

**STAFF REPORT
C81**

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E. Tajer
H. Rassamdana

**CONSIDER ACCEPTANCE OF THE
LONG BEACH UNIT ANNUAL PLAN
(JULY 1, 2018 THROUGH JUNE 30, 2019),
LONG BEACH UNIT, WILMINGTON OIL FIELD,
LOS ANGELES COUNTY**

GRANTEE:

City of Long Beach
Long Beach Gas and Oil Department

BACKGROUND:

The City of Long Beach (City), as Unit Operator and Trustee for the State, has submitted its Annual Plan (July 1, 2018 through June 30, 2019) for the Long Beach Unit to the Commission, as required by Chapter 138, Statutes of 1964, 1st Extraordinary Session, and Chapter 941 of the Statutes of 1991 and the Optimized Waterflood Program Implementation Agreement (OWPA).

On April 3, 2018, the Long Beach City Council adopted the proposed Annual Plan and authorized formal submission to the Commission. The Commission received the plan on March 9, 2018. As provided by Chapter 941, the Commission has 45 days to review the Annual Plan for consistency of the budget with the 5 Year Program Plan and make revisions. If the Commission makes no changes, the Annual Plan is deemed to be consistent with the Program Plan.

PROGRAM PLAN CONSISTENCY:

Pursuant to section 3 of Chapter 941, the Annual Plan, as submitted, is subject to review by the Commission for consistency with the budget of the current Program Plan. The Commission may revise the Annual Plan to make it consistent with the budget in the Program Plan. Pursuant to the OWPA, the changes ordered by the Commission must be in writing and set forth, with specificity, the reasons for the changes.

The proposed Annual Plan is a 1-year plan submitted by the City covering Fiscal Year 2018-2019. The Annual Plan is an itemized budget of anticipated expenditures needed to carry out the Program Plan objectives. There are five

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expenditure categories in the Annual Plan: Development Drilling; Operating Expense; Facilities Maintenance and Plant; Unit Field Labor and Administrative; and Taxes, Permits, and Administrative Overhead. Included in the expenditures is the plugging and abandonment of wells and facilities with no further economic use. The proposed Annual Plan's total budgeted expenditure of \$347.4 million represents about a 7 percent increase over the 2018-2019 budget of \$323.9 million contained in the current Program Plan. This change is consistent with an increase in project activity caused by higher oil prices (see Exhibit C).

Commission staff has concluded that the proposed Annual Plan is consistent with the objectives in the Program Plan.

ECONOMIC PROJECTIONS IN ANNUAL PLAN:

For Fiscal Year 2018-2019, the City estimates the Long Beach Unit net income will be \$71.4 million after total expenditures of \$347.4 million. This net income projection is based on the City's crude oil price forecast of \$55 per barrel (bbl) and a natural gas price of \$3 per thousand cubic feet (MCF). Most of the net income will be from oil revenues. The City and Field Contractor forecast oil production to average 20,400 bbl/day in Fiscal Year 2018-2019. This rate assumes the continuation of development activity to involve a total of 59 wells to be re-drilled from existing wellbores over the Plan period. Expenditure levels and the types of development projects will be adjusted as necessary to respond to fluctuations in oil price and other economic conditions. With proposed Fiscal Year 2018-2019 drilling activity (59 wells compared to 60 wells within the Program Plan) and expenditure levels, Commission staff expects oil production will be consistent with the Annual Plan's projection. Pursuant to Article 2, Paragraph 2.07 of the OWPA, the Field Contractor may exceed any budget category in the Plan budget without obtaining additional authority from the City and the Commission, so long as planned expenditures do not exceed 120 percent of the budget category.

OIL PRICE FORECAST:

In planning the expenditures needed to accomplish Long Beach Unit objectives, and the revenues needed to fund those expenditures, the City has used a crude oil price forecast of \$55/bbl. The City's approach for planning purposes ensures that revenues will be sufficient to pay for Long Beach Unit proposed expenditures and still provide net income to the State and the City's Field Contractor, California Resources Corporation, and its agent, THUMS Long Beach, Inc. (THUMS), and the other working interest owners.

Estimates prepared by Commission staff for State revenue projections for Fiscal Year 2018-2019 use an oil price forecast that reflects the current commodity price environment. The price for Long Beach crude oil in February 2018 has averaged \$63.50/bbl. Considering the fluctuations in the oil price, for the planning

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purposes, as mentioned before, the City's estimate of \$55/Bbl is considered prudent.

REVIEW OF ANNUAL PLAN:

Commission staff has reviewed the Annual Plan as submitted by the City and finds that the economic basis upon which the Program Plan was prepared will support and provide an engineering framework to meet the OWPA and Long Beach Unit objectives. Commission staff has concluded that the Annual Plan is consistent with good oil field practices. The plan is based on all engineering and geologic information available at the time of preparation. Further, to support the conclusion that the Annual Plan was prepared to ensure good oil field practices, Commission staff maintains direct involvement in ongoing Long Beach Unit development activities and the planning of future activities. Commission staff's involvement includes, among other things, monthly meetings of an engineering committee, on-site inspector presence in the field, reservoir management consultation with the City and the Field Contractor, assuring drilling safeguards involving blowout prevention equipment certification, oil spill prevention exercises, and subsidence monitoring and prevention.

At its April 28, 2011 public meeting, the Commission directed the staff to conduct an environmental and safety review and assessment including recommendation to improve the operations and Program Plan to address any identified risks. At the direction of the Commission a comprehensive Safety and Oil Spill Prevention Audit of the Long Beach Unit was started in January of 2012 and has been repeated every five years.

The Safety and Oil Spill Prevention Audit of the Long Beach Unit is currently in progress. The Safety Audits complement the Commission's monthly inspection program by performing technical analyses of safety system design, equipment specifications and condition, and safety management programs that are impracticable to inspect or evaluate on a monthly basis. Together, the monthly inspection and safety audit programs ensure that the facilities meet the Best Achievable Protection standard mandated by PRC 8755. These audits are repeated at five-year intervals by staff engineers on all state oil and gas production facilities. The current audit started in June of this year. The safety audit team has completed their field work on Islands White, Freeman and Grissom, and is currently working on Island Chaffee. When finished at Chaffee, the onshore facilities at Pier J will be examined. Thus far, the number of action items identified continues to decline, following the downward trend established by previous audits.

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In addition, staff has concluded that the Annual Plan is consistent with the OWPA, the Unit Agreement, and the Unit Operating Agreement, as they pertain to development and operations, subsidence prevention, preparation and submittal of plans of development and expenditures, re-pressuring operations, and drilling schedules. Further, staff has concluded that the Annual Plan is consistent with the Program Plan.

Staff also finds that the Field Contractor adheres to industry codes and standards, including the American Petroleum Institute recommended practices, State oil and gas regulations, and safety and environmental regulations of all State and local governmental agencies having jurisdiction over Long Beach Unit operations.

OTHER PERTINENT INFORMATION:

1. Acceptance of the Long Beach Unit Annual Plan is not a project in accordance with the California Environmental Quality Act because it is an administrative action that will not result in direct or indirect physical changes in the environment.

Authority: Public Resources Code section 21065 and California Code of Regulations, title 14, sections 15378, subdivision (b)(5).

2. This action is consistent with the Strategy 1.5 of the Commission's Strategic Plan to ensure the highest level of environmental protection and public safety in the production and transportation of oil and gas resources, by applying Key Action 1.5.2 to ensure lease and contract compliance with sound oil and gas development practices in compliance with regulatory and statutory requirements.

EXHIBITS:

- A. Letter from the City of Long Beach submitting the Long Beach Unit Annual Plan to the California State Lands Commission
- B. Long Beach Unit Annual Plan (July 1, 2018 through June 30, 2019)
- C. Oil Price Comparison Graph and Average Price Chart 2010-2018

RECOMMENDED ACTION:

It is recommended that the Commission:

AUTHORIZATION:

Accept the Long Beach Unit Annual Plan (July 1, 2018, through June 30, 2019), Long Beach Unit, Wilmington Oil Field, Los Angeles County.

Exhibit A

W 17166

CITY OF LONG BEACH



DEPARTMENT

ROBERT DOWELL
DIRECTOR

2400 EAST SPRING STREET · LONG BEACH, CA 90806
(562) 570-2000 · www.lbgo.org

March 8, 2018

Ms. Marina Voskanian, Chief
Division of Mineral Resources Management
California State Lands Commission
200 Oceangate, 12th Floor
Long Beach, CA 90802-4331

**SUBJECT: SUBMISSION OF THE LONG BEACH UNIT ANNUAL PLAN (JULY 1, 2018 -
JUNE 30, 2019)**

Dear Ms. Voskanian:

The City of Long Beach, as Unit Operator of the Long Beach Unit, and in accordance with Chapter 138, Section 5, Chapter 941, Section 3, and the Agreement for Implementation of an Optimized Waterflood Program for the Long Beach Unit, Article 2, submits 10 copies of the Long Beach Unit Annual Plan (July 1, 2018 through June 30, 2019).

If you have any questions, please contact Mr. Kevin Tougas at (562) 570-3963.

Sincerely,

A handwritten signature in black ink, appearing to read "R. Dowell", is written over a horizontal line.

ROBERT DOWELL, DIRECTOR
LONG BEACH GAS AND OIL DEPARTMENT

BD:kmt

Enclosures

cc: J. Lucchesi – California State Lands Commission
B. Grundstrom – California Resources Long Beach, Inc.
R. Anthony – City of Long Beach

EXHIBIT B

W 17166

Long Beach Unit

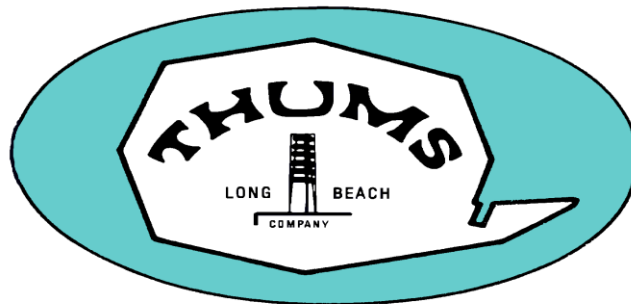
THUMS Long Beach Company

(Agent for Field Contractor)



ANNUAL PLAN

July 1, 2018 through June 30, 2019



ANNUAL PLAN

July 1, 2018 through June 30, 2019

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Part I

Introduction

This Annual Plan (“Plan”) was developed to reflect anticipated activity levels during the fiscal period from July 1, 2018 through June 30, 2019 (“FY19”). It is being submitted as required by Section 5(a) of Chapter 138, Statutes of 1964, First Extraordinary Session, and as revised by passage of Assembly Bill 227 (Chapter 941, Statutes of 1991) and the Optimized Waterflood Program Agreement executed by the State of California, the City of Long Beach, and California Resources Long Beach, Inc. (“CRC”), the Field Contractor.

This Plan provides for drilling, producing, water injection, and other associated activities from offshore and onshore locations. The budget for these activities is grouped into the following five major categories:

Plan Category	Fiscal Year 2018 – 2019 (\$ Million)
Development Drilling	\$ 98.8
Operating Expense	\$113.4
Facilities, Maintenance, and Plant	\$ 59.0
Unit Field Labor and Administrative	\$ 46.1
Taxes, Permits, and Administrative Overhead	\$ 30.2
Total	\$347.4

A. Plan Basis

This Plan was developed based on the parameters outlined in the Program Plan for the period July 2017 through June 2022 and provides current and updated estimates of volumes, drilling activity and expenditures for FY19.

Volumes

Oil and gas production volumes are predicted to average 20.4 Mbopd and 8.1 MMcfd, respectively, in FY19. Water production for the period is expected to average 1,153 Mbwpd and water injection is expected to average 1,228 Mbwpd.

Revenue and Expenses

A projected oil price of \$55/bbl Wilmington and gas price of \$3/mcf will result in revenues of \$418.8 million. Budgeted expenses for FY19 total \$347.4 million. Projected net profit in FY19 is \$71.4 million.

Drilling

This Plan allows for drilling approximately 59 new and redrilled development and/or replacement wells from existing cellars. The plan sets a drilling pace of two drilling rigs over the fiscal year. The rig utilization could potentially change due to variations in oil price and program performance. Workover rigs will perform drilling preparation and completion work.

The locations of production and injection wells to be drilled or redrilled are consistent with those given in the Program Plan (see attached Part II, Schedule 2B). Injection support for the drilling program will be provided through a combination of capital workovers (add pays and conversions), repair of failed injectors, and 15 new drill injectors. As per current operational practices, injection support will continue to maintain adequate I/G ratios to prevent subsidence and improve waterflood sweep efficiency.

Maintenance

The majority of the facility projects anticipated during the Plan period are required to maintain current equipment capabilities or to increase efficiency of current operations. Other projects will be necessary to take advantage of technological and other improvement opportunities and to address changes in the oil field operating environment.

CRC has a Mechanical Integrity and Quality Assurance (MIQA) program to assess and maintain critical equipment in order to protect the environment. The MIQA program is designed to meet internal and regulatory requirements and provide a high level of equipment integrity to reduce risk and increase reliability. Key elements include:

- Identification, evaluation, and determination of what equipment and/or process components are critical (i.e. their failure or malfunction could adversely affect the safety of personnel, operations, and/or the environment).
- A process to ensure equipment and components comply with material specifications, design and construction codes or standards thus providing a measure of safety and reliability.
- Methodologies for inspecting, testing and maintaining the equipment and documenting such action.

The MIQA program is an integral piece of the overall flow of maintenance, from inspection/testing through maintenance and, when necessary, repairs or replacement. The program is supported through the use of a comprehensive database and work order system that provides control and management of all maintenance activities.

Projects will be undertaken to repair or replace equipment that has outlived its useful life. Items needing to be repaired or replaced include, but are not limited to, facilities piping, tanks, and vessels. These projects are consistent with past activities to keep the Unit facilities in safe operating condition and reflect a forecasted field life of over 30 years.

Abandonment

Wells and facilities with no further economic use will be abandoned to reduce current and future Unit liability. This Plan provides funds for plugging wells to surface, in-zone, and conditional abandonments.

Safety, Environmental, and Regulatory Compliance

CRC is committed to conducting all aspects of its business in a manner that provides for the safety and health of employees, contractors and the public, and safeguards the environment in which it operates. Key safety programs include incident reporting and investigation, safety meetings and training, Management of Change (MOC), Process Hazard Reviews (PHR's), emergency response planning and drills, and a behavior based safety observation program. Key aspects of the environmental program include compliance with all laws and regulations, including South Coast Air Quality Management District (AQMD) requirements, waste management and minimization, spill prevention plans and Business Emergency Plans (BEP's).

The effectiveness and compliance of the above programs are assured through various internal audit programs. In addition, numerous agencies conduct periodic audits, including the CA State Lands Commission, Department of Transportation, State Fire Marshal, South Coast AQMD, Environmental Protection Agency, California Air Resource Board, California Department of Oil and Gas Resources (DOGGR), Long Beach Fire and Health Departments, Port of Long Beach and City of Long Beach Gas & Oil Department.

Emergency response planning and preparedness is bolstered by partnering with Marine Spill Response Corporation (MSRC). MSRC is an independent, non-profit, national spill response company dedicated to rapid response to environmental incidents. MSRC has a major west coast base of operations in the Port of Long Beach and its equipment and expertise are readily available for emergencies and are incorporated in onsite training exercises. The training exercises also involve a

close working relationship with the United States Coast Guard and the California Department of Fish and Wildlife, and local emergency responders

In 2017, THUMS continued the environmental and community outreach as a fundamental part of the THUMS programs and receipt of the Conservation Certifications that were awarded in 2016 by the Wildlife Habitat Council (WHC). This designation is awarded to facilities that provide for public education and involvement through wildlife related projects and learning opportunities on the facilities. In 2016, the THUMS Islands were presented by the WHC with the "Landscaping Project Award." These certifications and national award received by the WHC demonstrate THUMS continuing commitment to environmental stewardship and habitat conservation.

Projects relating to safety, environmental issues, or other situations necessary for meeting compliance with code, permit, or regulatory requirements will continue to be implemented under this Plan in accordance with all Unit agreements. In addition, CRC places additional emphasis on risk and system reviews and operational safeguards to assure reliable and compliant environmental performance.

Economic Review

Project expenditures during the Plan period are subject to economic review through the Determination and Authority for Expenditure (AFE) processes. All existing wells are frequently reviewed in light of changing crude prices to determine if they are economic to operate. Well servicing work is justified on economics and other conditions consistent with good engineering, business, and operating practices.

CRC remains committed to careful management of subsidence related to its oil and gas production through strict adherence to existing regulations and voidage rules.

B. Economic Projections
(Data in Millions of Dollars)

	BUDGET FIRST QUARTER <u>FY19</u>	BUDGET SECOND QUARTER <u>FY19</u>	BUDGET THIRD QUARTER <u>FY19</u>	BUDGET FOURTH QUARTER <u>FY19</u>	BUDGET TOTAL <u>FY19</u>
<u>ESTIMATED REVENUE</u>					
Oil Revenue	\$103.8	\$103.1	\$101.4	\$101.6	\$410.0
Gas Revenue	\$2.2	\$2.2	\$2.2	\$2.3	\$8.9
TOTAL REVENUE	\$106.0	\$105.3	\$103.7	\$103.9	\$418.8
<u>ESTIMATED EXPENDITURES</u>					
Development Drilling	\$24.7	\$24.7	\$24.7	\$24.7	\$98.8
Operating Expense	\$27.5	\$28.2	\$29.3	\$28.4	\$113.4
Facilities & Maintenance	\$15.3	\$14.2	\$15.1	\$14.3	\$59.0
Unit Field Labor & Administration	\$11.2	\$11.8	\$11.3	\$11.9	\$46.1
Taxes, Permits & Overhead	\$8.4	\$6.6	\$8.5	\$6.7	\$30.2
TOTAL EXPENDITURES	\$87.0	\$85.5	\$88.9	\$86.0	\$347.4
<u>NET PROFIT</u>	\$19.0	\$19.8	\$14.8	\$17.9	\$71.4

C. MAJOR PLANNING ASSUMPTIONS

	BUDGET FIRST QUARTER FY19	BUDGET SECOND QUARTER FY19	BUDGET THIRD QUARTER FY19	BUDGET FOURTH QUARTER FY19	BUDGET TOTAL FY19
<u>OIL PRODUCTION</u>					
PRODUCED (1000 BBL)	1,888	1,874	1,844	1,848	7,454
(AVERAGE B/D)	20,522	20,368	20,493	20,306	20,422
<u>GAS PRODUCTION</u>					
PRODUCED (1000 MCF)	728	739	739	751	2,956
(AVERAGE MCF/D)	7,909	8,033	8,211	8,248	8,100
<u>WATER PRODUCTION</u>					
PRODUCED (1000 BBL)	103,916	105,094	104,600	107,297	420,907
(AVERAGE B/D)	1,129,525	1,142,325	1,162,218	1,179,088	1,153,289
<u>WATER INJECTION</u>					
INJECTED (1000 BBL)	110,671	111,925	111,399	114,271	448,266
(AVERAGE B/D)	1,202,944	1,216,576	1,237,762	1,255,729	1,228,253
OIL PRICE (\$/BBL)	\$55.00	\$55.00	\$55.00	\$55.00	\$55.00
GAS PRICE (\$/MCF)	\$3.00	\$3.00	\$3.00	\$3.00	\$3.00

Part II

Program Plan Schedules

Schedule 2A

Range of Production and Injection

FY18-FY19

Long Beach Unit Program Plan, July 2017-June 2022

FISCAL YEAR	RANGE OF PRODUCTION AND INJECTION RATES											
	OIL MBOPD			WATER MBWPD			GAS MMCFPD			INJECTION MBWPD		
2017/18	19.6	-	21.6	1,111	-	1,228	7.5	-	8.3	1,182	-	1,307

FISCAL YEAR	RANGE OF PRODUCTION AND INJECTION RATES											
	OIL MBOPD			WATER MBWPD			GAS MMCFPD			INJECTION MBWPD		
2018/19	19.3	-	21.4	1,144	-	1,264	7.5	-	8.3	1,218	-	1,346

Schedule 2 B
Anticipated New and Redrilled Wells
Fiscal Year 19

Long Beach Unit Program Plan, July 2017-June 2022

Reservoir	CRB	Producers					Injectors				
		Grissom Min - Max	White Min - Max	Chaffee Min - Max	Freeman Min - Max	Pier J Min - Max	Grissom Min - Max	White Min - Max	Chaffee Min - Max	Freeman Min - Max	Pier J Min - Max
SG		0-2	0-0	0-0	0-0	0-0	0-1	0-0	0-0	0-0	0-1
Tar		0-4	0-0	0-0	0-0	0-0	0-1	0-0	0-0	0-0	0-0
Ranger West	1	0-9	0-0	0-0	0-0	0-0	0-3	0-0	0-0	0-0	0-0
	2	0-4	0-0	0-0	0-0	0-1	0-1	0-0	0-0	0-0	0-1
	3	0-10	0-0	0-0	0-0	0-0	0-3	0-0	0-0	0-0	0-0
	4	0-10	0-0	0-0	0-4	0-1	0-3	0-0	0-0	0-2	0-1
	5	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
	6	0-0	0-0	0-0	0-4	0-0	0-0	0-0	0-0	0-2	0-0
	7	0-0	0-0	0-0	0-4	0-0	0-0	0-0	0-0	0-2	0-0
	8	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-2	0-0
	9	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
	10	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
	11	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
	12	0-0	0-0	0-0	0-4	0-0	0-0	0-0	0-0	0-2	0-0
	13	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
	36	0-0	0-0	0-0	0-0	0-2	0-0	0-0	0-0	0-0	0-1
	37	0-0	0-0	0-0	0-4	0-0	0-0	0-0	0-0	0-2	0-0
		0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
Ranger East	14	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
	15	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
	16	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
	17	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
	18	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
	20	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
	21	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
	23	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
	33	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
		0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
Terminal	24	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
	38	0-5	0-0	0-0	0-0	0-3	0-2	0-0	0-0	0-0	0-1
	39	0-4	0-0	0-0	0-0	0-0	0-2	0-0	0-0	0-0	0-0
	40	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
	41	0-0	0-0	0-0	0-0	0-1	0-0	0-0	0-0	0-0	0-0
	42	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
	43	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
	47	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
		0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
UP Ford	26	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
	27	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
	30	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
	31	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
	44	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
	45	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
	46	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
		0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
		0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
237	30										
		Total					Total				
		0 - 76					0 - 31				

Part III

Itemized Budget of Expenditures

A. Development Drilling **\$98.7MM**

The Development Drilling category of expenditures encompasses all new well and replacement well drilling activity, as well as maintenance and replacement of drilling equipment within the Unit. Funds for development drilling are based on the assumption that 59 wells will be developed and/or replaced during the Plan year using a drilling pace equivalent to approximately 2 drilling rigs.

Drilling and completing new wells, as well as redrilling and recompleting existing wells, account for 97 percent of the funding provided in this Category. Included in these activities is funding for rig move-in, drilling and casing, completion activities, drilling rig in-zone plugs and conditional abandonments, and unscheduled activity (fishing operations, cement squeezing, special logging, contract drilling services).

Exact specifications regarding the distribution of wells, bottom hole locations, and completion intervals will be determined by CRC. These decisions will be influenced by contributions from reservoir engineering personnel, results from ongoing engineering studies, and well performance. This information will be reviewed and approved in accordance with the various unit agreements during regularly scheduled meetings.

B. Operating Expense **\$113.4MM**

The Operating Expense category of expenditures encompasses the ongoing costs of day-to-day well production and injection operations necessary for producing, processing, and delivering crude oil and gas, and for all electric power charges. Expenses for this category are based on estimated oil production of 20.4 Mbopd, estimated gas production of 8.1 MMcfpd, water injection requirement of 1,228

Mbwpd, and water production of 1,153 Mbwpd. Anticipated operating expenses were based on operating 4 workover rigs per month for servicing an average active well count of 796 producers and 437 injectors. These rigs will also be used for the completion of approximately 22 investment wellwork projects. Abandonment well count will be determined as a function of drilling activity and the number of idle wells with no future use identified.

The day-to-day costs for production and injection well subsurface operations represent approximately 54 percent of the funding provided in this category. Included are funds for recompletions, routine well work, well conversions, in-zone plugs, conditional abandonments, and other charges incurred for well maintenance.

Electricity makes up 46 percent of the funds in this Category. Cost for electric power is based on estimated kilowatt usage of 791,000,000 KWh at an average rate of \$0.063/KWh. This cost includes all sources of Unit electrical power, including all costs associated with the power plant and electric utility purchases.

C. Facilities, Maintenance, and Plant \$59MM

The Facilities, Maintenance, and Plant category of expenditures encompasses costs for maintenance, repairs, upgrades, additions of surface facilities and pipelines, and costs for general field services.

Approximately 74 percent of the funding in this category is for general field and operating costs. This includes, but is not limited to, charges for general labor, equipment rentals, and materials for general maintenance (painting, welding, electrical, etc.) of all Unit systems, such as oil gathering, treating, storage, and transfer; gas gathering and treating; scale and corrosion control; produced water handling; waste disposal; leasehold improvements; electrical system; fresh water system; fire protection and safety; marine operations; and automotive equipment. Funds are also provided for chemical purchases and laboratory-related charges for chemical treatment of produced and injected fluids; gas processing charges; make-up water; security; transportation; small tools; and other miscellaneous field activities.

Approximately 26 percent of the funding in this Category is for facility repair and minor projects. The majority of the facility repair and project investment is on the Tank and Vessel maintenance program and the remaining investment is focused on inspection, maintenance and repair in support of the MIQA program. This work includes regulated pipeline inspection surveys and evaluation, inspection and repair of cathodic protection systems, and infrastructure piping integrity inspections not covered by regulatory control. Projects include expenditures related to replacement, relocation, or minor expansion of existing injection piping, oil and water pumps and other infrastructure related investments.

D. Unit Field Labor and Administrative \$46.1MM

The Unit Field Labor and Administrative category of expenditures encompasses costs for Unit personnel and other Unit support activities.

Funding for Unit personnel includes costs of salaries, wages, benefits, training, and expenses of all CRC employees. These costs represent approximately 84 percent of the Category total.

Funding for Unit support activities includes, but is not limited to, costs for professional and temporary services necessary for the completion of support activities; charges for data processing; computer hardware and software; communications; office rent; general office equipment and materials; drafting and reprographic services; DOT drug and alcohol testing; special management projects; and other miscellaneous support charges.

E. Taxes, Permits, and Administrative Overhead \$30.2MM

The Taxes, Permits, and Administrative Overhead category of expenditures includes funds for specific taxes, permits, licenses, land leases, and all administrative overhead costs for the Unit.

Funding is provided for taxes levied on personal property, mining rights, and oil production; for the Petroleum and Gas Fund Assessment; annual well permits and renewals; Conservation Committee of California Oil and Gas Producers Assessment; California Oil Spill Response, Prevention, and Administration fee; land leases; and pipeline right-of-way costs. These costs represent approximately 58 percent of the Category total.

Funding is also provided in this Category for all Administrative Overhead (including Unit Operator billable costs and CRC billable costs) as called for in Exhibit F of the Unit Operating Agreement.

PART IV

Definitions

This Annual Plan may be Modified or Supplemented after review by the State Lands Commission for consistency with the current Program Plan. All Modifications and Supplements to this plan will be presented by the Long Beach Gas and Oil Department, City of Long Beach, acting with the consent of CRC, to the State Lands Commission in accordance with Article 2.06 of the Optimized Waterflood Program Agreement.

In addition, on or before October 1, 2018 the City of Long Beach shall present to the State Lands Commission a final report and closing statement of the FY18 Annual Plan, in accordance with the provision in Section 10 of Chapter 138.

A. Modifications

The City of Long Beach, acting with the consent of CRC, has the authority to cause the expenditures of funds for Unit Operations in excess of the amount set forth in the budget included in the Annual Plan, provided, however, that no such expenditure shall be incurred that would result in any category of expenditures set forth in the budget to exceed 120 percent of the budgeted amount for that category. A budget modification would be required for any expenditures which would cause a budget category to exceed its budgeted amount by 120 percent.

Any transfer of funds between budget categories or an augmentation or decrease of the entire budget may be accomplished by a budget modification in accordance with section 5(g) of Chapter 138 and Article 2.06 of the Optimized Waterflood Program Agreement.

Investment, facilities, and management expense projects commenced in prior budget periods, which are to be continued during the current budget period, may be added to this budget by a modification in accordance with Article 2.06 of the Optimized Waterflood Program Agreement.

B. Supplements

This Annual Plan contains all the investment and expense projects reasonably anticipated at the time the Plan was drafted and for which adequate detailed studies existed. Any significant and uncommon expenses not originally contemplated may be added to this budget or transferred by a supplement in accordance with Article 2.06 of the Optimized Waterflood Program Agreement. The amount of the supplement shall include sufficient funds to complete the projects.

C. Final Report and Closing Statement

The final report and closing statement for FY19 shall contain a reconciliation by category as finally modified and the actual accomplishments, including:

1. New wells and redrills by zone.
2. Facilities and capital projects.
3. Production by zone.
4. Injection by zone.

EXHIBIT C

W 17166

Oil Price Comparison LONG BEACH GAS & OIL DEPARTMENT - OIL OPERATIONS BUREAU

