District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources Department

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

Incident ID	
District RP	
Facility ID	
Application ID	

NMOCD
FEB 20 2019
DISTRICT III

Release Notification

Responsible Party

Responsible Party: BP America Production Co.	OGRID: 778	Initial Report/Remediation Plan
Contact Name: Steve Moskal	Contact Telephone: (505) 330-9179	
Contact email: steven.moskal@bpx.com	Incident # *(assigned by OCD)*	
Contact mailing address: 1199 Main Street, Suite 101, Durango CO, 81301	NVF1905641336	

Location of Release Source

Latitude: 36.842823° Longitude: -107.761976°
(NAD 83 in decimal degrees to 5 decimal places)

Site Name: Florance L 019	Site Type: Natural Gas Production Well Pad
Date Release Discovered: February 18, 2019	API#: 30-045-09916

Unit Letter	Section	Township	Range	County
H	3	T30N	R09W	San Juan

Surface Owner: ☐ State ☒ Federal ☐ Tribal ☐ Private (*Name:* _____)

Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
☐ Produced Water	Volume Released (bbls):	Volume Recovered (bbls):
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☐ Yes ☐ No
☒ Condensate	Volume Released (bbls): Unknown	Volume Recovered (bbls): 0 bbls
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release:
BGT closure sampling indicated soil impacts. The BGT removed for closure and the impacted area remediated to NMAC 19.15.29 standards. Full delineation of the release has not yet been performed. The well site is operated by BP Production.

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State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
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Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? ☐ Yes ☒ No	If YES, for what reason(s) does the responsible party consider this a major release?
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?	

Initial Response

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury

☒ The source of the release has been stopped.
☒ The impacted area has been secured to protect human health and the environment.
☒ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.
☒ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not been undertaken, explain why:

Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: Steve Moskal Title: Environmental Coordinator

Signature: Date: February 18,2019

email: steven.moskal@bpx.com Telephone: (505) 330-9179

OCD Only

Received by: Date: 4/29/2019

State of New Mexico
Oil Conservation Division

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Site Assessment/Characterization

This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

What is the shallowest depth to groundwater beneath the area affected by the release?	106 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☒ No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

Characterization Report Checklist: ***Each of the following items must be included in the report.***

- ☐ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
- ☐ Field data
- ☐ Data table of soil contaminant concentration data
- ☐ Depth to water determination
- ☐ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
- ☐ Boring or excavation logs
- ☐ Photographs including date and GIS information
- ☐ Topographic/Aerial maps
- ☐ Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

State of New Mexico
Oil Conservation Division

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I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: _____ Title: _____

Signature: _____ Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

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District RP	
Facility ID	
Application ID	

Remediation Plan

Remediation Plan Checklist: ***Each of the following items must be included in the plan.***

- ☒ Detailed description of proposed remediation technique
- ☒ Scaled sitemap with GPS coordinates showing delineation points
- ☒ Estimated volume of material to be remediated
- ☒ Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- ☒ Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

Deferral Requests Only: ***Each of the following items must be confirmed as part of any request for deferral of remediation.***

- ☐ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.
- ☐ Extents of contamination must be fully delineated.
- ☐ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: Steve Moskal Title: Environmental Coordinator

Signature: Date: February 18, 2019

email: steven.moskal@bpx.com Telephone: (505) 330-9179

OCD Only

Received by: Vanessa Fields Date: 2/25/2019

☒ Approved ☐ Approved with Attached Conditions of Approval ☐ Denied ☐ Deferral Approved

Signature: Date: 2/25/2019

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

Closure Report Attachment Checklist: ***Each of the following items must be included in the closure report.***

☐ A scaled site and sampling diagram as described in 19.15.29.11 NMAC

☐ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)

☐ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)

☐ Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: _____ Title: _____

Signature: _____ Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: _____ Date: _____

Printed Name: _____ Title: _____

BP Remediation Plan

To: Cory Smith, Vanessa Fields(NMOCD), Whitney Thomas (BLM)
From: Steve Moskal (BP)
CC: Jeff Blagg (Blagg Engineering), Emmanuel Adeloye (BLM)
Date: 2/18/2019
Re: Florance L 019 - Ex-situ Soil Remediation – Soil Shredding
(H) S-03, T30N, R09W; API #30-045-09916; Serial No.:NM-SF-081098-A

Dear Mr. Smith, Mrs. Fields and Mrs. Thomas,

The Florance L 019 site is an active natural gas production well location within the San Juan Basin Gas Field in San Juan County, New Mexico. The site is located on land managed by the Bureau of Land Management Farmington Field Office (BLM-FFO) and is in an area primarily used for oil and gas production and recreation.

Background

Impacts were confirmed at the location on February 18, 2019 during a below grade tank closure, upon receipt of the final laboratory report. Full delineation of the release has not yet been performed. The well site is operated by BP Production.

Site Ranking

Following the NMOCD site ranking criteria, the site closure standard is 1,000 ppm GRO&DRO and up to 2,500 ppm including MRO hydrocarbons, 50 ppm BTEX and 10 ppm benzene:

- Depth to groundwater >100' (0 points)
- Nearest surface water source >1,000' (0 points)
- Distance to nearest surface water body or coarse >300' <1,000' (10 points)

Proposed Remediation – Soil Shredding

BP proposes to employ soil shredding on site. Soil shredding involves the excavation of the impacted soil which is then placed in processing equipment, such as a hammer mill or pug mill, to mechanically process and break-up the soil. The soil becomes more uniform and is aerated during the mechanical processing. The soil is then ejected from the processing equipment and a chemical oxidizer is applied, in this case, a 35% solution of hydrogen peroxide and water. The applied concentration of hydrogen peroxide typically ranges from 3-8%. The hydrogen peroxide quickly oxidizes the hydrocarbon impacts (reagents), resulting in soil, water and carbon dioxide (products). Once the soil is processed, it is stockpiled and allowed to sit for approximately 2-5 days of residence time. A composite soil sample is collected from each segregated stockpile and submitted for laboratory analysis to determine the effectiveness of the ex-situ remediation process. If the laboratory results are of acceptable levels, the soil will be used as backfill to the excavation; if results are unsatisfactory, the soil is passed through the process once more and a subsequent laboratory sample will be collected for laboratory confirmation as described before. Typically, 24 hours of notice is provided to the regulatory agencies for the opportunity to observe and witness the stockpile sampling.

BP proposes to perform the remediation of hydrocarbon impacts by the means of soil shredding. A conservative estimate of approximately 400 cubic yards of soil will be treated through the soil shredding process. BP proposes to treat the impacted soil and segregate windrow stockpiles broken into 100 cubic

yard increments. A single, five-point composite, soil sample will be collected to represent each 100 cubic yard stockpile. If necessary, once a baseline of approximately 1,000 cubic yards of soil is consistently and successfully treated, BP will propose to decrease the sampling frequency to 500 cubic yard stockpile segments. The 500 cubic yard sampling modification will be discussed with the NMOCD and BLM for approval and input prior to implementation. BP would expect to have a sampling modification approval from the agencies within 48 working hours from the time of request. The remediation will then continue until complete and sampling will be based on the regulatory agencies approved sampling plan.

Excavation sampling will be in accordance with a typical dig and haul. The sidewalls and base of the excavation will be sampled in a frequency based on the size and progress of the excavation. Agency notification of excavation sampling will also be issued in advanced, 24-48 hours if possible.

BP is currently anticipates mobilizing to the location in March 2019, pending the approval of this plan by all regulatory agencies. BP plans to shut the well in and remove all necessary surface equipment. BP requests a 100' off pad buffer be included in the approval of this plan, in case additional room is needed or if impacts migrate to the edge of the well pad surface.

It is understood, that if soil remediation is not successful via the soil shredding, an alternative method such as a dig and haul or soil vapor extraction will be necessary. BP will be in close communications with the agencies in the event an alternative remediation method is required.

Site Closure and Reporting

Once the soil shredding process is complete, the excavated area will be fully backfilled and compacted, and surface equipment will be re-set. Collection of vadose zone samples will be performed to ensure no residual impacts remain following the remedial activities. A minimum of 24-hour notice will be provided to the agencies prior to the collection of these samples. Any necessary interim reclamation will be performed. Final reclamation of the well pad will occur at a later date, once the natural gas production well is plugged and abandoned.

A final remediation report will be delivered to NMOCD and BLM for approval of final site closure regarding the excavation and soil shredding activities within 60 days of the receipt of the final laboratory report.

Field Report

CLIENT: BP

BLAGG ENGINEERING, INC.
P.O. BOX 87, BLOOMFIELD, NM 87413
(505) 632-1199

API #: 30045 09916

TANK ID (if applicable): B

FIELD REPORT:

(circle one): BGT CONFIRMATION / RELEASE INVESTIGATION / OTHER:

PAGE #: 1 of

SITE INFORMATION:

SITE NAME: FLORANCE L #19

DATE STARTED: 02/13/18

QUAD/UNIT: H SEC: 3 TWP: 30 N RNG: 9 W PM: NM CNTY: SJ ST: NM

DATE FINISHED:

1/4 -1/4/FOOTAGE: 1650'N/790'E SE/SE LEASE TYPE: (FEDERAL) STATE / FEE / INDIAN

ENVIRONMENTAL SPECIALIST(S): NJV / JCB

LEASE #: SF081098A PROD. FORMATION: PW/DK CONTRACTOR: STRIKE BP - J. GONZALES

REFERENCE POINT:

WELL HEAD (W.H.) GPS COORD.: 36.842996 x 107.761930 GL ELEV.: 6,142'

1) 120 BGT (SW)(SB) GPS COORD.: 36.842799 x 107.761511 DISTANCE/BEARING FROM W.H.: 142', S59.5E

2) _____ GPS COORD.: _____ DISTANCE/BEARING FROM W.H.: _____

3) _____ GPS COORD.: _____ DISTANCE/BEARING FROM W.H.: _____

4) _____ GPS COORD.: _____ DISTANCE/BEARING FROM W.H.: _____

SAMPLING DATA:

CHAIN OF CUSTODY RECORD(S) # OR LAB USED: HALL

	SAMPLE ID:	SAMPLE DATE:	SAMPLE TIME:	LAB ANALYSIS:	OVM READING (ppm)
1)	SPC-TB @ 5' (120)	02/13/18	1325	8015B/8021B/300.0 (Cl)	1979
2)	GRAB (E.SIDE) @ 6' (120)	"	1350	" / " / "	1567
3)					
4)					
5)					

SOIL DESCRIPTION:

SOIL TYPE: (SAND) / SILTY SAND / SILT / SILTY CLAY / CLAY / GRAVEL (OTHER) BEDROCK (SANDSTONE)

SOIL COLOR: OLIVE GRAY TO BLACK

PLASTICITY (CLAYS): NON PLASTIC / SLIGHTLY PLASTIC / COHESIVE / MEDIUM PLASTIC / HIGHLY PLASTIC

COHESION (ALL OTHERS): NON COHESIVE / SLIGHTLY COHESIVE / COHESIVE (HIGHLY COHESIVE) DENSITY (COHESIVE CLAYS & SILTS): SOFT / FIRM / STIFF / VERY STIFF / HARD

CONSISTENCY (NON COHESIVE SOILS): LOOSE / FIRM / DENSE (VERY DENSE) HC ODOR DETECTED: (YES) / NO EXPLANATION - DISCOLORED SOILS

MOISTURE: DRY / (SLIGHTLY MOIST) / MOIST / WET / SATURATED / SUPER SATURATED

SAMPLE TYPE: (GRAB) / COMPOSITE # OF PTS. _____ ANY AREAS DISPLAYING WETNESS: YES / (NO) EXPLANATION -

DISCOLORATION/STAINING OBSERVED: (YES) NO EXPLANATION - OLIVE GRAY TO BLACK ENTIRE EXCAVATION WITHIN BERM.

SITE OBSERVATIONS:

LOST INTEGRITY OF EQUIPMENT: (YES) NO EXPLANATION - SE CORNER OF BGT

APPARENT EVIDENCE OF A RELEASE OBSERVED AND/OR OCCURRED (YES) NO EXPLANATION: DISCOLORED SOILS & HC ODOR

EQUIPMENT SET OVER RECLAIMED AREA: YES / NO EXPLANATION - UNKNOWN AT PRESENT TIME.

OTHER: NMOCD / BLM REP(S) ~~PRESENT~~ / (NOT PRESENT) TO WITNESS CONFIRMATION SAMPLING.

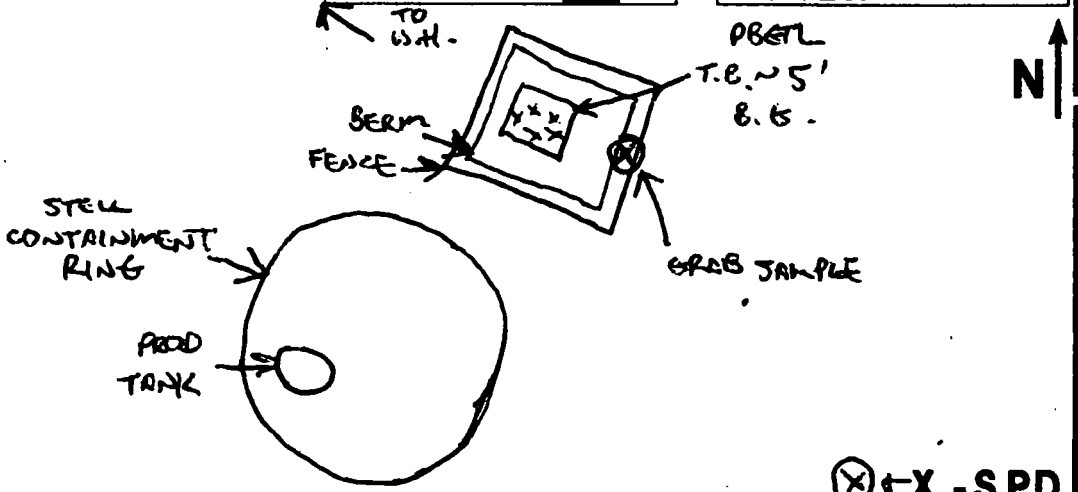
EXCAVATION DIMENSION ESTIMATION: _____ ft. X _____ ft. X _____ ft. EXCAVATION ESTIMATION (Cubic Yards): _____

DEPTH TO GROUNDWATER: >100' NEAREST WATER SOURCE: >1,000' NEAREST SURFACE WATER: 300'<x<1000' NMOCD TPH CLOSURE STD: 2,500 ppm

SITE SKETCH

BGT Located: off / (on) site

PLOT PLAN circle: attached



OVM CALIB. READ. = 100.4 ppm RF=1.00

OVM CALIB. GAS = 100 ppm

TIME: 1:35 am/(pm) DATE: 2/13/19

MISCELL. NOTES

WO:

REF #:

VID: VHIXONEVRM

PJ #:

Permit date(s): 01/31/19

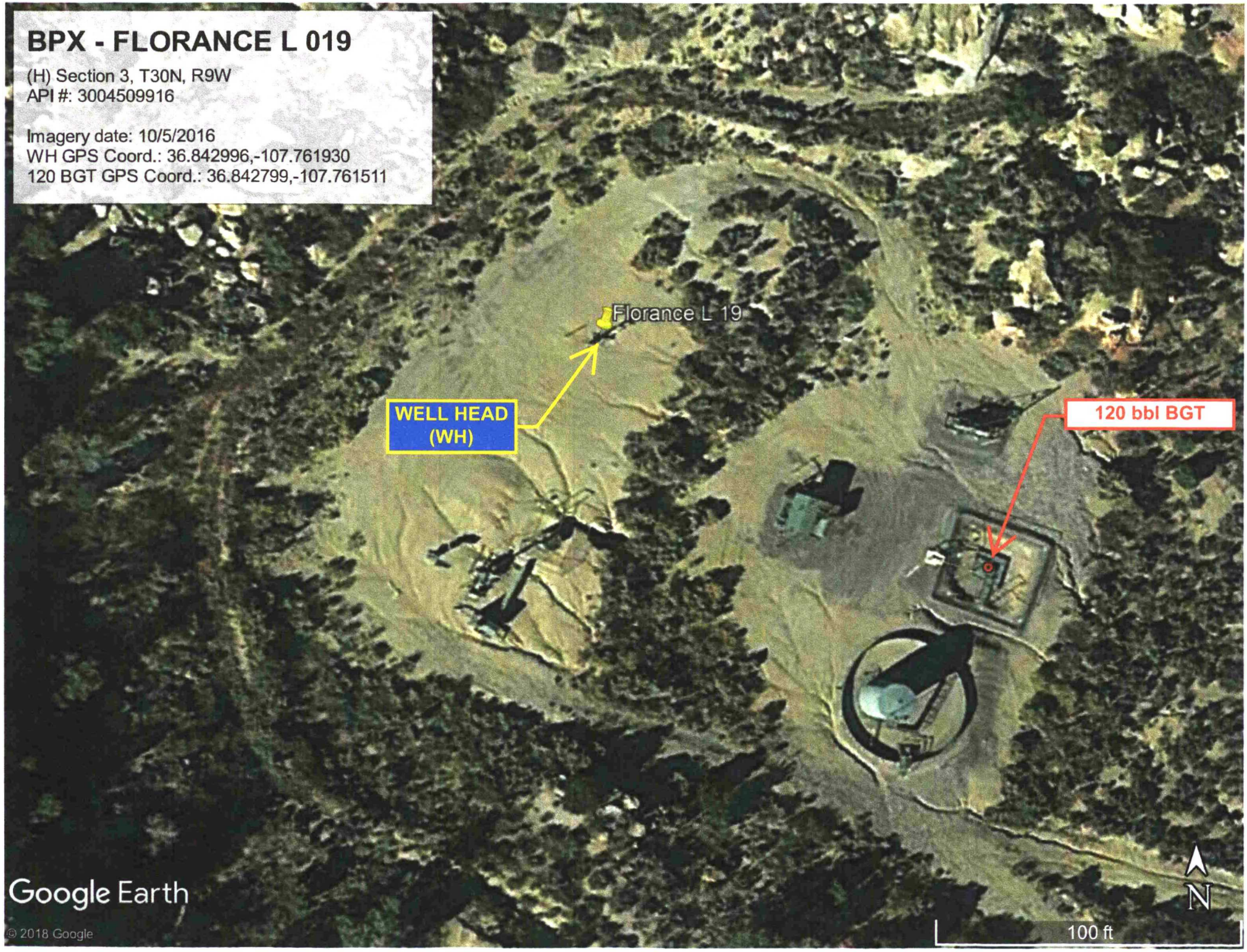
OCD Appr. date(s):

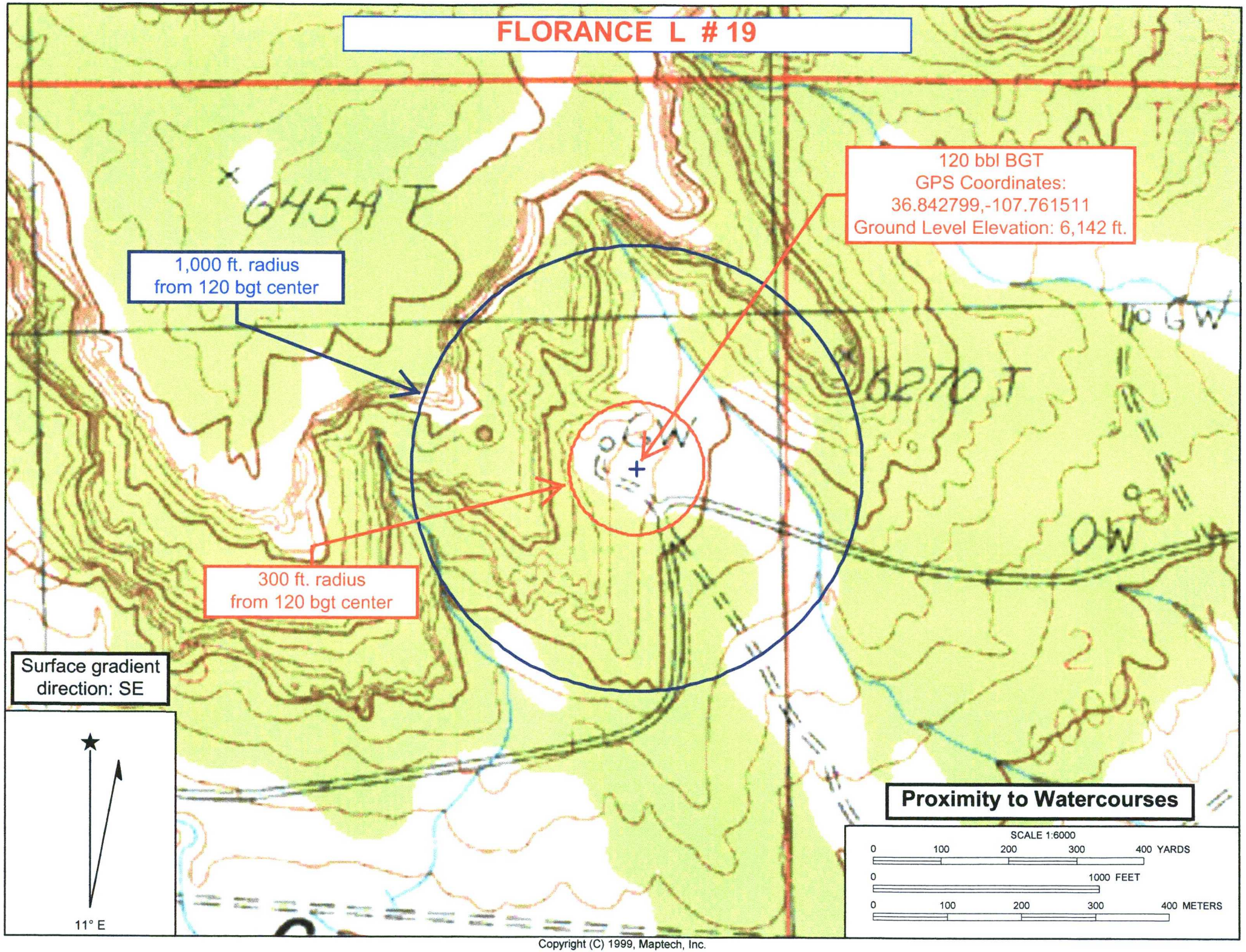
Tank ID	OVM = Organic Vapor Meter ppm = parts per million
B	BGT Sidewalls Visible: Y / (N)
	BGT Sidewalls Visible: Y / N
	BGT Sidewalls Visible: Y / N

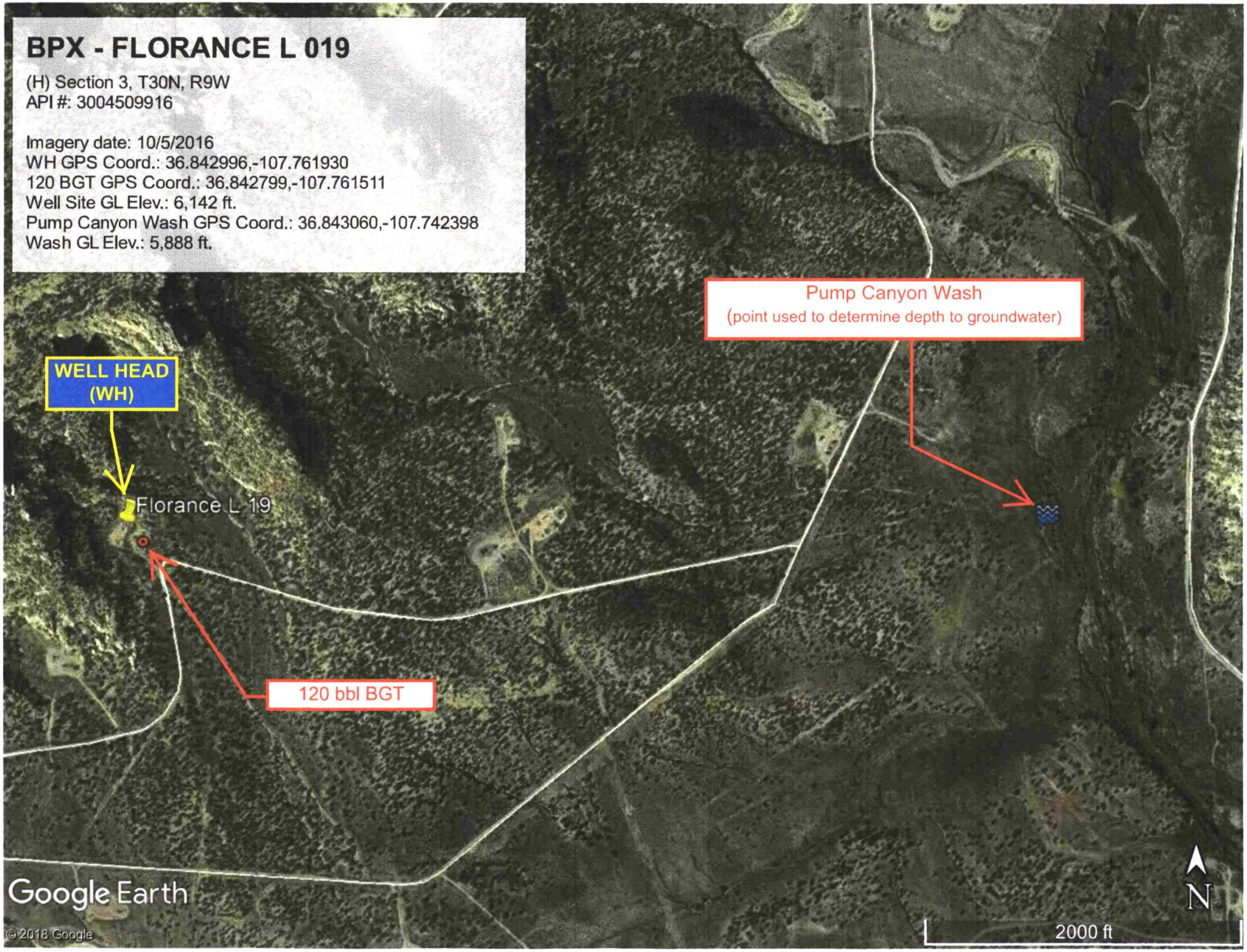
Magnetic declination: 10° E

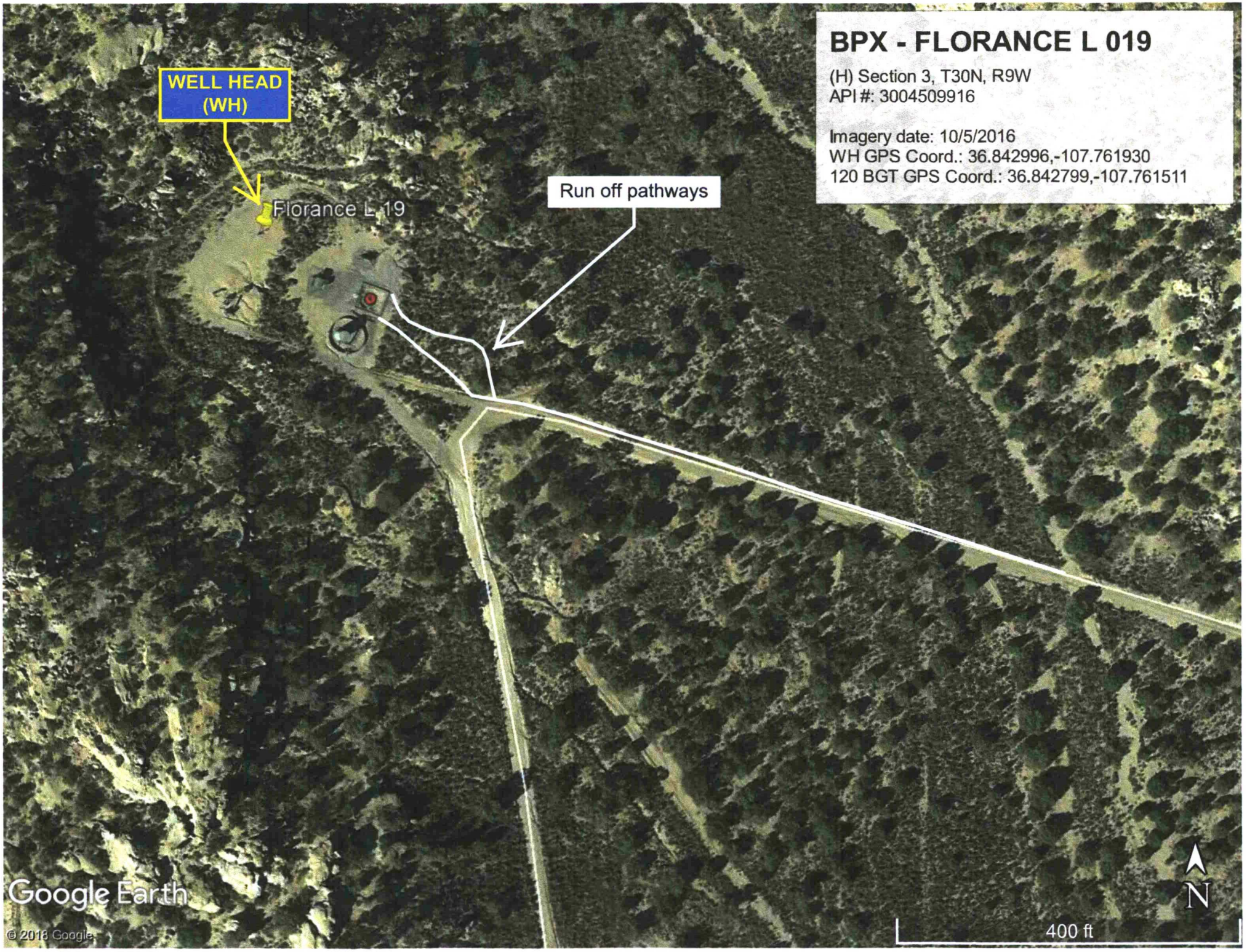
NOTES: BGT = BELOW-GRADE TANK; E.D. = EXCAVATION DEPRESSION; B.G. = BELOW GRADE; B = BELOW; T.H. = TEST HOLE; ~ = APPROX.; W.H. = WELL HEAD; T.B. = TANK BOTTOM; PBGTL = PREVIOUS BELOW-GRADE TANK LOCATION; SPD = SAMPLE POINT DESIGNATION; R.W. = RETAINING WALL; NA - NOT APPLICABLE OR NOT AVAILABLE; SW - SINGLE WALL; DW - DOUBLE WALL; SB - SINGLE BOTTOM; DB - DOUBLE BOTTOM.

NOTES: GOOGLE EARTH IMAGERY DATE: 10/5/2016 . ONSITE: 02/13/18

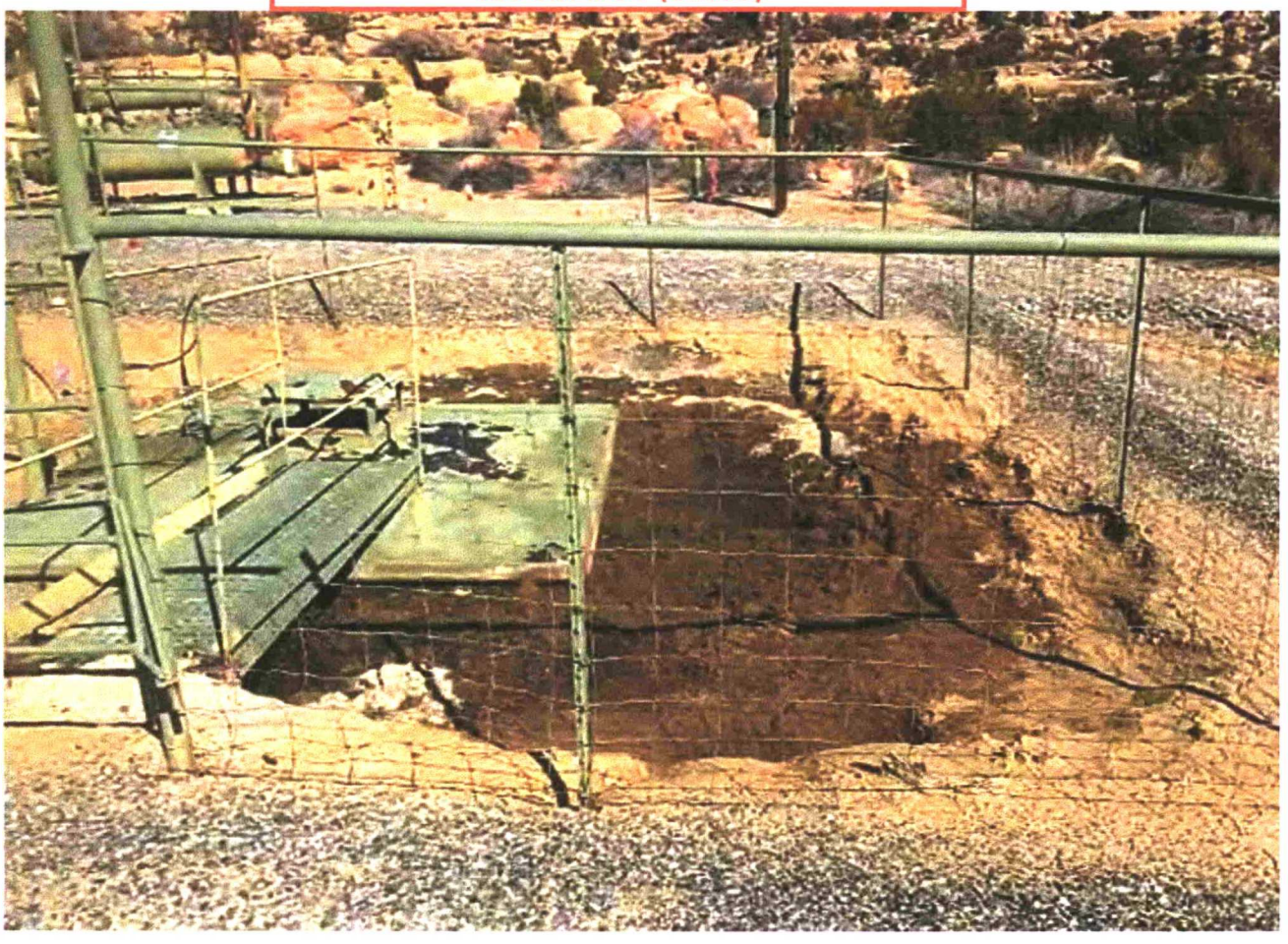

BPX - FLORANCE L 019
(H) Section 3, T30N, R9W
API #: 3004509916
Imagery date: 10/5/2016
WH GPS Coord.: 36.842996,-107.761930
120 BGT GPS Coord.: 36.842799,-107.761511
Florance L 19
WELL HEAD (WH)
120 bbl BGT
Google Earth
© 2018 Google
N
100 ft



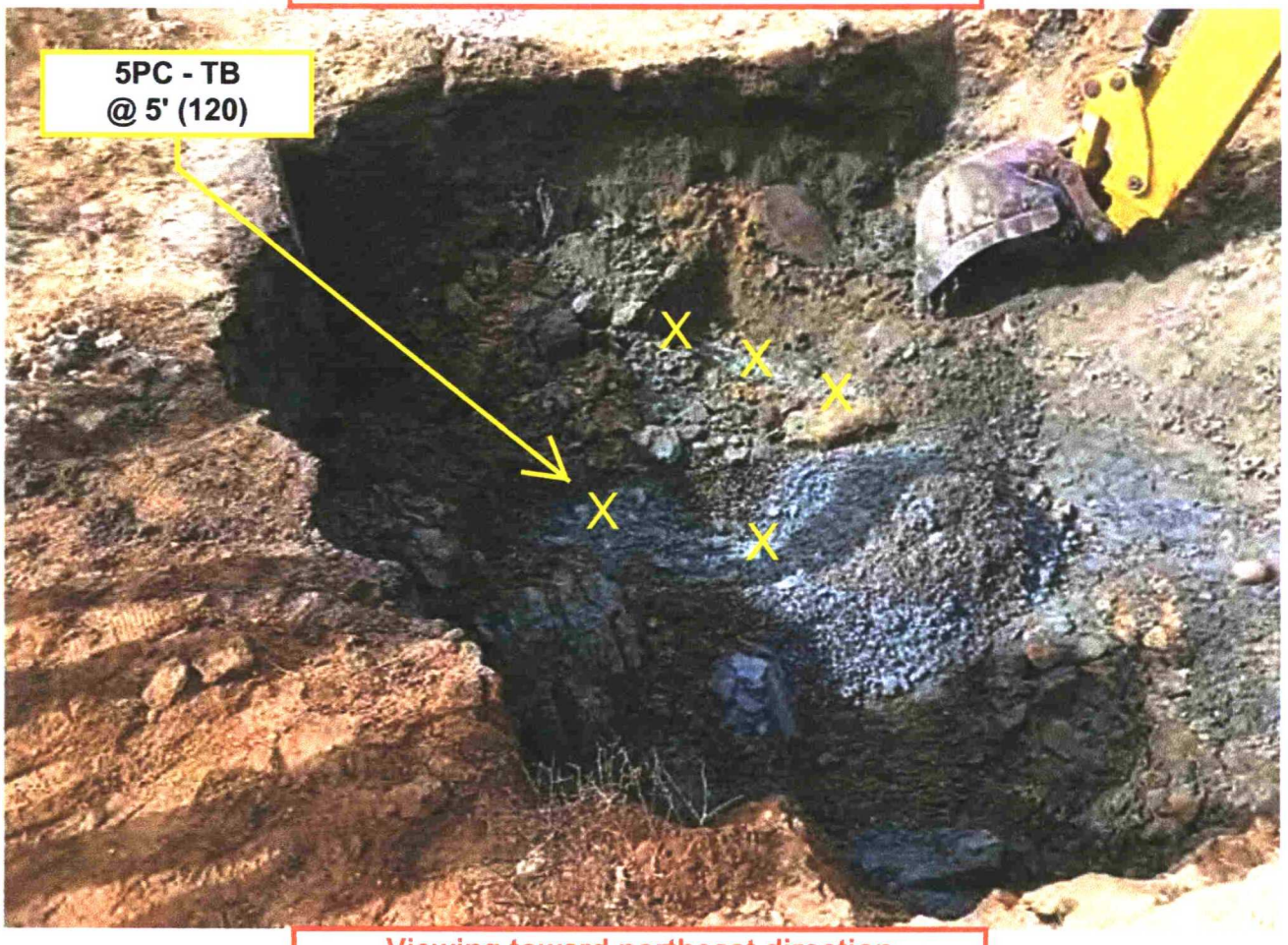

BPX - FLORANCE L 019
(H) Section 3, T30N, R9W
API #: 3004509916
Imagery date: 10/5/2016
WH GPS Coord.: 36.842996,-107.761930
120 BGT GPS Coord.: 36.842799,-107.761511
Well Site GL Elev.: 6,142 ft.
Pump Canyon Wash GPS Coord.: 36.843060,-107.742398
Wash GL Elev.: 5,888 ft.
Pump Canyon Wash
(point used to determine depth to groundwater)
WELL HEAD
(WH)
Florance L 19
120 bbl BGT
Google Earth
© 2018 Google
N
2000 ft


WELL HEAD
(WH)
Florance L 19
Run off pathways
BPX - FLORANCE L 019
(H) Section 3, T30N, R9W
API #: 3004509916
Imagery date: 10/5/2016
WH GPS Coord.: 36.842996,-107.761930
120 BGT GPS Coord.: 36.842799,-107.761511
Google Earth
© 2018 Google
N
400 ft

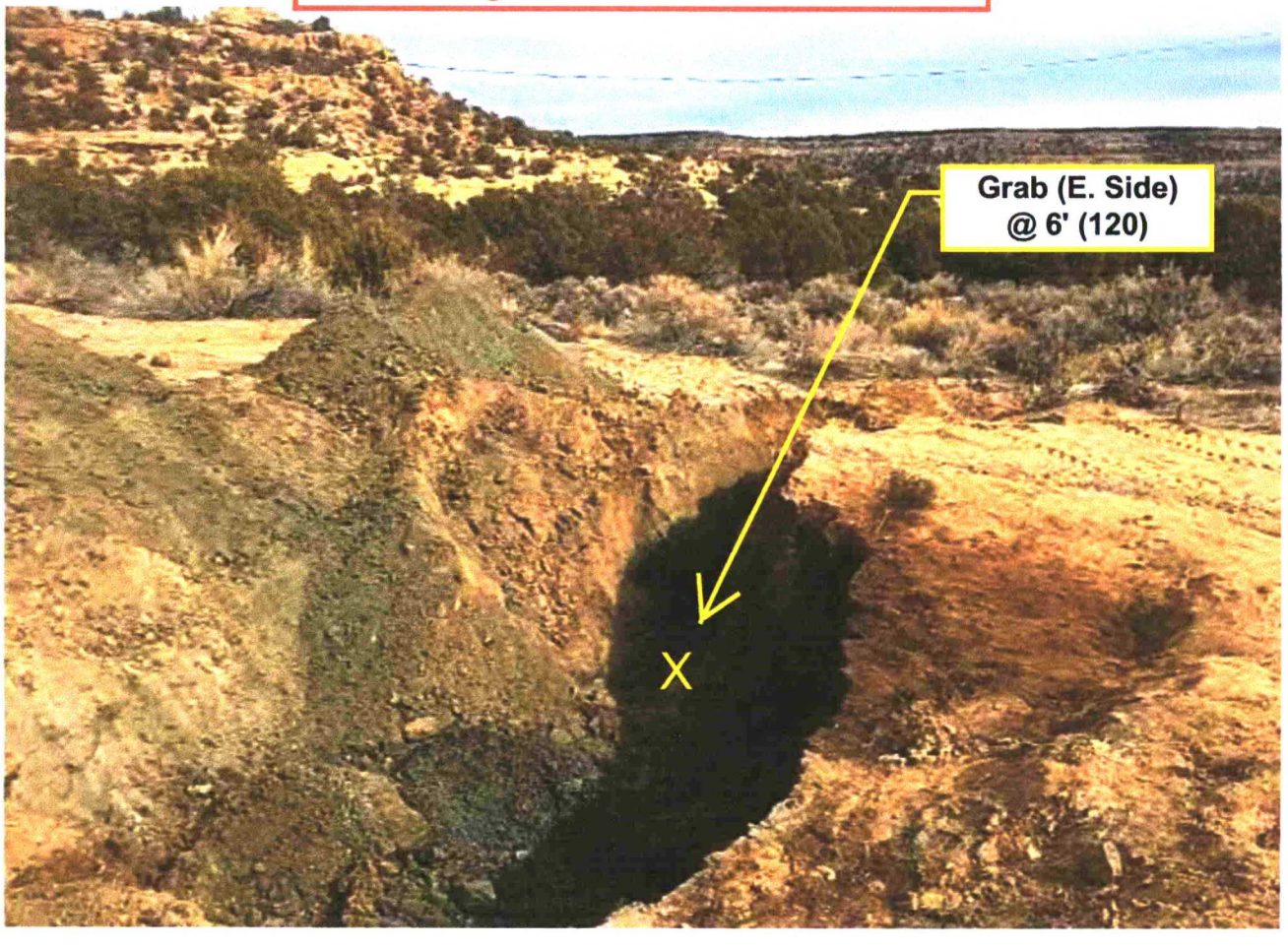
120 bbl BGT (sw/sb)



FLORANCE L 019 - 120 bbl BGT



Viewing toward northeast direction



Laboratory Reports

Analytical Report
Lab Order **1902608**
Date Reported: **2/15/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering
Project: Florance L #19
Lab ID: 1902608-001 **Matrix:** MEOH (SOIL)

Client Sample ID: 5 PC-TB@5' (120)
Collection Date: 2/13/2019 1:25:00 PM
Received Date: 2/14/2019 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	60		mg/Kg	20	2/14/2019 11:00:47 AM	43159
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	2300	98		mg/Kg	10	2/14/2019 11:03:45 AM	43157
Motor Oil Range Organics (MRO)	6100	490		mg/Kg	10	2/14/2019 11:03:45 AM	43157
Surr: DNOP	0	50.6-138	S	%Rec	10	2/14/2019 11:03:45 AM	43157
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	1800	69		mg/Kg	20	2/14/2019 9:37:11 AM	43133
Surr: BFB	457	73.8-119	S	%Rec	20	2/14/2019 9:37:11 AM	43133
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	3.2	0.34		mg/Kg	20	2/14/2019 9:37:11 AM	43133
Toluene	1.3	0.69		mg/Kg	20	2/14/2019 9:37:11 AM	43133
Ethylbenzene	9.0	0.69		mg/Kg	20	2/14/2019 9:37:11 AM	43133
Xylenes, Total	150	1.4		mg/Kg	20	2/14/2019 9:37:11 AM	43133
Surr: 4-Bromofluorobenzene	118	80-120		%Rec	20	2/14/2019 9:37:11 AM	43133

Total TPH - 10,200 mg/Kg benzene - 3.2 mg/Kg Total BTEX - 163.5 mg/Kg

BGT Permit closure standards: total TPH - 100 mg/Kg, benzene - 0.2 mg/Kg, total BTEX - 50 mg/Kg

19.15.29 NMAC closure standards: total TPH - 2,500 mg/Kg, benzene - 10 mg/Kg, total BTEX - 50 mg/Kg

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report
Lab Order **1902610**
Date Reported: **2/15/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering
Project: Florance L #19
Lab ID: 1902610-001 **Matrix:** MEOH (SOIL)

Client Sample ID: GRAB (E. SIDE) @ 6' (120)
Collection Date: 2/13/2019 1:50:00 PM
Received Date: 2/14/2019 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	59		mg/Kg	20	2/14/2019 11:13:13 AM	43159
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	1500	96		mg/Kg	10	2/14/2019 12:16:28 PM	43157
Motor Oil Range Organics (MRO)	3800	480		mg/Kg	10	2/14/2019 12:16:28 PM	43157
Surr: DNOP	0	50.6-138	S	%Rec	10	2/14/2019 12:16:28 PM	43157
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	2200	70		mg/Kg	20	2/14/2019 10:00:46 AM	43133
Surr: BFB	759	73.8-119	S	%Rec	20	2/14/2019 10:00:46 AM	43133
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	0.55	0.35		mg/Kg	20	2/14/2019 10:00:46 AM	43133
Toluene	17	0.70		mg/Kg	20	2/14/2019 10:00:46 AM	43133
Ethylbenzene	11	0.70		mg/Kg	20	2/14/2019 10:00:46 AM	43133
Xylenes, Total	170	1.4		mg/Kg	20	2/14/2019 10:00:46 AM	43133
Surr: 4-Bromofluorobenzene	128	80-120	S	%Rec	20	2/14/2019 10:00:46 AM	43133

Total TPH - 7,500 mg/Kg **benzene - 0.55 mg/Kg** **Total BTEX - 198.55 mg/Kg**

BGT Permit closure standards: total TPH - 100 mg/Kg, benzene - 0.2 mg/Kg, total BTEX - 50 mg/Kg

19.15.29 NMAC closure standards: total TPH - 2,500 mg/Kg, benzene - 10 mg/Kg, total BTEX - 50 mg/Kg

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 15, 2019

Steve Moskal
Blagg Engineering
P. O. Box 87
Bloomfield, NM 87413
TEL:
FAX

RE: Florance L #19 OrderNo.: 1902608

Dear Steve Moskal:

Hall Environmental Analysis Laboratory received 1 sample(s) on 2/14/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1902608**
Date Reported: **2/15/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering
Project: Florance L #19
Lab ID: 1902608-001 **Matrix:** MEOH (SOIL)

Client Sample ID: 5 PC-TB@5' (120)
Collection Date: 2/13/2019 1:25:00 PM
Received Date: 2/14/2019 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	60		mg/Kg	20	2/14/2019 11:00:47 AM	43159
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	2300	98		mg/Kg	10	2/14/2019 11:03:45 AM	43157
Motor Oil Range Organics (MRO)	6100	490		mg/Kg	10	2/14/2019 11:03:45 AM	43157
Surr: DNOP	0	50.6-138	S	%Rec	10	2/14/2019 11:03:45 AM	43157
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	1800	69		mg/Kg	20	2/14/2019 9:37:11 AM	43133
Surr: BFB	457	73.8-119	S	%Rec	20	2/14/2019 9:37:11 AM	43133
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	3.2	0.34		mg/Kg	20	2/14/2019 9:37:11 AM	43133
Toluene	1.3	0.69		mg/Kg	20	2/14/2019 9:37:11 AM	43133
Ethylbenzene	9.0	0.69		mg/Kg	20	2/14/2019 9:37:11 AM	43133
Xylenes, Total	150	1.4		mg/Kg	20	2/14/2019 9:37:11 AM	43133
Surr: 4-Bromofluorobenzene	118	80-120		%Rec	20	2/14/2019 9:37:11 AM	43133

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1902608**

15-Feb-19

Client: Blagg Engineering
Project: Florance L #19

Sample ID	MB-43159	SampType:	mblk	TestCode:	EPA Method 300.0: Anions					
Client ID:	PBS	Batch ID:	43159	RunNo:	57701					
Prep Date:	2/14/2019	Analysis Date:	2/14/2019	SeqNo:	1932360	Units:	mg/Kg			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID	LCS-43159	SampType:	lcs	TestCode:	EPA Method 300.0: Anions					
Client ID:	LCSS	Batch ID:	43159	RunNo:	57701					
Prep Date:	2/14/2019	Analysis Date:	2/14/2019	SeqNo:	1932361	Units:	mg/Kg			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	15	1.5	15.00	0	97.1	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1902608**

15-Feb-19

Client: Blagg Engineering
Project: Florance L #19

Sample ID	LCS-43157	SampType:	LCS		TestCode:	EPA Method 8015M/D: Diesel Range Organics				
Client ID:	LCSS	Batch ID:	43157		RunNo:	57693				
Prep Date:	2/14/2019	Analysis Date:	2/14/2019		SeqNo:	1930939	Units:	mg/Kg		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	43	10	50.00	0	86.8	63.9	124			
Surr: DNOP	4.8		5.000		95.5	50.6	138			

Sample ID	MB-43157	SampType:	MBLK		TestCode:	EPA Method 8015M/D: Diesel Range Organics				
Client ID:	PBS	Batch ID:	43157		RunNo:	57693				
Prep Date:	2/14/2019	Analysis Date:	2/14/2019		SeqNo:	1930940	Units:	mg/Kg		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.9		10.00		98.8	50.6	138			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1902608

15-Feb-19

Client: Blagg Engineering
Project: Florance L #19

Sample ID RB	SampType: MBLK	TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBS	Batch ID: R57709	RunNo: 57709							
Prep Date:	Analysis Date: 2/14/2019	SeqNo: 1931552	Units: %Rec						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	970		1000		96.8	73.8	119			

Sample ID 2.5UG GRO LCS	SampType: LCS	TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSS	Batch ID: R57709	RunNo: 57709							
Prep Date:	Analysis Date: 2/14/2019	SeqNo: 1931553	Units: %Rec						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1100		1000		114	73.8	119			

Sample ID MB-43133	SampType: MBLK	TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBS	Batch ID: 43133	RunNo: 57708							
Prep Date: 2/13/2019	Analysis Date: 2/14/2019	SeqNo: 1931578	Units: mg/Kg						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1000		1000		102	73.8	119			

Sample ID LCS-43133	SampType: LCS	TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSS	Batch ID: 43133	RunNo: 57708							
Prep Date: 2/13/2019	Analysis Date: 2/14/2019	SeqNo: 1931579	Units: mg/Kg						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	105	80.1	123			
Surr: BFB	1100		1000		113	73.8	119			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1902608**

15-Feb-19

Client: Blagg Engineering
Project: Florance L #19

Sample ID **MB-43133**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **43133**	RunNo: **57708**
Prep Date: **2/13/2019**	Analysis Date: **2/14/2019**	SeqNo: **1931588** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.98		1.000		98.4	80	120			

Sample ID **LCS-43133**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **43133**	RunNo: **57708**
Prep Date: **2/13/2019**	Analysis Date: **2/14/2019**	SeqNo: **1931589** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.88	0.025	1.000	0	87.9	80	120			
Toluene	0.93	0.050	1.000	0	93.1	80	120			
Ethylbenzene	0.94	0.050	1.000	0	94.0	80	120			
Xylenes, Total	2.8	0.10	3.000	0	94.8	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		100	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **BLAGG** Work Order Number: **1902608** RcptNo: **1**

Received By: **Erin Melendrez** **2/14/2019 8:10:00 AM**

Completed By: **Leah Baca** **2/14/2019 8:27:41 AM**

Reviewed By: VVZ 2/14/19

Labeled by: IO 2/14/19

Chain of Custody

1. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑ TO
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: ~2/14/19 (<2 or >12 unless noted)
Adjusted? _____
Checked by: _____

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date _____
By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding: _____
Client Instructions: _____

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.7	Good	Yes			
2	2.4	Good	Yes			
3	1.5	Good	Yes			
4	3.1	Good	Yes			

Chain-of-Custody Record

Client: BLAGG ENGR. / BPX

Mailing Address:

Phone #: 505.320.3489

email or Fax#:

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☐ Standard ☒ Rush SAME DAY

Project Name: FLORANCE L #19

Project #:

Project Manager: STEVE MOJKAL

Sampler: NELSON VELEZ NV

On Ice: ☒ Yes ☐ No

Sample Temperature: 3.1°C 1.5°C, 3.1

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No 1902608	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	CHLORIDE			5 PT. COMPOSITE	Air Bubbles (Y or N)
2/13/19	1325	SOIL	SPC-TB@5'(120)	4oz.-1	COOL	-001	✓		✓									✓			✓	

Date: 2/13/19 Time: 1815 Relinquished by: [signature]
Received by: [signature] Date: 2/13/19 Time: 1815

Date: 2/13/19 Time: 2010 Relinquished by: [signature]
Received by: [signature] Courier ENM 2/14/19 Date: 2/14/19 Time: 0810

Remarks: BILL BP DIRECTLY
CONTACT: STEVE MOJKAL / VANCE HIXON
VID: VHIXONEVRM

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 15, 2019

Steve Moskal
Blagg Engineering
P. O. Box 87
Bloomfield, NM 87413
TEL:
FAX

RE: Florance L #19 OrderNo.: 1902610

Dear Steve Moskal:

Hall Environmental Analysis Laboratory received 1 sample(s) on 2/14/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1902610**
Date Reported: **2/15/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering
Project: Florance L #19
Lab ID: 1902610-001 **Matrix:** MEOH (SOIL)

Client Sample ID: GRAB (E. SIDE) @ 6' (120)
Collection Date: 2/13/2019 1:50:00 PM
Received Date: 2/14/2019 8:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	59		mg/Kg	20	2/14/2019 11:13:13 AM	43159
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	1500	96		mg/Kg	10	2/14/2019 12:16:28 PM	43157
Motor Oil Range Organics (MRO)	3800	480		mg/Kg	10	2/14/2019 12:16:28 PM	43157
Surr: DNOP	0	50.6-138	S	%Rec	10	2/14/2019 12:16:28 PM	43157
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	2200	70		mg/Kg	20	2/14/2019 10:00:46 AM	43133
Surr: BFB	759	73.8-119	S	%Rec	20	2/14/2019 10:00:46 AM	43133
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	0.55	0.35		mg/Kg	20	2/14/2019 10:00:46 AM	43133
Toluene	17	0.70		mg/Kg	20	2/14/2019 10:00:46 AM	43133
Ethylbenzene	11	0.70		mg/Kg	20	2/14/2019 10:00:46 AM	43133
Xylenes, Total	170	1.4		mg/Kg	20	2/14/2019 10:00:46 AM	43133
Surr: 4-Bromofluorobenzene	128	80-120	S	%Rec	20	2/14/2019 10:00:46 AM	43133

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1902610**

15-Feb-19

Client: Blagg Engineering
Project: Florance L #19

Sample ID	MB-43159	SampType:	mblk	TestCode:	EPA Method 300.0: Anions				
Client ID:	PBS	Batch ID:	43159	RunNo:	57701				
Prep Date:	2/14/2019	Analysis Date:	2/14/2019	SeqNo:	1932360	Units:	mg/Kg		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID	LCS-43159	SampType:	lcs	TestCode:	EPA Method 300.0: Anions				
Client ID:	LCSS	Batch ID:	43159	RunNo:	57701				
Prep Date:	2/14/2019	Analysis Date:	2/14/2019	SeqNo:	1932361	Units:	mg/Kg		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	15	1.5	15.00	0	97.1	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1902610**

15-Feb-19

Client: Blagg Engineering
Project: Florance L #19

Sample ID **LCS-43157**	SampType: **LCS**			TestCode: **EPA Method 8015M/D: Diesel Range Organics**					
Client ID: **LCSS**	Batch ID: **43157**			RunNo: **57693**					
Prep Date: **2/14/2019**	Analysis Date: **2/14/2019**			SeqNo: **1930939**		Units: **mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	43	10	50.00	0	86.8	63.9	124			
Surr: DNOP	4.8		5.000		95.5	50.6	138			

Sample ID **MB-43157**	SampType: **MBLK**			TestCode: **EPA Method 8015M/D: Diesel Range Organics**					
Client ID: **PBS**	Batch ID: **43157**			RunNo: **57693**					
Prep Date: **2/14/2019**	Analysis Date: **2/14/2019**			SeqNo: **1930940**		Units: **mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.9		10.00		98.8	50.6	138			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

WO#: 1902610

Hall Environmental Analysis Laboratory, Inc.

15-Feb-19

Client: Blagg Engineering
Project: Florance L #19

Sample ID RB	SampType: MBLK	TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBS	Batch ID: R57709	RunNo: 57709							
Prep Date:	Analysis Date: 2/14/2019	SeqNo: 1931552	Units: %Rec						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	970		1000		96.8	73.8	119			

Sample ID 2.5UG GRO LCS	SampType: LCS	TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSS	Batch ID: R57709	RunNo: 57709							
Prep Date:	Analysis Date: 2/14/2019	SeqNo: 1931553	Units: %Rec						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1100		1000		114	73.8	119			

Sample ID MB-43133	SampType: MBLK	TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBS	Batch ID: 43133	RunNo: 57708							
Prep Date: 2/13/2019	Analysis Date: 2/14/2019	SeqNo: 1931578	Units: mg/Kg						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1000		1000		102	73.8	119			

Sample ID LCS-43133	SampType: LCS	TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSS	Batch ID: 43133	RunNo: 57708							
Prep Date: 2/13/2019	Analysis Date: 2/14/2019	SeqNo: 1931579	Units: mg/Kg						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	105	80.1	123			
Surr: BFB	1100		1000		113	73.8	119			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1902610**

15-Feb-19

Client: Blagg Engineering
Project: Florance L #19

Sample ID	MB-43133	SampType:	MBLK		TestCode:	EPA Method 8021B: Volatiles				
Client ID:	PBS	Batch ID:	43133		RunNo:	57708				
Prep Date:	2/13/2019	Analysis Date:	2/14/2019		SeqNo:	1931588	Units:	mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.98		1.000		98.4	80	120			

Sample ID	LCS-43133	SampType:	LCS		TestCode:	EPA Method 8021B: Volatiles				
Client ID:	LCSS	Batch ID:	43133		RunNo:	57708				
Prep Date:	2/13/2019	Analysis Date:	2/14/2019		SeqNo:	1931589	Units:	mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.88	0.025	1.000	0	87.9	80	120			
Toluene	0.93	0.050	1.000	0	93.1	80	120			
Ethylbenzene	0.94	0.050	1.000	0	94.0	80	120			
Xylenes, Total	2.8	0.10	3.000	0	94.8	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		100	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **BLAGG** Work Order Number: **1902610** RcptNo: **1**

Received By: **Erin Melendrez** **2/14/2019 8:10:00 AM**

Completed By: **Leah Baca** **2/14/2019 8:37:28 AM**

Reviewed By: VN 2/14/19

Labeled by TO 2/14/19

Chain of Custody

1. Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐	
2. How was the sample delivered?	Courier			

Log In

3. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐	
4. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐	
5. Sample(s) in proper container(s)?	Yes ☑	No ☐		
6. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐		
7. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐		
8. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐	
9. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑	TO
10. Were any sample containers received broken?	Yes ☐	No ☑		
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐		
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐		
13. Is it clear what analyses were requested?	Yes ☑	No ☐		
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐		

# of preserved bottles checked for pH: 2/14/19 (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (If applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified:		Date	
By Whom:		Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person	
Regarding:			
Client Instructions:			

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.7	Good	Yes			
2	2.4	Good	Yes			
3	1.5	Good	Yes			
4	3.1	Good	Yes			

Chain-of-Custody Record

Client: BLAGG ENGR. / BPX

Mailing Address:

Phone #: 505.320.3489

email or Fax#:

QA/QC Package:
☒ Standard ☐ Level 4 (Full Validation)

Accreditation
☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:
☐ Standard ☒ Rush SAME DAY

Project Name: FLORANCE L #19

Project #:

Project Manager: STEVE MOSKAL

Sampler: NELSON VELEZ

On Ice: ☒ Yes ☐ No

Sample Temperature: 3.7°C, 2.4°C, 1.5°C, 3.1°C

HEAL No: 1902010

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + ~~MTBE + TMB's~~ (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	CHLORIDE			GRAB SAMPLE	Air Bubbles (Y or N)
2/13/19	1350	SOIL	GRAB (E. SIDE) @ 6' (120)	4oz. - 1	COOL	-001	✓		✓									✓			✓	

Date:	Time:	Relinquished by:	Received by:	Date	Time
2/13/19	1819			2/13/19	1819
2/13/19	2016		COURIER ENH ZIHVA	2/14/19	0810

Remarks: BILL BP DIRECTLY
CONTACT: STEVE MOSKAL / VANCE HIXON
VID : VHIXON@EVRM

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Siting Criteria

SITING AND HYDRO-GEOLOGICAL REPORT FOR FLORANCE L 019

Siting Criteria 19.15.17.10 NMAC

Depth to groundwater at the site is estimated to be greater than 100 feet. This estimation is based on data from Stone and others (1983), and depth to groundwater data obtained from water wells permitted by the New Mexico State Engineer's Office (OSE, Figure 1). Local topography and proximity to adjacent water features is also considered. A topographic map of the site is provided as Figure 2 and demonstrates that the below grade tank (BGT) is not within 300 feet of any continuously flowing watercourse or within 200 feet of any other significant watercourse, lakebed, sinkhole or playa lake as measured from the ordinary high water mark. Figure 3 demonstrates that the BGT is not within 300 feet of a permanent residence, school, hospital, institution or church. Figure 4 demonstrates, based on a search of the OSE database and USGS topographic maps, that there are no freshwater wells or springs within 1000 feet of the BGT. Figure 5 demonstrates that the BGT is not within a municipal boundary or a defined municipal freshwater well field. Figure 6 demonstrates that the BGT is not within 500 feet of a wetland. Figure 7 demonstrates that the BGT is not in an area overlying a subsurface mine. The BGT is not located in an unstable area. Figure 8 demonstrates that the BGT is not within the mapped FEMA 100-year floodplain.

Local Geology and Hydrology

This particular site is located north of Crow Canyon close to the main channel of Pump Canyon, but hundreds of feet higher in elevation than the surface of the canyon. Regional topography of Pump Canyon is composed of mesas dissected by deep, narrow canyons and arroyos. The more resistant cliff-forming sandstones of the San Jose Formation cap the interbedded siltstones, shales and sandstones of the Nacimiento Formation. Accumulations of talus and eroded sands at the base of canyon walls form steep to gentle slopes that transition into flat-bottomed arroyos within the canyons. Deposits of Quaternary alluvial and aeolian sands occur prominently near the surface of Pump Canyon, especially near streams and washes.

Regional Geology and Hydrology

The San Juan Basin is situated in the Navajo section of the Colorado Plateau and is characterized by broad open valleys, mesas, buttes and hogbacks. Away from major valleys and canyons topographic relief is generally low. Native vegetation is sparse and shrubby. Drainage is mainly by the San Juan River, the only permanent stream in the Navajo Section of the Colorado Plateau. The San Juan River is a tributary of the Colorado River. Major tributaries include the Animas, Chaco and La Plata Rivers. Flow of the San Juan River across the basin is regulated by the Navajo Dam, located about 30 miles northeast of Farmington, New Mexico. The climate is arid to semiarid with an average annual precipitation of 8 to 10 inches. Soils within the basin consist of weathered parent rock derived from predominantly physical means mostly from eolian depositional system with fluvial having a lesser impact.

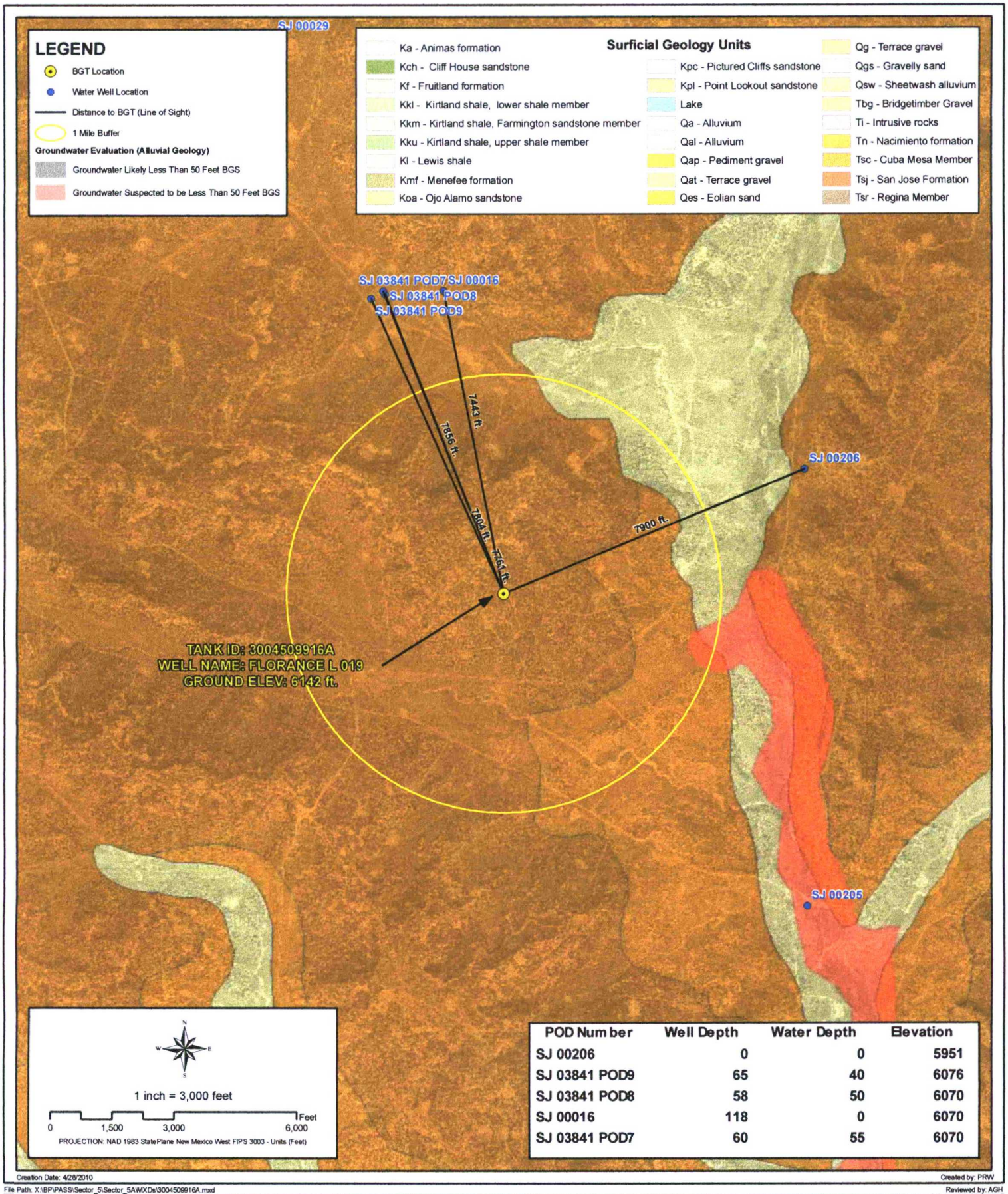
Cretaceous and Tertiary sandstones, as well as Quaternary Alluvial deposits, serve as the primary aquifers in the San Juan Basin (Stone et al., 1983). The San Jose Formation of Eocene age

occurs in both New Mexico and Colorado, and its outcrop forms the land surface over much of the eastern half of the central basin. It overlies the Nacimiento Formation in the area generally south of the Colorado-New Mexico border and overlies the Animas Formation in the general area north of the State Line. The San Jose Formation was deposited in various fluvial-type environments. In general, the unit consists of an interbedded sequence of sandstone, siltstone, and shale. Thickness of the San Jose Formation increases from west to east. Groundwater is associated with alluvial and fluvial sandstone aquifers. The occurrence of groundwater is mainly controlled by distribution of sandstone in the formation. The reported or measured discharge from numerous water wells completed in the formation range from 0.15 to 61 gallons per minute (gpm) and with a median of 5 gpm. Most of the wells provide water for livestock and domestic purposes. The formation is suitable for recharge from precipitation due to overlying soils being sandy, highly permeable and absorbent. Low annual precipitation, relatively high transpiration and evaporation rates and deep dissection of the formation by the San Juan River and its main tributaries all tend to reduce the effective recharge to the formation. Aquifers within the coarser and continuous sandstone bodies of the Nacimiento Formation of Paleocene age are between 0 and 1000 feet deep in the majority of the basin as well (Stone et al., 1983).

References

Circular 154—Guidebook to coal geology of northwest New Mexico By E. C. Beaumont, J. W. Shomaker, W. J. Stone, and others, 1976

Stone, et al., 1983, Hydrogeology and Water Resources of the San Juan Basin, New Mexico, Socorro, New Mexico Bureau of Mines and Mineral Resources Hydrologic Report 6, 70 p



POD Number	Well Depth	Water Depth	Elevation
SJ 00206	0	0	5951
SJ 03841 POD9	65	40	6076
SJ 03841 POD8	58	50	6070
SJ 00016	118	0	6070
SJ 03841 POD7	60	55	6070

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Reviewed by: AGH

bp

GROUNDWATER LESS THAN 50 FT.

WELL NAME: FLORANCE L 019

API NUMBER: 3004509916 TANK ID: 3004509916A

SECTION 3, TOWNSHIP 30.0N, RANGE 09W, P.M. NM23

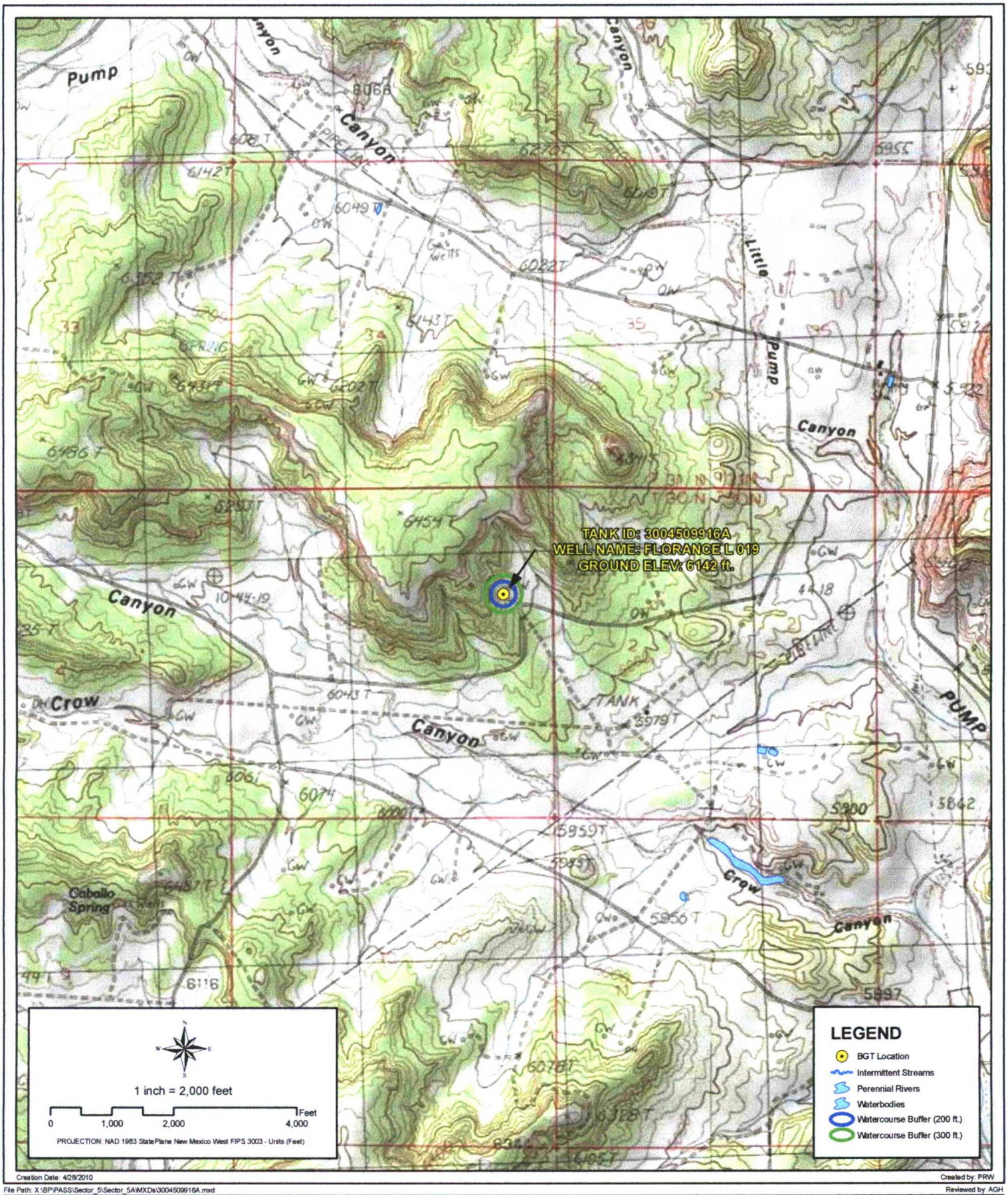
FIGURE 1

New Mexico Office of the State Engineer
Point of Diversion Summary

Well Tag	POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) Q64 Q16 Q4 Sec Tws Rng	(NAD83 UTM in meters) X	Y
	SJ 03841 POD9		252800	4083193

Driller License:	1210	**Driller Company:**	CASCADE DRILLING, LP		
Driller Name:	CAIN, MATTHEW				
Drill Start Date:	08/15/2008	**Drill Finish Date:**	08/15/2008	**Plug Date:**	
Log File Date:	09/04/2008	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:	2.00	**Depth Well:**	65 feet	**Depth Water:**	40 feet

Water Bearing Stratifications:	Top	Bottom	Description
	40	65	Sandstone/Gravel/Conglomerate



Creation Date: 4/28/2010
Created by: PRW
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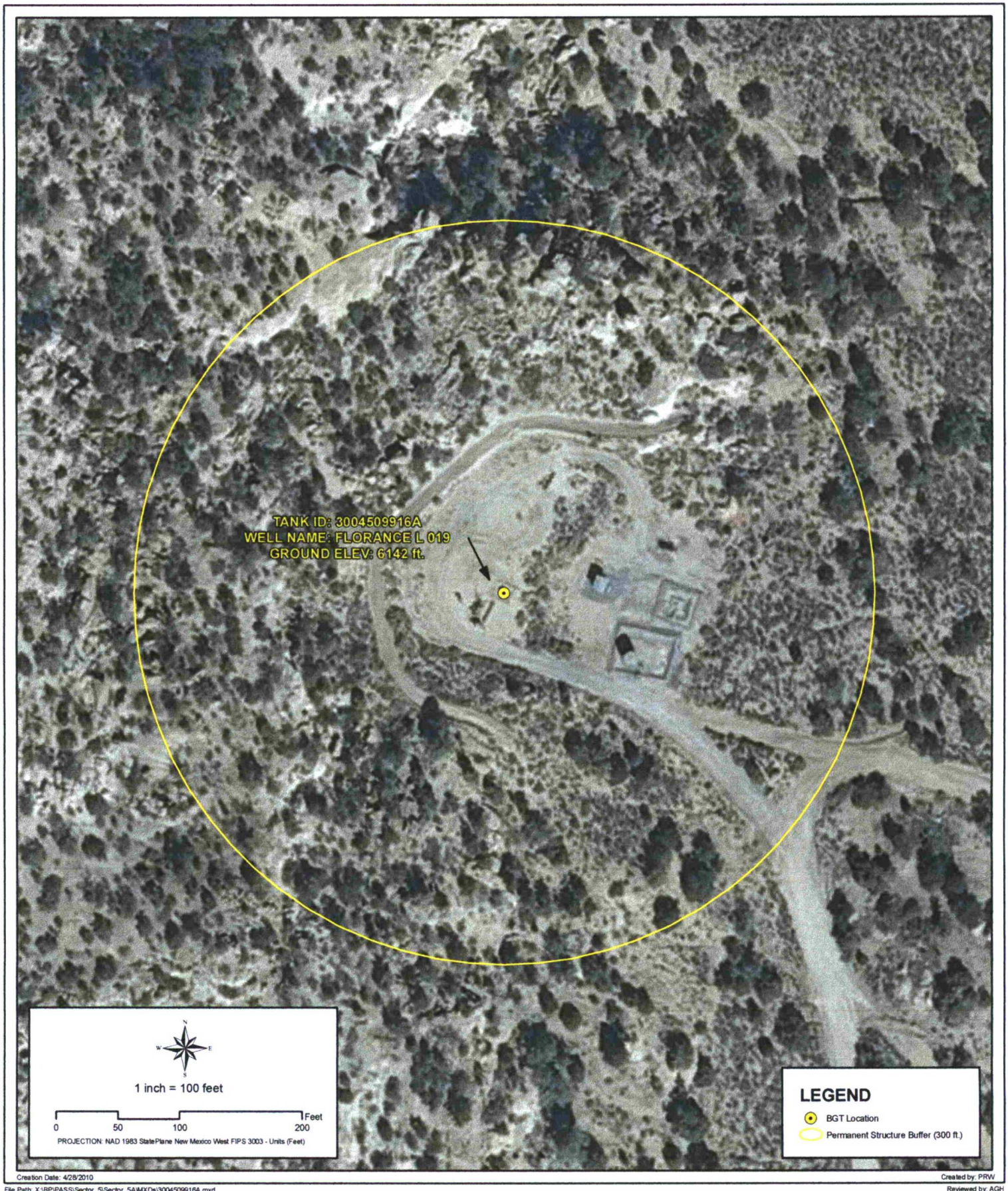
PROXIMITY TO WATERCOURSES

WELL NAME: FLORANCE L 019

API NUMBER: 3004509916 TANK ID: 3004509916A

SECTION 3, TOWNSHIP 30.0N, RANGE 09W, P.M. NM23

FIGURE 2



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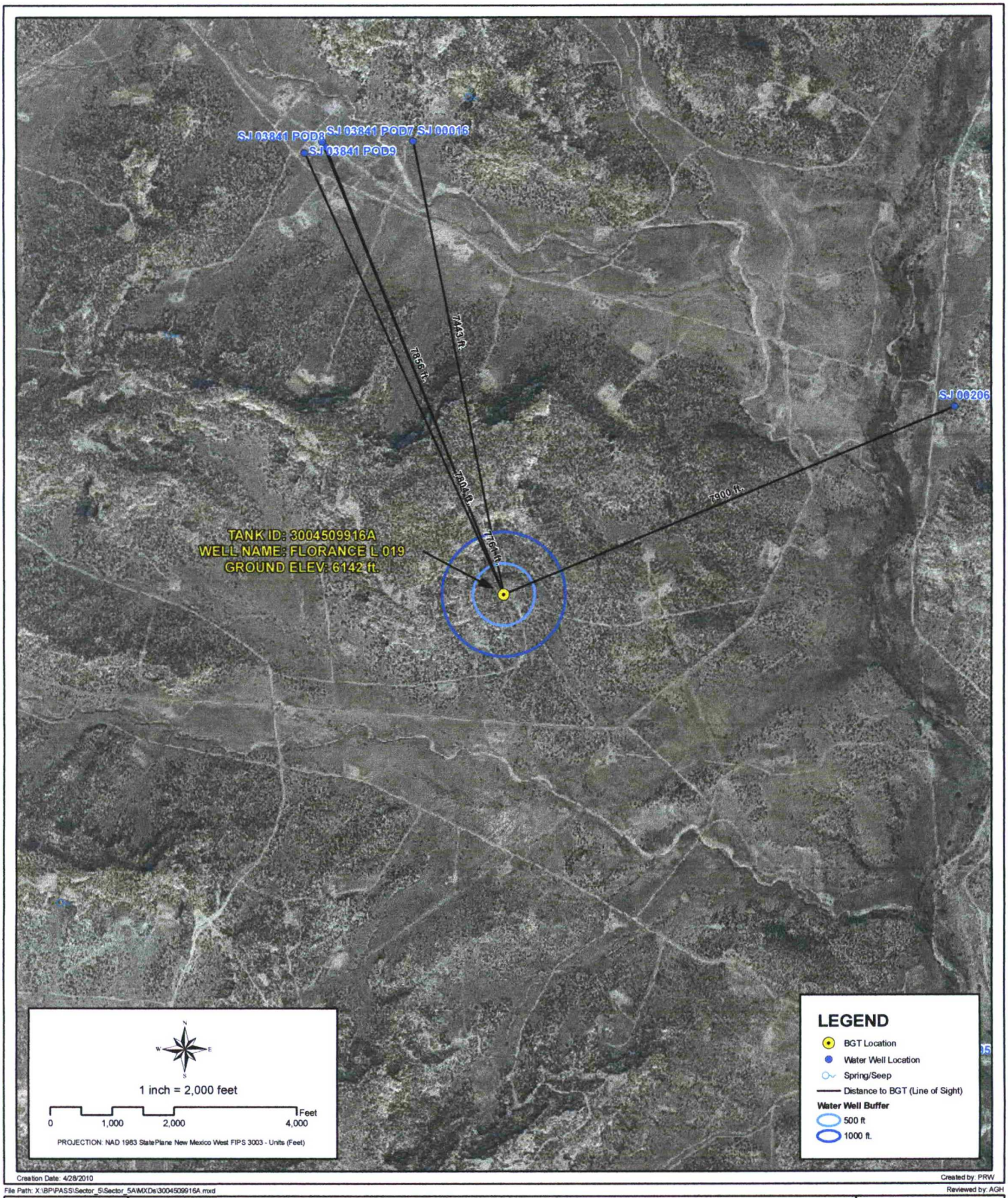
PROXIMITY TO PERMANENT STRUCTURE

WELL NAME: FLORANCE L 019

API NUMBER: 3004509916 TANK ID: 3004509916A

SECTION 3, TOWNSHIP 30.0N, RANGE 09W, P.M. NM23

FIGURE 3



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Reviewed by: AGH

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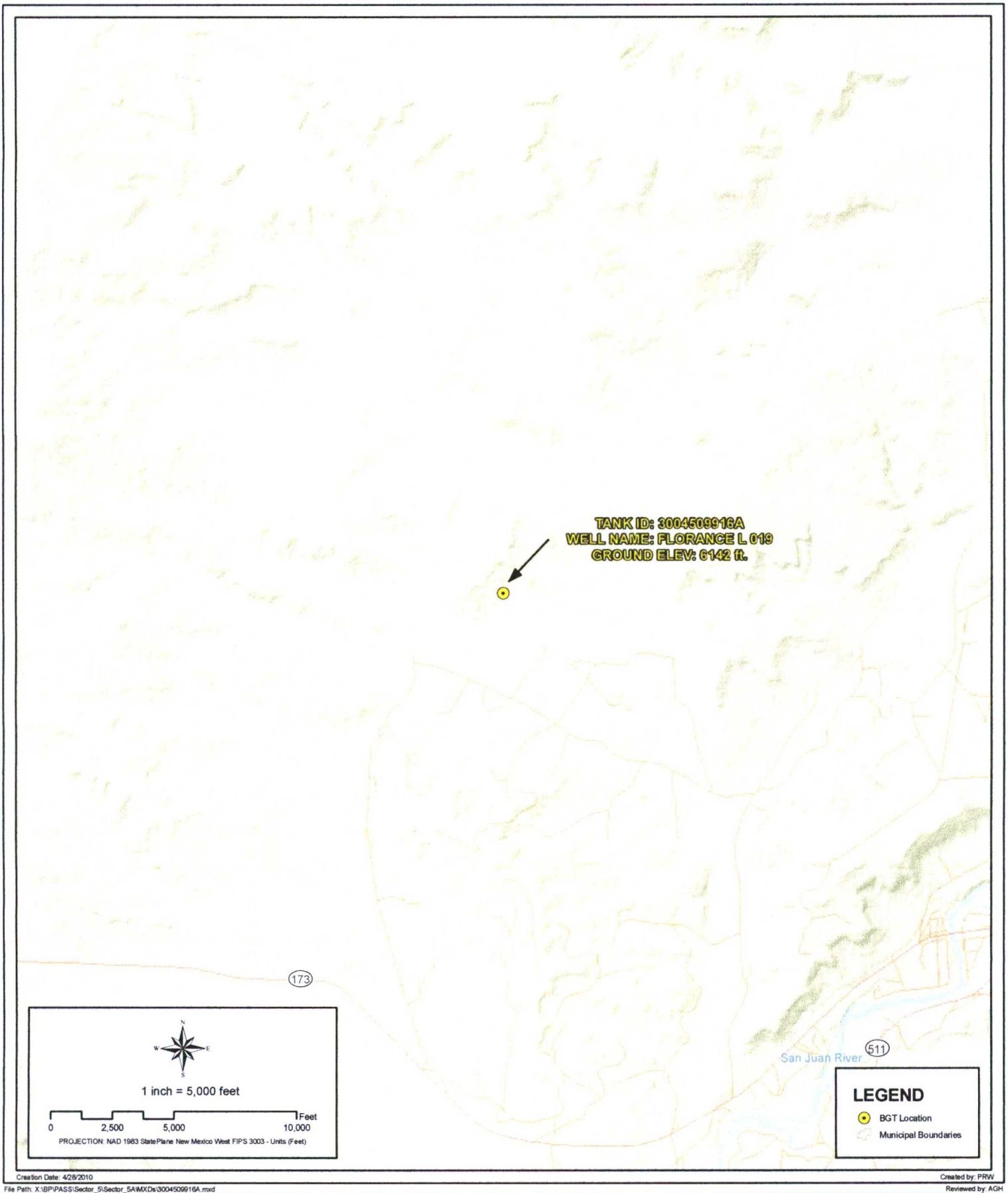
PROXIMITY TO WATER WELLS

WELL NAME: FLORANCE L 019

API NUMBER: 3004509916 TANK ID: 3004509916A

SECTION 3, TOWNSHIP 30.0N, RANGE 09W, P.M. NM23

FIGURE 4



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Reviewed by: AGH

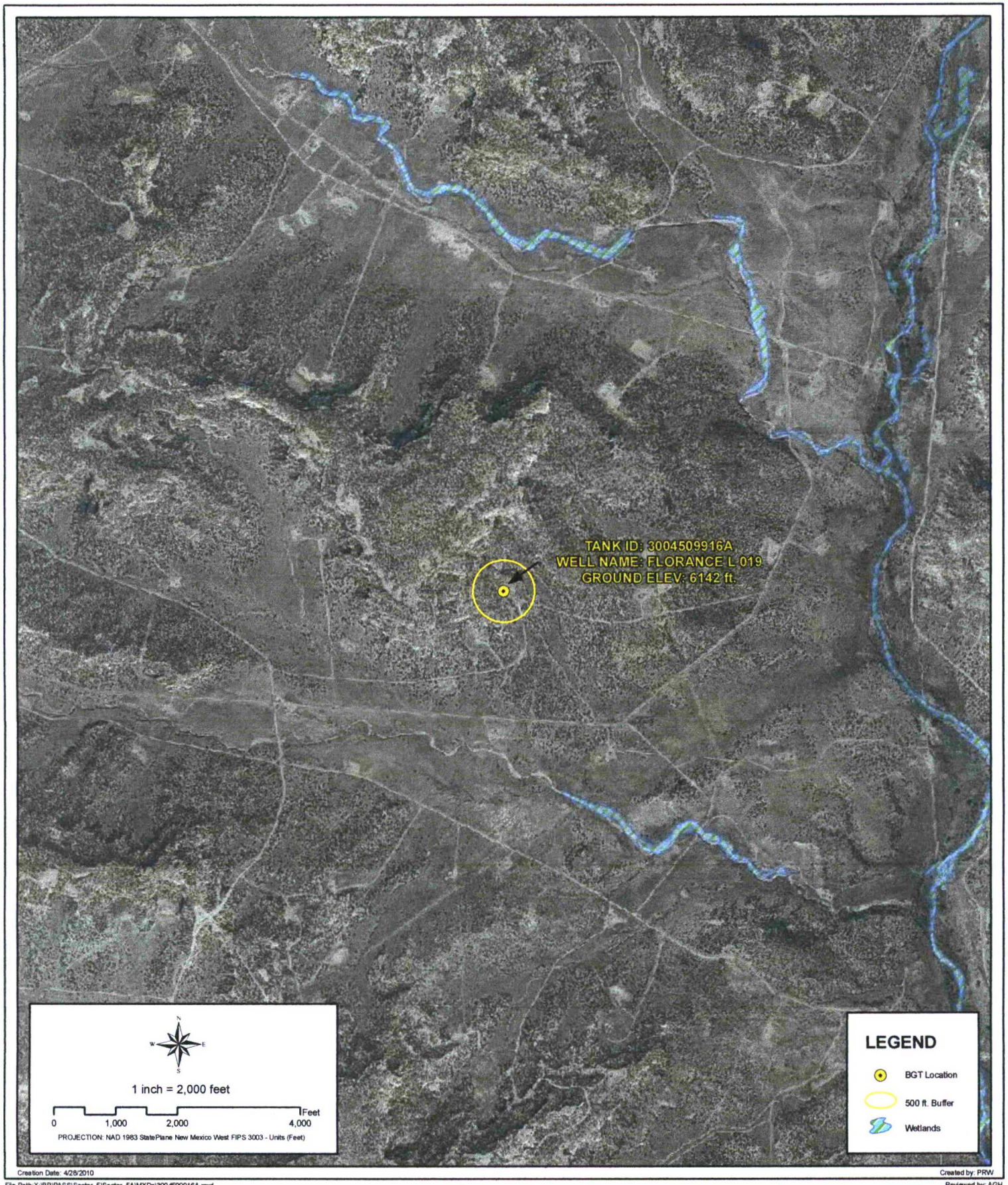
PROXIMITY TO MUNICIPAL BOUNDARY

WELL NAME: FLORANCE L 019

API NUMBER: 3004509916 TANK ID: 3004509916A

SECTION 3, TOWNSHIP 30.0N, RANGE 09W, P.M. NM23

FIGURE 5



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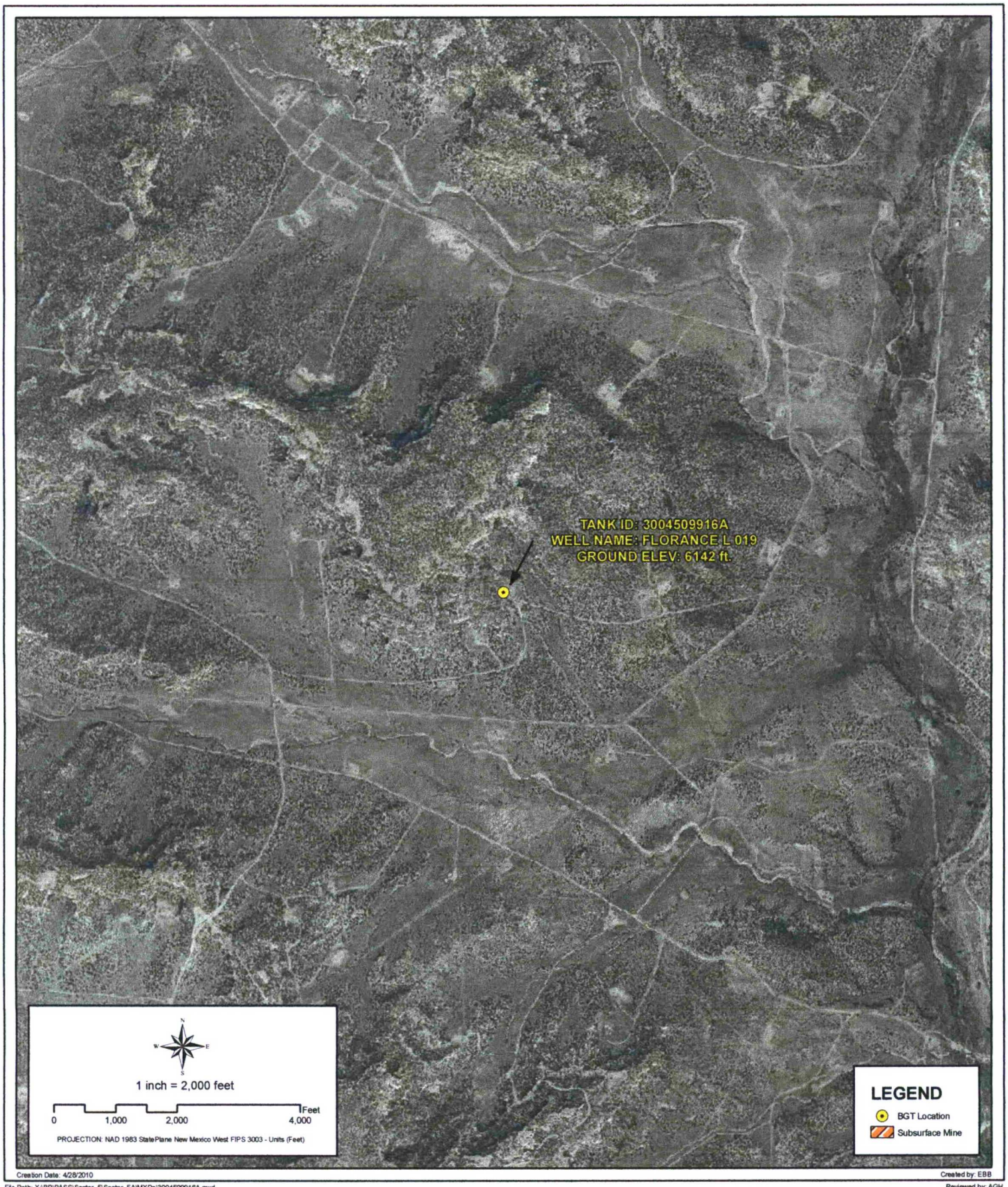
PROXIMITY TO WETLANDS

WELL NAME: FLORANCE L 019

API NUMBER: 3004509916 TANK ID: 3004509916A

SECTION 3, TOWNSHIP 30.0N, RANGE 09W, P.M. NM23

FIGURE 6



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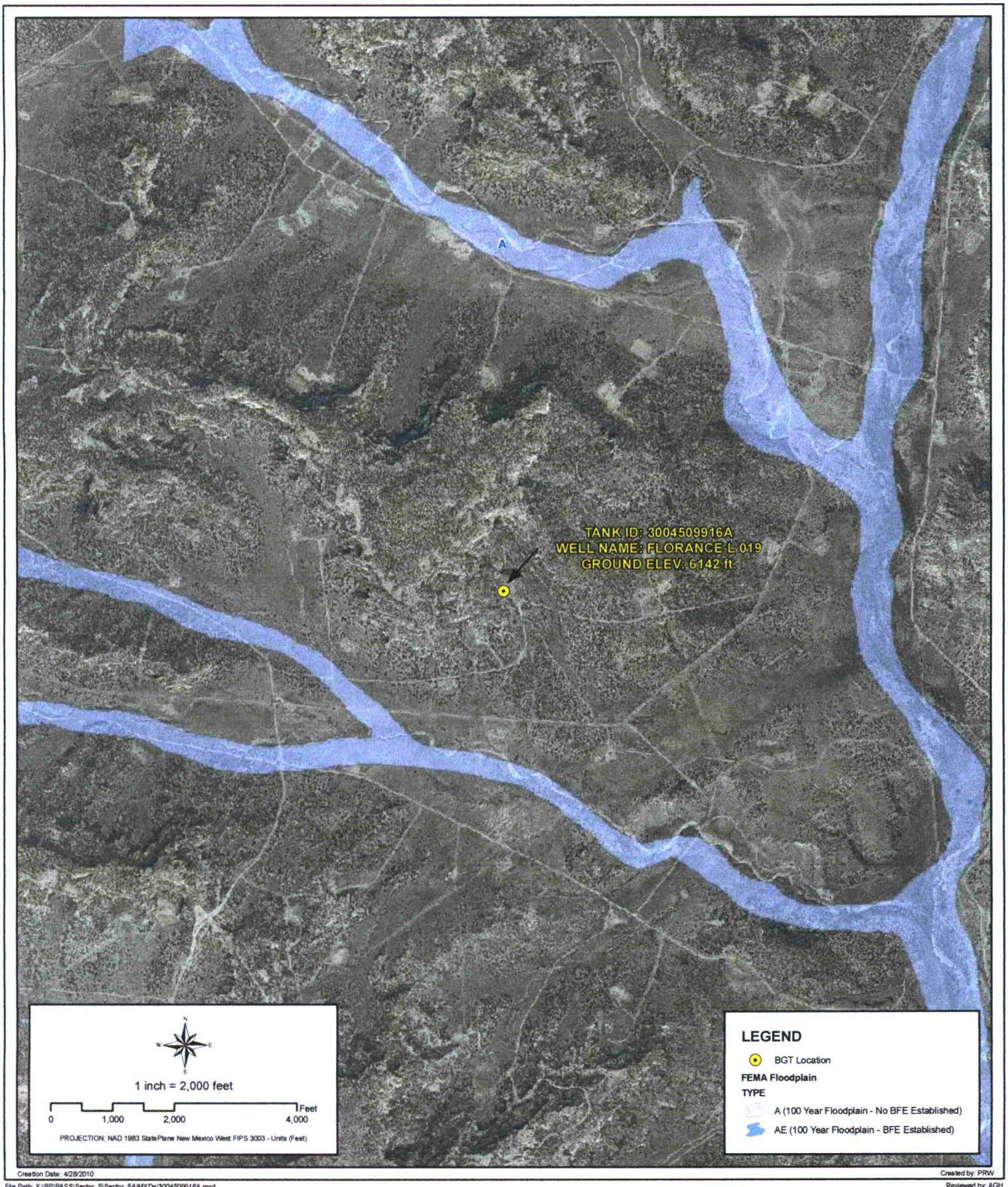
PROXIMITY TO SUBSURFACE MINES

WELL NAME: FLORANCE L 019

API NUMBER: 3004509916 TANK ID: 3004509916A

SECTION 3, TOWNSHIP 30.0N, RANGE 09W, P.M.NM23

FIGURE 7



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PROXIMITY TO FLOODPLAIN

WELL NAME: FLORANCE L 019

API NUMBER: 3004509916 TANK ID: 3004509916A

SECTION 3, TOWNSHIP 30.0N, RANGE 09W, P.M. NM23

FIGURE 8

SOUTHERN SAN JUAN BASIN (SSJB)

Figure Citation List

March 2010

Figure 1: Groundwater Less Than 50 ft.

Layers:

Water Wells: **iWaters Database: NMOSE/ISC (Dec. 2009)**

New Mexico Office of the State Engineer (OSE) /ISC iWaters database. (Data updated: 12/2009. Data received: 03/09/2010). Data available from: http://www.ose.state.nm.us/waters_db_index.html.

Cathodic Wells: **Tierra Corrosion Control, Inc. (Aug. 2008)**

Tierra Corrosion Control, Inc. 1700 Schofield Ln. Farmington, NM 87401. Driller's Data Log. (Data collected: All data are associated with cathodic protection wells installed at BP facilities between 2008-2009. Data received: 05/06/2010).

Hydrogeological Evaluation: **Wright Water Engineers, Inc. (2008)**

Evaluation completed by Wright Water Engineers, Inc. Durango Office. Data created using digital statewide geology at 1:500,000 from USGS in combination with 10m Digital Elevation Model (DEM) from NRCS. (Data compiled: 2008.)

Results: Spatial Polygons representing "Groundwater likely to be less than 50 ft." and "Groundwater suspected to be less than 50 ft.".

Surficial Geology: **USGS (1963/1987)**

Data digitized and rectified by Geospatial Consultants. (Data digitized: 03/23/ 2010). Original hard copy maps sourced from United States Geological Survey (USGS). Data available from: http://pubs.er.usgs.gov/.

Geology, Structure and Uranium Deposits of the Shiprock Quadrangle, New Mexico and Arizonia. 1:250,000. I - 345. Compiled by Robert B. O'Sullivan and Helen M. Beikman. 1963.

Geologic Map of the Aztec 1 x 2 Quadrangle, Northwestern New Mexico and Southern Colorado. 1:250,000. I - 1730. Compiled by Kim Manley, Glenn R. Scott, and Reinhard A. Wobus. 1987.

Aerial Imagery: **Conoco (Summer 2009)**

ConocoPhillips Company. (Flown: Summer 2009). 12 in. High Resolution Orthoimagery. Projected coordinate system name: NAD_1983_StatePlane_New_Mexico_West_FIPS_3003_Feet.

Provided as tiled .tiff images and indexed using polygon index layer.

Figure 2: Proximity to Watercourses

Layers:

Perennial Streams: **NHD, USGS (2010)**

National Hydrography Dataset (NHD). U.S. Geological Survey. (Data last updated: 02/19/2010. Data received: 03/09/2010). High-resolution: 1:24,000. Digital Representation of USGS 24k Topographic map series with field updates as required. Data available from: http://nhd.usgs.gov/.

Intermittent Streams: **NHD, USGS (2010)**

National Hydrography Dataset (NHD). U.S. Geological Survey. (Data last updated: 02/19/2010. Data received: 03/09/2010). High-resolution: 1:24,000. Digital Representation of USGS 24k Topographic map series with field updates as required. Data available from: http://nhd.usgs.gov/.

Water Bodies: **NHD, USGS (2010)**

National Hydrography Dataset (NHD). U.S. Geological Survey. (Data last updated: 02/19/2010. Data received: 03/09/2010). High-resolution: 1:24,000. Digital representation of USGS 24k Topographic map series with field updates as required. Data available from: http://nhd.usgs.gov/.

USGS Topographic Maps: **USGS (2007)**

USGS 24k Topographic map series. 1:24000. Maps are seamless, scanned images of USGS paper topographic maps. Data available from: http://store.usgs.gov.

Figure 3: Proximity to Permanent Structure

Layers:

Aerial Imagery: **Conoco (Summer 2009)**

ConocoPhillips Company. (Flown: Summer 2009). 12 in. High Resolution Orthoimagery. Projected coordinate system name:
NAD_1983_StatePlane_New_Mexico_West_FIPS_3003_Feet.

Provided as tiled .tiff images and indexed using polygon index layer.

Figure 4: Proximity to Water Wells

Layers:

Water Wells: **iWaters Database: NMOSE/ISC (Dec. 2009)**

New Mexico Office of the State Engineer (OSE) /ISC iWaters database. (Data updated: 12/2009. Data received: 03/09/2010). Data available from: http://www.ose.state.nm.us/waters_db_index.html.

Springs/Seeps: **NHD, USGS (2010)**

National Hydrography Dataset (NHD). U.S. Geological Survey. (Data last updated: 02/19/2010. Data received: 03/09/2010). High-resolution: 1:24,000. Digital representation of USGS 24k Topographic map series with field updates as required. Data available from: http://nhd.usgs.gov/.

Aerial Imagery: **Conoco (Summer 2009)**

ConocoPhillips Company. (Flown: Summer 2009). 12 in. High Resolution Orthoimagery. Projected coordinate system name: NAD_1983_StatePlane_New_Mexico_West_FIPS_3003_Feet.

Provided as tiled .tiff images and indexed using polygon index layer.

Figure 5: Proximity to Municipal Boundary

Layers:

Municipal Boundary: **San Juan County, New Mexico (2010)**

Data provided by San Juan County GIS Division. (Data received: 03/25/2010).

Shaded Relief: **NED, USGS (1999)**

National Elevation Dataset (NED). U.S. Geological Survey, EROS Data Center. (Data created: 1999. Data downloaded: April, 2010). Resolution: 10 meter (1/3 arc-second). Data available from: http://ned.usgs.gov/.

StreetMap North America: **Tele Atlas North America, Inc., ESRI (2008)**

Data derived from Tele Atlas Dynamap/Transportation North America, version 5.2. (Data updated: annually. Data series issue: 2008).

Figure 6: Proximity to Wetlands

Layers:

Wetlands: **NWI (2010)**

National Wetlands Inventory (NWI). U.S Fish and Wildlife Service. (Data last updated: 09/25/2009. Data received: 03/21/2010). Data available from: http://www.fws.gov/wetlands/.

Aerial Imagery: **Conoco (Summer 2009)**

ConocoPhillips Company. (Flown: Summer 2009). 12 in. High Resolution Orthoimagery. Projected coordinate system name:
NAD_1983_StatePlane_New_Mexico_West_FIPS_3003_Feet.

Provided as tiled .tiff images and indexed using polygon index layer.

Figure 7: Proximity to Subsurface Mine

Layers:

Subsurface Mine: **NM Mining and Minerals Division (2010)**

New Mexico Mining and Minerals Division. (Data received: 03/12/2010). Contact: Susan Lucas Kamat, Geologist. Provided PLSS NM locations (Sections) for the two subsurface mines located in San Juan and Rio Arriba counties.

Aerial Imagery: **Conoco (Summer 2009)**

ConocoPhillips Company. (Flown: Summer 2009). 12 in. High Resolution Orthoimagery. Projected coordinate system name:
NAD_1983_StatePlane_New_Mexico_West_FIPS_3003_Feet.

Provided as tiled .tiff images and indexed using polygon index layer.

Figure 8: Proximity to FEMA Floodplain

Layers:

FEMA Floodplain: **FEMA (varying years)**

Data digitized and rectified by Wright Water Engineers, Inc. (Data digitized: August 2008). Digitized from hard copy Flood Insurance Rate Maps (FIRMs) (varying years) of San Juan County.

Aerial Imagery: **Conoco (Summer 2009)**

ConocoPhillips Company. (Flown: Summer 2009). 12 in. High Resolution Orthoimagery. Projected coordinate system name:
NAD_1983_StatePlane_New_Mexico_West_FIPS_3003_Feet.

Provided as tiled .tiff images and indexed using polygon index layer.