

Information Series 48

COLORADO WATER QUALITY DATABASE
from the
Environmental Protection Agency's
STORET Database

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DISCLAIMER

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The data included in the database are limited to those available from public (government-funded) agencies.

Constituent concentrations analyzed in water samples can be highly variable. Site conditions, sampling time of day, sampling time of year, precipitation events, sampling techniques and protocols, and laboratory analysis methods, can all contribute to this variability. Therefore, care should be taken when using the data. If the data is not interpreted in its correct context, inappropriate assumptions and decisions can be made. A number of sample locations have had repeated sample events through time. The results of all the sample events at a specific location should be used to characterize water quality, as opposed to using only part of the available data.

It is the user's responsibility to determine the criteria that will make the data acceptable for its intended use.

TABLE OF CONTENTS

DISCLAIMER.....	ii
ACKNOWLEDGEMENTS.....	v
INTRODUCTION.....	1
EXPLANATIONS.....	2
GRAB-SAMPLE DATA.....	2
AGENCY CODE.....	2
STATION CODE.....	3
FIPS STATE CODE.....	3
STATE NAME.....	3
FIPS COUNTY CODE.....	3
COUNTY NAME.....	3
LATITUDE.....	3
LONGITUDE.....	4
HUC BASIN CODE.....	4
DATE.....	4
TIME.....	4
DEPTH.....	4
PARAMETER 1.....	5
PARAMETER 2.....	5
PARAMETER 3.....	5
PARAMETER CODE.....	5
NUMERIC VALUE.....	6
TEXT VALUE.....	6
REMARK CODE.....	6
SOURCE.....	6
COMPOSITE AND GROUNDWATER SAMPLE DATA.....	6
LOCATION NAME.....	6
STREAM TYPE.....	7
BEGINNING DATE, ENDING DATE.....	7
BEGINNING TIME, ENDING TIME.....	7
STATISTICAL CODE.....	7
SPACE/TIME/BOTH CODE.....	7
METHOD CODE OR GRAB COUNT.....	7
LOOK-UP TABLES.....	8
CONCLUSION.....	8
APPENDIX A.....	9
ABBREVIATED LOOK-UP TABLE FOR AGENCY NAMES.....	9
APPENDIX B.....	13
LOOK-UP TABLE FOR COUNTY CODES.....	13
APPENDIX C.....	14
LOOK-UP TABLE FOR HUC BASIN CODE.....	14

APPENDIX D.....	17
LOOK-UP TABLE FOR REMARK CODES.....	17
APPENDIX E.....	19
LOOK-UP TABLE FOR STATISTICAL CODES.....	19
APPENDIX F.....	20
LOOK-UP TABLE FOR METHOD/GRAB COUNT CODES.....	20
APPENDIX G.....	20
LOOK-UP TABLE FOR SPACE/TIME/BOTH CODES.....	20
APPENDIX H.....	21
LOOKUP TABLE FOR STATE FIPS CODES.....	21

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INTRODUCTION

Water quality data is important to many people in Colorado. Many industries, consultants, government agencies, environmental organizations, and citizens use water quality data in their daily endeavors. Often though, water quality data is not easy to obtain. It must be requested from the agency that performed the original sampling, and then, may only be available in a hardcopy form or a digital form that is not easily utilized. For this reason, the Colorado Geological Survey's Water Quality Data Program has produced this CD-ROM. This CD contains all the ambient water quality data for Colorado contained in the Environmental Protection Agency's (EPA) Storage and Retrieval (STORET) database through January 1998.

The STORET database is a nationwide database for maintaining information on water quality and biological monitoring. Information accumulated in STORET has been gathered by many organizations, including the EPA, U.S. Geological Survey, U.S. Forest Service, National Park Service, U.S. Bureau of Reclamation, the Colorado Department of Public Health and Environment, Colorado Department of Natural Resources, and other government agencies. With its roots in the 1960's, the system, now known as the STORET Legacy system, has become outdated and very difficult to use. Currently, a new STORET system is being created that will be compatible with modern computing architecture and software. Unfortunately, data gathered on the earlier Legacy system cannot be transferred into the new STORET system.

The purpose of this publication is to create an easily accessible format from which the user can obtain information about Colorado water quality data gathered on the STORET Legacy database since its inception. The data we have collected from STORET has been reorganized into a Microsoft Access v.97 database format. This allows the user to run queries to gather specific information and create reports in minutes that might take hours, even days, to do on the STORET Legacy system.

Data from National Pollutant Discharge Elimination System (NPDES) regulatory enforcement has not been included on this CD-ROM because these samples *generally* represent surface water affected by a point-source effluent (discharge from a regulated activity) and are not indicative of ambient water quality conditions.

The information collected on the Colorado Water Quality database represents an original retrieval made from the STORET database and has not been changed to correct existing errors or omissions contained in the STORET Legacy database. Multiple fields exist in the database, which have been transferred directly from STORET. The following is a description of each

field found in the Colorado Water Quality database, and an explanation of the type of data stored in the respective fields.

The CD does not contain a resident search engine. The data will need to be manipulated by the existing database software on your PC.

EXPLANATIONS

The Colorado Water Quality Database consists of three main types of data: 1) grab-sample data, 2) composite-sample data, and 3) groundwater data. The grab-sample data is, by far, the largest of these data sets. Therefore, it is divided into sixty-four data tables corresponding to the counties of Colorado. Each of these tables consists of data for that county only. There is one grab-sample data table labeled "Unclassified," for samples that do not contain county references. The composite-sample data consists of only one data table covering the entire state, as is the case for the groundwater data.

The database also contains ten look-up tables. The look-up tables contain explanations of certain codes used in the grab, composite, and groundwater tables. The look-up tables are named according to the data-field name each refers to. They list the range of possible codes in that particular field in the data tables and give an explanation of each particular code.

GRAB-SAMPLE DATA

Below are explanations for the fields that make up the county grab-sample data tables.

Agency Code

This field contains codes assigned to the agencies that report water quality data into the STORET database. A look-up table called "Agency Names" is included in the database. This table can be used in conjunction with the data to access vital information regarding the submitting agency. This field is 10 characters in width.

Station Code

The Station Code field is an alphanumeric code identifying the particular station from which the data has been collected. In most cases, the station identifier is assigned by the submitting agency, and not by the STORET administrators. Please note that some station codes are the Latitude/Longitude locations of that particular station. This field is 17 characters in width.

FIPS State Code

The FIPS State Code is the state identifier code assigned by the federal government for each state in the nation. This is a numerical code of two digits; therefore, the field is only two digits in length. For Colorado, the FIPS State Code is 08.

State Name

The author added the “State Name” field to each table for clarity. This is a text field 10 characters in length.

FIPS County Code

The FIPS County Code is the county identifier code assigned by the federal government for each county in a state. This is a numerical code of three digits, which is based alphabetically by county name. The number range is from 001 to 125 in Colorado, with 001 being the code for Adams County and 125 being the code for Yuma County. These numerical codes are in odd number increments.

County Name

The author added the “County Name” field to each table for clarity when running queries from multiple tables. This is a text field 20 characters in length. A County Code look-up table is included, identifying the county code and the corresponding county name.

Latitude

The Latitude field is a numeric column showing the Latitude in degrees, minutes, seconds (DMS) of the station location.

Longitude

The Longitude field is a numeric column showing the Longitude in degrees, minutes, seconds (DMS) of the station location.

HUC Basin Code

The hydrologic unit code, or HUC Basin Code, is a numeric value set forth by the Federal Government defining drainage basins and sub-basins for location use. The code number is usually 8 numbers in length. The first two numbers in the code identify the major basin. The next two numbers define the sub-basin, and the final four numbers in the code define the exact drainage. A look-up table called “HUC Descriptions” describes the drainages defined by HUC Basin Codes.

Date

The date field is a numerical value of six digits displaying the sample collection date. The last two numbers in the year are the first two numbers in the field, the two digits of the month are the middle two numbers, and the day is represented as the last two numbers.

Time

The time field is a four digit numeric indicating the time (in military time) of sample collection. For samples that do not have a time recorded, this field will read '9999'.

Depth

The depth field is a numeric field indicating the depth (in feet) below the water surface at which the sample was collected. This field is 6 digits in length. Samples that have no value entered in this field will read '99999999'.

Parameters

The STORET database separates the sampling description parameters into three distinct fields: Parameter 1, Parameter 2, and Parameter 3.

Parameter 1

The Parameter 1 field is an alphanumeric description field of 8 digits identifying the physical and chemical parameters performed during sampling and laboratory analysis of the water sample.

Parameter 2

The Parameter 2 field is a continuation of the Parameter 1 field. This is also 8 digits in width, and is alphanumeric.

Parameter 3

The Parameter 3 field is an alphanumeric description field that defines the units that the parameter was measured in. Examples of this field might be milligrams per liter (mg/L), micrograms per liter (ug/L), tons/day, etc.

Parameter Code

Each grouping of three parameter fields has a unique numeric parameter code shown in this field. The code numbers can also be cross-referenced in the Parameter Descriptions look-up table for a full description of the parameter. A look-up table for Parameter Codes and the corresponding parameter descriptions is found in the main database. Due to the large number of parameters in the STORET Database, a Parameter Code table was not included in the appendix to this data dictionary. The user can print out the necessary information from the Parameter Code look-up table on the CD-ROM.

Within the parameter codes, there are two parameters, "Geologic Age" and "Aquifer Name", which have various codes in the "Text Value" column. These two codes are designed to be merged (concatenated) with the Geologic Age Code first, then the Aquifer Name Code, to reveal the meaningful code. This combined code can then be cross-referenced back to the Aquifer Name Code look-up table for a description. The Aquifer Name Code look-up table is found in the main database. An Aquifer Name Code table was not included in the appendix to this data dictionary because of its size.

Numeric Value

If the result of the parameter is a numeric value (i.e. 19 mg/L), it will be displayed in this 13-character field. If the result of the parameter is a text value, then this field will be displayed as '1E+13'.

Text Value

If the result of the parameter is a text value, then that value will be displayed in this field. Like the Numeric Value field, the Text Value field has 13 character field limit, and if the result of the parameter is a numeric value, then this field will read '9999999999999'.

Remark Code

The Remark Code field is a single alpha character field citing any special note regarding the parameter, of the values achieved. The values shown in this field range from A to Z, and a description of the values are located in the Remark Codes look-up table. Samples that do not have an assigned remark code will be blank in this field.

Source

The source field was added to the Colorado Water Quality database to indicate the originating source of the data.

Composite and Groundwater Sample Data

The format for the composite data and the groundwater data differs slightly from the format of the grab-sample data. In addition to the fields found in the grab-sample tables, the following fields are included in the composite data and groundwater data tables.

Location Name

This text field indicates the name of the location at which the sample was collected.

Stream Type

This text field indicates whether the water sample was collected from an ambient stream or non-ambient (regulated point source) discharge. In this database, the non-ambient data was not included.

Beginning Date, Ending Date

These fields, found in both the composite data table and the groundwater data table, indicate the starting and ending date for sample collection. Both are numerical fields of six digits in length.

Beginning Time, Ending Time

These fields, found in both the composite data table and the groundwater data table, indicate the starting and ending time for sample collection. Both are numerical fields of four digits in length.

Statistical Code

This single digit text code is a statistical description of the analytical result. The description for the codes can be found in the "Statistical Codes" look-up table.

Space/Time/Both Code

This alpha-numeric field consists of a single code indicating the type of composite sampling procedure used for the sampling event. The "Space/Time/Both Codes" look-up table describes the composite sampling procedure indicated by the codes.

Method Code or Grab Count

This alpha-numeric field describes the sampling methodology for collection of a particular sample, or the number of grab samples collected at a particular station. A look-up table called "Method/Grab Codes" explains the descriptions of each code.

LOOK-UP TABLES

Ten look-up tables have been included in the database and consist of information retrieved from the STORET Legacy database for the purpose of understanding the information found in the data tables. The user should find these tables very useful in understanding data for a particular location, parameter, or agency.

Seven look-up tables are related to fields in the grab-sample data tables. The look-up tables are the Agency Names table, State Code table, County Code table, HUC Descriptions table, Parameter Descriptions table, Aquifer Names table, and Remark Codes table. When viewing the Parameter Descriptions look-up table, the user will note several fields with various codes created by the STORET administrators. A full description of these fields and codes can be found as a separate MSWord file located on the CD-ROM called parno_expl.doc. This file was obtained directly from the STORET database.

In addition to the five look-up tables for the grab samples, there are three lookup tables with code definitions for the Composite Data and Groundwater Data tables. These look-up tables are the Method/Grab Codes table, the Space/Time/Both Codes table, and the Statistical Codes table. The user will find these look-up tables useful due to the different format of the Composite and Groundwater data tables.

A hardcopy version of most of the look-up tables is included in the appendix for your reference. Only the “Parameter Descriptions” and “Aquifer Name Codes” look-up tables are not included, due to their size.

CONCLUSION

The Colorado Water Quality Database is a preliminary data tool provided by the Colorado Geological Survey and the Environmental Protection Agency for use on the personal computer. With the advent of the next version of the STORET database, the CGS will continue to update the database, with some necessary modifications to this format.

APPENDIX A

Abbreviated Look-Up Table for Agency Names

Agency Code	Data Description	Contact Name	Phone Number-1	City	State
1117MBR	USEPA Region 7 data	Norm Crisp, Robert Barber	(913) 236-3884	Kansas City	KS
1117P030	Unclaimed data Missouri Environmental Control Agency	Storet User Assistance	(202) 260-7050	Washington	DC
1117S030	Unclaimed data USEPA Region 8	Storet User Assistance	(202) 260-7050	Washington	DC
1117TECH	Unclaimed data USEPA Region 7	Storet User Assistance	(202) 260-7050	Washington	DC
1118C030	Unclaimed data USEPA Region 9	Storet User Assistance	(202) 260-7050	Washington	DC
1118EPA8	USEPA Region 8 data	Marty McComb	(303) 312-6963	Denver	CO
11190RPF	Unclaimed data- Natl. Env. Research Center USEPA- Las Vegas, NV	Storet User Assistance	(202) 260-7050	Washington	DC
112WRD	US Geological Survey data	John Briggs	(703) 648-5624	Reston	VA
113BRECD	Unclaimed data Pueblo Water Works- US Bureau of Reclamation	Storet User Assistance	(202) 260-7050	Washington	DC
113BREC4	Unclaimed data- Grand Junction (CO) Proj, US Bur. Reclam, Montrose, CO	Storet User Assistance	(202) 260-7050	Washington	DC
113FORS2	US Forest Service lake, streams & sediment data	Dale Pfankuch	(303) 234-5570	Denver	CO
EFCOEPA	USEPA HQ- Monet & data support div. effluent data for Colorado	Louis Hoelman	(202) 260-7050	Washington	DC
EFONTEPA	Effluent data for Canadian Facilities	Louis Hoelman	(202) 260-7050	Washington	DC
EFPLANE	Unclaimed data US Air Force Kelly AFB, San Antonio Texas	Storet User Assistance	(202) 260-7050	Washington	DC

Agency Code	Data Description	Contact Name	Phone Number-1	City	State
OTSHMD	Unclaimed data	Storet User Assistance	(202) 260-7050	Washington	DC
11BIOACC	Fish Tissue	Kroner, Steve	(202) 260-4761	Washington	DC
11BSF&W	Bur Sport Fisheries & Wildlife data- Div of Fish Hatcheries Wash, DC	Robin Fletcher	(617) 565-3363	Boston	MA
11COEALB	Corps of Engineers Albuquerque District Conventional Lake Water data	Jean Manger	(505) 766-2775	Albuquerque	NM
11EG	Unclaimed data USEPA-HQ Effluent Guidelines Division	Storet User Assistance	(202) 260-7050	Washington	DC
11EPALES	USEPA Lake Eutrophication Survey data	Victor W. Lambou	(702) 798-2259	Las Vegas	NV
11EPATM	Univ. Nevada-Las Vegas Toxic Metals in Water data	Victor W. Lambou	(702) 798-2259	Las Vegas	NV
11FWS	US Fish & Wildlife Service data USEPA HQ Backdata Study	Louis Hoelman	(202) 260-7050	Washington	DC
11NATDC	National Dioxin Study	Louis Hoelman	(202) 260-7050	Washington	DC
11NPSWRD	Ambient and/or special water quality studies in National Park units	Dean Tucker, Gary Rosenlieb	(970) 225-3516	Fort Collins	CO
110EHL	Unclaimed data US Air Force Kelly AFB, San Antonio, TX	Storet User Assistance	(202) 260-7050	Washington	DC
11RGACID	Acid rain data	Donna Inman	(303) 312-6201	Denver	CO
11TRAIN	Example agency code for testing the system and for seminars	Louis Hoelman	(202) 260-7050	Washington	DC
11USAFA	Unclaimed data Frank J. Seiler Lab, USAF Acad, Colo Spgs, CO	Storet User Assistance	(202) 260-7050	Washington	DC
11USBRUC	Water & Power Res. SVC. Service data	Bill Tucker	(303) 247-0247	Durango	CO
11VEGA49	Unclaimed data	Storet User Assistance	(202) 260-7050	Washington	DC

Agency Code	Data Description	Contact Name	Phone Number-1	City	State
11WSNOMS	National organic monitoring survey data USEPA HQ backdata study	Louis Hoelman	(202) 260-7050	Washington	DC
1110DFID	Unclaimed data enforcement- USEPA Natl Investigation Center data	Gary Young	(303) 236-5132	Denver	CO
111WS	USEPA office of water supply, Cincinnati (Ohio) Lab USEPA backdata study	Louis Hoelman	(202) 260-7050	Washington	DC
1110NET	USEPA HQ National Network	Storet User Assistance	(202) 260-7050	Washington	DC
12LVNV	Biological monitoring data, no stations	Wesley Kinney	(702) 798-2358	Las Vegas	NV
12OWNIRS	EPA/WERL/TSD National inorganics and radionuclide survey	Lawrence J. Weiner, Judith M. Lebowich	(202) 260-2799	Washington	DC
12TAWI	Unclaimed data, Environ Monit Systems Lab, USEPA - Las Vegas, NV	Storet User Assistance	(202) 260-7050	Washington	DC
12WLS1	Western Lake Survey, Phase 1	Dixon H. Landers	(541) 754-4427	Corvallis	OR
121MBRCE	Corps of Engineers data	Garland Kersh	(816) 842-6039	Kansas City	MO
21BCCHD	Unclaimed data Boulder (CO) City/County Health Dept.	Storet User Assistance	(202) 260-7050	Washington	DC
21CODBWC	Denver Board of Water Com. stream water data	Jim Yahnke	(303) 445-2451	Denver	CO
21CODHDP	Unclaimed data- Denver (CO) City-County Health Dept.	Storet User Assistance	(202) 260-7050	Washington	DC
21COGF&P	Colorado Dept. Natural Res. Gamefish & Park Div data	John Woodling	(303) 291-7224	Fort Collins	CO
21COLSS0	Colorado Dept. of Health stream studies data	Dennis Anderson	(303) 692-3571	Denver	CO
21COL001	Colorado Dept. of Health water and tissue data	Dennis Anderson	(303) 692-3571	Denver	CO

Agency Code	Data Description	Contact Name	Phone Number-1	City	State
21COMETR	Metro Denver Sewage Disposal Dist. #1 data	Harry M. Haranda	(303) 289-5941	Denver	CO
21COPWWK	Unclaimed data- Pueblo (CO) Water Works	Storet User Assistance	(202) 260-7050	Washington	DC
21COROCK	Unclaimed data HQ Rocky Mount. Arsenal, US ARMY, Denver, CO	Storet User Assistance	(202) 260-7050	Washington	DC
21COSTU	Water and power resources genl. Water quality data	Jim Yahnke	(303) 445-2451	Denver	CO
21DRCOG	Denver Regional Council of Govts. Nationwide Urban Runoff Program data	Russ Clayshulte	(303) 455-1000	Denver	CO
21NMEX	N. Mexico Dept. of Health and Environment data	Don Ditmore	(505) 827-2823	Santa Fe	NM
21PPCOG	Pikes Peak Council of Government Stream Water Quality data	Ken Prather	(719) 471-7080	Colorado Springs	CO
21UTAH	Utah Health Dept. general water quality data	Richard Denton, Arne Hultquist	(801) 538-6146	Salt Lake City	UT
21WYDHSS	Wyoming water quality data	Beth Pratt	(307) 777-7079	Cheyenne	WY
22COCITY	USEPA HQ- Nationwide urban runoff program data- Colorado project	Roney Frederick	(202) 260-7054	Washington	DC
2208DWWD	US Bureau of Reclamation, Denver Basin project, CO GW drinking water	Larry Tandeski, Ed Everaert	(406) 657-6465	Billings	MT
31COUMM3	Unclaimed data, USEPA Region 8	Storet User Assistance	(202) 260-7050	Washington	DC
31M&I8	Unclaimed data, USEPA Region 8	Storet User Assistance	(202) 260-7050	Washington	CO

APPENDIX B

Look-Up table for County Codes

County Code	County Name		County Code	County Name
1	Adams		65	Lake
3	Alamosa		67	La Plata
5	Arapahoe		69	Larimer
7	Archuleta		71	Las Animas
9	Baca		73	Lincoln
11	Bent		75	Logan
13	Boulder		77	Mesa
15	Chaffee		79	Mineral
17	Cheyenne		81	Moffat
19	Clear Creek		83	Montezuma
21	Conejos		85	Montrose
23	Costilla		87	Morgan
25	Crowley		89	Otero
27	Custer		91	Ouray
29	Delta		93	Park
31	Denver		95	Phillips
33	Dolores		97	Pitkin
35	Douglas		99	Prowers
37	Eagle		101	Pueblo
39	Elbert		103	Rio Blanco
41	El Paso		105	Rio Grande
43	Fremont		107	Routt
45	Garfield		109	Saguache
47	Gilpin		111	San Juan
49	Grand		113	San Miguel
51	Gunnison		115	Sedgwick
53	Hinsdale		117	Summit
55	Huerfano		119	Teller
57	Jackson		121	Washington
59	Jefferson		123	Weld
61	Kiowa		125	Yuma
63	Kit Carson			

APPENDIX C

Look-Up table for HUC Basin Code

HUC Basin Code	Basin Name	Area Sq Mi
10180001	NORTH PLATTE HEADWATERS.	1420
10180002	UPPER NORTH PLATTE.	2880
10180010	UPPER LARAMIE.	2180
10190001	SOUTH PLATTE HEADWATERS.	1590
10190002	UPPER SOUTH PLATTE.	1820
10190003	MIDDLE SOUTH PLATTE-CHERRY CREEK.	2870
10190004	CLEAR.	558
10190005	ST. VRAIN.	978
10190006	BIG THOMPSON.	819
10190007	CACHE LA POUFRE.	1910
10190008	LONE TREE-OWL.	573
10190009	CROW.	1410
10190010	KIOWA.	720
10190011	BIJOU.	1360
10190012	MIDDLE SOUTH PLATTE-STERLING.	2900
10190013	BEAVER.	1080
10190014	PAWNEE.	728
10190015	UPPER LODGEPOLE.	1130
10190016	LOWER LODGEPOLE.	1350
10190017	SIDNEY DRAW.	744
10190018	LOWER SOUTH PLATTE.	1380
10250001	ARIKAREE.	1710
10250002	NORTH FORK REPUBLICAN.	3290
10250003	SOUTH FORK REPUBLICAN.	2720
10250004	UPPER REPUBLICAN.	2160
10250005	FRENCHMAN.	1350
10250006	STINKING WATER.	1470
10250012	SOUTH FORK BEAVER.	771
10250013	LITTLE BEAVER.	604
10260001	SMOKY HILL HEADWATERS.	1070
10260002	NORTH FORK SMOKY HILL.	734
10260004	LADDER.	1430
11020001	ARKANSAS HEADWATERS.	3020
11020002	UPPER ARKANSAS	2280
11020003	FOUNTAIN.	917
11020004	CHICO.	729

HUC Basin Code	Basin Name	Area Sq Mi
11020005	UPPER ARKANSAS-LAKE MEREDITH.	2170
11020006	HUERFANO.	1830
11020007	APISHAPA.	1060
11020008	HORSE.	1400
11020009	UPPER ARKANSAS-JOHN MARTIN RESERVOIR.	3770
11020010	PURGATOIRE.	3440
11020011	BIG SANDY.	1880
11020012	RUSH.	1350
11020013	TWO BUTTE.	798
11030001	MIDDLE ARKANSAS-LAKE MCKINNEY.	2330
11030002	WHITEWOMAN.	1370
11040001	CIMARRON HEADWATERS.	1730
11040002	UPPER CIMARRON.	1750
11040003	NORTH FORK CIMARRON.	987
11040004	SAND ARROYO.	728
11040005	BEAR.	1870
11080001	CANADIAN HEADWATERS.	1730
13010001	RIO GRANDE HEADWATERS.	1320
13010002	ALAMOSA-TRINCHERA.	2560
13010003	SAN LUIS.	1590
13010004	SAGUACHE.	1320
13010005	CONEJOS.	790
13020101	UPPER RIO GRANDE.	3220
13020102	RIO CHAMA.	3150
14010001	COLORADO HEADWATERS.	2860
14010002	BLUE.	675
14010003	EAGLE.	963
14010004	ROARING FORK.	1440
14010006	PARACHUTE-ROAN.	698
14020001	EAST-TAYLOR.	760
14020002	UPPER GUNNISON.	2380
14020003	TOMICHI.	1090
14020004	NORTH FORK GUNNISON.	959
14020005	LOWER GUNNISON.	1630
14020006	UNCOMPAHGRE.	1110
14030001	WESTWATER CANYON.	1440
14030002	UPPER DOLORES.	2140

HUC Basin Code	Basin Name	Area Sq Mi
14030003	SAN MIGUEL.	1530
14030004	LOWER DOLORES.	904
14030005	UPPER COLORADO-KANE SPRINGS.	2240
14050001	UPPER YAMPA.	2590
14050002	LOWER YAMPA.	1550
14050003	LITTLE SNAKE.	3060
14050005	UPPER WHITE.	1360
14050006	PICEANCE-YELLOW.	904
14050007	LOWER WHITE.	2670
14060001	LOWER GREEN-DIAMOND.	961
14080101	UPPER SAN JUAN.	3430
14080102	PIEDRA.	662
14080104	ANIMAS.	1370
14080105	MIDDLE SAN JUAN.	1920
14080107	MANCOS.	795
14080201	LOWER SAN JUAN-FOUR CORNERS.	2000
14080202	MCELMO.	702
14080203	MONTEZUMA.	1160

APPENDIX D

Look-Up table for Remark Codes

Remark Code	Explanation
(@)	Used in download option of retrieval for null field or no remark. If it follows a value, then number should be interpreted exactly as reported.
(blank)	Data not remarked. Number should be interpreted exactly as reported.
(A)	Value reported is the mean of two or more determinations.
(B)	results based upon colony counts outside the acceptable range.
(C)	Calculated. Value stored was not measured directly, but was calculated from other data available.
(D)	Field measurement. Some parameter codes (e.g. 401, field pH) simply this condition without this remark.
(E)	Extra sample taken in compositing process.
(F)	In the case of species, F indicates female sex.
(G)	Value reported is the maximum of two or more determinations.
(H)	Value based on field kit determination; results may not be accurate.
(I)	The value reported is less than the practical quantitation limit and greater than or equal to the method detection limit.
(J)	Estimated. Value shown is not a result of analytical measurement.
(K)	Off scale low. Actual value not known, but known to be less than the value shown.
(L)	Off scale high. Actual value not known, but known to be greater than the value shown.
(M)	Presence of material verified, but not quantified. Indicates positive detection, at a level too low to permit accurate quantification. In the case of temperature or oxygen potential, M indicates a negative value.
(N)	Presumptive evidence of the presence of material.
(O)	Sampled for. But analysis lost. Accompanying value not meaningful for analysis.
(P)	Too numerous to count.
(Q)	Sample held beyond normal holding time.
(R)	Significant rain in the past 48 hours.
(S)	Laboratory test.

Remark Code	Explanation
(T)	Value reported is less than the criteria of detection.
(U)	Material was analyzed for, but not detected. Value stored is the limit of detection for the process in use. In the case of species, undetermined sex.
(V)	Indicates the analyte was detected in both the sample and associated method blank
(W)	Value observed is less than the lowest value reportable under remark "T"
(X)	Value is quasi vertically-integrated sample
(Y)	Laboratory analysis from the unpreserved sample. Data may not be accurate
(Z)	Too many colonies were present to count (TNTC), the numeric value represents the filtration volume
(\$)	Calculated by retrieval software. Numerical value was neither measured nor reported to the database, but was calculated from other data available during generation of the retrieval report.
(M)	In the case of species, M indicates male species

APPENDIX E

Look-Up table for Statistical Codes

Code	Explanation
A	AVERAGE
H	MAXIMUM
L	MINIMUM
N	NUMBER OF OBSERVATIONS FOR THE SAMPLE
S	STANDARD DEVIATION
U	SUM OF SQUARES
V	VARIANCE
C	COEFFICIENT OF ERROR
X	COEFFICIENT OF VARIANCE
E	SKEWNESS
F	KURTOSIS
Z	NUMBER OF SAMPLES IN COMPOSITE EXCEEDS ESTABLISHED LIMIT
%	PRECISION
\$	ACCURACY
B	NONE OF THE ABOVE
D	INDICATES REPLICATE SAMPLE

APPENDIX F

Look-Up table for Method/Grab Count Codes

Code	Explanation
C	SAMPLES COLLECTED CONTINUOUSLY
G	GRAB SAMPLES, NUMBER COMPRISING SAMPLE NOT REPORTED
nn	GRAB SAMPLES WITH nn INDICATING THE NUMBER OF SAMPLES
B	NONE OF THE ABOVE. USED WITH REPLICATE SAMPLES

APPENDIX G

Look-Up table for Space/Time/Both Codes

Code	Explanation
S	SPACE
T	TIME
B	BOTH
F	FLOW PROPORTIONAL COMPOSITE
1-9	REPLICATE NUMBER

APPENDIX H

Lookup Table for State FIPS Codes

State FIPS Code	State Name
1	ALABAMA (AL)
2	ALASKA (AK)
4	ARIZONA (AZ)
5	ARKANSAS (AR)
6	CALIFORNIA (CA)
8	COLORADO (CO)
9	CONNECTICUT (CT)
10	DELAWARE (DE)
11	DISTRICT OF COLUMBIA (DC)
12	FLORIDA (FL)
13	GEORGIA (GA)
15	HAWAII (HI)
16	IDAHO (ID)
17	ILLINOIS (IL)
18	INDIANA (IN)
19	IOWA (IA)
20	KANSAS (KS)
21	KENTUCKY (KY)
22	LOUISIANA (LA)
23	MAINE (ME)
24	MARYLAND (MD)
25	MASSACHUSETTS (MA)
26	MICHIGAN (MI)
27	MINNESOTA (MN)
28	MISSISSIPPI (MS)
29	MISSOURI (MO)
30	MONTANA (MT)
31	NEBRASKA (NE)
32	NEVADA (NV)
33	NEW HAMPSHIRE (NH)
34	NEW JERSEY (NJ)
35	NEW MEXICO (NM)
36	NEW YORK (NY)
37	NORTH CAROLINA (NC)
38	NORTH DAKOTA (ND)
39	OHIO (OH)

State FIPS Code	State Name
40	OKLAHOMA (OK)
41	OREGON (OR)
42	PENNSYLVANIA (PA)
44	RHODE ISLAND (RI)
45	SOUTH CAROLINA (SC)
46	SOUTH DAKOTA (SD)
47	TENNESSEE (TN)
48	TEXAS (TX)
49	UTAH (UT)
50	VERMONT (VT)
51	VIRGINIA (VA)
53	WASHINGTON (WA)
54	WEST VIRGINIA (WV)
55	WISCONSIN (WI)
56	WYOMING (WY)