Colorado Interstate Gas Company, L.L.C.
a Kinder Morgan company

March 8, 2019

Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

Attention: Ms. Kimberly D. Bose, Secretary

Re: Colorado Interstate Gas Company, L.L.C.;
Docket No. CP19-56-000;
Supplemental Environmental Information

Dear Ms. Bose:

On February 21, 2019, Colorado Interstate Gas Company, L.L.C. ("CIG") received an informal request for additional information from the Office of Energy Projects ("OEP") related to its proposed CIG High Plains Kiowa Lateral Expansion Project. Accordingly, CIG is herein filing with the Federal Energy Regulatory Commission ("Commission") in Docket No. CP19-56-000, responses associated with that request.

Description of Proceeding

On January 24, 2019, CIG filed a prior notice request to Sections 157.205(b), 157.208(b), and 157.210 of the Commission's Regulations under the Natural Gas Act for authorization to construct and operate two laterals and metering facilities located in Weld County, Colorado. The project is referred to as the "CIG High Plains Kiowa Lateral Expansion Project".

Description of Information Being Filed

CIG is hereby submitting responses to the February 21, 2019 informal request. CIG notes that it is in the process of preparing and finalizing the responses to the remaining informational requests. CIG will submit such information as soon as possible but no later than March 21, 2019.

Filing Information

CIG is e-Filing this letter and attachment with the Commission's Secretary in accordance with the Commission's Order No. 703, *Filing Via the Internet*, guidelines issued on November 15, 2007 in Docket No. RM07-16-000.

Respectfully submitted,
COLORADO INTERSTATE GAS COMPANY L.L.C.

By /s/
Francisco Tarin
Director, Regulatory

Enclosures

COLORADO INTERSTATE GAS COMPANY, L.L.C.
Response to FERC Data Request
Dated February 21, 2019 in Docket No. CP19-56-000
CIG High Plains Kiowa Lateral Expansion Project

General:

1. Provide revised alignment sheets on 1:6,000 or greater scale (for example 1" = 200 feet) aerial photographs or photo-based alignment sheets. Show:

a. clearly demarcated limits of disturbance for all Kiowa Lateral Pipeline Project (Project) work areas;
b. the full extent of all proposed access roads labeled as permanent and temporary, and the Fort Lupton Contractor Yard;
c. labels for all proposed facilities and temporary workspaces and access roads;
d. the labeled workspace for the Lancaster/High Five Tie-in and associated access road; and
e. the environmental survey corridor.

Response:

CIG has attached aerial photographs and alignment sheets on a 1:6,000 scale showing all requested information.[1] Please see attachment 1 behind this response. CIG will separately provide Commission Staff full-size paper copies of the aerial alignment sheets.

Response prepared by or under the supervision of:

Claudia Leal
Project Manager
303-914-4626

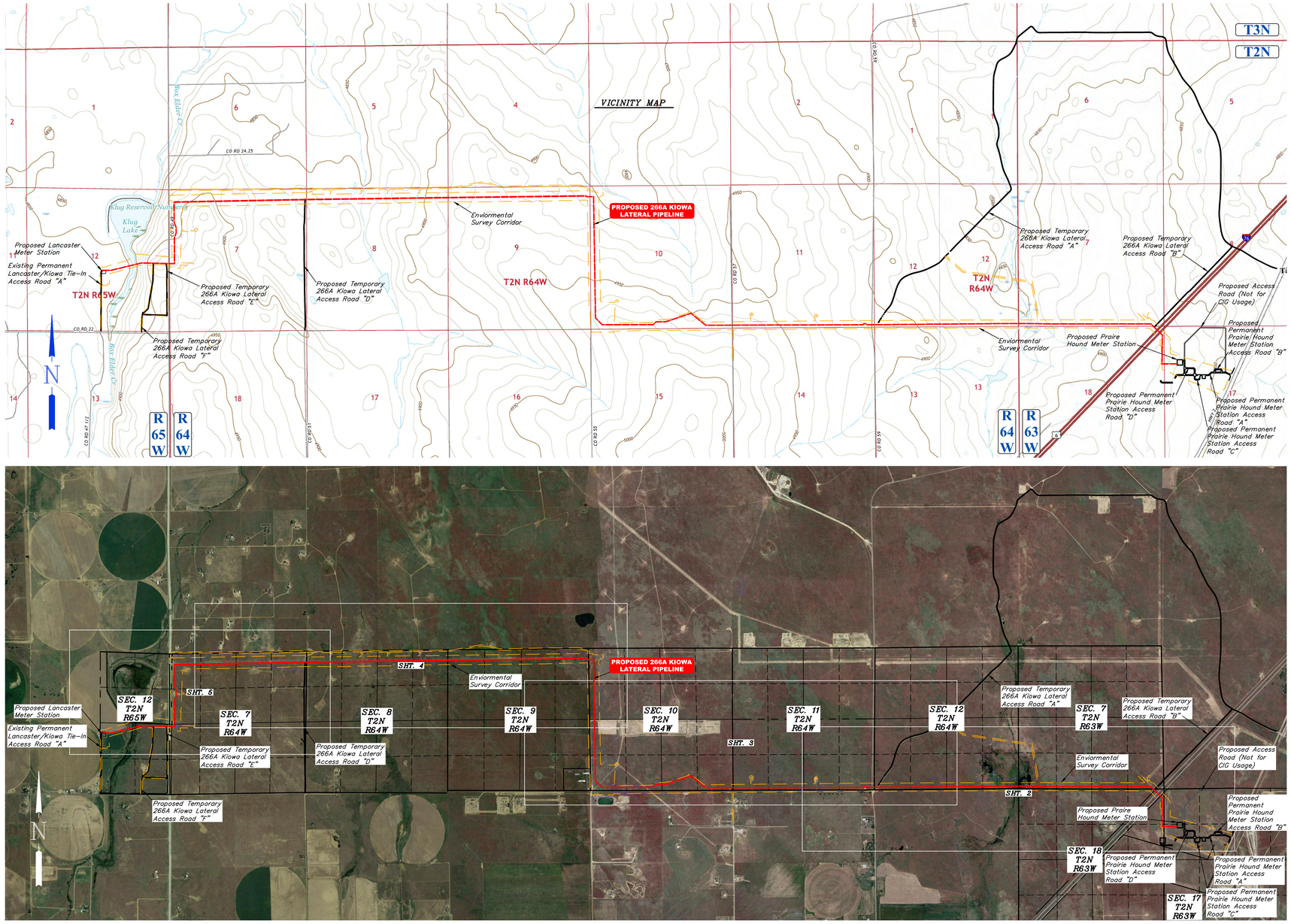
[1] Note that the material description on the alignment sheets has been updated and the Kiowa Lateral Access Road "C" is not shown since it will not be used for construction.

Colorado Interstate Gas Company, L.L.C.

PIPELINE PLAN & PROFILE

(FOR 266A KIOWA LATERAL)

LOCATED IN
SECTIONS 7, 17 & 18, T2N, R63W, 6th P.M.,
SECTIONS 7, 8, 9, 10, 11 & 12, T2N, R64W, 6th P.M.,
& SECTION 12, T2N, R65W, 6th P.M.
WELD COUNTY, COLORADO



SHEET INDEX

LEGEND

- C/L PROPOSED PIPELINE
- PROPERTY LINE
- SECTION LINE
- 1/16 SECTION LINE
- 1/4 SECTION LINE
- ENVIORMENT SURVEY CORRIDOR

GENERAL INFORMATION

- AN ATTEMPT HAS BEEN MADE TO LOCATE EXISTING UTILITIES ADJACENT TO AND CROSSING THE PROPOSED PIPELINE ROUTE, BUT THERE IS NO GUARANTEE THAT ALL LINES HAVE BEEN LOCATED. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL PIPELINES AND FOREIGN UNDERGROUND OBSTRUCTIONS BEFORE COMMENCING WORK. THE CONTRACTOR AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MAY OCCUR DUE TO CONTRACTORS FAILURE TO ACCURATELY LOCATE AND PRESERVE THESE UNDERGROUND UTILITIES. CONTRACTOR IS TO NOTIFY ALL FOREIGN LINE OWNERS ADJACENT TO OR CROSSING THEIR LINES BEFORE CONSTRUCTION COMMENCES.
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- LINE MARKERS SHALL BE PLACED AT ALL POINT OF INTERSECTION LOCATIONS & BOTH SIDES OF ROAD CROSSINGS.

REVISION

NO.	DESCRIPTION	DATE
1	NAME CHANGE, PL RE-ROUTE	12-12-18
2	PL RE-ROUTE	01-09-19
3	FERC UPDATES	02-28-19
4	UPDATE ENVIRONMENTAL SURVEY CORRIDOR R.T.	03-07-19
5	UPDATE SHEET NUMBERS R.T.	03-08-19

SUMMARY OF MATERIALS

ITEM NO.	LINEAR FEET	DESCRIPTION
1	44,061	24" X 0.344" X70 FBE STEEL PIPE
2	4,340	24" X 0.438" X70 FBE ARO STEEL PIPE

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

LOCATED IN
SECTIONS 7, 17 & 18, T2N, R63W, 6th P.M.,
SECTIONS 7, 8, 9, 10, 11 & 12, T2N, R64W, 6th P.M.,
& SECTION 12, T2N, R65W, 6th P.M.
WELD COUNTY, COLORADO

ISSUED FOR REVIEW

Colorado Interstate Gas Company, L.L.C.

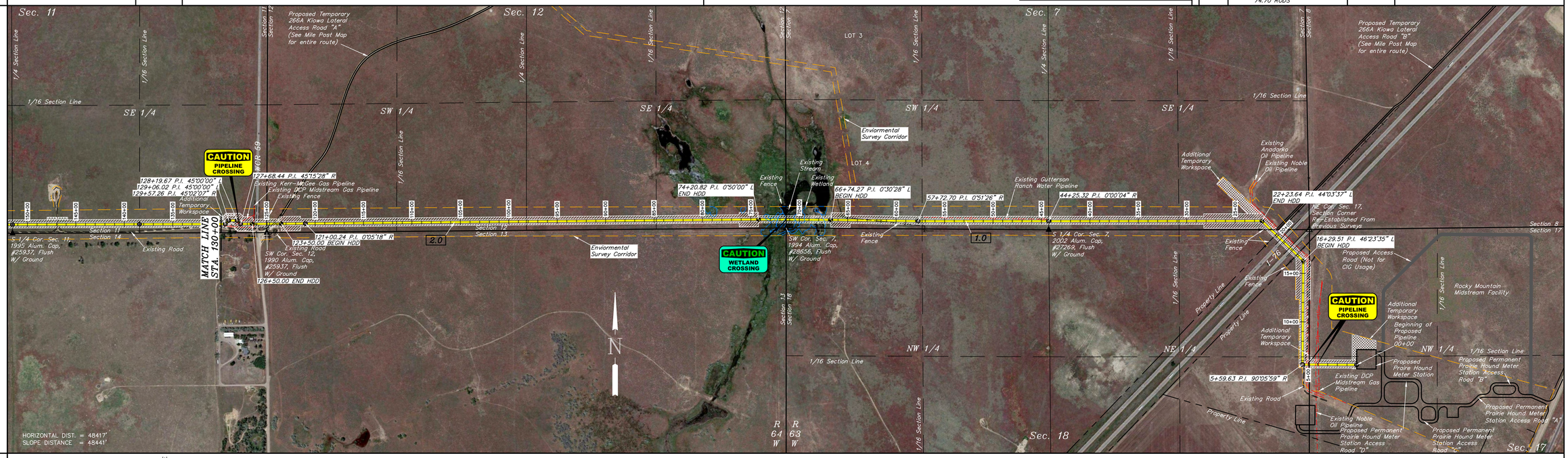
266A KIOWA LATERAL
STA. 0+00 TO STA. 484+00.80
PIPELINE PLAN & PROFILE

SURVEYED BY: M.M.	AFE # 215883	SHEET NO.
DRAWN BY: B.D.H.	DATE: 11-30-18	COVER SHEET
SHEET: 1 OF 7	FILE: 65051-A	

COUNTY & STATE: WELD COUNTY, COLORADO

OWNERSHIP FEET / RODS: 130+00 | (GUTTERSEN RANCHES LLC) S 1/2 S 1/2 OF SEC. 11, T2N, R64W, 6th P.M. 501.49' 30.39 RODS | 124+98.51 | (GUTTERSEN RANCHES LLC) S 1/2 S 1/2 OF SEC. 12, T2N, R64W, 6th P.M. 5362.20' 324.98 RODS | 71+36.51 | (GUTTERSEN RANCHES LLC) S 1/2 S 1/2 OF SEC. 7, T2N, R63W, 6th P.M. 5042.23' 305.59 RODS | 20+94.08 | (GUTTERSEN RANCHES LLC) A PORTION OF THE NE 1/4 NE 1/4 OF SEC. 18, T2N, R63W, 6th P.M. 72.91' 4.42 RODS | 20+21.17 | (CDOT) A PORTION OF THE NE 1/4 NE 1/4 OF SEC. 18, T2N, R63W, 6th P.M. 299.60' 18.16 RODS | 17+21.57 | (MELECIO & MARGARET CHAVEZ) A PORTION OF THE E 1/2 NE 1/4 OF SEC. 18, T2N, R63W, 6th P.M. 1232.60' 74.70 RODS | 4+88.97 | (MELECIO & MARGARET CHAVEZ) SW 1/4 NW 1/4 OF SEC. 17, T2N, R63W, 6th P.M. 488.97' 29.63 RODS | 0+00

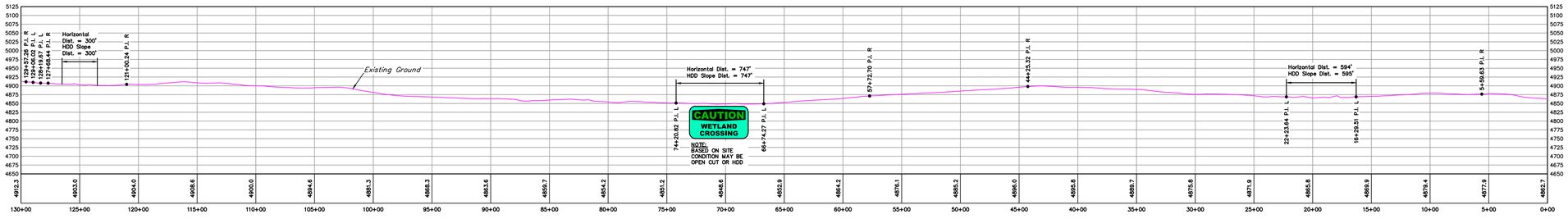
PLAN VIEW
SCALE: 1" = 500'



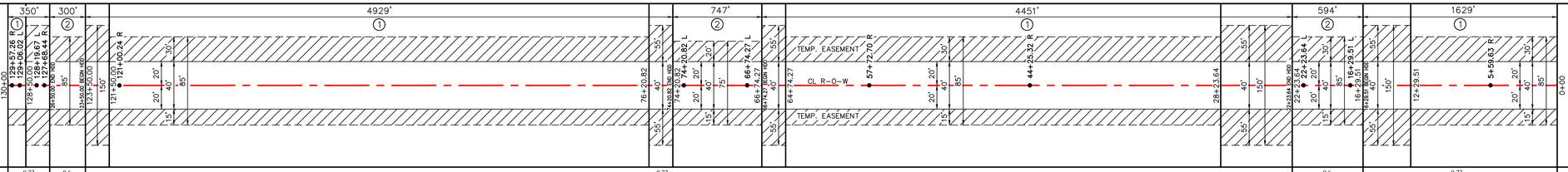
STATIONING

130+00 | 129+57.26 P.I. 45°00'07" R | 129+06.02 P.I. 45°00'00" L | 128+19.67 P.I. 45°00'00" L | 127+68.44 P.I. 45°15'28" R | Existing Kerr-McGee Gas Pipeline | 127+50.00 BEGIN HDD | Existing DCP Midstream Gas Pipeline | WCR 59 | 126+50.00 END HDD | 125+00 | 121+00.24 P.I. 0°05'18" R | 120+00 | 105+60.00 MILE MARKER 2 | 100+00 | 95+00 | 90+00 | 85+00 | 80+00 | 75+00 | 74+20.82 P.I. 0°50'00" L | 74+20.82 END HDD | 73+45.73 EDGE OF WETLAND | 72+19.87 FENCE | 71+36.51 P.I. 0°30'28" L | 71+36.51 BEGIN HDD | 70+00 | 65+00 | 64+32.41 FENCE | 60+00 | 57+72.70 P.I. 0°51'26" R | 55+00 | 52+80.00 MILE MARKER 1 | 50+00 | 45+00 | 44+25.32 P.I. 0°00'04" R | 40+00 | 35+00 | 30+00 | 25+00 | 22+23.64 P.I. 44°03'37" L | 22+23.64 END HDD | 20+00 | 19+34.10 CL I-76 | 17+00 | 16+29.51 END HDD | 16+29.51 P.I. 46°23'35" L | 15+00 | 10+00 | 5+59.63 P.I. 90°05'59" R | 5+59.63 BEGIN HDD | 5+00 | 0+00

PROFILE
SCALE: 1" = 500' HORIZ., 1" = 250' VERT.



PIPE DETAIL
N.T.S.



DESIGN FACTOR	0.72	0.6	0.72	0.6	0.72
CLASS LOCATION	CLASS 1				
DESIGN PRESSURE	1440				

LEGEND

- C/L PROPOSED PIPELINE
- PROPERTY LINE
- SECTION LINE
- 1/16 SECTION LINE
- 1/4 SECTION LINE
- EXISTING PIPELINE
- EXISTING FENCE
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- EXISTING DRAINAGE
- EXISTING ROAD
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- PERM. EASEMENT
- TEMP. WORK SPACE
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- BORE ENTRY/EXIT
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- 0.0 MILE MARKER

GENERAL INFORMATION

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REVISION

NO.	DESCRIPTION	DATE
1	NAME CHANGE	12-12-18
2	ADD STREAM CROSSING	12-19-18
3	PL RE-ROUTE, UPDATE ACCESS ROADS, UPDATE PIPE DETAIL	01-09-19
4	UPDATE PRAIRIE HOUND ACCESS ROADS, UPDATE WETLAND HDD CALL OUTS	01-15-19
5	FERC UPDATES	02-28-19
6	UPDATE ENVIRONMENTAL SURVEY CORRIDOR R.T.	03-07-19
7	UPDATE SHEET NUMBERS R.T.	03-08-19

SUMMARY OF MATERIALS

ITEM NO.	LINEAR FEET	DESCRIPTION
1	11,359	24" X 0.344" X70 FBE STEEL PIPE
2	1,641	24" X 0.438" X70 FBE ARO STEEL PIPE

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

LOCATED IN
SECTIONS 7, 17 & 18, T2N, R63W, 6th P.M.,
SECTIONS 7, 8, 9, 10, 11 & 12, T2N, R64W, 6th P.M.,
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WELD COUNTY, COLORADO

ISSUED FOR REVIEW

Colorado Interstate Gas Company, L.L.C.

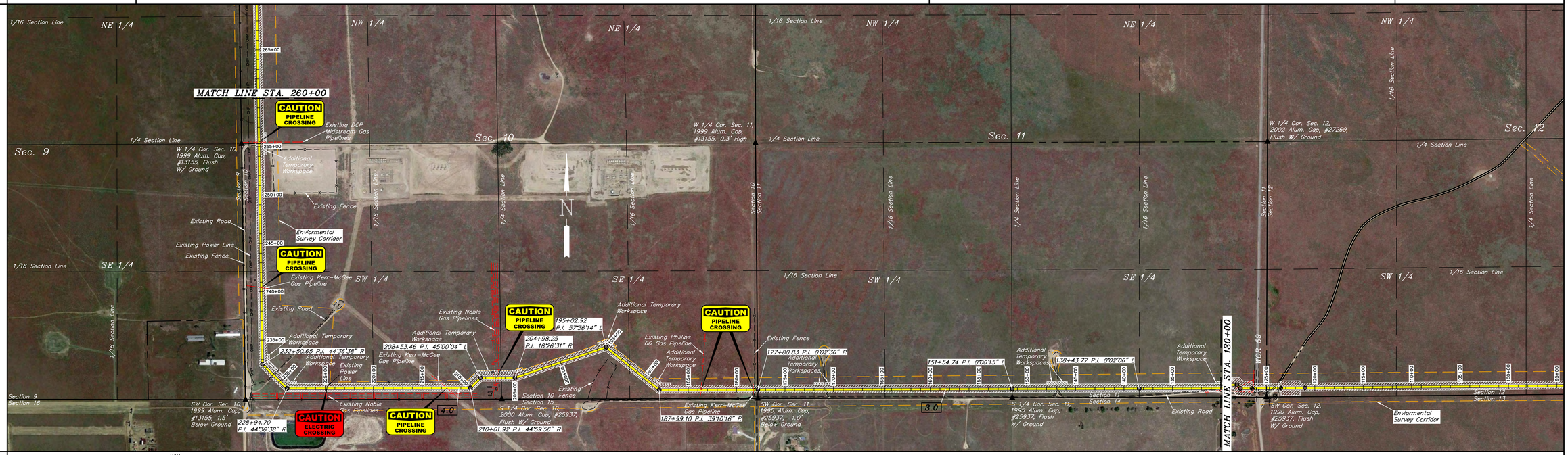
266A KIOWA LATERAL
STA. 0+00 TO STA. 130+00
PIPELINE PLAN & PROFILE

SURVEYED BY: M.M.	AFE # 215883	SHEET NO.
DRAWN BY: B.D.H.	DATE: 11-30-18	2
SHEET: 2 OF 7	FILE: 65051-B	

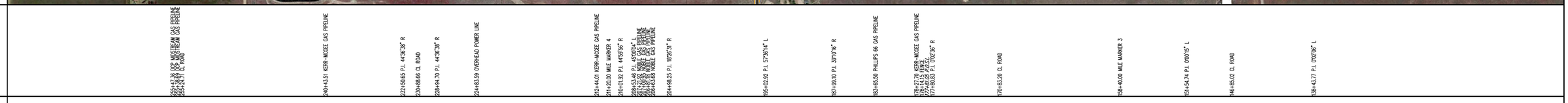
COUNTY & STATE: WELD COUNTY, COLORADO

OWNERSHIP FEET / RODS: 260+00 | (WASTE MANAGEMENT CORP) S1/2 S 1/2, W 1/2 W 1/2 OF SEC. 10, T2N, R64W, 6th P.M. 8218.95' 498.12 RODS | 177+81.05 | (GUTTERSEN RANCHES LLC) S 1/2 S 1/2 OF SEC. 11, T2N, R64W, 6th P.M. 4781.05' 289.76 RODS | 130+00

PLAN VIEW
SCALE: 1" = 500'



STATIONING



PROFILE
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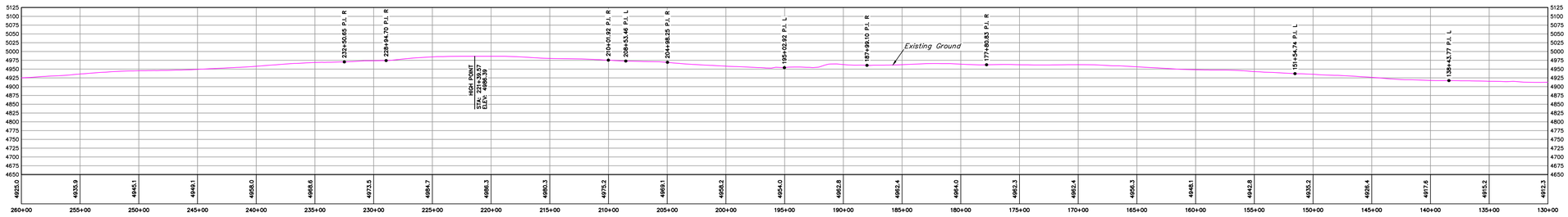

PIPE DETAIL
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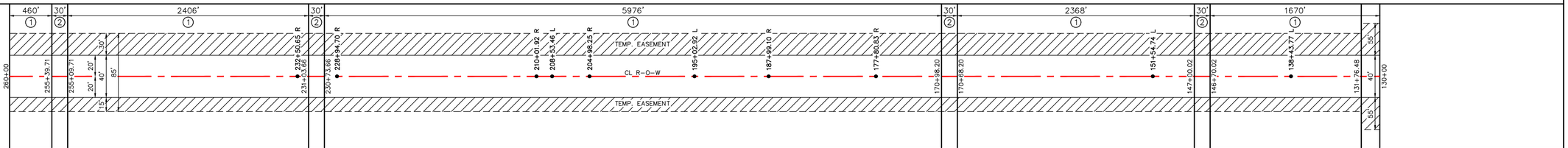

DESIGN FACTOR	0.72
CLASS LOCATION	CLASS 1
DESIGN PRESSURE	1440

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REVISION

NO.	DESCRIPTION	DATE
1	NAME CHANGE	12-12-18
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3	UPDATE MATERIAL SUMMARY	02-28-19
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WELD COUNTY, COLORADO

ISSUED FOR REVIEW

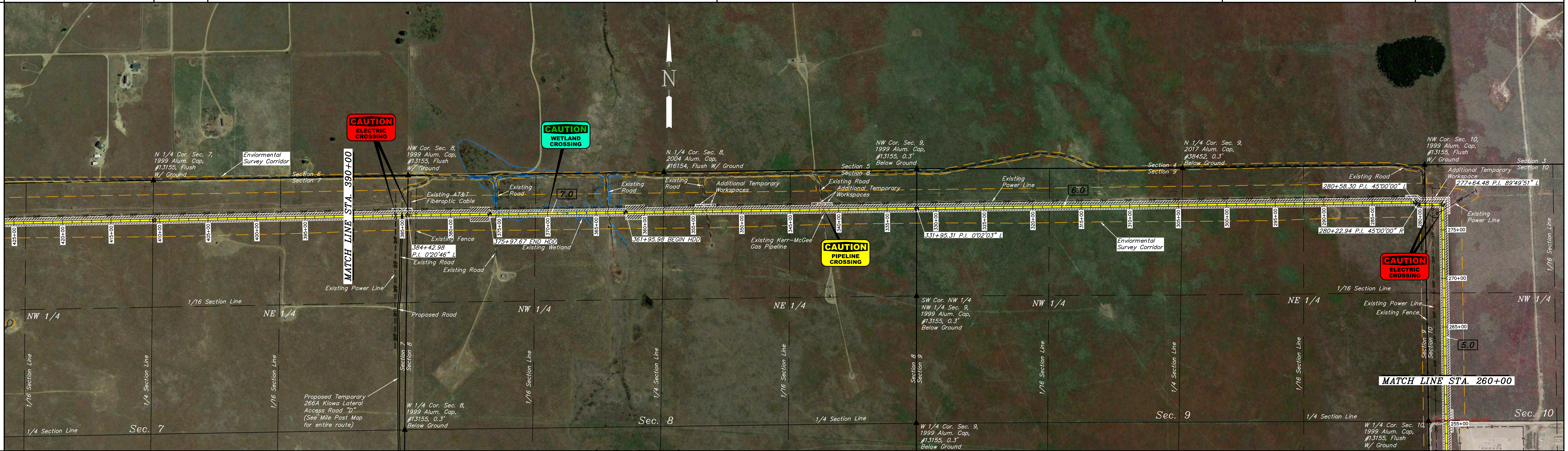
Colorado Interstate Gas Company, L.L.C.

266A KIOWA LATERAL
STA. 130+00 TO STA. 260+00
PIPELINE PLAN & PROFILE

SURVEYED BY: M.M.	AFE # 215883	SHEET NO.
DRAWN BY: B.D.H.	DATE: 11-30-18	3
SHEET: 3 OF 7	FILE: 65051-C	

COUNTY & STATE	WELD COUNTY, COLORADO			
OWNERSHIP FEET / RODS	390+00 (PIONEER HOLDCO LLC) N 1/2 N 1/2, LOTS 1, 2 & 3, OF SEC. 7, T2N, R64W, 6th P.M. 557.02' 33.76 RODS 384+42.98	(PIONEER HOLDCO LLC) N 1/2 N 1/2 OF SEC. 8, T2N, R64W, 6th P.M. 5247.67' 318.04 RODS 331+95.31	(PIONEER HOLDCO LLC) N 1/2 N 1/2 OF SEC. 9, T2N, R64W, 6th P.M. 5250.82' 318.23 RODS 279+44.49	(WASTE MANAGEMENT CORP) S1/2 S 1/2, W 1/2 W 1/2 OF SEC. 10, T2N, R64W, 6th P.M. 1944.49' 117.85 RODS 260+00

PLAN VIEW
SCALE: 1" = 500'



STATIONING

PROFILE
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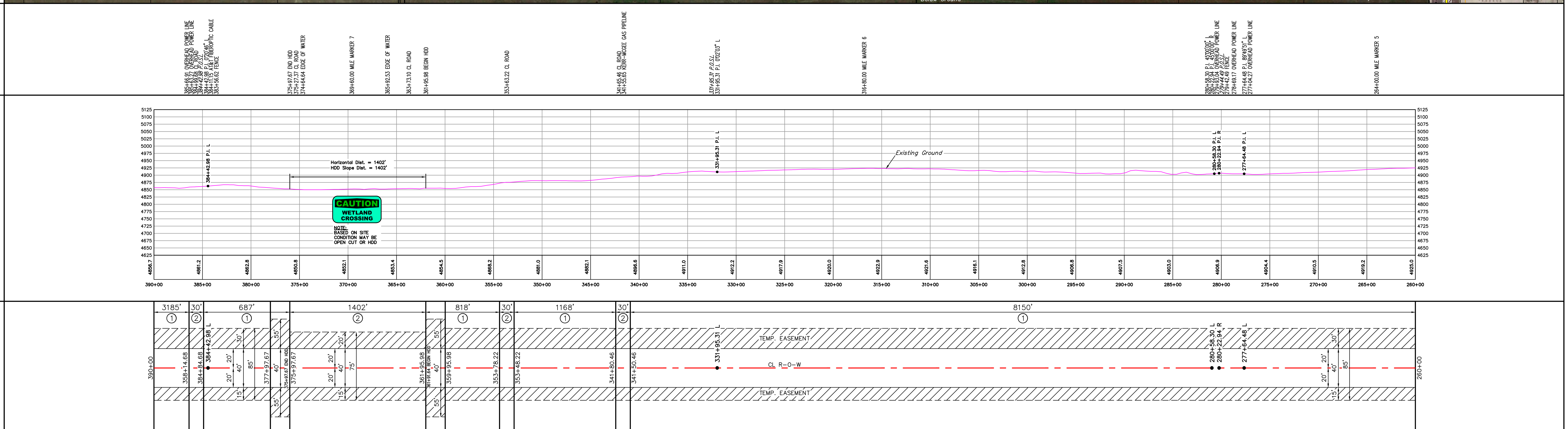
PIPE DETAIL
N.T.S.



DESIGN FACTOR	0.72
CLASS LOCATION	CLASS 1
DESIGN PRESSURE	1440

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1/16 SECTION LINE
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UINTAH ENGINEERING & LAND SURVEYING

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Corporate Office * 85 South 200 East
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**266A KIOWA LATERAL
STA. 260+00 TO STA. 390+00
PIPELINE PLAN & PROFILE**

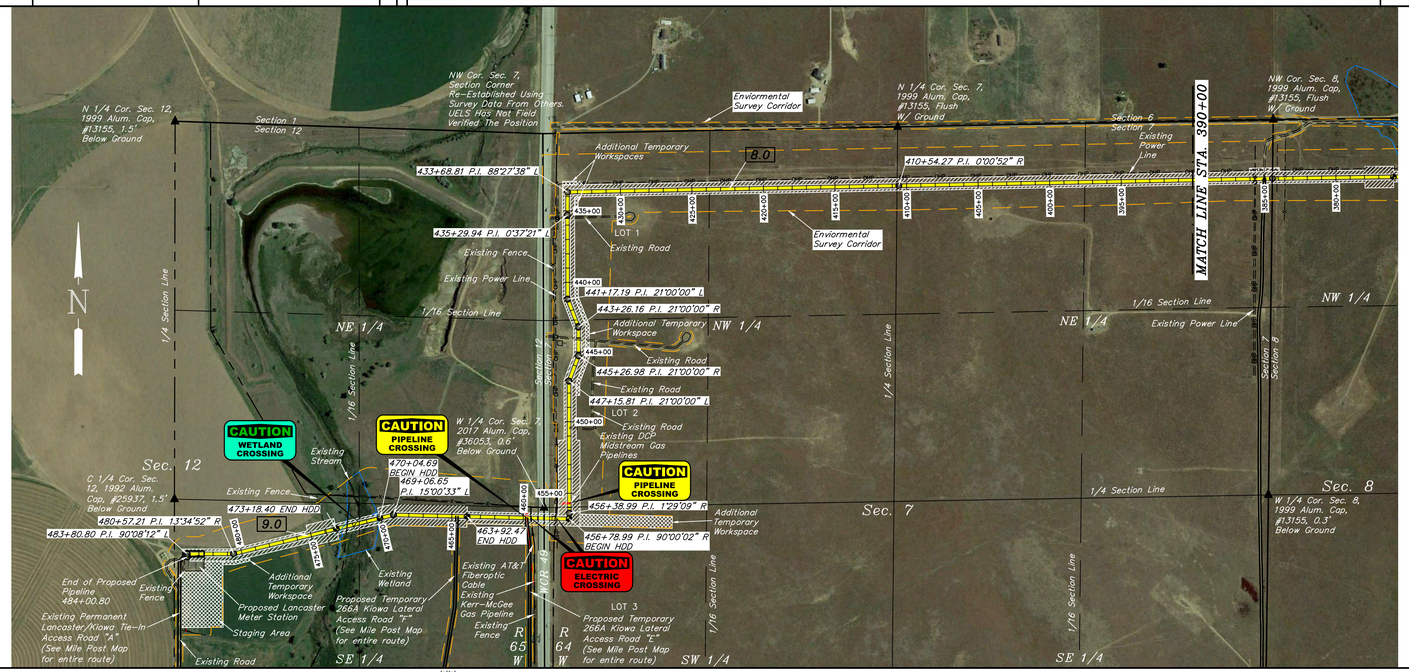
SURVEYED BY: M.M.	AFE # 215883	SHEET NO.
DRAWN BY: B.D.H.	DATE: 11-30-18	4
SHEET: 4 OF 7	FILE: 6 5 0 5 1-D	

COUNTY & STATE: WELD COUNTY, COLORADO

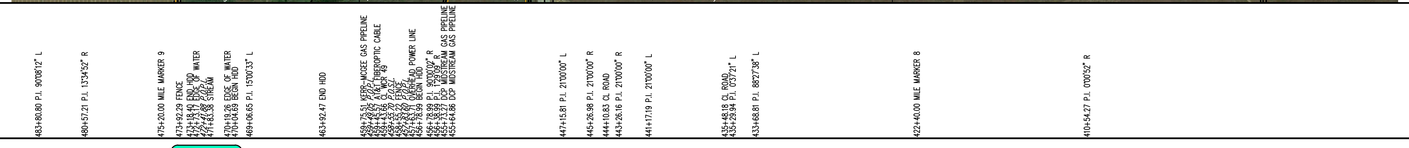
OWNERSHIP FEET / RODS

484+00.80	(GREENLEAF ACRES LLC) A PORTION OF THE NW 1/4 SE 1/4 OF SEC. 12, T2N, R65W, 6th P.M. 1158.92' 70.24 RODS	472+41.88	(PIONEER HOLDCO LLC) A PORTION OF THE N 1/2 SE 1/4 OF SEC. 12, T2N, R65W, 6th P.M. 1292.83' 78.35 RODS	459+49.05	(WELD COUNTY) A PORTION OF THE NE 1/4 SE 1/4 OF SEC. 12, T2N, R65W, 6th P.M. 93.35' 5.66 RODS	458+55.70	(WELD COUNTY) A PORTION OF LOT 3 OF SEC. 7, T2N, R64W, 6th P.M. 72.09' 4.37 RODS	457+63.60	(PIONEER HOLDCO LLC) N 1/2 N 1/2, LOTS 1, 2 & 3, OF SEC. 7, T2N, R64W, 6th P.M. 6783.60' 411.13 RODS	390+00

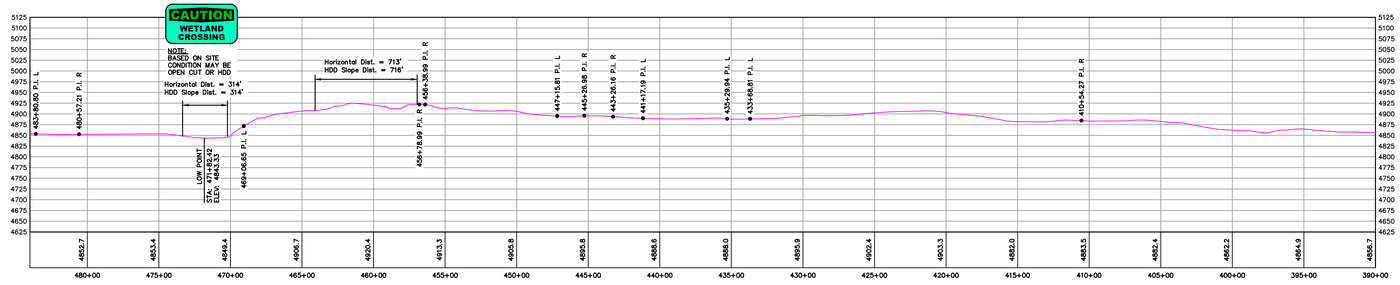
PLAN VIEW
SCALE: 1" = 500'



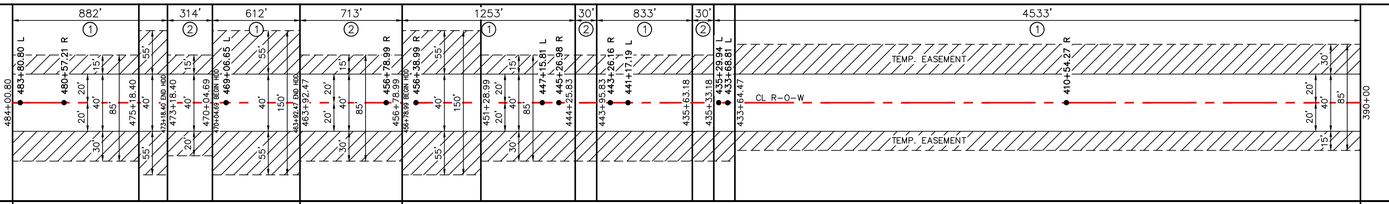
STATIONING



PROFILE
SCALE: 1" = 500' HORIZ., 1" = 250' VERT.



PIPE DETAIL
N.T.S.



DESIGN FACTOR	0.72	0.6	0.72
CLASS LOCATION	CLASS 1		
DESIGN PRESSURE	1440		

LEGEND

- C/L PROPOSED PIPELINE
- PROPERTY LINE
- SECTION LINE
- 1/16 SECTION LINE
- 1/4 SECTION LINE
- EXISTING PIPELINE
- EXISTING FENCE
- EXISTING OVERHEAD POWER LINE
- EXISTING DRAINAGE
- EXISTING ROAD
- ENVIORMENT SURVEY CORRIDOR
- PERM. EASEMENT
- TEMP. WORK SPACE
- ADDT TEMP. WORKSPACE
- POINT OF INTERSECTION
- BORE ENTRY/EXIT
- TEST STATION
- LINE MARKER
- 0.0 MILE MARKER

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REVISION

NO.	DESCRIPTION	DATE
1	NAME CHANGE, PL RE-ROUTE	12-12-18
2	ADD STREAM CROSSING	12-19-18
3	UPDATE WETLAND HDD CALL OUTS	01-15-19
4	OWNERSHIP CHANGE	01-23-19
5	FERC UPDATES	02-28-19
6	UPDATE ENVIRONMENTAL SURVEY CORRIDOR. R.T.	03-07-19
7	UPDATE SHEET NUMBERS R.T.	03-08-19

SUMMARY OF MATERIALS

ITEM NO.	LINEAR FEET	DESCRIPTION
1	8,314	24" X 0.344" X70 FBE STEEL PIPE
2	1,087	24" X 0.438" X70 FBE ARO STEEL PIPE

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

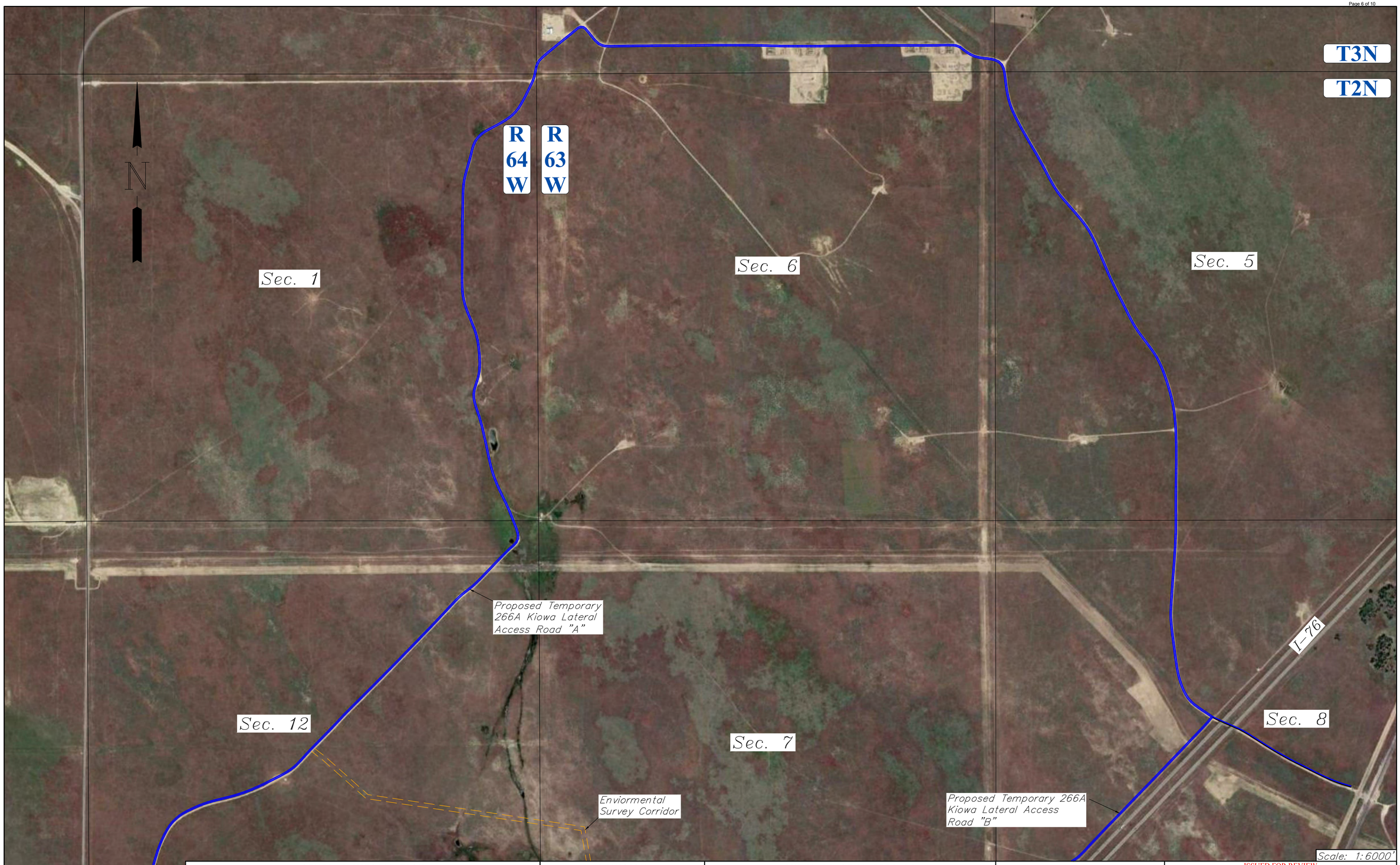
LOCATED IN
SECTIONS 7, 17 & 18, T2N, R63W, 6th P.M.,
SECTIONS 7, 8, 9, 10, 11 & 12, T2N, R64W, 6th P.M.,
& SECTION 12, T2N, R65W, 6th P.M.
WELD COUNTY, COLORADO

ISSUED FOR REVIEW

Colorado Interstate Gas Company, L.L.C.

266A KIOWA LATERAL
STA. 390+00 TO STA. 484+00.80
PIPELINE PLAN & PROFILE

SURVEYED BY: M.M.	AFE # 215883	SHEET NO.
DRAWN BY: B.D.H.	DATE: 11-30-18	5
SHEET: 5 OF 7	FILE: 6505 1-E	



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REVISION

NO.	DESCRIPTION	DATE
1	UPDATE PHOTO R.T.	03-08-19

SUMMARY OF MATERIALS

ITEM NO.	LINEAR FEET	DESCRIPTION

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

LOCATED IN
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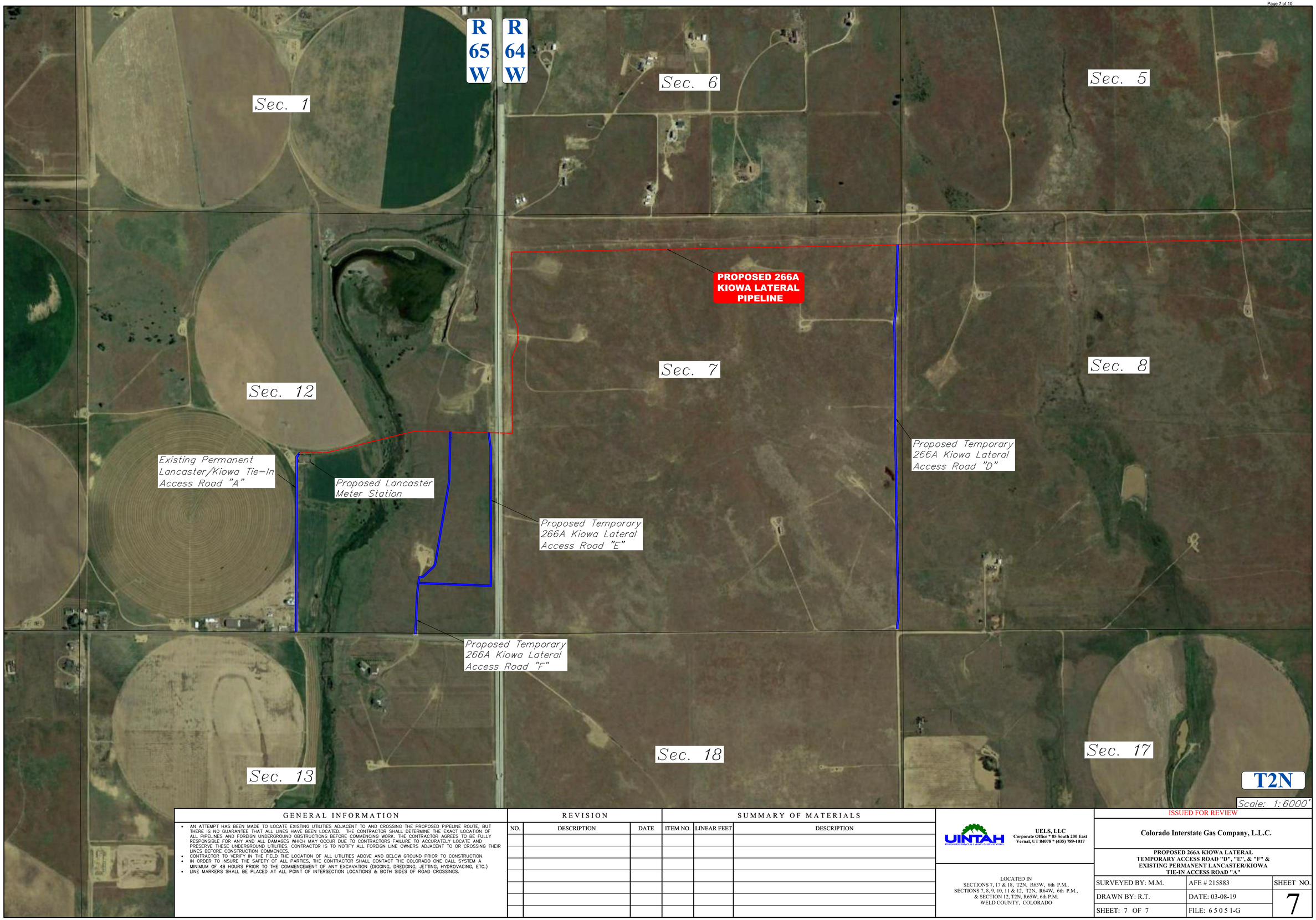
SECTIONS 7, 8, 9, 10, 11 & 12, T2N, R64W, 6th P.M.,
& SECTION 12, T2N, R65W, 6th P.M.
WELD COUNTY, COLORADO

ISSUED FOR REVIEW

Colorado Interstate Gas Company, L.L.C.

**PROPOSED 266A KIOWA LATERAL
TEMPORARY ACCESS ROAD "A"**

SURVEYED BY: M.M.	AFE # 215883	SHEET NO.
DRAWN BY: R.T.	DATE: 03-07-19	6
SHEET: 6 OF 6	FILE: 6505 1-F	



Scale: 1:6000'

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REVISION

NO.	DESCRIPTION	DATE

SUMMARY OF MATERIALS

ITEM NO.	LINEAR FEET	DESCRIPTION

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

LOCATED IN
SECTIONS 7, 17 & 18, T2N, R63W, 6th P.M.,
SECTIONS 7, 8, 9, 10, 11 & 12, T2N, R64W, 6th P.M.,
& SECTION 12, T2N, R65W, 6th P.M.
WELD COUNTY, COLORADO

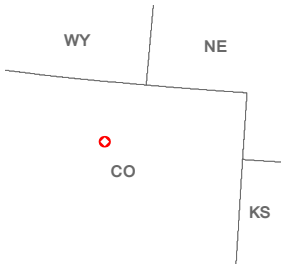
ISSUED FOR REVIEW

Colorado Interstate Gas Company, L.L.C.

**PROPOSED 266A KIOWA LATERAL
TEMPORARY ACCESS ROAD "D", "E", & "F" &
EXISTING PERMANENT LANCASTER/KIOWA
TIE-IN ACCESS ROAD "A"**

SURVEYED BY: M.M.	AFE # 215883	SHEET NO.
DRAWN BY: R.T.	DATE: 03-08-19	7
SHEET: 7 OF 7	FILE: 6 5 0 5 1-G	

Site Location

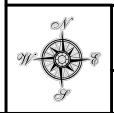


Legend

- Access Road
- Kinder Morgan Pipelines
- Compressor Station
- Contractor Yard
- Survey Area

NOTICE
KINDER MORGAN, INC
PRIVILEGED OR CONFIDENTIAL INFORMATION

Please find KINDER MORGAN GIS information specific to this project map. This map is intended solely for internal use by your business for that purpose. KINDER MORGAN does not guarantee the accuracy of this map or information delineated thereon. Nor does KINDER MORGAN assume responsibility for any reliance thereon. Recipient agrees not to copy, distribute or digitize this map without express consent from KINDER MORGAN or its affiliates.



0 250 500 1,000
Feet

Created By: ermibre1	Map ID: GISEPS-97	Date: 3/7/2019

KINDER MORGAN

Fort Lupton Comporessor Station
Contractor Yard

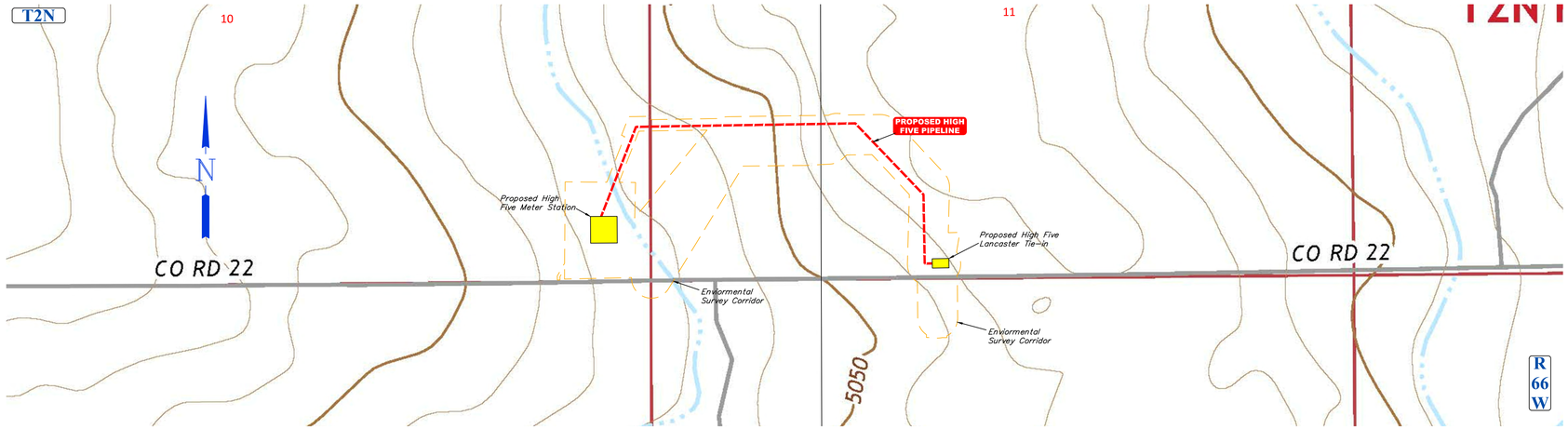
Colorado Interstate Gas Company, L.L.C.

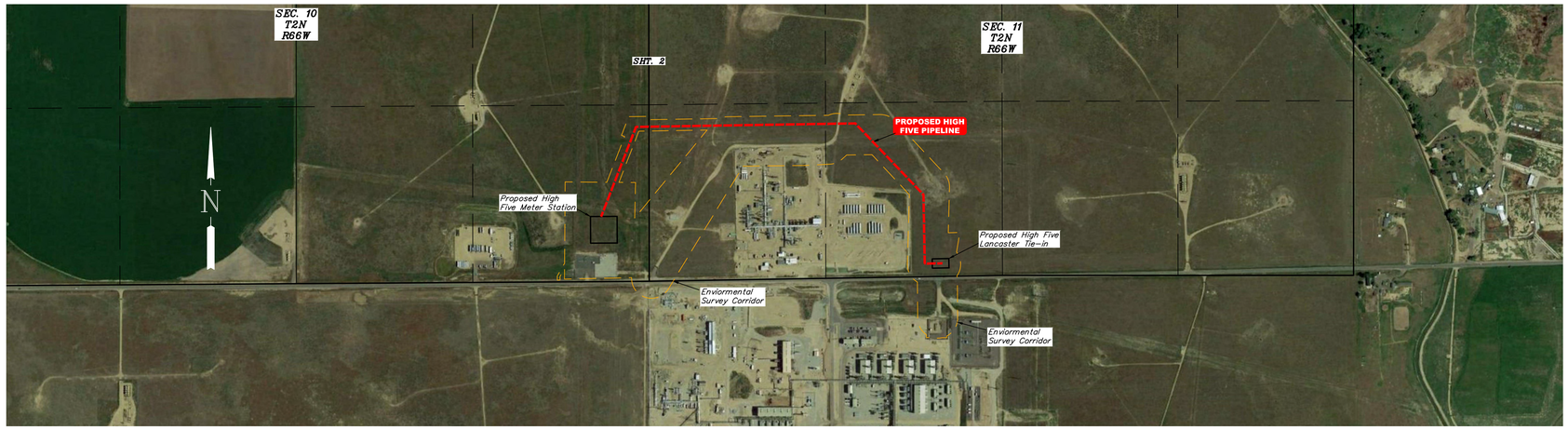
PIPELINE PLAN & PROFILE

(FOR HIGH FIVE LATERAL)

LOCATED IN
SECTIONS 10 & 11, T2N, R66W, 6th P.M.,
WELD COUNTY, COLORADO

VICINITY MAP





SHEET INDEX

LEGEND

- C/L PROPOSED PIPELINE
- PROPERTY LINE
- SECTION LINE
- 1/16 SECTION LINE
- 1/4 SECTION LINE
- ENVIROMENTAL SURVEY CORRIDOR

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REVISION

NO.	DESCRIPTION	DATE
1	NAME CHANGE	12-12-18
2	UPDATE PIPE SPEC	01-09-19
3	PIPELINE RE-ROUTE	01-22-19
4	ADD ENVIRONMENTAL SURVEY CORRIDOR	02-28-19
5	UPDATE ENVIRONMENTAL SURVERY CORRIDOR R.T.	03-07-19

SUMMARY OF MATERIALS

ITEM NO.	LINEAR FEET	DESCRIPTION
1	3,669	24" X 0.344" X70 FBE STEEL PIPE
2	60	24" X 0.438" X70 FBE ARO STEEL PIPE

UELS, LLC
Corporate Office * 85 South 200 East
Vernal, UT 84078 * (435) 789-1017

LOCATED IN
SECTIONS 10 & 11, T2N, R66W, 6th P.M.,
WELD COUNTY, COLORADO

ISSUED FOR REVIEW

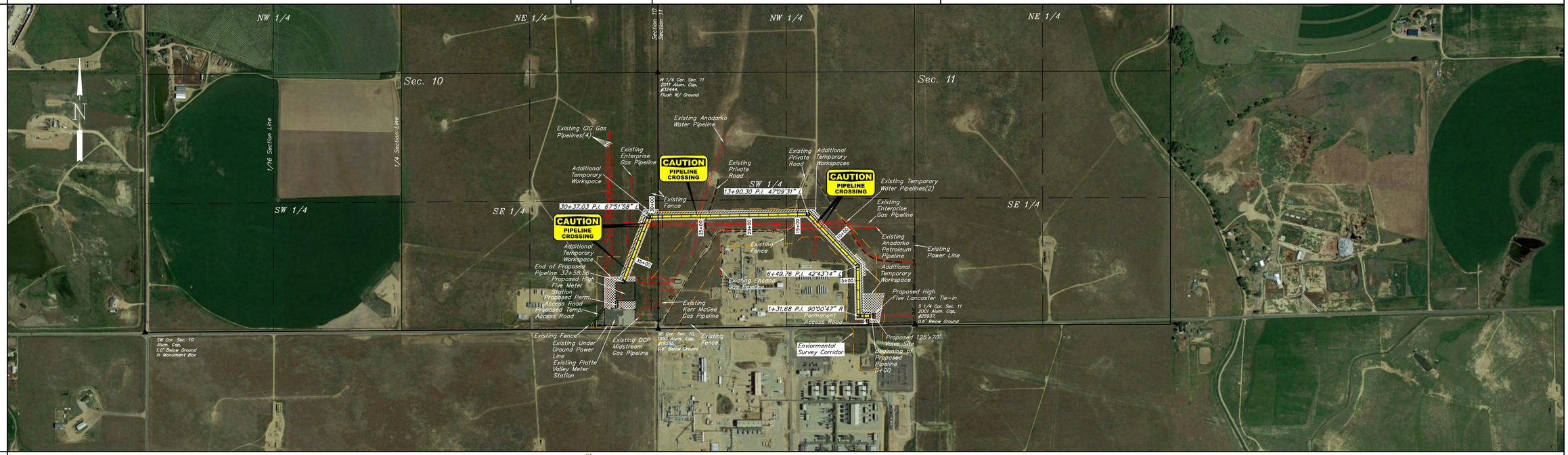
Colorado Interstate Gas Company, L.L.C.

HIGH FIVE LATERAL
STA. 0+00 TO STA. 37+58.56
PIPELINE PLAN & PROFILE

SURVEYED BY: M.M., & D.E.	AFE # 215881	SHEET NO.
DRAWN BY: B.D.H.	DATE: 11-30-18	COVER SHEET
SHEET: 1 OF 2	FILE: 6501 1-A	

COUNTY & STATE				
OWNERSHIP FEET / RODS		37+58.56 (CANNON LAND CO.) SE 1/4 SE 1/4 OF SEC. 10, T2N, R66W, 6th P.M. 818.98' 49.64 RODS	29+39.58 (CANNON LAND CO.) A PORTION OF THE S 1/2 SW 1/4 OF SEC. 11, T2N, R66W, 6th P.M. 2939.58' 178.16 RODS	0+00

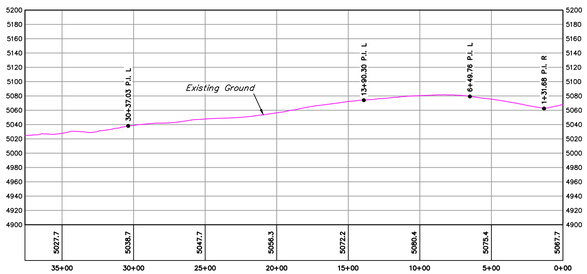
PLAN VIEW
SCALE: 1" = 500'



STATIONING

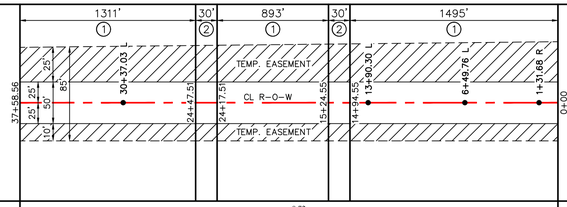
36+33.00 EXISTING WILLIAMS GAS PIPELINE
31+41.95 EXISTING ENTERPRISE GAS PIPELINE
31+14.81 EXISTING TEMPORARY WATER PIPELINE
31+10.32 EXISTING TEMPORARY WATER PIPELINE
30+37.03 P.I. 67°51'58" L
30+00.00 BEGIN 2.0° CURVE
29+39.58 P.O.C.
29+34.74 FENCE
25+33.44 EXISTING ANADARKO WATER PIPELINE
24+32.61 CL PRIVATE ROAD
15+09.55 CL PRIVATE ROAD
13+90.30 P.I. 47°09'31" L
12+70.40 EXISTING TEMPORARY WATER PIPELINE
12+62.62 EXISTING TEMPORARY WATER PIPELINE
12+54.75 EXISTING ENTERPRISE GAS PIPELINE
11+98.63 EXISTING ANADARKO PETROLEUM PIPELINE
6+49.76 P.I. 42°43'14" L
1+31.68 P.I. 90°00'47" R

PROFILE
SCALE: 1" = 500' HORIZ., 1" = 100' VERT.



HORIZONTAL DIST. = 3759'
SLOPE DISTANCE = 3759'

PIPE DETAIL
N.T.S.



DESIGN FACTOR	0.72
CLASS LOCATION	CLASS 1
DESIGN PRESSURE	1440

LEGEND

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REVISION

NO.	DESCRIPTION	DATE
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2	UPDATE PIPE SPEC	01-09-19
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LOCATED IN
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WELD COUNTY, COLORADO

ISSUED FOR REVIEW

Colorado Interstate Gas Company, L.L.C.

HIGH FIVE LATERAL
STA. 0+00 TO STA. 37+58.56
PIPELINE PLAN & PROFILE

SURVEYED BY: M.M., & D.E.	AFE # 215881	SHEET NO.
DRAWN BY: B.D.H.	DATE: 11-30-18	2
SHEET: 2 OF 2	FILE: 6 5 0 1 1-B	

COLORADO INTERSTATE GAS COMPANY, L.L.C.
Response to FERC Data Request
Dated February 21, 2019 in Docket No. CP19-56-000
CIG High Plains Kiowa Lateral Expansion Project

2. File a revised Waste and Spill Management Plan that incorporates the measures in the FERC Wetland and Waterbody Construction and Mitigation Procedures (FERC Procedures) at section IV.a. This plan should also incorporate restrictions on refueling and storage of hazardous substances (generally prohibit refueling and storage of hazardous materials within a 200-foot radius of private wells, and 400- foot radius of community and municipal wells), or otherwise indicate how Colorado Interstate Gas would protect groundwater wells from contamination from spills.

Response:

CIG has revised Section 6.3 of its Waste and Spill Management Plan to incorporate the requested measures. Please see attachment 2 behind this response.

Response prepared by or under the supervision of:

Mike Bonar
Environmental Project Manager
719-520-4817

WASTE AND SPILL MANAGEMENT PLAN

CIG High Plains Kiowa Lateral Expansion Project
Weld County, Colorado

Two North Nevada Avenue
Colorado Springs, CO 80903

WASTE AND SPILL MANAGEMENT PLAN

1.0 GENERAL

1.1 This specification shall apply to all work where waste may be generated or a spill may occur.

1.2 The Contractor shall attend a pre-job meeting to review environmental issues and requirements relating to the job prior to initiating work activities. During the pre-job meeting, Colorado Interstate Gas Company, L.L.C. ("CIG" or "Company") will review the requirements for proper waste management, spill reporting and cleanup. Contractor agrees to comply with the requirements set forth below and in the contract's Scope of Work.

1.3 The Contractor shall comply with the current edition of the Company's Environmental Handbook and all applicable federal, state, and local regulations.

1.4 Contractor shall be responsible for ensuring that applicable Contractor personnel including subcontractors understand spill prevention procedures and how to handle, store, transport, and dispose of waste per this specification. Contractor shall keep records of training and provide copies of such records to Company upon request.

2.0 WASTE MANAGEMENT – COMPANY RESPONSIBILITIES

2.1 BEFORE WORK COMMENCES

2.1.1 For all wastes anticipated to be generated as a result of the Scope of Work, Company shall determine the classification (hazardous, non-hazardous and special waste) of all Company's waste generated by Company or Contractor. Company shall notify Contractor of waste classification.

2.1.2 If waste classification is unknown, Company shall arrange for sampling to determine waste classification as early as possible, but this may occur after work has commenced.

2.1.3 Company shall review and approve the Contractor's Waste Management Plan prior to the pre-job meeting.

2.1.4 Company shall conduct a pre-job meeting to review the Waste Management Plan and responsibilities and review Company authorized personnel and environmental contacts.

2.1.5 Company shall make all required notifications unless otherwise specified in the Scope of Work.

2.2 BEFORE GENERATING WASTE

2.2.1 Company shall inspect all secondary containment provided by the Contractor.

2.2.2 Company shall provide the EPA generator number if necessary for all hazardous waste generated as a result of the performance of the Scope of Work and provide a hazardous waste contingency plan if necessary.

2.3 DURING WASTE GENERATION

2.3.1 For unanticipated wastes generated during the performance of the Scope of Work, Company and Contractor shall confer on classification responsibilities as soon as possible after the waste is generated. Company shall obtain a temporary hazardous waste EPA ID number if necessary.

2.4 AFTER WASTE GENERATION

2.4.1 Company shall arrange for transportation and disposal of all hazardous and special wastes generated during the performance of the Scope of Work.

3.0 WASTE MANAGEMENT – CONTRACTOR RESPONSIBILITIES

3.1. BEFORE WORK COMMENCES

3.1.1 Contractor shall develop a Waste Management Plan for all wastes anticipated during the project and submit to Company for approval. At the discretion of the Company, multiple similar projects may be covered under one Waste Management Plan. The work shall not commence prior to obtaining Company's approval of Waste Management Plan. If the Waste Management Plan addresses potentially hazardous waste or asbestos, the Contractor shall have training in accordance with Contractor's own training program.

3.1.2 Contractor shall minimize the waste generated during a project by purchasing and using only the amount of material needed. All excess materials purchased by a Contractor shall be removed by the Contractor at the end of the project.

3.1.3 Contractor shall furnish to the Company copies of any permits, clearances or authorizations obtained by Contractor.

3.2 BEFORE GENERATING WASTE

3.2.1 Contractor shall be familiar with the state and local environmental requirements as necessary for the performance of the Scope of Work.

3.2.2 Contractor shall provide all drums (DOT Spec. 1A1 or 1A2), rolloff boxes, or other containers necessary to contain wastes generated during the performance of work, including wastes generated in response to spill response and cleanup activities, unless otherwise specified in the Scope of Work. All containers shall be approved by the Company.

3.2.3 Contractor shall provide containment areas for liquids, hazardous waste and special waste as required by the Spill Management section of this specification. The containment shall be impervious to the materials being stored. Temporary storage on the right-of-way does not require protection from weather; temporary storage shall not exceed one week.

3.2.4 Contractor shall collect all waste near the close of each workday and shall place the waste in a Company-approved location.

3.3 DURING WASTE GENERATION

3.3.1 Contractor shall be responsible for housekeeping activities in the work area.

3.3.2 Contractor shall notify the Company prior to placing any potentially hazardous or special waste in storage so that Company may conduct sampling and analysis as necessary.

3.3.3 Contractor shall be responsible for proper packaging, labeling, marking and storing of waste.

3.3.4 Contractor shall keep hazardous, non-hazardous, special, and general trash wastes separate and shall not mix waste streams.

3.3.5 Contractor shall keep a waste log identifying the Company facility at which the waste was generated, the volume and type of waste generated, the date generated and, where applicable, the Company-approved location to which the waste was transported or stored. Contractor shall provide the waste log to the Authorized Company Representative weekly. Any waste shipped to a Company facility shall be accompanied by a log.

3.3.6 For unanticipated wastes generated during the Scope of Work, Company and Contractor shall confer on classification responsibilities as soon as possible after the waste is generated.

3.3.7 If classification of a waste is unknown, all waste shall be assumed to be hazardous until final classification is received from the Company. Contractor shall label and store waste accordingly.

3.3.8 In accordance with the Contractor's approved Waste Management Plan, the Contractor shall be responsible for the handling, storing and transporting of non-hazardous and special wastes generated by Contractor during the performance of the contract.

3.3.9 Any proposed changes to the approved Waste Management Plan regarding the methods established for the handling, collecting, transporting, and storing of any waste shall be submitted in writing and agreed to by both the Contractor and Company prior to instituting the change.

3.4 AFTER WASTE GENERATION

3.4.1 Contractor shall notify Company personnel prior to moving any waste off-site to another location.

3.4.2 Contractor shall be responsible for ensuring that non-hazardous and special wastes are transported by Company-authorized transporters only, and all waste is accompanied by the appropriate shipping papers, complete with required information and signatures. **Contractor is prohibited from transporting hazardous waste unless specifically authorized.**

3.4.3 Contractor shall submit all waste shipping papers to the Company.

3.4.4 Contractor shall supply disposal containers for the general trash waste generated by the Contractor and its subcontractor; it shall be transported to a disposal facility in accordance with the Waste Management Plan.

4.0 SPILL MANAGEMENT – COMPANY RESPONSIBILITIES

4.1 Company shall review spill prevention and response as part of the pre-job meetings as discussed above.

4.2 In the event of a reportable spill or release which involve Company-processed products/materials (e.g. pipeline liquids, used oil, etc.), Company shall make notifications to the appropriate agency.

4.3 Company shall provide a copy of release reports required by Federal or State agencies to any jurisdictional land-managing agency, concurrent with the filing of reports to the involved Federal and State agencies.

5.0 SPILL MANAGEMENT – CONTRACTOR RESPONSIBILITIES

5.1 The Contractor shall comply with the spill prevention, control, and containment procedures set forth below and in the Scope of Work for all work undertaken during performance of the contract.

5.2 Contractor shall ensure that their personnel and subcontractors involved in the work area are aware of the spill prevention and containment responsibilities.

5.3 Contractor shall develop a list of all emergency contacts within the Contractor's and subcontractors' organizations, and a description of emergency response equipment that will be provided by the Contractor for use by their employees. Emergency equipment may include but is not limited to shovels, backhoes, dozers, front end loaders, etc.

5.4 Contractor shall have a copy of the Material Safety Data Sheet (MSDS) of each chemical to be used during the job and it shall be available for review if requested by the Company.

6.0 SPILL PREVENTION – CONTRACTOR RESPONSIBILITIES

6.1 Contractor shall install lined secondary containment impervious to the material being stored (e.g. diking and/or earthen berms with liner) around liquids, materials, handling and storage areas to

prevent spilled material from reaching the waters of the state. Areas which require containment structures include: (i) liquid and hazardous waste drum storage areas, (ii) bulk storage tanks, (iii) tanker trucks if parked at one location for more than two days, (iv) liquids handling and operations areas on offshore facilities. All equipment staging areas shall be located at least 50 feet away from all water sources and wetland areas. No storage areas shall be located within 100 feet of a perennial stream. No chemicals or fuel shall be transferred within 100 feet of stream banks. The contractor shall install drip pans or other suitable containment devices to collect all vehicle fluids when performing on-site maintenance. All waste fluids shall be removed from the site by Contractor and disposed of properly.

6.2 Contractor shall inspect equipment for integrity including, but not limited to, valves, hoses and fittings. Contractor shall monitor all loading and unloading operations of chemicals and fuels to ensure proper response to prevent spills. All hose connections shall be inspected for leaks and if leakage should occur, the operation should cease until the leak is repaired or a containment pan is placed under the leaking connection.

6.3 Contractor shall ensure that all fuel storage areas, refueling activities, or storage of other hazardous materials are located outside of the minimum buffers for environmental resources to prevent contamination in the event of a spill: 200 feet for private water wells, 400 feet from public water wells, 100 feet from wetlands and streams. Contractor will also not park equipment overnight within these buffers. These activities can occur closer only if the Environmental Inspector determines that there is no reasonable alternative, and Company Representative and Contractor have taken appropriate steps to prevent spill and provide for prompt cleanup in the event of the spill.

7.0 SPILL RESPONSE - CONTRACTOR RESPONSIBILITIES

7.1 Contractor shall provide immediate notice to the Company's Authorized Representative in the event of a spill or other emergency. All spills occurring on land or in watercourses (including intermittent and ephemeral streams), regardless of quantity, shall be cleaned up immediately.

7.2 If a release or spill occurs, Contractor shall stop operations and take immediate measures to control the release and prevent dispersal of the spilled material. For spills to land (e.g. spills in drum storage areas, spills at bulk storage tank areas, spills at truck staging areas, equipment failure or leaks, etc.), Contractor shall initiate cleanup of the area affected by the spill by removing the soil and placing it into new or reconditioned DOT Spec. 1A2/Z150/S drums, or other suitable containers, as determined appropriate by Company. The Contractor shall be deemed the generator of the waste resulting from the spill. The Contractor shall excavate and remediate the area of the spilled material. For spills that enter water, Contractor shall contain the spill and remove the spilled material to the extent practicable using pumps or absorbent materials.

7.3 With the exception of spills/releases which involve Company-processed products/materials (e.g. pipeline liquids, used oil, etc.), Contractor shall be responsible for making any necessary notifications to the appropriate Federal or State agencies for any release or spill of hazardous substances in excess of reportable quantities established by 40 CFR 117, 40 CFR 302, and 40 CFR 355 or releases of oil as defined by 40 CFR 110, which occurs as a result of Contractor's or its subcontractors' activities.

7.4 Contractor shall document and record all spills. Copies of the documentation shall be provided to the Company's Authorized Representative.

CIG Pipelines
Waste Management Plan Template

Project Name	Project ID:	Date:

Brief Description of Project:

Facility/Station:	Division/Area:	Line # (O&M):

EPA ID #: _____

Contractor Name: _____

Subcontractor Name: _____

Contractor Representative: _____ **Cell Phone No.:** _____

On-Site CIG Representative: _____ **Phone No.:** _____

CIG Project Coordinator: _____ **Phone No.:** _____

CIG Waste Coordinator: _____ **Phone No.:** _____

Approved By: _____ **Date:** _____ **Phone No.:** _____
CIG Environmental Representative

Objective

Contractor/Central Maintenance/Roving Crew shall list all waste streams expected to be generated and proposed plans for handling, storage, and disposal of each waste stream. The plan shall include wastes generated during work performed by subcontractors, and must be reviewed and approved (signed) by the CIG Environmental Representative prior to the commencement of any work.

Instructions

1. Review project scope and check all appropriate waste streams (including wastes generated by subcontractor) listed in Attachment A.
2. For each waste stream checked in Attachment A, complete the associated Details information on Attachment B.
3. Provide original copies of manifests, bill of lading, and related waste documents to the On-Site CIG Representative listed above.
4. Contact the Environmental Department if unanticipated waste is generated and modify Waste Management Plan to include new waste.

Contractor/Central Maintenance/Roving Crew Responsibilities

1. Implement the completed Waste Management Plan and appropriate Company guidelines/procedures when handling, storing, labeling, transporting, and disposing of waste. Refer to the current edition of the CIG Pipeline Group's Environmental Handbook for more information. Contact the **CIG Project Coordinator** with any project specific questions.
2. Maintain onsite Material Safety Data Sheets for **hazardous chemicals** used on the jobsite.
3. Inspect equipment to minimize releases to the environment.
4. Keep waste storage segregated (hazardous, non-hazardous, domestic, universal, etc.) – do not mix different wastes.
5. Inspect waste storage area to ensure that containers are properly closed, labeled, and stored.
6. Keep emergency and spill equipment (as needed) at the jobsite.
7. Communicate the status of all actual or potential non-compliance activities to the **On-Site CIG Representative**.
8. Report all spills and agency inspections to the **On-Site CIG Representative**.
9. Minimize waste generated during the project by purchasing and using only the amount of material needed.

Waste Management Plan
Project Name: _ *Project ID #:* _ *Date:* _____

ATTACHMENT A

WASTE STREAMS

Asbestos Containing Materials
- ☐ Ceiling tile repair/removal
- ☐ Floor tile repair/removal
- ☐ Gaskets
- ☐ Insulation
- ☐ Pipe coating
- ☐ Roofing tiles and siding
- ☐ Transite
- ☐ Other:

Abrasive Blasting Waste
- ☐ Blasting bare pipe
- ☐ Feathering in fusion bonded epoxy
- ☐ After removal of pipe coating
- ☐ Blasting painted pipe **(PHW)***

Contaminated Soil
- ☐ Hydrocarbon contaminated soil/gravel (specify source): _
- ☐ Mercury contaminated soil
- ☐ Soil from cleanup of spill (specify contaminant): _
- ☐ Soil from cleanup of Glycol/Ambitrol spill
- ☐ Soil impacted with other historical containments (specify contaminant): _

Empty Containers
- ☐ Aerosol cans
- ☐ Empty drums/baskets
- ☐ Other:

Equipment, Tank or Facility Cleanout Waste (PHW)*
- ☐ Sludge/bottoms from cleanout of basement or sump
- ☐ Sludge/bottoms from cleanout of separator
- ☐ Sludge/bottoms from cleanout of scrubber
- ☐ Sludge/bottoms from tank cleanout: Source:
- ☐ Meter run cleanout: Chemicals/solvents: _
- ☐ Other equipment cleanout: _

Filters
- ☐ Air filters/oil filters
- ☐ Scrubber filters **(PHW)***
- ☐ Other filters (describe):

Oily Debris
- ☐ Oil stained cardboard
- ☐ Oily rags
- ☐ Oil absorbent used to clean up spill: _
- ☐ Other oily debris: _

Oily Liquids
- ☐ Used oil
- ☐ Hydraulic oil
- ☐ Scrubber liquids
- ☐ Distillate/condensate/pipeline drip
- ☐ Other oily liquids: _

Painting Waste
- ☐ Old paint/coatings **(PHW)***
- ☐ Paint brushes
- ☐ Solvents used to clean all paint equipment **(PHW)***
- ☐ Other: _

PCB Waste
- ☐ Air Systems
- ☐ Pipe coating (asphaltic-based)
- ☐ PCB impacted soils
- ☐ PCB oil/liquids
- ☐ Other: _

Pigging Waste
- ☐ Pigging sludge **(PHW/PE&P)***
- ☐ Pigging liquids **(PHW* if not recyclable)**
- ☐ Used pigs
- ☐ Wash water from cleaning pigs or catch basins
- ☐ Other: _

HW = Hazardous Waste
PHW = Potentially Hazardous Waste
PE&P = Potentially Exploration & Production Waste

Waste Management Plan
Project Name: _ *Project ID #:* _ *Date:* _____

WASTE STREAMS

General Trash

- ☐ Plastics, Paper, wood, uncontaminated cardboard/rubber/cloth, wood packing materials, food wastes, aluminum cans/foil, glass, incandescent light bulbs, other waste similar to domestic waste

Scrap Metal, Piping, Equipment

- ☐ Scrap metal with no coating
- ☐ Scrap metal with coating
- ☐ Scrap metal with potential NORM
- ☐ Equipment/vessels
- ☐ Other:

Spent Solvents

- ☐ Used cleaning solvents **(PHW**)*: _
- ☐ Other spent solvents **(PHW**)*: _

Wastewater

- ☐ Glycol liquids
- ☐ Hydrostatic test water
- ☐ Oil/water liquids in pipeline when pipe is cut in trench
- ☐ Produced water
- ☐ Scrubber liquids
- ☐ Turbine/Engine wash water
- ☐ Heater water
- ☐ Other wash water: _

Other Debris

- ☐ Asphalt
- ☐ Cleared Vegetation
- ☐ Casing filler
- ☐ Cement
- ☐ Coke breeze
- ☐ Concrete without contaminants
- ☐ Contaminated concrete (e.g. oil, PCBs)
  List possible contaminants: _
- ☐ Drilling mud
- ☐ Lumber
- ☐ Non-asbestos insulation
- ☐ Pipe coating (non-asbestos, non-PCB)
- ☐ Other:

Other Waste (List other waste not identified previously)

- ☐ Batteries (describe): _
- ☐ CPS rectifier
- ☐ Fluorescent light bulbs
- ☐ Lead acetate/rubicon tape **(PHW)***
- ☐ Mercury containing equipment (switches etc.)
- ☐ Electronic equipment (circuit boards, transformers, etc.)
  Describe: _
- ☐ Creosote-coated wood products **(PHW*)**
- ☐ Personal Protective Equipment/rags **(PHW*)**
  Describe source: _
- ☐ Pesticides: _
- ☐ Insecticides: _
- ☐ Fertilizers: _
- ☐ Other waste: _

HW = Hazardous Waste
PHW = Potentially Hazardous Waste
PE&P = Potentially Exploration & Production Waste

Waste Management Plan
Project Name: _ *Project ID #:* _ *Date:* _____

ATTACHMENT B
WASTE MANAGEMENT PLAN DETAILS

Waste Stream Name: _____	Estimated Volume/Weight/ # of Containers: _____	**Handling, Storage, Disposal**
☐ Known HW ☐ PHW ☐ PE&P ☐ Non-HW ☐ Special ☐ Unknown	**Sampling Required?** ☐ Yes ☐ No	• Responsible for managing waste: ☐ Company ☐ Contractor • Responsible for storing/labeling waste: ☐ Company ☐ Contractor • Waste storage container type: • Labeling requirements**:** • Responsible to transport waste from site to secure storage site: *(obtain permission from CIG facility before storage at a company location)* ☐ Company ☐ Contractor ☐ N/A ☐ Do Not Transport offsite for storage • Transporter company name: • Waste storage secure location: • Storage site weekly inspections required? ☐ Yes ☐ No • Responsible to coordinate disposal: ☐ Company ☐ Contractor • Transporter company name: • Final disposal site (if known): • Any Special Issues: _____

Waste Stream Name: _____	Estimated Volume/Weight/ # of Containers: _____	**Handling, Storage, Disposal**
☐ Known HW ☐ PHW ☐ PE&P ☐ Non-HW ☐ Special ☐ Unknown	**Sampling Required?** ☐ Yes ☐ No	• Responsible for managing waste: ☐ Company ☐ Contractor • Responsible for storing/labeling waste: ☐ Company ☐ Contractor • Waste storage container type: • Labeling requirements**:** • Responsible to transport waste from site to secure storage site: *(obtain permission from CIG facility before storage at a company location)* ☐ Company ☐ Contractor ☐ N/A ☐ Do Not Transport offsite for storage • Transporter company name: • Waste storage secure location: • Storage site weekly inspections required? ☐ Yes ☐ No • Responsible to coordinate disposal: ☐ Company ☐ Contractor • Transporter company name: • Final disposal site (if known): • Any Special Issues: _____

COLORADO INTERSTATE GAS COMPANY, L.L.C.
Response to FERC Data Request
Dated February 21, 2019 in Docket No. CP19-56-000
CIG High Plains Kiowa Lateral Expansion Project

3. Colorado Interstate Gas provided site-specific geotechnical investigation reports for the proposed horizontal directional drill (HDD) crossings of I-76 and CR 49. File site-specific geotechnical investigations for the proposed crossing of CR 59, and the potential HDD crossings of Streams 1 and 3 and Wetlands 1, 2, and 5. If Colorado Interstate Gas does not intend to complete site-specific geotechnical investigations at these locations, provide justification for how design and feasibility would be determined.

Response:

CIG is currently completing a geotechnical investigation of the proposed crossing of CR 59. The results of this investigation will be filed as soon as possible. Also, CIG has reviewed the proposed HDD crossing of streams 1 & 3 and wetlands 1, 2, & 5 and proposes crossing these features using an open cut method; therefore no geotechnical investigations would be required for these sites.

Response prepared by or under the supervision of:

Claudia Leal
Project Manager
303-914-4626

COLORADO INTERSTATE GAS COMPANY, L.L.C.
Response to FERC Data Request
Dated February 21, 2019 in Docket No. CP19-56-000
CIG High Plains Kiowa Lateral Expansion Project

4. Provide a plan for HDD fluid composition and management, monitoring procedures, and response procedures for an inadvertent return of drilling fluid to the ground surface. Incorporate measures from FERC's Draft Guidance for Horizontal Directional Drill Monitoring, Inadvertent Return Response, and Contingency Plans (Docket No. AD19-6).

Response:

CIG has provided a Horizontal Directional Drill Monitoring Plan, Inadvertent Return Response, and Contingency Plan. Please see attachment 3 behind this response.

Response prepared by or under the supervision of:

Claudia Leal
Project Manager
303-914-4626

HDD Inadvertent Returns Contingency Plan

Colorado Interstate Gas Company, L.L.C.
a Kinder Morgan company

CIG High Plains Kiowa Lateral Expansion Project

Weld County, Colorado

Table of Contents

INTRODUCTION

Horizontal Directional Drilling (HDD) is a steerable utility installation system using a surfaced-launched drill rig. HDD is commonly used to install pipelines beneath roads, rivers, wetlands and other obstacles. An HDD profile is typically designed to pass beneath these obstacles to avoid disruption or damage to surface structures. HDD is an efficient, safe, cost effective method for installing utilities and is considered an industry standard for trenchless utility installation. Drilling fluid is used throughout the operation to transport drill cuttings, reduce friction, and stabilize the drilled hole. Installation of a pipeline by HDD is generally accomplished in three stages. The first stage consists of directionally drilling a small diameter pilot hole along a designed path. The second stage involves enlarging this pilot hole to a diameter suitable for installation of the pipeline. The third stage consists of pulling the pipeline through the enlarged hole.

Formational drilling fluid losses typically occur when the drilling fluid flows through the pore spaces in the soil through which the HDD profile passes. An inadvertent return occurs when drilling fluid emerges at the ground surface or in any other undesired location from formation fluid loss.

This inadvertent return contingency plan provides specific procedures and steps for preventing, monitoring, detecting, and controlling releases of drilling fluid during the construction of HDD crossings.

DRILLING FLUID AND DRILLING FLUID SYSTEMS

The HDD process uses drilling fluids to facilitate many of the HDD operations. Drilling fluid is a slurry composed of water and bentonite clay intended to transport drill cuttings, reduce friction, and stabilize the drilled hole. Bentonite clay (sodium montmorillonite) is a naturally occurring hydrophilic clay that can absorb up to ten times its weight in water. Bentonite is inert, non-toxic and is a non-hazardous substance used for drilling potable water wells. The composition of the drilling fluids and its engineering properties are tested to ensure their suitability for the given subsurface conditions encountered along the alignment and at each individual HDD location.

Depending on subsurface conditions encountered, polymers or lost circulation materials (LCM) may be added to the drilling fluid mixture. Polymers are often used to increase the carrying capacity of the drilling fluid or reduce clay adhesion. Lost circulation materials (e.g. organic materials, wood chips, etc.) may be used to seal drilling fluid surface releases return zone or to seal around the borehole to prevent drilling fluid from escaping into the formation and allow for the reestablishment of drilling fluid returns to the entry and/or exit pits. Many types of polymers and LCMs are available for use during HDD operations that are inert and environmentally benign.

Most drilling fluids, drilling fluid additives and polymers used in the HDD industry are NSF 60 compliant, as these products are also used in other rotary drilling applications such as water well drilling and completion. Therefore, if NSF 60 complaint products are used there will be no effects on water quality. CIG will require the HDD contractor to use only NSF 60 compliant additives and polymers, and to submit Safety Data Sheets (SDSs) to verify.

During HDD operations, the drilling fluid is prepared in a mixing tank. The fluid is pumped at a flow rate ranging between 100 to 800 gallons per minute (gpm) through the center of the drill pipe to the bit or cutters. Return flow is through the annulus created between the wall of the boring and the drill pipe. The cuttings are then carried back to the entry pit. When in the entry pit, the drilling fluid is pumped to the fluid cleaning system. Typically, shaker screens, desanders, desilters and possibly centrifuges remove increasingly finer cuttings from the drilling fluid. The cleaned and recycled drilling fluid is returned to the mixing tank and pumps for reuse in the drilled hole. The cuttings are disposed of at an approved disposal site.

The environmental impact of a release of drilling fluid into a water body is a temporary increase in local turbidity until the drilling fluid dissipates with the current or settles to the bottom.

Drilling fluid is easily contained by standard erosion and sedimentation control measures such as stray bales and silt fence. Drilling fluid would be contained on entry and exit worksites by hay bales and silt fence installed and maintained around the perimeter of each site. Within the boundaries of the worksites, drilling fluid would be controlled using pits at the crossing entry and exit points and typical fluid handling equipment such as trash pumps.

INADVERTENT RETURN EVALAUATION AND PREVENTION

General

In the contingency planning for this project, prevention of an inadvertent return has been a significant consideration in the design the profile of the HDD crossing. A primary factor in selecting the pipeline crossing profile is the type of soil and/or rock the HDD profile will pass through and the depth of soil cover. Dense granular soils and competent rock are considered to have relatively low susceptibility to an inadvertent return potential. The second factor considered in developing a profile is adequate thickness of overlying soil.

Regardless of the subsurface conditions, there is typically a high risk of an inadvertent return within about 100 to 150 feet of the HDD entry and exit points, as the drill path approaches the ground surface with decreasing overburden confinement. Where areas with high potential for an inadvertent return are identified, steps can be taken to manage and contain drilling fluid to reduce impacts.

Personnel Responsibilities and Training

Personnel Responsibilities

The actions in this Plan are to be implemented by the following personnel:

- Chief Inspector – CIG will designate a Chief Inspector ("CI") for the Project. The CI will have overall authority for construction activities that occur on their designated portion of the Project.
- HDD Inspector – CIG will designate a HDD Inspector for the Project. The HDD Inspector will have overall authority for the HDD construction activities that occur on their designated portion of the Project and will report to the CI.
- Environmental Inspector – At least one Environmental Inspector ("EI") will be designated by CIG to monitor the HDD activities. The EI will have peer status with all other project inspectors and will report directly to the Lead Environmental Inspector. The EI, along with all other inspectors and inspection personnel, will have the authority to stop activities that violate the environmental conditions of the FERC certificate (if applicable), other federal and state permits, or landowner requirements, and to order corrective action.
- HDD Superintendent – The HDD Superintendent is the senior on-site representative of the HDD contractor. The HDD Superintendent has overall responsibility for implementing this Plan on behalf of the HDD contractor. The HDD Superintendent will be familiar with the aspects of the drilling activity, the contents of the Plan and the conditions of approval under which the activity is permitted to take place. The HDD Superintendent will make available a copy of this Plan to the appropriate construction personnel. The HDD Superintendent will ensure that workers are properly trained and familiar with the necessary procedures for response to an inadvertent return.
- HDD Operator – The HDD Operator is the HDD contractor's driller operating the drilling rig and mud pumps. The HDD Operator is responsible for monitoring circulation back to the entry and exit locations. In the event of loss of circulation, the HDD Operator must communicate the event to the HDD Superintendent and HDD contractor field crews. The HDD Operator is responsible for stoppage or changes to the drilling program in the event of an observed inadvertent return.
- HDD Contractor Personnel – During HDD installation, field crews will be responsible for monitoring the HDD alignment along with CIG field representatives. Field crews, in coordination with the EI, are

responsible for timely notifications and responses to observed releases in accordance with this Plan. The Lead EI ultimately must approve the action plan for mitigating the release.

Training

Prior to the start of HDD construction activities, all personnel involved in HDD operations will receive the site-specific training including but not limited to:

- Project specific safety training;
- Review provisions of this Plan and site-specific permit requirements;
- Review location of sensitive environmental resources at the site;
- Review drilling procedures for release prevention;
- Review the site-specific monitoring requirements;
- Review the location and operation of release control equipment and materials;
- Review protocols for reporting an observed inadvertent return

Surface and Subsurface Conditions

Surface Conditions

The initial step in the HDD design process and evaluation of the risk of an inadvertent return is to conduct a detailed site reconnaissance. During site reconnaissance, the proposed HDD site is evaluated for the availability of adequate workspace and suitable temporary ingress and egress for construction equipment and personnel; topographic features such as large elevation differentials that could limit or preclude the use of HDD technology; and potentially limiting surface features such as existing infrastructure and environmentally sensitive habitat areas. By selecting a crossing site with an optimal combination of the aforementioned features, an HDD can then be designed with an appropriate geometric profile and sufficient depth of cover for a particular crossing.

Subsurface Conditions

A thorough evaluation of the subsurface conditions along a proposed HDD alignment enables the designer to select a profile depth that passes through the most competent and desirable subsurface layer for drilling. Subsurface soil and groundwater conditions are explored by advancing exploratory borings to depths of 20 to 25 feet below the anticipated design profile depth. The borings are observed in the field during drilling and soil/rock samples are visually classified and logged. Laboratory tests, including moisture content, dry unit weight, sieve analyses, unconfined compression and triaxial compression tests are completed on selected samples from the borings.

The subsurface data is then used in conjunction with the surface data to optimize the HDD profile so that it passes through and beneath the most competent subsurface layers, thereby reducing the potential for drilling fluid to migrate to the ground surface. Additionally, it provides favorable drilling conditions for the contractor reducing the likelihood of prolonged drilling activities which may increase the potential for instability of the drilled hole.

HDD Geometry

The HDD profile is designed to reduce the potential for an inadvertent return in sensitive areas to the extent possible considering site limitations. The type of subsurface material and the depth of cover material are two main factors considered in developing the profile of an HDD crossing.

The geometry of the pipeline profile can also affect the potential for drilling fluid seepage. In a profile which forces the pipe to make compound or excessively tight radii turns, downhole pressures can build

up, thereby, increasing the potential for an inadvertent return. The HDD design profiles for the proposed HDD reduces this potential to the extent possible, with vertical curves appropriate for the product pipe diameter. Therefore, the potential for pressure buildup caused by pipeline geometry has been reduced.

Inadvertent Return Analysis

General

During HDD installation, drilling fluid is transported under pressure through the drill pipe string to the cutting tool. For HDD installations of this size, pump pressures of several hundred pounds per square inch (psi) and pump rates of 100 to 800 gpm are typical. The drilling fluid typically has a specific gravity ranging from 1.1 to 1.2 (approximately 69 to 75 pounds per cubic foot [pcf]).

The total drilling fluid pressure at the cutting tool is a function of pumping pressures, the elevation difference between the drill rig and the cutting tool and friction losses. Soil and rock formations along the drill path experience maximum drilling fluid pressures in the immediate proximity of the drill bit or reaming tools. The energy (pressure) of the drilling fluid is steadily diminished along its path from the drill rig to the cutting tool and back to the drill rig through the annulus of the hole. Thus, the pumping pressure required to circulate the drilling fluid increases as the drill bit advances farther from the drill rig. Typically, the annular drilling fluid pressure at the cutting tool can range from 15 to 25 percent of the pump pressure.

Drilling Fluid Loss

Drilling fluid circulation may be reduced or lost during HDD operations by drilling fluid loss to the surrounding formation or by the accumulation of cuttings downhole that create a blockage which may result in an inadvertent return. These two processes are discussed below:

- Formational fluid loss occurs when drilling fluid flows into surrounding permeable soil units either within the pore spaces of the soil or along preexisting fractures or voids in the formation.
- Subsequent loss of drilling fluid can occur where the combined resisting force of the available overburden pressure and the shear strength of the overburden soil is less than the hydrostatic drilling fluid pressure and the pressures applied to the surrounding soil from the drilling fluid at the cutting tool.

Formational drilling fluid losses typically occur when the drilling fluid flows through the pore spaces in the soil through which the HDD profile passes. Thus, a formation with a higher porosity can potentially absorb a larger volume of drilling fluid than a formation with a lower porosity. Silty sands, silts and clays typically have a low susceptibility to formational drilling fluid losses. Coarse sand and gravel units with low percentages of silt and clay have a moderate to high susceptibility for drilling fluid loss. The proper management of the drilling fluid properties can reduce the volume of formational drilling fluid loss.

Inadvertent Return

An inadvertent return occurs when drilling fluid emerges at the ground surface or in any other undesired location such as wetlands, utility trenches, basements, roads, railroads, and waterbodies. In practice, an inadvertent return typically occurs in close proximity to the entry and exit points where annular pressures are high and soil cover is thin. An inadvertent return can also occur at locations along a drill path where there are low shear strength soils, where soil cover is relatively thin or along preexisting fractures or voids. Other locations where an inadvertent return can occur are along preferential pathways such as exploratory boring locations, within utility trenches, or along the edges of existing subsurface structures such as piles or utility poles.

The HDD contractor's construction procedures constitute another important factor influencing when and where drilling fluid loss occurs. If the HDD contractor operates with insufficient drilling fluid flow rates, inadequate drilling fluid properties or excessive rates of penetration, the annulus may become blocked through an accumulation of drill cuttings falling out of suspension. This can occur within formations

that typically have a low potential for an inadvertent return. If the accumulation of cuttings creates a blockage downhole, the annulus may become over-pressurized, leading to the potential of an inadvertent return. The contractor has the responsibility to mitigate the risk of overpressure by techniques stated in more detail in the next section. Additionally, a CIG HDD inspector will be assigned full-time to the site.

Responsibility of Contractor

The drilling contractor is responsible for execution of the directional drilling operation, including actions for monitoring, detecting and controlling drilling fluid loss. The HDD contractor should utilize appropriate best management practices and drilling methods to limit the potential for an inadvertent return. Such practices include the contractor taking care such that penetration rates will not exceed the rate of cuttings removal from the hole, maintaining proper drilling fluid properties to clean the hole and not allow excess solids to build up in the drilling fluid, and maintaining drilling fluid returns at all times during the pilot hole, hole opening and pullback processes. The contractor's means and methods significantly influence the potential for an inadvertent return to occur during construction. CIG's HDD Inspector will closely supervise the progress and actions of the drilling contractor.

INADVERTENT RETURN MONITORING AND DETECTION

Monitoring Procedures

The HDD Inspector, EI, and all HDD Contractor personnel are responsible for continuously monitoring operations during drilling activities. Monitoring will include:

- Inspection along the drill path, including monitoring the waterbody for evidence of a release. Inspection of the ground surface along the drill path will be completed at least every two hours during pilot hole and reaming operations.
- Continuous examination of drilling fluid pressures and the flow rate of the drilling fluid returns.
- The drilling operator will provide information regarding drilling conditions to the HDD Inspector and EI throughout the course of drilling activities.
- In the case of an in-stream release, monitoring may include an inspection by boat to determine plume movement within the waterbody.
- If an in-stream release occurs, the EI will collect drilling fluid returns at the borehole entry location for future analysis, as required.
- Monitoring will be documented by the HDD Inspector and/or EI.

Drilling Fluid Pressures

Drilling fluid pressures are affected by several factors. A description of some of these factors and how they can be managed follows.

- *Drilling fluid density.* Greater drilling fluid densities result in greater downhole pressures. A large component of drilling fluid density is the concentration of cuttings in the fluid. By controlling drilling and hole opening penetration rates and maximizing the effectiveness of drilling fluid recycling equipment, drilling fluid densities can be kept below acceptable limits.
- *Drilling fluid viscosity.* Greater drilling fluid viscosities result in greater downhole pressures. However, greater viscosities also help seal off fissures and other escape paths into the surrounding formation from the HDD borehole. Similarly, increased viscosity improves the cuttings carrying capability of the drilling fluid. Drilling fluid viscosity must be carefully managed to obtain a balance between these conflicting requirements.
- *Drilled hole cleanliness.* Cuttings tend to settle out of the flow of drilling fluid in the annular space around the drill pipe string. Accumulations of cuttings or cutting beds restrict the flow of drilling fluid through the annular space. This results in an increase in the pressure required to maintain flow. Careful

management of drilling fluid properties and the regular use of borehole swabbing techniques will keep the borehole free of cuttings beds and their associated pressure increases.

- The drilling fluid pressures in the borehole will vary throughout the installation processes. They will change with the depth of cover, the distance drilled, and the borehole diameter. However, changes in pressure should be gradual and can to a large extent be predicted. Rapid or unexpected changes in pressure are indicators of potential problems downhole. It is critical that drilling fluid pressures be monitored and recorded throughout the pilot hole process, when pressures are the highest. There are two techniques available for drilling fluid pressure monitoring. They are drill pipe pressure monitoring and downhole annular pressure monitoring.

Drill Pipe Pressure Monitoring

Pressure in the drill pipe is measured at the surface by the drilling fluid pump system. The difference between this pressure and the downhole pressure in the borehole is the pressure drop experienced by the fluid as it flows down the drill pipe string and through the downhole tool. Hence drill pipe pressure gives only an approximate indication of the downhole pressure before the drilling fluid exits the tooling.

Careful monitoring of drill pipe pressure can provide an indication of a rapid or unexpected change in downhole pressure.

Downhole Pressure Monitoring

Downhole pressure monitoring is typically only used during the pilot hole operation. This is a sophisticated technique that involves the use of a pressure transducer incorporated into the downhole survey probe immediately behind the drilling assembly. The transducer measures the drilling fluid pressure in the annular space around the probe. Data from the transducer is transmitted to the drill rig at the surface via the same electrical wire line used to transmit survey data.

Drilling Fluid Volume Management

If drilling fluid is not allowed to escape from the drilled hole, then the volume of fluid pumped downhole would return to the surface via the annular space. However, it is typical that a portion of the drilling fluid will be lost to the surrounding formation. Even though some drilling fluid loss should be expected, a program for monitoring and managing the volumes of drilling fluid used is beneficial in identifying sudden decreases in drilling fluid volume, which could be a sign of a potential inadvertent return.

Throughout the HDD process the contractor will keep a running balance of the total volume of fluid pumped downhole and the total volume recovered from the return pits. The difference between these volumes will be the volume lost from the drilled hole. If the rate of loss of fluid is greater than expected or if it suddenly increases this could be an indication of a problem downhole. Measures to reduce the loss of fluid from the borehole would be implemented as described in this plan.

Detection

HDD is a technically advanced process involving skilled operators. The detection of conditions that indicate a potential inadvertent return is highly dependent upon the skills and experiences of the drilling crew. Each drilling situation is unique in that the behavior of the subsurface soil is highly variable and difficult to predict. There is no down-hole monitoring equipment that can specifically detect the potential for an inadvertent return. It is a combination of factors, which must be properly interpreted, that may indicate conditions that can have the potential of causing an inadvertent return.

A downhole annular pressure tool that can measure downhole annular pressures in real-time during the drilling process can be included in the pilot hole jetting assembly and/or reaming assembly to assist in measuring and detecting elevated drilling fluid pressure conditions that could result in an inadvertent return. By using a downhole annular pressure tool, the drilling operator can observe when elevated downhole annular pressures occur, which could indicate an elevated risk of an inadvertent return in the formation. Using this tool, the drilling operator could observe a significant decrease in downhole annular

pressure which could indicate that an inadvertent return has occurred. In this case, the drilling operator could disengage the drilling fluid pumps to limit the amount of drilling fluid being pumped downhole and potentially prevent an inadvertent return.

INADVERTENT RETURN RESPONSE, CONTAINMENT AND CONTROL

Inadvertent Return Response

By actively monitoring drilling operations, CIG intends to correct problems before they occur. The HDD contractor will also monitor the condition of the ground surface around the HDD alignment throughout the HDD drilling process.

If during HDD operations, drilling fluid is detected/observed at the surface, the drilling crew will take immediate corrective action. The first corrective action is to stop the drilling fluid pumps. By stopping the pumps, the pressure in the hole will quickly dissipate. With no pressure in the hole, the surface seepage will stop.

The inadvertent return will be assessed by the HDD Superintendent, EI, and HDD Inspector to determine an estimated volume of the release. They will also assess the potential of the release to reach adjacent waterbodies, wetlands, or other types of infrastructure (e.g., wells). The HDD Superintendent will assess the drilling parameters (depth, type of formation, fluid flow rate, and drilling fluid characteristics) and incorporate appropriate changes.

The HDD Superintendent, EI, and HDD Inspector will coordinate installation of appropriate containment structures and implement additional response measures. Site topography in conjunction with access for personnel and equipment to the release site are major factors in determining the methods used for containment and disposal.

Inadvertent Return Containment

After assessment of the inadvertent return, the following measures will be implemented to stop or reduce the extent and severity of the release:

Upland Release

If an inadvertent return occurs in upland areas, regardless of whether the release is inside or outside the project right-of-way, the drilling crew will take immediate corrective action to contain the release and to prevent migration.

- Typically, containment is achieved by excavating a small sump pit at the site of the release and/or surrounding the release with containment materials (i.e. hay bales, silt fence and/or sand bags). When contained, the drilling fluid is either collected by vacuum trucks or pumped to a location where vacuum trucks can be accessed. The fluids are then transported either back to the HDD drill rig or to a disposal site.
- Additional berms will be constructed around the release site as directed by the EI to prevent release materials from flowing into a waterbody.
- If the amount of an upland release does not allow practical collection, the affected area will be diluted with fresh water and allowed to dry. Steps will be taken (such as berm, silt fence and/or hay bale installation) to prevent silt-laden water from flowing into a waterbody.

Wetland Release

If an inadvertent return occurs in a wetland, either inside or outside the project right-of-way, the drilling crew will take immediate corrective action to contain the release and to prevent migration. These will include:

- Evaluate the amount of release to determine if containment structures are warranted and if they will effectively contain the release.
- Promptly implement appropriate containment measures to contain and recover the slurry.
    - Efforts to contain and recover slurry in wetlands may result in further disturbance by equipment and personnel, and possibly offset the benefit gained in removing the slurry.
    - If the amount of the slurry is too small to allow the practical collection from the affected area, the fluid will be diluted with fresh water or allowed to dry and dissipate naturally.
- If the release cannot be controlled or contained, immediately suspend drilling operations until appropriate containment is in place.
- Remove the fluids using either a vacuum truck or by pumping to a location where a vacuum truck is accessible.

Waterbody Release

If a release occurs within a waterbody, the drilling crew will take immediate corrective action to contain the release to the extent practical. The following approach will generally be followed after an inadvertent return has been isolated, and the flow has stopped. Because the unpredictable nature of the locations and environment in which an inadvertent return may occur, this description cannot encompass all possible approaches to clean-up under all conditions. If necessary, drilling operations will be reduced or suspended to assess the extent of the release and to implement corrective actions.

The following are response techniques that may be applied for a waterbody release:

- If the bentonite material flows overland prior to entering the waterbody, installation of containment materials such as silt fencing or sandbag dams at the point of entry will be used to reduce or stop the flow; if the release is directly into the waterbody, other means to isolate the vent site from the flowing waterbody will be used.
- If the release occurs in non-flowing water less than about 2 feet deep, a vacuum truck or pump(s), with a sufficient hose will remove the drilling fluid. Personnel will remove the bentonite, working from downstream to upstream, to allow maximum visibility. Hand tools may be used to scarify the sediments and ensure removal to the maximum extent practicable.
- If necessary, water may be temporarily diverted using barriers such as sandbags to isolate the impacted area. If water diversion is successful, a vacuum truck or pump(s), with a sufficient hose will remove the drilling fluid.
- If an inadvertent return occurs in a waterbody that is more than two feet in depth or has significant flow, there are limitations to what can be done to contain or control the drilling fluid that has been released. If it is impracticable to remove the drilling fluid, a clear written explanation of the current conditions and the forward plan of action will be submitted to the applicable regulatory agencies. If the agencies approve the forward plan of action, drilling operations will resume.
- Measures will be implemented to limit the further release of fluid into the waterbody including the introduction of lost circulation materials into the drilling fluid, increasing drilling fluid viscosity and the temporary reduction of drilling fluid pumping rates. Drill penetration rates will also be temporarily increased to move the drilling assembly away from the release point as quickly as possible for the release to stop quickly.
- Exposed soils will have temporary erosion control measures established as soon as practical with permanent erosion controls established as soon as possible.
- Disturbance of vegetation will be kept to a minimum and all disturbed vegetation will be restored.

Inadvertent Return Control

After an inadvertent return has been contained, measures will be taken to control the inadvertent return and to reduce the chance of recurrence. Developing the corrective measures will be a joint effort of CIG, the HDD Inspector, the EI, and the HDD contractor and will be site and problem specific. Below is a summary of possible corrective measures that could be implemented in the event of an inadvertent return:

- Increase the drilling fluid viscosity in an attempt at sealing the point at which fluid is leaving the drilled hole. The drilling operation may be suspended for a short period (e.g. overnight) to allow the fractured zone to become sealed with the higher viscosity fluid.
- If increasing the drilling fluid viscosity is ineffective, LCM may be introduced into the hole by incorporating them in the drilling fluid and pumping the material down-hole. The drilling operation may again be suspended for a short period (e.g. overnight) to allow the fractured zone to become sealed with the lost circulation materials.
- Depending on the location of the fractured zone, a steel casing may be installed that is of sufficient size to receive the largest expected down-hole tools for the crossing. This casing installation provides a temporary conduit for drilling fluids to flow while opening the remaining section of the hole to a diameter acceptable for receiving the proposed product pipe. To alleviate future concerns with the steel casing after the HDD installation is completed, the casing is generally extracted from the hole prior to or just after completing the HDD installation. However, there have been instances when attempts at extracting the steel casing were unsuccessful.
- In the event fluid flow is still not regained through the annulus of the drilled hole and a steel casing installation is not selected, the HDD contractor may elect to install a grout mixture into the drilled hole in an attempt at sealing the fractured zone. When opting to utilize this approach, the down-hole drilling assembly is generally extracted from down- hole. The existing hole will be re-drilled to the point at which it had previously been drilled prior to having encountered the loss of drilling fluid.
- Another approach that can be implemented in the event the grouting program within the drilled hole is unsuccessful at sealing the fractured zone is attempting a grouting program from the surface. This approach is only viable in areas where drilling rigs with vertical drilling capabilities can access the HDD alignment. If a surface grouting program is selected, the HDD drilling assembly is extracted from down-hole. Multiple holes are then drilled vertically on either side and along the HDD alignment to allow for grout slurry to be pumped into the fracture zone where the drilling fluid had previously been lost from the drilled hole. This process can take several days to complete in order to insert the grout in a grid pattern that covers the full fractured zone, during which time the HDD operation is suspended. Upon completion of the surface grouting program, the HDD operation resumes, and a pilot hole must be reestablished through the grouted formation.

Response Equipment

Equipment for containing, controlling and cleaning up an inadvertent return will be kept on site throughout the installation process. Heavy equipment not specifically designated for control and cleanup of drilling fluid such as backhoes will also be available on site.

The following list identifies some materials and equipment that will be maintained at each HDD site in sufficient quantities to help ensure containment of an inadvertent return:

- Weed free straw or hay bales
- Sand bags
- Stakes to secure bales
- Silt fence

- Shovels, rakes, brooms and buckets
- Trash pumps and flexible hose
- Light tower(s), so that cleanup work could continue after dark
- A boat with appropriate personal safety equipment at major water body crossings depending on seasonal flows
- Vacuum trucks

Reporting

If an inadvertent return occurs within a stream, wetland or wetland buffer, or other sensitive resources, or poses a threat to public safety, the Lead EI will immediately notify the Environmental Manager.

Regulatory agencies will be contacted as required by the agencies reporting requirements. CIG will inform the regulatory agencies if any threat to public health and safety exist and explain whether the release can be corrected without incurring additional environmental impact. If necessary, drilling operations will be reduced or suspended to assess the extent of the release and to implement corrective actions. If public health and safety are threatened, drilling fluid circulation pumps will be turned off and work will stop until the threat to public health and safety are mitigated.

The Lead EI will provide the following:

- The location of the inadvertent return;
- A description of the area affected; and
- The containment measures implemented.

As soon as possible, a report, containing the following information, will be prepared and emailed to the appropriate agencies.

- The cause of the release;
- Photographs of the release site;
- The area affected;
- The location and size of the resulting work area; and
- The location of any drainage, streams or wetlands in the area and the distance to them from the inadvertent return site.

Upon completion of HDD activities, a report will be prepared that summarizes:

- The events leading up to the inadvertent return;
- The measures taken to minimize the impacts following the release;
- Any impacts from the release;
- Mitigation for the impacts from the release; and
- Agency contacts.

Abandonment

If the drill path becomes obstructed and cannot be cleared or if corrective actions do not prevent or control releases from occurring, CIG may opt to re-drill the hole along a different alignment or suspend the project altogether. In either case, the following procedures will be implemented to abandon

the drill hole.

The method for sealing the abandoned drill hole is to pump thickened drilling fluid into the hole as the drill assembly is extracted, and using cement grout to make a cap.

Closer to the surface (within approximately 10 feet of the surface), a soil cap will be installed by filling with soil extracted during construction of the pit and berms.

The borehole entry location and, if necessary, the exit location will be graded and seeded by the contractor to its original grade and condition after the drill hole has been abandoned.

COLORADO INTERSTATE GAS COMPANY, L.L.C.
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5. Provide a list of HDD drilling fluid additives proposed for use, as known, as well as the safety data sheets for these additives. Include a commitment that any additional drilling fluid additives would be pre-approved (by FERC) and would comply with all other permit requirements and applicable regulations.

Response:

The HDD drilling fluid additives that will be utilized during construction will be decided by CIG's contractor, once selected. The list below includes the HDD drilling fluid additives that may be utilized, and the associated Material Safety Data Sheets. Please see attachment 4 being provided as Tab 1.

- Bara-Kade Bentonite
- Bara-Kade DWD
- Bara-Kade 200 Bentonite
- Clay Breaker
- Clay Cutter
- Clay-Star USA
- Drilling Detergent
- Foam-Star Ultra
- Flowpac
- Lubra-Star Plus
- Magma Fiber
- Magma Fiber Coarse
- Magma Fiber Fine
- Maxgel
- M-I-X* II
- Poly Select Pac-L
- Polyselect Pac-R
- Polyselect Soda Ash
- Polyselect Xan
- Polyswell
- Sandmaster
- Sapp Stick
- Super Gel X
- Soda Ash
- Solidibond 1.1

- Solidibond 2.2
- Slikgel
- Star-Det ECO
- Star-Det Plus
- Star-Drill Dry
- Star-Drill Liquid
- Star-Drill LV
- Star-Gel Premium
- Star-Gel Xtra
- Star-Plex
- Super Gel-X
- Swell Star
- Thin-Star L
- Thinzit
- Torq Breaker 114
- Trol-Star LV
- Ultra Pac Plus LV/Regular
- Wyo-Vis DP
- Wyo-Vis LVP
- Western Extra- High Yield Slickgel
- Xanthan Gum

Additional drilling additives would be pre-approved by FERC and would comply with all other permit requirements and applicable regulations prior to use.

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COLORADO INTERSTATE GAS COMPANY, L.L.C.
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6. Confirm that a down-hole annular pressure tool would be utilized during the HDD pilot hole drilling phase to ensure that the drilling contractor can respond to a loss and/or spike in drilling fluid pressure, potential hydrofracture and inadvertent return at the ground surface or provide suitable alternative methods for monitoring the borehole annular pressure during pilot hole drilling.

Response:

CIG will require that the contractor utilize a down-hole annular pressure tool during the HDD pilot hole drilling phase.

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COLORADO INTERSTATE GAS COMPANY, L.L.C.
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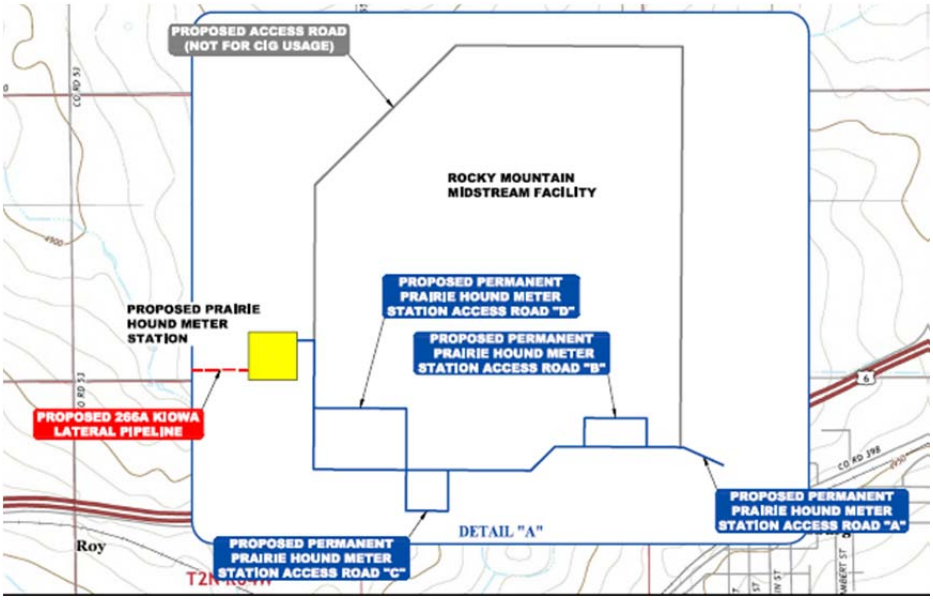
Resource Report 1

1. Section 1.3 states that "The proposed Prairie Hound Meter Station will be accessed along multiple proposed permanent access roads." However, section 1.1.1 indicates there is only one proposed permanent access road. Clarify this apparent discrepancy.

Response:

A permanent access road with multiple segments (access roads A, B, C and D as shown in the below diagram) will be constructed by Rocky Mountain Midstream LLC to extend from Weld County Road 398 to the Prairie Hound Meter Station. Located to the south of the new Rocky Mountain Midstream LLC natural gas processing plant, the multiple permanent access road segments will make up one longer continuous access road. Note the access road to the north of the natural gas processing plant will not be an access road for CIG use. This is the gray line shown in the diagram.



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2. Table 1-2 includes 3.1 acres for aboveground facilities' access roads for both construction and operation. Confirm there would be no temporary access roads used during construction of aboveground facilities, and this acreage is correct.

Response:

Seven permanent access roads and one temporary access road will be associated with aboveground facilities. All access roads, except for the Lancaster/ Kiowa Tie-In Access Road A, will be constructed for the Project. The Lancaster/Kiowa Tie-In Access Road A is an existing dirt road currently used to access other existing aboveground facilities in the area. Table 8-3 from the original filing is copied below and is revised to include the temporary access road.

Table 8-3
Access Roads Proposed for Use During Construction and Operation

High Five Meter Station	Temporary/Permanent/Existing	Approximate Acres of Impact
Access Road A	Temporary (Proposed)	0.20
Access Road B	Permanent (Proposed)	0.03
Prairie Hound Meter Station		
Access Road A	Permanent (Proposed)	1.09
Access Road B	Permanent (Proposed)	0.23
Access Road C	Permanent (Proposed)	0.24
Access Road D	Permanent (Proposed)	0.29
Lancaster/Kiowa Tie-In		
Access Road A	Permanent (Existing)	1.03
Lancaster/High Five Tie-In		
Access Road A	Permanent (Proposed)	0.02
Total Construction (Permanent and Temporary) Acres		3.13
Total Operation (Permanent) Acres		2.93
Total Temporary Acres		0.20

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5. Section 1.4.3.4 states that “backfill from other sources may be required.” Regarding imported backfill, identify the anticipated source and type of material that would be imported and clarify how Colorado Interstate Gas would ensure that it is free of invasive species and contaminants.

Response:

CIG would specify that the contractor obtain soils from local sources located in the immediate vicinity of its project. Such soils will be certified as weed free and free of contaminants. All soils obtained for the project would be inspected and approved by CIG’s Environmental Inspector prior to use on the project.

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COLORADO INTERSTATE GAS COMPANY, L.L.C.
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6. Section 1.4.4 states that "Colorado Interstate Gas proposes to cross two streams and three wetlands…via open-cut trenching; however, Colorado Interstate Gas would like to have the option to cross these features via horizontal directional drill should field conditions permit." Clarify how and when Colorado Interstate Gas would determine the crossing method that would be used to cross each of these features. If Colorado Interstate Gas proposes to cross wetlands or waterbodies by the HDD method, Colorado Interstate Gas must also file site-specific HDD crossing plans per the FERC Procedures at section V.B.6.d.

Response:

CIG proposes to cross the two streams and three wetlands crossing using an open cut method.

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Resource Report 2

1. With regard to construction water needs, address the following:

    a. Section 2.2.5 states that "a total of approximately 1,226,805 gallons of water is anticipated to be used for hydrostatic testing of the Project facilities and HDD operations." Clarify if this estimated total includes potential water needs for HDD operations if Colorado Interstate Gas crosses Streams 1 and 3 and Wetlands 1, 2, and 5 via HDD. If not, provide the source and volume of water that would be required for these activities;
    b. Section 2.2.5 states that "all water used for hydrostatic testing and HDD operations would be obtained from either municipal sources or local existing water wells." Describe the "local existing water wells" from which Colorado Interstate Gas would withdraw water, as well as any testing for environmental contaminants that would be conducted prior to use of non- municipal water supplies; and
    c. Provide the source and anticipated volume of water that would be required for fugitive dust control.

Response:

a. As noted in its response to Resource Report 1 Data Request No. 6 herein, CIG will not employ HDD crossing methods at streams 1 & 3 and wetlands 1, 2, & 5. As such, the amount of water required for its HDD project will be approximately 219,897 gallons of water. This amount is in addition to the approximate 1,226,805 gallons of water to be used for the hydrostatic testing.
b. All water for the project would be obtained from local non-tributary sources, that may include municipal sources or groundwater wells. CIG would test for the parameters identified in the Colorado Department of Public Health and Environments Discharge Permit.
c. CIG anticipates an additional approximate 305,000 gallons of water would be required for dust control activities. This would be in addition to the approximate 219,897 gallons that would be required for the completion of the HDDs. Total anticipated volume of water for the project is approximately 1,751,702 gallons.

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2. Colorado Interstate Gas has identified two groundwater monitor wells within 150 feet from the construction workspace (table 2-1). Clarify the location of these wells and describe whether contaminated soil or groundwater may be present in this area, assess impacts on the Project, and describe mitigation measures, if necessary.

Response:

According to the Colorado Oil and Gas Commission wells dataset and the Colorado Division of Water Resources wells dataset, five private water wells are within 150 feet of the project area. Two of these wells are groundwater monitoring wells. A sixth well has been permitted but not constructed and is within the project area. Table 2-1 of the original filing (copied below) has been revised to include permit numbers and coordinates for each well. No known areas of contaminated soil or groundwater are within the vicinity of these wells. CIG will conduct pre- and post-construction testing of water wells and springs located within 150 feet of the construction workspace and will test for both water quantity and quality parameters. In order to mitigate potential impacts to these wells, CIG will mark such wells with flagging to ensure all contractors are aware of the well locations. CIG will also require its contractors to keep a safe buffer between the well and stockpiled spoil or equipment.

Table 2-1
Water Wells within 150 feet of the Project

Approximate Milepost/(Facility)	Type	Status	Use	Permit #	Distance from Proposed Pipeline (feet)	Distance from Edge of Construction Workspace (feet) [a]	Latitude	Longitude
1.3 (Kiowa Lateral)	Private	Constructed	Stock	75234-	170	90	40.146373°	-104.488144°
2.3 (Kiowa Lateral)	Private	Permit Issued	Industrial	79039-F	0	0	40.145904°	-104.508791°
2.4 (Kiowa Lateral)	Private	Constructed	Domestic	159505-	50	15	40.145765°	-104.508972°
6.9 (Kiowa Lateral)	Private	Constructed	Stock	86114-	180	150	40.159491°	-104.577276°
0.7 (High Five Lateral)	Private	Constructed	Monitoring	42046-MH	350	140	40.147104°	-104.756249°
0.7 (High Five Lateral)	Private	Constructed	Monitoring	261468-	310	100	40.145732°	-104.754997°

[a] Distance from the Project to the water well is measured from the center point of the well to the edge of the nearest temporary workspace, ATWS, access road, or aboveground facility boundary.
Sources: CDNR (2018)

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3. Section 2.1.3 states that no public water supply wells were identified "within the Project area." Identify all public water supply wells within 150 feet of the Project areas.

Response:

The Colorado Division of Water Resources Water Wells Dataset revealed five wells are located within 150 feet of the Project area. According to the dataset, none of these five wells are designated for public use. The wells are owned by private companies or individuals.

Water Wells Located Within 150 Feet of the Project				
Project Area	Private/ Public Well	Designated Use	Latitude	Longitude
High Five Lateral	Private	Monitoring/Sampling	40.147104	-104.756249
High Five Lateral	Private	Monitoring/Sampling	40.145732	-104.754997
Kiowa Lateral	Private	Domestic	40.145765	-104.508972
Kiowa Lateral	Private	Industrial	40.145904	-104.508791
Kiowa Lateral	Private	Stock	40.146373	-104.488144

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4. Section 2.1.5 states “if requested by landowners, Colorado Interstate Gas will conduct pre- and post-construction testing of water wells and springs within 150 feet of the construction workspace and will test for both water quantity and quality parameters.” Testing of water supply wells and springs within 150 feet of the Project area should be offered regardless of whether the landowner has requested it. Therefore, confirm that Colorado Interstate Gas would offer both pre- and post- construction quality and yield testing to landowners for all water supply wells and springs within 150 feet of construction workspaces.

Response:

CIG will offer pre- and post-construction quality and yield testing of water wells and springs within 150 feet of the construction workspace and will test for both water quantity and quality parameters. CIG will obtain pre- and post-construction samples from the water well and send them for analysis, under applicable state and local guidelines, to test for concentration of constituents, as well as volatile organic compounds (VOCs), total petroleum hydrocarbons, and compounds used in blasting charges. A CIG representative will contact landowners after samples have been analyzed to provide the results of pre- and post-construction sampling events. If the results indicate any significant differences in the well water or spring quality between pre- and post-construction sampling events that cannot be attributed to naturally occurring events, CIG will compensate the landowner for the repair of the well, installation of a new well, or otherwise arrange for provision of suitable water supplies.

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5. In its November 21, 2018 letter to the U.S. Fish and Wildlife Service (USFWS), Colorado Interstate Gas states the proposed Project crosses 100-year flood zones at two locations; however, Resource Report 2 states no 100-year flood zones are crossed. Clarify this apparent discrepancy.

Response:

According to the Federal Emergency Management Agency (FEMA) National Flood Hazard Layer, the majority of the Project area is not within a flood hazard zone (FEMA 2018). The Project area does cross a Zone A, 100-year flood zone at two locations from mileposts 8.9 to 9.2 and 6.8 to 7.0. Box Elder Creek occurs approximately 0.15 mile east of the Lancaster Overpressure Protection Facility, where the Lancaster/Kiowa tie-in will occur, but CIG's proposed site is approximately 15 feet higher in elevation above the stream. There are no drainages or surface connections between the station and the Box Elder Creek. Although FEMA maps identify the facility as occurring in a Zone A flood zone, the area would not likely be affected by a 100-year flood due to the elevation of the facility and the lack of any known connection.

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COLORADO INTERSTATE GAS COMPANY, L.L.C.
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6. In section 2.2.5, Colorado Interstate Gas proposes to use 1,226,805 gallons of water for hydrostatic testing and states water would be sourced from a local water well and municipal sources. Confirm that the water well used for hydrostatic testing is not sourced from tributaries of the Platte River watershed that would require consultation for the four target species (whooping crane, interior least tern, piping plover, and pallid sturgeon) under the USFWS Platte River Implementation Program.

Response:

In compliance with the DOT regulations, CIG will perform hydrostatic testing of the new pipeline segments and aboveground facilities piping prior to being placed into service. CIG anticipates using approximately 1,226,805 gallons of water for the hydrostatic testing of the Project facilities, approximately 219,897 gallons of water for the HDD operations (i.e., drilling mud), and approximately 305,000 gallons of water would be required for dust control activities, which totals approximately 1,751,702 gallons of water to be used for the Project. All water used for hydrostatic testing, HDD operations and dust control activities will be obtained from non-tributary resources such as local existing water wells or municipal sources.

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7. Section 2.3.1 states three wetlands would be impacted by the proposed Project; however, table 2-3 states five wetlands would be impacted by the proposed Project. Clarify this discrepancy.

Response:

The Project will impact a total of five wetlands; however, only three wetlands will be crossed by the centerline of the Project. Wetlands 3 and 4 are located within the workspace but are not crossed by the centerline. The column labeled crossing distance in Table 2-3 identifies the wetland areas affected by CIG's Project regardless of whether the wetland is being crossed by the pipeline centerline or the wetland is affected by workspaces.

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Resource Report 3

1. Provide any additional correspondence with the USFWS for the Project since filing the application.

Response:

There has been no further correspondence with the USFWS for the Project since filing the application. The last correspondence from the USFWS was the No Effect concurrence letter received from the Colorado and Nebraska field offices supervisor Dru DeBerry on December 3, 2018, as discussed in section 3.4.1 of Resource Report 3.

Response prepared by or under the supervision of:

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Resource Report 4

1. Define the Project area of potential effects and discuss the potential to affect historic properties both directly and indirectly.

Response:

CIG has retained the services of Metcalf Archeological Consultants, Inc. ("Metcalf") to complete the cultural and historical resources inventory for the Project. Metcalf recognizes the definition of the area of potential effect (APE) is the responsibility of the federal agency, in consultation with the SHPO (36 CFR §800.4(a)(1)). The APE includes the area within which the undertaking may have direct or indirect impact on historic properties, if present, and the extent of the APE is influenced by the nature and extent of the undertaking (36 CFR §800.16(d)).

For this project, Metcalf considered the APE for both direct and indirect effects to be the inventory corridors and inventory areas requested by CIG. These areas include a 300 foot wide inventory corridor along the proposed pipeline, a 50 foot wide inventory corridor along existing and proposed access routes, and block areas covering associated facilities footprints (meter stations, pipe storage yards, temporary work areas). Over the course of involvement in the project, Metcalf acquired from CIG GIS data of final design and engineering and confirmed that all proposed development impact footprints remained within areas inventoried or, in the case of some proposed structures at the High Five Meter Station, were located in areas completely disturbed by other existing oil and gas facilities.

In Metcalf's experience, this inventory area configuration is adequate to find historic properties that could incur reasonably expected and planned direct physical impacts from construction and operation of the proposed pipelines and associated facilities. The 300' pipeline inventory corridor adequately covers the construction right-of-way and temporary work spaces along the corridor where the construction corridor may be wider than nominal dimensions due to terrain, existing built environment features, other environmental considerations, and road crossings and bore or HDD locations. All these areas are within the inventoried area.

Metcalf did not consider a more expansive indirect APE for this project. The indirect APE is the area within which indirect impacts may impact historic properties such that the property's key aspects of integrity are compromised to an extent that might change

the National Register evaluation of the site. Indirect effects can include auditory, vibratory, atmospheric and visual impacts and intrusions. Construction activities related to the building of the pipeline and associated facilities can have temporary impacts—most notably noise and visual impacts from construction activity and equipment and atmospheric impacts such as dust and vehicle and equipment exhaust. These are short-lived, occurring during construction and reclamation, ceasing thereafter, and limited in the distances to which they extend out from the project area. None are expected to result in any permanent impact.

Metcalf has found that the most common type of long-term indirect impact from pipeline projects is primarily visual and comes from the introduction of a vegetation scar to the landscape that can take a number of years to revert to full natural vegetation and appearance. Where above-ground facilities are to be constructed, these can impact integrity of setting, feeling, and association of historic properties by introducing modern and contrasting elements to the foreground and mid-ground viewshed. This project area is in relatively low-relief terrain with encroaching urbanization. Currently, much of the project area's immediate environs have been or are being cultivated or used for cattle grazing, and the visual impacts from a pipeline scar do not stand out, particularly when viewed at low angle and from the side, and tend to mimic other surface disturbances in the area, such as two-tracks and surface roads, well pads, fence lines, cattle trails, trampled ground around cattle watering holes, other utility corridors, and constructed two- and four-lane roads and highways, all of which are present in and around the project area. Permanent above-ground features along pipelines are typically limited to location safety markers (such as carsonite posts) and shut-off or isolation valves. These are small and inconspicuous or not perceptible once one is away from the pipeline corridor, and also are of like visual character to fences, gates, stock watering structures, etc., which are common throughout the project area.

Permanent above-ground structures at the meter station facilities will be placed in and around existing metering facilities and other pipelines' similar structures. As such, these structures do not add any appreciable new visual impacts or intrusions to possible historic properties that might be within sight. The Prairie Hound Meter Station is being constructed in an area that has recently been completely bladed, leveled, and stripped of all vegetation as part of an unrelated project. It also will be located near Interstate 76, which dominates the view to the west and north from this location.

Given these circumstances, Metcalf recommends the inventoried area be considered the APE for both direct and indirect effects for the project. Metcalf notes that the SHPO, in its review and concurrence letter of January 2, 2019, made no comment regarding the definition of the APE. Similarly, there has been no information provided by the

tribes contacted about this project which warrants or requests consideration of a different or more expansive APE for either direct or indirect effects (see discussion below for Data Request No. 7).

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2. Provide a discussion on historic architectural resources that may be affected by the proposed Project, including county roads and interstates. Based on aerial imagery, there are numerous structures within the viewshed of the Project and roads that are crossed by the pipeline. Are any of these over 50 years of age? If so, identify whether they are eligible to be historic properties and if they will be affected by the proposed Project. Provide any findings to the Colorado State Historic Preservation Officer (SHPO) and file any consultation documents to/from the SHPO.

Response:

The viewshed for this project is very extensive, extending for tens of miles in most directions from different parts of the project area. This radius includes many of the communities on this part of the Front Range. While the viewshed is extensive, it is a very different consideration from the indirect APE as it relates to visual impacts. Since it is governed by the scale, nature and extent of the proposed development; the degree to which the immediate surroundings already manifest modern structures and other modern intrusions on what would have been the historic or prehistoric setting; and whether or not the new pipelines and their associated facilities present a significantly new intrusion to the already-compromised setting. For the reasons noted in CIG's response to Data Request #1, Metcalf recommends an APE for indirect effects that is limited to the same area as the APE for direct effects.[2] Metcalf did not consider impacts to historic properties outside of the indirect APE as no impacts are expected given the nature of the project, the current setting (including present built environment), and the results of files and records searches which covered the legal sections containing and immediately adjacent to the project area.

Metcalf did consider previously constructed structures within the project corridor and whether they were 50 years of age or older. The final paragraph of the File Search section discusses the archival research of historic maps and considers those features on the map that are at or near the project area. It discusses the types of archival research materials used and justifies the reasons for inventorying or not inventorying those resources.

[2] CIG has retained the services of Metcalf Archeological Consultants, Inc. ("Metcalf") to complete the cultural and historical resources inventory for the Project.

Specific to two transportation structures, Metcalf did record and evaluate a segment of historic County Road 49 which will be crossed by the proposed pipeline (5WL7915.8). This segment is recommended to be a non-supporting portion of the larger eligible resource (5WL7915). SHPO has concurred with this evaluation in its letter of January 2, 2019. Further, Metcalf understands CIG proposes to cross this modern five lane highway by means of boring or horizontal directional drill which will result in no direct physical impacts to the roadway.

Metcalf did not record a segment of Interstate 76 where it will be crossed by the proposed pipeline. Metcalf contacted both the Office of Archaeology and Historic Preservation (OAHP) at History Colorado, and the Colorado Department of Transportation (CDOT), about whether a segment should be recorded and both entities told Metcalf that roadways of the Interstate System in Colorado are considered exempt from documentation as cultural resources and not considered by CDOT or the SHPO in the Section 106 process. SHPO made no comment regarding the exclusion of I-76 from the recorded sites in the project APE in its letter of January 2, 2019. Regardless, the interstate crossing, as above, will be by boring or horizontal directional drill, resulting in no direct physical impacts to the highway.

One previously recorded historic site, 5WL2212, consists solely of a historic artifact scatter with no structures or architectural remains. It is mapped in a location within the direct APE but could not be found and may have been destroyed or may be miss-plotted in the original recording. It is previously evaluated not eligible with SHPO concurrence. SHPO made no comment regarding this site in its January 2, 2019, letter.

Three segments of the Brighton Ditch (5WL2182.2, .7, and .5) and one segment of the Speer Canal feeder ditch (5WL1485.15) are in the project APE. One of these segments is destroyed by existing pipeline construction. The other three are physically extant, though considerably eroded due to lack of use and maintenance. The whole resources are considered eligible for the National Register, but these segments are either no longer existing, or have deteriorated to a degree that Metcalf has recommended they be considered non-supporting of the larger resource due to lack of key aspects of integrity. SHPO has concurred with these assessments in its letter of January 2, 2019.

Finally, Metcalf did record one new historic site, 5WL8837. This site is a historic cultural material scatter and remains of a long concrete watering or feed trough, two depressions, and one piece of prehistoric chipped stone debitage. Based on the findings during inventory and subsequent records searches, it is recommended not eligible for the National Register, and SHPO has concurred with this assessment in its letter of January 2, 2019.

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4. The terms 'significance' and 'significant' are used extensively in appendix D with regard to cultural resources. Define the terms and make sure they are being used appropriately in accordance with applying the National Register criteria.

Response:

In this project's site forms (Appendix D), Metcalf Archeological Consultants, Inc ("Metcalf") uses the words significance and significant generally to refer to a site's place in history or prehistory and its ability to convey qualities that allow it to be associated with or reflective of important parts of history and prehistory, as defined by the four National Register eligibility criteria.[3] "Important" or "importance" are likely the closest synonyms to the usage of these words when not referring specifically to National Register criteria. In a National Register context, "significance" and "significant" can take on subtly different meanings, depending on the discussion. In several of the site discussions, Metcalf refers to "criteria of significance." This is a not-ideally worded phrase that does refer to the National Register eligibility criteria and would be better worded "criteria of eligibility" or "eligibility criteria."

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[3] CIG has retained the services of Metcalf Archeological Consultants, Inc. to complete the cultural and historical resources inventory for the Project.

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5. Under Recommendations for Construction Monitoring in Appendix D, define ‘qualified’ archaeologist.

Response:

A “qualified” archaeologist in this context is one that meets the Secretary of the Interior’s Standards and Guidelines for Identification and for Evaluation. As a proxy for these standards, Metcalf staffs projects such as this with field supervisors and crew chiefs who are listed on the company’s State of Colorado Archaeological Permit (#73793) as Principal Investigators or Project Archaeologists.

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6. Revise the last paragraph under section: Discovery of Cultural Resources in Appendix D. If site eligibility has been determined and formulation of recommendations regarding any further work has been done, it does not seem necessary to do further testing to prepare a data recovery plan. Furthermore, see question 4 reading the use of the term 'significant.' What are significant cultural materials and who decides their significance? This paragraph also states "It may be possible to postpone testing until later in the construction process or after construction is completed if the find is not threatened." Further testing is not necessary if the Project can be modified as to avoid the resource.

Response:

For the purpose of this response Metcalf Archeological Consultants, Inc. ("Metcalf") assumes this is actually a reference to the section "Discovery of Cultural Resources" which is on page 46 of the report (Appendix D is the cultural resource forms for the project).[4] Metcalf has found in other similar circumstances where a tested site is found to be eligible, and data recovery is the preferred option, that a limited amount of additional testing can help to refine the scope and direction of a data recovery plan. It is not a necessary step and can be included as part of the initial data recovery effort, but Metcalf has found that it helps to streamline and target data recovery early in the process. Testing to determine eligibility is usually limited to the maximum needed to be able to provide a justifiable recommendation concerning eligibility under Criterion d. This testing may not be of a level of effort needed to then go on and more fully define the full extent of those cultural materials that support that eligibility, either spatially, or vertically.

The term "significant" in this context refers to whether the discovered materials have sufficient integrity and are of a quantity and type that would warrant a recommendation that the discovery is eligible for the National Register, or if made within the bounds of a site already determined eligible, whether the discovery supports that eligibility. Unless specifically provided in a monitoring and treatment plan which streamlines the assessment process, that assessment is simply a recommendation to the FERC, which, in consultation with SHPO, will make the determination of whether it is, in fact, eligible. The discussion beginning on page 46 of the report outlines a streamlined process for assessment, continuing through data recovery, which could be approved by the FERC

[4] CIG has retained the services of Metcalf Archeological Consultants, Inc. ("Metcalf") to complete the cultural and historical resources inventory for the Project.

to serve as the means by which the monitoring archaeologists can make decisions regarding assessment of eligibility, and/or affect, and then to proceed directly to treatment if adverse effect has occurred. Agency notifications still occur, but archaeological investigations can continue while notification is ongoing.

Postponing testing at certain locations until after construction is partially or fully complete is a strategy commonly implemented by Metcalf, with FERC and SHPO approval, on pipeline projects where open trench inspection will occur. It is applied primarily as a safety consideration, keeping archaeologists out of the construction zone and away from the open trench to the extent possible, and to reduce the disruption to the construction process as much as is reasonably feasible. It is recommended only in circumstances where cultural materials are exposed in the wall of the pipeline trench, those materials are at least 30 cm (1 ft) below the right-of-way surface, where the deposits are stable and well-consolidated, and risk of trench wall sluffing is minimal. Under these conditions, the damage to the discovered resource is already done, and if these conditions exist, it is very unlikely that further damage will be done as construction continues. It is never applied in the case of discovery of human remains or suspected human remains. The discovery is shot in with GPS (postprocessed to sub-meter accuracy) taking several shots to adequately map the extent of the exposure in the trench wall, and then pipe laying and backfilling are allowed to occur. The archaeologists return to the location following backfilling and conduct test excavations to further expose and assess the discovery. Monitoring of some or all of the construction steps following discovery may be warranted to assure the integrity of the discovery remains.

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8. In a letter dated January 2, 2019, the Colorado SHPO requested that they would like to be involved in the consultation process with local government and other consulting parties. Has this consultation occurred and has the SHPO been provided documentation of this consultation?

Response:

CIG consulted with various Tribal Historic Preservation Officers that might have interest or concern in the potential impacts associated with its Project. Further, CIG has not identified or consulted with any other parties that may have a potential interest or concern in the project. CIG notes that it is working with Weld County to obtain applicable county permits. CIG and Metcalf Archeological Consultants, Inc ("Metcalf") expect that if Weld County has any interest or concerns with cultural resources, it will be expressed as part of the land use permitting process.[5] To date, CIG and Metcalf know of no such interest or concern. Accordingly, to CIG's and Metcalf's knowledge, there is no other consultation ongoing with which the SHPO can be involved.

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[5] CIG has retained the services of Metcalf Archeological Consultants, Inc. to complete the cultural and historical resources inventory for the Project.

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Resource Report 6

1. Section 6.1.1 states "there are no other subsurface mineral resources near the Project." Identify current, historic, or proposed surface and subsurface mines or oil and gas exploration within 0.25 mile of the Project area and provide references for the information.

   a. Provide a discussion of construction methods and hazard mitigation methods that would be employed for oil and gas wells and infrastructure within 100 feet of the Project. Such measures may include strategic placement of balustrades, orange safety fencing, and/or employment of specialized construction methods.

Response:

Colorado Online Oil and Gas Wells Dataset revealed one active well, i.e. the Crestone Peak Well, located within 100 feet of the Project area. Although the proposed workspace will be located approximately 91 feet from the Project, CIG will implement measures during construction to reduce likelihood of impacts, such as marking the well with flagging and ensuring all contractors are aware of the well location, and will require its contractor to keep a safe buffer between the well and stockpiled spoil or equipment. If an inactive oil or gas well is unexpectedly encountered during construction, and a spill occurs, CIG will stop work immediately, contain any spilled product in accordance with the *Spill Prevention, Containment, and Countermeasures Plan*, secure the area with barricades or safety fencing, and notify the FERC as well as the appropriate state and/ or local agency.

Oil and Gas Wells Located Within a Quarter Mile of the Project[a]					
Operator	Located within 100 Feet of the Project[b]	Latitude	Longitude	Status	API Number
High Five Lateral					
Kerr McGee Oil & Gas Onshore LP	No	40.150050	-104.74794	Producing	12307300
Crestone Peak Resources Operating LLC	No	40.149012	-104.758726	Producing	12310070
Crestone Peak Resources Operating LLC	No	40.151343	-104.756155	Producing	12319749
Kerr McGee Oil & Gas Onshore LP	No	40.147740	-104.752010	Producing	12319783

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Oil and Gas Wells Located Within a Quarter Mile of the Project[a]					
Operator	Located within 100 Feet of the Project[b]	Latitude	Longitude	Status	API Number
Crestone Peak Resources Operating LLC	Yes	40.146682	-104.756123	Producing	12319957
Kerr McGee Oil & Gas Onshore LP	No	40.150980	-104.750750	Producing	12321876
PDC Energy INC	No	40.143800	-104.741860	Producing	12324395
Kerr McGee Oil & Gas Onshore LP	No	40.144060	-104.756180	Producing	12324894
Kerr McGee Oil & Gas Onshore LP	No	40.147073	-104.742649	Producing	12325666
Crestone Peak Resources Operating LLC	No	40.146723	-104.756307	Producing	12332298
Crestone Peak Resources Operating LLC	No	40.146693	-104.756295	Producing	12332354
PDC Energy INC	No	40.143611	-104.741944	Plugged and Abandoned	12317222
Kerr McGee Oil & Gas Onshore LP	No	40.144220	-104.746010	Plugged and Abandoned	12320998
Kerr McGee Oil & Gas Onshore LP	No	40.147360	-104.745990	Plugged and Abandoned	12322072
Kerr McGee Oil & Gas Onshore LP	No	40.143750	-104.747210	Plugged and Abandoned	12323083
Kerr McGee Oil & Gas Onshore LP	No	40.146607	-104.752309	Abandoned Location	12319591
Encana Oil & Gas (USA) INC	No	40.146240	-104.760120	Abandoned Location	12334796
Encana Oil & Gas (USA) INC	No	40.146240	-104.760220	Abandoned Location	12334948
Kiowa Lateral					
Red Hawk Petroleum LLC	No	40.144880	-104.503680	Permitted Well	12344062
Red Hawk Petroleum LLC	No	40.144880	-104.503780	Permitted Well	12344063
Red Hawk Petroleum LLC	No	40.144880	-104.503570	Permitted Well	12344064
Red Hawk Petroleum LLC	No	40.144940	-104.495240	Permitted Well	12344068
Red Hawk Petroleum LLC	No	40.144940	-104.495350	Permitted Well	12344069

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Oil and Gas Wells Located Within a Quarter Mile of the Project[a]					
Operator	Located within 100 Feet of the Project[b]	Latitude	Longitude	Status	API Number
Red Hawk Petroleum LLC	No	40.144940	-104.495450	Permitted Well	12344070
Red Hawk Petroleum LLC	No	40.144940	-104.495670	Permitted Well	12344071
Red Hawk Petroleum LLC	No	40.144940	-104.495770	Permitted Well	12344072
Red Hawk Petroleum LLC	No	40.144940	-104.495560	Permitted Well	12344073
Red Hawk Petroleum LLC	No	40.144950	-104.495130	Permitted Well	12344074
Noble Energy INC	No	40.158050	-104.592640	Permitted Well	12348767
Noble Energy INC	No	40.158070	-104.595360	Permitted Well	12348768
Noble Energy INC	No	40.158050	-104.592720	Permitted Well	12348769
Noble Energy INC	No	40.161230	-104.573830	Permitted Well	12348770
Noble Energy INC	No	40.158050	-104.592130	Permitted Well	12348771
Noble Energy INC	No	40.158070	-104.595440	Permitted Well	12348772
Noble Energy INC	No	40.161190	-104.580650	Permitted Well	12348773
Noble Energy INC	No	40.161240	-104.574070	Permitted Well	12348774
Noble Energy INC	No	40.158070	-104.595520	Permitted Well	12348775
Noble Energy INC	No	40.161230	-104.573990	Permitted Well	12348776
Noble Energy INC	No	40.158050	-104.592210	Permitted Well	12348777
Noble Energy INC	No	40.161230	-104.573910	Permitted Well	12348778
Noble Energy INC	No	40.158050	-104.592800	Permitted Well	12348779
Noble Energy INC	No	40.161190	-104.580330	Permitted Well	12348780
Noble Energy INC	No	40.158070	-104.595790	Permitted Well	12348781
Noble Energy INC	No	40.158050	-104.592880	Permitted Well	12348782
Noble Energy INC	No	40.158070	-104.595610	Permitted Well	12348783
Noble Energy INC	No	40.158080	-104.595870	Permitted Well	12348784
Noble Energy INC	No	40.158070	-104.595280	Permitted Well	12348785
Noble Energy INC	No	40.158080	-104.595950	Permitted Well	12348786
Noble Energy INC	No	40.161190	-104.580570	Permitted Well	12348787
Noble Energy INC	No	40.161190	-104.580490	Permitted Well	12348788
Noble Energy INC	No	40.161190	-104.580410	Permitted Well	12348789
Noble Energy INC	No	40.158050	-104.592370	Permitted Well	12348790
Noble Energy INC	No	40.158050	-104.592560	Permitted Well	12348791
Noble Energy INC	No	40.161230	-104.573750	Permitted Well	12348792
Noble Energy INC	No	40.158080	-104.596030	Permitted Well	12348793
Noble Energy INC	No	40.158050	-104.592290	Permitted Well	12348794
Noble Energy INC	No	40.143778	-104.488091	Shut-in	12308083
Noble Energy INC	No	40.156410	-104.589390	Shut-in	12309505
Noble Energy INC	No	40.157130	-104.569120	Shut-in	12310626

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Oil and Gas Wells Located Within a Quarter Mile of the Project[a]					
Operator	Located within 100 Feet of the Project[b]	Latitude	Longitude	Status	API Number
Noble Energy INC	No	40.147122	-104.525676	Shut-in	12321064
Noble Energy INC	No	40.158190	-104.591740	Shut-in	12322853
Blue Chip Oil INC	No	40.144330	-104.520390	Shut-in	12322980
Kerr McGee Oil & Gas Onshore LP	No	40.157780	-104.604280	Shut-in	12323095
Noble Energy INC	No	40.161213	-104.604575	Shut-in	12323346
Noble Energy INC	No	40.154060	-104.595890	Shut-in	12323863
Noble Energy INC	No	40.162330	-104.544430	Shut-in	12324798
Kerr McGee Oil & Gas Onshore LP	No	40.152922	-104.612575	Shut-in	12329628
Kerr McGee Oil & Gas Onshore LP	No	40.152911	-104.612538	Shut-in	12329629
Kerr McGee Oil & Gas Onshore LP	No	40.152878	-104.612469	Shut-in	12329631
Kerr McGee Oil & Gas Onshore LP	No	40.152947	-104.612681	Shut-in	12329645
Kerr McGee Oil & Gas Onshore LP	No	40.152933	-104.612631	Shut-in	12329646
Noble Energy INC	No	40.158582	-104.577251	Shut-in	12331013
Noble Energy INC	No	40.144461	-104.534503	Producing	12321075
Kerr McGee Oil & Gas Onshore LP	No	40.154310	-104.614410	Producing	12321159
Noble Energy INC	No	40.158057	-104.573470	Producing	12331014
Kerr McGee Oil & Gas Onshore LP	No	40.154692	-104.604022	Producing	12332975
Kerr McGee Oil & Gas Onshore LP	No	40.154735	-104.604009	Producing	12332976
Noble Energy INC	No	40.152256	-104.544449	Producing	12338189
Noble Energy INC	No	40.152250	-104.544840	Producing	12338190
Noble Energy INC	No	40.152257	-104.545121	Producing	12338191
Noble Energy INC	No	40.152261	-104.544988	Producing	12338192
Noble Energy INC	No	40.152258	-104.544583	Producing	12338193
Noble Energy INC	No	40.152255	-104.544716	Producing	12338380
Noble Energy INC	No	40.144520	-104.550180	Producing	12345232
Habersham Energy Company	No	40.143809	-104.477880	Plugged and Abandoned	12307705
U.S. Minerals EXPL	No	40.140309	-104.473150	Plugged and Abandoned	12307865
Noble Energy INC	No	40.148990	-104.599120	Plugged and Abandoned	12307907
Kerr McGee Oil & Gas	No	40.154760	-104.604150	Plugged and	12309709

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Oil and Gas Wells Located Within a Quarter Mile of the Project[a]					
Operator	Located within 100 Feet of the Project[b]	Latitude	Longitude	Status	API Number
Onshore LP				Abandoned	
Noble Energy INC	No	40.157235	-104.581498	Plugged and Abandoned	12310627
Noble Energy INC	No	40.148357	-104.543503	Plugged and Abandoned	12311869
Noble Energy INC	No	40.155990	-104.599320	Plugged and Abandoned	12314417
Noble Energy INC	No	40.158240	-104.600680	Plugged and Abandoned	12321548
Noble Energy INC	No	40.146984	-104.516966	Plugged and Abandoned	12323303
Kerr McGee Oil & Gas Onshore LP	No	40.152887	-104.612435	Plugged and Abandoned	12329624
Amoco Production Company	No	40.142789	-104.503441	Dry and Abandoned	12307299
Sundance Oil Company	No	40.161758	-104.600524	Dry and Abandoned	12307488
Mormac Energy Corp	No	40.147399	-104.483250	Dry and Abandoned	12310357
Monahan* Rex Family Trust	No	40.141129	-104.464890	Dry and Abandoned	12311119
Snyder Oil Corp	No	40.142949	-104.464880	Dry and Abandoned	12318268
Barrett Resources Corp	No	40.148357	-104.543503	Abandoned Location	12310446
Red Hawk Petroleum LLC	No	40.144880	-104.504000	Abandoned Location	12341185
Red Hawk Petroleum LLC	No	40.144880	-104.504110	Abandoned Location	12341188
Red Hawk Petroleum LLC	No	40.144880	-104.503890	Abandoned Location	12341194
Red Hawk Petroleum LLC	No	40.144880	-104.504210	Abandoned Location	12341199

[a] Information for oil and gas wells located near the Project was obtained from the Colorado Oil and Gas Commission Wells Dataset
[b] Well locations were measure from the edge of the Project disturbance, not from the proposed centerline

Response prepared by or under the supervision of:

Mike Bonar
Environmental Project Manager
719-520-4817

COLORADO INTERSTATE GAS COMPANY, L.L.C.
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2. In section 6.1.1.1, Colorado Interstate Gas states that "a potential impact to oil and gas wells would be access to the wells for inspection or maintenance while the pipeline trench is open" and that "if necessary, an earth plug in the ditch will be used to provide needed access." Clarify how long Project construction would prevent access to the referenced oil and gas wells, and how quickly an earth plug could be installed in the ditch to provide access when needed.

Response:

CIG will maintain access to the oil and gas wells during construction. CIG will specify that the construction contractor "shall maintain access around open cut road crossings at all times and provide barricades safety fencing and traffic control as required". This may be accomplished through the use of earth plugs, steel crossing plates, shoofly roads or other applicable measures.

Response prepared by or under the supervision of:

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COLORADO INTERSTATE GAS COMPANY, L.L.C.
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4. Provide the location of known incidences of induced seismicity (from fluid injection) (if any) in the Project vicinity, their magnitude, and discuss the potential for future induced seismic events. Also identify wastewater injection wells associated with oil and gas production within 1 mile of Project areas.

Response:

There are two wastewater injection wells that maybe considered incidences of induced seismicity associated with oil and gas production within 1-mile of the Project radius and they are identified in the table below. Beyond these wastewater injection wells, there are no other known incidences of induced seismicity within the Project vicinity. With regard for the potential for future-induced seismic events, CIG notes that according to the USGS 2017 map for potential human-induced seismicity, Colorado has the lowest chance for a human induced seismic event. Please see attachment 5 behind this response for the USGS 2017 map.

Injection Wells Located Within 1 Mile of the Project[a,b]			
Operator	Latitude	Longitude	API Number
Kiowa Lateral			
EWS 4 DJ BASIN LLC	40.13947	-104.46355	12344047
EWS 4 DJ BASIN LLC	40.13705	-104.47264	12344167

[a] Information for oil and gas wells located near the Project was obtained from the Colorado Oil and Gas Commission Wells Dataset
[b] Well locations were measure from the edge of the Project disturbance, not from the proposed centerline

Response prepared by or under the supervision of:

Claudia Leal
Project Manager
303-914-4636

New USGS Maps Identify Potential Ground-Shaking Hazards in 2017

Release Date: MARCH 1, 2017

New USGS maps identify potential ground-shaking hazards in 2017 from both human-induced and natural earthquakes in the central and eastern U.S.

New USGS maps identify potential ground-shaking hazards in 2017 from both human-induced and natural earthquakes in the central and eastern U.S., known as the CEUS. This is the second consecutive year both types of hazards

Contacts

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U.S. Geological Survey

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12201 Sunrise Valley Drive
Reston, VA 20192
United States
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Damage to buildings in Cushing, Oklahoma from the magnitude 5.0 earthquake on November 6, 2016. Unreinforced brick and stone masonry buildings and facades are vulnerable to strong shaking. Photograph credit: Dolan Paris, USGS

are forecasted, as previous USGS maps only identified hazards from natural earthquakes. This research was published today in Seismological Research Letters.

Approximately 3.5 million people live and work in areas of the CEUS with significant potential for damaging shaking from induced seismicity in 2017. The majority of this population is in Oklahoma and southern Kansas.

Research also shows that an additional half million people in the CEUS face a significant chance of damage from natural earthquakes in 2017, which brings the total number of people at high risk from both natural and human-induced earthquakes to about 4 million.

“The good news is that the overall seismic hazard for this year is lower than in the 2016 forecast, but despite this decrease, there is still a significant likelihood for damaging ground shaking in the CEUS in the year ahead,” said Mark Petersen, chief of the USGS National Seismic Hazard Mapping Project.

The 2017 forecast decreased compared to last year because fewer felt earthquakes occurred in 2016 than in 2015. This may be due to a decrease in wastewater injection resulting from regulatory actions and/or from a decrease in oil and gas production due to lower prices.

Despite the decrease in the overall number of earthquakes in 2016, Oklahoma experienced the largest earthquake ever recorded in the state as well as the greatest number of large earthquakes compared to any prior year. Furthermore, the chance of damage from induced earthquakes will continue to fluctuate depending on policy and industry decisions, Petersen noted.

“The forecast for induced and natural earthquakes in 2017 is hundreds of times

Jessica Fitzpatrick

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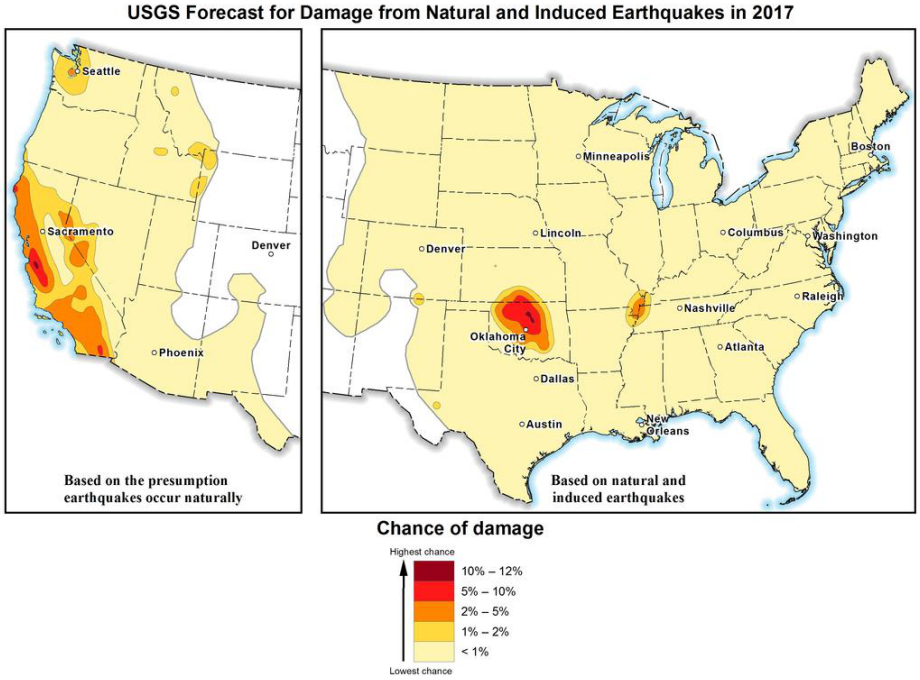
higher than before induced seismicity rates rapidly increased around 2008," said Petersen. "Millions still face a significant chance of experiencing damaging earthquakes, and this could increase or decrease with industry practices, which are difficult to anticipate."

Important Note: In the west, USGS scientists have focused on the hazard from natural earthquakes. Induced earthquakes have been observed in California as well, but they don't significantly change the regional hazard level, which is already high due to frequent natural earthquakes.



USGS map displaying potential to experience damage from natural or human-induced earthquakes in 2017. Chances range from less than 1 percent to 12 percent.

What are Induced Earthquakes?

Induced earthquakes are triggered by human activities, with wastewater disposal being the primary cause in many areas of the CEUS. Wastewater from oil and gas operations can be disposed of by injecting it into deep underground wells. Injected fluids cause pressure changes that can weaken a fault and therefore bring it closer to failure. Most injection wells do not trigger felt earthquakes, suggesting that a combination of many factors contribute to such events.

"By understanding the relationship between earthquakes and wastewater injection, informed decisions can be made on processes such as controlling the volumes and rates of wastewater injected and determining which wells are most susceptible to inducing earthquakes," said Petersen.

Many questions have been raised about hydraulic fracturing—commonly referred to as "fracking"—and more information can be found by reading common questions.

States with High Hazard

The maps indicate an especially high ground-shaking hazard in five areas of the CEUS in 2017. These same areas were identified in the 2016 forecast.

Induced seismicity poses the highest hazard in two areas, which are Oklahoma/southern Kansas and the Colorado/New Mexico area known as the Raton Basin. In those areas, there is a significant chance that damaging levels of ground motion will occur in 2017.

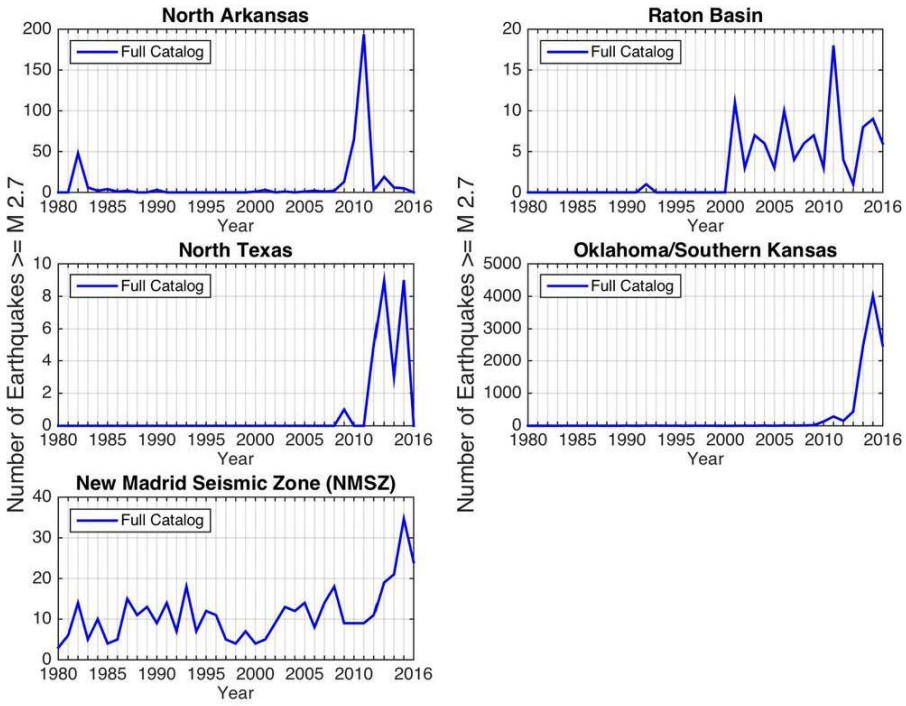
Enhanced hazard from induced seismicity was also found in Texas and north Arkansas, but the levels are significantly lower in these regions than that forecasted for 2016. While earthquakes are still a concern, scientists did not observe significant activity in the past year, so the forecasted hazard is lower in 2017.

There is also a high hazard for natural earthquakes in the New Madrid Seismic Zone. The NMSZ is the only one of the five identified areas that has not experienced induced earthquake activity. The NMSZ had a higher rate of natural earthquakes in the past three years, leading to a slightly higher hazard potential compared to previous years in portions of Arkansas, Missouri, Illinois, Kentucky and Tennessee.

“The 2016 forecast was quite accurate in assessing hazardous areas, especially in Oklahoma,” said Petersen. “Significant damage was experienced in Oklahoma during the past year as was forecasted in the 2016 model. However, the significantly decreased number of earthquakes in north Texas and Arkansas was not expected, and this was likely due to a decline in injection activity.”

“There is specific concern in parts of the central U.S. since the forecasted hazard levels are higher than what is considered in current building codes, which only incorporate natural earthquakes,” said Petersen.

People living in areas of higher earthquake hazard should learn how to be prepared for earthquakes. Guidance can be found through FEMA’s Ready Campaign.



USGS charts showing the number of earthquakes greater than or equal to magnitude

2.7 since 1980 in the five focus areas identified as having especially high ground-shaking hazard in the central and eastern U.S. in 2017.

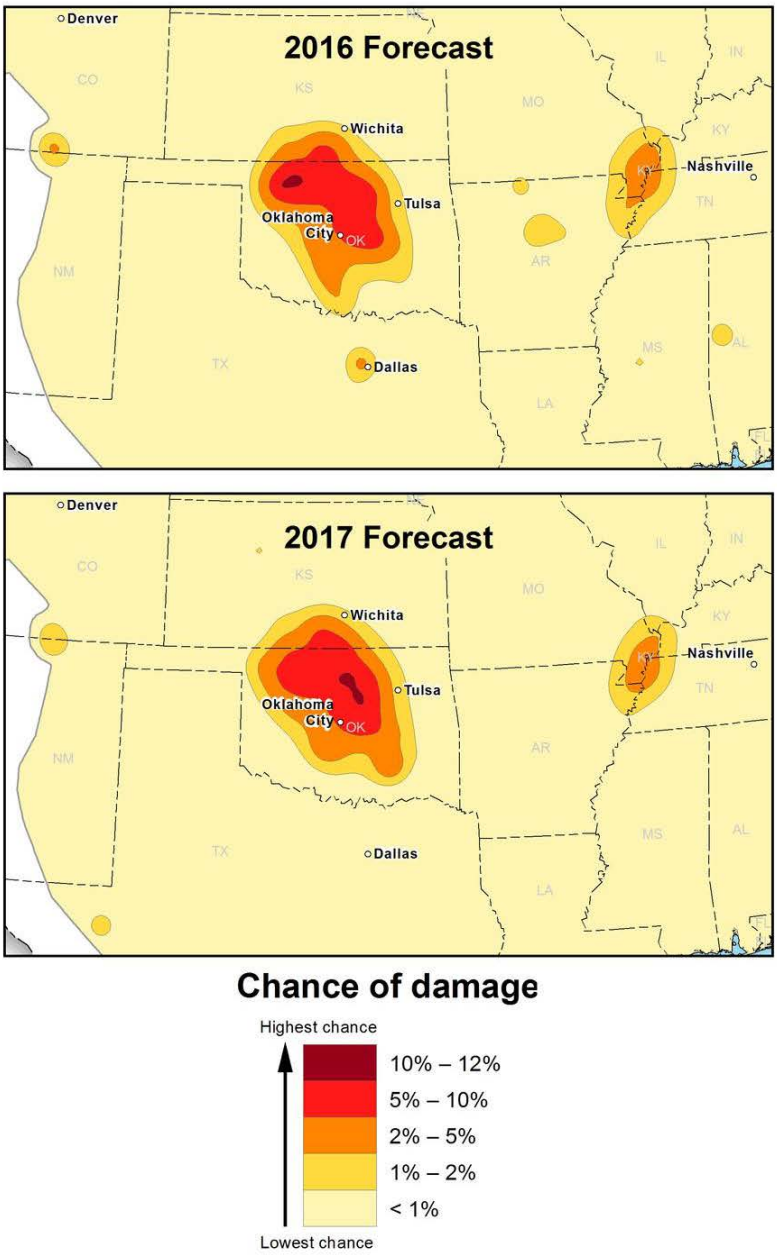
Spotlight on Oklahoma

Between 1980 and 2000, Oklahoma averaged about two earthquakes greater than or equal to magnitude 2.7 per year. However, this number jumped to about 2,500 in 2014, 4,000 in 2015 and 2,500 in 2016. The decline in 2016 may be due in part to injection restrictions implemented by the state officials. Of the earthquakes last year, 21 were greater than magnitude 4.0 and three were greater than magnitude 5.0.

USGS research considers a magnitude 2.7 earthquake to be the level at which ground shaking can be felt. An earthquake of magnitude 4.0 or greater can cause minor or more significant damage.

The forecasted chance of damaging ground shaking in central Oklahoma is similar to that of natural earthquakes in high-hazard areas of California.

“Most of the damage we forecast will be cracking of plaster or unreinforced masonry. However, stronger ground shaking could also occur in some areas, which could cause more significant damage," said Petersen.



USGS maps comparing the potential to experience damage from a natural or human-induced earthquake in Oklahoma in 2016 and 2017.

Protecting Communities

The new report is valuable for making informed decisions to reduce the nation's vulnerability and providing safety information to those who may be at risk from strong shaking. For example, the 2016 forecast has been used by engineers to evaluate earthquake safety of buildings, bridges, pipelines and other important structures. Risk modelers have used data in developing new risk assessments, which can be used to better understand potential impacts on insurance premiums. The U.S. Army Corps of Engineers has used the information to provide guidance on updating their safety assessments of selected facilities.

Continuing collaborations between regulators, industry, and scientists will be important toward reducing hazard, improving future forecasts, and enhancing preparedness.

Central versus Western U.S.

In recent years, the CEUS has experienced a significant increase in induced earthquakes. Therefore, in the 2017 and 2016 forecasts, scientists distinguish between human-induced and natural seismicity only for the CEUS. Scientists also used a historical catalog of seismic events dating back to the 1700s, putting a strong emphasis on earthquakes that occurred during the last 2 years.

Future research, noted Petersen, could take a more detailed look at induced seismicity in the west, including in California at The Geysers, Brawley and small areas of the Los Angeles Basin.

Distinguishing Between Induced and Natural Earthquakes

To determine whether particular clusters of earthquakes were natural or induced, the USGS relied on published literature and discussions with state officials and the scientific and earthquake engineering community. Scientists looked at factors such as whether an earthquake occurred near a wastewater disposal well and whether the well was active during the time the earthquakes occurred. If so, it was classified as an induced event.

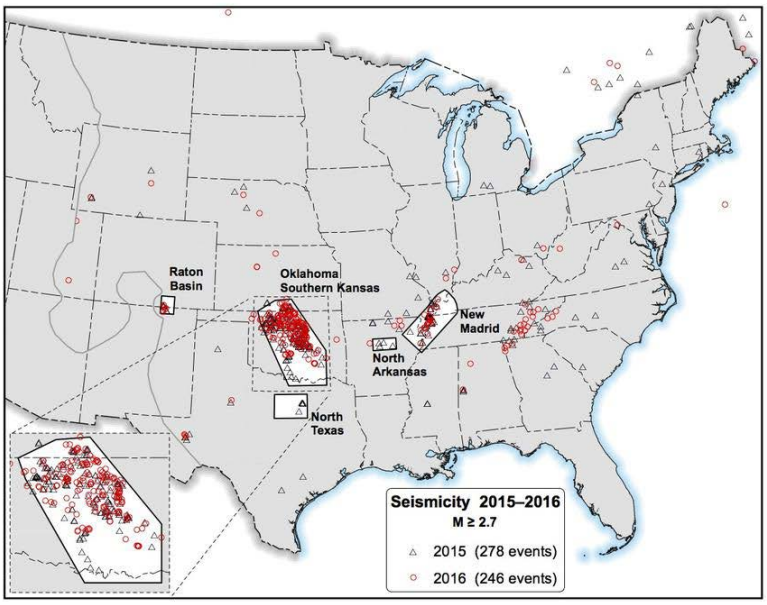
One-Year Outlook

The one-year outlook is chosen because induced earthquake activity can increase or decrease with time and is subject to commercial and policy decisions that could change rapidly. The 2016 and 2017 forecasts employ identical methodologies; the only difference is that the 2017 forecast includes an updated earthquake catalog with 2016 events. This allows for a direct comparison from one year to the next.

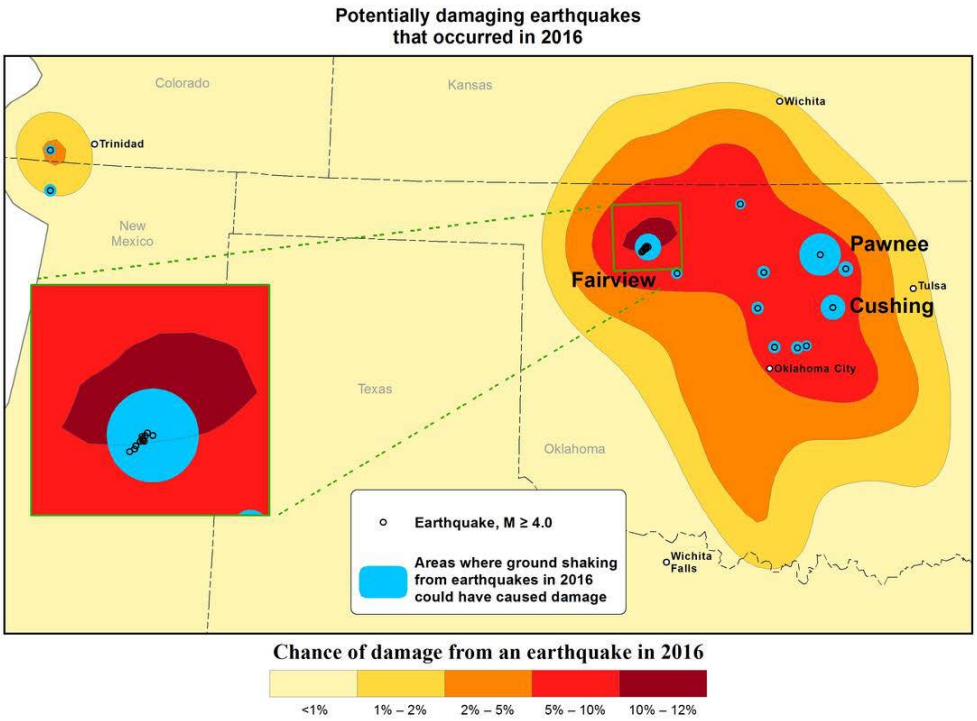
In contrast, the USGS National Seismic Hazard Map assesses natural earthquake hazards and uses a 50-year forecast. That timeframe was chosen because that is the average lifetime of a building, and such information is essential to engineering design and the development of building codes.

USGS Science

The USGS is the only federal agency with responsibility for recording and reporting earthquake activity nationwide and assessing seismic hazard. These maps are part of USGS contributions to the National Earthquake Hazards Reduction Program, which is a congressionally established partnership of four federal agencies with the purpose of reducing risks to life and property in the United States that result from earthquakes.

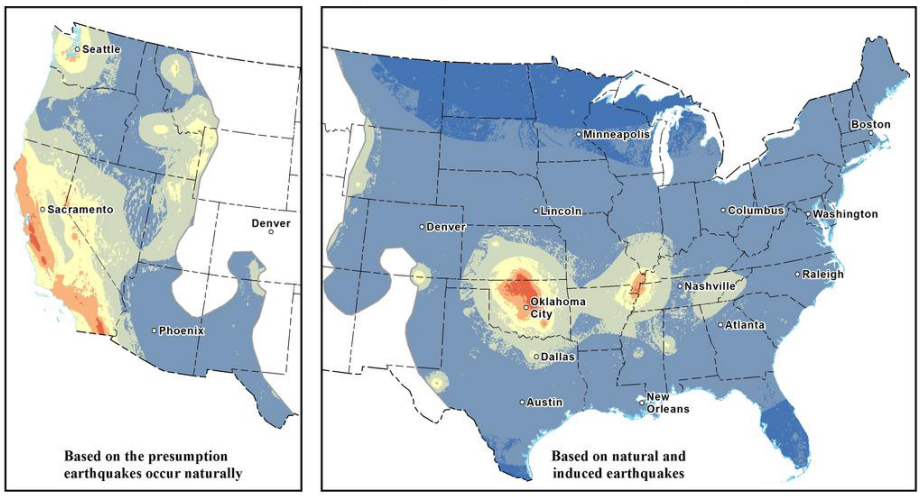


USGS map displaying seismic events in 2015 and 2016 in the central and eastern U.S. There is a high hazard for earthquakes in five areas, which are Oklahoma-Kansas, the Raton Basin, north Texas, north Arkansas, and the New Madrid Seismic Zone.



USGS map showing the location of earthquakes greater than or equal to magnitude 4.0 in Oklahoma and the Raton Basin in 2016.

USGS Forecast for Ground Shaking Intensity from Natural and Induced Earthquakes in 2017



Modified Mercalli Intensity

VIII+	Shaking severe, heavier damage
VII	Shaking very strong, moderate damage
VI	Shaking strong, felt by all, minor damage
V	Shaking moderate, felt indoors by most, outdoors by many
IV	Shaking light, felt indoors by many, outdoors by few
III	Shaking weak, felt indoors by several

USGS map displaying intensity of potential ground shaking from natural and human-induced earthquakes. There is a small chance (one percent) that ground shaking intensity will occur at this level or higher. There is a greater chance (99 percent) that ground shaking will be lower than what is displayed in these maps.

COLORADO INTERSTATE GAS COMPANY, L.L.C.
Response to FERC Data Request
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Resource Report 7

1. Colorado Interstate Gas states in section 7.6 “for all areas, including prime farmland, ditch line only topsoiling is the suggested method.” Clarify if Colorado Interstate Gas would conduct topsoil segregation in areas designated prime farmland (and whether this would include areas designated unique farmland or farmland of statewide or local importance) even if these areas are not in unsaturated wetlands or in agricultural use.

Response:

CIG will conduct ditchline only topsoiling throughout the right-of-way in all areas requiring excavation, to minimize topsoil disturbance. This includes areas designated as prime farmland (including areas designated as unique farmland or farmland of statewide or local importance). CIG will use ditchline only topsoiling even if such areas are not in unsaturated wetlands or agricultural use. This is a variance from the FERC plan that CIG is seeking to implement.

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COLORADO INTERSTATE GAS COMPANY, L.L.C.
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Dated February 21, 2019 in Docket No. CP19-56-000
CIG High Plains Kiowa Lateral Expansion Project

2. Summarize the acres of each soil characteristic impact by facility and county (see example table below).

Response:

Please see the table behind this response for the acres of each soil characteristic impact by the project. Note that all activities will occur within the same county, Weld County, Colorado.

Response prepared by or under the supervision of:

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Acres of Soil Characteristics Affected by the Project[a,b,c]									
Total Acres in County	Important Farmlands[d]	Prime Farmland[e]	Hydric Soils[e]	Compaction Prone[f]	Highly Erodible		Revegetation Concerns[i]	Stony/ Rocky[j]	Shallow to Bedrock[k]
					Water[g]	Wind[h]			
Kiowa Lateral Pipeline									
108.10	43.45	0.00	3.69	0.00	0.00	102.82	60.19	0.00	0.00
High Five Pipeline									
9.17	7.25	0.00	0.00	0.00	0.00	9.17	6.97	0.00	0.00
Prairie Hound Meter Station									
1.77	0.00	0.00	0.00	0.00	0.00	1.77	1.77	0.00	0.00
High Five Meter Station									
2.34	1.47	0.00	0.00	0.00	0.00	2.34	2.34	0.00	0.00

[a] – The area affected includes the permanent pipeline right-of-way, temporary pipeline right-of-way, and additional temporary workspace. The soils data in the table does not include areas of open water.

[b] – The numbers in this table have been rounded for presentation purposes.

[c] – The values in each row do not add up to the total acreage for each county because soils may occur in more than one characteristic class or may not occur in any class listed in the table.

[d] – Important Farmlands are lands that the NRCS, along with other Federal, State, and local governmental organizations have inventoried for production of the Nation's food supply.

[e] – Prime farmland has been defined by the U.S. Department of Agriculture (USDA) as land with the best characteristics for producing food, fiber, and forage crops. The Kiowa Lateral crosses 1.26 acres considered to be prime farmland if irrigated, but the area is not irrigated.

[f] – Includes soils in somewhat poor to very poor drainage classes with surface textures of sandy clay loam and finer.

[g] – Land in capability subclasses 4E through 8E and soils with an average slope greater than or equal to 9 percent.

[h] – Soils with a wind erodibility group (WEG) classification of 1 or 2.

[i] – Soils with a surface texture of sandy loam or coarser that are moderately well to excessively drained, and soils with an average slope greater than or equal to 9 percent.

[j] – This group includes soils with a cobbley, stony boulder, shaly, very gravelly, or extremely gravelly modifier to the textural class of the surface layer, with a surface layer that contains greater than 5 percent by weight stones larger than 3 inches, and/or with a layer in the subsoils that meets one of the preceding criteria

[k] – Soils identified as containing bedrock at a depth of 5 feet or less from the surface, all of which is paralithic and rippable with standard construction equipment.

COLORADO INTERSTATE GAS COMPANY, L.L.C.
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3. With regard to the alternative measures to the FERC Upland Erosion Control, Revegetation, and Maintenance Plan (FERC Plan) described in section 7.6, address the following:

a. Colorado Interstate Gas proposes "topsoil salvage depth is specified as no less than 6 inches and no more than 12 inches, where topsoil is available." The FERC Plan (at section IV.B.3.b) states that a Project sponsor must "make every effort to segregate the entire topsoil layer in soils with less than 12 inches of topsoil". By salvaging "no less than 6 inches" during construction, Colorado Interstate Gas could mix topsoil and subsoil in areas where topsoil is less than 6 inches in thickness. Therefore, either confirm that Colorado Interstate Gas would adhere to the FERC Plan at section IV.B.3.b or provide additional justification on how the proposed alternative measure would provide equal or greater protection to topsoil resources.
b. Colorado Interstate Gas proposes that "if rutting exceeds 12 inches in depth…work would continue and the rutted area would be covered with an adequate volume of new topsoil to replace mixed soils and subsoils, such topsoil would be purchased in the immediate vicinity…this departure from the FERC Plan would not apply to rangelands or pasturelands." The Project workspace includes approximately 5.1 acres of agricultural land.

Clarify if and how this proposed alternative measure would apply to construction in agricultural land.

Response:

a. CIG would adhere to the FERC Plan Section IV.B.3.b. The Project Environmental Inspector will work closely with the Chief Inspector and the Contractor to ensure that the proper depth of topsoil will be removed to minimize mixing with subsoil.
b. Rutting that exceeds 12 inches in active agricultural lands would be mitigated through the placement of weed and contaminant free topsoil to replace any topsoil mixing.

Response prepared by or under the supervision of:

Mike Bonar
Environmental Project Manager
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COLORADO INTERSTATE GAS COMPANY, L.L.C.
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CIG High Plains Kiowa Lateral Expansion Project

Resource Report 8

1. Clarify if the construction acreages in table 8-1 include operation acreages.

Response:

Construction acreages in table 8-1 do include operation acreages.

Response prepared by or under the supervision of:

Mike Bonar
Environmental Project Manager
719-520-4817

COLORADO INTERSTATE GAS COMPANY, L.L.C.
Response to FERC Data Request
Dated February 21, 2019 in Docket No. CP19-56-000
CIG High Plains Kiowa Lateral Expansion Project

Resource Report 9

1. Provide a detailed list of all activities that may occur during nighttime hours and a justification for each activity.

Response:

At this time, CIG does not anticipate any overnight work to occur; drilling activities are planned to stop at the end of the work day. Hydrostatic testing or tie-in activities may carry over into the evening for completion but work is not planned to continue overnight.

Response prepared by or under the supervision of:

Claudia Leal
Project Manager
303-914-4626

COLORADO INTERSTATE GAS COMPANY, L.L.C.
Response to FERC Data Request
Dated February 21, 2019 in Docket No. CP19-56-000
CIG High Plains Kiowa Lateral Expansion Project

2. Clarify if Colorado Interstate Gas would implement any mitigation measures to reduce combustion-related construction emissions and provide mitigation measures to reduce fugitive dust emissions during construction.

Response:

CIG will implement the following mitigation measures during construction in order to reduce combustion-related construction emissions:

- Avoid unnecessary construction activities leading to increased emissions, where possible;
- Follow manufacturer's operating recommendations regarding good combustion practices to ensure that fuel efficiency is maximized, and engines are operated such that emissions are minimized;
- Avoid idling of the construction equipment to the extent possible.

CIG will implement the following fugitive dust control measures on an as needed basis:

- Fugitive dust emissions generated by motorized equipment and miscellaneous vehicle traffic will be controlled by water suppression as necessary;
- Reducing construction vehicle speeds to reduce fugitive dust;
- Fugitive dust emissions from vegetation removal, clearing and grading, cutting and filling, topsoil removal, trenching, backfilling and stockpile storage will be controlled to a great extent by following the construction sequencing and disturbing limited areas at a time.
- CIG will comply with Weld County dust control measures as per the Road Maintenance Agreement.
- The Environmental Inspector will be responsible for notifying and working with the contractor to control construction related dust.

Note that construction activity calculations were estimated assuming all activities were performed with minimal fugitive dust control. A dust control factor of 25% was assumed based on as-needed watering and does not include any control for winter conditions.

Response prepared by or under the supervision of:

Claudia Leal
Project Manager
303-914-4626

COLORADO INTERSTATE GAS COMPANY, L.L.C.
Response to FERC Data Request
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3. Provide a revised table 9-3 which includes fugitive and pipeline degassing emissions from the proposed pipeline and provide emissions of carbon dioxide equivalent for the pipeline and proposed meter stations.

Response:

Below is the revised table 9-3 which provides the project operations emissions summary.

Table 9-3. Project Operations Emissions Summary

Station/Segment	NOx (tpy)	CO (tpy)	VOC (tpy)	PM (tpy)	SO2 (tpy)	HAP (tpy)	CO2e (tpy)
High Five Meter Station	--	--	0.08	--	--	0.01	107.66
Prairie Hound Meter Station	--	--	0.08	--	--	0.01	107.66
Pipeline Fugitive Emissions	--	--	6.62	--	--	0.48	20.56
Pipeline Degassing Emissions	--	--	12.40	--	--	1.76	17,638.4
Totals	**--**	**--**	**19.17**	**--**	**--**	**2.25**	**17,874.3**
PSD Major Source Threshold	**250**	**250**	**250**	**250**	**250**	**25**	**--**
Major Source/Project?	**No**	**No**	**No**	**No**	**No**	**No**	**--**

Response prepared by or under the supervision of:

Claudia Leal
Project Manager
303-914-4626

COLORADO INTERSTATE GAS COMPANY, L.L.C.
Response to FERC Data Request
Dated February 21, 2019 in Docket No. CP19-56-000
CIG High Plains Kiowa Lateral Expansion Project

4. Clarify if there are additional noise sensitive areas (NSAs) within 0.5 mile of each proposed HDD site and if so, provide the distance and direction of each NSA.

Response:

Residence 1, Residence 5, and Residence 10 are located within 0.5 miles of expected HDD locations. There were no residences located within 0.5 miles of the metering site locations. A revised Table 9-6 is below.

Revised Table 9-6
Identified Critical Receptors

Site	UTM Coordinates (Zone 13T)		Distance (meters) and Direction from Closest HDD Site
	North	East	
Residence 1	4443648.87 m N	541706.6 m E	390 S
Residence 2	4442511.32 m N	542822.88 m E	1,573 SSW
Residence 3	4443893.48 m N	540290.46 m E	1,330 W
Residence 4	4444253.66 m N	535711.57 m E	1,280 SSW
Residence 5	4445800.72 m N	534777.87 m E	1,120 WNW
Residence 6	4446315.45 m N	535172.58 m E	812 NW
Residence 7	4445770.31 m N	534074.76 m E	916 N
Residence 8	4444038.77 m N	532952.86 m E	1,031 SW
Residence 9	4443872.61 m N	533296.37 m E	982 SSW
Residence 10	4443213.64 m N	541682.98 m E	820 S

Response prepared by or under the supervision of:

Claudia Leal
Project Manager
303-914-4626

COLORADO INTERSTATE GAS COMPANY, L.L.C.
Response to FERC Data Request
Dated February 21, 2019 in Docket No. CP19-56-000
CIG High Plains Kiowa Lateral Expansion Project

7. Provide an acoustical analysis for the proposed meter stations, identifying the noise impacts for maximum flow at NSAs within 0.5 mile and identify any mitigation to ensure that noise impacts from the meter stations do not exceed 55 A-weighted day-night averaged decibels at NSAs.

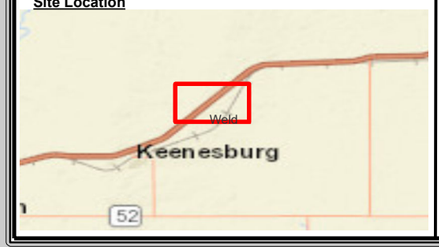
Response:

There are no residences within 0.5 miles of the proposed metering stations; therefore, there will be no significant noise or vibration impacts to critical receptors from Project operations. Please see attachment 6 behind this response.

Response prepared by or under the supervision of:

Claudia Leal
Project Manager
303-914-4626

Site Location



Legend

- Kiowa Lateral (Line No. 266A)
- Prairie Hound Meter Station .5 Mile Buffer
- Prairie Hound Receipt Meter Station

GISMS - 4612

Date: 3/8/2019

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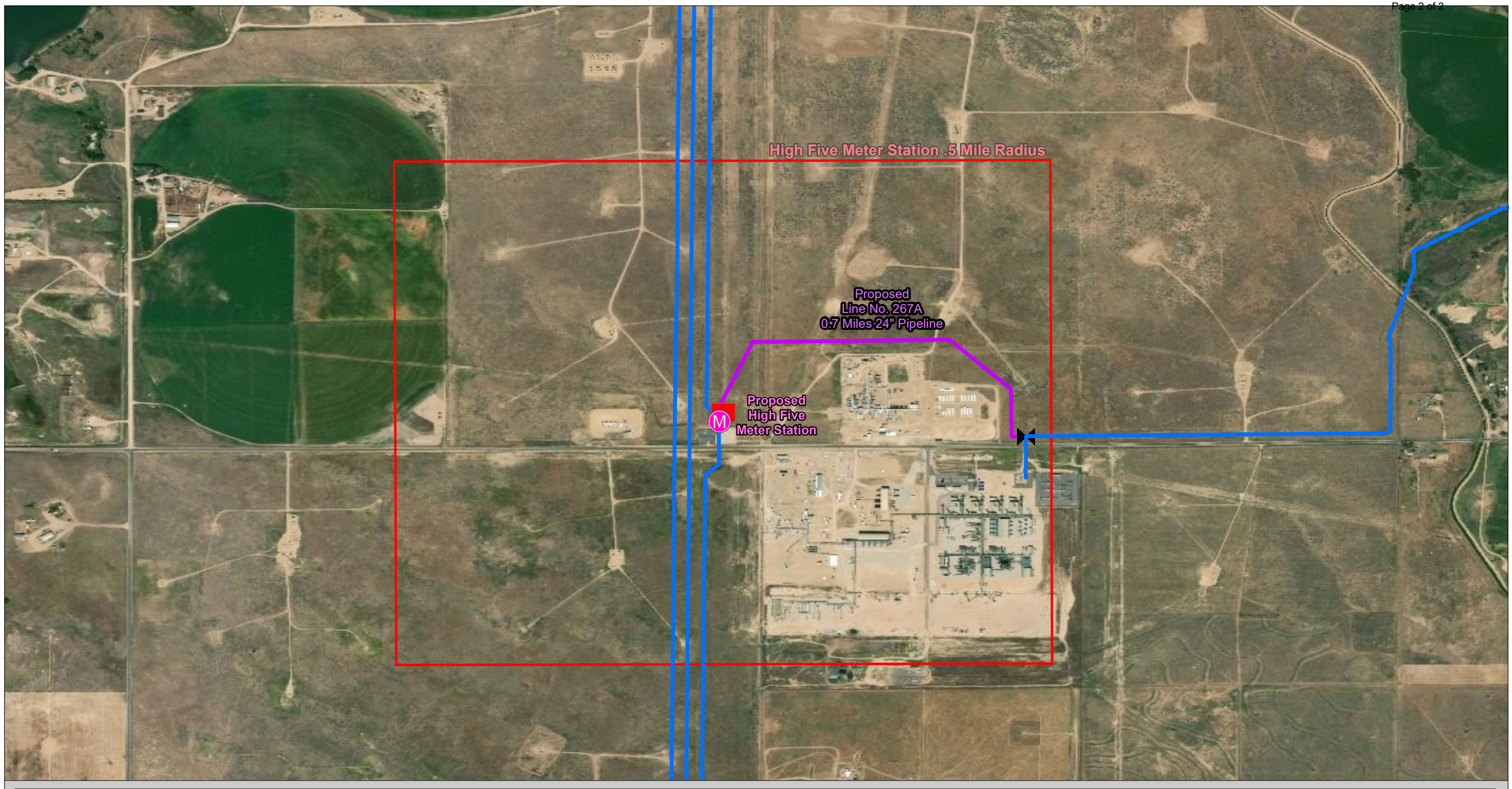
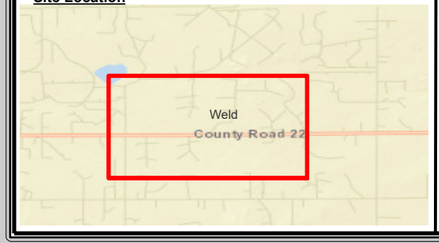
Expansion Project
Weld County, Colorado



Site Location



Legend

- Colorado Interstate Gas Company, L.L.C.
- High Five Lateral (Line No. 267A)
- High Five Meter Station .5 Mille Buffer
- High Five Meter Station Boundary
- M High Five Meter Station
- High Five Lateral Tie-lin

NOTICE
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Expansion Project
Weld County, Colorado

Certificate of Service

I hereby certify that I have this day caused a copy of the foregoing documents to be served upon each person designated on the official service list compiled by the Commission's Secretary in this proceeding in accordance with the requirements of Section 385.2010 of the Federal Energy Regulatory Commission's Rules of Practice and Procedure.

Dated at Colorado Springs, Colorado as of this 8th day of March 2019.

/s/
Francisco Tarin

Two North Nevada Avenue
Colorado Springs, Colorado 80903
(719) 667-7517