



Economic Feasibility of Oil Wells Owned and Operated by the City

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Study Session - March 21, 2023

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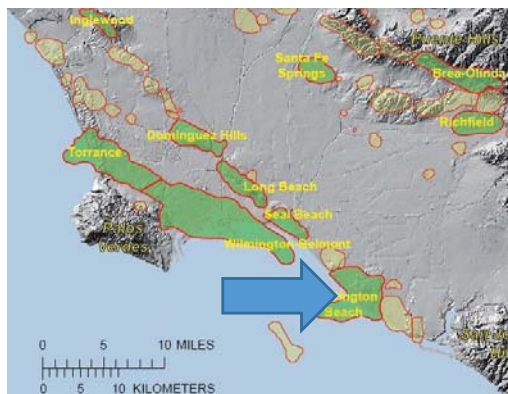


Background

Huntington Beach Oil Field

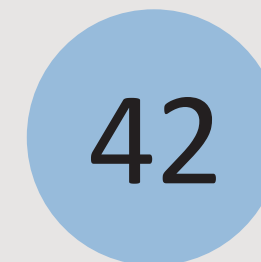


Discovered
1920

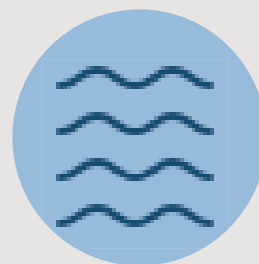


Oil - 3,480 barrels
Water - 147,670 barrels

223 active wells



Gallons = 1 Barrel
(BBL)



86% produced water – re-injected

46 injection wells

Civic Center – never injected but
benefited from nearby water injection

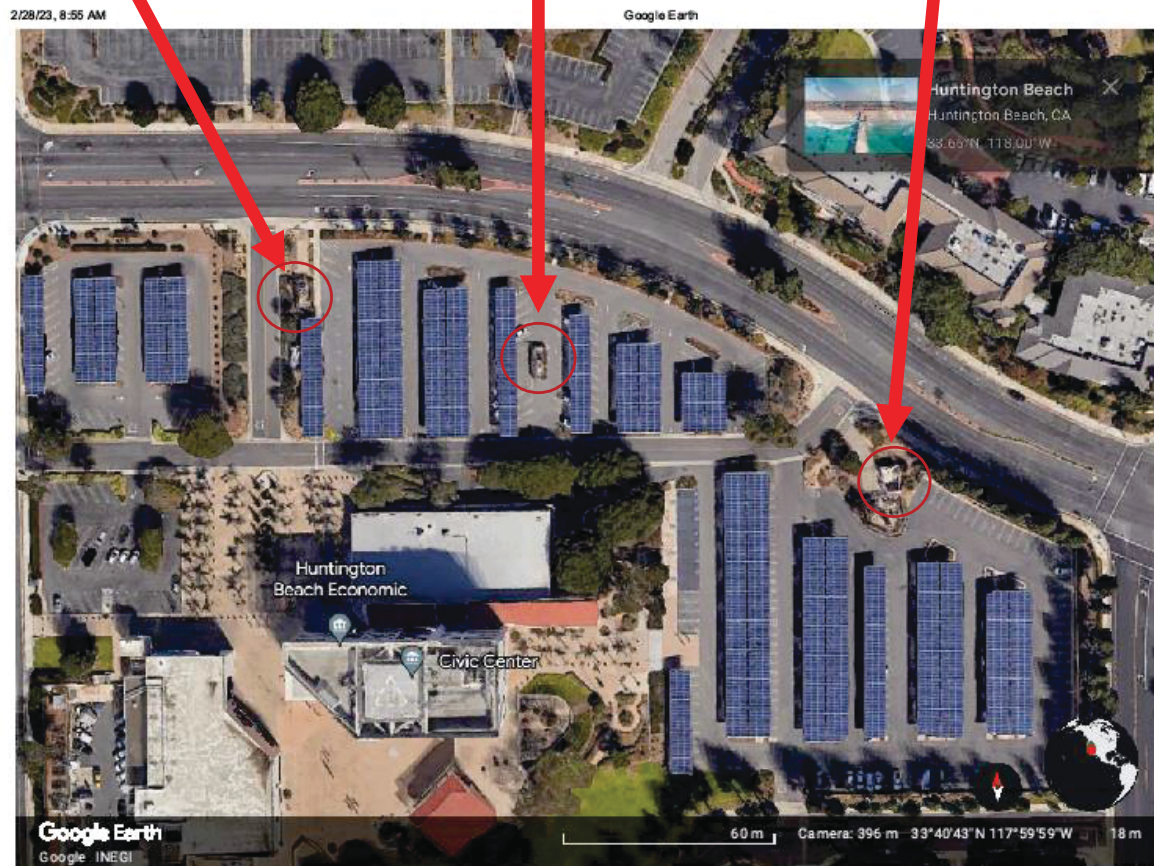


Civic Center Wells

Civic Center 3

Civic Center 2

Civic Center 1



- The City owns three oil wells, the Civic Center 1, 2 & 3
- The wells are located in the Civic Center parking lot
- The wells were acquired as a part of the City acquisition of the Civic Center property in 1971



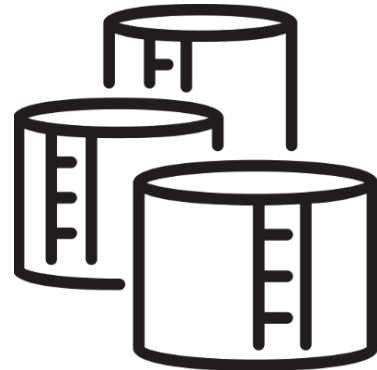
Five Areas of Interest in Analyzing Oil Operations

1



Process

2



Oil, Gas
and Water
Production

3



Product
Pricing

4



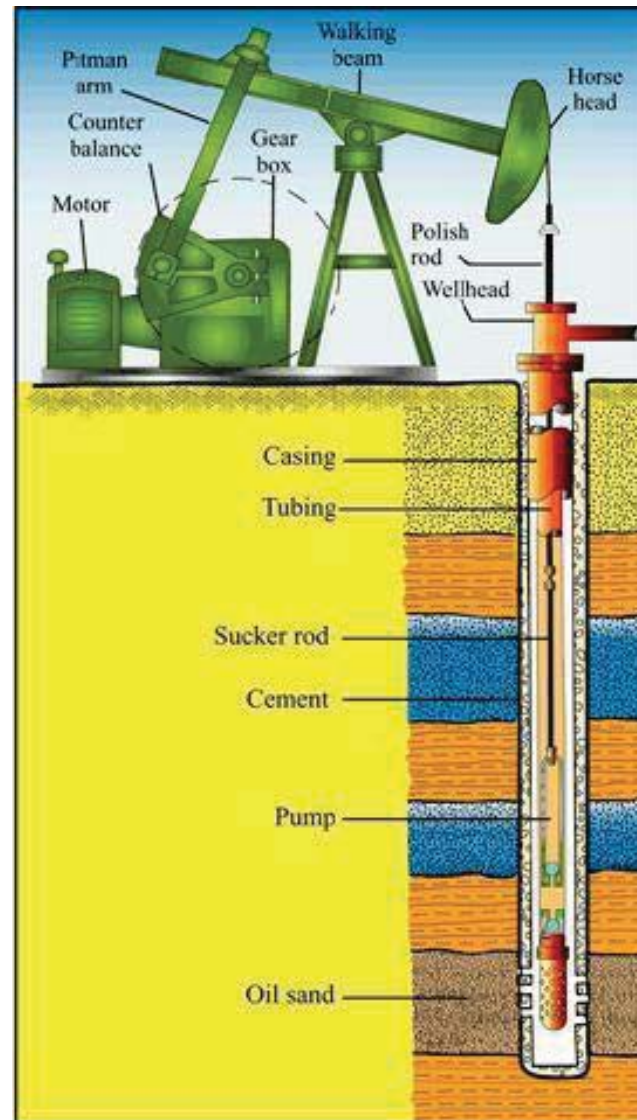
Operating
Expenses

5

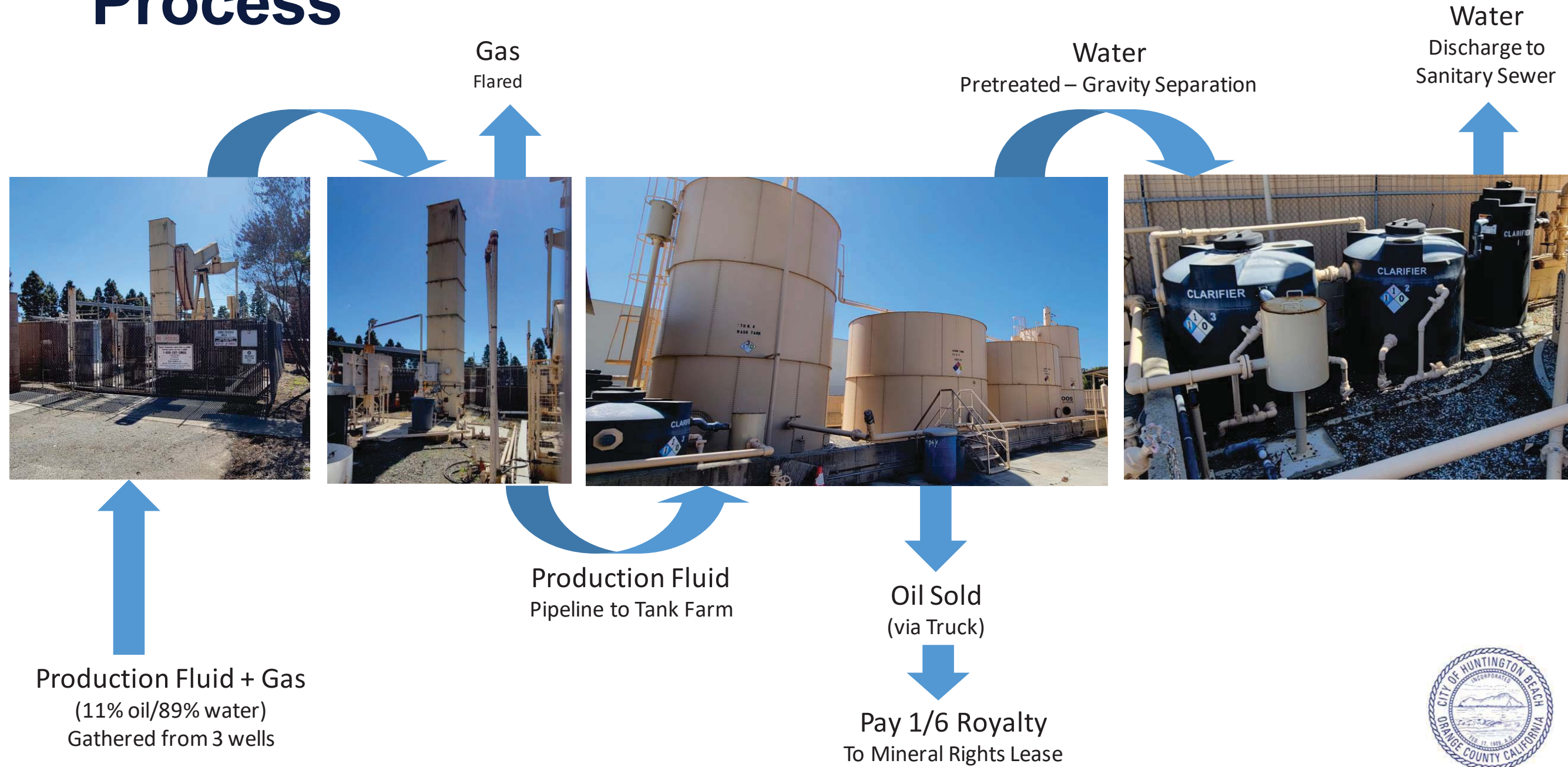


Assess
Condition

Anatomy of Production

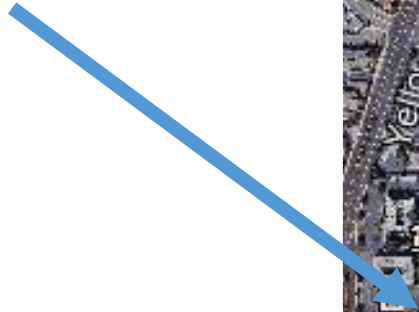


Process



Process

Civic Center Oil Wells



Miley Keck Tank Farm

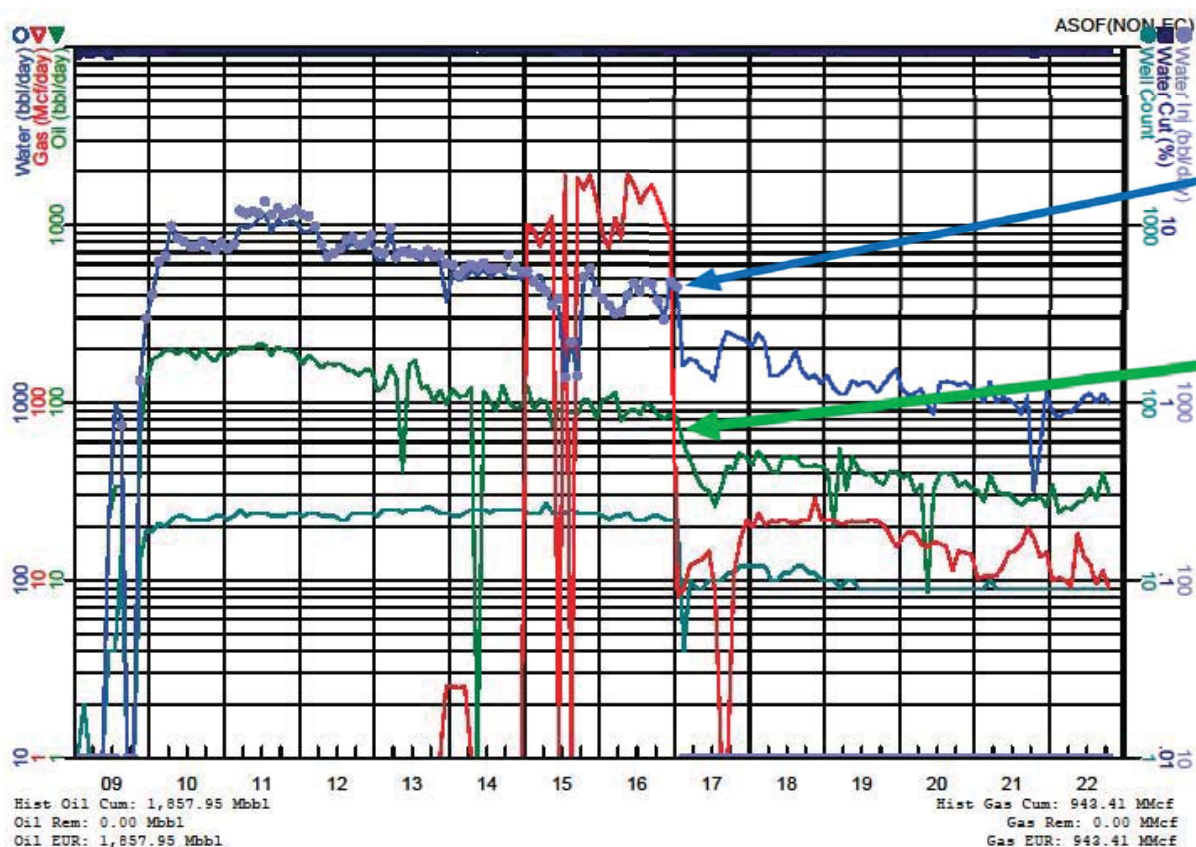
Pipeline
Connecting wells to tank farm
Appx. 1/2 mile, 6" steel pipe

Angus Petroleum
Springfield Unit
Nearest water injection wells



Production – Springfield Unit

Field: Huntington Beach
Case Name: Springfield Unit
Well: All

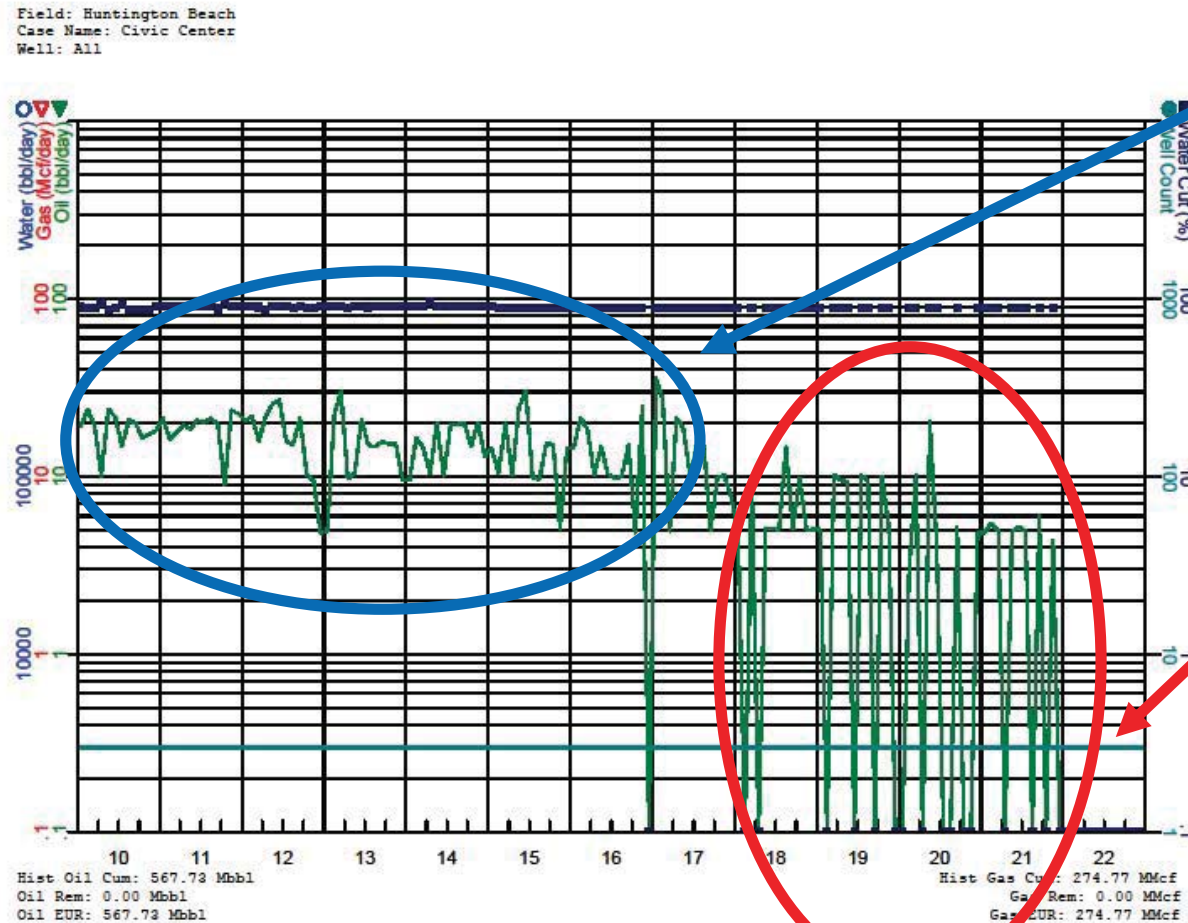


Operator ceased water injection (pressure support) in July 2017

Oil production dropped significantly - shortly after the loss of pressure support



Production – Civic Center



Civic Center lease averaged 16.4 barrels of oil per day from January 2010 through June 2017 (prior to loss of pressure support)

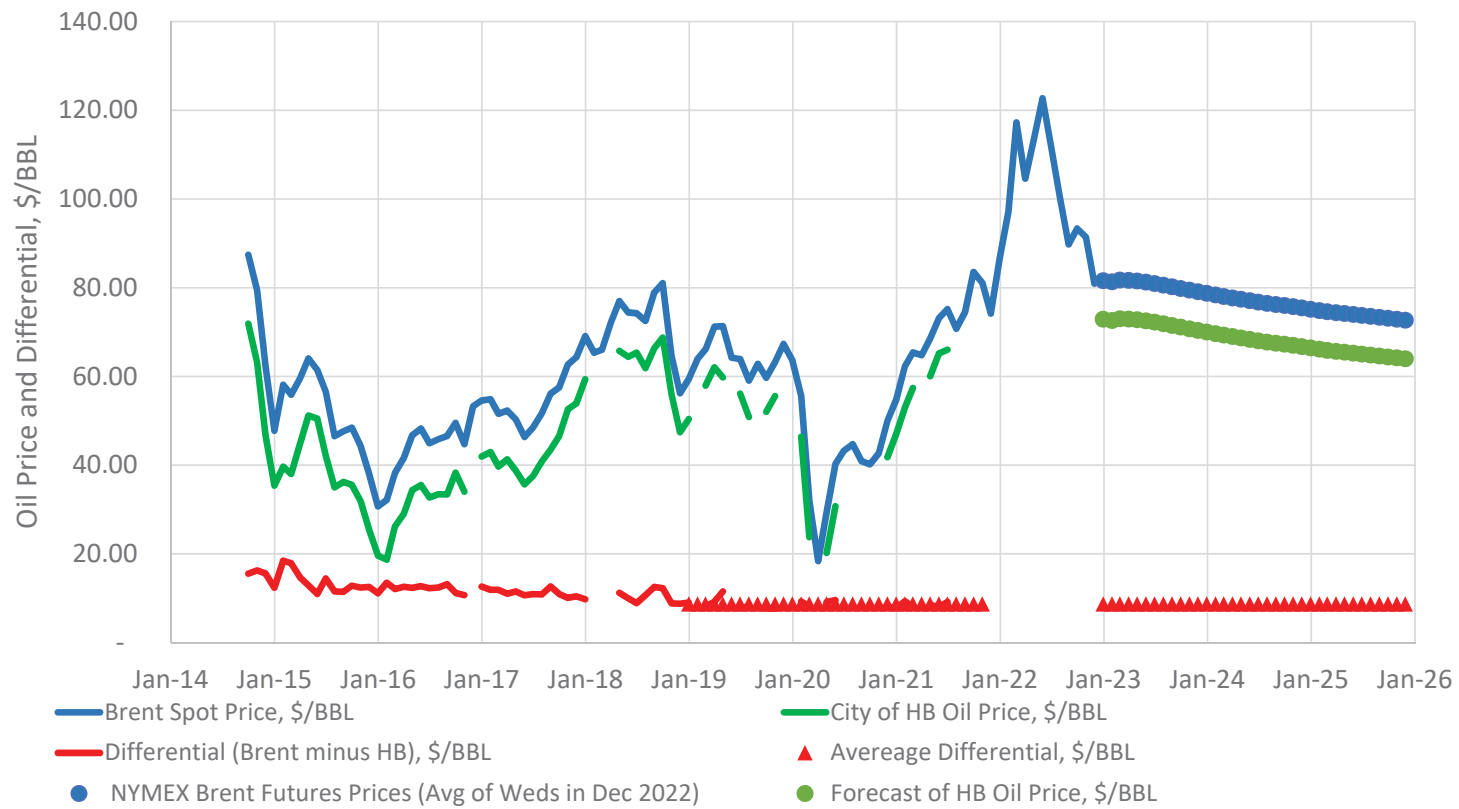
Civic Center lease averaged 5.5 barrels of oil per day from July 2017 through November 2021 (after loss of pressure support).

This is a decrease of 10.9 barrels of oil per day.



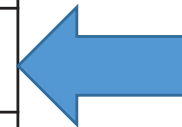
Product Price

Historical and Forecast Oil Prices



Production and Gross Revenue - Civic Center

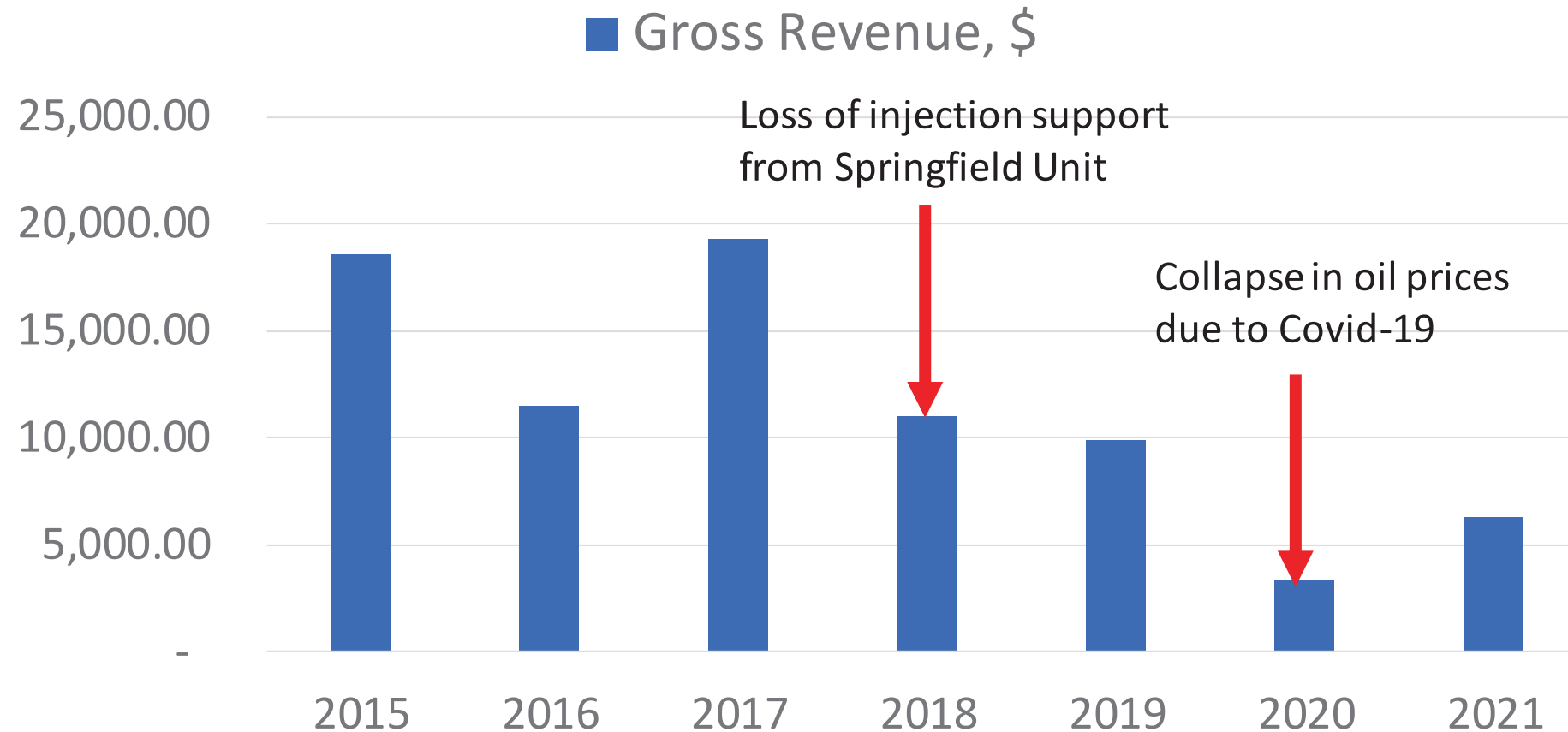
Year	Avg Price (Paid), Barrel	Oil Sales, Barrels	Gross Sales, \$
2015	\$41.29	5,463	\$225,560
2016	\$29.41	4,680	\$137,643
2017	\$42.33	5,460	\$231,138
2018	\$61.71	2,133	\$131,626
2019	\$58.87	2,130	\$119,009
2020	\$27.00	1,470	\$39,687
2021	\$61.26	1,223	\$74,923



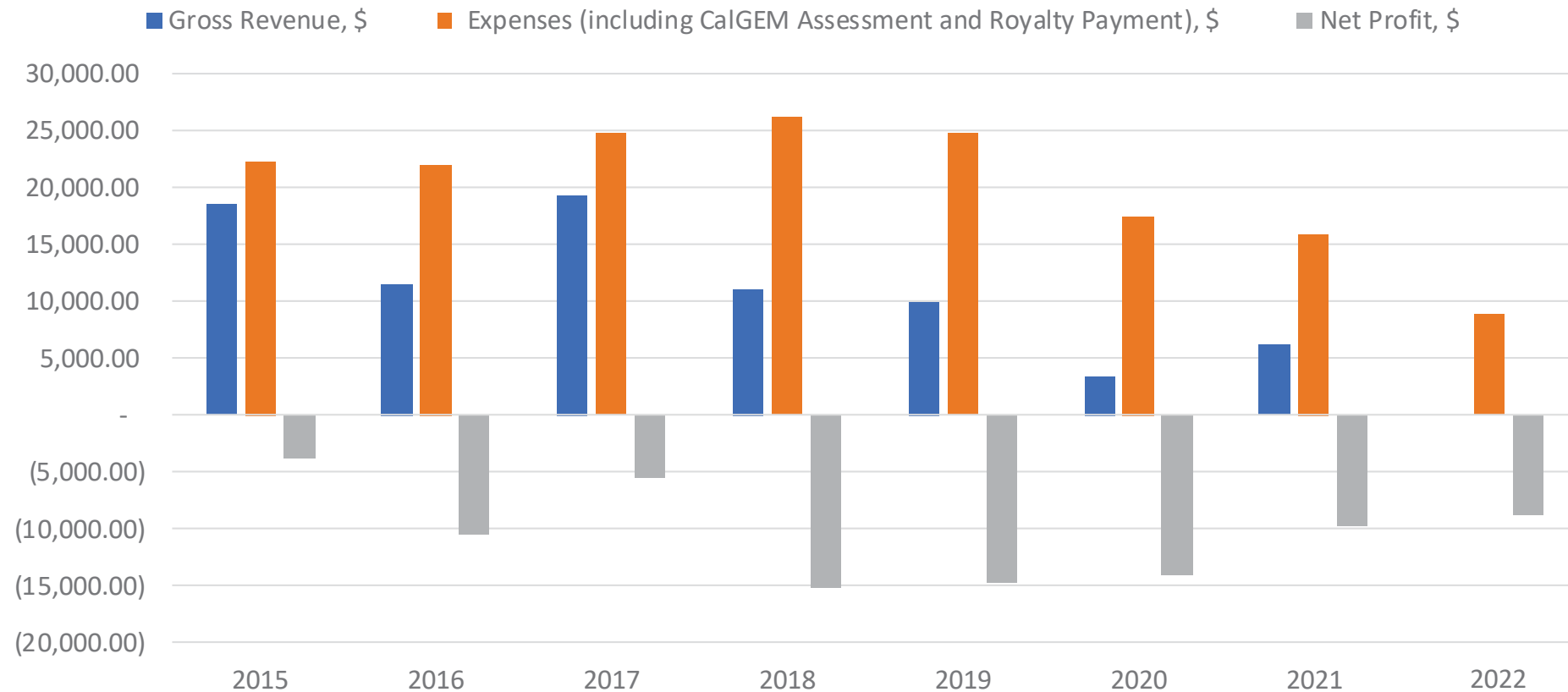
Loss of injection support from Springfield Unit Mid-2017



Average Monthly Revenue



Average Monthly Revenue, Expense, and Net Profit



*Does not include staff cost.



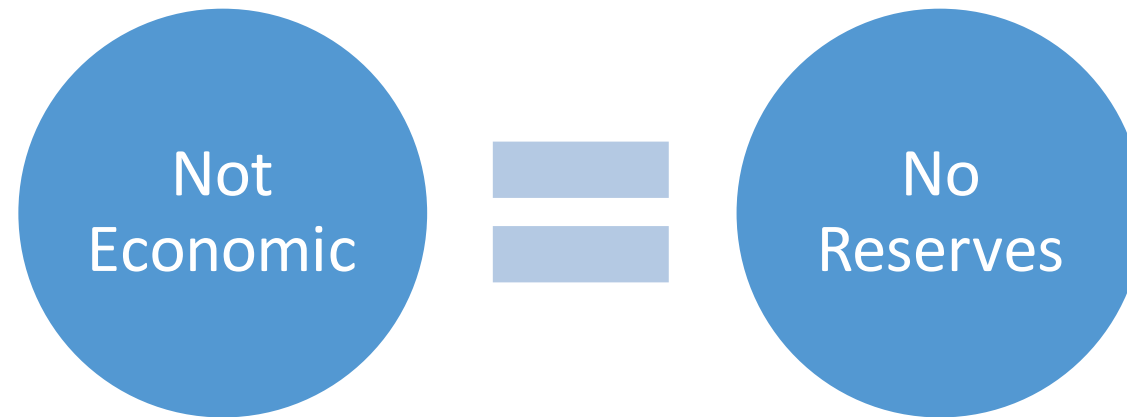
Monthly Operating Expenses

Expense	Monthly Cost
Tank battery lease	\$7,150
Pumper charge	\$3,800
Maintenance	\$5,550
Compliance	\$2,200
Total	\$18,700



Remaining Reserves (Capacity)

- Reserves (SPEE)
“Those quantities of petroleum anticipated to be commercially recoverable by application of development projects to known accumulations from a given date forward under defined conditions.”



- Civic Center is not economic and therefore reserves are zero
- Civic Center will produce 5.5 BBLs/day with full production



Decision to Halt Production 2021-22

Factors

- Loss of Springfield Unit injection
- Collapse in oil prices
- 3rd party economic analysis
- Aging infrastructure
- Potential Redevelopment
- Tank farm lease expiration 2024

Decision

- Halt production
- Investigate cost of abandonment
- Minimize expenditures where possible





Conditions Assessment

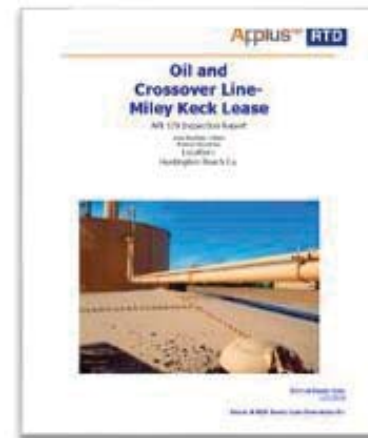
Condition - Wells

Well Component	Condition	Cost for Known Condition Assessment or Maintenance	Vendor
Downhole <i>Civic Center 1, 2, 3</i>	POOR/INOPERABLE	<i>Discussed in Well Reactivation slides</i>	Oil Well Services
Pumping Units	FAIR/GOOD	\$3,700	AC Pumping Unit Repair
Electric Motors Starter not up to code	POOR/INOPERABLE	<i>Discussed in Well Reactivation slides</i>	Innovative Electric



Condition – Piping and Tanks

Well Component	Condition	Cost for Known Condition Assessment or Maintenance	Vendor
Piping and Tanks	FAIR/GOOD	\$26,255	Applus
Tank Farm Secondary Containment	FAIR/GOOD	\$14,975	RM Baker International
		TOTAL: \$41,230	





Cost to Re-activate Oil Production

Known Repair Costs

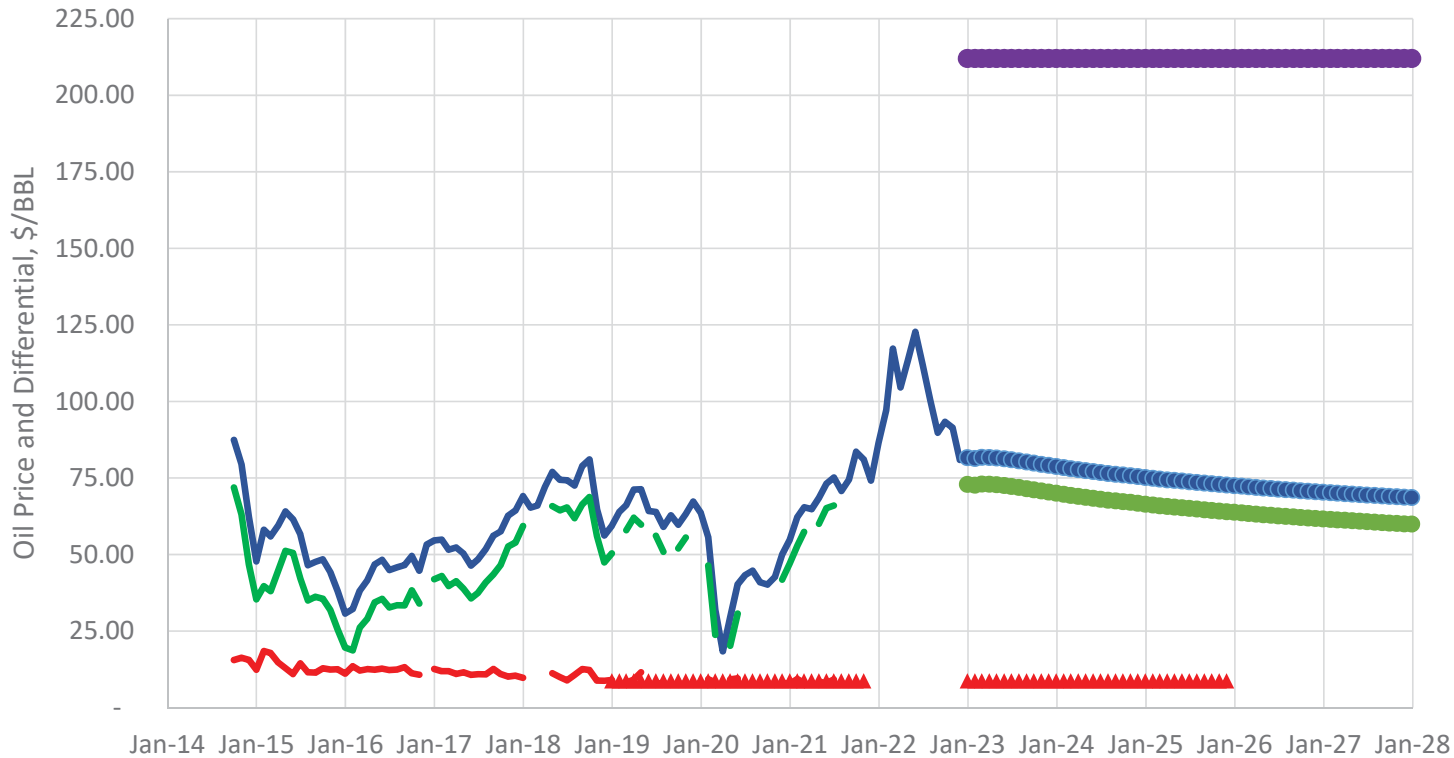
Well Component	Cost Estimate	Estimate From
Civic Center 1	\$46,300	Oil Well Services
Civic Center 3		
- Remove fish 2-7/8" liner and junk	\$544,950	Oil Well Services
- Casing repair	\$89,000	Oil Well Services
Pumping Unit Electrical	\$65,200	Innovative Electrics
Fencing	\$2,750	Nowlin Fencing Inc
	Total: \$748,200	

* Does not include required maintenance and repair from conditions assessment



Breakeven Oil Price

Historical and Forecast Oil Prices



- Brent Spot Price, \$/BBL
- City of HB Oil Price, \$/BBL
- Differential (Brent minus HB), \$/BBL
- ▲ Average Differential, \$/BBL
- NYMEX Brent Futures Prices (Avg of Weds in Dec 2022)
- Forecast of HB Oil Price, \$/BBL
- Break Even Oil Price, \$/BBL

Assumptions:

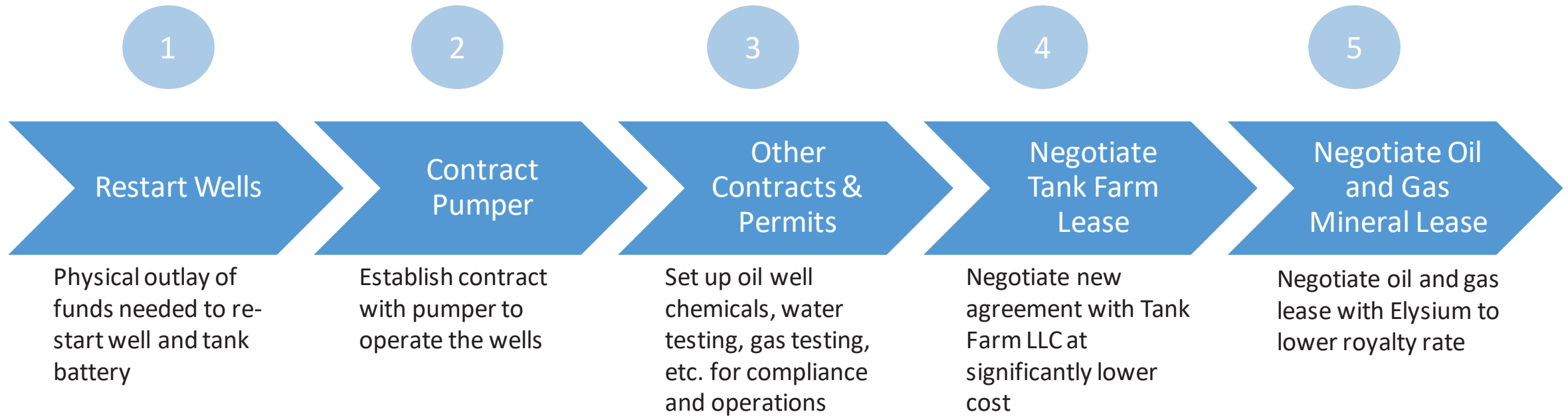
- 5.5 Barrels of oil per day
- \$793,130 in reactivation costs
- \$18,700 monthly expenses

Result:

- \$214 per barrel



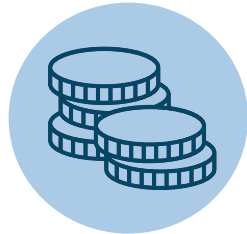
Plan to Resume Operations





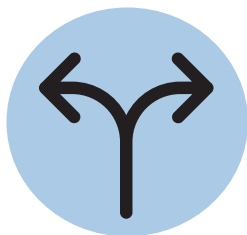
Options

Full Production



Costs (One Time and Annual)	
Assessments (wells, tanks/piping)	\$44,930
Known Repairs	\$748,200
Unknown Repairs – <i>from Assessments</i>	TBD
Total One Time Costs	\$793,130 plus TBD costs
Total Annual Costs (Operation and Maintenance Costs)	\$224,400
Total One Time Costs plus Total Annual Costs	\$1,017,530

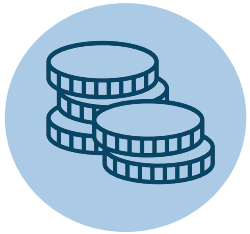
Revenue (Annual)	
Oil revenue (2,000 barrel/yr @\$80.00/barrel)	\$160,000
- <i>Minus Royalty Payment</i>	\$26,667
Total Annual Revenue	\$133,333



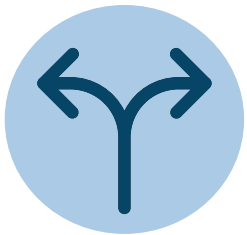
Pros	Cons
Maintaining oil production	Continued liability until well abandonment
	Continued costs that outweigh revenues
	Aging infrastructure



Sell Wells/Lease



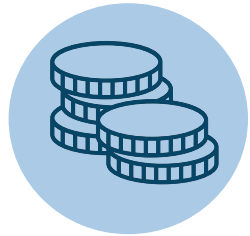
Costs		Revenue	
Unknown	TBD	None	N/A



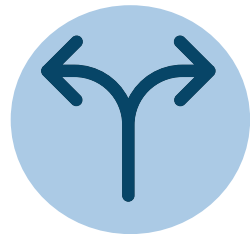
Pros	Cons
Allows potential future City oil production	Unlikely interest
	Unknown cost to prepare oil unit for sale/lease
	Still need to address tank farm lease
	Will impact development of Civic Center



Idle Wells



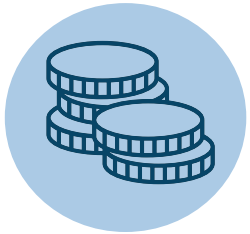
Costs		Revenue	
One time - unknown (<i>minimum repair to well 3</i>)	<i>Minimum - \$544,950</i>	None	N/A
Annual costs	TBD		



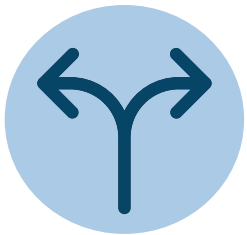
Pros	Cons
Possible re-activation at later time	Still requires casing repair on well #3
	Requires ongoing compliance and maintenance costs
	City retains closure liability
	Retain tank farm lease



Abandonment



Costs (One time)		Revenue	
Abandon Wells – <i>to be studied if requested by Council</i>	Est. \$1,500,000	None	N/A



Pros	Cons
Removes liability	Expensive one-time investment
Potential to re-develop over wells	Permanent closure – no option for future oil production
Can phase the abandonment into multi-year	End of life issues with tank farm lease



Summary

	Full Production	Sell / Lease	Idle	Abandon
Costs				
- One Time	-\$793,130	-TBD	-\$544,950 minimum	-\$1,500,000 estimated
- Annual	-\$224,000	-N/A	-TBD	-N/A
- Repair	-TBD from assessment			
- Est. Total	-\$1,017,530 plus TBD costs	-TBD One Time Costs	-\$544,950 min plus TBD costs	-\$1,500,000 estimated
Revenue				
- Annual	\$133,333	N/A	N/A	N/A
Pros	<ul style="list-style-type: none"> Maintaining oil production 	<ul style="list-style-type: none"> Allows potential future City oil production 	<ul style="list-style-type: none"> Possible re-activation at later time 	<ul style="list-style-type: none"> Removes liability Potential to re-develop over wells Can phase the abandonment into multi-year
Cons	<ul style="list-style-type: none"> Continued liability until well abandonment Continued costs that outweigh revenues Aging infrastructure 	<ul style="list-style-type: none"> Unlikely interest Unknown cost to prepare oil unit for sale/lease Still need to address tank farm lease Will impact development of Civic Center 	<ul style="list-style-type: none"> Still requires casing repair on well #3 Requires ongoing compliance and maintenance costs City retains closure liability Must retain tank farm lease 	<ul style="list-style-type: none"> Expensive one-time investment Permanent closure - no option for future oil production End of life issues with tank farm lease

Questions?

