



MEMORANDUM

To: Robert P. Koehler, PhD, Oil & Gas Conservation Commission
From: Andrew Flor, Hydrogeologist
Date: September 24, 2019
Subject: Water Injection Project
SWNW Sec 22, Township 2N, Range 102W, 6th PM, Rio Blanco County
Chevron USA Inc

On September 12 you sent a memo describing a proposal by Chevron USA Inc to convert an existing well, Union Pacific #113x22, for injection into the Navajo Formation (4,788-5,300 feet measured depth). The well will be located in the SW $\frac{1}{4}$ of the NW $\frac{1}{4}$ of Section 22, Township 2 North, Range 102 West of the Sixth Principal Meridian in Rio Blanco County. The well will be approximately 3 miles northwest of Rangely, CO and 3 miles north of the White River.

The well completion information indicates that this well was constructed with 16-inch conductor casing grouted to a depth of 45 feet. 9- $\frac{5}{8}$ -inch surface casing is grouted from ground surface to a depth of 808 feet. 7- $\frac{7}{8}$ inch casing extends to a depth of 6,725 feet and is cemented from that depth back up to 680 feet below ground surface.

There are no completed water supply wells of record within $\frac{1}{2}$ mile of the wellhead, as shown in Table 1. There are no water rights structures within $\frac{1}{2}$ mile of the proposed wellhead as shown in Table 2. There are 21 COGCC oil/gas wells within $\frac{1}{2}$ mile of the proposed wellhead as shown in Table 3. A PDF output from AquaMap delineating a $\frac{1}{2}$ mile radius from the proposed injection well is attached. Permitted water supply wells are shown with green circles or red squares for uncompleted wells, decreed water rights structures are shown with magenta squares, and OGCC wells are shown as blue squares. There are three dams within 10 miles of this injection well. The dams and hazard ratings are shown on the attached map.

This well is located in the northern portion of the Piceance Basin in an area known as the Rangely Field. The geology of the well site area includes approximately 3,000 feet of the Cretaceous Age Mancos Shale overlying the Dakota Group. Underlying the Dakota Group are the Jurassic Age Morrison, Entrada, and Navajo Formations. The Dakota Sandstone is considered a potential aquifer in northwest Colorado, however at this location it is too deep to be economically viable. The Navajo Formation crops out approximately 9 miles to the north.

Due to the depth and poor water quality of the injection zone formation (residual petroleum hydrocarbons, TDS=15,600 mg/L) it is not considered to be a source of potable groundwater at this time and location. Based on the information provided, injection into the Navajo Formation through a properly constructed well should not negatively impact existing groundwater or surface water resources in the vicinity. If you have any questions or require additional information, please feel free to contact me (303-866-3581 x8218).





COLORADO
Oil & Gas Conservation
Commission

Department of Natural Resources

1120 Lincoln Street, Suite 801
Denver, CO 80203

September 12, 2019

MEMORANDUM

TO: Andrew Flor
Division of Water Resources

FROM: Robert P. (bob) Koehler, PhD.
Oil and Gas Conservation Commission (OGCC)

SUBJECT: Need for Hydrologic Information

The OGCC has received an application for a water injection project, summarized as follows. This will be a conversion of an existing production well for disposal. Note that the Division of Water Resources reviewed the two other Chevron wells for conversion and injection into the Navajo, the S B Lacy #11Y (your Memorandum dated July 18, 2018) and Emerald #79X (your Memorandum dated February 12, 2018).

LOCATION	COUNTY	FIELD
Surface SWNW Section 22, Township 2 North, Range 102 West, 6th P.M.	Rio Blanco	Rangely #72370

WELL NAME	Chevron USA INC: Union Pacific #113x22 (API: 05-103-08606)	
INJECTION ZONE FORMATION	Navajo Formation	
DEPTH OF INJECTION INTERVAL	4,788 - 5,300 (Measured Depth)	feet
PROPOSED INJECTION PRESSURE	1,600 - 1,900	psig
FRAC GRADIENT OR PRESSURE (BHP)	0.95 (estimate)	psi/ft
VOLUME OF FLUID TO BE INJECTED	15,000 bbl/day	bbl/day
TDS OF INJECTION ZONE FLUID	15,600	mg/L
TDS OF FLUID TO BE INJECTED	56,203	mg/L

WELL CONSTRUCTION DATA: Union Pacific #113x22								
CASING STRING	HOLE SIZE	CASING SIZE	CSG WT.	CSG TOP	SET DEPTH	CEMENT VOLUME	CEMENT TOP	CEMENT BOTTOM
Conductor	19"	16	55#	0'	45'	6 sks	0'	45'
Surface String	13-1/2"	9-5/8"	36#	0'	808'	500 sks	0'	808'
First String	8-3/4"	7"	23 & 26#	0'	6,725'	1770 sks	680'	6,725'

Please furnish the OGCC with the name and depth of any aquifer in the area of injection that is a known or potential fresh water stratum. We would also like a list of the water wells within one half mile of this



Mr. Andrew Flor
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location. Any other information with regard to distance to streams, ditches or outcrops would be very helpful. Thank you.

Table 1						
RECEIPT	PERMIT	STATUS	USE	AQUIFER	DEPTH	OWNER

Table 2

Structure Type	WDID	Associated Permits	Associated Case Numbers	Structure Name	More Info
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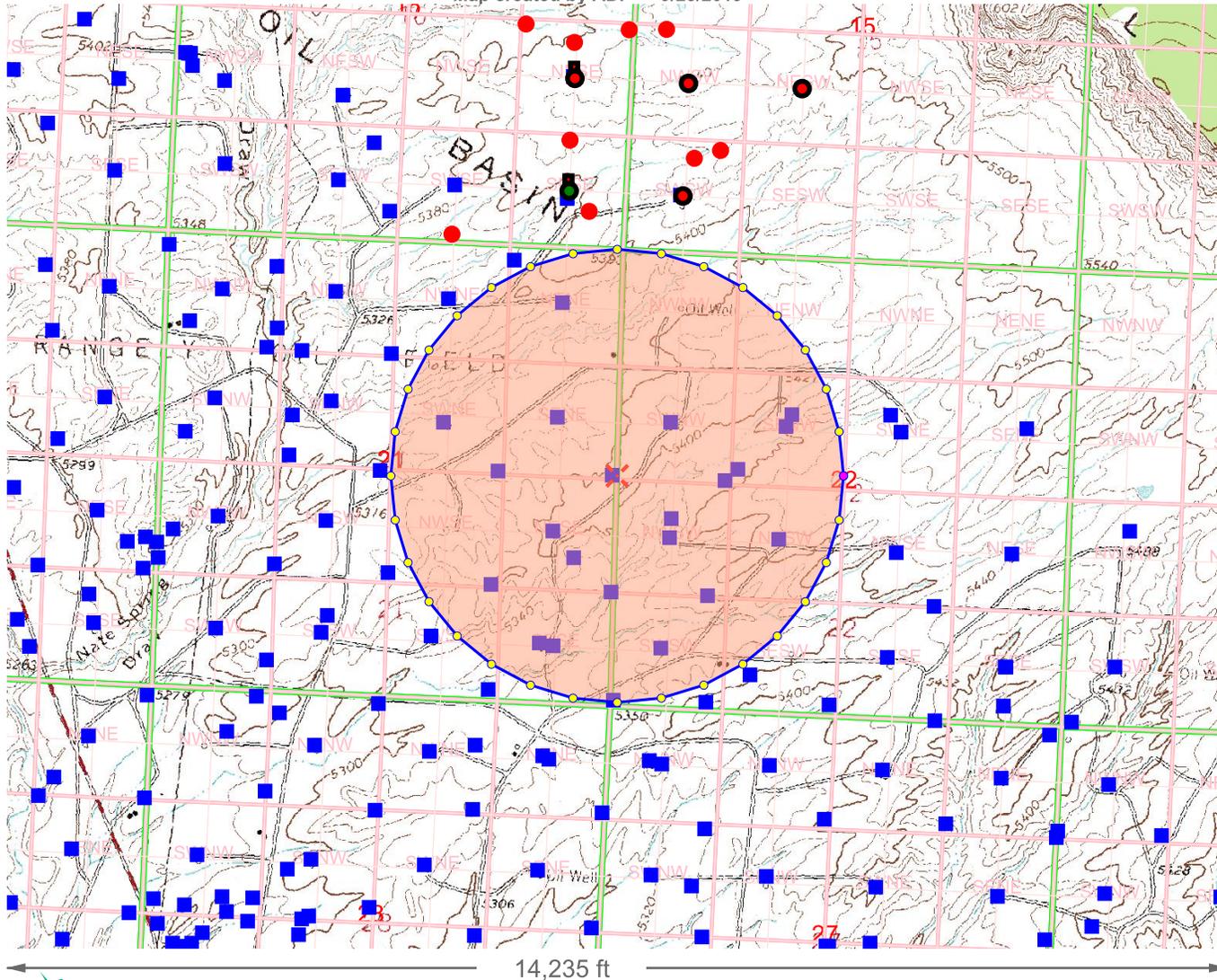
Table 3				
API_NUM	WELL_NAME	WELL_STATUS	PLSS_LOCATION	OPERATOR_NAME
05-103-07736	EQUITY-CALUP NSD 3	DRY AND ABANDONED	NESE 21 2N 102W 6	UNKNOWN
05-103-06167	UNION PACIFIC 56-21	INJECTING	SENE 21 2N 102W 6	CHEVRON USA INC
05-103-06169	FEE 59	INJECTING	SESE 21 2N 102W 6	CHEVRON USA INC
05-103-07426	UNION PACIFIC 78X-21	INJECTING	SWSE 21 2N 102W 6	CHEVRON USA INC
05-103-07559	FEE 88X	INJECTING	SWSW 22 2N 102W 6	CHEVRON USA INC
05-103-06165	UNION PACIFIC 57-21	PLUGGED AND ABANDONED	NWSE 21 2N 102W 6	CHEVRON USA INC
05-103-06174	FEE 53	PLUGGED AND ABANDONED	NWSW 22 2N 102W 6	CHEVRON USA INC
05-103-06178	U P 40-22	PLUGGED AND ABANDONED	SENE 22 2N 102W 6	UNKNOWN
05-103-06164	U P 18-21	PRODUCING	SWNE 21 2N 102W 6	CHEVRON USA INC
05-103-06168	FEE 20	PRODUCING	NESE 21 2N 102W 6	CHEVRON USA INC
05-103-06173	U P 28-22	PRODUCING	SWNW 22 2N 102W 6	CHEVRON USA INC
05-103-06175	FEE 27	PRODUCING	SWSW 22 2N 102W 6	CHEVRON USA INC
05-103-07274	FEE 73X	PRODUCING	SWSW 22 2N 102W 6	CHEVRON USA INC
05-103-08606	UNION PACIFIC 113 X 22	PRODUCING	SWNW 22 2N 102W 6	CHEVRON USA INC
05-103-08667	U P R R 117 X 22	PRODUCING	SENE 22 2N 102W 6	CHEVRON USA INC
05-103-09383	NATE SPRINGS 1	PRODUCING	SENE 22 2N 102W 6	RIO MESA RESOURCES INC
05-103-09822	NATE SPRINGS 3	PRODUCING	SENE 22 2N 102W 6	RIO MESA RESOURCES INC
05-103-08612	FEE 53AX	SHUT IN	NWSW 22 2N 102W 6	CHEVRON USA INC
05-103-06166	UNION PACIFIC 31-21	TEMPORARILY ABANDONED	NENE 21 2N 102W 6	CHEVRON USA INC
05-103-06176	FEE 36	TEMPORARILY ABANDONED	NESW 22 2N 102W 6	CHEVRON USA INC
05-103-07555	FEE 89X	TEMPORARILY ABANDONED	SWSW 22 2N 102W 6	CHEVRON USA INC
05-103-08699	UNION PACIFIC 120 X 21	TEMPORARILY ABANDONED	SWNE 21 2N 102W 6	CHEVRON USA INC

AQUAMAP

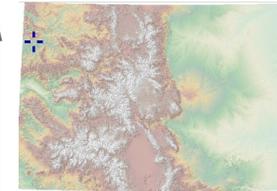
Colorado Division of Water Resources

CHEVRON USA UNION PACIFIC 113X22 Half Mile Radius

Map created by ADF 9/23/2019



MAP NAVIGATION



Click to create PDF
 UTM X, Zone 13: 730007
 UTM Y, Zone 13: 4346141
 Long: -102° 20' 6.6"
 Lat: 39° 14' 2.8"
 UTM and Geographic(LL) coordinates in NAD 83

DATA DISPLAY

- Background
- Counties
- Water Well Applications
- Quad Maps ▼
- PLSS
- DWR Parcels
- Roads
- EPA Well Notifications
- Hydrography
- Oil/Gas Well Locations
- Transparency ▼
- County Parcels (No Public Access)
- Towns
-

LOCATION

Section	Township	Range	Meridian
22 ▼	2 ▼	102 ▼	W ▼
<input type="button" value="PLSS Locator"/> <input type="button" value="Quick Zoom"/> <input type="button" value="Spacing"/>			

PRINTING

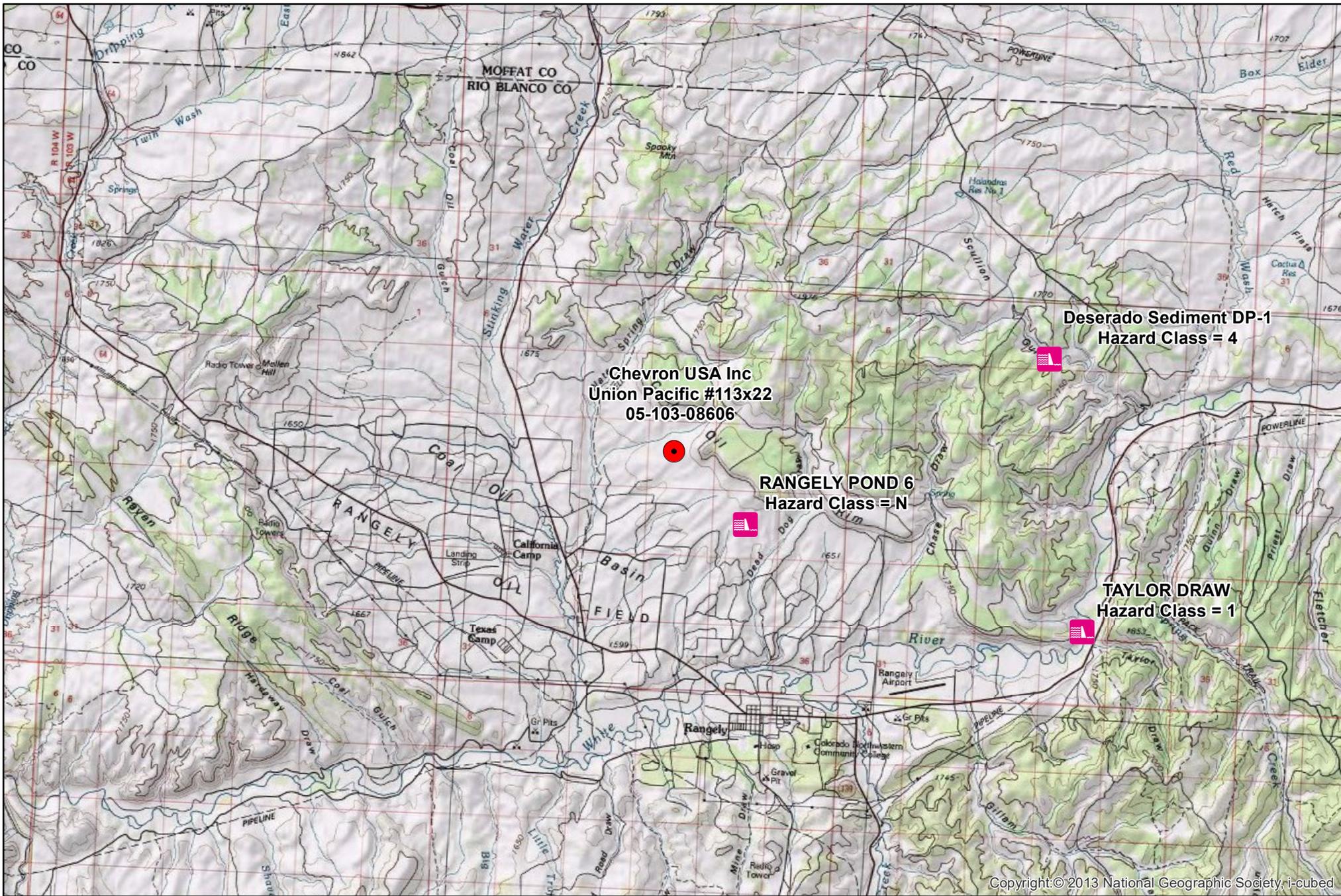
Output Scale	Page Size	User
24,000 ▼	8.5x11 ▼	ADF
Title CHEVRON USA UNION PACIFIC 113X22 Half M		

Note: The well locations displayed on AquaMap are based on location information provided by well permit application forms and are only as accurate as the information provided. The actual physical locations of all wells have not been field verified and may vary from the location displayed. Refer to a copy of the original well permit file, available on the Division of Water Resources website, for well location details.



Based on work developed at <http://www.carto.net>

Address location by Bing Maps
 AquaMap Version 3.0.1 July 5, 2009



Chevron USA Inc Union Pacific #113x22 Dams within 10 miles



COLORADO
Division of Water Resources
Department of Natural Resources

1 inch = 10,000 feet

