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An Overview of the California Permitting Process

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California has had fifteen years experience with geothermal power production. During this period it has developed a sophisticated geothermal regulatory structure which provides for the delegation of substantial authority to local governmental units. Mr. Trower examines this regulatory structure, emphasizing the Napa County Geothermal Ordinances.

AN OVERVIEW OF THE CALIFORNIA PERMITTING PROCESS†

*E. Dale Trower**

During the more than fifteen years that it has lived with modern geothermal power production, California has developed, and continues to develop, a sophisticated geothermal regulatory structure. This paper will present an overview of that structure giving special emphasis to the exploration permitting process. Since AMAX Exploration, Inc. has been exploring for geothermal resources in Napa, California, the newly enacted Napa County Geothermal Ordinance[1] will be a focal point for discussions of the substantial powers which California has delegated to local units of state government.

OVERVIEW

The corporate geothermal exploration program generally begins when management decides that a particular area, for one reason or another, appears permissive to the presence of a geothermal steam or hot water reservoir. Interest in the area may be evoked by the results of prospecting work done by the technical staff, it may come from an attractive land offer made by a promoter or potential joint venturer, or finally, management interest may be created simply by intense competitor activity in the area.

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1. NAPA COUNTY CODE NO. 499 §§ 10400 *et seq.* (1976).

No matter how begun, smooth transition to the exploration project from the land acquisition and surficial examination stages (which include geochemical, seismic and magnetotelluric studies) through the drilling of temperature gradient and exploration/production wells, is no longer simply a matter of analyzing data then charging ahead to the limits of the program budget. Ever increasingly, key decisions and the expenditure of time and money are dependent upon or are a function of regulatory imposition. It is therefore crucial for the geothermal client to understand at an early stage the impact of applicable regulations on program budgeting and timing.

California, with its multi-layered regulatory framework, powerful local governments and sophisticated environmental legislation presents a significant challenge to the potential geothermal developer and its counsel. The fact that California has been rated the forty-seventh (out of the contiguous forty-eight) most attractive state[2] in which to locate new industry in no way lessens this challenge.

Of the thirteen western states[3] which have adopted a geothermal ordinance of one form or another, California's system is by far the most complex. The fact that Oregon, which has had long-standing exposure to low temperature geothermal, (primarily used for space heating) also has a very detailed geothermal regulatory structure[4] suggests that the more advanced the development of the industry in a state, the more involved will become that state's regulatory structure. California therefore lends itself to study as a harbinger of things (and problems) to come in those states which are beginning to experience a rapid growth in geothermal exploration activities.

2. California Chamber of Commerce ALERT, Dec. 3, 1976, p. 2 (citing the work of plant location consultant Maurice Fulton).
3. Alaska (ALASKA STAT. § § 38.05.181 *et seq.* (1973)), Arizona (ARIZ. REV. STAT. § § 27-651 *et seq.* (1965)); California (CAL. PUB. RES. CODE § 6902-25 (West Supp. 1973)); Colorado (COLO. REV. STAT. § 34-70-101 (Cum. Supp. 1975)); Hawaii (HAWAII REV. STAT. § 182.1 (Supp. 1975)); Idaho (IDAHO CODE § § 42-4001 *et seq.* (1977)); Montana (MONT. REV. CODES ANN. § 81-2601 (Cum. Supp. 1975)); Nevada (NEV. REV. STAT. § 5340.020, 361. 606 (1971)); New Mexico (N.M. STAT. ANN. § 7-15-1 (1953)); Oregon (ORE. REV. STAT. § § 522.005 *et seq.* (1975)); Utah (UTAH CODE ANN. § 73-1-20 (Supp. 1975)); Washington (WASH. REV. CODE § 79.76.010 (1975)); and Wyoming (WYO. STAT. § 41-121(D) (Supp. 1975)).
Not all of these states have ordinances *per se;* in several instances the state statute merely assigns the resource to a regulatory agency.
4. Oregon's system which includes geothermal heating districts is less complex in practice due to the lesser powers given to cities and counties by the state constitution.

There is of course the possibility that the increased regulations which have accompanied the industry's growth in California and Oregon are related less to necessity than to the law of the growth of bureaucracies which C. Northcote Parkinson explains in his remarkable book *Parkinson's Law*. Parkinson's law in essense provides that the number of workers in any bureaucracy will tend to rise at an annual rate of six per cent regardless of work to be done or even whether any work is done.[5]

At least a dozen state agencies as well as several regional and local entities may become involved in the geothermal regulatory process in California at any one time. State agencies involved with geothermal exploration and development include: the Energy Resources Conservation and Development Commission (policy, plant siting), the State Lands Commission (leasing of state lands), the Division of Oil and Gas (downhole regulations), the California Department of Fish and Game (Environmental Impact Report (EIR) and permit review), the Public Utilities Commission (plant siting and rate setting), the Division of Industrial Relations (occupational safety), the Department of Parks and Recreation (permit review), the Division of Forestry (permit review), the Geothermal Resources Board (designation of KGRAs), the State Water Resources Control Board (setting of water quality standards), and the Air Resources Board (setting of air quality standards).

Regional agencies, which have been organized on the basis of common air basins or watersheds, regulate drilling and power plant effluents and emissions. These are the State Regional Water Pollution Control Boards (effluent standards and permits) and the Air Pollution Control Districts (emission standards and permits). Local entities which generally participate in the geothermal regulating process include the County Planning Commission (permit approval, lead agency in the EIR process) and the County Board of Supervisors (final approvals at the county level).[6]

5. Miller, *My Turn—Can Carter Repeal Parkinson's Law?*, NEWSWEEK, Dec. 26, 1976, at 9.
6. If the resource is on federal property, at least five federal agencies can be added to this picture: the Bureau of Land Management (lease administration), the Geological Survey (KGRA designation), Fish and Wildlife Service (EIS and drill permit review), the Forest Service (surface management and EIS review) and the Environmental Protection Agency (environmental standards).

Not all of the above agencies are involved with every step of a geothermal exploration and development program. However, the fact that all, at one time or another, may be involved in the regulatory and permitting system does point out the rather formidable obstacles which can stand between the hopeful applicant and the successful developer.

LEASE PRACTICES

As mentioned earlier, an initial step, and in many cases the initial step in geothermal exploration is the land acquisition program. The location of a proposed project, that is whether it is on state, federal or private lands determines, as much as does any factor, the procedures and public agencies which will be involved in the early stages of exploration.

Exploration and development rights to geothermal resources on federal and California state lands are acquired by lease pursuant to the Federal Geothermal Steam Act of 1970[7] and California's Geothermal Resources Act of 1967,[8] respectively. The rights to geothermal resources underlying private lands are occasionally obtained by purchase, but are more frequently leased from private land owners.

Since leasing practices are the subject matter of another paper, lease regulations will be discussed only briefly, with some particular attention given to peculiarities of the California practice.

FEDERAL LANDS

In California, as in all states, the right to expropriate geothermal resources from federal lands is obtained from the federal government via a lease obtained by competitive bid or by priority lease application.[9] The Bureau of Land Management ("BLM" or "the Bureau") is the administering agency for the leasing program.[10] The Bureau receives technical assistance from the United States Geological Survey and also confers with the Forest Service regarding the leasing of National Forest lands.[11]

7. 30 U.S.C. § § 530 1001 *et seq.* (1970).
8. CAL. PUB. RES. CODE § § 6902-25 *et seq.* West Supp. 1976).
9. 30 U.S.C. § 1003 (Supp. 1975).
10. 43 C.F.R. § § 3200 *et seq.* (1976).
11. 43 C.F.R. § § 3200 *et seq.* (1976).

In those areas which have not been designated a "Known Geothermal Resources Area" (KGRA), priority applications for leases are issued to the first qualified applicant. In those areas designated KGRA, leasing is by sealed bid with the lease going to the highest qualified bidder.[12] An area may be designated a KGRA if the geology, nearby discoveries, competitive interests, or other indicia would, in the opinion of the Secretary of the Interior, engender a belief in men who are experienced in the subject matter that the prospects for the extraction of geothermal steam or associated geothermal resources are good enough to warrant expenditures of money for that purpose.[13]

Federal leases are for a period of ten years and so long thereafter as geothermal resources are produced in commercial quantities, up to a maximum of forty additional years.[14] However, if the lands are not needed for other purposes, the leases may be extended for a second forty year period.[15] Royalties are ten to fifteen per cent of the value of the resource derived from production under the lease which are sold or utilized, or are reasonably susceptible of being sold or utilized by the lessee.[16] A royalty, not to exceed five per cent of value, may also be imposed on by-products recovered.[17]

STATE LANDS—LEASING

Among western states it is common practice to give geothermal regulatory powers to either the state engineer (*i.e.*, to treat the resource like water) or to treat the resources as a mineral, putting them under the control of the state's Division of Oil and Gas.[18] California has chosen to put drilling regulation under the Division of Oil and Gas[19] and leasing regulation under the State Lands Commission.[20] Rather than reflecting a predetermination that the resource is a mineral, this more likely reflects an attempt to insert geothermal resources administration into an established regulatory framework.

12. 30 U.S.C. § 1003 (Supp. 1975).
13. 30 U.S.C. § 1001(e) (Supp. 1975).
14. 43 C.F.R. § 3203.1-2 (1976).
15. 43 C.F.R. § 3203.1-3(a) (1976).
16. 43 C.F.R. § 3205.3-5(a) (1976).
17. 43 C.F.R. § 3205.3-5(b) (1976).
18. *See, e.g.*, Wyoming, Utah and Nevada (resource treated like water) and Colorado and New Mexico (resource treated like mineral).
19. 14 CAL. ADMIN. CODE § 1621 (1975).
20. CAL. PUB. RES. CODE §§ 6900 *et seq.* (West Supp. 1976).

The primary custodian of state lands in California is the California State Lands Commission. The Commission's powers of disposition over geothermal resources include those resources located on state school lands, proprietary lands, tidelands, submerged lands, swamp and overflowed lands, beds of navigable rivers and lakes, and land in which geothermal resources have been reserved to the state.[21]

Paralleling the federal system, lands designated by the State Lands Commission as Known Geothermal Resources Areas are leased to the highest bidder.[22] On those lands which have not been designated a KGRA, a prospecting permit may be obtained which grants exclusive prospecting rights for a period of three years[23] with an option to extend for two more.[24] Prospecting permits are issued to the first qualified applicant. The applicant must accompany the permit application with a twenty-five dollar filing fee, an expense deposit of one hundred dollars and a rental deposit equal to the amount of one dollar per acre or fraction thereof.[25]

The designation of an area as a KGRA may be made by the State Lands Commission of its own volition or upon recommendation of the Geothermal Resources Board.[26] In order to be designated a KGRA, the area under consideration must contain at least one well "capable of producing geothermal resources in commercial quantities".[27] This definition differs substantially from that of the federal system discussed above. In light of this more restrictive definition, the California system presumably will not create KGRAs nearly as arbitrarily as does the federal system. This should somewhat lessen the potential problem of a permittee (the California equivalent of a federal priority lease applicant) losing its competitive advantage by having an area converted from non-KGRA to KGRA subsequent to the applicant having been issued a prospecting permit.

Protection is given the California prospector by the liberal conversion rights which are provided in the California Geo-

21. CAL. PUB. RES. CODE § 6904 (West Supp. 1976).
22. CAL. PUB. RES. CODE § 6912(a) (West Supp. 1976). The designation "Geothermal Resources Area" (GRA) is used by the Division of Oil and Gas for internal administrative purposes, but such designation is unrelated to leasing procedures.
23. CAL. PUB. RES. CODE § 6910 (West Supp. 1976).
24. CAL. PUB. RES. CODE § 6910 (West Supp. 1976)
25. 14 CAL. ADMIN. CODE § 2252(b) (1975).
26. CAL. PUB. RES. CODE § 6912(b) (West Supp. 1976).
27. CAL. PUB. RES. CODE § 6912(b) (West Supp. 1976).

thermal Resources Act of 1967 (hereinafter, sometimes, the "Act").[28] The Act provides that upon the classification of any of the lands included within a prospecting permit as a Known Geothermal Resources Area, the permittee shall be entitled to a preferential lease for such lands providing the permittee submits its application for a lease within ninety days after being notified of the classification.[29]

Where a severed estate is involved, that is, where the state has disposed of the surface, but retained mineral rights, the surface owner is given conversion rights with regard to both geothermal permits and leases.[30] On lands wherein the surface has been disposed of by the state subject to a reservation of geothermal resources, the applicant for a state permit or lease must give notice of the application to the surface owner. The surface owner then has six months in which to file an application of his own for the permit or lease. If the surface owner is a qualified applicant, his application for lease or permit will be granted by the State Lands Commission and the original application will be dismissed.[31]

If lands in which the surface is in private ownership and the geothermal resources are state owned, are classified as KGRA, and the state's geothermal interests are thereafter leased by competitive bid, the surface owner may, within ten days after notice of bidding is delivered to him by the Commission, submit a bid equal to the winning bid. Thereupon, the Commission will issue the lease to the surface owner and dis-

28. CAL. PUB. RES. CODE § 6902-25 *et seq.* (West Supp. 1976).
29. CAL. PUB. RES. CODE § 6911 (West Supp. 1976).
30. Whether geothermal resources are owned by the owner of the surface estate or by the owner of the mineral estate has been the issue in three separate actions: United States v. Union Oil Company, 369 F. Supp. 1289 (N.D. Cal., 1973); Pariani v. The State of California, No. 657291 Super. Ct., San Francisco County; and Geokinetics, Inc. v. Union Oil Company, No. 75314 Super. Ct., Sonoma County.

In a decision handed down after this paper was written the Ninth Circuit Court of Appeals in a decision delivered January 31, 1977, ruled that the Stock Raising Homestead Act of 1916 included a reservation of geothermal resources. The *Pariani* decision, which was also delivered after the paper was written, reaches a similar conclusion by bringing geothermal resources within the concept of "mineral deposits" and "mineral waters". This decision was dated June 30, 1977.

As discussed at page 333, *Geokinetics* also held that geothermal resources were owned by the mineral estate owner. Both *Pariani* and *Geokinetics* are on appeal. A petition for certiorari was filed with the United States Supreme Court regarding the *Union Oil*. However, the Court did not rule on the petition during its last term.

Until final resolution of these three cases is obtained, ownership of geothermal resources remains somewhat in doubt. Due to the existence of this doubt, most geothermal developers will continue to obtain leases from both the surface and mineral estate owner in those situations where the two estates have been severed and are under the ownership of different individuals or entities.
31. CAL. PUB. RES. CODE § 6922 (West Supp. 1976).

miss the original winning bidder.[32] It is worth mentioning that this protection provided to the surface owner can be used to advantage by the geothermal exploration company. Occasionally, a surface owner is initially unwilling to lease geothermal resources to anyone. However, the farsighted explorer happening upon the reluctant lessor may be able to tie up the property with an agreement that if, and only if, the state notfies the surface owner of an impending state lease, the surface owner will acquire the lease and will thereafter assign it to the exploration company. This contingent arrangement may be appealing to the surface owner, where an immediately effective lease would not be. Such an arrangement can also be obtained for relatively little compensation. In a similar vein, where there is a severed estate having private surface and state minerals, the lease with the surface owner should provide that if the area is made a KGRA and subsequently leased by competitive bid, the surface owner, at the option of the surface lessee, will match the winning bid and thereafter assign the state lease to the surface lessee.

The California state lease is for a primary term of twenty years (*i.e.*, twice as long as the federal lease) and so long thereafter as geothermal resources are produced or utilized or are capable of being produced or utilized in commercial quantities from such lands or lands unitized therewith, not to exceed ninety-nine years.[33] Royalties to be paid the state upon obtaining production from the lease are ten per cent of gross proceeds for geothermal resources[34] and two per cent to ten per cent for by-products.[35] Once production commences, a two dollar per acre minimum royalty applies.[36]

A unique provision of the California system lessens the likelihood that acquisition of water rights will be a problem. California Public Resources Code Section 3742.2 creates a rebuttable presumption that the water developed in the course of geothermal resource extraction is the property of the resource owner so long as that water is not usable as domestic or irrigation water without further treatment.

32. CAL. PUB. RES. CODE § 6922 (West Supp. 1976).
33. CAL. PUB. RES. CODE § 6918 (West Supp. 1976).
34. CAL. PUB. RES. CODE § 6913(a) (West Supp. 1976).
35. CAL. PUB. RES. CODE § 6913(b) (West Supp. 1976).
36. CAL. PUB. RES. CODE § 6913(d) (West Supp. 1976).

PRIVATE LANDS—LEASING

Since, as in the oil and gas industry, a large amount of land is required for geothermal prospecting and exploration activities, exploration companies generally prefer to lease geothermal rights rather than to purchase properties in fee, in order to keep land holding costs to a minimum. Even using this scheme, ongoing lease rentals can be very burdensome. In those areas where a severed interest exists, and both the surface and mineral rights are owned by private individuals, the lessee is often required to take leases from both parties since, until the resource ownership issue is settled, there is no other method by which the lessee can insure that, notwithstanding the outcome of pending litigation, he will have obtained geothermal development rights. In addressing the case where both estates were privately owned, the court in *Geokinetics v. Union Oil Company* held that geothermal resources belong with the mineral estate. While the case is among the better reasoned of those which have faced the ownership issue, an appeal is being filed, thus final resolution is still some time away.

Two private lease clauses seem worthy of discussion. The first is a lesser interest provision. This clause provides that, if the lessor does not own the resource as represented, a proportionate reduction will be made in rentals and production royalties. While this provision is commonly used in mineral leases where only superficial title work has been done prior to entering into the lease, it is of particular importance where a geothermal lease and severed estate are involved. Since, as discussed, the applicant is often forced to lease both the surface and mineral estates, the lesser interest clause will avoid the possibility of royalty claims by both the surface and mineral owners. Also, if the mineral estate owner is finally determined by case law to be the owner of the geothermal resource, some accord will have to be made with the surface owner for use of the surface. Therefore, a corollary provision should be inserted into surface leases which provide that if the surface owner does not turn out to own the resource, the parties' agree that certain consideration will still be paid to the surface owner for rights of access to and use of the surface.

A second provision is made imperative in California by the numerous anti-pollution permits and operating permits required at each major stage of geothermal operations. The provision may be termed "environmental force majeure". Whether incorporated into a standard force majeure clause or inserted as a discrete provision, it allows the suspension of obligations by the lessee during such period as the lessee is prevented from compliance with lease terms due to an inability to obtain required use permits or anti-pollution permits. The provision is of particular importance if the lessor insists on a drilling obligation provision in the lease.

DRILL PERMITS

As the exploration company continues its technical and land acquisition program, exploration results will direct the placement of thermal gradient observation wells. The data obtained from a number of such shallow wells will hopefully direct the placement of the first and subsequent exploration and production wells.

In California, whether wells are drilled upon state, federal or fee leases, a drilling notice or permit will generally be required. Due to the lead times which may be involved in the permitting process, substantial preplanning is required. As will be discussed, permit processing delays are largely a result of California's environmental requirements. Therefore, the commencement of a program of environmental (air and water quality) base line monitoring should be considered prior to drilling. Such a program can provide to the exploration company knowledge of potential impacts of development and may later serve to reduce environmental impact processing time. Such information can also rebut unfounded charges of environmental disturbance.

FEDERAL

Thermal gradient drilling on unleased public domain may be conducted pursuant to a BLM-approved Notice of Intent to Conduct Exploration Operations.[37] The Notice must be processed by the BLM within thirty calendar days after the date of filing.[38] In the absence of the operator having a fed-

37. 43 C.F.R. § 3209.1 (1976).
38. 43 C.F.R. § 3209.1-2 (1976).

eral geothermal resources lease, deep exploration and production wells may not be drilled on federal land.[39]

The holder of a federal geothermal lease may drill observation or deep wells on the lease pursuant to the approval of a Plan of Operations.[40] Since, pursuant to Geothermal Resources Operational Order No. 1, the Plan of Operations is reviewed by the Geological Survey which, unlike the BLM, is not subject by regulation to a mandatory processing deadline (and by its own regulations must undertake an environmental review before granting permission to drill), it is not unusual to find that it takes less time to receive permission to drill a thermal gradient well on unleased land than it does to drill the identical type well on the applicant's federal leasehold. The result, of course, is that the lessee (who has paid for his exploration rights) can not proceed as rapidly as a wildcatter on the public domain. Approval of the Plan of Operations may also be delayed if it is determined that the program threatens to significantly affect the environment and therefore requires the preparation of an Environmental Impact Statement.[41]

STATE

The California Division of Oil and Gas ("the DOG") a division of the Department of Natural Resources, regulates drilling in California on other than the public domain and federal leases. Notice must be provided the DOG prior to the following activities regardless of their depth: drilling of a new well, redrilling of an abandoned well;[42] deepening, redrilling, plugging or otherwise altering the casing of a well;[43] converting a well to an injection well;[44] or abandoning a well.[45] Provision is made, however, whereby a temperature gradient program (*i.e.*, twenty-five or fewer wells) may be drilled under a single permit.[46]

Since, by statute, the DOG must respond to a Notice within ten working days after receipt, processing by the DOG

39. 43 C.F.R. § 3209.0-5 (1976).
40. 30 C.F.R. § 270.34 (1976).
41. *See* Section 102(2) (C) of the National Environmental Policy Act of 1969 (42 U.S.C. §§ 4321 *et seq.* (1970)).
42. 14 CAL. ADMIN. CODE § 1931 (1976).
43. 14 CAL. ADMIN. CODE § 1931.1 (1976).
44. 14 CAL. ADMIN. CODE § 1931.2 (1976).
45. 14 CAL. ADMIN. CODE § 1931.(a) (1976).
46. 14 CAL. ADMIN. CODE § 1931.3 (1976).

is one of the most expeditiously executed parts of the permitting process.[47] However, a copy of the Notice will be transmitted by the DOG to the Department of Fish and Game, the Water Resources Board and the State Water Resources Control Board. The Fish and Game Department generally notifies the applicant that no drilling may take place prior to inspection and approval of the drilling site by an inspector from the Fish and Game Department.[48] Primary emphasis of the inspections naturally are on facets of the proposed operations which may either degrade stream quality to the detriment of fish populations or may interfere with bird and animal habitats. Therefore, even though a permit may be readily obtained from the DOG, actual permission to drill may depend on availability of the area's Fish and Game inspectors.

While specific requirements exist for well spacing,[49] casing,[50] utilization of conductor pipe,[51] blowout prevention equipment,[52] and the submission of drilling logs,[53] the Division of Oil and Gas is given discretionary power to lessen or waive unnecessary provisions. The submission by the permittee of such proprietary items as temperature well logs is a common condition of drilling approval. A guarantee of confidentiality is provided by California Administration Code Section 1937.2(c), however, there is some doubt as to the sanctity of submitted information since it may be released to the Board and employees of the DOG and to the Geothermal Resources Board.

Application fees (*i.e.*, fees to accompany Notices) range from twenty-five dollars for a shallow well to $1,000.00[54] for an exploratory well of any depth (such a well being defined as a well other than an observation well or development well drilled for the discovery and/or evaluation of geothermal resources).[55] An indemnity bond in the amount of either $5,000.00 per well or $25,000.00 for any number of wells must also be provided prior to drilling.[56] However, the author

47. 14 CAL. ADMIN. CODE § 1931 (1976).
48. *See* for example, Department of Fish & Game notification No. III-769-76 of August 12, 1976, directed to Mr. Harry J. Olson, AMAX Exploration, Inc.
49. 14 CAL. ADMIN. CODE § 1934 (1976).
50. 14 CAL. ADMIN. CODE § 1935 (1976).
51. 14 CAL. ADMIN. CODE § 1935.1 (1976).
52. 14 CAL. ADMIN. CODE § 1935.2(d) (1976).
53. 14 CAL. ADMIN. CODE § 1937.1(f) (1976).
54. 14 CAL. ADMIN. CODE § 1932 (1976).
55. 14 CAL. ADMIN. CODE § 1920.1(e) (1976).
56. 14 CAL. ADMIN. CODE § 1933 (1976).

was informed on January 12, 1976 by Douglas Stockton, Geothermal Officer for the DOG, that this amount is being raised under proposed regulations to $25,000.00 per well and $250,000.00 for a blanket bond.

In order to conduct drilling operations on private lands a use permit from the applicable county is required.[57] A recent opinion of the California Attorney General, and the attitude of the state DOG, would seem to indicate that at least with regard to other than "downhole" regulations the county may also require use permits prior to permitting drilling to take place on state geothermal leases.[58]

The county's authority to regulate geothermal activities is part of the broad powers which California delegates to local governmental units. California Constitution, article XI, § 7, provides:

> A county or city may make and enforce within its limits all local, police, sanitary and other ordinances and regulations not in conflict with the general laws.

With regard to regulation of geothermal drilling, the opinion of the Attorney General[59] provides that powers and duties of cities and counties to regulate oil, gas and geothermal operations is complete so long as such local regulations do not conflict with general laws.[60] That opinion goes on to provide that such powers include the right to absolutely prohibit geothermal activities within certain zones or, in fact, within the entire boundaries of the city or county.[61]

To the extent that the counties do permit such activities, they are constrained as to the conditions which they may impose on geothermal operations whether as a condition of use permit or otherwise. Where either a statutory scheme or the Supervisor of the Division of Oil and Gas specifies a particular method, material or procedure by a general rule or regulation or gives approval to a plan of action with respect to a particular well or field or approves a transaction at a specified well

57. Lake, Imperial, Napa and Sonoma are among those California Counties having specific geothermal ordinances. They, as well as the majority of counties which have no such ordinances, rely on a use permit system for controlling exploratory drilling rather than designating part of the county as a geothermal resources area.
58. CAL. ATT'Y GEN. OPIN. SO-76/32 (August 24, 1976).
59. *Id.*
60. *Id. Citing* Shaves v. Sargent, 52 Cal. 2d 162, 176 (1959).
61. *Id.* at 7.

or field, local regulation, whether more or less stringent than the state's specifications is ineffective.[62]

Generally, the preemptive state regulations are those directed at protecting and conserving geothermal resources. Such regulations are primarily "downhole", *i.e.*, casing requirements, and plugging and abandonment requirements (except as abandonment may affect surface areas).[63] Among the items which can be regulated by the county, or by both the state and the county, (so long as the county regulations are within the ambit of public health, safety and welfare) are approval of drilling, shut-off tests and remedial work, unitization, well spacing, and oil sump requirements.[64] Whether any single ruling by the county is an overstepping of authority, must be made on a case by case basis.

Processing time for county permits will vary measurably with one or more of several variables. Among these are the scope and complexity of the project being requested, the likelihood of significant impact on the environment, the degree of controversy surrounding the proposal, and the attitude of the county toward the geothermal industry. Generally, the more complex the project, the greater are the potential environmental, socio-economic, land use and other effects which the county will wish to review prior to granting the permit. Therefore, a permit to drill shallow observation wells will likely be processed much more rapidly than an application for a steam field at the Geysers. Some counties, for example, require no permit for shallow wells.[65]

Whether the project may adversely impact the environment affects the timing of the permit process in that California's Environmental Quality Act of 1970 ("CEQA")[66] requires an Environmental Impact Report (EIR) prior to the permitting of those projects which may have a significant effect on the environment. As mentioned earlier, the delays caused by the EIR process can to a significant degree be mitigated by the permittee if environmental monitoring of air and water quality has been an ongoing part of the geothermal

62. *Id.* at 21.
63. *Id.* at 23-26.
64. *Id.*
65. JET PROPULSION LABORATORY, REPORT ON THE STATUS OF GEOTHERMAL ENERGY RESOURCES IN CALIFORNIA (draft), p. 5-33 (1975).
66. CAL. PUB. RES. CODE § 21000 *et seq.* (West Supp. 1976).

exploration program. Since public hearings are a part of both the EIR and (generally) the county use permit application process, controversy alone may be responsible for multiple hearings, appeals, and injunctive actions, all of which, of course, add to permit lead time. In fact, the existence of substantial environmental controversy is a specified basis for requiring the preparation of an EIR.[67] Again, the existence of and results from a solid environmental program can serve to defuse many irresponsible allegations.

Since the counties are lead agencies responsible for determining whether an EIR or a Negative Declaration is required prior to drilling, it is possible that a county's attitude toward geothermal development may be reflected in the dispatch with which the county acts on a permit application. It is of interest that in a recent study done by the Jet Propulsion Laboratory for the California Energy Resources Conservation and Development Commission, Imperial and Sonoma counties, which have had the greatest experience with California's geothermal development, were rated enthusiastic about it. On the other hand, Napa County, which has developed one of the most recent geothermal ordinances and which has had very little geothermal activity occur within its boundaries, was the only California county rated as having an unfavorable attitude towards the industry.[68]

As mentioned earlier, because of the author's personal familiarity with the development of Napa County's geothermal ordinance, and because it is among the most recently enacted in California, the ordinance will be examined both as an example of the typical conditions and requirements imposed by county ordinances in California and as an example of the extremes to which regulations can be taken.

NAPA COUNTY

Napa County's first geothermal ordinance was passed in May of 1974.[69] This ordinance prohibited geothermal production in the county but allowed geothermal exploration

67. 14 CAL. ADMIN. CODE § 15084(c) (1976).
68. REPORT ON THE STATUS OF GEOTHERMAL ENERGY RESOURCES IN CALIFORNIA, *supra* note 65, at 5-15.
69. Ordinance No. 475, An Ordinance of the Board of Supervisors of the County of Napa, State of California, Prohibiting the Use of Land for Development of Geothermal Energy Facilities, Requiring Use Permit for Certain Geothermal Energy Exploration Activities, and Providing for Immediate Effective Date.

pursuant to a use permit. The ordinance was passed pursuant to provisions of the California Government Code which allows for emergency legislation where necessary for the immediate preservation of public peace, health and safety or general welfare.[70] The original ordinance which was purportedly enacted to provide four months for the county to research and draft a final geothermal ordinance, was ultimately extended for a total of some twenty-four months. Final passage of the present ordinance occurred on April 27, 1976.

Under the new ordinance, permits are required for all stages of drilling,[71] although one permit may cover up to six shallow observation wells so long as such wells are located within the same assessor's parcel, contiguous assessor's parcels or within the same lease.[72] Among the types of information to be supplied to the County Conservation, Development and Planning Department (the "Planning Department") is a general statement of the anticipated drilling schedule including "lease requirements for drilling" and any "pertinent lease terms which may affect the transfer of geothermal resources across property boundaries or county boundaries".[73] Earlier drafts would have required that a copy of the lease itself be submitted with the application. At hearings on the proposed ordinance this provision was objected to by industry representatives including those from AMAX Exploration, Inc. and Natomas Company. Objection was also voiced by resident lessors who considered the economic terms of private leases outside the legitimate interests of the county. As the ordinance now reads, the county can be assured that the lessee is not contractually bound to undertake matters which are not permitted by the county. At the same time, lessors can keep proprietary matters confidential and, finally, exploration companies can continue land acquisition programs without the concern that a use permit application will cause to be disclosed to prospective lessors the amounts paid for previous leases, a situation which could tend to inflate future lease prices.

Proof in writing must be furnished to the Planning Department that the program applied for has been approved by

70. CAL. GOV. CODE § 11422(c) (West 1966).
71. NAPA COUNTY, CALIF., ORDINANCES tit. X, art. 3, § 10426 (1976).
72. NAPA COUNTY, CALIF., ORDINANCES tit. X, art. 3, § 10426 (1976).
73. NAPA COUNTY, CALIF., ORDINANCES tit. X, art. 3, § 10426(a) (1976).

the State Division of Oil and Gas, and that where required, all test measurements and waste discharge operations have been submitted to and are being processed by the State Regional Water Quality Control Board, Air Resources Board,[74] Air Pollution Control District, Radiological Health Section of the State Department of Public Health and other appropriate state and federal agencies.[75] Other information to be provided includes location of the well,[76] identification and address of the property owner,[77] written consent from the property owner[78] and maps of the area.[79]

Additional required information regarding exploratory and development projects (as opposed to shallow wells) include, "a description of the owner and operator's expertise, previous performance record and any refusal, default or forfeiture of bonds, violation citations by regulatory agencies; litigation pending or settled regarding environmental matters; and education and experience of personnel principally involved in environmental impact mitigation and monitoring of the subject project."[80] In earlier drafts of the ordinance, assignment of permits was not allowed. As the ordinance reads now, both the original applicant and proposed transferees must disclose to the county, their environmental performance record.

A conference with the Director of the Planning Department is required to clarify procedures and requirements and identify (the Planning Department's) environmental concerns by an on-site inspection conducted by the Director or a county designated environmental consultant.[81] The Director can force the operator to adjust the site location to the "best site accessible to the target area, using any general environmental guidelines deemed appropriate by the Director."[82]

Two provisions of the Napa ordinance are worthy of note in that unlike the foregoing they are relatively unique and reflect the general concern of the county fathers regarding the

74. The nine regional Water Resources Control Boards and five Air Pollution Control Districts promulgate and enforce respectively effluent and emission discharges.
75. NAPA COUNTY, CALIF., ORDINANCES tit. X, art. 3, § 10426(a)6, 10426(b)7 (1976).
76. NAPA COUNTY, CALIF., ORDINANCES tit. X, art. 3, § 10426(a) (1) (1976).
77. NAPA COUNTY, CALIF., ORDINANCES tit. X, art. 3, § 10426(a) (2) (1976).
78. NAPA COUNTY, CALIF., ORDINANCES tit. X, art. 3, § 10426(a) (3) (1976).
79. NAPA COUNTY, CALIF., ORDINANCES tit. X, art. 3, § 10426(a) (4) (1976).
80. NAPA COUNTY, CALIF., ORDINANCES tit. X, art. 3, § 10426(b) (2) (d) (1976).
81. NAPA COUNTY, CALIF., ORDINANCES tit. X, art. 3, § 10426(b) (3) (1976).
82. NAPA COUNTY, CALIF., ORDINANCES tit. X, art. 3, § 10426(b) (3) (b) (1976).

potential impact of geothermal development in Napa. The first of these requirements which is unique only in its excess, concerns bonding. An operator must furnish the county with an indemnity bond in the amount of $200,000.00 to $600,000.00 for each well drilled, redrilled or (abandoned well) re-entered (this applies whether the well is a temperature gradient or a development well).[83] The determination of the precise amount is a prerogative of the Napa Planning Commission (the Planning Department performs a staff function to the Planning Commission).[84] In lieu of the foregoing, a blanket bond of $1,200,000.00 can be obtained covering any number of wells to be drilled or re-entered in the county.[85] Such bonds are *in addition* to the indemnity bonds required by the State Division of Oil and Gas. For perspective, any number of shallow observation wells may be drilled on any public domain under a blanket $50,000.00 bond.[86]

The second provision of interest concerns the stated environmental concerns of the county. Section 10400 of the ordinance, "Findings", explains that public concern has been expressed over the lack of scientific research, monitoring and adequate control as to the environmental impacts of exploratory and development drilling on land use in general and the agricultural and recreational income of the county in particular. The list of potential environmental concerns is set forth in exhausting detail.[87] The list is, in essence, repeated at Section 10428 which provides that the Planning Commission may approve an application for a permit unless it makes any of the following findings (which are listed below in their entirety since there is no other way to demonstrate their detail):[88]

> 1. Adequate mitigation measures do not exist for all significant forms of air, land, water and noise pollution, including, but not limited to the control of erosion and the disposal of liquid, solid and gaseous wastes, protection of surface and sub-surface waters, plants, humans, fish and wildlife and their habitats.

83. NAPA COUNTY, CALIF., ORDINANCES tit. X, art. 3, § 10450(a) (1976).
84. NAPA COUNTY, CALIF., ORDINANCES tit. X, art. 3, § 10450(a) (1976).
85. NAPA COUNTY, CALIF., ORDINANCES tit. X, art. 3, § 10450(a) (1976).
86. 43 C.F.R. § 3209.4-1 (1976).
87. NAPA COUNTY, CALIF., ORDINANCES tit. X, art. 3, § 10400(e) (1976).
88. NAPA COUNTY, CALIF., ORDINANCES tit. X, art. 3, § 10428(a) (1976).

2. The temporary exploratory probe or the oil and gas or geothermal resources exploration or development project, will, in the circumstances of the particular case, be materially detrimental to health, safety, and general welfare of persons residing or working in the vicinity of the use.

3. The health, safety and general welfare of others will be endangered by damage to components of the ecological system such as vegetation, air, water, crops, household and agricultural water supplies from erosion increase, water quality degradation, ground water infiltration, wildlife habitat loss, noise, dust, impact on fragile or sensitive areas, wildlife disturbance, land use and cultural use disturbance, road failures, off-site land degradation, seepage, spillage or escape of toxic materials, liquids or drill muds, venting or spillage of biosensitive materials, well blowout, induced seismic activity, unacceptable sump material dumping sites and neutralization of biosensitive sump materials, possible impact of heavy metals and materials such as boron and chloride generally from condensed steam phase and system-wide leakages or emissions due to breakdowns, punctures or vandalism, full or partial steam and gases vented to the atmosphere, or additional environmental changes or air or water quality, such as:

a. Impact of potential acid rainfall and potential effect on vegetation, wildlife, aquatic organisms, human health, air chemistry, and agricultural production;

b. Non-condensible gas impact from methane, argon, mercury, hydrogen sulfide, ammonia, ethane, radon and daughter products;

c. Increase in existing smog levels through potential transformation from hydrogen sulfide to sulfur dioxide through contact with oxygen-hydrogen ions in partially polluted air and possibly from photo-oxidation of hydrogen sulfide;

d. Probability of significant effects from dissemination of hydrogen or sulfur compound substances as both gases and aerosols are present over Napa County, especially the City of Napa, Pope and Chiles Valleys and Lake Berryessa;

e. Location and intensity of localized concentrations or accumulated effects both localized and general, of increased levels of emissions from full field development arising from steam-associated condensible and non-condensible gases and other materials such as boron, chlorides, heavy metals, (particularly mercury, lead, and copper) and radio-active materials, particularly radon and its daughter products, on the environment, especially on all types of biota in relation to standards such as those of the Environmental Protection Agency, State Health Department, and other agencies;

f. Local and regional climate modification, including increased fog, possible formation of rime ice, during the winter months, and increased humidity contributing to localized changes in nearground climate regimes;

g. Emission of considerable quantities of heat, water vapor, and steam into the atmosphere, depending upon the atmospheric conditions and the magnitude of the effluents causing visible flumes, local cloud formation, more extended cloud formation such as stratus and sheets of cumulus clouds, and in a valley increasing incidence and duration of ground fog and icing on the ground and elevated structures.

The rambling and inflamatory nature of the foregoing list was pointed out at hearings prior to enactment of the final statute.[89] Oral and written testimony from R.T.H. Collis, Director Atmospheric Sciences Laboratory, Stanford Research Institute,[90] and a written Declaration from Dr. Ray Thompson, Professor, University of California at Davis,[91] were entered into the record of the hearings which preceded final enactment of the ordinance. Their comments addressed realistically the potential effects of geothermal development on local air quality and the potential effects of H_2S on grapes (since viticulture is an extremely important industry in Napa

89. At the several hearings which preceded enactment of the ordinance, written and oral testimony was presented by the author, on behalf of AMAX Exploration, Inc. and by representatives of Natomas Company.
90. Letter from R.T.H. Collis to E. Dale Trower (January 19, 1976).
91. Undated *Declaration* of Dr. C. Ray Thompson, submitted to the record as part of AMAX Exploration, Inc.'s presentation regarding the proposed geothermal ordinance.

County). However, this testimony made no discernible difference in draft and final versions of the ordinance.

Since so little drilling has taken place pursuant to this ordinance, it is too early to speculate on its potential effects on geothermal operations in Napa, although one can surely not read the ordinance as being an open invitation to the industry. In a similar vein, it is difficult to perceive whether any of its rather severe requirements will be adopted by other county or state governments.

ENVIRONMENTAL IMPACT REQUIREMENTS

Notwithstanding the arguably excessive concerns voiced in the Napa ordinance, geothermal power production does have the potential to impact the local environment. California's environmental regulations are of broad scope and no discussion of resource development would be complete without brief examination of their relation to the geothermal exploration process.

Whether geothermal exploration and development is conducted on federal, state or private lands, the greatest potential for delay in acquisition of approval to drill or to begin power plant construction involves the environmental impact reporting process. California's Environmental Quality Act of 1970 parallels rather closely the Environmental Impact Statement requirements of Section 102(2) (c) of the National Environmental Policy Act of 1969.

CEQA and its implementing regulations have been undergoing rather frequent revision in an attempt to streamline EIR procedures. CEQA requires the preparation of EIRs by public agencies for any project that might have a significant effect on the environment (significant effect is defined as a substantial, or potentially substantial adverse change in the environment).[92] Case law has made it clear that CEQA applies to private activities on either state or private land so long as discretionary action of a public agency is involved.[93]

92. CAL. PUB. RES. CODE § 21068 (West Supp. 1976).
93. Friends of Mammoth v. Board of Supervisors of Mono County, 8 Cal. 3d 247, 502 P.2d 1049 (1972).

The determination of whether an EIR will or will not be required is a decision made by the "lead agency" subsequent to its conducting an "initial study".[94] The initial study is designed to facilitate the decision whether an EIR or a Negative Declaration is applicable.[95] The "lead agency" is that public agency which is most directly involved in the decision making or permit approval process.[96] With regard to the geothermal industry, the State Lands Commission is the lead agency in the determination of whether an EIR is required prior to designation of an area as a KGRA. For drilling permits, the lead agency is the host county. For establishment of power plants, the Public Utility Commission has to date been the lead agency, however, this function may be assumed by the increasingly powerful California Energy Resources Conservation and Development Commission.

If, subsequent to the preparation of an initial study, it is determined that no significant environmental effect will be caused, a Negative Declaration will be prepared, and, barring appeal of the decision, the proposed action may be approved by the lead agency. If the initial study indicates that an EIR is required, the lead agency or a contractor designated by the agency will prepare the Environmental Impact Report. The lead agency will pass the cost of preparation of the report to the applicant.[97] Under a recent amendment to CEQA, the applicant may submit a draft Environmental Impact Report which the agency may consider in the formulation of its own report.[98] Previously, an applicant was permitted to submit raw data for the lead agency's use but could not submit a draft EIR. Allowing the applicant to submit the draft EIR should drastically reduce both duplication of effort and needless expenditure of time. This provision, as mentioned earlier, makes a sound, early initiated, environmental program a must for the applicant.

Prior to the preparation of a final EIR, the lead agency will distribute its draft EIR to "responsible agencies" which are those agencies which may legitimately have an interest in the proposed activity. It is in this review process that such de-

94. 14 CAL. ADMIN. CODE § 15084 (1976).
95. 14 CAL. ADMIN. CODE § 15080 (1976).
96. 14 CAL. ADMIN. CODE § 15061(b) (1976).
97. CAL. PUB. RES. CODE § 21089 (West Supp. 1976).
98. CAL. PUB. RES. CODE § 21082.1 (West Supp. 1976).

partments as Water Resources, the State Water Resource Control Board, the Air Pollution Control District, Department of Parks and Recreation, Fish and Game and the Division of Forestry may become a part of the regulatory framework. As any of these agencies may have more expertise than the lead agency regarding a facet of the proposed activity, their review contributes substantially to the decision made by the lead agency.

In response to criticism by many that environmental studies are made but are never the basis for approval or disapproval by the lead agency, Section 21002.1 of the state's EIR guidelines provides that no agency shall approve a project which has one or more significant effects unless it determines that changes in the proposed project have been made which will mitigate or avoid the adverse effect or that specific economic, social, or other considerations make infeasible the mitigation measures recommended in the Environmental Impact Report.

A further effort at streamlining the environmental impact reporting process has been incorporated into Section 21003 of the guidelines which requires that, to the extent possible, all review procedures shall run concurrently rather than consecutively, all unnecessary information should be omitted, information should be incorporated into a data base for use in subsequent EIRs, and information developed for large areas should be used in subsequent EIRs covering smaller included areas.

The California Public Resources Agency has promulgated proposed guidelines which would require complete EIR review within certain time limits in accordance with the following time table:

PROJECT	*DAYS*
Initial Study	7 to 30 days depending upon complexity.
Negative Declaration	7 to 30 days
Draft Environmental Impact Report (If done primarily by staff or consultant)	30 to 270 days

(If a draft EIR is submitted by the applicant and reviewed by the public agency)	14 to 45 days proposed regulations
Review Period for Draft EIR and Negative Declaration	30 to 90 days (45 days minimum is required if a state agency is the lead agency)

These new amendments will hopefully prevent the recurrence of the forty-four month review period experienced by Pacific Gas and Electric during the Unit Twelve permitting process.[99] Further, they will impose on lead agencies (*i.e.*, *generally* counties) the obligation of seeing to the mitigation of adverse effects prior to approving a use permit.

SUMMARY

In summary, California has pioneered the development of the geothermal industry and the geothermal regulatory "industry". Its multi-level regulatory scheme is complex and difficult to navigate. The extraordinary power given to local governmental units will always mean that regulatory consistency will be an elusive goal. On the other hand, California has been unafraid to change where change is called for. Hopefully, its new EIR guidelines and DOG regulations will have a refining and streamlining quality which will permit (better yet, encourage) the continued search for and development of its vast geothermal resource potential.

99. Telephone interview with Richard Alves, Executive Representative, Pacific Gas & Electric (January 5, 1977).