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COGCC  
MOUNTAIN ENVIRONMENTAL CONSULTING  
1001 10th AVENUE  
GREELEY, COLORADO 80637  
970-336-1644 Fax 970-336-9544

Mr. Randall Ferguson  
Colorado Oil and Gas Conservation Commission  
1120 Lincoln Street, Suite 801  
Denver, Co. 80203

April 8, 2007

RE: Subsurface Investigation Smits Federal 6-20A, SENW 20 T2N R66W

Mr. Ferguson

Per request from the COGCC, MEC Inc performed a subsurface investigation per the proposed scope of work dated February 6, 2007. MEC Inc subcontracted the probe services to DrillPro Services Inc. Soil and groundwater samples were submitted to Weld Laboratories in Greeley for analysis.

The probe equipment allows for the collection of continuous cores in four foot intervals. MEC Inc inspected and described the cores in four foot intervals. Field screening for volatile compounds was performed using a photoionization detector (PID). A minimum of one PID screening sample was collected for each four foot core interval. The subsurface soils encountered in the probes was primarily medium to coarse grain sands with some gravel. Groundwater was encountered at approximately 16-17 feet BGL. Detailed geologic probe logs are included in the attachments. The map coordinates for each probe location is included in the probe logs and the attached data table.

No significant PID readings were encountered during the field screening.

MEC Inc installed six probes on March 13, 2007. Five probes were installed to an approximate depth of 24 feet below grade level (BGL) and one probe (PB7) was advanced to twenty feet BGL.

Probe location (PB7) was selected to evaluate the area south of the prior PB4 installed in November 2006. PB7 was located approximately 30 feet south of PB4. PB4 had encountered elevated TPH418.1 concentrations at 4' BGL XXX and at 16' XXX. Probe PB7 encountered primarily fine to medium sand with stringers of gravel and coarser sand below 16 feet. PB7 was advanced to a depth of 20'. Wet/damp soils were encountered at 16-18 feet BGL. Temporary 1" slotted pipe was installed but no free water was subsequently recovered. Field PID screening did not detect elevated volatile concentrations in the soils. Two soil samples were collected for lab analysis. Samples PB7-S1 at 4-5' BGL had a TPH 418.1 concentration of 2020 ppm and PB7-S2 at 17' BGL had a TPH418.1 of 2200. A groundwater sample was not collect from the temporary well.

Probe location (PB8) was selected to evaluate the area immediately east of PB2, installed in November 2006. as determined by GPS measurements reported to the COGCC. COGCC GPS equipment was used to select the PB8 location. Based on the inability to acquire groundwater from PB7 it was decided to advance Probe PB8 to a minimum of 24' BGL to verify that free water is present. Wet/damp soils were encountered at 16-18 feet BGL. Visible free water was observed at approximately 22 feet BGL. Temporary 1" slotted pipe was installed but no free water was subsequently recovered. Field PID screening did not detect elevated volatile concentrations in the soils above 22 feet. Visible impacted dark gray to black soils was encountered at 21.5 feet BGL. Two soil samples were collected for lab analysis. Samples PB8-S1 at 22' BGL had a TPH 418.1 concentration

of 2020 ppm and PB8-S2 at 4-5' BGL had a TPH418.1 of <5. BTEX compounds were not detected in the temporary groundwater well.

Probe location (PB9) was selected as an offset to PB2 to evaluate the deeper soil horizons not encountered in PB2. Probe PB9 was advanced to a depth of 24' BGL. Wet/damp soils were encountered at 16-18 feet BGL. Visible free water was observed at approximately 22 feet BGL. Temporary 1" slotted pipe was installed but no free water was subsequently recovered. Field PID screening did not detect elevated volatile concentrations in the soils above 22 feet. Visible impacted dark gray to black soils was encountered at 22 feet BGL. Two soil samples were collected for lab analysis. Samples PB9-S1 at 16' BGL had a TPH 418.1 concentration of <5 ppm and PB9-S2 at 24' BGL had a TPH418.1 of 36.1 ppm. BTEX compounds were not detected in the temporary groundwater well.

Probe location (PB10) was selected based on interpretation of the historical aerial photograph as to the location of the former tank battery that was located in this area. PB10 was located in the estimated vicinity of the former oil storage tank location. Probe PB9 was advanced to a depth of 24' BGL. Wet/damp soils were encountered at 17-18 feet BGL. Visible free water was observed at approximately 22 feet BGL. Temporary 1" slotted pipe was installed but no free water was subsequently recovered. Field PID screening did not detect elevated volatile concentrations in the soils above 22 feet. Visible impacted dark gray to black soils was encountered at 22 feet BGL. Two soil samples were collected for lab analysis. Samples PB10-S1 at 23' BGL had a TPH 418.1 concentration of 20.2 ppm. BTEX compounds were not detected in the temporary groundwater well.

Probe location (PB11) was selected based on interpretation of the historical aerial photograph as to the location of the former tank battery that was located in this area. Probe PB11 was advanced to a depth of 24' BGL. Wet/damp soils were encountered at 16-18 feet BGL. Visible free water was observed at approximately 22 feet BGL. Temporary 1" slotted pipe was installed but no free water was subsequently recovered. Field PID screening did not detect elevated volatile concentrations in the soils above 22 feet. Visible impacted dark gray to black soils was encountered at 22 feet BGL. Two soil samples were collected for lab analysis. Samples PB11-S1 at 18' BGL had a TPH 418.1 concentration of 44.4 and PB11-S2 at 12' BGL had a TPH418.1 of 28.3. BTEX compounds were not detected in the temporary groundwater well.

Probe location (PB12) was selected as an offset to PB4, to confirm PB4 results and to evaluate the deeper soil horizons not encountered in PB4. Probe PB12 was advanced to a depth of 24' BGL. Wet/damp soils were encountered at 16-18 feet BGL. Visible free water was observed at approximately 22 feet BGL. Temporary 1" slotted pipe was installed but no free water was subsequently recovered. Field PID screening did not detect elevated volatile concentrations in the soils above 22 feet. Visible impacted dark gray to black soils was encountered at 22 feet BGL. Two soil samples were collected for lab analysis. Samples PB12-S1 at 3-4' BGL had a TPH 418.1 concentration of 1320 ppm; PB12-S2 at 18' BGL had a TPH 418.1 concentration of 1540 ppm; and PB12-S3 at 22' BGL had a TPH418.1 of 1440 ppm. BTEX compounds were not detected in the temporary groundwater well.

## SUMMARY

A total of ten soil samples for TPH 418.1 laboratory analysis and five groundwater samples for BTEX were collected.

Elevated TPH 418.1 concentrations, greater than 1000 ppm, were detected in PB7, PB8, and PB12. The elevated residual concentrations were associated with the soils encountered at the water table level in each of the three probes and at 3-4 feet BGL in PB7 and PB12.

Based on the recent subsurface investigation results and the prior November 2007 subsurface investigation the results indicated it appears that visible residual impact to the subsurface soils is present at the soil/ground water interface in the vicinity of PB7, PB8, and PB12. Though the laboratory analysis for the deep soil sample from PB9 had a TPH 418.1 concentration of 36.1, it was visibly impacted comparable to PB7 and PB8. In addition shallow soil residual impact, though not visibly impacted, is present in the vicinity of PB4, PB7 and PB12.

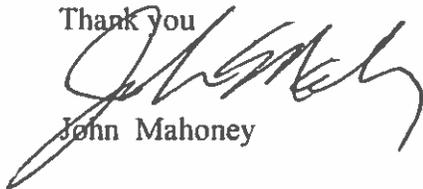
Water samples were collected from PB8, PB9, PB10, PB11, and PB12. The water samples were collected from temporary 1" slotted pipe. The water samples were delivered to Weld Laboratories for BTEX analysis. The BTEX analysis results indicated that no BTEX compounds were detected. The temporary wells were set and left in-place, if it is decided that additional sampling is necessary.

It is recommended if additional sampling is needed that it be performed prior to April 15, 2007, since according to the property owner farming activity may commence soon.

Borehole logs and a site plan schematic are attached.

If you have any questions, please contact me at 970-381-5951.

Thank you



John Mahoney

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Smits Federal 6-20A LABORATORY RESULTS

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Sample ID	Date	Depth	TRPH 418.1 mg Kg (PPM)	Field PID Reading	Description	
<b>SOIL Results</b>						
PB7 - S1	3 13 2007	4-5'	2020	ND		Probe location south of PB4, Water not recovered
PB7 - S2	3 13 2007	17-18'	2200	1	slight discoloration	
PB8 - S1	3/13/2007	22'	2020	122	visible gray-black stain	Probe location PB8 selected based on reported original coordinates, visible impact encountered
PB8 - S2	3 13 2007	4-5'	< 5	1.5		
PB9 - S1	3/13/2007	16'	< 5	9.8		Probe location PB9 selected as offset of PB2 to evaluate deeper depth based on PB8 results
PB9 - S2	3/13/2007	24'	36.1	10.4	visible stain	
PB10 - S1	3/13/2007	23'	20.2	4.3		Probe location PB10 selected based on estimated location of old tank battery tank's from historical aerial photograph.
PB11 - S1	3/13/2007	18'	44.4	2.7		Probe location PB11 selected as estimated SW corner of tank battery area based on historical aerial photograph interpretation.
PB11 - S2	3/13/2007	12'	28.3	1		
PB12 - S1	3/13/2007	3-4'	1320	ND		Probe location PB12 selected as deep offset of PB4.
PB12 - S2	3/13/2007	18'	1540	3.1	slight odor	
PB12 - S2	3/13/2007	22'	1440	8.5	visible stain	
* Note temporary 1" slotted pipe set at each of the new probes PB7-12						
<b>WATER Results</b>			<b>Benzene</b>	<b>Toluene</b>	<b>Ethylbenzene</b>	<b>Xylene</b>
PB8	3/13/2007		ND	ND	ND	ND
PB9	3/13/2007		ND	ND	ND	ND
PB10	3/13/2007		ND	ND	ND	ND
PB11	3/13/2007		ND	ND	ND	ND
PB12	3 13 2007		ND	ND	ND	ND

Identify any sample results which exceed COGCC Standards by presenting those results in bold typeface.

ND = Less than the stated laboratory detection limit.

NA = Not Analyzed,

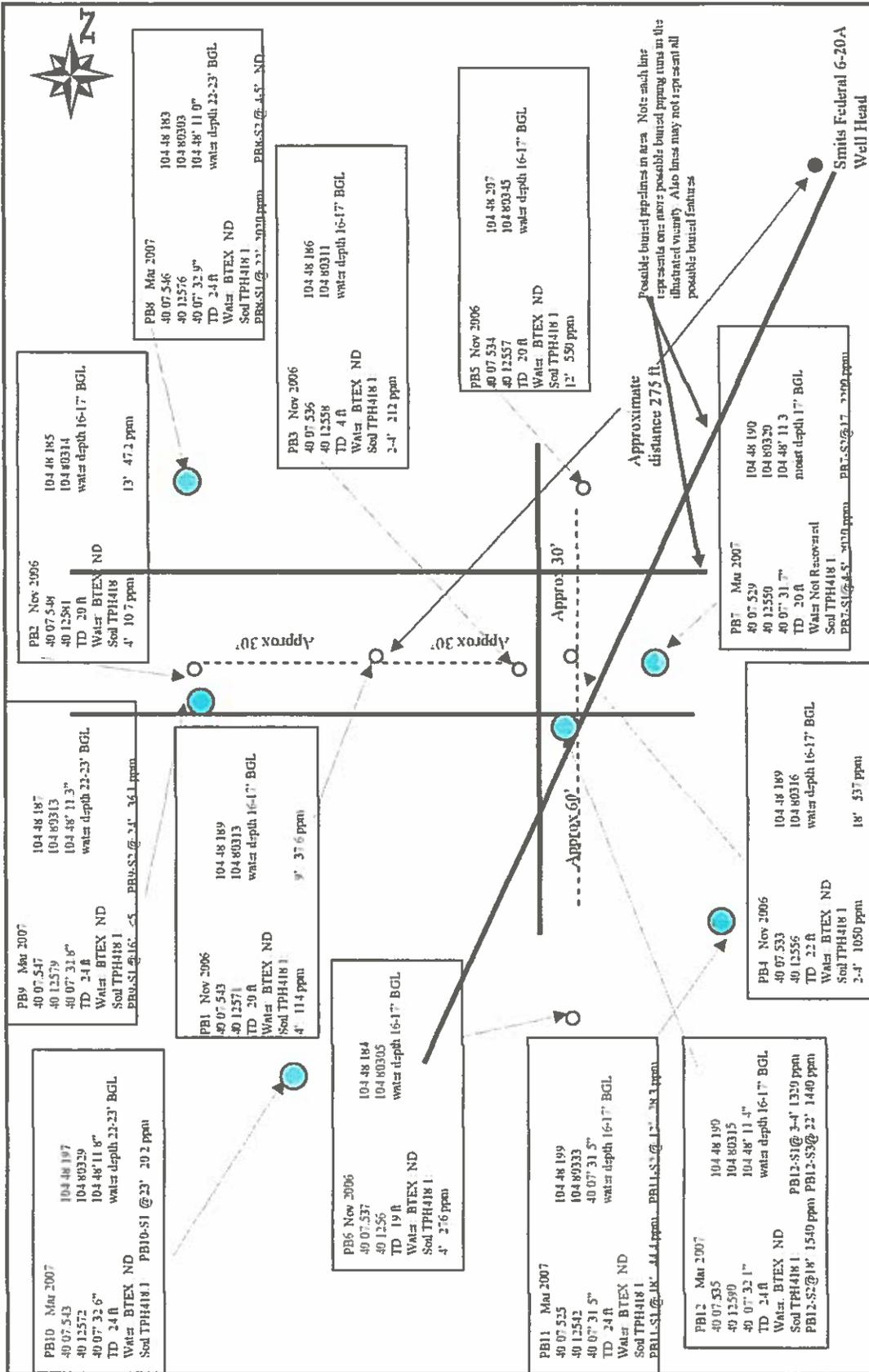
Analysis Units:

BTEX: milligrams per kilogram (ug/Kg)

TPH: micrograms per kilogram (mg/Kg)

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March 2007 Probe Locations and Nov 2006 Site Investigation Results Schematic

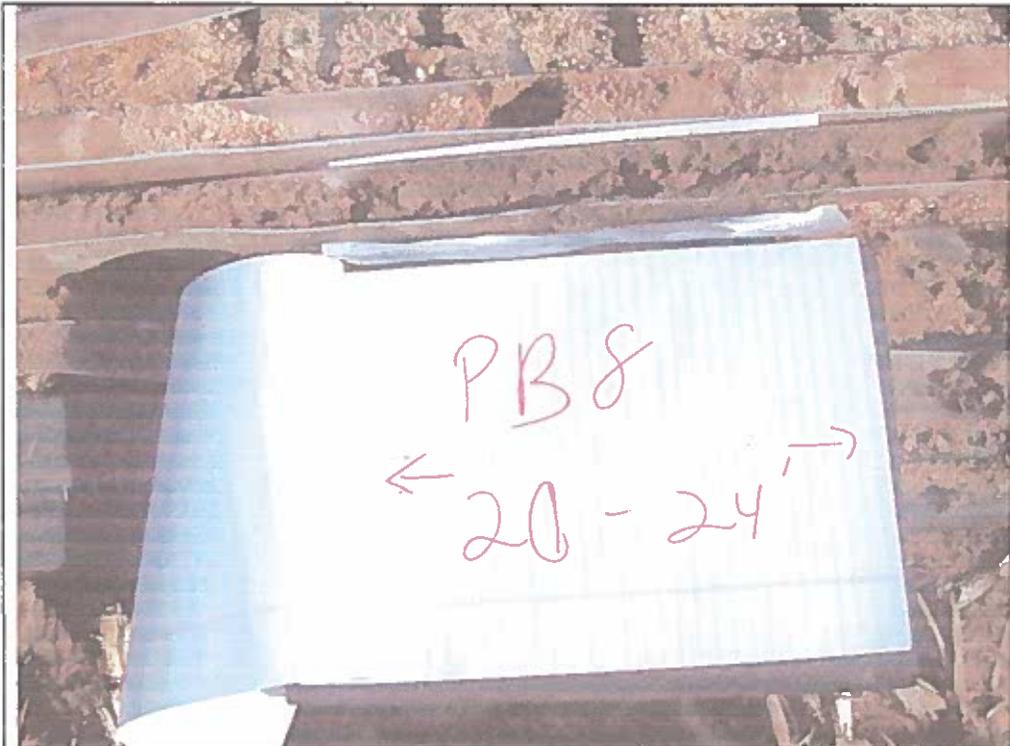
MAHONEY ENVIRONMENTAL CONSULTING INC  
1601 10th Avenue  
GREELEY, CO 80631  
(970) 352-2644 (TEL)

Smits Federal 6-20A  
SENW 20 T2N R66W  
Weld County

COGCC

March 13, 2007  
Not to scale, All illustrated locations are approximate

- March 2007 Probe Locations
- Nov 2006 Probe Locations



PB8 core 20-24', with visible staining at 22-23.5 ft. Sample moist/wet below 22.5'



PB9 core 20-24', with visible staining at 22.5-24 ft. Sample moist/wet below 22.5'

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PROBE/BOREHOLE #: **PB7**

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**BORING LITHOLOGIC LOG SUMMARY**

SITE: Smits Federal #6 - 20A  
SENW20- T2N R66W, Weld County, Co.

Date: March 13, 2007

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MAP COORDINATES GPS:

Latitude: 40.12550 40 07.529' 40 07' 31.7"  
Longitude: 104.80320 104 48.190' 104 48' 11.3"

BORING LOCATION: At estimated location near test pit 275 NW from wellhead.

DRILLER: Drill Pro DRILLING METHODOLOGY: direct push

GEOLOGIST: John Mahoney, MEC Inc.

TOTAL DEPTH: 20 feet WATER DEPTH: Approx 17-18 feet BGL CONVERTED TO Temporary Monitoring Well

Field Monitoring Equipment: Photo Ionization Detector (PID)

**LITHOLOGIC DESCRIPTION**

DEPTH	LITHOLOGY	PID/OVM	Sample
0-4'	light to medium brown, fine grain sand, reworked, humic no odor, no stain	@2': ND @4': ND	PB7-S1 (4-5')
4-8'	light to medium brown, fine to medium grain sand, no odor, no stain	@8': ND	
8-12'	light to medium brown, fine to medium grain sand, Gravel layer 11-12, no odor, no stain	@12': ND	
12-16'	CS grain sand and small gravel, Slightly damp at 16'	@16': ND	
16-20'	medium to cs sand, slightly darker at 17' Wet @ 17-18'	@17-18': 1.0	PB7-S2 (17-18')

Set temporary 1" perforated pipe to 19', estimated 2' of water column  
Sand pack to 2' BGL, bentonite to surface

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Date: COGCC March 13, 2007

PROBE/BOREHOLE #: PB8

**BORING LITHOLOGIC LOG SUMMARY**

SITE: Smits Federal #6 - 20A  
SENW20- T2N R66W, Weld County, Co.

MAP COORDINATES GPS:

Latitude: 40.12576 40 07.546' 40 07' 32.9"  
Longitude: 104.80303 104 48.183' 104 48' 11.0"

BORING LOCATION: Northeast of sampling area.

DRILLER: Drill Pro DRILLING METHODOLOGY: direct push

GEOLOGIST: John Mahoney, MEC Inc.

TOTAL DEPTH: 20 feet WATER DEPTH: Approx 17-18 feet BGL CONVERTED TO Temporary Monitoring Well

Field Monitoring Equipment: Photo Ionization Detector (PID)

**LITHOLOGIC DESCRIPTION**

DEPTH	LITHOLOGY	PID/OVM	Sample
0-4'	0-2' light to medium brown, fine grain sand, some clay, reworked, humic no odor, no stain	@2': 0.1 @4': 1.5	PB8-S2 (4-5')
4-8'	light to medium brown, fine to medium grain sand, no odor, no stain	@8': ND	
8-12'	light to medium brown, coarse sand, some gravel Slightly moist 10', no odor, no stain	@10': ND @12': ND	
12-16'	CS grain sand and gravel,	@16': ND	
16-20'	medium to cs sand, slightly darker at 17' damp @ 17-18'	@18': ND	
20-24'	medium to cs sand, visible impact 21-24' wet @ 23'	@21': 122	PB8-S1 (22')

Set temporary 1" perforated pipe to 23.5', estimated 2' of water column  
Sand pack to 2' BGL, bentonite to surface

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PROBE/BOREHOLE #: PB9

**BORING LITHOLOGIC LOG SUMMARY**

SITE: Smits Federal #6 - 20A  
SENW20- T2N R66W, Weld County, Co.

Date: March 13, 2007

MAP COORDINATES GPS:

Latitude: 40 12579 40 07.547" 40 07'32.8"  
Longitude: 104.80313 104 48.187" 104 48' 11.3"

BORING LOCATION: Offset of PB2, to go deeper

DRILLER: Drill Pro DRILLING METHODOLOGY: direct push

GEOLOGIST: John Mahoney, MEC Inc.

TOTAL DEPTH: 24 feet WATER DEPTH: Approx 22 feet BGL CONVERTED TO Temporary Monitoring Well

Field Monitoring Equipment: Photo Ionization Detector (PID)

**LITHOLOGIC DESCRIPTION**

DEPTH	LITHOLOGY	PID/OVM	Sample
0-4'	light to medium brown, fine grain sand, some clay, reworked, humic no odor, no stain	@2': 1.1 @4': 1.7	
4-8'	light to medium brown, coarse sand and gravel, no odor, no stain	@8': ND	
8-12'	coarse sand, some gravel no odor, no stain	@12: 0.3	
12-16'	CS grain sand and gravel, slight staining No O/S	@16': 9.8	PB9-S1 (16')
16-20'	Cs sand and gravel, moist @ 17-18'	@18': ND	
20-24'	Cs sand and gravel, visible impact 22.5-24' wet @ 23'	@24': 10.4	PB9-S2 (24')

Set temporary 1" perforated pipe to 24'. estimated 2' of water column  
Sand pack to 2' BGL, bentonite to surface

PROBE/BOREHOLE #: PB10

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**BORING LITHOLOGIC LOG SUMMARY**

SITE: Smits Federal #6 - 20A  
SENW20- T2N R66W, Weld County, Co.

Date: March 13, 2007

MAP COORDINATES GPS:

Latitude: 40.12572 40 07' 32.6" 40 07.543'  
Longitude: 104.80329 104 48' 11.8" 104 48.197'

BORING LOCATION: Approximate location of old tanks per air photo interpretation

DRILLER: Drill Pro DRILLING METHODOLOGY: direct push

GEOLOGIST: John Mahoney, MEC Inc.

TOTAL DEPTH: 24 feet WATER DEPTH: Approx 22 feet BGL CONVERTED TO Temporary Monitoring Well

Field Monitoring Equipment: Photo Ionization Detector (PID)

**LITHOLOGIC DESCRIPTION**

DEPTH	LITHOLOGY	PID/OVM	Sample
0-4'	silt to fine grain sand, some clay, reworked, humic no odor, no stain	@2': 1.1 @4': ND	
4-8'	4-7' brown, medium grain sand 7-8' CS SD and gravel, no odor, no stain	@8': ND	
8-12'	medium - coarse sand no odor, no stain	@12: 0.4	
12-16'	MD-CS grain sand and gravel, No O/S	@16': ND	
16-20'	Cs sand, No O/S, moist @ 17-18'	@18': ND	
20-24'	Cs sand to 21.5' MD-CS Sand, visible impact 21.5-24' wet @ 23'	@23': 4.3	PB10-S1 (23')

Set temporary 1" perforated pipe to 23.5', estimated 2' of water column  
Sand pack to 2' BGL, bentonite to surface

PROBE/BOREHOLE #: PB11

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**BORING LITHOLOGIC LOG SUMMARY**

SITE: Smits Federal #6 - 20A  
SENW20- T2N R66W, Weld County, Co.

Date: ~~March 13~~ 2007

MAP COORDINATES GPS:

Latitude: 40.12542 40 07.525' 40 07'31.5"  
Longitude: 104.80333 104 48.199' 104 48' 11.9"

BORING LOCATION: Southwest corner

DRILLER: Drill Pro DRILLING METHODOLOGY: direct push

GEOLOGIST: John Mahoney, MEC Inc.

TOTAL DEPTH: 24 feet WATER DEPTH: Approx 22 feet BGL CONVERTED TO Temporary Monitoring Well

Field Monitoring Equipment: Photo Ionization Detector (PID)

**LITHOLOGIC DESCRIPTION**

DEPTH	LITHOLOGY	PID/OVM	Sample
0-4'	silt to fine grain sand, some clay, reworked, humic no odor , no stain	@2': ND @4': ND	
4-8'	5-7' fine - medium grain sand 7-8' CS SD and gravel, no odor , no stain	@6': ND @8': ND	
8-12'	medium - coarse sand no odor , no stain	@12: 1.0	
12-16'	CS grain sand and clay, Moist at 14', No O/S	@16': 0.4'	PB11-S2 (12')
16-20'	MD-CS sand, No O/S, Slightly damp @ 17'	@18': 2.7	(PB11-S1 (18'))
20-24'	Cs sand and gravel No O/S wet @ 22-23'	@23': ND	

Set temporary 1" perforated pipe to 24', estimated 2' of water column  
Sand pack to 2' BGL, bentonite to surface

**PROBE/BOREHOLE #: PB12**

**BORING LITHOLOGIC LOG SUMMARY**

SITE: Smits Federal #6 - 20A Date: March 13, 2007  
SENW20- T2N R66W, Weld County, Co.  
MAP COORDINATES GPS:  
Latitude: 40.12550 40 07.529' 40 07' 31.7"  
Longitude: 104.80320 104 48.190' 104 48' 11.3"

BORING LOCATION: Offset of PB4, 10' West

DRILLER: Drill Pro DRILLING METHODOLOGY: direct push  
GEOLOGIST: John Mahoney, MEC Inc.  
TOTAL DEPTH: 24 feet WATER DEPTH: Approx 22 feet BGL CONVERTED TO Temporary Monitoring Well  
Field Monitoring Equipment: Photo Ionization Detector (PID)

**LITHOLOGIC DESCRIPTION**

DEPTH	LITHOLOGY	PID/OVM	Sample
0-4'	silt to fine grain sand, some clay, reworked, humic some brick fragments, no odor, no stain Fn Sd, silt and clay	@2': ND @4': ND	PB12-S1 (3-4')
4-8'	fine - medium grain sand	@6': ND	
8-12'	8-10' medium sand 10-12' coarse sand, no odor, no stain	@12': ND	
12-16'	CS grain sand No O/S	@16': ND	
16-20'	Silt, MD-CS sand, No O/S, Slightly damp @ 17'	@18': 3.1	(PB12-S2 (18'))
20-24'	Cs sand and gravel to 22' No O/S Md sand 22-24', streaks, wet @ 23'	@23': 8.5	PB12-S3 (22')

Set temporary 1" perforated pipe to 24', estimated 2' of water column  
Sand pack to 2' BGL, bentonite to surface