State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

Ken McQueen
Cabinet Secretary

Matthias Sayer
Deputy Cabinet Secretary

David R. Catanach, Division Director
Oil Conservation Division

02 June 2017

Joseph Wiley, P.G.
Project Manager Pipeline Remediation
Kinder Morgan, Inc
1001 Louisiana Street, Room 956I
Houston, TX 77002

Re: 2016 Annual Ground Water Monitoring Report (AGWMR)

Dear Mr. Wiley:

I've reviewed the results and recommendations in your 2016 AGWMR for the 12 remediation projects discussed below. OCD comments follow.

1) Duration of Projects. These projects have been going on for a long time. They began in the last century.

Project	Name	Date of First Ground Water Sample
3RP-201	Johnston Federal #4	08/08/1995
3RP-207	Knight #1	10/16/1995
3RP-235	Sandoval GC A#1A	05/30/1995
3RP-196	Jams F Bell #1E	10/17/1998
3RP-204	K-27 Line Drip	11/04/1996
3RP-179	GCU A#142E	10/17/1997
3RP-407	GCU #124E	06/25/1998
3RP-239	State Gas Com N#1	10/17/1995
3RP-202	Johnston Federal #6A	08/10/1995
3RP-155	Canada Mesa #2	11/04/1996
3RP-213	Lateral O-21 Line Drip	11/06/1995
3RP-068	Fogelson #4-1	11/06/1995

2) Delineation of Ground Water Contamination. Best practices call for the extent of contamination to be determined soon after its discovery. Even though these projects have been underway for some time, some of the limits of free product (NAPL) and benzene (C_6H_6) contamination have yet to be found, as follows. Recall the cleanup limit for C_6H_6 is 10 ppb and for NAPL is non-detect. Results shown are for 2016.

Project	Name	Not Delineated for
3RP-201	Johnston Federal #4	Looks good
3RP-207	Knight #1	West of Monitoring Well #11 (MW11) (1,100 ppb C_6H_6)
3RP-235	Sandoval GC A#1A	N, W, and S of MW2 (0.43 ft NAPL)
		W, E, and S of MW5 (4,700 ppb C_6H_6)
		N, S, and E of MW4 (may be switched with MW2?)
3RP-196	James F Bell #1E	N and W of MW11 (3,200 ppb C_6H_6)
		N and E of MW10 (0.24 ft NAPL)
		E of MW6 and MW7 (1,200 ppb C_6H_6)
3RP-204	K-27 Line Drip	N of MW2R (0.35ft NAPL)
3RP-179	GCU A#142E	N, E, and W of MW2 (0.30 ft NAPL)
		S and W of MW7
3RP-407	GCU #124E	Looks good (after 12 years, NAPL appears in MW1)
3RP-239	State Gas Com N#1	Looks good (23,000 ppb C_6H_6)
3RP-202	Johnston Fed #6A	Looks good (0.09 ft NAPL)
3RP-155	Canada Mesa #2	N, S, and W of MW1 (0.03ft NAPL)
3RP-213	Lateral O-21 Drip	Poor all directions, only 3 MWs, 2 are dry, 2 w/ historic NAPL
3RP-068	Fogelson #4-1	Poor all directions, only 3 MWs

3) Recovery of NAPL. Unless NAPL is aggressively recovered, these ground water projects will go on for years. Use of absorbent socks placed or of hand baling in monitoring wells is passive and is suited for use only after aggressive mechanical systems have removed the bulk of contamination. The online documents show bailing of NAPL up to 2011. The records seem incomplete after that. Recovery of contamination is summarized below.

Project	Name	Wells NAPL 2016		Recovery 2016
3RP-201	Johnston Federal #4	4	max 0.76 ft	7.1 gal bailed
				22 gal+85 lb vapor MDPE in 16 hours
	[bailing twice yearly 1996-2011 in 2 MW recovered 22.7 gal]			
3RP-196	James F Bell #1E	3	max 0.24 ft	1.81 gal bailed
				20 gal+137 lb vapor MDPE in 16 hours
	[NAPL discovered in new MWs 8 & 10]			
	[bailing between 1996-2011 in 2 MW recovered 891 gal; 1.7 gal/bailing event]			
3RP-202	Johnston Fed #6A	1	max 0.09 ft	5 gal MDPE in 7 hours (mostly vapor)
	[bailing between 2009-2011 in 3 MW recovered 18.8 gal]			
3RP-239	State Gas Com N#1	3	max 0.99 ft	1.68 gal bailed
	[bailing between 1996-2011 in 7 MW recovered 274 gal]			

3RP-204	K-27 Line Drip	1	max 0.35 ft	None
	[bailing between 2001-2011 in 3 MW recovered 12.3 gal]			
3RP-207	Knight #1	1	max 0.62 ft	None
	[bailing between 2000-2011 in 3 MW recovered 9.9 gal]			
3RP-235	Sandoval GC A#1A	1	max 0.43 ft	None
	[ground water sampling since 1995, NAPL first appeared in 2016]			
3RP-179	GCU A#142E	1	max 0.30 ft	None
	[bailing between 2010-2011 in 3 MW recovered 1.0 gal]			

With less than a day of aggressive mechanical recovery (MDPE), you can recover more NAPL than by decades of hand bailing. The three MDPE projects demonstrated the success of NAPL and C_6H_6 recovery, even when NAPL thickness was marginal. Likewise, the results of hand bailing demonstrate its inefficiency and futility. It's clear that what's been done so far isn't working and we're chasing the contamination plumes downgradient with progressions of monitoring wells. We're pleased you've shown insights into using advanced recovery methods.

By 31 July 2017, please submit remediation plans to a) fully delineate both the NAPL and benzene plumes and b) to recover NAPL effectively by use of more active remediation techniques. Passive remediation techniques shown to be ineffective, such as bailing and sorbent socks, will not be approved.

Randolph Bayliss, P.E.
Hydrologist, District III

Cc: Jim Griswold, Charlie Perrin, Brandon Powell, Cory Smith, Vanessa Fields