

2020 Annual Report



Gov. Highline Roller Dam, photo by James Heath

DWR's Commitment

The Colorado General Assembly has given DWR the statutory responsibility and authority to administer the waters of the State and provide for public safety according to the State Constitution, Colorado Revised Statutes, case law, decrees of the court, interstate compacts, and rules and regulations. DWR is a leader in Colorado and among the western states because our employees are experts in water administration and in the programs that support water administration and public safety. Within the scope of our statutory authority, DWR accomplishes these responsibilities in accordance with the following principles.

DWR employees commit to:

- Recognize the importance to Colorado water users of maximizing the beneficial use of water;
- Work collaboratively with our community and stakeholders to develop solutions;
- Treat each other and the public with respect and fairness;
- Explain Colorado water operations in plain language;
- Foster continuous improvement, innovative thought, and learning;
- Empower leadership at all levels of DWR.

“When hydrologic conditions are poor, the effect on our water users permeates all aspect of what we do.”

Kevin Rein
State Engineer



Breached dam at Vagabond Ranch Pond, Grand County
Photo by Sue Avre

In 2020, Division of Water Resources employees had several challenges before them. While snowpack was around average statewide, low precipitation during the irrigation season put demands on crops and other uses, and impacted mid and late-season water supplies. This was the case even in the Yampa, which again, experienced a call on the mainstem in 2020, an event that used to be regarded as unusual but may become the norm. It is with this in mind that I observe that DWR employees need to be nimble and able to react to unforeseen circumstances. We're fortunate to have a team that does not just act according to a routine set of conditions but instead can deal with new scenarios as they arise.

When hydrologic conditions are poor, the effect on our water users permeates all aspect of what we do. The intensity of on-the-ground-administration increases, both for the allocation of available water and enforcement against illegal diversions; the level of administrative approvals and the associated accounting processes increases and adds to the existing demands in those areas; and for interstate compacts, the need to comply with them and the uncertainty of hydrologic conditions that raises compliance concerns becomes more present.

During 2020, the Drought Contingency Plan (DCP), which had been recently approved by Congress and enacts provisions for the management of the Colorado River and its reservoirs, was the impetus for a high level of activity within Colorado. The Colorado River and its tributaries provide water to every corner of our state. Colorado's sister agency, the CWCB, along with Colorado's Commissioner to the Upper Colorado River Commission, have the responsibility to act on provisions of the DCP, particularly the feasibility analysis for a Demand Management program. However, the combination of the activity associated with the DCP, other discussions between the seven compact states, and unfavorable hydrologic conditions in the Colorado River Basin, causes the State Engineer to consider the potential for administration in Colorado for interstate compact compliance purposes. I'm confident that the need for compact compliance administration is not imminent, however, the conversation about it became much more prevalent in 2020 and the question will be on the minds of our water users around the state from now on.

On March 26, 2020, I sent an e-mail to all DWR staff that included unprecedented guidance for DWR employees:

“Beginning immediately and until further notice, my direction to you is that you should not report to your public office. The exception to this is if you need to perform a specific, identifiable task to enable some aspect of our work and that task can only be done if you are in the office. You can also come into the office if you need to retrieve materials to work effectively from home.”

That direction was in response to the COVID-19 pandemic. As we at DWR, along with the rest of the state and the country, learned more about the pandemic, the Governor's Office set us on a path to work differently and our worlds changed.

As I acknowledge the important fact that our worlds changed, I also acknowledge that many things did not change. Our administration of surface water and groundwater continued at the same high level, our customer service retained its same quality, and our well permitting and administrative approvals never missed a beat. We continued to collect, store, and provide DWR employees and the public with important information related to water rights and administration. Dams and wells were inspected and we managed our stream gages. We pursued many important matters related to litigation. In large part, this was possible because of the foresight and efforts of current and past employees to develop our databases, document management systems, and tools that truly allowed us to “work from home.” The other significant factor was the adaptability of DWR employees that are invested in their work as public servants. This is even more notable when I consider that the budget crisis associated with the pandemic required DWR to maintain vacant positions at a level of more than ten percent of our normal staffing for much of 2020. Many DWR employees felt the direct effect of that and managed it by doing everything they could to prioritize and work at an even higher level than normal, even as it caused them distress to see many important things that they do just not getting done. I was proud during 2020 to tell outside interests that DWR was maintaining a high level of productivity and public service.

Our experiences working from home showed us a lot we already know about our character as public servants and it helped us develop some new processes and efficiencies. While we look forward to a time when our work environment is not influenced at all by the COVID-19 pandemic, we also know that we've affirmed the effectiveness of our existing tools and processes, and developed new ones that will change our work place and allow us to be even more effective in the work we do as we continue into the future. I'm privileged to be a part of the team that will do this on an ongoing basis.



State Engineer, Executive Director



Our mission is to:

The Division of Water Resources will administer the waters of the State to maximize lawful beneficial use, ensure that dams and water wells are properly constructed and safe, and provide information about water resources to the public.

Our Programs

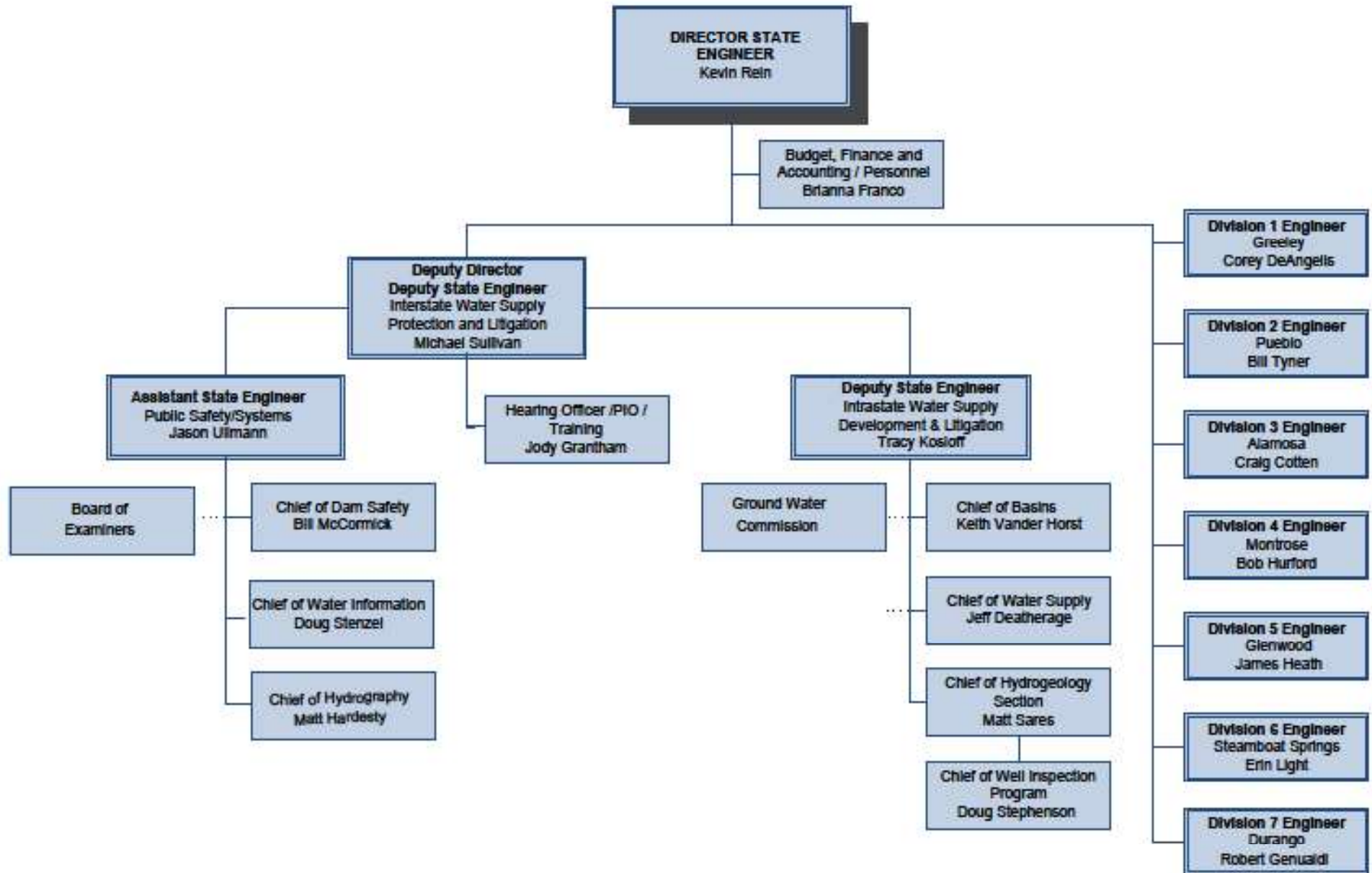
- Water Administration
 - Dam Safety
- Hydrographic & Satellite Monitoring
 - Hydrogeological Services
 - Interstate Compacts
- Modeling & Decision Support Systems
 - Water Supply
- Water Information & Data



Orchard Mesa Canal, Palisade, CO, photo by Jana Miller



COLORADO DIVISION OF WATER RESOURCES ORGANIZATIONAL CHART



Dam Safety Program Statutory Authorities

CRS Title 37 Article 87

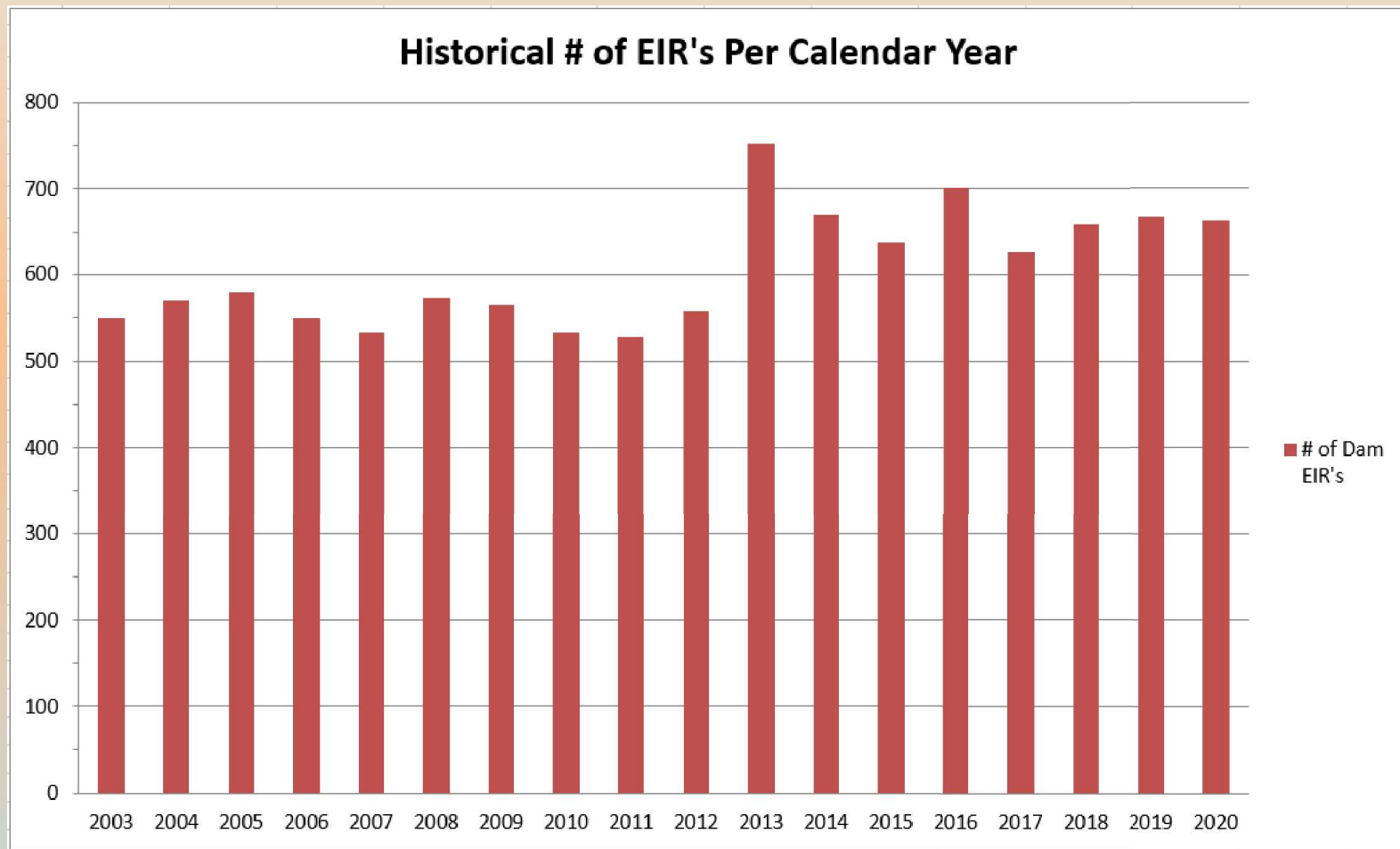
- *37-87-105-Approval of Plans for Reservoirs*
 - Make and Maintain Rules and Regulations
 - Review and Approval Authority for; New Dams, Alteration, Modification, Repair and enlargement of existing dams
- *37-87-107- Safety Inspections-Amount of Water to be Stored*
 - Inspections
 - Determination of Safe Storage Level



Lake Granby, Photo by Sue Avre

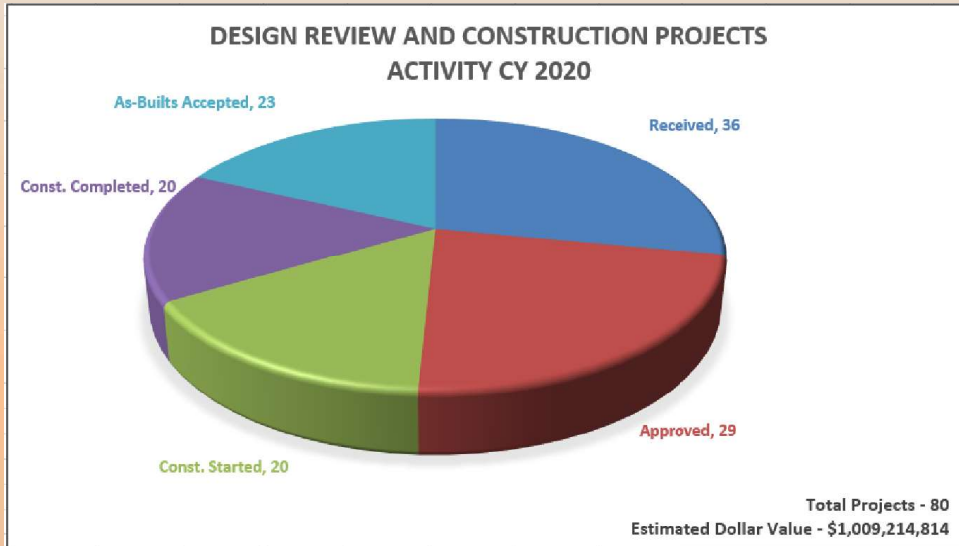


Dam Inspections



100% High and Significant Hazard dams (#1 Priority)

Design Review Activities



Haviland Lake draw down for outlet repairs.
 Photo by Jeff Titus

DESIGN REVIEW AND CONSTRUCTION PROJECT ACTIVITY SUMMARY - 2020			
DESIGN REVIEW ACTIVITY	NO. (2019)	NO. (2020)	ESTIMATED DOLLAR VALUE
Received	23	36	\$510,451,607
Approved	25	29	\$451,221,320
Const. Started	22	20	\$7,962,204
Const. Completed	24	20	\$25,013,596
As-Builts Accepted	27	23	\$42,840,298
Total Projects	67	80	\$1,009,214,814



Emergency Action Plan Activities

EAP Analysis 2019 & 2020				
	4/28/2020 Summary		4/12/2021 Summary	
HH Dams	438		442	
EAP - Yes	435	99%	440	99%
EAP -No	3	1%	2	1%
HH Age < 5yrs	344	79%	340	77%
HH IM Maps	408	93%	415	94%
HH IM SHP	323	74%	349	79%
SH Dams	290		289	
EAP - Yes	278	94%	276	95%
EAP -No	12	6%	13	5%
SH Age < 5 yrs	173	60%	165	60%
SH IM maps	178	61%	181	63%
SH IM SHP	97	33%	100	35%

Hydrographic & Satellite Monitoring Program



Radar installation, Purgatoire River at Fisher's Crossing
Photo by Joey Talbott

- Hydrographic staff are responsible for operations and maintenance of 700 sites including designing, constructing, maintaining and operating streamgages, gage infrastructure, satellite monitoring equipment, conducting regular discharge measurement for the purposes of maintaining and developing stage-discharge and velocity indexed relations as well as working and publishing streamflow records. Hydrographic staff currently publish 235 final streamflow records.
- Hydrographers and water commissioners made 4,053 gage visits and discharge measurements in Water Year 2020. These measurements were made to calibrate stage-discharge relationships at stream gaging stations in canals and ditches to support real-time water administration decision making.
- The Satellite-linked Monitoring System (SMS) provides the Division of Water Resources, other State and federal entities, the water user community and the public at large with access to real-time streamflow and storage data from gaging stations across the State of Colorado. The SMS allows the Division to collect, process, store, and distribute any kinds of environmental data transmitted from remote locations.

Division								Grand Total
1	2	3	4	5	6	7		
1393	639	1295	180	172	104	270		4053

Streamflow Measurements by Water Division

Hydrogeological Services

- **Staff assistance**
 - Aquifer determinations ▶ 750 (+0%)
 - Recharge Pond Reviews (HB 1013) ▶ 2 (+0%)
- **Board of Examiners Support**
 - Variances to Well Construction Rules ▶ 114 (+20%)
- **Groundwater Monitoring Program** ▶ 1,226 wells
- **Permit Cond. Amendments** ▶ 241 (-13%)
- **Well Inspections** ▶ 1,202 (+58%)
- **Complaints/Violations** ▶ 52 (-44%)
- **Nontributary Initial Determinations** ▶ 4 (+400%)
- **Colorado Oil & Gas Conservation Commission Reviews** ▶ 8 (+400%)



Well being drilled near Saguache in San Luis Valley. Photo by Matthew Sares



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Interstate Compacts

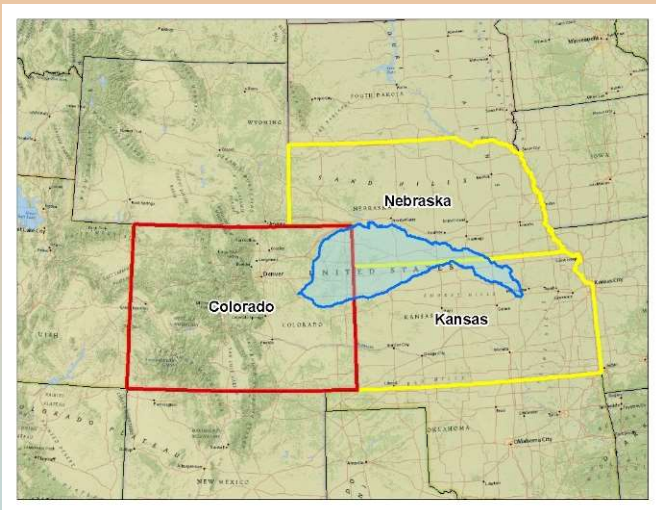
Colorado River

- Renegotiation (CWCB lead)
- Declining inflows and lake levels
- Upper Colo. River Commission Engineering reviews



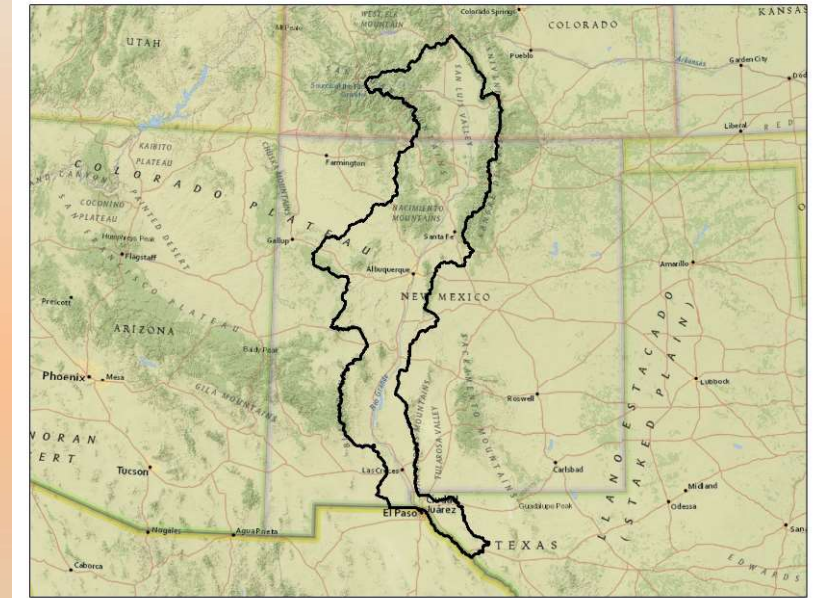
Republican River

- Colorado, Nebraska and Kansas continue meetings
- Conservation Reserve Enhancement Program (CREP) continues
- Settlement of Hutton Case
- Compact Rules in water court



Interstate Compacts

- Rio Grande Compact
 - Texas v. New Mexico & Colorado
 - Ongoing since 2014
 - Depositions continue
 - Mediation
 - Trial is set to begin in Sept. 2021
- Federal update
 - Waters of the United States revisions
 - USFWS Critical Habitat Rules
 - USFS NEPA Rules
 - Endangered Species Act Rules (Section 7)
 - Environmental Protection Agency Science rules
 - 2018 Farm Bill (CRP, CREP & EQIP) Rules



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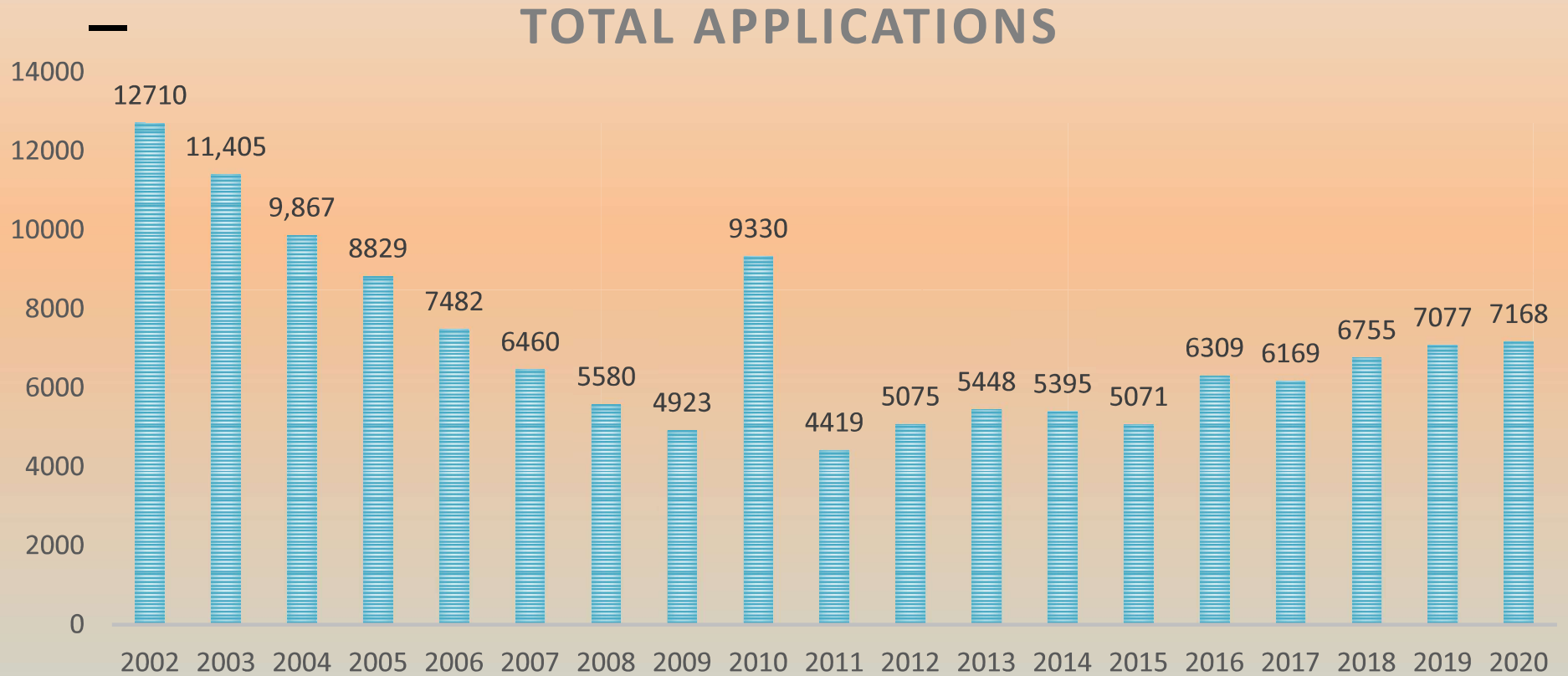
Modeling & Decision Support Systems

- **Statewide**
 - **Lease Fallow Tool Version 8** - A new version of the Lease Fallow Tool (LFT) was deployed which incorporates additional West Slope data and more fully utilizes the statewide gridded evapo-transpiration (ET) dataset and new crop coefficients.
 - **Upper Colorado ATM Research Project** - Staff contributed to the Alternative Transfer Method project conducted near Kremmling and utilized remotely sensed ET products and the LFT to verify new high elevation grass coefficients and to estimate stream accretions and depletions due to fallowing and deficit and split season irrigation of grass fields.
 - **CDSS Support** - Staff continue to support software and modeling datasets that are maintained as part of the Colorado Decision Support System. Development has continued on OpenCDSS which is an open source approach to maintain and enhance CDSS software.
- **Rio Grande Basin**
 - **RGDSS Phase 7 Models** - Continued with phase 7 to update geologic representations, datasets, and processes in the Rio Grande Decision Support System models so that response functions used to estimate pumping depletions can be updated.
 - **Support** - As new sub-districts have developed water management plans, staff continued to provide technical support, training, and information to Division 3 staff, individuals/group of well owners, consultants, districts and associations on RGDSS model tools and data.
- **Arkansas River Basin**
 - **ArkDSS** - Staff have continued to support the development of the STATEMOD surface water model for the Arkansas River Decision Support System that will facilitate water allocation evaluations as well as the 10-year review of the Trinidad Project.
 - **Colors of Water Tool** - A contractor was selected and has initiated work on the phase 2 Colors of Water Tool while staff continued to develop coding for the model engine which incorporates dynamic transit losses and routing to estimate “water class” amounts.
 - **Compact Support** - Staff continued to support requirements related to the Arkansas River Compact including annual updates of the H-I Model, modeling for the Surface Water Improvement Rules, and management of lysimeter operations.

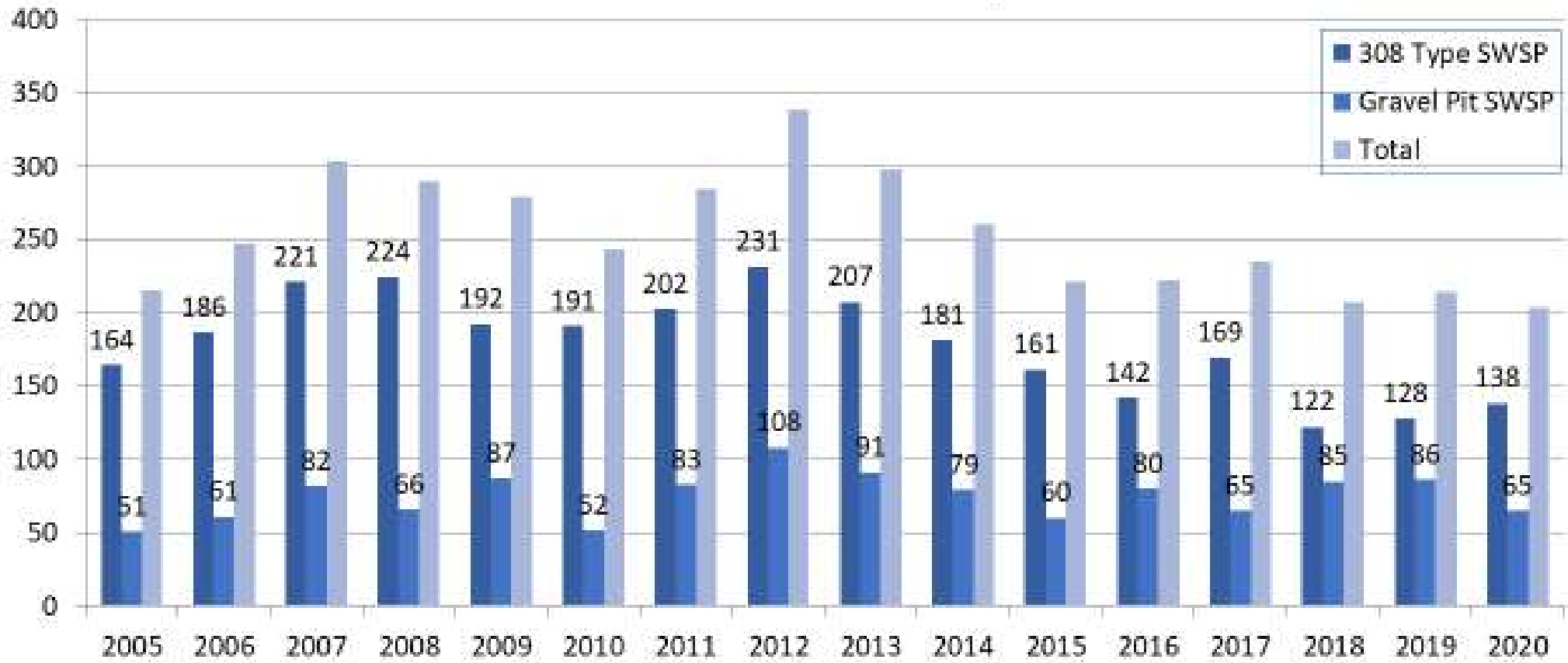
Water Supply Branch

- Analyzed and approved 138 general Substitute Water Supply Plans (SWSPs) and 65 SWSPs for gravel pits
- Reviewed, analyzed, and provided 529 comments to Colorado counties regarding the water supply for proposed subdivisions and other land use actions
- Received and acted on 6,044 well permit applications and processed 966 Monitoring Hole Notices, 9,027 Changes in Ownership/address, 4,528 Well Construction and Test Reports, and 4,462 Pump Installation Reports
- Issued zero final permits, 225 determinations of water rights, 24 change application approvals and seventeen (17) replacement plans in designated basins.

Well Permit Activity



SWSP Activity

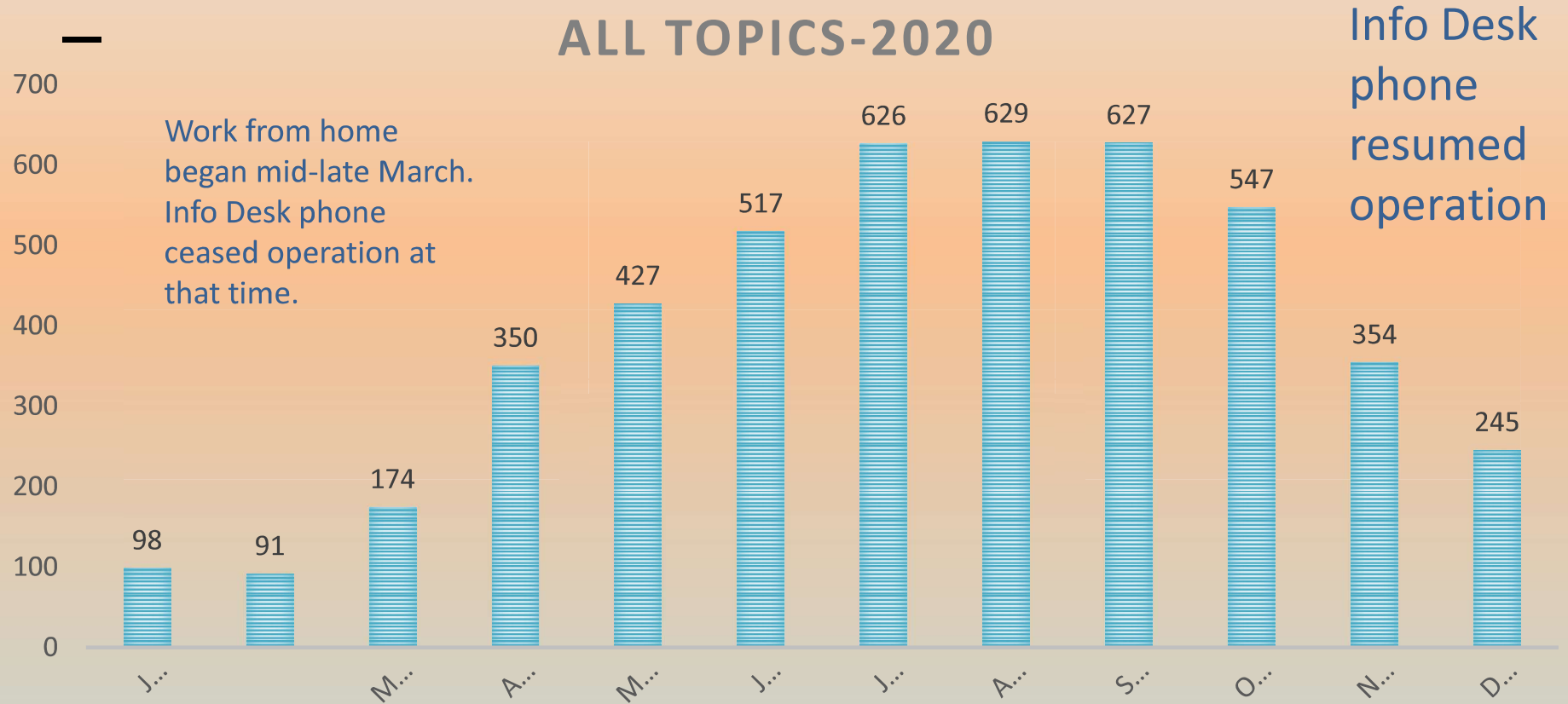


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Ask DWR Activity



Statewide Administrative Challenges 2020 and beyond.....

- Number of water court decrees increasing every year
- Increase in complexity of decrees (terms and conditions)
- Increase in Measurement, Recording, Reporting & Accounting requirements
- Increase in Notification and verification in the field (operations)



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South Platte River Basin Water Division 1



- There were a total of 133 days South Platte Compact Call during water year 2020, a significant increase from the 21 days of call during 2019.
- The South Platte Well Team continued its work with approximately 6,400 wells that fall within the scope of the South Platte Measurement Rules. The Well Team conducting approximately 22 installed flow meter verification field tests, processing over 900 submitted measurement tests into DWR's database, the field inventory of approximately 370 wells, inspection for compliance of 305 wells filed as inactive in accordance with the Measurement Rules, and responding to many questions from water users. Approximately 65 wells were also identified as non-existent as efforts of staff field inspections. The well team certified 4 new well meter testers and recertified 17 certified well meter testers.
- The State Engineer's Republican River Compact Use Rules continue in the Division One Water Court under Case No. 2019CW3002. The rules would allow the state to administer surface water and groundwater wells for compliance with the 1942 Republican River Compact.
- The Republican River Well Team continued their efforts of administering the Republican River Basin Groundwater Measurement Rules (Rules) in 2020:
 - Conducted 251 well measurement device verification field tests
 - Field inventory of 963 wells
 - Field inspections of 240 wells filed as inactive in accordance with the Rules
 - The Republican River Well Team assisted with Well Tester certification training classes, and conducted in-field one-on-one recertification of approximately 25 certified well testers.



New Upper Platte & Beaver Ditch Diversion
Water Dist. 1.
Photo by Brent Schantz



Fountain Creek Channel Restoration, photo by Rachell Zancanella

Arkansas River Basin Water Division No. 2

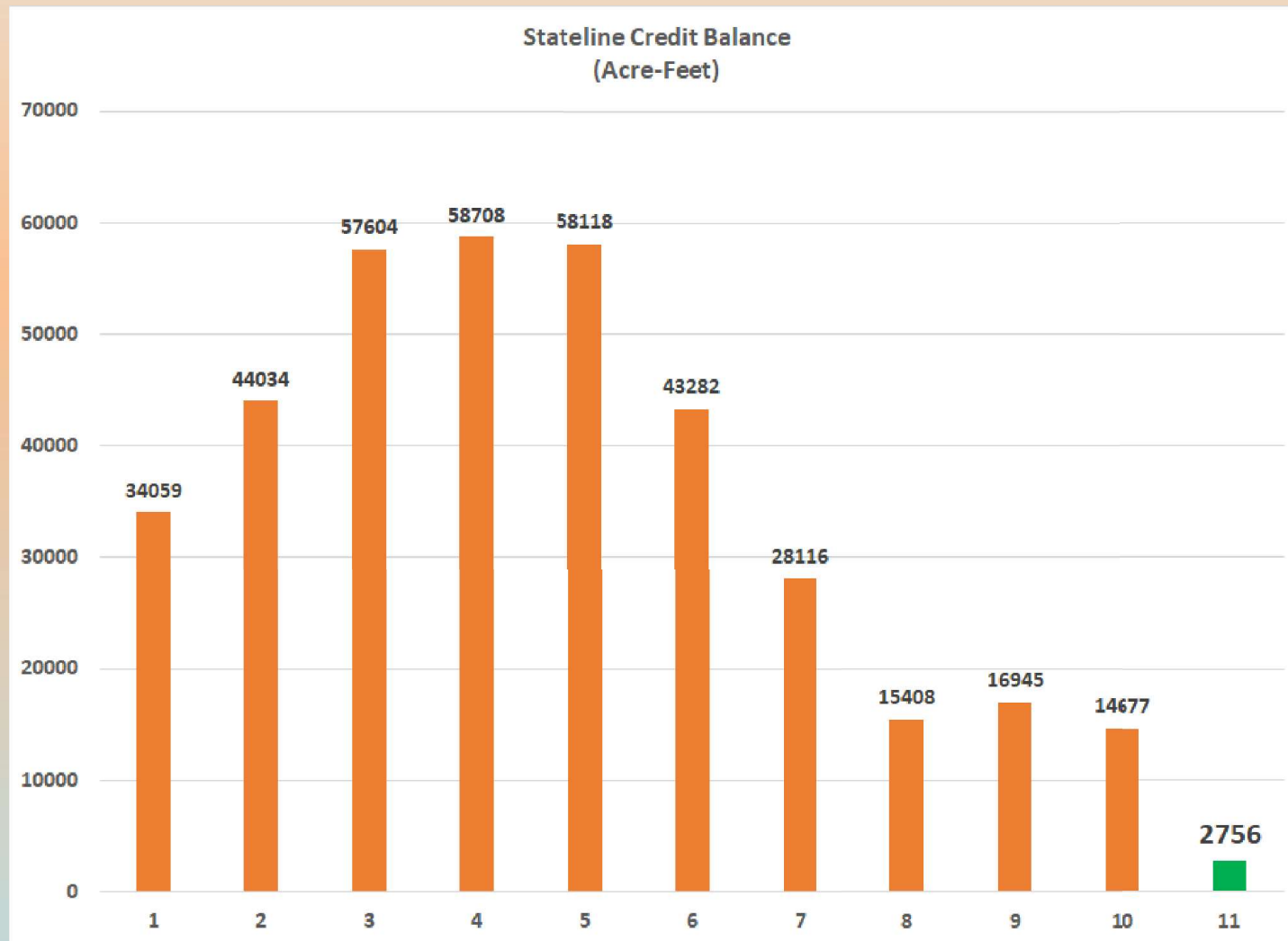


- Water supply conditions in 2020 were below average and considered a very dry year in calculations used in the basin for the 1950 period forward. 2020 ranked at the tenth worst year in the 70 year period of record. The absence of monsoon rains and poor runoff from snowmelt contributed to the poor conditions.
- The final report for the Pueblo Winter Water Storage Program for the period November 15, 2019 through March 14, 2020 showed a system total of 116,840 acre-feet, or 16.8% more than was stored in the previous year and 14, 578 acre-feet or 11.1% less than the previous 20 year average.
- During 2020 the irrigation well pumping represented in the H-I Model totaled 76,934 acre-feet. For User Groups 1-14 (above John Martin Reservoir Area) the total pumping was 49,5620 acre-feet and for User Groups 15-24 (below John Martin Reservoir) the total pumping was 27,314 acre-feet.
- Twenty-seven new augmentation plans were decreed during 2020, bringing the total to 764 plans within Div. 2



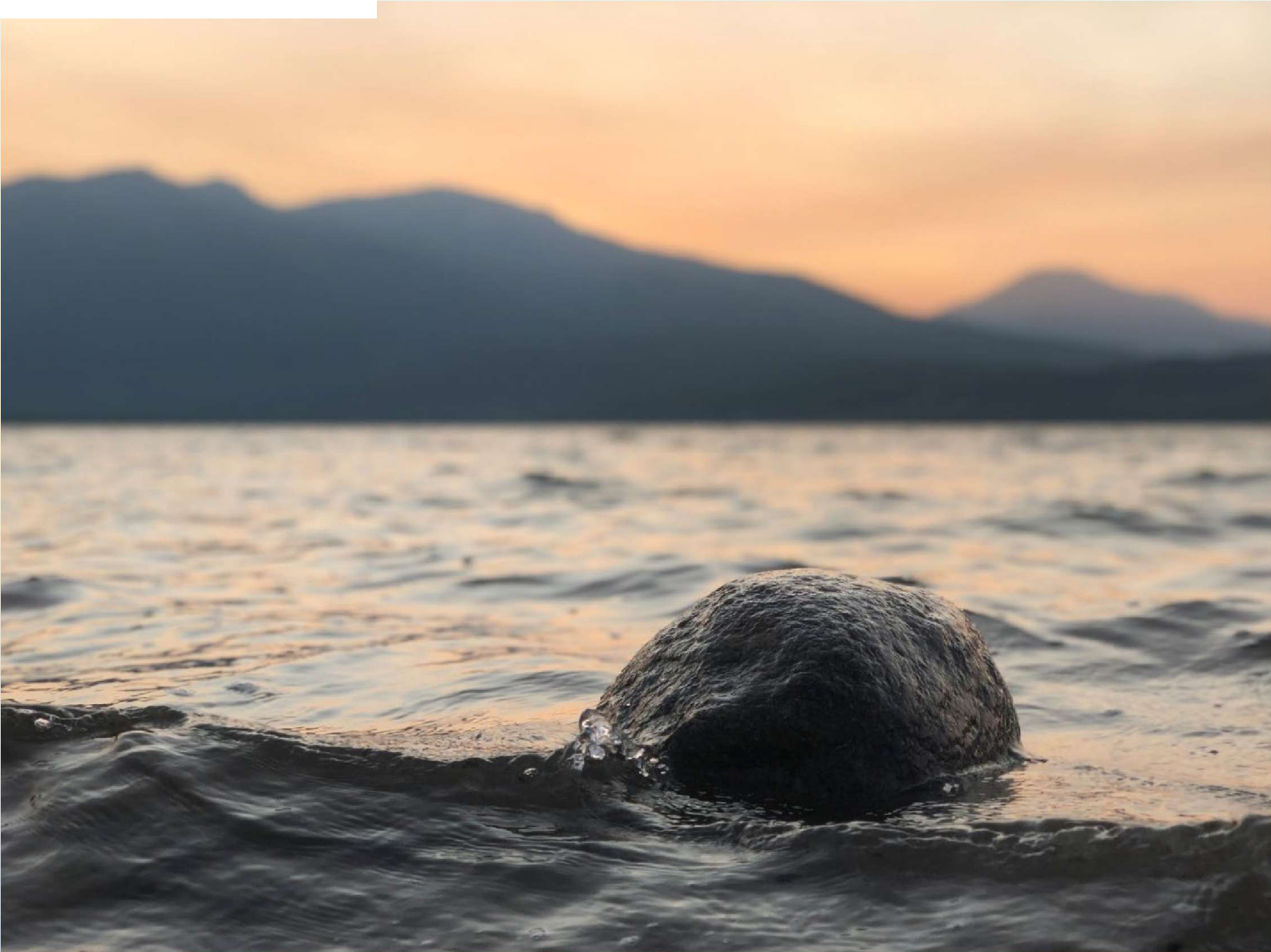
Chalk Creek, District 11, photo by Rachel Zancanella

The Arkansas River Compact H-I Model is used for the purpose of determining depletions to usable stateline flow caused by well pumping of a ten-year period, which is updated annually. The update made in 2020 was for the period 2010-2019. This update showed a stateline credit balance of 2,756 acre-feet.





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Twin Lakes, photo by Jacob Olson

The Rio Grande Basin Water Division No. 3



- Under the Groundwater Rules and Regulations all non-exempt wells must be participating in a subdistrict operating under a valid Annual Replacement Plan (ARP), participate in a plan for augmentation or operate under an approved Substitute Water Supply Plan by March 15, 2021.
- In 2020, the unconfined aquifer of the Closed Basin lost a significant amount of water. This was due in large part to the low stream flows seen in the Rio Grande and its tributaries. This was in contrast to the 2019 water year where streamflows were extremely good and the resulting recharge brought the aquifer level up significantly.
- Water year 2020 saw a near average snow pack that peaked at 99% of average.
- Multiple factors of wind and very dry soil conditions led to a below average runoff. Most rivers and streams had annual streamflows of around 60-70% of normal.
- Actual water delivery at the state line was very close to compact obligations, resulting in an end of the year credit under the Rio Grande Compact of 1,200 acre-feet for Colorado.



Upper Zapata Pond, photo by Bob Schultz

The Gunnison River Basin Water Division No. 4



Paradox Valley Salinity Control Unit, photo by Bob Hurford



- 2020 snowpack conditions on record peaked at approximately 90% basin-wide
- Inflow to the Aspinall Unit (Blue Mesa, Morrow Point and Crystal Reservoirs) as of May 1, 2020 was 57% of the 30-year median seasonal average, categorizing the season as a “Moderately Dry” year.
- Grand Mesa water supply conditions went from full and spilling reservoirs in 2019 to the lowest carryover storage on record in 2020.
- 268 total permits were issued during 2020 (down from 398 the prior year) with 227 of those permits issued by the Division 4 staff.

The Colorado River Basin Water Division No. 5

- Storage for the basin began the water year at 107% of average. The water year ended at 101% of average storage. The basin's major reservoirs reached a physical or paper fill in 2020 with the exceptions of Granby Reservoir, Rifle Gap Reservoir, Ruedi Reservoir, and Vega Reservoir. Well below average runoff was the result of below average snowpack and much below average summer precipitation.
- The 2020 irrigation season ended with gaged flow for the Colorado River near Cameo ranking as the 19th driest year in 87 years of record. The flow for the Colorado River near Dotsero ranked as the 23rd driest in 79 years of record.
- Total call days by the Shoshone Power Plant was 132 days for the 2020 irrigation year.
- Well permitting activity was slightly up from 2020 continuing the trend since the economic down-turn of 2007-08. 880 applications were received and 822 well permits were approved.



Diversion structure for the East Fork Pumping Plant. Photo by Jana Miller

The Yampa and White River Basins

Water Division No. 6

- Snowpack was average for the year, however, spring runoff was well below normal.
- For the first time ever, the Yampa River went under administration in 2018. Despite the fact that 2020 was a near average year for snowpack, well below average rainfall from June through September resulted in another call being placed on the Yampa.
- In March 2019, notices to owners of all known structures that were not equipped with an operable headgate and/or measuring device were sent. Due primarily to weather reasons, many people were unable to comply with the November 30, 2019 deadline requiring installation of operable headgates and measuring devices. As a result, many users opted to not divert water in the spring until they were in compliance. Extensions were granted to those requesting an extension.
- In irrigation year 2020, 94 well permits, including monitoring/observation wells, were issued. This number was down considerably from 2019.
- Regardless of the pandemic and working from home, the Division 6 staff successfully assisted the public in preparing water court and well permit applications by providing water right and diversion record information, providing information on proper selection and installation of water measuring devices, and assisting dam owners with completing Notices of Intent to Construct Non-Jurisdictional Dams, Livestock Water Tank Permits and Emergency Action Plans.



Construction of Keller Ditch, Appropriation date Oct. 1, 1885



Animas and La-Plata River Basins

Water Division No. 7

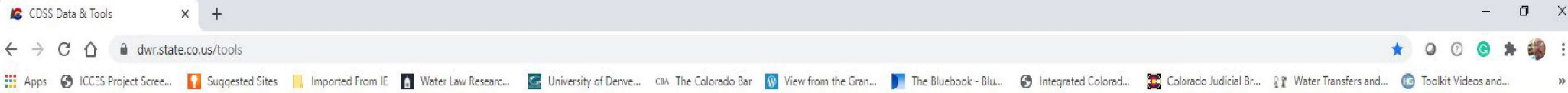


- Snowpack in the San Juan and Dolores River Basins during the winter of 2019-2020 (water Year 2020) was close to normal. However, a drought that began in April caused water users to rely on stored water later in the summer. Fortunately, due to the strong snowpack the year before, reservoirs had carryover capacity.
- Precipitation from November through May was 70% of average. April and May were well below average.
- In many of the basins, only senior water right holders remained in priority to divert water. There were 175 administrative calls placed on 10 different stream systems during the year.
- There were 288 well permits issued in 2020.
- There are currently over 3,900 coal bed methane wells in Division 7, 90% of which lie within the Southern Ute Indian Reservation boundary. The Colorado Supreme court upheld the question of the State's authority to administer non-tributary groundwater within the Ute Reservation.
- Division 7 Hydrographers worked with the City of Durango to install new telemetry for the new flume for the City's main diversion from the Florida River. Staff also helped to install a new flume to measure bypasses around the structure in case releases from Lemon Reservoir must be measured past the City's diversion.



City of Durango Flume on the Florida River
Photo by Brian Boughton

Colorado's Decision Support Systems Site



Administrative Calls

Active, Historical & Analysis Tools

Groundwater

Water Levels & Geophysical Logs

Water Rights

Decree Details, Court Docs, Net Amounts

Aquifer Determination

Denver Basin & Dakota/Cheyenne

Location Tools

Coordinates & Distance Calculators

Climate Stations

Temperature, Precipitation, Snow, Etc

Stations

Current Conditions & Historical Data

Well Permits

Application History & Well Details

Call Analysis Tools

Structure and Water Source Analysis

My Stations

Station Lists and Alerts

Dam Safety

Dams, Livestock Water, Erosion Control

Structures

Diversion Records & Other Details

Map Viewer

DWR Online GIS Products

Information Marketplace

DWR Data on "CIM" Platform

REST Web Services

GET CDSS Data Programmatically



For detailed field office and branch reports please visit
“Publications & Reports” located on our website at: [2020 Annual Reports](#)



Headwaters, Photo by Sue Avre