



From: Kunkel, Tara S [<mailto:tara.kunkel@CBIFederalServices.com>]
Sent: Monday, January 30, 2017 2:26 PM
To: Agnew, Diane, NMENV <Diane.Agnew@state.nm.us>
Cc: adria.bodour.1@us.af.mil; Matt Ellender (matthew.b.ellender@usace.army.mil)
(matthew.b.ellender@usace.army.mil) <matthew.b.ellender@usace.army.mil>; Simpler, Trent SPA
(Trent.Simpler@usace.army.mil) <Trent.Simpler@usace.army.mil>; Romalia, Kathleen
<Kathleen.Romalia@CBIFederalServices.com>; Burke, Bruce <bruce.burke@CBIFederalServices.com>;
McBride, Randy <Randy.McBride@CBIFederalServices.com>; LaChance, Caitlin Q
<caitlin.lachance@CBIFederalServices.com>; CLARK, SCOTT C GS-12 USAF AFMC 377 MSG/CEIR
(scott.clark@us.af.mil) <scott.clark@us.af.mil>; suzanne.devergie@us.af.mil
Subject: Requesting NMED approval, KAFB-106MW2 relocate due to original borehole abandonment
Importance: High

Hi Diane,

Please find attached a map that shows the proposed relocation of KAFB-106MW2 due to having to abandon the original borehole because of deviation. The borehole will be located 10 feet north-west of the original location. All the deviation observed at the original borehole is to the east south-east, so this location should not interfere with the original location.

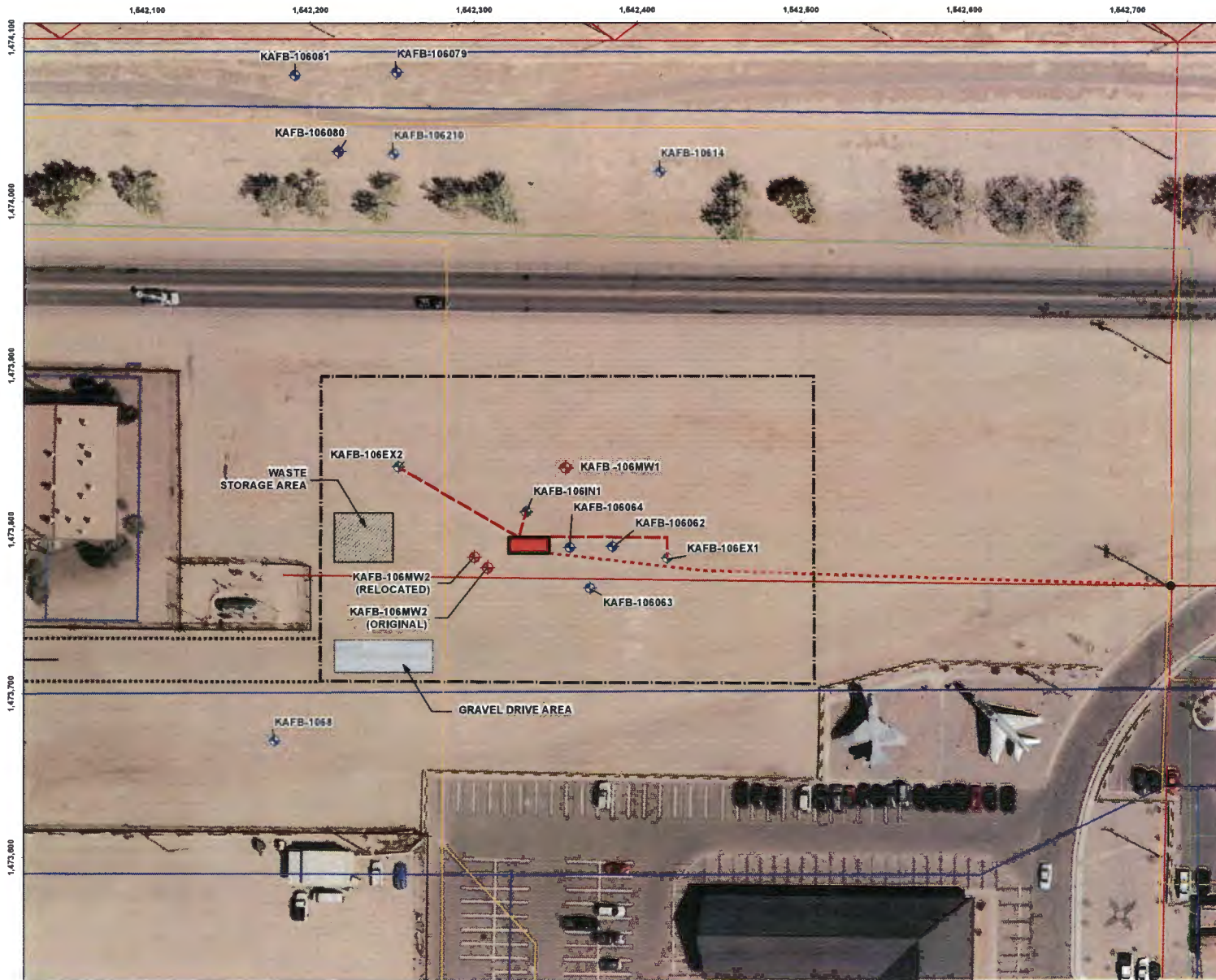
Please let us know if you any questions about the new location. And if we are approved to proceed as suggested.

Respectfully,
Tara

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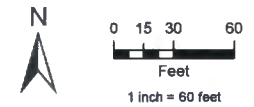
Legend

- ◆ Monitoring Well
- ◆ Pilot Test Injection/Extraction Well
- ◆ Pilot Test Monitoring Well
- - - Wall Line
- Natural Gas Line
- Wastewater Line
- Water Line
- Electrical Cable Line
- ▭ Construction Fence Area
- ⋯ Truck Exit Route
- - - Pilot Test Trench Location for Water Pipe and Subsurface Electrical
- ▭ Pilot Test System Location
- Pilot Test Existing Electrical Tie-in
- ⋯ Proposed Electrical Service Line



SITE LOCATION

Revision Date: 01/30/17



Projection : NAD83 State Plane New Mexico Central FIPS 3002 Feet

FIGURE 6

SITE LOCATION MAP

-----Original Message-----

From: Simpler, Trent W CIV USARMY CESP (US) [mailto:Trent.Simpler@usace.army.mil]

Sent: Friday, January 27, 2017 12:51 PM

To: McQuillan, Dennis, NMENV <dennis.mcquillan@state.nm.us>; Agnew, Diane, NMENV <Diane.Agnew@state.nm.us>

Cc: Adria Bodour <adria.bodour.1@us.af.mil>; Ellender, Matthew B CIV USARMY CENWO (US) <Matthew.B.Ellender@usace.army.mil>; Phaneuf, Mark J CIV USARMY CESP (US)

<Mark.J.Phaneuf@usace.army.mil>; CLARK, SCOTT C GS-13 USAF AFCEC/CZO <scott.clark@us.af.mil>; LYNNES, KATHRYN D HQE USAF AFMC 377 MSG/SAF/IEE <kathryn.lynnes@us.af.mil>; ZENCEY, JESSICA A GS-07 USAF AFGSC 377 MSG/CE <jessica.zencey.2@us.af.mil>; Julie McNeill

<jmcneill@portageinc.com>; Burke, Bruce <bruce.burke@CBIFederalServices.com>; Kunkel, Tara S <tara.kunkel@CBIFederalServices.com>; Romalia, Kathleen

<Kathleen.Romalia@CBIFederalServices.com>

Subject: FW: Evaluation of borehole for KAFB-106MW2

Dennis and Diane,

Please see below, we would like permission to P&A the MW2 and we will propose a new location in the immediate future based on modeling done by CB&I.

More formal information and requests will follow.

Thanks

Trent

Trent Simpler, P.E.

Project Manager BFF

Chair Wind Energy CX

Red Team LGL

US Army Corps of Engineers

Trent.Simpler@usace.army.mil

505-342-4823 (office)

505-301-6996 (mobile)

-----Original Message-----

From: Kunkel, Tara S [mailto:tara.kunkel@CBIFederalServices.com]

Sent: Friday, January 27, 2017 12:39 PM

To: Simpler, Trent W CIV USARMY CESP (US) <Trent.Simpler@usace.army.mil>; Phaneuf, Mark J CIV USARMY CESP (US) <Mark.J.Phaneuf@usace.army.mil>; Ellender, Matthew B CIV USARMY CENWO (US) <Matthew.B.Ellender@usace.army.mil>; adria.bodour.1@us.af.mil

Cc: Romalia, Kathleen <Kathleen.Romalia@CBIFederalServices.com>; Richards, Trenton <Trenton.Richards@CBIFederalServices.com>; Burke, Bruce <bruce.burke@CBIFederalServices.com>;

McBride, Randy <Randy.McBride@CBIFederalServices.com>; Koster van Groos, Paul

<pkostervangroos@cbifederalservices.com>; LaChance, Caitlin Q

<caitlin.lachance@CBIFederalServices.com>

Subject: [EXTERNAL] Evaluation of borehole for KAFB-106MW2

Hello All,

Please see below a summary of the activities to determine borehole deviation at KAFB-106MW2.

On Tuesday 1/24/17 TD was reached at KAFB-106MW2. The first borehole deviation test was run using a Reflex EZ-Trac which is a digital instrument that provides a measurement in degrees that indicates how far the borehole is deviated from 90 degrees. An initial measurement of 86.8 degrees was recorded. That reading indicated the deviation was too great, and additional tests were initiated.

On Wednesday 1/25/17, the Reflex EZ-Trac was rerun and a measurement of 87.2 degrees was recorded. A surface static test of the instrument indicated 89.2 degrees. Because inconsistent readings were measured, we directed the driller to provide an alternative instrument, Eastman Whipstock Eastco mechanical drift detector, to evaluate deviation.

On Thursday 1/26/17, the Reflex EZ-Trac was rerun twice using different centralizers, both measurements were 88.9 degrees. The Eastco mechanical drift detector device was then used to measure deviation multiple times both at total depth and at shallower depths. No consistent measurements were recorded, and deviation results varied from 2 - 3 degrees from 90. We directed the driller to schedule a surveyor to test the borehole using a self-seeking gyroscopic borehole deviation tool.

On Friday 1/27/17, the gyroscopic borehole tool was run (see attached results), the bottom of the borehole was verified as being deviated 26.35 feet on an azimuth of 113.5 degrees from north. Placing the bottom of the borehole east south-east of the top. The deviation results indicate that at a depth of 225 feet bgs, the casing began to deflect and subsequent sections of casing followed the new direction. Results of these tests were discussed with USACE on 1/27/17 and an action plan was developed.

Recommended path forward:

The deviation measured at KAFB-106MW2 is too large for successful well installation. The drive casing should be removed and the borehole grouted to the surface for abandonment per the NM OSE requirements. All removed casing will be examined and documented for damage as a result of the deflection. A new borehole location for KAFB-106MW2 will be determined and approved by USACE, AFCEC, and the NMED. Any leading indicators/lessons learned will be provided by Cascade drilling and applied to future drilling activities to mitigate the risk, if possible, of borehole deflection.

Please let us know if there are any additional questions,

Tara

Tara S. Kunkel

Geologist

Federal Services

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CB&I

2440 Louisiana Blvd. NE Suite 300

Albuquerque, NM 87110, USA

Customer-----: **Cascade**
 Property -----: **Kirtland AFB**
 Hole ID-----: **106-NW2**
 Date -----: **1/27/2017**
 Backsite -----: **322**
 Mag Dec -----: **8.6**
 Svy Ref Point ----: **330.6**
 Projected Depth --: **N/A**



IDS Technician
Jason Farnsworth
775-385-4006

Survey Type -----: **SRG**
 Latitude -----: **N/A**
 Traverse -----: **N/A**
 Water Contact-----: **N/A**

Comments
 Thank You!

MEAS DEPTH (FEET) =====	TRUE VERTICAL DEPTH (FEET) =====	TRUE VERTICAL X-SECTION (FEET) =====	INCL (HORZ) (DEG) =====	DIRECTION (AZIMUTH) =====	RECTANGULAR COORDINATES		DOGLEG 100/FT (DEG) =====	CLOSURE DISTANCE (FEET) =====	CLOSURE DIR (DEG) =====	TEMP (F) (DEG) =====
					N+S- (FEET) =====	E+W- (FEET) =====				
0	0.00	0.00	-89.35	114.70	0.00	0.00	0.00	0.00	0.00	44.8
25	25.00	0.26	-89.45	101.60	-0.08	0.25	0.68	0.26	108.70	45.7
50	50.00	0.56	-89.11	83.30	-0.08	0.56	1.63	0.56	98.67	45.7
75	74.99	0.97	-89.00	97.60	-0.09	0.97	1.04	0.97	95.39	46.6
100	99.99	1.47	-88.68	89.90	-0.12	1.47	1.42	1.47	94.64	46.6
125	124.98	2.15	-88.22	92.30	-0.13	2.15	1.86	2.15	93.59	47.5
150	149.97	2.94	-88.18	92.50	-0.17	2.93	0.16	2.94	93.27	46.6
175	174.95	3.76	-88.04	94.20	-0.22	3.75	0.60	3.76	93.29	47.5
200	199.94	4.61	-88.04	97.20	-0.30	4.60	0.41	4.61	93.74	48.3
225	224.92	5.62	-87.32	102.80	-0.48	5.60	3.02	5.62	94.94	50.1
250	249.89	6.84	-86.98	109.20	-0.83	6.79	1.86	6.84	96.97	50.1
275	274.85	8.15	-86.94	107.00	-1.24	8.05	0.49	8.15	98.77	50.1
300	299.81	9.54	-86.59	108.70	-1.68	9.39	1.45	9.54	100.11	51.9
325	324.76	11.10	-86.19	109.00	-2.18	10.88	1.60	11.10	101.35	51.0
350	349.70	12.79	-85.97	110.10	-2.76	12.49	0.93	12.79	102.44	51.9
375	374.64	14.58	-85.76	111.20	-3.39	14.18	0.90	14.58	103.46	51.0
400	399.57	16.45	-85.57	113.10	-4.11	15.93	0.95	16.45	104.45	52.7
425	424.49	18.38	-85.48	113.40	-4.88	17.72	0.37	18.38	105.38	49.2
450	449.41	20.33	-85.47	116.40	-5.71	19.51	0.95	20.33	106.30	52.7
475	474.33	22.30	-85.36	115.30	-6.58	21.31	0.56	22.30	107.15	54.5
500	499.25	24.32	-85.28	114.60	-7.44	23.16	0.39	24.32	107.80	56.2
525	524.17	26.35	-85.35	113.50	-8.27	25.02	0.46	26.35	108.29	57.1