MINUTE ITEM
This Calendar Item No. 23
was approved as Minute Item
No. 23 by the State Lands
Commission by a vote of 3
to 0 at its 8/26/82
meeting.

CALENDAR ITEM

23

8/26/82
W 40223
Graber
PRC 6206

AWARD OF A NEGOTIATED OIL AND GAS LEASE

APPLICANT: Jordan Oil and Gas Company
P.O. Box 1919
Santa Rosa, California 95402

AREA, TYPE LAND AND LOCATION:
186± acres of submerged State-owned lands in the bed of the Sacramento River northerly of Princeton, California. The description is made without warranty to limitation on the State's title to the land.

PERTINENT INFORMATION:

1. P.R.C. section 6815(b) provides that the Commission may negotiate and enter into leases for the development of State-owned lands through drilling from adjoining lands where the competitive bid provisions of P.R.C. section 6827 are impracticable by reason of, among other reasons, the irregular configuration of the property and the property's inacecssibility from surface drillsites reasonably available or obtainable by the State.

   The staff believes that a negotiated lease is appropriate for the parcel due to its inaccessibility from surface drillsites and its irregular configuration.

A 1, 3

S 1

150

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The subject parcel is surrounded by land under lease to the applicant (see Exhibit "A"). Surface drillsites on the State owned parcel are inaccessible because the lands are in the bed of the Sacramento River. The applicant proposes to directionally drill from sites on private lands adjacent to the State-owned parcel.

2. Under the proposed negotiated oil and gas lease, applicant agrees to pay in money to the State annually a rental of a) $25 per acre, b) 25 percent royalty on all oil and gas produced from State-owned lands and (c) a five percent pass-through royalty on gas produced on non-State-owned lands as specified in the lease on file in the office of the State Lands Commission.

3. The proposed lease has been reviewed by Staff Counsel, who has advised that the proposed negotiated lease will comply with the requirements of P.R.C. section 6815(b) and other applicable provisions of law and regulations of the Commission.

ENVIRONMENTAL IMPACT

The State Lands Commission staff, in accordance with 2 Cal. Adm. Code, Div. 3, Chapter 1, Article 10, has conducted an initial study and has concluded that the project will not have a significant effect on the environment. Therefore, a Negative Declaration was prepared and filed with the State Clearinghouse.

The proposed project is situated on lands identified as Class B (P.R.C. 6370.1), limited use and possesses environmental values. However, this project has been determined to be compatible with the provisions of 2 Cal. Adm. Code, Div. 3, Chapter 1, Article II.

EXHIBITS:

A. Site Map.

B. Land Description.

C. Negative Declaration.

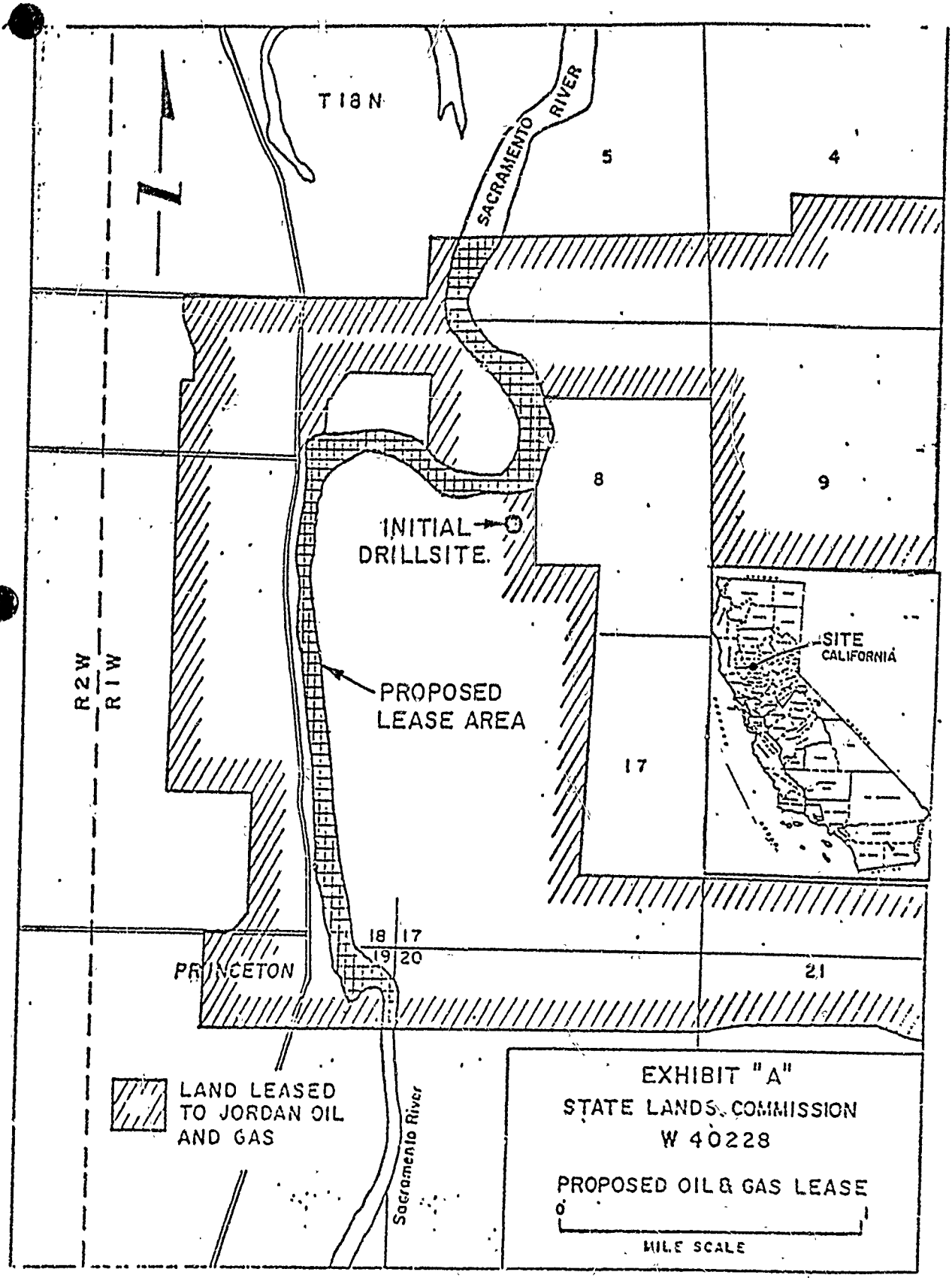
IT IS RECOMMENDED THAT THE COMMISSION:

1. DETERMINE THAT A NEGATIVE DECLARATION (EIR NO. 305) HAS BEEN COMPLETED IN COMPLIANCE WITH CEQA OF 1970, AS AMENDED AND THE STATE GUIDELINES, THAT THE PROJECT WILL HAVE NO SIGNIFICANT EFFECT ON THE ENVIRONMENT, AND THAT THE COMMISSION HAS REVIEWED AND CONSIDERED THE INFORMATION CONTAINED THEREIN.

2. FIND THAT GRANTING OF THE LEASE WILL HAVE NO SIGNIFICANT EFFECT UPON THE ENVIRONMENTAL CHARACTERISTICS IDENTIFIED PURSUANT TO P.R.C. SECTION 6370.1.

3. FIND THAT IN ACCORDANCE WITH SECTION P.R.C. 6815(b) THE PROVISIONS OF SECTION 6827 ARE IMPRACTICAL BECAUSE OF THE UNAVAILABILITY OF DRILLSITES ON THE STATE PROPERTY AND THE IRREGULAR CONFIGURATION OF THE PARCEL.

4. AUTHORIZE THE ISSUANCE OF AN OIL AND GAS LEASE ON 186 ACRES OF SUBMERGED LANDS DESCRIBED IN EXHIBIT "B" ATTACHED, AND BY REFERENCE MADE A PART HEREOF, PURSUANT TO DIVISION 6, OF THE P.R.C., TO JORDAN OIL AND GAS COMPANY FOR CONSIDERATION OF AN ANNUAL RENTAL OF $25.00 PER ACRE, 25 PERCENT FLAT RATE ROYALTY ON ALL OIL AND GAS PRODUCED FROM STATE-OWNED LANDS AND FIVE PERCENT OF THE VALUE OF ALL OIL AND GAS PRODUCED BY WELLS DRILLED THROUGH STATE LANDS INTO ADJACENT PRIVATE LANDS WHICH HAVE NOT BEEN INCLUDED IN A POOLING OR UNITIZATION AGREEMENT APPROVED BY THE STATE.



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W 40228

EXHIBIT "B"

LAND DESCRIPTION

A parcel of submerged land in the bed of the Sacramento River, in T18N, R1W, MDM, Glenn and Colusa Counties, California, described as follows:

All those lands bounded by the ordinary low water marks on the east and west banks of said Sacramento River and bounded on the north and south by California Coordinate System, Zone 2 latitudinal grid lines of the following "y" values:

North line, y = 645,950 feet
South line, y = 642,000 feet

END OF DESCRIPTION

PREPARED OCTOBER 23, 1981 BY TECHNICAL SERVICES UNIT, ROY MINNICK, SUPERVISOR.

STATE OF CALIFORNIA
STATE LANDS COMMISSION

EXECUTIVE OFFICE
1807 - 12th Street
Sacramento, California 95814

EXHIBIT "C"

PROPOSED NEGATIVE DECLARATION

EIR ND 305

File Ref.: W 40228

SCH#: 81090213

Project Title: Hacker Island Natural Gas Exploration/Lease Project.

Project Location: Under the bed of the Sacramento River northerly of the Town of Princeton, Glenn County, California.

Project Description: To explore for and, if commercial quantities are found, develop natural gas reserves under the bed of the Sacramento River by directional drilling from adjacent private lands.

This NEGATIVE DECLARATION is prpared pursuant to the requirements of the California Environmental Quality Act (Section 21000 et seq. of the Public Resources Code), the State EIR Guidelines (Section 15000 et seq., Title 14, of the California Administrative Code), and the State Lands Commission regulations (Section 2901 et seq., Title 2, of the California Administrative Code).

Based upon the attached Initial Studies, it has been found that:

☐ the project will not have a significant effect on the environment.

☒ the attached mitigation measures will avoid potentially significant effects.

Contact Person: Ted T. Fukushima
1807-13th Street
Sacramento, CA 95814
(916) 322-7813

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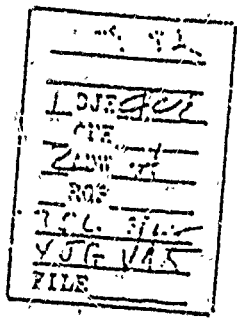
Form 13.17 (3/82)

State of California

Business and Transportation Agency

Memorandum

To : Mr. D. J. Everitts
State Lands Commission
1807 13th Street
Sacramento, CA 95814



Date: January 12, 1982

File : 03-Gle-45
Jordan Oil & Gas Co.
Packer Island
Exploration

From : DEPARTMENT OF TRANSPORTATION - Telephone ATSS 457-4277
District 3, P.O. Box 911, Marysville, CA 95901

Subject:

Thank you for the opportunity to review the initial study for the proposed exploration for natural gas reserves under the Sacramento River near Princeton, in Glenn County.

We note that State Highway 45 intersects a portion of the area leased to Jordan Oil and Gas Company. We are concerned about possible impacts within the State right of way due to drilling operations in the riverbed. The environmental document should specifically address any potential activities within the right of way including earthwork or vegetation removal.

An encroachment permit would be required for any work within the State right of way. The appropriate environmental clearances, as described above, would assist in expediting the permit application process.

We request the opportunity to review subsequent environmental information on this project.

LEO J. TROMBATORE
District Director of Transportation

By R. D. Skidmore
R. D. Skidmore
Chief, Environmental Branch.

RESPONSE: The project will not involve any drilling activities within the State Highway 45 right-of-way.

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STATE LANDS COMMISSION

INITIAL STUDY CHECKLIST

File Ref.: W40228

BACKGROUND INFORMATION

A. Applicant: Jordan Oil and Gas Co.
P.O. Box 1919
Santa Rosa, CA 95402

B. Checklist Date: 08 / 25 / 81

C. Contact Person: Jacques A. Graber
Telephone: (916) 323-7209

D. Purpose: Oil and Gas Lease.

E. Location: On a portion of the Sacramento River north of Princeton, CA

F. Description: Explore for and develop natural gas reserves under the bed of the Sacramento River.

G. Persons Contacted: Will Lesack
Land Manager

SAMPLE

II. ENVIRONMENTAL IMPACTS. *(Explain all "yes" and "maybe" answers)*

		Yes	Maybe	No
A.	*Earth.* Will the proposal result in:			
1.	Unstable earth conditions or in changes in geologic substructures?	☐	☐	☒
2.	Disruptions, displacements, compaction, or overcovering of the soil?	☒	☐	☐
3.	Change in topography or ground surface relief features?	☐	☒	☐
4.	The destruction, covering, or modification of any unique geologic or physical features?	☐	☐	☒
5.	Any increase in wind or water erosion of soils, either on or off the site?	☐	☐	☒
6.	Changes in deposition or erosion of beach sands, or changes in siltation, deposition or erosion which may modify the channel of a river or stream or the bed of the ocean or any bay, inlet, or lake?	☐	☐	☒
7.	Exposure of all people or property to geologic hazards such as earthquakes, landslides, mudslides, ground failure, or similar hazards?	☐	☐	☒

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		Yes	Maybe	No
B.	*Air.* Will the proposal result in:			
8.	Substantial air emissions or deterioration of ambient air quality?	☐	☒	☐
9.	The creation of objectionable odors?	☐	☒	☐
10.	Alteration of air movement, moisture or temperature, or any change in climate, either locally or regionally?	☐	☐	☒
C.	*Water.* Will the proposal result in:			
11.	Changes in the currents, or the course or direction of water movements, in either marine or fresh waters?	☐	☐	☒
12.	Changes in absorption rates, drainage patterns, or the rate and amount of surface water runoff?	☐	☐	☒
13.	Alterations to the course or flow of flood waters?	☐	☐	☒
14.	Change in the amount of surface water in any water body?	☐	☐	☒
15.	Discharge into surface waters, or in any alteration of surface water quality, including but not limited to temperature, dissolved oxygen or turbidity?	☐	☐	☒
16.	Alteration of the direction or rate of flow of ground waters?	☐	☐	☒
17.	Change in the quantity of ground waters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations?	☐	☐	☒
18.	Substantial reduction in the amount of water otherwise available for public water supplies?	☐	☐	☒
19.	Exposure of people or property to water related hazards such as flooding or tidal waves?	☐	☐	☒
D.	*Plant Life.* Will the proposal result in:			
20.	Change in the diversity of species, or number of any species of plants (including trees, shrubs, grass, crops, and aquatic plants)? ON DRILLSITE	☒	☐	☐
21.	Reduction of the numbers of any unique, rare or endangered species of plants?	☐	☐	☒
22.	Introduction of new species of plants into an area, or in a barrier to the normal replenishment of existing species?	☐	☐	☒
23.	Reduction in acreage of any agricultural crop? DURING DRILLING, PRODUCTION EQUIPT SITE.	☒	☐	☐
E.	*Animal Life.* Will the proposal result in:			
24.	Change in the diversity of species, or numbers of any species of animals (birds, land animals including reptiles, fish and shellfish, benthic organisms, or insects)? DURING DRILLING	☒	☐	☐
25.	Reduction of the numbers of any unique, rare or endangered species of animals?	☐	☐	☒
26.	Introduction of new species of animals into an area, or result in a barrier to the migration or movement of animals?	☐	☐	☒
27.	Deterioration to existing fish or wildlife habitat?	☐	☐	☒
F.	*Noise.* Will the proposal result in:			
28.	Increase in existing noise levels? DURING, DRILLING	☒	☐	☐
29.	Exposure of people to severe noise levels?	☐	☐	☒
G.	*Light and Glare.* Will the proposal result in:			
30.	The production of new light or glare? LIGHTS DURING DRILLING ON TOWER	☒	☐	☐
H.	*Land Use.* Will the proposal result in:			
31.	A substantial alteration of the present or planned land use of an area?	☐	☐	☒
I.	*Natural Resources.* Will the proposal result in:			
32.	Increase in the rate of use of any natural resources?	☐	☐	☐
33.	Substantial depletion of any non-renewable resources?	☐	☐	☐

		Yes	Maybe	No
J.	*Risk of Upset.* Will the proposal result in:			
34.	The involvement of a risk of an explosion or the release of hazardous substances (including, but not limited to, oil, pesticides, chemicals, or radiation) in the event of an accident or upset conditions?	☐	☒	☐
K.	*Population.* Will the proposal result in			
35.	The alteration, distribution, density, or growth rate of the human population of the area?	☐	☐	☒
L.	*Housing.* Will the proposal result in:			
36.	Affecting existing housing, or create a demand for additional housing?	☐	☐	☒
M.	*Transportation/Circulation.* Will the proposal result in:			
37.	Generation of substantial additional vehicular movement?	☐	☒	☒
38.	Affecting existing parking facilities, or create a demand for new parking?	☐	☐	☒
39.	Substantial impact upon existing transportation systems?	☐	☐	☒
40.	Alterations to present patterns of circulation or movement of people and/or goods?	☐	☐	☒
41.	Alterations to waterborne, rail, or air traffic?	☐	☐	☒
42.	Increase in traffic hazards to motor vehicles, bicyclists, or pedestrians?	☐	☒	☐
N.	*Public Services.* Will the proposal have an effect upon, or result in a need for new or altered governmental services in any of the following areas:			
43.	Fire protection?	☐	☐	☒
44.	Police protection?	☐	☐	☒
45.	Schools?	☐	☐	☒
46.	Parks and other recreational facilities?	☐	☐	☒
47.	Maintenance of public facilities, including roads?	☐	☐	☒
48.	Other governmental services?	☐	☐	☒
O.	*Energy.* Will the proposal result in:			
49.	Use of substantial amounts of fuel or energy?	☐	☐	☒
50.	Substantial increase in demand upon existing sources of energy, or require the development of new sources?	☐	☐	☒
P.	*Utilities.* Will the proposal result in a need for new systems, or substantial alterations to the following utilities:			
51.	Power or natural gas?	☐	☒	☐
52.	Communication systems?	☐	☐	☒
53.	Water?	☐	☐	☒
54.	Sewer or septic tanks?	☐	☐	☒
55.	Storm water drainage?	☐	☐	☒
56.	Solid waste and disposal?	☐	☐	☒
Q.	*Human Health.* Will the proposal result in:			
57.	Creation of any health hazard or potential health hazard (excluding mental health)?	☐	☐	☒
58.	Exposure of people to potential health hazards?	☐	☐	☒
R.	*Aesthetics.* Will the proposal result in:			
59.	The obstruction of any scenic vista or view open to the public, or will the proposal result in the creation of an aesthetically offensive site open to public view? DRAINAGE DITCH	☐	☒	☐
S.	*Recreation.* Will the proposal result in:			
60.	An impact upon the quality or quantity of existing recreational opportunities?	☐	☐	☒

		Yes	Maybe	No
T.	*Archeological/Historical.* Will the proposal result in:			
61.	An alteration of a significant archeological or historical site, structure, object, or building?	☐	☐	☐
U.	*Mandatory Findings of Significance.*			
62.	Does the project have the potential to degrade the quality of the environment, reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☒
63.	Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?	☐	☐	☒
64.	Does the project have impacts which are individually limited, but cumulatively considerable?	☐	☐	☒
65.	Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒

III. DISCUSSION OF ENVIRONMENTAL EVALUATION

IV. DETERMINATION

On the basis of this initial evaluation:

☒ I find the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures described on an attached sheet have been added to the project. A NEGATIVE DECLARATION will be prepared.

☐ I find the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

Date: 8.25.81

For the State Lands Commission

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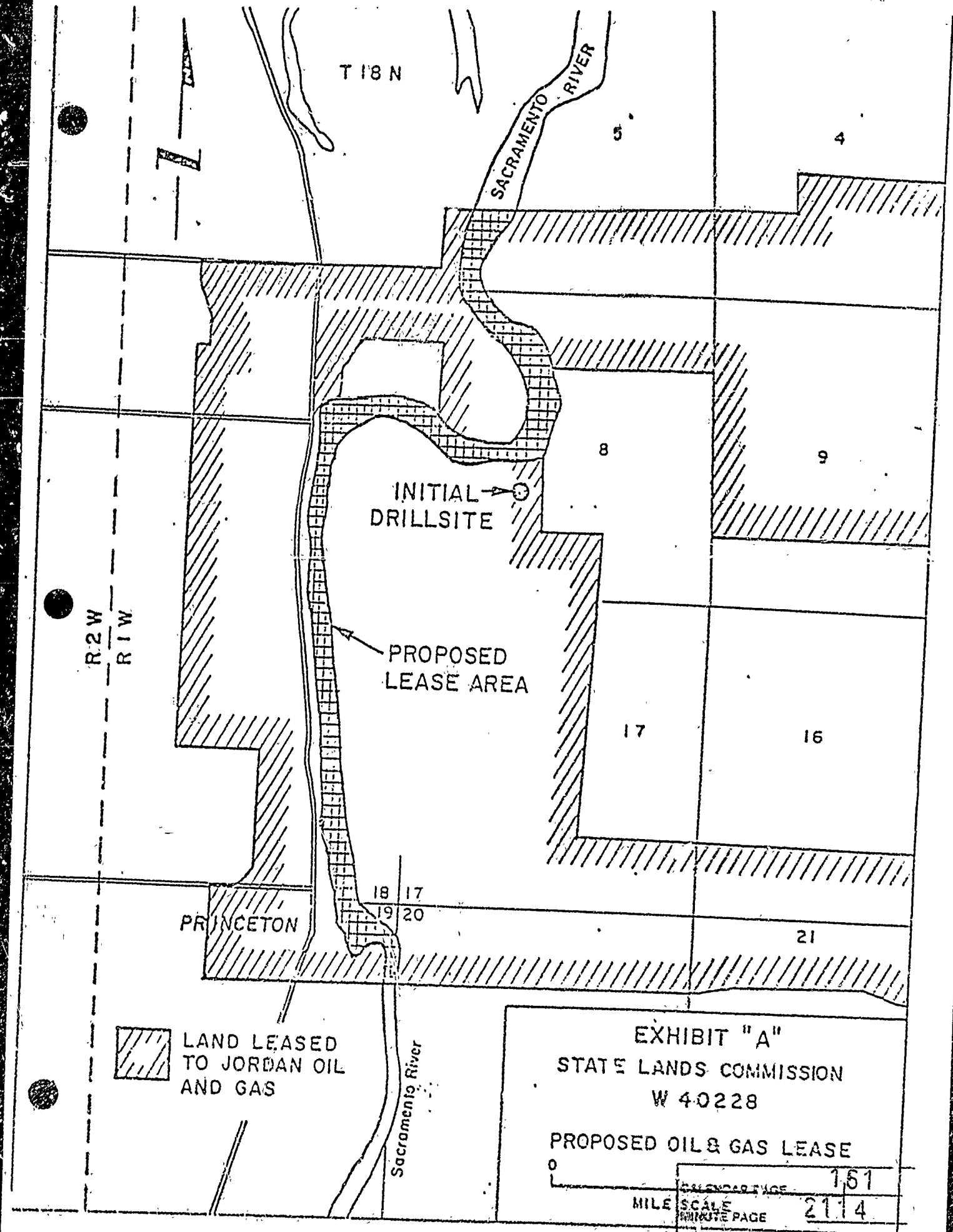
Form 1330 (7/79)


T 18 N
SACRAMENTO RIVER
5
4
8
9
INITIAL DRILLSITE
PROPOSED LEASE AREA
R 2 W
R 1 W
17
16
18
17
19
20
21
PRINCETON
LAND LEASED TO JORDAN OIL AND GAS
Sacramento River
EXHIBIT "A"
STATE LANDS COMMISSION
W 40228
PROPOSED OIL & GAS LEASE
0
MILE SCALE
CALENDAR PAGE 151
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W 40228

EXHIBIT "B"

LAND DESCRIPTION

A parcel of submerged land in the bed of the Sacramento River, in T18N, R1W, MDM, Glenn and Colusa Counties, California, described as follows:

All those lands bounded by the ordinary low water marks on the east and west banks of said Sacramento River and bounded on the north and south by California Coordinate System, Zone 2 latitudinal grid lines of the following "y" values:

North line, y = 645,950 feet
South line, y = 642,000 feet

END OF DESCRIPTION

PREPARED OCTOBER 23, 1981 BY TECHNICAL SERVICES UNIT, ROY MINNICK, SUPERVISOR.

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DESCRIPTION OF PROJECT

The project to be identified as the Packer Island Exploration Project is an effort by Jordan Oil and Gas Company to explore for, develop, and if commercial quantities are found, produce new natural gas reserves in the vicinity of Packer Island on the Sacramento River, north of the town of Princeton in Glenn County. The project is located in Sections 7 and 8; 17, 18, 19 and 20, T18N, R1W, MDB and M.

An Oil and Gas Lease is proposed for the subsurface area of the Sacramento River as shown in Exhibit "A".

The issuance of the aforementioned lease would allow exploration by the applicant. The proposed exploration plan calls for an exploratory geophysical program to assist in the selection of the bottom hole target. Upon selection of a drillsite, a drillsite pad, containment pit for the drilling muds and an access road to the drillsite would be constructed.

In the event of discovery, and assuming production is obtained, a wellhead will be installed along with protective equipment for the facilities against possible damage during winter flooding.

There are presently two locations for a possible drillsite. (Final selection would follow the geophysical survey) one proposed exploratory well will be a directional well drilled from a drillsite on the east bank of the Sacramento River. Its final location will be determined based upon data gathered from geophysical surveys. This site is currently under cultivation and within the SW¼ of Section 8, T18N, R1W, MDB and M.

Another drillsite may be selected on newly acquired lands. This site would be on the west bank of the Sacramento River in Section 7, or 18, T18N, R1W.

Each potential drillsite location will occupy approximately one acre during the exploratory phase. If commercial production is obtained, approximately one quarter will be required for the production pad. The proposed location as approved by the private landowner. The pad will be so situated as to minimize land use on the acreage including roads for drilling access. (See Exhibit "A" for proposed drillsite(s)).

In event of discovery both sites may be used for drilling. A single conventional drilling rig will be used for the project. The well(s) would require approximately five days to drill, the well(s) being shallow in depth. The operations could take around two weeks to drill and complete.

If commercially producible gas is discovered, the well(s) will be free-flowing requiring no lifting equipment and only a limited amount of production equipment. A wellhead fitting will be installed and connection to an existing pipeline will be made, all in conformance with Division of Oil and Gas Regulations.

Following completion of development drilling, the drilling equipment will be removed, the sumps vacuumed out and cleaned up and all traces of the drilling phase removed. If a gas discovery is made the reservoir should be depleted within ten to fifteen years at which time the wells would be abandoned in accordance with State regulations, production equipment will be removed and sites will be restored to the original condition.

PERSONS OR AGENCIES CONTACTED

MEMOS:

California State Department of Fish and Game.

California State Department of Conservation; Division of Oil and Gas.

State Water Resources Control Board.

Solid Waste Management Board.

O.P.R. Clearing House, Attention: Anna Polvos.

California Department of Parks and Recreation.

Office of Historic Preservation.

LETTERS:

Glenn County Planning Department.

Glenn County Air Pollution Control District.

Jordan Oil and Gas Company.

Colusa County Planning Department.

Colusa County Air Pollution Control District.

DISCUSSION OF ENVIRONMENTAL EVALUATION

IIA.

2. Construction of each initial drilling pad will disrupt an area of approximately one acre for the drillsite. An access road would be constructed to the drillsite. If commercial production is obtained, an average of one well for each 160 acres would be drilled. Once drilling is completed and commercial quantities of gas are found, the production facilities would require an area of approximately one-fourth acre. The produced gas would be transported from the site(s) by via existing pipeline.

3. The possibility that subsidence could occur is discussed in Exhibit "D". Also enclosed is a subsidence monitoring and control plan as required by Public Resources Code Section 6873.2, attached as Exhibit "E".

IIB.

8. A small amount of air pollution ould be generated during operation of diesel engines used in powering the drilling operations. Exhibit "C" provides data on operational emissions for diesel engines in a 750 H.P. rating. Duration of use of the drilling rig would be approximately five days for each well drilled.

9. During the drilling phase, operation of the diesel engines would create some objectionable odor. This could partially be controlled by properly adjusted engines and adequate pollution control devices.

IID.

20. During the exploration phase, one acre of land would be occupied for an initial drillsite and possibly two sites. The selected drillsites would be on agricultural lands thereby possibly prohibiting agricultural use in those one acre sites. If commercial quantities of gas are found at either site the area used for production equipment would be reduced to about one-fourth acre. The rest of the drillsite would be returned to agricultural use. If no gas is found, the exploratory site(s) would be returned to the original condition.

23. Initially one acre of land or crop would be disturbed, leading, possibly, to a one-fourth acre site if production is attained. (Refer to IID - 20 above).

IIE.

24. Construction of the drillsite(s) would cause a temporary disturbance to the area. Due to a repeated disturbance because of agricultural use, animal use of this habitat has fluctuated with the season and the state of the crop.

IIF.

28. There will be an increase in the noise level in the immediate vicinity of the drilling site due to the construction equipment for building the drillsite pad and the drilling machinery. Noise levels may be around 70 decibels at 1000 feet distance from the drillsite. The noise would be reduced at greater distances south and east by the obstructions of orchards and levees.

If a site is located in Section 8 the drillsite would be near some farms. To the north is undeveloped forest. Some houses lay to the west of the drillsite approximately one-fourth mile distant. The town of Princeton is located approximately one and one-half miles from the east bank site and the west bank site and would not be disturbed by noise. A site on the west bank in Section 7 would be closer to some houses along Highway 45. The increased noise level would last through the initial drilling period or approximately five days per drillsite. If production equipment is installed afterward there would be no noise generated during its operation life.

IIG.

30. The drilling rig would be visible at night due to high intensity lighting needed for the round-the-clock operations of drilling. The effect would be temporary occuring only during the drilling phase (approximately five days).

III.

33. If a commercially producible amount is discovered, natural gas is the only non-renewable resource that will be removed.

IIJ.

34. In conducting drilling of a well, there is always a chance for blowout, fire or spills. The operator will be required to conduct drilling operations in accordance with stringent regulations for critical well procedures as set forth by the State Lands Commission. The critical operations may occur during drilling, well completion, well maintenance and construction.

All applicable standards and regulations will be followed in the design and construction of the surface facilities and the gathering lines. Routine inspections will be conducted, and in the event of a leak, field personnel will be dispatched to locate and repair it.

IIM.

37. During the drilling phase, additional traffic will result while construction equipment, drill rigs and well service vehicles and equipment into the area are introduced during set-up of the well. Private vehicles will be present as drilling crews arrive and leave on each shift during the drilling phase.

42. With the presence of drilling operations within the area, the additional movement of employee vehicles and construction equipment will increase the potential of traffic hazard.

Proper caution in the operation of vehicles will help to avoid potential traffic hazards.

IIP. If commercial quantities of natural gas are discovered, gas transmission line hookup will be required, necessitating construction of new gathering lines to already existing public utility transportation systems nearby.

IIR.

59. Obstruction of vistas or views will be temporary during drilling operations. The drill derrick will be removed when drilling operations are complete.

IIT.

61. Alteration of Significant Archaeological Sites.

The records of the California Archaeological Inventory Regional Office indicate no existing archaeologic sites in the vicinity of either chosen drilling location.

EXHIBIT "C"

DIESEL POWERED INDUSTRIAL ENGINE EMISSION FACTORS AND RATES

750 H.P.[1]

	g/hp. hr.[2]	at 75%[3] load factor	g/sec.	tons/mo.
Carbon Monoxide (CO)	3.030	2.27	0.47	1.37
Exhaust Hydrocarbons (HC)	1.120	0.84	0.17	0.51
Evaporative Hydrocarbons	None			
Crankcase Hydrocarbons	None			
Nitrogen Oxides (NO_x)	14.000	10.50	2.18	6.32
Aldehydes	0.210	0.16	0.03	0.12
Sulfur Oxides (SO_x)	0.931	0.70	0.15	0.42
Particulate (Part)	1.000	0.75	0.16	0.45

1. Total H.P. - two engines of approximately 350 hp. and 400 hp. will be used.

2. Data obtained from EPA, AP-42 Supplement 5; December 1975, p. 3.3.3-1.

3. Hoisting operations will require 675 H.P. for approximately six hours per day and drilling operations will require 525 H.P. 18 hours per day.

Load factor 1 = 675/750 = 90%
Load factor 2 = 525/750 = 70%
Average load factor = $\frac{(0.90)(6) + (0.70)(18)}{24}$ = 75%

W 40228

EXHIBIT "D"

COMMENT ON LAND LEVEL VARIATIONS

Considering subject IIA-3, land subsidence could occur. A discussion and analysis of subsidence in this area of the Sacramento River reads as follows:

Variations in land level in a region can be affected by these causes:

1. Ground water withdrawal.
2. Oxidation and compaction of peat and related organic sediments.
3. Tidal fluctuations.
4. Crustal Adjustments.

Extraction of natural gas in this area is not considered a significant cause of subsidence because:

1. The gas bearing sands are generally quite thin, ranging from 10 to 50 feet in thickness and can only compact a small amount.
2. The sands are relatively competent and resist compaction.
3. The waterdrive commonly fills the interstices as the gas is withdrawn, thus reducing compacting tendencies of the sands.

Site Specific Observations

With respect to the location of the proposed project, compaction of peat soils can be discounted because these soil types do not extend northward along the Sacramento River as far as Courtland (Department of Water Resources Bulletin 76, Preliminary Edition, December 1960, page 19).

Tidal flucuations (Item 3) result in very small elevation changes, which measure in tenths of a foot or less, and are cyclical in nature. Local groundwater withdrawal is the probable cause of the small elevation changes in the area; however, tectonic and isostatic crustal adjustments (Item 4) should not be ruled out.

One of the most available sources of historic information regarding land level variations throughout the State is the recurrent survey data of the National Geodetic Survey. Their readings record bench mark elevations over considerable time spans, up to thirty years in many cases. Unfortunately many regions are incompletely surveyed or the data is unavailable. In the region of the proposed project, the surveys conducted are incomplete and those few on record are below current specifications for third-order control standards.

One iron post, near a brick building in Princeton, was recorded in 1929 at 80.017 feet. It was again recorded in 1951 at 81.113 feet. An elevation change of + 1.096 feet has occured over a 22 year period.

According to the applicant, continuous drilling and drainage of gas reservoirs in this region have not contributed to an apparent significant subsidence in the area. A memo from the Department of Conservation, dated September 3, 1981, supports the applicant's statement. It states that the formations involved in this region of gas production are thin and, characterized by high operating pressures and rapid water influx, which will resist significant subsidence.

Because of the lack of recent subsidence data in the region it will be required of the applicant to survey three existing bench marks adjacent to the proposed drillsite(s). The applicant must establish new survey points near the drillsite(s) and tie these into the existing survey network. These would be monitored yearly if and when production is established.

MITIGATING MEASURES PROPOSED TO MINIMIZE IMPACTS

Drilling and completion operations will be conducted to conform to regulations of the State Lands Commission and the Division of Oil and Gas. Surface casing will be set as prescribed by regulations to provide anchorage for blowout prevention equipment and to protect groundwater. Approved blowout prevention equipment will be used during drilling operations.

Freshwater aquifers that may extend to 2,000 feet will be cased and/or protected with cement at the time of completion or abandonment. If toxic materials are used in the drilling fluids, the sump will be lined with impervious material and the spent mud will be disposed of at a site approved by the Regional Water Quality Board. The applicant will also contact the Board to determine if adherance to waste discharge requirements will be necessary. Subsequently, the sites will be cleaned up and restored as nearly as practicable to their original condition.

If a producible gas accumulation is discovered, the gas will be moved from the drillsite(s) by pipeline and there will be minimal venting or release of gas to the atmosphere during the production phase.

The lessee will be required to suspend all drilling and production operations, except those which are corrective, protective, or mitigative, immediately in the event of any disaster or contamination or pollution resulting from operations under its lease. Such drilling or production operations shall not be resumed until adequate measures have been taken and authorization for resumption of operations has been made by the Commission. Corrective measures shall be taken immediately whenever pollution has occured.

Residuary products of oil, drilling fluid, sanitary wastes and other refuse shall be disposed of in approved dumping areas. None of these products will be permitted to enter the adjacent drainages or any slough or marsh lands connected therewith. The lessee will be required to comply with the Commission's Rules and Regulations for Drilling and Production Operations on State upland areas.

The drilling regulations include requirements for well casing, cementing of well casing, blowout prevention equipment, supervision and training of drilling personnel, drilling mud system and control, safe drilling practices, and drilling inspection. The production regulations include well completion and safety equipment, remedial and well maintenance work, subsurface injection projects, waste disposal, safety equipment and procedures relating to production facility operations, and the operation and maintenance of pipelines.

'It is the responsibility of the Division of Oil and Gas and the State Lands Commission to see that the procedures are followed, and a system of inspections and reports are required to insure that this is being done.

Though the chance of discovering oil is slight, the lessee will be required to maintain a current oil spill contingency plan for initiating corrective action to control and recover oil spilled on any waters or land. The plan will cover both minor and major oil spills associated with drilling operations.

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SUBSIDENCE MONITORING AND CONTROL PLAN

The lessee, upon the discovery of natural gas and/or oil, will be required to determine a subsidence rate as of the current USGS, USC and GS Data before large volumes of gas are produced from the subject lease. This will be accomplished by precision leveling surveys of bench marks (USGS, USC and GS and others) in the area. The lessee will also be required to establish bench marks (preferably one on each side of the lease area) which will be tied by precise leveling into the control network. Such bench marks set by the lessee will be surveyed each year and the control network surveyed every two years.

Since it has been established by USGS that during subsidence (due to removal of subsurface elements) bench marks will move toward the center or toward the area of deepest subsidence, detailed horizontal surveys could serve to effectively detect areal subsidence.

After discovery, a well may be drilled and programmed to include a casing joint survey. A casing joint survey is a procedure in which a magnetic coil is lowered into the well and, as it is withdrawn, records the magnetic density of the casing. Lengths of casing can be accurately determined by such technique and comparisons with later surveys or "runs" may indicate casing deformation, a sign of possible subsidence. While a casing joint survey may not reveal a total subsidence rate, it will permit the operator to determine if casings opposite the producing sands are undergoing deformation. These surveys would be run about every two years as part of the subsidence monitoring procedure.

Many gas sands in the delta region are partially repressured or repressured with a partial or full waterdrive mechanism. If the reservoir has a natural water-drive, then a withdrawal rate could be determined which would allow the formation pressures to remain stable and constant. This condition could negate any subsidence attributed to gas production.

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(Revised 8/23/82)

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