



COLORADO
Division of Water Resources
Department of Natural Resources

1313 Sherman Street, Room 821
Denver, CO 80203

MEMORANDUM

TO: Robert P. Koehler, PhD, Oil & Gas Conservation Commission
FROM: Kevin Donegan, Hydrogeologist
DATE: April 23, 2015
SUBJECT: Water Injection Project - NGL C12 (API 123-41201)
NESE Sec 27, T5N, R63W, 6th PM
NGL Water Solutions, Weld County

On February 24, 2015 you sent a memo describing a proposal by NGL Water Solutions to construct a new well, NGL C12, for injection into the DJINJ interval 8,235 to 9,961 feet below ground surface. This interval represents the approximate depths for the following formations; Lyons, Lower Satanka, Wolfcamp, Amazon, Council Grove, Admire, Virgil, Missouri, Fountain, Des Moines, Atoka, Morrow and Mississippian Formations. The NGL C12 well will be located in the NE¼ of the SE¼ of Section 27, Township 5 North, Range 63 West of the Sixth Principal Meridian in Weld County. The well is located approximately 0.36 miles northeast of the Riverside Intake Canal, 0.75 miles northeast of the South Platte River, and 8 miles east-southeast of Kersey, CO near 70 Ranch. The uppermost injection formation, the Lyons, crops out approximately 38 miles west of the proposed well location.

The well completion information indicates that this well will be constructed with 9-5/8 inch surface casing that will be grouted from ground surface to a depth of 850 feet. 7 inch casing will be installed to a depth of 8,242 feet and will be stage-cemented from 8,242 feet back up to ground surface. 4-½ inch slotted liner will be installed from 8,142 to 9,968 feet below ground surface.

There are five completed water supply wells of record within ½ mile of the injection well. The details of those wells are shown on the attached Table 1. There are no other decreed water rights structures within ½ mile. A PDF output from Map Viewer delineating a ½ mile radius from the injection well is attached. The Riverside Reservoir Dam, Hazard Class 1, is located approximately 9 miles to the southeast. Dams of concern and hazard ratings are also shown on an attached map.

Most of the existing water supply wells in this area produce from the South Platte alluvial aquifer or the Laramie-Fox Hills aquifer (KLF). The base of the KLF aquifer is approximately 300 feet below ground surface. The Pierre Shale underlies the Laramie-Fox Hills aquifer at this location. Recently, the Upper Pierre aquifer has begun to be developed as a source of fresh water in Northern Colorado. The Upper Pierre aquifer at this location extends to an approximate depth of 1,400 feet below ground surface.

Due to the depth and poor water quality of the injection zone formations, they are not considered to be sources of potable groundwater at this location. Based on the information provided, injection to the Lyons, Lower Satanka, Wolfcamp, Amazon, Council Grove, Admire, Virgil, Missouri, Fountain, Des Moines, Atoka, Morrow and Mississippian Formations through a properly constructed well should not negatively impact existing groundwater or surface water resources in the vicinity. **The well must be constructed with grout extending from surface to a depth of at least 1,500 feet below ground surface to adequately protect the Upper Pierre aquifer from contamination.** If you have any questions or require additional information, please feel free to contact me (303-866-3581 x8218).



Table 1

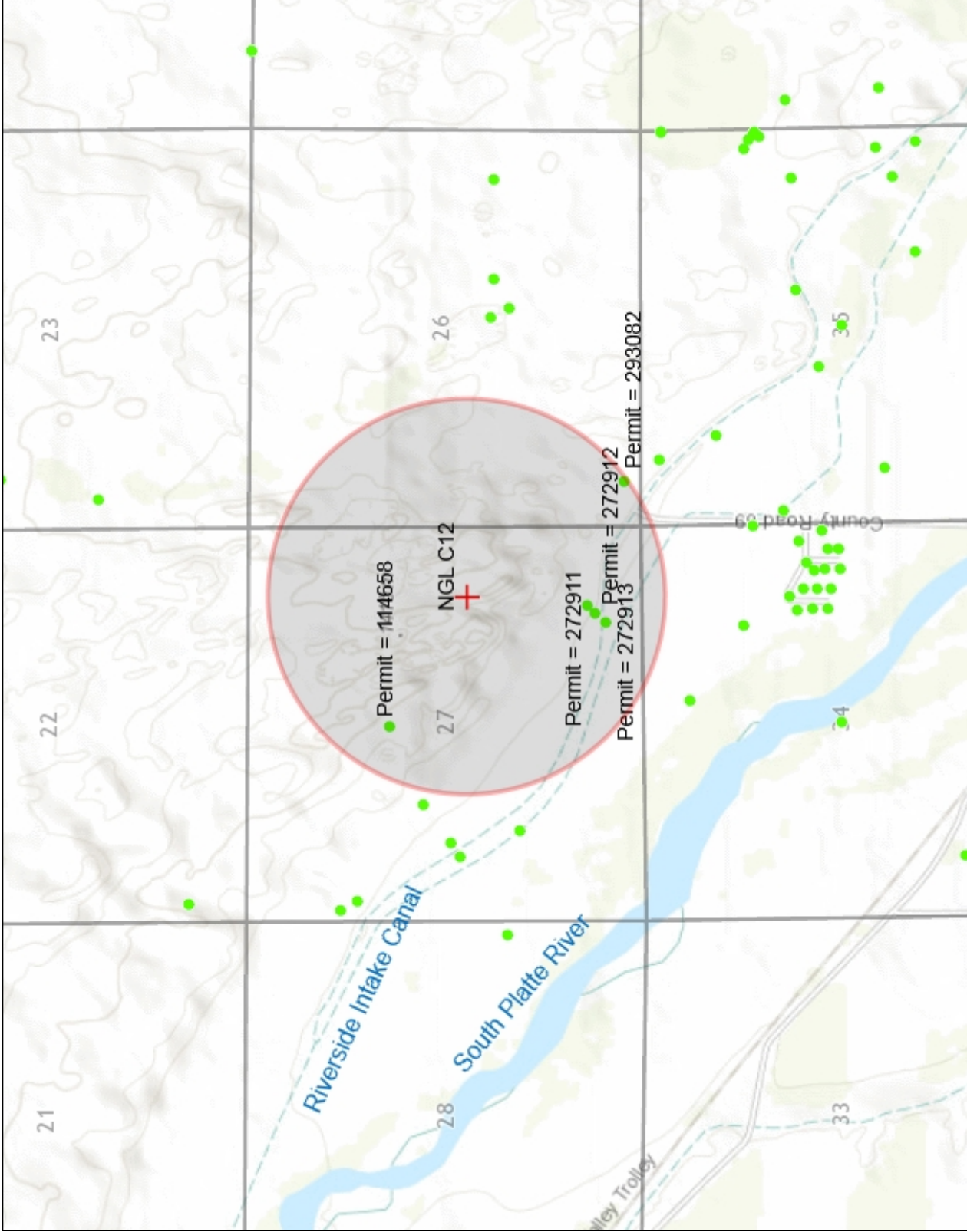
RECEIPT	PERMIT	WELL NAME	USE	AQUIFER	DEPTH	OWNER	MORE INFO
3613983E	272911	2-1 (70 RANCH)	MONITORING WELL	QAUTERNARY ALLUVIUM	40	70 RANCH	http://www.dwr.state.co.us/WellPermitSearch/View.aspx?receipt=3613983E
3613983F	272912	2-2 (70 RANCH)	MONITORING WELL	QAUTERNARY ALLUVIUM	40	70 RANCH	http://www.dwr.state.co.us/WellPermitSearch/View.aspx?receipt=3613983F
3613983G	272913	2-3 (70 RANCH)	MONITORING WELL	QAUTERNARY ALLUVIUM	45	70 RANCH	http://www.dwr.state.co.us/WellPermitSearch/View.aspx?receipt=3613983G
52076	29308		COMMERCIAL	QAUTERNARY ALLUVIUM	90	STATE LAND BOARD	http://www.dwr.state.co.us/WellPermitSearch/View.aspx?receipt=0052076
9066278	114658		STOCK	QAUTERNARY ALLUVIUM	55	70 RANCH	http://www.dwr.state.co.us/WellPermitSearch/View.aspx?receipt=9066278



CDSS

Colorado's Decision Support Systems

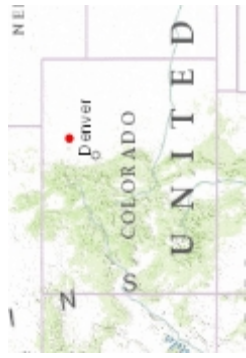
NGL C12 Half Mile Radius



Legend

- Well Constructed
- Townships
- Sections

Location



Notes

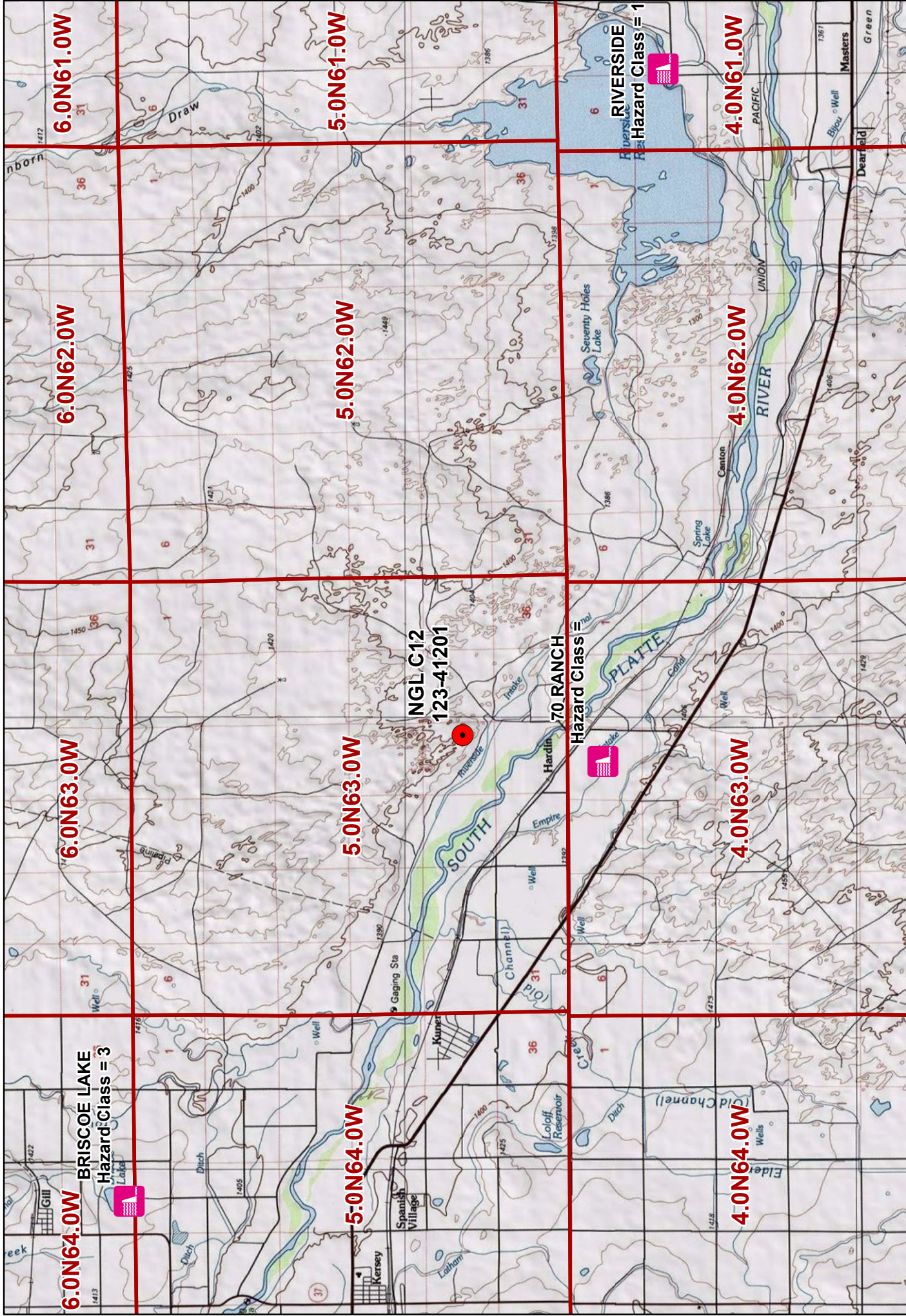
This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.



4,000 0 2,000 4,000 Feet

1: 24,000

Date Prepared: 4/23/2015 10:39:54 AM



1 inch = 9,000 feet

0 1 2 3 4 Miles

NGL C12 Surrounding Dams





COLORADO
Oil & Gas Conservation
Commission

Department of Natural Resources
1120 Lincoln Street, Suite 801
Denver, CO 80203

MEMORANDUM

February 24, 2015

TO: Kevin Donegan
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:

LOCATION	COUNTY	FIELD
NESE Section 27 Township 5 North Range 63 West, 6th P.M.	Weld	Wattenberg #90750

WELL NAME	NGL: NGL C12	
INJECTION ZONE FORMATION	DJINJ = Lyons, L. Satanka, Wolfcamp, Amazon, Council Grove, Admire, Virgil, Fountain, Missouri, Des Moines, Atoka, Morrow, and Mississippian Formations	
DEPTH OF INJECTION INTERVAL	Open Hole: 8,235-9,961	feet
PROPOSED INJECTION PRESSURE	2,200 to 2,500	psig
FRAC GRADIENT OR PRESSURE (BHP)	TBD (Step Rate Test)	psi/ft
VOLUME OF FLUID TO BE INJECTED	10,000 to 24,000	bbl/day
TDS OF INJECTION ZONE FLUID	TBD	mg/L
TDS OF FLUID TO BE INJECTED	TBD (Commercial Disposal)	mg/L

WELL CONSTRUCTION DATA (Pre-Drill Estimates)					
CASING STRING	HOLE SIZE	CASING SIZE	DEPTH	AMOUNT CEMENT	CEMENT TOP
Surface	12-1/4"	9-5/8"	850'	245 sks	0'
1st String*	8-3/4"	7"	8,235'	831 sks	0'
1st Liner**	6-1/8"	4-1/2"	9,961'	NA	NA

*DV Stage Tool @ 6,810' with 669 sks cement.

**Planned Casing Packer @ 8,150'; External Casing Packers at 8,335', 8,583', 8,881', 9,122', 9,511', 9,821', and 9,911'.

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

