



Water-Level Monitoring and Current Groundwater Conditions in Colorado

Suzanne Paschke, Supervisory Hydrologist
U.S. Geological Survey
Denver, CO

CWCB
Water Availability Task Force
February 25, 2010

USGS Water Data Websites

U.S. Geological Survey

[//www.usgs.gov/](http://www.usgs.gov/)

USGS Water Resources

[//water.usgs.gov/](http://water.usgs.gov/)

Nationwide current stream flow

[//waterwatch.usgs.gov/](http://waterwatch.usgs.gov/)

USGS CO Water Science Center

[//co.water.usgs.gov/](http://co.water.usgs.gov/)

USGS water data for Colorado

[//waterdata.usgs.gov/co/nwis/](http://waterdata.usgs.gov/co/nwis/)

Colorado Groundwater Data

[//groundwaterwatch.usgs.gov/StateMaps/CO.html](http://groundwaterwatch.usgs.gov/StateMaps/CO.html)



U.S. Geological Survey //www.usgs.gov/

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http://www.usgs.gov/

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USGS: Your source for science you can use

As an unbiased, multi-disciplinary science organization that focuses on biology, geography, geology, geospatial information, and water, we are dedicated to the timely, relevant, and impartial study of the landscape, our natural resources, and the natural hazards that threaten us. Learn more about our goals and priorities for the coming decade in our [Science Strategy](#).

RECOVERY.GOV
Department of the Interior
Recovery Investments

Science Areas

- Biology
- Geography
- Geology
- Geospatial
- Water

Hazards

Show all hazards

Recent Earthquakes:

World | USA

Contaminant Transport to Public-Supply Wells

Scientists tracked what, when, and how contaminants may reach public-supply wells in four aquifers in California, Connecticut, Nebraska, and Florida.

3 / 14

Can't see Flash? Install Flash Player or use the HTML version.

News Releases

Plagued by Plague: New Research Shows Widespread Risk to Wildlife
(Released: Wed, 24 Feb 2010 14:16:51 EDT)

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Science Topics

Browse USGS topics of interest:

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- Contaminants
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- Geospatial Analysis
- Groundwater, Surface water
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http://www.usgs.gov/science/science.php?term=799

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USGS Water Resources

//water.usgs.gov/

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WATER DATA FOR THE NATION

National Water Information System (NWIS)

View current and historical streamflow, groundwater level, and water-quality data

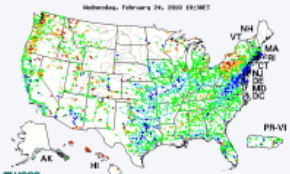
Data by state

Data Discovery

For more data options, explore our data discovery tools.

Today's Water Conditions

View maps of current and historical conditions



Streamflow

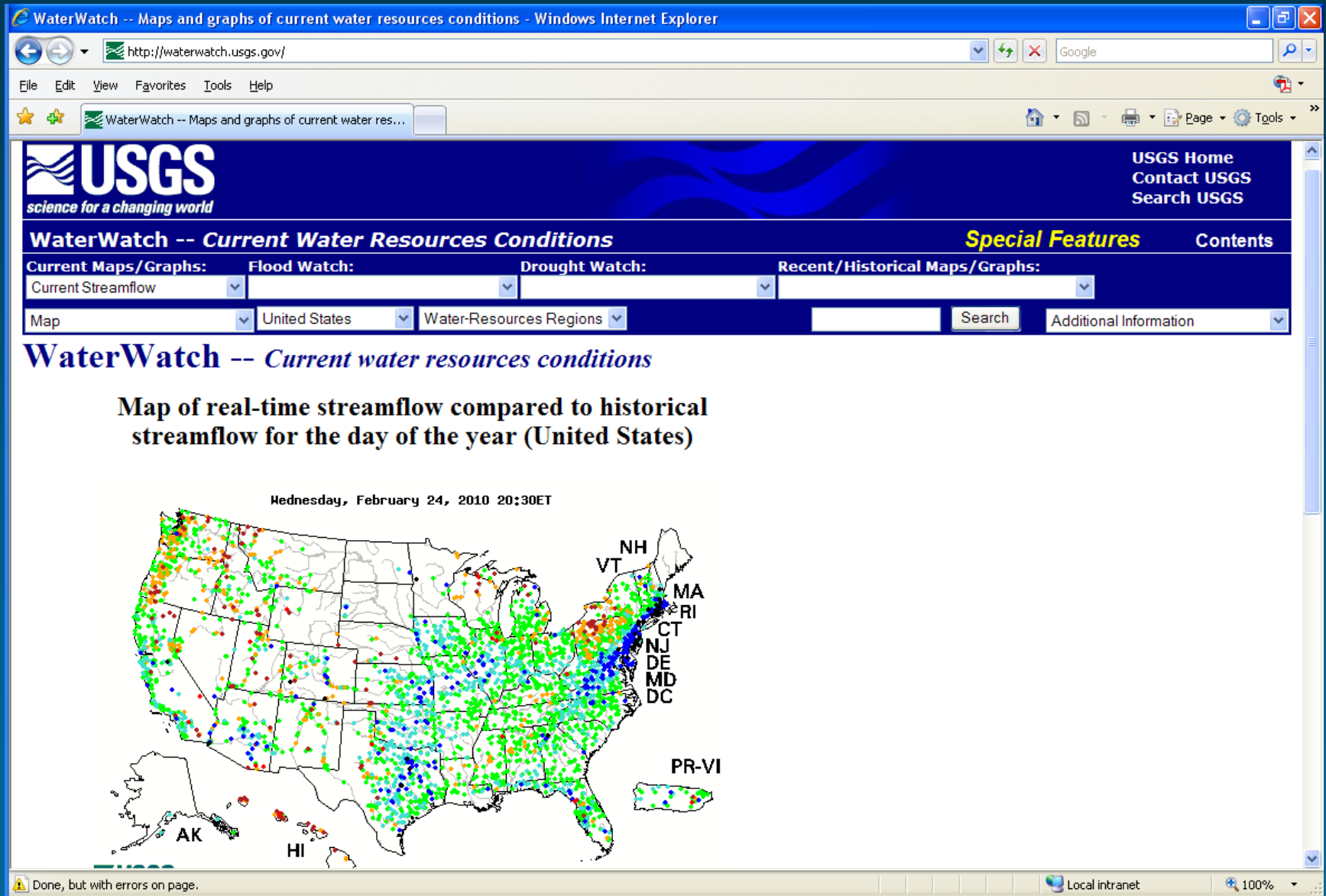
Water Resources Topics

 <u>Streams, lakes, and reservoirs</u> Science to observe, analyze, and understand the movement and condition of surface water.	 <u>Floods and droughts</u> Study the conditions and consequences of water over-abundance or scarcity.
 <u>Groundwater, aquifers, and wells</u> Science to discover and describe the location, condition, and behavior of water in the ground.	 <u>Water use</u> Information about how water is used now and in the past.
 <u>Quality of water resources</u> Science to monitor and evaluate biological, chemical, and environmental factors affecting water quality.	 <u>Contamination and pollution</u> Study the existence and results of harmful substances in water, produced by humans and natural processes.
 <u>International water activities</u> Ongoing water projects of international interest.	 <u>Methods and modeling</u> Available tools and expertise to conduct water resources science.

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Nationwide current streamflow

//waterwatch.usgs.gov/



USGS CO Water Science Center

//co.water.usgs.gov/

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http://co.water.usgs.gov/

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Colorado Water Science Center

Home Information/Data Projects Publications Contact



Water Resources of Colorado

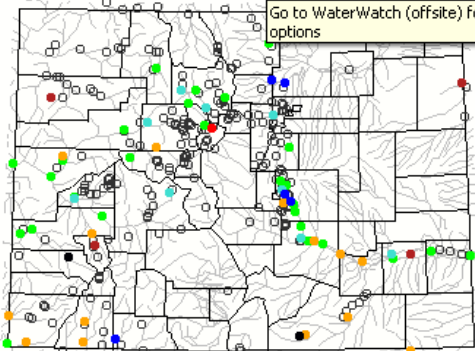
Welcome to the USGS Colorado Water Science Center. These pages are your source for water-resource information collected and interpreted by the U.S. Geological Survey in Colorado.

Hednesday, February 24, 2010 21:30ET

Water-resource activities include:

- Operation and oversight of an extensive network of water-resource monitoring gages
- Archive of water-resource information collected for more than 100 years
- Data collection and investigative studies related to issues of concern to water-management entities and citizens
- Publishing data and topical reports

Go to WaterWatch (offsite) for a larger map with additional options



real-time [streamflow](#), [water-quality](#), [ground-water levels](#)

DATA CENTER

USGS Real-time data

- Streamflow
- Streamflow - Comparisons current/historic
- Ground water
- Water quality
- Precipitation
- Meteorological
- Reservoirs

State of Colorado Division of Water Resources

- Surface Water Conditions

USGS WaterWatch

- Current conditions
- Flood Watch

Quick Link to Real-Time Data

Enter a USGS site number:

Go

View site list: [SW](#) | [GW](#) | [WQ](#)

Explanation - Percentile classes

Low	Much below normal	Below normal	Normal	Above normal	Much above normal	High	Not ranked
●	●	●	●	●	●	●	○

[Explanation of percentile classes](#)

http://water.usgs.gov/waterwatch/?m=real&r=co

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USGS Water Data for Colorado

//waterdata.usgs.gov/co/nwis/

USGS Water Data for Colorado - Windows Internet Explorer

http://waterdata.usgs.gov/co/nwis/ steamboat hot springs

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USGS Water Data for Col... Steamboat Hot Springs - Ste...

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USGS
science for a changing world

National Water Information System: Web Interface

[USGS Water Resources](#)

Data Category: Home Geographic Area: Colorado GO

[News](#) - updated January 2010

USGS Water Data for Colorado

Data Category

Real-time data **Current-conditions** data transmitted from selected surface-water, ground-water, and water-quality sites.

Site information Descriptive site information for all sites with links to all available water data for individual sites.

Surface water Water flow and levels in streams, lakes, and springs.

Ground water Water levels in wells.

Water quality Chemical and physical data for streams, lakes, springs, and wells.

Mapper Map of all sites with links to all available water data for individual sites.

Introduction

The U.S. Geological Survey's (USGS) National Water Information System (NWIS) is a comprehensive and distributed application that supports the acquisition, processing, and long-term storage of water data. NWISWeb serves as the publicly available portal to a geographically seamless set of much of the water data maintained within NWIS ([additional background](#)).

NWISWeb pages provide access to water data from over 1.5 million sites in all 50 States and additional border and territorial sites. The data are organized within the categories listed to the left.

The water data available via NWISWeb have been acquired as part of the USGS investigations of the occurrence, quantity, quality, distribution, and movement of the surface and underground waters that constitute the Nation's water resources. Additional information about the USGS and water resources of the Nation is available at water.usgs.gov.

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Web Serving of Shared Water-Level Data

USGS groundwater data available from National Water Information System (NWIS):

<http://groundwaterwatch.usgs.gov/StateMaps/CO.html>



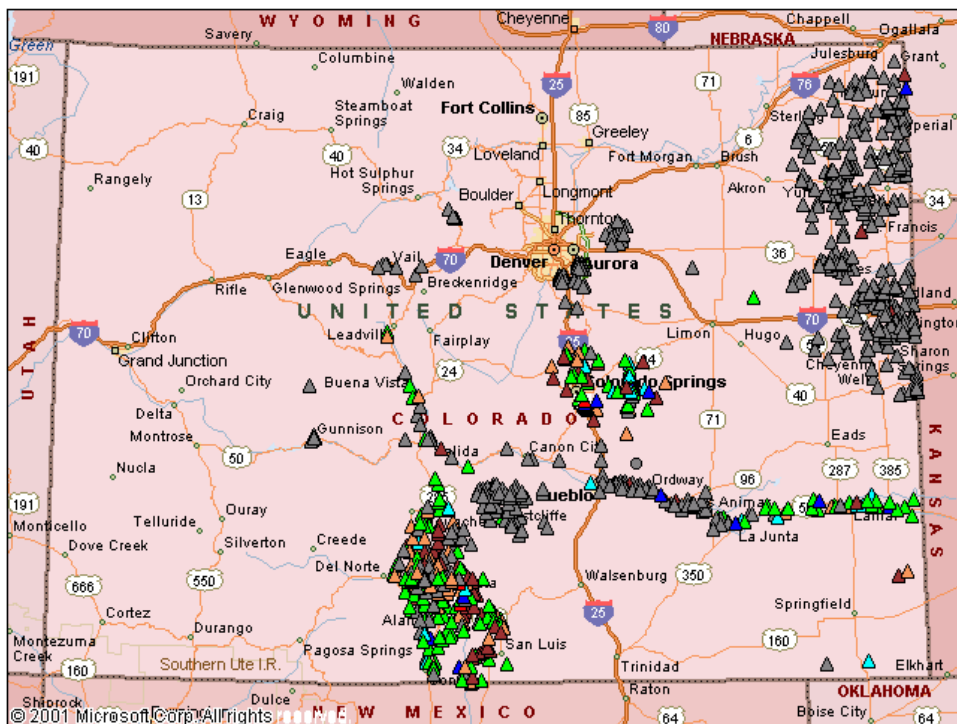
Colorado Active Water Level Network

In cooperation with



Hover mouse over site for information.

Click site to open page with county information and site selection.



Explanation - Percentile classes (symbol color based on most recent measurement)

Low	<10	10-24	25-75	76-90	>90	High	Not Ranked	○ Real Time
	Much Below Normal	Below Normal	Normal	Above Normal	Much Above Normal			□ Continuous
								△ Periodic Measurements

Map generated 2/24/2010 8:23:02 AM

[Groundwater Watch Help Page](#)

[Download Google Earth Version](#)

[Google Maps Display interactive map](#)

Colorado Counties depicted on the state location map with active wells

Counties	Well Count	Real-Time	Continuous	Periodic
Adams County	17	-	-	17
Alamosa County	98	-	-	98
Arapahoe County	19	-	-	19
Baca County	3	-	-	3
Bent County	12	-	-	12

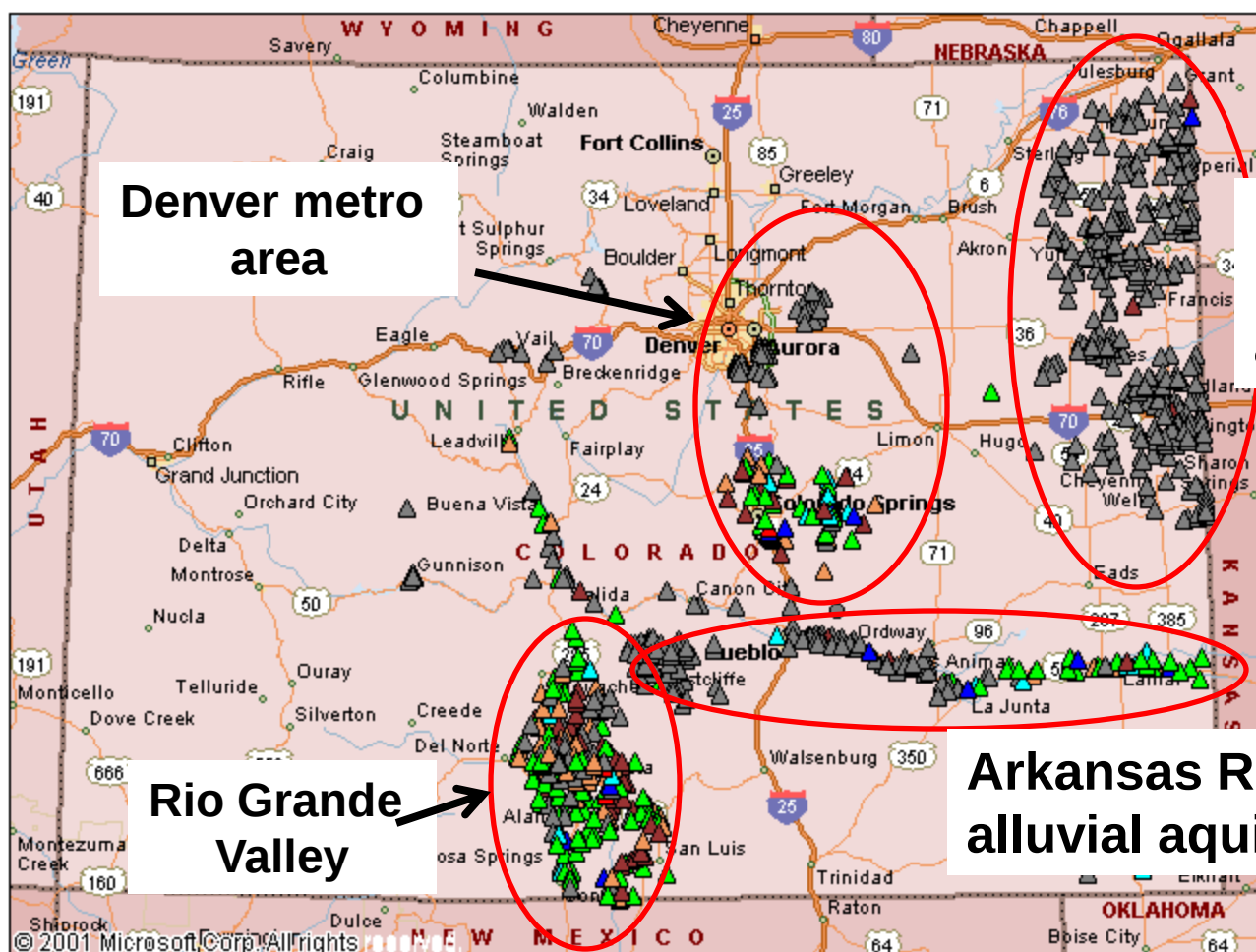
Interactive map and county list of water-level monitoring sites

Colorado Counties depicted on the state location map with active wells

Counties	Well Count	Real-Time	Continuous	Periodic
Adams County	17	-	-	17
Alamosa County	98	-	-	98
Arapahoe County	19	-	-	19
Baca County	3	-	-	3
Bent County	13	-	-	13
Chaffee County	12	-	-	12
Cheyenne County	18	-	-	18
Conejos County	28	-	-	28
Costilla County	41	-	-	41
Crowley County	4	-	-	4
Custer County	59	-	-	59
Douglas County	25	-	-	25
Eagle County	5	-	-	5
El Paso County	126	-	-	126
Fremont County	7	-	-	7
Grand County	5	-	-	5
Gunnison County	6	-	-	6
Kit Carson County	102	-	-	102
Lake County	2	-	-	2
Lincoln County	1	-	-	1
Logan County	6	-	-	6
Otero County	25	-	-	25
Phillips County	40	-	-	40
Prowers County	19	-	-	19
Pueblo County	34	1	-	33
Rio Grande County	53	-	-	53
Saguache County	84	-	-	84
Sedgwick County	7	-	-	7
Summit County	2	-	-	2
Washington County	18	-	-	18

Interactive
county list of
data availability

Hover mouse over site for information.
Click site to open page with county information and site selection.

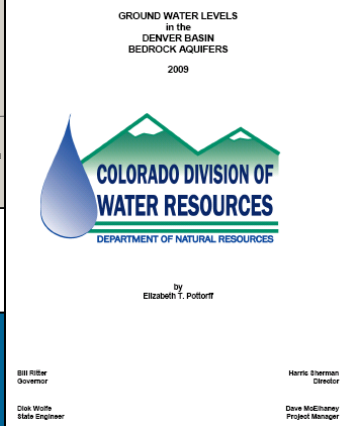
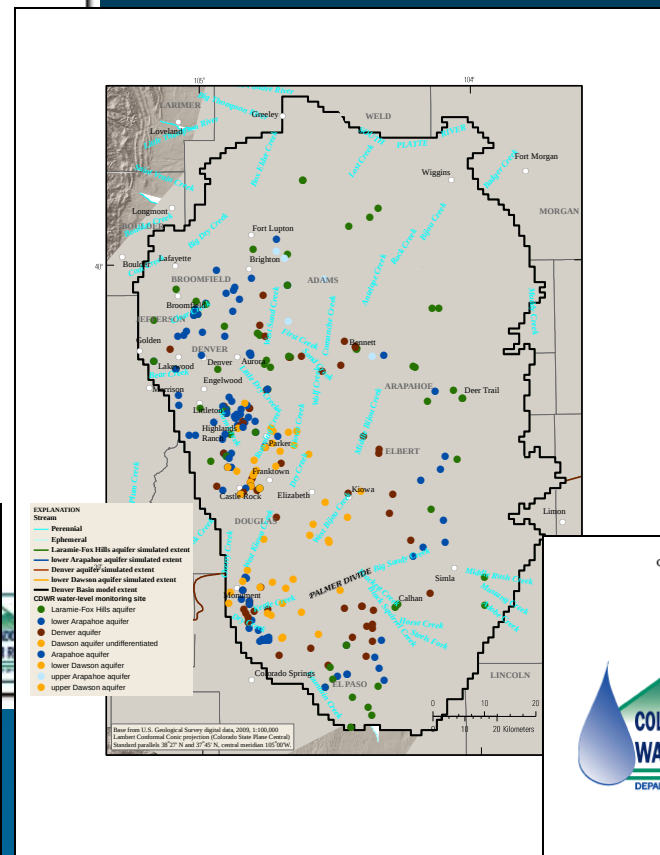
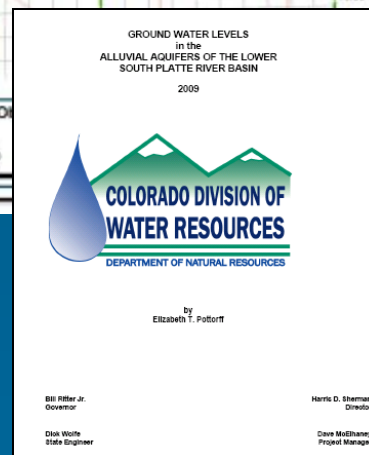
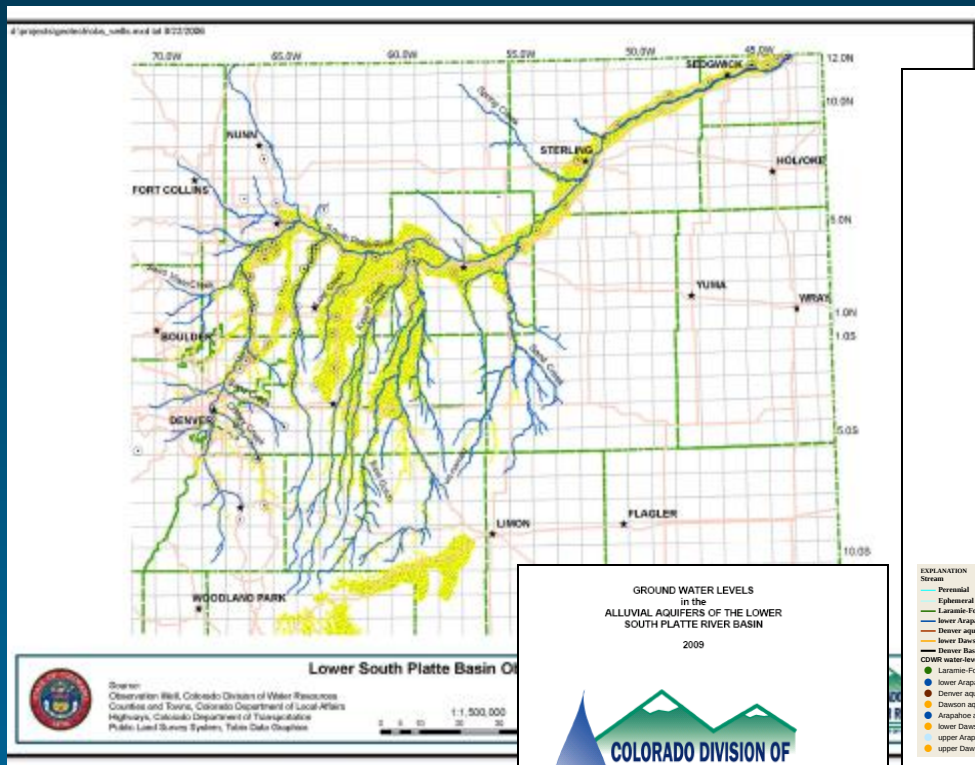


Explanation - Percentile classes (symbol color based on most recent measurement)

●	●	●	●	●	●	●	●
Low	<10	10-24	25-75	76-90	>90	High	Not

- Real Time
- Continuous
- △ Periodic

CDWR South Platte and Denver Basin Water-Level Networks



Yuma County, Colorado

In cooperation with



Colorado Springs Utilities
It's how we're all connected



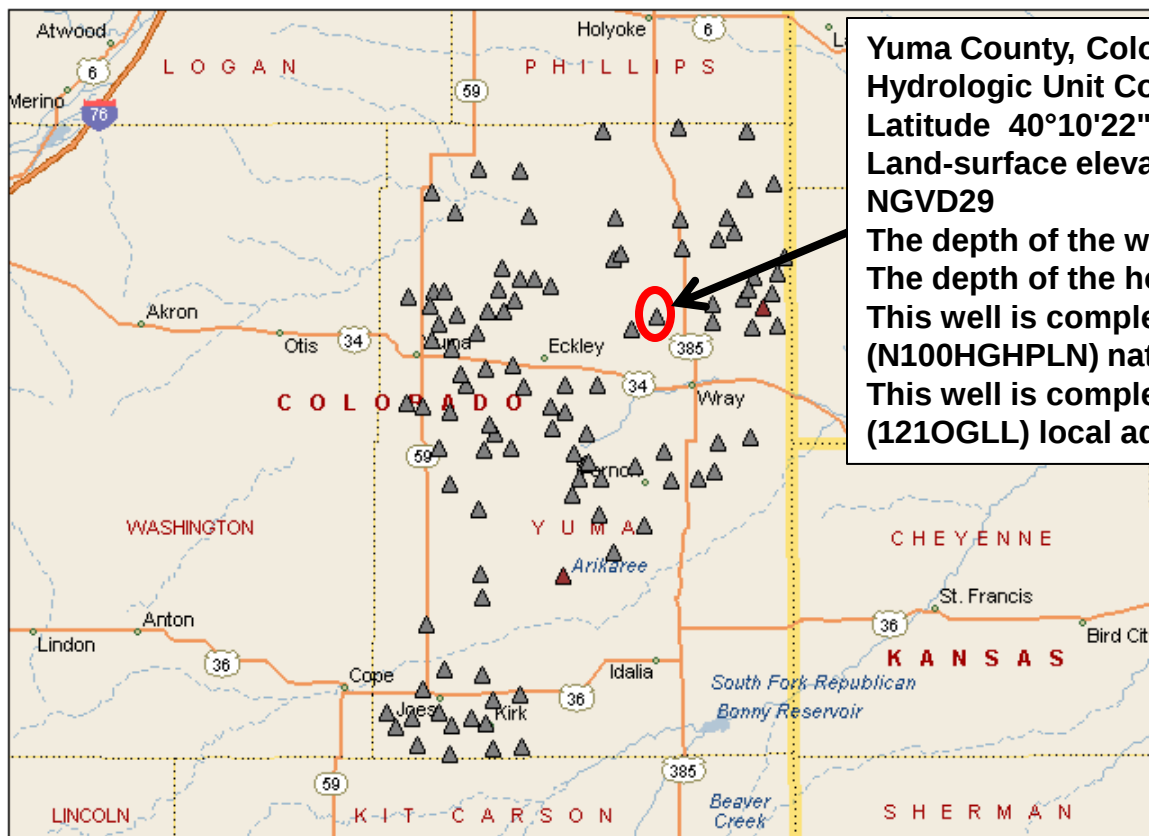
SOUTHEASTERN COLORADO
Water Conservancy District

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**Trinchera Water
Conservancy District**



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Yuma County, Colorado

Hydrologic Unit Code 10250002

Latitude 40°10'22", Longitude 102°17'45" NAD27

Land-surface elevation 3,761.00 feet above sea level
NGVD29

The depth of the well is 355 feet below land surface.

The depth of the hole is 355 feet below land surface.

This well is completed in the High Plains aquifer
(N100GHPLN) national aquifer.

This well is completed in the Ogallala Formation
(121OGLL) local aquifer.

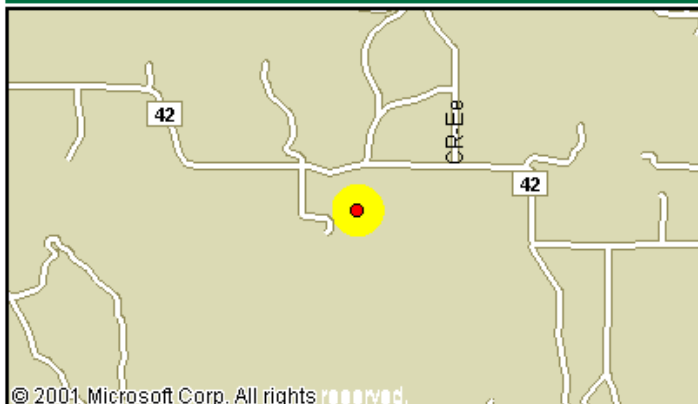


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Groundwater Watch

**** Due to NWISWeb being unavailable this weekend, continuous groundwater data will not be updated until the weekend of Feb 27. ****

Site Number: 401020102172000 - SB00204404BDB



Groundwater
Watch Help Page

DESCRIPTION:

Latitude 40°10'22", Longitude 102°17'45" NAD27
 Yuma County, Colorado, Hydrologic Unit 10250002
 Land surface altitude: 3,761.00 feet above sea level
 NGVD29.
 Well completed in "High Plains aquifer" (N100HGHPLN)
 national aquifer.
 Well completed in "OGALLALA FORMATION" (121OGLL) local
 aquifer

AVAILABLE DATA FROM NWISWeb:

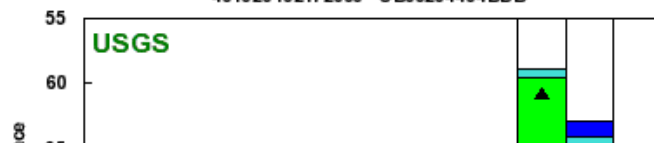
[Field ground-water-level measurements](#)
[Field/Lab water-quality samples](#)

OPERATION:

Record for this site is maintained by the USGS Colorado
 Water Science Center
 Email questions about this site to [Colorado Water-Data
 Inquiries](#)

Site Statistics

401020102172000 - SB00204404BDB



Most recent data value: 96.20 on 4/10/2009

Period of Record Monthly Statistics for 401020102172000

Depth to water level, feet below land surface

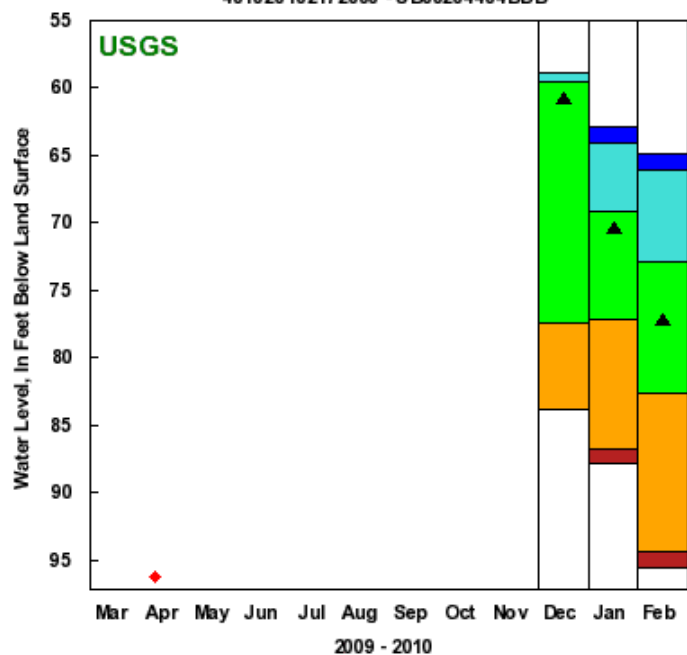
All Approved Continuous & Periodic Data Used In Analysis

Note: **Bold** values in the table indicate closest statistic to the most recent data value.

Month	Lowest	10th	25th	50th	75th	90th	Highest	Number of
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Site Statistics

401020102172000 - SB00204404BDB

Most recent data value: **96.20** on 4/10/2009

Period of Record Monthly Statistics for 401020102172000

Depth to water level, feet below land surface

All Approved Continuous & Periodic Data Used In Analysis

Note: **Bold** values in the table indicate closest statistic to the most recent data value.

Month	Lowest Median	10th %ile	25th %ile	50th %ile	75th %ile	90th %ile	Highest Median	Number of Years
Jan	87.90	86.80	77.20	70.50	69.20	64.04	62.86	19
Feb	95.60	94.38	82.70	77.26	72.84	66.11	64.90	11
Mar								0
Apr								0
May								0
Jun								0
Jul								0
Aug								0
Sep								0
Oct								0
Nov								0
Dec	83.80	-	-	-	-	-	58.90	5



Statistics Options



View month/year statistics

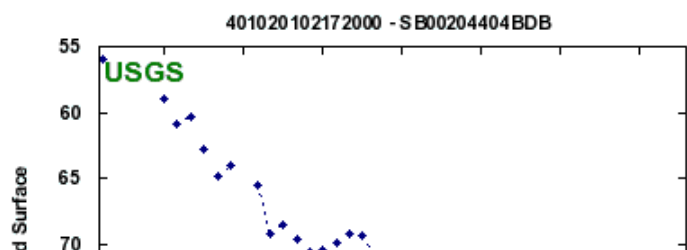
Periodic Groundwater Data

Summary for Period of Record Periodic Water Levels

Depth to water level, feet below land surface

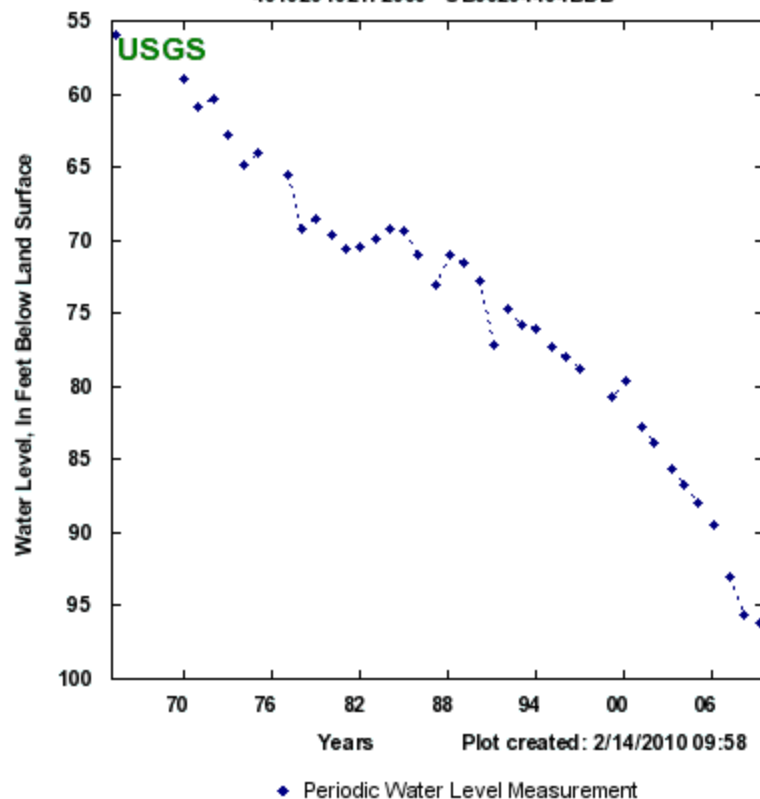
Approved Periodic Water Level Values

Begin Date		End Date		Number of Values	
05/01/65		04/10/09		39	
Highest WL	Date of Highest WL	Lowest WL	Date of Lowest WL		



Periodic Groundwater Data

401020102172000 - SB00204404BDB



Summary for Period of Record Periodic Water Levels

Depth to water level, feet below land surface

Approved Periodic Water Level Values

Begin Date		End Date	Number of Values
05/01/65		04/10/09	39
Highest WL	Date of Highest WL	Lowest WL	Date of Lowest WL
56.00	05/01/65	96.20	04/10/09



Groundwater Levels Options

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Long-term water-level decline in response to pumping
About 40 feet of water-level decline 1965-2009 (44 years) ~ 1 ft/year

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Active Groundwater Level Network

**** Due to NWISWeb being unavailable this weekend, continuous groundwater data will not be updated until the weekend of Feb 27. ****

Pueblo County, Colorado

In cooperation with



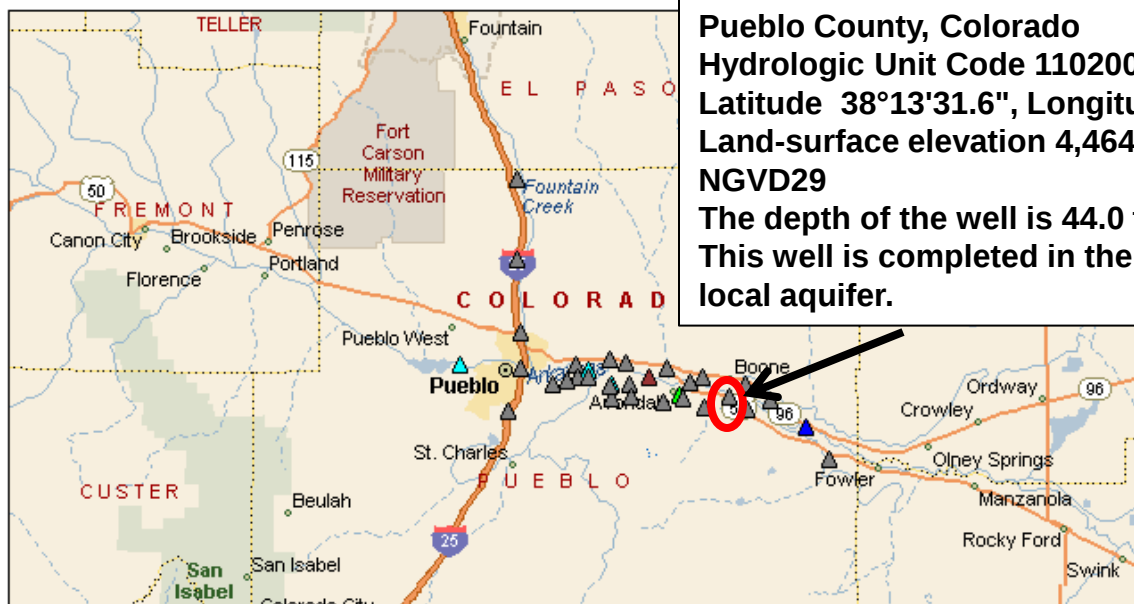
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Water Conservancy District

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Pueblo County, Colorado

Hydrologic Unit Code 11020005

Latitude 38°13'31.6", Longitude 104°15'59.1" NAD83

Land-surface elevation 4,464.00 feet above sea level

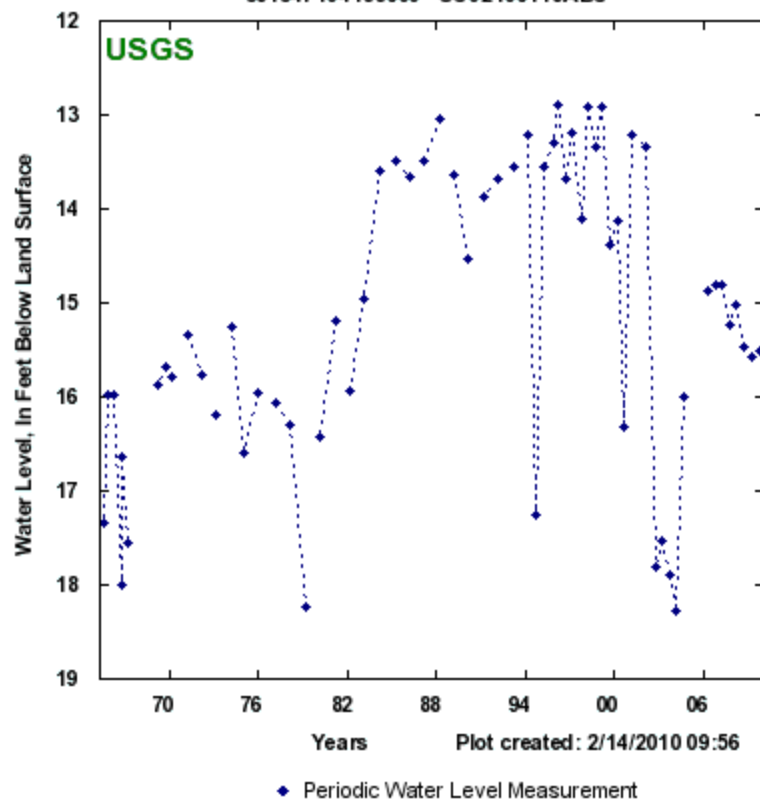
NGVD29

The depth of the well is 44.0 feet below land surface.

This well is completed in the Valley-Fill Deposits (111VLFL) local aquifer.

Periodic Groundwater Data

381347104155600 - SC02106118ABC



Summary for Period of Record Periodic Water Levels

Depth to water level, feet below land surface

Approved Periodic Water Level Values

Begin Date	End Date	Number of Values
------------	----------	------------------

07/22/65	11/12/09	61
----------	----------	----

Highest WL	Date of Highest WL	Lowest WL	Date of Lowest WL
------------	--------------------	-----------	-------------------

12.90	03/15/96	18.28	03/12/04
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Groundwater Levels Options

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Alluvial aquifer water levels exhibit seasonal and long-term variation in response to climate and local recharge conditions

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* Due to NWISWeb being unavailable this weekend, continuous groundwater data will not be updated until the weekend of Feb 27. *****

El Paso County, Colorado

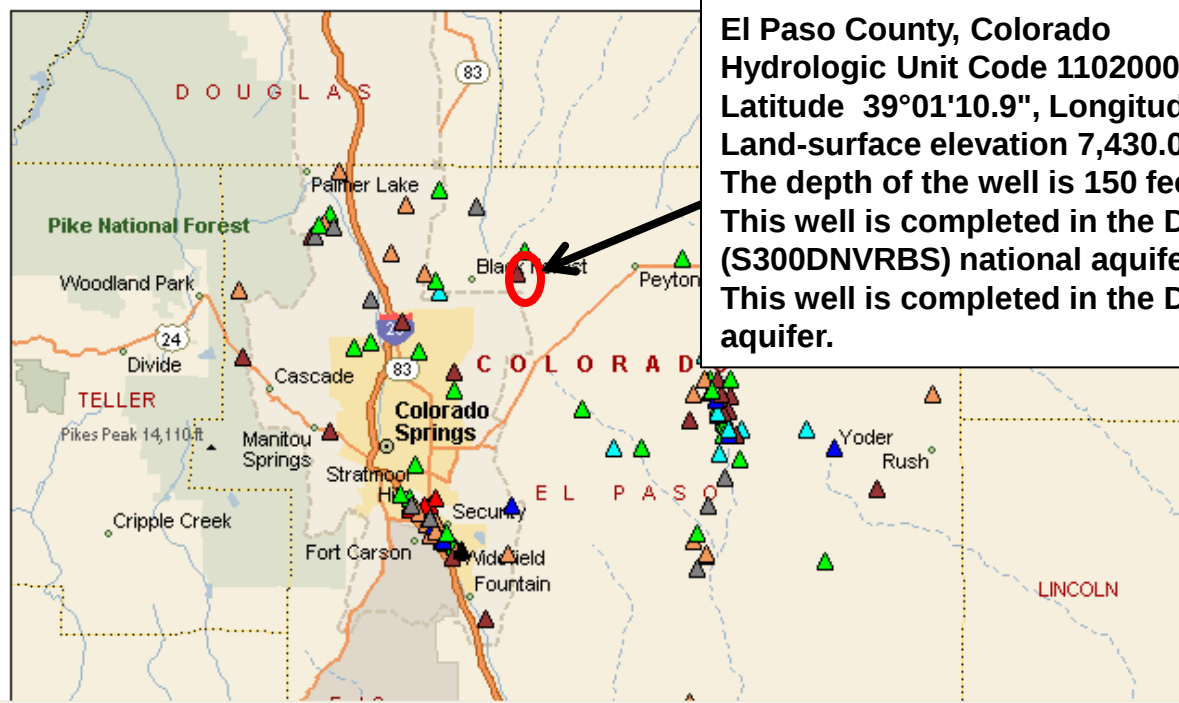
In cooperation with



Trinchera Water Conservancy District



Hover mouse over site for information. Click site to open page with information and data.



El Paso County, Colorado

Hydrologic Unit Code 11020004

Latitude 39°01'10.9", Longitude 104°38'25.6" NAD83

Land-surface elevation 7,430.00 feet above sea level NGVD29

The depth of the well is 150 feet below land surface.

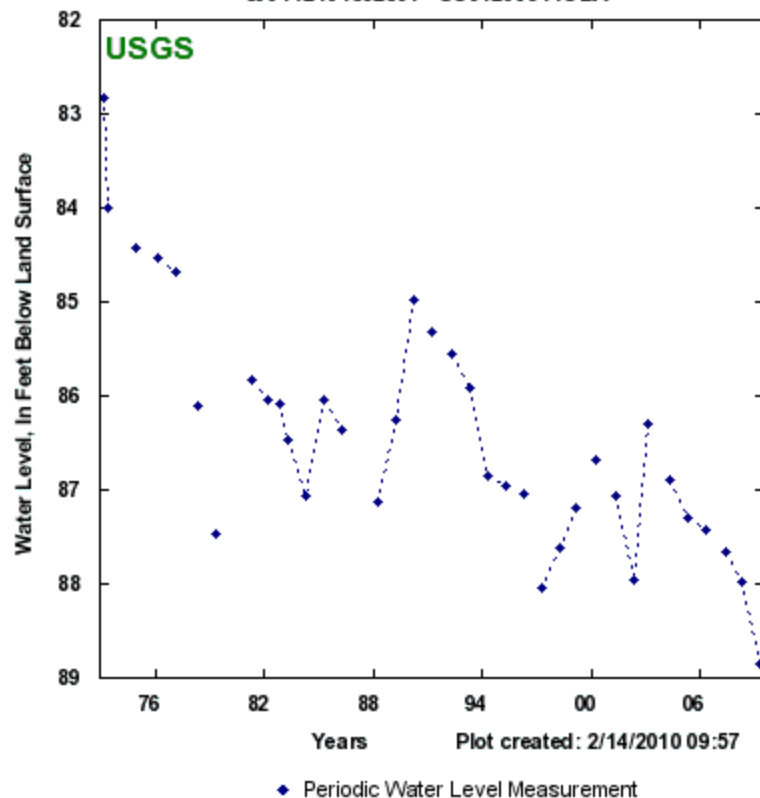
This well is completed in the Denver Basin aquifer system (S300DNVRBS) national aquifer.

This well is completed in the Dawson Arkose (124DWSN) local aquifer.

Data Point < 10 10 - 24 25 - 75 76 - 90 > 90 Monthly Median

Periodic Groundwater Data

390112104382301 - SC01206511C BA



Summary for Period of Record Periodic Water Levels

Depth to water level, feet below land surface

Approved Periodic Water Level Values

Begin Date	End Date	Number of Values
------------	----------	------------------

03/05/73	04/08/09	36
----------	----------	----

Highest WL	Date of Highest WL	Lowest WL	Date of Lowest WL
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82.83	03/05/73	88.85	04/08/09
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Groundwater Levels Options



[View NWISWeb Groundwater levels page](#)



[View annual monthly statistics for all data types](#)



[Download Groundwater levels in text format](#)

Denver Basin bedrock water levels exhibit seasonal variation in response to pumping and climate
Long-term water-level declines in some areas and aquifers

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Conclusions

- Shared data on USGS web sites. Opportunities for collaboration - South Platte River Basin, Denver Basin, and West Slope.
- Water levels in Ogallala (High Plains) Aquifer exhibit long-term decline in response to pumping
- Water levels in alluvial aquifers respond rapidly to climatic and local recharge conditions including surface water and irrigation return flows
- Water levels in confined aquifers can exhibit seasonal variation in response pumping and long-term water-level decline in some locations



Questions?
spaschke@usgs.gov