Colorado Stream Lines

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

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Our mission is to serve the needs of the public and to distribute, conserve, protect, develop and maximize the beneficial use of the state's present and future water supplies.

COLORADO RIVER DECISION SUPPORT SYSTEM

By Ray Bennett

Recent developments between the seven Colorado River Basin states (California, Nevada, Arizona, Utah, Wyoming, New Mexico and Colorado), have highlighted the need for Colorado to improve their capability to develop credible information and analyses regarding the operation of the Colorado River. A needs analysis and feasibility study for development of the Colorado River Decision Support System (CRDSS), funded by the Colorado Water Conservation Board (CWCB), was prepared. The feasibility study determined that a data centered Decision Support System would be a feasible project and recommended that the CRDSS be developed over a four-year period. The Colorado Legislature approved the recommendation and allocated $1,400,000 for Fiscal Year 1994 from the CWCB Construction Fund.

The objectives of the CRDSS have been identified and prioritized into the three following categories:

- **Interstate Compact Policy Analysis** including evaluation of alternative operating strategies, determination of available water remaining for development, and maximization of Colorado's Compact apportionment.

- **Colorado Water Resources Management** including development of basin-wide planning models, examination of water management options, and evaluation of in-stream flow appropriations for endangered species.

- **Colorado Water Rights Administration** including efficient water right administration in Colorado, on-line sharing of information between water users, and potential administration of water rights under a compact call.

The project is being administered by a management team consisting of Ross Bethel of Leonard Rice as project manager, Ray Alvarado of the Colorado Water Conservation Board, and Ray Bennett of the Division of Water Resources. A Technical Advisory Committee, chaired by David Harrison of the Colorado Water Conservation Board, has been established to provide advice and guidance to the project management team. Technical expertise responsible for developing the CRDSS is being provided by the consulting team of Riverside Technology, Inc. and Colorado State University.

CRDSS is scheduled to be developed over a four-year period, with the initial focus in years 1 and 2 (fiscal years 1994 - 1995) on data base design, data base construction, development of a Consumptive Use and Planning Model and the ability to utilize the current version of the Bureau of Reclamation's Colorado River Simulation Model. Years 3 and 4 (Fiscal Years 1996 - 1997) will complete the data base design, refine the water rights planning models, and develop various other administrative tools.

HydroBase

by Jean Van Loan, Project Leader

The Technical Support Branch of the Division of Water Resources has increased its efforts toward implementing a GIS (Geographic Information System) by beginning Project *HydroBase*. The purpose of this project is to prepare a data base of tabular information, called *HydroBase*, which computers can then link to and display graphic map features. The result of such linking is a "smart map, which not only displays features, but gives us the ability to show data associated with [these] features" ("State Engineer's Office Enters World of GIS", by Stephani Schupbach, Cartographer, ***Stream Lines***, March, 1993).

The first phase of the project, data base design, has been underway for several months and is to be completed by January 1, 1994. Tasks during this phase are to; 1) document all of DWR's data classes necessary to carry out the agency's mission, 2) interview staff to identify how GIS can specifically help work units, and 3) complete the specifications for the new computer files.

HydroBase will allow the employees of the Division of Water Resources to better serve the public through faster, higher quality data retrieval. Eventually, it should also be available for use by the public in the Records Section of the Division of Water Resources which would then allow them the same easy access to water rights information.

Substitute Supply Plans for Long Term Augmentation Replacement

It has come to the State Engineer's attention that many people may be confused with regard to our abilities to grant substitute supply plans pursuant to Section 37-80-120, C.R.S. (1990), for approval of the use of not-nontributary water sources of the Denver Basin aquifers as defined in Section 37-90-103(10.5), C.R.S. (1990). Section 37-90-137(9)(c), C.R.S. (1990), specifically states that "...judicial approval of plans for augmentation shall be required prior to the use of such ground water." Therefore, it is the interpretation of the State Engineer's Office that it does not have the authority to issue substitute supply plans that involve these waters and the applicant must obtain a court approved plan for augmentation.

For further information regarding the parameters and issuance of substitute supply plans, please see the insert in this issue of ***Stream Lines***.

The South Platte Water Rights Management System, - A Tool To Enhance Administration In Water Division 1

By Julie A. Kraus & Richard L. Stenzel

Efficient management of any natural resource is fundamentally dependent upon the availability of adequate and accurate information. Currently, efficient water management in the South Platte River basin is seriously impaired by the lack of essential real-time data on current river operations; specifically water diversions, storage levels, stream flows, and precipitation. The net result is that key water management decisions arising on a daily basis may be made in a data vacuum.

Over a century ago, the state made a commitment to administer water rights, to be the official keeper of data, and to ensure that all vested water rights receive their proper legal entitlement. Without question, these responsibilities have grown in scope well beyond original expectations. The tools used to carry out these responsibilities have also changed dramatically from horseback, to telegraph, to telephone and to satellites. We are now upon the next generation of communication technology which includes workstations, wide area networks, and geo-relational data bases. The state's continuing commitment to efficiently administer water rights will utilize this next generation of technolgy via a project known as the South Platte Water Rights Management System.

The South Platte Water Rights Management System (SPWRMS), was initiated and sponsored beginning in June 1990 by many South Platte water users and participants, such as the City of Aurora, the Denver Water Board, Northern Colorado Water Conservancy District, Centennial Water and Sanitation District, the City of Thornton, the Colorado Water Resources Institute, the University of Colorado, and the Colorado State Engineer's Office. Until June 1993, these private and public sponsors funded the project. During the last legislative session, the Colorado Water Conservation Board (CWCB) began providing funding towards system development.

The additional funding will provide the Division of Water Resources, and in particular, Division 1, with computer tools, computer applications, advanced decision support systems, and graphical user interfaces to facilitate the water rights administration and assist in river management decisions in the South Platte basin. The South Platte Water Rights Management System being developed by the University of Colorado, Center for Advanced Decision Support for Water and Environmental Systems (CADSWES), will rebuild the infrastructure within the state for the administration of water rights. It will provide the state and its water users with a communications tool that will finally allow water users and the state to fully understand river operations. The system will promote and improve communications among water users, water managers, and administrative officials by monitoring physical conditions of the basin, monitoring diversions, and performing a variety of administrative analyses, such as a curtailment analysis and allocation analysis. It is a concrete step towards metropolitan and agricultural cooperation which can directly benefit the citizens of the state through better river management and administration.

The data and tools developed as a part of this system will provide a means of making the water system more efficient and provide an opportunity to reduce costs. The developed data base and analytical tools will also allow the Division of Water Resources, water users and water managers to easily evaluate alternative water supplies or develop more innovative ways to manage limited supplies using data available through the use of this system.

With CWCB funding in place, the Division of Water Resources is purchasing appropriate hardware and software to operate the support system (such as notebook computers and modems for water commissioners), connecting the wide area network between Greeley and Denver, and assessing water commissioners data transfer capabilities.

CADSWES is developing the South Platte Water Rights Management System spatial and relational data bases. These data bases will have the ability to provide easy access and a dependable means to read, input, store, revise, update, and output data. CADSWES is also developing a personal computer (PC) interface for water commissioners. This personal computer interface will access information from the UNIX workstations in Greeley and Denver and allow the water commissioners easy access to streamflow data, daily diversions, river calls, information on exchanges, and various South Platte analyses associated with the South Platte Water Rights Management System application, including curtailment analyses.

During the 1994 irrigation season, the water commissioner's applications and tools, and the workstation applications will be tested and modified. In July 1994, the South Platte Water Rights Management System should be fully operational and ready for project sponsors to gain access to the system.

This project is a very exciting one for the Division of Water Resources. The tools being developed will aid us in real time administration of water rights, enhance the transfer and exchange of data between agencies and water users, provide direct user access to the data, and allow spatial monitoring and analysis of water use in the South Platte Basin.

Due to the repeal of the exemption for domestic animals in the issuance of exempt well permits which expired on June 30, 1993, over 7,500 public contacts were made by the Division's Record Section during the month of June alone. This represented approximately three times the normal operations for customer contacts.

Water Well Permit Application Backlog Prompts Plea for Patience

A recent change in the law concerning the use of well water for domestic animals has caused a backlog in water well permit applications and has prompted the State Engineer's Office to ask the water well owners to be patient while the applications are processed.

Almost 2,900 well permit applications were filed in May and June, mostly from Adams, Arapahoe, Boulder, Douglas, El Paso, Elbert, Jefferson and Weld counties.

"This is double the number of applications we received during the same period last year and has created a significant backlog," said Purushottam Dass, supervising professional engineer. "We apologize for the delays and busy phone lines."

A 1988 law allowed owners of certain household-use-only well permits to water domestic animals, if they had prior approval from the (See Patience, Cont. Page 7)

SUBSTITUTE SUPPLY PLAN GUIDELINES

By
David J. Fox, Team Leader, Water Division 5

Maximizing beneficial use and providing flexibility in water utilization are major objectives of the State Engineer. The Colorado statutes compliment this under the substitute supply provisions of Section 37-80-120, C.R.S. These provisions permit the State Engineer to approve exchanges and substitutions of water for beneficial uses without judicial review. The statute further requires that substitutions of water must not injure or impair availability to other vested water rights.

Substitute water supply plans provide water users a mechanism to exchange and replace out-of-priority depletions on an interim basis. This permits mitigation for temporary changes of use or in the case of permanent changes protection while litigation involving water change cases and augmentation plans occurs. Generally, plans are only approved where a water-short supply situation is imminent or an economic emergency exists. Plans are usually valid for one year and may be extended subject to review.

Approvals are conditioned to insure that operation of the substitute water supply plan will not injure other water rights. Conditions and limitations similar to or more stringent than court-approved changes and plans for augmentation are usually imposed to insure that injury will not occur. Requests which are of a permanent nature may be approved provided that a related Water Court application is filed within one year of initial approval.

Requests may be approved without the filing of a change case or a plan for augmentation if the substitute supply plan is short term and the replacement water will return back to its original use. This provides flexibility in instances involving temporary uses. For example, plans have been approved in the past for out-of-priority depletions associated with the clean-up of hazardous waste contamination at old mine sites.

It has been the policy of this office to grant substitute water supply plans for situations in which the termination of a plan would not result in any long term adverse consequences or injury to third parties. We have, for example, received requests for substitute supply plans involving not nontributary aquifers and for providing domestic well water within new or proposed residential subdivisions. These requests have generally not been granted because of the potential of the substitute supply plan not being renewed and a permanent plan for augmentation not being approved by the Water Court. Under these circumstances, persons purchasing lots and constructing homes could potentially be faced with mandatory curtailment of their water source.

It should also be noted that requests for substitute supply plans have also been requested to replace depletions from the pumping of not-nontributary ground water. These requests will be denied because the statutes specifically require a judicially approved plan for augmentation prior to pumping pursuant to Section 37-90-137(9)(c), C.R.S.

The State Engineer's Office does not have the authority or resources to provide consulting engineering services. Thus, a substitute water supply plan request must be complete upon submittal to the State Engineer. Often, consultation with a professional engineer may be necessary to address the technical and engineering issues involved and to assure that a complete request is prepared. The following guidelines should be followed when submitting a request for approval of a plan.

1. Provide a statement regarding the justification and need.

2. Attach an affidavit of ownership or a consent agreement to utilize the proposed water rights.

3. Provide an engineering report of the plan. The report should include, but is not limited to, all pertinent information regarding the source of replacement water, historical and proposed consumptive uses, diversion records, aerial photographs to document historic use, well permits, location maps, transit losses, and the timing of depletions.

4. Submit a proposed monthly accounting form indicating depletions, replacement water, reservoir releases, meter totals, evaporation, river call, etc. The accounting forms should contain all information necessary for the administration of the plan.

5. All diversion points of the proposed plan shall be metered or gaged. Allowances shall be made for ungaged streamflows, i.e., measuring the flows manually.

6. Approval of substitute supply plans is subject to application for a permanent plan for augmentation and/or change in water rights to Water Court within one year of issuance. Variances may be made where applicable and for plans which are short term and the water being used for replacement will revert back to its original use when expired.

7. The granting of a substitute supply plan may require the issuance of a well permit, if applicable. Consent of adjacent well owners or a hearing may be required prior to the issuance of a well permit if another well is located within 600 feet.

8. Substitute supply plans may be revoked or modified at any time should it be determined that injury to other vested water rights has or will occur as a result of the plan.

Requests should be directed to the State Engineer. The applications are review by assigned water division teams and final approval is granted by the State Engineer. Team leaders include:

Water Division 1	South Platte Drainage	Bill McIntyre
Water Division 2	Arkansas Drainage	Keith Vander Horst
Water Division 3	Rio Grande Drainage	Keith Vander Horst
Water Division 4	Gunnison River Drainage	Krishna Murthy
Water Division 5	Colorado River Drainage	David Fox
Water Division 6	Yampa River Drainage	John Schurer
Water Division 7	San Juan, Animas et. al Drainages	Krishna Murthy

Should you have any questions or comments regarding substitute supply plans, please contact David Fox or the appropriate team leader.

*Editor's Note: This article is reprinted and revised as a service to our readers. We have received numerous requests for copies of this article and thought that an updated version of this article that was printed in the Winter 1989-1990 issue of ***Stream Lines*** might be useful.

(Patience cont.) State Engineer's Office. That provision of the law expired on June 30. this meant that any existing or potential household-use-only well permit holder had to submit an application by June 30 in order to request permission to water domestic animals from the well.

"We want to assure all applicants that their permits will be processed, even if it takes longer than the 45 days required under the law," Dass said. He added that processing is taking 45 to 75 days.

People with questions about the status of their applications are encouraged to wait a few more weeks. Questions should be directed to the State Engineer's Office, Ground Water Information Desk, (303) 866-3587.

Gravel Pit Substitute Water Supply Plan Update
by
Judy Sappington

On June 6, 1993, Governor Roy Romer signed Senate Bill 93-260, which increased the fees for gravel pit substitute supply plans. Previous fees approved under Senate Bill 89-120 were increased to reflect actual consultant's cost for performing the plan review.

The new fee is $1,343 regardless of the number of surface acres of ground water exposed. This fee applies to any new plan, any plan with an enlarged or amended gravel pit, any expired plan, or any subsequent plan for a disapproved plan. The fee covers two years of operation of the plan. A new fee for renewals was also approved with a renewal fee of $217 if the renewal is requested prior to the expiration date of the current plan. That fee covers one year operation.

The State Engineer is required to retain an engineering consultant to assist in the review of all gravel pit substitute supply plan requests. Bids by consultants to review these plans have been submitted and a final selection is expected in late October or early November.

Of further interest regarding gravel pits, the Division of Water Resources held its first Open Forum meeting on September 27, 1993 to discuss issues and concerns regarding gravel pits and long term augmentation needs. The meeting was attended by Water Resources staff and many gravel mining interests including Colorado Rock Products Association. Some of the issues discussed included perpetual management of water augmentation plans after mining has ceased and the possible submittal of basin-wide substitute supply plans to replace out-of-priority depletions caused by the mining of gravel. A future meeting of this group is tentatively set for November 8, 1993 at 1:30 p.m. Interested persons should contact Dick Wolfe of the Division of Water Resources at (303) 866-3581 for further information.

Residential Wells and Subdivisions
by
Jeff Deatherage

On May 5, 1972, legislation was enacted which mandated that counties adopt subdivision regulations requiring developers to provide data, studies, and analyses for their proposed subdivision of land. The studies were to include, among other items,

adequate evidence that a water supply was available and that the quality, quantity, and dependability was sufficient. In turn, the State Engineer was required to review the water supply information and issue an opinion regarding injury to other vested water rights and the adequacy of the water supply.

Under C.R.S. 37-92-602(3)(b)(III), in evaluating residential household well permit applications which are located in subdivisions, approved on or after June 1, 1972, for which the water supply plan has not been approved by the State Engineer, the cumulative effect of all such wells in the subdivision shall be considered in determining material injury. The term subdivision is defined in C.R.S. 30-28-101 and does not apply to any division of land which creates parcels equal to or greater than 35 acres. For new subdivisions in overappropriated areas, a plan for augmentation approved by the Water Court, is required before residential well permits can be granted.

When applying for a permit to construct a residential well on a parcel of less than 35 acres, the application may need to be supplemented with additional information concerning the tract of land on which the well will be located. This information is necessary for the evaluation of the application. If the proposed location of the well will be in an overappropriated stream system, or in a Designated Ground Water Basin, additional information detailing the legal description of the tract, and when or how the tract was created, is typically required. The following information is intended to aid in preparing and completing a well permit application of this type.

Parcels of less than 35 acres - Application made pursuant to Sections 37-92-602 or 37-90-105, C.R.S (1990) for residential use.

1. If the parcel is in a platted subdivision, make sure to specify the lot, block, filing number, and subdivision name. While our records reflect when many recorded subdivisions were platted, if this office has no information on the subdivision, or incomplete information, then information verifying the creation date of the subdivision must be submitted before the application can be evaluated.

2. If the parcel was created prior to June 1, 1972, but is not in a subdivision, then a copy of a recorded deed, a county approved plat map, or other document with a legible date showing that such action occurred prior to June 1, 1972 must be submitted. The documentation must contain a metes and bounds legal description that specifically identifies the subject parcel. The legal description must include a tie to a section corner or quarter corner so the parcel can be located on a USGS quadrangle map (scale of 1" = 2000'). If the legal description is too lengthy to fit on the application form, then the description should be submitted on a separate sheet and referenced in the application. The parcel size indicated on the application should agree with the area identified by the legal description.

3. If the parcel was created by an exemption from the definition of a subdivision, then a copy of one of the following must be submitted: A) The signed and dated County Commissioner's Resolution (or County Commissioner's Minutes) concerning the exempted tract; or B) A copy of the county approved survey plat

with legible dates and signatures showing the original tract and all *exempted* tracts. Before a well permit application can be acted upon, the exemption should be approved by the county.

4. If the subdivision or particular parcel was created after June 1, 1972 by an action other than a Resolution of the County Commissioners (such as a court order, etc.), please provide copies of documents to show how and when this occurred.

5. Parcels of less than 35 acres created prior to June 1, 1972, that are located in an overappropriated stream system, and are outside of a Designated Ground Water Basin, will typically qualify only for a "household use" well. Wells permited for "household use" can be used to serve ordinary household purposes inside one single-family dwelling. No outside uses such as lawn irrigation or animal watering are allowed.

Current law provides that divisions of land of 35 acres or more, regardless of when created, are considered to be exempt from the definition of a subdivision. When applying for a permit to construct a residential well on a parcel of 35 acres or more, a legal description of the parcel must be included with the application. The following information is intended to aid in preparing and completing a well permit application of this type.

Parcels of 35 acres or more - application made pursuant to Sections 37-92-602 or 37-90-105, C.R.S. (1990) for residential use.

1. If the parcel can be described as a square 40 acres (i.e. quarter/quarter of a Section), or some fractional portion thereof, then the full legal description (1/4 1/4, Section, Township, Range, and Principal Meridian) should be indicated on the application.

2. If the parcel cannot be described as a square 40 acres, then a complete metes and bounds legal description, or a surveyor's plat of the parcel must be provided. The legal description must include a tie to a section corner or quarter corner so the parcel can be located on a USGS quadrangle map (scale of 1" = 2000'). If the legal description is too lengthy to fit on the application form, then the description should be submitted on a separate sheet and referenced in the application. The parcel size indicated on the application form should agree with the area identified by the legal description.

3. If a right-of-way (such as State and Federal highways, railroads, utility lines, etc.) crosses the parcel, and the right-of-way is owned in fee by another, then the area of the right-of-way cannot be included in determining the parcel size.

4. If two or more parcels (each less than 35 acres) are to be combined to create a parcel of 35 acres or more, the parcels must be contiguous, they must be owned by one interest, and they must have been created prior to June 1, 1972, or exempted by the county from the definition of a subdivision. Documentation showing when the parcels were created must be provided. Contiguous parcels must touch at least at one point or be separated only by a "right-of-way-of-necessity."

5. Parcels of 35 acres or more may qualify for a residential well that can serve ordinary household purposes inside not more than three single-family dwellings, irrigate not more than one acre of home lawns and gardens, and water domestic animals. The proposed number of dwellings to be served and the amount of irrigation should be specified on the application form.

While the above information may not apply to all situations, it should provide a general guide for the more common situations. The County Planning and/or Assessor's Office may be able to provide assistance with questions about the creation of a subdivision or parcel, or legal description of a parcel. Questions regarding the well permit application form can be directed to the Division field office in your area, or the Ground Water Information Desk in Denver at 866-3587.

Calendar of Events

November 9, 1993	Colorado Water Congress (CWC) Workshop on A Review of Federal Environmental Laws Impacting Water Interests, CWC Conference Room, Suite 312, 1390 Logan Street. Contact CWC Office (303) 837-0812 for more information.
November 10, 1993	Colorado Water Congress (CWC) Workshop on What You Should Know About the Legislative Process: The Law, The Rules & The Practices to be held at the CWC Conference Room, Suite 312. Contact CWC Office (303) 837-0812 for more information.
November 9 & 10, 1993	Colorado Water Conservation Board meeting to be held in Room 610, 1525 Sherman Street, Denver, CO. Contact Dori Romero, at (303) 866-3441.
November 12, 1993	Colorado Ground Water Commission to be held in the Senate Committee Room 356, at the State Capitol Building, Denver, CO. Contact Marta Ahrens, at (303) 866-3581.
December 7, 1993	Board of Examiners of Water Well Construction and Pump Installation Contractors meeting to be held in Room 719, 1313 Sherman Street, Denver, CO. Contact Marta Ahrens, at (303) 866-3581.
January 20-21, 1994	Colorado Water Congress (CWC) 36th Annual Convention at the Holiday Inn in Northglenn, I-25 & 120th Avenue. Contact CWC Office (303) 837-0812 for more information.
February 16-18, 1994	Annual Conference of the Colorado Water Well Contractors Association at the Holiday Inn West in Golden Colorado. Contact Colorado Water Well Contractors Association at (303) 759-1756.
February 17 & 18, 1994	Annual Convention and Training Seminar at the Red Lion Inn in Colorado Springs. Contact Colorado Rural Water Association at (719) 545-6748.

OFFICE OF THE STATE ENGINEER
Colorado Division of Water Resources
Department of Natural Resources
1313 Sherman Street - Room 818
Denver, Colorado 80203

Phone (303) 866-3581
FAX (303) 866-3589

Ken Salazar, DNR Executive Director
Hal D. Simpson, State Engineer
Joseph (Jody) B. Grantham, Editor

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