

110 years, and provide a fascinating education in drilling equipment and technology, as it existed in the late 19th C.

URBAN ENCROACHMENT ASSOCIATED WITH THE OIL FIELDS OF BAKERSFIELD, CA

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Soaring housing prices and limited land opportunities in many areas of California have driven developers to the Central Valley. In Bakersfield, the developers have found the available land and friendlier planning commissions they seek. As the tentative tracts maps spread west and south however, they have begun to encroach onto land formerly zoned agricultural or resource-mineral producing. This latter condition has given rise to land use compatibility questions and conflicts between surface rights owners and mineral rights owners. This presentation addresses some of the issues and potential hazards of increasing housing density near oilfields.

A HISTORY OF SUBSIDENCE ON THE LOS ANGELES COASTAL PLAIN

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(Abstract not submitted)

CALIFORNIA'S DIVISION OF OIL, GAS, AND GEOTHERMAL RESOURCES (1915-PRESENT)

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Thousands of years after humans first use of California's petroleum and 50 years after drilling California's first oil well, the California Legislature, with the support of the petroleum industry, created a State-level regulatory agency to curtail abuse of this precious natural resource. Preventing reservoir damage from wells lacking competent isolation of water zones and collection of well and production records were initial goals for the Department of Petroleum and Gas.

The Department original offices were in Coalinga, Taft, Los Angeles, and Santa Maria. The first State Oil and Gas Supervisor, Roy McLaughlin, a mining engineer, had previously conducted a comprehensive survey of the California oil industry for the State Mining Bureau. This survey and industry confirmed the need for a effective regulatory program. Under Mr. McLaughlin the agency preferred obtaining compliance through persuasion. In Mr. McLaughlin annual reports he was adamant that oil companies create technical departments that would use scientific methods to develop California oil resources and he exposed those that lack this resource.

In 1929, the organization was separated from the State Mining Bureau and moved to the Department of Natural Resources. In 1961, after further reorganization, the name was changed to the Division of Oil and Gas (Division), which was moved to its present position within the Department of Conservation under the Resources Agency.

Historically, the Division's additional statutory authority and associated enforcement has been reactionary to major issues with California's oil industry. Major revisions in 1929 addressed the unreasonable waste of gas, which was a common practice to get to the oil hydrocarbons. California's "law of capture" for oil fields generated haphazard townlot drilling of wells and overproduction which were addressed in 1931 amendments that detailed voluntary and mandatory spacing requirements. This 1931 amendment also introduced the first bonding requirement to address wells that operators deserted.

Although offshore wells were drilled as early as 1897, it was not until 1921 that the State Legislature passed a tidelands leasing act. This act and the State Lands Act of 1938 allowed the more orderly development of the offshore reserves. Recovery of the State's offshore resources consistently improved with technology developments, however, it wasn't until 1958 that the first new-field discovery was made offshore – Summerland Offshore.

Onshore and offshore production from the giant Wilmington field resulted in major subsidence in the Long Beach – Los Angeles harbor area. In response, in 1958, the Subsidence Control Act was enacted. The act encouraged voluntary pooling and unitization, but provided for compulsory unitization if necessary. It included determining costs of initiating and conducting a repressuring operation.

In the 1960's the Geysers Geothermal field in Sonoma and Lake Counties was developed into a world-class electrical generation facility. In September 1965, the regulation of geothermal wells was added to the Division of Oil and Gas. However, the geothermal industry would wait until 1992

to have their industry recognized in the Division's name - Division of Oil, Gas, and Geothermal Resources.

In 1970, Division authority was expanded considerably to prevent "...damage to life, health, property, and natural resources...". The primary charge of the Division prior to this scope expansion was conservation and protection of oil, gas and fresh water. This change was a result of the 1969 Santa Barbara Channel oil spill, which gave the Division authority to implement environmental guidelines, which were adopted as regulation in 1974. The guidelines included sumps, natural drainage channels, tank settings, well cellars, production and injection facilities, and oilfield junk, trash and other wastes.

In 1983, the Division applied for and received US Environmental Protection Agency "primacy" for Class II injection wells in response to the Underground Injection Control (UIC) federal program.

In 1990, the Division improved its idle/orphan well abatement program by increasing financial insurance requirements, thereby, decreasing the State's future liability for deserted oil and gas wells, and providing incentives to allow an operator to rework an orphaned well in an attempt to regain production.

In 1998, the Division adopted more stringent regulations for pipelines located in environmentally sensitive areas.

As the Division looks to the future, its core programs will continue to protect the citizens of the State, the environment, and natural resources. Ongoing and additional challenges include the elimination of long-term idle wells and the remediation of derelict/idle lease facilities.

THE EMERGENCE OF THE MODERN PETROLEUM INDUSTRY IN THE MIDDLE EAST: A CASE STUDY OF IRAN (1872-1953)

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Since the discovery well at Masjid Suleiman in 1908 in Iran (now one hundred years ago), the Middle East has increasingly become a scene of petroleum exploration, production, exports and geopolitics. This paper (sequel to my paper "Pre-Modern History of Bitumen, Oil and Gas in Persia" in *Oil-Industry History*, v. 6, no. 1. 2005), discusses the emergence of the modern oil industry in Iran as a pioneer case in the Middle East. I divide this modern history into five stages: (i) beginnings (1872-1908) from the Reuter and D'Arcy contracts with the

Iranian government (Qajar Dynasty) to the oil discovery at Masjid Suleiman; (ii) 1909-1949, the formation of the Anglo-Persian Oil Company (mother company of the present British Petroleum) and its evolution as a British government-supported company at odd with the interests of the Iranian government especially given the importance of Iranian oil during World Wars I and II; (iii) 1950-1953, the nationalization of oil in Iran and the rise and fall of Prime Minister Dr. Muhammad Mossadeg; (iv) 1954-1978, the Anglo-American Consortium activities in Iran during the reign of Muhammad Reza Shah Pahlavi, and (v) 1979-present, the Islamic Revolution and the era of the Islamic Republic of Iran. Of these stages, my focus in this paper is on stages i-iii, which are relevant for the early history rather than the contemporary history (stages iv and v). In this analysis, I use both Persian and English information sources to provide a scholarly-balanced perspective.

THE THORA-MCKEE OIL WELL AND SALT WORKS, NOBLE COUNTY, OHIO

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Forty-five years before the drilling of the famous 1859 Colonel Drake oil well in Pennsylvania, oil was discovered, produced, and marketed from wells dug in southeastern Ohio. In 1814, Silas Thorla and Robert McKee operated a salt-works along Duck Creek, in what is now Noble County, Ohio. Using the spring-pole drilling method and a hollow sycamore log as surface casing, they encountered oil and gas while drilling for salt brine. To separate the oil from the brine, the mixture was first placed in barrels allowing the less dense oil to rise to the top. They then gathered the oil by soaking blankets and wringing out the oil. The oil was bottled and sold as "Seneca Oil" as a medicine for rheumatism, sprains, and bruises. Early travelers often visited the salt-works and the oil wells. In 1818 one traveler wrote about his visit in a letter to a friend. He stated that the site was "one of the greatest curiosities in nature". He further described Duck Creek covered with as much as three feet of oil for a distance of three miles, and that the quality of the oil "is as fine as any oil from the head of a sperm whale" and that it "burns clear and bright". In 1860, one of the first oil fields in Ohio was discovered along Duck Creek, approximately ten miles southeast of the Thorla-McKee well. The discovery of the Macksburg oil field in Washington County helped ignite the oil boom of southeastern Ohio.