Colorado Stream Lines

QUARTERLY NEWSLETTER OF THE OFFICE OF THE STATE ENGINEER
COLORADO DIVISION OF WATER RESOURCES

VOLUME II, NUMBER 2 JUNE 1989

## LEGISLATIVE NEWS

By
Jeris A. Danielson

During this past legislative session, several bills of interest to water users were passed. I would like to take this opportunity to pass along information regarding the bills and their implications to my office and the public at large.

**Senate Bill 120** was a result of last year's Supreme Court decisions in Zigan Sand & Gravel, Inc. v. Cache La Poudre Water Users Association, et al. and The Three Bells Ranch Associates v. Cache La Poudre Water Users Association (see **STREAM LINES** Vol. 1, No. 2) that stated all gravel pits which expose ground water are wells, and therefore, are required to possess a well permit and an approved augmentation plan to replace evaporative losses in order to operate. This bill codified the requirement into statute.

An interesting feature of this bill is a grandfather clause which allows for a person who extracted sand and gravel by open mining and exposed ground water to the atmosphere prior to December 31, 1980, to be exempt from the requirements of a well permit, augmentation requirements, or a substitute supply plan.

**Senate Bill 120** also provides for the collection of fees by the State Engineer under various scenarios. For persons with gravel pits that exposed ground water after December 31, 1980, but prior to July 15, 1989, a $210 fee is imposed for each augmentation or substitute supply plan that exposes groundwater surface area of ten acres or less. If more than ten acres are exposed, a fee of $1,050 is imposed. However, if the plan is filed prior to July 15, 1990, the filing fee shall be only $70 for ten acres or less and $350 for pits exposing over ten acres of groundwater. Gravel pits exposing groundwater that are constructed after July 15, 1989, will pay fees of $70 for ten acres or less and $350 for more than ten acres of groundwater surface area.

**Senate Bill 135** was also passed by the legislature during this session repealing the provisions of section 37-80-111.5(4), C.R.S. (1988 Supp.). This will allow the Division of Water Resources to continue collecting cash funds for the satellite monitoring system, the water data bank, the groundwater management fund, and the publications fund.

With regard to water court matters, section 37-92-305(3) was amended by **Senate Bill 166.** Basically, this bill requires water right applicants, in cases in which a statement of opposition has been filed, to provide the judge or water referee with a proposed ruling prior to a hearing on the merits of the case.

Of final note, water quality control and regulation was dealt with in **Senate Bill 181.** The

Water Quality Control Commission, under this bill, must now consult with the Division of Water Resources prior to adopting policies that may cause material injury to water rights, both surface and groundwater. Also, the State Engineer must take into consideration water quality standards and classifications prior to issuance of permits to construct wells.

## WELL PERMIT INFORMATION ACCESS IMPROVED AT DWR

By Will Burt

The Division of Water Resources is in the final stages of testing a new data base containing all well information, from applications through completed wells. Previously, completed well information was maintained on an ancient batch-operated data system on the State's mainframe. The Application/Permit File was maintained on-line using the Department of Natural Resources' Wang VS System. The new system, which will also run on the Wang VS, is expected to be in use by May 30.

The new system, simply called "The Well System," will allow on-line access, both for inquiry and update, into any of the State's 240,000 well records. Each record may be accessed for display using any one of several key fields, including name, location, subdivision name, permit number, or receipt number. Access will be from any of DWR's PC workstations. The Ground Water Information Desk will be an immediate beneficiary of the system allowing quicker access to requested information by phone. The Records Section should be on-line within a few months to assist in answering the numerous requests for well information that they receive daily in person. The system itself will minimize the need to search for microfilm for each individual well and will make the research process more efficient for the public and DWR.

## HAZARDS OF UNUSED WELLS WHICH ARE NOT PROPERLY PLUGGED

By Reiner Haubold

In the past few months the State Engineer's Office has been involved in two hazardous well abandonment situations. These cases are mentioned here to alert well owners of the hazards of abandoned wells which are not properly plugged, including the potential liabilities and expenses that can be associated with the failure to properly plug.

In March of this year, a 10-year old girl fell into an open, unused well near Crawford, Colorado. Fortunately for all involved, she was rescued and received only minor injuries. A subsequent joint investigation was conducted by the State Engineer's Office and the Oil and Gas Conservation Commission. The investigation revealed that the well was constructed as an oil test well and not plugged when abandoned. Since that time, the Commission has issued an order to plug and abandon the well involved and monitoring of compliance continues to this date

At approximately the same time, the State Engineer's Office was also notified of a water well which was leaking, causing possible contamination of the surface stream flow system. Once the well owner was located and informed of the waste and contamination problems, he had the well plugged with cement to discontinue the flow.

These instances are good examples of some of the extreme hazards that exist and are a direct result of the abandonment of wells without proper plugging. The owners of property on which an unused well is located not only expose themselves and their families and friends to very serious hazards, but can also be held liable for injury to others, including clean-up costs associated with a contaminated aquifer. When a well is not used or is incapable of being used, it is in the owner's best interest, and the law, that the structure be properly plugged and abandoned. The proper plugging and sealing o

all unused wells will prevent accidents such as the one near Crawford or the one in Texas two years ago. It will also save the owner possible liability problems and needless worry.

Persons knowing of improperly abandoned or unused wells which pose a threat either to the environment or to the general public should report their location to the Division of Water Resources for water wells, the Oil and Gas Conservation Commission for oil or gas wells, or the Mined Land Reclamation Division for coal and mineral exploration holes. Should further information be required regarding the proper methods to plug such wells, please contact the respective agency listed above.

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## DAM CONSTRUCTION WITH GEOSYNTHETICS

By Greg Hammer

As the number of dams being repaired rises and with it the cost of repairs, geosynthetic materials are finding increasing favor in dam construction. In recent years several dams in the U. S. have been modified using geomembranes, but in Europe, the technology has been in place for over 20 years. With a record of low cost and low maintenance, geosynthetics are becoming a viable alternative for modification and repair of dams.

Geosynthetics constitute a broad range of man-made materials which have been developed primarily for applications involving ground modification. Currently, three major categories exist, being geotextiles, geomembranes, and geogrids, with numerous other products on the market. These synthetics are petroleum based products and are produced in a wide assortment of chemical compositions and construction.

The first generation of synthetics, geotextiles, was primarily used as embankment foundation support on soft ground. The fabric would be rolled out over the ground, usually in swamps, and a road or dike constructed over it. Over time, the textiles have developed to be used as a replacement for sand filters in drainage systems and as bedding for riprapped slopes. Typical installations are to wrap gravel in the fabric for a gravel drain or to wrap perforated drain pipe. The fabrics generally have a woven or nonwoven structure and are most commonly polyester or polypropylene.

Initially developed to provide watertight barriers lining small water storage basins and canals, the use of geomembranes has expanded broadly to other applications. As the applications have increased, likewise has the number of manufacturers and formulations. Primarily, geomembranes are "rubber liners" made from formulations of poly-vinyl chloride and polyethylene with various additives and composition. In conjunction with the membrane, a geotextile is often used to provide strength and puncture resistance.

Several years ago, while employed by the U.S. Bureau of Reclamation, I was tasked with a project to raise a dam in conjunction with enlarging its spillway. The 30-year old clay and rockfill structure was located in a popular tourist area, and over its crest carried a U.S. highway which had been given scenic status. In addition to the usual technical design details, there were concerns to minimize the impact to tourist traffic due to construction and to avoid the unsightly scars which result from development of borrow sources for embankment fill.

As the design neared completion, we were asked to investigate a design which would utilize a geomembrane as the impervious core for the raised embankment section. Our initial concerns were how to bond the membrane to the original clay core and to a rock foundation for a new embankment, and more significantly, how would the membrane resist puncturing when placed against angular rockfill. Bonding to the soil and

rock was solved through standard manufacturer details, but to avoid puncturing, special precautions were required.

Initially we selected the thickest, toughest, and most durable membrane that was on the market, reasoning that with care puncturing could be prevented. We were able to locate test data for several different geomembranes and then developed our own test program to evaluate the suitability of thinner and more flexible membranes. Based on these tests, the design was modified to incorporate a textile backing to protect the membrane and allow a thinner membrane to be used. To guard against an embankment failure if a leak were to develop, an upstream sand zone was provided to serve as a filter for a zone of rock fines placed upstream of the membrane. With this filter in place the embankment could withstand through-flow without failing. An additional purpose for the sand was to serve as a cushion for construction equipment traveling over the membrane. Using this system for modification, we projected a 20% cost savings for the project and were able to continually allow tourist traffic to continue across the dam during construction, with minimal delays.

In recent months information has been coming from Europe describing the use of geomembranes in concrete dams. Some of these dams were repaired almost 30 years ago and have displayed minimal wear with time. To Colorado dam owners this is noteworthy, since some of these dams are in mountainous areas and are susceptible to ice action and exposure to ultra-violet radiation.

In Europe, geomembranes have been placed on dams with vertical faces, and on embankment dams with upstream face linings. Installation has been performed using procedures which essentially "glue" the liner or by mechanical methods which bolt the liner to the dam. These techniques generally do not require heavy equipment so that difficult access is not a major problem for construction operations.

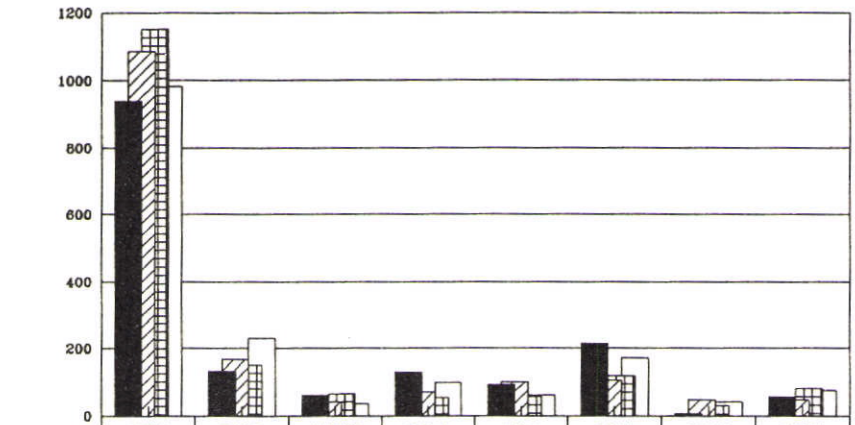
Benefits from the use of these linings is the rapidity of installation and the perfect seal which reduces or eliminates seepage. The speed witl which installation can progress limits the amount of time that the reservoir must be empty, and if conditions require, the installation can be performed under water. With regard to seepage, these linings have virtually eliminated all flow through the dam itself. For concrete dams, this procedure can help to eliminate the deterioration of the downstream face which plagues many structures due to through seepage.

The latest products to come out are materials known as geogrids. These come in numerous shapes, configurations, and formulations. Typically, they are best used for erosion control and slope protection. To date they have been used primarily on channel slopes, but use is increasing in the field of dam construction. Recent studies have investigated their suitability for use as protection against overtopping.

Geogrids, in general terms, resemble a net. Installation involves laying out the material and backfilling the cavities between the grids. In thir manner, the grids become an integral part of the soil fabric. The additional support that is provided to the soil by constraint from the grids yields a much stronger soil structure. This is most beneficial for slopes which tend to be unstable and are susceptible to sloughing or sliding.

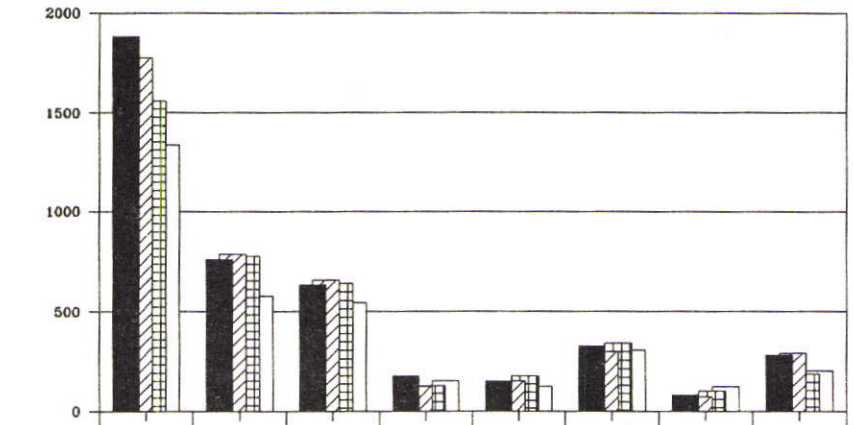
In the U.S. the use of geomembranes, geotextiles and geogrids has been limited for water storage reservoirs, with more extensive use in the hazardous waste field. As was mentioned previously, the U.S. Bureau of Reclamation has some experience, and European experience is being made available to the U.S. With proper attention to design criteria, these materials may prove to be feasible solutions to difficult problems.

## SUMMARY NON-EXEMPT WELL PERMITS ISSUE CALENDAR YEARS 1985 THROUGH 1988




| | DIV 1 | DIV 2 | BASINS | DIV 3 | DIV 4 | DIV 5 | DIV 6 | DIV 7 |
|---|---|---|---|---|---|---|---|---|
| 1985 | 939 | 133 | 60 | 130 | 92 | 214 | 8 | 56 |
| 1986 | 1085 | 168 | 41 | 70 | 101 | 106 | 48 | 47 |
| 1987 | 1152 | 152 | 65 | 54 | 56 | 119 | 31 | 81 |
| 1988 | 983 | 229 | 35 | 98 | 60 | 173 | 41 | 76 |

## SUMMARY OF EXEMPT WELL PERMITS ISSUED CALENDAR YEARS 1985 THROUGH 1988



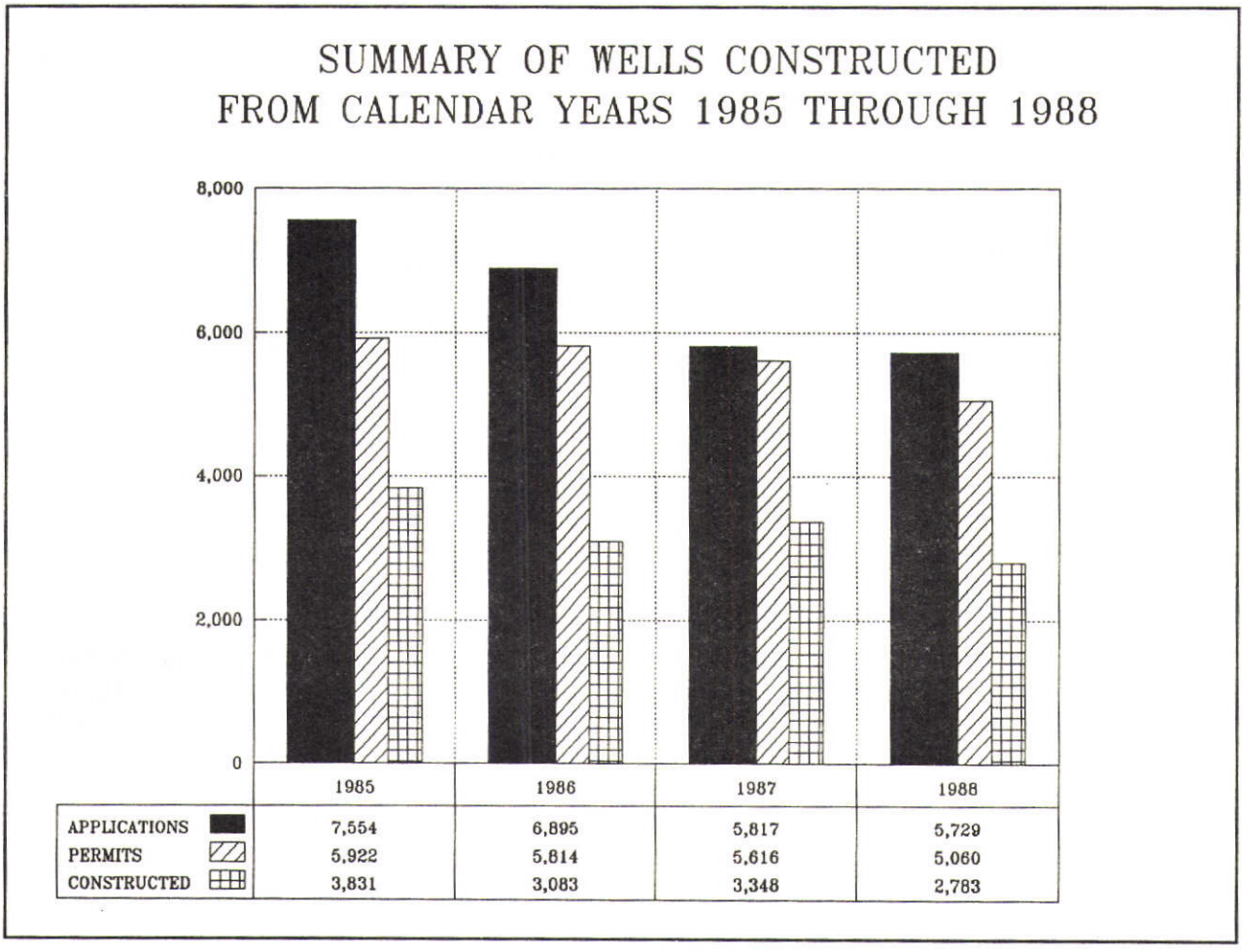

| | DIV 1 | DIV 2 | BASINS | DIV 3 | DIV 4 | DIV 5 | DIV 6 | DIV 7 |
|---|---|---|---|---|---|---|---|---|
| 1985 | 1883 | 756 | 629 | 176 | 152 | 328 | 62 | 282 |
| 1986 | 1776 | 784 | 651 | 123 | 152 | 297 | 73 | 292 |
| 1987 | 1560 | 774 | 636 | 129 | 179 | 338 | 102 | 188 |
| 1988 | 1337 | 575 | 543 | 153 | 124 | 303 | 124 | 206 |

**Graphs showing the number of both exempt and non-exempt well permits issued by the Division of Water Resources for the years 1985 through 1988.**

## FAX NOTE

Geophysical logs can be FAXed to this office for review and evaluation of aquifer boundaries. Recently we had the opportunity to test this procedure. A log was FAXed to us, reviewed and the determination returned to the consultant within an hour and a half. By doing this, it was not necessary for the consultant to make a special trip to the office and wait for a response. The turn-around time by using this method will probably save a full day of rig standby time.

If you wish to submit geophysical logs in this manner, please call and speak to someone in the Geotechnical Services Branch to make availablity arrangements and to obtain our FAX number.




| | 1985 | 1986 | 1987 | 1988 |
|---|---|---|---|---|
| APPLICATIONS | 7,554 | 6,895 | 5,817 | 5,729 |
| PERMITS | 5,922 | 5,814 | 5,616 | 5,060 |
| CONSTRUCTED | 3,831 | 3,083 | 3,348 | 2,783 |

**Number of wells constructed for the years 1985 through 1988**

## GROUNDWATER MONITORING

by

George VanSlyke, Project Manager

The winter groundwater level monitoring program for the designated basins of eastern Colorado has been completed. Over 900 well sites were visited during the period and over 800 wells were measured. Results of the measurements show an increased decline in water levels throughout much of the High Plains area due to two dry summers in a row, combined with the dry winter of 1988/89. Wells in the Northern High Plains pumped as late as January of 1989. Soil moisture levels dropped significantly during the winter and pumping began in early March over much of the area. The following table gives the results of the measurements:

| Basin | Management District | Average Change |
|---|---|---|
| Northern High Plains | W-Y | - 3.08 Feet |
| | Frenchman | - 1.08 |
| | Central Yuma | - 0.64 |
| | Marks Butte | - 0.41 |
| | Sandhills | - 1.17 |
| | Arikaree | - 0.65 |
| | Plains | - 1.19 |
| | Eastern Chy. | - 1.66 |
| | Washington C. | - 0.06 |
| | Logan C. | + 0.59 |
| | Prowers C. | + 0.80 |
| | Kiowa C. | + 0.32 |
| Total | | - 1.06 |
| S. High Plains | (all aquifers) | - 0.05 |
| Lost Creek | Lost Creek | - 0.02 |
| Kiowa-Bijou | N. Kiowa-Bijou | - 0.55 |
| Upper Black Squirrel | | - 2.19 |

Detailed reports for each of these areas are available through the Office of the State Engineer. The Northern High Plains report is $5.00, reports for the other basins are $1.50 each.

Water level measurements in the Denver Basin bedrock wells have been taken for approximately 150 wells. The data for these wells are presently being analyzed and the results will be reported in the September issue of **STREAM LINES.** Copies of the report should be available about the first of July and may be purchased for $6.00.

## COLORADO RECHARGE DEMONSTRATION PROJECTS

By Purushottam Dass

The High Plains States Artificial Groundwater Recharge Demonstration Program Act, Public Law 98-434, was passed in 1983. The Act directs the U.S. Bureau of Reclamation to engage in a study of the potential for groundwater recharge in the eight High Plains states (Colorado, Kansas, Nebraska, New Mexico, Oklahoma, South Dakota, Texas, and Wyoming), and in nine other Reclamation Act states (Arizona, California, Idaho, Montana, Nevada, North Dakota, Oregon, Utah, and Washington). The Act emphasizes demonstration projects using local surface water supplies to recharge nearby aquifers.

The Phase I site selection study is already completed. The Bureau, in cooperation with the U.S. Geological Survey, Environmental Protection Agency and the U. S. Fish & Wildlife Service, selected 21 projects (three from Colorado) in the 17 western states. The total estimated cost for these projects is $27 million, with $18.5 million from federal funds and $8.5 million from nonfederal funds. Local sponsors are required to provide at least 20 percent of the project costs.

The Phase II program consists of design, construction, operation, and monitoring of the recharge demonstration sites for a five-year study period. The Bureau and local project sponsors are now finalizing the project proposals and cooperative agreements for the Phase II work. A proposal consists of a plan of development as well as a monitoring plan, a quality assurance plan, a fish and wildlife mitigation plan, and the detailed cost estimates and specifications.

The purpose of the recharge demonstration projects is to demonstrate the feasibility of this technology to conserve our limited water resources, extend aquifer life, and answer engineering, water quality and economic questions. The Phase II studies will be completed by September 30, 1993.

The Colorado Ground Water Commission was authorized by Governor Romer to serve as the lead state agency for the recharge demonstration projects within Colorado. During the site selection phase the Commission forwarded the proposals on four projects to the Bureau. Three of those projects were selected for the Phase II study. A description of each project follows:

Plains/Arikaree

This project includes three separate sites where three different methods of recharge would be tested in similar hydrologic settings. The sites are located on ephemeral streams in the High Plains of eastern Colorado. The Cope site, on the Arikaree River near Cope, will use a series of small dams with spreading basins. The Kuhn site, on Sand Creek near Burlington, will utilize an abandoned gravel pit as a recharge pit. The McConnell site, on Landsman Creek near Stratton, would feature a small detention dam with an open-pipe outlet to control outflow so that it will all recharge through the streambed of the aquifer downstream of the dam. Each site will have several monitoring wells to monitor water quality and groundwater level changes. Besides testing and comparing the hydrologic effectiveness of each of the three methods, this proposal compares construction and operational costs of the various methods.

The State Engineer's Office and the Plains and Arikaree Ground Water Management Districts are project sponsors. Due to several changes in the project scope and extensive EPA requirements for water quality monitoring, the project cost has increased to about $750,000.

Frenchman Recharge Project

This project will examine the benefit of sma water conservation structures, such as terraces, pits and ponds, on groundwater recharge. The study will utilize two adjacent watersheds, one having conservation structures and the other with no structures. The selected basins are the South Fork of Frenchman Creek, which has extensive terraces, and an unnamed adjacent tributary southwest of Holyoke, which is relatively undeveloped. Monitoring wells and neutron probes will be installed to observe the recharge rates and collect water quality samples.

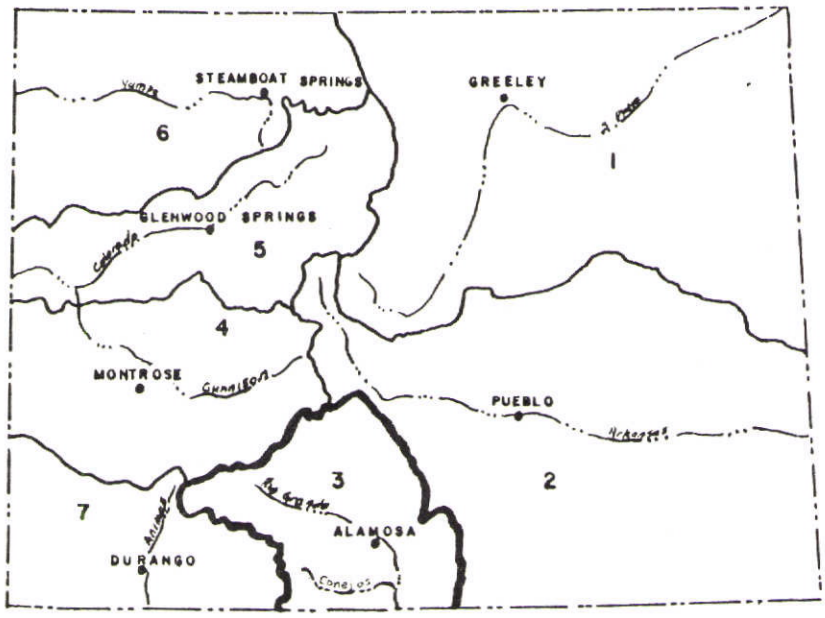
The State Engineer's Office and the Central Yuma County, Frenchman, Marks Butte, and Sandhills Ground Water Management Districts are the project sponsors. A revised proposal will be prepared specifying project details.

Denver Basin Aquifer Recharge Project

This project will demonstrate the engineering and economic feasibility of using an injection well to recharge treated municipal water into the Arapahoe Aquifer of the Denver Basin. This project is located within the Willows Water District, which is located approximately 12 miles south of downtown Denver near the western edge of the Basin. This project will be unique in that it will test the feasibility of injecting treated potable water into the Arapahoe Formation at a depth of 800-1500 feet below land surface, then later, if feasible, recovering the water for municipal use.

Willows Water District is the project sponsor and the State Engineer's Office is a local cooperator. Willows has submitted a proposal to the Bureau with a project cost of about $3 million for the Phase II study. Willows has already started a recharge demonstration using one of its own production wells. That study has the Denver Water Department, Parker Water and Sanitation District and the State Engineer's Office as cooperators.

WATER DIVISION BOUNDARIES




## WATER DIVISION III
## THE RIO GRANDE BASIN

By Steven E. Vandiver
Division Engineer

WATER DIVISION III is in the south central portion of the state and covers approximately 8,000 square miles. The Rio Grande is the principal river in the Division with the Conejos River being Colorado's largest tributary. The headwaters of the Rio Grande start on the Continental Divide just east of Silverton, Colorado, and run generally southeasterly through Alamosa where the river turns south and crosses the stateline into New Mexico. Approximately 600,000 acres of irrigated land are located in Division III and 30,000 people depend on the surface and groundwater flows in the area.

Much of Division III is a flat, high mountain valley approximately ninety miles long from north to south and fifty miles wide east to west. The Division is bounded on the west, north and east by the San Juan and Sangre de Cristo mountains, many of which are 11,000 to 14,000 feet in elevation. Because of this ring of mountains, the valley floor receives an average of six to nine inches of precipitation per year, while the mountains receive up to 50 inches of precipitation per year. Therefore, the primary source of surface supplies comes from snowmelt runoff in May and June. The north half of this valley floor (approximately 3,000 square miles) has no natural surface outlet to the Rio Grande and is considered a "closed basin." There are numerous streams (17) and several large irrigation canals out of the Rio Grande which run into this area. Practically all the water produced by these streams and diversions not consumed by irrigation is lost to evapotranspiration and evaporation.

The prominent administrative concern of the Division is the Rio Grande Compact. This interstate compact between the states of Colorado, New Mexico and Texas was signed in 1938 to equitably apportion the waters in the Rio Grande between the three states and the Republic of Mexico. The compact provides that Colorado shall annually deliver a portion of the waters of the Conejos River and the Rio Grande to the New Mexico stateline in accordance with a delivery schedule in the compact. This generally has to be accompished by partially curtailing diversions on the two rivers to provide water to meet our annual obligation. Usually, the curtailment is in the thirty to fifty percent range meaning that

thirty to fifty percent of the annual flows of both rivers must be delivered downstream without allowing in-state users to divert the water and put it to a beneficial use. This has caused many interesting "cussins and discussions" over the history of compact administration.

One new relief to this delivery obligation is the Closed Basin Project which is being constructed by the United States Bureau of Reclamation and sponsored by the Rio Grande Water Conservation District. This project is designed to salvage water historically lost to evaporation and evapotranspiration in the Closed Basin area by pumping shallow groundwater and delivering it to the Rio Grande to help Colorado meet it's delivery obligations. A portion will also go to wildlife interests in the Valley.

The other major sources of water in Division III are the extensive groundwater aquifers underlying the valley floor. The unconfined shallow aquifer averages approximately 5 to 100 feet in depth and the confined or artesian aquifer, which lies under an aquitard called the Blue Clay, averages from 150 to 3,000 feet in depth. Approximately 4,000 irrigation wells in the Valley use water extensively from both aquifers and supply most of the 1800 center pivot sprinklers in Division III.

Water Court activity has slowed considerably in the last few years. Only 35 applications were filed in 1988. Judge Robert Ogburn and George Woodard, the newly appointed Water Referee, preside over the Water Court and Carol Redding is the Water Court Clerk.

The Division Engineer, Steven E. Vandiver, and his staff are located in Alamosa at 422 Fourth Street in the Ton Building. The staff includes four engineers, 13 water commissioners, one well inspector and one secretary. The office can be reached by phone at: (719) 589-6683.

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Note: This is the fourth in a series of nine articles explaining the geographical division and administration of water in Colorado. The September issue of **STREAM LINES** will feature Water Division IV, the Gunnison River Basin.

**COLORADO GROUNDWATER ENGINEERING AND MANAGEMENT CONFERENCE**
FEBRUARY 26-27, 1990 (tentative date)
DENVER, COLORADO

# C A L L  F O R  P A P E R S

Conference Objective

The purpose of the Colorado Groundwater Engineering and Management Conference is to evaluate technical management methods necessary to solve state groundwater problems. The Conference will involve the presentation of contributed papers, invited papers and discussion about groundwater issues.

Audience

The Conference will be of interest to engineers, attorneys, hydrologists, geologists, well drillers, government officials, water managers, water users, utility contractors, researchers and citizens with a general interest in Colorado water.

Conference Topics

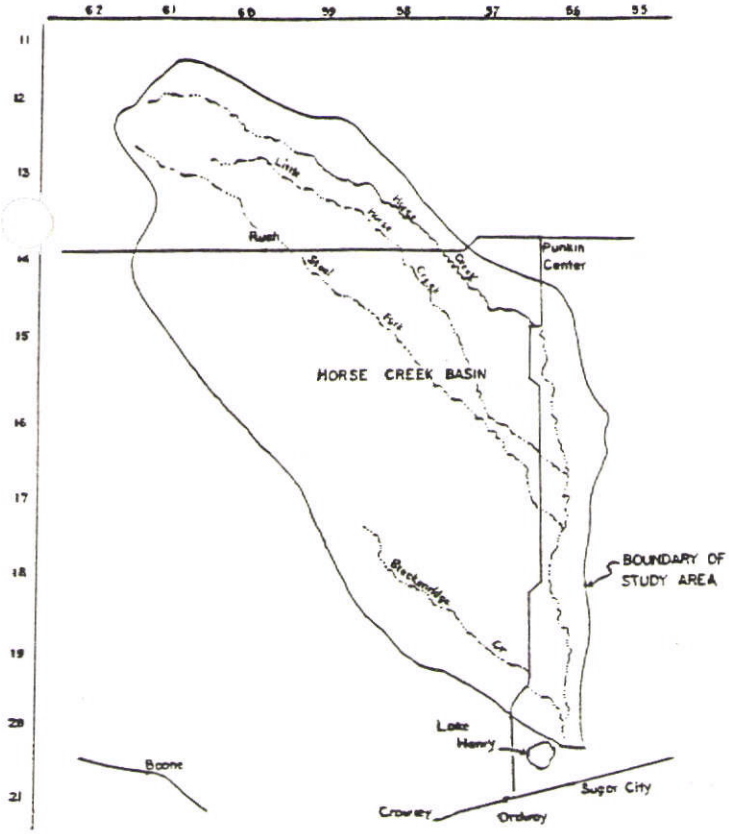
- Groundwater Management Techniques
- Determination of Aquifer Characteristics
- Aquifer Restoration Techniques
- Groundwater Quality Monitoring
- Hydrogeology
- Modeling and Computer Applications
- Legal and Institutional Factors and Role of Governments
- Groundwater Recharge and Conjunctive Use
- Management of Nontributary Aquifers
- Protection of Aquifers From Contamination
- Groundwater Classification Systems
- Well Technology
- High Plains Issues

Cosponsors Sought

The Conference is organized by the Colorado Division of Water Resources and the Water Resources Research Institute. Other agencies or public organizations or associations with an interest in groundwater are invited to cosponsor.

To Submit a Paper for Consideration
Send a 200-word abstract by **1 November 1989** to:

Water Resources Research Institute
Colorado State University
Fort Collins, CO 80523
(303) 491-6308



HORSE CREEK BASIN STUDY AREA

## HORSE CREEK BASIN FIELD INVESTIGATIONS TO BE CONDUCTED BY THE DIVISION OF WATER RESOURCES

By Joseph B. Grantham

During the upcoming irrigation season the Division of Water Resources will be conducting a study of the Horse Creek Basin area (see map inset). The area involved in the study encompasses approximatley 1,070 square miles in eastern El Paso, southern Elbert, southwestern Lincoln and northern Crowley counties, Colorado, which includes Horse Creek and all of its tributaries upstream of the Lake Henry-Sugar City area. The study is being conducted pursuant to an order by Judge John Tracey of the Division II Water Court in Pueblo.

Pursuant to Judge Tracey's order, an administrative plan has been developed by the State Engineer's Office which will be implemented in three phases. Phase I of the plan will involve extensive field investigations within the study area by the State and Division Engineers' respective staffs to determine improper and illegal uses of water, with appropriate orders being issued where necessary.

Based upon information collected during the investigation period involved in Phase I, an administrative plan may be implemented within the study area during 1990 (Phase II). Continued monitoring of water use, both surface and groundwater, may continue within the study area through 1991 and beyond should the court deem it necessary.

The administrative plan and supporting hydrologic data report can be viewed at the Division of Water Resources, Division No. 2, 219 West 5th Street, Room 223 of the Thatcher Building, Pueblo, Colorado, during normal business hours. Please call (719) 542-3368 for further information.

## JOHN ROMERO RECEIVES GLOVER AWARD

At its annual meeting in April, the Colorado Ground Water Association honored **John Romero** of the State Engineer's Office and **Stan Robson** of the U.S. Geological Survey by awarding them the Robert E. Glover Award for 1989. The award is presented by the Association to persons making significant contributions to the development and use of groundwater in Colorado. John and Stan were recognized for their contributions to the knowledge and understanding of the groundwater regime of the Denver Basin.

John was raised in Leadville where his father was a miner. After graduation from high school, John worked in the mines prior to spending two years in the Army. After his return to Colorado he attended college in Durango, and later transferred to CU where he earned a B.S. in Geology. He attended graduate school at CSU and earned his M.S. in Hydrogeology. John joined the Office of the State Engineer in the fall of 1965. He is a registered professional engineer and a member of the Sigma Xi Scientific Research Society. His membership in the society was sponsored by the late Robert E. Glover.

## EMPLOYEE RECOGNITION

The Division of Water Resources would like to take this opportunity to recognize some outstanding employees. The employees are: **Thomas Kelly**, the Division Engineer for Water Division No. 4 (Montrose), **Violet Rodriguez** of the Denver staff and **Jim McDanold**, a Water Resource Engineer for the Denver Engineering Branch.

**Tom Kelly**, Division Engineer for Water Division No. 4, was recently nominated to receive the First Annual Colorado State Managers Association Outstanding Manager Award. Tom, who has worked diligently for DWR over the past 28 years, was nominated for his outstanding management abilities which directly resulted in greater Division efficiencies using fewer resources. Tom epitomizes everything a "civil servant" should be. His honesty, sincere concern for his fellow man, and willingness to try to resolve problems to everyone's benifit made Mr. Kelly an obvious nominee. We are proud that Tom finished a close second in the balloting for the award and would like to say thank you for your efforts and continued service. Congratulations, Tom.

**Violet Rodriguez**, a Data Entry Operator in the Records Section of the Denver Office, was recently honored as the Employee of the Month for May. Besides doing an outstanding job in data entry, Violet was also recognized for her willingness to help out in a variety tasks when called upon. Her cheerful disposition was also noted as "second to none." Hats off to Violet from the Division of Water Resources.

**Jim McDanold**, is the Division of Water Resources Employee of the Month for June. Jim was honored by his fellow employees for his diligent assistance in court matters and evaluations of substitute supply plans. Jim also recently passed his P. E. examination and is now a Registered Professional Engineer.

Of final note, **Donald Q. (Stix) Palmer**, Water Commissioner for District 5 in Division I, will be retiring July 1st. Stix began his career with the state in October 1964 as deputy water commissioner for the St. Vrain River and ha been a fixture in the community ever since. His dedicated service and sense of humor will be missed by both the public and the Division. The Division would like to say thank you and congratulations and we wish him luck in his new endeavors as a consultant and traveler.

## PUBLICATIONS

A number of new publications are available through the Records Section. These new publications are:

Dam Safety Manual (reprint)
$10.00

Water Levels in the Northern High Plains
Years 1988/89
$ 5.00

Water Level Reports $ 1.50 ea.
Upper Black Squirrel
Lost Creek
Kiowa-Bijou
Southern High Plains

Procedure for Approximating Dam Failure Floodplain Mapping
$15.00

Analytical Stream Depletion Model (reprint)
$15.00

Bibliography of Geology and Groundwater Geology for the Denver Basin, Colorado
$ 1.50

In addition to the above reports, there are two free publications available by writing or phoning the Division of Water Resources.

1. Construction and Operation of Dams in Colorado (brochure)

2. Available Publications of the Division of Water Resources

## NEW GRAND JUNCTION OFFICE

The Division recently established a field office in Grand Junction to provide the local water users with better access to the regional water commissioners. The office will be staffed by Richard Belden, Division 4 Water Commissioner for Districts 42, 63, and 73, and Marcus Klocker, Division 5 Water Commissioner for District 72.

The new office is located just North of I-70 on Horizon Drive at 2754 Compass Drive, Suite 326, in the same building as the Soil Conservation Service, ASCS and other USDA agencies. Office hours will be adjusted seasonally, so a call ahead is recommended. The number is (303) 245-5884.

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## CALENDAR OF EVENTS

**July**

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|---|---|
| July 10-11 | Colorado Water Conservation Board, Denver, CO. Contact: Maria Martel, CWCB. (303) 866-3441. |
| July 12-14 | 95th Quarterly Meeting of the Western States Water Council, Jackson Hole, WY. Contact: Craig Bell, WSWC. (801) 561-5300. |
| July 21 | 29th Annual Meeting of the Republican River Compact, Lincoln, NE. Contact: Paula Lacey. (303) 866-3581. |
| July 24-26 | 14th Annual Colorado Water Workshop - "Enough and Clean Enough: Colorado's Water Quality/Quantity Debate," Western State College of Colorado, Gunnison, CO. Contact: Tyler Martineau. (303) 943-2082 |
| July 25-28 | Western States Water Council Non Point Source Pollution Control Workshop - Technical Issues, Irvine, CA. Contact: Norman Johnson, WSWC. (801) 561-5300. |

**August**

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| August 1 | Board of Examiners of Water Well Construction and Pump Installation Contractors, Room 821, 1313 Sherman St., Denver, CO, 8:30 a.m. Contact: Bruce DeBrine. (303) 866-3581. |
| August 17-18 | Colorado Ground Water Commission, tentatively scheduled for Burlington, CO, 9:00 a.m. Contact: Marsha Smith. (303) 866-3581. |

## CALENDAR OF EVENTS CONT.

**September**

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|---|---|
| Sept. 11-13 | 96th Quarterly Meeting of the Western States Water Council, Mount St. Helen, WA. Contact: Craig Bell, WSWC. (801) 561-5300. |
| Sept. 19-21 | 62nd Annual Meeting of the Association of Western State Engineers, Newport, OR. Contact: Larry Jebousek, Oregon Water Resources Dept. (503) 378-8128 |
| Sept. 21-22 | Colorado Water Conservation Board, location outside of Denver to be determined. Contact: Maria Martel, CWCB. (303) 866-3441. |
| Sept. 26-29 | Dam Safety Seminar and Inaugural Meeting of the Canadian Association of Dam Safety Officials, Edmonton, Alberta. Contact: Barry Hurndall, CADSO. (403) 422-1356. |

**October**

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| October 1-5 | 6th Annual Conference of the Association of State Dam Safety Officials, Albuquerque, NM. Contact: Lori Spragens, ASDSO. (606) 257-5140. |

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DENVER COLORADO

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STREAMLINES is published by the Colorado Division of Water Resources on a quarterly basis in March, June, September and December. Subscriptions are available for $10.00 per year to cover the cost of printing and mailing.