UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
DENVER, CO 80202-1129
Phone 800-227-8917
http://www.epa.gov/region08

MAY 2 0 2014

Ref: 8ENF-UFO

CERTIFIED MAIL 7008-3230-0003-0727-5393
RETURN RECEIPT REQUESTED

Susana Lara-Mesa
Wattenberg Disposal, LLC
1675 Broadway
Suite 2800
Denver, CO 80202

Re: Underground Injection Control (UIC)
Permission to Resume Injection
Suckla Farms #1 Well
EPA ID# CO10938-02115
API # 05-123-14291
Spindle Field
Weld County, CO

Dear Ms. Lara-Mesa:

On May 16, 2014, the Environmental Protection Agency (EPA) received information from Wattenberg Disposal, LLC on the above referenced well concerning the workover to address a casing leak and the followup mechanical integrity test (MIT) conducted on May 14, 2014. The data submitted shows that the well passed the required MIT. Therefore, pursuant to Title 40 of the Code of Federal Regulations Section 144.51(q)(2) (40 C.F.R. § 144.51(q)(2)), permission to resume injection is granted. Under continuous service, the next MIT will be due on or before May 14, 2019.

Pursuant to 40 C.F.R. § 144.52(a)(6), if the well is not used for a period of at least two (2) years ("temporary abandonment"), it shall be plugged and abandoned unless the EPA is notified and procedures are described to the EPA ensuring the well will not endanger underground sources of drinking water ("non-endangerment demonstration") during its continued temporary abandonment. A successful MIT is an acceptable non-endangerment demonstration and would be necessary every two (2) years the well continues in temporary abandonment.

Failure to comply with a UIC Permit, or the UIC regulations found at 40 C.F.R. Parts 144 through 148 constitute one or more violations of the Safe Drinking Water Act, 42 U.S.C. § 300h. Such non-compliance may subject you to formal enforcement by the EPA, as codified at 40 C.F.R. Part 22.

TAB	GREEN	BLUE	CB
		1	

If you have any questions concerning this letter, you may contact Sarah Roberts at (303) 312-7056. Please direct all correspondence to the attention of Sarah Roberts at Mail Code 8ENF-UFO.

Sincerely,

Mark Chalfant, Acting Director
UIC/FIFRA/OPA Technical Enforcement Programs

Printed on Recycled Paper

Bowling, Linda

From: Rodriguez, Sallena
Sent: Thursday, October 02, 2014 1:02 PM
To: Bowling, Linda
Subject: RE: Public Notice Question

This notice was published on 9/23.

Let me know if you need anything else.

Sallena

From: Bowling, Linda
Sent: Thursday, October 02, 2014 12:59 PM
To: Rodriguez, Sallena
Cc: Minter, Douglas
Subject: Public Notice Question

Hello Sallena,

I spoke with Douglas Minter this morning regarding the public notice which has been issued. This is the public notice for the Suckla Farms #1 well renewal – Permit No. CO10938-02115. The Suckla Farms #1 well is operated by the Wattenberg Disposal, LLC company.

Douglas pretty much restated the same analogy that you made earlier this morning. If the notification for the renewal of the Suckla Farms #1 well has been published in one newspaper, i.e. Fort Morgan paper, and posted on the EPA website for public comments than no additional public notice is required.

Can you let me know when the public comment period will end for the notice posted in the Fort Morgan paper?

Lynne, has the document been posted on the Region 8 website for at least 30 days? Let me know.

Thank you all in advance for your responses.

Linda M. Bowling
U.S. Environmental Protection Agency Region 8
1595 Wynkoop Street
Denver, CO 80202
(303) 312-6254 work
(303) 312-6741 fax
bowling.linda@epa.gov

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MEMORANDUM

SUBJECT: Suckla Farms #1 - Permit No. CO10938-02115
Compliance with Requirements under 40 CFR Section 144.4 –
Considerations under Federal Law

FROM: Linda M. Bowling
UIC Permit Writer

TO: Memo to the File

DATE: July 9, 2014

This memorandum evaluates the consistency of issuance of a permit for the continuous operation of the Suckla Farms #1 injection well with EPA regulations at 40 C.F.R. Section 144.4. This well is located at the following:

Suckla Farms #1 Injection Well
SENW, 500 feet (ft.) from the south line (FSL) and 2020 ft. from the west line (FWL),
Section 10, Township 1 North, Range 67 West
Weld County, Colorado
API No. 05-123-14291

The National Historic Preservation Act of 1966, 16 U.S.C. § 470 et seq

Section 106 of the NHPA, 16 U.S.C. § 470f, requires that federal agencies consider the effects of federal undertakings on historic properties and afford the Advisory Council on Historic Preservation (the Council) a reasonable opportunity to comment with regard to such undertakings. Under the Council's implementing regulations (36 C.F.R. Part 800), where the federal agency determines that an undertaking is a type of activity that does not have the potential to cause effects on historic properties, there are no further obligations under section 106 or the regulations. 36 C.F.R. § 800.3(a)(1).

The EPA has received an application from Wattenberg Disposal, LLC to renew the permit for an underground injection control (UIC) Class I non-hazardous Permit for the existing Suckla Farms #1 Class I injection well located on private property in Weld County, Colorado. The Suckla Farms injection well is located in a portion of the Spindle Field adjacent to the Weld County Road 19. This well was initially permitted as a Class I well on June 16, 1992, for a period of 10 years. A renewal was issued on January 22, 2003. The submittal of a complete application prior

to expiration of the Permit extends the existing Permit until completion of the re-permitting process and the issuance of a final decision regarding a new Permit (40 CFR 144.37).
The applicant proposes to continue to inject a mixture of fluids produced from oil and gas operations and non-hazardous industrial waste into perforations completed in the Lyons Formation between the depth of 9276 feet and 9418 feet. This permit application is for continued operation of a Class I non-hazardous well for the disposal of both produced water from oil and gas operations, including gas plants and methane storage operations and non-hazardous industrial fluids. The industrial fluids will consist of reclaimed water associated with the removal of underground fuel storage tanks, pit water from oil field wash pits, contaminated surface water from construction sites, and other non-hazardous fluids. Fluids are anticipated to be from the Front Range area as far south as Pueblo, Colorado.

No new surface-disturbing activity is required as the Suckla Farms #1 is an existing well operating in Welds County, nor is any such new surface-disturbing activity authorized by this permit. Continued operation of the Suckla Farms #1 well is not expected to result in any impacts to historical artifacts. An evaluation of compliance with the National Historic Preservation Act (NHPA) is not required in order to re-permit the Suckla Farms #1 well. Once permitted, the Suckla Farms well injection operations will continue exactly as it has since 1992. The State Historic Preservation Officer for Colorado issued a finding of no historic properties affected for the proposed project pursuant to 36 CFR 800.4(d)(1) in a response dated March 25, 2014.

The Endangered Species Act, 16 U.S.C. § 1531 et seq.
Section 7(a)(2) of the Endangered Species Act (ESA), 16 U.S.C. 1536 (a)(2), requires federal agencies to ensure that actions they authorize, fund or carry out are not likely to jeopardize the continued existence of federally-listed endangered or threatened species or result in the destruction or adverse modification of designated critical habitat of such species. ESA implementing regulations at 50 C.F.R. Part 402 require consultation with FWS where the action "may affect" listed species or their critical habitat. 50 C.F.R. 402.14.

The impact of this project is expected to be limited. There will be no noise and excess traffic resulting because the well is constructed and will continue current operations under the permit renewal. This action will not require activities such as removal of vegetation, impounding, diverting, deepening, controlling or otherwise modifying streams or bodies of water. Since no water discharge is authorized, there are no expected effects on migratory birds or fisheries.

According to information provided in an email from the U.S. Fish and Wildlife Service (FWS) dated April 9, 2014, the project area does not have any threatened and endangered species present. There are no fish and wildlife concerns.

Based on the information outlined above, the EPA has determined that issuance of UIC Permit CO10938-02115 is not an action that may affect threatened or endangered species.

The Coastal Zone Management Act, 16 U.S.C. § 1451 et seq.

Not applicable.

The Fish & Wildlife Coordination Act, 16 U.S.C. § 661 et seq.
The continued operation of the Suckla Farms #1 well will not involve disturbance of a water body. Therefore, consultation with the Fish and Wildlife Service is not required for this action.

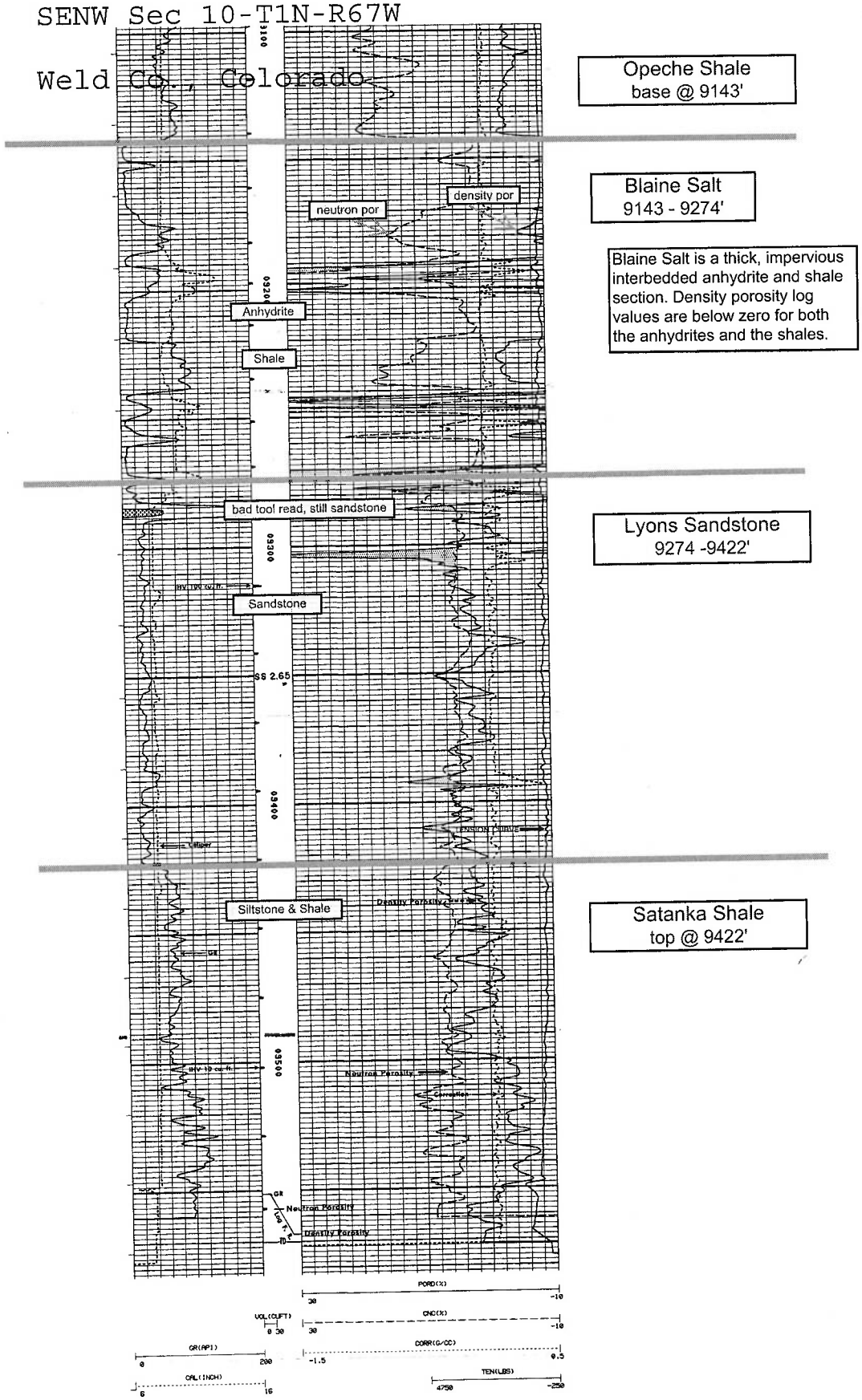
Executive Orders.
The EPA is complying with Executive Orders, including, to the extent applicable, E.O.13175 (Consultation and Coordination With Indian Tribal Governments).

The Wild and Scenic Rivers Act, 16 U.S.C. § 1273 et seq.
There are no designated Wild and Scenic rivers or tributaries of any such rivers within the Suckla Farms #1 well's ¼-mile-radius Area of Review. In addition, no water resources project will be authorized by this permit. Accordingly, the Wild and Scenic Rivers Act is not applicable to this action.

Suckla Farms Injection Well #1

SENW Sec 10-T1N-R67W

Weld Co., Colorado



APPENDIX D

Bowling, Linda

From: Susana Lara-Mesa [SLaraMesa@kpk.com]
Sent: Wednesday, January 08, 2014 4:35 PM
To: Bowling, Linda
Subject: RE: Questions

Linda,
Please find my responses below. The only information I'm missing is the language for testing new sources. Could you please help me with that?

Thanks,
Susi

Susana Lara-Mesa | K.P. Kauffman Company, Inc.
1675 Broadway, Suite 2800 |Denver, CO 80202 |T: (303) 825-4822 |SLaraMesa@kpk.com |www.kpk.com

From: Bowling, Linda [mailto:Bowling.Linda@epa.gov]
Sent: Tuesday, December 24, 2013 11:51 AM
To: Susana Lara-Mesa
Subject: Questions

- Do you have a date for the last renewal for the Suckla Farms #1 well?*[Susana Lara-Mesa]* Final Permit Issue date is January 10, 2003
- What is the lower confining zone at the proposed well location for the Lyons injection zone?*[Susana Lara-Mesa]* The Blaine Anhydrite at 8757'
- Here's the suggested permit (renewal) language that I spoke with you over the phone about. Let me know what you think. I would like to add the following language to the monitoring section with some edits of course.*[Susana Lara-Mesa]* This is what we currently do, so this is ok. We also do semi-annual groundwater monitoring.

1. Injection Well Monitoring Program.
The Permittee submitted with the application a monitoring program, parts of which are incorporated into this permit as specified below. Monitoring shall consist of:

a) analysis of the injection fluids, performed:

(i) **quarterly** for: pH, Total Dissolved Solids (TDS), and specific gravity;

(ii) The permittee shall submit a comprehensive water analysis and brief summary to the Director **within thirty (30) days** of observing any significant change(s) in the parameters measured under Part II, Section E.1.(a).(i) of this permit: pH, TDS, and specific gravity. The permittee shall identify the potential of any observed significant change(s) to cause fractures and/or of the potential of the injected

fluid to exhibit a hazardous characteristic in the brief summary. A significant change observed for the parameters measured for the injection fluid are:

- ☐ pH - Analysis of the fluid's pH value shows it to be less than 2 and/or greater than 12.5;
- ☐ TDS - Measured TDS values are 10% greater than the parameter's baseline value; and/or
- ☐ Specific Gravity - Specific gravity data is 10% greater than the parameter's baseline value.

The applicant shall use the baseline data established for the Suckla Farms #1 well. Samples and measurements shall be representative of the monitored activity. The Permittee shall utilize the applicable analytical methods described in Table I of 40 CFR Section 136.3, or in Appendix III of 40 CFR Part 261, or in certain circumstances, other methods that have been approved by the EPA Administrator.

Let me know what you think.

Linda Bowling
1595 Wynkoop Street
Denver, CO 80202
(303) 312-6254 work
bowling.linda@epa.gov

Wattenberg Disposal, LLC
Denver, Colorado
Packer = 9240'
TD = 9571 ft
PBTD = 9476'

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
DENVER, CO 80202-1129
Phone 800-227-8917
http://www.epa.gov/region08

2014TA0470CPA0043 EM - L. Bowling

U.S. FISH AND WILDLIFE SERVICE	
☒ NO CONCERNS	
☐ CONCUR NOT LIKELY TO ADVERSELY AFFECT	
☐ NO COMMENT	
Susan C. Linner	4/9/14
SUSAN C. LINNER	DATE
COLORADO FIELD SUPERVISOR	

Ref: 8P-W-UIC

Susan Linner, Field Supervisor
Colorado Ecological Services Field Office
P.O. Box 25486
DFC 65412
Denver, Colorado 80225-0486

RE: Endangered Species Act Evaluation, 1422 UIC Class I Well, Wattenberg Disposal LLC, Suckla Farms #1 Disposal Well, Weld County Colorado, Permit No. CO10938-02115

Dear Ms. Linner:

I am contacting the Colorado Ecological Services Field Office to notify you of a renewal permit application that our office is reviewing. I would like to know if your office has any concerns about allowing work to continue under a renewal permit to continue disposal operations.

My name is Linda Bowling. I'm an engineer who works for the Environmental Protection Agency Region 8, Denver Office in the Underground Injection Control Program. The EPA has received a Class I Nonhazardous Disposal Permit renewal application for the Suckla Farm #1 disposal well which is owned and operated by Wattenberg Disposal LLC. The Suckla Farm #1 well is located at the following:

Suckla Farms #1 Underground Injection Well

SENW, 500 feet (ft) from the south line (FSL) and 2020 ft from the west line (FWL),

Section 10, Township 1 North, Range 67 West

Weld County, Colorado

This is a commercial disposal well which injects nonhazardous wastewater for disposal into the Lyons Formation. The nonhazardous source fluid originates from produced brines, fracture fluids, and various other sources. Trucks unload the wastewater to a settling tank and oil is removed. Then it moves to retention tanks, and then to the pumps and chemical addition. After this, it's pumped to the well.

The Suckla Farm #1 well has been authorized to operate since July 1992. The well is completed and operating. Pipelines, roads, and the well pad are also established. The permit renewal activities are not expected to result in any further construction at the site.

I am enclosing the Endangered Species Act (ESA) list created by the Fish and Wildlife website IPAC for a Wastewater Facility, an ESA list for the option "Other", a schematic of the permitted well operation area, and a description of the project activities. I've generated two (2) ESA lists because I was unclear as to if the Wastewater Facility option was appropriate for a wastewater disposal project.

Please review the enclosed information. Let us know if you have concerns, if you request alterations, or if you have no objections to our office authorizing the continued operation of this project. Feel free to contact me at 303-312-6254 with any questions or concerns that you may have regarding this matter.

Sincerely,

Linda Bowling
Permit Writer

Enclosures.

Cc: Donna LaKamp

Printed on Recycled Paper

Bowling, Linda

From: Bowling, Linda
Sent: Tuesday, August 05, 2014 6:43 AM
To: 'Susana Lara-Mesa'
Subject: RE: Latest Changes

Susi. I will be working on a project this morning. I will give you a call later this evening if that is okay with you. Take care.

From: Susana Lara-Mesa [mailto:SLaraMesa@kpk.com]
Sent: Monday, August 04, 2014 3:55 PM
To: Bowling, Linda
Subject: RE: Latest Changes

Linda,
I'm sorry I missed your call last week. Please find my comments below. Let's try to set-up a time to talk this week. I'm out on Friday, though.

Thanks,
Susi

Susana Lara-Mesa | K.P. Kauffman Company, Inc.
1675 Broadway, Suite 2800 |Denver, CO 80202 |T: (303) 825-4822 |SLaraMesa@kpk.com |www.kpk.com

From: Bowling, Linda [mailto:Bowling.Linda@epa.gov]
Sent: Tuesday, July 29, 2014 2:50 PM
To: Susana Lara-Mesa
Subject: RE: Latest Changes

Susi,

I'll comb through the document again to make sure that the proper well class that refers to a Class I well is used. You probably see references to Class II a lot because when we refer to Class II oil and gas fluids these injectate sources sometimes are RCRA exempted.

I will try to use the word Oil and Gas and not Class II oil and gas. This may clear up some confusion.

I will respond to your other questions in the color "red" below.

From: Susana Lara-Mesa [mailto:SLaraMesa@kpk.com]
Sent: Tuesday, July 29, 2014 8:31 AM
To: Bowling, Linda
Subject: RE: Latest Changes

Linda,

Thanks for the update. I see a lot of language referring to Class II, this well is Class I and II, do you know why you only mention Class II?

My other comments are very minor and are listed below and highlighted in yellow.

Thanks,
Susi

Susana Lara-Mesa | K.P. Kauffman Company, Inc.
1675 Broadway, Suite 2800 |Denver, CO 80202 |T: (303) 825-4822 |SLaraMesa@kpk.com |www.kpk.com

From: Bowling, Linda [mailto:Bowling.Linda@epa.gov]
Sent: Wednesday, July 23, 2014 4:30 PM
To: Susana Lara-Mesa
Subject: Latest Changes

Susie, I'm copying a few language changes that I would love for you to review. See below:

Linda M. Bowling
U.S. Environmental Protection Agency Region 8
1595 Wynkoop Street
Denver, CO 80202
(303) 312-6254 work
(303) 312-6741 fax
bowling.linda@epa.gov

6. **Seismicity.**

The U.S. Geological Survey (USGS) Earthquake Hazards Program operates an email notification service which reports real-time earthquake events for any area specified by the user. The permittee is required to subscribe to this service, known as the Earthquake Notification Service (ENS). Details for the ENS can be found at:

https://sslearthquake.usgs.gov/ens/

and a subscription can be initiated at:

https://sslearthquake.usgs.gov/ens/register

For any seismic event reported within two miles of the permit boundary, the permittee shall immediately cease injection and report to EPA within twenty-four (24) hours according to Part III, Section E.11.c of this permit. Injection shall not resume until the Permittee has obtained approval to recommence injection from EPA.*[Susana Lara-Mesa]* Any magnitude? **I will give you a call to discuss.*[Susana Lara-Mesa]* I signed up and they by default have notifications starting at 6.0 magnitude, so I changed it to 1.0 and it says that I will be getting a lot of notifications, but so far I haven't gotten one. That's why I ask.**

For any seismic event occurring between two and fifty miles of the permit boundary, that event will be recorded and reported to EPA on a quarterly basis.

Pore Pressure	Data shall be collected within sixty (60) days of the receipt of the Final Permit Renewal.

[Susana Lara-Mesa] Can you please specify what methods can be used? Can it be a calculation using existing logs? **If calculated, you should use recent logs. We are using this data to determine whether or not the Lyons Formation is seeing a significant buildup of pressure.*[Susana Lara-Mesa]* I don't think there are recent logs, so either way we would have to pull tubing to run a tool. Could we do this during the next Pressure Fall-off and not 60 days after obtaining the permit?**

1. Injection Fluid Limitation.

The Permittee is authorized to inject produced water from oil and gas wells, oil and gas related fluids, nonhazardous fluids from underground storage tank (UST) cleanup sites, and other nonhazardous industrial wastes as approved by the Director in APPENDIX G or approved by other written correspondence from the EPA. Class II fluids*[Susana Lara-Mesa]* and Class I **[okay these references to classes can be removed, The sentence shall begin with the word fluids]** are brought to the surface in connection with surface gas storage operations, or conventional oil and gas production and may be commingled with waste waters from gas plants which are an integral part of production operations, unless those waters are classified as a hazardous waste at the time of injection. Injection of any hazardous waste as identified by EPA under 40 CFR 261.3 is prohibited. The Permittee may request new sources of fluids for injection by following the procedures provided below. A list of parameters to use in the evaluation of the following potential sources of wastewater is included in Appendix J.

a) New additions for source waters (new Class II (oil and gas) and UST (conventional fuel and heating oil) fluid sources) shall be made a binding part of this permit following the procedures outlined below, prior to acceptance of the fluid for disposal:*[Susana Lara-Mesa]* What constitutes a new source? **[Sources and additional quantities of fluids which have not been previously approved by the EPA Director are considered new sources. Did I miss anything? Is there another scenario?]***[Susana Lara-Mesa]* **No, I'm just wondering what the definition of a new source is. i.e. new well added, new formation, new lease, etc.?**

(i) Include the source name, location, Permittee, and a brief description of the operation that produced the waste fluid. If the source is an UST sources (conventional fuel and heating oil), the discussion must provide information demonstrating that no metals above the Characteristics of toxicity are present in the fluid.

(ii) The request shall be accompanied by a water analysis consisting of at least total dissolved solids, pH, specific gravity, and specific conductivity.

(iii) Any approval for injection may be granted verbally, with subsequent written approval from the Director.

b) For new UST (other than conventional fuel and heating) or industrial non-hazardous fluid sources shall be made a binding part of this permit following the procedures outlined below:

(i) Include the source name, location, Permittee, and a brief description of the operation that produced the waste fluid. If the source is an UST site, the discussion must provide information demonstrating that no metals above the

TC toxicity characteristics are present in the fluid.

(ii) The request shall include a complete analysis of the fluids, including cations, anions, BTEX, Characteristic of Corrosivity, Characteristic of Toxicity using the Toxicity Characteristic Leaching Procedure (TCLP) for all listed parameters, Characteristic of Ignitability, and Characteristic of Reactivity. Also, include an analysis for Total Dissolved Solids, pH, Specific Gravity, and Specific Conductivity.

(iii) Any approval for injection may be granted verbally, with subsequent written approval from the Director.

---

1. Injection Well Monitoring Program.

Samples and measurements shall be representative of the monitored activity. A list of parameters and EPA methods to use in the evaluation of wastewater sources described below is included in Appendix J. The permittee shall utilize the applicable analytical methods described in Table 1 of 40 CFR § 136.3, or Appendix III of 40 CFR Part 261, or in certain circumstances, by other methods that have been approved by the EPA Administrator. Monitoring shall consist of:

a) *analysis of all injection fluids and evaluation of any hazards, performed:*

(i) quarterly or during the quarter that sampling analysis occurs for: pH, Total Dissolved Solids (TDS), and specific gravity.

Note: Data for this analysis shall be obtained in accordance with the schedule identified in paragraphs Part II.E.1.b and Part II.E.1.c and reported in the quarter that the data is obtained;

(ii) The permittee shall submit a comprehensive water analysis using the parameters in Appendix J and provide a brief summary to the Director **within thirty (30) days** of observing any significant change(s) in the parameters measured under Part II, Section E.1.(a).(i) of this permit: pH, TDS, and specific gravity. The permittee shall identify the potential of any observed significant change(s) to cause fractures and/or of the potential of the injected fluid to exhibit a hazardous characteristic in the brief summary. A significant change observed for the parameters measured for the injection fluid are:

- ☐ pH - Analysis of the fluid's pH value shows it to be less than 2 and/or greater than 12.5;
- ☐ TDS - Measured TDS values are 20% greater than the parameter's baseline value; and/or
- ☐ Specific Gravity - Specific gravity data is 10% greater than the parameter's baseline value.

The applicant shall use baseline data previously established for the Suckla Farm #1 disposal well. Baseline data shall be based on three years of monitoring events and submitted to the EPA **within ninety (90) days of receipt of a final permit**. Samples and measurements shall be representative of the monitored activity.

b) *For fluids which vary in process and vary in chemical composition*, the analysis of industrial waste fluids shall be performed prior to delivery, or prior to being pumped from individual delivery trucks into on-site storage tanks. Fluid samples shall be analyzed for chemical, physical, biological, and radiological constituents, including cations and anions, pH, conductivity and total dissolved

solids content.

If however, the analyses of four (4) loads indicates the material is not hazardous and the quality has little variability, the Director may waive the requirement for analyzing every load. Subsequent to this waiver, a minimum of one load in five shall be analyzed for chemical, physical, biological, and radiological constituents, including cations and anions, pH, conductivity and total dissolved solids content. Also, data analysis shall be performed in accordance with Part II, Section E.1.a of this permit. The parameter list in Appendix J shall be used for the analyses.

c) *For fluids associated with a specific process which do not vary in chemical composition*, the analysis of industrial waste fluids received at the well site shall be performed once every ten loads or once per month, whichever is less. Fluid samples shall be analyzed for chemical, physical, biological, and radiological constituents, including cations and anions, pH, conductivity, and total dissolved solids content. If, however, the analyses of the monthly samples show significant variability (variation of greater than 20%) chemical composition and/or pH value shows it to be less than 2 and/or greater than 12.5; the frequency of analysis may be increased to once every two loads or once per month, whichever is less. Also, data analysis shall be performed in accordance with Part II, Section E.1.a of this permit. The parameter list in Appendix J shall be used for all analysis.

d) *Analysis of commingled injection fluids.* Commingled injection fluids are those waters pumped from the various storage tanks to the Class II injection system. An analysis for commingled injection fluids should occur prior to injection and shall be performed at random, but not less than once every three months, for total dissolved solids, pH, specific conductivity, specific gravity, major cations and anions, oil and grease, and total organic carbon.

APPENDIX J GROUNDWATER MONITORING PARAMETER LIST

TOPIC	PARAMETER	UNIT	METHOD
Identification of Characteristic Waste	Ignitability 40 CFR 261.21		Pensky-Martens Closed Cup Tester using Method ASTM Standard D 93-79 or D 93-80 or
			Setaflash Closed Cup Tester using Method ASTM Standard D 3278-78
	Corrosivity 40CFR 261.22		Evaluate pH using Method 9040C
	Reactivity 40CFR 261.23		See the description under 40 CFR 261.23
	Toxicity 40 CFR 261.24		Evaluate fluids using Toxicity Characteristic Leaching Procedure test Method 1311. See 40 CFR 261.24 for more information and Table 1 – Maximum Concentration of Contaminants for the Toxicity Characteristic
Field Parameters	pH		
	Specific Conductance		
	Temperature		

	TDS		
	Specific Gravity	g/l	
Cations	Magnesium	Mg/l	6010B
	Sodium	Mg/l	6010B
	Potassium	Mg/l	6010B
	Calcium	Mg/l	6010B
Anions	Carbonate	Mg/l	SM 2320
	Bicarbonate	Mg/l	SM 2320
	Chloride	Mg/l	325.3
	Sulfate	Mg/l	375.4
	Nitrite	Mg/l	353.2
	Nitrate	Mg/l	353.2
Metals **use total metals and not dissolved Metals*	Antimony	Mg/l	200.8, 200.9
	Arsenic	Mg/l	200.7, 200.8, 200.9
	Barium	Mg/l	200.7, 200.8
	Beryllium	Mg/l	200.7, 200.8, 200.9
	Boron	Mg/l	200.7, 212.3
	Cadmium	Mg/l	200.7, 200.8, 200.9
	Chromium (total)	Mg/l	200.7, 200.8, 200.9
	Copper	Mg/l	200.7, 200.8, 200.9
	Iron (total)	Mg/l	200.7, 200.8
	Lead	Mg/l	200.8, 200.9
	Mercury (inorganic)	Mg/l	200.8, 245.1, 245.2
	Manganese	Mg/l	200.7, 200.8, 200.9
	Molybdenum	Mg/l	200.7, 246.1, 246.2
	Nickel	Mg/l	200.7, 200.8, 200.9
	Selenium	Mg/l	200.8, 200.9
	Silver	Mg/l	200.7, 200.8, 200.9
	Strontium	Mg/l	200.7, 272.1, 272.2
	Thallium	Mg/l	200.8, 200.9
	Zinc	Mg/l	200.7, 200.8
Organics	Total Organic Carbon (TOC)	Mg/l	9060
	Total Recoverable Petroleum Hydrocarbons (TRPH)	Mg/l	418.1
	Benzene	Mg/l	8021B
	Toluene	Mg/l	8021B
	Ethylbenzene	Mg/l	8021B
	Xylenes, total	Mg/l	8021B
Radiological	Uranium	Mg/l	908.0, 908.1
	Radium - 226	pCI/L	304
	Radium - 228	pCI/L	304
	Gross Alpha	pCI/L	E900.0
	Gross Beta	pCI/L	E900.0
Other Constituents as needed			