKM-485Bees (from one to the next) is about 600 feet, though this can vary more or less based on obstacles vs. clear line of sight.

All these products come with installation instructions.

Communication converters:
To connect the Omnimeter Pulse v.4 units (and so all the water meters) direct to your computer you can use our USB converter ($25). The twisted pair wire would connect to A and B on this converter and you would plug it into your computer.

To read the meters over the internet you could instead connect the twisted pair wire to A and B on our EKM Push converter ($100). The EKM Push would need to be connected to an electrical outlet to power it up and also would need to be connected to your internet connection — such as plugging into the back of your router on site. You can get a WiFi Bridge at you local home electronics store and plug that into the EKM Push to wirelessly get the data to the internet via your WiFi network. We do recommend the $25 USB converter as well for on-site settings changes if needed.

Once everything is all wired up you would then use our EKM Dash software on your computer to read the meters. This comes with full setup instructions and we are always here to help you out as well.

We recommend our enclosures for the Omnimeter Pulse v.4 units, as they need to be protected from moisture and the elements. We have indoor and outdoor enclosures depending on where you have these installed.

Thanks again,

Seth
EKM Metering
Santa Cruz, California
ekmmetering.com

Ticket: https://help.ekmmetering.com/helpdesk/tickets/48781

On Mon, 2 Oct at 12:06 PM , Joe <joe@borregowd.org> wrote:
Contacts information:
Attachment : N/A
What is your name? : Joe Tatusko
What is your company name? : Borrego Water District
What is your email address? : Joe@borregowd.org
What is your phone number? : 619 851-0890
What are you interested in metering? : Water
What is your voltage (in volts)? : N/A
What is the amp rating of your system (in amps)? : N/A
What is the diameter/size of your wire (in mm)? : N/A
What size water meter do you need? : 2.0"
What water temperature are you intending to meter? : Cold
Let us know as much as you can about your needs. : About 50, 2" water meters with remote monitoring. Please provide an estimate and Call Thanks BWD, Director

Borrego Water District Socioeconomic Assessment, SDAC Engagement, and Sustainable Groundwater Management Project

Prop 1 Category 1 Well Metering Project

The Borrego Water District (BWD) including Agriculture, Golf Courses, Commercial and the State Park water users have been task to reduce consumption by 70% by 2040. The attachment 5 budget includes table 4 and table 5.

Table 4

a) Stakeholder engagement to determine well pumpers meter needs - $500.00

b) Well site visit to assess well installation - $1,000

c) Create well site specification and hardware required - $500.00

d) Order equipment = $1,500 per well

e) Well site installation hardware and electrical - $500.00

f) Monitor computer/software set-up at BWD office - $200.00

Total per well $4,200.00

Table 5

Project 1 Well Meters total installation $75,000

Attachment 5 Budget

Page 1

Borrego Water District Socioeconomic Assessment, SDAC Engagement, and Sustainable Groundwater Management Project

Prop 1 Category 1 Well Metering Project

The Borrego Water District (BWD) including Agriculture, Golf Courses, Commercial and the State Park water users have been task to reduce consumption by 70% by 2040. Attachment 6 metering project schedule.

Stakeholder engagement – 4 weeks

Well Site Assessment - 1 day

Create well site specifications and hardware needs – 1 day

Order equipment – 1 day

Receive equipment – 4 weeks

Well site installation – 2 days

Computer/software set-up and test – 2 hours

Total timeline for 1 site – 9 weeks, multiple sites could be processed concurrently

Attachment 6 Schedule

Page 1

Borrego Water District Socioeconomic Assessment, SDAC Engagement, and Sustainable Groundwater Management Project

Prop 1 Category 1 Well Metering Project

The Borrego Water District (BWD) including Agriculture, Golf Courses, Commercial and the State Park water users have been task to reduce consumption by 70% by 2040. Attachment 7 Disadvantaged Community

LeSar Stats.....

Attachment 7 SDAC

Page 1

Borrego Water District Socioeconomic Assessment, SDAC Engagement, and Sustainable Groundwater Management Project

Prop 1 Category 1 Fresh Water Vulnerability - New Well Site Assessment

The Borrego Water District (BWD) has nine active production wells, several of these wells are near the end of their useful life. As a small SDAC Community the cost of professional basin assessment for determining 3 possible sites is prohibitive. The assessment is necessary to reduce the vulnerability of not providing fresh reliable drinking water to the 2100 SDAC ratepayers, thus this project significantly benefits the SDAC Community. Prop 1's major purpose is to provide fresh water distribution and storage. This project will professionally look at the best fresh water well production locations as well as depth and compare these to the BWD pipe distribution locations and fresh water tank storage to optimize efficiency and redundancy. The resulting assessment will benefit the SDAC Community. This project will also include construction of test well(s) which will measure the success of the assessment.

BWD is a GSA and works closely with our Co-GSA the San Diego County. We will share information such as the consultant used for the well location assessment. We work closely with San Diego County in developing the Groundwater Sustainability Plan (GSP). We share the same consulting Hydrogeology firms for projects such as the GSP.

Attachment 3 SDAC Project Justification

Page 1

Borrego Water District Socioeconomic Assessment, SDAC Engagement, and Sustainable Groundwater Management Project

Prop 1 Category 1 Fresh Water Vulnerability - New Well Site Assessment

The Borrego Water District (BWD) has nine active production wells, several of these wells are near the end of their useful life. The BWD work plan is to have a Hydrogeology firm work with BWD Staff in the assessment using recent basin publications created for BWD. These include Dudek well water monitoring, U.S. Department of the Interior Bureau of Reclamation of September 2015 and the U.S. Department of the Interior U.S. Geological Survey Scientific Investigations Report 2015-5150 of 2015.

The objective of the work plan is to complete is to determine the most beneficial new well locations comparing location, depth, and proximity to existing BWD freshwater pipeline and water tank locations. The resulting report will be used to drill test well(s).

Attachment 4 SDAC Work Plan

Page 1

Borrego Water District Socioeconomic Assessment, SDAC Engagement, and Sustainable Groundwater Management Project

Prop 1 Category 1 Fresh Water Vulnerability - New Well Site Assessment

The Borrego Water District (BWD) has nine active production wells, several of these wells are near the end of their useful life. The BWD budget for this test well work plan is $225,000 for the basin assessment report phase per a Dudek budget estimate of similar recently 1000 feet deep drilled wells.

The second phase will be site test well drilling to validate location(s), depth and fresh water quality. The estimated cost for the second phase is $1,500,000 estimate for a production well, with pump and motor, power and new distribution pipeline and appurtenances.

See table 4 and table 5 of the package submittal.

Attachment 5 SDAC Budget

Page 1

Borrego Water District Socioeconomic Assessment, SDAC Engagement, and Sustainable Groundwater Management Project

Prop 1 Category 1 Fresh Water Vulnerability - New Well Site Assessment

The Borrego Water District (BWD) schedule for our SDAC Community is to have the assessment work complete with report within 6 months of grant approval go ahead. The second phase is test well(s) drilling with location, depth testing and water quality analysis would be complete 3 months after award of Prop 1 SDAC funding.

Attachment 6 SDAC Schedule

Page 1

DUDEK

CORPORATE OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 F 760.942.4508

October 12, 2017

Geoff Poole, General Manager
Borrego Water District
806 Palm Canyon Drive
Borrego Springs, California 92004

Subject: **Proposal for Additional Groundwater Extraction Wells for the Borrego Water District**

Dear Mr. Poole:

We appreciate the opportunity to present the following proposal for evaluating additional groundwater extraction wells for the Borrego Water District (BWD). The following sections outline our proposed approach, scope of services, and fee estimate for the project.

1 Approach and Scope of Services

1.1 Project Understanding

Dudek understands the goal of the project is to determine the most feasible and cost-effective options for providing suitable drinking water for BWD customers with future consideration given the identified groundwater overdraft condition and the aging existing BWD water supply infrastructure. The Borrego Valley Subbasin (Basin), which is the sole source of water supply for the BWD, has been identified as a critically overdrafted basin (DWR 2015). Declining groundwater levels has resulted in loss of production from existing BWD extraction wells. In portions of the Borrego Springs Subbasin, the upper aquifer as defined by the U.S. Geological Survey (USGS) has become unsaturated limiting the potential to simply drill deeper at existing well locations. Likewise, limited remaining useful life of aging water wells will require replacement within the next few years. Additionally, arsenic concentrations exceeding State of California drinking water maximum contaminant levels (MCLs) have been identified in several wells in the South Management Area of the Borrego Springs Subbasin. Ultimately, loss of production and well failure will result in decreased water supply to reliably serve BWD customers. As the capital investment to design and construct several new water wells and associated pipelines represents a substantial cost to BWD directly impact the affordability of water at a detriment to customers in an area which has already been identified by the Department of Water Resources (DWR) as a severely disadvantaged community.

In order to provide a reliable and cost effective water resource supply to customers, the BWD must evaluate locating replacement groundwater extraction wells. Dudek proposes the BWD consider a proposed well site ranking system in order to assist in decision making as it pertains to the addition of groundwater extraction wells. The well site ranking system will consider but not limited to the below criteria;

- Aquifer properties
- Well interference

- Groundwater Quality
- Existing BWD water supply infrastructure (pressure zones, wellhead distribution system pressures)
- Longevity of existing wells (age and declining groundwater levels)
- District Owned Property, Property Acquisition and Easement acquisition
- Other Environmental Constraints (flood zones, biological resources, etc.)

The Dudek team will apply the above ranking system to prioritize well locations for BWD. Each category will be assigned a ranking that ranges from 1 ("least favorable") to 4 ("most favorable"). The ranking for each category will be totaled for each perspective well location, and the highest total represented by the most favorable locations will be recommended for consideration of installing test or production wells. A detailed description of each criterion is outlined below.

Aquifer Properties

A hydrogeologic assessment will be developed to determine the most productive site for additional extraction wells based on the productivity of the Basins aquifers. Dudek will review available well completion reports, available literature, and aquifer test data to determine the aquifer properties of the three primary aquifers. Aquifer properties to be considered include transmissivity, conductivity, lithology, and depth and saturated thickness of aquifer. Dudek will use a groundwater numeric model completed by the USGS in cooperation with the BWD to determine saturated thickness of each aquifer unit within the Basin.

Well Interference

Well interference will be reviewed in order to determine nearby pumping influences of existing wells. Because the time and duration of nearby pumping wells can affect the long term use of additional BWD wells, production wells, including agriculture and recreation wells, and their assumed production amount, will be used to identify areas where the least amount of well interference will be encountered.

Water Quality

Given the potential for arsenic to exceed the California drinking water standard in BWD wells that are primarily screened in the lower aquifer (USGS 2015), it is a concern that as groundwater levels in the Basin continue to decline, arsenic levels may increase above the drinking water standard of 10 micrograms per liter (µg/L).

As part of Dudek's ongoing work with the Sustainable Groundwater Management Act (SGMA) and the preparation of the Groundwater Sustainability Plan (GSP), groundwater sampling of at least 30 wells, in addition to sampling the District's wells will be conducted in the Basin during the month of November 2017. Dudek will use groundwater quality results from 2017 and historical data to identify areas of desirable groundwater quality to determine additional well locations.

Existing BWD Water Supply Infrastructure

Dudek will assess the feasibility of connecting additional wells to the existing water supply infrastructure. If wells are considered outside of the current water system infrastructure, Dudek will consider cost and feasibility of additional water system infrastructure to connect to the existing BWD system. Dudek's team of

water system infrastructure engineers will evaluate feasibility and cost of potential well hooks ups using a WaterCAD hydraulic model previously developed for the BWD.

Longevity of Existing Wells

Existing BWD wells will be reviewed with information provided by the BWD including well drillers report, historical PumpCheck motor test data, groundwater levels, groundwater quality and rehabilitation and maintenance logs to estimate the remaining useful life of groundwater extraction wells currently in use by the BWD. In order to decrease cost to the BWD, existing wells and infrastructure will be evaluated to provide recommendations for additional rehabilitation and maintenance.

Easement Acquisition

Acquiring land for the drilling of additional groundwater extraction wells will play a pivotal role in the feasibility and cost of the project needs. Sites will be evaluated based on cost and cooperation with current property owners to grant a groundwater extraction well easement on private property. Additionally, Dudek will assess the suitability of drilling new water wells on BWD owned land to minimize cost.

Other Environmental Constraints

Well sites will be evaluated for potential impacts to environmental constraints such as well construction in flood plains, jurisdictional waterways, potential impacts to groundwater dependent ecosystems, and other biological resources.

1.2 Project Approach and Scope of Work

Dudek proposes to approach the development of the project through the research and preparation of several concurrent work elements that address the various aspects of the project. Following the completion of each of the work elements, the report will be prepared based on the consolidated information. The following describes the general nature and scope of each work element:

Task 1 – Additional Groundwater Extraction Well Ranking System

The ultimate goal of the project is to determine the most feasible approach to supply customers of the BWD safe and cost efficient water. Dudek will investigate potential new water sources to replace production from BWD wells that are reaching their useful life. The investigation will include a ranking system to determine the best approach for drilling new groundwater wells for the BWD.

Task 2 – Water Model Update & Calibration

To better assess the feasibility of additional groundwater extraction wells, it is necessary to identify system supply and demands by improvement zones. Dudek will use the existing WaterCAD Model to estimate average and maximum day demand for each improvement or major pressure zone and aid in the development of the alternatives.

There are currently two existing WaterCAD models for the District. One model covers Improvement Districts (IDs) 1 and 3 and another covers IDs 4 and 5. Dudek anticipates the District would like to combine the two models into one, functional model. Once combined, Dudek will update the demands, well flow rates, controls and any improvements made to the distribution system infrastructure. It is assumed water meter

data for the demands update of the model will be made available in GIS format for accurate geographical locating of demand loads.

Once the model is updated, Dudek will calibrate the model with SCADA and fire hydrant pressure data (provided by the District), resulting in a hydraulic model that accurately represents field conditions.

Deliverable: *Updated and calibrated WaterCAD hydraulic modeling files.*

Task 3 –Technical Memorandum

The results of the ranking system will be consolidated into a technical memorandum for District review. Draft and final versions of the technical memorandum will be submitted to the District.

Deliverables: *Draft and final technical memorandums in electronic format.*

Task 4 –Meetings and Project Management

Dudek will perform typical project coordination and project management tasks, including budget and scheduling, for the project. One Kickoff Meeting and one (1) status meeting was assumed for the fee estimate.

Deliverables: *Agendas and meeting minutes for Kickoff and status meetings*

2 Project Fee

Our attached fee proposal broken down by task and for each proposed staff member. Our fee proposal submittal includes the fee proposal and our current 2017 Standard Rate Schedule. We understand that the work will be performed on a time-and-materials basis, not to exceed, and that no additional compensation will be provided without advance written approval from the City.

We have assembled a highly experienced team eager to prepare your water quality feasibility assessment and we look forward to continuing to support the District. Please feel free to contact me at 760.479.4154 or by email at tdriscoll@dudek.com, if you have any questions or require any additional information.

Sincerely,

DUDEK

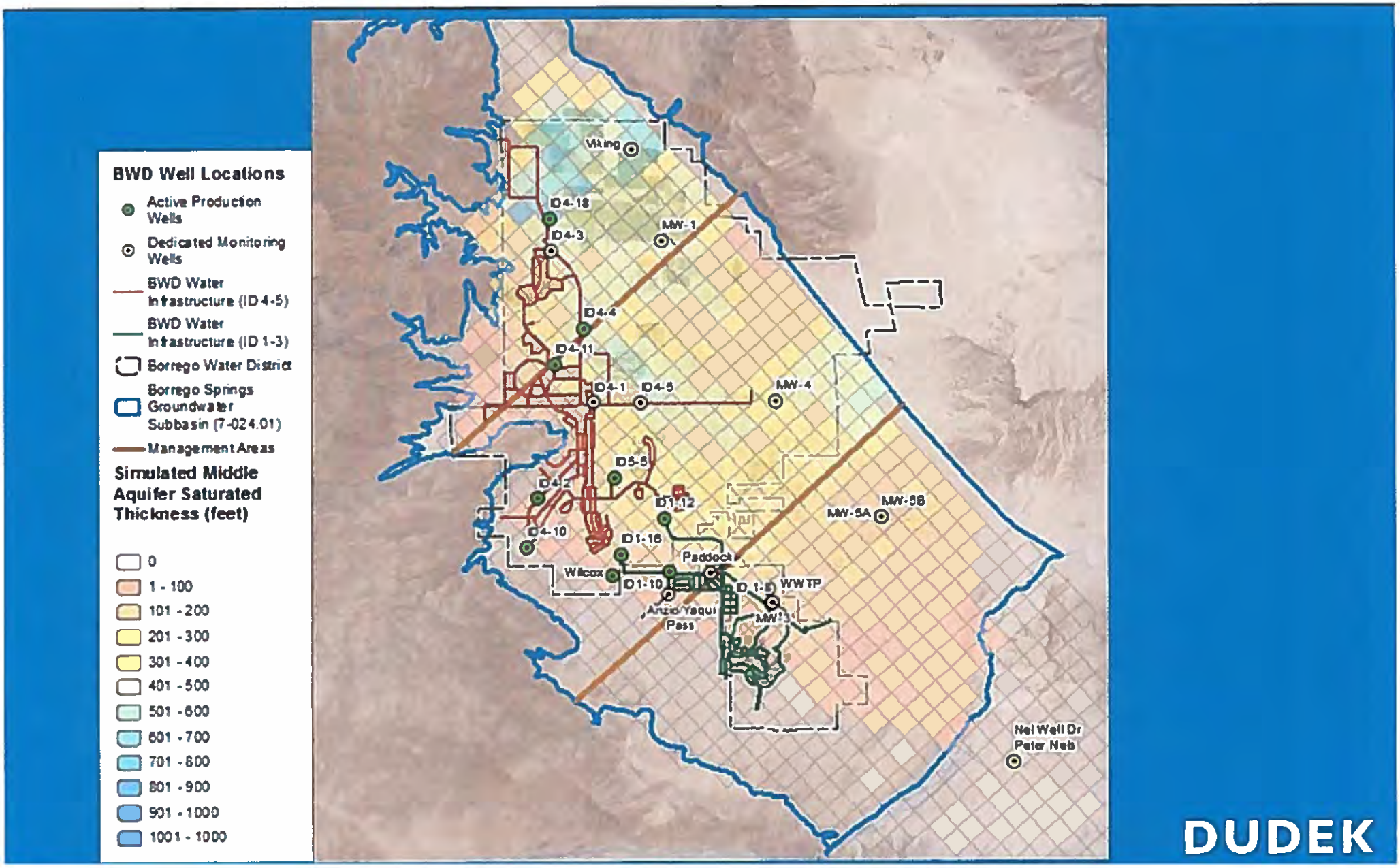
Trey Driscoll

Trey Driscoll, PG, CHG
Principal Hydrogeologist/Project Manager

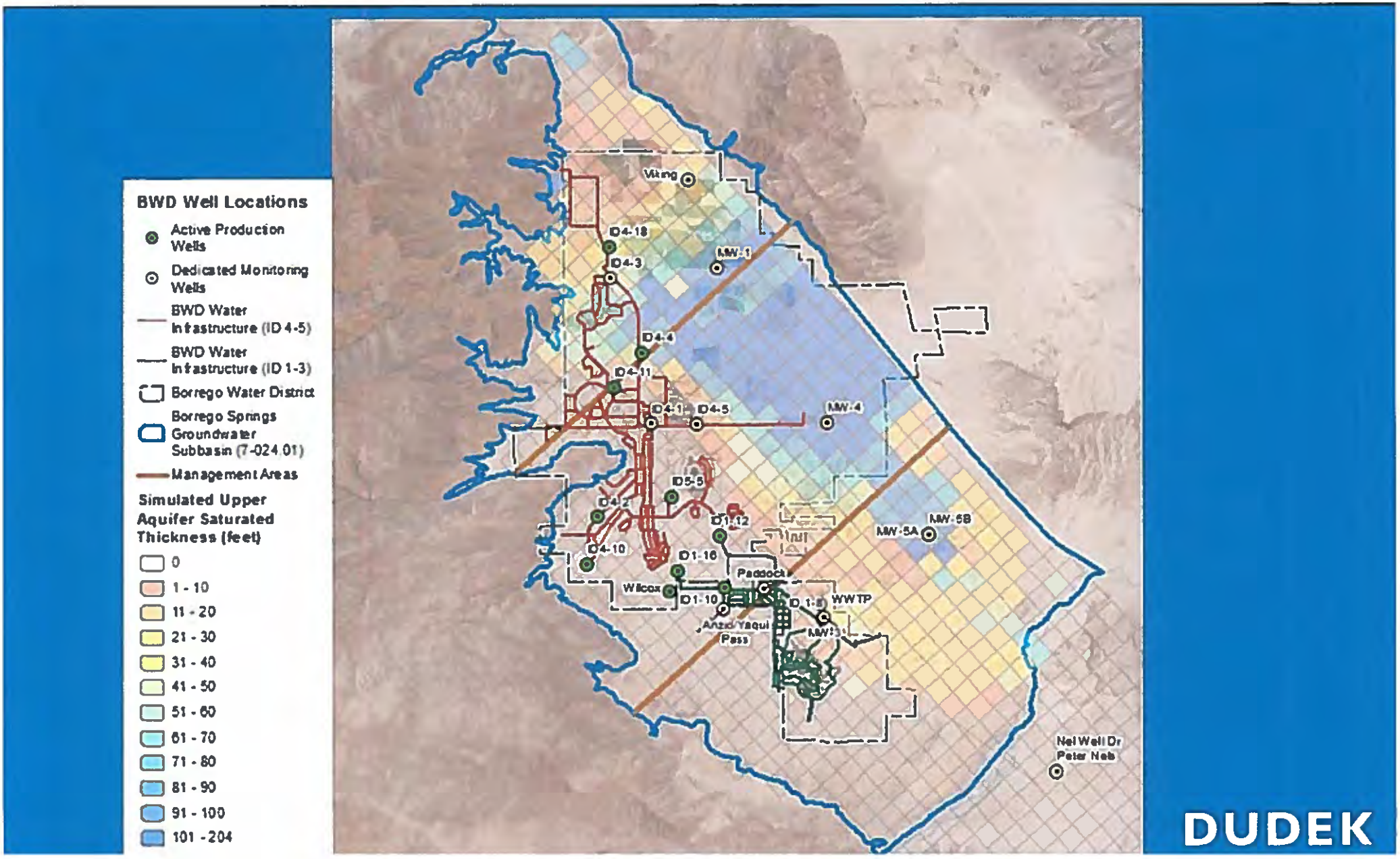
FEE ESTIMATE

		Labor Hours and Rates					TOTAL DUDEK HOURS	DUDEK LABOR COSTS	OTHER DIRECT COSTS	TOTAL FEE
	Project Team Role	Project Manager	Engineer	Project Engineer	Hydrogeo VI	Hydrogeo I				
	Team Member	T. Driscoll	E. Caliva	H. Dodd	P. Rentz	H. McManus				
	Billable Rate :	$240	$190	$135	$160	$110				
Task 1	**Additional Groundwater Extraction Well Ranking System**									
1.1	Well Location Analysis using ranking criteria	4				30	34	$ 4,260		$ 4,260
1.2	Groundwater Model Analysis	2				8	10	$ 1,360		$ 1,360
1.3	Water Quality Evaluation	6			8	8	22	$ 3,600		$ 3,600
1.4	Peak Hour and Max Day Demand	2		8		2	12	$ 1,780		$ 1,780
1.5	Determine Remaining Useful Life of BWD Wells	2				8	10	$ 1,360		$ 1,360
1.6	Identify Well Issues	2				8	10	$ 1,360		$ 1,360
	Subtotal Task 1	**18**		**8**	**8**	**64**	**98**	**$ 13,720**	**$ -**	**$ 13,720**
Task 2	**Water Model Update and Calibration**									
2.1	Combine Water Models		4	8			12	$ 1,840		$ 1,840
2.2	Update Water Model		4	16			20	$ 2,920		$ 2,920
2.3	Calibrate Model		4	8			12	$ 1,840		$ 1,840
2.4	Feasibility Assessment to Include Additional Wells		2	8			10	$ 1,460		$ 1,460
	Subtotal Task 2		**14**	**40**			**54**	**$ 8,060**	**$ -**	**$ 8,060**
Task 3	**Technical Memorandum**									
3.1	Draft Technical Memorandum	8	8	24	4	24	68	$ 9,960		$ 9,960
3.2	Final Technical Memorandum	4	4	8		8	24	$ 3,680		$ 3,680
	Subtotal Task 3	**12**	**12**	**32**	**4**	**32**	**92**	**$ 13,640**	**$ -**	**$ 13,640**
Task 4	**Meetings and Project Management**									
4.1	Meetings (1)	6	6				12	$ 2,580	$ 101	$ 2,681
4.2	Project Management	8					8	$ 1,920		$ 1,920
	Subtotal Task 4	**14**	**6**				**20**	**$ 4,500**	**$ 101**	**$ 4,601**
	Total Non-Optional Hours and Fee	44	32	80	12	96	264	$ 39,920	$ 101	$ 40,021
	Percent of Hours:	***17%***	***12%***	***30%***	***5%***	***36%***	***100%***			

Modeled Middle Aquifer Saturated Thickness



Modeled Upper Aquifer Saturated Thickness



DUDEK

Gmail Joseph Tatusko <jatmpk@gmail.com>

RE: FW: Proposition 1 Grant New Water Well Locating Evaluation

Trey Driscoll <tdriscoll@dudek.com> Sat, Oct 14, 2017 at 12:26 PM
To: Joseph Tatusko <jatmpk@gmail.com>

Joe,

A 1,000 foot test hole and monitoring well is about $170,000 (see attached non-prevailing wage cost estimate). Assume 30% more if you are required to pay prevailing wage (i.e. $221,000). Also, engineering/geologic oversight and project management will be about 20% of the driller cost. Thus, **$225,000** is a good budget number for a **monitoring well**.

A production well will cost about $600,000 for the driller (see attached non-prevailing wage actual cost to drill and install Rams Hill Well 3 (12" casing for RH-3; included cost increase in this estimate to account for larger borehole and casing for new District well). Assume 20% for engineering and project management. Thus, **$720,000** is an approximate budget number for a **production well** excluding equipping the well with pump and motor, power and new distribution pipeline (this cost assumes non-prevailing wage). Total cost for new production well, pump and motor, power, pipeline and appurtenances is in excess of *$1 million*.

Give me a call at 760.415.1425 if you need to discuss further.

Cheers,

Trey

From: Joseph Tatusko [mailto:jatmpk@gmail.com]
Sent: Saturday, October 14, 2017 12:04 PM
To: Trey Driscoll
Subject: RE: FW: Proposition 1 Grant New Water Well Locating Evaluation

[Quoted text hidden]

2 attachments

T2 Test Hole.pdf
36K

Rams Hill Well 10 Invoice.pdf
509K

Fain Drilling & Pump Co. Inc.

12029 OLD CASTLE RD.
VALLEY CENTER, CA 92082
PHONE: 760-749-0701
FAX; 760-749-6380

Invoice

Date	Invoice #
8/22/2014	10436C

Bill To
T2 BORREGO LLC 4582 S. ULSTER STREET STE 310 DENVER, CO 80237

P.O. No.	Terms	Project
	Due on receipt	

Description	Qty	U/M	Rate	Amount
MOBILIZATION OF EQUIPMENT AND SET UP FEE	1		3,500.00	3,500.00
DRILL AN 8" DIA PILOT HOLE	1,000		30.00	30,000.00
RUN ELECTRIC LOG	1		3,500.00	3,500.00
WELL PERMIT AND FILING FEES	1		735.00	735.00
SITE BMP'S & CLEAN- UP	1		1,000.00	1,000.00
CHANGE ORDER				
ADDITIONAL MOBILIZATION AND SET-UP FEE @$2000.00	1		2,000.00	2,000.00
REAM 8" DIA HOLE TO 12" PILOT HOLE FROM 0-890 @ $35.00 PER FT.	890		35.00	31,150.00
REAM UPPER 50 FT. FOR 24" CONDUCTOR CASING @ $250.00 PER FT.	50		250.00	12,500.00
INSTALL 50 FT. CONCRETE SANITARY SEAL @$60.00 PER FT	50		60.00	3,000.00
REAM PILOT HOLE TO 2 FT. DIA FROM 50-890 FT @$72.00 PER FT	890		72.00	64,080.00
FURNISH AND INSTALL 12" X .375 WALL LCS BLANK CASING 298 FT. @$80.00 PER FT.	298		80.00	23,840.00
FURNISH AND INSTALL 12" X .375 WALL LCS LOUVRE CASING 590 FT @$154.00 PER FT	590		154.00	90,860.00
FURNISH & INSTALL 12" X .375 WALL LCS SUMP CASING W/CAP, 5 FT. @$80.00 PER FT.	5		80.00	400.00
INSTALL GRAVEL PACK 890 FT.@$39 PER FT.	890		39.00	34,710.00
DRILL RIG DEVELOPMENT, 16 HRS @$700.00 PER HR.	16		700.00	11,200.00
PUMP RIG DEVELOPMENT, 16 HRS @$500.00	16		500.00	8,000.00

	Total
	Payments/Credits
	Balance Due

Fain Drilling & Pump Co. Inc.

12029 OLD CASTLE RD.
VALLEY CENTER, CA 92082
PHONE: 760-749-0701
FAX; 760-749-6380

Invoice

Date	Invoice #
8/22/2014	10436C

Bill To
T2 BORREGO LLC 4582 S. ULSTER STREET STE 310 DENVER, CO 80237

P.O. No.	Terms	Project
	Due on receipt	

Description	Qty	U/M	Rate	Amount
TEST PUMP DEVELOPMENT, 8 HRS @$625.00 PER HR.	8		625.00	5,000.00
WELL PRODUCTION & AQUIFER TEST, 24 HRS@$625 PER HR.	24		625.00	15,000.00
Sales Tax			8.00%	0.00

Total	$340,475.00
Payments/Credits	$-13,120.50
Balance Due	$327,354.50

FAIN
DRILLING & PUMP CO., INC.
760.749.0701

Proposal

Customer

Name T2 Borrego LLC
Address
City State CA ZIP
Phone

Date 4/18/2017
Well Location

Qty	Description	Unit Price	TOTAL
	Phase 1 Test Hole		
1	Mobilization of Equip. & Set-Up Fee	$3,500.00	$3,500.00
1000	Drill an 12" dia pilot hole	$65.00	$65,000.00
1	Run electric log	$4,500.00	$4,500.00
1	Well permit & filing fees	$735.00	$735.00
1	Site BMP's & containment	$1,000.00	$1,000.00
	Total Phase 1 = $74,735		
	Phase 2 Monitoring Well		
6	Clean well out for casing installation per hour	$700.00	$4,200.00
600	Furnish & install 6"x.250 wall LCS Casing	$30.00	$18,000.00
400	Furnish & install 6"x.250 wall LCS Louvre Casing	$69.00	$27,600.00
25	Furnish & install gravel pack per yard	$800.00	$20,000.00
16	Develop well per hour w/ drill rig	$700.00	$11,200.00
16	Develop well per hour w/ pump rig	$500.00	$8,000.00
1	Perform 24 hour test pump	$6,000.00	$6,000.00
	Total Phase 2 = $95,000		
		SubTotal	$169,735.00
		Shipping & Handling	$0.00
		Taxes	
		TOTAL	$169,735.00

BORREGO WATER DISTRICT

BOARD OF DIRECTORS MEETING – OCTOBER 25, 2017

AGENDA BILL 2.B

October 19, 2017

TO: Board of Directors, Borrego Water District

FROM: Geoff Poole, General Manager

SUBJECT: Proposition One Resolution Authorizing GM to Submit Application – G Poole

RECOMMENDED ACTION:

Approve attached Resolution

ITEM EXPLANATION:

A requirement of the Prop One Application is a Board Resolution authorizing the General Manager to submit the Application. The attached Resolution follows the recommended DWR format.

FISCAL IMPACT:

N/A

ATTACHMENTS:

1. Draft Resolution

RESOLUTION NO. _____

Resolved by the Borrego Water District that application be made, in partnership with the County of San Diego, to the California Department of Water Resources to obtain a grant under the 2017 Sustainable Groundwater Planning Grant Program pursuant to the Water Quality, Supply, and Infrastructure Improvement Act of 2014 (Proposition 1) (Water Code Section 79700 *et seq*.), and to enter into an agreement to receive a grant for the SDAC Engagement and Identification/Assessment of Water Supply and Needs tasks outlined in the joint application with the County. The General Manager of the Borrego Water District or designee is hereby authorized and directed to, in conjunction with the County, prepare the necessary data, conduct investigations, file such application, and execute a grant agreement with California Department of Water Resources. Passed and adopted at a meeting of the Borrego Water District on October 17, 2017.

Authorized Original Signature:

_____

Printed Name:

_____

Title:

_____

Clerk/Secretary:

_____

CERTIFICATION
I do hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the Borrego Water District held on October 17, 2017.

Clerk/Secretary:

_____

BORREGO WATER DISTRICT

BOARD OF DIRECTORS MEETING – OCTOBER 25, 2017

AGENDA BILL 2.C

October 19, 2017

TO: Board of Directors, Borrego Water District

FROM: Geoff Poole, General Manager

SUBJECT: Draft Tertiary Treatment Study: Dudek Engineering – G Poole

RECOMMENDED ACTION:

Receive telephonic presentation from Dudek and direct staff accordingly

ITEM EXPLANATION:

BWD received a $75,000 Grant from the State for the completion of a study to look at Tertiary sewage treatment at BWD's Wastewater Treatment Facility. As expected, the high cost of improving sewage treatment in Borrego does not appear to be economically feasible.

FISCAL IMPACT:

N/A

ATTACHMENTS:

1. Dudek Tertiary Study

DRAFT

PROPOSITION 1
BORREGO WATER DISTRICT RECYCLED WATER FEASABILITY ASSESSMENT

Prepared for:

Borrego Water District
806 Palm Canyon Drive
Borrego Springs, CA 92004
Contact: Geoff Poole, General Manager

Prepared by:

DUDEK
605 Third Street
Encinitas, California 92024
Contact: Elizabeth Caliva, P.E.

SEPTEMBER 2017

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TABLE OF CONTENTS

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APPENDICES

FIGURES

TABLES

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EXECUTIVE SUMMARY

Study Area Characteristics

The community of Borrego Springs is completely surrounded by the Anza-Borrego Desert State Park and plays host to hundreds of thousands of park visitors throughout the year. The community's residential population ranges from less than 3,000 in summer months to over 8,000 in the height of the winter season. The northern portion of the community is primarily dedicated to agricultural production. Approximately 4,000 acres are actively involved in the production of citrus and nursery stock, such as date palms.

The Borrego Water District (District) provides water and wastewater services to the rural unincorporated community of Borrego Springs. The community is supplied domestic water service from the Borrego Valley Groundwater Basin (BVGB) which has been determined by the California Department of Water Resources to be in a "critical overdraft" status. The District is in the process of developing a Groundwater Sustainability Plan under provisions outlined in the Sustainable Groundwater Management Act of 2014. In accordance with this new law, the BVGB will be required to reduce groundwater extractions by 70% to achieve sustainability. It is anticipated that reductions will come from a variety of conservation measures, including water reuse.

Water Supply Characteristics and Facilities

Borrego Water District is the only retail water purveyor to Borrego Springs. Water supply for BWD is from groundwater pumping of the BVGB.

The District is now comprised of five (5) Improvement Districts (IDs). The distribution system consists of four pressure zones.

Wastewater Characteristics and Facilities

The District has operated the Rams Hill Water Reclamation Plant (WRP) since the early 1980's. This plant, originally designed to treat effluent to tertiary levels with a capacity of 0.25 million gallons per day (MGD), has never had enough flow to justify the increased expense of engaging the tertiary portion of the original plant design. Instead, the average daily flow of approximately 0.07 MGD has been treated to secondary standards and the resulting effluent is presently evaporated in the two adjacent evaporation-percolation ponds. Only 20 percent of BWD's customers are connected to the sewer collection system. The remainder utilize septic systems.

Recycled Water Market

Borrego Springs is a "snow bird" community, meaning that residents spend the winter months in the town (typically November through March) but leave before temperatures rise in the summer.

The District estimates that the community's population ranges from less than 3,000 in summer months to over 8,000 in the height of the winter season.

The majority of irrigation within the District is for agriculture and golf course turf irrigation. As the agricultural fields are located a significant distance from a potential recycled water source, they were quickly excluded from consideration. Golf courses, which are located within residential communities which provide a source of potential recycled water were determined as having the most significant and viable recycled water use potential for the area. There are six golf courses within District boundaries and each were investigated to potentially receive recycled water to reduce the groundwater pumping for irrigation.

Two potential users were identified as part of the market assessment—the Rams Hill Golf Course and the De Anza Golf Course. Both potential users would use recycled water for irrigation of golf course turf. Both currently use groundwater for turf irrigation but could replace a portion of their groundwater usage with recycled water if and when available. The estimated annual and peak recycled water use for the golf course would be the total amount produced at the treatment plants (Rams Hill WRP for the Rams Hill GC and a package tertiary plant at the De Anza GC), as the recycled water produced will only supply a small portion of their total water needs. Onsite irrigation ponds exist on both golf courses; it is assumed groundwater and recycled water would both air gap into the lake prior to distribution into the irrigation systems. Given recycled water would blend with groundwater, no water quality issues (TDS and boron) are anticipated to be concerns for either golf course. Groundwater is the backup source of water for both users.

Alternative Analysis and Selected Project

Two alternatives were evaluated to produce and distribute recycled water.

- Alternative 1 includes expanding the District's sewer collection system and upgrading their existing tertiary facilities at the existing Rams Hill WRP to produce recycled water for delivery to Rams Hill Golf Course.
- Alternative 2 includes connecting residents at the De Anza Country Club, currently on septic, to a sewer collection system and conveying water to a new tertiary package plant for recycled water production and delivery to the De Anza Golf Course. Additionally, Rams Hill WRP would be upgraded to produce tertiary recycled water with no additional expansion of the existing sewer collection system.

Descriptions of alternatives, by sewage collection, treatment and recycled water distribution, are provided below

Alternative 1: Expanded Centralized Sewer Collection and Upgraded Tertiary Treatment at Rams Hill WRP

This alternative was based on the total volume of flow that could cost effectively be collected and transported to the plant. Developments currently on septic were evaluated for potential connection to the sewer collection system. De Anza Country Club and the one development south of it (located north of Granada Drive) were determined to be potential options based on being denser concentrations of septic properties and their proximity to existing collection system facilities. Total annual average recycled water production was estimated to be 132 AFY.

Collection System: This alternative includes the expansion of the sewage collection system north into these areas by 71,000 LF of pipe, as shown in Figure 9 in Section 1.10. Due to the increased flows to the Rams Hill WRP, a pump station expansion as well as a forcemain upsizing would also be required.

Treatment: Rams Hill WRP is a 0.25 MGD tertiary treatment plant built in the early 1980s. The tertiary and disinfection facilities of the Rams Hill WRP have never been operated or maintained and the system is not capable of producing recycled water. The anticipated improvements required for producing recycled water at the Rams Hill WRP include:

- Installation of construction of coagulant dosing system and mixer
- Construction of flocculation chamber
- Installation of new above grade filter system skids (e.g. disk filters) and piping
- Construction of additional pass in chlorine contact chamber and piping modifications.
- Installation of new sodium hypochlorite storage tanks and dosing equipment.
- Installation of new recycled water pumps.
- Installation of new electrical and instrumentation system for tertiary and disinfection facilities.

Recycled Water Distribution: When the Rams Hill WRP was constructed in the early 1980s, the distribution line to convey recycled water to the Rams Hill Golf Course was also constructed. Non-potable wells currently pump into this pipeline and discharge to the golf course lake looked at an elevation of 700 feet via an air gap. For the purposes of this analysis, it was assumed the recycled water distribution line would not need any improvements.

Alternative 2: Decentralized Treatment at De Anza Country Club and Golf Course and Upgraded Rams Hill WRP Tertiary Facilities

Alternative 2 considered a decentralized option to avoid the cost of constructing long lengths of gravity main to connect disparate areas to the centralized collection system. De Anza Country Club is the only septic golf course community in the area that currently has a considerable amount of existing homes.

Collection System: Approximately 300 existing homes in the De Anza Country Club could be connected to a local collection system to carry flows to a small package treatment plant that would produce Title 22 recycled water for golf course irrigation. One lift station has been determined to be necessary to convey flows to the package plant due to topography of the site.

Treatment: Production of recycled water would occur in two locations—at a package plant in the De Anza Country Club and from the upgraded facilities at the existing Rams Hill WRP.

Based on the existing number of homes and number of existing empty lots that can potentially be developed at De Anza Country Club, a total high season (winter) sewage flow of 49,250 gpd could be conveyed to a package treatment plant (membrane bioreactor) for production of recycled water to offset existing groundwater pumping for irrigation of the De Anza Golf Course.

Sizing of the package plant would be based on the high season, or maximum month, flow rate. The resulting total average annual recycled water production from both water recycling plants was estimated at 121 AFY.

Recycled Water Distribution: A short (less than 1,000 LF) recycled water distribution line would be required to convey recycled water to an existing lake within the golf course. The water would be discharged into the lake through an air gap. As with Alternative 1, no improvements are assumed necessary with the existing Rams Hill WRP tertiary effluent pipeline feeding Rams Hill Golf Course.

Economic Analysis and Selected Project

The cost per acre-foot (AF) of recycled water produced for Alternative 1 is estimated at $5,700. The cost per AF of recycled water produced for Alternative 2 is estimated at $4,700.

Economic Factors: Costs for water vary based on their source (e.g. pumped groundwater, imported State Water Project water, desalination, Title 22 recycled water). For this analysis, costs were compared against Title 22 recycled water production from the City of San Diego's 2012 Recycled Water Study. The City of San Diego's study estimated gross costs for recycled water at between $1,700 to $1,900 per AF, with an average cost of $1,800/AF. Taking into account various savings, net costs for City of San Diego were reduced to between $600 and $1300 per AF, with an average net cost of $1,020. Comparing estimated costs from this analysis to those estimated by the City of San Diego, results in costs for recycled water production in Borrego being between 2.6 and 3.2 times the gross cost for the City of San Diego between 4.6 and 5.6 times the net cost.

Non-Economic Factors: The greatest possible supplemental volume of recycled water produced in this analysis was 132 AF for Alternative 1. This equates to an 8% reduction in overall domestic demand (based on the 2016 domestic groundwater production value of 1,645 AF) and a 1%

reduction in overall groundwater basin reduction required (based on the estimated 70 percent reduction required, or 13,400 AFY). Independent of cost, due to the proportionally low sources of wastewater available for treatment and production of recycled water, producing recycled water would only result in very small fraction of reduction in overall groundwater usage.

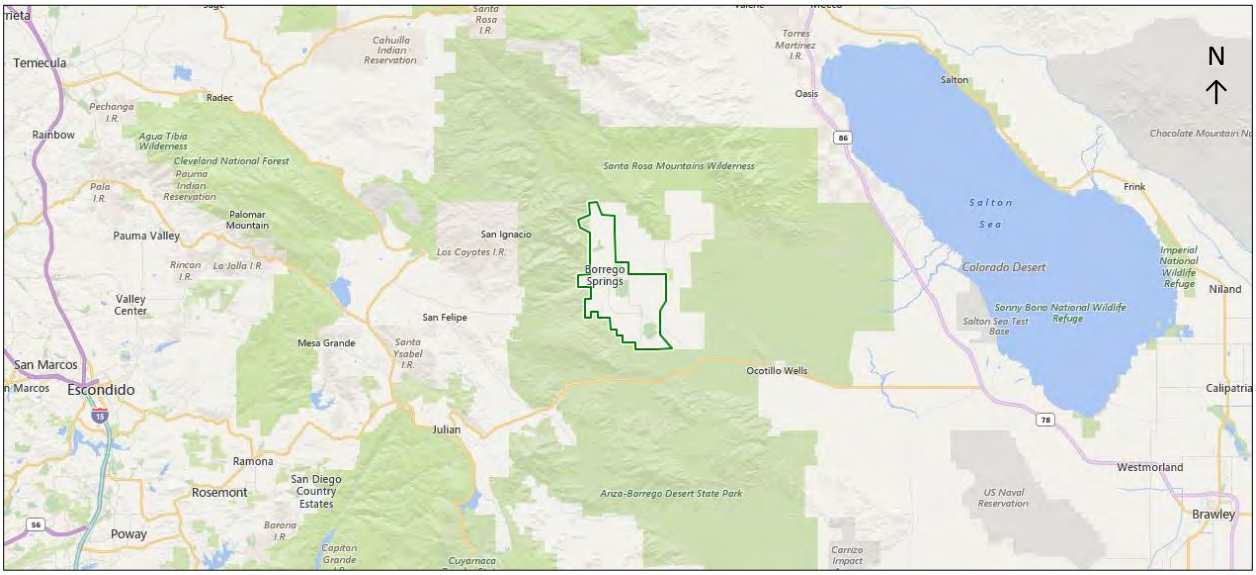
As a result of these economic and non-economic factors, it is concluded that the production of recycled water in Borrego Water District is not feasible and the No Project Alternative is recommended.

FACILITIES PLAN / PROJECT REPORT

1.0 MAPS AND DIAGRAMS

1.1 Vicinity Map

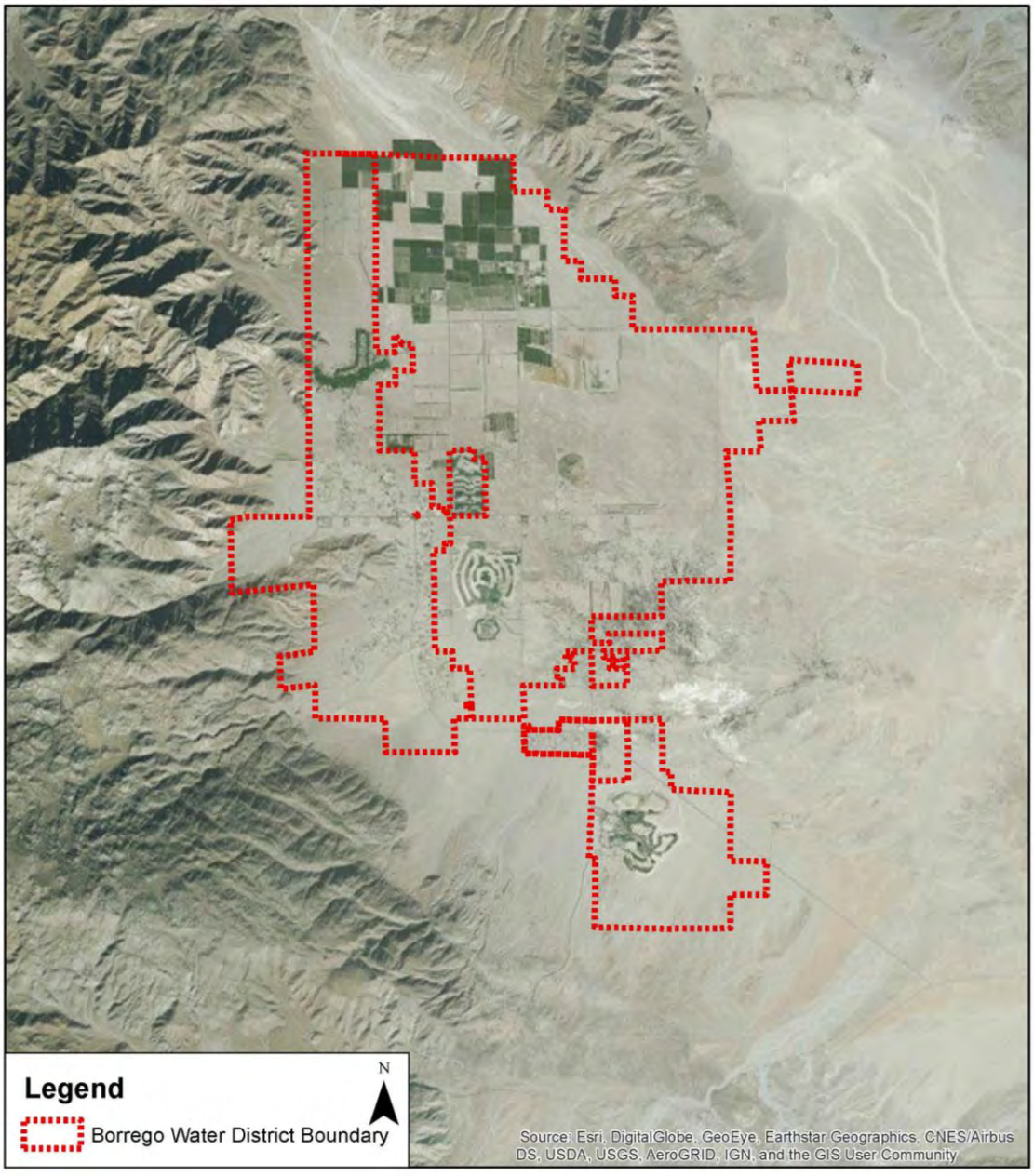
Figure 1. Vicinity Map



1.2 Detailed Map of Study Area Boundaries

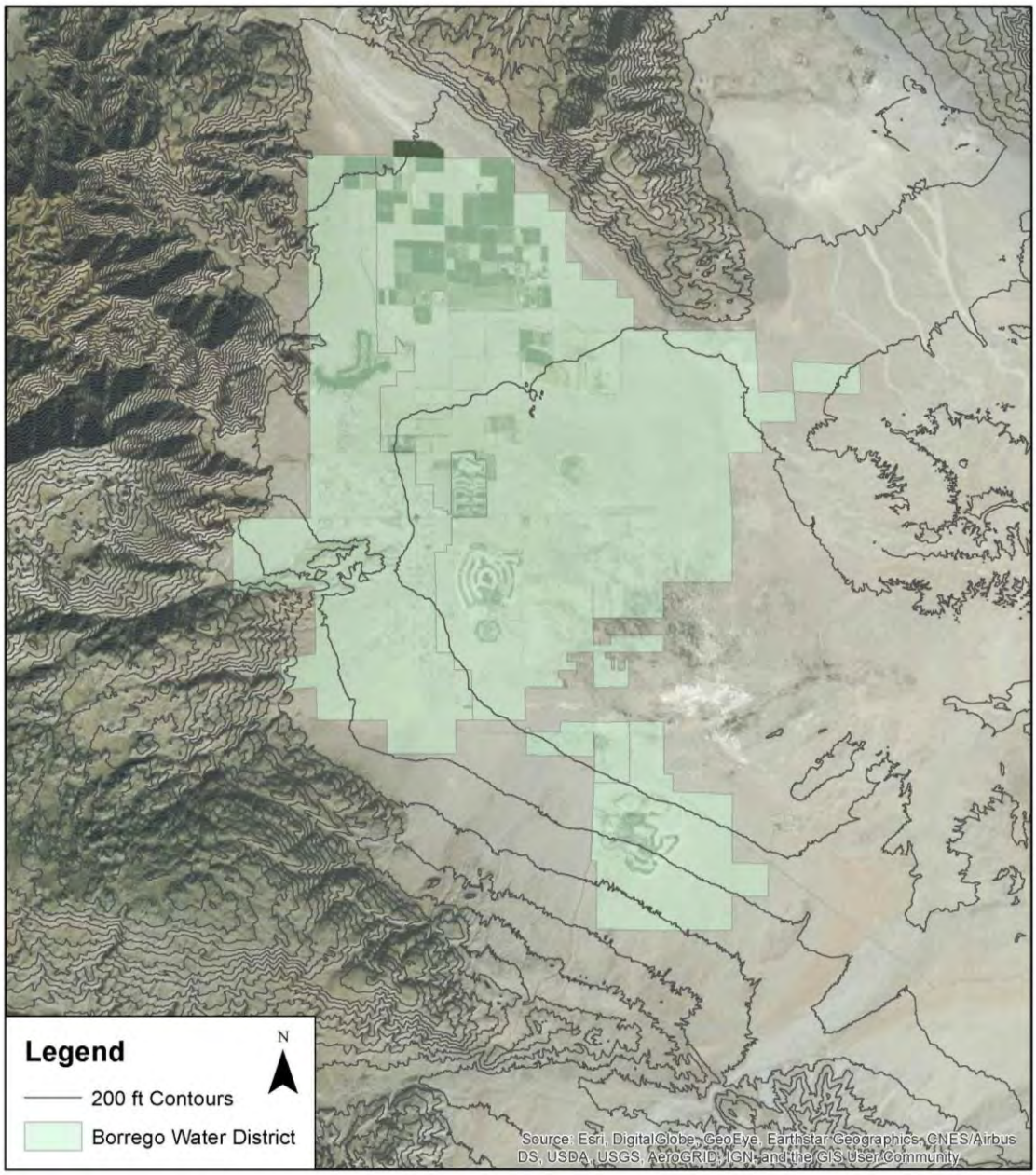
The Study Area is the Borrego Water District (BWD); thus the BWD boundary is the Study Area boundary. The BWD is within the County of San Diego.

Figure 2. Detailed Map of Study Area Boundaries



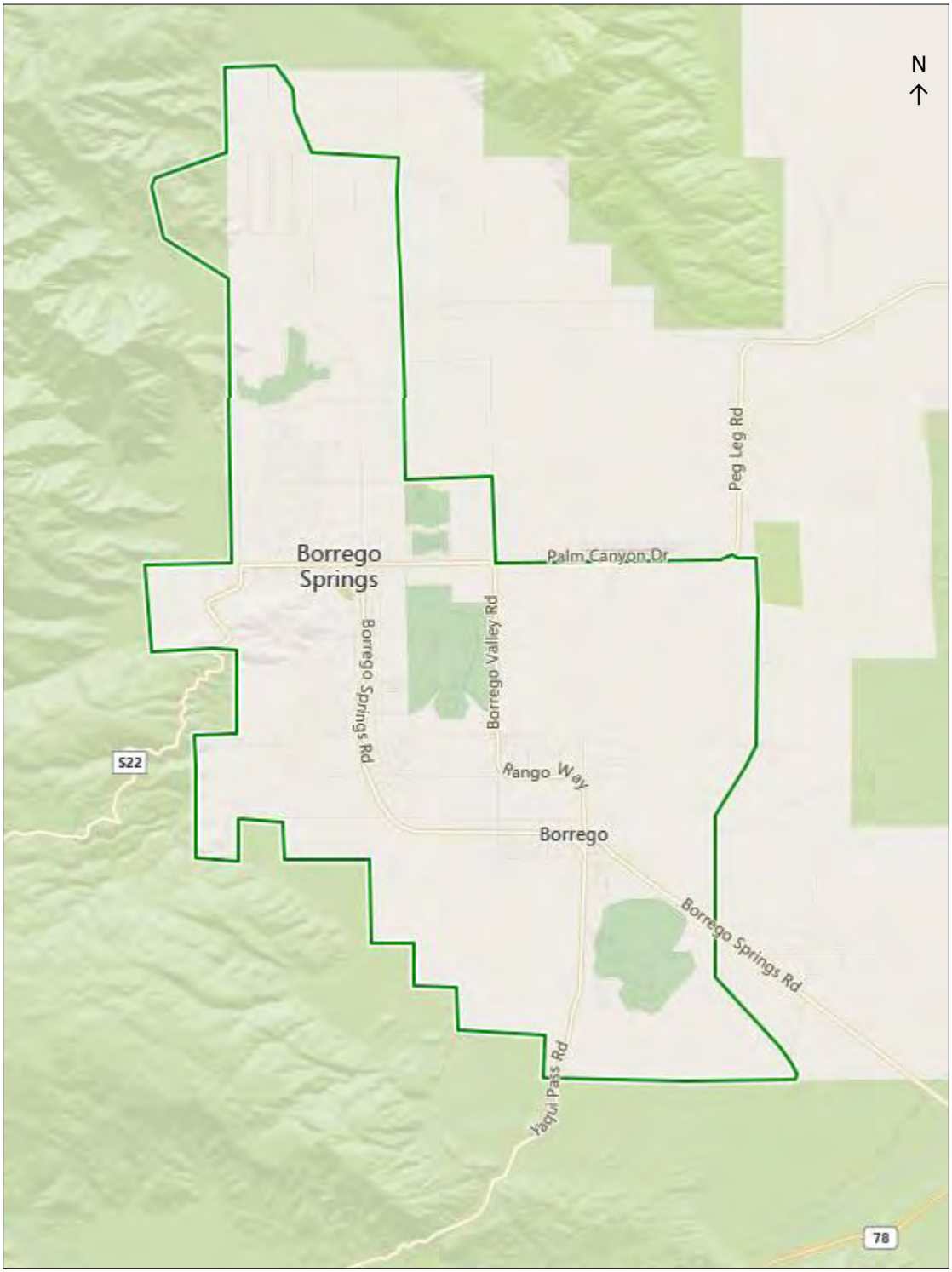
1.3 Topographic Map

Figure 3. Topographic Map



1.4 City Boundaries

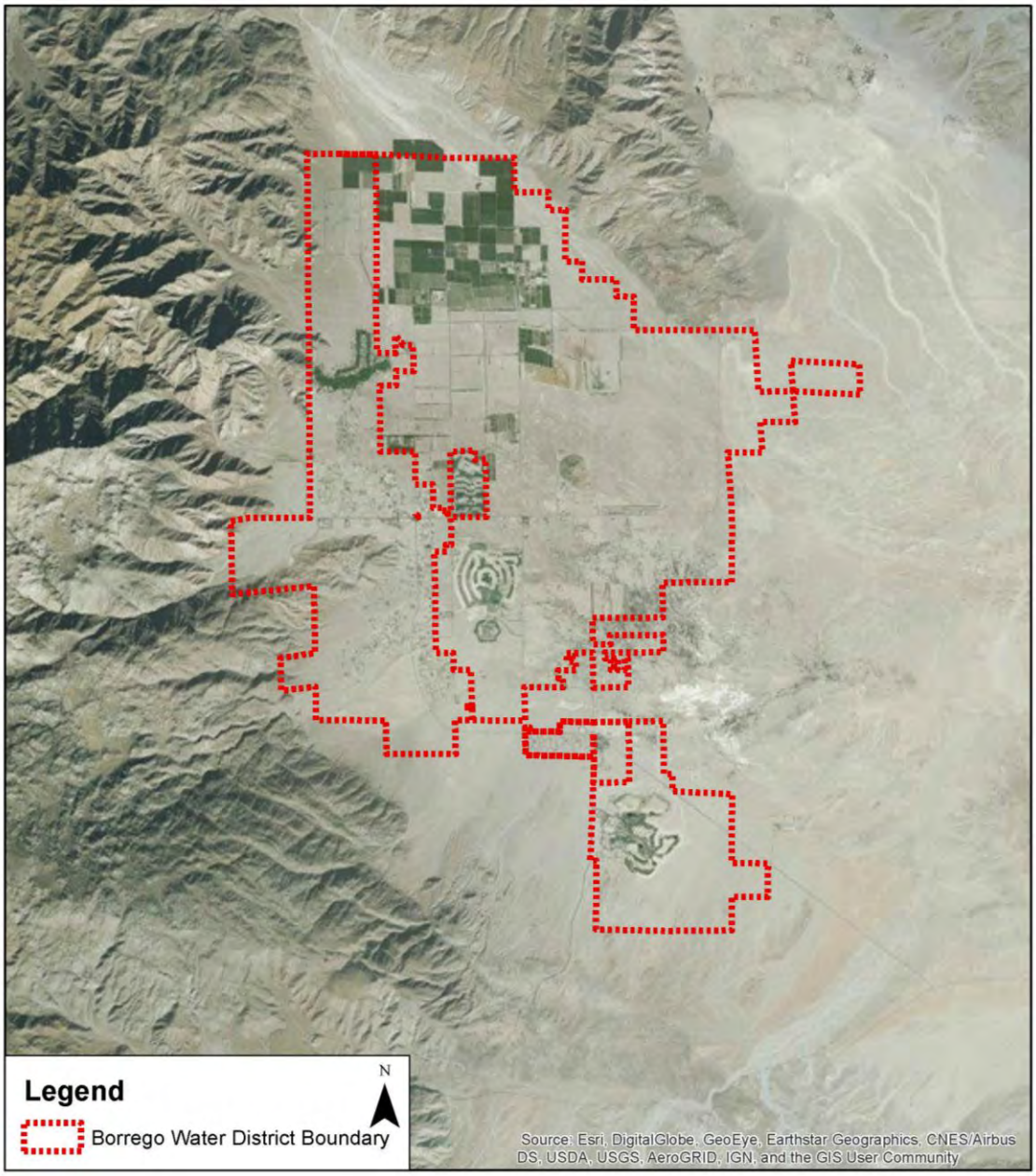
Figure 4. City Boundaries



1.5 Wholesale and Retail Water Supply Entity Boundaries within Study Area and Adjacent to Study Area

Borrego Water District is the retail water supply entity within the Study Area. There are no wholesale entities within the Study Area.

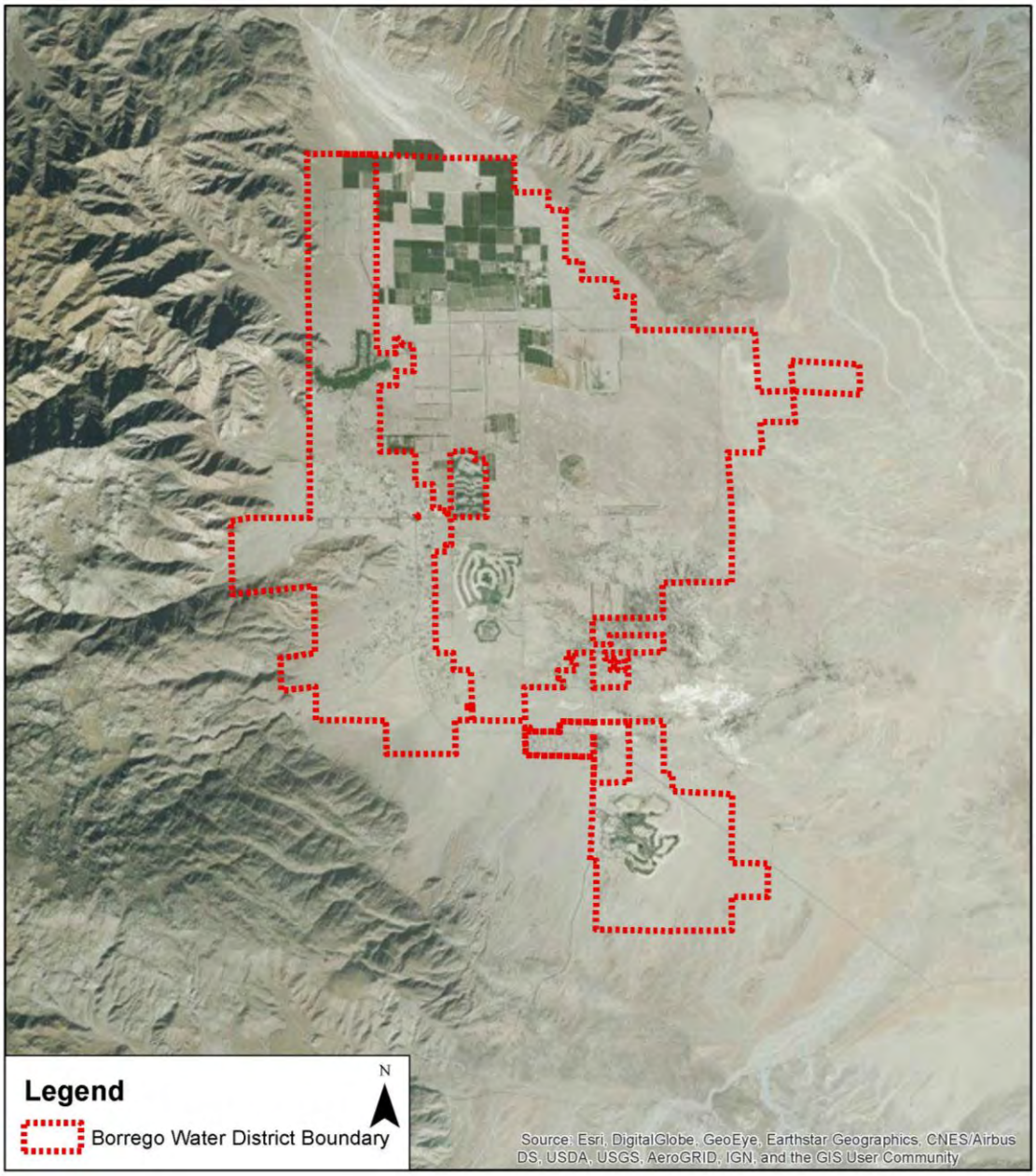
Figure 5. Wholesale and Retail Water Supply Entity Boundaries



1.6 Wastewater Agency Boundaries within and Adjacent to Study Area

Borrego Water District is the wastewater agency within the Study Area.

Figure 6. Borrego Water District Boundary



1.7 Existing Recycled Water Distribution Pipelines, Storage, and Customers

No map is available as there is not existing recycled water service within the District boundaries.

1.8 Ground Water Basin Boundaries, Major Streams, Streams Receiving Waste Discharges

Figure 7. Groundwater Basin Boundaries and Major Streams – Map 1

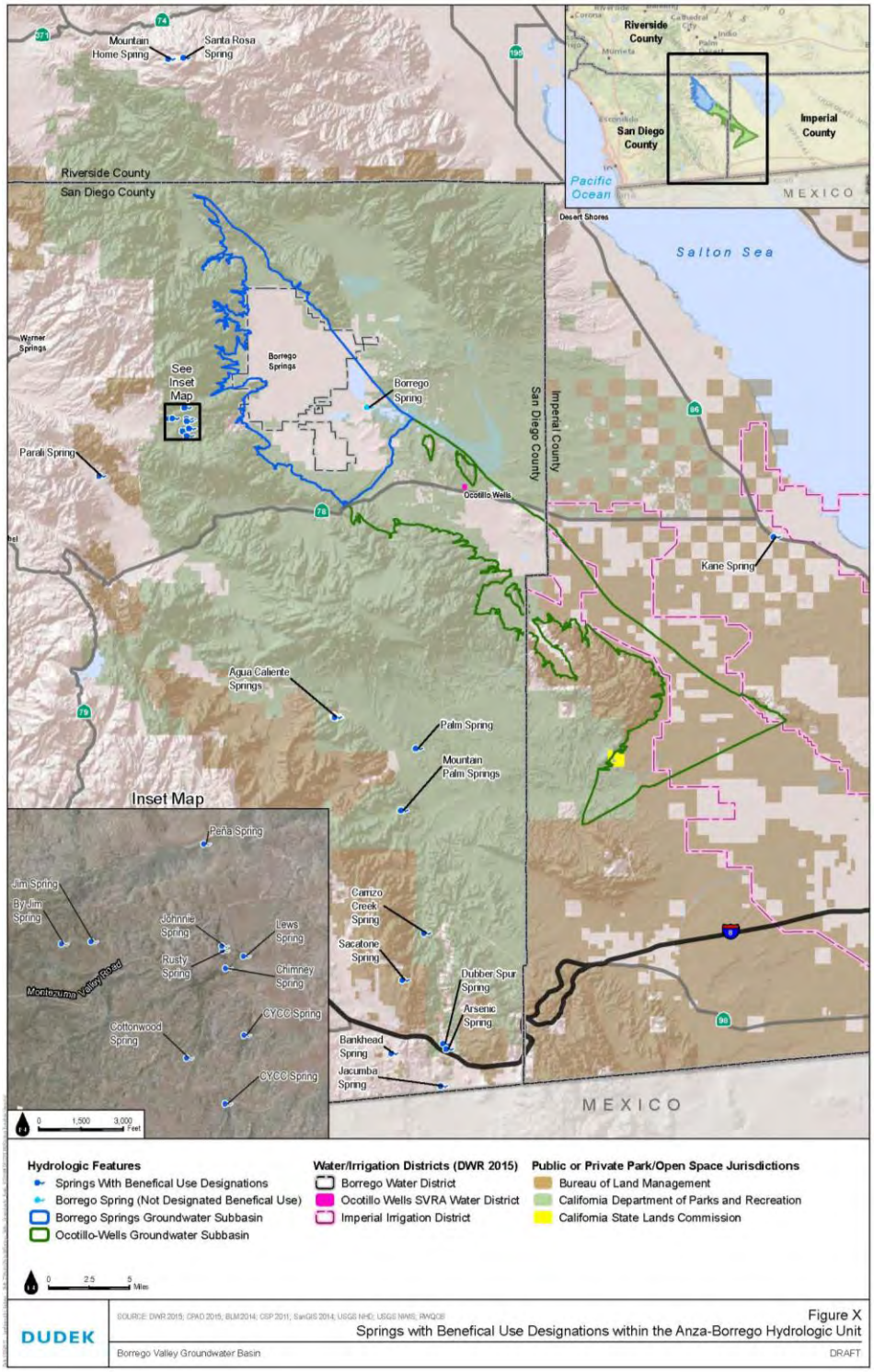
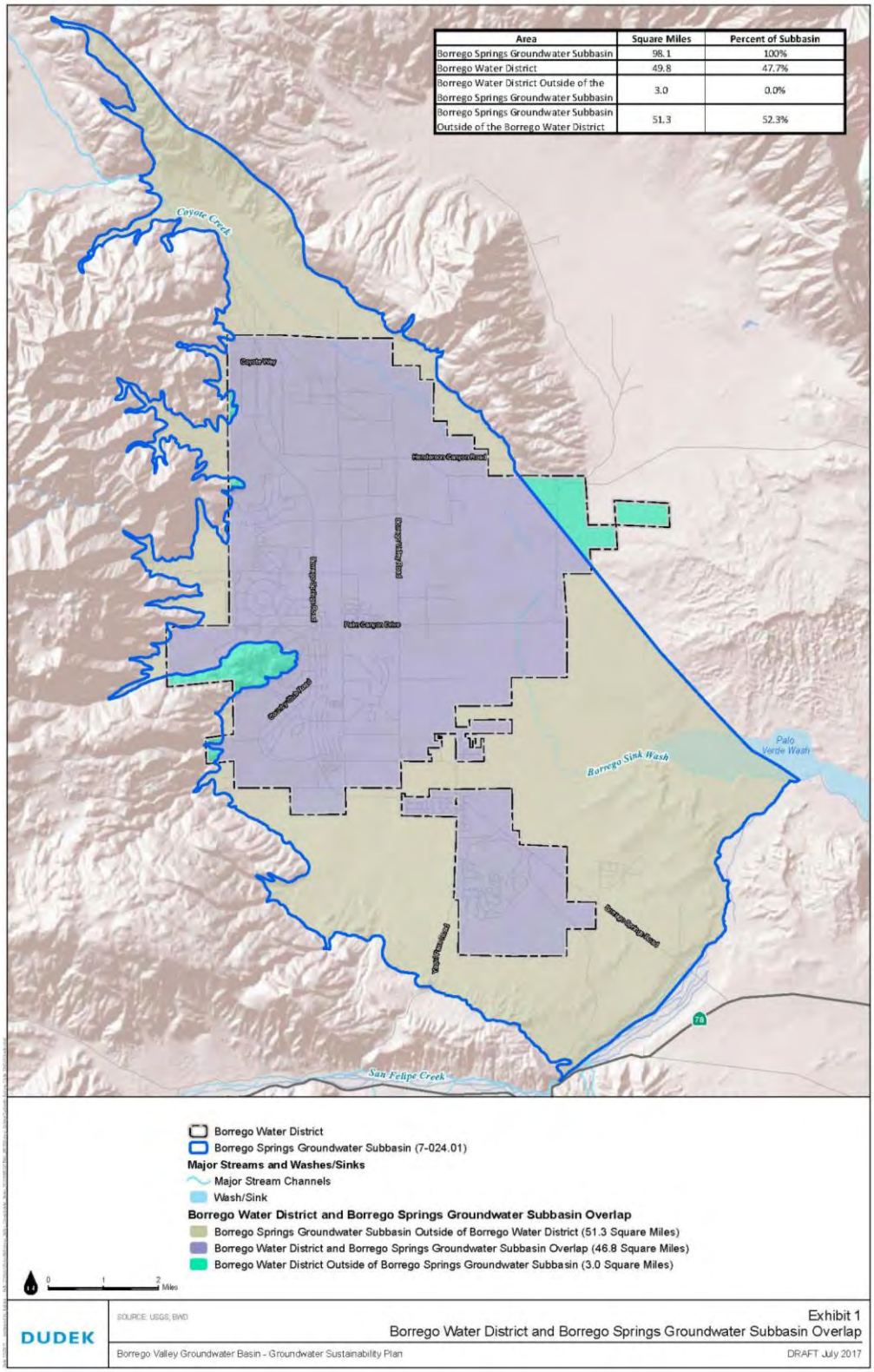


Figure 8. Groundwater Basin Boundaries and Major Streams – Map 2


Area | Square Miles | Percent of Subbasin
Borrego Springs Groundwater Subbasin | 98.1 | 100%
Borrego Water District | 49.8 | 47.7%
Borrego Water District Outside of the Borrego Springs Groundwater Subbasin | 3.0 | 0.0%
Borrego Springs Groundwater Subbasin Outside of the Borrego Water District | 51.3 | 52.3%
Coyote Creek
Borrego Sink Wash
Palo Verde Wash
San Felipe Creek
78
Borrego Water District
Borrego Springs Groundwater Subbasin (7-024.01)
Major Streams and Washes/Sinks
Major Stream Channels
Wash/Sink
Borrego Water District and Borrego Springs Groundwater Subbasin Overlap
Borrego Springs Groundwater Subbasin Outside of Borrego Water District (51.3 Square Miles)
Borrego Water District and Borrego Springs Groundwater Subbasin Overlap (46.8 Square Miles)
Borrego Water District Outside of Borrego Springs Groundwater Subbasin (3.0 Square Miles)
0 1 2 Miles
DUDEK
SOURCE: USGS, BWD
Exhibit 1
Borrego Water District and Borrego Springs Groundwater Subbasin Overlap
Borrego Valley Groundwater Basin - Groundwater Sustainability Plan
DRAFT July 2017

1.9 Present and Projected Land Use

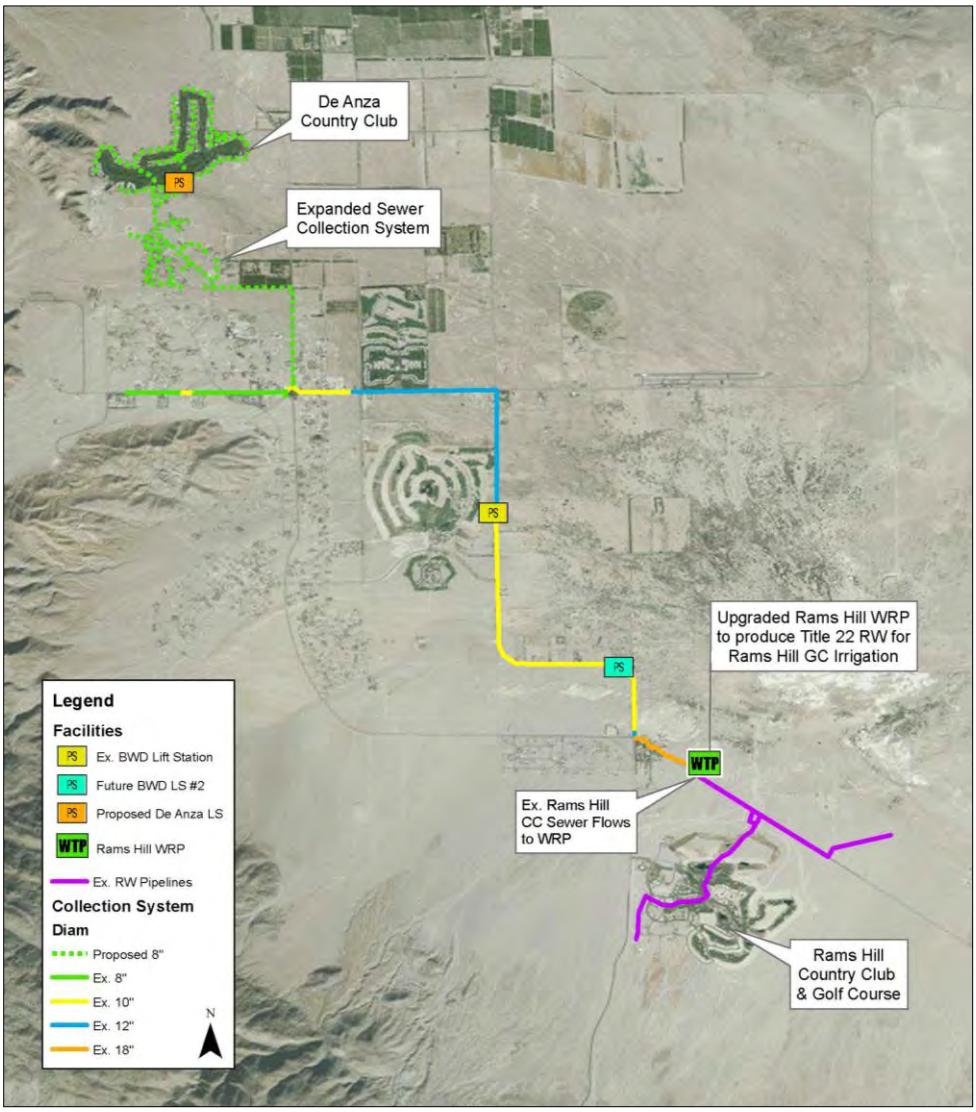
Refer to the land use map in **Appendix A**, which presents land use information for the Borrego Springs area from the most current County of San Diego General Plan (2011).

1.10 Each Recycled Water Facilities Alternative (including Recommended Project), showing locations of potential customers and approximate pipeline routes

Alternative 1: Centralized Treatment – Rams Hill Water Reclamation Plant Upgrade

Alternative 1 includes expanding the District's collection system and upgrading their existing tertiary WRP, Rams Hill, to produce recycled water for delivery to Rams Hill Golf Course. Refer to Section 7.2.1 for further description of this alternative.

Figure 9. Alternative 1 Facilities Map



Alternative 2: Decentralized Treatment – De Anza Golf Course Tertiary Package Plant

Alternative 2 includes connecting residents at the De Anza Country Club, currently on septic, to a sewer collection system and conveying water to a new tertiary package plant for recycled water production and delivery to the De Anza Golf Course. Additionally, Rams Hill WRP would be upgraded to produce tertiary recycled water with no additional expansion of the existing sewer collection system. Refer to Section 7.2.1 for further description of this alternative.

Figure 10. Alternative 2 Facilities Map

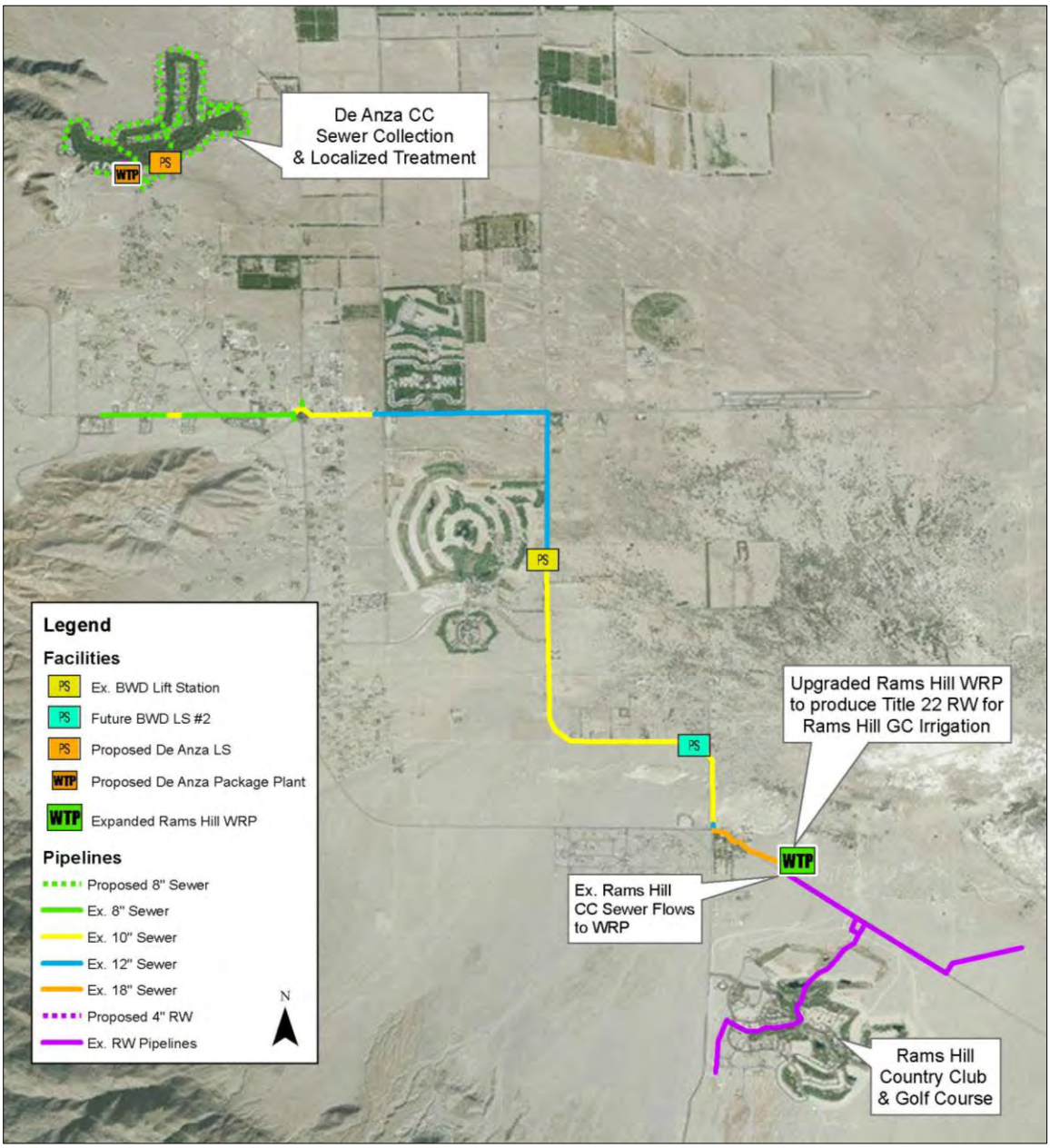
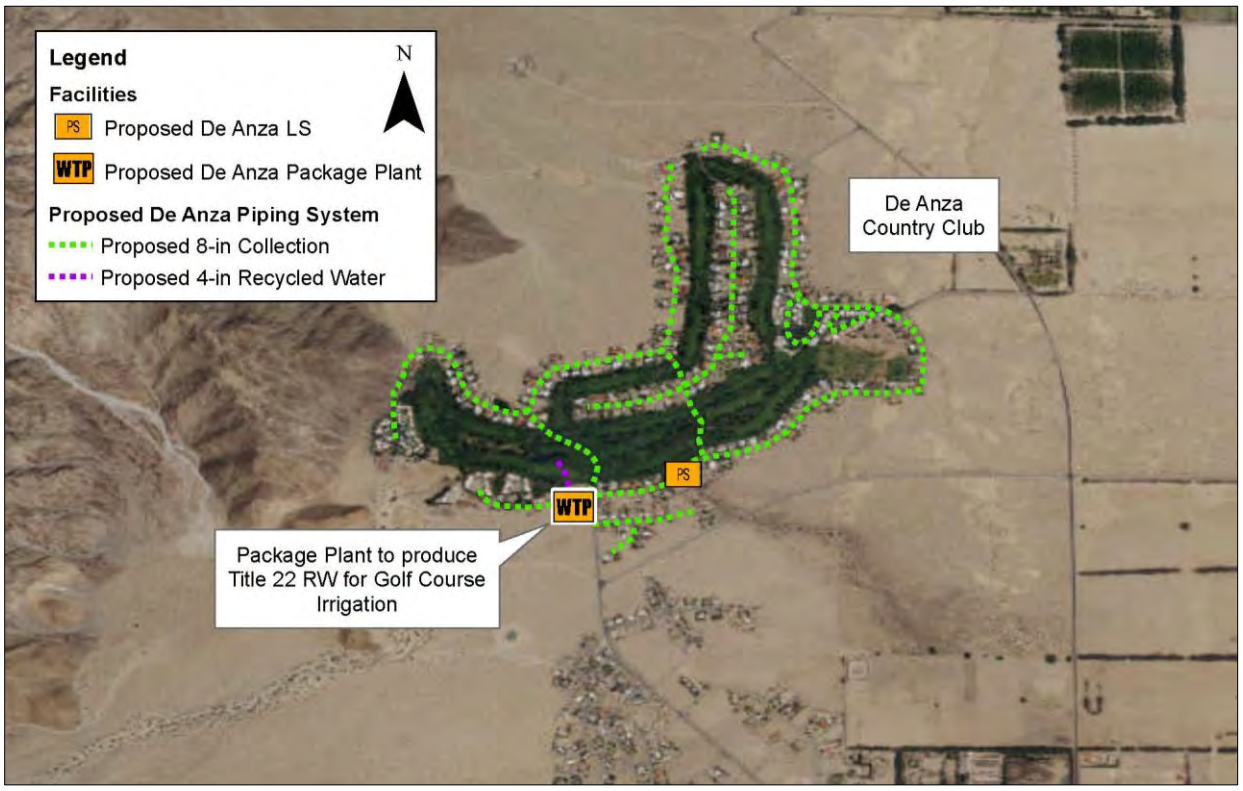


Figure 11. Alternative 2 Facilities Map – De Anza Facilities Only



1.11 Wastewater Treatment Schematic – Existing and Proposed

Refer to the process schematic in **Appendix B**.

2.0 STUDY AREA CHARACTERISTICS

The community of Borrego Springs is surrounded by the Anza-Borrego Desert State Park and plays host to hundreds of thousands of park visitors throughout the year. The community's residential population ranges from less than 3,000 in summer months to over 8,000 in the height of the winter season. The northern portion of the community is primarily dedicated to agricultural production. Approximately 4,000 acres are actively involved in the production of citrus and nursery stock, such as date palms.

The Borrego Water District (District) provides water and wastewater services to the rural unincorporated community of Borrego Springs. The community is supplied domestic water service from the Borrego Valley Groundwater Basin (BVGB) which has been determined by the California Department of Water Resources to be in a "critical overdraft" status. The District is in the process

of developing a Groundwater Sustainability Plan under provisions outlined in the Sustainable Groundwater Management Act of 2014. In accordance with this new law, the BVGB will be required to reduce groundwater extractions by 70% to achieve sustainability. It is anticipated that these reductions will come from a variety of conservation measures, including water reuse.

2.1 Hydrologic Features

The Study Area includes the BVGB, the Borrego Springs Groundwater Subbasin, the Borrego Sink Wash and Coyote Creek, as shown in the maps in Section 1.8 above.

2.2 Ground Water Basins

The Borrego Springs Groundwater Subbasin is the groundwater basin supplying water for the Study Area.

2.2.1 Natural and Artificial Recharge:

According to the 2009 Integrated Water Resources Management Plan, the groundwater basin is recharged by surface runoff from rainfall in the watershed area to the north and west that enters and percolates through the valley floor through canyons via intermittent streams. This runoff is the main water supply to the groundwater basin. The annual rainfall in the mountains is ±16 inches. The valley floor receives three to six inches of rainfall and is generally lost to evaporation.

According to the Scientific Investigations Report 2015-5150, *Hydrogeology, Hydrologic Effects of Development, and Simulation of Groundwater Flow in the Borrego Valley, San Diego, County California*, estimates groundwater recharges from averages of 3,300 to 11,000 acre-feet per year (AFY).

2.2.2 Losses by Evapotranspiration:

According to the Scientific Investigations Report 2015-5150, *Hydrogeology, Hydrologic Effects of Development, and Simulation of Groundwater Flow in the Borrego Valley, San Diego, County California*, the estimated loss by evapotranspiration in year 2000 was 132 AFY.

2.2.3 Quantities Extracted by All Users, Inflow and Outflow of Basin and Safe Yield or Overdraft:

The Borrego Springs Subbasin of the BVGB has been determined to be in "overdraft". Recent studies estimate that water users within the Borrego Springs Subbasin currently withdraw approximately 19,000 AFY and that the *sustainable yield* of the Borrego Springs Subbasin is approximately 5,700 AFY based on averaging 66 years of historical annual recharge data.[1] The current estimated overdraft is approximately 13,300 AFY. The withdrawal value of 19,000 AFY is the assumed baseline on which the state-required Groundwater Sustainability Plan (GSP) is established, and the *sustainable yield* value of 5,700 AFY is the maximum water use target at the end of the prescribed 20-year water reduction period.[2]

2.3 Water Quality – Ground Water and Surface Water

2016 water quality data for active groundwater wells is presented in **Table 1**. Surface water quality data is unavailable.

Table 1. Select Water Quality Data for Active Wells

Well	Status	TDS (mg/L)	Turbidity (NTU)	Arsenic (ug/L)	Total Chromium (ug/L)	Nitrate Nitrogen (mg/L)
Drinking Water MCL		***N/A***	***5.0***	***10***	***0.1***	***10***
ID1-1	Active	1,400	0.42	0	0	0.96
ID1-2	Active	270	0.33	9	0	3.1
ID1-8	Active	490	0.3	5.3	1.5	2.0
ID1-10	Active	340	0.44	4	1.1	1.4

[1] The overdraft of the BVGB was established by the U.S. Geological Survey (USGS) work conducted in 1982 for San Diego County. Since 1982, the overdraft has more than doubled. See http://www.borregowd.org/uploads/BWD_Report_USGS_1982.pdf. See also, USGS Scientific Investigation Report 2015-5150, *Hydrogeology, Hydrologic Effects of Development, and Simulation of Groundwater Flow in the Borrego Valley, San Diego County, California*, available at https://pubs.er.usgs.gov/publication/sir20155150.

[2] This amount does not include any environmental water necessary to maintain the groundwater system, which at present is unknown. The 20-year water reduction period is promulgated in California Water Code Section 10727.2(b)(1).

Well	Status	TDS (mg/L)	Turbidity (NTU)	Arsenic (ug/L)	Total Chromium (ug/L)	Nitrate Nitrogen (mg/L)
ID1-12	Active	300	0.1	3.1	0	0.38
ID1-16	Active	300	1.4	3.2	0	0.95
ID4-4	Active	310	0.11	2.9	0	0.56
ID4-11	Active	320	0	0	2.0	0.66
ID4-18	Active	610	0.22	0	1.5	0.5
ID5-5	Active	350	0.14	0	0	0.44
RH-3	Active	290	0.86	15	0	1.3
RH-4	Active	360	0.15	18	0	0.43
RH-5	Active	510	0.17	16	0	3.8
RH-6	Active	300	0.26	15	0	3.3
Cocopah	Active	390	0	6.4	0	0
Jack Crosby	Active	450	0.1	13	0	0.32
Wilcox	Active	220	0.13	4.4	0	0.92

2.4 Land Use and Land Use Trends

The map included in **Appendix A** presents land use information for the Borrego Springs area from the most current County of San Diego General Plan (2011).

2.5 Population Projections of Study Area

According to the Borrego Springs Community Plan within the 2011 County of San Diego General Plan, a maximum full-time, permanent population projection of 8,000 was estimated. According to the Community Plan, the “population estimate was generated by the Community Plan study group based on the status of current development patterns balanced with the currently estimated groundwater resources available for development, along with an estimate of population necessary to generate a critical mass to encourage community economic development.”

2.6 Beneficial Uses of Receiving Waters and Degree of Use, Portion of Flow that is Effluent

According to the 2006 Water Quality Control Plan for the Colorado River Basin Region 7, beneficial uses for San Felipe Creek (shown in Figure 8) include agriculture, fresh water replenishment, groundwater recharge, water contact and non-water contact recreation, warm freshwater habitat, wildlife habitat and preservation of rare, threatened or endangered species.

The Palo Verde Wash and Borrego Sink Wash, as ephemeral streams, are listed in the WQCP as having intermittent beneficial uses of fresh water replenishment, groundwater recharge, non-water contact recreation, and wildlife habitat.

3.0 WATER SUPPLY CHARACTERISTICS AND FACILITIES

3.1 Description of All Wholesale and Retail Entities

Borrego Water District is the only retail entity within the project area. Water supply for BWD is from groundwater pumping. There are no wholesale water suppliers to the area.

3.2 All Sources of Water for Study Area and Major Facilities, their Costs (Fixed and Variable), Subsidies, and Customer Prices

Water supply for the Study Area is solely provided by groundwater extraction. Costs incurred by for groundwater extraction include the variable costs of power and maintenance. According to the District, fixed costs for water sources are $50,000 per year. Variable costs for water are $300,000 per year for all water supply wells combined. BWD does not receive subsidies for groundwater. The current potable water rate is $2.21 per unit (one unit equals one hundred cubic feet) for Tier 1 (up to seven units) and $2.44 per unit for Tier 2 (seven units and above).

The existing, active water production wells and their production capacities are shown in **Table 2**. The location of the District's wells are shown in **Figure 12**.

Table 2. Active Study Area Groundwater Extraction Well Production Data

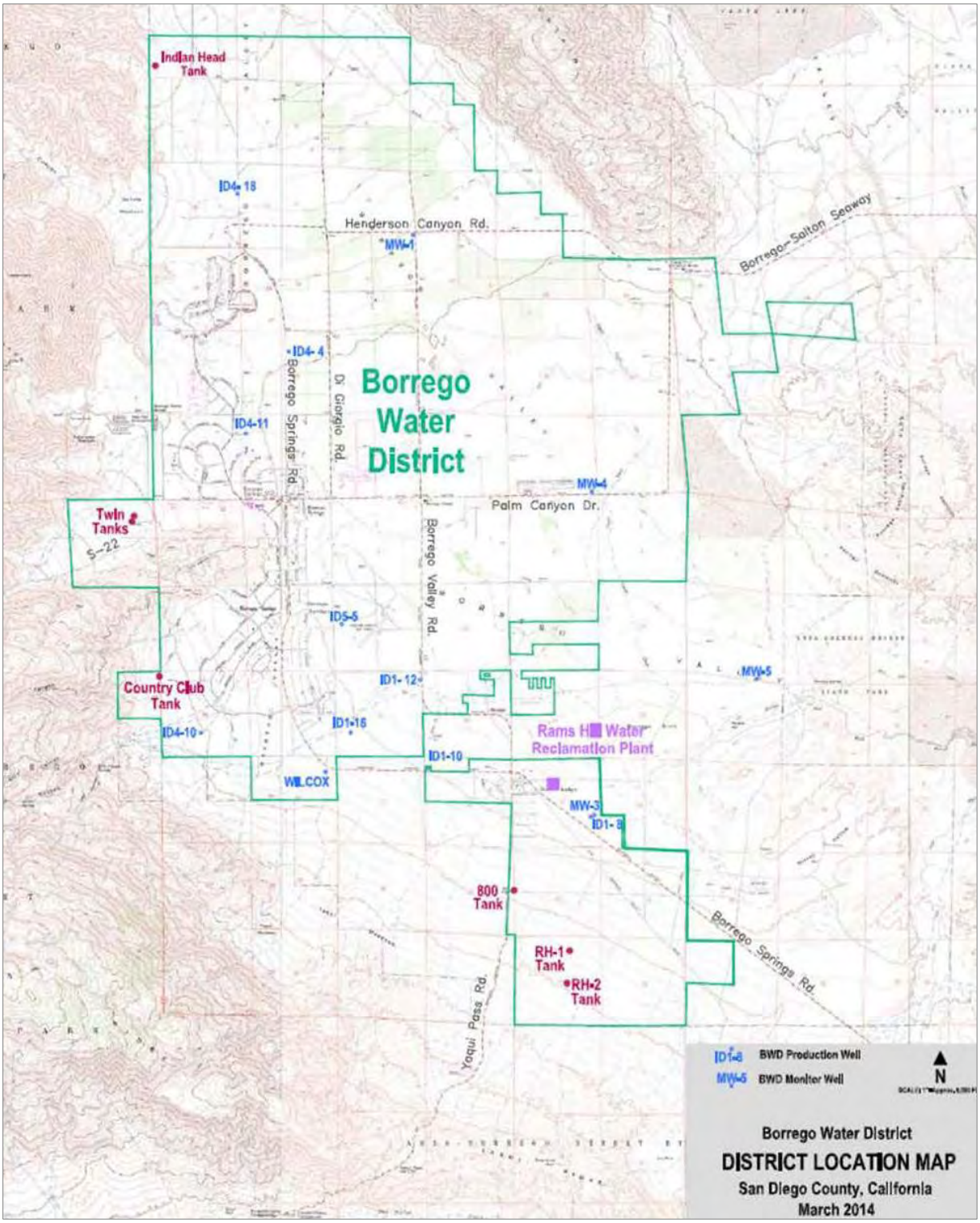
Local Well Name	Well Owner	Status	Current (2016) Production (AFY)
ID1-1	BWD	Active	19
ID1-2	BWD	Active	79
ID1-8	BWD	Active	64
ID1-10	BWD	Active	10
ID1-12	BWD	Active	289
ID1-16	BWD	Active	2
ID4-4	BWD	Active	429
ID4-11	BWD	Active	564
ID4-18	BWD	Active	34
ID5-5	BWD	Active	213
RH-3	Rams Hill Country Club	Active	128
RH-4	Rams Hill Country Club	Active	170
RH-5	Rams Hill Country Club	Active	316

Local Well Name	Well Owner	Status	Current (2016) Production (AFY)
RH-6	Rams Hill Country Club	Active	278
La Casa	The Casa Del Zorro Resort	Active	40
BSCCGC Well #2	Borrego Springs Country Club	Active	273
BSCCGC Well #3	Borrego Springs Country Club	Active	247
BSCCGC Well #6	Borrego Springs Country Club	Active	169
Notes: Source: BWD 2017 Well production data includes all available production records from the BWD. Additional sources of groundwater extraction well production may be included in the study area, but were not available for this report.			

Water is served to four (4) pressure zones:

1. 800 feet – Includes the Deep Well Trail subdivision, the Rancho Borrego area, and La Casa del Zorro Resort.
2. 880 feet – Includes the previous Borrego Springs Water Company, the majority of the Borrego Springs community, and the newly incorporated Borrego Springs Park Community Services District area.
3. 900 feet – Includes the Rams Hill subdivision.
4. 1,000 feet – Includes the Rams Hill subdivision.

Figure 12. District Well and Tank Location Map



3.3 Capacities of Present Facilities, Existing Flows, Estimated Years When Capacities to be Reached for Major Components (Water Treatment Plants, Major Transmission and Storage Facilities)

3.3.1 Water Treatment Plants

No water treatment plants exist within BWD. Disinfection of groundwater is performed using calcium hypochlorite feeders at the well sites.

3.3.2 Major Water Transmission Mains

No specific information on major water transmission mains is available.

3.3.3 Potable Reservoirs

A list of storage facilities currently in service are presented in **Table 3**. The locations of the reservoirs are shown in Figure 12 above.

Table 3. Storage Facilities Currently in Service

Tank	Capacity (MG)	Type	Area Served
Rams Hill #1	1.25	Bolted steel	ID-1
Rams Hill #2	0.4	Galvanized bolted steel	ID-1
Indianhead	0.44	Galvanized bolted steel	ID-4
Country Club	1.0	Bolted steel	ID-4
Twin Tank #1	0.2	Galvanized bolted steel	ID-4
Twin Tank #2	0.2	Galvanized bolted steel	ID-4
800 Reservoir	0.75	Hypalon Bladder	ID-3

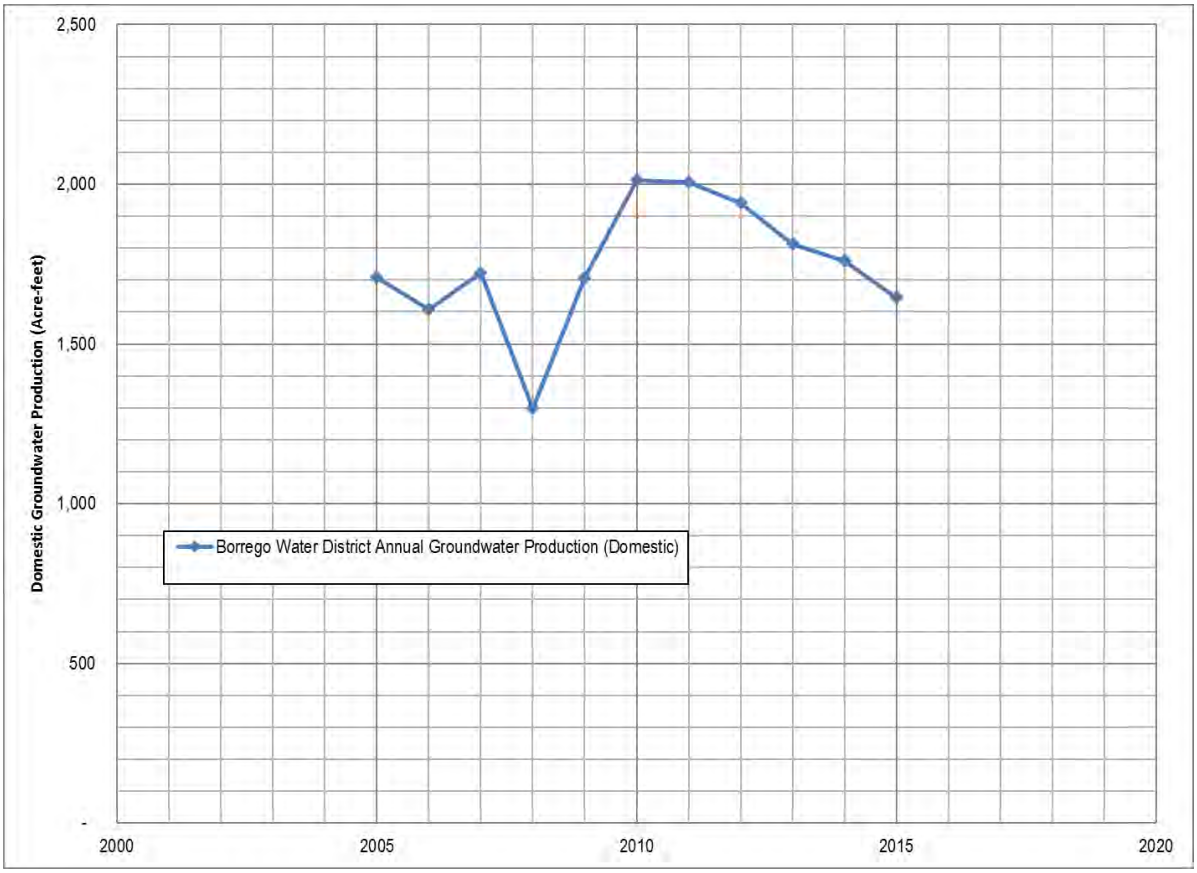
3.4 Ground Water Management and Recharge, Overdraft Problems

Refer to Section 2.2 above.

3.5 Water Use Trends and Future Demands, Prices and Costs

Figure 13 presents the District's domestic water usage between 2005 and 2015. As can be seen in the chart, water usage has been in steady decline since 2010. It is anticipated that water usage will continue to decline. The District is in the middle of a five year Prop 218 rate cycle (through 2021) with 6% annual increases in water and 4% in sewer rates and charges. The rate increases are anticipated to be a conservation-forcing mechanism.

Figure 13. Domestic Water Usage (2005-2015)



3.6 Quality of Water Supplies

2016 water quality data for active water supply wells is presented in **Table 1** in Section 2.3 above.

3.7 Sources for Additional Water and Plans for New Facilities

Refer to **Appendix C** for plans for new facilities and sources of additional water.

4.0 WASTEWATER CHARACTERISTICS AND FACILITIES

4.1 Description of Entities

The Borrego Water District provides wastewater service in the Study Area. The District has operated the Rams Hill Water Reclamation Plant (WRP) since the early 1980's. This plant, originally designed to treat effluent to tertiary levels with a capacity of 0.25 million gallons per day (MGD), has never had enough flow to justify the increased expense of engaging the tertiary portion of the original plant design. Instead, the average daily flow of approximately 0.07 MGD

has been treated to secondary standards and the resulting effluent is presently evaporated in the two adjacent evaporation ponds. Only 20 percent of homes in the service area are connected to the sewer collection system. The remainder of homes utilize septic systems.

4.2 Description of Major Facilities including capacities, present flows, plans for new facilities, description of treatment processes, design criteria

4.2.1 Treatment Plant

Rams Hill Water Reclamation Plant is the single treatment plant within District, located near the south end of the District. The plant has a total design treatment capacity of 250,000 gpd. The existing average annual flow rate of the plant is 74,000 gpd (0.074 MGD) with a summer-time (low season) average of approximately 47,000 gpd (0.047 MGD).

The treatment processes include influent screening, grit removal, oxidation ditch, secondary clarifier, flow equalization, pressure filters, chlorine contact tank, effluent pump station and storage. Tertiary facilities have never been used. Secondary effluent is directed to evaporation-percolation ponds.

Key design criteria for the plant is presented in **Table 4**. A full list of plant design criteria for all plant processes is included in **Appendix D**.

Table 4. Rams Hill WRP Design Criteria

Criteria	Design Value	Units
Flow		
Average	0.25	MGD
Peak	0.75	MGD
Plant Hydraulic Capacity	2.0	MGD
Ultimate Plant Capacity	0.5	MGD
Wastewater Concentration		
5-Day BOD	275	mg/L
Suspended Solids	275	mg/L

4.2.2 Collection System

The District owns and operates a sewer collection system, including gravity mains, one lift station and forcemains. The specific length of gravity mains and forcemains is not available, though it is on the order of 10 to 12 miles.

4.2.3 New Facilities

Refer to **Appendix C** for a list of the District's current 2017-2025 capital improvement program.

4.3 Water Quality of Effluent and Any Seasonal Variation

Refer to **Appendix E** for effluent water quality and seasonal variation for years 2014-2017.

4.4 Additional Facilities Needed to Comply with Waste Discharge Requirements

Plant is currently in compliance with existing waste discharge permit requirements.

4.5 Sources of Industrial or Other Problem Constituents and Control Measures

Fats, oils and greases (FOG) have historically been problem constituents in the wastewater system. The District has a FOG prevention program in place.

4.6 Existing Recycling (Including users, quantities, contractual and pricing arrangements)

Recycled Water is not currently being produced or distributed by the District.

4.7 Existing Rights to Use Treated Effluent after Discharge

The Rams Hill WRP's current waste discharge permit (Order No. R7-2007-0053) states that treated effluent from the plant is discharged into three evaporation-percolation ponds. Given the desert location and dry, hot conditions, it is anticipated that a majority of the treated effluent is evaporated. However, any water that did percolate would be replenishing the groundwater basin.

4.8 Wastewater Flow Variations (Hourly and Seasonal)

Refer to **Appendix E** for wastewater seasonal flow variations for years 2014-2017. Hourly flow variations are not available.

5.0 TREATMENT REQUIREMENTS FOR DISCHARGE AND REUSE

5.1 Required Water Qualities for Potential Uses

Recycled water produced within the Study Area would be used for the irrigation of unrestricted golf courses, in particular the Rams Hill Golf Course. Required treatment is disinfected tertiary recycled water.

5.2 Required Health-Related Water Qualities or Treatment Requirements for Potential Uses including Operational and On-site Requirements, such as Backflow Prevention or Buffer Zones

Title 22 disinfected tertiary is required for irrigation of golf courses in Borrego Springs. No other uses are available other than golf course irrigation.

5.3 Wastewater Discharge Requirements (anticipated changes in requirements)

The District's waste discharge permit, listing their discharge requirements, is included in **Appendix F**.

5.4 Water Quality-Related Requirements of the RWQCB to Protect Surface or Ground Water from Problems Resulting from Recycled Water Use

No water quality-related requirements of the RWQCB exist at this time though may be required in the future.

6.0 RECYCLED WATER MARKET

6.1 Description of Market Assessment Procedures

The service area contains two primary markets for utilization of treated recycled water: golf courses and commercial agricultural irrigation.

There are six (6) golf courses in the service area, as shown in **Table 5**. Each golf course contains a varying number of surrounding residential homes. In all cases, the quantity of potential recycled water supply generated from surrounding residential homes can be used to offset water demands from the golf course they surround. Additionally, the required water demand for golf course irrigation is vastly greater than the volume of recycled water that can be generated by the surrounding homes.

Commercial agricultural lands are concentrated in the northern region of the distribution system. While recycled water can be used to supplement groundwater based irrigation, as described above, all potential recycled water source water surrounds existing golf courses and the water demand for each golf course vastly exceeds the adjacent recycled water supply.

Based on the above discussion, the market for recycled water use is focused on supplying golf courses only. No further consideration for supplying recycled water to commercial agricultural irrigation customers is warranted.

Table 5. Irrigation Demand Data for Potential Recycled Water Users

Potential Irrigation User[1]	Type	Water Use (AFY)	Irrigated Area (Acres)	Average Water Use (AFY/ac)	Distance from RW Source[2] (miles)	Source
Borrego Springs Resort – Golf Club & Spa	18 holes	589	110	5.4	4.0	2015 Groundwater Monitoring Report, Borrego Springs CC Permit #SPA9001
Club Circle Resort	Par 3 course with 18 holes	66	28	2.4	3.9	2015 Groundwater Monitoring Report, Borrego Springs CC Permit #SPA9001
De Anza Country Club Golf Course	18 holes	773	137	5.6	8.7	12 months meter reads; Holloway, pers. comm. 2016
Rams Hill Golf Course[3]	18 holes	998	175	5.7	0.0	Metered 2015 production records
The Springs at Borrego RV Resort and Golf Course	9 holes	175	84	2.1	6.0	2014 report to County
Roadrunner Golf and Country Club	Par 3 course with 18 holes	252	45	5.6	5.7	Assumption: 45 irrigated acres @ est. 5.35 AF per acre
	Totals	**2,853**	**579**	**--**		

Notes:

[1] The agricultural fields also exist as potential recycled water irrigation users; however, given any recycled water produced could be used by any of the golf courses, which are closer to the source, the agricultural fields were not considered as potential users in this analysis.

[2] Assumes Rams Hill WRP would be source of recycled water for all locations.

[3] Includes water demand for 91.7 acres of fairways/rough, 6.5 acres greens/tees, 76.6 acres of landscaping and evaporation loss from 11 acres of lakes. Source: BWD 2015; Dudek 2016; Holloway pers. Comm. 2016, Rams Hill 2016.

There are six golf courses within District boundaries, as shown in **Figure 14**, and each were investigated to potentially receive recycled water to reduce the groundwater pumping for irrigation.

Figure 14. Golf Course Location Map

Rams Hill Golf Course was originally planned to receive recycled water from the Rams Hill WRP once recycled water was produced and therefore recycled water transmission facilities were previously constructed.

Five other golf course communities exist within the District, as presented in **Table 5**. Two of the five are already sewered (Roadrunner Golf & Country Club and The Springs at Borrego RV Resort), with wastewater flows being sent to Rams Hill WRP. Three golf course communities are currently on septic; therefore, they provide an opportunity to collect wastewater for localized

treatment and delivery to the golf course to offset groundwater pumping for irrigation. Club Circle and Borrego Springs Resort were estimated to have wastewater flows less than 10,000 gpd; therefore it was determined these locations would not be viable options for a package treatment plant. De Anza, however, was evaluated and found to be sufficiently developed for the potential collection and treatment of wastewater for golf course irrigation.

Note that Borrego Springs is a "snow bird" community, meaning that residents spend the winter months in the town (typically November through March) but leave before temperatures rise in the summer. The District estimates that the community's population ranges from less than 3,000 in summer months to over 8,000 in the height of the winter season. Only 20 percent of the District's water customers are connected to the sewer system, with the remainder utilizing septic systems. For the purposes of this analysis, an across the board reduction in population of 37.5 percent (3,000/8,000) was assumed for estimating low season potential wastewater supply.

Table 6. Golf Course Community Summary of Waste Generation

Golf Course Community	No. Homes / Est. % Buildout	Sewer Status	Potential New High Season Wastewater Supply (gpd)[1]	Potential New Low Season Wastewater Supply (gpd)[2]
Rams Hill	280 / 30%	Sewered	N/A	N/A
Club Circle[3]	62 / 50%	Septic	7,750	775
Borrego Springs Resort	35 / 5%	Septic	4,100	1,540
Roadrunner Golf & Country Club	425 / 80%	Sewered	N/A	N/A
The Springs at Borrego RV Resort	N/A (RVs)	Sewered	N/A	N/A
De Anza	304 / 77%	Septic	38,000	14,250

Notes:
[1] Assumes 125 gpd/EDU at full occupancy.
[2] Assumes 125 gpd/EDU at low season occupancy (37.5%).
[3] According to Club Circle staff, the community has a low season occupancy of approximately 10%.

6.2 Descriptions of All Users or Categories of Potential Users

Two potential users were identified as part of the market assessment—the Rams Hill Golf Course and the De Anza Golf Course. Both potential users would use recycled water for irrigation of golf course turf. Both current use groundwater for turf irrigation but could replace a portion of their groundwater usage with recycled water if and when available. The estimated annual and peak recycled water use for the golf course will be the total amount produced at the treatment plants

(Rams Hill WRP for the Rams Hill GC and a package tertiary plant at the De Anza GC), as the recycled water produced will only supply a small portion of their total water needs. Onsite irrigation ponds exist on both golf courses; it is assumed groundwater and recycled water air gap into the lake prior to distribution into the irrigation systems. Given recycled water would blend with groundwater, no water quality issues (TDS and boron) are anticipated to be concerns for either golf course. Groundwater is the backup source of water.

More information for each potential user is provided in **Table 7**.

Table 7. Potential Recycled Water Users and Estimated Use

Site	Type of Use	Ex. Water Usage (AFY)	Expected Annual RW Use (AFY)[1]	Estimated Peak RW Use (AFY) [1]	Desire to Use RW	Est. Onsite Conversion Costs
Rams Hill GC	Golf course irrigation	998	91	116	Good	$10,000
De Anza GC	Golf course irrigation	773	30	44	Unknown	$25,000
Notes: [1] Estimates based on 125 gpd/EDU, full occupancy during high (winter) season and 37.5% occupancy during low (summer) season.						

6.3 Summary Tables of Potential Users and Related Data

Refer to Table 7 above.

6.4 Definition of Logical Service Area Based on Results of Market Assessment

Logical service area included golf courses, specifically De Anza and Rams Hill.

7.0 PROJECT ALTERNATIVE ANALYSIS

7.1 Planning and Design Assumptions

The following subsections define the planning and design assumptions used in this analysis.

7.1.1 Delivery and System Pressure Criteria

Recycled water would be delivered to golf course irrigation ponds or storage tanks via an air gap; therefore, delivery and system pressures will be low, estimated at 20-40 psi for the purposes of this analysis.

7.1.2 Peak Delivery Criteria

Maximum depth over diameter ratio (d/D) of 0.5 for gravity sewerlines less than 12-inches in diameter. Maximum d/D of 0.75 for gravity sewer lines 12-inches in diameter and greater.

Maximum velocity of 15 fps in sewer forcemains and recycled water distribution pipes.

7.1.3 Storage Criteria

Because recycled water will be offsetting groundwater pumping at the golf courses, the existing onsite storage provided by the lakes and ponds are considered sufficient. Users will boost pressure onsite. No other recycled water storage will be necessary.

7.1.4 Cost Basis (Cost Index, Discount Rate, Useful Lives, Etc.)

The following lists the assumptions of the cost basics:

- Cost Index – Engineering News Record Cost Index for Los Angeles, CA
- Discount Rate – 3%
- Useful Lives
    - Pumps and Equipment: 30 years
    - Chemical Dosing and Storage Systems: 20 years
    - Civil/Piping Work: 75 years
    - Tanks and Structures: 50 years
    - Electrical/Instrumentation: 20 years

7.1.5 Planning Period

Planning period assumed was 50 years.

7.2 Water Recycling Alternatives to be Evaluated

7.2.1 Treatment Alternatives

Two treatment alternative were evaluated to produce and distribute recycled water.

- Alternative 1 includes expanding the District's collection system and upgrading their existing tertiary WRP, Rams Hill, to produce recycled water for delivery to Rams Hill Golf Course.
- Alternative 2 includes connecting residents at the De Anza Country Club, currently on septic, to a sewer collection system and conveying water to a new tertiary package plant for recycled water production and delivery to the De Anza Golf Course. Additionally, Rams

Hill WRP would be upgraded to produce tertiary recycled water with no additional expansion of the existing sewer collection system.

Descriptions of alternatives, broken up by sewage collection, treatment and recycled water distribution, are provided below

Alternative 1: Expanded Collection System and Tertiary Upgrades at Rams Hill WRP

This alternative was based on the total volume of flow that could cost effectively be collected and transported to the plant. Developments currently on septic were evaluated for potential connection to the sewer collection system. De Anza Country Club and the one development south of it (located north of Granada Drive) were determined to be potential options based on being denser concentrations of septic properties and their proximity to existing collection system facilities.

Collection System: This alternative includes the expansion of the sewage collection system north into these areas by 71,000 LF of pipe, as shown in Figure 9 in Section 1.10. Due to the increased flows to the Rams Hill WRP, a pump station expansion as well as a forcemain upsizing would also be required.

Assuming buildout conditions of the new developments converted from septic to sewer as well as the Rams Hill County Club community, a total estimated ultimate plant average flow rate of 147,000 gpd and a high season "maximum month" flow rate of 196,000 gpd were estimated, as presented in the table below. A sewer generation factor of 125 gpd/EDU was assumed based on existing WRP flow data.

Table 8. Alternative 1 Recycled Water Production Estimates

Source of Flow	No. EDUs	High Season Flow[1] (gpd)	Low Season Flow[2] (gpd)	Annual Average Flow[3] (gpd)
Ex. Rams Hill WRP Flow	~720	90,000	47,000	74,000
Additional Sources Proposed:				
Buildout of Rams Hill Country Club	315	39,400	14,800	27,100
Homes on Septic North of Granada Drive	138	17,250	6,500	11,875
Ex. De Anza Country Club Homes on Septic	304	38,000	14,300	26,150
Buildout of De Anza Country Club	90	11,250	4,200	7,725
Total Wastewater Flow to Rams Hill WRP		**196,000**	**87,000**	**147,000**
Total Est. Recycled Water Produced[4]		**157,000 (176 AFY)**	**70,000 (78 AFY)**	**118,000 (132 AFY)**

Notes:

[1] Estimates based on 125 gpd/EDU and full occupancy during high (winter) season at buildout.

[2] Estimates based on 125 gpd/EDU and 37.5% occupancy during low (summer) season at buildout.

[3] Estimates based on 125 gpd/EDU with average flow being based on average occupancy of 68.75% at buildout.

[4] Estimated at 80% of plant inflow to account for loses, including evaporation in the oxidation ditch, pressure filter backwash water losses, solids removal, etc.

Treatment: Rams Hill WRP is a 0.25 MGD tertiary treatment plant built in the early 1980s. The current plant annual average flow rate is 74,000 gpd. The tertiary and disinfection facilities of the Rams Hill WRP have never been operated or maintained and the system is not capable of producing recycled water. The existing sand filters do not meet current Title 22 requirements, there are no flocculation facilities, the chlorine contact basin is not anticipated to have sufficient modal contact time, and the equipment has not been maintained and requires replacement. The upgraded tertiary facilities would be sized and constructed to handle the high season, or maximum month, flow rate listed in **Table 8**. The annual average recycled water production for this alternative is estimated at 132 AFY.

The anticipated improvements required for producing recycled water at the Rams Hill WRP include:

- Installation of construction of coagulant dosing system and mixer
- Construction of flocculation chamber
- Installation of new above grade filter system skids (e.g. disk filters) and piping
- Construction of additional pass in chlorine contact chamber and piping modifications.
- Installation of new sodium hypochlorite storage tanks and dosing equipment.
- Installation of new recycled water pumps.
- Installation of new electrical and instrumentation system for tertiary and disinfection facilities.

Recycled Water Distribution: When the Rams Hill WRP was constructed in the early 1980s, the distribution line to convey recycled water to the Rams Hill Golf Course was also constructed. Non-potable wells currently pump into this pipeline and discharge to the golf course lake looked at an elevation of 700 feet via an air gap. For the purposes of this analysis, it was assumed the recycled water distribution line would not need any improvements.

<u>Alternative 2: Decentralized Treatment at De Anza Country Club and Golf Course and Upgraded Rams Hill WRP</u>

Alternative 2 considered a decentralized option to avoid the cost of constructing long lengths of gravity main to connect disparate areas to the centralized collection system. De Anza Country Club is the only septic golf course community in the area that currently has a considerable amount of existing homes.

Collection System: Approximately 300 existing homes in the De Anza Country Club could be connected to a local collection system to carry flows to a small package treatment plant that would produce Title 22 recycled water for golf course irrigation. One lift station has been determined to be necessary to convey flows to the package plant due to topography of the site.

Treatment: In Alternative 2, production of recycled water would occur in two locations—at a package plant in the De Anza Country Club and from the upgraded facilities at the existing Rams Hill WRP.

Based on the existing number of homes and number of existing empty lots that can potentially be developed at De Anza Country Club, a total high season (winter) sewage flow of 49,250 gpd could be conveyed to a package treatment plant (membrane bioreactor) for production of recycled water to offset existing groundwater pumping for irrigation of the De Anza Golf Course.

As presented in **Table 9**, low (summer) season wastewater flow rates were estimated based on 37.5% occupancy. The annual average wastewater flow was estimated based on an average occupancy of 68.75% at buildout conditions (all empty lots developed). As with Alternative 1, a sewer generation factor of 125 gpd/EDU was assumed. Sizing of the package plant would be based on the high season, or maximum month, flow rate listed in Table 8. This results in a total average annual recycled water production from both plants of 121 AFY.

Table 9. Alternative 2 Recycled Water Production Estimates

Source of Flow	No. New EDUs Connected	High Season Flow[1] (gpd)	Low Season Flow[2] (gpd)	Annual Average Flow[3] (gpd)
De Anza Package Plant				
Ex. De Anza Country Club Homes on Septic	304	38,000	14,300	26,150
Buildout of De Anza Country Club	90	11,250	4,200	7,725
Total Projected Wastewater Flow to De Anza Package Plant		**49,250**	**18,500**	**33,900**
Upgraded Rams Hill WRP				
Ex. Rams Hill WRP Flow	~720	90,000	47,000	74,000
Buildout of Rams Hill Country Club	315	39,400	14,800	27,100
Total Projected Wastewater Flow to Upgrade Rams Hill WRP		**129,400**	**61,800**	**101,100**
Total Est. Combined Recycled Water Produced at Both Plants[4]		**143,000 (160 AFY)**	**64,000 (72 AFY)**	**108,000 (121 AFY)**

Notes:

[1] Estimates based on 125 gpd/EDU and full occupancy during high (winter) season at buildout.

[2] Estimates based on 125 gpd/EDU and 37.5% occupancy during low (summer) season at buildout.

[3] Estimates based on 125 gpd/EDU with average flow being based on average occupancy of 68.75% at buildout.

[4] Estimated at 80% of plant inflow to account for loses, including membrane backwash water losses, solids removal, etc.

Recycled Water Distribution: A short (less than 1,000 LF) recycled water distribution line would be required to convey recycled water to an existing lake within the golf course. The water would be discharged into the lake through an air gap. As with Alternative 1, no improvements were assumed necessary with the existing Rams Hill WRP tertiary effluent pipeline feeding Rams Hill Golf Course.

Refer to Figure 10 in Section 1.10 above for a map of the proposed facilities for this alternative.

7.2.1.1 Alternative Levels of Treatment

Under both alternatives, wastewater would be treated to disinfected Title 22 tertiary levels.

7.2.1.2 Alternative Unit Processes to Achieve a Given Level of Treatment

No alternative unit processes were considered for each alternative.

7.2.2 Pipeline Route Alternatives

No pipeline route alternatives were considered in this analysis.

7.2.3 Alternative Markets:

No alternative markets were used in this analysis. Only golf courses were considered given their high potential for usage in a single location.

7.2.3.1 Based on Different Levels of Treatment

Not applicable.

7.2.3.2 Geographical Areas

Not applicable.

7.2.4 Alternative Storage Locations

No alternative storage locations were considered for this analysis.

7.2.5 Sub alternatives of Selected Alternative:

Not used.

7.2.5.1 Marginal Analysis for Selected Alternative for certain categories of users or certain geographic areas

Not used.

7.2.5.2 Varying Storage, Pump Rates, and Pipeline Diameters

Not used.

7.2.5.3 Use of Water Blending during Peak Irrigation Months

Water blending would occur naturally within golf course storage lakes where recycled water would be delivered, though blending is not necessary to comply with any regulations.

7.3 Non-Recycled Water Alternatives

No non-recycled water alternatives were included in this feasibility analysis.

7.3.1 Discussion of Other Potentially Viable New Sources of Water

Not applicable.

7.3.2 Provide Economic Costs

Not applicable.

7.4 Water Conservation/Reduction Analysis

While water conservation/reduction at agricultural fields in the area could potentially have a very significant impact on groundwater use in the basin, e.g. through improved irrigation techniques, fallowing of land or change of agricultural product to less water-intensive option, these alternatives were not considered for this recycled water feasibility analysis.

7.4.1 Analysis

Not applicable.

7.4.2 Impact on Recycling, If Any

Not applicable.

7.4.3 Recommendation

Not applicable.

7.4.4 Implementation

Not applicable.

7.5 Pollution Control Alternatives

Not Applicable

7.6 No Project Alternative

A No Project Alternative was included in this analysis. Under the No Project Alternative, no recycled water would be produced. Treated secondary effluent from the Rams Hill WRP would continue to be sent to the existing evaporation-percolation ponds. The Rams Hill and De Anza golf courses would continue to supply 100% of their irrigation from pumped groundwater.

7.7 Information Supplied for Each Alternative

See below.

7.7.1 Cost Tables

Refer to **Appendix G** for detailed cost tables. A summary of project costs broken up treatment, collection system and recycled water distribution, is provided in **Tables 10** and **11** below.

Table 10. Alternative 1 Estimated Project Costs

Facility	Cost
Treatment Plant Upgrades (Tertiary Facilities)	$2,335,000
Collection System Upgrades/Expansion	$10,120,000
Subtotal	**$12,455,000**
Contingency (20%)	$2,491,000
Design & Construction Management (20%)	$2,491,000
Total Project Cost	**$17,437,000**
Annualized Project Cost (3%, 50 Years)	$678,000
Annual O&M Costs (Tertiary Facilities Only)	$69,000
Total Annual Costs	**$747,000**
Estimated Average Annual RW Projection (AFY)	132
Cost per Acre-Foot ($/AF)	**$5,700**

Table 11. Alternative 2 Estimated Project Costs

Facility	Cost
Package Plant and Tertiary Upgrades	$4,270,000
Collection System	$3,848,000
Recycled Water Distribution	$60,000
Subtotal	**$8,178,000**
Contingency (20%)	$1,636,000

Design & Construction Management (20%)	$1,636,000
Total Project Cost	**$11,450,000**
Annualized Project Cost (3%, 50 Years)	$446,000
Annual O&M Costs (Treatment Only)	$121,000
Total Annual Costs	**$567,000**
Estimated Average Annual RW Projection (AFY)	121
Cost per Acre-Foot ($/AF)	**$4,700**

7.7.2 Lists of Potential Users Assumed for Each Alternative

The potential user for Alternative 1 is Rams Hill Golf Course. The potential users for Alternative 2 are De Anza Golf Course and Rams Hill Golf Course

7.7.3 Economic Analysis

Costs for water vary based on their source (e.g. pumped groundwater, imported State Water Project water, desalination, Title 22 recycled water). For this analysis, costs were compared against Title 22 recycled water production from the City of San Diego's 2012 Recycled Water Study. The City of San Diego's study estimated gross costs for recycled water at between $1,700 to $1,900 per AF, with an average cost of $1,800/AF. Taking into account various savings, net costs for City of San Diego were reduced to between $600 and $1300 per AF, with an average net cost of $1,020. Comparing estimated costs from this analysis to those estimated by the City of San Diego, results in costs for recycled water production in Borrego being between 2.6 and 3.2 times the gross cost for the City of San Diego between 4.6 and 5.6 times the net cost.

7.7.4 Energy Analysis for Each Alternative, Including Direct and Construction Energy

A direct and construction energy analysis was performed for each alternative and the results presented in the following tables.

Table 12. Alternative 1 Direct Energy Estimate

Equipment Item	Duty / Standby	Nameplate HP	Brake HP	Operating KW	Runtime	hrs/day	kwh/day
Coagulant Feed Pump	D	0.1	0.1	0.0746	Intermittent	24	1.8
Coagulant Feed Pump	S	0.1	0.1	0.0746	Intermittent	0	0.0
Flocculator - Stage 1	D	1	1	0.746	Intermittent	24	17.9
Flocculator - Stage 2	D	1	1	0.746	Intermittent	24	17.9
Tertiary Disk Filter	D	1	1	0.746	Continuous	24	17.9

Tertiary Disk Filter	S	1	1	0.746	Intermittent	0	0.0
Filter Backwash Pump	D	5	5	3.73	Intermittent	2.4	9.0
Filter Backwash Pump	S	5	5	3.73	Intermittent	0	0.0
Chlorine Feed Pump	D	0.1	0.1	0.1	Continuous	24	1.8
Chlorine Feed Pump	S	0.1	0.1	0.1	Continuous	0	0.0
Recycled Water Pump	D	40.0	40.0	29.8	Intermittent	24	716.2
Recycled Water Pump	D	40.0	40.0	29.8	Intermittent	12	358.1
Recycled Water Pump	S	40.0	40.0	29.8	Intermittent	0	0.0
Totals		**134.4**	**134.4**				**1,140**

Table 13. Alternative 2 Direct Energy Estimate

	Annual Energy Estimate (kWh/d)
De Anza Package Plant	
Secondary plant power	211
Tertiary and disinfection	37
De Anza Package Plant Totals	**248**
Rams Hill WRP[1]	**910**
COMBINED TOTAL	**1,158**

Note:
[1] Estimated based on 70% of energy estimate from Alternative 1 (Table 11).

Table 14. Alternative 1 Construction Energy Estimate

Equipment	HP[1]	Load Factor[1]	Months	hrs/day	Total HP-hr
Air Compressor	78	0.48	4	6	19,255
Concrete Mixer	9	0.56	0.25	8	216
Cranes	231	0.29	1	4	5,742
Excavators	158	0.38	1	4	5,146
Forklifts	89	0.2	3	6	6,866
Rubber Tired Dozers	247	0.4	0	8	0
Tractors/Loaders	97	0.37	2	8	12,305
TOTAL CONSTRUCTION ENERGY[2]					**50,000**

Notes:
1. Horsepower and load factors based on CalEEMod Appendix D.
2. Estimated for tertiary and disinfection only at design capacity of 200,000 gpd.

Table 15. Alternative 2 Construction Energy Estimate

Equipment	HP[1]	Load Factor[1]	Months	hrs/day	Total HP-hr
De Anza Package Plant[2]					
Air Compressor	78	0.48	3	6	14,441
Concrete Mixer	9	0.56	0.5	8	432
Cranes	231	0.29	2	4	11,484
Excavators	158	0.38	2	4	10,293
Forklifts	89	0.2	2	6	4,577
Rubber Tired Dozers	247	0.4	1	8	16,937
Tractors/Loaders	97	0.37	3	8	18,458
De Anza Package Plant Construction Energy					**77,000**
Rams Hill WRP Tertiary Construction Energy[3]					**35,000**
TOTAL CONSTRUCTION ENERGY					**112,000**

Notes:
1. Horsepower and load factors based on CalEEMod Appendix D.
2. Estimated for design plant capacity of 49,000 gpd.
3. Estimated as 70% of construction energy calculated for Alternative 1 (Table 13) based on proportion of plant flows for each alternative

7.7.5 Water Quality Impacts:

Because recycled water will be supplying only a portion of the total irrigation demand of each golf course and because recycled water will be blended with groundwater in the golf course water storage facilities, no negative water quality impacts are anticipated.

7.7.5.1 Effect on Receiving Water

Not applicable. Current effluent is not discharged to receiving waters but rather evaporated in evaporation-percolation ponds.

7.7.5.2 Ground Water Impacts

Recycled water production offsets groundwater pumping by up to 132 AFY (Alternative 1) or 121 AFY (Alternative 2). However, this water was previously sent as treated secondary effluent to evaporation-percolation ponds (for existing collection system flow) or to septic tanks. Whether treated to tertiary levels and used to irrigate turf or allowed to evaporate and/or seep into the ground via septic leach fields or percolation ponds, the total volume returned to the ground water basin, or in the region's water cycle, stays the same.

7.8 Comparison of Above Alternatives and Recommendation of Specific Alternative

As stated above, the costs estimated for the two recycled water alternatives included in this analysis are at a minimum 2.5 times the estimated cost of the production of recycled water elsewhere in San Diego County. As a result, it is concluded that the production of recycled water in Borrego Water District is not feasible and recommend the No Project Alternative.

8.0 RECOMMENDED FACILITIES PROJECT PLAN

The No Project Alternative has been recommended; therefore, this section is not applicable.

8.1 Description of All Proposed Facilities and Basis for Selection

Not applicable.

8.2 Preliminary Design Criteria and Refined Pipeline Routes

Not applicable.

8.3 Cost Estimate Based on Time of Construction

Not applicable.

8.4 List of All Potential Users, Quantity of Recycled Water Use, Peak Demand, and Commitments Obtained

Not applicable.

8.5 Reliability of Facilities as compared to user requirements

Not applicable.

8.6 Implementation plan

Not applicable.

8.6.1 Coordination with Water Suppliers

(determination of recycled water supplier and needed agreements or ordinances)

Not applicable.

8.6.2 Ability and Timing of Users to Join System and Make On-site Investments

Not applicable.

8.6.3 Tentative Water Recycling Requirements of RWQCB

Not applicable.

8.6.4 Commitments from Potential Users

Not applicable.

8.6.5 Water Rights Impact

Not applicable.

8.6.6 Permits, Right-of-way, Design Construction

Not applicable.

8.6.7 Detailed Schedule

Not applicable.

8.7 Operational Plan (Responsible People, Equipment, Monitoring, Irrigation Scheduling, etc.)

Not applicable.

9.0 CONSTRUCTION FINANCING PLAN AND REVENUE PROGRAM

The No Project Alternative has been recommended; therefore, this section is not applicable.

9.1 Sources and Timing of Funds for Design and Construction

Not applicable.

9.2 Pricing Policy for Recycled Water

Not applicable.

9.3 Costs that can be Allocated to Water Pollution Control

Not applicable.

9.4 Annual Projections

Not applicable.

9.4.1 Water Prices for Each User or Category of Users

Not applicable.

9.4.2 Recycled Water Used by Each User

Not applicable.

9.4.3 Annual Costs

((required revenue) of recycling project)

Not applicable.

9.4.4 Allocation of Costs to Users

Not applicable.

9.4.5 Unit Costs to Serve Each User or Category of Users

Not applicable.

9.4.6 Unit Price of Recycled Water for Each User or Category of Users

Not applicable.

9.4.7 Sensitivity Analysis

(assuming portion of potential user fail to use recycled water)

Not applicable.

9.5 Sunk Costs and Indebtedness

Not applicable.

Borrego Springs
Subregional Group Area

General Plan Land Use Designations[1,2]
Adopted August 2011

- Village Residential (VR-30)
- Village Residential (VR-24)
- Village Residential (VR-20)
- Village Residential (VR-15)
- Village Residential (VR-10.9)
- Village Residential (VR-7.3)
- Village Residential (VR-4.3)
- Village Residential (VR-2.9)
- Village Residential (VR-2)
- Semi-Rural Residential (SR-.5)
- Semi-Rural Residential (SR-1)
- Semi-Rural Residential (SR-2)
- Semi-Rural Residential (SR-4)
- Semi-Rural Residential (SR-10)
- Rural Lands (RL-20)
- Rural Lands (RL-40)
- Rural Lands (RL-80)
- Specific Plan Area (residential densities in italics)[4]
- Office Professional[3]
- Neighborhood Commercial[3]
- General Commercial[3]
- Rural Commercial[3]
- Limited Impact Industrial[3]
- Medium Impact Industrial[3]
- High Impact Industrial[3]
- Village Core Mixed Use
- Public/Semi-Public Facilities[3]
- Public/Semi-Public Lands (Solid Waste Facility)
- Public Agency Lands
- Tribal Lands
- Open Space (Recreation)
- Open Space (Conservation)
- County Water Authority Boundary
- Borrego Springs Subregional Group Area Boundary

NOTES:

1: The type and intensity of development depicted on the map must be implemented in accordance with General Plan goals and policies and other County regulations which may further affect the type and intensity of use.

2: Land Use Element, Table LU-1 indicates the applicable Regional Category for each designation.

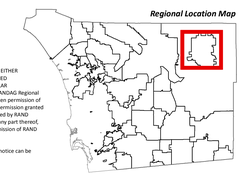
3: Maximum development intensity for non-residential designations is provided in Land Use Element, Table LU-1.

4: Refer to Community Plan for general land uses and intensities allowed in Specific Plan area (SPA).

Map Prepared By:
LUEG GIS
Land Use & Environment Group Geographic Information Service

Coordinates: NAD83 Feet

Regional Location Map



Source: County of San Diego, SanGIS, SANDAG
File reference:
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20
ACRES

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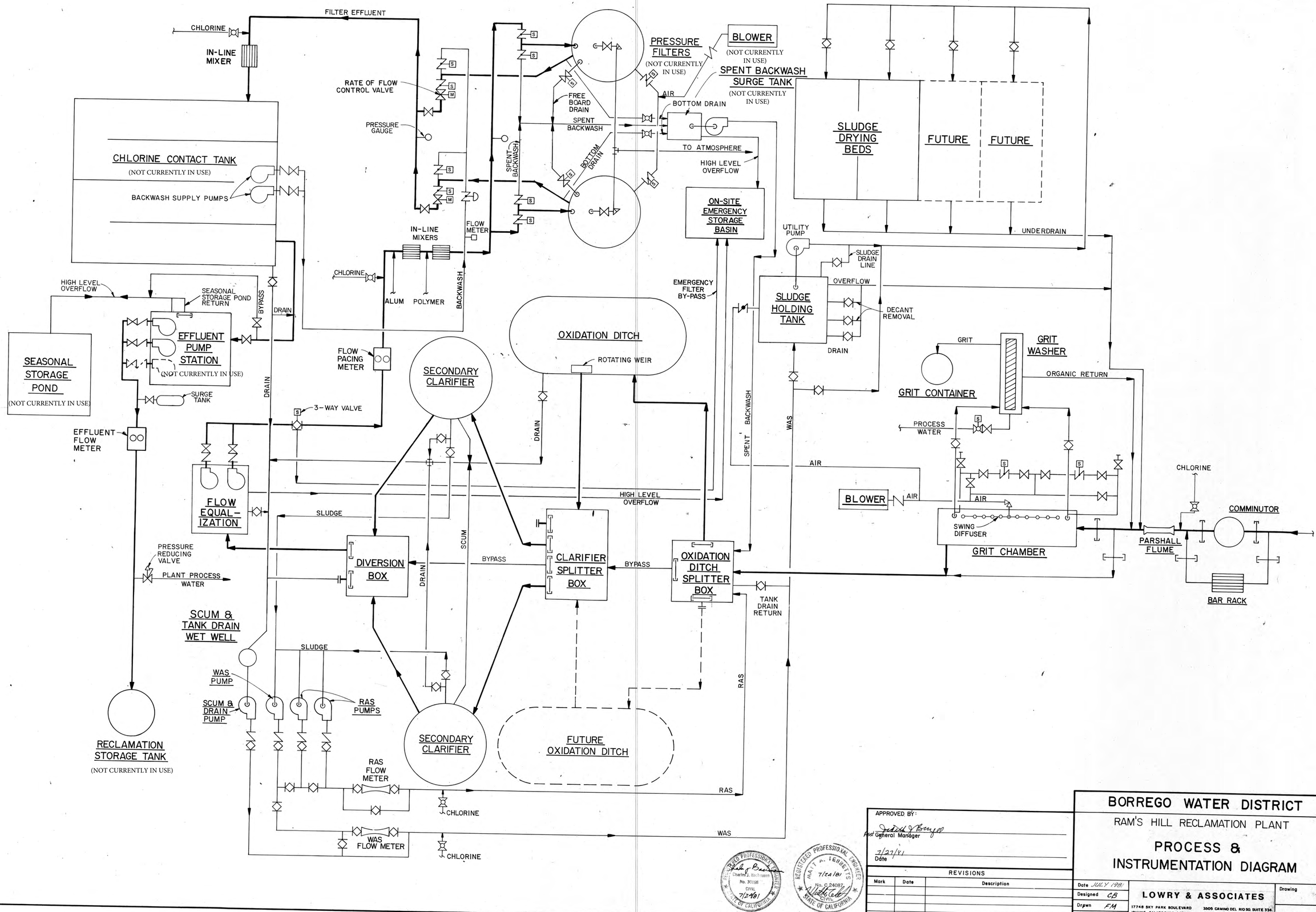
Feet

Printed: July 23, 2012



APPROVED BY:

Asst General Manager

7/27/81

Date

REVISIONS

Mark	Date	Description

BORREGO WATER DISTRICT

RAM'S HILL RECLAMATION PLANT

PROCESS & INSTRUMENTATION DIAGRAM

Date JULY 1981
Designed CB
Drawn FM
Checked JK

LOWRY & ASSOCIATES

17740 SKY PARK BOULEVARD, IRVINE, CALIFORNIA 92714
3505 CAMINO DEL RIO SO. SUITE 356, SAN DIEGO, CALIFORNIA 92108

Drawing 104

Sht. 3 of 61

M E M O R AN D U M

DATE: 7/10/17

TO: Geoff Poole, General Manager BWD

FROM: David Dale, PE, PLS

Re: Borrego Water District – 2017-2025 CIP Project Summary and Narratives

The following table shows the summary of the 2017-2025 projects. The CIP projects are described in detail on the following pages.

CIP #	CAPITAL IMPROVEMENT PROJECTS FISCAL YEARS 2017-2025 SUMMARY
	WELLS, BOOSTER STATIONS, RESERVOIRS & ASSOCIATED TRANSMISSION MAINS
5	Water Treatment Facility (phase 1)
6	Water Treatment Facility (phase 2)
7	New well assessments (Exploration Phase) and acquire land
8	Drill new wells
9	Country Club Tank Recoating, 1999 1.0 MG
10	New 900 Reservoir
11	Transmission line to convey well 16 water directly to ID1 900 Reservoir (Pipeline 1)
12	Transmission line to convey Well 5 water directly to C.C. Reservoir (Pipeline 2)
13	Transmission line to convey Well 12 water directly to Tilting T-Di Giorgio (Pipeline 3)
14	Transmission pipeline Slash M Rd. west to Country Club Tank
15	Replace Twin Tanks – Possible Prop 1 Grant
16	Replace Wilcox Diesel Motor – Possible Prop 1 Grant
17	Replace Indianhead Reservoir – Possible Prop 1 Grant
18	Rams Hill #2, 1980 galv. 0.44 MG recoating – Possible Prop 1 Grant
	WASTEWATER TREATMENT FACILITIES
21	Force main replacement at La Casa del Zorro; Cleanouts on existing force main
22	Sewer main replacement Club Circle
23	Conversion to Tertiary Treatment - Study
24	Lift station-Aeration and odor removal system
25	Plant-Grit removal at the headworks - Possible Prop 1 grant
	PIPELINE REPLACEMENT /IMPROVEMENT PROGRAM
28	Emergency water pipeline repairs
29	10" Bypass at ID1 Booster Station 2
30	Borrego Springs Road, Walking H Drive to Country Club Road Phase 1 (Pipeline 5)
31	Borrego Springs Road, Walking H Drive to Country Club Road Phase 2 (Pipeline 5)
32	T Anchor Drive, Frying Pan Road to Double O Road (Pipeline 6)
33	Weather Vane Drive, Frying Pan Road to Double O Road (Pipeline 7)
34	Frying Pan Road, north and south from T Anchor Drive (Pipeline 8)
35	Double O Road, north and south from T Anchor Drive (Pipeline 9)
36	Borrego Springs Road, Weather Vane Drive to Barrel Drive (Pipeline 10)
37	Pipeline for Santiago and ID5 (Pipeline 11)
38	De Anza Dr. 1600 block west from Yaqui Road (Pipeline 12)
39	Club Circle Pipeline Evaluation

Contents

Water Treatment Facility (Phase 1 and 2)

A. Project Description / Reasons for Capital Expense

Budget: $1,535,000

The following are excerpts from "Draft Working Technical Memorandum" prepared by Dudek, written to the Borrego Water District dated June 16, 2017:

As a public water system, the BWD is regulated by the State Water Resources Control Board's Department of Drinking Water. California regulations related to drinking water are contained within California Code of Regulations (CCR) Title 17 and Title 22. California drinking water MCLs that shall not be exceeded in the water supplied to the public are listed in CCR Title 22 Chapter 15. The BWD samples groundwater quality from water wells at intervals required by the DDW.

While none of the BWD's wells currently exceed California drinking water MCLs, treatment alternatives for COCs are discussed herein to explore options in the event that groundwater quality were to become impaired. Non-treatment and treatment options to meet drinking water standards typically include blending, wellhead treatment, or supplementing the impaired source of supply.

The Borrego Springs Groundwater Subbasin of the Borrego Valley Groundwater Basin (BVGB) has been determined to be in overdraft. There is a potential risk associated with temporal changes in groundwater quality that may result in exceedances of California drinking water maximum contaminant levels (MCLs) in Borrego Water District (BWD) production wells due to the long-standing critical overdraft. Thus, it assesses current and historical groundwater quality data and the inter-relationship between groundwater levels and groundwater quality. The main constituents of concern (COCs) are arsenic, nitrate, sulfate, fluoride, total dissolved solids (TDS), and radionuclides. Of primary concern is the potential for water quality degradation and the relative risk that the groundwater supply will not meet MCLs.

The USGS found that concentrations of TDS and nitrate exceed their respective water quality standard thresholds in portions of the upper aquifer of the Borrego Springs Groundwater Subbasin (for reference with depth the BVGB is comprised of three aquifers: upper, middle, and lower). The highest concentrations of both constituents were generally found in the northern portion of the Borrego Springs Groundwater Subbasin, and the concentration of TDS was found to increase as groundwater levels decline. Sulfate, another COC, was also found to increase in concentration as groundwater levels decline. In addition to nitrate, TDS, and sulfate, other potential COCs in the BVGB include arsenic and gross alpha radiation, though the latter appears to be confined to the Ocotillo Wells Groundwater Subbasin. Since the compilation of available groundwater quality data by the USGS in 2015, additional data have been collected by the BWD for its active production wells in 2016 and for seven private wells located in the South Management Area (SMA) of the Borrego Springs

Groundwater Subbasin. This recent data indicates that arsenic concentrations exceed the California drinking water MCL of 10 micrograms per liter (µg/L) in portions of the lower aquifer in the SMA. Additionally, review of historical arsenic data for BWD wells located in the SMA indicates an increasing arsenic trend in well ID1-2, and a linear regression analysis indicates a good correlation of fit among arsenic concentration, groundwater production, and declining groundwater levels in well ID1-8. Based on the 2-year lag linear regression of groundwater production and arsenic data from well ID1-8, groundwater production in excess of 300 AFY at well ID1-8 is predicted to exceed the arsenic drinking water standard of 10 µg/L. Thus, arsenic concentrations in the lower aquifer of the Borrego Springs Groundwater Subbasin are determined to be a primary COC. Because groundwater quality data for the Borrego Springs Groundwater Subbasin are limited, further data collection and evaluation is required to verify the predicted exceedance of the arsenic drinking water standards in well ID1-8 and potential for other wells in the Borrego Springs Groundwater Subbasin to exceed the arsenic drinking water standard or other COC.

It is yet to be determined if treatment will be necessary, but for planning purposes the BWD has put placeholders in the Capital Improvement Program (CIP) in the next eight years.

B. Project Design / Process Flow:

Once it has been determined if a treatment process is necessary, an engineering report will be prepared indicating the best and most efficient method of treatment. The CIP breaks the treatment into phases. Environmental documents will be prepared and distributed. After approval, the project(s) will be sent out to public bidding and then constructed. The CIP shows these projects starting in FY 2022-23.

C. Cost Estimate:

Project costs are highly speculative at this time due to the fact that current water quality does not require treatment. Due to the falling groundwater table, this may change in the future with depth dependent water quality. The budget is $1,535,000.

D. Project Estimated Timeline:

The CIP shows these projects starting in FY 2022-23; however actual timing of this project is dependent on several factors discussed above.

CIP ITEM No. 7 AND 8

Exploration, Land Acquisition and Drill New Wells

A. Project Description / Reasons for Capital Expense

Budget: $2,800,000

BWD has identified three wells that will need to be replaced within the next eight years. Wells ID1-8, ID4-4 and ID1-10 cannot be rehabilitated again will need to be replaced due to age and falling groundwater levels. Two high yield wells may replace these three wells.

B. Project Design / Process Flow:

Dudek prepared a report "Draft Working Technical Memorandum" dated June 16, 2017 that describes three separate Subbasin within the BWD service boundary. The report identifies that the Central Management Basin has the best chance for water that meets the requirements of California Code of Regulations (CCR) Title 17 and Title 22.

The BWD has already initiated preliminary review of potential new sources of supply in the Borrego Springs Subbasin and will further identify strategic sources of supply that meet Title 22 potable drinking water quality requirements.

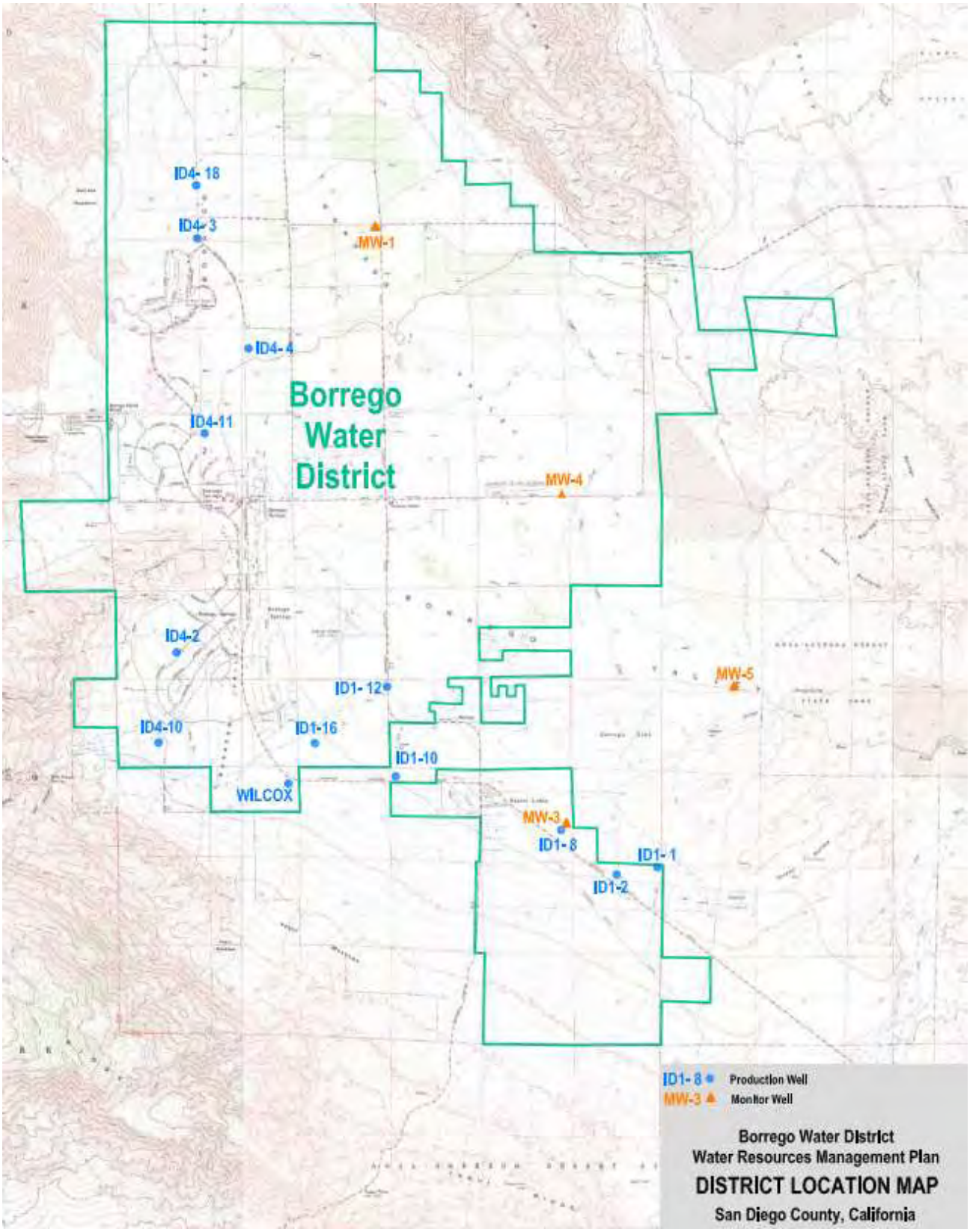
Once a site has been selected, an exploration phase will commence. If the water quality and depth is acceptable, the land will be acquired for the wellsite and the well will be constructed to municipal standards.

C. Cost Estimate:

The cost estimate for the exploration and land acquisition phase is $550,000. The wells are estimated to cost $1,000,000 each to construct.

D. Project Estimated Timeline:

Exploration and land acquisition:	FY 2018-2020
Construct well#1:	FY 2021-2022
Construct well#2:	FY 2023-2024


ID4-18
ID4-3
MW-1
ID4-4
Borrego
Water
District
ID4-11
MW-4
ID4-2
MW-5
ID1-12
ID4-10
ID1-16
ID1-10
WILCOX
MW-3
ID1-8
ID1-1
ID1-2
ID1-8 Production Well
MW-3 Monitor Well
Borrego Water District
Water Resources Management Plan
DISTRICT LOCATION MAP
San Diego County, California

CIP ITEM No. 9

Country Club Tank Rehabilitation

A. Project Description / Reasons for Capital Expense

Budget $ 250,000

The Country Club Tank is located approximately 1-½ mile west of the intersection of Title T and Borrego Springs Road (S3). The tank has a capacity of 1.0 million gallons and is composed of coated steel. The California Department of Health Services requires the District to physically inspect the inside of the domestic water reservoirs every three years. This service is performed by a consultant that utilizes divers and provides a written report as well as a video. The tank was constructed approximately 17 years ago. The tank is in good condition currently, but it is anticipated that it will need to be recoated on a regular schedule in fiscal year 2024-25 and is thus in the CIP for the next eight years.

B. Project Design / Process Flow:

After the inspection report is delivered and the tank needs recoating, the District Engineer will prepare engineering documents and the project will be sent out for public bidding with Board approval.

C. Cost Estimate:

Without a recent dive inspection, an accurate cost estimate is difficult because the number of metal repairs necessary is unknown. Experience with past projects gives an approximate cost estimate of $250,000 to recoat and repair the tank.

D. Project Estimated Timeline:

Dive Inspection:	February 2023
Receive Dive Inspection Report:	March 2023
Engineering/design completion:	March 2023 – April 2023
Project Bidding:	April 2024 – May 2024
Repair Recoat Tank:	June 2024 – July 2024

Item	Quan	Unit	Description	Unit Cost	Amount
1	1	LS	Mobilization/ Demobilization, Temporary Facilities, Construction Sign, Insurance, Payment Bond, Taxes, Permits, Fees and Similar Expenses	$22,500	$ 22,500
2	18,800	SF	Sandblast Complete Interior Including Columns, Rafters, Appurtenances, Exterior Roof Coatings to SSPC-SP 10. Remove and Legally Dispose of Spent Blast Material.	$ 3.75	$ 70,500
3	1	LS	Remove and replace metal components as necessary	$ 3,500	$ 3,500
3	18,800	SF	Recoat Interior Surfaces. This Item to be Considered Lump Sum Unless the Area is Shown to be Materially Different than shown.	$ 5.10	$ 95,880
4	1	LS	Coating Inspection and Testing	$ 3,500	$ 3,500
5	1	EA	Replace Manway Gasket	$ 750	$ 750
6	1	LS	Hydrostatic Testing, VOC Testing, Disinfection of Tank, Bacteriological Testing	$ 3,800	$ 3,800

Construction Subtotal:	$200,430
Contingency (10%):	$ 20,043
Subtotal Construction:	$220,473
Engineering/Contract Document Preparation	$ 20,000
Construction Inspection:	$ 9,527
Total Project Estimate:	$250,000

Country Club Tank Location

CIP ITEM No. 10

900 Tank (Formerly the 800 Tank)

A. Project Description / Reasons for capital expense:

Budget $ 525,000

The existing 800 tank is leaking due to a failed liner. The liner has failed and been replaced and repaired multiple times without long term success. Based on this experience, another attempt at lining is not recommended. The tank is important to be able to serve the Rams Hill area and golf course.

Replacing the R-2 tank with a potable water storage tank (900 tank) will allow a direct feed of water from Well 16 and still serve the Rams Hill area, as well as ID-1. The tank would store Well 16 water only without major changes to the distribution system. In the future, this tank could be used for treatment or blending if necessary. The 900 tank is located approximately 2,000 feet south of the 800 tank.

The California State Water Resources Control Board, Division of Drinking Water oversees the District's water supply. The 800 tank was not designed to current drinking water storage standards, but has been "grandfathered" in. Replacement of the 800 tank with a current design would be good to safeguard the water supply quality.

B. Project Design / Process Flow:

Upon review of the 800 tank record drawings, the tank was designed to be partially underground. The bowl beneath ground level has approximately 400,000 gallons storage capacity. Most of this area would need to be backfilled with a suitable material and compacted at a high expense. Also, the area surrounding the 800 tank appears to be environmentally sensitive, which is probably why the tank was designed and built mostly underground. There is a soil berm surrounding the tank to make it blend in with the surrounding desert. Installing a bolted steel tank in this location may require a lengthy CEQA process. Additionally, there does not appear to be any property ownership or easement to allow the District to operate a tank in this location.

The existing R-2 tank will be replaced with a new potable water bolted steel tank (now called "900 tank" due to its elevation) without as many modifications to the distribution system. Most of the piping is already in place to allow for a direct feed from Well 16 to the 900 tank location. Some modifications would be necessary to the distribution system. There are existing rights to allow the District to install and operate a tank in this location.

C. Cost Estimate

The project has been bid (Contract cost is $500,000) and the contract is currently being prepared.

D. Project Estimated Timeline:

Construction of tank:	July 2017 – November 2017
Construction/modifications to distribution system:	July 2017
Tank filling and startup:	November 2017

Figure 1 - Location of 800 and 900 tanks

CIP ITEM No. 11 -14

Transmission Pipelines

A. Project Description / Reasons for Capital Expense

The District's water distribution system was piecemealed together over time as the District took over smaller Districts in the area. The smaller pipelines were interconnected in partial measures. There is a need to deliver water in a more efficient manner. The District has identified four main transmission pipelines that should be installed for a more functional system. The transmission lines would have no service laterals connected, and would serve only to deliver water to the tanks or to another part of the distributions system. These projects are not considered pipeline replacement projects; they will enhance the distribution system operation.

B. Project Design / Process Flow:

Pipelines 1, 2 and 4 are projects that can possibly be installed by District staff over time; thus, saving District funds. Pipeline 3 (Well 12 to Tilting T and Di Giorgio) is a more complex project and may require professional design and implementation.

C. Cost Estimate

Estimates were derived using pipeline lengths and cost per unit length. Not enough information is available to do a detailed analysis now.

Transmission line to convey well 16 water directly to ID1 900 Reservoir (Pipeline 1)	$112,000
Transmission line to convey Well 5 water directly to C.C. Reservoir (Pipeline 2)	$625,000
Transmission line to convey Well 12 water directly to Tilting T-Di Giorgio (Pipeline 3)	$668,000
Transmission line Slash M Rd. west to Country Club Tank (Pipeline 4)	$175,700

Total: $1,600,700

D. Project Estimated Timeline:

Transmission line to convey well 16 water directly to ID1 900 Reservoir (Pipeline 1)	FY 2018-19
Transmission line to convey Well 5 water directly to C.C. Reservoir (Pipeline 2)	FY 2017-23
Transmission line to convey Well 12 water directly to Tilting T-Di Giorgio (Pipeline 3)	FY 2022-23
Transmission line Slash M Rd. west to Country Club Tank (Pipeline 4)	FY 2019-20

CIP ITEM No. 15

Twin Tanks

A. Project Description / Reasons for Capital Expense

The Twin Tanks are located approximately ½ mile southwest of the intersection of Palm Canyon Drive and Montezuma Valley Road (S22). The two tanks have a capacity of 220,000 gallons each and are composed of galvanized steel. The California Department of Health Services requires the District to physically inspect the inside of the domestic water reservoirs every three years. This service is performed by a consultant that utilizes divers and provides a written report as well as a video. The past inspection report recommended that the tanks be recoated and minor metal repairs made. The tank inspections were received in February 2017. The tanks are highly corroded. The tanks are scheduled for repair/replacement in the 2017-2018 CIP.

B. Project Design / Process Flow:

When the tanks were inspected in 2017, the divers installed a plug in the pipe that interconnects the tank because there is no valve there to allow for one tank to be taken out of service. Staff installed a permanent valve. After the inspection report was delivered, it was determined that the tanks may need replacement. The process to determine if the tanks can be repaired, is to drain one of the tanks and sweep blast (Sandblast) certain areas for inspection. The inspection may determine that the tanks require replacement, or that they can be repaired. After determination, engineering documents will be prepared and the project will be sent out for public bidding. For budgeting purposes, it was assumed to be a tank replacement project.

There are two tanks. Twin Tank #1 is the south tank, and Twin Tank #2 is the north tank.

The tanks will be replaced with a single 440,000 gallon bolted steel tank. No change in capacity is proposed. The tank will be installed at the same location as the existing tanks. The bolted steel tank will be approximately 55 feet in diameter and 24 feet high. The coating will be fusion or powder coated steel.

The estimated life of the tank is approximately 30 years if it is properly maintained. After completion of the tank, the tank will be filled with water. The water will be tested for Volatile Organic Compounds (VOC) and bacteria prior to putting the tank into service.

C. Cost Estimates:

Twin Tanks Replacement					
No.	Qua	Unit	Description	Unit Cost	Total Cost
1	**Construction Cost**				
1.1	2	LS	Mobilization/ Demobilization, Temporary Facilities, Insurance, Payment Bond, Taxes, Permits, Fees and Similar Expenses	$ 25,000.00	$ 50,000
1.2	2	LS	Demolish existing bolted 220,000 gallon steel tank. Remove and dispose of the tank.	$ 13,500.00	$ 27,000
1.3	2	LS	Provide tank submittal, stamped and signed by a Registered Engineer in the State of California. Payment after acceptance.	$ 2,500.00	$ 5,000
1.4	2	LS	Prepare Tank Pad – Install new galvanized steel ring around the perimeter of the tank. Install 1-inch No. 4 Rock eight inches thick. Install ½" Fiber expansion joint material on top of the rock.	$ 14,000.00	$ 28,000
1.5	2	LS	Furnish and Install OSHA exterior locking ladder kit and railing around the roof hatch	$ 7,500.00	$ 15,000
1.6	2	LS	Install fusion powder coated bolted steel tank, nominal dimensions 24' high and 38' diameter. After installation, complete holiday testing of interior coating and repair all holidays to the satisfaction of the engineer.	$ 165,000.00	$ 330,000
1.7	2	LS	Install piping, valves, transition couplings, fittings, Tideflex valve, expansion joints, check valves, pipe supports, ductile iron risers, thrust blocks, anti-vortex hardware, and other appurtenances. Connect to existing piping.	$ 4,200.00	$ 8,400
1.8	1	LS	Hydrostatic Testing, VOC Testing, Wash-down and Cleaning of the interior, Disinfection, and Bacteriological Testing. Water provided by the District at no charge.	$ 3,800.00	$ 3,800
				Project Construction Cost:	$ 467,200
				10% Contingency:	$ 46,720
				Total Construction Cost:	**$ 513,920**
2	**Admin and Engineering**				
2.01	1	LS	Preliminary Engineering, Engineering Plans and Specifications		$ 40,000
2.02	1	LS	Construction Management		$ 25,000
			TOTAL PRELIMINARY PROJECT ESTIMATED COST		**$ 578,920**

D. Project Estimated Timeline:

Dive Inspection:	February 2017
Receive Dive Inspection Report:	March 2017
Engineering/design completion:	July 2017 – August 2017
Project Bidding:	October 2017 – November 2017
Repair Recoat Tank:	January 2018 – May 2018

Figure 2 - Twin Tanks Location

CIP ITEM No. 16

Replace Wilcox Diesel Motor

A. Project Description / Reasons for Capital Expense

Budget $59,000

The District has received a Notice of Violation (number 225200) from the APCD on July 7, 2015. In the violation notice, the APCD indicated that the diesel engine must be replaced with an emissions compliant engine, the engine must be refitted with emissions equipment or the engine taken out of service. Due to the age of the engine it is not feasible to install aftermarket controls to meet the new emissions requirement. Therefore, the options include replacement or taking the well out of service (revoking the existing permit to operate). The Wilcox Well is considered an emergency source of water when the electric power is out of service, so it is a critical component of the water distribution system and must be kept online. The alternative to replace the engine is the most cost effective and environmentally friendly option.

The proposed project includes new equipment purchase, necessary construction permits of the APCD, removal of the existing diesel engine and installation of the new compliant engine.

The proposed project includes replacing the existing 80hp diesel engine with a Tier 4 emissions compliant for standby diesel engines. This is considered a green component due to the enhanced energy efficiency of the engine and near-zero emissions. Replacing the existing diesel engine is much more cost effective than to bring electric power to the site and install an electric engine.

B. Project Design / Process Flow

On May 11, 2004, EPA signed the final rule introducing Tier 4 emission standards, which are phased-in over the period of 2008-2015. The Tier 4 standards require that emissions of PM and NOx be further reduced by about 90%. Such emission reductions can be achieved through the use of control technologies, including advanced exhaust gas after treatment. The new diesel engine will comply with EPA Tier 4 Final and EU Stage IV emissions standards. It will employ Diesel Oxidation Catalyst (DOC) technology or Diesel Particulate Filters (DPF) to meet the Tier 4 Final/Stage IIIB requirement for near-zero Particulate Matter (PM) emissions. The Tier 4 regulation and later amendments for Engine power between 75hp and 175hp have numeric not-to exceed values for various pollutants and also include a number of provisions:

- *Smoke Opacity*—Existing Tier 2-3 smoke opacity standards and procedures continue to apply in some engines. Exempted from smoke emission standards are engines certified to PM emission standards at or below 0.07 g/kWh (because an engine of such low PM level has inherently low smoke emission).

- *Crankcase Ventilation*—The Tier 4 regulation does not require closed crankcase ventilation in nonroad engines. However, in engines with open crankcases, crankcase emissions must be measured and added to exhaust emissions in assessing compliance.
- *DEF Refill Interval*—For SCR-equipped nonroad diesel engines, a minimum DEF (urea solution) refill interval is defined as at least as long (in engine-hours) as the vehicle's fuel capacity.
- *Emergency Operation*—To facilitate the use of certain nonroad engines in temporary emergency situations, the engines can be equipped with an AECD to override performance inducements related to the emission control system—for example, to allow engine operation without urea in the SCR system during an emergency. This flexibility is intended primarily for engines used in construction equipment and portable equipment used for temporary power generation and flood control.
- *ABT Program*—Similarly to earlier standards, the Tier 4 regulation includes such provisions as averaging, banking and trading of emission credits and FEL limits for emission averaging.

C. Cost Estimate:

Replace Wilcox Diesel Engine with APCD Compliant Engine

No.	Qua	Unit	Description	Unit Cost	Total Cost
1	**Construction Cost**				
1.1	1	LS	Replace Wilcox Diesel Engine	$ 50,000.00	$ 50,000
				Project Construction Cost:	$ 50,000
				10% Contingency:	$ 5,000
				Total Construction Cost:	**$ 55,000**
2	**Admin and Engineering**				
2.1	1	LS	Preliminary Engineering, Engineering Plans and Specifications		$ 2,000
2.2	1	LS	Construction Management		$ 2,000
			TOTAL PRELIMINARY PROJECT ESTIMATED COST		**$ 59,000**

D. Project Timeline:

Prepare Plans:	July 2017
Bid Project:	November 2017
Construction:	January 2018

CIP ITEM No. 17

Replace Indian Head Reservoir

A. Project Description / Reasons for Capital Expense

The District contracted a dive inspection on February 2, 2017 to determine the condition of the interior of the tanks. The last inspection occurred October 14, 2014. Inspections occur approximately every three years. The inspection of the Indian Head Tank identified that the tank may be at the end of its useful life and requires replacement.

B. Project Design/Flow

The tank will be replaced with a single 220,000-gallon bolted steel tank. No change in capacity is proposed. The tank will be installed at the same location as the existing tank. The bolted steel tank will be approximately 38 feet in diameter and 24 feet high. The coating will be fusion or powder coated steel.

The estimated life of the tank is approximately 30 years if it is properly maintained. After completion of the tank, it will be filled with water. The water will be tested for Volatile Organic Compounds (VOC) and bacteria prior to putting the tank into service. No change in capacity is proposed.

Figure 4 - Location of Indianhead tank

C. Cost Estimate:

Indian Head Tank Replacement					
No.	Qua	Unit	Description	Unit Cost	Total Cost
1	**Construction Cost**				
1.1	1	LS	Mobilization/ Demobilization, Temporary Facilities, Insurance, Payment Bond, Taxes, Permits, Fees and Similar Expenses	$ 25,000.00	$ 25,000
1.2	1	LS	Demolish existing bolted 220,000 gallon steel tank. Remove and dispose of the tank.	$ 13,500.00	$ 13,500
1.3	1	LS	Provide tank submittal, stamped and signed by a Registered Engineer in the State of California. Payment after acceptance.	$ 2,500.00	$ 2,500
1.4	1	LS	Prepare Tank Pad – Install new galvanized steel ring around the perimeter of the tank. Install 1-inch No. 4 Rock eight inches thick. Install ½" Fiber expansion joint material on top of the rock.	$ 14,000.00	$ 14,000
1.5	1	LS	Furnish and Install OSHA exterior locking ladder kit and railing around the roof hatch	$ 7,500.00	$ 7,500
1.6	1	LS	Install fusion powder coated bolted steel tank, nominal dimensions 24' high and 38' diameter. After installation, complete holiday testing of interior coating and repair all holidays to the satisfaction of the engineer.	$165,000.00	$ 165,000
1.7	1	LS	Install piping, valves, transition couplings, fittings, Tideflex valve, expansion joints, check valves, pipe supports, ductile iron risers, thrust blocks, anti-vortex hardware, and other appurtenances. Connect to existing piping.	$ 4,200.00	$ 4,200
1.8	1	LS	Hydrostatic Testing, VOC Testing, Wash-down and Cleaning of the interior, Disinfection, and Bacteriological Testing. Water provided by the District at no charge.	$ 3,800.00	$ 3,800
				Project Construction Cost:	$ 235,500
				10% Contingency:	$ 23,550
				Total Construction Cost:	**$ 259,050**
2	**Admin and Engineering**				
2.01	1	LS		Preliminary Engineering, Engineering Plans and Specifications	$ 20,000
2.02	1	LS		Construction Management	$ 15,000
				TOTAL PRELIMINARY PROJECT ESTIMATED COST	**$ 294,050**

D. Project Timeline:

Completion FY 2017-2018

CIP ITEM No. 18

Rams Hill #2 Recoating

A. Project Description / Reasons for Capital Expense

Budget: $190,528

The District contracted a dive inspection on October 19, 2016 to determine the condition of the interior of the tanks. The last inspection occurred in 2012. Inspections occur approximately every three years. The inspection of the Twin Tanks has identified areas inside the tank that require repair.

Rams Hill #2 Tank Areas

55’	Diameter
24’	Height

FT^2	Area
4147	interior walls
2376	Interior floor
2376	interior roof
38	Center Support
600	Rafters/etc.
9536	Total Interior

FT^2	Area
2376	exterior roof
4147	exterior shell
6523	Total Exterior

SF=square feet

B. Project Design/Flow

The interior of the galvanized steel tank will be sandblasted - including the columns, rafters, appurtenances to SSPC-SP 10. The exterior shell requires recoating; the roof will be sandblasted to SSPC-SP10 along with any areas that have corroded. The remaining exterior will be pressure washed prior to coating. The contractor is to remove and legally dispose of the spent blast material. OSHA and Cal-OSHA require a safety railing on the roof structure that will be installed on the tank. Some metal repairs inside the tank will be required. The inspection report identified corrosion on the shell, floor, centerpole, roof structure and interior of the drain and level sensor lines. One rafter is missing, and there appear to be some bolts loose. The loose bolts will be replaced along with the missing rafter. Seventy percent of the bolt runs are estimated to be covered with corrosion. Some attachment hardware will need to be replaced on the shell and floor panels. The full extent of the metal repairs will not be known until after the sandblasting is complete. According to the tank

inspection report, if the corrosion is left unaddressed, metal loss could lead to water leakage. The exterior of the tank is in fair condition, only a few small areas will be repainted. The estimated life of the coating is approximately 30 years if it is properly maintained. After completion of the recoating, the tanks will be filled with water. The water will be tested for Volatile Organic Compounds (VOC) and bacteria prior to putting them back into service. No change in capacity is proposed.

C. Cost Estimate:

Rams Hill #2 Rehabilitation

No.	Qua	Unit	Description	Unit Cost	Total Cost
1	**Construction Cost**				
1.1	1	LS	Mobilization/ Demobilization, Temporary Facilities, Construction Sign, Insurance, Payment Bond, Taxes, Permits, Fees and Similar Expenses	$ 16,000.00	$ 16,000.00
1.2	1	LS	Test for lead, chromium and arsenic in interior of tank.	$ 700.00	$ 700.00
1.3	11,912	SF	Sandblast Complete Interior Including Columns, Rafters, Appurtenances, Exterior Roof Coatings and Small Localized Areas on the Exterior Shell (to be located in the field), to SSPC-SP 10. Remove and Legally Dispose of Spent Blast Material.	$ 3.50	$ 41,692.00
1.4	1	LS	Metal Repair Estimate	$ 11,500.00	$ 11,500.00
1.5	9,536	SF	Recoat Interior Surfaces.	$ 4.50	$ 42,912.00
1.6	6,523	SF	Coat Exterior Surfaces	$ 3.50	$ 22,830.50
1.7	1	LS	Coating Inspection and Testing	$ 5,500.00	$ 5,500.00
1.8	2	EA	Replace Manway Gaskets	$ 500.00	$ 1,000.00
1.9	1	LS	Hydrostatic Testing, VOC Testing, Disinfection of Tank, Bacteriological Testing	$ 3,800.00	$ 3,800.00
			Project Construction Cost:		$ 145,935
			10% Contingency:		$ 14,593
			Total Construction Cost:		**$ 160,528**
2	**Admin and Engineering**				
2.1	1	LS	Preliminary Engineering, Engineering Plans and Specifications		$ 15,000
2.2	1	LS	Construction Management		$ 15,000
			TOTAL PRELIMINARY PROJECT ESTIMATED COST		**$ 190,528**

D. Project Timeline:

Project scheduled to be completed in FY 2017-18

CIP ITEM No. 21

Forcemain Replacement at La Casa Del Zorro; Cleanouts on existing forcemain

A. Project Description / Reasons for Capital Expense

Budget: $150,000

The Wastewater Treatment Facility services approximately 20 percent of the community of Borrego Springs. Specifically it serves the Rams Hill residential community and the Town Center area, which includes hotels, a motel, and small business along Palm Canyon Drive. The remaining 80 percent of Borrego Springs is serviced by individual septic tank-subsurface disposal systems.

The sewer is collected and flows by gravity to a pump station located along Borrego Valley Road, approximately 0.6 miles north of Tilting T Drive. The pump station was installed within the past 10 years. The raw sewage is pumped via a sewer forcemain approximately 2.8 miles to a point 150 feet north of Borrego Springs Road at Yaqui Pass Road. The sewer then flows by gravity inside the La Casa Del Zorro Resort property (located at 3845 Yaqui Pass Road in Borrego Springs, CA) via an 18" PVC gravity main owned by the District and then along Borrego Springs Road to the wastewater treatment plant located at 4861 Borrego Springs Road.

There has been a history of high hydrogen sulfide gas levels and odors detected at manholes located downstream of where the sewer force main discharges into the 18-inch gravity pipeline, at or near the La Casa Del Zorro Resort, especially during the high residency season (November through March) and during holidays.

The intention of this project is to install cleanouts on the existing forcemain to allow the District to clean the forcemain.

B. Project Design/Flow

The District will install cleanouts every approximate 500 feet in the existing forcemain. There will be approximately 30 cleanouts to be installed.

C. Cost Estimate:

It is estimated that each cleanout will cost approximately $5,000, therefore the project cost estimate is $150,000.00.

D. Project Timeline:

The project is scheduled to be completed FY 2018-19

CIP ITEM No. 22

Sewer Main Replacement Club Circle

A. Project Description / Reasons for Capital Expense

Budget: $400,000

The District acquired Improvement District 5 (ID-5) in 2008. Club Circle is part of ID-5, and the infrastructure therein was installed in 1960's. The sewer collection system pipelines are composed of a clay material and are at the end of their expected lifetime. The collection system should be replaced within the next eight years and has been scheduled in the CIP.

B. Project Design/Flow

The design will start with a topographic survey that will show the elevations of all the existing tops of manholes, inverts of existing sewer pipe, identify the type and size of pipe, other utilities, rights of ways, existing structures, etc. The design plan will show the locations, size and type of the new sewer pipelines and manholes. The existing sewer system will remain in service until the new sewer collection system is installed. As an alternative, the sewer pipelines may be sliplined, depending on the engineer's recommendations. Sliplining is used to repair leaks or restore structural stability to an existing pipeline. Sliplining is completed by installing a smaller, "carrier pipe" into a larger "host pipe", grouting the annular space between the two pipes, and sealing the ends. The most common material used to slipline an existing pipe is high-density polyethylene (HDPE), but fiberglass-reinforced pipe (FRP) and PVC are also common. Sliplining can be used to stop infiltration and restore structural integrity to an existing pipe. There are two methods used to install a slipline: continuous and segmental.

Continuous sliplining uses a long continuous pipe, such as HDPE, Fusible PVC, or Welded Steel Pipe, that are connected into continuous pieces of any length prior to installation. The continuous carrier pipe is pulled through the existing host pipe starting at an insertion pit and continuing to a receiving pit. Either the insertion pit, the receiving pit, or both can be manholes or other existing access points if the size and material of the new carrier pipe can maneuver the existing facilities.

Segmental sliplining is very similar to continuous sliplining. The difference is primarily based on the pipe material used as the new carrier pipe. When using any bell and spigot pipe such as FRP, PVC, HDPE or Spirally Welded Steel Pipe, the individual pieces of pipe are lowered into place, pushed together, and pushed along the existing pipe corridor. Using either method the annular space between the two pipes must be grouted. In the case of sanitary sewer lines, the service laterals must be reconnected via excavation.

C. Cost Estimate

A budget of $400,000 was allocated in the CIP for this project. Actual costs will depend on the type of rehabilitation or construction selected.

D. Project Timeline

The CIP shows a segmented project, starting FY 2019-20, FY 2021-22 and FY 2024-25.

CIP ITEM No. 24

Lift Station – Aeration and Odor Removal System

A. Project Description / Reasons for Capital Expense

Budget $500,000

The Wastewater Treatment Facility services approximately 20 percent of the community of Borrego Springs. Specifically it serves the Rams Hill residential community and the Town Center area, which includes hotels, a motel, and small business along Palm Canyon Drive. The remaining 80 percent of Borrego Springs is serviced by individual septic tank-subsurface disposal systems.

The sewer is collected and flows by gravity to a pump station located along Borrego Valley Road, approximately 0.6 miles north of Tilting T Drive. The pump station was installed within the past 10 years. The raw sewage is pumped via a sewer forcemain approximately 2.8 miles to a point 150 feet north of Borrego Springs Road at Yaqui Pass Road. The sewer then flows by gravity inside the La Casa Del Zorro Resort property (located at 3845 Yaqui Pass Road in Borrego Springs, CA) via an 18" PVC gravity main owned by the District and then along Borrego Springs Road to the wastewater treatment plant located at 4861 Borrego Springs Road.

There has been a history of high hydrogen sulfide gas levels and odors detected at manholes located downstream of where the sewer force main discharges into the 18-inch gravity pipeline, at or near the La Casa Del Zorro Resort, especially during the high residency season (November through March) and during holidays.

The La Casa Del Zorro Resort has recently installed P-traps upstream of multiple lateral service connections to the Borrego Water District sanitary sewer system. There have been no odor complaints since the P-traps have been installed.

B. Project Design/Flow

To be proactive in case the problem resurfaces, the District has started an engineering investigation to determine the best course of action.

The District has not yet received recommendations for this issue. When the engineering investigation report is complete, the District will review the recommendations therein. The

C. Cost Estimate:

A placeholder was put in the CIP for $500,000 to install the equipment necessary for this project. The engineered estimate will be available after the referenced study is complete.

D. Project Timeline – The CIP shows the project completion in FY 2019-20

CIP ITEM No. 25

Plant Grit Removal at the Headworks

A. Project Description / Reasons for Capital Expense

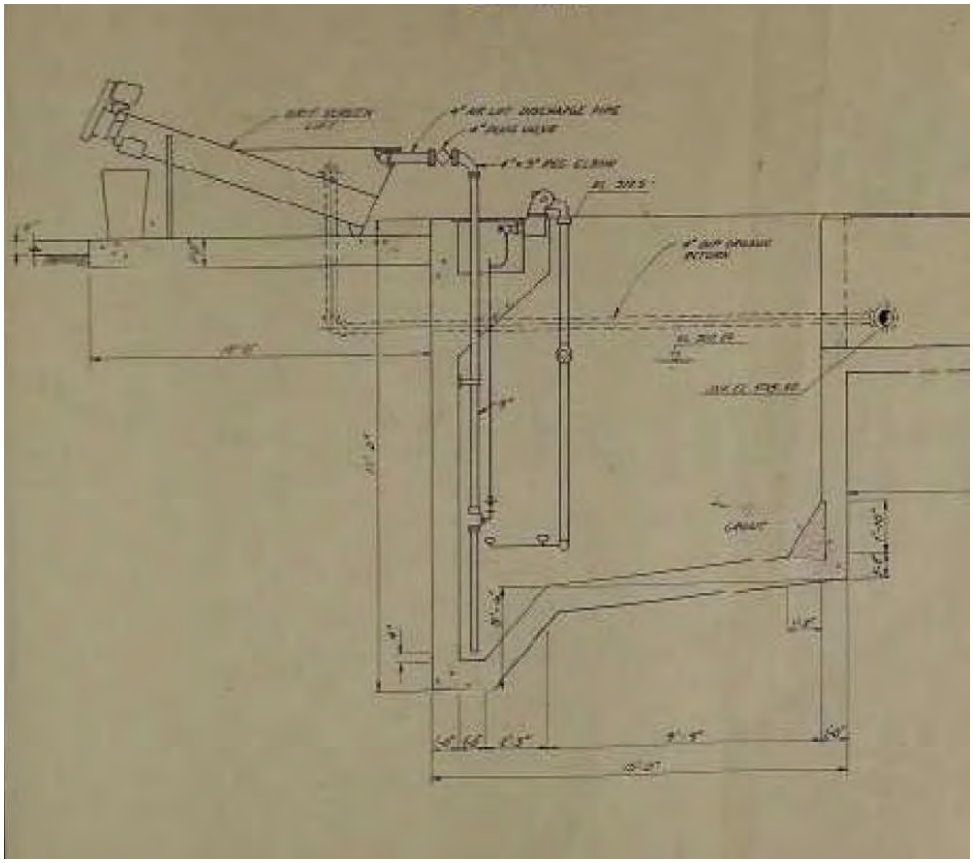
Budget $100,000

The wastewater treatment facility headworks consist of an influent flowmeter (Parshall Flume), a grit settling basin, positive displacement air blower system, and an “auger-style” grit separator. Recent improvements to the headworks include installation of a new ultrasonic flow meter unit, repair of the original bar screen, replacement of comminutor (Muffin Monster) unit, and replacement of the positive-displacement style blower unit that provides aeration to the aerobic sludge digester.

The existing “auger-style” grit separator housing and drive unit are extremely corroded (see photos below), do not adequately process settled grit, and leak raw influent wastewater onto the surface area. Furthermore, according to operations staff, the original air-lift system has not worked properly for quite some time, and should be replaced with a fluid pumping system capable of pumping settled grit and solids from the bottom of the grit chamber to the separator. Without a functional grit removal system, floating solids are transported through the WWTF facility.

B. Project Design/Flow:

The headworks dimensions are 54” tall x 30” wide x 18 ½’ Long. The primary channel includes a Muffin Monster Grinder. There is also a by-pass stationary bar screen. The onsite power is 240V 3 phase 60 Hz. The alternatives for this are to replace the existing failed grit separator, or no action. If nothing is done, solids and particulate matter can enter the WWTF, causing problems with the treatment process and possible effluent violations.



WWTF Headworks Drawing (profile view)

C. Cost Estimate:

ALTERNATIVE 1 - REPLACE GRIT REMOVAL AUGER						
No.	Qua	Unit	Description	Unit Cost		Total Cost
1	**Construction Cost**					
1.00	1	LS	Replace Grit Remover	$ 80,182.00	$	80,182
				Project Construction Cost:	$	80,182
				10% Contingency:	$	8,018
				Total Construction Cost:	**$**	**88,200**
2	**Admin and Engineering**					
2.01	1	LS	Preliminary Engineering, Engineering Plans and Specifications		$	4,000
2.02	1	LS	Construction Management		$	3,000
			TOTAL PRELIMINARY PROJECT ESTIMATED COST		**$**	**95,200**

D. Project Timeline:

The project is scheduled to be completed FY 2017-18

CIP ITEM No. 28

Emergency Water Pipeline Repairs

A. Project Description / Reasons for Capital Expense

Budget $225,000 (average $28,125 per fiscal year)

The District's water distribution system is aging. Some parts of the distribution system were installed in the 1960's and are starting to reach their life expectancy. The pressure in the system is over 100psi in many areas. Each year there are water pipe breaks that the District repairs. The CIP has included these costs as routine repairs each year.

B. Project Design/Flow

When a pipeline breaks, the District responds immediately to repair the leak. If the roadway is affected, the County sends an inspector to the project site.

C. Cost Estimate

The cost in the CIP is based on historical trends.

D. Timeline

The schedule for this item is based on whenever the pipelines break.

CIP ITEM No. 29-39

Pipeline Replacement / Improvement Program

A. Project Description/ Reason for expense.

Water pipelines are out of sight and "out of mind" until there are breaks and water leaks. Many parts of the distribution system are beyond their useful life. Every year the District is proactive in replacing and installing new water pipelines in the distribution system. The District has identified and prioritized several sections of pipelines within the distribution system. They are the following:

10" Bypass at ID1 Booster Station 2
Borrego Springs Road, Walking H Drive to Country Club Road Phase 1 (Pipeline 5)
Borrego Springs Road, Walking H Drive to Country Club Road Phase 2 (Pipeline 5)
T Anchor Drive, Frying Pan Road to Double O Road (Pipeline 6)
Weather Vane Drive, Frying Pan Road to Double O Road (Pipeline 7)
Frying Pan Road, north and south from T Anchor Drive (Pipeline 8)
Double O Road, north and south from T Anchor Drive (Pipeline 9)
Borrego Springs Road, Weather Vane Drive to Barrel Drive (Pipeline 10)
Pipeline for Santiago and ID5 (Pipeline 11)
De Anza Dr. 1600 block west from Yaqui Road (Pipeline 12)

B. Project Design/ Flow

The regularly scheduled water pipeline replacement program is to be completed by in house District staff as they become available.

C. Cost Estimate

Pipeline 5 CIP Line 30 CIP Line 31	8" Water Main from the intersection of Borrego Springs Road and Walking H Drive to the intersection of Borrego Springs Road and Country Club Road. Total length 5850 feet at $70.00 per foot Estimated cost $409,500.00
Pipeline 6	6" Water Main going west to east on T Anchor Drive from Frying Pan Road to Double O Road.

CIP Line 32	Total length 525 feet at $65.00 per foot Estimated cost $34,125.00
Pipeline 7	6" Water Main going west to east on Weather Vane Drive from Frying Pan Road to Double O Road.
CIP Line 33	Total length 525 feet at $65.00 per foot Estimated cost $34,125.00
Pipeline 8	6" Water Main going north and south on Frying Pan Road from T Anchor Drive.
CIP Line 34	Total length 3110 feet at $80.00 per foot Estimated cost $248,000.00
Pipeline 9	6" Water Main going north and south on Double O Road from T Anchor Drive.
CIP Line 35	Total length 3920 feet at $80.00 per foot Estimated cost $313,600.00
Pipeline 10	8" Water Main from intersection of Borrego Springs Road and Weather Vane Drive to the intersection of
CIP Line 36	Borrego Springs Road and Barrel Drive. Total length 1500 feet at $70.00 per foot Estimated cost $105,000.00
Pipeline 11	6" Water Main going east from Double O Road to Di Giorgio
CIP Line 37	Total length 1700 feet at $65.00 per foot Estimated cost $214,000
Pipeline 12	6" Water Main 1600 Block of De Anza Drive
CIP Line 40	Total length 1260 feet at $200.00 per foot Estimated cost $252,000

D. Project Timeline

The CIP shows these projects starting in FY 2017-18 and finishing in FY 2021-22. The completion of these projects is dependent on staff availability, and if there are any unanticipated emergency water pipeline breaks that will change the priority of the replacement schedule.

DESIGN CRITERIA

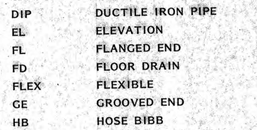
FLOW	
AVERAGE	= 0.25 MGD
PEAK	= 0.75 MGD
PLANT HYDRAULIC CAPACITY	= 2.00 MGD
ULTIMATE PLANT CAPACITY	= 0.50 MGD
WASTEWATER CONCENTRATION	
5-DAY BOD	= 275 mg/l
SUSPENDED SOLIDS	= 275 mg/l
INFLUENT SCREENING	
TYPE	= COMMINUTOR W/ BYPASS BAR SCREEN
CAPACITY	= 1.73 MGD
FLOW METER	
TYPE	= PARSHALL FLUME
SIZE	= 6" PERMANENT W/ 3" NESTED INSERT
GRIT CHAMBER	
TYPE	= AERATED
AIR REQUIREMENT	= 50 CFM
PEAK CAPACITY	= 4.0 MGD
GRIT WASHER	
NUMBER	= 1
GRIT PUMPS	
TYPE	= AIR LIFT
NUMBER	= 2
OXIDATION DITCH	
VOLUME	= 250,000 GAL. (MIN.)
AERATION	= BRUSH AERATORS (2)
BRUSH LENGHT	= 11'-0"
IMMERSION RANGE	= 3 INCHES - 12 INCHES
HORSEPOWER	= 20 HP EACH
DETENTION TIME (@ 0.25 MGD	= 24 HOURS
SECONDARY CLARIFIERS	
NUMBER	= 2 (1 STANDBY)
DIAMETER	= 28'-0"
SIDE WATER DEPTH	= 12'-0"
OVERFLOW RATE (@ 0.25 MGD)	= 406 GPD/SF
WEIR LOADING (@ 0.25 MGD)	= 2842 GPD/LF
DETENTION TIME (@ 0.25 MGD)	= 5.3 HOURS
RETURN SLUDGE PUMPS	
PERCENT RETURN	= 25 - 150 PERCENT
TYPE	= ROTARY LOBE
NUMBER	= 2
CAPACITY	
1 CONSTANT SPEED	= 130 GPM
1 MANUALLY ADJUSTABLE	= 40 - 130 GPM
HORSEPOWER	= 15 HP EACH
FLOW EQUALIZATION BASIN	
VOLUME	= 121,500 GAL.
DEPTH RANGE	= 1'-6" - 10'-3"
AERATION	= FLOATING MECHANICAL (1)
HORSEPOWER	= 10 HP
FILTRATION AID FEED SYSTEM	
FEED PUMPS, NUMBER	= 3 (1 STANDBY)
ALUM	
NORMAL DOSAGE	= 0-20 mg/l
GPD (50% SOLUTION)	= 11.25
POLYMER	
NORMAL DOSAGE	= 0-1 mg/l
GPD (33% SOLUTION)	= 1.25
FILTER FEED PUMPS	
NUMBER	= 2 (1 STANDBY)
TYPE	= VERTICAL TURBINE
CAPACITY	= 200 GPM
PUMPING HEAD	= 77 FEET
HORSEPOWER	= 5 HP
DUAL MEDIA FILTERS	
NUMBER	= 2 (1 STANDBY)
TYPE	= VERTICAL PRESSURE
DIAMETER	= 7'-6"
MEDIA	= 24 INCH ANTHRACITE/12 INCH SAND
NOMINAL FILTER RATE	= 5 GPM/SF
BACKWASH SOURCE	= RECLAIMED WATER SYSTEM
BACKWASH RATE	= 20 GPM/SF (MAX.)
BACKWASH DURATION	= 10 MIN. (MAX.)

SPENT BACKWASH SYSTEM	
SURGE TANK VOLUME	= 18,000 GAL.
SPENT BACKWASH RECYCLE PUMP	
NUMBER	= 1
TYPE	= ROTARY LOBE
CAPACITY	= 25 GPM
CHLORINATORS	
NUMBER	= 2 (1 STANDBY)
TYPE	= COMPOUND LOOP CONTROL
MAXIMUM DOSAGE	= 20 mg/l
MAXIMUM FEED RATE	= 53 LBS/DAY
CHLORINE CONTACT TANK	
VOLUME	= 21,300 GAL.
DETENTION TIME	= 2 HOURS
LENGHT: WIDTH RATIO	= 42:1
PROCESS RELIABILITY POND	
VOLUME	= 500,000 GAL.
SEASONAL STORAGE PONDS	
VOLUME	= 3,600,000 GAL.
RECLAIMED WATER PUMPS	
NUMBER	= 2 (1 STANDBY)
TYPE	= VERTICAL TURBINE
CAPACITY	= 230 GPM
LIFT	= 483 FEET
HORSEPOWER	= 40 HP EACH
WASTE SLUDGE HANDLING	
QUANTITY WASTED (@ 0.25 MGD)	= 385 LBS/DAY 9250 GPD @ 0.5% CONC.
WASTE SLUDGE PUMP (PROVIDES STANDBY FOR RETURN SLUDGE PUMPS)	
TYPE	= ROTARY LOBE
CAPACITY	= 40 - 130 GPM (MANUALLY ADJUSTABLE)
HORSEPOWER	= 15 HP
AERATED SLUDGE HOLDING TANK	
VOLUME	= 30,000 GAL.
AIR REQUIREMENTS	= 150 CFM
SLUDGE DRYING BEDS	
NUMBER	= 2
AREA	= 2,600 SF EACH
SCUM/TANK DRAIN PUMP	
TYPE	= SUBMERSIBLE
CAPACITY	= 50 GPM
LIFT	= 33 FEET
HORSEPOWER	= 3 HP

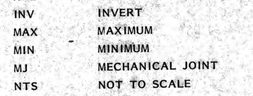
ABBREVIATIONS & SYMBOLS

ACP	ASBESTOS CEMENT PIPE
BFV	BUTTERFLY VALVE
BSP	BLACK STEEL PIPE
CIP	CAST IRON PIPE
CISP	CAST IRON SOIL PIPE
CML & CSP	CEMENT MORTAR LINED & COATED STEEL PIPE
CMLSP	CEMENT MORTAR LINED STEEL PIPE
CO	CLEANOUT
CPLG	COUPLING
DIP	DUCTILE IRON PIPE
EL	ELEVATION
FL	FLANGED END
FD	FLOOR DRAIN
FLEX	FLEXIBLE
GE	GROOVED END
HB	HOSE BIBB
HWL	HIGH WATER LEVEL
INV	INVERT
MAX	MAXIMUM
MIN	MINIMUM
MJ	MECHANICAL JOINT
NTS	NOT TO SCALE
PE	PLAIN END
PVC	POLYVINYAL CHLORIDE PIPE
RT	RING-TITE
VCP	VITRIFIED CLAY PIPE
VTR	VENT TO ROOF
WSP	WELDED STEEL PIPE

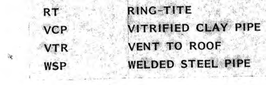
	BUTTERFLY VALVE
	PLUG VALVE
	CHECK VALVE
	FIRE HYDRANT
	UTILITY HYDRANT
	MANHOLE
	CLEANOUT
	GATE VALVE
	BALL VALVE
	FLOW CONTROL VALVE
℄	CENTERLINE
ø	DIAMETER
∠	ANGLE
@	AT
ℙ	PLATE



DETAIL



SECTION



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REGISTERED PROFESSIONAL ENGINEER Charles J. Bachmann No. 30198 CIVIL 7/24/81 STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER MATT J. TEBBETTS No. C 24089 CIVIL 7/4/81 STATE OF CALIFORNIA

APPROVED BY:
Judith G. Borrell
Asst General Manager
7/27/81
Date

REVISIONS		
Mark	Date	Description

BORREGO WATER DISTRICT

RAM'S HILL RECLAMATION PLANT

INDEX, ABBREVIATIONS, SYMBOLS AND DESIGN CRITERIA

Date JULY 1981	LOWRY & ASSOCIATES	Drawing
Designed CB	17748 SKY PARK BOULEVARD, IRVINE, CALIFORNIA 92714 — 3505 CAMINO DEL RIO SOL SUITE 334, SAN DIEGO, CALIFORNIA 92108	
Drawn PG		Sht. 2 of 61
Checked JK		

Borrego WWTP INFLUENT

Jan-14	Flow	BOD	TSS
30 Day mean	86,324	40.50	ND
Maximum	119,653	46.00	ND
Minimum	10,263	35.00	ND

Feb-14	Flow	BOD	TSS
30 Day mean	87,506	446.50	15
Maximum	106,410	800.00	20
Minimum	9,663	93.00	10

Mar-14	Flow	BOD	TSS
30 Day mean	89,558	410.00	ND
Maximum	106,410	800.00	10
Minimum	48,200	20.00	ND

Apr-14	Flow	BOD	TSS
30 Day mean			ND
Maximum			ND
Minimum			ND

May-14	Flow	BOD	TSS
30 Day mean	64,549	130.00	120.00
Maximum	88,616		
Minimum	46,164		

Jun-14	Flow	BOD	TSS
30 Day mean	50,158		
Maximum	65,909		
Minimum	25,122		

Jul-14	Flow	BOD	TSS
30 Day mean	49,651		
Maximum	66,046		
Minimum	37,759		

Aug-14	Flow	BOD	TSS
30 Day mean	57,767		
Maximum	93,584		
Minimum	43,756		

Sep-14	Flow	BOD	TSS
30 Day mean	57,092	24.00	18.00
Maximum	78,258		
Minimum	36,396		

Borrego WWTP EFFLUENT

BOD	TSS	SS	T.Nitro.	TDS	pH
ND	9.00	ND	40.00	555	7.00
ND	9.00	ND	41.00	600	7.00
ND	9.00	ND	39.00	510	7.00

BOD	TSS	SS	T.Nitro.	TDS	pH
5.50	9.50	ND	47.00	454.00	6.90
6.00	10.00	ND	48.00	900.00	6.90
5.00	6.00	ND	46.00	8.00	6.90

BOD	TSS	SS	T.Nitro.	TDS	pH
7.50	8.50	ND	48.00	650.00	6.80
9.00	10.00	ND	48.00	680.00	6.90
6.00	9.00	ND	48.00	620.00	6.70

BOD	TSS	SS	T.Nitro.	TDS	pH

BOD	TSS	SS	T.Nitro.	TDS	pH
ND	6.00	ND	37.00	620.00	7.30

BOD	TSS	SS	T.Nitro.	TDS	pH

BOD	TSS	SS	T.Nitro.	TDS	pH

BOD	TSS	SS	T.Nitro.	TDS	pH

BOD	TSS	SS	T.Nitro.	TDS	pH
ND	11.00	ND	24.00	480.00	7.40

Borrego WWTP INFLUENT

Oct-14	Flow	BOD	TSS
30 Day mean	64,040	27.00	20.00
Maximum	99,325	27.00	22.00
Minimum	50,440	27.00	18.00

Nov-14	Flow	BOD	TSS
30 Day mean	85,583	41.00	74.00
Maximum	115,931	50.00	130.00
Minimum	69,927	32.00	18.00

Dec-14	Flow	BOD	TSS
30 Day mean	81,408	58.00	76.00
Maximum	118,979	69.00	100.00
Minimum	65,955	47.00	52.00

Borrego WWTP EFFLUENT

BOD	TSS	SS	T.Nitro.	TDS	pH
ND	10.50	ND	30.50	560.00	7.45
ND	12.00	ND	35.00	620	7.70
ND	9.00	ND	26.00	500	7.20

BOD	TSS	SS	T.Nitro.	TDS	pH
ND	7.50	ND	37.50	570.00	7.20
ND	8.00	ND	38.00	600.00	7.30
ND	7.00	ND	37.00	540.00	7.10

BOD	TSS	SS	T.Nitro.	TDS	pH
ND	ND	ND	34.50	595.00	7.15
ND	ND	ND	36.00	630.00	7.20
ND	ND	ND	33.00	560.00	7.10

Borrego WWTP INFLUENT

Jan-15	Flow	BOD	TSS
30 Day mean	87,237	60.00	92.50
Maximum	117,818	73.00	150.00
Minimum	70,793	47.00	35.00

Feb-15	Flow	BOD	TSS
30 Day mean	93,983	140.50	308.00
Maximum	116,027	230.00	580.00
Minimum	80,827	51.00	36.00

Mar-15	Flow	BOD	TSS
30 Day mean	91,426	159.00	275.00
Maximum	112,102	250.00	440.00
Minimum	78,700	68.00	110.00

Apr-15	Flow	BOD	TSS
30 Day mean	68,494	29.00	32.00
Maximum	96,612		
Minimum	9,229		

May-15	Flow	BOD	TSS
30 Day mean	52,264		
Maximum	79,225		
Minimum	39,344		

Jun-15	Flow	BOD	TSS
30 Day mean	44,690		
Maximum	61,381		
Minimum	36,361		

Jul-15	Flow	BOD	TSS
30 Day mean	41,396		
Maximum	54,820		
Minimum	31,154		

Aug-15	Flow	BOD	TSS
30 Day mean	50,444	ND	48
Maximum	71,439		
Minimum	35,314		

Sep-15	Flow	BOD	TSS
30 Day mean	47,464		
Maximum	63,745		
Minimum	37,567		

Borrego WWTP EFFLUENT

BOD	TSS	SS	T.Nitro.	TDS	pH
ND	ND	0.1	34.50	735.00	7.00
ND	ND	ND	38.00	800.00	7.10
ND	ND	ND	31.00	670.00	6.90

BOD	TSS	SS	T.Nitro.	TDS	pH
ND	20.00	ND	32.50	550.00	7.55
ND	34.00	ND	35.00	590.00	7.60
ND	6.00	ND	30.00	510.00	7.50

BOD	TSS	SS	T.Nitro.	TDS	pH
ND	9.50	ND	26.45	595.00	7.40
ND	10.00	ND	44.00	670.00	7.80
ND	9.00	ND	8.90	520.00	7.00

BOD	TSS	SS	T.Nitro.	TDS	pH
ND	ND	ND	13.00	560.00	7.90

BOD	TSS	SS	T.Nitro.	TDS	pH

BOD	TSS	SS	T.Nitro.	TDS	pH

BOD	TSS	SS	T.Nitro.	TDS	pH

BOD	TSS	SS	T.Nitro.	TDS	pH
ND	ND	ND	23.00	490.00	7.70

BOD	TSS	SS	T.Nitro.	TDS	pH

Borrego WWTP INFLUENT

Oct-15	Flow	BOD	TSS
30 Day mean	58,497	34.00	65.50
Maximum	91,026	36.00	94.00
Minimum	47,032	32.00	37.00

Nov-15	Flow	BOD	TSS
30 Day mean	80,019	82.00	101.00
Maximum	122,270	120.00	160.00
Minimum	57,200	44.00	42.00

Dec-15	Flow	BOD	TSS
30 Day mean	80,019	82.00	101.00
Maximum	122,270	120.00	160.00
Minimum	57,200	44.00	42.00

Borrego WWTP EFFLUENT

BOD	TSS	SS	T.Nitro.	TDS	pH
ND	7.00	ND	31.50	540.00	7.65
ND	8.00	ND	32.00	550.00	7.80
ND	6.00	ND	31.00	530.00	7.50

BOD	TSS	SS	T.Nitro.	TDS	pH
6.00	8.00	ND	36.50	545.00	7.30
ND	11.00	ND	37.00	580.00	7.40
ND	5.00	ND	36.00	510.00	7.20

BOD	TSS	SS	T.Nitro.	TDS	pH
6.00	8.00	ND	36.50	545.00	7.30
ND	11.00	ND	37.00	580.00	7.40
ND	5.00	ND	36.00	510.00	7.20

Borrego WWTP INFLUENT

Jan-16	Flow	BOD	TSS
30 Day mean	91,057	118.00	131.00
Maximum	121,702	160.00	210.00
Minimum	70,762	76.00	52.00

Feb-16	Flow	BOD	TSS
30 Day mean	101,353	190.00	195.00
Maximum	149,016	240.00	230.00
Minimum	80,218	140.00	160.00

Mar-16	Flow	BOD	TSS
30 Day mean	99,499	660.00	135.00
Maximum	161,411	1,200.00	150.00
Minimum	80,455	120.00	120.00

Apr-16	Flow	BOD	TSS
30 Day mean	80,726		
Maximum	106,806		
Minimum	63,337		

May-16	Flow	BOD	TSS
30 Day mean	62,126		
Maximum	93,047		
Minimum	40,804		

Jun-16	Flow	BOD	TSS
30 Day mean	51,003	100.00	160
Maximum	70,678		
Minimum	37,747		

Jul-16	Flow	BOD	TSS
30 Day mean	47,561		
Maximum	69,636		
Minimum	32,191		

Aug-16	Flow	BOD	TSS
30 Day mean	45,444		
Maximum	64,748		
Minimum	35,346		

Sep-16	Flow	BOD	TSS
30 Day mean	45,154	ND	26.00
Maximum	64,748		
Minimum	35,346		

Borrego WWTP EFFLUENT

BOD	TSS	SS	T.Nitro.	TDS	pH
5.00	7.00	ND	26.00	585.00	7.30
ND	8.00	ND	32.00	660.00	7.60
ND	6.00	ND	20.00	510.00	7.00

BOD	TSS	SS	T.Nitro.	TDS	pH
ND	7.50	ND	27.00	535.00	7.45
ND	8.00	ND	29.00	580.00	7.60
ND	7.00	ND	26.00	490.00	7.30

BOD	TSS	SS	T.Nitro.	TDS	pH
11.50	27.00	ND	43.00	665.00	6.95
14.00	28.00	ND	48.00	670.00	7.20
9.00	26.00	ND	38.00	660.00	6.70

BOD	TSS	SS	T.Nitro.	TDS	pH

BOD	TSS	SS	T.Nitro.	TDS	pH

BOD	TSS	SS	T.Nitro.	TDS	pH
ND	ND	ND	43	640	6.58

BOD	TSS	SS	T.Nitro.	TDS	pH

BOD	TSS	SS	T.Nitro.	TDS	pH

BOD	TSS	SS	T.Nitro.	TDS	pH
ND	13.00	ND	31.00	590.00	7.20

Borrego WWTP INFLUENT

Oct-16	Flow	BOD	TSS
30 Day mean	68,171	39.50	75.00
Maximum	90,055	42.00	120.00
Minimum	50,199	37.00	30.00

Nov-16	Flow	BOD	TSS
30 Day mean	82,381	41.00	44.00
Maximum	117,504	43.00	46.00
Minimum	62,205	39.00	42.00

Dec-16	Flow	BOD	TSS
30 Day mean	85,649	56.55	41.00
Maximum	118,674	80.00	56.00
Minimum	67,077	33.00	26.00

Borrego WWTP EFFLUENT

BOD	TSS	SS	T.Nitro.	TDS	pH
ND	6.00	ND	29.50	555.00	6.85
ND	6.00	ND	30.00	570.00	6.87
ND	6.00	ND	29.00	540.00	6.84

BOD	TSS	SS	T.Nitro.	TDS	pH
ND	10.00	ND	41.00	610.00	6.94
ND	10.00	ND	41.00	620.00	6.94
ND	10.00	ND	41.00	600.00	6.94

BOD	TSS	SS	T.Nitro.	TDS	pH
ND	6.00	ND	36.00	595.00	7.20
ND	6.00	ND	39.00	600.00	7.54
ND	6.00	ND	33.00	590.00	6.87

Borrego WWTP INFLUENT

Jan-17	Flow	BOD	TSS
30 Day mean	96,603	34.50	28.50
Maximum	117,522	39.00	32.00
Minimum	74,309	30.00	25.00

Feb-17	Flow	BOD	TSS
30 Day mean	98,624	114.00	89.00
Maximum	132,186	140.00	110.00
Minimum	82,016	88.00	68.00

Mar-17	Flow	BOD	TSS
30 Day mean	128,802	175.00	272.00
Maximum	208,510	220.00	480.00
Minimum	96,859	130.00	64.00

Apr-17	Flow	BOD	TSS
30 Day mean	135,794		
Maximum	363,847		
Minimum	94,019		

May-17	Flow	BOD	TSS
30 Day mean	50,345	49.00	74.00
Maximum	85,150	49.00	74.00
Minimum	20,030	49.00	74.00

Jun-17	Flow	BOD	TSS
30 Day mean	45,139		
Maximum	73,100		
Minimum	34,400		

Jul-17	Flow	BOD	TSS
30 Day mean			
Maximum	Pending		
Minimum			

Aug-17	Flow	BOD	TSS
30 Day mean			
Maximum	Pending		
Minimum			

Sep-17	Flow	BOD	TSS
30 Day mean			
Maximum	Pending		
Minimum			

Borrego WWTP EFFLUENT

BOD	TSS	SS	T.Nitro.	TDS	pH
ND	4.00	ND	24.05	515.00	7.01
ND	4.00	ND	20.00	520.00	7.03
ND	4.00	ND	8.10	510.00	7.00

BOD	TSS	SS	T.Nitro.	TDS	pH
ND	4.50	0.1	7.60	510.00	7.21
ND	7.00	0.1	11.00	520.00	7.34
ND	2.00	0.1	4.20	500.00	7.08

BOD	TSS	SS	T.Nitro.	TDS	pH
16.00	20.50	0.3	15.90	550.00	7.84
20.00	37.00	0.3	24.00	610.00	7.90
12.00	4.00	0.3	7.70	490.00	7.78

BOD	TSS	SS	T.Nitro.	TDS	pH

BOD	TSS	SS	T.Nitro.	TDS	pH
ND	16.00	0.3	36.00	670.00	6.99
ND	16.00	0.3	36.00	670.00	7.79
ND	16.00	0.3	36.00	670.00	6.08

BOD	TSS	SS	T.Nitro.	TDS	pH

BOD	TSS	SS	T.Nitro.	TDS	pH

BOD	TSS	SS	T.Nitro.	TDS	pH

BOD	TSS	SS	T.Nitro.	TDS	pH

Borrego WWTP INFLUENT

Oct-17	Flow	BOD	TSS
30 Day mean			
Maximum	Pending		
Minimum			

Nov-17	Flow	BOD	TSS
30 Day mean			
Maximum	Pending		
Minimum			

Dec-17	Flow	BOD	TSS
30 Day mean			
Maximum	Pending		
Minimum			

Borrego WWTP EFFLUENT

BOD	TSS	SS	T.Nitro.	TDS	pH

BOD	TSS	SS	T.Nitro.	TDS	pH

BOD	TSS	SS	T.Nitro.	TDS	pH

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

ORDER NO. R7-2007-0053

WASTE DISCHARGE REQUIREMENTS
FOR
BORREGO WATER DISTRICT, OWNER/OPERATOR
RAMS HILL WASTEWATER TREATMENT FACILITY
Borrego Springs – San Diego County

The California Regional Water Quality Control Board, Colorado River Basin Region, finds that:

1. Borrego Water District, P. O. Box 1870, Borrego Springs, California 92004, (hereinafter referred to as the Discharger), submitted an updated Report of Waste Discharge (ROWD) to the California Regional Water Quality Control Board, Colorado River Basin Region (Regional Board), on September 14, 2005, for the Rams Hill Wastewater Treatment Facility.

2. The property for the Wastewater Treatment Facility (WWTF) (Assessor's Parcel No. 200-120-42 and 200-120-41) is located about four miles southeast of Borrego Springs in the E 1/2 of Section 23, T11S, R6E, SBB&M.

Wastewater Treatment and Disposal Facilities

3. The WWTF includes a comminutor, parshall flume, grit chamber, an oxidation ditch, two secondary clarifiers, a flow equalization basin, three evaporation-percolation ponds, and sludge drying beds. The WWTF has a design capacity of 250,000 gallons per day (gpd).

4. Current flows into the Facility average approximately 60,000 gpd. During the summer, flows average approximately 20,000 gpd. Effluent from the treatment Facility is discharged to evaporation/percolation ponds. Sludge from the Facility is discharged to on-site drying beds for stabilization. The sludge is removed every four to five years for off-site disposal at a waste management facility approved by the Regional Board.

5. The WWTF services approximately 20 percent of the community of Borrego Springs' specifically, the Rams Hill residential community and the Town Center area, which includes hotels, a motel, and small business along Palm Canyon Drive. The remaining 80 percent of Borrego Springs is serviced by individual septic tank-subsurface disposal systems.

6. The discharge from the WWTF is currently regulated by Waste Discharge Requirements Board Order No. 90-032. Board Order No. 90-032 is neither adequate nor consistent with the current plans and policies of the Board.

Hydrogeological Conditions

7. The WWTF is about 520 feet above mean sea level. Surface water runs off as sheet flow, draining to the east.

8. Soils at the WWTF from ground surface to approximately 35 feet below ground surface (bgs) consist of fine to coarse sands, and silty clays.

9. Average annual precipitation for the area is 6.8 inches, and average annual evaporation is 50 inches. Temperatures in the Borrego Springs area can reach 120° F in summer.

10. The Discharger owns and operates a network of eleven groundwater wells that provide domestic water for the community. Groundwater quality in Borrego Springs varies from good to excellent. Depth to first encountered groundwater is approximately 60 feet bgs.

11. The Discharger reports that domestic water for the sewered portion of the community is supplied by four wells. The wells are reportedly upgradient of the WWTF and show the following constituent concentrations for 2006:

Constituent	ID1–Well 12	ID1–Well 16	ID4–Well 3	ID4–Well 11
Total Dissolved Solids	410	370	790	430
Chloride	52	75	71	46
Nitrate-Nitrogen	0.32	1.2	2.6	0.43
Sulfate	92	58	390	90
Fluoride	0.5	0.5	0.4	0.3

Basin Plan, Beneficial Uses, and Regulatory Considerations

12. The Water Quality Control Plan for the Colorado River Basin Region of California (Basin Plan), as amended to date, designates the beneficial uses of ground and surface waters in this Region.

13. The discharge is taking place in the Anza-Borrego Hydrological Unit. The beneficial uses of groundwater in the Anza-Borrego Hydrological Unit are municipal supply, agricultural supply, and industrial supply.

14. The Basin Plan establishes narrative and numeric water quality objectives for groundwater that Waste Discharge Requirements (WDRs) implement. For groundwater designated as municipal and domestic supply, the numeric objectives are the maximum contaminant levels (MCLs), and bacteriological limits specified in Section 64421 et seq. of Title 22, California Code of Regulations (CCR). Regarding narrative objectives, the Basin Plan states in relevant part that:

    "Groundwater...shall not contain taste or odor producing substances in concentrations that adversely affect beneficial uses as a result of human activity..." (Basin Plan, page 3-9.)

    "Discharges of water softener regeneration brines...to disposal facilities which ultimately discharge in areas where such wastes can percolate to ground water usable for domestic and municipal purposes are prohibited." (Basin Plan, page 3-9.)

15. These WDRs implement narrative and numeric water quality objectives established by the Basin Plan for ground and surface waters.

16. The discharge authorized herein, and treatment and storage facilities associated with the discharge of treated municipal wastewater, except for discharges of residual sludge and solid waste, are exempt from the requirements of Title 27, CCR, Section 20005 et seq. (hereinafter Title 27). The exemption, pursuant to Section 20090(a) of Title 27, is based on the following:

    a. The waste consists primarily of domestic sewage and treated effluent;
    b. The WDRs are consistent with water quality objectives; and
    c. The treatment and disposal facilities described herein are associated with a domestic wastewater treatment facility.

17. State Water Resources Control Board (State Board) Resolution No. 68-16 ("Policy with Respect to Maintaining High Quality Waters of the State") (hereinafter Resolution No. 68-16) requires a regional board in regulating the discharge of waste to maintain high quality waters of the state (i.e., background water quality) until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in plans and policies (e.g. violation of any water quality objective). The discharge is required to meet WDRs that result in the best practicable treatment or control necessary to assure that pollution or nuisance will not occur, and highest water quality consistent with maximum benefit to the people will be maintained.

18. Some degradation of groundwater from the discharge to the disposal ponds is consistent with Resolution No. 68-16 provided that degradation:

    a. Is confined to a reasonable area;
    b. Is minimized by means of full implementation, regular maintenance, and optimal operation of best practicable treatment and control (BPTC) measures;
    c. Is limited to waste constituents typically encountered in domestic wastewater; and
    d. Does not result in water quality less than that prescribed in the Basin Plan, including violation of any water quality objective.

19. The discharge from the WWTF as permitted herein reflects BPTC for wastewater. The control is intended to assure the discharge does not create a condition of pollution or of nuisance, and that the highest water quality defined by groundwater limits will be maintained, which is consistent with the antidegradation provisions of Resolution No. 68-16. The WWTF incorporates:

    a. Technology for secondary treated domestic wastewater;
    b. Sludge handling facilities;
    c. An operation and maintenance manual;
    d. Staffing to assure proper operation and maintenance; and
    e. A standby emergency power generator of sufficient size to operate the treatment Facility and ancillary equipment during commercial power loss.

20. Waste constituents in typical domestic WWTF effluent that present the greatest risk to groundwater quality are nitrogen, coliforms (pathogen-indicator organisms), and dissolved salts (TDS). The proposed WWTF provides substantial removal of soluble organic matter and solids. It also reduces fecal coliform densities by 90 to 99% however

the plant is ineffective reducing TDS, which in effluent discharged to ponds will concentrate through evaporation before percolating into the subsurface.

21. Given the above, disposal ponds are likely to degrade groundwater by increasing TDS. However, the degradation should be limited to the area directly underlying and immediately downgradient of the disposal ponds and limited to salinity constituents.

22. The typical incremental addition of dissolved salts from domestic water usage is 150 to 380 mg/L (i.e., 150 < $TDS_{effluent}$ –$TDS_{water\ supply}$< 380 mg/L). Excepting the TDS reported for ID4-Well 3, the TDS of groundwater supplied to residents and businesses is below the lower TDS limit prescribed by Title 22, CCR (i.e., it is of excellent quality). The TDS of the effluent discharged to the disposal ponds is reportedly 540 mg/L.

23. The Discharger has not provided the flow-weighted average TDS concentration of domestic water needed to determine the current incremental addition of TDS from domestic water usage. Likewise, the Discharger has not investigated, and appropriately addressed, the extent of water softener regeneration brine discharges into the sewage collection system (e.g., eliminate brine discharges to the extent practicable to comply with the Basin Plan). At such time, this Order may be reopened to establish a more appropriate TDS effluent limit for the discharge.

24. For domestic wastes without water softener discharges, a TDS effluent limit of 500 mg/L limits salt degradation to a reasonable amount, and reasonably protects present and anticipated, future uses of groundwater.

25. Groundwater limits equal to water quality objectives for indicator waste constituents and parameters are appropriate because they maintain background water quality to the maximum extent practicable. Economic prosperity of local communities and associated industry/commerce is of maximum benefit to the people of California. Therefore, it is reasonable to allow groundwater degradation immediately beneath the WWTF to accommodate growth, provided the terms and conditions of the Basin Plan are not violated.

26. This Order prescribes groundwater monitoring to establish background water quality, and to ensure compliance with Basin Plan objectives. To ensure groundwater degradation is limited, compliance with objectives will be determined through groundwater monitoring wells designated as points of compliance (POCs) to the extent they are necessary. In this context, the Discharger is investigating background water quality to allow the Regional Board to make a determination on appropriate groundwater protection standards and whether POCs are necessary.

27. Section 13241 of the California Water Code (CWC) requires the Regional Board to consider various factors, including economics, when adopting water quality objectives. Water Code Section 13263 requires the Regional Board to address factors in Section 13241 when adopting WDRs. The State Board, however, has held that Regional Boards need not address Section 13241 factors when implementing existing water quality objectives in WDRs, given that the factors were considered when initially

adopting water quality objectives. These WDRs implement adopted water quality objectives. Therefore, no additional analysis of Section 13241 factors is required.

28. The Monitoring and Reporting Program No. R7-2007-0053 is necessary to determine compliance with WDRs, and to determine Facility impacts, if any, to receiving water.

Other

29. Federal regulations for storm water discharges were promulgated by the United States Environmental Protection Agency (USEPA) (40 CFR Parts 122, 123, and 124). The regulations require specific categories of facilities which discharge storm water associated with industrial activity to obtain National Pollutant Discharge Elimination System (NPDES) permits, and to implement Best Conventional Pollutant Technology (BCT) and Best Available Technology Economically Achievable (BAT) to reduce or eliminate industrial storm water pollution.

30. The State Board adopted Order No. 97-03-DWQ (General Permit No. CAS000001) specifying WDRs for storm water discharges associated with industrial activities, excluding construction activities, and requiring submittal of a Notice of Intent by industries for coverage under the Permit.

31. The Discharger indicates that there are no discharges of pollutants, as defined in 33 U.S.C. Section 1362(12), from this site. Therefore, an NPDES permit is not necessary for this Facility.

32. Pursuant to CWC Section 13263(g), the discharge of waste is a privilege, not a right. Adoption of this Order does not create a vested right to continue this waste discharge.

CEQA and Public Participation

33. In accordance with Section 15301, Chapter 3, Division 6, Title 14 of the California Code of Regulations, the issuance of WDRs, which govern the operation of an existing facility involving negligible or no expansion of use beyond that previously existing, is categorically exempt from the provisions of the California Environmental Quality Act (CEQA) (Pub. Resources Code, Section 21000 et seq.).

34. The Board has notified the Discharger and all known interested agencies and persons of its intent to update WDRs for this discharge, and has provided them with an opportunity for a public meeting, and an opportunity to submit comments.

35. The Board, in a public meeting, heard and considered all comments pertaining to this discharge.

IT IS HEREBY ORDERED, that Board Order No. 90-032 be rescinded, and in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, the Discharger shall comply with the following:

A. DISCHARGE PROHIBITIONS

1. Discharge of wastes to surface waters or surface water drainage courses is prohibited.

2. Discharge of waste classified as 'hazardous,' as defined in Section 2521(a) of Title 23, CCR, Section 2510 et seq., or 'designated,' as defined in California Water Code Section 13173, is prohibited.

3. Bypass or overflow of untreated or partially treated waste is prohibited, except as allowed in Provision E.12.

4. Discharge of waste from the sewer collection system at any point upstream of the WWTF is prohibited.

5. Discharge of wastewater from the WWTF other than into the evaporation/percolation ponds described in Finding Nos. 3 and 4, above, is prohibited.

6. Discharges of water softener regeneration brines, other mineralized wastes, and toxic wastes to disposal ponds are prohibited.

B. DISCHARGE SPECIFICATIONS

1. The average monthly discharge flow from the Facility into the disposal ponds shall not exceed 250,000 gallons-per-day.

2. Effluent discharged into the ponds shall not exceed the following limits:

Constituent	Unit	Monthly Average
BOD_5[1]	mg/L[2]	30
Total Suspended Solids	mg/L	30
Settleable Matter	ml/L[3]	0.3

[1] 5-day biochemical oxygen demand at 20 °C.
[2] milligrams per liter
[3] milliliters per liter.

3. Ponds shall not have a pH below 6.0 or above 9.0.

4. The treatment or disposal of wastes from the Facility shall not cause pollution or nuisance, as defined in Sections 13050(l) and 13050(m) of Division 7 of the California Water Code.

5. Public contact with wastewater shall be precluded or controlled through such means as fences and signs, or acceptable alternatives.

6. The Discharger shall not cause degradation of any water supply.

7. No waste constituent shall be released or discharged, or placed where it will be released or discharged, in concentrations that cause violation of groundwater limits.

8. The WWTF (treatment, storage, and disposal areas, etc.) shall be operated and maintained to prevent inundation or washout due to floods with a 100-year return frequency.

9. Objectionable odor originating at the WWTF shall not be perceivable beyond the limits of the WWTF.

10. As a means of discerning compliance with Discharge Specification B.9 above, the dissolved oxygen content in the upper one foot of wastewater in all ponds shall not be less than 1.0 mg/L.

11. Freeboard shall never be less than two feet in any pond (measured vertically). Lesser freeboard may be allowed if certified in writing by a California registered civil engineer as adequate to prevent overtopping, overflows, or levee failures.

12. Ponds shall have sufficient capacity to accommodate allowable wastewater flow and design seasonal precipitation. Design seasonal precipitation shall be based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns.

13. Ponds shall be managed to prevent breeding of mosquitoes. In particular:

    a. An erosion control plan should assure that small coves and irregularities are not created around the perimeter of the water surface.
    b. Weeds shall be minimized through control of water depth, harvesting, and herbicides.
    c. Dead algae, vegetation, and debris shall not accumulate on the water surface.

14. Adequate measures shall be taken to assure that flood or surface drainage waters do not erode or otherwise render portions of the discharge facilities inoperable.

C. SLUDGE DISPOSAL

Sludge defined in this document is solid, semisolid, and liquid residues removed during primary, secondary, or advanced wastewater treatment processes. Solid waste refers to grit and screening material generated during preliminary treatment. Residual sludge is sludge that will not undergo further treatment at the WWTF. Biosolids are sludge that is treated, tested, and demonstrated to be beneficial, and legal to use pursuant to federal and state regulations, as a soil amendment for agriculture, silviculture, horticulture, and land reclamation.

1. Collected screenings, biosolids, grease and oil, and other solids removed from liquid wastes shall be disposed of in a manner consistent with Title 27 and approved by the Executive Officer.

2. Treatment and storage of sludge generated by the WWTF shall be confined to the Facility property, and conducted in a manner that precludes infiltration of waste constituents into soils in concentrations that will violate groundwater limits.

3. Storage of residual sludge, solid waste, and biosolids on property of the WWTF shall be temporary, and controlled/contained in a manner that minimizes leachate formation, and precludes infiltration of waste constituents into soil in concentrations that will violate groundwater limits.

4. Any proposed change in biosolids use or disposal practice, from a previously approved use/practice, shall be reported to the Regional Board Executive Officer and U.S. Environmental Protection Agency Regional Administrator at least 90 days in advance of the change.

5. Use and disposal of sludge shall comply with existing Federal and State laws and regulations, including permitting requirements and technical standards included in Title 40 of the Code of Federal Regulations (CFR), Part 503. If the Federal government delegates to the State and Regional Boards the authority to implement regulations contained in 40 CFR Part 503, this Order may be reopened to incorporate time schedules and technical standards. The Discharger must comply with the standards and time schedules contained in 40 CFR Part 503 whether or not incorporated into this Order.

D. GROUNDWATER LIMITS

The discharge to disposal ponds, in combination with other sources, shall not cause groundwater at the Facility to:

1. Contain waste constituents in concentrations statistically greater than receiving water limits, where specified below, or background water quality where not specified. (For purposes of comparison, background water quality shall be determined when background monitoring provides sufficient data. Quality determined in this manner establishes "water quality protection standards.")

2. Contain chemicals, heavy metals, or trace elements in concentrations that adversely affect beneficial uses or exceed maximum contaminant levels specified in the 22 CCR, Division 4, Chapter 15.

3. Exceed a most probable number of total coliform organisms of 2.2/100 ml over any seven-day period.

4. Exceed concentrations of radionuclides specified in 22 CCR, Division 4, Chapter 15.

5. Contain taste or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses.

6. Contain chemical constituents in concentrations that adversely affect agricultural use.

7. Exhibit a pH less than 6.5 or greater than 8.5.

E. PROVISIONS

1. The Discharger shall comply with "Monitoring and Reporting Program No. R7-2007-0053, and future revisions thereto, as specified by the Regional Board Executive Officer.

2. Standby power generating facilities shall be available to operate the Facility during a commercial power failure.

3. The WWTF shall be supervised and operated by persons possessing certification of appropriate grade pursuant to Section 3680, Chapter 26, Division 3, Title 23 CCR. The Discharger shall ensure that all operating personnel are familiar with the content of this Board Order.

4. Prior to any modification at this Facility that would result in a material change in the quality or quantity of wastewater treated or discharged, or a material change in the location of the discharge, the Discharger shall report all pertinent information in writing to the Regional Board, and obtain revised requirements before implementing the modification.

5. Prior to any change in ownership or management of this Facility, the Discharger shall transmit a copy of this Board Order to the succeeding owner/operator, and forward a copy of the transmittal letter to the Regional Board.

6. This Board Order does not authorize violation of any federal, state, or local laws or regulations.

7. The Discharger shall allow the Regional Board, or an authorized representative, upon presentation of credentials and other documents as may be required by law, to:

   a. Enter upon the premises regulated by this Board Order, or the place where records must be kept under the conditions of this Board Order;

   b. Have access to and copy, at reasonable times, any records that shall be kept under the conditions of this Board Order;

   c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Board Order; and

   d. Sample or monitor at reasonable times, for the purpose of assuring compliance with this Board Order or as otherwise authorized by the California Water Code, any substances or parameters at this location.

8. The Discharger shall comply with all of the conditions of this Board Order, including timely submittal of technical and monitoring reports as directed herein, or by the Executive Officer pursuant to Section 13267 of the CWC. Any noncompliance with this Board Order constitutes a violation of the CWC, and is grounds for enforcement action.

9. The Discharger shall at all times properly operate and maintain all systems and components of collection, treatment and control that are installed or used by the Discharger to achieve compliance with this Board Order. Proper operation and maintenance includes effective performance, adequate process controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities, or similar systems when necessary to achieve compliance with this Board Order. All systems both in service and reserved, shall be inspected and maintained on a regular basis. Records shall be kept of inspection results and maintenance performed, and made available to the Regional Board upon demand.

10. The Discharger shall comply with the following:

    a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

    b. The Discharger shall retain records of all monitoring information including: all calibration and maintenance records; original strip chart recordings for continuous monitoring instrumentation; copies of all reports required by this Board Order; and records of all data used to complete the Board Order application. The records shall be retained for at least five years from the date of the sample, measurement and/or report of application.

    c. Records of monitoring information shall include:

        1. The date, exact place, and time of sampling or measurement;
        2. The individual(s) who performed the sampling or measurement;
        3. The date the analysis was performed;
        4. The individual(s) who performed the analysis;
        5. The analytical technique or method used; and
        6. The result of each analysis.

11. The Discharger shall furnish, under penalty of perjury, technical monitoring program reports, submitted in accordance with the specifications ordered by the Regional Board Executive Officer. Such specifications are subject to periodic revisions as may be warranted.

12. By-pass (i.e., the intentional diversion of waste streams from any portion of a treatment facility, except diversions designed to meet variable effluent limits) is prohibited. The Board may take enforcement action against the discharger for by-pass unless:

    a. By-pass is required for essential maintenance to assure efficient operation;
    b. Effluent and receiving water limits are not exceeded;
    c. The discharger notifies the Board ten days in advance;

d. By-pass was unavoidable to prevent loss of life, personal injury, or severe property damage. Severe property damage means: substantial physical damage to property; damage to treatment facilities that cause loss of function; and substantial or permanent loss of natural resources. Severe property damage does not mean economic loss caused by delays in production.

e. There are no feasible alternatives to by-pass, such as use of auxiliary treatment facilities, or retention of untreated waste. This condition is not satisfied if the Discharger did not implement preventive maintenance, or install adequate back-up equipment to prevent a by-pass likely to occur during equipment downtime.

The Discharger shall submit notice of an unanticipated by-pass as required in paragraph c. above.

13. Unless otherwise approved by the Regional Board Executive Officer, all analyses shall be conducted at a laboratory certified for such analyses by the State Department of Health Services. All analyses shall be conducted in accordance with the latest edition of "Guidelines Establishing Test Procedures for Analysis of Pollutants", promulgated by the United States Environmental Protection Agency.

14. **By November 15, 2007**, the Discharger shall submit a technical report in the form of a work plan that includes a time schedule for implementation, and specific tasks and milestones to identify and/or control discharges of water softener brines into the collection system to ensure compliance with Discharge Prohibition A.6, and to establish an appropriate TDS effluent limit. The work plan is subject to review and approval by the Regional Board Executive Officer.

15. The Discharger is responsible for compliance with these WDRs, and the Monitoring and Reporting Program for the Facility. The Discharger shall comply with all conditions of these WDRs. Violations may result in enforcement action, including Regional Board Orders or court orders requiring corrective action or imposing civil monetary liability, or in modification or revocation of these WDRs by the Regional Board.

16. The Discharger shall provide a report to the Regional Board when the treatment Facility average flow rate for any month exceeds 80 percent of the design capacity specified in Finding No. 3 above. The report shall indicate steps the Discharger will take to accommodate wastes received in excess of the Facility's current design capacity.

17. The Discharger shall retain records of all monitoring information including all calibration and maintenance records, copies of all reports required by this Board Order, and records of all data used to complete the application for this Board Order. Records shall be maintained for a minimum of five years from the date of the sample, measurement, or report. This period may be extended during the course of any unresolved litigation regarding this discharge or when requested by the Regional Board Executive Officer.

18. The Discharger shall provide adequate notice to the Regional Board Executive Officer of the following:

a. Introduction of new pollutants into any treatment Facility described in the Findings of this Board Order from an indirect Discharger subject to Section 301 or 306 of the Clean Water Act if discharging the pollutants directly.

b. A substantial change in the volume or character of pollutants introduced into any treatment Facility described in this Board Order, by an existing or new source.

c. A physical alteration or addition to any Facility described in this Board Order, or a change in the Discharger's sludge use or disposal practice, where such alteration, addition, or change may justify a Board Order revision prior to implementation (e.g., adding disposal sites not reported during the Board Order application process, or not reported pursuant to an approved land application plan).

19. The Discharger shall report all instances of noncompliance. Reports of noncompliance shall be submitted with the next scheduled self-monitoring report, or earlier if requested by the Regional Board Executive Officer, or if required by an applicable standard for sludge use and disposal.

20. The Discharger shall provide a plan describing the method to treat, handle, and dispose of sludge that is consistent with State and Federal laws and regulations. The Discharger shall obtain written approval from the Regional Board Executive Office prior to disposing of treated or untreated sludge (or similar solid wastes) using a method not described in Finding No. 4.

21. The Discharger shall maintain a permanent log of all solids removed from the treatment Facility for use and/or disposal offsite, and provide a summary of the volume, type (screenings, grit, raw sludge, digested sludge), use (agricultural, composting, etc.), and destination in accordance with the Monitoring and Reporting Program No. 2007-0053. Sludge stockpiled at the treatment Facility shall be sampled and analyzed for constituents listed in the sludge monitoring section of Monitoring and Reporting Program No. 2007-0053, and as required by 40 CFR, Part 503. The results of the analyses should be submitted to the Regional Board as part of the Monitoring and Reporting Program.

22. This Board Order may be modified, terminated, or revoked and reissued for cause. Filing a request for a Board Order modification, termination, or revocation and reissuance, does not stay any Board Order condition. Likewise, notifying the Board of anticipated noncompliance does not stay any Board Order condition. Situations that may require a Board Order update include promulgation of new State or Federal regulation, a revision to the Basin Plan, or a change in land application plans, sludge use, or sludge disposal.

23. This Board Order does not convey property rights of any sort, or any exclusive privileges, nor does it authorize injury to private property or invasion of personal rights, nor any infringement of federal, state or local laws and regulations.

24. The Discharger shall report any noncompliance that may endanger human health or the environment. The Discharger shall immediately report orally information of noncompliance to the Regional Board office and the Office of Emergency Services as soon as:

(1) The Discharger has knowledge of the discharge,
(2) Notification is possible, and

During non-business hours, the Discharger shall leave a message on the Regional Board office voice recorder. A written report shall be provided within five business days of the time the Discharger is aware of the incident. The written report shall describe the noncompliance and its cause, the period of noncompliance, the anticipated time to achieve full compliance, and steps taken or planned, to reduce, eliminate, and prevent recurrence of the noncompliance.

25. The Discharger shall report intentional or unintentional sewage spills in excess of one thousand (1,000) gallons occurring within the Facility or collection system to the Regional Board office in accordance with the time limits in Provision No. 24.

I, Robert Perdue, Executive Officer do hereby certify the foregoing is a full, true and correct copy of a Board Order adopted by the California Regional Water Quality Control Board, Colorado River Basin Region, on September 19, 2007.

ROBERT PERDUE
Executive Officer

8. Soils at the WWTF from ground surface to approximately 35 feet below ground surface (bgs) consist of fine to coarse sands, and silty clays.

9. Average annual precipitation for the area is 6.8 inches, and average annual evaporation is 50 inches. Temperatures in the Borrego Springs area can reach 120° F in summer.

10. The Discharger owns and operates a network of eleven groundwater wells that provide domestic water for the community. Groundwater quality in Borrego Springs varies from good to excellent. Depth to first encountered groundwater is approximately 60 feet bgs.

11. The Discharger reports that domestic water for the sewered portion of the community is supplied by four wells. The wells are reportedly upgradient of the WWTF and show the following constituent concentrations for 2006:

Constituent	ID1–Well 12	ID1–Well 16	ID4–Well 3	ID4–Well 11
Total Dissolved Solids	410	370	790	430
Chloride	52	75	71	46
Nitrate-Nitrogen	0.32	1.2	2.6	0.43
Sulfate	92	58	390	90
Fluoride	0.5	0.5	0.4	0.3

Basin Plan, Beneficial Uses, and Regulatory Considerations

12. The Water Quality Control Plan for the Colorado River Basin Region of California (Basin Plan), as amended to date, designates the beneficial uses of ground and surface waters in this Region.

13. The discharge is taking place in the Anza-Borrego Hydrological Unit. The beneficial uses of groundwater in the Anza-Borrego Hydrological Unit are municipal supply, agricultural supply, and industrial supply.

14. The Basin Plan establishes narrative and numeric water quality objectives for groundwater that Waste Discharge Requirements (WDRs) implement. For groundwater designated as municipal and domestic supply, the numeric objectives are the maximum contaminant levels (MCLs), and bacteriological limits specified in Section 64421 et seq. of Title 22, California Code of Regulations (CCR). Regarding narrative objectives, the Basin Plan states in relevant part that:

"Groundwater...shall not contain taste or odor producing substances in concentrations that adversely affect beneficial uses as a result of human activity..." (Basin Plan, page 3-9.)

"Discharges of water softener regeneration brines...to disposal facilities which ultimately discharge in areas where such wastes can percolate to ground water usable for domestic and municipal purposes are prohibited." (Basin Plan, page 3-9.)

15. These WDRs implement narrative and numeric water quality objectives established by the Basin Plan for ground and surface waters.

EFFLUENT MONITORING

Effluent samples shall be representative of the discharge, and collected immediately before discharge into disposal ponds. The time the grab sample is collected shall be recorded. At a minimum, wastewater effluent shall be monitored for the following constituents from samples collected at the specified frequency:

October through April (high-season)				
Constituent	**Units**	**Type of Sample**	**Sampling Frequency**	**Reporting Frequency**
Total Suspended Solids	mg/L	Grab	2/month[1]	Monthly
20° C BOD_5	mg/L	Grab	2/month	Monthly
Settleable Solids	mg/L	Grab	2/month	Monthly
Total Nitrogen	mg/L	Grab	2/month	Monthly
Total Dissolved Solids	mg/L	Grab	2/month	Monthly
pH	pH units	Grab	2/month	Monthly
VOCs[2]	µg/L[3]	Grab	2/year	Semi-annually

[1] 2 samples per month with at least 2 weeks between samples
[2] Volatile Organic Compounds testing is to be accomplished using USEPA Test Method 601 and 602, or 624.
[3] Micrograms per liter.

May through September (off-season)				
Constituent	**Units**	**Type of Sample**	**Sampling Frequency**	**Reporting Frequency**
Total Suspended Solids	mg/L	Grab	Quarterly	Quarterly
20° C BOD_5	mg/L	Grab	Quarterly	Quarterly
Settleable Solids	mg/L	Grab	Quarterly	Quarterly
Total Nitrogen	mg/L	Grab	Quarterly	Quarterly
Total Dissolved Solids	mg/L	Grab	Quarterly	Quarterly
pH	pH units	Grab	Quarterly	Quarterly
VOCs[1]	µg/L[2]	Grab	2/year	Semi-annually

[1] Volatile Organic Compounds testing is to be accomplished using USEPA Test Method 601 and 602, or 624.
[2] Micrograms per liter.

DISPOSAL PONDS MONITORING

A permanent marker shall be placed in each pond calibrated to indicate the water level at design capacity, and available operational freeboard. The Discharger shall inspect ponds in use at least weekly, and document visual observations in a bound log book. Observations shall indicate:

a. The occurrence and location of weeds within the pond, or along the bank;
b. The occurrence and location of dead algae, vegetation, scum, or debris on the pond surface;
c. Burrowing animals or insects; and
d. Color of the pond/cell.

At a minimum, the groundwater monitoring network shall include:

1. A sufficient number of background monitoring points installed at appropriate locations and depths to yield groundwater samples from the uppermost aquifer that represent the quality of groundwater not affected by a release from the wastewater pond;
2. A map of the proposed well locations, and
3. A schematic of the proposed wells.

Following approval of the proposed network by the Regional Board Executive Officer, a minimum of one groundwater monitoring well shall be established upgradient of the disposal ponds. To determine the appropriate water quality protection standards, monthly samples shall be collected from the background monitoring well(s) for a period of one year. Further, groundwater elevation relative to mean sea level shall be measured in all wells on a monthly basis, and used to the extent practicable to determine ground water direction, and gradient.

If subsequent sampling of the background monitoring well(s) indicates significant variations in water quality due to seasonal fluctuations or reasons unrelated to waste disposal activities, the Discharger may request modification of the water quality protection standards. At a minimum, groundwater shall be monitored for the following constituents from samples collected at the specified frequency:

Constituent	Units	Type of Sample	Sampling Frequency (during 1st year)	Sampling Frequency (after 1st year)
Standard Minerals[1]	mg/L	Grab	Monthly	Quarterly
Total Nitrogen	mg/L	Grab	Monthly	Quarterly
VOCs	mg/L	Grab	Quarterly	Quarterly
pH	pH Units	Grab	Monthly	Quarterly

[1] At a minimum, Standard Minerals shall include: total dissolved solids, calcium, chloride, fluoride, iron, magnesium, manganese, nitrate, potassium, sodium, sulfate, barium, total alkalinity (including alkalinity series), and hardness.

Following completion of the 12 months of sampling, the Discharger shall submit a technical report in the form of an engineering report. The report shall statistically analyze water quality monitoring data for each sampled parameter to interpret the data to establish background water quality, and provide recommendations regarding future groundwater monitoring, including the need to establish POCs. The specifications for each statistical analysis method used shall be provided. The report shall also include the results of groundwater elevations and to the extent possible the elevations shall be represented graphically using flow nets. This technical report is requested pursuant to Section 13267 of the California Water Code. The report shall **be submitted to the Regional Board within 60 days following the last sampling event** to determine background water quality and shall be prepared by a California Registered civil engineering or engineering geologist with experience in hydrogeological investigations.

SLUDGE MONITORING

On an annual basis, the Discharger shall submit a monitoring report describing current and proposed sludge disposal methods, and quantity of sludge disposed of in the previous calendar year. If more than one method of sludge disposal was used, the report shall quantify sludge disposal by method:

6. The Monitoring and Reporting Program, and other information requested by the Regional Board, shall be signed by a principal executive officer or ranking elected official.

7. A duly authorized representative of the Discharger may sign the documents if:

   a. The authorization is made in writing by the person described above;
   b. The authorization specifies an individual or person having responsibility for the overall operation of the regulated disposal system; and
   c. The written authorization is submitted to the Regional Water Board Executive Officer.

8. Reporting of any failure at the Facility (wastewater treatment plant, and collection and disposal system) shall be as described in Provision No. 19. Results of any analysis performed as a result of a failure of the Facility shall be provided within ten (10) days after collection of the samples.

9. The discharger shall attach a cover letter to the Self-Monitoring Report. The information contained in the cover letter shall clearly identify violations of the WDRs, discuss corrective actions taken or planned, and propose a time schedule for planned corrective actions. Identified violations shall include a description of the requirement that was violated and a description of the violation.

10. Daily, weekly and monthly monitoring reports shall be submitted to the Regional Board by the 15th day of the following month. Quarterly monitoring reports shall be submitted to the Regional Board by January 15th, April 15th, July 15th, and October 15th of each year. Annual monitoring reports shall be submitted to the Regional Board by January 15th of each year.

11. The Discharger shall submit monitoring reports to:

    California Regional Water Quality Control Board
    Colorado River Basin Region
    73-720 Fred Waring, Suite 100
    Palm Desert, CA 92260

Ordered by: _____
ROBERT PERDUE
Executive Officer

September 19, 2007
Date

Borrego Water District
Recycled Water Production Economic Analysis

Alt 1: Expanded Collection to and Upgrade of Ram Hills WRP (At Buildout of Rams Hill CC and De Anza CC) Full Install of Pipe Cost $ 15.00 per inch diamter per LF

Item	Value	Unit	Pipeline Diam (inch)	Cost per Unit	Cost	
Treatment						$ 2,335,000
Ram Hill WRP Upgrades + 50 Yr Life Cycle Replacement Costs (Present Value)[1]	1	LS		$ 2,335,000	$ 2,335,000	
Collection System						$ 10,119,250
Replace Existing PS pump with new larger flow pump	1	LS		$ 50,000	$ 50,000	
New De Anza Lift Station (0.024 MGD)	1	LS	NA	$ 200,000	$ 200,000	
Replace Existing 12" Forcemain DS of PS with 14"[2]	250	LF	14	$ 210	$ 52,500	
Replace Existing 12" US of PS with 15"	11,750	LF	15	$ 225	$ 2,643,750	
Replace Existing 8" on Borrego Springs Rd with 10"	300	LF	10	$ 150	$ 45,000	
New 8" pipeline from N Granada Dr to Palm Canyon Dr	7,700	LF	8	$ 120	$ 924,000	
New N Granada Dr Proposed 8" pipeline	21,300	LF	8	$ 120	$ 2,556,000	
New De Anza Proposed 8" pipeline	30,400	LF	8	$ 120	$ 3,648,000	
Subtotal					**$ 12,455,000**	**$ 12,455,000**
Contingency (20%)					$ 2,491,000	
Design & CM (20%)					$ 2,491,000	
Total Project Cost					**$ 17,437,000**	
Annualized Project Cost	3.0%	Inerest Rate	50	Yrs	$ 678,000	
Annual O&M Costs (Tertiary Facilities only)					$ 69,000	
Total Annual Costs					**$ 747,000**	
Estimated Average Annual RW Production (AFY)					132	
Cost per AF ($/AF)					**$ 5,700**	

Notes:

[1] See Lifecycle Cost for Alternative 1 for breakdown of this value.

[2] No plans or flow data exist for lift station; conservatively assumed to need replacment.

Borrego Water District
Recycled Water Production Economic Analysis

Alt 2: De Anza CC Package WWTP (at Build-out) and Upgraded Rams Hill WRP

Full Install of Pipe Cost $ 15.00 per inch diamter per LF

Item	Value	Unit	Pipeline Diameter (inch)	Cost per Unit	Item Cost	
Treament						$ 4,270,000
Rams Hill WRP Upgrades + 50 Yr Lifecycle[1]	1	LS		$ 1,770,000	$ 1,770,000	
De Anza CC Package WWTP (0.049 MGD)[2]	1	LS		$ 2,500,000	$ 2,500,000	
Collection System						$ 3,848,000
De Anza Lift Station (0.024 MGD)	1	LS	NA	$ 200,000	$ 200,000	
De Anza Proposed 8" Pipeline	30,400	LF	8	$ 120	$ 3,648,000	
Recycled Water Distribution						$ 60,000
RW Forcemain from WWTP to Golf Course	1,000	LF	4	$ 60	$ 60,000	
Subtotal					**$ 8,178,000**	**$ 8,178,000**
Contingency (20%)					$ 1,636,000	
Design & CM (20%)					$ 1,636,000	
Total Project Cost					**$ 11,450,000**	
Annualized Project Cost	**3.0%**	**Inerest Rate**	**50**	**Yrs**	**$ 446,000**	
Annual O&M Costs (Treatment Plants only)					$ 121,000	
Total Annual Costs					**$ 567,000**	
Estimated Average Annual RW Production (AFY)					121	
Cost per AF ($/AF)					**$ 4,700**	

Notes:

[1] Refer to Alternative 2 Lifecycle Cost for breakdown.

[2] Source of cost estimate--Michael Hill based on similar project.

Borrego Water District
Rams Hill WWTP Upgrades (Alt 1)
Present Value Life Cycle Cost Analysis

Year	Construction	Maintenance[1][2]	Present Value[3]	Notes
0	$1,275,000		$ 1,275,000.00	
1			$ -	
2			$ -	
3			$ -	
4			$ -	
5			$ -	
6			$ -	
7			$ -	
8			$ -	
9			$ -	
10			$ -	
11			$ -	
12			$ -	
13			$ -	
14			$ -	
15			$ -	
16			$ -	
17			$ -	
18			$ -	
19			$ -	
20		$ 586,986.15	$ 325,000.00	Replace Chemical Storage/Equp & Electrical
21			$ -	
22			$ -	
23			$ -	
24			$ -	
25			$ -	
26			$ -	
27			$ -	
28			$ -	
29			$ -	
30		$ 995,177.61	$ 410,000.00	Replace Pumps & Mechanical Equip
31			$ -	
32			$ -	
33			$ -	
34			$ -	
35			$ -	
36			$ -	
37			$ -	
38			$ -	
39			$ -	
40		$ 1,060,162.28	$ 325,000.00	Replace Chemical Storage/Equp & Electrical
41			$ -	
42			$ -	
43			$ -	
44			$ -	
45			$ -	
46			$ -	
47			$ -	
48			$ -	
49			$ -	
50			$ -	Replace WWTP
		Life Cycle Cost =	**$ 2,335,000.00**	

Borrego Water District
Rams Hill WWTP Upgrades (Alt 1)
Present Value Life Cycle Cost Analysis

(1) Present Value of maintenance costs per occurrence are as follows:

Replace Pumps/Mechanical	$	410,000	every 30 years
Replace Chemical Storage & Equip	$	135,000	every 20 years
Replace Civil/Piping	$	240,000	every 75 years
Replace Tanks	$	305,000	every 50 years
Replace Electrical	$	190,000	every 20 yrs

(2) Future value = Present value * $(1+i)^n$, where i is the inflation rate (3%) and n is number of years in future.

(3) Present value = Future value * $(1+i)^{-n}$, where i is the discount rate (3%) and n is number of years in future.

Borrego Water District
Rams Hill WWTP Upgrades (Alt 2)
Present Value Life Cycle Cost Analysis

Year	Construction	Maintenance[1][2]	Present Value[3]	Notes
0	$960,000		$ 960,000.00	
1			$ -	
2			$ -	
3			$ -	
4			$ -	
5			$ -	
6			$ -	
7			$ -	
8			$ -	
9			$ -	
10			$ -	
11			$ -	
12			$ -	
13			$ -	
14			$ -	
15			$ -	
16			$ -	
17			$ -	
18			$ -	
19			$ -	
20		$ 451,527.81	$ 250,000.00	Replace Chemical Storage/Equp & Electrical
21			$ -	
22			$ -	
23			$ -	
24			$ -	
25			$ -	
26			$ -	
27			$ -	
28			$ -	
29			$ -	
30		$ 752,451.37	$ 310,000.00	Replace Pumps & Mechanical Equip
31			$ -	
32			$ -	
33			$ -	
34			$ -	
35			$ -	
36			$ -	
37			$ -	
38			$ -	
39			$ -	
40		$ 815,509.45	$ 250,000.00	Replace Chemical Storage/Equp & Electrical
41			$ -	
42			$ -	
43			$ -	
44			$ -	
45			$ -	
46			$ -	
47			$ -	
48			$ -	
49			$ -	
50			$ -	Replace WWTP
	Life Cycle Cost (Present Value) =		**$ 1,770,000.00**	

Borrego Water District
Rams Hill WWTP Upgrades (Alt 2)
Present Value Life Cycle Cost Analysis

(1) Present Value of maintenance costs per occurrence are as follows:

Replace Pumps/Mechanical	$	310,000	every 30 years
Replace Chemical Storage & Equip	$	105,000	every 20 years
Replace Civil/Piping	$	180,000	every 75 years
Replace Tanks	$	225,000	every 50 years
Replace Electrical	$	145,000	every 20 yrs

(2) Future value = Present value * $(1+i)^n$, where i is the inflation rate (3%) and n is number of years in future.

(3) Present value = Future value * $(1+i)^{-n}$, where i is the discount rate (3%) and n is number of years in future.

Rams Hill WWTP
Construction and Replacement Cost Estimates

Item	Max Plant Capacity Costs (0.25 MGD)	Minimum Costs (0.09 MGD)	High Season Design Q for Alt 1 Costs (0.2 MGD)	High Season Design Q for Alt 2 Costs (0.13 MGD)	Notes
General	$ 50,000	$ 25,000	$ 42,188	$ 31,250	
Demo filter/Cl system and RW pumps	$ 100,000	$ 100,000	$ 100,000	$ 100,000	
Disk filter (x2), floc/coag, and piping	$ 800,000	$ 400,000	$ 675,000	$ 500,000	based on WVRWRF
NaOCl tank, pumps, & piping	$ 75,000	$ 40,000	$ 64,063	$ 48,750	Est
NaOCl mix vault and static mixer	$ 75,000	$ 40,000	$ 64,063	$ 48,750	based on WVRWRF
Extend CCT	$ 50,000	$ -	$ 34,375	$ 12,500	conc
RW pumps	$ 150,000	$ 75,000	$ 126,563	$ 93,750	based on WVRWRF
Elec and I&C	$ 200,000	$ 100,000	$ 168,750	$ 125,000	
Total	**$ 1,500,000**	**$ 780,000**	**$ 1,275,000**	**$ 960,000**	

Plant Design Q:	0.25	0.09	0.196	0.129	MGD

Rams Hill WWTP
Construction and Replacement Cost Estimates

Life Cycle Components:	Pumps & Mech Equip	Chemical Storage & Equipment	Civil/Piping	Tanks/ Structures	Electrical	TOTAL
useful life (yrs)	30	20	75	50	20	
	30%	10%	20%	25%	15%	100%
	30%	10%	20%	25%	15%	100%
	40%	10%	20%	30%		100%
		80%		20%		100%
	30%		30%	40%		100%
			20%	80%		100%
	60%		40%			100%
					100%	100%
Replacement Costs:						
0.25 MGD	$ 477,500	$ 155,000	$ 282,500	$ 362,500	$ 222,500	$ 1,500,000
0.09 MGD	$ 254,500	$ 84,500	$ 147,000	$ 175,250	$ 118,750	$ 780,000
0.2 MGD	$ 407,813	$ 132,969	$ 240,156	$ 303,984	$ 190,078	$ 1,275,000
0.13 MGD	$ 310,250	$ 102,125	$ 180,875	$ 222,063	$ 144,688	$ 960,000

Rams Hill WWTP
Operation and Maintenance Cost Estimates

Rams Hill WWTP O&M Cost Summary

Parameter	Annual Cost (0.25 MGD)	Annual Cost (0.18 MGD)	Annual Cost (0.15 MGD)	Annual Cost (0.10 MGD)
Energy Costs	$ 50,000	$ 36,000	$ 30,000	$ 20,000
Chemical Costs	$ 23,000	$ 16,560	$ 13,800	$ 9,200
Employee costs	$ 36,000	$ 25,920	$ 21,600	$ 14,400
Maintenance Costs	$ 6,000	$ 4,320	$ 3,600	$ 2,400
Total Annual O&M Costs	**$ 115,000**	**$ 82,800**	**$ 69,000**	**$ 46,000**

Notes:
O&M Costs estimated for max tertiary plant capacity of 0.25 MGD then scaled back to maximum month and annual average capacities used for recycled water feasibility study analysis.

Energy Costs

Equipment Item	Duty / Standby	Nameplate HP	Brake HP	Operating KW	Runtime	hrs/day	kwh/day
Coagulant Feed Pump	D	0.1	0.1	0.0746	Intermittent	24	1.8
Coagulant Feed Pump	S	0.1	0.1	0.0746	Intermittent	0	0.0
Flocculator - Stage 1	D	1	1	0.746	Intermittent	24	17.9
Flocculator - Stage 2	D	1	1	0.746	Intermittent	24	17.9
Tertiary Disk Filter	D	1	1	0.746	Continuous	24	17.9
Tertiary Disk Filter	S	1	1	0.746	Intermittent	0	0.0
Filter Backwash Pump	D	5	5	3.73	Intermittent	2.4	9.0
Filter Backwash Pump	S	5	5	3.73	Intermittent	0	0.0
Chlorine Feed Pump	D	0.1	0.1	0.1	Continuous	24	1.8
Chlorine Feed Pump	S	0.1	0.1	0.1	Continuous	0	0.0
Recycled Water Pump	D	40.0	40.0	29.8	Intermittent	24	716.2
Recycled Water Pump	D	40.0	40.0	29.8	Intermittent	12	358.1
Recycled Water Pump	S	40.0	40.0	29.8	Intermittent	0	0.0
Total		**134.4**	**134.4**				**1140**

Unit energy costs	$0.12
Energy costs per day	$137
Annual energy costs	$50,000

Notes
Only used when clarified secondary turbidity limit is exceeded; assumed operation of 30 d/yr
Only used when clarified secondary turbidity limit is exceeded; assumed operation of 30 d/yr
Only used when clarified secondary turbidity limit is exceeded; assumed operation of 30 d/yr
Only used when clarified secondary turbidity limit is exceeded; assumed operation of 30 d/yr
Backwashing 144 min/day per Kruger

kwh/day
/kW-hr
/d
/yr

Chemical Costs

Coagulant (Alum)

			Source
Plant Flow Rate	0.25	MGD	
C_0	-	mg/l	Alum concentration in secondary effluent (typically zero)
Alum wt%	48.5%		Alum solution strength
Alum solution density	11.13		Pounds per gallon stock alum solution
	5.40		Pounds alum per gallon stock alum solution
MW alum	599.75	g/mole	Molecular weight of alum ($Al_2(SO_4)_3*14.3H_2O$)
SG	1.33		Specific gravity of alum solution
C_B	643,760	mg/l alum	Alum concentration in storage tank
C_E	10	mg/l alum	Alum concentration after dosing
C_E	0.9	mg/l Al^{3+}	Al^{3+} concentration after dosing
V	110	gal	Proposed alum storage tank volume (30 d storage)
Daily solution volume usage	4	gal_{sol}/d	
Annual solution usage (volume)	1,417	gal_{sol}/yr	Continuous dosing
	117	gal_{sol}/yr	30 d/yr operation

Unit cost basis	per gallon of solution		
unit cost (per solution weight)	$ -	$/lb_{sol}$	
unit cost (per dry weight)	$ -	$/lb_{dry}$	
unit cost (per volume)	$ 1.00	$/gal_{sol}$	Per Goleta Proposal
Annual chemical cost	$ 1,417	/yr	Continuous dosing
	$ 117	/yr	30 d/yr operation
Storage Tank Size	110	gal_{sol}	
Number of chemical deliveries	13	delivery/yr	
Unit cost of chemical delivery	$ 30.00	/delivery	
Annual Delivery Cost	$ 390.00	/yr	
Total Annual chemical costs	$ 1,807	/yr	

Disinfection (NaOCl)

Flow Rate	0.25	MGD	
C_0, mg/l	-		NaOCl concentration in filter effluent (typically zero)
NaOCl wt%	12.5%		NaOCl concentration in storage tank
SG	1.22		Specific gravity of NaOCl solution
$Q_{B\ @41,000\ gpd}$, gpd	13.3		VCMWD WVRWRF NaOCl dosing rate at plant flow of 41,000 gpd
$M_{B\ @41,000\ gpd}$, lb/d	17.0		Mass loading rate at plant flow of 41,000 gpd
C_B, mg/l	152,308		NaOCl concentration in storage tank
C_e, mg/l NaOCl	49.6		NaOCl concentration after dosing
C_e, mg/l OCl^-	34.9		OCl^- concentration after dosing
V, gal	1,900		Existing NaOCl storage tank volume
Daily solution volume usage	81	gal_{sol}/d	
Annual solution usage (volume)	29,722	gal_{sol}/yr	

Unit cost basis	per gallon of solution		
unit cost (per solution weight)	$ -	$/lb_{sol}$	
unit cost (per dry weight)	$ -	$/lb_{dry}$	
unit cost (per volume)	$ 0.70	$/gal_{sol}$	http://www.pwtag.org/researchdocs/Used%20Ref%20d
Annual chemical cost	$ 20,805	/yr	
Storage Tank Size	1,900	gal_{sol}	
Number of chemical deliveries	16	delivery/yr	
Unit cost of chemical delivery surcharge	$ 30.00	/delivery	
Annual Delivery Cost	$ 480.00	/yr	
Total Annual chemical costs	$ 21,285	/yr	

Chemical	Design Dosage	Daily Usage	Annual Usage	Unit Costs	Annual Costs
	mg/L	*gal/d*	*gal/yr*	*$/gal*	*$/yr*
Alum	10.0	4	1,417	$ 1.00	$ 2,000
Sodium Hypochlorite	49.6	81	29,722	$ 0.70	$ 21,000
Total					**$ 23,000**

ocs/33%20Sodium%20Hypochlorite%20and%20Chlorine%20Gas.pdf

FTE Costs

Required additional full time employees		0.25	
annual cost per employee	$	143,864	per VCMWD Budget
Total annual costs	$	36,000	

Maintenance Costs

Parameter	Value
Total Equipment Capital Costs	$ 586,000
Flocculators, Tertiary Filters, Chemical Feed	*$ 380,000*
*Chemical Mixers and Recycled Water Pumps**	*$ 106,000*
Miscellaneous Mechanical/Equipment	*$ 100,000*
Percentage of Maintenance to Capital Cost	1%
Total Annual maintenance Costs	**$ 6,000**

Notes:

* Design of Municipal Wastewater Treatment Plants, WEF MOP No. 8, 4th ed., pg 2-68

BORREGO WATER DISTRICT

BOARD OF DIRECTORS MEETING – OCTOBER 25, 2017

AGENDA BILL 2.D

October 19, 2017

TO: Board of Directors, Borrego Water District

FROM: Geoff Poole, General Manager

SUBJECT: Draft Hydrogen Sulfide Odor Study: Dudek Engineering – G Poole

RECOMMENDED ACTION:

Receive telephonic presentation from Dudek and direct staff accordingly

ITEM EXPLANATION:

BWD commissioned Dudek to evaluate the causes and potential remedies for hydrogen sulfide odors in BWD sewer collection system. The attached Study documents the cause of the problem and outlines a series of HIGH and LOW priority projects as possible cures.

FISCAL IMPACT:

N/A

ATTACHMENTS:

1. Dudek Hydrogen Sulfide Odor Study

Technical Memorandum for
Borrego Water District Sewer System Evaluation
DRAFT

Prepared for:

Borrego Water District
806 Palm Canyon Drive
Borrego Springs, CA 92004
Contact: Geoff Poole, General Manager

Prepared by:

DUDEK
605 Third Street
Encinitas, California 92024
Contact: Gregory Guillen, Ph.D., P.E.

OCTOBER 2017

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APPENDICES

1 INTRODUCTION

The Borrego Water District is undertaking an improvement program to address deficiencies in the District's sewer collection system. To assist in this effort, Dudek has prepared this Technical Memorandum (TM), which includes an evaluation and preliminary condition assessment of the District's sewer collection system. The portion of the sewer collection system that will be considered in this TM includes the Borrego Valley Road Pump Station, 2.8 miles of forcemain, and 3,500 feet of gravity sewer with 11 manholes along the La Casa del Zorro Resort and Spa (Resort) and Borrego Springs Road, as shown in Figure 1-1.

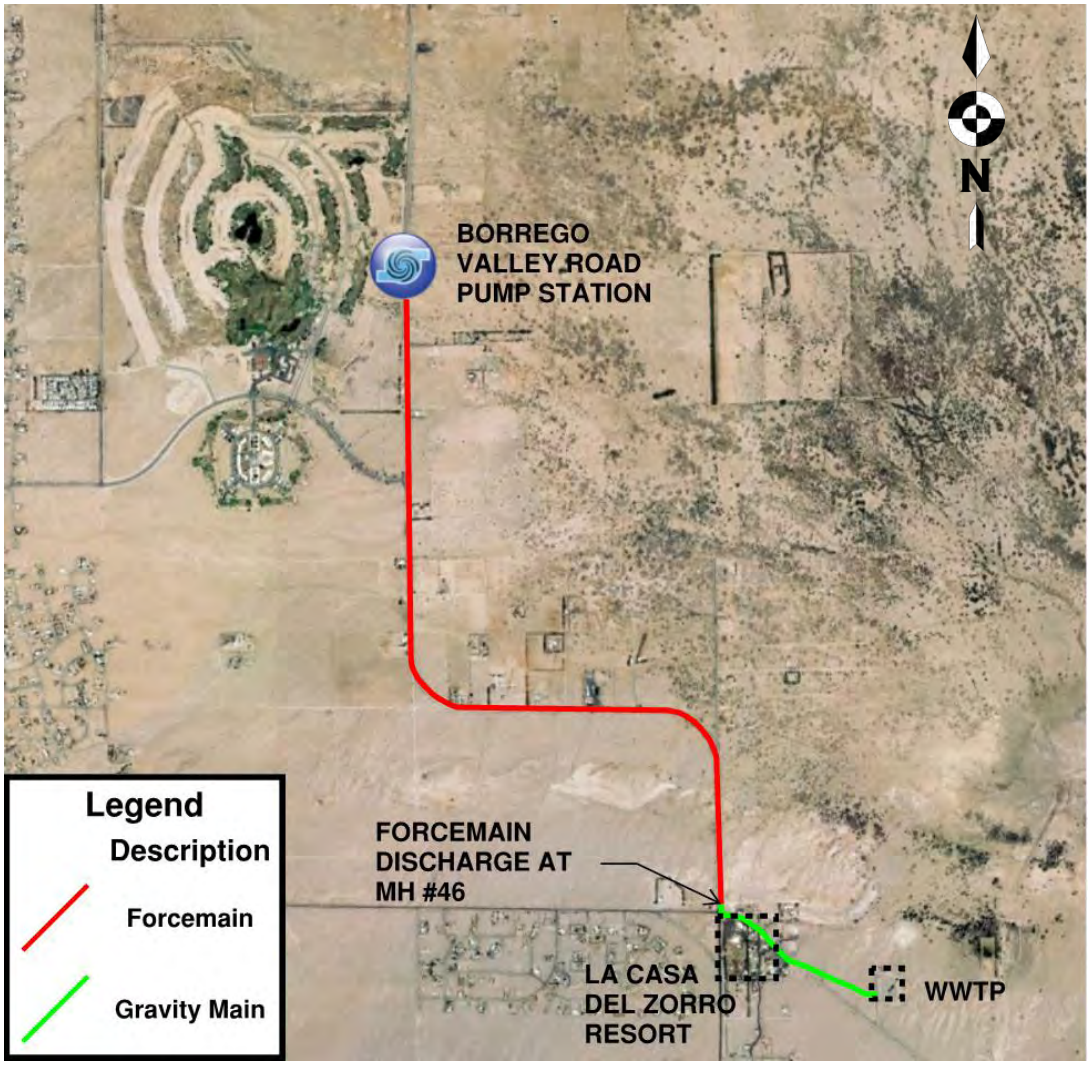


Figure 1-1: System Overview

This TM is intended to support the District's 2015 Sewer System Management Plan (SSMP). As part of this project, Dudek completed a review of the District's 2015 SSMP and found the document to be adequate for the District's needs. The recommended improvements in this TM, combined with practices listed in the 2015 SSMP, will ensure a properly functioning collection system. The 2015 Borrego Water District SSMP is included in Appendix A.

2 METHODOLOGY

The following section describes the data collection and methodology used to perform a sewer system evaluation and preliminary condition assessment. Information was gathered from site visits, as-built records review, discussions with the District, and CCTV video inspection files.

2.1 Field Visit Observations and Record Drawings Review

On April 5, 2017 Dudek visited various sections of the sewer collection system including the Borrego Valley Pump Station, forcemain alignment, and gravity main section downstream of the forcemain discharge. In addition to the field visit, Dudek performed a review of "The Town Center Sewer" (Aug. 1986) as-builts to further understand the sewer collection system and address District concerns.

2.2 CCTV Review

In January 2014, the District had the gravity main downstream of the forcemain discharge (totaling 3,500 feet) inspected using CCTV methods. The CCTV inspection reports and/or videos of the project pipes were reviewed to identify defects and provide recommendations for repair, rehabilitation, or replacement of portions or entire pipe segments, as appropriate. Observations and recommendations are noted in a sewer data table spreadsheet as well as a log of lateral locations and conditions (see Appendix B).

Rehabilitation and replacement alternatives considered include the following:

- CIPP lining of entire segment.
- In-situ spot/point repair of a defect, typically 4-feet in length or less. Potential technologies include a CIPP short liner and Link Pipe mechanical seal sleeve.
- Spot/point repair of a defect by excavation and replacement. Figure 2-1 is a proposed detail for an excavation point repair. Dresser style couplings for the connections to the existing pipe are recommended because they create a rigid connection and reduce the potential for differential settlement at the coupling. An open trench point repair may also include replacement of a lateral connection with the section of sewer main if the defect includes broken pipe at the lateral connection that cannot be rehabilitated with a CIPP liner.
- Excavation and replacement of the entire segment from manhole to manhole.

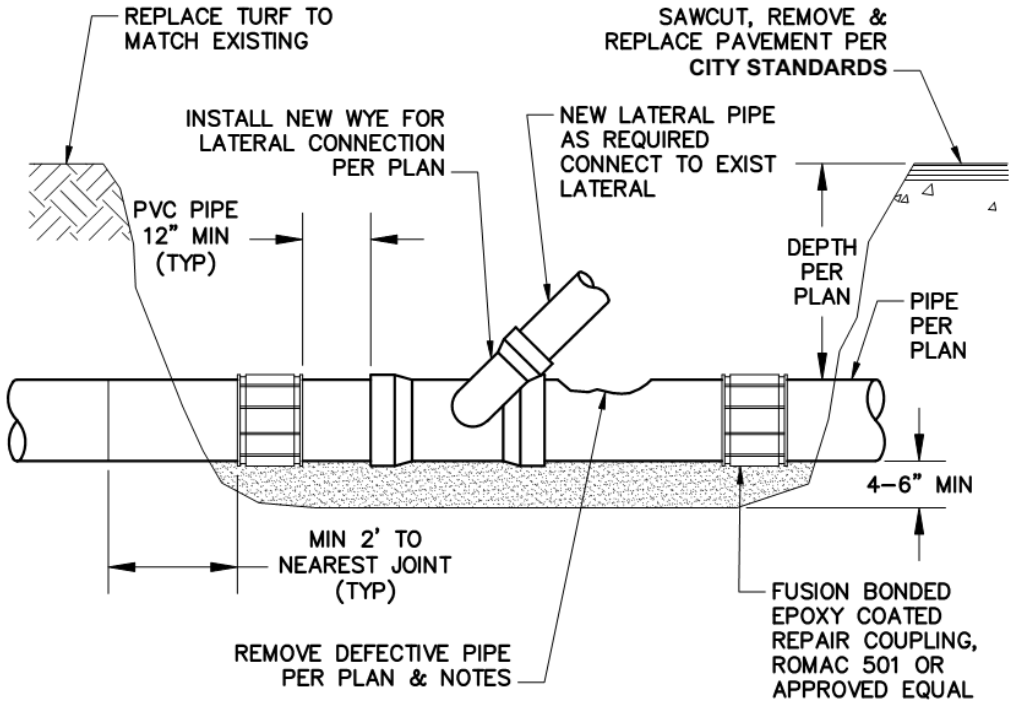


Figure 2-1: Preliminary Excavation Point Repair Detail

Other ancillary improvements identified and quantified in the Condition Assessment Review spreadsheet include the following:

- Reinstate laterals in pipes to be CIPP lined.
- Intruding laterals to be trimmed.
- Specialty and heavy cleaning for those pipes with heavy roots, grease, debris, or scale.
- Manhole rehabilitation.

2.3 Discussions with the District

Discussions with the District have indicated that odors and corrosion are a pervasive problem in the collection system. Odor control is discussed in Section 3.2.

The District has indicated that discharge of fats, oils, and grease (FOG) by food service establishments (FSEs) has created maintenance problems in the collection system. Large grease balls and mats decrease sewer capacity, produce severe odors, and increase sewer maintenance requirements. The District has a FOG control program (Appendix C) that regulates the discharge of FOG and describes maintenance and monitoring requirements for FSEs. District staff monitor FSE grease traps as often as possible. However, more frequent monitoring and a robust

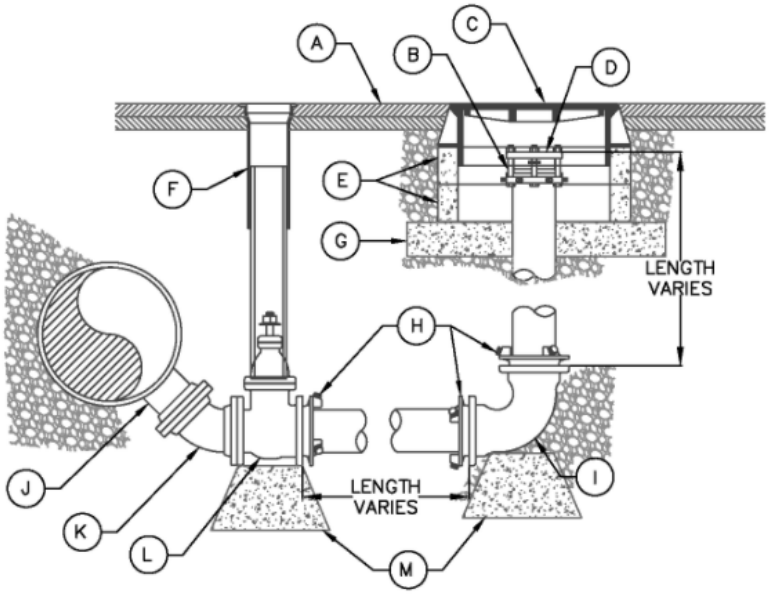
enforcement plan would help address the collection system FOG problems that are still observed by District staff. It is recommended that the District consider hiring an independent FOG inspector to conduct annual grease interceptor inspections.

3 PUMP STATION AND FORCEMAIN

The Borrego Valley Road Pump Station is located along Borrego Valley Road approximately 0.6 miles north of Tilting T Drive. During the summer months, flows average 25,000 gpd. During the winter months, flows reach 130,000 gpd. Wastewater is pumped a distance of 2.8 miles through a 10-inch PVC forcemain before discharging to gravity at Manhole #46. Along the forcemain, there is one air-vacuum valve located at the intersection of Borrego Valley Road and Rango Way. The air-vacuum valve is contained inside a manhole structure. Air-vacuum valves are typically installed at high points on pressure pipe and are designed to allow air to enter or escape the system during filling and draining operations. No other manholes exist along the forcemain.

3.1 Forcemain Access

The District has indicated there are currently no blowoffs with which to drain the forcemain for cleaning and/or maintenance events. Blowoffs along forcemains are not normally required. However, a blowoff may be required for forcemains with long depressed sections between two high points or for those forcemains that need a drainage point. Blowoff valves are typically installed at low points or valleys on pressurized pipes. The design of blowoff piping consists of a valve connection on the forcemain and piping to either a gravity sewer manhole or to a manhole so that a pump can be used to drain the forcemain. Figure 3-1 illustrates a typical blowoff assembly.



KEYNOTES:

A. FINISHED GRADE. PROVIDE 4" THICK AC PAVEMENT OR CONCRETE PAD CENTERED AROUND VALVE BOXES AND MANHOLES IF OUTSIDE OF PAVED AREAS. PAD SHALL EXTEND A MINIMUM OF 6" BEYOND ALL SIDES OF VALVE BOXES AND MANHOLES.
B. 6" RESTRAINED FLANGED COUPLING ADAPTER.
C. 10"X24" STANDARD MANHOLE FRAME WITH "W" LID.
D. 6" BLIND FLANGE.
E. 2 EACH–6"X24" CONCRETE MANHOLE GRADE RING.
F. VALVE BOX ASSEMBLY PER DETAIL 3.
G. 6" THICK CAST–IN–PLACE CONCRETE BASE.
H. ALL JOINTS IN BLOWOFF ASSEMBLY SHALL BE FULLY RESTRAINED WITH MECHANICAL GRIP FOLLOWERS.
I. 6" 90° BEND. MJ X MJ.
J. MAINLINE DIAMETER X 6" TEE ROTATED DOWN 45°. MJ X FLANGE.
K. 45° BEND. FLANGE X FLANGE.
L. 6" GATE VALVE. FLANGE X MJ.
M. 12"X12" CONCRETE PIER BLOCK ON UNDISTURBED NATIVE SOIL.

Figure 3-1: Blowoff Assembly

Dudek reviewed District "The Town Center Sewer" as-builts of the forcemain alignment and determined a low point in the forcemain alignment exists near STA 179+75 (Sheet 28 of 34 near transition between Rango Way and Yaqui Pass Road). A second pump station was intended to be built in this location. However, the pump station was not constructed and the forcemain was instead extended to Manhole #46. Adding a blowoff valve in this location would allow the District to drain the forcemain segment from Manhole 1F to Manhole #46 for inspection, repair, and/or cleaning.

3.2 Odor Control

The District has reported severe levels of hydrogen sulfide (H_2S) odors originating at the forcemain discharge and detected throughout the gravity main. The District is currently dosing a liquid-phase odor control chemical, Persnickety® P713, directly into the Borrego Valley Road Pump Station wet well at a rate of 10 gpd. The chemical has been reported to have mixed results.

3.2.1 Causes of Sewer Odors

Sewer odors are caused by a multitude of volatile chemicals unique to each collection system. Hydrogen sulfide is the most prevalent and commonly identified odorous gas in municipal sewers because it is easily detectible by humans at extremely low concentrations. As a result, the odors that create complaints from neighboring receptors are most often due to H_2S gas.

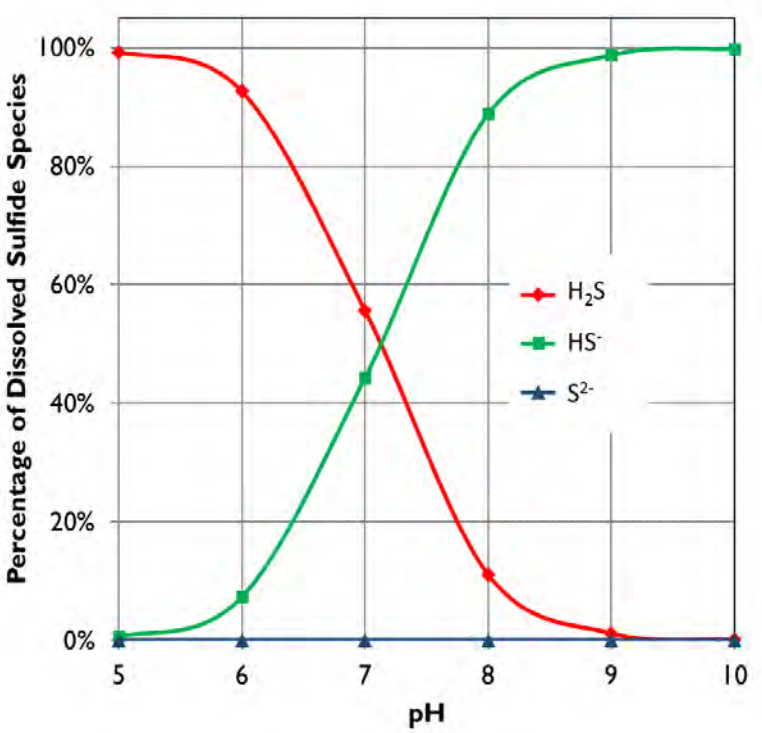


Figure 3-2: Sulfide Speciation

Hydrogen sulfide is a reduced form of sulfur present in municipal wastewater largely due to the reduction of sulfate (SO_4^{2-}). The reduced forms of sulfur are more generally called sulfide. Dissolved sulfide is present in three species: hydrogen sulfide (H_2S), bisulfide (HS^-), and sulfide di-anion (S^{2-}). The proportion of each species is dependent on the pH of the wastewater. H_2S is the gaseous and odorous form that may be released to the air. The other two species remain in solution and do not contribute to odor. At pH 7, approximately half of the sulfide present is in the form of H_2S and the other half as HS^-. The sulfide di-anion is effectively non-existent below pH 12. Figure 3-2 illustrates the relationship between the forms of dissolved sulfide and wastewater pH. Acidic wastewater conditions cause a shift in sulfide speciation toward the volatile and odorous H_2S species.

The generation of sulfide is a byproduct of the anoxic (lack of dissolved oxygen) decomposition of organic matter by sulfate reducing bacteria (SRB). Sewer collection systems contain ample anoxic regions, organic matter, and sulfate. SRB exist in the anoxic slime layer commonly found

in sewer pipe walls or in any sludge and silt deposits in the pipe. The Pomeroy-Parkhurst equation (Equation 3-1) has been used to predict theoretical sulfide generation within the Borrego Valley Pump Station forcemain for both winter and summer seasons (Appendix D).

$$S_2 = S_1 + M \cdot t \cdot EBOD\left(\frac{4}{d} + 1.57\right), \qquad \text{Equation 3-1}$$

Where:
S_2 = forcemain discharge sulfide concentration, mg/l
S_1 = forcemain influent sulfide concentration, mg/l
M = sulfide flux coefficient, m/h
t = detention time in the forcemain, h
d = forcemain diameter, m
$EBOD$ = effective BOD = BOD x $1.07^{(T-20)}$, mg/l
BOD = wastewater biochemical oxygen demand, mg/l
T = wastewater temperature, °C

Biological sulfide generation increases with pipe slime layer coverage, slime layer thickness, hydraulic detention time, Biochemical Oxygen Demand (BOD), pipe diameter, and temperature. The low dissolved oxygen concentrations found in sewer forcemains or sealed gravity lines lead to increased sulfide production. The presence of FOG increases sulfide generation.

Hydrogen sulfide is volatile and will partition into the gas phase in areas of high liquid-gas interfacial area, such as those areas created by splashing, falling films, hydraulic jumps, or any other hydraulic feature that increases the surface area of wastewater.

When sewer gas escapes the collection system, it can become a public nuisance and cause for complaints. The presence of H_2S gas in sewers also leads to manhole and pipe corrosion on non-submerged surfaces where the gas is converted to corrosive sulfuric acid.

3.2.2 Borrego Valley Pump Station Odor Potential

Equation 3-1 was used to calculate a theoretical sulfide generation in the Borrego Valley Road Pump Station forcemain. A sulfide mass flux coefficient of 7×10^{-4} m/h, wastewater temperature of 75 °F (24 °C) during the summer season and 65 °F (18 °C) during the winter season, and BOD of 200 mg/l were assumed. Gas-phase H_2S concentration was approximated from theoretical sulfide generation by Henry's Law using a Henry's Law constant of 0.1 mole/liter-atmosphere and wet well headspace temperature of 75 °F for the summer season and 43 °F (6 °C) for the winter season. The gas-phase H_2S concentration calculated in this manner represents an "equilibrium" concentration, that is, the concentration of H_2S gas that develops after contact with liquid phase H_2S for an infinite amount of time at constant temperature, pressure, and dissolved H_2S concentration. Equilibrium conditions do not exist in sewer collection systems. Actual gas-phase

H_2S concentrations are typically 2 – 20% of the theoretical equilibrium gas-phase concentrations (US EPA, 1985). Theoretical sulfide generation within the pump station forcemain and the estimated gas-phase H_2S concentration ranges are shown in Table 3-1.

Table 3-1: Theoretical Sulfide Generation

Parameter	Summer Season	Winter Season
Average Daily Flow, gpd	25,000	130,000
Average Forcemain Hydraulic Detention Time, hr	73.4	11.3
Theoretical Dissolved Sulfide Concentration at FM Discharge, mg/l	42	20.3
Daily Sulfide Load, lb/d	7	22
Gas-Phase Sulfide Equilibrium Concentration, ppm_v	7,050	5,340
2% of Equilibrium Concentration, ppm_v	141	110
20% of Equilibrium Concentration, ppm_v	1,410	1,100

As shown above in Table 3-1, the dissolved sulfide concentration is highest during the summer season which is a direct result of higher ambient temperatures and lower flow. The lower flow causes wastewater to have higher hydraulic detention times (HDT) within the forcemain, allowing for more sulfide generation.

While dissolved sulfide concentration is higher during the summer season, sulfide loading (in pounds per day) is actually higher in the winter season due to the increased average daily flow. This means that dosing liquid-phase odor control chemicals that are dependent on sulfide loading is actually higher during the winter season as compared to the summer season. Liquid-phase odor control chemicals that are dosed based on flow would also have higher demand during the winter season. Due to Henry's law and the ambient headspace temperature during both seasons, the gas-phase sulfide equilibrium concentration is very similar for both the summer and winter months. This means liquid-phase odor control chemicals will have seasonal variations where as the loading on gas-phase odor control scrubbers will not be influenced by seasonal variations as much.

3.2.3 Persnickety® P713

Persnickety® P713 is a blend of proprietary, naturally-occurring, strict and facultative anaerobic bacteria in a liquid medium. Bacteria are dosed into the collection system where they colonize and reduce H_2S to elemental sulfur, which is stored intercellularly. The biological solution is reported by the manufacturer to be non-toxic, non-pathogenic, harmless to aquatic life, and compatible with other desirable bacteria found in wastewater. P713 must be dosed daily to maintain enough biomass to control sulfide. Start-up and the determination of optimal dosing

requires approximately 1 month. Discontinuation of dosing will allow native sewer bacteria to outcompete P713 bacteria and lead to eventual sulfide generation.

P713 bacteria, like all bacteria, are subject to die-off and washout if unfavorable conditions occur in the collection system. P713 applications are limited to collection systems with pH between 6 and 9, temperature below 108 °F (42 °C), redox potential above -350 mV, and dissolved H_2S concentration less than 80 mg/l. A nutrient solution must also be added when dosing P713. The chemical manufacturer does not recommend P713 for severely anaerobic conditions such as those found in long septic forcemains or anaerobic digesters. The District has reported mixed results using this chemical. The Persnickety® P713 system used at the Borrego Valley Pump Station is shown in Figure 3-3.

Figure 3-3: Persnickety® P713 System

4 FORCEMAIN PROFILE AND DISCHARGE

The forcemain follows the alignment shown in Figure 1-1 and the profile shown in Figure 4-1. The forcemain has two high points. The first peak point is at Manhole 1F which contains an air relief valve (ARV). Air relief valves allow air trapped in a forcemain to exit the line and allow air to enter a forcemain under vacuum conditions. The second peak point in the forcemain is at Manhole #46 where the forcemain discharges to gravity. The difference in elevation between these two high points is 4.5 ft. A low point exists at STA 179+75 that is 36 ft below the invert at Manhole #46. The low point in the forcemain is likely accumulating solids, which increases sulfide odor generation.

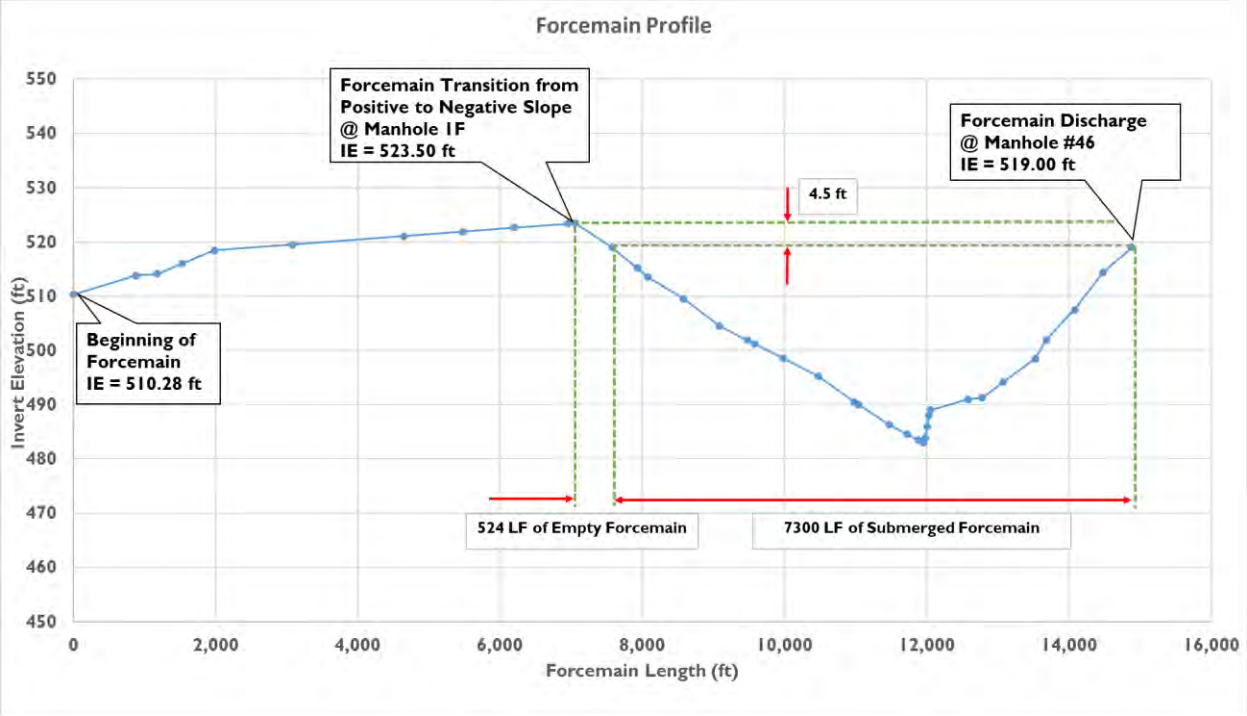


Figure 4-1: Forcemain Profile

The ARV allows air entrained in the sewage and captured at the high point in the forcemain to exit the system while the pump station is running. After a pumping cycle, the forcemain partially drains through Manhole #46 due to the 4.5 ft elevation difference between high points. The ARV allows air to enter the forcemain to prevent pipe vacuum conditions when the pumps are idle. The passage of air through the ARV is important in preventing air accumulation in the forcemain. Air accumulation in forcemains can lead to odor issues where that air is discharged. The ARV in Manhole 1F is shown in Figure 4-2. The ARV shows some corrosion. Manhole 1F appears to be in good condition.

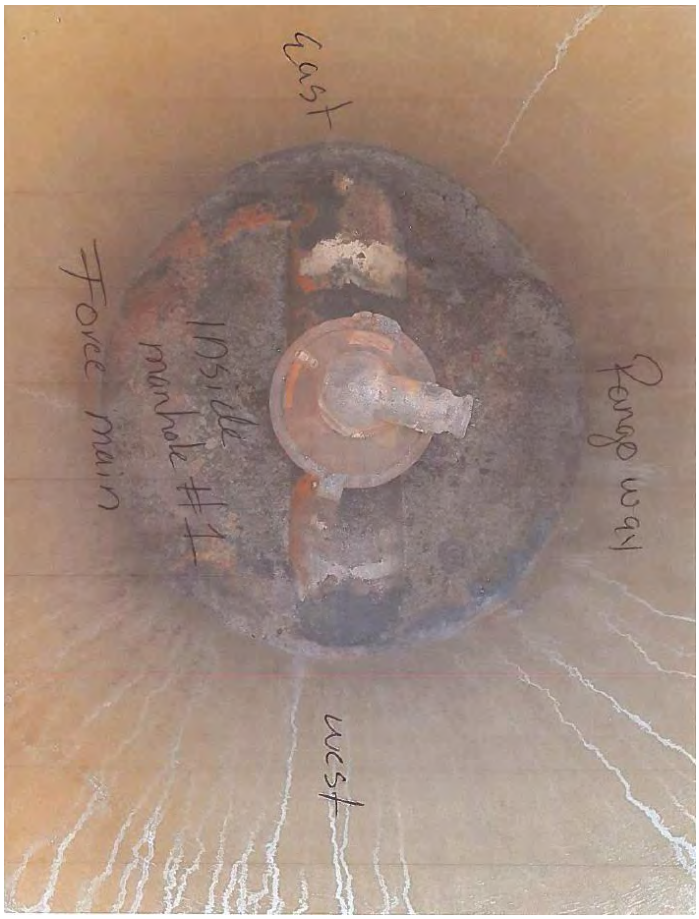


Figure 4-2: Air Relief Valve in Manhole 1F

The original design of Manhole #46, shown in Figure 4-3, included a concrete weir. The weir has since corroded and was removed by District staff. The intended purpose of the weir is unclear, but it may have been used to prevent air from entering the forcemain through the ARV by preventing vacuum conditions during pump idle periods. The 5.5 ft tall weir provided enough head to overcome the 4.5 ft invert elevation difference between Manhole 1F and Manhole #46. The presence of the weir would not eliminate the need for the ARV, as air entrained in the sewage at the pump station would still need venting to prevent air accumulation in the forcemain.

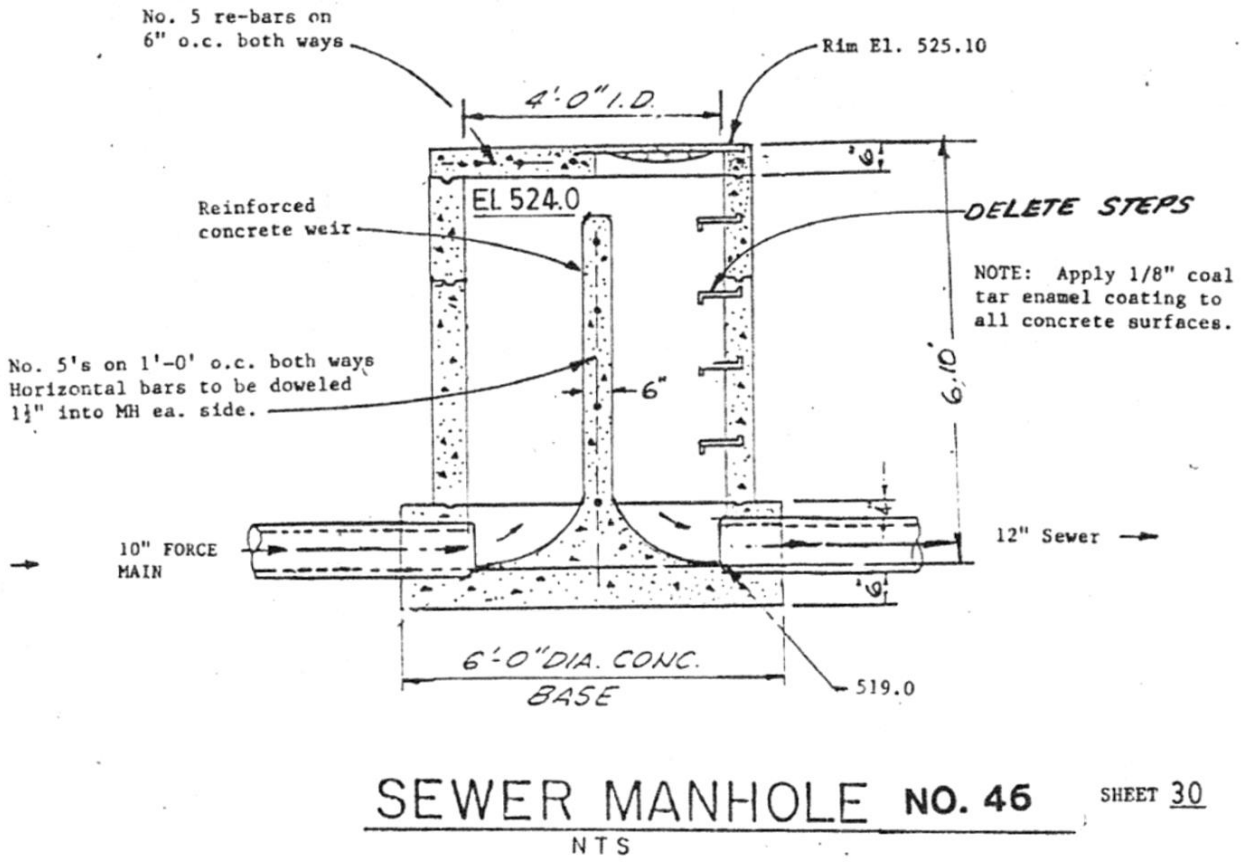


Figure 4-3: Forcemain Discharge at Manhole #46 and Weir

The up and down nature of the forcemain profile creates conditions under which segments of the forcemain may be under vacuum during pump idle periods. To alleviate vacuum conditions, the District should consider the following alternatives:

1. **Inspect and replace (if necessary) ARV at Manhole 1F.** The ARV is designed to allow air entrained in the pumped sewage to exit the forcemain. The ARV also reduces vacuum conditions by allowing air to enter the forcemain during pump idle periods or when the forcemain is being drained for maintenance. Air released from the ARV may be highly odorous. The ARV should be inspected to ensure it is operating within specification and should be replaced if necessary. Maintaining or replacing the ARV is relatively inexpensive and helps alleviate vacuum conditions in the forcemain. Solids accumulation in the forcemain would not be improved by implementing this alternative.

2. **New pump station at forcemain low point (STA 179+75).** A new pump station could be constructed at the low point in the forcemain. This would allow the forcemain to break head, as originally intended, at Manhole 1F and flow by gravity down to STA

179+75. The new pump station would lift sewage 36 ft to Manhole #46 (or another discharge point). This alternative is expensive both in capital and O&M costs but would alleviate air entrainment, vacuum conditions, and solids accumulation in the forcemain.

3. **Build temporary weir in Manhole #46.** Replacing the 5.5 ft weir in Manhole #46 would increase the effective elevation at Manhole #46, bringing it above that of Manhole 1F. This would prevent vacuum conditions from occurring in the forcemain that results in air entering the forcemain through the ARV.

   A weir in this location would increase solids accumulation on the upstream side of the weir and create a cascade of wastewater on the downstream side of the weir during pumping cycles. Solids accumulation in sewers decreases pipe capacity and creates anaerobic zones in which SRB produce sulfide. Sulfide generated in the settled solids would contribute additional sulfide to that produced in the forcemain. The splashing of wastewater laden with sulfide increases H_2S off-gassing potential as the weir overflows during pumping cycles. The combination of increased sulfide generation and H_2S off-gassing potential would lead to an odorous and corrosive environment in and around Manhole #46. Additionally, the weir would bring sewage within 1 foot of the manhole rim.

   Replacement of the weir in Manhole #46 would be inexpensive and would address vacuum conditions in the forcemain. This alternative would exacerbate solids accumulation and odor generation in the forcemain near Manhole #46, increase maintenance requirements and create odorous and corrosive conditions in Manhole #46. This alternative should be viewed as a short-term, temporary solution to the vacuum conditions in the forcemain. A temporary weir should be constructed with adequate access for maintenance.

4. **Relocate forcemain discharge location.** The forcemain discharge elevation may be increased by relocating it to a higher elevation. The higher elevation would alleviate vacuum conditions in the forcemain and prevent the ARV from allowing air to enter the forcemain. This new location may be in an existing downstream manhole, or a new manhole may be constructed with an invert elevation greater than that of Manhole 1F (523.5 ft). An ARV would still be required at Manhole 1F to allow entrained air to exit the forcemain. Relocation of the forcemain discharge point and construction of a new manhole would alleviate the vacuum conditions in the forcemain. This alternative is likely more expensive than replacing the weir in Manhole #46. However, there would be less solids accumulation, less odor, and less corrosion potential associated with this alternative than with Alternative 3.

The forcemain is currently functioning adequately with a single pump station and ARV. Discussions with District staff have indicated that odors have been an issue at Manhole #46 and have increased since removal of the weir. Hydrogen sulfide generated biologically in the forcemain

is believed to be the main contributor to odors. It is possible that air entering the forcemain through the ARV may be passing through the forcemain and out the discharge at Manhole #46. Large air bubbles combined with sulfide formation in the forcemain would lead to significant odor emissions. A properly operating ARV would minimize the possibility of large bubbles exiting the forcemain through Manhole #46. Replacement of the weir, while inexpensive and a solution to the forcemain vacuum conditions, is not recommended as a long-term solution as it would increase odor and maintenance requirements. Provisions for regular cleaning would be required with any weir replacement project. Constructing a pump station at STA 179+75 would greatly improve collection system operations but is prohibitively expensive at this time. Alternative 4, relocation of the forcemain discharge, is a viable long-term solution to forcemain vacuum conditions provided an appropriate location can be found. The discharge point of forcemains are often highly odorous due to off-gassing of H_2S. The relocation of the forcemain discharge point to an area with fewer sensitive receptors would benefit the District and the community.

In summary, Dudek recommends that the ARV be inspected to ensure it is operating properly and replaced if necessary. A temporary weir in Manhole #46 may be a short-term solution to forcemain vacuum conditions provided that the weir and manhole are adequately maintained. The recommended long-term solution is to relocate the forcemain discharge point to a higher elevation location further from sensitive receptors.

5 GRAVITY MAIN AND MANHOLES

Following the forcemain discharge, sewage then flows by gravity via a 12-inch and 18-inch PVC gravity main. The gravity main starts at Manhole #46, crosses Borrego Springs Road to Manhole #8, then crosses the Resort to Manhole #4, crosses Borrego Springs Road to Manhole #3, and finally terminates at the WWTP. The gravity main alignment and manhole locations are shown in Figure 5-1.

Figure 5-1: Gravity Sewer Main Alignment and Manhole Locations

5.1 Pipe Alignment

Approximately 2,000 feet of 18-inch PVC gravity sewer and six manholes are currently on private property. This run of sewer, which stretches from Manhole #8 to Manhole #4, flows through and collects sewage from the Resort. The District has reported difficulty with access and maintenance and odor complaints in this section of sewer. Relocation of the forcemain discharge should be considered when evaluating alternative gravity main alignments. The following alternative gravity main alignments include:

- Alternative 1: Following the public right-of-way along Borrego Springs Road. This alignment alternative would see the abandonment of the existing main between Manhole #8 and Manhole #3. A new 2,200-ft long 10-inch gravity main would be installed along Borrego Springs Road with new lateral connections made from the Resort. This alignment alternative would provide the District improved access to the gravity main and decrease odor complaints by moving manholes further from the Resort.
- Alternative 2: Re-route gravity main beginning at Manhole #46 and run alignment behind properties on the north side of Borrego Springs Road before connecting to the existing location of Manhole #3. The District has indicated that an easement exists, or could easily be obtained, in this location. A new 2,600-ft long 10-inch gravity main would be constructed. The existing segment of gravity main within the Resort would collect wastewater and tie into the new gravity main at Manhole #3. Manholes, and their

associated odor potential, would still exist on the Resort property. Construction of this alignment may be less expensive than trenching and repaving as would be required in Alternative 1. This alignment is not recommended due to potential issues with access, easements acquisition, and available slope.

Both alignment alternatives are shown in Figure 5-2. A topographic survey should be completed with any new gravity main alignment project to ensure adequate slope is available. A 10-inch PVC pipe diameter is recommended based on current District flows.

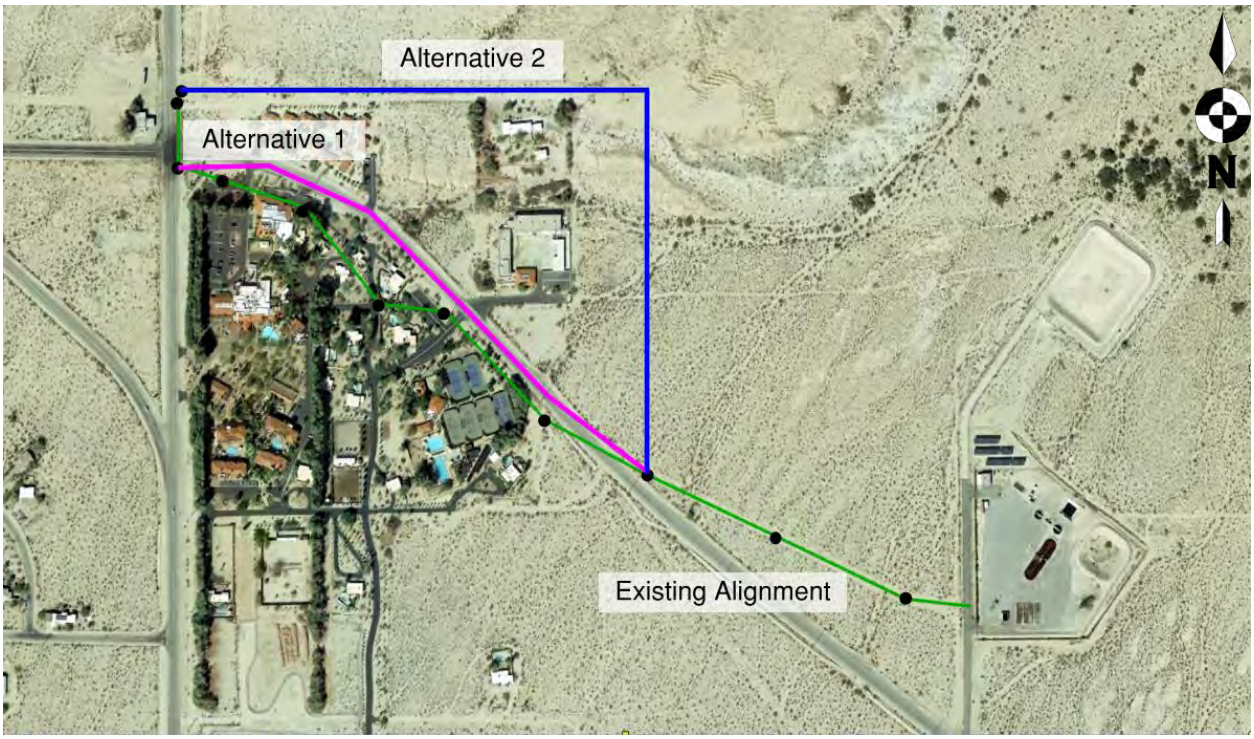


Figure 5-2: Gravity Main Alignment Alternatives

5.2 Gravity Main Assessment Results

The sewer data table with condition assessment data and rehabilitation and replacement recommendations developed for this project is included as Appendix B. Segments recommended for repair or replacement are summarized in Table 5-1 below.

Table 5-1: Pipe Defects

Segment	Upstream MH to Downstream MH	Pipe Defect
J	MH 9 to MH 8	Pipe is completely surcharged. Severe solids settling has occurred at the upstream MH 9 indicating the pipe has a positive upwards slope instead of a downwards slope as shown in Figure 5-3.
E	MH 5 to MH 4	Pipe has longitudinal crack starting at 294.6' and ending at 300'. Pipe has second longitudinal crack starting at 335' and ending at 340' as shown in Figure 5-4.

Figure 5-3: Solid Deposits in Manhole #9

Figure 5-4: Longitudinal Crack in Gravity Main Segment E (1 of 2)

5.3 Manhole Condition Assessment

Using a combination of the April 2017 Dudek site visit observations and photos from the 2014 CCTV inspection reports, conditions of the gravity sewer manholes were assessed. During the April 2017 Dudek site visit, Manholes #46, #9, #6, and #4 were observed to be in significantly worse condition than what the 2014 CCTV pictures report (Appendix E). This is likely due to the highly corrosive environment caused by H_2S gas. Before implementing repairs, the District should reassess each manhole and update conditions and subsequent required repairs. Manhole condition assessments are given in Table 5-2.

Table 5-2: Manhole Condition Assessment

MH ID	Location	MH Depth (ft)	2014 Condition	2017 Condition
1	East of Borrego Springs Rd	6.5	Manhole in good condition. Bench and channel have areas of exposed aggregate.	N/A
2	East of Borrego Springs Rd	8.0	Manhole, bench and channel in good condition. Bench has build-up of solids	N/A
3	Borrego Springs Rd	7.0	Manhole, channel and bench in good condition.	N/A
4	Borrego Springs Rd	8.0	Manhole has cracks at joints. Bench and channel have sections of exposed aggregate.	Bench has medium to high deterioration. Motorized fan with cable inside manhole.
5	Borrego Springs Rd	6.0	Manhole, bench and channel have areas of exposed aggregate from minor corrosion.	N/A
6	Private Property - West of Borrego Springs Rd	7.0	Manhole, channel and bench in good condition. Manhole bench recently lined as shown in Figure 5-5.	Entire manhole is lined. Manhole liner is failing as shown in Figure 5-6.
7	Private Property - West of Borrego Springs Rd	6.0	Manhole, bench and channel have many areas of exposed aggregate from severe corrosion.	N/A
7A	Borrego Springs Rd	-	Manhole, bench and channel showing signs of minor degradation.	N/A
8	Yaqui Pass Rd and Borrego Springs Rd	7.0	Manhole liner failing and flaking off. Channel and bench are mostly exposed aggregate.	N/A
9	Yaqui Pass Rd	-	Manhole and bench have previously been lined. Both are showing signs of failure and corrosion. Channel rapidly accumulates solids.	Severe solids deposit in manhole trough. Manhole liner is failing. Bench and channel all showing signs of severe corrosion.
46	Yaqui Pass Rd	6.0	N/A	Manhole liner is failing. Bench and channel all showing signs of severe corrosion. Concrete weir disintegrated, was removed and not replaced.

Manholes with existing failing liners will require either complete removal of the existing liner or patch repairs depending on the severity of the liner failure. For unlined manholes, the following strategies are repair alternatives based on observed conditions and level of corrosion:

- **Cementitious Wall and Bench Rehabilitation** – For uncoated manholes with mild to moderate corrosion, prepare existing surfaces and spray apply an approximately 1-inch coating of high-strength calcium aluminate cement to walls and bench, terminating just

below the channel springline. Calcium aluminate raises the surface pH, which protects against biogenic corrosion caused by H_2S. Acceptable products include SewperCoat by Kerneos and Strong-Seal High Performance Mix by The Strong Company, Inc.

- **Cementitious Channel Rehabilitation or Rechanneling** – For uncoated manhole channels with mild to moderate corrosion, prepare existing surfaces, which may include removing material obstructing flow in the channel and apply high-strength calcium aluminate cement to rehabilitate and/or reshape manhole channel. This work requires flow bypassing, and therefore is called for only where channel defects were clearly observed during field inspection and in photos.

- **Cured in Place Manhole Rehabilitation** – For manholes with severe corrosion, prepare existing surfaces and install a fully structural cured in place liner. Acceptable products include MultiPlexx Model PVCP by Terre Hill Composites and Triplex-5600 Liner by McNeil Technologies.

Figure 5-5: Manhole #6 (2014)

Figure 5-6: Manhole #6 (2017)

6 RECOMMENDATIONS

Dudek performed a system evaluation of the Borrego Water District's sewer collection system starting at the Borrego Valley Road Pump Station and ending at the gravity main near the District's WWTP. Dudek's review of the system resulted in various recommendations to address the system deficiencies identified in earlier sections of this TM. Class 4 (-15 to +50%) cost estimates were developed for each recommendation. Each recommendation was assigned a priority rank from very high to low. Each priority ranking represents a level of risk to the system at the currently deficiency state. For example, No. 1 System Deficiency – Gravity Main Segment J sloping upwards, presents a much greater risk and O&M costs to the District than No. 6 System Deficiency – Gravity Main Segment E has multiple cracks. While similar in estimated costs, the benefits and cost savings addressing No. 1 System Deficiency far outweigh the benefits of addressing No. 6 System Deficiency.

Recommendations and associated estimated costs are shown in Table 6-1.

Table 6-1: Summary of Recommendations and Costs

No.	Priority	System Deficiency	Recommendation	Estimated Cost
1	Very High	Gravity Main Segment J (MH #9 to MH #8) is sloping upwards causing solids settling to MH #9 and frequent cleaning, maintenance, and odor concerns.	Open trench replacement of Gravity Main Segment J from MH #9 to MH #8. Will require replacement or relocation of MH #8 to achieve adequate slope. Improvement assumes 220 LF of 10" PVC pipe and one new lined manhole.	$52,000
2	High	Borrego Valley Road Pump Station and forcemain generating severe levels of hydrogen sulfide leading to odor complaints, health concerns, and infrastructure corrosion.	Perform odor control study to analyze wastewater quality and sulfide generation potential. Evaluate liquid-phase odor control, gas-phase odor control, and physical modifications to minimize odor generation and release.	$40,000
3	Medium	2,200 LF of gravity main is located inside private property restricting District access.	Relocate portion of gravity sewer in public right-of-way along Borrego Springs Road. Improvement assumes 2,200 LF of 10" PVC pipe and six new integrally lined manholes.	$450,000
4a	Medium	Vacuum conditions exist in forcemain	Short-term: Inspect/replace ARV in Manhole 1F; install temporary weir in Manhole #46	$10,000
4b	Medium	Vacuum conditions exist in forcemain	Long-term: Relocate forcemain discharge to area of higher elevation and further from sensitive receptors	$50,000
5	Medium	District currently has no way to drain forcemain for cleaning or maintenance events.	Install blowoff assembly at STA 179+75 in sewer forcemain. Improvement assumes installation of 1 blowoff assembly.	$20,000

No.	Priority	System Deficiency	Recommendation	Estimated Cost
6	Medium	Several manholes have experienced severe corrosion and degradation as a result of H_2S forming sulfuric acid.	Perform updated manhole assessment and repair as needed. Improvement assumes repair of 10 manholes.	$80,000
7	Low	FOG problems in collection system	Increase FOG inspections at FSEs using District staff or an independent FOG inspector	$10,000/yr
8	Low	Gravity Main Segment E has multiple cracks	Repair pipe using trenchless CIPP liner. Improvement assumes 490 LF of 18" CIPP liner.	$53,000

7 CONCLUSION

Dudek has performed an engineering review of the District's sewer system including the Borrego Valley Road Pump Station, 2.8 miles of 10-inch PVC forcemain, 11 sewer manholes, and approximately 3,500 feet of gravity sewer main. Dudek's review of the system resulted in recommendations to address each concern identified in this report. Recommendations varied in estimated costs as low as $20,000 to as high as $450,000. Not all recommendations require implementation as one recommendation may help solve multiple deficiencies. For example, implementing and coordinating an odor control improvement program would address the odor issue as well as the manhole corrosion issue. Similarly, relocation of the section of gravity main from Manhole #8 to Manhole #3 into the public right-of-way would eliminate the necessity for repair of Gravity Main Segment E.

8 REFERENCES

US EPA. (1985). *Odor and Corrosion Control in Sanitary Sewerage Systems and Treatment Plants.* Washington D.C.: US EPA.

APPENDIX A

2015 Borrego Water District SSMP

Borrego Water District

Sewer System Management Plan

(SSMP)

NOVEMBER 2015

PREPARED BY:

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BORREGO WATER DISTRICT SEWER SYSTEM MANAGEMENT PLAN (SSMP)

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F. STATE OF CALIFORNIA WATER RESOURCES BOARD ORDER NO. WQ-2013-0058-EXEC, AMENDING MONITORING AND REPORTING PROGRAM FOR STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS FOR SANITARY SEWER SYSTEMS

SECTION (1.0.0): INTRODUCTION

Sanitary sewer overflows are identified as a major threat to public health and water quality because of the pathogens, toxic pollutants and nutrients they contain and have become a focus of State water quality regulators over the past several years. On May 2, 2006, the State Water Resources Control Board adopted *Statewide General Waste Discharge Requirements for Sanitary Sewer Systems* to provide a consistent, statewide regulatory approach to address these overflows (State Water Resources Control Board, Order No. 2006-003). Amendment Orders (Order No. WQ 2008-0002-EXEC and WQ 2013-0058-EXEC) were adopted. Public agencies, like the Borrego Water District, that own and operate a sanitary sewer system comprised of one mile or more of pipeline to transport sewage to a treatment facility must file a Notice of Intent to comply with the State Order. The requirements include two major components:

1) Reporting all sanitary sewer overflows in the statewide spill reporting database, and

2) Developing a Sewer System Management Plan (SSMP) with the intent to reduce the potential for or eliminate sanitary sewer overflows.

Before the enrollment deadline of November 2, 2006, the District submitted a Notice of Intent to the State Water Resources Control Board to comply with the State requirements related to reporting sanitary sewer overflows. The preparation, adoption and implementation of the District's SSMP fulfill the remaining requirement of the State Order.

SSMP Organization

The organization of this SSMP (section numbering and nomenclature) follows the General Waste Discharge Requirements (GWDR) for Wastewater Collection Agencies, State Water Resources Control Board Order Number 2006-0003 dated May 2, 2006 and Order Number 2008-0002-EXEC dated February 20, 2008. Board Order Nos. 2006-0003 and 2008-0002-EXEC are attached as Appendix A. Each section includes the requirement as the introduction for reference. As an introduction to the SSMP, this section provides background on the District's wastewater collection system. Following this introduction, the SSMP includes eleven required sections including:

- Goals
- Organization
- Legal Authority
- Operation and Maintenance
- Design and Construction Standards
- Overflow and Emergency Response
- Fats, Oils and Grease Control
- System Evaluation and Capacity Management
- Monitoring, Measurement, Program Modification,
- Communication

SECTION (2.0.1): Sewer System Management Plan Goals,

The WDRs for the Goals section of the SSMP states that the Borrego Water District must develop goals to properly manage, operate, and maintain all parts of its wastewater collection system in

order to reduce and prevent SSOs, as well as to mitigate any SSOs that occur. Additional and specific goals for the Borrego Water District SSMP shall include the following:

1. Maintain uninterrupted sewage flow without health hazard, effluent leakage, or water infiltration and inflow.
2. Operate a sanitary sewer system that meets all regulatory requirements.
3. Avoid sanitary sewer overflows and respond to sanitary sewer overflows quickly and mitigate any impact of the overflow.
4. Maintain standards and specifications for the installation of new wastewater systems.
5. Verify the wastewater collection system has adequate capacity to convey sewage during peak flows.
6. Provide training for Wastewater Collection staff.
7. Develop a Fats, Oil, and Grease (FOG) Control Program to limit fats, oils, grease, and other debris that may cause blockages in the sewer collection system at the time it is required.
8. Identify and prioritize structural deficiencies and implement short-term and long-term maintenance and rehabilitation actions to address each deficiency.
9. Meet all applicable regulatory notification and reporting requirements.
10. Provide excellent customer service through efficient systems operation and effective communication strategies.

Sewer System Management Plan Goals

The WDRs for the Goals section of the SSMP states that the Borrego Water District must develop goals to properly manage, operate, and maintain all parts of its wastewater collection system in order to reduce and prevent SSOs, as well as to mitigate any SSOs that occur. Additional and specific goals for the Borrego Water District SSMP shall include the following:

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2. Operate a sanitary sewer system that meets all regulatory requirements.
3. Avoid sanitary sewer overflows and respond to sanitary sewer overflows quickly and mitigate any impact of the overflow.
4. Maintain standards and specifications for the installation of new wastewater systems.
5. Verify the wastewater collection system has adequate capacity to convey sewage during peak flows.
6. Provide training for Wastewater Collection staff.
7. Develop a Fats, Oil, and Grease (FOG) Control Program to limit fats, oils, grease, and other debris that may cause blockages in the sewer collection system at the time it is required.
8. Identify and prioritize structural deficiencies and implement short-term and long-term

maintenance and rehabilitation actions to address each deficiency.

9. Meet all applicable regulatory notification and reporting requirements.
10. Provide excellent customer service through efficient systems operation and effective communication strategies.

SECTION 3.0.1: ORGANIZATION

Organization

The Borrego Water District oversees operation and maintenance of the wastewater collection system with the Engineer Staff. The District staff is organized into one main crew to conduct maintenance, inspection, and construction and repair operations as needed. Wastewater Collection staff responds to all sewage spills seven days a week, 24 hours a day.

- Table 1: SSMP Implementation Responsibilities - notes the responsibilities of the District Staff members.

- Figure 1: Organizational Chart - identifies the line of authority for the implementation of the SSMP. The Engineer whom plays a role in the SSMP responsibilities is noted in the in the Organization Chart as the Engineer is a contracted consultant of the District.

The authorized representative, or *legally responsible official* (LRO), for the implementation and administration of the Districts SSMP is the Supervisor/Foreman who is responsible for reporting SSOs via the California Integrated Water Quality System (CIWQS) on-line database.

Table 1: SSMP Implementation Responsibilities

SSMP	Responsible Person	Role
Goals		
Implementation and management of the SSMP	General Manager	Provides oversight of the SSMP
Ensure that the collection system is maintained and operated to reduce or eliminate SSOs	Chief Plant Operator (CPO)	Oversight of all aspects of the collection systems
Organization		
Chain of Communication	General Manager	Determines the chain of command for responding to SSOs
Organization Chart	General Manager	Keeps organization chart up to date
SOP for SSO Reporting Guidelines	Chief Plant Operator (CPO)	Keeps reporting guidelines up to date to ensure compliance with the GWDR

Operation & Maintenance Program		
Maintaining collection system maps	Chief Plant Operator (CPO)	Works with WWC staff and District Engineer to maintain maps
Preventative operation and maintenance	Chief Plant Operator (CPO)	Updates the description of the program as needed
Development of a rehabilitation and replacement plan	Chief Plant Operator (CPO)	Continues the current program in place and improves as needed
Provide training to WWC Staff	Operations Manager	Continues the current program in place and improves as needed
Provide equipment and replacement part inventories	Chief Plant Operator (CPO)	Continues the current program in place and improves as needed
Design & Performance Provisions		
Design and construction standards for all aspects of the collection system	Contracted Engineer	Works together to update design and construction standards
Inspection and testing standards	Chief Plant Operator (CPO)	Continues current inspection and testing practices and improves as needed
Overflow and Emergency Response		
Procedures for notification, response, notification of appropriate agencies	General Manager	The District has spill reporting guidelines in place. There will be updated to include CIWQS reporting. The current procedures for responding to a spill, containment preventing the discharge will be put in written form.
Training of all staff involved in emergency response including response procedures, Notification of agencies, and containing and preventing the discharge of wastewater to a waterway	Operations Manager	Conduct annual refresher training
Fats, Oils, & Grease (FOG) Control		
Administration and implementation of the District's FOG program which includes public education, inspection of facilities which produce FOG and working with WWC to identify areas prone to FOG blockage	Chief Plant Operator (CPO)	Continue current program and develop a written program of the current activities
System Evaluation & Capacity Assurance		
Evaluation of system to determine areas of deficiencies	Contracted Engineer	The District has a Sewer Master Plan in place.

Design criteria	Contracted Engineer	Design criterion is identified in the Sewer Master Plan.
Capacity enhancement measures	Contracted Engineer	Evaluation of hydraulic capacity is illustrated in the Sewer Master Plan
Capital Improvement Program	General Manager/Contracted Engineer	To be set in place as needed
Monitoring, Measurement, & Program Modifications		
Maintenance of information, monitoring and assessing the effectiveness of the program	Chief Plant Operator (CPO)	
Updating the program and Identifying trends	Operations Manager	
SSMP Audits		
Conduct periodic internal audits to determine the effectiveness of the SSMP and compliance with the SSMP	Contracted Engineer and CPO	Develop an audit check list, conduct internal audit at least every two years, keep a report of the findings on file, and initiate any corrective actions needed
Communication Program		
Communication with the public on the development, implementation, & performance of its SSMP	General Manager	
Develop a plan of communication with the satellite agencies	Operations Manager	

LEGAL AUTHORITY

SECTION (4.0.0): The legal authority for the Borrego Water District (BWD) to operate and maintain sewerage works is contained generally in the California Water Code, Section 34000 et.seq. and is specifically recognized in various SWRCB and RWQCB Orders. The District's rules and regulations regarding Sewer Use are described in the following documents which are appended hereto:

- Article VII of the BWD Administrative Code as amended February 28, 2007
- Policy Statement No. 84-2 relating to the Use of Septic Tank Systems within the Borrego Valley.
- Policy Statement No. 85-1 relating to the Issuance of Water and Sewer Will-Serve Letters.
- Policy Statement No. 89-1 as relates to the Expansion of the Town Center Sewer.
- Policy Statement No. 91-1 (which supersedes Policy Statement 84-2) relating to the Use of Septic Tank and Package Sewage Treatment Plants within the Borrego Water District.
- Policy Statement 2007-3-1 relating to Extending Sewer Service to Areas within the Borrego Water District but Outside of an Improvement District.

To insure the proper design, construction and inspection of new sewer facilities, the BWD has adopted the Water Agencies' Standards (sdwas.com) and is in the process of becoming a signatory member of this group. The group's webpage describing the contents of the standards is appended hereto.

The SWRCB and RWQCB Orders which the District operates under are enumerated below:

- ORDER NO. R7-2007-0053, WASTE DISCHARGE REQUIREMENTS FOR BORREGO WATER DISTRICT, OWNER/OPERATOR RAMS HILL WASTEWATER TREATMENT FACILITY, as issued by the California Regional Water Quality Control Board, Colorado River Basin Region.
- STATE WATER RESOURCES CONTROL BOARD ORDER NO. 2006-003-DWQ, STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS FOR SANITARY SEWER SYSTEMS.

The above Orders are appended hereto.

While this section of the SSMP can be waived for systems of small size similar to that operated by the BWD, it has been included to provide background on the legal authority of the BWD to operate the sewer system, and to provide documents that relate to other elements of the Sewer System Maintenance Plan.

(End of Section)

Appendices

OPERATIONS AND MAINTENANCE PROGRAM

SECTION 5.0.0: The Borrego Water District ("BWD", or "the District") presently operates a collection system which consists of a main interceptor that collects and transports sewage from the commercial area of town (the "Town Center Sewer") and a residential collection system which conveys sewage from the Montesoro develop in the Southeast portion of town (originally called the "Rams Hill Development"). The collection system has one lift station on Borrego Valley Road which is utilized to pump sewage collected from the Town Center Sewer to the Rams Hill Wastewater Treatment Plant. Additionally, the sewer system serves some trailer parks in the vicinity of the commercial area, and a portion of the Roadrunner Club, a mobile home and Recreational Vehicle Park.

In February, 2009, the District completed a consolidation with the Borrego Springs Park Community Services District (the "CSD"), which resulted in the BWD becoming responsible for the collection system it operated that conveys sewage from the Borrego Springs Resort area to the District's wastewater treatment plant.

MAPS:

SECTION 5.0.1: The District maintains maps of the collection system, and also all of the as-builts for the collection system. The size of the system has not necessitated the numbering of manholes or pipeline as they are generally referred to as to their location relative to landmarks such as major intersections or along streets as the case may be. Pump stations are located on the maps. There are no storm water facilities operated by the District. Furthermore, no in-line valves exist other than at the pump stations. The District has transferred all of its as-builts and system maps into the District's GIS system which is used extensively for the water system. Changes to the maps can be made in-house through the District's engineering capabilities which includes modern AutoCAD programs, scanners and plotters. Key system component operation and maintenance manuals are maintained at the District's offices and at the Rams Hill WWTP.

PREVENTATIVE OPERATION AND MAINTENANCE:

SECTION 5.0.2: The District has not experienced a history of mainline stoppages, and has not had to report a Sewer System Overflow ("SSO") since documentation of such events have been required to be submitted to the SWRCB.

The District has a pipeline cleaning program that is based on visual inspection of the sewers and a delineation of areas that are in need of cleaning due to slope conditions of the pipe. There are not any areas within the collection system that are "blind" to the discovery of SSO's, due to the location of the lines being adjacent to roadways for the most part, and the fact that running water

in the desert locale here is an unusual site and is reported immediately (in the case of waterline breaks) due to the high public conscientiousness of the community needing to preserve its' precious water resources.

While any SSO would be considered significant, there are no particular areas where an SSO would be considered critical due to the lack of waterways in the area. If an SSO were to occur it is likely to be contained to a relatively small area due to the soil conditions in the area, and the depth of the groundwater in the community is so deep that any percolated sewage overflow liguids would be cleansed through the natural soil filtration process (as demonstrated in the Whittier Narrows tests from the 1970's).

Roots from Oleander trees can be a problem in some areas, and are monitored regularly to insure that overflows are averted. The District maintains a procurement process which clearly delineates where work has been completed. Since the District does not have any sewer cleaning equipment, all sewer cleaning can be identified through the procurement records.

PREVENTATIVE MAINTENANCE:

SECTION 5.0.3: The District regularly inspects the collection system through manhole access on an annual basis to determine the need for cleaning and/or root control. Any evidence of oils and grease accumulation is also noted and results in stepped-up compliance of the District's FOG control program.

The District employs the use of a biological inoculant for the control of hydrogen sulfide gas in the collection system. The brand currently used is Persnickety 713. The product description, safety data and MSDA follow this section.

The area that has experienced some odor issues is near the intersection of Borrego Valley Road and Borrego Springs Road adjacent to the Borrego Ranch Resort, which is near where the force main from the District's lift station discharges back into gravity flow lines to the Rams Hill WWTP. The biological inoculant has performed satisfactorily.

Due to the nature of the climate and groundwater conditions in the Borrego Valley, neither infiltration nor inflow is experienced. Flow records from the WWTPs indicate extremely small increases in flow during runoff events, well below accepted levels for inflow. Infiltration is simply not an issue due to the depth to groundwater in the region.
The highest probability of experiencing an SSO would be at the lift stations operated by the District, with power outages being the most likely cause. In order to address this issue the

District has recently upgraded its' emergency generator capability through the purchase of two new mobile generators, and has an aggressive operation and maintenance program for all fixed generators.

REHABILITATION AND REPLACEMENT PROGRAM:

SECTION 5.0.4: The District constructed a new sewage lift station that includes automatic power transfer to back-up generators in case of power outages, and is sited in a bermed area. In case of a lift station failure and a backup of the collection system, the bermed area will contain any discharge of raw sewage offsite until which time that the District repairs the problem. Additionally, there is additional pumping capability built into the lift station to allow a temporary pump to be installed in the wet well if the main pumps are nonfunctional.

The District established a comprehensive Capital Improvement Program ("CIP"). The District's CIP is located on the District's website at www.borregowd.org, and is reviewed yearly by the District's Capital Project Committee based on input from operations and management staff. Funding for projects is achieved through District reserves and other financial vehicles such as low interest government loans, grants and development contributions.

TRAINING:

SECTION 5.0.5: The District participates in numerous training programs that are run by the Association of California Water Agencies Joint Powers Insurance Agency ("JPIA"). Additionally, the District provides for the training of its operations personnel to achieve certified operator licenses for operation of the WWTPs and the collection system.

In 2009, the District upgraded the Emergency Response Program to insure the ongoing availability of critical utility services in an emergency. The most likely emergency expected in the region is a long term power outage caused by a storm or possible earthquake. An earthquake is likely to also cause other problems to the facilities of the District, and the program provides for an assessment of all damage, and the assignment of personnel and equipment to the most critical areas following the event. The plan calls for periodic simulations of the response activities.

The District has maintained an excellent safety record due in large part to its on-going training efforts in conjunction with the JPIA. Incentive for safe operations is provided through the pass-through of any insurance premium rebates being placed into a fund for future employee bonus awards.

The District has three certified sewer system operators and a professional engineer on staff with 35 years of experience in wastewater collection systems.

EQUIPMENT AND REPLACEMENT INVENTORIES:

SECTION 5.0.6: The District maintains and extensive spare parts inventory for key system components due to the remote location of the service area. Pipe repair items, electrical switches and fuses are maintained in quantity, and a monthly check of the inventory is achieved through a computer software program utilized to track usage and expenditures. At present the District maintains approximately $150,000 worth of inventory which is available for use to insure the ongoing operation of the sewage system, including extra motors, backhoe spare parts, and other critical items.

Additionally the District has on-call contracts with local contractors to assist the District should the need arise in an emergency. These services include tanker trucks, cleaning and root cutting services, and labor assistance as may be necessary.

6. FOG CONTROL PROGRAM

Section (6.0.1): The BWD controls fats, oils and grease (FOG) in its collection system through the implementation of the requirements contained in Section 7.4.4.D of the Administrative Code which prohibits the discharge of these substances in a concentration greater than 100 mg/l (ppm). The District implements this provision through monthly inspection of all grease traps located within the District. Any violators are given orders to have their grease trap pumped if it is found to be overloaded or causing a discharge in violation of the aforementioned Code.

In general, the BWD has not experienced any problems with these substances under the present method of inspection and through coordination with the San Diego Department of Environmental Health, which also regulates the restaurants that are the primary source of these contaminants.

Program Background

The District's recommended pretreatment section of the Wastewater Division will permit and inspect grease and oil generating facilities to ensure control of discharges that may cause blockages. A Fats, Oil and Grease Control Program (FOG) is to be implemented by the District. It will include discharger education on the control of fats, oil and grease, and specific guidelines food facilities must follow. The program will be implemented by a District designated Industrial Waste Inspector. The California Regional Water Quality Control Board will require annual inspections and implementation of FOG control measures as a part of this recommended program as food service establishments are the largest non-domestic contributors of fats, oil and grease to the District's wastewater collection system.

Under the FOG program, the Food Service Establishment (FSE) is to document that each grease trap/interceptor is maintained to prevent FOG from entering the District's collection system. Inspections are to be conducted using an inspection form which addresses best management practices for the prevention of FOG discharges to the sewer. FSEs must maintain records of FOG program maintenance and disposal. Restaurant protocols that eliminate FOG from entering inside drains are considered including employee training and documentation of grease trap/interceptor cleaning. Inspections of FOG program and maintenance records may be completed on-site during any hour of operation.

Additionally, less preventive maintenance and fewer sanitary sewer overflows caused by fats, oil and grease allow the District to perform other required infrastructure work.

(6.0.2) Guidelines for the Control of Fats, Oil & Grease

As part of the District's FOG Program FSE's are provided the following guidelines as part of an inspection.

General Measures

- Train all restaurant/food service establishment staff on best management practices related to fat, oil and grease. Staff will be more willing to support an effort if they understand its basis. Trained staff will be more likely to implement best management practices and work to reduce grease discharges to the sewer.
- Post "No Grease" signs above sinks. Signs serve as a constant reminder to staff of proper grease disposal practices. Reduction of grease entering the drain reduces the cleaning frequency of the grease removal device.
- "Dry wipe" pot, pans and kitchen equipment before cleaning. "Dry wiping" will reduce the amount of grease going into the grease removal devices and the sewer. This will reduce the cleaning frequency and maintenance costs for grease removal devices and reduce the amount of grease entering the drain.
- Use absorbents such as paper towels to pick up oil and grease spills prior to mopping. Decreases the amount of grease that will be put down the drain. This reduces the amount of grease entering the drain and protects sewers from grease blockages and overflows.
- Dispose of food waste as solid waste. Dispose of food waste to the trash. Solid waste disposal of food waste will reduce the frequency and cost of grease removal device cleaning.
- Use screens in sinks and floor drains to capture food waste and dispose of properly into the trash. Food waste can cause sewer lateral blockages. Proper disposal of food waste will protect laterals and sewer mains from blockages and overflows.
- Collect and recycle waste cooking oil. Excess oil is prevented from entering the grease removal device and the sewer. Reduction in the cleaning frequency of the grease removal device and less grease being passed to the sewer.

(6.0.3) Grease Trap/Interceptor Maintenance/General

- Complete grease trap or interceptor maintenance log to document cleaning intervals. Maintenance log can help your facility determine if cleaning frequency of the grease removal device is sufficient. A proper cleaning frequency will result in less grease accumulating in the lateral, fewer blockages and less pass through to the sewer lines.
- Clean grease traps at a frequency that will prevent the accumulation of grease or pass through to the sewer. Routine cleaning of the grease removal device ensures efficient operations. Routine cleaning will prevent grease from passing through to the sewer lateral and from accumulating in the sewer mains.
- Use water temperatures less than 140° F in all sinks, especially in the pre-rinse sink. Temperatures above 140° F will dissolve grease, which will re-solidify in the sewer lines. Reduces costs for the energy to heat the water. Sewer lateral remains free of grease.
- Have a manager present during grease trap/interceptor cleaning to ensure the unit is properly serviced. The manager can ensure that the grease removal device is properly cleaned and no shortcuts are taken. Proper cleaning ensures that the grease removal

device will function properly and efficiently.

- Do not store anything on or around the grease removal device that will block access. Proper maintenance is easier to complete if access to the grease removal device is not blocked. Routine maintenance is more likely to be performed if the grease removal device is easily accessible.

(6.0.4) Outdoor Housekeeping/Storm Water Best Management Practices

- Clean floor mats and exhaust filters and other equipment inside. Cleaning greasy equipment outside is one of the most common sources of fat, oil and grease in our storm drains. Grease and food waste will be properly disposed of and will not enter the storm drain where it will de-grade surface channel water quality.
- Sweep or mop outdoor surfaces. Sweeping and mopping outdoor surfaces will reduce non-storm water runoff and will save water. Elimination of non-storm water discharges that degrade water quality.
- Any water used to clean outside surfaces by contractors must be vacuumed up and properly disposed of to the sewer.
- Keep the area around the dumpster/trash storage clear of trash, debris, and grease. Debris, trash, and grease can be washed into the storm drain during the rainy season. Loose debris and trash will not enter the storm drain causing blockages and will not enter the waterways.

(6.0.5) FOG Program Education

Information on proper disposal of FOG and other SSO prevention measures, including house lateral maintenance, etc. is to be disseminated through brochures and flyers. The District would also utilize personal contacts with business owners by the District's Public Works Supervisor or appointed Industrial Waste Inspector. These methods have been proven to be very effective in relaying information on proper disposal of FOG and SSO prevention methods to FSEs. Expanded use of radio and television announcements and other aggressive means should be explored in the future, as well as a District website. A more aggressive public education and outreach program will be considered and if warranted.

Section (6.1.0):

GREASE TRAPS/INTERCEPTORS IN FOOD SERVICE ESTABLISHMENTS/FACILITIES

Sub-Sections:

(6.0.1) Purpose.

The purpose of this section is to set forth policies, procedures, and requirements for food service establishments governing the installation, maintenance, and use of grease traps, grease interceptors or other comparable devices which represent the best practicable control technology for fat, oil, and grease (FOG) removal, to control discharge of grease into the wastewater collection system and to establish procedures regarding implementation and enforcement of the regulations set forth in this chapter.

(6.2.1) Conflict between these provisions and Uniform Plumbing Code.

All new grease trap/interceptor installations shall be located outside the footprint of the food facility wherever possible. No garbage disposal connections are allowed. A separate grease trap interceptor is recommended for each dishwasher. All rules of the Uniform Plumbing Code must be followed. In the event of any conflict between the provisions of this chapter and the Uniform Plumbing Code, the provisions of this order shall prevail.

(6.3.1) Definitions.

“Fats, Oils, Grease” (FOG) means the collective fats, oils, and grease generated by an FSE.
“Food service establishment” (FSE) ; means an establishment that prepares and/or sells food for consumption either on or off the premises, including, but not limited to, restaurants, sandwich shops, delicatessens, bakeries, or pizzerias. The term, as used in this chapter, does not refer to food stores or establishments that do not prepare food on premises or process food in a manner so as to contribute grease to the sewer system.

“BWD” or “District” means the Borrego Water District.

“BWDSSMP” means Borrego Water District Sewer System Management Plan

“Gravity Grease Interceptor” (GGI) is a larger volume gravity grease removal system usually between 200-2000 gpm that is installed underground outside of a facility.

“Grease interceptor” means a device designed and installed to separate and retain deleterious, hazardous, or undesirable matter from normal wastes and to permit normal sewage or liquid wastes to discharge into the disposal terminal by gravity.

“Grease trap” means a device designed to retain grease from grease generating fixtures and piping.

“Hydro-mechanical Grease Interceptor” (HGI) previously referred to as a “grease trap” is a smaller volume grease removal system usually between 20 gpm and 100 gpm. Can be located inside or preferably outside the building and the food preparation areas.

(6.4.1) Requirement for grease trap, grease interceptor, or other device.

(a) A food service establishment, restaurant or any other business discharging grease, oil or other similar material shall have an operable Hydro-mechanical Grease Interceptor (HGI) or Gravity Grease Interceptor (GGI) as determined by the BWD and the County of San Diego (DEH for location outside of the building footprint of an FSE if logistically possible and Building Division for sizing on building permits). A properly sized interceptor or (HGI) shall be considered first, in conformity with the sizing guidelines set forth in the BWD grease trap policy. Should space limitations or other exceptional circumstances prevent their installation, BWD may grant exceptions to the requirement of grease traps or grease interceptors in this section. Generally the BWD prohibits installation of a (GGI) unless exceptional circumstances require installation of a large volume gravity grease Interceptor (GGI). Jurisdiction for this requirement is mandated in the BWD Sewer Rules and Regulations Article VII section 7.4.5 titled Restaurant Grease Traps, which states: “Each restaurant connected to the sewer system shall properly install and maintain one or more grease traps to prevent prohibited substances, such as those described in Subsection 7.4.4 (the discharge of FOG in a concentration greater than 100 mg/l or containing substances which may solidify or become viscous at temperatures between 32 and 150 degrees Fahrenheit) from being discharged into the system. The District Engineer, (General Manager), or his authorized representative shall determine (1.) the number, size, type and capacity of the grease traps for each restaurant (FSE), and (2) the method and frequency of cleaning of the traps to assure their proper working condition.

(b) All drains from food preparation and cleanup areas including, but not limited to, prewash sinks, floor drains, food waste disposal units, pots and pans sinks, scullery sinks, and garbage can wash areas shall be connected to such trap or interceptor.

(c) Sizing Formula-The size of the grease trap/interceptor shall be as determined by the BWD on a case by case basis. Grease traps required by this chapter shall be no smaller than a **(75-gallon per minute flow rate and 150 lb capacity).** The BWD uses the Plumbing and Drainage Institute (PDI) sizing method which calculates actual drainage loads, flow rates, drainage periods and maximum total capacity for all fixtures. A small volume tank (75 gpm/150 lb) installed outside of the building footprint with a barrel for professional sanitary disposal of the grease is ideal. If this can not occur it must be placed outside of the food preparation area. The location will be determined by the District (BWD) as directed by the General Manager and the San Diego County Department of Environmental Health. The District may also require that the grease trap be cleaned professionally as needed.
(d) Existing grease traps, grease interceptors or similar devices.

> (1) Any food service establishment or other business that, on or after January 1, 1999, installed grease traps, grease interceptors, or other grease pretreatment equipment to comply with the requirements of the BWDSSMP, shall not be required to upgrade such equipment until January 1, 2016, so long as such equipment remains in good working order. Should the grease trap, grease interceptor or other grease pretreatment equipment become nonoperational or fail to operate in good working order, a grease trap or interceptor meeting the standards set forth in this chapter shall be immediately installed.
>
> (2) Notwithstanding the foregoing subsection (a)(1) of this section, any food service establishment or other business that, on or after, January 1, 1999, installed grease traps, grease interceptors, or other grease pretreatment equipment to comply with the requirements of the BWDSSMP, shall upgrade such equipment to meet the standards set forth in this chapter upon the change of ownership of the business in which the equipment is located, or upon the remodeling of the business in which the equipment is located. Remodeling of the business not requiring a building permit shall be exempted from the upgrade requirement. The remodeling shall not be separated into phases for the purpose of avoiding the requirement of a building permit.

(6.5.1) General regulations and procedures.
(a) When waste treatment is required pursuant to this chapter, an approved grease trap or grease interceptor complying with the provision of this chapter shall be installed in the waste line leading from sinks, drains, and other fixtures or equipment.

(b) A plumbing permit shall be obtained from the County of San Diego (Building Division) prior to the installation of a grease trap or grease interceptor. The food establishment must also obtain approval from the County of San Diego (Department of Environmental Health Food and Housing Division) to operate a food establishment in the County of San Diego.

(c) Each trap, interceptor, or comparable device required by this chapter shall have an approved volume not less than required by this chapter. Each new installation shall be required to install a sampling box. As stipulated in Section 7.4.4 D of the BWD administrative code the discharge of FOG in a concentration greater than 100 mg/l (ppm) is prohibited.

(d) Toilets, lavatories, and other sanitary fixtures shall not be connected to any grease trap, grease interceptor, or comparable device.

(e) Location of Grease Traps, and Grease Interceptors.

(1) They shall be located outside buildings, unless a finding is made by the County of San Diego building inspector that the location of the building on the site or some other aspect of the use prevents an outside location and that placement within a building is not hazardous to public health and safety;

(2) They shall be located and maintained at all times so as to prevent the entrance of foreign materials, shall be easily accessible for cleaning inspection and removal of intercepted grease, and shall pose no hazard to public health or safety;

(3) If they are not designed in accordance with Uniform Plumbing Code (UPC) Section 711, they must be designed by a professional engineer, must be consistent with the standards of this chapter, and must be approved by BWD.

(f) Related Equipment.

(1) They shall be fitted with a standard service access cover or manhole. If a manhole is required, it shall be brought to grade and finished with standard manhole cover and ring;

(2) A sampling box shall be located on the discharge side.

(g) All discharging fixtures shall be individually trapped and vented in accordance with the UPC.

(h) They shall be constructed of durable materials and shall have a full-size gas-tight cover which can easily be removed.

(i) They shall not be installed until the type and/or model has been subjected to, and has fully complied with, tests acceptable to the chief building inspector. Where an existing grease trap or grease interceptor is found acceptable by the chief building inspector, such equipment will be allowed to remain in use. Whenever a grease trap or grease interceptor does not comply with the provisions of this chapter, the chief building inspector shall require corrective measures.

(j) Prohibited and/or Restricted Equipment.

(1) The installation and use of garbage grinders (disposals) in commercial-food establishments is prohibited;

(2) The connection of high-temperature/high-flow dishwashers to a grease trap or grease interceptor is prohibited; water temperature cannot exceed 140F. High water temperatures will enable dissolved grease to pass through the interceptor and solidify in the BWD wastewater collection system causing a potential blockage and/or a decreased flow rate.

(3) The use of enzymes or bacterial cultures designed to disperse grease is prohibited unless specifically approved in writing by the BWD.

(4) The use of degreasing chemicals and solvents entering the collecting system must be environmentally sustainable approved and will be monitored by BWD staff.

(k) After the effective date of the ordinance codified in this chapter, all establishments covered by this chapter shall install an approved grease trap or grease interceptor of sufficient size to prevent discharges into the sewer system.

(l) Maintenance-

(1) Traps and interceptors shall be maintained in efficient operating condition by periodic removal of the accumulated grease. No collected grease shall be introduced into any public or private drainage piping.

(2) Any grease trap or grease interceptor required by this chapter shall be readily accessible for inspection and properly maintained to assure that accumulations of grease or oil do not impair its efficiency or transport grease or oil into the sewer system.

(3) All food service establishments or businesses required under this chapter to install and maintain a grease trap or grease interceptor shall maintain a maintenance record for the grease trap or grease interceptor, which shall be transmitted the BWD on a quarterly basis.

This record shall include the date, the name of the person who performed cleaning and the disposal site of the waste. The record shall be posted in a conspicuous location and be available for review by the BWD's inspector at each routine inspection and at such other time as necessary for the city to determine whether a particular establishment may be performing maintenance contrary to the provisions of this chapter.

(4) The BWD or its designee shall perform grease trap and grease interceptor inspections bi-annually, or more often at the discretion of the BWD should maintenance reports not be received or should a grease trap or grease interceptor fail to operate properly.

(5) In the event the BWD determines that a food service establishment or business required to install and maintain a grease trap either fails to maintain the maintenance record required by this section, or fails to maintain the grease trap as required by this section, the BWD may require the immediate installation of a grease interceptor.

(6) In the event a sewer spill, sewer main blockage or odor problem is reported and is determined to be caused by excessive grease generation BWD inspectors will investigate facilities contributing to the incident. A determination will be made as to which facilities contributed to the blockage, spill or odor problem. Subsequently more in-depth inspections of those facilities will be conducted where appropriate and additional requirements and/or procedures will be put in place. Where requirements are made for additional grease removal equipment or maintenance the facility (FSE) is given a date to comply. A notice of violation is issued once a facility has passed the final due date for compliance. Administrative hearings, permit revocation and termination of sewer service may occur for facilities who fail to comply.

(m) Suspension or Termination of Health Permit- The BWD shall have the discretion to request the County of San Diego Department of Environmental to terminate or cause to be terminated the health permit of any user if a violation of any provision of this chapter is found to cause a condition of contamination, pollution, nuisance, or other threat to public health or safety.

(n) Request for Ruling - If an applicant for a permit or the owner of a grease trap or grease interceptor disputes the interpretation or application of this chapter, he/she may request a written ruling from the General Manager of the BWD. The decision of the BWD General Manager shall be final for all purposes.

End FOG Control Program

BORREGO WATER DISTRICT
ARTICLE VII

Sewer Rules and Regulations

SECTION (7.1) PURPOSE AND POLICY

The Borrego Water District will provide for the maximum public benefit from the use of the District's facilities. This shall be accomplished by regulating sewer use and wastewater discharges, by providing equitable distributions of costs, and by establishing procedures that enable the District to comply with the standards, policies, and requirements of other regulatory agencies. The revenues derived from the fees and charges levied by the District for providing sewer services shall be used for the actual and necessary expenses related to those services only, including administration, operation monitoring, maintenance, capital improvements, replacements, and repair.

To comply with applicable State of California and County of San Diego policies and standards, provisions are made in this Article for the regulation of wastewater discharges. This Article may also establish quantity limitations on wastewater discharges in order to maintain an equitable distribution of the capacity rights in main trunk, collector and treatment facilities. It is also the intent of the limitations on the quality and quantity of discharges to assure the productions of a treated effluent satisfactory for reclamation and reuse purposes.

SECTION (7.2) DEFINITIONS

SECTION (7.3) USE OF DISTRICT SEWER SYSTEM

7.3.1 Unauthorized Use

No authorized person shall uncover, make any connections with or opening into, use, alter or disturb any public sewer without first obtaining a written permit from the Engineer and paying all applicable fees and charges.

7.3.2 Connection Rules and Regulations

The following rules and regulations for connection to the District's sewer system shall apply:

A. Each application for permission to connect to the sewer system shall be in writing and submitted to the District Office on forms provided by the District.

B. Application shall be made for a specific premise and is not transferable to any other premise.

C. Applicant shall specify the proposed use of the premise or project and the number of equivalent dwelling units required for that use.

D. Upon completion of a proper application and the payment of applicable fees and charges and meeting whatever stipulations, terms, or conditions established by the Engineer, a permit to connect to the sewer system may be issued.

E. Physical connection to the sewer system shall be made in a manner, size, and location as approved by the Engineer and shall be subject to the Engineer's inspection at any time during the connection process.

F. The connection permit shall not be deemed valid until the Engineer has inspected the completed connection and certified that it has been made in a reliable and satisfactory manner.

G. The owner of the premise for which the connection is made shall be responsible for the maintenance of the service lateral,

7.3.3 Facility Requirements for Sewer Construction Undertaken by Developers of Real Property within the Service Area of the Water District

Any construction of additions to the sewer system done by developers of real property will be done in conformance with the requirements of Policy 90-02 or such additional requirements as established by the District's Chief or Consulting Engineer.

SECTION (7.4) NON-SEWAGE WASTES

7.4.1 Discharge of Sanitary Sewage.

With the exception as provided by this Section, no person shall discharge or cause to be discharged anything other than sanitary sewage to any public sewer.

7.4.2 Discharge of Non-Sewage Waters.

No person shall discharge or cause to be discharged any storm water, surface waters, yard drainage, street drainage, roof runoff, swimming pool drainage, subsurface drainage, uncontaminated cooling water, or unpolluted industrial process waters to any sanitary sewer.

7.4.3 Water Softener Brine.

The discharge of water softener brine wastes is prohibited.

7.4.4 Other Prohibited Substances

No person shall discharge or cause to be discharged into the sewer system any of the following:

A. Any gasoline, benzene, naphtha, cleaning solvents, mineral oils, lubricating oils, fuel oil or other flammable or explosive solid or liquid.

B. Any solids or viscous substances in quantities, or of such size, capable of causing obstruction to the flow in sewers or interference with the proper operations of sewage facilities.

C. Any waters or wastes containing toxic or poisonous solid liquids or gases in sufficient quantity, whether singly or by interaction with other wastes, to interfere with the sewage treatment process, constitute a hazard to human or animal life, or create a public nuisance.

D. Any water or wastes containing fats, waste, grease or oils whether emulsified or not, in excess of 100 mg/L or containing substances which may solidify or become viscous at temperatures between 32 and 150 degrees Fahrenheit.

7.4.5 Restaurant Grease Traps.

Each restaurant connected to the sewer system shall properly install and maintain one or more grease traps to prevent prohibited substances, such as those described in Subsection D of Section 7.4.4, from being discharged into the system. The District Engineer or his authorized representative shall determine (1) the number, size, type, and capacity of the grease traps for each restaurant, and (2) the method and frequency of cleaning of the traps to assure their proper working condition.

SECTION 7.5 INSPECTION AND TESTING

The District Engineer or his authorized representative shall be permitted to enter upon any premises connected to or to be connected to the sewer system at any reasonable time and without prior notice for the purpose of:

A. Inspection, observation, measurement, sampling, and testing of the quantity, quality, and characteristics of the wastewater being discharged into the sewer system;

B. Determining the condition, location, and size of any sewer connection.

C. Determining the condition, location, and size of any device installed for the purpose of preventing prohibited substances from entering into the sewer system; or

D. Gathering any information required for the effective enforcement of any applicable state, federal, or local law or ordinance or any provisions of these rules and regulations.

SECTION 7.6 VIOLATION OF RULES

7.6.1 Notice of Violation

Any person violating any provisions of this Article shall be served by the District with written notice stating the nature of the violation, The offender shall, within the period of time stated on the notice, cease all violation. Continuance of violation shall be sufficient cause for the discontinuance of service,

7.6.2 Violation of a Misdemeanor.

Violation of any provisions, or the failure to comply with any of the requirements of the Articles or of any rule or regulation adopted herein shall constitute a misdemeanor. Any person convicted of such violation or such failure shall be punishable by a fine of not more than $500.00 or by imprisonment in the County Jail for a period of not more than six months, or by both such fine and imprisonment.

7.6.3 Other Criminal and Civil Liability.

In addition to Section 7.6.2, State statutes or regulations provide for other criminal and civil liability and penalties.

7.6.4 Revocation or Suspension of Permits

The District may revoke or suspend a permit issued to any person in the event of a violation by the permittee of any provision of any applicable state, federal, or local law or ordinance or any provisions of these rules and regulations. When a premise has been disconnected, it shall not be reconnected until the violation for which it was disconnected has ceased or been remedied and a reasonable charge for such disconnection and reconnection, as established by the District, has been paid.

7.6.5 Notice of intention to Disconnect

The District shall not give less than five days' notice of intention to disconnect the premise or suspend or revoke a permit, stating the reasons therefore, and may grant a reasonable time for the elimination of the violation; provided, however, that if the District determines that a dangerous situation exists or is imminent and such action is necessary for the immediate protection of the health, safety, or welfare of persons or property, or for the protection of the sewer system, any premise may be disconnected and service terminated concurrently with the giving of such notice. Notice may be given personally to the permittee or the permittee's agent or the recorded owner of the premise, by certified mail to the permittee or recorded owner of the premise or may be posted upon the premise.

7.6.6 Billings and Delinquent Accounts

There are monthly fees for those both holding EDUs for future use (Holders) and for those connected to and using the sewer system as set forth in the sewer service fee schedule. Under the provisions in the original contract failure of a Holder to pay fees within 30 days will result in a penalty of 10 percent per annum being applied on a

monthly basis at a rate of .83 percent a month. No holder may assign any EDU nor exercise his or her right of connection so long as the account is delinquent. Any account delinquent for a period of 90 days will result in written notification to the Holder that the account is in default and the total amount due. If payment is not received in full within 30 days following the date of notice the District shall terminate its performance of the Agreement with respect to all of the EDUs of the defaulting Holder, The EDUs of a defaulting Holder will become the property of the District for reassignment to others,

Failure of a User to pay the monthly fees will result in a 10 percent (10%) per month penalty and disconnect of water service based upon the conditions established in the water service provisions of this code.

Amended: Articles II, III, IV, V VI, AND VII, February 1999, September 2000, 10/29/2003,

SECTION (8.0.0): OVERFLOW EMERGENCY RESPONSE PLAN

CONTENTS / SECTION 8.0.0:

Section (8.0.1) RESPONSE TEAM MEMBERS:

The response team shall consist of the following personnel:

- General Manager
- Operations Manager
- District Engineer
- Compliance Manager
- Wastewater Operations Supervisor
- Water Operations Supervisor
- All Equipment Operators
- All Certified Operators and Field Personnel

The highest ranking responder onsite shall be responsible for all decisions relative to the response and correction of the SSO, and shall be responsible for compliance with applicable reporting requirements in consultation with the General Manager if he is not yet at the site.

The procedures for responding to a sewer system overflow within the Borrego Water District are established as follows:

SECTION (8.0.2) NOTIFICATION:

- The Duty Operator shall immediately notify the members of the District Management Team including the General Manager, Operations Manager and the Compliance Manager when informed or becoming aware that there is a sewer system overflow.

- The General Manager shall determine the extent of the overflow relative to regulatory requirements and make the appropriate notifications to the RWQCB and other agencies as may be appropriate for the size of spill and the extent of potential contamination.

SECTION (8.0.3) RESPONSE:

If the sewer system overflow or discharge is coming from a broken pipe, then the following procedures shall be implemented:

1. The immediate upstream manhole shall be sealed on the downstream side through use of a sewer plug or sand bags.

2. Diluted bleach shall be applied to the sewage spill to control pathogens, and warning tape and barricades placed to keep the public away from the site.

3. The emergency tanker truck contractor shall be called onsite.

4. The emergency gasoline pump shall be utilized to pump the manhole dry of sewage as it rises to the halfway point in the manhole, discharging the sewage into the tanker truck, which then shall deliver the sewage to the closest downstream manhole so that the sewage will be conveyed to the WWTP.

5. District Backhoes shall be brought onsite to construct berms to contain the sewage spill.

6. A sump shall be dug by the backhoe at the low end of the affected area so that the emergency trash pump can pump the sewage collecting in said spot into the tank truck for disposal at the closest downstream manhole.

7. The area affected by the spill shall be sprayed with a dilute dilution of bleach immediately after all sewage has been removed pursuant to step 6 above.

8. The response crew shall then use the backhoe to expose the portion of broken/leaking pipe, and utilizing all safety procedures for trench excavation shall repair or replace the damaged section of pipe. Once the pipe is repaired then the seal at the upstream manhole shall be removed after pumping the sewage down to the lowest point possible.

9. Once the land area that the spill impacted has dried sufficient to allow staff to traverse the site then the response team shall clean up all solid waste on the site and dispose of it properly at the WWTP.

10. Following drying of the area to a sufficient level for motorized equipment, the area shall be scarified with the District's Gannon Tractor, and the area again sprayed with dilute bleach.

11. The following day the area shall be smoothed over with the Gannon Tractor, and the warning tape shall be left in place for 1 week following the event.

Should the source of the overflow be a manhole, then the above procedures apply with the following modifications.

1. The emergency pump shall be used at the overflowing manhole to pump sewage into the tank truck.

2. The other members of the response crew shall seal the immediate upstream manhole. Once the sewage in the overflowing manhole is eliminated, the emergency pump shall be transferred to the upstream manhole and pump it out as outlined in procedure 4 above.

3. The District shall contact its sewer cleaning contractor to have the downstream lines cleaned to remove the obstruction causing the backup in the overflowing manhole.

If the source of the SSO is one of the District's existing sewage lift stations then Steps 1 through 11 above apply with the following modifications:

1. Place the emergency gasoline powered pump in the sump of the wetwell and pump to the tanker truck for disposal at the closest downstream manhole to allow the sewage to reach the WWTP.

2. Immediately call the District's on-call pump repair firm to respond to the problem and determine if the cause of the overflow is due to mechanical failure of the lift station pumps, or if the cause is due to a problem with the force main.

3. If the problem is mechanical, continue to implement emergency response procedures while the contractor repairs the lift station.

4. If the problem is with the force main, then contact the sewer cleaning on-call firm and have the line inspected and cleaned to determine if there is a collapsed section of pipe or a clog that need to be removed.

5. Once the portion of the force main that needs repairing is identified, then the response team shall replace that portion of pipe consistent with District practice and procedures for pipe repair, and upon completion of the repair the lift station shall be returned to service and a determination made if the problem has been resolved.

SECTION (8.0.4) REPORTING:

Consistent with SWRCB Order No. **WQ 2013-0058-EXEC**, the General Manager shall insure compliance with the following provisions. There are three categories of sewer spills:

SSO Categories

Category 1

Discharges of untreated or partially treated wastewater of any volume resulting from the District's sanitary sewer system failure or flow condition that:

a. Reach surface water and/or reach a drainage channel tributary to a surface water; or

b. Reach a MS4 and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly. Any volume of wastewater not recovered from the MS4 is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or groundwater infiltration basin (e.g., infiltration pit, percolation pond).

Category 2

Discharges of untreated or partially treated wastewater greater than or equal to 1,000 gallons resulting from the District's sanitary sewer system failure or flow condition that does not reach a surface water, a drainage channel, or the MS4 unless the entire SSO volume discharged to the storm drain system is fully recovered and disposed of properly.

Category 3

All other discharges of untreated or partially treated wastewater resulting from the District's sanitary sewer system failure or flow condition.

SECTION (8.0.5) NOTIFICATION REQUIREMENTS:

1. For any **Category 1 SSO** greater than or equal to 1,000 gallons that results in a discharge to a surface water or spilled in a location where it probably will be discharged to surface water, either directly or by way of a drainage channel or MS4, the District shall, as soon as possible, but not later than two **(2) hours** after (A) the District has knowledge of the discharge, (B) notification is possible, and (C) notification can be provided without substantially impeding cleanup or other emergency measures, notify the Cal OES and obtain a notification control number.

   State Office of Emergency Services (OES) phone number: **(800) 852-7550**

2. The District shall provide the information requested by Cal OES before receiving a control number. Spill information requested by Cal OES may include:

    i. Name of person notifying Cal OES and direct return phone number.
    ii. Estimated SSO volume discharged (gallons).
    iii. If ongoing, estimated SSO discharge rate (gallons per minute).
    iv. SSO Incident Description:
        a. Brief narrative.
        b. On-scene point of contact for additional information (name and cell phone number).
        c. Date and time District became aware of the SSO.
        d. Name of sanitary sewer system agency causing the SSO.
        e. SSO cause (if known).
    v. Indication of whether the SSO has been contained.
    vi. Indication of whether surface water is impacted.
    vii. Name of surface water impacted by the SSO, if applicable.
    viii. Indication of whether a drinking water supply is or may be impacted by the SSO.
    ix. Any other known SSO impacts.
    x. SSO incident location (address, city, state, and zip code).

3. Following the initial notification to Cal OES and until such time that the District certifies the SSO report in the CIWQS Online SSO Database, the District shall provide updates to Cal OES regarding substantial changes to the estimated volume of untreated or partially treated sewage discharged and any substantial change(s) to known impact(s).

4. The District shall notify Cal OES of discharges greater than or equal to 1,000 gallons of untreated or partially treated wastewater that result or may result in a discharge to surface water resulting from failures or flow conditions within a privately owned sewer lateral or from other private sewer asset(s) if the District becomes aware of the PLSD.

SECTION (8.0.6) SANITARY SEWER OVERFLOW REPORTING – TIMEFRAMES:

Category 1 and Category 2 SSOs – All SSOs that meet the above criteria for Category 1 or Category 2 SSOs shall be reported to the CIWQS Online SSO Database:

a. Draft reports for Category 1 and Category 2 SSOs shall be submitted to the CIWQS Online SSO Database within three **(3) business days** of the District becoming award of the SSO.

b. A final Category 1 or Category 2 SSO report shall be certified through the CIWQS Online SSO Database within **15 calendar days** of the end date of the SSO.

Category 3 SSOs – All SSOs that meet the above criteria for Category 3 SSOs shall be reported to the CIWQS Online SSO Database and certified within 30 calendar days after the end of the calendar month in which the SSO occurs (e.g., all Category 3 SSOs occurring in the month of February shall be entered into the database and certified by March 30).

"No Spill" Certification – If there are no SSOs during the calendar month, the District shall either 1) certify, within 30 calendar days after the end of each calendar month, a "No Spill" certification statement in the CIWQS Online SSO Database certifying that there were no SSOs for the designated month, or 2) certify, quarterly within 30 calendar days after the end of each quarter, "No Spill" certification statements in the CIWQS Online SSO Database certifying that there were no SSOs for each month in the quarter being reported on. For quarterly reporting, the quarters are Q1 - January/ February/ March, Q2 - April/May/June, Q3 July/August/September, and Q4 - October/November/December. If there are no SSOs during a calendar month but the District reported a PLSD, the District shall still certify a "No Spill" certification statement for that month.

Amended SSO Reports – The District may update or add additional information to a certified SSO report within 120 calendar days after the SSO end date by amending the report or by adding an attachment to the SSO report in the CIWQS Online SSO Database. SSO reports certified in the CIWQS Online SSO Database prior to the adoption date of this MRP may only be amended up to 120 days after the effective date of this MRP. After 120 days, the District may contact the SSO Program Manager to request to amend an SSO report if the District also submits justification for why the additional information was not available prior to the end of the 120 days.

SECTION (8.0.6) RECORD KEEPING REQUIREMENTS:

The following records shall be maintained by the District for a minimum of five (5) years and shall be made available for review by the Water Boards during an onsite inspection or through an information request:

1. General Records: The District shall maintain records to document compliance with all provisions of the SSS WDRs and this MRP for each sanitary sewer system owned

including any required records generated by an District's sanitary sewer system contractor(s).

2. SSO Records: The District shall maintain records for each SSO event, including but not limited to:

    a. Complaint records documenting how the District responded to all notifications of possible or actual SSOs, both during and after business hours, including complaints that do not result in SSOs. Each complaint record shall, at a minimum, include the following information:

        i. Date, time, and method of notification.
        ii. Date and time the complainant or informant first noticed the SSO.
        iii. Narrative description of the complaint, including any information the caller can provide regarding whether or not the complainant or informant reporting the potential SSO knows if the SSO has reached surface waters, drainage channels or storm drains.
        iv. Follow-up return contact information for complainant or informant for each complaint received, if not reported anonymously.
        v. Final resolution of the complaint.

    b. Records documenting steps and/or remedial actions undertaken by District, using all available information, to comply with section D.7 of the SSS WDRs.

    c. Records documenting how all estimate(s) of volume(s) discharged and, if applicable, volume(s) recovered were calculated.

3. Records documenting all changes made to the SSMP since its last certification indicating when a subsection(s) of the SSMP was changed and/or updated and who authorized the change or update. These records shall be attached to the SSMP.

4. Electronic monitoring records relied upon for documenting SSO events and/or estimating the SSO volume discharged, including, but not limited to records from:

    a. Supervisory Control and Data Acquisition (SCADA) systems
    b. Alarm system(s)
    c. Flow monitoring device(s) or other instrument(s) used to estimate wastewater levels, flow rates and/or volumes.

SECTION (8.0.7) OTHER REQUIREMENTS:

As defined and discussed in the Monitoring and Reporting Program Order No. **WQ 2013-0058-EXEC**, attached.

BORREGO WATER DISTRICT

POLICY STATEMENT

Subject: Issuance of Water and Sewer ill-Serve Letters
No: 85-1
Adopted: January 16, 1985

PURPOSE:

To guide the staff and those persons or organizations processing development projects which will require water, sewer, flood control or septic systems maintenance services from the District.

GOALS:

It is the intention of the Board of Directors to accomodate those involved in the processing of development proposals and to respond to referrals from the County Department of Planning and Land as expeditiously as possible. In doing so, however, the Board of Directors recognizes that the costs associated in the analysis and preparation of Will-Serve Letters should not be a burden upon the General Funds of the District. It is the Board's goal, therefore, to assure that all such costs are fully paid for by those benefiting from the issuance of Will-Serve Letters.

POLICY:

1. All requests for Will-Serve Letters will, upon receipt, be for referred to staff an estimate of the legal, administrative And engineering costs associated with the preparation of a responsible reply.

2. At the earliest practicable meeting of the Board of Directors, staff will present its estimate and the Board shall determine the amount to be deposited with the District by those submitting the request. Further action on the requests may be suspended until such funds have been deposited.

3. Should the actual costs exceed the estimate, the Board may withhold issuance of the final Will-Serve Letter until the District is fully reimbursed.

4. Should the actual costs be less than the estimate, the Board may authorize reimbursement.

5. The foregoing shall not apply to requests from owners or developers who have paid for and installed water, sewer or flood control facilities to District standards. In such cases, staff is authorized to execute will-Serve Letters without prior Board review or approval.

BORREGO WATER DISTRICT

POLICY STATEMENT

SUBJECT : Expansion of the Town Center Sewer

NO: 89-1

ADOPTED : May 24, 1989

PURPOSE:

The purpose of this policy is to guide the District staff, current holders of capacity in the Town Center Sewer and other interested persons on the conditions under which the Board of Directors would consider the expansion of this sewer facility beyond its current connection limit of 1,000 equivalent dwelling units (EDU's).

GOAL:

The Board of Directors recognizes that sometime in the future development in the District will reach levels that may make it desirable to expand the sage of the Town Center Sewer. In order to meet its other commitments, however, the Board must be assured that the Rams Hill Treatment Plant can be expanded to a 750,000 or 1,000,QOO gpd capacity. The Board is also aware that in order to expand the use of this sewer facility it must first obtain approval of the Local Agency Formation Commission (LAFCO) to expand its latent sewer service area beyond the current geographical limits. It is the goal of this Policy, therefore, to provide a means whereby the Board may satisfy its responsibilities to the residents and property owners within Rams Hill and to those agencies having regulatory jurisdiction.

POLICY :

1. Prior to considering the expansion of the Town Center Sewer within the existing approved sewer service area. the following conditions must be met:

   a. Petitioners seeking expa,nsion of this sewer facility shall deposit with District the amount of $100.00 per eachEDU of expanded capacity required for the purpose of financing a feasibility study.

   b. No such study shall be undertaken until the District has received a total of $25.000 in deposits.

   c. The study shall investigate the economic an:d technital feasibility of expanding the capacity of the Rams Hill Treatment Plant and the Town Center Sewer, and may investigate other matters the Board deems relevant to such a project.

2. Prior to considering he expansion of the Town Center Sewer to serve areas outside of the existing approved service area, the following conditions must be met:

   a. All of the conditions set forth in Section 1 above; and

   b. An estimate shall be made of the costs of making an application to LAFCO for its approval to expand the sewer service area of the District and for an environmental impact analysis if one should be necessary. The petitioners shall deposit with the District an amount equal to this estimate in addition to any other deposits made under this Policy.

BORREGO WATER DISTRICT

POLICY NO. 91-1

Subject: Use of Septic Tank and Package Sewage Treatment Plants within the Borrego Water District

No.: 91-1 Supercedes Policy 84-2

Adopted: 2/20/91

Purpose

The Borrego Water District operates the Ram's Hill Wastewater Reclamation Plant and the Town Center Sewer. As other areas in the Borrego Valley develop consideration should be given to utilizing, expanding or extending these facilities to new service areas. Before any maps are approved which call for the use of septic tanks or package sewer treatment plants for installation in the Borrego Valley, the Borrego Water District should have the opportunity to review the project and to suggest alternative sewage collection and treatment methods.

This policy is intended to inform those doing business with the District, other public agencies having policy or regulatory jurisdiction over the subject matter, and the public in general, that the Board of Directors is concerned about the continued use of septic tank systems and isolated package sewage treatment plants within the Borrego Valley. It is the further purpose of this Policy Statement to guide and direct rather than to regulate the use of septic tank and package treatment plant systems.

Goals and Intent

It is the intent of the Borrego Water District to establish and carry out a groundwater management program to preserve and enhance the water resources of the Valley. In cooperation with their public agencies and privately owned water utilities, the ultimate goal of the District is to assure present and future residents a reliable source of water of a quality adequate to meet the needs of all classifications of users.

One of the elements of a groundwater management program is the regulation of methods for the collection, treatment and disposal of liquid waste in order that (a) groundwater supplies will not be polluted, and (b) wastewater may be reclaimed and reused to every extent practicable and economical.

It is the intent of the Board of Directors that all sewer improvement plans be referred to the District staff for review of (1) type and capacity of proposed sewage treatment plant, (2) comments regarding location of plant in the tract, (3) comments and right of approval of pipe layout, (4) right to make recommendations and to approve plans for treated wastewater disposal, (5) have the right to operate the plant under adequate fee structure or to approve outside operation provided operation is to district standards and the number of years said operation is specified. District should also be advised as to future responsibility after outside contractor (developer or County) ceases to be responsible for operation and (6) have the right to make recommendations and approve the plan for financial responsibility for maintenance.

POLICY:

1. The District will use its authority to raise funds and develop plans for programs that will lead to the construction of public sewer systems as rapidly as existing and future development density warrants.

2. As the sewer system is placed in service and periodically expanded, it shall be the Policy to require connection by all properties abutting the trunk lines. It is expected that, as such connections are made, septic systems will be phased out of existence in all areas served by the District except those isolated areas of low density in which service is not economically feasible.

3. By observing expansion actions taken by the District, property owners will be provided with fair notice of the type of disposal system which they will ultimately be required to use.

4 The costs of initial planning and program development will be borne by General Funds of the District based upon the principle that public sewer systems are the primary means for safeguarding groundwater resources, and are therefore, beneficial to all water users within the Borrego Valley.

5. Funds required for the design, permit approval, and construction of public sewer facilities will be required of owners whose properties directly benefit from the construction of such facilities.

6. The District will work with the County of San Diego to review package treatment plants when considered for use within the District.

IMPLEMENTATION:

The staff is directed to keep alert to and monitor new evelopment and proposals within the Valley that the use of septic tanks contemplate package iewage treatment plants. or

Staff is further directed to keep the Board of Directors iniormed of uch developments and to analyze and mai ntain records on the cumulative 1mpact the instal lation of new septic tanks will have on groundwater quality and the present or proposed program of the District.

A copy of this Policy Statement is to be transmitted to other agencies having jurisdiction in these matters along with a request that the District be notified:

1. When permits are applied for, to install new, or to replce or substantially modify existing septic tank systems: or

2. When any violation of the permit process relative. to the installation, replacement, modification or maintenance of septic tanks is detected.

3. When any planning decision or map is being processed by the County of San Diego which lnvolves septic tanks or package sewage treatment plants.

BORREGO WATER DISTRICT

POLICY STATEMENT

SUBJECT: **Extending Sewer Service to Areas Within the Borrego Water District But Outside of an Improvement District**

NO: **2007-3-1**

ADOPTED: **March 28, 2007**

Reference: **Policy 81-1**
Policy 87-1
Policy 89-1

PURPOSE

The District frequently receives inquiries from persons owning property within the boundary of the Borrego Water District, but outside of an Improvement District, as to the requirements for obtaining sewer service from the District.

Tills is a policy statement setting forth the procedure for those properties to obtain sewer service from the Borrego Water District. The policy does not apply to any land outside of the boundary of the District as provision of sewer service to such property would require atll lexation and approval of the Local Agency Formation Commission.*

BACKGROUND

The Borrego Water District has extended its service areas by creating Improvement Districts. When the District was activated in 1978 to provide water, sewer and flood control services to the Ram's Hill development, it created Improvement District No. 1 and established both taxing and service rates for that area. When sewer service was established to the Town Center area in 1988, the area was designated as Improvement District No. 2. When the water service areas of the Rancho Borrego Mutual Water Company and the Desert Sands Mutual Water Company were acquired in 1985, the area was designated Improvement District No. 3. When the assets of the Borrego Springs Water Company were acquired in 1997, the service area was designated Improvement District No. 4. Each of the Improvement Districts that provides water and sewer service has its own tax rate and service rates. Much of the area of the Borrego Water District does not have service by the District. Owners of land in this area frequently inquire as to what is needed to obtain service. The purpose of this policy is to specify the requirements. Sewer service at present is provided only in ID 1 (Ram's Hill/Montesoro) and ID 2 (the Town Center Sewer).

•Note: For inquiries regarding sewer service outside the District LAFCO would advise the property owner to contact the BWD regarding the feasibility of annexing to the District and then make application through LAFCO. The District would set the terms and conditions of the annexation through the LAFCO process.

GOALS

It is the goal of the Borrego Water District to extend sewer services of the District to all art?as within its boundaries where practicable, but not to create a situation that would be regarded as growth inducing under the provisions of the California Environmental Quality Act. Wherever service is extended, it should be done without adding to the costs of those already receiving service either interms of providing the initial service or maintaining the expanded system. All lands to be considered for new service shall fall under all other District standards and requirements including existing policies and regulations.

POLICY

1) The District may consider extending its sewer services to any property within the District boundary if that property may practicably be served by an e:<lsting or newly created Improvement District and the property is annexed by Board action to that Improvement District as provided in Section 36428 et seq. of the Water Code of the State of California.

2) Any property owner seeking the extension of Djstrict sewer service shall require a detemlination by District staff of the property 's status with regard to the District's Sewer Sphere of Influence (SOI). If it is determined that the property in question is not within the District's Sewer Sphere of Influence, the property owner shall be directed to LAFCO to process any changes required to be included within the District's Sewer SOI.

3) If tfle property in question is in the SOI but not in an existing District Improvement District for sewer service, the property owner will be directed to LAFCO to process documentation for proceedings regarding Expansion of the District's Sewer Service Latent Powers Area. If approved by LAFCO for expansion of the sewer service latent powers area, the property owner will follow the procedure established below.

4) Any property owner seeking the extension of District sewer service to property shall submit a request to the District to be approved by the Board of Directors and shall comply with the Jntemal Annexation Procedures of the District.

5) All sewer extensions and facilities shall be provided by the property owners at their sole expense including, but not limited to, all permit costs, District staff, attorney and/or engineering costs and any environmental evaluations and clearances. All facilities shall be constructed to the standards of the District. Sewer line extehsions that may serve additional property in the future may include a reimbursement agreement.

6) All sewer line extensions and facilities shall be granted to theDistrict.

7) The property will be subject to the taxes and sewer service rates of the Improvement District to which it is annexed.

8) It is the general policy of the Board of Directors of the Borrego Water District to limit annexation of territory to an Improvement District to property that is ontiguous to the Improvement District and that has appropriate facilities available or that can practicably be made available to serve the subject land.

Attachments: Legal Description, Notary Form

APPENDIX

Borrego Water District
Sewer System Management Plan
(SSMP)

DECEMBER 2014

PREPARED BY:

DAVID DALE, P.E.

2415 IMPERIAL BUSINESS PARK DRIVE, SUITE B

IMPERIAL, CA 92251

APPENDIX B

CCTV Inspection Summary

Pipe Segment	U/S MH	D/S MH	Length (ft)	Diam (in)	Material	Direction	Dudek Reviewer	General Condition Notes	Lateral Notes (TBA = Tap Break-in Active) (TFA = Tap Factory Active)	Point Repair Notes	Final Recommendation
A	1	WWTP	298	18	PVC	DS	BHT	Pipe is in good condition, no defects. Pipe has light staining.	None	N/A	NO REPAIR
B	2	1	500.4	18	PVC	DS	BHT	Pipe has small sag starting at 281' and ending at 317'. Pipe has small sag starting at 402' and ending at 447'. Sags are minor and no settled solids were observed.	None	N/A	NO REPAIR
C	3	2	500.7	18	PVC	DS	BHT	Pipe is in good condition, no defects. Pipe has light staining.	None	N/A	NO REPAIR
D	4	3	374.5	18	PVC	DS	BHT	Pipe has light to medium grease deposits throughout. CCTV operator reports sags but the water backup is caused by the pipe slightly changing slope and causing a water back up.	None	N/A	NO REPAIR
E	5	4	492.1	18	PVC	DS	BHT	Pipe has light to medium grease deposits throughout. Pipe has light to medium grease deposits throughout. Pipe has longitudinal crack starting at 294.6' and ending at 300'. Pipe has second longitudinal crack starting at 335' and ending at 340'.	TBA 39.8' @ 10:00 TBA 115.9' @ 2:00 TBA 480' @ 2:00	N/A	LINE
F	6	5	227	18	PVC	DS	BHT	Pipe has light to medium grease deposits throughout.	TBA 47.7' @ 10:00	N/A	NO REPAIR
G	7	6	410.2	18	PVC	DS	BHT	Pipe has light to medium grease deposits and staining throughout. Medium obstruction in pipe at 226.8' causing a back up of water. Appears to be asphalt. Deposited solids at 260'.	TBA 86.1' @ 2:00 TBA 92.3' @ 2:00 TBA 264.2' @ 12:00 TBA 299.9' @ 2:00	N/A	NO REPAIR
H	7A	7	312	18	PVC	DS	BHT	Pipe has light to medium grease deposits and staining. Operator notes sag in pipe starting at 247.3' due to high water level. It is unclear whether the high water level is due to a sag or downstream obstruction causing water to back up.	TBA 108' @ 2:00, offset TFA 130.4' @ 2:00 TBA 212.6' @ 12:00	N/A	
I	8	7A	149.2	18	PVC	DS	BHT	Pipe has light to medium grease deposits and staining.	None	N/A	NO REPAIR
J	9	8	223.8	10	PVC	DS	BHT	Camera is completely submerged throughout inspection. Pipe needs immediate replacement. Pipe has sag. Need to survey invert of upstream and downstream manhole to verify adequate slope is available.	None	N/A	TRENCH
K	46	9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

APPENDIX C

Borrego Water District FOG Control Program

FOG CONTROL PROGRAM

The BWD controls fats, oils and grease in its collection system through the implementation of the requirements contained in Section 7.4.4.D of the Administrative Code which prohibits the discharge of these substances in a concentration greater than 100 mg/l (ppm). The District implements this provision through monthly inspection of all grease traps located within the District. Any violators are given orders to have their grease trap pumped if it is found to be overloaded or causing a discharge in violation of the aforementioned Code.

In general, the BWD has not experienced any problems with these substances under the present method of inspection and through coordination with the San Diego Public Health Department, which also regulates the restaurants that are the primary source of these contaminants.

Program Background

The District's recommended pretreatment section of the Wastewater Division will permit and inspect grease and oil generating facilities to ensure control of discharges that may cause blockages. A Fats, Oil and Grease Control Program (FOG) is to be implemented by the District. It will include discharger education on the control of fats, oil and grease, and specific guidelines facilities must follow. The program will be implemented by a District designated Industrial Waste Inspector. The California Regional Water Quality Control Board will require annual inspections and implementation of FOG control measures as a part of this recommended program as food establishments are the largest non-domestic contributors of fats, oil and grease to the District's wastewater collection system.

Under the FOG program, the FSE is to document that each grease trap/interceptor is maintained to prevent FOG from entering the District's collection system. Inspections are to be conducted using an inspection form which addresses best management practices for the prevention of FOG discharges to the sewer. FSEs must maintain records of FOG program maintenance and disposal. Restaurant protocols that eliminate FOG from entering inside drains are considered including employee training and documentation of grease trap/interceptor cleaning. Inspections of FOG program and maintenance records may be completed on-site during any hour of operation.

Additionally, less preventive maintenance and fewer sanitary sewer overflows caused by fats, oil and grease allow the District to perform other required infrastructure work.

Guidelines for the Control of Fats, Oil & Grease

As part of the District's FOG Program FSE's are provided the following guidelines as part of an inspection.

General Measures

- Train all staff on best management practices related to fat, oil and grease. Staff will be more willing to support an effort if they understand its basis. Trained staff will be more likely to implement best management practices and work to reduce grease discharges to the sewer.
- Post "No Grease" signs above sinks. Signs serve as a constant reminder to staff of proper grease disposal practices. Reduction of grease entering the drain reduces the cleaning frequency of the grease removal device.
- "Dry wipe" pot, pans and kitchen equipment before cleaning. "Dry wiping" will reduce the amount of grease going into the grease removal devices and the sewer. This will reduce the cleaning frequency and maintenance costs for grease removal devices and reduce the amount of grease entering the drain.
- Use absorbents such as paper towels to pick up oil and grease spills prior to mopping. Decreases the amount of grease that will be put down the drain. This reduces the amount of grease entering the drain and protects sewers from grease blockages and overflows.
- Dispose of food waste as solid waste. Dispose of food waste to the trash. Solid waste disposal of food waste will reduce the frequency and cost of grease removal device cleaning.
- Use screens in sinks and floor drains to capture food waste and dispose of properly into the trash. Food waste can cause sewer lateral blockages. Proper disposal of food waste will protect laterals and sewer mains from blockages and overflows.
- Collect and recycle waste cooking oil. Excess oil is prevented from entering the grease removal device and the sewer. Reduction in the cleaning frequency of the grease removal device and less grease being passed to the sewer.

Grease Trap/Interceptor Maintenance

- Complete grease trap or interceptor maintenance log to document cleaning intervals. Maintenance log can help your facility determine if cleaning frequency of the grease removal device is sufficient. A proper cleaning frequency will result in less grease accumulating in the lateral, fewer blockages and less pass through to the sewer lines.
- Clean grease traps at a frequency that will prevent the accumulation of grease or pass through to the sewer. Routine cleaning of the grease removal device ensures efficient operations. Routine cleaning will prevent grease from passing through to the sewer lateral and from accumulating in the sewer mains.
- Use water temperatures less than 140° F in all sinks, especially in the pre-rinse sink. Temperatures above 140° F will dissolve grease, which will re-solidify in the sewer lines. Reduces costs for the energy to heat the water. Sewer lateral remains free of grease.
- Have a manager present during grease trap/interceptor cleaning to ensure the unit is properly serviced. The manager can ensure that the grease removal device is properly cleaned and no shortcuts are taken. Proper cleaning ensures that the grease removal

device will function properly and efficiently.

- Do not store anything on or around the grease removal device that will block access. Proper maintenance is easier to complete if access to the grease removal device is not blocked. Routine maintenance is more likely to be performed if the grease removal device is easily accessible.

Outdoor Housekeeping/Storm Water Best Management Practices

- Clean floor mats and exhaust filters and other equipment inside. Cleaning greasy equipment outside is one of the most common sources of fat, oil and grease in our storm drains. Grease and food waste will be properly disposed of and will not enter the storm drain where it will de-grade surface channel water quality.
- Sweep or mop outdoor surfaces. Sweeping and mopping outdoor surfaces will reduce non-storm water runoff and will save water. Elimination of non-storm water discharges that degrade water quality.
- Any water used to clean outside surfaces by contractors must be vacuumed up and properly disposed of to the sewer.
- Keep the area around the dumpster/trash storage clear of trash, debris, and grease. Debris, trash, and grease can be washed into the storm drain during the rainy season. Loose debris and trash will not enter the storm drain causing blockages and will not enter the waterways.

FOG Program Education

Information on proper disposal of FOG and other SSO prevention measures, including house lateral maintenance, etc. is to be disseminated through brochures and flyers. The District would also utilize personal contacts with business owners by the District's Public Works Supervisor or appointed Industrial Waste Inspector. These methods have been proven to be very effective in relaying information on proper disposal of FOG and SSO prevention methods to FSEs. Expanded use of radio and television announcements and other aggressive means should be explored in the future, as well as a District website. A more aggressive public education and outreach program will be considered and if warranted.

End FOG Control Program

APPENDIX D

Theoretical Sulfide Generation

Forcemain Dissolved Sulfide Model - Summer

Client: Borrego Water District
Project: Sewer System Evaluation
Job No. 10151

	Parameter	Value	Units
	System Inputs:		
1	Seasonal High Wastewater Temperature, T_H	75	°F
2		23.9	°C
3	Biochemical Oxygen Demand, BOD	200	mg/l
4	Forcemain Diameter, d	10	in
5		0.83333333	ft
6		0.254	m
7	Forcemain Length, L	15,000	ft
8	Initial Sulfide Concentration, S_1	0	mg/l
9	Sulfide Flux Coefficient, M	0.0007	m/h
10	Average Flow, Q	0.02	mgd
11		13.8888	gpm
12		2	ft^3/min
13	Wastewater pH	7.00	
	Liquid Sulfide Calculations:		
14	Effective BOD, EBOD (High-Temperature)	260	mg/l
15	Crossectional Flow Area, A	0.55	ft^2
16	Average Flow Velocity, v	0.06	ft/s
17	Average Hydraulic Detention Time, HDT	4406	min
18		73.4	hr
19	**High Temp. Sulfide Conc. at FM Discharge, S_{2H}**	**42.0**	**mg/l**
20	**Daily Sulfide Load**	**7.0**	**lb/day**
	Vapor Sulfide Calculations:		
21	H_2S Molecular Weight	34	g/mol
22	Headspace Temperature, T	75	°F
23		23.9	°C
24		297.0	K
25	H_2S Henry's Constant at STP, $K_{H\theta}$	0.1	M/atm
26	Temperature Adjusted Henry's Constant, K_H	0.10	M/atm
27	Aqueous H_2S Concentration	23.4	mg/l
28		6.9E-04	mol/l
29	Gaseous H_2S Equilibrium Concentration	7.1E-03	atm
30		7051	ppm_v
31	**2% of Equilibrium**	**141**	**ppm_v**
32	**20% of Equilibrium**	**1410**	**ppm_v**

Forcemain Dissolved Sulfide Model - Winter

Client: Borrego Water District
Project: Sewer System Evaluation
Job No. 10151

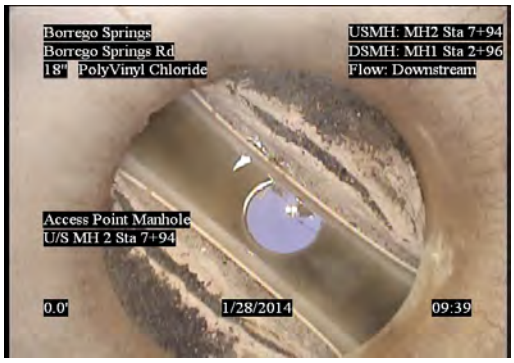
	Parameter	Value	Units
	System Inputs:		
1	Seasonal Low Wastewater Temperature, T_L	60	°F
2		15.6	°C
3	Biochemical Oxygen Demand, BOD	200	mg/l
4	Forcemain Diameter, d	10	in
5		0.833333333	ft
6		0.254	m
7	Forcemain Length, L	15,000	ft
8	Initial Sulfide Concentration, S_1	0	mg/l
9	Sulfide Flux Coefficient, M	0.0007	m/h
10	Average Flow, Q	0.13	mgd
11		90	gpm
12		12	ft^3/min
13	Wastewater pH	7.00	
	Liquid Sulfide Calculations:		
14	Effective BOD, EBOD (Low-Temperature)	148	mg/l
15	Crossectional Flow Area, A	0.55	ft^2
16	Average Flow Velocity, v	0.37	ft/s
17	Average Hydraulic Detention Time, HDT	678	min
18		11.3	hr
19	**Low Temp. Sulfide Conc. at FM Discharge, S_{2L}**	**20.3**	**mg/l**
20	**Daily Sulfide Load**	**22.0**	**lb/day**
	Vapor Sulfide Calculations:		
21	H_2S Molecular Weight	34	g/mol
22	Headspace Temperature	43	°F
23		6.1	°C
24		279.3	K
25	H_2S Henry's Constant at STP, $K_{H\theta}$	0.1	M/atm
26	Temperature Adjusted Henry's Constant, K_H	0.06	M/atm
27	Aqueous H_2S Concentration	11.3	mg/l
28		3.3E-04	mol/l
29	Gaseous H_2S Equilibrium Concentration	5.3E-03	atm
30		5339	ppm_v
31	**2% of Equilibrium**	**107**	**ppm_v**
32	**20% of Equilibrium**	**1068**	**ppm_v**

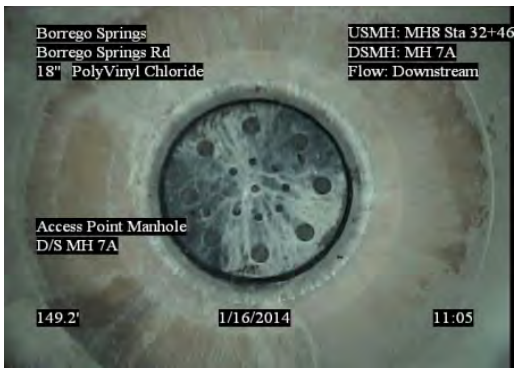
APPENDIX E

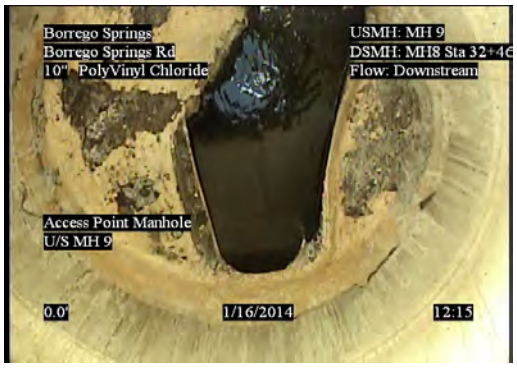
Manhole Condition Photos

DUDEK 605 Third Street, Encinitas, CA 92024 760.942.5147 Fax 760.479.4808	Client: Borrego Water District	Done by: AC	Date: 9/18/2017	Sheet No.: 1 of 1
	Project Title: Sewer System Evaluation - Appendix D	Checked By: BHT	Date: 9/18/2017	Dudek Job No. 10151

Manhole Reference Table

Manhole #	2014 Condition	2017 Condition
1		No Photo Available
2		No Photo Available
3		No Photo Available
4		

5		No Photo Available
6		
7		No Photo Available
7A		No Photo Available

8		No Photo Available
9		
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BORREGO WATER DISTRICT

BOARD OF DIRECTORS MEETING – OCTOBER 25, 2017

AGENDA BILL 2.E

October 19, 2017

TO: Board of Directors, Borrego Water District

FROM: Geoff Poole, General Manager

SUBJECT: State Water Resources Board Discharge Permit 2017 Application – G Poole

RECOMMENDED ACTION:

Authorize staff to enter into an Agreement with Joe Cornejo for assistance with development of BWD Waster Discharge Permit with the California State Water Resources Control Board

ITEM EXPLANATION:

As previously reported to the Board, the 2007 Waste Discharge Permit issued to BWD for operation of its waste water treatment plant expires this year and a new one is needed. Our Plant Operations Consultant, Joe Cornejo has provided BWD with a proposal to complete the technical requirements and coordinate the overall effort at an estimated cost of $7,500. The process may take a year or more to complete.

FISCAL IMPACT:

$7,500

ATTACHMENTS:

NONE

BORREGO WATER DISTRICT

BOARD OF DIRECTORS MEETING – OCTOBER 25, 2017

AGENDA BILL 2.F

October 19, 2017

TO: Board of Directors, Borrego Water District

FROM: Geoff Poole, General Manager

SUBJECT: FY 2017-18 Professional Services Assistance from Jerry Rolwing – G Poole

RECOMMENDED ACTION:

Authorize staff to enter into an Agreement with Jerry Rolwing for assistance with various projects during FY 2017-18

ITEM EXPLANATION:

Last year, the Board authorized me to use Jerry on projects and I would like to continue during the current Fiscal Year. The specific projects and tasks follow:

1. CASGEM
Semi-annual monitoring of CASGEM wells
Report on CASGEM monitoring
Ensure compliance with CASGEM 6
On-line submittal of CASGEM monitoring with Dept. of Water Resources
Semi-annual inspection of Water Credit Fallowing compliance
On-site work would take place twice a year, Oct./Nov. and Mar./Apr. Hourly rate calculated at $140/hour

Annual Estimate = $5,000

2. Possible Assistance Projects (@$95/hr.) Provide support to General Manager for additional projects as needed (est. 8 hours/mo.) TBD Support work for GSP data collection Assist District staff with new development, production wells, lead & copper, backflow Misc. support as needed

FISCAL IMPACT:

$5,000.00 for phase one

ATTACHMENTS:
1. Jerry Rolwing Letter

One Eleven Water Services
P.O. Box 1552
Borrego Springs, CA 92004
bsh2o@yahoo.com

September 20, 2017

Mr. Geoff Poole, General Manager
Borrego Water District
806 Palm Canyon Drive
Borrego Springs, CA 92004

Dear Geoff:

The Borrego Water District is responsible for a variety of tasks that can be overwhelming for its small support staff. Many of these tasks were performed by me when I held the position of general manager, operations manager and engineering technician over the past 18 years. Since my retirement, I have been available to respond to several questions and situations that have been presented to me. This proposal is being offered to continue this support and follow through with annual technical details as requested as we move forward with the difficult tasks that confront the District staff.

This year's proposal includes a slight increase in the CASGEM turnkey program but no increase in the on-call support. I have also included a summary of my billing to date.

I will be happy to discuss this proposal in more detail at your earliest convenience.

Thank you.

Sincerely,

Jerry Rolwing
Technical Director

Attached Scope of Work Detail

BORREGO WATER DISTRICT

BOARD OF DIRECTORS MEETING – OCTOBER 25, 2017

AGENDA BILL 2.G

October 19, 2017

TO: Board of Directors, Borrego Water District

FROM: Geoff Poole, General Manager

SUBJECT: Excessive Use Forgiveness Policy – G Poole

RECOMMENDED ACTION:

Approve Forgiveness Policy

ITEM EXPLANATION:

At the September Board meeting, Staff was directed to create an amended Excessive Use Policy. Attached is a version that incorporates the Board's comments.

FISCAL IMPACT:

To be determined

ATTACHMENTS:

1. Excessive Use Policy

SECTION 6.15 WATER LEAK ADJUSTMENT

The General Manager and/or his/her designee is authorized at their discretion to make adjustments to variable water charges for a billing period in which an apparent water loss occurred due to a broken pipe and/or plumbing fixture that caused exceptionally high water consumption compared to consumption history for the property during the same billing period. Adjustments will be determined using the following criteria:

a. The customer must not have received an adjustment at the same property under this policy in the past 60 months.

b. A District leak adjustment reimbursement request form must be properly completed by the customer and submitted to the District with required documentation within 25 days of the statement date of the bill in question.

c. A maximum of two billing periods will be considered for an adjustment.

d. The adjustment is calculated based on the customer's average annual use from the previous year and refunding the difference. No adjustments shall exceed $2,500.

e. No adjustments will be given if the District determines excessive water flow was caused by the customer's negligence or non-responsiveness to warning signals such as higher water and/or sewer bills, leak notifications, visible water, or other factors that should have made the customer reasonably aware of existence of broken pipe and/or plumbing fixture.

f. No adjustments will be given if a third party is responsible for water loss at the customer's property and can be pursued for reimbursement by the customer.

g. No adjustments will be given due to the resetting of irrigation timers at the customer's property, whether intentional or not.

h. The District is not responsible for any leak due to lack of notification and no adjustment will be given for this reason. It is the customer's responsibility to determine leaks and/or excessive water use.

i. The General Manager is not obligated in his/her sole discretion to grant any adjustment.

BORREGO WATER DISTRICT

BOARD OF DIRECTORS MEETING – OCTOBER 25, 2017

AGENDA BILL 2.H

October 19, 2017

TO: Board of Directors, Borrego Water District

FROM: Geoff Poole, General Manager

SUBJECT: Request for Excessive Water Use Adjustment: Gary Otto – G Poole

RECOMMENDED ACTION:

Receive staff report, discuss and direct staff accordingly

ITEM EXPLANATION:

Staff received a request from Gary Otto for a waiver on a $5,000 water bill. The dollar amount exceeds the GM Authorization so it is being brought to the Board for consideration.

FISCAL IMPACT:

To be determined

ATTACHMENTS:

1. **Letter from Gary Otto**

Gary & Chriss Otto

315 Verbena Drive

Borrego Springs, CA 92004

Re: Water statement and usage 8-24-17 to 9-22-17; Account 006271-000

Geoff: Per your request, here are our responses and comments regarding the extreme water invoice we received on Sept 29, 2017

Total current water charge for 4 week period ending 9-22-17; $5,216.96

1. This amounts to consumption of over 1,000,000 gallons of water in 4 weeks; 35,000 gallons of water usage per day; 1500 gallons of water per hour, 24 hours per day for an entire month; usage of 1394 units
2. Our average usage is around 80 to 90 units per month in prior months and years
3. This anomaly occurred shortly after we reported a broken water meter and the new one was installed
4. There were no prior incidents anywhere in this range in past years
5. We have had leaks on the property over the years but always visually see them and repair them immediately
6. We have two separate maintenance people that watch the property and meter for leaks, usage and wet spots every week.
7. There were no visible places or wet spots that would indicate over one million gallons of water was used during this time period
8. We believe this is an a one-time unexplained anomaly and that we did not consume over one million gallons of water for the month
9. Since the incident, the daily and weekly reading we've taken indicate that it is back to its regular consumption pattern
10. We are asking for relief from this invoice to some type of normal monthly payment

Please give this your consideration

Thank you,

Respectfully

Gary & Chriss Otto

10-13-17

BORREGO WATER DISTRICT

BOARD OF DIRECTORS MEETING – OCTOBER 25, 2017

AGENDA BILL 2.I

October 19, 2017

TO: Board of Directors, Borrego Water District

FROM: Geoff Poole, General Manager

SUBJECT: Sponsor Group Support Letter Regarding Groundwater Issues and Land Use Decisions – B Hart

RECOMMENDED ACTION:

Receive letter, discuss and direct staff accordingly

ITEM EXPLANATION:

As a follow up to the October 17th meeting, President Hart has made some amendments in the letter to the BV Sponsor Group. The intent of this item is to receive input from the Board and authorize it to be send it to the appropriate parties.

FISCAL IMPACT:

To be determined

ATTACHMENTS:

1. Amended letter to Sponsor Group

Rebecca Falk, Chair

Borrego Springs Community Sponsor Group

This is in response to requests that the Borrego Water District (BWD) comment on whether the County of San Diego Department of Planning and Development Services (PDS) should consider future groundwater supply availability and affordability in its land use decisions within the District's municipal service boundaries of the Borrego Springs Subbasin (Borrego Basin) of the Borrego Valley Groundwater Basin.

An overdraft in the Borrego Basin is well established. In the early 1980's, a US Geological Survey (USGS) study funded by San Diego County found that the basin was in overdraft and presented a serious economic, social, and environmental threat to the future of the Borrego Valley. In 2015, the USGS concluded a second study funded by the Borrego Water District that confirmed and expanded on the 1980's study, finding that the overdraft is more severe than had been established in the early 1980's.

Current estimates of average annual withdrawals from the basin are: agricultural uses approximately 70%, recreational uses (primarily golf courses) approximately 20% and municipal uses approximately 10%. The USGS estimated that annual withdrawals equal approximately 19,000 AFY, while average annual recharge is approximately 5,700 AFY based on 66 years of historic data. Thus, the current rate of groundwater

pumping produces an average annual overdraft of about 13,300 AFY (for additional formation please see the District's website at borregowd.org).

On January 1, 2015, the Sustainable Groundwater Management Act (SGMA) went into effect requiring Groundwater Sustainability Agencies (GSAs) to bring basins into sustainability by taking various, including potentially limiting extractions, imposing fees and penalties, and requiring metering and water quality monitoring in overdrafted basins. The Borrego Basin is defined by the Department of Water Resources (DWR) as a basin in "critical" overdraft. In 2015/16, the District and San Diego County entered into a Memorandum of Agreement (MOA) to become a multi-agency GSA for the basin. The GSA is charged with developing and adopting a Groundwater Sustainability Plan (GSP) that produces basin sustainability in no more than twenty (20) years from 2020. The target date for GSP adoption is before January 1, 2020 (for additional information refer to the County's or DWR's websites).

We assume that PDS is carefully reviewing the availability of water supply and the potential environmental impacts of serving Basin groundwater to new EDU's under the California Environmental Quality Act (CEQA) as required under California law in all its deliberations concerning new development and the potential future water supply constraints in the Basin. Yet, we understand that currently the County takes the position that there is no specific statutory requirement that the County consider SGMA and its sustainability mandates when making its land use decisions within the District's municipal service area of the Borrego Basin. To support the continued economic growth of our area and the protection of the Basin, we want to ensure that

such land use decisions are not, inadvertently, made open to challenge under CEQA or SGMA due to any allegation that Basin conditions and water availability have not been fully addressed before discretionary action is taken by the land use agency.

Practically speaking establishing sustainability will directly and permanently affect the water supply within the Borrego Basin, straining BWD's capacity to provide an affordable supply of potable water for municipal uses in our severely disadvantaged community. Accordingly, the District would support the Sponsor Group's position that PDS's land use decisions must consider the future availability and affordability of municipal water supply for the Borrego Springs community.

BORREGO WATER DISTRICT

BOARD OF DIRECTORS MEETING – OCTOBER 25, 2017

AGENDA BILL 2.J

October 19, 2017

TO: Board of Directors, Borrego Water District

FROM: Geoff Poole, General Manager

SUBJECT: Resolution for November and December Board Meeting Dates – G Poole

RECOMMENDED ACTION:

Approve Resolution setting November and December 2017 Board Meeting dates.

ITEM EXPLANATION:

The District traditionally holds one meeting in Nov and Dec. This year the proposed dates are November 15, 2017 and December 20, 2017 and the attached Resolution formalizes the change.

FISCAL IMPACT:

N/A

ATTACHMENTS:

1. Resolution 2017-10-01

RESOLUTION NO. 2017-10-01

RESOLUTION OF THE BOARD OF DIRECTORS OF THE BORREGO WATER DISTRICT REVISING THE SCHEDULE OF REGULAR MEETINGS

WHEREAS, on June 14, 1983, this Board of Directors adopted Ordinance No. 83-1 establishing the Administrative Code of the Borrego Water District ("Administrative Code") pursuant to the specific and implied grants of authority in Division 13, commencing with Section 34000, of the Water Code of the State of California to serve in part as the Bylaws of the Borrego Water District as required by Section 35300 et seq. of the Water Code; and

WHEREAS, Section 4.1.1 of the Administrative Code as adopted by Ordinance No. 83-1 established a schedule of the regular meetings of the Board of Directors; and

WHEREAS, on February 28, 2007 the Board of Directors adopted Ordinance No. 07-1 amending Section 4.1.1 of the Administrative Code governing the date and time of regular meetings of the Board of Directors to read: "4.1.1 Regular Meetings. Regular meetings of the Board shall be held pursuant to such schedule as the Board may adopt by Resolution from time to time. In the event the regular meeting date falls on a holiday designated in Section 6700 of the Government Code, a regular meeting of the Board of the cancellation of a regular meeting or meetings may be made by a majority vote of the members of the Board at least fifteen (15) days prior to the change or cancellation. A determination to change or cancel a regular meeting must be made at a regular or special meeting of the Board;" and

WHEREAS, the Board of Directors adopted Resolution 2007-2-1 on February 28, 2007 setting its regular board meetings at 9:00 a.m. on the second and fourth Wednesday of each month.

WHEREAS, the Board of Directors Adopted Resolution 2008-9-03 on September 24, 2008 setting its regular board meetings at 9:15 a.m. on the fourth Wednesday of every month.

WHEREAS, the Board of Directors adopted Resolution 2011-02-01 on February 15, 2011 setting its regular meetings at 9:00 a.m. on the fourth Wednesday of the month.

WHEREAS, pursuant to Ordinance 07-1, the Board of Directors desires to revise the schedule for its regular meetings.

NOW, THEREFORE, the Board of Directors of the Borrego Water District does hereby resolve, determine and order as follows:

Section 1. The Board of Directors of the Borrego Water District shall hold its regular meetings at 9:00 a.m. on the fourth Wednesday of each month.

Section 2. Notwithstanding Section 1, above, the regular meetings of the Board of Directors of the Borrego Water District for the months of November and December 2017 shall be held on the third Wednesday for the Month of November (November 15th, 2017) and the third Wednesday of December (December 20th, 2017).

ADOPTED, SIGNED AND APPROVED this 25th day of October, 2017.

President of the Board of Directors of Borrego Water District

ATTEST:

Secretary of the Board of Directors
of Borrego Water District

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN DIEGO)

I, Joseph Tatusko, Secretary of the Board of Directors of the Borrego Water District, do hereby certify that the foregoing resolution was duly adopted by the Board of Directors of said District at a regular meeting held on the 25th day of October, 2017, and that it was so adopted by the following vote:

AYES: DIRECTORS:

NOES: DIRECTORS:

ABSENT: DIRECTORS:

ABSTAIN: DIRECTORS:

Secretary of the Board of Directors of Borrego Water District

STATE OF CALIFORNIA)
) ss.
COUNTY OF SAN DIEGO)

I, Joseph Tatusko, Secretary of the Board of Directors of the Borrego Water District, do hereby certify that the above and foregoing is a full, true and correct copy of RESOLUTION NO. 2017-10-01, of said Board, and that the same has not been amended or repealed.

Dated:

Secretary of the Board of Directors of Borrego Water District

BORREGO WATER DISTRICT

BOARD OF DIRECTORS MEETING – OCTOBER 25, 2017

AGENDA BILL 2.K

October 19, 2017

TO: Board of Directors, Borrego Water District

FROM: Geoff Poole, General Manager

SUBJECT: Acceptance of nomination of Diane Johnson as Borrego Valley Stewardship Council Representative on the Borrego Valley Groundwater Plan Advisory Committee – G Poole

RECOMMENDED ACTION:

Accept nomination of Diane Johnson and forward to the County for concurrence.

ITEM EXPLANATION:

Suzanne Lawrence has recently resigned as the Borrego Valley Stewardship Council Representative on the Borrego Valley Groundwater Plan Advisory Committee District. Diane Johnson is the recommended successor and her completed Application is attached.

FISCAL IMPACT:

N/A

ATTACHMENTS:

1. Application from Diane Johnson

THIS IS A PUBLIC RECORD SUBJECT TO DISCLOSURE.

APPLICATION FOR BORREGO VALLEY GROUNDWATER SUSTAINABILITY PLAN ADVISORY COMMITTEE

Return to:
County of San Diego
Leanne Crow, Planning & Development Services
5510 Overland Ave, Suite 310
San Diego, CA 92123
858-495-5514
Leanne.crow@sdcounty.ca.gov

INSTRUCTIONS: Please complete each item below. The Borrego Valley Groundwater Sustainability Plan (GSP) Advisory Committee (AC) will aid in the development of the GSP for the Borrego Valley Groundwater Basin. This Ad Hoc committee will consist of 9 members nominated by the following stakeholder organizations, as follows:

- Borrego Water Coalition - 1 agricultural member; 1 recreation member; 1 independent pumper; 1 at large member,
- 1 member Borrego Springs Community Sponsor Group,
- 1 member Borrego Valley Stewardship Council,
- 1 member Borrego Water District representative for ratepayers/property owners,
- 1 member San Diego County Farm Bureau, and
- 1 member California State Parks, Colorado Desert Region.

Each AC member will be nominated by the stakeholder organization they represent and endorsed by the Borrego Water District (BWD) and County of San Diego (County) Director of Planning & Development Services. The aim of this application process is to review the qualifications of interested candidates and ensure that the GSP is developed in consideration of all interests of all beneficial uses and users of groundwater in the Borrego Valley Groundwater Basin. For more complete information or assistance, contact Leanne Crow at (858) 495-5514 or Leanne.crow@sdcounty.ca.gov.

PLEASE PRINT IN INK OR TYPE

APPLICANT'S NAME:

APPLYING FOR MEMBERSHIP OF THE BORREGO VALLEY GSP ADVISORY COMMITTEE

Please indicate which entity you would like to represent:

- ☐ **Borrego Water Coalition (4)**
- ☐ **Borrego Springs Community Sponsor Group (1)**
- ☒ **Borrego Valley Stewardship Council (1)**
- ☐ **Borrego Water District (1)**
- ☐ **San Diego County Farm Bureau (1)**
- ☐ **California State Parks, Colorado Desert Region (1)**

THIS IS A PUBLIC RECORD SUBJECT TO DISCLOSURE.

The Borrego Valley GSP Advisory Committee will meet approximately 15 to 20 times over a 2-year period. Meeting dates and times will be based on the availability and mutual agreement of committee members. Will you be able to schedule your time accordingly?

Yes X_____ No _____ Please list any time restrictions here: _____

Why are you interested in participating on the Borrego Valley GSP Advisory Committee? __It is now more clear than ever that the continued existence of Borrego Springs hinges on our water supply, which comes entirely from groundwater. And the town and the ABDSP Park are entirely intertwined. The Stewardship Council, on which I have served for several years, acknowledges this fact and stands ready to shepherd in a new approach to collaborative engagement in planning, between the Council, the community, the Park, and theCounty.

List all County Boards, Commissions or Committees of which you are a current member.

COMMITTEE NAME	**DATE APPOINTED**
NA	

List past County appointments with dates served, and other past or present community or public service appointments. ____Rotary Club of Borrego Springs, 2004+, President 2016 to present; Borrego Village Foundation, Director, 2014+; Borrego Art Institute, Director, 2009+;

STATEMENT OF OCCUPATIONAL EXPERIENCE

Current Employer (if

employed):_NA_____ Job Title:

What experience or special knowledge can you bring to the Borrego Valley GSP Advisory Committee? __I have followed Borrego Water District issues since 2004, with a more intense focus since Spring 2017. I am a research librarian by training and have found and shared with BWD and the public many online reports on specific Dept of Water Resources programs as well as current news reports. I recently attended, as a "citizen activist," two conferences of the Groundwater Resources Association of California, one on law and one on "Collaboration and Innovation." I am in the process of sharing information I obtained there.

NOTE: Membership qualifications for all County Boards, Commissions and Committees may be accessed on the Clerk of the Board's website at www.sdcounty.ca.gov/cob/ or by calling the Clerk's office at (619) 531-5600.

By signing below, I declare that the information provided above is accurate and complete to the best of my knowledge.

SIGNATURE: Diane E.P. Johnson_____ DATE: ___10/19/17_____

Note: Personal information may be withheld from public view as allowed by law.

NAME: ____Diane

Johnson_____ BORREGO

VALLEY GSP ADVISORY COMMITTEE

HOME ADDRESS: ___PO Bpx 2457_____ CITY____Borrego
OFFICE PHONE: _____
Springs_____ ZIP ___92004___ BUSINESS ADDRESS: _____ CITY
HOME PHONE: _____
_____ ZIP _____
FAX NUMBER: _____

EMAIL ADDRESS:

____depjohnson@aol.com_____

_

III
Staff Reports

Senate Bill No. 252

CHAPTER 538

An act to add and repeal Article 5 (commencing with Section 13807) of Chapter 10 of Division 7 of the Water Code, relating to groundwater.

[Approved by Governor October 6, 2017. Filed with Secretary of State October 6, 2017.]

LEGISLATIVE COUNSEL'S DIGEST

SB 252, Dodd. Water wells.

(1) Existing law requires the State Water Resources Control Board to adopt a model water well, cathodic protection well, and monitoring well drilling and abandonment ordinance implementing certain standards for water well construction, maintenance, and abandonment and requires each county, city, or water agency, where appropriate, not later than January 15, 1990, to adopt a water well, cathodic protection well, and monitoring well drilling and abandonment ordinance that meets or exceeds certain standards. Under existing law, if a county, city, or water agency, where appropriate, fails to adopt an ordinance establishing water well, cathodic protection well, and monitoring well drilling and abandonment standards, the model ordinance adopted by the state board is required to take effect on February 15, 1990, and is required to be enforced by the county or city and have the same force and effect as if adopted as a county or city ordinance.

This bill, until January 30, 2020, would require a city or county overlying a critically overdrafted basin, as defined, to request estimates of certain information from an applicant for a new well located within a critically overdrafted basin as part of an application for a well permit. The bill would require a city or county that receives an application for a well permit in a critically overdrafted basin to make the information about the new well included in the application for a well permit available to both the public and to groundwater sustainability agencies and easily accessible. The bill would authorize a city or county to issue a new well permit within a critically overdrafted basin when these requirements have been met. By increasing the duties of cities and counties, this bill would impose a state-mandated local program.

(2)The California Constitution requires the state to reimburse local agencies and school districts for certain costs mandated by the state. Statutory provisions establish procedures for making that reimbursement.

This bill would provide that no reimbursement is required by this act for a specified reason.

The people of the State of California do enact as follows:

SECTION 1. Article 5 (commencing with Section 13807) is added to Chapter 10 of Division 7 of the Water Code, to read:

Article 5. Wells in Critically Overdrafted Groundwater Basins

13807. The Legislature finds and declares all of the following:

(a) According to the Department of Water Resources, among the 512 basins throughout the state, 21 are deemed critically overdrafted.

(b) In 2014, California adopted landmark legislation, the Sustainable Groundwater Management Act (Part 2.74 (commencing with Section 10720) of Division 6), to sustainably manage groundwater resources. The act will not be fully implemented for several years, allowing groundwater overdraft to continue in some regions.

(c) The Sustainable Groundwater Management Act was a critical step toward achieving sustainability in the management of groundwater.

(d) Consistent with Section 113 and the Sustainable Groundwater Management Act, this article supports groundwater management by local agencies and is not a limitation on the authority of local agencies or the state under any other law.

(e) Greater transparency is needed to provide existing pumpers and water users in critically overdrafted basins with important information about the use of shared groundwater resources, specifically regarding applications for new well permits.

13807.5. As used in this article:

(a) "Basin" has the meaning provided in Section 10721.

(b) "Critically overdrafted basin" means a basin designated by the department as subject to critical conditions of overdraft pursuant to Section 12924.

(c) "De minimis extractor" has the meaning provided in Section 10721.

(d) "Groundwater sustainability agency" has the meaning provided in Section 10721.

(e) "Groundwater sustainability plan" has the meaning provided in Section 10721.

(f) "High-priority basin" and "medium-priority basin" have the same meaning as the categorization of a basin by the department pursuant to Section 10722.4.

(g) "Undesirable results" has the meaning provided in Section 10721.

13808. (a) Except as specified in Section 13808.4, every city or county overlying a critically overdrafted basin shall request estimates of the following information, to the extent that it can be reasonably known, from an applicant for a new well located within a critically overdrafted basin, or the applicant's agent, as part of an application for a well permit:

(1) A map of the location, as well as information including, but not limited to, global positioning system coordinates and elevation of the proposed well.

(2) The depth.

(3) The proposed capacity, estimated pumping rate, anticipated pumping schedule, and estimated annual extraction volume.

(4) The geologic siting information, including, but not limited to, water table depth, seasonal fluctuations, recharge area and rate, if known, and location to flood plain.

(5) The distance from any potential sources of pollution onsite and on adjacent properties, including, but not limited to, existing or proposed septic systems, wells, animal or fowl enclosures, transmission lines, or sewer lines.

(6) The distance from ponds, lakes, and streams within 300 feet.

(7) Any existing wells on the property, including well use, depth, diameter, screen interval, pumping rate, estimated or measured annual extraction volume, and, if available, information on specific capacity or other pumping tests completed.

(8) For a well below Corcoran clay, a map showing the location of canals, ditches, pipelines, utility corridors, and roads within two miles.

(9) The estimated cumulative extraction volume before January 1, 2020.

(10) The size in acres of the area to be served by the well.

(11) The planned category of water use, such as irrigation, stock, domestic, municipal, industrial, or other.

(b) Subdivision (a) does not require a city or county to amend or update an existing ordinance.

13808.2. A city or county that receives an application for a well permit in a critically overdrafted basin shall make the information provided pursuant to subdivision (a) of Section 13808 for a pending well application easily accessible and available to both the public and to groundwater sustainability agencies located within the basin where the new well is located. Methods of making the information publicly available and easily accessible, include, but are not limited to, posting the information on the city's or county's Internet Web site or providing the availability of an email mailing list management system for all interested parties.

13808.4. (a) A city or county may issue a new well permit within a critically overdrafted basin when the requirements of Section 13808 have been met, in addition to any requirements set forth in an ordinance adopted by the city or county or the standards adopted by a regional board for an area under the jurisdiction of the city or county pursuant to Section 13805, as applicable.

(b) This article does not apply to any of the following:

(1) An applicant for a new water well who would be a de minimis extractor.

(2) An applicant for a replacement water well that would not increase the amount of extractions above the amount of water extracted from the existing well.

(3) A city or county with a process for the issuance of a well permit that substantially complies with the requirements of this article. In order for this article to not apply to such a city or county, the city or county shall make a public finding certifying that the city or county has an ordinance in effect that substantially complies with the requirements of this article.

(4) An applicant for a new water well that is not located within a critically overdrafted basin.

(5) An applicant for a new water well located within an area subject to a groundwater sustainability plan adopted in accordance with Section 10728.4.

(6) A public agency that substantially meets or exceeds the requirements of this article through another requirement of law. In order to be exempt, the applicant shall document the laws that substantially meet or exceed the requirements of this article and how the requirements of those laws were met.

(7) A city or county municipal well to provide water supply solely for residents of the city or county.

13808.6. This article does not, in any manner, alter, change, affect, modify, or enlarge the authority of the city or county to deny, condition, or otherwise modify the proposed well, nor the standards, measurements, or criteria applicable to the approval of the proposed well permit, under an ordinance adopted by the city or county or under the standards adopted by a regional board for an area under the jurisdiction of the city or county pursuant to Section 13805.

13808.8. This article shall become inoperative on January 30, 2020, and, as of January 1, 2021, is repealed.

SEC. 2. No reimbursement is required by this act pursuant to Section 6 of Article XIII B of the California Constitution because a local agency or school district has the authority to levy service charges, fees, or assessments sufficient to pay for the program or level of service mandated by this act, within the meaning of Section 17556 of the Government Code.

O