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INTERSTATE TRANSFER OF COLORADO WATER FOR THE SAN MARCO COAL SLURRY PIPELINE

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Introduction

It is estimated that the United States’ coal production must at least double by 1985 if this country hopes to achieve energy independence.1 Fortunately, the United States has a great, untapped supply of coal. Coal reserves constitute approximately 85% of this nation’s total energy resources, while coal presently provides only 18% of the nation’s energy.2

The 1973 oil embargo focused interest on the use of low-sulfur western coal. Such coal with its low sulfur content has the added environmental value to midwestern and southern utilities of complying with stringent federal and state air pollution control standards.3 Eighty percent of

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1. See ENERGY TRANSPORTATION SYSTEMS, INC., SLURRY PIPELINES—INNOVATION IN ENERGY TRANSPORTATION 13 (1975) [hereinafter cited as ETSI REPORT]. ETSI is the leading proponent of coal slurry pipelines and is the developer of the Wyoming-Arkansas coal slurry pipeline. ETSI is a partnership composed of Bechtel, a large California engineering firm, Texas Eastern Corp., ARCO Pipeline Co., Kansas-Nebraska Natural Gas, and Lehman Brothers Kuhn Loeb, a New York investment banking house.
2. See Leisenring, Western Coal—The Sleeping Giant, 19 ROCKY Mtn. Min. L. INST. 1, 5 (1974). See also ETSI REPORT, supra note 1, at 12.
3. ETSI REPORT, supra note 1, at 5. Sulfur content of western coal averages about .5%,
the country's coal reserves are west of the Mississippi, with the greatest known deposits in Montana, North Dakota, and Wyoming.\textsuperscript{4} Coal development is also taking place in Arizona, Colorado, New Mexico, Texas, Utah, and Washington.\textsuperscript{5} The crucial problem is how to get this western coal to the industrial centers.

Basically, railroads have been the only feasible mode of transportation available for transporting coal from the sparsely populated western states to distant urban power plants.\textsuperscript{6} Two-thirds of the 830 million tons of coal produced in the United States in 1980 was transported by railroads, and with that amount they carried five times more than any other transportation mode.\textsuperscript{7} According to the National Coal Association, 85\% of the coal shipped by rail cannot be transported practicably by any other means.\textsuperscript{8} Motor carrier transportation is not economical for long hauls and barge carriage by water is unavailable in those western states with large coal deposits.\textsuperscript{9}

Rail transportation, however, is expensive. Rail costs are more than double the cost of the coal itself,\textsuperscript{10} and inflation and deregulation are pushing costs even higher. To increase the attractiveness of marketing western coal, energy companies are showing an interest in reviving an old transportation device—the coal slurry pipeline.\textsuperscript{11}

Numerous controversies have arisen in relation to the proposed coal slurry pipeline. Considerable disagreement exists as to whether coal slurry pipelines should be abetted by federal and state legislation. Other concerns include the effect of the pipelines on the cost of coal, the economic impact on the railroads, the environmental effects of increased

\textsuperscript{4} Leisenring, supra note 2, at 5. Montana has nearly 222 billion tons of mostly sub-bituminous coal; North Dakota has more than 350 billion tons of known reserves of lignite coal; and Wyoming has more than 120 billion tons of sub-bituminous coal.\textsuperscript{Id.}

\textsuperscript{5} Id. at 6. New Mexico, with 60 billion tons, has the largest mine in the country.

\textsuperscript{6} HUdson Institute, Research Analysis of Factors Affecting Transportation of Coal by Rail and Slurry Pipelines 1 (1976) (prepared under a grant from the Burlington Northern Railroad) [hereinafter cited as Hudson Report].

\textsuperscript{7} To Facilitate the Transportation of Coal by Pipeline Across Federal and Nonfederal Lands: Hearings on H.R. 4230 Before the House Comm. on Interior & Insular Affairs, 97th Cong., 1st Sess. 544 (1981) (statement by Carl E. Bagge, President, National Coal Ass'n) [hereinafter cited as 1981 Coal Pipeline Act Hearings].

\textsuperscript{8} Id. at 450, 544.

\textsuperscript{9} Hudson Report, supra note 6, at 1.

\textsuperscript{10} Coal Pipeline Act: Hearings on S. 707 and S. 3046 Before the Subcomm. on Public Lands and Resources of the Senate Comm. on Energy & Natural Resources, 95th Cong., 2d Sess. 163 (1978) [hereinafter cited as Coal Pipeline Act Hearings].

\textsuperscript{11} Note, Coal Slurry Pipeline: A Transportation Alternative for North Dakota Coal?, 53 N.D.L. Rev. 449, 450 (1977) [hereinafter cited as Note].
coal utilization, water rights, and water quality.  

Although coal slurry pipelines offer an economical alternative to rail transport, the apparent disadvantage is their need for large amounts of water; the slurry mixture is comprised of approximately equal weights of pulverized coal and water.  

Some fear that tremendous demands will be placed on existing water resources in the semi-arid West if a number of the proposed coal slurry pipelines are built throughout the western coal region. This, according to some, would adversely affect water available for agriculture, industries, municipalities, and wildlife.  

Others argue that western supplies of low-sulfur coal must be developed to meet current demands for coal and to comply with federal and state air pollution control standards. Proponents of coal slurry pipelines emphasize their economic efficiency by arguing that the expense of transporting western coal by rail is prohibitive and the construction of massive power plants to convert coal to electricity at the coal's source would require even greater amounts of water.  

Because coal slurry pipelines would increase the demand for interstate transfers of water, some states are raising jurisdictional barriers to water exportation as sources of supply become increasingly critical. Consequently, for the first time questions are being raised as to the rights of states to preempt the use of water, either directly by legislative proscription on extraterritorial diversions, or indirectly by narrow definitions of lawful beneficial uses. The basic issue is whether a state in which the diversion is made can assert dominion over the water source so as to prohibit its delivery in interstate commerce.  

Legal controversies over control of the water needed for coal slurry pipeline transportation and over restrictions on the use of such water must be resolved. Debate will also intensify over whether the federal government or the states control western water because much of the

13. ETSI REPORT, supra note 1, at 19.
15. See generally McDaniel, supra note 14, at 534-35; 1981 Coal Pipeline Act Hearings, supra note 7, at 163-214 (statement by David A. Skedgell, President and Chief Administrative Officer, Slurry Transport Ass'n).
17. See MONT. CODE ANN. § 85-2-104(2) (1981), providing that the use of water for slurry transport of coal is not a beneficial use of water.
water for slurry pipelines will have to come from federal lands within the states’ boundaries. 19

The purpose of this article is to analyze the constitutionality of statutes prohibiting the interstate transfer of water for coal slurry pipelines. Emphasis is placed on Colorado’s antiexport statute and the proposed San Marco Pipeline originating in the southeastern part of Colorado. First, the article describes the development of coal slurry pipelines; problems and benefits associated with coal slurry pipelines; the San Marco Pipeline; Colorado water law, including the right to appropriate water and the administration of water rights; and water ownership and antiexport statutes. The article next analyzes Colorado’s asserted dominion over water and the constitutionality of antiexport statutes under the commerce clause of the United States Constitution. Last, the article sets forth alternatives to appropriating water under state statutes, such as federal eminent domain powers, federal reserved water rights, interstate compacts, and using federal storage water.

I. Development of Coal Slurry Pipelines

Coal slurry pipeline systems consist of seven parts:
(1) a slurry preparation facility;
(2) storage for the slurry before entering the pipeline;
(3) pumping stations to move the slurry through the pipeline;
(4) the pipeline itself;
(5) slurry storage at the destination;
(6) a dewatering plant to separate the coal from the water; and
(7) storage for the dewatered coal. 20

A slurry is formed by pulverizing the coal 21 and then mixing the pulverized coal with an equal amount of water. 22 This slurry mixture of finely ground coal and water is held in storage tanks equipped with agitators to prevent settling until introduced into the pipeline by displacement pumps. 23 Intermediate booster pump stations located at 50- to

22. Note, supra note 11, at 450; 1981 Coal Pipeline Act Hearings, supra note 15, at 168, 169; Webber, Coal Slurry Pipelines are Ready, Willing, and Unable to Get There, 11 St. Mary’s L.J. 765, 769 (1980).
23. Technology Assessment, supra note 21, at 27.
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150-mile intervals propel the slurry at a constant velocity of about four miles per hour to its destination.24 At the terminals the slurry is again held in agitating tanks until it is centrifuged to separate the coal and water.25 The dried coal is ready for boiler preparation and the extracted water can be reused by electric power plants for cooling purposes.26

Even though the technology for transporting granulated coal mixed with water was patented during the last century,27 it was not really tested until 1957, when a 108-mile slurry pipeline was opened in Ohio.28 That pipeline was built in response to high railroad rates but ceased operation six years later when the railroad reduced rates by 45%.29 Only one coal slurry pipeline is actually operating in the United States today and that is a 273-mile line from the Peabody Black Mesa Mine, on the Navajo Indian Reservation in Arizona, to the Southern California Edison Mohave Power Station on the Colorado River near the southern tip of Nevada.30 The Black Mesa Pipeline, which is owned by the Southern Pacific Railroad, was built in 1970 over terrain too rough for railroad construction and has used water from the Navajo Indian Reservation since its inception without any apparent water quality problems.31

Several other coal slurry pipelines are in varying stages of planning and development, but all await water allocation, or easements, or both before construction can begin.32 Because conventional coal pipelines are highly water consumptive, requiring a ton of water to transport

24. Id.
25. Id. at 28.
26. Id. See also Note, supra note 11, at 450; Webber, supra note 22, at 769-70. The pulverizing process and the mixing of the pulverized coal with water also improves the quality of the coal. When coal is washed its sulfur and ash content is reduced by 15 to 20%. HUDSON REPORT, supra note 6, at 18.
27. Note, supra note 11, at 451; McDaniel, supra note 14, at 533.
28. ETSI REPORT, supra note 1, at 1-2; Note, supra note 11, at 451; Kiechel, supra note 12, at 411.
29. ETSI REPORT, supra note 1, at 12; Note, supra note 11, at 451; Kiechel, supra note 12, at 411; Webber, supra note 22, at 766. This pipeline was completed from Cadiz, Ohio, to Cleveland after the railroad announced a rate increase from $2.63 to $3.47 per ton. The pipeline was deactivated in 1963 when the railroad developed unit train operations and reduced coal rates to $1.88 per ton. Coal Pipeline Act Hearings, supra note 10, at 152-53.
30. ETSI REPORT, supra note 1, at 9; Note, supra note 11, at 451; Kiechel, supra note 12, at 411; Webber, supra note 22, at 766. See generally Coal Pipeline Act Hearings, supra note 10, at 152-53.
31. HUDSON REPORT, supra note 6, at 9; Note, supra note 11, at 451; Kiechel, supra note 12, at 411.
a ton of coal, extensive opposition to their development has arisen in coal-producing, semiarid western states.\(^{33}\) Proposed slurry pipelines are also being hindered by the railroads, which, fearing the loss of coal traffic revenue,\(^{34}\) refuse to grant rights-of-way across their lands.\(^{35}\)

Three proposed coal slurry pipelines are located in the semiarid Southwest; they are the San Marco Pipeline, Energy Transportation System, Inc. (ETSI) Pipeline, and Allen-Warner Valley Energy System (Alton) Pipeline. The San Marco Pipeline Company, owned jointly by the Houston Natural Gas Corporation and Rio Grande Industries, Inc., a holding company of the Denver and Rio Grande Railroad, has proposed a 1,000-mile pipeline system to move approximately 15 million tons of coal a year from Walsenberg in southeastern Colorado to several generating facilities in Houston and the Texas Gulf Coast area. This pipeline, with its terminus at a facility on the Intercoastal Waterway, is expected to move approximately 15 million tons of coal a year and to require 15,000 acre-feet of water\(^{36}\) annually.\(^{37}\) It can be constructed as soon as water supplies are secured, because Texas, where almost all of the line will be located, has eminent domain coverage for coal slurry pipelines.\(^{38}\)

Energy Transportation System, Inc. (ETSI) was organized in 1973\(^{39}\) to construct a coal slurry pipeline to transport coal from the Powder River Basin in Wyoming to power plants in Oklahoma, Arkansas, and Louisiana. Initially the pipeline was planned to carry 25 million tons of low-sulfur coal annually in a 1,000-mile line ending in Arkansas,


\(^{34}\) See Coal Pipeline Act of 1978: Hearings on H.R. 1609 Before the Subcomm. on Surface Transportation of the House Comm. on Public Works & Transportation, 95th Cong., 2d Sess. 115-16 (1978) (remarks by William H. Dempsey, President, Ass'n of American Railroads) (loss of business to slurry pipelines would be "catastrophic" for all rail industry). The Office of Technology Assessment concluded in a 1978 report on coal slurry pipelines that if the pipelines being considered at that time were constructed, in the year 2000 the rail industry would lose $688 million in net railway operating revenues, as measured in 1971 dollars, of which $628 million would be lost by western railroads. Technology Assessment, supra note 21, at 75.

\(^{35}\) The proposed coal pipeline from Gillette, Wyoming, to Arkansas, for example, will cross under the tracks of nine railroads at 48 crossings; only one railroad as of 1976 has been willing to grant a right-of-way to the pipeline. See 122 Cong. Rec. 22455 (1976) (remarks by Rep. Max Baucus).

\(^{36}\) One acre-foot of water is equal to 326,000 gallons. McDaniel, supra note 14, at 534 n.10.


\(^{39}\) See supra note 1 for the ownership of the ETSI.
but subsequently the project was expanded to a throughput of 37.4 million tons of coal per year and a length of 1,664 miles. The planned terminus is now near Baton Rouge, Louisiana, with nine delivery sites en route.\(^4\)

The Allen-Warner Valley Energy System (Alton) Pipeline is a 183-mile, 22-inch-diameter line proposed by Nevada Power Company to transport eight million tons of coal a year from Alton, Utah to the Harry Allen power plant in southeastern Nevada. Another component of that line is a 73-mile, 12-inch-diameter pipeline to deliver two million tons of coal annually from the same mine to the Warner Valley power plant in southwestern Utah. The preparation plant and two pipelines would require approximately 10,000 acre-feet of water per year, all of which would be pumped from 13 deep wells drilled into the Navajo Sandstone Aquifer underlying the mine area.\(^4\)

Other proposed western coal slurry pipelines include the Gulf Interstate-Northwest Pipeline between Gillette, Wyoming and Washington state; Interprovincial-Lakehead System Pipeline from Alberta, Canada through the Great Lakes states to eastern New York state; Wytex Pipeline between Gillette, Wyoming and Houston, Texas; and Powder River Pipeline from southeastern Montana to Lake Michigan. A proposed line in the eastern part of the country, Florida Pipeline, would carry coal from southern Illinois to eastern West Virginia in two northern branches to Miami.\(^4\)

II. Problems and Benefits Associated With Coal Slurry Pipelines Versus Unit Trains

Proposed coal pipelines would compete primarily with the high-volume, long-distance coal transportation market now dominated by the unit train. Unit trains, consisting of six locomotives pulling approximately 100 permanently coupled hopper cars, shuttle continuously between the coal-producing area and the shippers' coal-burning facilities. A unit train making weekly round-trips delivers 500,000 tons of coal per year.\(^4\)

While reducing equipment assignment and switching costs

\(^{40}\) 1981 Coal Pipeline Act Hearings, supra note 15, at 179; Teknekron, supra note 32, at pp. 2-5, 2-6. As originally planned, the ETSI Wyoming to Arkansas pipeline to transport 25 million tons of coal annually would require an equivalent amount of water by weight, or 6.25 billion gallons annually. One ton of water equals 250 gallons of water. Note, supra note 11, at 456 & n.57.

\(^{41}\) 1981 Coal Pipeline Act Hearings, supra note 15, at 178-79; Teknekron, supra note 32, at pp. 2-12, 2-13.

\(^{42}\) Note, supra note 11, at 451; Teknekron, supra note 32, at fig. 1-1, p. 1-2.

\(^{43}\) Technology Assessment, supra note 21, at 29.
of conventional railway systems, unit trains actually increase equipment utilization rates and can haul coal for 40% less than conventional rail carriage.44

Financial Costs

Coal slurry pipeline advocates contend that tremendous cost savings will result from pipeline operations. Pipelines demand a large initial capital investment;45 however, about 70% of the unit cost of a pipeline will be met once the pipes are in the ground and pumps installed.46 The remaining 30% of the unit cost is in variable costs relating to electricity, labor, and supplies.47 Railroads, on the other hand, have far greater variable costs than pipelines. For example, labor alone amounts to more than 50% of railroad costs.48 Generally the cost per ton-mile of hauling coal by railroads is constant over distance; the length of the route affects the rail cost proportionately.49 Conversely, the longer a coal pipeline is, the less the transportation cost per ton-mile.50 Therefore, a large volume of coal must be transported over a long distance to a single market for a slurry pipeline to maximize its economic advantages.51

Economic Impact

Coal is the largest single commodity carried by the railroads;52 the bulk of this coal moves in noncompetitive markets.53 Railroads contend that implementing coal slurry pipelines would cripple their revitalization efforts and could even cause bankruptcy among the weaker rail companies.54 Advocates of coal slurry pipelines contend that the


45. For example, the initially planned ETSI pipeline from Wyoming to Arkansas was expected to cost $750 million. ETSI REPORT, supra note 1, at 15.

46. Id. at 4.

47. Id.

48. Id. at 17.

49. See TEXAS COAL TRANSPORTATION ALTERNATIVES, supra note 44, at 48-49.

50. Id. at 67.

51. Note, supra note 11, at 455. Promoters of the ETSI Wyoming-Arkansas pipeline believed that it would save the Arkansas utility company $14 billion in transportation costs over a 30-year period. See Webber, supra note 22, at 771 for further discussion of the cost factors.

52. See U.S. DEP’T OF TRANSPORTATION, A PROSPECTUS FOR CHANGE IN THE FREIGHT RAILROAD INDUSTRY 110 (1978). In 1975 coal accounted for almost 30% of volume and more than 13% of revenues of Class I railroads. Id.


railroads will not be able to handle the increased coal traffic expected during the next few years and that the present coal rates charged by railroads are too high. These rates are sometimes as high as 140% above variable costs.\textsuperscript{55} Even if all of the proposed coal pipelines are operating by 1990, they would carry less than 150 million tons of coal or about 10% of the country's requirements.\textsuperscript{56} In light of this relatively small market share of coal being transported by pipelines and the rapid expansion of the overall market for coal, coal pipelines should not seriously impair revenues of the railroad industry.\textsuperscript{57}

\textit{Water Consumption}

Promoters of the coal slurry pipelines contend that the maximum annual water use for such lines would amount to only 13% of one day's total water use in the country, and on a year-to-year basis, maximum coal pipeline water use would account for less than 4/100ths of 1% of total use. Viewed another way, in twenty-five years of operation, maximum water use by pipeline systems would equal three and one-third days of total water use.\textsuperscript{58} The least costly source of water is from the state in which the coal formations are located.\textsuperscript{59} However, most of the proposed pipelines are located in the semiarid western states where water is a valuable and scarce resource. In contrast to the pipelines, unit trains hauling coal from mines to users at industrial centers need very little water.

Several water source alternatives are available to coal slurry pipelines. One such source would be water that is too contaminated or too expensive for other purposes. For example, pipeline operators could develop industrial quality water sources, such as sewage treatment plant effluent and brackish underground aquifers, and make available additional supplies of such water for other industrial uses.\textsuperscript{60} Another alternative would be to require pipeline operators to construct a parallel water pipeline and to require the ultimate users of the coal to supply the water.\textsuperscript{61} A third alternative would be to pump the water in from some distant abundant water source.\textsuperscript{62} Still another alternative would be to recycle the water by constructing a parallel pipeline and then,

\begin{itemize}
\item \textsuperscript{55} Note, supra note 11, at 459-60.
\item \textsuperscript{57} See \textit{Coal Pipeline Act Hearings}, supra note 10, at 171.
\item \textsuperscript{58} 1981 \textit{Coal Pipeline Act Hearings}, supra note 15, at 197.
\item \textsuperscript{59} See generally \textit{Hudson Report}, supra note 6, at 127-28.
\item \textsuperscript{60} 1981 \textit{Coal Pipeline Act Hearings}, supra note 15, at 199.
\item \textsuperscript{61} Comment, \textit{An Analysis of Technical and Legal Issues Raised by the Development of Coal Slurry Pipelines}, 13 \textit{Hous. L. Rev.} 528, 547 (1976) [hereinafter cited as Comment].
\item \textsuperscript{62} Note, supra note 11, at 457.
\end{itemize}
after separating the water from the coal at the plant site, returning
the water to the coal-producing site to be reused.\textsuperscript{63} All of these alternatives would increase the capital and operating expenses of the pipeline
and some pipeline advocates think that the increased costs would not permit coal slurry pipelines to be economically competitive with railroads.\textsuperscript{64}

\textbf{Environmental Impact}

There are both advantages and disadvantages, environmentally, to
the use of coal slurry pipelines. Obviously the effects of pipelines on
the environment are quite different from the effects of unit train
operations.\textsuperscript{65} Environmental impacts of unit trains include locomotive
air pollution, coal dust emissions from open hopper cars, interference
with surface activities, dislocation of wildlife, and community disturbances in terms of visual and noise pollution, as well as traffic disturbances and accidents.\textsuperscript{66} Many of these disturbances are minimized or eliminated by coal pipelines in that the pipelines are almost completely underground and are quiet, clean, and invisible.\textsuperscript{67}

Because a coal pipeline is a water intensive technology, one serious
environmental question is where pipeline operators will obtain the large
amounts of water necessary to operate. A coal slurry line transporting
sufficient coal for a city of two million persons would require about
15,000 acre-feet of water per year, which is about one-half of the annual municipal water consumption in Wyoming.\textsuperscript{68} Although water is physically available for western pipelines, slurry water would compete
directly with other possible future uses. Pipeline advocates point out,
however, that the impact on nonindustrial users can be lessened through
the use of deep groundwater unsuitable for municipal or agricultural
uses and by more efficient irrigation techniques. Additionally, although slurry water is lost to its source, the water is available for use at the
terminal facility.\textsuperscript{69}

The implementation of coal slurry pipelines would undoubtedly require institutional trade offs both within the energy development field
and among all other water users. But when compared to other coal

\textsuperscript{63} Hudson Report, supra note 6, at 134.
\textsuperscript{64} For example, a water recycling system has been reported to add about 38 to 40\% to
the costs of moving coal by slurry pipeline. Id.
\textsuperscript{65} Texas Coal Transportation Alternatives, supra note 44, at 107.
\textsuperscript{66} Note, supra note 11, at 453; 1981 Coal Pipeline Act Hearings, supra note 15, at 191;
Webber, supra note 22, at 773.
\textsuperscript{67} 1981 Coal Pipeline Act Hearings, supra note 15, at 191; Webber, supra note 22, at 773.
\textsuperscript{68} See generally Webber, supra note 22, at 773-75.
\textsuperscript{69} Id.
users, coal pipelines are relatively water efficient.\textsuperscript{70} Coal-fired electrical generation, for instance, requires up to seven times the water required by a slurry line.\textsuperscript{71} When the alternative to transmitting coal by pipelines is generation of electricity or coal gasification at the coal source, allocating water to pipelines may be preferable to the use of far greater amounts of water required for conversion at the source site.\textsuperscript{72}

Coal slurry pipeline or utility companies will have to satisfy federal and state requirements under the Federal Water Pollution Control Act Amendments of 1972.\textsuperscript{73} Any discharge from the site of preparation of the coal for movement through the pipeline, as well as any discharge along the route or at its terminus, will require National Pollutant Discharge Elimination System permits.\textsuperscript{74} Moreover, such a facility in connection with the pipeline will likely be a "new source" and if constructed under federal authority will require an environmental impact assessment under the National Environmental Policy Act.\textsuperscript{75}

III. \textit{San Marco Pipeline}

As previously stated, the San Marco Pipeline Company has proposed constructing a 1,000-mile pipeline to move approximately 10 million tons of coal per year from southeastern Colorado to several generating facilities south of Houston, Texas; this operation would require 15,000 acre-feet of water annually. The area from which this proposed pipeline would originate, comprising the southern Colorado portion of the Rio Grande Basin, has severe water supply problems. Several factors, including extremely low levels of precipitation, high agricultural demand, and the water delivery requirements of the Rio Grande River Compact,\textsuperscript{76} account for the problems. A large portion of the sparsely populated and economically depressed basin is mountainous and covered with forests, while the alluvial valley floor is used for crop production and as rangelands. The cattle and sheep industry is a major part of the

\textsuperscript{70} H.R. Rep. No. 692, supra note 56, at 17. \textit{See generally Texas Coal Transportation Alternatives, supra note 44, at 36-37; Comment, supra note 61, at 546.}
\textsuperscript{71} Technology Assessment, supra note 21, at 91. \textit{See generally Abbey, Energy Production and Water Resources in the Colorado River Basin, 19 Nat. Resources J. 275, 285-88 (1979).}
\textsuperscript{72} Electrical generation at the coal source requires eight times the water used by a coal pipeline, while synfuel production requires more than twice the water needed to slurry coal. H.R. Rep. No. 692, supra note 56, at 17. For further discussion on water needs for coal development, see Tarlock, \textit{Western Water Law and Coal Development}, 51 U. Colo. L. Rev. 511, 517-23 (1980).
\textsuperscript{75} 42 U.S.C. § 4332(C) (1976).
basin's economy, but overgrazing has caused serious soil erosion.\textsuperscript{77}

Because the frost-free season in this area lasts only between three and four months and the rainfall averages under 10 inches per year, the number of crops grown are limited primarily to lettuce, melting barley, potatoes, alfalfa, grass hay, and wheat. Most land is irrigated and at present there are 609,000 irrigated acres in that basin. More than 90\% of the basin's water use is for agriculturally related purposes. Surface waters in the basin are generated mainly from snow melt and runoff of the San Juan and Sangre de Cristo mountains. Adequate water reserves are not available in the basin because of this surface water source and the time of year it is available. The average annual quantity of runoff water is 1,577,000 acre-feet, although this varies significantly from year to year. Monthly variations in runoff are also considerable because snow melt runoff generally peaks during May and early June and drains out of state, while demand is highest during July and early August.\textsuperscript{78}

If the entire yearly supply of 1,577,000 acre-feet of surface water were made available for irrigating the 609,000 acres of cropland in the basin, with an efficiency use of 50\% and adequate storage facilities, the amount of water available would be 1.29 acre-feet per acre, which is more than enough for the cropland needs.\textsuperscript{79} This, however, is not the case because transpiration by low-value phreatophytes,\textsuperscript{80} evaporation, and loss to downstream states under the Rio Grande River Compact obligations reduce the amount of water available for productive use.\textsuperscript{81} Only about 29\% of the surface water available at the point of diversion is available for irrigation, which is only about 25\% of the irrigation requirements during most of the growing season.\textsuperscript{82}

Groundwater pumping partially makes up the yearly shortfall. During an average year approximately 279,000 acre-feet of groundwater is consumptively used for irrigation purposes, which requires ground-

\textsuperscript{77} Teknekon, supra note 32, at p. 4-3.
\textsuperscript{78} Id. For further discussion of Colorado water problems, see Harrison & Sandstrom, Jr., The Groundwater-Surface Water Conflict and Recent Colorado Water Legislation, 43 U. Colo. L. Rev. 1, 4-7 (1971).


\textsuperscript{80} Phreatophytes are deep-rooted plants, such as cottonwood or salt-cedar trees, which consume water directly from the free water table in the alluvial valley. Harrison & Sandstrom, supra note 78, at 2 n.3.

\textsuperscript{81} See generally id. at 2-3.

water withdrawals averaging about 411,000 acre-feet a year.\textsuperscript{83} Even with combining surface and groundwater there is an average 13% irrigation water shortfall in the basin. This translates into smaller than possible agricultural yield per acre, less acres planted, and substitution of crops that can be planted earlier in the season and that are generally less water-consumptive but have less economic value.\textsuperscript{84}

Additional groundwater pumping could conceivably make up this shortfall because it is estimated that as much as 2 billion acre-feet of water is contained in the aquifers below the basin.\textsuperscript{85} However, it is not economical to pump most of this water\textsuperscript{86} and the quality of much of it is poor. A determination has not been made on the amount of good quality water that is available for irrigation. Sixteen of the 25 communities in the Rio Grande Basin experience some type of municipal water supply problems, but in most instances those problems are because of inadequate storage, handling, and distribution facilities rather than the lack of water availability.\textsuperscript{87}

Alamosa, Costilla, Conejos, and Rio Grande counties are directly affected by the proposed San Marco Pipeline, and these four counties are among the major producing counties of potatoes, spring wheat, and barley in Colorado. Almost 80% of the total production of potatoes in Colorado is produced in these four counties, as well as a disproportionately high percentage of barley and spring wheat. Even more critical is that these counties are among the minority of counties in the state that have absolutely no nonirrigated acreage planted for spring wheat or barley, essentially because of the low levels of precipitation.\textsuperscript{88} Consequently, surface water sources are of critical importance to the area.

Surface water for these four counties comes principally from the Rio Grande and Conejos rivers and Culebra Creek, which are also the surface water sources closest to the proposed San Marco Pipeline well fields. If the San Marco source is tributary to the Rio Grande River and Culebra Creek, as local water users contend, then pumping from those well fields could have a significant impact on the surface water sources, particularly during dry years. Consequently, the stream flow

\textsuperscript{83} \textbf{COLORADO Water Conservation Board, supra} note 79, at p. IV-30.
\textsuperscript{84} \textbf{TEKNEKRON, supra} note 32, at p. 4-6.
\textsuperscript{85} \textbf{COLORADO Water Conservation Board, supra} note 79, at p. IV-30.
\textsuperscript{86} The energy requirement for pumping a given quantity of water 300 feet is 10 times as great as for 50 feet. G. SLOGGETT, PROSPECTS FOR GROUND-WATER IRRIGATION: DECLINING LEVELS AND RISING ENERGY COSTS 13 (Agric. Econ. Rep. No. 478, 1981). See \textit{id.} at 13-20 for further discussion.
\textsuperscript{88} \textit{See} \textbf{Teknekron, supra} note 32, at pp. 4-26, 4-27.
of these surface waters and especially the extent of fluctuations during dry years is of great importance.

Streamflow of the Rio Grande River and Culebra Creek is even more critical in the four-county area because the annual precipitation in the southern part of the basin is among the lowest in Colorado; reservoir storage capacity is comparatively small; and the Rio Grande River Compact requires Colorado to send a specified quantity of water to New Mexico every year. These factors seriously intensify the effect of seasonal streamflow fluctuations, which along with annual fluctuations are considerable. Annual streamflow of the Rio Grande as it enters the four-county area fluctuated during the past five years from a high of 925,000 acre-feet in 1978 to a low of 215,000 acre-feet in 1977. Similar deviations exist for the Conejos River and Culebra Creek and the Rio Grande as it passes into New Mexico. Of even greater importance than the annual streamflow fluctuations are the fluctuating levels of consumption necessitated by surface water availability in the area. High consumption of surface water is absolutely necessary to avoid excessive groundwater depletion. In dry years, when the surface water consumption is often less than one-fourth that of peak wet years, groundwater depletions are estimated to approximate 1 million acre-feet.

San Marco Pipeline Company has been unable to obtain state permits for the required water allotment. It applied to the Colorado state engineer in June 1976 under a statute applicable to areas outside the boundaries of a designated groundwater basin for permits to construct wells that would appropriate up to 15,000 acre-feet of groundwater from a well field in Costilla County in southeastern Colorado. The

89. Data recorded at three stations in the basin closest to the well fields indicate precipitation ranged from 3.5 to 11.5 inches per year over the last fifty years. Id. at p. 4-28, 4-29.
90. Full storage capacity for the basin is 376,960 acre-feet and some of that is used exclusively for recreational purposes. Id. at p. 4-30.
91. See Rio Grande River Compact, art. III, in Colo. Rev. Stat. § 37-66-101 (1973). The quantity varies according to an elaborate formula based principally on the amount of seasonal snowfall. Colorado has been unable to meet the allotments since 1952 and has built up a large "debt" to New Mexico, which now is almost 700,000 acre-feet. Teknekron, supra note 32, at pp. 4-7, 4-31.
92. See Teknekron, supra note 32, at tables 4-6 to 4-9, pp. 4-32 to 4-38.
93. Id. at p. 4-8.
94. See Colo. Rev. Stat. § 37-90-137 (1973 & Cum. Supp. 1982). San Marco, however, did not specify the specific subsection of the statute under which it applied for the permit. Colo. Rev. Stat. § 37-90-137(1) (1973) applies to permits for the construction of wells to take water from aquifers that are either tributary or nontributary to surface water and are located outside the boundaries of a designated groundwater basin, which applies to about 70% of the state. Colo. Rev. Stat. § 37-90-137(4) (1973) applies to permits for the construction of wells to take water from nontributary bedrock, nonrecharging aquifers located outside the boundaries of a designated groundwater basin. Permit applicants must own or control all of the land above the aquifer and the minimum useful life of the aquifer must be 100 years.
company contended that the small aquifer underlying the well field was not hydrologically connected to the surface flow of any nearby Colorado watercourse,\(^95\) nor was it tributary to any other groundwater basin; therefore, the aquifer from which the pipeline water would be pumped would not affect any other source of water in the area. San Marco also contended that the area in the immediate vicinity of the well fields is relatively barren and that under no circumstances could agricultural production be increased. The state engineer denied the permit application, citing Colorado’s “antiexport” statute prohibiting the export of groundwater out of state\(^96\) and claiming that the company had failed to specify the particular designated aquifer from which the water was to be diverted\(^97\) and to submit sufficient data on the hydrologic characteristics of the aquifer. As San Marco did not specify under which subsection of the statute it was applying for a permit\(^98\) and there was a dispute over this issue between San Marco and the state engineer,\(^99\) the state engineer felt justified in denying the application based on failure to specify groundwater sought.\(^100\)

In December 1976, San Marco Pipeline Company filed an application with the district court of Water Division No. 3 (water court)\(^101\) for an adjudication of conditional underground water rights\(^102\) in the aquifer underlying the well field in Costilla County for which the company had previously applied for a permit to appropriate.\(^103\) Nearly forty interested parties, including the state of Colorado, entered the case

\(^95\) The aquifer was tributary, however, to a creek in New Mexico.
\(^97\) This is one of the requirements for approval under **Colo. Rev. Stat.** § 37-90-137(1) (1973). See **supra** note 94.
\(^98\) Whether it was under **Colo. Rev. Stat.** § 37-90-137(1) (1973) or **id.** § 37-90-137(4). See **supra** note 94.
\(^99\) The state engineer believed the application should have been made under **Colo. Rev. Stat.** § 37-90-137(4) (1973). This subsection applies to nontributary, nonrecharging bedrock aquifers in nondonated groundwater basins and the water supply will last at least 100 years. The permit applicant would have to control all of the land over the well field, which was not the case for San Marco Pipeline Company, hence its reason for not filing permit application under that subsection.
\(^100\) **See Stonewall Estates v. CF & I Steel Corp.,** 197 Colo. 255, 592 P.2d 1318, 1320 (1979).
\(^101\) The Water Rights Determination and Administration Act of 1959 divided the state into seven water divisions, each with a district judge filling the position of water judge. Each water judge is given exclusive jurisdiction of water matters within the division. The statute does not use the term “water court,” but the term is commonly used to designate the court in which the water judge presides under the Act. **Colo. Rev. Stat.** §§ 37-92-201, 203 (1973). Water District No. 3 is composed of nine counties in south-central Colorado. **Id.** § 37-92-201(1)(c).
\(^102\) Conditional water rights means rights to perfect a water right with a certain priority upon the completion with a reasonable diligence of the appropriation upon which such water rights are to be based. **Colo. Rev. Stat.** § 37-92-103(6) (1973).
as "objectors" contending that the groundwater pumping would further intensify the area's chronic water shortage. The water court granted a motion for summary judgment late in 1981 in favor of the objectors on the grounds that it is unlawful to divert groundwater for use outside the state\textsuperscript{104} and that the water court had no jurisdiction over a water source that is not tributary to any surface stream in the state.\textsuperscript{105} San Marco amended its application, taking the position that there is a hydrologic connection between its proposed water source and at least two surface water sources, but that pumping from its groundwater source would not affect the surface streams.\textsuperscript{106} The case is now pending a decision from the water judge on the objectors' motion to dismiss on the grounds that it is unlawful to export groundwater out of the state\textsuperscript{107} and pumping the groundwater would impact certain streams. This case involves an internal state problem because water is public property and it is the state's responsibility to protect the water rights of its people.\textsuperscript{108}

IV. Colorado Water Law

The common law doctrine of riparian rights gives owners of riparian lands a qualified right to the waters flowing past their property regardless of whether the owners use the rights. It denies water rights to any landowner whose property is not riparian, that is, property that does not abut on a stream, regardless of the need or purpose.\textsuperscript{109} From the very beginning, miners and settlers of the western states rejected the common law doctrine and developed the convention of prior appropriation, which was better suited for governing the use of limited water resources over


\textsuperscript{106} San Marco continues to maintain that pumping from its water source meets the following three essential criteria: (1) would not reduce the current agricultural production of any area in Colorado; (2) would not be in conflict with any proposed agricultural or municipal development in the state; and (3) would not adversely affect the vested water rights of any other water appropriator in the state.


\textsuperscript{109} 1 S. Weil, Water Rights in the Western States § 685 (3d ed. 1911). See 1 D. Large, Land Application of Wastewater and State Water Law: An Overview 7-27 (Environmental Protection Technology Series EPA-600/2-77-232, 1977) [hereinafter cited as 1 Large], for a discussion of the riparian doctrine as it relates to natural watercourses, surface waters, and groundwater.
vast areas of semiarid land.\textsuperscript{110} Under the prior appropriation doctrine, the first person to appropriate (divert) water from a stream for a beneficial use on any land is entitled to the continued use of that amount of water appropriated as long as the beneficial application continues.\textsuperscript{111} Once waters have been fully appropriated, new users cannot divert water upstream and deprive prior appropriators of their established uses. In times of water shortage a senior appropriator’s rights are satisfied in full before junior appropriators can assert their shares.\textsuperscript{112}

California was the first state to approve the doctrine of prior appropriation in \textit{Irwin v. Phillips},\textsuperscript{113} although its approval was limited to water used for mining on federal lands. The extension of the appropriation doctrine to validate the priority of nonmining uses both on and outside federal lands quickly followed the \textit{Irwin} case.\textsuperscript{114} Both the Colorado and Wyoming supreme courts held that riparian rights were never available in the West and that the doctrine of prior appropriation was the governing law.\textsuperscript{115} The Colorado Supreme Court stated:

\begin{quote}
The climate is dry, and the soil, when moistened only by the usual rainfall, is arid and unproductive; except in a few favored sections, artificial irrigation for agriculture is an absolute necessity. . . .

The right to water in this country, by priority of appropriation thereof, we think it is, and has always been, the duty of the national and state governments to protect. The right itself, and the obligation to protect it, existed prior to legislation on the subject of irrigation. It is entitled to protection as well after patent to a
\end{quote}

\footnotesize{

\textsuperscript{111} Joerger v. Pacific Gas & Elec. Co., 207 Cal. 8, 26, 276 P. 1017, 1026 (1929). See 1 Large, supra note 109, at 28-49 for a discussion of the appropriation doctrine as it relates to natural water courses, surface waters, and groundwater.

\textsuperscript{112} Comment, \textit{Paleface, Redskin, and the Great White Chiefs in Washington: Drawing the Battle Lines over Western Water Rights}, 17 \textit{San Diego L. Rev.} 449, 476 (1980) [hereinafter cited as \textit{Drawing Battle Lines}]. See Trelease, supra note 110, at 194-95, where he indicated that the rule of prior appropriation was not as harsh as it appears. Subsequent reapportionment of available water among users as they entered the area would eventually result in insufficient waters to allow anyone to prosper. As such, junior water appropriators are encouraged to develop alternative groundwater sources, to build dams to store flood and rain water, to transport water from greater distances, or to purchase water rights from senior appropriators.

\textsuperscript{113} 5 Cal. 140 (1855). See \textit{Colorado Water Law}, supra note 110, at 20.

\textsuperscript{114} Rupley v. Welch, 23 Cal. 452 (1863); Tartar v. Spring Creek Water & Mining Co., 5 Cal. 395 (1855). See 1 Large, supra note 109, at 30-33.

\textsuperscript{115} Coffin v. Left Hand Ditch Co., 6 Colo. 443, 446-47 (1882); Moyer v. Preston, 6 Wyo. 308, 44 P. 845 (1896).
}
third party of the land over which the natural stream flows, as when such land is a part of the public domain; and it is immaterial whether or not it be mentioned in the patent and expressly excluded from the grant.\textsuperscript{116}

**Establishment of Right to Appropriate Water**

The basic principle applicable to the establishment of rights to appropriate water under the prior appropriation doctrine is "he who is first in time is first in right."\textsuperscript{117} An appropriation of water for beneficial use begins as a conditional water right and is effected as of the time the "first step" is taken to secure it.\textsuperscript{118} A conditional water right or decree is a vested property right as of the date of the first step taken subject to forfeiture if the holder fails to pursue his conditional water right with reasonable diligence.\textsuperscript{119} A diversion and application of water to some beneficial use is necessary to establish a priority and complete an appropriation.\textsuperscript{120}

Beneficial use has been broadly defined over the years. Early definitions included irrigation,\textsuperscript{121} mining,\textsuperscript{122} domestic and municipal,\textsuperscript{123} and milling\textsuperscript{124} uses.\textsuperscript{125} Electrical power generation,\textsuperscript{126} propagation of fish,\textsuperscript{127} watering growing trees and grass in public parks,\textsuperscript{128} and stock watering\textsuperscript{129} were later recognized as beneficial uses.\textsuperscript{130} Colorado statutes also include in the definition the impoundment of water for recreational purposes and appropriation by the state of minimum flows to preserve

\textsuperscript{116} Coffin v. Left Hand Ditch Co., 6 Colo. 443, 446-47 (1882).


\textsuperscript{118} Denver v. Northern Colorado Water Conservancy Dist., 130 Colo. 375, 386-87, 276 P.2d 992, 998 (1954). The first essential of an appropriation is the actual diversion of the water with intent to apply to a beneficial use.


\textsuperscript{121} Platte Water Co. v. Northern Colorado Irrig. Co., 12 Colo. 525, 530-33, 21 P. 711, 712-13 (1889).

\textsuperscript{122} Fuller v. Swan River Pacer Min. Co., 12 Colo. 12, 19 P. 836 (1888).

\textsuperscript{123} Strickler v. Colorado Springs, 16 Colo. 61, 69, 26 P. 313, 317-18 (1891).

\textsuperscript{124} Cache la Poudre Reservoir Co. v. Water Supply & Storage Co., 25 Colo. 161, 53 P. 331 (1898).

\textsuperscript{125} 3 W. Hutchins, WATER RIGHTS LAWS IN THE NINETEEN WESTERN STATES 219-20 (1977).


\textsuperscript{127} Faden v. Hubbell, 93 Colo. 358, 368, 28 P.2d 247, 250-51 (1933).

\textsuperscript{128} Denver v. Brown, 56 Colo. 216, 222-23, 138 P. 44, 47-48 (1914).

\textsuperscript{129} Hehl Eng'g Co. v. Hubbell, 132 Colo. 96, 100, 285 P.2d 593, 595 (1955).

\textsuperscript{130} 3 Hutchins, supra note 125, at 220.
the natural environment to a reasonable degree.\textsuperscript{131} Water may be appropriated for immediate application or for storage, but an appropriation for one of these uses is not an appropriation for the other.\textsuperscript{132}

What constitutes the first step to initiate the conditional water right is not the same in every proposed appropriation because the facts must be taken into consideration in each case on an ad hoc basis.\textsuperscript{133} Generally, it has been held that the required first step must consist of open, physical demonstration on the land in order to give notice to others of the appropriators' intentions.\textsuperscript{134} More recent Colorado cases have held that two requirements must coexist to constitute the first step of an appropriation: open physical demonstration on the land must be accompanied by the requisite intent to appropriate.\textsuperscript{135} The priority date for an appropriation may not precede the time when both elements are present, and in any adjudication of the priority date, the appropriator must submit proof that both requirements were met on that date.\textsuperscript{136}


\textsuperscript{132} Handy Ditch Co. v. Greeley & Loveland Irrig. Co., 86 Colo. 197, 199-200, 280 P. 481, 481-82 (1929); Holbrook Irrig. Dist. v. Ft. Lyon Canal Co., 84 Colo. 174, 191, 269 P. 574, 581 (1928); 3 Hutchins, supra note 125, at 221.


\textsuperscript{134} Elk-Rifle Water Co. v. Templeton, 173 Colo. 438, 445, 484 P.2d 1211, 1215 (1971); Sieber v. Frink, 7 Colo. 148, 153, 2 P. 901, 903 (1884). See also Fruitland Irrig. Co. v. Kruemling, 62 Colo. 160, 165, 162 P. 161, 163 (1916), which provides some basic guidelines for determining what constitutes the "first step" to establish a priority date or date of first appropriation: [T]he first step . . . is nothing short of an open and notorious physical demonstration, conclusively indicating a fixed purpose to diligently pursue and, within a reasonable time, ultimately acquire a right to the use of water, and as its primary function is to give notice to those subsequently desiring to initiate similar rights, it must necessarily be of such a character that they may fairly be said to be thereby charged with at least such notice as would reasonably be calculated to put them on inquiry of the prospective extent of the proposed use and consequent demand upon the water supply involved.

\textsuperscript{135} Elk-Rifle Water Co. v. Templeton, 173 Colo. 438, 485, 484 P.2d 1211, 1215 (1971).

\textsuperscript{136} See id. at 444-47, 484 P.2d at 1214-15, where it emphasizes the Colorado Supreme Court's search for the point in time when open and notorious acts on the land combine with the appropriator's actual intention to appropriate. In that case, the appropriator had first spent two months compiling information about the terrain and making plans for the construction of a reservoir. The company officials then reviewed the plans and decided to file engineering plans with the state engineer's office and proceed with a full survey. The court set the priority date for that appropriation on the date of the official's meeting. See also Fruitland Irrig. Co. v. Kruemling, 62 Colo. 160, 165-67, 162 P. 161, 163 (1916), wherein the supreme court held that neither the removal of rocks, nor the purchase of the land, nor even the first survey was sufficient to constitute a first step establishing the date of appropriation, because Fruitland Irrigation had not yet decided that its reservoir project was economical or even feasible. The court considered the above actions to be merely preliminary or reconnaissance. The date of appropriation was set.
Although an appropriation is not complete until there is an actual diversion and use of water, the right acquired by application to a beneficial use may relate back to the first substantial act (first step) of the appropriator to establish the appropriation. This is known as the relation-back doctrine, whose importance cannot be overestimated. It would be impossible for any private enterprise to risk large amounts of capital, as is often necessary, to complete a water appropriation, especially for transmountain diversion, without assurance of a conditional decree.\footnote{137} The right to have an appropriation priority date relate back is conditional that construction after the first step is pursued with reasonable diligence and conditional further that there was a fixed and definite purpose to use the water for a particular purpose within a reasonable time. What constitutes “reasonable diligence” and “fixed and definite purpose” are questions of fact.\footnote{138}

The Colorado court has held that perfecting a conditional water right with reasonable diligence “does not require unusual efforts or expenditures, but only such constancy in the pursuit of the undertaking as is usual with those in like enterprises, [and] such assiduity as shows a \textit{bona fide} intention to complete it within a reasonable time.”\footnote{139} The question of diligence must be determined in light of all facts present in a particular case, including the size and complexity of the project, the extent of the construction season, the availability of materials, labor and equipment, the economic ability of the claimant, and the intervention of outside delaying factors such as wars, strikes, and litigation.\footnote{140} Few standards exist for whether an appropriator has a “fixed and definite purpose” for the use of the water to which the appropriator claims a conditional water right. It has been stated that an appropriator’s

\footnote{at the time a detailed survey was begun, for then Fruitland Irrigation was actually committed to its appropriation for a reservoir.}


\footnote{139. Highland Ditch Co. v. Mumford, 5 Colo 325, 336 (1880). See also Denver v. Northern Colorado Water Conservancy Dist., 130 Colo. 375, 399, 276 P.2d 992, 1004 (1954), wherein “diligence” is defined to mean “the steady application to business of any kind, constant effort to accomplish any undertaking. It is the doing of an act or series of acts with all possible expedition, with no delay except such as may be incident to the work itself.”}

purpose must be definite enough to give others affirmative notice of the appropriator's interest.\textsuperscript{141}

Courts have emphasized that the Colorado constitution guarantees a right to appropriate, not a right to speculate, and the right to appropriate is for use, not merely for profit.\textsuperscript{142} One court rejected the claims of mere speculators because they did not intend to appropriate and use the water for a beneficial use themselves. A claim for mere speculative purposes will not give the appropriator any rights against subsequent good faith appropriations.\textsuperscript{142} It should be noted, however, that a city has the right not only to appropriate enough water for its immediate use but also to acquire an adequate supply to satisfy its needs resulting from a normal increase in population within a reasonable time in the future. Further, municipalities may lease water in excess of immediate requirements to other uses pending the times at which it will be needed.\textsuperscript{144}

Water appropriation rights are real property rights.\textsuperscript{145} These property rights extend both to the quantity of the water appropriated and to the priority of the right, which usually accounts for the chief value of the property interest.\textsuperscript{146} Water rights are possessory rights, however, and are dependent upon the continuous application of the water to a beneficial use.\textsuperscript{147} The appropriative right is separate from the land

\textsuperscript{141} Holbrook Irrig. Dist. v. Ft. Lyon Canal Co., 84 Colo. 174, 190-91, 269 P. 574, 581 (1928). See New Loveland & Greeley Irrig. & Land Co. v. Consolidated Home Supply Ditch & Reservoir Co., 27 Colo. 525, 528-31, 62 P. 366, 367-68 (1900), wherein the court held that the priority date of a conditional water right only applied to the irrigation water the appropriator first planned to use and not to the water used in a storage system built after the first system was completed. Had the appropriator planned to build them both from the outset the early appropriation date would have applied to both systems. See also Taussig v. Moffat Tunnel Water & Dev. Co., 106 Colo. 384, 393-94, 106 P.2d 363, 368 (1940), wherein a water decree for "beneficial purposes other than irrigation" was held to be too indefinite. The court modified the development company's decree so that it related "only to irrigation, domestic and municipal use." The court took judicial notice that water was generally needed for these uses in the South Platte basin where the water was allegedly to be used.


\textsuperscript{144} Denver v. Sheriff, 105 Colo. 193, 202-04, 96 P.2d 836, 841 (1939).


\textsuperscript{146} Nichols v. McIntosh, 19 Colo. 22, 27, 34 P. 278, 280 (1889); Strickler v. Colorado Springs, 16 Colo. 61, 70, 26 P. 315, 316 (1891).

for which it was appropriated and may be sold separately. Rights to change places of use are inherent as an incident of ownership, provided only that the rights of others are not infringed. Furthermore, the Colorado court has held that the state constitution sanctions the business of transporting water from natural streams for hire to distant customers.

Many western states have forfeiture provisions in their statutes providing that an appropriative right has been forfeited because of a failure to use the water for a specified number of years. Colorado does not have such a statute, but the court decided that abandonment occurs when there is a nonuse coupled with an intention to abandon. One must intend to discontinue permanently the use of part or all of the water to abandon a water right. Nonuse of the water for ten years creates a rebuttable presumption of abandonment for purposes of tabulating water rights by the state engineer.

**Administration of Water Rights**

Appropriation of water rights in Colorado has traditionally been regulated and administered by the judiciary. Much of the court precedent has been compiled by the legislature into statutes to provide a comprehensive water management scheme. The state engineer is responsible for the day-to-day administration and distribution of the waters of the state, while a separate state water rights determination system within the judiciary has been established to handle the continuous adjudication of water rights in the state. Colorado gives

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148. See **COLO. REV. STAT.** § 37-85-102 (1973); Strickler v. Colorado Springs, 16 Colo. 61, 70-72, 26 P. 313, 316-17 (1891).


151. 2 W. Hutchins, **WATER RIGHTS LAWS IN THE NINETEEN WESTERN STATES** 290 (1974).


155. 2 Hutchins, supra note 151, at 470-85.


157. **Id.** § 37-80-101 to -120; 37-92-301.

158. **Id.** § 37-92-101 to -103.
special consideration to groundwater.\footnote{159} The law governing the appropriation and use of groundwater may be divided into three categories relating to (1) groundwater tributary to surface water,\footnote{160} (2) designated groundwater basins,\footnote{161} and (3) nontributary and "nondesignated" groundwater.\footnote{162}

Colorado's constitution allows for appropriation of water from every natural stream within the state for a beneficial use.\footnote{163} It became the natural assumption early in Colorado's history that all groundwater was tributary to some natural stream and, therefore, could be appropriated in the same manner as surface water.\footnote{164} Courts began later to recognize what they at first called "artificially developed water" and defined such water as that not reaching a surface stream in due course. Appropriators could claim exclusive rights to such water and escape prior appropriation considerations provided they assured the court by a preponderance of clear and satisfactory evidence that the water was not tributary to any stream.\footnote{165}

The question of what should be done with groundwater that is not tributary to any natural stream was first raised in \textit{Safranek v. Town of Limon},\footnote{166} but not answered because the court found the groundwater in question was tributary to a stream.\footnote{167} In response to questions of ownership, administration, and the appropriate water law doctrine applicable to nontributary groundwater, the state passed the Colorado Ground Water Act of 1957.\footnote{168} The purpose of that Act was to protect groundwater by providing administrative facilities to control its reasonable use and by providing a record of facts upon which such reasonable use could be determined to prevent waste.\footnote{169} After reviewing the constitution and the Act, the supreme court concluded in \textit{Whitten}...
v. Coit\textsuperscript{170} that underground water not contributing to a natural stream was not public water, therefore, not subject to the prior appropriation doctrine.\textsuperscript{171} The court ruled that a pre-1957 adjudication of nontributary groundwater rights was void because the lower court lacked jurisdiction.\textsuperscript{172} Such a ruling had the effect of making countless conditional well decrees for nontributary groundwater suddenly unenforceable.

Colorado’s 1957 law relating to nontributary groundwater was changed by the Ground Water Management Act of 1965\textsuperscript{173} to provide, for the first time, management of groundwater according to a prior appropriation permit system.\textsuperscript{174} The Act protected the priorities of those who appropriated nontributary groundwater prior to its effective date\textsuperscript{175} and provided that a Ground Water Commission,\textsuperscript{176} upon application, would grant or deny permits for new appropriations.\textsuperscript{177} Further, the Act gave the Commission authority to designate “groundwater basins” and determine their boundaries,\textsuperscript{178} and to dictate the use and conservation of water within those basins.\textsuperscript{179} In reviewing the 1965 Act’s permit procedure for “designated groundwater” and its constitutionality, the supreme court held the procedure was reasonably designed to achieve economic development of such designated groundwater resources\textsuperscript{180} and did not prohibit or limit the constitutional right to appropriate the unappropriated waters of natural streams.\textsuperscript{181}

An appropriator today must comply with statutory requirements for perfecting a water right. The Water Rights Determination and Administrative Act of 1969\textsuperscript{182} integrated the appropriation, use, and ad-

\textsuperscript{170} 153 Colo. 157, 385 P.2d 131 (1963).
\textsuperscript{171} Whitten v. Coit, 153 Colo. 157, 163-74, 385 P.2d 131, 134-40 (1963). See Colo. Const. art. XVI, §§ 5, 6, providing that water of natural streams are public property and such waters are subject to appropriation for beneficial uses.
\textsuperscript{175} Colo. Rev. Stat. §§ 37-90-109(1), (2) (1973); Moses & Vranesh, \textit{supra} note 173, at 305-06.
\textsuperscript{181} Id., 580 P.2d at 35-36.
ministration of groundwater\textsuperscript{183} tributary to surface water in order to maximize the beneficial use of all the state's waters.\textsuperscript{184} The legislature recognized the existing and future use of tributary groundwater either independently or in conjunction with surface water rights and provided that the use of tributary groundwater may be considered as an alternate source or supplemental source for surface water rights previously entered.\textsuperscript{185} Seven water division engineers appointed by the state engineer\textsuperscript{186} oversee the administration and distribution of tributary groundwater and surface water in each division under the supervision of the state engineer.\textsuperscript{187} Division engineers also have certain functions regarding tabulation of water rights priorities.\textsuperscript{188}

The state engineer and division engineers are authorized to issue orders and regulations\textsuperscript{189} with respect to total or partial discontinuance of any water diversion not applied to beneficial use or to any diversion of water required by persons entitled to use that water under rights having senior priorities if the diversion is causing or will cause material injury to the senior appropriators.\textsuperscript{190} In promulgating such orders and regulations, state and division engineers may not reduce a lawful diversion unless such a reduction would increase the amount of water available to and required by water rights having senior priorities.\textsuperscript{191} Other areas under control of the state and division engineers include releasing illegally or improperly stored water from storage, administering the movement of water involved in any plan for augmentation or water use project, ordering the installation of measuring devices, and entering private lands to inspect the diversion, transportation, storage, and use of water.\textsuperscript{192}

Jurisdiction over water matters arising in each water division\textsuperscript{193} rests

\textsuperscript{183} The Act uses the term "underground water," which is defined as that water in the unconsolidated alluvial aquifer of sand, gravel, and other sedimentary materials and all other waters hydraulically connected to it which can influence the rate or direction of movement of the water in that alluvial aquifer or natural stream. Colo. Rev. Stat. § 37-92-103 (11) (1973).


\textsuperscript{185} Id. § 37-92-102(2)(a)-(d) (1973).

\textsuperscript{186} Id. § 37-92-202. See id. §§ 37-80-101 to -120 (powers and duties of state engineers).

\textsuperscript{187} Id. § 37-92-301 (1973 & Cum. Supp. 1982). See id. § 37-80-105 (1973) (providing for supervision by the state engineer). State and division engineers administer, distribute, and regulate water in accordance with the constitution, statutes, and written instructions and orders of the state engineer. Id. § 37-92-501(1).


\textsuperscript{189} Id. § 37-92-502(1) (1973).

\textsuperscript{190} Id. § 37-92-502(2).

\textsuperscript{191} Id. § 37-92-102(2)(d).

\textsuperscript{192} Id. §§ 37-92-502(3)-(6).

\textsuperscript{193} The state is divided into seven water divisions. See id. § 37-92-201.
in the water judge of the district courts of all counties situated within each of the seven water divisions. A water referee appointed by the district water judge has the authority and duty to rule in the first instance upon determinations of water rights and conditional water rights, their amount, priority, changes, and abandonment, plans for augmentation, and approvals of reasonable diligence in the development of appropriations under unconditional water rights. Persons desiring a determination of water rights or conditional water rights and amounts and priorities must file an application with their division water clerk. Following publication of the application by the water clerk, the referee holds a hearing to investigate the application and statements of opposition and then makes a ruling. If the ruling of the referee is protested, the water judge will conduct hearings and render a decision confirming, modifying, reversing, or reversing and remanding that ruling.

The legislature has specifically vested the state engineer with broad rule-making power for regulating tributary groundwater diversions. Well withdrawals that are causing or will cause material injury to senior priorities must be regulated. The engineer must predict surface flow and groundwater levels, in addition to surface and well demands for the coming season, in order to ensure owners of surface rights the amount of water they would have received absent well pumping.

Permits are issued by the state engineer to applicants for constructing wells in all areas outside designated groundwater basins. In deciding whether to grant applications, material injury to the vested rights of others will be considered, and no permit will be issued unless the location of the proposed well is 600 feet or more from an existing well. This requirement is a protection against the creation of overlapping cones of depression. The permit system is usually used after plans for

194. The supreme court designates one district court judge within each water division as the water judge to hear all pending and new water matters in the division. The services of the water judge are in addition to the regular duties as a district judge, but the water duties have priority over the regular duties. Id. § 37-92-203(2).
195. Id. § 37-92-203(1). The water judge has exclusive jurisdiction over all water matters within the division and no judge other than the one designated as the water judge can act on any water matter in that division.
196. Id. §§ 37-92-203(4)-(6).
200. Id. § 37-92-302(4) (1973)
204. Id.
augmentation of a decreed surface water right have been approved. Wells may acquire their own priority date or they may become an alternate point of diversion for the surface right and acquire the surface right's appropriation date.\textsuperscript{205} 

The state engineer must distribute water in accordance with tabulated priorities and at the same time he must anticipate stream conditions and demands in order to notify well owners when they can pump. This involves discriminating among wells based on their priority number and the stream depletion factor.\textsuperscript{206} The state engineer uses the stream depletion factor to regulate recharge control, which is absolutely necessary for effective management of an integrated system. Stream depletion factors describe the time effect that pumping has on a stream and is calculated by the state engineer for use in the regulation of well pumping in river valleys. This factor is based on a 5% volume interception rate. Thus, a 5% stream depletion factor of 20 days means that a well will begin taking water destined for the stream at a rate of 5% of the stream's total flow in 20 days.\textsuperscript{207}

Permits are required under the Ground Water Management Act of 1965\textsuperscript{208} to withdraw both tributary and nontributary groundwater from wells and to appropriate such water.\textsuperscript{209} All "designated groundwater,"\textsuperscript{210} which is that groundwater in a designated basin not tributary to a full stream and not impacting on any vested water rights,\textsuperscript{211} in the state is subject to appropriation.\textsuperscript{212} As noted earlier, the Act created a Ground Water Commission\textsuperscript{213} and empowered it to determine "designated groundwater basins" and designate their boundaries.\textsuperscript{214}

Even though the groundwater in designated basins is subject to appropriation, appropriators must obtain permits for its withdrawal and use.\textsuperscript{215} A permit application must contain the location of the proposed

\textsuperscript{205} Id. §§ 37-92-102(2)(a)-(c).
\textsuperscript{206} Harrison & Sandstrom, supra note 78, at 17.
\textsuperscript{209} See id. §§ 37-90-107, -108, -137.
\textsuperscript{210} Designated groundwater is that which in its natural course would not be available to and required for the fulfillment of decreed surface rights, or groundwater in areas not adjacent to a continuously flowing natural stream wherein groundwater withdrawals have constituted the principal water usage for at least fifteen years preceding the date of the first hearing on the proposed designation of the basin, and which in both cases is within the geographic boundaries of a designated groundwater basin. Id. § 37-90-103(6) (1973).
\textsuperscript{211} Designated groundwater, however, may impact on intermittent streams in the designated groundwater basin.
\textsuperscript{213} Id. § 37-90-104.
\textsuperscript{214} Id. § 37-90-106(1).
\textsuperscript{215} Id. § 37-90-107(1).
well, proposed beneficial use for the water, estimated average annual amount of water applied for in acre-feet, and estimated maximum pumping rate in gallons per minute.216 The Commission has the power to prohibit or limit withdrawal of water from wells when withdrawal would cause unreasonable injury to prior appropriators in the basin, to establish reasonable groundwater pumping levels in a designated basin, and to prevent withdrawals at a rate materially in excess of the reasonably anticipated average rate of future recharge.217 The 3-mile test is used by the Commission as a reasonable basis for assessing the effect of a proposed use on other uses. In using the test, a circle with a 3-mile radius is drawn around the proposed well site, and a rate of pumping determined that would result in a 40% depletion of the available groundwater in that area over a period of twenty-five years. If that rate of pumping is exceeded by the existing wells within the circle, then the application for a permit to drill a new well is denied.218

Groundwater management districts may be created, and if they are, all groundwater aquifers within the geographic boundaries of the district must be designated as part of the district by the Commission.219 The districts assist the Commission on all matters affecting the district area, including “enforcing commission regulations, providing data on underground aquifers within the area, determining if commission regulations are suitable for the area, and helping conserve the groundwater for maximum beneficial use.”220

Permits must be issued by the state engineer for constructing wells in aquifers located in nondesignated groundwater basins, which account for about 70% of the state. One type of permit pertains to both tributary and nontributary groundwater not in a designated groundwater basin.221 Permit applicants must provide the same information as those applying for a well permit in designated groundwater basins.222 Another type of permit pertains to nontributary groundwater in nondesignated groundwater basins. The amount of withdrawal will be restricted to that unappropriated water underlying the land owned by the applicant or owned by others, but with their consent, if the permit is issued. Issuance of the permit must not result in material injury to

217. Id. §§ 37-90-111(1)(a), (b) (1973).
vested water rights and the minimum useful life of the bedrock aquifer must be 100 years.223

V. Water Ownership and Antiexport Statutes

Colorado has recognized the doctrine of prior appropriation for a beneficial use to be the foundation upon which water rights depend.224 All waters in or tributary to natural surface streams originating in or flowing into Colorado, except that already appropriated,225 are declared to be public property dedicated to use by the state’s people and subject to appropriation and use.226 The appropriation, use, and administration of underground waters tributary to a stream are integrated with the use of surface water in a way as to maximize the beneficial use of all the state’s waters.227 A preference system has been established by the constitution that provides for priority of appropriation to be given to the person with the senior right if both are using the water for the same purpose, but in cases of water shortage those using the water for domestic purposes have preference over those claiming the water for other purposes, and persons using water for agricultural purposes have preference over those using it for manufacturing purposes.228 This preference, however, may not be exercised without fully compensating the senior appropriator for the loss sustained by invoking the preference.229

Under Colorado law, the appropriation of any surface or groundwater outside the state is absolutely prohibited. The antiexport statute relating to surface water provides that

for the purpose aiding and preserving unto the state . . . and
. . . its citizens the use of all the [surface] waters . . . of this state, which waters do not increase with the growth of population and which are necessary for the health and prosperity of all the citizens . . . and for the growth, maintenance, and general welfare of the state, it is unlawful . . . to divert, carry or transport by . . .

223. COLO. REV. STAT. § 37-90-137(4) (1973). Basically, the permit applicant must own or control all of the land above the aquifer.
225. COLO. CONST. art. XVI, § 5.
228. COLO. CONST. art. XVI, § 6.
pipelines] . . . the [surface] waters . . . of this state into any other state for use therein.230

A similar antiexport statute makes it unlawful to divert, carry, or transport by any manner, including pipelines, groundwater, whether tributary or nontributary to a natural stream, into any other state for use therein.231

The Houston Natural Gas Company, one of the co-owners of the San Marco Pipeline Company, has attempted to use Colorado groundwater in the proposed San Marco slurry pipeline without mounting a direct challenge of the constitutionality of the two antiexport statutes. Instead, the company has alleged that use of the water at the source of the coal slurry line would itself constitute a beneficial use of the water within the state of Colorado. As such, according to the company, no Colorado water would be leaving the state as water, but only a product, coal slurry, would be exported from the state.232 To counter this contention, the legislature in 1977 enacted a new statute that provided in the event of inapplicability or invalidity of any other law, this statute would prohibit the diversion of water outside of Colorado unless such water is credited to an interstate compact.233 This new statute specifically prohibited water exportation by means of slurry pipelines by stating that "water mixed with other substances in the process of forming a slurry for the purpose of transporting any substance as a suspended solid shall not be deemed to have lost its character as water."234

Even though Colorado has one of the most stringent antiexport statutes, it is not alone; other western states also have various jurisdictional barriers to water exportation. The four antiexport approaches used by other western states are:

(1) prohibiting interstate water transfers, except for certain purposes;
(2) requiring specific legislative approval for all interstate transfers of water;
(3) prohibiting interstate transfers unless the receiving state provides for reciprocal transfer rights; and
(4) determining that the use of water for coal slurries is not a beneficial use.

New Mexico statutes prohibit the withdrawal of groundwater from

230. COLO. REV. STAT. § 37-81-101 (Cum. Supp. 1982). Enforcement is to be provided by the state engineer, division engineers, and water commissioners to prevent out-of-state transfer of water. Id. § 37-81-102.
232. See TEKNEKRON, supra note 32, at p. 3-3.
234. Id.
that state and transporting it to another state for use unless the water will be used for the exploration and drilling of oil and gas.\textsuperscript{235} The city of El Paso, which is desirous of drilling wells in New Mexico and transporting water from those wells into Texas, is currently challenging the constitutionality of this statute in a federal court.\textsuperscript{236}

Oregon\textsuperscript{237} and Wyoming\textsuperscript{238} statutes prohibit the diversion of both surface and groundwater for use outside the state for any purpose without the specific consent of the legislature. No guidelines or criteria have been established by which the legislature will determine whether to grant approval for out-of-state diversions. The Wyoming constitution, however, provides that no request for an appropriation shall be denied unless such a denial is required by the "public interest."\textsuperscript{239} Legislative approval has been given to Energy Transportation Systems, Inc., to appropriate 20,000 acre-feet of groundwater annually, under certain conditions, for use in a coal slurry pipeline from Wyoming to Louisiana.\textsuperscript{240}

Idaho\textsuperscript{241} and Nebraska\textsuperscript{242} prohibit the diversion of water for use outside their states' boundaries unless the receiving state grants reciprocal rights for the use of its water within the sending state. Nebraska's statute was recently upheld by the Nebraska Supreme Court,\textsuperscript{243} but on appeal to the United States Supreme Court the reciprocity requirement was declared to violate the commerce clause\textsuperscript{244} as imposing an impermissible burden on interstate commerce.\textsuperscript{245} The supervisor of water resources in Washington may decline at his discretion to issue a permit for out-of-state diversion if the receiving state's water laws do not grant reciprocal rights.\textsuperscript{246} Nevada will not deny an out-of-state appropriation to a state having reciprocal water transfer rights.\textsuperscript{247}

Montana and Oklahoma prohibit the use of water for transporting coal slurry to any destination. Montana declares that the use of water for slurry transport of coal is not a beneficial use of water, whether

\begin{footnotesize}
238. Wyo. Stat. §§ 41-3-105, -115(d) (1977), See TEKNEKRON, supra note 32, at pp. 3-8 to 3-11 for a discussion of the Wyoming antiexport statutes.
239. Wyo. Const. art. VIII, § 3.
244. U.S. Const. art. I, § 8, cl. 3.
\end{footnotesize}
the destination is within the state or out of state.\textsuperscript{248} Coal slurry pipeline companies have eminent domain powers in Oklahoma,\textsuperscript{249} but no water from any source within the state may be used to transport coal in slurry form either within or through the state.\textsuperscript{250}

South Dakota has taken a somewhat different approach to the possibility of interstate water use for coal slurry pipelines.\textsuperscript{251} Rights may be granted to use South Dakota water within the boundaries of any adjoining state if that state in which the water is used allows equivalent use of its waters within South Dakota.\textsuperscript{252} In addition, legislative approval must be given for all proposed appropriations involving more than 10,000 acre-feet of water per year.\textsuperscript{253} There are no guidelines for the legislature to use in deciding whether to approve an appropriation; in theory at least, in-state and out-of-state diversions are treated similarly.

The Utah statute regarding the export of state water is the most liberal.\textsuperscript{254} It has modified its statute to make it more permissive with respect to out of state diversions. Under the prior law, any appropriation of water to be used out of state from intrastate streams was limited to use in bordering states and only in those states that reciprocally permitted use of their state’s water in Utah.\textsuperscript{255} The new law allows the state engineer to grant applications for out-of-state use with the governor’s consent, regardless of the receiving state’s policies.\textsuperscript{256}

VI. \textit{Colorado’s Asserted Dominion Over Waters}

The basic issue common to interstate transfers of water is whether the state in which the diversion is made can assert such dominion over the water source as to prohibit its delivery in interstate commerce. With regard to the San Marco Pipeline, the question is whether Colorado has sovereignty over the waters within its boundaries or whether the federal government has jurisdiction over how and when water may be owned or regulated. Colorado’s declaration of sovereignty has never been successfully challenged.

\textsuperscript{250} 27 Okla. Stat. § 7.6 (1981).
\textsuperscript{251} See Teknekon, supra note 32, at pp. 3-18 to 3-21 for discussion of South Dakota anti-export provisions.
\textsuperscript{252} S.D. Cod. Laws Ann. § 46-1-13 (Int. Supp. 1982).
\textsuperscript{253} Id. § 46-5-20.1.
\textsuperscript{254} For a discussion of Utah statutes on out-of-state use of water, see Teknekon, supra note 32, at pp. 3-13 to 3-16.
State's Asserted Dominion Over Waters

Colorado claims proprietary rights in its water through its constitution and admission into the Union. All unappropriated waters of natural streams in Colorado are declared in the constitution to be public property and dedicated to the use of the people of the state.\(^\text{257}\) Colorado contends that when a state was admitted to the Union with a constitution containing such language the federal government surrendered any rights it was given to such waters either expressly or impliedly by Congress. If a state was admitted to the Union by an act of Congress and that enabling act authorized the state to acquire proprietary rights in the waters within its boundaries, the act would repeal or amend any prior inconsistent congressional legislation and the enabling act or act of admission would constitute an express grant.\(^\text{258}\) However, Colorado was admitted to the Union under an enabling act authorizing the President to admit states to the Union by proclamation upon its adoption of a constitution containing a variety of specified provisions.\(^\text{259}\) Under this enabling act Congress did not review the state constitution and did not ratify any provisions in it. Therefore, the Colorado constitution was never reviewed by Congress upon the state’s admission to the Union.\(^\text{260}\)

Even though Colorado was admitted to the Union by proclamation and its constitutional provision on water\(^\text{261}\) was not reviewed by Congress, the Colorado Supreme Court nonetheless held that the admission of the state into the Union with the dedication of waters to the people of the state in the constitution amounted to a recognition by Congress of state ownership of water resources.\(^\text{262}\) This declaration still stands today in Colorado.\(^\text{263}\) However, the Colorado Supreme Court

\(^{257} &^{258} &^{259} &^{260} &^{261} &^{262} &^{263}\) See Act of Mar. 3, 1875, ch. 139, 18 Stat., pt. 3, 474 (1875) (admission of California). New Mexico and Utah were admitted in a similar manner.

\(^{257} &^{258} &^{259} &^{260} &^{261} &^{262} &^{263}\) See Act of Admission, 26 Stat. 222 (1890) (Wyoming’s admission).

\(^{257} &^{258} &^{259} &^{260} &^{261} &^{262} &^{263}\) See also Bowers v. McFadzean, 82 Colo. 138, 142, 257 P. 361, 363 (1927). See generally Trelease, Government Ownership and Trusteeship of Water, 45 Calif. L. Rev. 638 (1957).
in *United States v. District Court*\(^2\)\(^6\)\(^4\) cast some doubt on the validity of that declaration when it recognized the possibility that its former decision in *Stockman v. Leddy*\(^2\)\(^6\)\(^5\) had been overruled by the United States Supreme Court in *Arizona v. California*.\(^2\)\(^6\)\(^6\) The Colorado court deferred a decision in *District Court* on the matter until a particular case, involving a federal reservation after statehood, should come before it.\(^2\)\(^6\)\(^7\)

The federal government has two interests that may prompt it to exercise its authority over western water. One interest of the United States is that of a sovereign entity exercising its constitutional power and the other interest is that of the United States as the proprietor of vast areas of western land. Despite its own interests in western waters, the federal government silently acquiesced to and subordinated its interests to state and local appropriation laws until the last half of the nineteenth century.\(^2\)\(^6\)\(^8\) In the Mining Act of 1866\(^2\)\(^6\)\(^9\) the federal government affirmatively recognized and confirmed the preexisting water rights that had been established on the public land according to local customs and state laws.\(^2\)\(^7\)\(^0\) That Act was not itself a grant of water rights pursuant to federal law, but was a voluntary recognition of a preexisting right of possession, constituting a valid claim to its continued use.\(^2\)\(^7\)\(^1\) The United States Supreme Court considered the 1866 Act to foreclose all further proprietary objection by the federal government to appropriations that rested upon local custom.\(^2\)\(^7\)\(^2\)

The Desert Land Act of 1877 gave further grounds for the western...

265. 55 Colo. 24, 129 P. 220 (1912).
270. California v. United States, 438 U.S. 645, 656 (1978). Because of the fear that the Mining Act of 1866 might in some way interfere with the water rights and systems that had grown up under state law and local laws, Congress explicitly recognized and acknowledged the local law. See Martz & Grazis, *supra* note 18, at 45.
271. United States v. Rio Grande Dam & Irrig. Co., 174 U.S. 690, 705 (1899). In the Mining Act of 1870, Congress reaffirmed that occupants of federal public land would be bound by state water law by providing that all patents granted or preemption or homesteads allowed would be subject to any vested and accrued water rights. Act of July 9, 1870, ch. 235, 16 Stat. 218 (1871), codified in 43 U.S.C. § 661 (1976). The effect of the 1866 and 1870 acts were not limited to rights previously acquired; they reached into the future and approached and confirmed the policy of appropriation for a beneficial use, as recognized by local rules and customs, and the legislation and judicial decisions of the arid states, as the test and measure of private rights in and to nonnavigable waters on the public domain. California Oregon Power Co. v. Beaver Portland Cement Co., 295 U.S. 142, 155 (1935).
states to claim sovereignty over the waters within their boundaries.273 Entry upon and reclamation of desert lands within certain western states and territories was allowed under the Act, provided that the use of water by a claimant would depend upon bona fide appropriation under the laws of the states and territories. Individuals had the right to appropriate unappropriated waters pursuant to their state’s laws. Water not appropriated by the claimant could be appropriated by the public for irrigation, mining, and manufacturing purposes subject to existing rights.274 The United States Supreme Court has not held that the Desert Land Act effected a grant of proprietary rights in water to the states or to the people subject to irrevocable state control, but has held that the Act “effected a severance of all waters upon the public domain, not theretofore appropriated, from the land itself.”275 “[A]ll non-navigable waters then a part of the public domain became publici juris, subject to the plenary control of the designated states. . . .”276 The states and territories would govern the use of this water and would be free to adopt either prior appropriation or riparian water rights.277

Federal recognition of the appropriation doctrine was also contained in the Reclamation Act of 1902,278 which stated that federally sponsored reclamation projects would not affect or interfere with any state laws relating to the control, appropriation, use, or distribution of water used in irrigation or any vested rights acquired or any rights of states or appropriators of water.279 In California v. United States280 the Supreme Court held that the U.S. Bureau of Reclamation, when impounding water for a water project, must comply with any state-imposed conditions not inconsistent with specific congressional directives.281 In draw-

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276. Id. at 163-64. See also California v. United States, 438 U.S. 645, 658 (1978).
279. Reclamation Act, ch. 1093, § 8, 32 Stat. 390 (1903), codified in 43 U.S.C. § 383 (1976). See Drawing Battle Lines, supra note 112, at 480, which stated that even the Reclamation Act “carried forward the policy of recognizing the territorial laws as the sources of water rights, clearly providing that state water law would control the appropriation and later distribution of water.”
281. Id. at 672. In this case the state of California sought reversal of a declaratory judgment giving the U.S. Bureau of Reclamation the right to impound whatever unappropriated water it found necessary for a reclamation project, without regard to state law. Id. at 647. The state had issued the desired permits, but with 25 attached conditions, including one that required a
ing this conclusion, the Supreme Court conducted a thorough investigation of the Reclamation Act and found it to embody a spirit of cooperation between state and federal governments. Specifically, the savings clause of the Act was found to constitute a clear expression of congressional intent to defer to the substance, as well as the form, of state water law. Although California v. United States expressly addressed only reclamation cases, it indicated a newly found respect for all water savings clauses. The policy of the federal government under this Act and the Mining acts has been to encourage development of water resources by state water users. The western states, in governing the use and distribution of water rights, draw some support from their compact power, which is the power to enter into agreements with sister states regarding the allocation of water among the states, and from the states' right or duty of parens patriae by which they represent their citizens in litigation or otherwise in the protection of their common interests. States rely primarily, however, on their reserved powers under the tenth amendment to the United States Constitution to regulate private water rights. That amendment states that the "powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people." States draw their police power from this amendment to protect the public health, safety, and general welfare of their citizens and their power to create property rights; thus, we have state-created water rights.

Federal Asserted Dominion Over Waters

The federal government is a government of delegated powers. The Constitution gives it powers to regulate interstate commerce, navigation, and spending, to manage federal property, to make war and provide for the common defense, to approve treaties, and to promote the

showing of specific plans for the beneficial use of water. Id. at 652-53. In western states, beneficial use is often described as the basis, the measure, and the limit of the right to use water, and statutes generally list approved uses according to preference. See Treaclese, The Concept of Reasonable Beneficial Use in the Law of Surface Streams, 12 Wyo. L.J. 1, 6-7 (1957).  
285. See Webber, supra note 22, at 780.  
289. See Martz & Grazis, supra note 18, at 50-54.  
290. U.S. Const. amend. X.  
291. Id.  
292. 3 Hutchins, supra note 125, at 2.
general welfare of the nation. One or more of these powers and related constitutional provisions have been used to justify various aspects of water regulation or water resource development by the federal government. In evaluating the validity of Colorado's antiexport statutes, it is important to review the areas of federal sovereignty over certain waters that have been exercised or specifically carved out by Congress and the courts.

Federal dominion over the navigable waters of the United States is the most clearly defined area of federal sovereignty and this was first recognized by the Supreme Court in Gibbons v. Ogden. The Federal Power Act draws upon this federal power and illustrates its breadth. Judicial interpretation of the Federal Power Act further suggests that other powers of the federal government are equally strong and may sustain federal action over state objectives.

In First Iowa Hydro-Electric Cooperative v. Federal Power Commission, the Supreme Court addressed the issue whether a diversion from a navigable stream could be licensed pursuant to the Federal Power Act without first obtaining a state water permit. The Supreme Court held that the Federal Power Act overrode conflicting state law that state prohibitions against diversions of water outside of its natural watershed were preempted by the Act, and that compliance with state law was only one factor to be considered in acting upon license applications. As a result of this decision, the federal government has exclusive jurisdiction over the navigable rivers of the United States, although state laws would remain applicable to other waters and matters in the state:

The [Federal Power] Act leaves to the States their traditional jurisdiction subject to the admittedly superior right of the Federal Government, through Congress, to regulate interstate and foreign commerce, administer the public lands and reservations of the United States and, in certain cases, exercise authority under the

293. Id.
294. 22 U.S. 1 (1824).
296. See Webber, supra note 22, at 777.
298. Id. at 163-64. Applicants for federal licenses are required under the Act to provide satisfactory evidence of compliance with state law. 16 U.S.C. § 802(b) (1976).
300. Id. at 171.
301. Id. at 178. See Federal Power Comm'n v. Oregon, 349 U.S. 435, 452 (1955), which held federal licensees need not obtain a state permit to construct a dam across nonnavigable waters on federal land.
treaties of the United States. These sources of constitutional power are all applied in the Federal Power Act to the development of the navigable waters of the United States.302

The Boulder Canyon Project Act of 1928,303 which authorized the United States to construct a dam, storage reservoir, and hydroelectric plant on the Colorado River at Black Canyon and provided that the federal government control, manage, and operate such facilities, also drew on the federal government’s power to control navigable waters.304 In Arizona v. California305 Arizona asserted control over both the water rights and the entire Hoover Dam, which was being constructed pursuant to the Act, and required written approval of plans and specifications from the state engineer prior to construction of any dam, even those erected by the United States.306 The Supreme Court found:

The United States may perform its functions without conforming to the police regulations of a State. . . . If Congress has power to authorize the construction of the dam and reservoir, . . . [the Secretary of the Interior] is under no obligation to submit the plans and specifications to the State Engineer for approval. And the Federal Government has the power to create this obstruction in the river for the purpose of improving navigation if the Colorado River is navigable.307

. . . .

[T]he fact that purposes other than navigation will also be served could not invalidate the exercise of the authority conferred, even if those other purposes would not alone have justified an exercise of Congressional Power.308

In a subsequent case, Arizona v. California,309 the Supreme Court again upheld the validity of federal action under the Boulder Canyon Project Act, stating that the Act was passed "in the exercise of congressional power to control navigable water for purposes of flood con-

304. 43 U.S.C. § 617 (1976). The purpose of the Act was to control floods, improve navigation, and regulate the flow of the Colorado River and to provide for the storage and delivery of the stored waters for reclamation of public lands and other beneficial uses and for generation of electrical energy.
305. 283 U.S. 423 (1931).
308. Id. at 456.
trol, navigation, power generation, and other objects. . . .”10 Further, the Act “is equally sustained by the power of Congress to promote the general welfare through projects for reclamation, irrigation, or other internal improvements.”11 In concluding that state law did not control the apportionment of water in the Colorado River, the Court stated that where the federal government, as here, “has exercised this power and undertaken a comprehensive project for the improvement of a great river and for the orderly and beneficial distribution of water, there is no room for inconsistent state laws.”12 The savings clause in the Act was held only to allow states to do things not inconsistent with the Act.13

Some believe that after First Iowa Hydro-Electric14 and Arizona v. California,15 state water law savings provisions drafted for proposed coal pipeline legislation will prove ineffective in the courts16 and that Congress can effectively authorize the diversion of any water supply in the United States, whether it be navigable or nonnavigable, surface or ground water, pure or polluted, despite anything contrary in state laws. Those decisions, however, involved direct confrontation between state laws and express congressional directives to regulate water.17 The Boulder Canyon Project Act did delegate to the Secretary of the Interior power to create a reservoir and diversion works18 and to create water rights in states and water users to the impounded water.19 The logical extension of the holding in Arizona v. California20 interpreting

310. Id. at 587.
311. Id.
312. Id.
313. Id. at 587-88. See 3 Hutchins, supra note 125, at 26-27.
316. During hearings on H.R. 1609, the coal pipeline legislation defeated in 1978, Wyoming Governor Herschler testified that while he appreciated congressional attempts to protect state water law, “in light of various court decisions, I doubt that there is any language that could guarantee the retention of State authority.” Coal Pipeline Act Hearings, supra note 10, at 42. While federal power over water resources is almost without limit, Congress has regularly incorporated state water law savings clauses in federal legislation affecting water resources. Public Land Law Review Commission, supra note 19, at 141.
319. See 43 U.S.C. §§ 617b-617e, 617g, 617h (1976). See id. § 617q, which provides, however, that nothing in the Act should be construed as interfering with such rights as the states had on December 21, 1928, either to the waters within their borders or to adopt such policies and enact such laws as they deem necessary with respect to appropriation, control, and use of waters within their borders, except as modified by the Colorado River Compact or other interstate agreements.
the Act is that the federal government has the ultimate say over inter-state resources. States cannot forbid the export of water when it is specifically authorized by Congress.121

Another large area of federal rights over western waters is sanctioned by the reserved rights doctrine. This doctrine states that whenever the federal government reserves land by withdrawing a parcel of its land from the public domain for a specified purpose, such as a national forest or an Indian reservation, the government by implication reserves enough of the unappropriated water to accomplish the purpose of the reservation. In the past, the federal government has asserted that it can expand these reserved rights for new uses on the public land and that the priority of its rights would date back to the original reservation of the land.122 However, in United States v. New Mexico,123 the Supreme Court generally recognized congressional deference to state water law124 and held that under the reserved rights doctrine the federal government is entitled only to water necessary to the specific purposes for which the land was originally taken.125 Although Congress originally established the national forests only to secure favorable water flow and to preserve timber,126 subsequent legislation has expressly decided that national forests be administered for recreational and wildlife purposes.127 Consequently, the Supreme Court found that in the absence of a positive indication that additional water be reserved, state law controls.128 This narrow limitation on the amount of water reserved was based on “Congress’ principled deference to state water law.”129 No rights will be implied under the reserved rights doctrine where the water is to be used for a secondary purpose or use.130 Even with this assurance, the indefinite quantity of federal reserved rights is a hard-

325. Id. at 702. The state engineer rejected federal claims for sufficient water for recreation and stock-watering purposes in the stream adjudication of a river originating in a national forest. Id. at 698.
329. Id. at 718.
ship on state water administration and on water users who may suddenly have their state-adjudicated rights impaired by the federal government exercising dormant reserved rights.\textsuperscript{331}

State and federal district courts have concurrent jurisdiction over reserved water rights. The McCarran Amendment, enacted by Congress in 1952, consented to joinder of the United States as a party in general water rights adjudication.\textsuperscript{332} The United States Supreme Court held in \textit{Colorado River Water Conservation District v. United States}\textsuperscript{333} that the McCarran Amendment extended to Indian reserved rights and evoked a clear federal policy to avoid piecemeal adjudication of water rights in a river system when comprehensive state systems for adjudication of water rights are available.\textsuperscript{334}

The federal government has established broad powers over the navigable waters of the United States. It also has access to western water sources through the reserved rights doctrine. The extent of power the federal government may exercise in regard to nonnavigable water is still undecided. The area of greatest debate, however, involves the implications that the commerce clause in the United States Constitution has on such waters. In the absence of federal legislation in this area, what powers do states have to regulate interstate water transfers? This is the heart of the coal slurry water controversy.

VII. \textit{Constitutionality of Antiexport Statutes Under Commerce Clause}

The commerce clause of the United States Constitution gives Congress the power to regulate commerce "among the several states."\textsuperscript{335} It is an affirmative grant of power, but the Supreme Court has long recognized that it also contains an implicit prohibition against state regulation of interstate commerce. Although the Supreme Court over the years has taken various approaches to defining the precise scope of the prohibition, it has consistently ruled that economic protectionist legislation is invalid under the commerce clause.\textsuperscript{336}

The United States Supreme Court has considered the validity of a state prohibition against the exportation of water under the commerce clause three times. The earliest case, \textit{Hudson County Water Co. v. McCarter},\textsuperscript{337} sustained the constitutionality of a New Jersey antiexport

\textsuperscript{331} \textit{Drawing Battle Lines}, supra note 112, at 478-79.
\textsuperscript{333} 424 U.S. 800 (1976).
\textsuperscript{334} \textit{Id.} at 819.
\textsuperscript{335} U.S. Const. art. I, § 8, cl. 3.
\textsuperscript{336} \textit{The Supreme Court, 1977 Term}, 92 Harv. L. Rev. 57, 57 (1978).
\textsuperscript{337} 209 U.S. 349 (1908).
statute forbidding the export of surface water from the Passaic River in New Jersey to Staten Island, New York, for domestic use. In a later case, City of Altus v. Carr, the Supreme Court affirmed a federal district court decision that restrained the state of Texas from obstructing deliveries of Texas groundwater to customers in Oklahoma on the basis that the owner of an article of commerce can transport it in interstate commerce. The most recent case, Sporhase v. Nebraska, held groundwater to be an article of commerce and therefore subject to congressional regulation. Sporhase also held that the reciprocity requirement in a Nebraska statute that prohibits transporting groundwater for use in another state without the receiving state granting reciprocal rights providing for transfer of groundwater from that state into Nebraska violated the commerce clause as imposing an impermissible burden on interstate commerce. A close examination of these cases is necessary to understand the impact they might have in a suit challenging Colorado’s antiexport statutes.

Justice Holmes, who wrote the majority opinion in Hudson County, holding that New Jersey could protect its natural advantages by prohibiting the export of water to New York, stated:

[I]t is recognized that the State as quasi-sovereign and representative of the interests of the public has a standing in court to protect the atmosphere, the water and the forests within its territory, irrespective of the assent or dissent of the private owners of the land most immediately concerned.

... [I]t appears to us that few public interests are more obvious, indisputable and independent of particular theory than the interest of the public of a State to maintain the rivers that are wholly within it substantially undiminished, except by such drafts upon them as the guardian of the public welfare may permit for the purpose of

341. Id. at 340. A Texas statute forbidding exportation of Texas groundwater without legislative consent was invalidated because water was found by the court to be an article of commerce and as such the Texas law discriminated against interstate commerce. Id.
342. 102 S.Ct. 3456 (1982).
346. Id. at 355.
turning them to a more perfect use. This public interest is omnipresent wherever there is a State, and grows more pressing as population grows.347

. . .

We are of opinion, further, that the constitutional power of the State to insist that its natural advantages shall remain unimpaired by its citizens is not dependent upon any nice estimate of the extent of present use or speculation as to future needs.348

. . .

The right to receive water from a river through pipes is subject to territorial limits by nature, and those limits may be fixed by the State within which the river flows, even if they are made to coincide with the state line.349

The Hudson County decision appears to be precise, but it can be distinguished from future cases involving challenges of a state’s anti-export statute. First, the case is more than seventy years old and was decided many years before the full development of the interstate commerce powers of the federal government. One recent development in commerce clause law that directly affects the Hudson County decision is the Supreme Court’s overruling of Geer v. Connecticut350 in Hughes v. Oklahoma.351 Hudson County relied on Geer’s preservation rationale as well as on Geer’s holding that a state might qualify the property interest one receives in a resource to prevent it from becoming an object of interstate commerce.352 The Supreme Court in Hughes rejected the proposition that state ownership of things ferae naturae was a sufficient basis for a state to prefer its citizens to those of other states and held that such statutes will be subject to scrutiny under the commerce clause. Under the modern standard of scrutiny, the statute will be upheld only if it “regulates evenhandedly to effectuate a legitimate local public interest and its effects on interstate commerce are only incidental, . . . unless the burden imposed on such commerce is clearly

347. Id. at 356.
348. Id. at 356-57.
349. Id. at 357.
351. 441 U.S. 322, 338 (1979), wherein an Oklahoma statute that prohibited transporting out of the state for sale live minnows procured from waters within the state, was held unconstitutional on its face because it discriminated against interstate commerce. The Supreme Court held that a state may promote the legitimate purpose of protecting and conserving wild animal life, but only in ways consistent with promoting a national economic unit. When a wild animal becomes an article of commerce, its use cannot be limited to the citizens of one state to the exclusion of citizens of another state. Id. at 338-39.
excessive in relation to the putative local benefits.\textsuperscript{335} Another important consideration when assessing the precedential value of \textit{Hudson County} is that the case involved a controversy between two riparian doctrine states, New Jersey and New York, and may not be readily applicable to prior appropriation doctrine states because the fundamental theories of water law are so different.

A comparison of how each court in \textit{Hudson County} and \textit{City of Altus v. Carr}\textsuperscript{354} considered the nature of water is extremely important to an evaluation of Colorado's antiexport statutes. In \textit{Hudson County} water was not considered to be an article of commerce. This was not expressed directly in the opinion, but, in a subsequent dissenting opinion in \textit{Pennsylvania v. West Virginia},\textsuperscript{355} Justice Holmes expressed his belief that water was not an article of commerce and therefore was not deserving of commerce clause protection.\textsuperscript{356} In \textit{City of Altus}, however, the three-judge district court decision, which was affirmed by the Supreme Court without opinion,\textsuperscript{357} followed the rationale of the natural gas cases\textsuperscript{358} and assumed that water was similarly a commodity of interstate commerce.\textsuperscript{359}

One of the cases most relied on by the district court judges in \textit{City of Altus} was \textit{West v. Kansas Natural Gas Co.},\textsuperscript{360} involving an Oklahoma statute that denied the right of eminent domain and the right to use the highways of the state for the transportation of natural gas.\textsuperscript{361} The statute’s effect was to deny the owners of natural gas the right to sell the gas outside of the state.\textsuperscript{362} The statute was held invalid under the commerce clause,\textsuperscript{363} and the Supreme Court stated:

\begin{quote}
Gas, when reduced to possession, is a commodity; it belongs to the owner of the land, and, when reduced to possession, is his individual property subject to sale by him, and may be a subject of intrastate commerce and interstate commerce.\textsuperscript{364}
\end{quote}

\textsuperscript{355} Hughes v. Oklahoma, 441 U.S. 322, 331 (1979).
\textsuperscript{355} 262 U.S. 553 (1923).
\textsuperscript{356} \textit{Id.} at 602-03 (dissenting opinion). See McDaniel, \textit{supra} note 14, at 538.
\textsuperscript{357} Carr v. City of Altus, 385 U.S. 35 (1966) (mem.).
\textsuperscript{358} See Pennsylvania v. West Virginia, 262 U.S. 553 (1923); \textit{West v. Kansas Natural Gas Co.}, 221 U.S. 229 (1911).
\textsuperscript{359} City of Altus v. Carr, 255 F. Supp. 828, 837-40 (W.D. Tex. 1966), wherein a Texas statute prohibiting the diversion of underground water for export and use in any other state unless such diversion was specifically authorized by the legislature was held to be unconstitutionally under the commerce clause.
\textsuperscript{360} 221 U.S. 229 (1911).
\textsuperscript{362} West v. Kansas Natural Gas Co., 221 U.S. 229, 254-55 (1911).
\textsuperscript{363} \textit{Id.} at 262.
\textsuperscript{364} \textit{Id.} at 255.
... It is not necessary to cite cases to show that the right to engage in interstate commerce is not the gift of a State, and that it cannot be regulated or restrained by a State, or that a State cannot exclude from its limits a corporation engaged in such commerce.\textsuperscript{365}

\textit{West v. Kansas Natural Gas Co.} distinguished \textit{Hudson County} at length in determining that gas was subject to commerce clause protection.\textsuperscript{366}

The district court in \textit{City of Altus} held that the general law of Texas recognizes water withdrawn from underground sources to be personal property subject to sale and commerce.\textsuperscript{367} The court discussed the states' ability to interfere or regulate interstate commerce as follows:

By virtue of the Commerce Clause, the Congress of these United States was specifically granted the power to regulate commerce among the several states, and the states may not unreasonably burden or interfere with interstate commerce. This is not to say that a state may not, in the absence of conflicting legislation by Congress, make laws governing matters of local concern which may in some measure affect interstate commerce, or even, to some extent, regulate it. [Citation omitted.] Rather, it means that a state may not enact a law which imposes a direct burden on interstate commerce or discriminates against interstate commerce. [Citations omitted.] In the recent case of \textit{Huron Portland Cement Co. v. City of Detroit}, [citation omitted] an undue or unreasonable burden was defined as one which materially affects interstate commerce where uniformity of regulation is necessary.\textsuperscript{368}

... Considering the statute in question only with regard to whether it regulates the transportation and use of water after it has been withdrawn from a well and becomes personal property, such statute constitutes an unreasonable burden upon and interference with interstate commerce. Moreover, on the facts of this case it appears ... [the statute] does not have for its purpose, nor does it operate to conserve water resources of the State of Texas except in the sense that it does so for her own benefit to the detriment of her sister States. ... In the name of conservation, the statute seeks to prohibit interstate shipments of water while indulging in the substantial discrimination of permitting the unrestricted intrastate production and transportation of water between points within the State, no matter how distant; ... [T]he statute had little relation to the cause of conservation.\textsuperscript{369}

\textsuperscript{365} \textit{Id.} at 260.
\textsuperscript{366} \textit{Id.} at 258.
\textsuperscript{368} \textit{Id.} at 837.
\textsuperscript{369} \textit{Id.} at 839-40.
Texas is unique in its recognition of subterranean water as being absolutely owned as personal property by the overlying landowner once such landowner removes it from the ground. Other western states consider a citizen's "right to use" the surface or underground waters of the state as being a real property interest subject to conditions necessary to make and maintain a legal appropriation. For this reason, City of Altus may be distinguished from similar controversies involving other prior appropriation doctrine states.

The Nebraska Supreme Court in State v. Sporhase distinguished City of Altus on precisely those grounds. Nebraska's statute prohibiting an appropriator from transferring groundwater outside the state was held constitutional. Permits to withdraw groundwater from state wells and transport that water to an adjoining state are granted if the director of the Department of Water Resources determines that the transfer of water is: (1) reasonable, (2) not contrary to the conservation and use of groundwater, and (3) not otherwise detrimental to public welfare, and (4) that the receiving state grants reciprocal rights to withdraw and transport water to Nebraska. This permit system follows the spirit of the Nebraska constitution, which declares water for irrigation purposes in the state to be a natural want. Sporhase held that the legislature is able to determine the policy of the state as to underground waters and the rights of persons in their use. The court found that neither the Nebraska courts nor the legislature had ever considered groundwater to be an article of commerce. Water is not a market item freely transferable because the Nebraska public may limit or deny the right of private parties to use the water freely when it determines that the welfare of the state and its citizens is at stake. The court found that even where it appears that water itself is being marketed, as in municipal water supply arrangements, it is the value of the cost of distributing the water that is the basis for the rate structure and not the value of the water itself.

Sporhase refused to find that City of Altus overruled Hudson

370. Texas Co. v. Burkett, 117 Tex. 16, 296 S.W. 273 (1927); 2 Huchins, supra note 151, at 746.
371. See 2 Huchins, supra note 151, at 631-53.
373. Id. at 708-09, 305 N.W.2d at 618.
379. Id. at 707-08, 305 N.W.2d at 618.
380. Id. at 708, 305 N.W.2d at 618.
County and held that City of Altus was limited to its facts alone. The Nebraska court held that a state may, under its police power, forbid or condition the interstate transfer of its water resources without running afoul of the commerce clause of the United States Constitution. It also distinguished the decisions in other cases which limited the rights of individual states to condition interstate transfers of natural resources by holding that the natural resources dealt with in those cases have "historically been market items, reducible to private possession and freely exchanged for value." In emphasizing that underground water in Nebraska is not a market item, the court stated:

[S]ince water is the only natural resource absolutely essential to human survival, the application of rules designed to facilitate commerce in less essential resources to the transfer of water must be done, if at all, with extreme caution. It is this caution which prevents us from holding Nebraska groundwater is an article of commerce. Because the groundwater in this case is not an article of commerce, the commerce clause considerations do not apply to the Nebraska statute at issue here.

Groundwater has now been established by the United States Supreme Court to be an article of commerce and subject to the commerce clause. Sporhase appealed the Nebraska Supreme Court decision to the United States Supreme Court (Sporhase v. Nebraska), challenging the constitutionality of the statutory restriction on the withdrawal of groundwater from any well within Nebraska intended for use in an adjoining state. One question presented by the challenge was whether groundwater is an article of commerce and therefore subject to congressional regulation under the commerce clause. In holding that groundwater is an article of commerce, the Supreme Court stated that Nebraska's claim that its "groundwater is not an article of commerce goes too far; it would not only exempt Nebraska groundwater

383. Id.
388. 102 S.Ct. 3456 (1982).
389. Id. at 3457. See NEB. REV. STAT. § 46-613.01 (1978).
regulation from burden-on-commerce analysis, it also would curtail the affirmative power of Congress to implement its own policies concerning such regulation." 391 The Court rejected Nebraska’s claim that state ownership of groundwater would exempt it from commerce clause scrutiny. 392 In agreeing that states are vitally interested in conserving and preserving scarce water resources, the Court said that the “states’ interests clearly have an interstate dimension.” 393 Continuing, the Court stated that “the multistate character of the Ogallala aquifer . . . confirms the view that there is a significant federal interest in conservation as well as in fair allocation of this diminishing [groundwater] resource. . . . Ground water overdraft is a national problem and Congress has the power to deal with it on that scale.” 394

The controversy over whether antiexport statutes are constitutional under the commerce clause remains unresolved and will depend upon the nature of the restrictions and affected rights. Hughes v. Oklahoma 395 best sets forth the standard for considering constitutionality under the commerce clause:

Under the general rule, we must inquire: (1) whether the challenged statute regulates evenhandedly with only “incidental” effects on interstate commerce, or discriminates against interstate commerce either on its face or in practical effect; (2) whether the statute serves a legitimate local purpose; and, if so, (3) whether alternative means could promote this local purpose as well without discriminating against interstate commerce. The burden to show discrimination rests on the party challenging the validity of the statute, but “when discrimination against commerce . . . is demonstrated, the burden falls on the state to justify it both in terms of the local benefits flowing from the statute and the unavailability of non-discriminatory alternatives adequate to preserve the local interests at stake.” 396

The United States Supreme Court in Philadelphia v. New Jersey, 397 which held that solid waste was an article of commerce, noted that the opinions of the Court have “reflected an alertness to the evils of ‘economic isolationism’ and protectionism.” 398 It held that under the commerce clause “the crucial inquiry, therefore, must be directed to determining whether . . . [state legislation] is basically a protectionist

393. Id. at 3462.
394. Id. at 3463.
measure or whether it can fairly be viewed as a law directed to legitimate local concerns, with effects upon interstate commerce that are only incidental.\textsuperscript{399} Although protectionist legislation is not looked upon favorably, the Supreme Court has sustained such state regulations to promote the conservation of wildlife and game.\textsuperscript{400}

Two other questions presented on Sporphase's appeal to the United States Supreme Court of the Nebraska Supreme Court decision\textsuperscript{401} on the constitutionality of that state's antiexport statute relating to groundwater were whether the restriction on interstate transfer of groundwater imposed an impermissible burden on commerce and whether Congress granted the states permission to engage in groundwater regulation that otherwise would be impermissible.\textsuperscript{402} The Supreme Court recognized a state's interest in conserving and preserving its own scarce and diminishing groundwater resources\textsuperscript{403} and stated that such a purpose is unquestionably legitimate and important.\textsuperscript{404} Nebraska's groundwater regulations demonstrated the state's genuine concern in that strict regulations are imposed on all groundwater withdrawal and use and intrastate transfers of groundwater are only permitted between lands controlled by the same groundwater user.\textsuperscript{405}

The Court said that Nebraska's interest in conservation and preservation of groundwater was advanced by the first three conditions in the statute for the withdrawal of groundwater for an interstate transfer.\textsuperscript{406} Although commerce clause concerns are implicated by the fact that the statute applies to interstate transfers but not to intrastate transfers, there are legitimate reasons, according to the Court, for the special treatment accorded requests to transport groundwater across state lines. "Obviously a State that imposes severe withdrawal and use restrictions on its own citizens is not discriminating against interstate commerce when it seeks to prevent the uncontrolled transfer of water out of the State. An exemption for interstate transfers would be inconsistent with the ideal of evenhandedness in regulation."\textsuperscript{407}

\textsuperscript{399} Id. at 624.
\textsuperscript{400} Baldwin v. Montana Fish & Game Comm'n, 436 U.S. 371 (1978).
\textsuperscript{401} State v. Sporphase, 208 Neb. 703, 305 N.W.2d 614 (1981).
\textsuperscript{402} Sporphase v. Nebraska, 102 S.Ct. 3456, 3457 (1982).
\textsuperscript{403} Id. at 3462.
\textsuperscript{404} Id. at 3463. See Cities Service Gas Co. v. Peerless Oil & Gas Co., 340 U.S. 179, 188 (1950) ("Insofar as conservation is concerned, the national interest and the interest of producing states may well tend to coincide.").
\textsuperscript{406} Sporphase v. Nebraska, 102 S.Ct. 3456, 3464 (1982). Those requirements are "that the withdrawal of groundwater requested is reasonable, is not contrary to the conservation and use of groundwater, and is not otherwise detrimental to the public welfare." Neb. Rev. Stat. § 46-613.01 (1978).
\textsuperscript{407} Sporphase v. Nebraska, 102 S.Ct. 3456, 3464 (1982).
statutory standards imposed on Sporhase are no more strict, according to the Court, than the limitations imposed on intrastate transfers.

A fourth requirement in the Nebraska statute that "the state in which the water is to be used grants reciprocal rights to withdraw and transport groundwater from that state for use in the state of Nebraska" was held to be unconstitutional.408 Because Colorado forbids the exportation of its groundwater,410 the reciprocity provision operates as an explicit barrier to commerce between two states.411 The state, according to the Court, bears the initial burden of demonstrating a close fit between the reciprocity requirement and its asserted local purpose,412 and the reciprocity requirement failed this initial hurdle.413 There was no evidence that the reciprocal restriction was narrowly tailored to the conservation and preservation rationale;414 therefore, the reciprocity requirement did not survive the "strictest scrutiny" reserved for facially discriminatory legislation.415 If it could be shown that the state as a whole suffered a water shortage, that the intrastate transportation of water from areas of abundance to areas of shortage was feasible regardless of distance, and that the importation of water from adjoining states would roughly compensate for any exportation to those states, then the conservation and preservation purpose might be credibly advanced for the reciprocity provision. A demonstrably arid state conceivably might be able to marshall evidence to establish a close means-end relationship between even a total ban on the exportation of water and a purpose to conserve and preserve water. Nebraska did not claim such evidence existed.

On the third question presented by Sporhase's appeal, the Supreme Court held Nebraska's contention that Congress had authorized states to impose otherwise impermissible burdens on interstate commerce in groundwater not to be well-founded.416 Nebraska based its claim on thirty-seven statutes in which Congress had deferred to state water law and on a number of interstate compacts dealing with water that have been approved by Congress. The Supreme Court stated:

414. Id.
415. Id. at 5120. See Hughes v. Oklahoma, 441 U.S. 322, 337 (1929). See also supra text accompanying note 396.
Although the 37 statutes and the interstate compacts demonstrate Congress' deference to state water law, they do not indicate that Congress wished to remove federal constitutional constraints on such laws. The negative implications of the Commerce Clause, like the mandates of the Fourteenth Amendment, are ingredients of the valid state law to which Congress has deferred. Neither the fact that Congress has chosen not to create a federal water law to govern water rights involved in federal projects nor the fact that Congress has been willing to let the states settle their differences over water rights through mutual agreement, constitutes persuasive evidence that Congress consented to the unilateral imposition of unreasonable burdens on commerce. In the instances in which we have found such consent, Congress' intent and policy to sustain state legislation from attack under the Commerce Clause was expressly stated.417

Even though Sporhase v. Nebraska did not settle the constitutionality question on antiexport statutes, the decision is instructive. Antiexport statutes should be written carefully as conservation and preservation measures that do not discriminate in favor of transfers for use within the state. If out-of-state water transfers are restricted, then interbasin transfers within the state should also be restricted. If water may not be transported out of state in the form of coal slurry, then this prohibition must also apply to in-state uses. Antiexport statutes may be upheld as constitutional if they do not discriminate against out-of-state users and a clear and demonstrable state purpose exists which only incidentally interferes with interstate commerce. Similarly, such statutes requiring specific legislative approval before an interstate transfer can take place may be upheld if these conditions are met. Statutes allowing the interstate movement of water upon reciprocal bases are more likely to be struck down for violation of the commerce clause than are direct prohibitions of the interstate movement as a burden to the free flow of interstate commerce. Only state interests of substantial importance could save such a statute.418 Further, statutes attempting to compensate states for the depletion of a nonrenewable source of groundwater may be valid under a recent Supreme Court ruling affirming the constitutionality of Montana's coal severance tax.419

Professor Corker's comments on City of Altus v. Carr are likewise instructive.420 Recognizing that the city had already spent considerable

417. Id. at 3466.
money on the acquisition of land and water rights before the Texas legislature enacted its antiexport statute, Corker, in discussing possible Idaho legislation, said:

Clearly I think, the Commerce Clause does not threaten the validity of any state legislation limiting or forbidding export of water if that legislation applies to future diversions and is wholly without discrimination in favor of exports for use within Idaho. Interstate "commerce" may or may not be involved, but if it is, non-discriminatory legislation is likely to survive if it has a clear and demonstrable relation to any state purpose—preserving Idaho rivers for salmon, for recreationists, for irrigators or for cities wherever located. 421

VIII. Constitutionality of Colorado’s Antiexport Statutes

Colorado’s two antiexport statutes relating to surface 422 and ground 423 waters, which purport to be conservation measures, must be analyzed in light of Sporhase v. Nebraska 424 to determine their constitutionality. In addition, Colorado has another statute that prohibits the use of water for transporting another substance outside the state unless such diverted water is credited as a delivery to the other state by Colorado under an existing interstate compact. 425 Colorado’s statutes creating an absolute ban on interstate use of water are protectionist in nature, favor intrastate uses, and discriminate against interstate commerce. For example, the statutes do not prohibit the use of water for coal slurry transportation intrastate, but do prevent water from crossing state lines for interstate transportation of coal in slurry form.

The Colorado constitution expressly declares the waters of all natural streams to be public property and dedicated to the use of the people, 426 and states that the right to divert all unappropriated waters of a natural stream shall never be denied. 427 In Sporhase v. Nebraska state ownership of water was rejected as grounds for removing water as an article of commerce and thus exempting its interstate transfer from scrutiny under the commerce clause. 428 The Supreme Court stated that the public

421. Corker, supra note 321, at 148.
424. 102 S.Ct. 3456 (1982).
425. Colo. Rev. Stat. § 37-81-103(1) (Cum. Supp. 1982). Water mixed with other substances in the process of forming a slurry for the purpose of transporting any substance as a suspended solid shall not be deemed to have lost its character as water. Id.
427. Id., art. XVI, § 6.
ownership theory was nothing "but a fiction expressive in legal shorthand of the importance to its people that a State have power to preserve and regulate the exploitation of an important resource." 429

Although restrictions on the transfer of water out of state are absolute, the law with respect to the transfer of water rights within Colorado is unusually lenient. There are virtually no restrictions on the transfer of a water right with respect either to the type of use or the place of use. 430 Colorado statutes permit water rights to be owned, sold, leased, exchanged, loaned, or transferred. 431 The point of diversion may be changed as well as the manner of use, subject only to the condition that the rights of other appropriators not be seriously injured. 432 Intrastate and interbasin transfers of water are practiced on a daily basis. The Colorado Supreme Court has approved these transfers by stating in one case that "the constitution unquestionably contemplates and sanctions the business of transporting water for hire from natural streams to distant consumers," 433 and in another case that it found "nothing in the constitution which even intimates that waters should be retained in the watershed where originating." 434 Colorado's law appears to treat water as a marketable commodity despite the broad conservation declarations contained in the statutes. This coincides with the holding in Sporhase v. Nebraska that water is an article of commerce and subject to commerce clause inquiry. 435

Even though groundwater has been declared an article of commerce and as such subject to congressional regulation and control under the commerce clause, it does not mean that Colorado's antiexport statutes are invalid as being an unreasonable burden on and interfering with interstate commerce. The commerce clause concerns three spheres of commerce—channels (i.e., pipelines), articles (i.e., products that are

430. See Brighton Ditch Co. v. City of Englewood, 124 Colo. 366, 372-73, 237 P.2d 116, 120 (1951), where the court said:
  It is elementary learning in Colorado that a water priority is a property right—not a mere revocable privilege; that it is not a fixed appurtenance; that the right to change its place of use and point of diversion is an inherent property right, not conferred by our remedial statute, but pre-existing as an instrument of ownership, and always enforceable so long as the vested rights of others are not injuriously affected.
moving directly in commerce), and instrumentalities (i.e., activities of
the state affecting the movement of articles of commerce).436 Whether
a state act or regulation interferes with commerce turns on the nature
and severity of the burden created and the local purpose served by
the act or regulation. If the act or regulation is protectionist in nature
and discriminates on its face or in its application, it will be held in-
valid. If the state act or regulation serves a legitimate local interest,
then the beneficial effect of the local interest is balanced against the
burdens the act or regulation imposes upon interstate commerce. State
acts will be upheld where they only incidentally burden or discriminate
against interstate commerce. However, state acts that are flagrantly
discriminatory or that impose burdens on commerce that are clearly
excessive in relation to the local benefits will be held invalid. Thus,
where a legitimate local concern is found, the test becomes one of degree
and depends upon the nature of the local interest involved and whether
it could be promoted equally well through a lesser impact on interstate
activities.437

One will have to compare the Colorado and Nebraska groundwater
statutes governing both intrastate and interstate use of water in light
of Sporhase v. Nebraska. Nebraska's antielexport statute has four con-
ditions governing the issuance of a permit for withdrawing ground-
water for an interstate transfer and use. These requirements are that
the withdrawal of groundwater requested is reasonable, not contrary
to the conservation and use of groundwater, and not otherwise detri-
mental to the public welfare, and that the state in which the water is to
be used grants reciprocal rights to withdraw and transfer groundwater
from that state for use in Nebraska.438 The Supreme Court upheld the
first three conditions as advancing the state's interest in conservation
and preservation of its diminishing groundwater sources,439 but found
the reciprocity provision operated as an explicit barrier to commerce

436. Martz & Grazis, supra note 18, at 61. See Perez v. United States, 402 U.S. 146, 150
(1971); United States v. Darby, 312 U.S. 100, 112 (1941).
Cities Service Gas Co. v. Peerless Oil & Gas Co., 340 U.S. 179, 185-86 (1950); Foster-Fountain
Packing Co. v. Haydel, 278 U.S. 1, 10 (1928). See Pike, supra at 142 which stated:
Where the statute regulates evenhandedly to effectuate a legitimate local public
interest, and its effects on interstate commerce are only incidental, it will be upheld
unless the burden imposed on such commerce is clearly excessive in relation to
putative local benefits. . . If a legitimate local purpose is found, then the question
becomes one of degree. And the extent of the burden that will be tolerated will
of course depend on the nature of the local interest involved, and on whether
it could be promoted as well with a lesser impact on interstate activities.
between states.\textsuperscript{440} Conserving and preserving a state's groundwater sources is a legitimate and highly important purpose of a state statute,\textsuperscript{441} and looking at Nebraska's antiexport statute in relation to the state's other groundwater regulations for intrastate use demonstrates the state's genuine interest in conservation and preservation.\textsuperscript{442} Nebraska, which imposes severe withdrawal and use restrictions on its own citizens, is not discriminating against interstate commerce when it seeks to prevent the uncontrolled transfer of water out of state. An exemption for interstate transfers would be inconsistent with the ideal of evenhandedness in regulation.\textsuperscript{443}

Colorado's antiexport statutes\textsuperscript{444} are like Nebraska's in that they purport to conserve and preserve water, but unlike Nebraska's in that they absolutely prohibit the out-of-state diversion of Colorado water. Like Nebraska, Colorado does have a permit system for groundwater withdrawal and statutes governing the intrastate use of groundwater.\textsuperscript{445} Unlike Nebraska, which strictly limits the intrastate transfer of groundwater,\textsuperscript{446} Colorado has virtually no restrictions on the transfer of water rights with respect to either type of use or place of use.\textsuperscript{447} The Colorado antiexport statutes appear to be discriminatory against interstate commerce because different standards are applied to intrastate and interstate transfers and use, in that there is an absolute prohibition against interstate diversion, while lenient rules are applicable to intrastate transfers. Federal courts may support a state statute giving a limited preference to its own citizens in the utilization of natural resources, but the Colorado statutes give a total preference to its own citizens.\textsuperscript{448} According to \textit{Sporhase v. Nebraska}, Colorado would have to marshal evidence to establish a close means-end relationship between a total ban on the exportation of water and a purpose to conserve and preserve water.\textsuperscript{449}

One factor that may work in favor of upholding the constitutionality of Colorado's antiexport groundwater statute is the location of the wells from which San Marco Pipeline proposes to withdraw its water. If the proposed well field is located in the nontributary bedrock aquifer

\textsuperscript{440} Id.
\textsuperscript{442} Sporhase v. Nebraska, 102 S.Ct. 3456, 3463 (1982).
\textsuperscript{443} Id.
\textsuperscript{445} See id. §§ 37-90-107, -137.
\textsuperscript{447} See notes 430 to 435 supra and accompanying text.
\textsuperscript{449} Sporhase v. Nebraska, 102 S.Ct. 3456, 3465 (1982). The Court indicated that an arid state could conceivably present such evidence.
that is in a non-designated groundwater basin, only that amount of water underlying the land owned by the permit applicant or other owners with their consent can be withdrawn. In addition, the useful life of the aquifer must be at least 100 years and the withdrawal cannot injure other vested water rights.\textsuperscript{450} Intra-state use of water from this source is very restrictive; therefore, prohibition against intra-state use of this type of water may withstand a constitutional challenge of not being discriminatory against intra-state commerce. The state engineer thought that San Marco Pipeline should have applied for its well construction permit under the statutory section applicable to this type of groundwater.\textsuperscript{451}

IX. \textit{Alternatives to Appropriating Water Under State Restrictions}

Various alternatives might be considered by coal slurry pipeline companies that find themselves prohibited by Colorado law from acquiring water rights for intra-state transfer of coal slurry. The possibilities include federal eminent domain powers, leasing water from Indian reservations, seeking to credit water to intra-state compacts, and purchasing federal storage water.

\textit{Federal Eminent Domain Powers for Slurry Pipelines}

Several bills have been introduced in the Congress in the last few years to encourage the construction of coal slurry pipelines and the development of western coal reserves. Many of these bills sought to authorize coal slurry pipeline companies to acquire rights-of-way by exercising the federal power of eminent domain, but they specifically stated that the companies must comply with state water laws. These bills illustrate the federal government’s reluctance to preempt or interfere with states regulating water rights.

Eminent domain power is especially critical because railroads have been uncooperative in giving rights-of-way to pipeline companies, thus forcing the matter into litigation and as a result delaying, raising the cost of, and in some cases actually halting proposed construction of coal slurry pipelines.\textsuperscript{452} Most of the bills so far introduced in Congress give the Secretary of the Interior power to grant rights-of-way for coal slurry pipelines across federal lands. A major problem with these bills,


\textsuperscript{451} See notes 94 to 108 supra and accompanying text.

\textsuperscript{452} For another viewpoint, see Lang, \textit{The Case against Federal Eminent Domain Powers for Slurry Pipelines}, 110 Pub. Util. FORTNIGHTLY 23-26 (1982). Mr. Lang, vice president of information and public affairs at the Association of America Railroads, questions the need for coal slurry pipelines.
and probably the central reason why no bill has yet been enacted into law, is the potential effects these bills could have on western water rights under state law.

H.R. 4370,453 introduced into the Congress in 1979, would allow the Secretary of the Interior to certify coal slurry pipelines and grant them the right of eminent domain. A provision was incorporated to approve any state-imposed conditions or limitations on the use of water for slurry:

The establishment of terms or conditions to effectuate a legitimate State public interest pursuant to State law . . . shall not be deemed to prevent, unreasonably burden, discriminate against, or directly negate interstate commerce even though in the absence of this Act, such State law or laws or the establishment, exercise or enforce-
ment of such terms and conditions may be deemed violative of
the commerce clause of the United States Constitution.454

Such a constitutional interpretation by Congress is not binding; however, in the event that such a provision is enacted into law, it should operate as an effective delegation of congressional power to the states to regulate interstate commerce as it pertains to water.455

H.R. 1374,456 introduced in 1981, also stressed state control over water use. The bill would prohibit the granting of a right-of-way under the Federal Land Policy and Management Act of 1976457 for a coal slurry pipeline using groundwater in connection with such transpor-
tation unless each affected state consented to that use.458

Federal legislation could be adopted to authorize coal slurry pipeline companies to acquire water rights by eminent domain powers. There is ample precedent for the exercise of such powers by federal agencies and instrumentalities,459 even against conflicting state and local interests and policies,460 and for the delegation of such powers to private entities,461 wherever the exercise thereof is necessary and proper for the enjoyment of one of the enumerated powers vested in the federal government by the United States Constitution.462 The character of the

454. Id. § 302(c)(2).
455. Webber, supra note 22, at 783.
property interest in the water, however, creates difficulties in using federal eminent domain powers to solve water supply problems. The property interest does not inhere in a tangible physical commodity, but in an intangible privilege, shaped by local custom and policies of state law; it affords the appropriator the right to divert a quantity of water in priority and to apply the same to a beneficial use, but subject to various conditions of the state constitution and laws, including in some cases a restriction upon the use of water outside the state. The condemning authority may be privileged to condemn property and property rights and acquire whatever interest the condemnee has in it; it may not be privileged, however, to create a new property interest with rights and privileges in excess of those theretofore existing. Yet it would have to do essentially that if the condemnation were to free the water rights from the limitations of state law.\(^\text{463}\)

**Federal Reserved Water Rights**

State water law is irrelevant under the doctrine of federal reserved water rights because the federal government would be making its own water available for coal slurry pipelines.\(^\text{464}\) The federal reserved water rights doctrine, commonly known as the *Winters* doctrine or the doctrine of implied reservation-of-water rights, was judicially created by the Supreme Court in *Winters v. United States*.\(^\text{465}\) The doctrine of implied reservation-of-water rights states that when the federal government made a reservation or withdrawal of land, it also impliedly reserved sufficient water to fulfill the purpose of the reservation. The quantities of water reserved include amounts necessary for future as well as present needs of the reservation. The government’s water right is not dependent upon the application of the water to any beneficial use, nor is it perfected through nonuse. The right has a priority date as of the time the reservation was originally withdrawn. It is junior only to those private appropriations dated prior to the reservation’s withdrawal.\(^\text{466}\)

Reserved water rights are applicable to federal reserved lands, such

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465. 207 U.S. 564 (1908). The federal government brought suit on behalf of the Indians on the Fort Belknap Indian Reservation in Montana to enjoin upstream farmers from diverting water from the Milk River for irrigation. *Id.* at 565.

as national forests and parks, wildlife refuges, national recreation areas, and Indian reservations.\footnote{467}

The Supreme Court in \textit{Winters} held that the waters of the Milk River, arising on, flowing through, or bordering the Fort Belknap Indian Reservation, were impliedly reserved for the Indians as of the date the reservation was created.\footnote{468} The right to future use of the water was vested in the Indians even though the right was presently not exercised. Under this doctrine Indian reserved rights cannot be forfeited by nonuse or by state action through condemnation, inverse condemnation, or statute.\footnote{469} The federal government is obligated, as trustee of the Indian reserved water rights, to protect and enforce those rights.\footnote{470} In 1963 the Supreme Court in \textit{Arizona v. California}\footnote{471} affirmed the doctrine of Indian reserved rights and held that the reservation included sufficient quantities of water to satisfy present and future needs of the Indian reservation.\footnote{472}

The quantity of water reserved under the doctrine of implied-reservation-of-water rights is elusive.\footnote{473} No standard has yet been universally accepted, although numerous cases are pending on this precise issue.\footnote{474} Several methods have been advanced for quantifying reserved water rights. The open-ended method, favored by the Indians, would allow them to use as much water as they would ultimately need in the future for any use, that is, the method permits extension of the right to the ultimate need of the tribe.\footnote{475} A second method is more limited and permanently quantifies rights according to the reasonable foreseeable Indian needs and uses.\footnote{476} Many Indian reservations include

\footnote{467. Federal reserved lands are distinguished from other public domain lands. Federal reserved lands are those enclaves that are withdrawn from the public domain for a specified purpose, such as a national park or forest. "Public lands" are the remainder of the lands owned by the United States, which are subject to private appropriation and disposal under public land laws. The doctrine has not been applied to these public lands.}

\footnote{468. Winters v. United States, 207 U.S. 564, 576-77 (1908). The Court noted the policy of the government and desire of the Indians that the Indians change their nomadic habits and develop an agrarian society. \textit{Id.} at 576. Because portions of the reserved land were dry and arid, large quantities of water would be required for irrigation to make the lands productive. \textit{Id.} at 566.}

\footnote{469. See Ranquist, \textit{supra} note 466, at 655.}


\footnote{471. 373 U.S. 546 (1963).}

\footnote{472. \textit{Id.} at 600. The Court asserted that the doctrine was also applicable to other federal reservations, such as national parks, forests, recreation areas, and military installations. \textit{Id.} at 601.}

\footnote{473. \textit{Drawing Battle Lines}, \textit{supra} note 112, at 461.}

\footnote{474. \textit{Id.} at 478-79, 479 n.151.}

\footnote{475. Conrad Inv. Co. v. United States, 161 F. 829, 832 (9th Cir. 1908).}

\footnote{476. Tweedy v. Texas Co., 286 F. Supp. 383, 385 (D. Mont. 1968). This method requires a need and use prerequisite.}
vast reserves of coal and much water is needed for its development, so under this theory, the Indians could claim a need for extensive water rights.⁴⁷⁷ A third method, and the most widely accepted, is to quantify Indian reserved water rights according to the irrigable acreage on the reservation land.⁴⁷⁸

How might the doctrine of federal reserved water rights affect coal slurry pipelines? Indian tribes may be interested in leasing their water rights. The Black Mesa Pipeline, for example, utilizes water leased from the Navajo and Hopi Indian reservations in northeast Arizona.⁴⁷⁹ The leases permit the Peabody Coal Company to draw groundwater from deep aquifers. Under the terms of the lease, Peabody pays a fixed price for each acre-foot of water withdrawn, but such withdrawals may not impair the two tribes' underground water supply. If impairment does result, Peabody must furnish replacement water. Peabody's leases are subject to periodic renegotiation. Because other profitable uses for this water have arisen, it is not unlikely that at renegotiation the tribal representatives will insist on higher water prices, or that they may now be completely opposed to continued exportation of water from the reservations. Even with long-term leases, the possibility of changing tribal attitudes limits the attractiveness of relying on Indian reserved rights as an exclusive source of slurry water.

Credit Slurry Water to Interstate Compacts

Crediting water to an interstate compact is the only way permitted by statute of exporting water from Colorado.⁴⁸⁰ Both surface and tributary groundwater used in a coal slurry pipeline destined for Texas could theoretically be credited to Texas through the Rio Grande Compact.⁴⁸¹ That compact was agreed to and approved by Congress in 1939 in order to equitably apportion the water of the Rio Grande River among Colorado, Texas, and New Mexico.

New Mexico and Texas sued Colorado in a 1968 original action in the United States Supreme Court alleging that Colorado had delivered a million acre-feet of water less than provided for by the Rio Grande Compact and asked that Colorado be forced to comply with the compact and repay the alleged "debit" of water. The Supreme Court granted a continuance of the case upon the stipulation of the three parties. The agreement provided that there would be no prosecution for the

⁴⁷⁷. See Drawing Battle Lines, supra note 112, at 468.
⁴⁷⁹. See supra note 31 and accompanying text.
claim for payment of the water debit as long as Colorado undertook to meet the delivery obligation established by the schedules of the compact on an annual basis.\textsuperscript{482} As a result, the Colorado state engineer proposed rules and regulations to enable Colorado to meet its compact requirements.\textsuperscript{483} Delivery of certain quantities of water pursuant to the compact became the most senior water commitment as to surface and tributary groundwater in the Rio Grande and Conejos river systems. Thus, all surface and ground water diversions by state water rights holders are subject to regulation to the extent necessary to deliver the amount of water required pursuant to compact terms.\textsuperscript{484}

Colorado cannot provide more water to Texas than the amount the compact allows without further harming the holders of already curtailed water rights.\textsuperscript{485} Crediting coal slurry water transported to Texas to the compact may relieve some burden on these Colorado rights. A Texas agreement to accept some of its water entitled to under the compact as slurry water, however, would depend on its water laws and the demands of its water permit holders. It seems unlikely that Texas would be politically able to accept some of the Colorado water it is entitled to under the compact in the form of slurry water because of the consequent reduction in its existing water rights. Coal slurry-pipelines will need much greater support at the state level to enable pipeline advocates to take advantage of compact rights.

\textit{Use of Federal Storage Water}

Federal multipurpose storage reservoirs could become an important source of water for energy development. The authority for selling surplus storage water for energy projects, however, is not very clear. The Bureau of Reclamation has general statutory authority to sell surplus water, but such a sale may have to conform with the primary purpose of the individual reservoir project involved.\textsuperscript{486}

In \textit{Environmental Defense Fund, Inc. v. Andrus},\textsuperscript{487} a federal court determined that the Flood Control Act of 1944 authorized industrial use of project water.\textsuperscript{488} The court held that the Secretary of the In-

\textsuperscript{482} \textit{In re Rules \\& Regulations Governing Water Rights, 196 Colo. 197, 583 P.2d 910, 911-12 (1978).}

\textsuperscript{483} \textit{Id., 583 P.2d at 911.}

\textsuperscript{484} \textit{Id., 583 P.2d at 912.}

\textsuperscript{485} See notes 76 to 93 \textit{supra} and accompanying text for discussion of the water shortages in the Rio Grande Basin and Colorado's obligation under the Rio Grande River Compact.

\textsuperscript{486} \textit{See Tarlock, supra note 72, at 547.}

\textsuperscript{487} 596 F.2d 848 (9th Cir. 1979).

\textsuperscript{488} \textit{See 43 U.S.C. § 485h(c) (1976).}
terior has authority to sell water for industrial use only if it will not impair the efficiency of the project for irrigation projects. In the Andrus opinion, the court explained the water marketing program begun in 1967 by the Secretary of the Interior. Under the program, water option contracts could be granted for a period of up to forty years, but preference is given to municipalities and other public corporations. These contracts may be subject to various conditions, and the case held that an Environmental Impact Statement (EIS) must be prepared and approved before any contract could be granted. Although a federal option contract may be burdened with certain conditions, such as an EIS or conformance with any applicable federal water conservation requirements, it may still be a good source of reliable long-term water supply for coal slurry pipelines.

Summary and Conclusions

Coal slurry pipelines would increase the demand for water in the semiarid western states where a large percentage of the country’s coal reserves are located. Several pipelines are in varying stages of planning and development, but are awaiting water allocation and/or easements before construction can begin. Pipeline advocates contend that tremendous cost savings will result from pipeline operations, that water needed for pipelines is only a small amount in comparison with the total consumption of water for other uses, that pipelines are relatively water efficient when compared to the use of water in generating electricity with coal, and that pipelines will have a lesser impact on the environment than other forms of coal transportation. Opponents of coal slurry pipelines contend that they will have a severe economic impact on railroads, that they consume too much water from the semiarid western states where water is a valuable and scarce resource, and that pipelines will create water-quality problems.

The San Marco Pipeline Company has proposed a 1,000-mile pipeline system to move approximately 15 million tons of coal a year, along with 15,000 acre-feet of water, from Walsenberg in southeastern Colorado to several generating facilities in Houston and the Texas Gulf Coast area. The Rio Grande Basin, source of the coal and the proposed water for the pipeline, has severe water supply problems caused by the low levels of precipitation, the high agricultural demand for irriga-

490. Id. at 851-53.
491. See Tarlock, supra note 72, at 545 for further discussion of the use of water from federal storage for coal slurry pipelines.
tion, and the water delivery requirements of the Rio Grande River Compact.

San Marco Pipeline Company has been unable to obtain state permits for its required water allotment. It applied to the Colorado state engineer in June 1976 under a statute applicable to areas outside the boundaries of a designated groundwater basin for permits to construct wells that would appropriate up to 15,000 acre-feet of groundwater from a well field in Costilla County. The state engineer denied the permit application, citing Colorado’s antiexport statute prohibiting the export of groundwater out of state and claiming that the company failed to specify the particular designated aquifer from which the water was to be diverted. San Marco filed an application with the water court for an adjudication of conditional underground water rights in the aquifer underlying the well field, and the case is still pending.

Colorado has established a comprehensive system for water rights administration. Within the statutory guidelines, water appropriators have great freedom to use or market their water rights for in-state beneficial uses. Water is freely transported from basin to basin within the state, and even though water conservation is mentioned in the statute, it is not vigorously pursued. Water appropriators are real property owners and their water rights are protected from impairment by the state or by junior water-rights holders.

Colorado’s antiexport statutes prohibiting the diversion of the state’s surface and groundwater for use out of state, unless credited to an interstate compact, seems to be out of spirit with the state’s statutes governing interbasin transfers within the state. If a water appropriator has the right to use water beneficially within the state, some have questioned why the user is restricted to in-state uses. Is this mere hoarding of a natural resource in violation of the commerce clause in the United States Constitution, or is water of such a different inherent character that states can restrict interstate transfers and protect their supplies? Water is a unique resource and is vital to all of society’s activities. Water has now been ruled an article of commerce or a commodity and as such subject to commerce clause restrictions. State ownership of a natural resource, such as water, does not exempt it from commerce clause scrutiny.

The controversy over whether antiexport statutes are constitutional under the commerce clause remains unresolved and depends upon the nature of restrictions and affected rights. Coal slurry pipeline companies have only two choices for pursuing water rights within Colorado. They may challenge the validity of the antiexport statutes on commerce clause grounds, or they may attempt to use alternatives rather than to appropriate water under state restrictions. Alternatives include gaining
federal eminent domain powers for rights-of-way, using federal reserved water rights, crediting the slurry water to interstate compacts, and using federal storage water.

Colorado's antiexport statutes appear to be discriminatory against out-of-state transfers and use; therefore, in a commerce clause challenge these statutes may be held invalid primarily because of the state's leniency toward intrastate transfers. Whether a state statute interferes with commerce turns on the nature and severity of the burden created and the local purpose served by the statute. State statutes will be upheld only where they incidentally burden or discriminate against interstate commerce. States may impose severe restrictions on diverting water for out-of-state uses provided the same type of conservation measures are imposed on in-state uses. A court may find that the Colorado antiexport statutes are discriminatory against out-of-state users because of the different requirements imposed on out-of-state and in-state uses.

Colorado may want to consider restructuring its statutes to be fairer to out-of-state users. Because there is not enough water to meet all of the demands for its use, Colorado may want to set forth specific priorities regarding beneficial use and water conservation. This was done when the Colorado constitution was first written, but these constitutional priorities were held applicable only for eminent domain purposes. A tightly drawn, nondiscriminatory statute directing priorities first to the most essential uses of water, as the state perceives them, should tie state water policy closely to a legitimate exercise of the state's police power. Such priorities need not alter the existing system and could encompass current practices. They could be made to apply to future appropriations and to appropriations seeking a change of beneficial use determination. The latter provision would be the key factor to implementing the use priorities as determined by state residents.