Nebraska Law Review

Volume 42 | Issue 4 Article 2

1963

Nebraska Ground Water Problems

Richard S. Harnsberger
University of Nebraska College of Law

Leading Articles

NEBRASKA GROUND WATER PROBLEMS*

Richard S. Harnsberger**

I. INTRODUCTION

During the last two decades, use of underground water has expanded greatly in the Western states. Most of the jurisdictions affected have attempted to regulate such expansion and protect specified rights of use by comprehensive public legislation. The underground water law of Nebraska, however, is still in a state of considerable uncertainty in sharp contrast with the state's well settled doctrines governing streams and lakes.

Industrial and rural uses in Nebraska have been small up to this time, and no major problems have arisen concerning them. Only 12 mgd (million gallons per day) of ground water and 12 mgd of surface water were used by industry in 1960; and the rural use of 86 mgd of ground water and 4 mgd from streams and lakes was relatively insignificant.[1] The major problems arise because of municipal needs and the phenomenal increase in irrigation from wells during the past twenty-five years. Of the approximate total of 178 mgd diverted by towns and cities, 120 mgd is ground water; and all municipalities in the state except Omaha and Chadron get their supplies from underground sources. The extent of irrigation use is illustrated by the fact that in 1960 ground water supplied 1,300 mgd to farm lands. The reasons for this extraordinary development of well irrigation include improved drilling and pumping techniques, reduction of operating costs, and periods of low rainfall.[2]

---

* Published with approval of the Director as paper No. 1381, Journal Series, Nebraska Agricultural Experiment Station.

** B.S., M.A. and LL.B., University of Nebraska, S.J.D., University of Wisconsin; Professor of Law, University of Nebraska.

[1] KEECH, THE PROGRAM OF GROUND-WATER INVESTIGATION IN NEBRASKA 8-9 (Neb. Water Survey Paper No. 11, Jan. 1962).

[2] In Nebraska, the following have been given as principal reasons for the rapid increase: (1) advancements in well construction techniques; (2) development of new well drilling machinery resulting in deeper installations; (3) cheap electric power and natural gas on farms, the modern deep well turbine pump, the automatically controlled electric motor, and lightweight, corrosion-free, low price pipe materially reduce the costs of lifting water to the surface; (4) sprinkler irrigation, introduced into central Nebraska on a large scale beginning in 1947, eliminates expensive land grading for adapting to gravity irrigation and permits

The rapidity of growth in pump irrigation is shown by the following statistics:[3]

Year	*Number of irrigation wells in Nebraska*	*Acres Irrigated*
1910	6	360
1930	946	39,000
1942	3,477	383,110
1949	7,251	429,855
1955	14,882	909,110
1957	22,093	1,704,350
1963	24,439	1,750,000

Because subterranean withdrawals now account for almost one-half of the 3,200 mgd used in Nebraska, consideration of ground water management is pertinent.

II. THE HYDROLOGIC CYCLE

A. In General

No discussion of ground water is understandable without at least a generalized awareness of how water constantly circulates by the process which is called the hydrologic or water cycle.[4] Dur-

---

use of water on either rough topography or on land that has little or no slope; (5) ground water yields fluctuate less than surface water yields during dry seasons and reduced stream flows from 1952 to 1956 caused many irrigators to turn to wells. Illustrative of the situation is the fact that from Jan. 1955 to Aug. 1956, average precipitation deficiency in the state was 9.81 inches, and in numerous local areas it was as much as 18 inches. See Committee on Ground and Surface Water, Nebraska Legislative Council, Report No. 81, p. 3 (Nov. 1956) [hereinafter referred to as Report No. 81]; (6) ground water sources, as contrasted with surface supplies, necessitate neither expensive rights of way nor lateral pipelines, and therefore the development costs of irrigation wells are within the financial means of the individual farmers who have been responsible for most of the underground utilization; (7) ground water is more apt to be free of pollution than surface water. In addition, the work and scientific achievements of the Conservation and Survey Division of the University of Nebraska and of the Ground Water Branch of the United States Geological Survey have been highly significant in calling the attention of the people to the tremendous importance of ground water supplies and in informing potential users where ground water is located and in what amounts it can be withdrawn before local overdevelopment occurs.

[3] See Report No. 81, pp. 11-12; Keech, *supra* note 1, at 14; Reed, *Nebraska On the March* (Oct. 1956 and Oct. 1958) (reports by the State Geologist).

[4] See generally Ackermann, Colman & Ogrosky, *From Ocean to Sky to Land to Ocean*, in Water, The Yearbook of Agriculture 41 (1955); Thomas, *Underground Sources of Our Water, Id.* at 62.

ing this cycle, which traces all existing water from the oceans to the atmosphere, to the land and back to the oceans, the same ageless water is repeatedly propelled by solar energy and gravity, the atmosphere in effect being the fluid of a gigantic perpetual motion engine pumped by heat from the sun.

Water first comes to the ground as rain, snow, hail or fog; and all underground water reservoirs are completely dependent upon precipitation for their recharge. Part of this precipitation runs off into the streams and is ultimately carried to the ocean. An additional amount of precipitation, about thirty-five percent, either quickly vaporizes returning to the atmosphere by direct evaporation, or is retained only temporarily by the soil where it is used by plants before transpiring into the air.

Once the water soaks deep enough so that it can no longer be discharged into the atmosphere by evaporation or by transpiration from vegetation, it enters the zone of saturation to become what hydrologists call ground water. In this zone of saturation are the aquifers, or underground reservoirs, which supply wells and springs. The storage capacity of these reservoirs depends upon the thickness and composition of local geological formations. For example, the capacity of a sand and gravel area one mile square and twenty feet thick with an open space, or porosity, of twenty-five percent is 1,000,000,000 gallons. A formation fifty feet thick of good sand and gravel will deliver 1,000 gallons of water per minute to a well, but when the thickness is less than twenty feet, it is unusual that as much as 350 gallons per minute can be developed, and frequently only small amounts are available.[5]

The top of a zone of saturation is called the water table; the bottom is that depth where water no longer can seep downward toward the center of the earth. Even if no pumping occurs in an area, water tables constantly fluctuate, usually rising in the spring, slowly declining in the summer and fall, and remaining fairly constant in the winter. Therefore, pumping data must be adjusted to include normal seasonal changes.

Besides rising and falling, ground water also percolates laterally through an aquifer. As it moves laterally, the water in these reservoirs which is above the water level in surface watercourses eventually enters the rivers and streams in the area as seepage. Except for runoff from precipitation this overflow from the underground reservoirs is the only source of water for streams. When the reservoirs become depleted during long drought periods, the water

---

[5] Reed, *Nebraska on the March* 4 (Oct. 1954).

levels go down until there is no overflow seepage and the watercourses dry up.

If no pumping occurs, ground water reservoirs usually are in a state of cyclical equilibrium over the years as intake and recharge from precipitation equal the amount moving into springs, rivers and other places of discharge. When pumping from wells takes place, frequently only water which would otherwise escape to the surface is removed. Under these conditions, the pumping decreases the surface flow, but the water in the lower portion of the reservoir which would not escape because it is below the level of the streams remains unaffected and stays in permanent storage. When pumping is excessive for a long period of time water may be removed from the reservoir faster than precipitation restores it, and the water is then removed from permanent storage, or "mined" exactly as coal, oil and other minerals are extracted. The fact that ground water levels in an area occasionally fall in excess of regular seasonal fluctuations, however, does not necessarily mean water is being mined. If the reservoir levels rise to normal again during wet periods, no long run mining takes place.

In addition to their storage function, aquifers often serve as pipelines from intake areas to wells. An illustration of this can be made by elevating a tub of saturated gravel and extending from the middle of one side a round, sand filled drain pipe sloping downward and partially plugged at the lower end. Several points can be illustrated with this contrivance. First, if water is sucked up from the tub reservoir by long straws to irrigate overlying vegetation and thereby transpire into the atmosphere, the water level throughout the tub will progressively decline unless recharge occurs.[6] Second, water pumped from a hole drilled in the top of the lower end of the drain pipe will cause the water level in the tub to decline and pressure in the pipe to decrease slightly. Third, if the pumped water would otherwise have percolated down to and out the end of the pipe, the water diverted by pumping is taken from what would have been natural discharge. Fourth, if after pumping, precipitation now enters the tub which would have overflowed before, the pumping allows water to be received and stored which would have been lost by evaporation or runoff. Fifth, water moves slowly but constantly from the tub through the drain pipe.

---

[6] Irrigation use is very consumptive. See KNEESE, WATER RESOURCES DEVELOPMENT AND USE 6 (Fed. Reserve Bank of K.C., Dec. 1959); Blaney, *Climate as an Index of Irrigation Needs,* in WATER, THE YEARBOOK OF AGRICULTURE 341 (1955); Thornwaite & Mather, *The Water Budget and Its Use in Irrigation, Id.* at 346.

In actual underground reservoirs the rate of movement is very slow. The velocity of this flow from the tub to the place where the water is taken from the drain pipe determines the yield or amount of water which can be continuously withdrawn. Water cannot be pumped near the end of the pipe faster than it moves through it. If pumping from the pipe were excessive, a dry spot would develop until more water moved down. Such a temporary dry condition is called "coning." It limits well yields in many places. The concept of "coning" or transmissibility in aquifers becomes even more serious in the simulated situation if clay, rather than sand, is put in the drain pipe. Although abundant water might remain in the tub, it would not move rapidly enough through the drain pipe to permit useful pumping because of clay's low permeability.

Sustained long run yields can result only when perennial recharge is equal to perennial natural discharge or artificial withdrawal. Withdrawals greater than recharge result in mining and consequent progressively declining levels and pressures. Because of such overdrafts in many sections of the country, the trend is towards planned utilization of ground water resources.

B. In Nebraska

The hydrological pattern in Nebraska is governed largely by the climatic, topographical, and geological conditions existing in the state. Rainfall averages sixteen to eighteen inches each year in the western part of Nebraska, twenty-two inches in the central area, and twenty-eight to thirty-four inches in the east. It averages approximately twenty-two inches overall but is subject to extreme fluctuations.

Surface watercourses carrying precipitation and seepage flow from west to east except in the southeastern section of the state where the flow is from northwest to southeast. The general feature of the state is that of a rolling plain, sloping downward from its western boundary to the Missouri River at an average of about ten feet each mile, the decline being from over 5,000 feet in the extreme northwest to 825 feet in Richardson county in the southeast corner. Thus the principal rivers, which are the Platte with its two branches, the Niobrara, Republican, and Big Blue, traverse from the low rainfall belt in the semi-arid region west of the 100th meridian, which runs through Cozad, to the sub-humid east.

Although there are many misconceptions regarding ground water, it is actually no longer a mysterious resource. The State Conservation and Survey Division continually measures ground water levels in the state by tape measurements and by installing recorders in observation wells, and it thereby determines the "heart-

beat" of aquifers over long periods of time. From this and other scientific investigations, the occurrence, movement and extent of ground water is known with considerable accuracy. For instance, ground water in Nebraska percolates slowly (generally not more than several feet each day and in most cases only 300 feet annually)[7] and laterally towards lower elevations. This movement is almost always towards the main drainage of an area, but it does vary in some regions of the state due to the localized slope of the water table or hydraulic gradient. Nebraska's natural storage capacity in underground reservoirs has been estimated to be 547 trillion gallons, or 1.7 billion acre feet,[8] and some aquifers have enormous capacity. From the junction of the North and South Platte Rivers to Central City, a distance of about 150 miles, there are approximately 24 million acre feet of water underlying the valley.[9] Another principal reservoir is in the sandhills region which covers an area of about 20,000 square miles in north central, central and western Nebraska. Little precipitation runs off in this region and it has been estimated that the sandhills store 500 million acre feet of water.[10] The water in these reservoirs which is above the water level in surface watercourses enters the rivers which flow along the lower edge of the sandhills region, and keeps the streams flowing even when no precipitation falls. As shown by the latter discussion in this paper, the municipalities in the southeastern region of the state are vitally concerned with stream flow in the Elkhorn, Loup and Platte Rivers because they depend upon these streams to recharge their underground well fields.

III. NON-STATUTORY RULES GOVERNING WITHDRAWALS AND USE OF GROUND WATER

A brief consideration of the various common law views concerning rights to ground water is essential in order to evaluate existing Nebraska law. The non-statutory theories are classified as: (a) the common law or English rule, (b) the reasonable use

---

[7] Reed, *Ground Water,* in PROCEEDINGS OF THE NEBRASKA WATER CONFERENCE 24 (1957). See also Meinzer & Wenzel, *Movement of Ground Water and Its Relation to Head, Permeability, and Storage,* in PHYSICS OF THE EARTH, IX HYDROLOGY 444, 449 (1942).

[8] NEBRASKA RESOURCES DIVISION, *Nebraska's Water Story* 4 (1962). See also CONDRA & REED, WATER-BEARING FORMATIONS OF NEBRASKA 1-24 (Neb. Geol. Survey Paper No. 10, 1936).

[9] Bird, *Western Ground Waters and Food Production* 29 (U.S. Dep't of Ag. Misc. Pub. No. 504, 1942).

[10] Report No. 81, p. 15. Osterman v. Central Neb. Pub. Power & Irrigation Dist., 131 Neb. 356, 361, 268 N.W. 334, 336 (1936).

or American rule, and (c) the correlative rights doctrine or California rule.

A. ENGLISH RULE

Under the common law or English rule a landowner has absolute ownership of the waters under his land and, therefore, may without liability withdraw any quantity of water for any purpose even though the result is to drain all water from beneath surrounding lands.[11] Generally, American courts qualified the rule by requiring that diversions be made without malice; but some jurisdictions in early decisions followed the prevailing individualist 19th century philosophy[12] by holding that motive was immaterial.[13] Transportation of the water for use or sale outside the area overlying the common source of supply is permissible regardless of the length of time earlier users may have beneficially used the water on their property overlying the reservoir. Almost all of the contiguous seventeen Western states originally accepted the English rule by dictum or decision, but today only Texas appears to follow it.[14]

B. AMERICAN RULE

The American rule of reasonable use, like the English doctrine, recognizes that the overlying owner has a proprietary interest in the waters under his lands, but his incidents of ownership are restricted. He cannot transport the water outside the basin for use on non-local land, or sell it to distant customers if other overlying

---

[11] Acton v. Blundell, 12 Mees. & W. 324, 152 Eng. Rep. 1223 (Ex. 1843) is generally cited as establishing the doctrine, but some authorities consider Chasemore v. Richards, 7 H.L. Cas. 349, 1 Eng. Rul. Cas. 729, 11 Eng. Rep. 140 (1859) as the decisive decision finally settling the English law. For a review of the English cases see COULSON & FORBES, WATERS 220-41 (6th ed. 1952). The American cases are collected in Annot., 55 A.L.R. 1385, 1390 (1928) and Annot., 109 A.L.R. 395, 397 (1937). See also Clayberg, *The Law of Percolating Waters*, 14 MICH. L. REV. 119 (1915).

[12] See POUND, THE SPIRIT OF THE COMMON LAW 196-97 (1921); CARDOZO, THE NATURE OF THE JUDICIAL PROCESS 24-25 (1921).

[13] *E.g.*, Chatfield v. Wilson, 28 Vt. 49 (1855); Huber v. Merkel, 117 Wis. 355, 94 N.W. 354 (1903). See Comment, *The Law of Underground Water; A Half-Century of Huber v. Merkel*, 1953 WIS. L. REV. 491, 493-95.

[14] See Clark, *Ground Water Legislation in the Light of Experience in the Western States*, 22 MONT. L. REV. 42, 50 (1960); Hutchins, *Western Water Rights Doctrines and Their Developments in Kansas*, 5 KAN. L. REV. 533, 581 (1957). The English rule is the prevailing doctrine in about one-fourth of the states. 5 POWELL, REAL PROPERTY § 725 (1962).

landowners are injured.[15] Such diversions are enjoinable to the extent that they interfere with beneficial uses on overlying property even though they were made before the other overlying owners began using the water beneficially.[16]

When two or more landowners over an aquifer are each using the waters on their lands, then each can withdraw all of the supply which he can put to beneficial or reasonable use. What is a reasonable use is judged solely in relationship to the purpose of the use on overlying land; it is not judged in relationship to the needs of others. This fundamental point distinguishes the rule from the riparian rule of surface water. The reasonable use rule governing percolating water does not prohibit exhausting the entire supply even though other overlying owners are injured or completely deprived of water.[17]

If all the landowners are transporting water away from the land from which it is taken, none has any right to enjoin the diversions of the others.[18] The main practical difference between the American rule of reasonable use and the English common law doctrine appears to be the possibility of a local user restricting the taking and transporting of underground water for use on land which does not overlay the aquifer. Stated affirmatively, the right of an overlying landowner to take and use ground water seems to be almost as absolute under one doctrine as under the other.

C. California Rule

The correlative rights doctrine, or California rule, was first stated during 1902 in *Katz v. Walkinshaw*,[19] and has been further

---

[15] See Cohen v. La Canada Land & Water Co., 151 Cal. 680, 91 Pac. 584 (1907); Glover v. Utah Oil Refining Co., 62 Utah 174, 218 Pac. 955 (1923). See also Ziegler, *Water Use Under Common Law Doctrines*, in Water Resources and the Law 81 (1958) where it is stated that the courts "have expressed unanimous agreement on the principle that before a water user can bring his action for diversion beyond the water basin, he must show actual injury to his use"; Danielson, *Some Legal Aspects of Encroachment on Ground Water*, in Proceedings of the Nebraska State Irrigation Association 29 (1961).

[16] Erickson v. Crookston Waterworks, Power & Light Co., 100 Minn. 481, 111 N.W. 391 (1907); Forbell v. City of New York, 164 N.Y. 522, 58 N.E. 644 (1900); Canada v. City of Shawnee, 179 Okla. 53, 64 P.2d 694 (1937).

[17] Sloss-Sheffield Steel & Iron Co. v. Wilkes, 231 Ala. 511, 165 So. 764 (1936); Clinchfield Coal Corp v. Compton, 148 Va. 437, 139 S.E. 308 (1927).

[18] Merrick Water Co. v. City of Brooklyn, 32 App. Div. 454, 53 N.Y. Supp. 10 (1898).

[19] 141 Cal. 116, 70 Pac. 663, 74 Pac. 766 (1902-03).

developed in California by a long line of later cases.[20] Under the doctrine, overlying owners have no proprietary interest in the waters under their soils.[21] Instead, main features of the doctrine are: (1) all owners over a common basin of supply have equal and correlative rights to make a beneficial use of the underlying water on their overlying lands; (2) in times of shortage, the common supply is apportioned among the overlying owners on the basis of their reasonable needs, and as between the owners priority of use is unimportant; (3) waters which are not needed by the basin landowners are surplus and may be appropriated for use on lands outside the basin or for public utility use either inside or outside the area.[22] Such appropriations are made by diversion and use, not under the Water Code; and as between appropriators one prior in time is entitled to take all the water he needs up to the quantity he has taken in the past before a later appropriator can take any;[23] and (4) where underground waters contribute to a watercourse or are recharged from it, the rights of the riparians and appropriators on the stream are correlated with the rights of the landowners overlying the underground reservoir.[24]

In *City of Pasadena v. City of Alhambra*,[25] the California Supreme Court held that appropriations which lower the natural water table so as to cause an overdraft invade the rights of overlying owners and prior appropriators; and that prescriptive rights vest to the extent such invasions continue during the statutory period. Even though no proven present injury occurs, the cause of action arises at the time of the first overdraft. In the *Pasadena* case,

---

[20] For comprehensive discussions and collections of cases on the points involved in the correlative rights doctrine, see HUTCHINS, THE CALIFORNIA LAW OF WATER RIGHTS 431-66 (1956); NATIONAL RESOURCES PLANNING BOARD, STATE WATER LAW IN THE DEVELOPMENT OF THE WEST 73-74 (1943); Hutchins, *Trends in the Statutory Law of Ground Water in the Western States*, 34 TEXAS L. REV. 157, 163-65 (1955); Hutchins, *Ground Water Problems*, in CONFERENCE ON LEGAL PROBLEMS IN WATER RESOURCES 151 (Univ. of Cal. 1957).

[21] HUTCHINS, THE CALIFORNIA LAW OF WATER RIGHTS 450 (1956); Kirkwood, *Appropriation of Percolating Water*, 1 STAN. L. REV. 1, 6-7 (1948).

[22] City of Pasadena v. City of Alhambra, 33 Cal. 2d 908, 207 P.2d 17 (1949).

[23] City of San Bernardino v. City of Riverside, 186 Cal. 7, 26-28, 198 Pac. 784, 792-93 (1921).

[24] Rancho Santa Margarita v. Vail, 11 Cal. 2d 501, 81 P.2d 533 (1938); City of Lodi v. East Bay Municipal Util. Dist., 7 Cal. 2d 316, 60 P.2d 439 (1936); Peabody v. City of Vallejo, 2 Cal. 2d 351, 40 P.2d 486 (1935); Tulare Irrigation Dist. v. Lindsay-Strathmore Irrigation Dist., 3 Cal. 2d 489, 45 P.2d 972 (1935); Hudson v. Dailey, 156 Cal. 617, 105 Pac. 748 (1909).

[25] 33 Cal. 2d 908, 207 P.2d 17 (1949).

the court completely adjudicated the rights of the larger users in the Raymond Basin of Los Angeles County, restricted all parties to a proportionate reduction in the amounts which they previously had pumped, limited total annual withdrawals from the basin to safe yield, appointed a Water Master, and kept jurisdiction to enforce the decree.

D. NEBRASKA RULE

Only a few decisions of the Nebraska Supreme Court have dealt with underground water problems,[26] and it was not until 1924 that our court enunciated a rule for regulating subterranean supplies. In *Olson v. City of Wahoo*,[27] after stating that it favored the American rule, the court in dictum set out the principle in terms close to the California doctrine when it said:[28]

> The American rule is that the owner of land is entitled to appropriate subterranean waters found under his land, but he cannot extract and appropriate them in excess of a reasonable and beneficial use upon the land which he owns, especially if such use is injurious to others who have substantial rights to the waters, and if the natural underground supply is insufficient for all owners, each is entitled to a reasonable proportion of the whole. . . .

This rule of reasonable use, with its added feature from the California doctrine of apportionment in time of shortage, has been cited with approval by the Nebraska Supreme Court in several subsequent decisions.[29]

By adopting the theory of correlative sharing in times of shortage, the Nebraska court recognizes that persons pumping ground water are not taking something from under their lands which belongs to them, but rather are diverting directly or indirectly water that comes from underneath the lands of others.

---

[26] The early cases are Beatrice Gas Co. v. Thomas, 41 Neb. 662, 59 N.W. 925 (1894) (well pollution) and Lowe v. Prospect Hill Cemetery Ass'n, 58 Neb. 94, 78 N.W. 488 (1899) (ass'n enjoined from interring bodies where evidence showed probable result to be contamination of neighboring wells).

[27] 124 Neb. 802, 248 N.W. 304 (1933), noted in 12 NEB. L. BULL. 191 (1933). See also Danielson, *Ground Water in Nebraska*, 35 NEB. L. REV. 17 (1955).

[28] 124 Neb. at 811, 248 N.W. at 308.

[29] Luchsinger v. Loup River Pub. Power Dist., 140 Neb. 179, 182, 299 N.W. 549, 551 (1941) (verdict for plaintiff sustained where defendant's activities caused drainage of former subirrigation); Osterman v. Central Neb. Pub. Power & Irrigation Dist., 131 Neb. 356, 365, 268 N.W. 334, 338 (1936) (riparians entitled to relief when their subterranean irrigation affected by application to divert water from one stream to another).

E. UNDERGROUND STREAMS

When underground water is confined to reasonably ascertainable boundaries or is tributary to a stream, then the law applicable to surface watercourses determines the rights of owners.[30] Except in Colorado,[31] all water underground is presumed to be percolating and therefore the burden of proof is on the party claiming that a subterranean stream exists.[32] In some states the presumption is more difficult to overcome than in others,[33] but in no jurisdiction is it necessary that water flow freely through cavernous openings in the earth. For example, in the *Olson* case, the court indicated that water traveling through gravel in the Todd Valley, formerly the bed of the Platte River, from Morse Bluff to near Ashland had a known and well-defined channel and was therefore an underground stream.[34] This view follows the general theory that water which seeps through a stratum constitutes an underground stream even though in some cases the formations probably would not satisfy the hydrologic requirements for a watercourse.[35]

---

[30] Martz, *Water Rights*, 6 AMERICAN LAW OF PROPERTY 193-94 (1954); HUTCHINS, SELECTED PROBLEMS IN THE LAW OF WATER RIGHTS IN THE WEST 147-52 (1942); 2 WIEL, WATER RIGHTS IN THE WESTERN STATES 1011-26 (3d ed. 1911); Hutchins, *Protection in Means of Diversion of Ground-Water Supplies*, 28 CALIF. L. REV. 1 (1940).

[31] Karl F. Hehl Eng'r Co. v. Hubbell, 132 Colo. 96, 285 P.2d 593 (1955); Safranek v. Town of Limon, 123 Colo. 330, 228 P.2d 975 (1951).

[32] Maricopa County Municipal Water Conservation Dist. No. 1 v. Southwest Cotton Co., 39 Ariz. 65, 4 P.2d 369 (1931); Jones v. Home Bldg. & Loan Ass'n, 252 N.C. 626, 114 S.E.2d 638 (1960); Logan Gas Co. v. Glasgo, 122 Ohio St. 126, 170 N.E. 874 (1930); C & W Coal Corp. v. Salyer, 200 Va. 18, 104 S.E.2d 50 (1958); Wilkening v. State, 54 Wash. 2d 692, 344 P.2d 204 (1959).

[33] See Maricopa County Municipal Water Conservation Dist. No. 1 v. Southwest Cotton Co., *supra* note 32. For examples of what evidence might overcome the presumption see Clinchfield Coal Corp. v. Compton, 148 Va. 437, 139 S.E. 308 (1927); Commonwealth v. Department of Highways, 345 S.W.2d 46 (Ky. 1961); 56 AM. JUR. *Waters* § 103 (1947); 3 FARNHAM, WATERS AND WATER RIGHTS 2727-30 (1904); Ziegler, *supra* note 15, at 75-76.

[34] Olson v. City of Wahoo, 124 Neb. 802, 810, 248 N.W. 304, 307 (1933).

[35] Danielson, *supra* note 27, at 25 n.38. Hydrologists point out that the legal distinction between underground streams and percolating water has no scientific basis and that almost all ground water is moving. Therefore, it should make no legal difference whether it moves through large or small openings. See THOMAS, CONSERVATION OF GROUND WATER 248 (1951); Piper & Thomas, *Hydrology and Water Law: What is Their Future Common Ground?*, in WATER RESOURCES AND THE LAW 10-11 (1958); Thompson & Fiedler, *Some Problems Relating to Legal Control*

IV. CURRENT PROBLEMS IN NEBRASKA

At the present time Nebraska is faced with problems of preventing or adjudicating interferences between individual well owners, guaranteeing adequate supplies to municipalities, and regulating ground water withdrawals which interfere with long existing rights to appropriate stream flows.

A. Interference Between Individual Wells

As previously stated, when excessive withdrawals of ground water exceed the recharge rate, serious problems arise from lowering water tables; and if the diversions surpass recharge over an extended period, mining occurs and permanent storage is depleted. Pumping in heavily developed areas has caused falling water tables, and localized problems have arisen in nine south central counties where approximately one-half the well irrigation in the state takes place. Some places in which overdevelopment has occurred during recent years are the lower Platte River Valley above and below Kearney, especially in the area north of Wood River and near Grand Island, in Box Butte county near Alliance, in the eastern Loess Plains in south central Nebraska, and in Fillmore, Hamilton and York counties.[36] Further problem areas may be anticipated in view of the estimate by the University Conservation and Survey Division that wells capable of producing 500 gallons per minute of good quality water can be developed in at least sixty percent of the total area of the state.[37]

One problem of great concern has been the adverse effect on an existing pumping facility when later wells cause a lowering of the water table. This difficulty arises because well users not only compete for the same water in the aquifer but also compete at various water levels. By 1956 overdevelopment of irrigation wells in the state, particularly in such areas as Hamilton, Clay, Fillmore and Box Butte counties, had produced such a situation and, as a result, hearings were held before the Nebraska Legislative Committee on Ground and Surface Water. Subsequently, the Commit-

---

of Use of Ground Waters, 30 J. Am. Water Works Ass'n 1049, 1061 (1938); Tolman & Stipp, *Analysis of Legal Concepts of Subflow and Percolating Waters,* 21 Ore. L. Rev. 113 (1942.)

[36] Keech, *supra* note 1, at 17-18, 21, and 34-36. A sub-committee of the Nebraska Legislative Council had concluded in 1944 that "the availability and usable supply of subsurface water for irrigation is very much less than is generally believed, and is in danger of being seriously depleted." Nebraska Legislative Council, Water Diversion, Sub-commitee Report No. 2, p. 55 (1944).

[37] Nebraska Resources Division, *Nebraska's Water Story* 10 (1962).

tee recommended that a well spacing statute be enacted to reduce pumping competition between adjoining landowners and to help eliminate overdrafts resulting from the extremely high concentration of wells in certain areas.[38]

In response to the recommendation of the Committee, a statute was enacted which specified that irrigation wells must be registered within fifteen days of completion with the Department of Water Resources. The statute also prohibited the location of one irrigation well within 600 feet of any other irrigation well.[39] Registration is solely for informational purposes; rights are not acquired by registration and priorities between users are not established. Wells for domestic and stock use and those used to irrigate less than two acres are exempted from operation of the regulation;[40] and the restriction is not applicable to the location of more than one well by a landowner on his own farm so long as each well is at least 600 feet from any irrigation well on a neighboring farm which is under separate ownership.[41] Further, special permits may be issued by the Director of Water Resources without regard to the spacing requirements. In acting upon applications for such permits, however, he must consider the size, shape and irrigation needs of the property, the known ground water supply, and the effect which granting the special permission will have on the total supply and on neighboring lands.[42] Additional protection came with reference to irrigation wells in 1961 when the legislature required the plugging or capping of abandoned irrigation wells.[43]

The 600 foot well spacing statute affords considerable protection to well owners in many instances, but in other situations the spacing may prevent optimum development of water resources in a particular area. More important, however, the statutes do not provide for the situation which results when the later pumpers lower the water table and increase pumping costs. For example, A and B own neighboring farms above a common source of supply. A's well is 60 feet deep and supplies the needs of his family and

---

[38] Report No. 81, p. 41.

[39] Neb. Laws c. 201, § 2 (1957), now NEB. REV. STAT. § 46-609 (Reissue 1960).

[40] *Ibid.*

[41] NEB. REV. STAT. § 46-611 (Reissue 1960).

[42] NEB. REV. STAT. § 46-610 (Reissue 1960).

[43] NEB. REV. STAT. § 46-202 (Reissue 1960). A statute dating back to 1897 makes waste of artesian waters unlawful. Neb. Laws c. 84 (1897), now NEB. REV. STAT. §§ 26-281, -282 (Reissue 1956). Any person drilling an irrigation well for himself or for hire must furnish a log of his operations and other information to the Department of Water Resources.

stock. B begins to sink a 250 foot high capacity well which will lower the water level below A's well but not below the annual safe yield of the reservoir. What may A do?

In Nebraska, so long as B complies with the spacing regulation, A would have no remedy if the use by B is reasonable and confined to overlying lands.[44] Under the doctrine of reasonable use, priority in commencement of pumping gives no better right, and there does not appear to be any good reason for requiring that the water level be maintained where the first users found it. Of course, if a later user transports the water outside the basin, then there is substantial authority that the first user's means of diversion should be protected. The result is that early developers in an area have no assurance that the supplies they rely upon to retire their investments will be protected.[45] Those who invest in reliance on continued nonuse by others take a substantial risk. Further, the Nebraska statutes do not prevent over-development of aquifers. In this connection, the matter has been well stated:[46]

> From an economic standpoint, perhaps the greatest drawback to the reasonable-use rule is that under favorable circumstances it tends to encourage over-development of a ground-water area and resulting overdraft upon the available water supply. This is not merely an academic consideration; it has taken place in important areas. The rights of owners of overlying lands are correlative with respect to each other and with relation to the total quantity of water available. If the quantity of water underlying a given area is not sufficient for the requirements of all overlying lands, no landowner will have enough water for his entire tract if all owners exercise their rights and have the supply apportioned among them. Unless a determination of rights and an apportionment of water are made, the tendency of each user is to develop all the water he needs, and his success in his farming enterprise encourages others to do the same, with the result that the aggregate withdrawals of water exceed the recharge and it becomes necessary for each user to lower his pump and increase his power in order to serve adequately his existing development. Those who cannot afford to continue the financial struggle cease operations. This is an economic control, but with a resulting economic waste, and even this economic control has not always been enough to prevent overdraft and serious impairment of the utility of the ground-water supply.

---

[44] See HUTCHINS, SELECTED PROBLEMS IN THE LAW OF WATER RIGHTS IN THE WEST 180, 182 (1942); Hutchins, *Protection in Means of Diversion of Ground-Water Supplies*, 29 CALIF. L. REV. 1, 11 (1940); Evans v. City of Seattle, 182 Wash. 450, 47 P.2d 984 (1935).

[45] Wiel, *Theories of Water Law*, 27 HARV. L. REV. 530, 538 (1914).

[46] WATER RESOURCES PLANNING BOARD, STATE WATER LAW IN THE DEVELOPMENT OF THE WEST 80 (1943).

To date, the effectiveness of the Nebraska reasonable use rule with correlative sharing in times of shortage has not been tested in situations where demand exceeds supply in local areas; and the probability is that the legislature will enact a comprehensive public administration type water act before the courts are faced with the really critical problems of making "practical adjustments" when conflicts of interest arise among competing users. Should statutory apportionment become necessary, the legislature could provide for stiff controls in "critical areas" where shortages were jeopardizing supply and investments.

In states which have adopted the doctrine of prior appropriation, the view of courts generally has been to protect the senior appropriator's means of diversion by requiring junior appropriators either to stop pumping, supply the senior appropriators with water, or pay the cost of deepening, resetting, expanding or reconstructing their means of withdrawal.[47] The legal commentators disagree with the result on the theory that it retards full development of aquifers;[48] and Montana, Nevada, Wyoming and Kansas have provided by statute that the right of appropriation does not include a right to have the water maintained at a particular level.[49] The Montana Underground Water Code, enacted in 1961, authorizes the administrator to designate controlled ground water areas after notice and hearing, and within such controlled areas he may refuse

---

[47] Pima Farms Co. v. Proctor, 30 Ariz. 96, 245 Pac. 369 (1926); Noh v. Stoner, 53 Idaho 651, 26 P.2d 1112 (1933); Karl F. Hehl Engineering Co. v. Hubbell, 132 Colo. 96, 285 P.2d 593 (1955); City of Colorado Springs v. Bender, 366 P.2d 552 (Colo. 1961). See also City of Lodi v. East Bay Municipal Util. Dist., 7 Cal. 2d 316, 60 P.2d 439 (1936).

[48] Clyde, *Current Development in Water Law,* 53 NW. U.L. REV. 725, 741-43 (1959); Martz, *The Law of Underground Waters,* 11 OKLA. L. REV. 26 (1958); Comment, 28 ROCKY MT. L. REV. 371, 378 (1956); Note, 1 WYO. L. J. 111 (1947); Note, 4 WYO. L. J. 193 (1949); Note, 6 UTAH L. REV. 575 (1959); Note, 5 UTAH L. REV. 181 (1956); MISSOURI BASIN SURVEY COMMISSION, MISSOURI: LAND AND WATER 201 (1953); WATER RESOURCES PLANNING BOARD, STATE WATER LAW IN THE DEVELOPMENT OF THE WEST 84 (1943); HUTCHINS, SELECTED PROBLEMS IN THE LAW OF WATER RIGHTS IN THE WEST 168-69, 173-82 (1942). See also Current Creek Irrigation Co. v. Andrews, 9 Utah 2d 324, 332, 344 P.2d 528, 533 (1959) (dissenting opinion).

[49] KAN. GEN. STAT. ANN. § 82a-711 (Supp. 1961); MONT. REV. CODES ANN. § 89-2912 (Supp. 1961); NEV. REV. STAT. § 534.110 (1957); WYO. COMP. STAT. ANN. § 41-141 (1957). *Cf.* Wis. L. B. No. 616 A, § 33.06(2) (1957) which would have provided that a "reasonable practical adjustment" be made between users before permitting a proposed withdrawal which might interfere with a domestic use, an existing right, or a right of withdrawal previously approved.

to grant a permit if the withdrawal requested would be "beyond the capacity of the aquifer or aquifers in the ground water area to yield ground water within a reasonable or feasible pumping lift (in the case of pumping developments) or within a reasonable or feasible reduction of pressure (in the case of artesian developments)."[50]

On the other hand, the Utah statutes provide that junior appropriators must replace at their own expense the quality and quantity of the senior appropriator's supply.[51] In *Current Creek Irrigation Co. v. Andrews*,[52] the Utah Supreme Court construed the legislation as prohibiting junior appropriators from reducing static pressure in the artesian wells of senior appropriators. The decision has been criticized on the ground that "the effect . . . is to protect existing uses without regard to the reasonable development of critical water resources of the state."[53]

The criticism of the Utah rule is sound; and if legislation is enacted in Nebraska, first users should not be given such an absolute right that it is economically infeasible for others to develop a supply. As in Montana, however, those first withdrawing water should be protected from later users whose diversions would lower the water table below a reasonable pumping lift.

B. MUNICIPAL USE PROBLEMS

In addition to problems created by pump irrigation, the state now faces the complex question of protecting municipal supplies of underground water. Eminent experts in the Nebraska water field have predicted that if the present rate of increase in ground water withdrawals for agricultural and urban use continue, many cities will encounter shortages during periods of peak demand in the foreseeable future.[54] Because of such predictions, Fremont, Grand Island, Lincoln and Omaha Metropolitan Utilities District, all located in the southeastern part of the state along the lower

---

[50] MONT. REV. CODES ANN. § 89-2918 (Supp. 1961).

[51] UTAH CODE ANN. § 73-3-23 (1953).

[52] 9 Utah 2d 324, 344 P.2d 528 (1959), noted in 6 UTAH L. REV. 575 (1959).

[53] Martz, *Water Law*, in ANN. SURVEY AM. L. 483 (1960).

[54] See Cramer, *Municipal and Industrial Water Use in Nebraska*, in PROCEEDINGS OF THE NEBRASKA WATER CONFERENCE 40 (1957); Reed, *The Problem of Municipal Water Supply in Eastern Nebraska* (1962) (unpublished paper by the State Geologist). See generally *Time*, June 20, 1955, p. 82; Jordan, *The Problems That Face Our Cities*, in WATER, THE YEARBOOK OF AGRICULTURE 653 (1955); Woodward, *Availability of Water in the United States with Special Reference to Industrial Needs by 1980*, 35 (Thesis No. 143, Industrial College of the Armed Forces, 1955).

Platte River Valley, have filed applications with the Department of Water Resources for appropriations of underground water. The first three cities seek to protect existing well fields near the banks of the Platte; and Omaha, which now obtains its supply from the Missouri River, desires the protection of a ground water appropriation before undertaking a contemplated expenditure of 30 million dollars to develop wells near the Platte River outside its territorial limits.

The Director of the Department of Water Resources has taken the position that only the waters of a natural stream are subject to appropriation and he construes the words natural stream to mean "natural stream flows."[55] The cities have not sought to obtain a ruling on their applications, apparently because they want their respective priorities to date from the filing of their pending requests if present efforts are successful to secure legislative enactment of an underground municipal well appropriation statute. If such a statute is not enacted, then the cities may urge that the Director recognize the doctrine of subflow. If this theory were adopted, water percolating through the banks and bed of a stream and flowing in connection with the watercourse and in the same direction would be subject to appropriation in the same manner as surface water.[56]

In urging new legislation, the cities give three main reasons for the insecurity of their present and future investments. First, expansion of irrigation activities upstream on the Elkhorn, Loup and Platte Rivers by private irrigators and large scale irrigation districts will seriously reduce the stream flow of the Platte which recharges the cities' well fields located close to its banks.[57]

---

[55] The Neb. Const. and the state statutes dedicate the use of water of every natural stream to the people of the state and provide that the right to divert unappropriated waters thereof for beneficial use shall never be denied except when such denial is demanded by the public interest. NEB. CONST. art. XV, §§ 5, 6 and NEB. REV. STAT. §§ 46-202, -235 (Reissue 1960).

[56] Los Angeles v. Pomeroy, 124 Cal. 597, 57 Pac. 585 (1899); Whitmore v. Utah Fuel Co., 26 Utah 488, 73 Pac. 764 (1903). 3 FARNHAM, WATERS AND WATER RIGHTS 2081 (1904); HUTCHINS, SELECTED PROBLEMS IN THE LAW OF WATER RIGHTS IN THE WEST 152, 191 (1942); 2 WIEL, WATER RIGHTS IN THE WESTERN STATES 1012-21 (3d ed. 1911). In Vineland Irrigation Dist. v. Azusa Irrigation Co., 126 Cal. 486, 494, 58 Pac. 1057, 1059 (1899), the Supreme Court of California stated, "That one may be a lawful appropriator of such waters [subflow] there can be no question."

[57] See Reed, *The Problem of Municipal Water Supply in Eastern Nebraska* (1962) (unpublished paper by the State Geologist). Whenever irrigation activities expand, urban communities in the region benefit in-

Second, under the reasonable use rule adopted by the Nebraska Supreme Court, transportation of underground water from a municipality's extraterritorial land to within the corporate limits is unlawful whenever injury results to landowners over the common source of supply.[58] If a landowner commenced court proceedings because a municipality's diversions impaired subirrigation or otherwise interfered with his reasonable use, the court might grant an injunction on the theory that diverting water outside an underground basin raises questions similar to those involved when surface waters are diverted outside a watershed.[59] Such a remedy is an extraordinary one, however, and may be refused in the court's discretion. A chief reason to deny such an injunction is that municipal use includes domestic uses. However, the two do not entirely coincide. In addition to supplies for street cleaning, fire protection and domestic needs, municipal use includes activities such as swimming pools, playgrounds, fountains, park and golf course irrigation, leakage in systems, and a fairly large share for commercial and industrial utilization. Great amounts from municipal systems also go to stores, offices and factories for air conditioning. These commercial and industrial uses are essential for maintenance of the community's economy upon which the inhabitants are dependent and, therefore, deserve a preference.

Thus to prevent inconvenience, hardship, and threat to the public health which would result from shutting off urban supplies, the courts would have a number of reasons to keep overlying land-

---

directly; and upstream municipalities, as well as farmers in agricultural areas of Nebraska urge increased utilization of ground water. "[I]t has long been recognized that increase in property values of agricultural lands under irrigation development is at least matched and usually exceeded by the increase in value of nonagricultural suburban and urban areas. Indeed, it seems that from these latter areas actually comes much of the great pressure for expansion of irrigation." 2 U.S. COMMISSION ON ORGANIZATION OF THE EXECUTIVE BRANCH OF THE GOVERNMENT, TASK FORCE REPORT ON WATER RESOURCES AND POWER 630 (1955).

[58] Speech by G. H. Seig, Attorney, Omaha Metropolitan Util. Dist., Annual Meeting of Neb. Municipalities, Sept. 20, 1962. For a collection of cases, see Annot., 55 A.L.R. 1385, 1404 (1928). See also Kock v. Wick, 87 So. 2d 47 (Fla. 1956) (whether extracting water for distribution and sale outside of basin is reasonable is a fact issue); Volkmann v. City of Crosby, 120 N.W.2d 18 (N.D. 1963); City of Enid v. Crow, 316 P.2d 834 (Okla. 1957); Canada v. City of Shawnee, 179 Okla. 53, 64 P.2d 694 (1937); Rothrauff v. Sinking Spring Water Co., 339 Pa. 129, 14 A.2d 87 1940).

[59] See Ainsworth Irrigation Dist. v. Bejot, 170 Neb. 257, 102 N.W.2d 416 (1960) and Osterman v. Cent. Neb. Pub. Power & Irrigation Dist., 131 Neb. 356, 268 N.W. 334 (1936).

owners from obtaining injunctive relief. A holding that complainants are guilty of laches is particularly justified in situations where municipalities have issued and sold bonds; and a finding of estoppel might properly be made when the landowners with full knowledge of the city's expenditures and diversions did nothing while the city changed its position to its detriment.[60]

The best view appears to be that where issuance of an injunction would cause great inconvenience and no corresponding benefit to the complainant, the municipality should be permitted to continue diversion and use of the underground water. When substantial damage results, condemnation procedures are available and can be resorted to by the city.[61] In court proceedings for an injunction, the city should be permitted a reasonable time to tender the issue of eminent domain or be allowed to pay damages for the injury and thereby accomplish the same end by inverse condemnation.[62]

Third, a large industrial complex, or federal government project, upstream from municipal supplies would seriously impair the efforts of towns and cities to obtain water. No safeguard against federal encroachment is possible,[63] but future industrial sites constitute a genuine threat in the absence of protective legislation.

---

[60] See Annot., 74 A.L.R. 1129 (1931).

[61] Nebraska cities and towns are given the power to condemn rights for municipal supplies. For a discussion of problems of extraterritorial condemnation, see Ziegler, *Acquisition and Protection of Water Supplies by Municipalities*, 57 MICH. L. REV. 349, 353 (1959).

[62] Bernard v. City of St. Louis, 220 Mich. 159, 189 N.W. 891 (1922); Schenk v. City of Ann Arbor, 196 Mich. 75, 163 N.W. 109 (1917); Canada v. City of Shawnee, 179 Okla. 53, 64 P.2d 694 (1937). See Crawford Co. v. Hathaway, 67 Neb. 325, 93 N.W. 781 (1903); Harris v. Norfolk & W. Ry., 153 N.C. 542, 69 S.E. 623 (1910); McDonough v. Russell-Miller Milling Co., 38 N.D. 465, 165 N.W. 504 (1917).

[63] Nevada *ex rel.* Shamberger v. United States, 165 F. Supp. 600 (D. Nev. 1958). See Clyde, *Current Developments in Water Law*, 53 NW. U.L. REV. 725 (1959); Corker, *Water Rights and Federalism—The Western Water Rights Settlement Bill of 1957*, 45 CALIF. L. REV. 604, 621 (1957); Martz, *The Role of the Federal Government in State Water Law*, 5 KAN. L. REV. 626 (1957); Trelease, *Federal Jurisdiction Over Water in the Eastern United States*, in PAPERS DELIVERED AT THE WATER RIGHTS CONFERENCE, Michigan State Univ., 1, 8-9 (March 29, 1960); *Hearings Before the Senate Committee on Interior and Insular Affairs*, 87th Cong., 1st Sess. 187-218 (1961); *Hearings on S. 863 Before the Subcommittee on Irrigation and Reclamation of the Senate Committee on Interior and Insular Affairs*, 84th Cong., 2d Sess., pts. 1 and 2 (1956); and S. REP. No. 2587, 84th Cong., 2d Sess. (1956).

The prevailing attitude in Nebraska has been to oppose enactment of legislation to protect municipal supplies. The members of the Constitutional Convention in 1920 refused to approve a proposal that municipal use be preferred over all but domestic uses;[64] and as recently as 1961, the legislature defeated a bill to prohibit drilling irrigation wells within 600 feet of a municipal well installation.[65] Similarly, a bill was defeated in 1957 which would have authorized municipalities to prohibit drilling other wells within 1,000 feet of a city's supply[66] even though the Attorney General had assured the legislature that landowners would be entitled to compensation for any resulting damages to their property.[67] Thus the present situation is that although it is a misdemeanor to drill an irrigation well within 600 feet of another irrigation well, no restrictions whatsoever apply to drilling municipal wells near irrigation wells or irrigation wells near municipal wells. The statute should be broadened to cover spacing between such installations.

To help Nebraska cities in solving the problems they are encountering in furnishing potable supplies to their inhabitants, present and future municipal ground water diversions beyond extraterritorial overlying lands should be expressly authorized by statute if such diversions do not interfere with any reasonable uses existing at the time when the withdrawals begin.[68] To prevent expropriation of the rights of overlying owners not presently using water from the basin, a provision for compensation from the municipality would be necessary; but any new use, other than for domestic purposes, which interfered with a municipal diversion works could be restrained by the city.[69] In addition, a statute authorizing construction of storage projects by towns and cities in tributary watercourses would result in retention of stream flow during periods of high currents and permit use to be spread out over intervals of time. During February 1963, a special fifteen member legislative committee was formed to draft a bill incorporating such provisions and enactment of the committee's recommendations appears likely.[70]

---

[64] See *Journal of the Nebraska Constitutional Convention 1931* (1919-20).

[65] L.B. 512, 72d Neb. Leg. Sess. (1961).

[66] L.B. 91, 68th Neb. Leg. Sess. (1957).

[67] OPS. ATT'Y GEN. 49 (1957).

[68] *Cf.* FLA. STAT. § 373.141 (1961); ILL. ANN. STAT. c. 19, § 65 (Smith-Hurd Supp. 1962); WIS. STAT. ANN. § 31.34 (1957).

[69] See Williams v. City of Wichita, 374 P.2d 578 (Kan. 1962); and note 155 *infra*.

[70] L.B. 769, 73d Neb. Leg. Sess. (1963).

C. PROBLEMS OF INTERFERENCE BETWEEN SURFACE AND GROUND WATERS

There is no procedure in Nebraska to correlate ground and surface waters even though both are interdependent in the hydrologic cycle and withdrawals of one frequently interfere with the other.[71] Instances of such interferences are increasing, and the question arises whether irreconcilable conflicts will continue so long as the prior appropriation doctrine governs diversion of surface water and the modified reasonable use rule regulates withdrawals of ground water.

The normal flow of streams comes mainly from subterranean reservoirs and, although the first effect of overdeveloping ground water is a local one, stream flow eventually is affected after prolonged periods of excessive pumping. In Nebraska when a stream is fully appropriated, persons desiring to irrigate dig out pits or drill wells near the banks. Insofar as diversions from these pits and wells withdraw water which otherwise would constitute base stream flow subject to appropriation on the watercourse below, the pump irrigators gain a priority over the surface appropriators. Therefore, in many areas, pumping is comparable to withdrawing water directly from the stream without following the statutory procedure to secure an appropriative right.

The Nebraska Legislative Council Committee on Water Control, realizing that surface water appropriators cannot be protected unless diversions from contributing ground water reservoirs are controlled, recommended in its 1962 report that legislation be enacted requiring a permit from the Department of Water Resources to pump water from any pit or well within 200 feet of a natural stream. The bill as introduced provides that pumping within the 200 foot distance is presumed to have a direct effect on stream flow; but if the Director of the Department of Water Resources finds that the underground withdrawals will not deplete surface flow a permit is issued automatically. Installations with a maximum capacity of less than 500 gallons per hour are exempt from the proposal.[72] No

---

[71] THOMAS, THE CONSERVATION OF GROUND WATER 136-38, 250 (1951); Tolman & Stipp, *Analysis of Legal Concepts of Subflow and Percolating Waters*, 21 ORE. L. REV. 113 (1942); Trelease, *A Model State Water Code for River Basin Development*, 22 LAW & CONTEMP. PROB. 301, 310-12 (1957); Wiel, *Need of Unified Law for Surface and Underground* Water, 2 So. CAL. L. REV. 358 (1929).

[72] L.B. 489, 73d Neb. Leg. Sess. (1963). The Kansas statute provides, "No person shall be permitted to take or appropriate the waters of any subterranean supply which naturally discharge into any superficial stream, to the prejudice of any prior appropriator of the water of such superficial channel." KAN. GEN. STAT. ANN. § 42-306 (1949).

attempt is made to correlate interdependent supplies so that optimum use may be made by both surface and ground users, nor is the recommendation based upon any evaluation of hydrologic data.

Many situations arise where pumping outside the arbitrary 200 foot distance affects stream flow, and the effectiveness of such piecemeal legislation to solve problems of integrating and correlating water rights is doubtful. Other states, by judicial decision or by statute, have taken a broader approach to the problem. For instance, the New Mexico Supreme Court has taken the position that an adjudication of appropriative rights to a stream includes determining rights of landowners whose lands overlay the underground basins which contribute to stream flow;[73] and statutes in Utah and Washington[74] contemplate determining rights to both surface and ground waters in the same proceeding. In Washington the statutes specifically make rights in surface water superior to rights in ground water which may affect any surface watercourse;[75] and Oregon's Underground Water Act provides that if the State Engineer finds that a proposed ground water diversion will impair or substantially interfere with existing rights to appropriate surface waters, he may reject the application or impose limitations or conditions in the permit to protect surface diversions.[76]

On the other hand, under the Wyoming statutes when ground waters in different aquifers constitute one source because of interconnection or where ground water and surface waters are so interconnected as to constitute one source, priorities are to be correlated and a single schedule of such priorities is to relate to the entire supply.[77] The 1961 Montana Underground Water Code attempts to integrate surface and ground water rights by: (1) giving priority to all surface water appropriations before the date of the Code in order of time, (2) making ground water rights acquired before the Act prior to those obtained later, thus recognizing vested rights, and (3) providing that "as between all appropriators of surface or

---

[73] El Paso & R.I. Ry. v. District Court, 36 N.M. 94, 8 P.2d 1064 (1931). See HUTCHINS, THE NEW MEXICO LAW OF WATER RIGHTS 37, 55 (1955).

[74] UTAH CODE ANN. § 73-4-3 (1953); WASH. REV. CODE § 90.44.220 (1962).

[75] WASH. REV. CODE § 90.44.030 (1962).

[76] ORE. REV. STAT. § 537-620 (1953). Also see ORE. REV. STAT. § 537.622 (1953) which authorizes the owner or claimant of surface or ground water appropriative rights to file protests with the State Engineer against issuance of permits.

[77] WYO. STAT. ANN. § 41-133 (1957).

ground water on and after the date of the Act, the first in time is first in right."[78]

In Idaho, the underground water code contains an administrative procedure for determining conflicts between users of surface and ground water supplies. Anyone who thinks that his surface or ground water right is being adversely affected by a water right of later priority may file a statement under oath of his contentions with the state reclamation engineer.[79] Thereafter, a determination of the opposing claims is made by a temporary ground water board composed of the state reclamation engineer, a private engineer or geologist, and a resident irrigation farmer.[80] After the claims for which the board was appointed to hear are disposed of, the board is dissolved. An appeal may be taken to the applicable district court from any decision, determination, order or action.[81]

In California, physically interconnected ground and surface water are coordinated to a very high degree on the basis of reasonable beneficial use; and overlying owners must take into consideration the vested rights of stream owners when they exercise their correlative rights to ground water. Mr. Hutchins says the present rule in California is as follows:[82]

> [R]ights of the owners of lands overlying percolating waters that are tributary to a watercourse and necessary for its continued flow are coordinated with appropriative and riparian rights in the watercourse itself. All such waters constitute a common supply, and the overlying owners must exercise their correlative rights with due regard to vested rights in the stream waters. Extractions of the tributary percolating waters that result in impairing the supply of water flowing in the stream may be made only for a reasonable beneficial use on the overlying land. This is the case, whether the overlying lands that contain the tributary percolating water are riparian to the stream or are not contiguous to it. The natural rights of overlying and riparian owners in the common supply are coequal, except as to quantity of water, and correlative.

Mr. Hutchins believes that the Nebraska Supreme Court leans towards the California view.[83] His conclusion is based on the fact that in *Osterman v. Central Nebraska Public Power and Irrigation*

---

[78] MONT. REV. CODES ANN. § 89-2912 (Supp. 1961).

[79] IDAHO CODE ANN. § 42-237b (Supp. 1961).

[80] IDAHO CODE ANN. § 42-237b (Supp. 1961). The procedure is not an adjudication of ground water rights which are made under the general adjudicatory statutes. IDAHO CODE ANN. § 42-237f (Supp. 1961).

[81] IDAHO CODE ANN. § 42-237e (Supp. 1961).

[82] HUTCHINS, THE CALIFORNIA LAW OF WATER RIGHTS 518 (1956).

[83] HUTCHINS, SELECTED PROBLEMS IN THE LAW OF WATER RIGHTS IN THE WEST 161 (1942).

District,[84] an action to divert waters from one watershed to another, riparian owners were permitted to appear because of the value which underlying ground waters added to their properties.

In Colorado, the prior appropriation doctrine applies to all ground water which is tributary to a stream,[85] and therefore streams and tributary waters, both surface and underground, can be correlated on the basis of prior appropriation. In judicial proceedings to adjudicate and settle all questions concerning priorities on a stream in Colorado, all underground waters are presumed to be tributary to natural streams,[86] but the presumption can be rebutted by proof that such waters will not reach the watercourse in such quantities as to affect its flow.[87]

Correlation of rights in surface and ground waters is essential, whether it is done by statute, court decision, or both. If a landowner is prevented from diverting water from a stream because his proposed withdrawal would adversely affect earlier prior appropriators on a watercourse, the prohibition becomes meaningless if the owner can pump ground water near the bank and remove the same, or a greater quantity, of water with the identical detrimental effect on the stream flow. Landowners therefore should be enjoined to the extent that their withdrawals interfere with the prior appropriators whose rights date back many years and are clearly superior in time.[88]

V. THE TREND TOWARDS ADMINISTRATIVE CONTROL TYPE STATUTES IN OTHER STATES

Of all the Western states, Nebraska has placed the fewest restrictions on ground water use. Little legislation has been enacted and the philosophy of prior appropriation which governs surface water diversions has not been extended to ground water. There is no suggestion of imposing strict controls on ground water if no real

---

[84] 131 Neb. 356, 268 N.W. 334 (1936).

[85] Black v. Taylor, 128 Colo. 449, 264 P.2d 502 (1953); Safranek v. Limon, 123 Colo. 330, 228 P.2d 975 (1951); Faden v. Hubbell, 93 Colo. 358, 28 P.2d 247 (1933); Nevius v. Smith, 86 Colo. 178, 279 Pac. 44 (1929). See McHendrie, *The Law of Underground Water*, 13 ROCKY MT. L. REV. 1, 10 (1940).

[86] Karl F. Hehl Eng'r Co. v. Hubbell, 132 Colo. 96, 285 P.2d 593 (1955).

[87] Comrie v. Sweet, 75 Colo. 199, 225 Pac. 214 (1924).

[88] Tulare Irrigation Dist. v. Lindsay-Strathmore Irrigation Dist., 3 Cal. 2d 489, 45 P.2d 972 (1935); Silver King Consol. Mining Co. v. Sutton, 85 Utah 297, 39 P.2d 682 (1934).

problem exists, and it is not the purpose of this paper to make a value judgment concerning whether a demonstrated need has yet been proven for more extensive restrictions in Nebraska. That determination is a policy matter for the people to make upon the basis of sound hydrologic and economic data. Clarence A. Davis, a prominent Nebraska attorney and former Undersecretary of the Department of Interior has observed, "Legislation relating to underground water is one of the prickliest thorns with which the legislator is confronted."[89]

Any institutional arrangement should encourage the making of decisions which are most advantageous to individuals and which best benefit the society of the region. This raises the question whether management of the state's ground water resources should be left almost entirely to private landowners. The public has a direct interest in the conservation and full utilization of Nebraska's water resources, and many contend state regulation is justified to promote the public interest whenever individual conflicts arise over the water supply. Closely analogous situations have resulted in zoning regulations and in management of the state's surface waters by the Department of Water Resources.

As consideration of alternative types of legislation continues, the experiences of other states are of great interest. For that reason, some of the water law developments in other jurisdictions will be reviewed briefly.

In 1939, fourteen Western states followed common law doctrines in connection with the regulation and use of ground waters,[90] but during the past twenty-five years the trend has rapidly been toward the appropriative system. The first ground water appropriative statutes were enacted by Oregon[91] and New Mexico[92] in 1927; and the following public administrative control statutes regulating ground waters have been enacted since: Utah, 1935;[93]

---

[89] Davis, *Water and the Law,* in WATER RESOURCES AND THE LAW 43 (1958).

[90] See Clark, *Ground Water Legislation in the Light of Experience in the Western States,* 22 MONT. L. REV. 42, 50 (1960).

[91] Ore. Laws c. 410 (1927) (the original act was limited to "counties lying east of the summit of the Cascade Mountains").

[92] N.M. Laws c. 182 (1927). For technical reasons, this statute was found unconstitutional in Yeo v. Tweedy, 34 N. Mex. 611, 286 Pac. 970 (1929). To satisfy the court's objections, a second statute was enacted in 1931. N.M. Laws c. 131 (1931). See generally Harris, *New Mexico's Role in the Development of the Law of Underground Water,* 31 DICTA 41 (1954).

[93] Utah Laws c. 105 (1935).

Nevada, 1939;[94] Kansas, 1945;[95] Washington, 1945;[96] Wyoming, 1947;[97] Arizona, 1948;[98] Oklahoma, 1949;[99] Idaho, 1951;[100] North Dakota, 1955;[101] South Dakota, 1955;[102] Colorado, 1957;[103] and Montana, 1961.[104]

Separate Underground Water Codes exist in Arizona,[105] Colorado,[106] Idaho,[107] Montana,[108] Nevada,[109] New Mexico,[110] Oklahoma,[111] Oregon,[112] Washington,[113] and Wyoming.[114] In Kansas,[115]

---

[94] Nev. Stats. c. 178 (1939).

[95] Kan. Laws c. 390 (1945). For articles discussing the Kansas Water Appropriation Act, see generally *Symposium on Water Law,* 5 KAN. L. REV. 492-673 (1957).

[96] Wash. Laws c. 263 (1945).

[97] Wyo. Laws c. 107 (1947). See generally Note, 1 WYO. L. J. 111 (1947).

[98] Ariz. Laws c. 5 (1948). See generally Note, 3 ARIZ. L. REV. 115 (1961); Mann, *Law and Politics of Groundwater in Arizona,* 2 ARIZ. L. REV. 241 (1960); Note, 30 N.Y.U.L. REV. 1419, 1431-35 (1955); and Southwest Eng'r Co. v. Ernst, 79 Ariz. 403, 291 P.2d 764 (1955).

[99] Okla. Laws tit. 82, c. 11 (1949).

[100] Idaho Laws c. 200 (1951).

[101] N.D. Laws c. 345 (1955).

[102] S.D. Laws c. 431 (1955).

[103] Colo. Laws c. 289 (1957). For background information on earlier attempts to enact a Ground Water Code in Colorado, see McHendrie, *supra* note 85, at 1; Comment, 28 ROCKY MT. L. REV. 371 (1956).

[104] Mont. Laws c. 237 (1961).

[105] ARIZ. REV. STAT. ANN. §§ 45-301 to -324 (1956). The statutory restrictions in Arizona are not based upon the doctrine of prior appropriation.

[106] COLO. REV. STAT. ANN. §§ 147-19-1 to 20-1 (Supp. 1960), as amended by Colo. Laws c. 270 (1961). See Kelly, *Colorado Ground Water Act of 1957 — Is Ground Water Property of the Public?,* 13 ROCKY MT. L. REV. 165 (1959) (the Act does not apply the appropriation doctrine to ground water, but the appropriation doctrine does apply to ground water in Colorado which is tributary to a natural stream).

[107] IDAHO CODE §§ 42-226 to -239 (Supp. 1961).

[108] MONT. REV. CODES ANN. §§ 89-2911 to -2936 (Supp. 1961).

[109] NEV. REV. STAT. §§ 534.010-.190 (1957).

[110] N.M. STAT. ANN. §§ 75-11-2 to -7, -9 to -12, -14 to -19, -21 to -22 (1953), N.M. STAT. ANN. §§ 75-11-1, -13, -20 (Supp. 1959), and N.M. Laws c. 32 (1961).

[111] OKLA. STAT. ANN. tit. 82, §§ 1001- 1001-19 (1952).

[112] ORE. REV. STAT. §§ 537.505- .745 (1961).

[113] WASH. REV. CODE §§ 90.44.010 to 90.44.010-.240 (1951).

[114] WYO. STAT. ANN. §§ 41-121 to -127, -129 to -141, -143 to -147 (1957); WYO. STAT. ANN. §§ 41-128, -142 (Supp. 1961).

[115] KAN. GEN. STAT. ANN. § 82a-707 (Supp. 1961).

North Dakota[116] and Utah[117] the general appropriative statutes apply to ground water. South Dakota has a separate act pertaining to ground water but it merely applies the appropriative doctrine to ground water and then adopts the procedures which govern those for appropriating surface waters.[118]

All the states establish a permit system and, with the exception of Idaho, make securing a permit the exclusive means by which a valid appropriative right may be acquired. In Idaho, an appropriation may be perfected either by obtaining a permit or by diverting water and applying it to beneficial use.[119]

It is also interesting to note that during the past quarter of a century, there has been tremendous interest in water problems throughout the thirty-one humid Eastern states. This has resulted in a large number of useful studies and a good deal of legislation.[120] Iowa, for example, enacted a water rights law during 1957 which is administered by a State Water Commissioner.[121] Both surface and ground waters are regulated and a permit which cannot exceed ten years in duration must be secured before a withdrawal, except for an exempt use, may be made.[122]

---

116 N.D. CENT. CODE §§ 61-04-02, -01-01 (1960).

117 UTAH CODE ANN. §§ 73-1-1, -3-1 (1961).

118 S.D. CODE § 61.0404 (Supp. 1960).

119 IDAHO CODE § 42-229 (Supp. 1961).

120 See generally Martz, *Water for Mushrooming Populations*, 62 W. VA. L. REV. 1, 2-5 (1959), and *Memorandum of the Chairman of Senate Comm. on Interior and Insular Affairs*, 87th Cong., 2d Sess., REPORTS OF FEDERAL DEP'TS, LAND GRANT COLLEGES, AND STATE UNIVERSITIES, OTHER PUBLIC, EDUCATIONAL, AND PRIVATE INSTITUTIONS, AND INDIVIDUALS ON WATER RESEARCH ACTIVITIES (Comm. Print 1962). See also Ellis, *Regulation of Water Use in Local Areas by State or Local Governments and Districts*, in WATER LAW AND POLICY IN THE SOUTHWEST 238 (1961); Ellis, *Some Current and Proposed Water-Rights Legislation in the Eastern States*, 41 IOWA L. REV. 139 (1956); Fisher, *Western Experience and Eastern Appropriation Proposals*, in THE LAW OF WATER ALLOCATION IN THE EASTERN UNITED STATES 75 (1958); King, *Regulation of Water Rights Under the Police Power*, in WATER RESOURCES AND THE LAW 269, 347-48 (1958); Maloney, *Florida's New Water Resources Law*, 10 U. FLA. L. REV. 119, 126 (1957); O'Connell, *Iowa's New Water Statute—The Constitutionality of Regulating Existing Uses of Water*, 47 IOWA L. REV. 549 (1962); Ziegler, *Statutory Regulation of Water Resources*, in WATER RESOURCES AND THE LAW 87 (1958).

121 IOWA CODE ANN. §§ 455A-1 to .39 (Supp. 1958). See generally IOWA'S WATER RESOURCES (1956) and O'Connell, *supra* note 120, at 549.

122 IOWA CODE ANN. § 455A.20 (1957). Provision is made to extend the permit beyond the period for which it was originally granted. *Ibid.*

Statutes in New Jersey,[123] Indiana,[124] New York,[125] Wisconsin,[126] Florida,[127] Maryland,[128] and Minnesota[129] provide procedures which regulate ground water diversions. The last three states, and Iowa, regulate both surface and ground waters in a single water code, thus recognizing that rights to divert interconnected ground and surface water supplies must be coordinated to avoid conflicts between users. Generally, the approach in the East has been to regulate diversions by authorizing a state administrative agency to grant or deny water use permits or licenses which terminate after a specific period of time.

VI. KEY FEATURES OF REGULATING STATUTES

Western appropriative statutes typically: (1) designate the waters subject to appropriation for beneficial use; (2) except certain uses from the requirements of the law (domestic uses are exempted, for instance, in all codes); (3) preserve all existing rights; (4) name a public administrative agency or a public administrative officer, usually the chief engineer, who receives applications for drilling new wells and adjudicates conflicts between water users; (5) require proof of beneficial use before issuance of a permit evidencing the priority date of the pumping right; and (6) specify the method for appealing decisions of the administrative officer or agency to the courts. Provisions also are made for

---

[123] N.J. STAT. ANN. §§ 58-4A-1 to -4 (Supp. 1961).

[124] IND. ANN. STAT. §§ 27-1301 to -16 (1960).

[125] N.Y. CONSERV. § 521-a.

[126] WIS. STAT. ANN. §§ 144.03(6)-(8) (1957). The statute requires that a permit be obtained by anyone who proposes to install a new well or reconstruct an existing well if the capacity, alone or with other wells on the same property, exceeds 100,000 gallons a day. Pursuant to the statute, a permit system has been established by the Board of Health. The Board has no authority to refuse issuance of a permit except where availability of water to a public utility is adversely affected and to date no one has been denied water because of threatened interference with a municipal utility well. See generally THE SHAPING OF WISCONSIN'S PRIVATE AND PUBLIC RIGHTS IN WATER BY WISCONSIN STATE ADMINISTRATIVE AGENCIES AND LOCAL UNITS OF GOVERNMENT, TOGETHER WITH A DESCRIPTION OF LOCAL COURT CASES 100-15 (Review Draft, Phase Report No. 5, Contract No. 12-14-100-1010 (43) between the Univ. of Wis. and the U.S. Dep't of Ag., Beuscher and Ellis editors, 1960).

[127] FLA. STAT. §§ 373.071 -.241 (1961). See Maloney, *supra* note 120, at 119.

[128] MD. ANN. CODE art. 66C. §§ 718-20 (1957).

[129] MINN. STAT. §§ 105.41, .44 (1961).

loss of water rights through nonuse, and for changing the place of withdrawal and the place or character of use.[130]

A. WATERS INCLUDED

The first key question is, of course, what water should be included. During 1961, the Nebraska Legislative Council Committee on Water Control suggested that the legislature adopt the following definition of ground water so that "any future regulatory legislation will apply uniformly to the waters of the state."

> Ground water is that water which oozes, seeps, filters, or percolates through the ground under the surface without a definite channel, or in a course that is uncertain or unknown and not discoverable from the surface without excavation for that purpose, and that water under the surface flowing in fixed or definite channels, the existence and location of which are known or ascertainable from surface indications or other means without sub-surface excavations for that purpose.[131]

This definition which includes both percolating waters and underground streams is unduly cumbersome; and was rejected by the legislature in 1963 when it enacted a provision which states, "Ground water is that water which occurs or moves, seeps, filters, or percolates through the ground under the surface of the land."[132]

Iowa reaches the same result by simply stating that ground water is that water occurring beneath the surface of the earth.[133] Capillary soil water is excluded because it is considered to be diffused surface water.[134] Oregon too specifically excludes capillary moisture from the provisions of its ground water law;[135] but as is true in Wyoming[136] and Montana,[137] Oregon's statute applies to all other waters beneath the land surface or beneath the bed of any stream, lake, reservoir or other body of surface water.[138] In Utah the water statute covers all waters "whether above or under the ground,"[139] but the supreme court has held that water which

---

[130] Shurtz, *Report on the Laws of Kansas Pertaining to Ground Water* 83-153 (Bull. No. 5 of the Kansas Water Resources Board, 1960).

[131] NEBRASKA LEGISLATIVE COUNCIL COMMITTEE ON WATER CONTROL, COMMITTEE REPORT No. 114, p.26 (Nov. 1962).

[132] L.B. 491, 73d Neb. Leg. Sess. (1963).

[133] IOWA CODE ANN. § 455A.1 (Supp. 1962).

[134] *Ibid.*

[135] ORE. REV. STAT. § 537.515 (1955).

[136] WYO. STAT. ANN. § 41-121 (1957).

[137] MONT. REV. CODES ANN. § 89-2911 (Supp. 1961).

[138] ORE. REV. STAT. § 537.515 (1955).

[139] UTAH CODE ANN. § 73-1-1 (1961).

produces plant life and thereby benefits the land is part of the soil and not subject to appropriation.[140]

To avoid the difficulties of subjecting percolating waters to appropriation when their movement and extent cannot be accurately determined, New Mexico's ground water act relates only to "underground streams, channels, artesian basins, reservoirs, or lakes, having reasonably ascertainable boundaries";[141] and the Washington statute is applicable to "water beneath the land surface, the existence and boundaries of which may be reasonably established or ascertained."[142]

Both Arizona and Oklahoma exclude underground streams from the provisions of their subterranean water laws,[143] but the general trend is to include all waters under the surface of the earth.

B. EXEMPTIONS

A great deal of resistance to regulation of ground water can be overcome by exempting certain uses from the provisions of the act. Further, some uses are so small that they have little or no effect on other users and regulation would only impose excessive burdens on the administrative agency. "Domestic uses" are exempt from regulation in all states, and many specifically exclude water for stock watering.[144] Most of the statutes are unclear concerning whether the watering of large commercial herds would be exempt.[145] Idaho exempts all uses which do not exceed 13,000 gallons per day,[146] and Nevada exempts wells used for domestic purposes if the draught is less than 1,440 gallons daily.[147] In both Oregon and Washington industries and commercial enterprises which use less than 5,000

---

[140] Riordan v. Westwood, 115 Utah 215, 203 P.2d 922 (1949).

[141] N.M. STAT. ANN. § 75-11-1 (Supp. 1959).

[142] WASH. REV. CODE § 90.44.010 (1951).

[143] ARIZ. REV. ANN. § 45-301(4) (1956) and OKLA. STAT. ANN. tit. 82, § 1002 (1952).

[144] COLO. REV. STAT. ANN. § 147-19-8 (1953); IDAHO CODE ANN. § 42-230 (Supp. 1961); HAWAII REV. LAWS § 87B-2(d) (Supp. 1960); IOWA CODE ANN. § 455A.1 (Supp. 1962); OKLA. STAT. ANN. tit. 82, § 1004 (1952); ORE. REV. STAT. § 537.545 (1953); WASH. REV. CODE § 90.44.050 (1951); WYO. STAT. ANN. § 41-124 (1959).

[145] See, *e.g.*, O'Connell, *supra* note 120, at 590. The Hawaiian definition limits the exemption to "the watering of stock used in operating a farm or as food for the family or household . . . ." HAWAII REV. LAWS § 87B-2 (d) (Supp. 1960).

[146] IDAHO CODE ANN. § 42-230 (Supp. 1961).

[147] NEV. REV. STAT. § 534.180 (1957).

gallons per day do not need to obtain a permit to appropriate, but the State Engineer can require the filing of information reports.[148]

Arizona does not subject irrigation wells to control unless their capacity exceeds 100 gallons per minute.[149] In New Mexico, for the purpose of data collecting, all exempt users must apply to the state engineer for a permit which is thereafter automatically issued if no existing rights of others are impaired.[150]

C. VESTED RIGHTS

After determining what ground waters should be regulated, key provisions in the ground water codes then make such water subject to appropriation for beneficial use. Landowners applying water beneficially before the effective date of the enactment, however, have vested rights to continue their use. Also, a person with a diversion works under construction can proceed to complete the construction within a reasonable time and establish a vested right.[151]

Under the scheme of the Kansas act, vested rights of common law users are determined by the state engineer based upon beneficial use prior to the act.[152] His determination does not establish priorities between holders of vested rights, and the statute expressly states that "no such determination shall be deemed an adjudication of the relation between any vested right holders with respect to the operation or exercise of their vested rights."[153] In a number of states, pre-existing rights are recognized under the act after they have been registered in the office of the state engineer.[154]

The concept is that appropriations are to be granted only to water which is not being put to beneficial use at the time of the act, and that water rights being utilized at that time should be left

---

148 ORE. REV. STAT. § 537.545 (1953); WASH. REV. CODE § 90.44.050 (1962).

149 ARIZ. REV. STAT. ANN. § 45-301(14) (1956).

150 N.M. STAT. ANN. § 75-11-1 (1953).

151 For example, see KAN. GEN. STAT. ANN. § 82a-701(d) (Supp. 1961).

152 KAN. GEN. STAT. ANN. § 82a-704 (Supp. 1961); also see NEV. REV. STAT. § 534.100 (1957). In Nevada a claimant of vested existing water rights petitions the state engineer to adjudicate such rights.

153 KAN. GEN. STAT. ANN. 82a-704 (Supp. 1961).

154 WYO. STAT. ANN. § 44-122 (1957); N.M. STAT. ANN. §§ 75-11-4, -11-5 (1933) (verified declarations by claimants to vested rights are prima facie evidence of the truth of their contents); ORE. REV. STAT. §§ 537.585, .605, .610 (1953); WASH. REV. CODE ANN. § 99.44.090 (1962) (a claimant is entitled to receive from the supervisor of water resources a certificate of ground water right upon filing a certified declaration containing required information concerning such matters as amount claimed and time of earliest beneficial use).

relatively untouched. Under this philosophy land ownership does not carry with it vested rights to underlying waters which are not actually being withdrawn and applied to beneficial use. Such unused rights are not to be wasted by being held in perpetuity when others have use for them. As stated in *State ex rel. Emery v. Knapp,* "Unused or usable rights predicated alone upon theory become of little if any importance."[155]

New rights under the statutes are obtained by filing an application for a permit with the state administrative officer or agency, but persons using water for exempt purposes do not have to secure a permit. As already noted, however, some states do require information reports from exempt users concerning their diversions to secure data for facilitating administration and planning.

VII. ADMINISTRATION OF RIGHTS

A. Court Adjudications

In conflicts between private users competing for the water supply, the traditional common-law judicial approach has several shortcomings. First, litigation does not begin until the competing uses are operating against each other. Second, the court is unaware of the situation within an area because the conflicts are brought to it on a piecemeal basis and the court considers the water rights of

---

[155] 167 Kan. 546, 555, 207 P.2d 440, 447 (1949). Other decisions upholding the constitutionality of subordinating unused common law rights in Kansas to rights obtained under the appropriative statute are Williams v. City of Wichita, 374 P.2d 578 (Kan. 1962) and Baumann v. Smrha, 145 F. Supp. 617 (D. Kan.), *aff'd per curiam,* 352 U.S. 863 (1956), noted in 5 Kan. L. Rev. 470 (1957). Numerous articles discuss the constitutionality of ground water legislation. See, for example, Fisher, *Due Process and the Effect of Eastern Appropriation Proposals on Existing Rights, With Special Emphasis on the Michigan Proposal,* in Water Allocation in the Eastern United States 441 (1958); Hutchins, *Ground Water Legislation,* 30 Rocky Mt. L. Rev. 416, 430-34 (1958); Hutchins, *Western Water Rights Doctrines and Their Development in Kansas,* 5 Kan. L. Rev. 533, 575-82 (1957); Kirkwood, *Appropriation of Percolating Water,* 1 Stan. L. Rev. 1, 16-22 (1948); Martz, *The Law of Underground Waters,* 11 Okla. L. Rev. 26, 34-35 (1958); Scurlock, *Constitutionality of Water Rights Regulation,* 1 Kan. L. Rev. 125, 298 (1953); Note, 30 N.Y.U.L. Rev. 1419, 1428-35 (1955); Note, 3 Wyo. L. J. 140 (1949). In Nebraska, the unused rights of riparian owners on surface streams have been effectively restricted so that such rights do not interfere with those claiming under prior appropriation. Cline v. Stork, 71 Neb. 70, 98 N.W. 454 (1904); McCook Irrigation and Water Power Co. v. Crews, 70 Neb. 115, 102 N.W. 249 (1905). See Doyle, *Water Rights in Nebraska,* 20 Neb. L. Rev. 1, 21-22 (1941); Rarick, *Appropriator v. Riparian, A Preliminary Examination,* 10 Okla. L. Rev. 416 (1957).

only the immediate parties. The activities of those not participating in the proceedings remain unaffected.

In addition, state officials concerned with water problems usually are not called to testify and all too often the interests of the public are neither represented nor considered. In this connection, it has been said that "[S]o long as it is administered solely through the courts, it will be difficult, if not impossible, to arrive at a scientifically sound water policy. This is in no way a criticism of the courts, but is a recognition of the fact that they were developed to settle disputed issues, not to plan and execute programs involving large doses of public policy."[156]

Also, as a consideration of the California decisions shows, the Nebraska correlative rights rule of sharing involves tremendous administrative difficulties in time of shortage.[157] As between irrigators during seasonal shortages, there is no practical remedy unless an apportionment of the water is made at once, and courts generally are not equipped to make a rapid determination of competing rights. Court proceedings are also burdensome and expensive to the point that many landowners probably forego their rights rather than prosecute or defend a lawsuit.[158]

A preliminary question in considering alternatives to court adjudications is whether local control, centralized management at the state level, or a combination of both would provide the most favorable arrangement. Stated differently, should ground water in Nebraska continue to be treated as a free good or does the state have a legitimate interest in how it is used? A local district plan, by placing decision-making with the people in the affected locality, has the advantages of insuring local participation and more ready acceptance of policing restrictions. On the other hand, future planning of Nebraska's policy goals may be impossible unless management is placed in a centralized state agency which has access to extensive data enabling the analysis of overall development.

---

[156] CRIBBETT, ILLINOIS WATER RIGHTS LAW 27 (1957). See also Trelease, *A Model State Water Code for River Basin Development*, 22 LAW & CONTEMP. PROB. 301, 317 (1957).

[157] *E.g.*, City of Pasadena v. City of Alhambra, 33 Cal. 2d 908, 207 P.2d 17 (1949). For a discussion of this litigation which lasted thirteen years, see Snyder, *Economic Implications and Appraisal of the Court Reference Procedure for Allocating Ground Water*, in WESTERN AGRICULTURAL RESEARCH COUNCIL COMMITTEE ON THE ECONOMICS OF WATER RESOURCES DEVELOPMENT, REPORT NO. 5, GROUND WATER ECONOMICS AND THE LAW 37 (1956) [hereinafter cited as GROUND WATER ECONOMICS].

[158] See Danielson, *Water Administration in Colorado—Higher-ority or Priority*, 30 ROCKY MT. L. REV. 293 (1958).

The ultimate function of any natural resource is to benefit all citizens of the state. Professor Martz stated the case when he wrote:[159]

> The function of private enterprise is to transform water into economic values. Being responsive to market forces, it determines the relative worth of particular water uses, and develops utilization facilities competitively. Water to it is a species of property, a capital resource to be used in the production of wealth. Its contribution to the conservation process lies in its initiative, motivation and resourcefulness in water utilization. Its principal need is sufficient property security to justify and encourage economic development. Since the water resource moves from tract to tract, and has public as well as private attributes, a certain measure of regulation becomes necessary in the public interest. First of all, competitive private uses create conflicts of interest in the common resource. Secondly, self serving enterprise, not being conducive to cooperation, leads to single purpose water development projects that are small in scale and inefficient for full utilization of limited regional supplies. Finally, the individual user who is able to get enough water for his own needs will lack incentive to conserve his supply. . . .

Selection of local or state control, of course, will not increase the supply of water, but a particular institutional framework will minimize conflict between competing users and promote utilization closer to the optimum point.

B. Local Districts

In 1959, the Nebraska legislature enacted a Ground Water Conservation Act which authorizes the creation of conservation districts at the local level.[160] After its organization, a ground water con-

---

[159] Martz, *supra* note 120, at 46.

[160] Neb. Rev. Stat. §§ 46-614 to -634 (Reissue 1960). The first step towards organizing a district is submission of the proposal to the Director of Water Resources and the Director of the Conservation and Survey Division of the University of Nebraska who make a hydrologic and geographical evaluation of the proposed boundaries and recommend any changes which they believe are desirable. Thereafter a petition, "signed by not less than the lesser of five resident owners or fifty-one percent of the resident owners of land in each of a majority of the precincts lying within the proposed district," Neb. Rev. Stat. § 46-616 (Reissue (1960), is certified by the election commissioner or county clerk to the County Board. Subsequent to publishing notice and notifying the Director of Water Resources, a public hearing is held. After this hearing, the County Board may change the boundaries of the district subject to court review. Once the boundaries are established, an election is held in each county containing a part of the proposed district; and the district may be created if fifty-five percent of those resident landowners voting favor organization. A majority of the Board of Directors, who are elected for six year terms by the resident landowners, must be "resident

servation district may "aid or conduct, alone or in conjunction with other districts, any program of ground water conservation,"[161] and the directors of a district are specifically empowered to "institute corrective measures to ensure the proper conservation of ground water within the district."[162] First, however, the directors must consult with the Director of Water Resources, the Director of the Conservation and Survey Division, and with the "ground water users within the district."[163] Thereafter, a public hearing on seven days published notice must be held before any corrective measures are ordered.[164]

Notice of the corrective measures adopted is made by newspaper publication and by sending a certified or registered letter to all known water users in the district. The district's board of directors may commence proceedings in the district court to enforce corrective measures against any user who fails to comply.[165] In connection with such measures, it has been stated, "The vagueness of the powers throws some doubt as to the enforceability of the Act, or of any 'corrective measures' which might be ordered by the Board of Directors of the Ground Water Conservation District."[166]

No ground water conservation district has been organized yet in Nebraska. It is foreseeable that if pumpage continues to increase in some areas, the Nebraska well spacing regulations alone may prove ineffective to prevent falling water tables and increased pumping costs during a series of dry years. Large investments in irrigation equipment and land preparation would then be jeopardized. The question arises whether local farmers would impose controls upon themselves in such a situation. The likelihood is somewhat doubtful since well irrigation in the state has resulted almost entirely from investment of private capital, and farm owners and operators therefore are reluctant to recognize that control is a matter of state wide concern rather than an entirely

---

owner-operators" of irrigation wells, NEB. REV. STAT. § 46-625 (Reissue 1960).

[161] NEB. REV. STAT. § 46-629 (Reissue 1960).

[162] NEB. REV. STAT. § 46-630 (Reissue 1960).

[163] *Ibid.*

[164] *Ibid.*

[165] *Ibid.*

[166] See Good & Grether, *Nebraska Water Resources,* in COMMITTEE REPORTS OF THE AMERICAN BAR ASS'N SECTION OF MINERAL AND NATURAL RESOURCES LAW 167 (1962).

local matter. This conclusion is corroborated by Dr. Wells Hutchins, an eminent water expert with the United States Department of Agriculture, who has stated:[167]

> Opposition from persons who want no legal restrictions on well drilling or on individual pumping has been effective in many jurisdictions in blocking enactment of proposed legislation and in delaying the 'tightening up' of mild restrictions. One of the phenomena sometimes noted in connection with this public attitude is the hostility of many farmers even at times when water levels are dangerously receding.

Experience in Colorado, where the Ground Water Act of 1957[168] emphasizes local control, illustrates Mr. Hutchins' comment. Under the Colorado statute, no new well can be drilled nor can withdrawals from existing wells be increased unless application is made to the State Engineer for a permit.[169] Outside of areas designated as tentatively critical ground water districts, permits are granted as a matter of course,[170] and domestic and stock watering wells are exempt from the provisions of the law.[171]

When information indicates that the withdrawal of ground water appears to have approached, reached or exceeded normal annual recharge, a tentatively critical ground water district may be designated by an eight man ground water commission appointed by the Governor.[172] After designation of the area, the state commission conducts an election among qualified voters who are property owners in the district to elect a five man District Advisory Board; and unless a majority of the local board consents, no critical area designation may be kept in effect over twelve months.[173] Further, the critical designation must be removed upon the unanimous request of the district board or upon petition of two-thirds of the landowners.[174]

---

[167] Hutchins, *Ground Water Legislation*, 30 ROCKY MT. L. REV. 416, 423 (1958).

[168] Colo. Laws c. 289, §§ 1-18 (1957); COLO. REV. STAT. ANN. §§ 147-19-1 to -19-15 (Supp. 1960). For discussions of the Colorado law, see Kelly, *Colorado Ground Water Act of 1957—Is Ground Water Property of the Public?*, 31 ROCKY MT. L. REV. 165 (1959); and Shurtz, *supra* note 130, at 83-92.

[169] COLO. REV. STAT. ANN. § 147-19-5(1) (Supp. 1960).

[170] COLO. REV. STAT. ANN. § 147-19-5(2) (Supp. 1960).

[171] COLO. REV. STAT. ANN. § 147-19-8 (Supp. 1960).

[172] COLO. REV. STAT. ANN. § 147-19-3 (Supp. 1960).

[173] COLO. REV. STAT. ANN. § 147-19-4(7) (Supp. 1960).

[174] COLO. REV. STAT. ANN. § 147-19-3(11) (Supp. 1960).

On January 10, 1958, the Bijou Alluvial Basin was made a critical water area upon information that the water levels had declined forty feet since 1940. Five candidates, each of whom had campaigned against regulation, were elected; and their first action was to unanimously request removal of the critical designation. Commenting upon this reversal of state action at the local level, Professor Kanel of the University of Nebraska College of Agriculture concluded:[175]

> It is only natural when the control of water is put in the hands of local people that this resource will be used to their own advantage. However, the interests of the local people may not be clear and they may not be unanimous. Those who are already using ground water may want to protect their investments by regulating new users; or they might prefer to avoid regulations because of a fear that their own rights might be restricted. This apparently happened in the Colorado case. Others who have not yet put in wells might have interests entirely different from those who have wells.

Thus, the Colorado statutes granting local control are generally conceded to be ineffective, and enactment of greater regulatory authority over ground water is contemplated in order to manage withdrawals from aquifers and interrelate such diversions with long standing rights to surface waters.[176]

Developments in connection with local controls in Texas and California[177] have been more encouraging. Texas adopted a local control type statute in 1949 when it authorized creation of ground water conservation districts.[178] These districts are designated by the Texas Water Commission at the state level, and must be an area having the same boundaries as an underground reservoir or subdivision thereof.[179] "Reservoir" is defined as a specific subsurface

---

[175] Kanel & Tomek, *Ground Water Control: A Problem for Nebraska,* in FARM AND RANCH ECONOMICS 2 (Oct. 1958).

[176] See Kelly, Moses, Beise, & Martz, *Colorado Water Resources,* in COMMITTEE REPORTS OF THE AMERICAN BAR ASS'N SECTION OF MINERAL AND NATURAL RESOURCES LAW 155 (1962).

[177] See Krieger & Banks, *Ground Water Basin Management,* 50 CALIF. L. REV. 56 (1962); Smith, *The Role of the Public District in the Integrated Management of Ground and Surface Water,* in GROUND WATER ECONOMICS 81 (1956); Smith, *Problems in the Use of the Public District for Ground-Water Management,* 32 LAND ECON. 259 (1956).

[178] Tex. Laws c. 306 (1949), TEX. REV. CIV. STAT. art 7880-3c (1954). For an analysis and criticism of the 1949 law, see Comment, *The Texas Groundwater District Act of 1949: Analysis and Criticism,* 30 TEXAS L. REV. 862 (1952).

[179] TEX. REV. CIV. STAT. art. 7880-3c (1954). The principal water agency is the Board of Engineers which was reorganized and renamed the Texas

water-bearing reservoir which has ascertainable boundaries and contains underground water capable of being produced from a well at not less than 150,000 gallons per day.[180] If the district lies in a single county, its creation depends on the county commissioners; if the land in the district is in two or more counties, then the question goes to the Water Commission. After creation, the qualified resident property-owning taxpaying voters determine whether or not to confirm the district. If a majority of those voting at the election favor confirmation, the district is ratified and may begin to incur indebtedness. Municipal corporations within the area are separate voting entities, and votes are counted separately in rural areas and in each municipality.

Ground water districts may require that permits be obtained before landowners drill wells capable of producing over 100,000 gallons per day, may provide for the spacing of wells, and may regulate withdrawals from wells so as to minimize as far as practicable the drawdown of the water table or the reduction of artesian pressure.[181] In addition, districts may formulate plans and carry out projects for recharging reservoirs.[182]

A district in Texas has no authority, however, to determine priorities between users or to prorate underground water in the event of shortage,[183] and the statute expressly recognizes that landowners own the water under their lands.[184] Therefore, conflicts between individual users must still be decided by the courts. The constitutionality of requiring well spacing and regulating pumping have not been tested; and although the Texas Supreme Court has adopted the absolute ownership rule,[185] it does not necessarily follow that regulation by the underground water districts violates the due process clauses of the federal and Texas constitutions.[186]

Water Commission in 1962. TEX. REV. CIV. STAT. art. 7477(1) (Supp. 1962).

[180] TEX. REV. CIV. STAT. art. 7880-3c A(4) (1954).

[181] TEX. REV. CIV. STAT. art. 7880-3c B (Supp. 1962).

[182] See Duggan, *Texas Ground Water*, in PROCEEDINGS, WATER LAW CONFERENCE, UNIV. OF TEXAS 17-19 (Nov. 20-21, 1952).

[183] TEX. REV. CIV. STAT. art. 7880-3c D (1954) ("[T]he priorities, regulations and provisions of the law relating to the use of surface waters shall in no manner apply to underground water.")

[184] TEX. REV. CIV. STAT. art. 7880-3c D (1954).

[185] Houston & T. C. Ry. v. East, 98 Tex. 146, 81 S.W. 279 (1904). See Greenhill & Gee, *Ownership of Ground Water in Texas; the East Case Reconsidered*, 33 TEXAS L. REV. 620 (1955).

[186] See Casebier & Starley, *Proration of Ground Water*, in PROCEEDINGS, WATER LAW CONFERENCES, UNIV. OF TEXAS 159, 165-68 (May 25 and 26, 1956). See also Southwest Eng'r Co. v. Ernst, 79 Ariz. 403, 291 P.2d 764 (1955).

In California, as in Nebraska and Texas, state administrative management is lacking, but districts have been encouraged for integrated management of ground and surface waters.[187] In Texas, particularly in the high plains, and in California, local districts operate on a large scale. For instance, the High Plains Underground Conservation District No. 1 in Texas consists of parts of thirteen counties and covers about five million acres.[188]

C. Administration of Critical Areas

Because local action often is slow and frequently ignores the state interest of maximum efficiency in allocation of resources, many jurisdictions authorize state regulation in problem areas. Such statutes, of course, should not impose tight administrative controls on regions which are relatively free of water problems, and in these areas either one of the common law doctrines or the rule of prior appropriation should apply. If prior appropriation is in effect, permits are issued as a matter of course by the authorized state administrative officer if the proposed use is beneficial, and constitute evidence of actual use if it should later become necessary to determine priorities among users.[189]

However, in localities where water levels have been or are declining excessively or where conflicts are occurring between well users or between surface appropriators and well owners, the ground water laws often provide for designation of these regions as "critical areas."[190] The determination as to whether or not an area needs corrective regulations is made by an administrative agency or officer, usually the State Engineer, after a public hearing. Once an area is designated "critical" specific control provisions may be imposed to regulate water uses and prevent pollution or waste.

In Colorado, designation of a "tentatively critical ground water district" closes the area to further drilling but, as noted, the restrictions may be removed by the state commission upon its own initiative, and must be removed at the unanimous request of the local

---

[187] See Smith, *supra note* 177, at 81.

[188] See Duggan, *supra* note 182, at 19; Greenhill & Gee, *supra* note 185, at 629.

[189] See Clark, *Ground Water Legislation in the Light of Experience in the Western States,* 22 Mont. L. Rev. 42, 48 (1960), and Wyo. Stat. Ann. § 41-139 (1957).

[190] Ariz. Rev. Stat. Ann. §§ 45-301(1) (Supp. 1962) and 45-308 (1956); Colo. Rev. Stat. Ann. § 147-19-3 (Supp. 1960); Idaho Code Ann. § 42-233a (Supp. 1961); Mont. Rev. Codes Ann. § 89-2915 (Supp. 1961); Nev. Rev. Stat. § 534.030 (1957); Okla. Stat. Ann. tit. 82, § 1007 (1952); Ore. Rev. Stat. §§ 537.620, .720 (1961); Wyo. Stat. Ann. § 41-129 (1957).

advisory board or upon the request of two-thirds of the resident landowners using water in the district.[191] In addition, no critical area designation may be continued for more than one year unless the locally elected five man district advisory board consents.[192] In practice, areas in the state would therefore be closed on a year to year basis.

The Arizona statute requires the state land commissioner to issue permits for new wells in critical areas, but specifically provides that no permit shall be issued unless the land to be irrigated was irrigated on the date the area was declared critical or was in cultivation during some time within the previous five years.[193] It has been stated that the clear intent of the legislature was to restrict use of ground water to land which was cultivated within a previous five year period.[194] In *State v. Anway,* however, the Arizona Supreme Court decided it is only an implication that the provision prohibits expansion of acreage developed by ground water in critical areas. By thus construing the statute narrowly, diversion of water from overlying lands taken out of cultivation onto lands that had never before been irrigated was permitted.[195] Even though no increased withdrawals from the aquifer resulted from the rotation of use from one parcel to another, the case has been criticized on the grounds that it ignored the specific restrictions of the statute and modified the rule of *Bristor v. Cheatham*[196] which confined ground water diversions in Arizona to reasonable uses on overlying lands.[197]

In Idaho, permits are automatically issued in non-regulated areas, but in critical ground water areas no permit may be issued until after notice has been published and a public hearing held on all protests.[198] Montana requires that in "controlled areas" a permit must be secured before ground water may be withdrawn and that no permit shall be granted if the proposed withdrawal would be beyond the capacity of the aquifer to yield water within a feasible

---

[191] COLO. REV. STAT. ANN. § 147-19-3 (Supp. 1960).

[192] COLO. REV. STAT. ANN. § 147-19-4 (Supp. 1960).

[193] ARIZ. REV. STAT. ANN. § 45-314 (Supp. 1962).

[194] Mann, *Law and Politics of Ground Water in Arizona,* 2 ARIZ. L. REV. 241, 251 (1960).

[195] 87 Ariz. 206, 349 P.2d 774 (1960), noted in 3 ARIZ. L. REV. 115 (1961).

[196] 75 Ariz. 227, 255 P.2d 173 (1953).

[197] Martz, *Water Law,* in ANN. SURVEY AM. L. 463 (1957).

[198] IDAHO CODE ANN. §§ 42-233a, -233b (Supp. 1961).

lift.[199] Further, if the administrator finds that withdrawals in a controlled area exceed safe annual yield as measured by recharge, he shall order aggregate diversions decreased in conformity to priorities, except as to domestic use, so as not to exceed replenishment.[200] Likewise, Oklahoma provides that in any basin where a district court determines ground water withdrawals exceed annual yield, users may be required to stop diversions in reverse order of priorities or cease withdrawals completely if their late priorities interfere with persons having earlier ones.[201]

Nevada, Oregon and Wyoming delegate broad discretionary powers to the State Engineer for managing water uses within critical areas, subject to judicial review as to the reasonableness of his orders.[202] Typical of the measures which the engineer may take are: (1) closing the area to further appropriation until there is again unappropriated water; (2) apportioning total withdrawals according to priorities; (3) issuing temporary permits rather than perpetual appropriations; (4) ordering junior appropriators to cease or reduce withdrawals; (5) requiring and specifying a system of rotation; (6) granting preferences without regard to priorities, first to domestic and livestock users and thereafter to other beneficial uses as he believes advisable; (7) prohibiting the drilling of domestic wells where water can be furnished from a municipal supply; and (8) taking action to stop pollution.

Voluntary agreements between landowners are encouraged and, after approval by the state engineer, these control in Oregon and Wyoming over any restrictive orders previously imposed in a critical area.[203] If an agreement becomes inequitable because of changed conditions, or is detrimental to the public interest or to rights of persons not parties, then it may be terminated after notice and public hearing.[204]

A number of Eastern states also provide for the delineation and control of areas where withdrawals of subsurface waters exceed or threaten to exceed supply.[205] Delineations of protected

---

[199] MONT. REV. CODES ANN. § 89-2918 (Supp. 1961).

[200] MONT. REV. CODES ANN. § 89-2915 (Supp. 1961).

[201] OKLA. STAT. ANN. tit. 82, §§ 1010, 1015 (1952).

[202] NEV. REV. STAT. § 534.120 (1957); ORE. REV. STAT. § 537.735 (1953); WYO. COMP. STAT. ANN. § 41-132 (1957).

[203] ORE. REV. STAT. § 537.745 (1953); WYO. COMP. STAT. ANN. § 41-132 (1957).

[204] *Ibid.*

[205] For a discussion of existing legislation in the East, see Ellis, *Regulation of Water Use in Local Areas by State or Local Governments and Districts*, in WATER LAW AND POLICY IN THE SOUTHWEST 238 (1961).

areas in New Jersey began in 1947, and today approximately thirty-five percent of the state is included.[206] Since 1933, New York has required approval for new wells in the four counties comprising Long Island if the capacity exceeds 100,000 gallons per day.[207] Indiana provides for designation of restricted use areas in which new withdrawals exceeding 100,000 gallons per day and expansion of old withdrawals above that amount may be intensively regulated. Old users desiring to increase their withdrawals and new users may either be denied permits or subjected to "such conditions or stipulations as may be necessary to conserve the ground waters of the area and prevent their waste, exhaustion or impairment."[208] In granting or denying permits the Department of Conservation considers: (1) the effect of diversions on future supplies; (2) use made of the water and its effect on present users; (3) whether future natural replenishment is likely to become more or less; (4) whether future demands are likely to be greater or smaller; and (5) how withdrawals of additional water will affect the best interests of the public.[209] No restricted ground water areas have been established yet in Indiana, but it is significant that the power has been conferred upon the Department of Conservation. Florida, Illinois and Hawaii also provide for regulation of ground water in designated areas.[210]

VIII. CONCLUSION

According to data collected by the United States Bureau of the Census, Nebraska had an increase of 1,201,667 acres, or 137.1 percent, in total irrigated land in farms between 1949 and 1959.[211] No other state had such a large percentage increase. The conclusion

---

[206] *Id.* at 243.

[207] N.Y. Sess. Laws 1933, c. 563, § 2, as amended, N.Y. CONSERV. § 521-a.

[208] IND. ANN. STAT. § 27-1305 (1960).

[209] *Ibid.*

[210] FLA. STAT. §§ 373.141-.171 (1959); ILL. STAT. ANN. c. 111 2/3, § 228 (Smith-Hurd 1954) (Water authorities created by referendum to regulate ground waters have power to "reasonably regulate the use of water and during any period of actual or threatened shortage to establish limits upon or priorities as to the use of water." None of the provisions of the law apply to agriculture, farm irrigation, or domestic purposes where not more than four families are supplied from the same source.); HAWAII REV. LAWS § 87B-33 (Supp. 1960) (in 1959 Hawaii adopted the Model Water Use Act).

[211] United States Bureau of the Census, United States Census of Agriculture, 3 IRRIGATION OF AGRICULTURAL LAND XXVII (1959).

follows that up to this time the state's legal philosophy of leaving practically all decisions to private landowners has provided widespread encouragement to individual initiative and private investment.

The crucial question now is whether the prospect of diminishing supplies, stimulated by this enormous increase of underground water use, plus large costs of development, have brought about difficulties which necessitate some alterations in the present institutional arrangement. Opinions differ sharply and opposition to change is bitter. Individual landowners question the advisability or workability of restrictions on their use. On the other hand, arguments are being advanced that some type of public management would afford protection to existing users which they do not now have.

As the "thinking through" process continues, the following matters are among those that should receive consideration:

1. Collection and evaluation of basic hydrologic information is necessary to obtain a more extensive amount of data than we now have concerning supplies, water levels, and interrelations between surface and ground waters. In addition, development of a sound water program depends upon continuing economic research to seek answers for difficult questions. How should the remaining unappropriated ground water in Nebraska be allocated so that maximum benefits may be obtained? What is the state's industrial and agricultural potential? To what extent does the future economy require more industrialization in some regions? In such regions, should procedures be established to give industry a preference over agriculture when their needs conflict?[212] On the basis of current

---

[212] The statutory preference scales are identical in Nebraska for both underground and surface waters. Domestic use is favored over agriculture and agriculture is preferred over manufacturing and industrial. NEB. CONST. art. XV, § 6, NEB. REV. STAT. §§ 46-204, -613 (Reissue 1960). The effect of a preference in Nebraska is to authorize one desiring to use water for a purpose of higher rank to acquire by condemnation all or part of an inferior user's supply upon payment of just compensation. See Doyle, *Water Rights in Nebraska,* 29 NEB. L. REV. 385, 407-09 (1950). See also Ciriacy-Wantrup, *Some Economic Issues in Water Rights,* 37 J. FARM ECONOMICS 875, 880-82 (1955); Larson, *The Development of Water Rights and Suggested Improvements in the Water Law of North Dakota,* 38 N.D.L. REV. 243, 268-74 (1962); Thomas, *Appropriations of Water for a Preferred Purpose,* 22 ROCKY MT. L. REV. 422 (1950); Trelease, *Preferences to the Use of Water,* 27 ROCKY MT. L. REV. 133 (1955). Generally, economic returns of water used in industry greatly exceed the returns in agriculture. See 5 PRESIDENT'S MATERIALS POLICY COMMISSION, RESOURCES FOR FREEDOM 86 (1952); Ciriacy-Wantrup, *supra,* at 881; KNEESE,

trends, where are the areas in which future population growth and economic activity may be expected? What rate and extent of expansion is anticipated? What are the probable demands upon the existing water supply, and to what degree is water a limiting factor upon present and prospective state goals? If state policies and laws are to be based upon valid economic grounds, answers to such inquiries are necessary to provide guidelines.

2. Physical solutions such as storage facilities on tributaries and artificial recharging of underground water resources can alleviate shortages in some regions, and technical assistance at the state level should be given encouragement.

3. Should a public administrative control type statute be adopted (a) to integrate management of all interrelated surface and underground water so that the rights between the users of each can be correlated, (b) to give greater assurance of adequate supplies for increasing urban populations, and (c) to prevent conflicts between users of underground water in areas where there is danger of overdrafts, and to protect well owners who already have made large investments? In this connection, no requirements other than data reporting and proof of present use should be applicable to problem-free regions, and the rights of those now utilizing water should not be affected. However, when areas become overdrawn or "critical," corrective measures would be taken. Most states have taken the position that these measures should be imposed by the state whenever the public interest is threatened, but participation and advisory assistance at the local level should be included and encouraged in any plan. As in the case of Nebraska's surface waters, there are many advantages in clearly specifying a landowner's rights and preventing later users from infringing upon them in times of shortage.

Lawyers can draft legislation to change institutional arrangements, but before this is done the people must decide upon the goals they desire to achieve by choosing between alternative values.

WATER RESOURCES DEVELOPMENT AND USE 8, 14 (Fed. Reserve Bank of K.C., Dec. 1959); Kneese, *Some Economic Effects of Alternative Water Use Patterns in New Mexico*, in WESTERN RESOURCES PAPERS 1960, 154-56 (1960); U.N. WATER RESOURCES DEVELOPMENT CENTRE, LARGE-SCALE GROUND-WATER DEVELOPMENT 24 (60.II.B.3 E/3424-ST/ECA/65) (1960). Much of the inflexibility inherent in a system of preferred uses can be eliminated by making a court determination in each case concerning which of conflicting uses is for the greatest public good. WASH REV. CODE ANN. 90.03.040 (1962).