

April 15, 2025

Castulo Estrada
Utilities Manager
City of Coachella
53462 Enterprise Way
Coachella, California 92236

Subject: Proposal to Perform Chemical and Mechanical Rehabilitation to Increase Production Rate at Well 16

Dear Mr. Estrada,

Dudek is pleased to submit this proposal as an amendment to the existing scope of work to the City of Coachella to support the City's Well 16 rehabilitation project and continued well rehabilitation work, informed by the initial data and well performance information that has been collected to date. The goal of the well rehabilitation work scope presented in this proposal is to increase the groundwater production capacity at Well 16.

Based on initial data provided by the City at the start of this Well 16 project, it was apparent that significant corrosion and iron bacteria oxidation has impacted the pumping equipment in Well 16. The City indicated that Well 16 was taken out of service due to customer complaints of entrained air in the groundwater pumped from the well. Dudek and pump contractor L.O. Lynch (Lynch) took an initial approach to this project with the intent to 1) determine the cause of the entrained air issue leading to customer complaints, and 2) determine the current production capacity of Well 16, given the fact that it has been offline for an extended period of time.

To address these two goals, Lynch performed poly-brushing and swabbing in order to clean off a limited amount of screen to allow a downhole video survey a clear view of the well casing and well screen condition.

Following the poly-brushing, a downhole video survey was performed on November 11, 2024 to assess the condition of the well casing. Based on the results of the video survey, it was apparent that the well casing is impacted by iron bacteria, incrustation and some degree of corrosion. The vertical mill-slots were observed to be plugged and impacted by incrustation (**Figure 1**). Following the documentation of current well casing and well screen condition, Dudek and Lynch conducted a step-test at Well 16 using a submersible pump and motor with the pump intake set to a depth of 300 feet. During this step test, Well 16 was pumped at increasing flow rates as follows: Step 1 at 348 gallons per minute (gpm); Step 2 at 564 gpm; Step 3 at 726 gpm and Step 4 at 838 gpm.

During this testing, Dudek staff collected frequent groundwater samples to look for the presence of entrained air. *No entrained air was observed in any of the groundwater samples, indicating that the well casing was not causing this issue (as reported by customer complaints). The old pump and drop pipe, which had severe corrosion and holes in the pipe, were likely responsible for this issue.* **Figure 2** shows depicts a sample that had been immediately collected from Well 16 during step-test pumping, documenting the absence of entrained air.

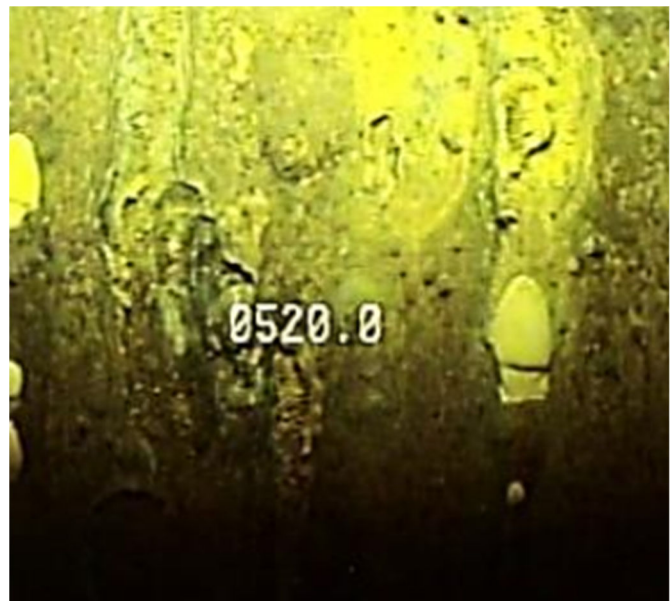


Figure 1: Severe corrosion and encrustation of Well 16 screen, vertical mill slots exhibit plugging and scaling



Figure 2: Groundwater Sample Collected During Well 16 Step Test, Showing No Entrained Air

Additionally, Dudek collected water level data during the step-testing using a water level pressure transducer installed above the pump inside the well casing. Using this data, pumping water level and water level drawdown during testing was determined at each of the four pumping steps. The results of the step-test and well efficiency analysis are shown on **Figure 3**. Based on well performance and observed drawdown at the increasing flow rates, Well 16 can currently sustainably pump 850 to 900 gpm, while maintaining a safe water level above the pump intake set at 300 feet.

The City provided Dudek with a pump check test performed at Well 16 on October 27, 2008 which indicated that Well 16 yielded 1,850 gpm with 68.1 feet of drawdown. After discussing the previous pumping capacity (1,850 gpm) compared to the existing pumping capacity (850-900 gpm) with the

City and consulting with Lynch regarding rehabilitation recommendations, the City has requested Dudek provide a scope and cost to perform additional chemical and mechanical rehabilitation at Well 16 in an effort to increase the current well production capacity. Dudek and Lynch both recommend chemical and mechanical rehabilitation effort to increase well yield, proceeding with caution given the age of the well, the well casing thickness of only 0.25-inches and the presence of iron-reducing bacteria incrustation and scaling in the well.

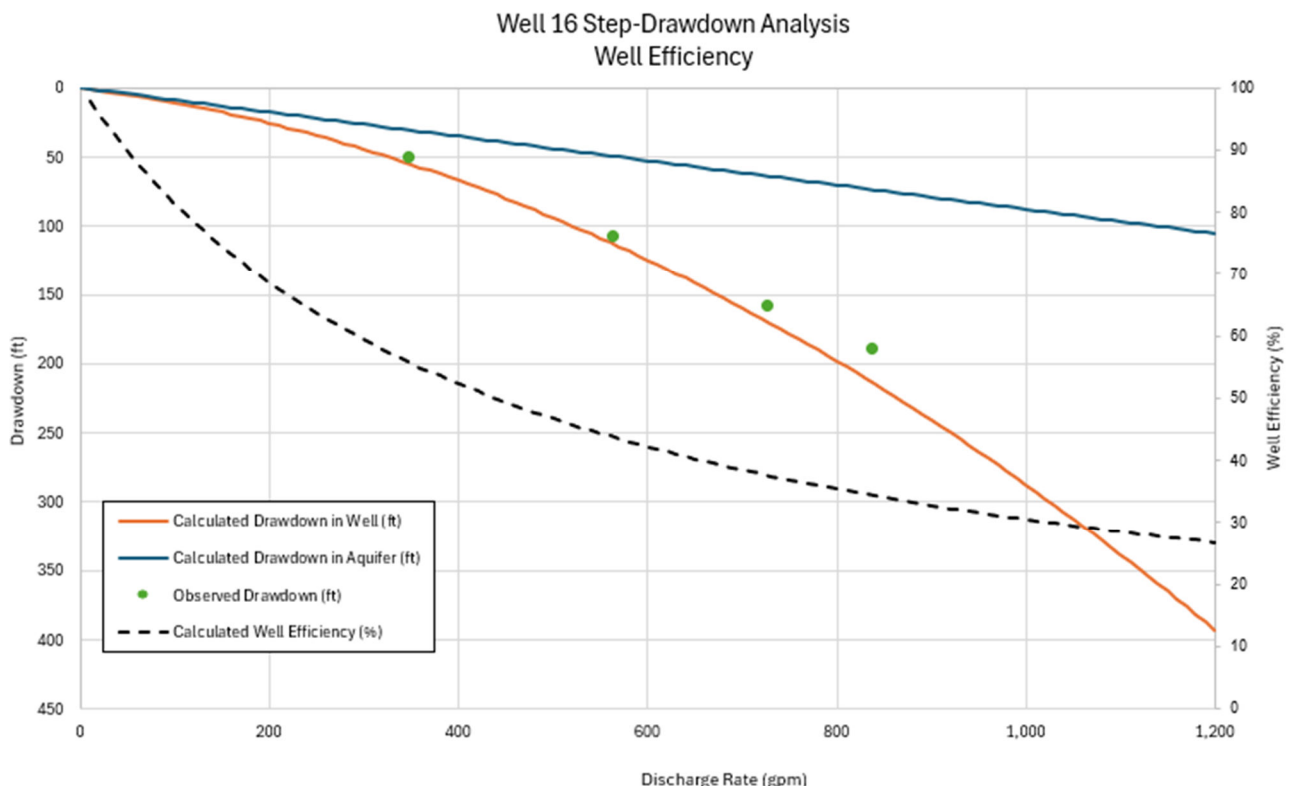


Figure 3: Results of Step-Test at Well 16 Showing Calculated Drawdown and Well Efficiency at Various Pumping Rates

Scope of Work

The original fee for Lynch to perform the work described above, as well as a proposed constant rate test at Well 16 (which was not performed due to the decision to implement additional rehabilitation actions), was \$45,920. Since the constant rate test was not performed, a revised invoice was submitted by Lynch totaling \$33,500, for a savings of \$12,420 on the original fee estimate. The cost estimate provided by Lynch to perform the scope of services summarized below is attached to this proposal for reference.

Task 1: Project Management and Meetings

Dudek will proactively manage the Well 16 rehabilitation activities to complete the scope on schedule and within the approved budget. We will identify project risks that have the potential to delay the project schedule or result in increased project costs. Task 1 work will include the following:

- Preparation of monthly invoices and progress reports.
- Monthly budget tracking and contractor coordination.
- Regular communication between the Dudek project manager, City, and project team.
- Holding Project Meetings to Discuss Rehabilitation Efforts and Progress with the City

Deliverables:

- Meeting agendas in hard copy format for in person meetings and PDF for online meetings.
- Meeting minutes in PDF format for all meetings.

Task 2: Perform Additional Well 16 Rehabilitation Work Including EMDS Casing Survey, Well Chlorination, Chemical Rehab. Using NuWell 220 and Focused Intake Pumping

Dudek will provide part-time field oversight during the additional well development activities performed at Well 16. Based on specific rehab. techniques suitable for this well, developed upon review of available historical data and the recent well condition and performance information described above, a summary of rehabilitation actions to be performed by Lynch are as follows:

- Perform EMDS (i.e. metal loss) downhole geophysical survey
- Perform 1st pass of focused intake pumping
- Inject NW220 dispersant chemicals and swab/disperse throughout well casing and screen
- Extract NW220 chemicals
- Inject 12.5% chlorine solution and swab/disperse throughout well casing and screen
- Extract chlorine
- Mechanical development via focus intake pumping
- Perform step test to determine suitable flow rate for constant rate test
- Perform constant rate test

- Remove test pump

Assumptions:

- Dudek and Contractor will have access to Well 16 at all times.
- Dudek will not be onsite full-time to oversee the work described in this proposal. Dudek staff will be onsite part-time on select days during this well rehabilitation to document progress and spot-check redevelopment work.
- While well rehabilitation will proceed with caution, with City consultation during each step, Dudek and/or Lynch will not be held responsible for any damage to Well 16 as a result of well rehabilitation due to the observed incrustation, corrosion and age of the well.
- Lynch will perform the additional rehabilitation work as a subcontractor amendment under Dudek's existing contract with the City of Coachella. Dudek applies a 15% markup to subcontractors.

The breakdown of the requested amendment to the existing scope of work is summarized below and a breakdown by Task is provided in the Table on the next page:

TOTAL DUDEK COST (INCLUDING TRAVEL).....	\$13,605.00
TOTAL L.O. LYNCH COST (INCLUDING 15% MARKUP OF ATTACHED LYNCH ESTIMATE).....	\$92,563.50
TOTAL AMENDMENT AMOUNT.....	\$106,168.50

Fee

The table below summarizes the anticipated level of effort for each task.

Project Team Role:		Principal Hydrogeologist (PM)	Sr. Hydrogeologist IV						
		K. Ilkhanipour	P. Rentz, S. Dickey	TOTAL DUDEK STAFF	DUDEK LABOR	SUBCONTRACTOR L.O. LYNCH	DUDEK SUBCONTRACTOR MARKUP	OTHER DIRECT COSTS *	
Billable Rate :		\$300	\$265	HOURS	COSTS	Fee Based on Lynch Estimate (attached)	15% Markup Amount		TOTAL AMENDMENT FEE
Task 1	Project Management and Meetings								
1.1	Project Management and Project Meetings with City	4	2	6	\$ 1,730				\$ 1,730
	Subtotal Task 1	4	2	6	\$ 1,730	\$ -		\$ -	\$ 1,730
Task 2	Perform Additional Well 16 Rehabilitation Work								
2.1	EMDS Survey, Chemical and Mechanical Development, Focused Intake Pumping, Step Test and Constant Rate Test	4	36	40	\$ 10,740	\$ 80,490	\$ 12,074	\$ 1,135	\$ 104,439
	Subtotal Task 2	4	36	40	\$ 10,740	\$ 80,490	\$ 12,074	\$ 1,135	\$ 104,439
	Total Dudek + Lynch Amendment Hours and Fee	8	38	46	\$ 12,470.00	\$ 80,490.00	\$ 12,073.50	\$ 1,135.00	\$ 106,168.50

Total Fee Not to Exceed.....\$106,168.50

Closing

We appreciate the City of Coachella's consideration of the above proposed scope of work. Should you have any questions please reach out to Kayvan Ilkhanipour at 760.479.4129 or kilkhanipour@dudek.com. We look forward to working with the City on this project.

Sincerely,



Kayvan Ilkhanipour, PG No. 8461, CHG No. 948
Principal Hydrogeologist/Project Manager

DUDEK

L.O. LYNCH

Quality Wells and Pumps, Inc.

Mud & Air Drilling • Well Cleaning • Repairing • Design • Construction

Contractors License
No. 740156

856 W. Seventh St.
San Jacinto, CA 92582

951-654-7724 Toll Free 888-654-7724 Fax 951-654-2060



Pump Estimate

Date	Estimate #
4/7/2025	21106

Customer Phone	Customer Fax
Ship To	
Terms	

Name / Address
City of Coachella Castulo Estrada 53990 Enterprise Way Coachella, CA 92236

Item	Description	Qty	U/M	Cost	Total
CONDITION4	SCOPE OF WORK TO BE DONE: PRICING LISTED BELOW IS FOR OPTION 1 REHAB INCLUDING EMDS CASING SURVEY AND CHLORINE REHAB			0.00	0.00
LPS200	STEP 1 - PERFORM 1ST PASS OF FOCUS PUMPING LABOR - TO PERFORM STEP 2	1	hr	9,600.00	9,600.00
LPS200	STEP 2 - INJECT NW220 CHEMICALS LABOR - TO PERFORM STEP 4	1	hr	1,980.00	1,980.00
NW220	5 GALLON CLAY DISPERSANT	5	ea	800.00	4,000.00
LPS200	STEP 3 - SWAB NW220 INTO WELL SCREEN LABOR - TO PERFORM STEP 5	1	hr	4,200.00	4,200.00
LPS200	STEP 4 - EXTRACT NW220 LABOR - TO PERFORM STEP 6	1	hr	6,400.00	6,400.00
LPS200	STEP 5 - INJECT CHLORINE LABOR - TO PERFORM STEP 7	1	hr	1,980.00	1,980.00
WK-CL-9912-5	5GAL BUCKET OF 12-1/2% CHLORINE	6	ea	375.00	2,250.00
LPS200	STEP 6 - SWAB CHEMICALS INTO WELL SCREEN LABOR - TO PERFORM STEP 8	1	hr	4,200.00	4,200.00
ZONE SPECIFI...	STEP 7 - MECHANICALLY DEVELOP VIA FOCUS INTAKE PUMPING (PRICING BASED ON 25 HOURS OF MECHANICAL DEVELOPMENT) ZONE SPECIFIC FOCUS INTAKE PUMPING	1	ea	20,000.00	20,000.00

THE FOLLOWING APPLIES UNLESS OTHERWISE STATED: Any item not specifically mentioned is not included nor was it intended. Delivery/shipment is estimated and L.O. Lynch is not responsible for delays beyond their reasonable control. Prices DO NOT include special equipment (if required) or freight. This quote is firm for 30 days from above date. L.O. Lynch takes complete and total exception to any requirements, plans and/or specifications not provided to company for review.

Total

Signature

Interest will begin to accrue 10 days after date of Invoice at a rate of 1-1/2% per month. If any legal action or proceeding arising out of or relating to this Contract is brought by either party to this Contract, the prevailing party will be entitled to receive from the other party, in addition to any other relief that may be granted, the reasonable attorney's fee, costs and expenses incurred in the action or proceeding by the prevailing party.

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Date	Estimate #
4/7/2025	21106

Customer Phone	Customer Fax
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Terms	

Name / Address
City of Coachella Castulo Estrada 53990 Enterprise Way Coachella, CA 92236

Item	Description	Qty	U/M	Cost	Total
LPS200	STEP 8 - SET TEST PUMP FOR CONSTANT RATE TEST LABOR - TO PERFORM STEP 10	1	hr	3,960.00	3,960.00
LPS200	STEP 9 - PERFORM CONSTANT RATE TEST LABOR - TO PERFORM STEP 11	1	hr	3,960.00	3,960.00
LPS200	STEP 10 - PULL TEST PUMP LABOR - TO PERFORM STEP 12	1	hr	3,960.00	3,960.00
DISCHARGET...	18000 GALLON DISCHARGE TANKS	1	ea	5,500.00	5,500.00
EMDS	ELECTRO-MAGNETIC-DEFECTO-SCOPE (REDUCED RATE)	1	ea	8,500.00	8,500.00
Signature	Please indicate acceptance of this estimate by signing below and returning estimate with payment.			0.00	0.00
PREPAREDBY	Respectfully, Phil Lucas Sales Manager 951-858-0181 plucas@lynchwells.com	1	ea	0.00	0.00

THE FOLLOWING APPLIES UNLESS OTHERWISE STATED: Any item not specifically mentioned is not included nor was it intended. Delivery/shipment is estimated and L.O. Lynch is not responsible for delays beyond their reasonable control. Prices DO NOT include special equipment (if required) or freight. This quote is firm for 30 days from above date. L.O. Lynch takes complete and total exception to any requirements, plans and/or specifications not provided to company for review.

Total \$80,490.00

Signature _____

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