



DEPARTMENT OF THE ARMY
CAMP STANLEY STORAGE ACTIVITY, RRAD
25800 RALPH FAIR ROAD, BOERNE, TX 78015-4800

June 12, 2006

U-094-06

Ms. Abigail Power
TCEQ, Region 13 Office
14250 Judson Road
San Antonio, TX 78233-4480

Subject: Permit By Rule Modification Notification for SWMU B-3
~~Department of the Army, Camp Stanley Storage Activity,~~
Boerne, Texas

Dear Ms. Power:

As requested by Mr. Clyde Price, TCEQ Region 13, Camp Stanley Storage Activity (CSSA), McAlester Army Ammunition Plant, U.S. Army Field Support Command, Army Materiel Command, U.S. Army is submitting this Permit By Rule notification to propose a modification of the soil vapor extraction (SVE) system planned and permitted for the site in 1996 (PBR 32405). The proposed modification will use soil evaporation to remediate chlorinated volatile organic compounds (VOCs) from excavated soils from Solid Waste Management Unit (SWMU) B-3. The calculated emission for the proposed project will not exceed the currently authorized SVE PBR for SWMU B-3 (0.7 lb/hr, 3.2 tons/yr). A conservative approach was used when estimating the emissions from the remedial evaporation effort by using a worst-case concentration of 140,000 mg/l of TCE (TCLP extract) in the soil.

Attached please find the proposed project modification including estimated emissions and completed forms and checklists for this modification. CSSA plans to start this remediation effort on 16 June 2006. If you have any questions, please call Ms. Glaré Sanchez, CSSA Environmental Program Manager, at (210) 698-5208.

Sincerely,


Jason D. Shirley
Installation Manager

Attachment

Glaré Sanchez
CSSA Environmental Program Manager

Clyde Price
TCEQ Region 13

~~Julie Burdey~~
Parsons

Henry Dress
Parsons

Ken Rice
Parsons

**MODIFICATION OF SWMU B-3
PERMIT BY RULE APPLICATION
FOR EVAPORATION TECHNIQUE**

**Camp Stanley Storage Activity
Boerne, Texas**

June 2006

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SOIL EVAPORATION TECHNIQUE DESCRIPTION

Introduction

The proposed modification to the project will use soil evaporation instead of soil vapor extraction (SVE) to effect remediation of chlorinated chemicals excavated from beneath Solid Waste Management Unit (SWMU) B-3, which is a contaminated site at Camp Stanley Storage Activity (CSSA) near Boerne, Texas.

The soils and groundwater in proximity to SWMU B-3, which is a former landfill area, were contaminated with chlorinated volatile organic compounds (VOCs) as a result of undefined historical activities.

Background

Remediation has previously been attempted at this site utilizing SVE. Standard Exemption permit number 32405 was first approved in 1996 for a small SVE system that was installed to remediate the contaminated soil matrix. The system was modified in 1999 to allow a larger 18 well system since permeability of the wells in the soil matrix was poor. That SVE system was subsequently demolished so that the most contaminated portions of the former landfill could be excavated and disposed offsite. A Permit-By-Rule (PBR) application was submitted in March 2004 to implement a pilot SVE study for the same site to address residual contamination of the underlying bedrock. This modification is proposed under the March 2004 application.

Technical Approach

This project proposes to excavate contaminated soils from the SWMU and place the soil in a waste pile on the adjoining ground surface over an area of approximately 6000 square feet. To facilitate evaporation of the contaminants the soil will be placed in single 12-inch lift. Samples will be collected and analyzed and to determine effectiveness. The expected duration of evaporation is the summer months of 2006. No schematic for piling the excavated material is provided.

Location

The location diagram as shown on Figure 1 of the attachments indicates the respective distances from the facility to the nearest property boundary and the nearest off-property receptor. The distance from SWMU B-3 to the nearest property boundary is 4200 feet. The distance from SWMU B-3 to the nearest off-property receptor is 4600 feet.

Estimated Emissions for Proposed Evaporation Technique

The maximum chlorinated hydrocarbon emission rate from the March 2004 PBR application using soil vapor extraction as the remedial technique was estimated at 0.7 lb/hr (3.2 tons per year), see Table 1.

Table 1
Emissions Summary from March 2004 PBR

Chemical Compound	CAS #	L mg/m ³	E Exempt Emission Rate lb/hr	Molecular weight, lb/lb-mol	Soil Gas Conc., ppmv	Calculated Emission Rate		Allowable Emission Rate	
						lb/hr	tons/yr*	lb/hr	tons/yr
Vinyl chloride	75-01-4	2	0.25	62.50	0.45	0.0	0.00	6.00	5.0
trans-1,2-dichloroethene	156-60-5	793	99.1	96.94	2.30	0.0	0.03	1.0	4.4
cis-1,2-dichloroethene	156-59-2	793	99.1	96.94	6.98	0.0	0.09	1.0	4.4
Trichloroethene	79-01-6	135	16.9	131.39	168.37	0.7	3.02	6.00	5.0
Tetrachloroethene	127-18-4	33.5	4.2	165.83	0.57	0.0	0.01	6.00	5.0
TOTAL EMISSIONS						0.7	3.2	20.0	23.8

Basis: Volumetric flowrate for calculation is based on 163 SCFM.

Distance to nearest receptor is > 3000 feet, therefore, a K value of 8 was used for all E=L/K calculations

L values for 1,1-dichloroethene, trans-1,2-dichloroethene, and cis-1,2-dichloroethene are ACGIH TWAs (1997)

Soil gas concentrations taken from two boreholes, the highest concentrations from each assumed to be worst-case.

* Assumes operation 24 hours per day, 7 days per week and 52 weeks per year.

The emissions rate for the evaporation technique was estimated using an EPA method as presented in the document Hazardous Waste Treatment, Storage, and Disposal Facilities, OAQPS, Air Emission Models (EPA 450/3-87-026). The calculations were performed using typical assumptions of the method's authors, local climate data, and trichloroethene (TCE) physical property data since TCE is the predominant constituent of the contamination at the site.

The worst-case scenario selected for the proposed evaporation technique assumes a maximum TCE fraction in the liquid (essentially equivalent to a TCLP result) of 0.14, which is most unlikely given TCE's solubility in water of approximately 1100 mg/L. Nonetheless, even with this extremely conservative assumption of the TCE fraction in the liquid phase, the estimated emissions are slightly below the 0.7 lb/hr estimated previously, see Calculations attached.

Conclusions:

The emission rates calculated for contaminant evaporation from a waste pile, using the method presented in EPA 450/3-87-026, are lower than the maximum rates allowed by the Rule, both on an hourly and an annual basis, and also less than or equal to the emission rates estimated in the March 2004 PBR application for the SVE pilot study. Therefore, permission to change the remedial technique is requested on the basis that the estimated emission rates will not exceed those represented in the March 2004 PBR application.

Certification

This certification validates the calculations of the attached Permit-By-Rule notification proposed to modify the technique to remediate Solid Waste Management Unit B-3 at Camp Stanley Storage Activity in Boerne, Texas using soil evaporation instead of soil vapor extraction. After reviewing the method, the basis for each assumption, the design conditions, the physical property data and the emissions estimates, I attest that the assumptions, design conditions, physical property data and calculations are correct and in accordance with accepted engineering practices, and that the calculations were done accurately. I believe the results are proper and correct in predicting the probable emissions that will result from evaporation at the specified conditions assuming the 1987 EPA method is both valid and accurate.

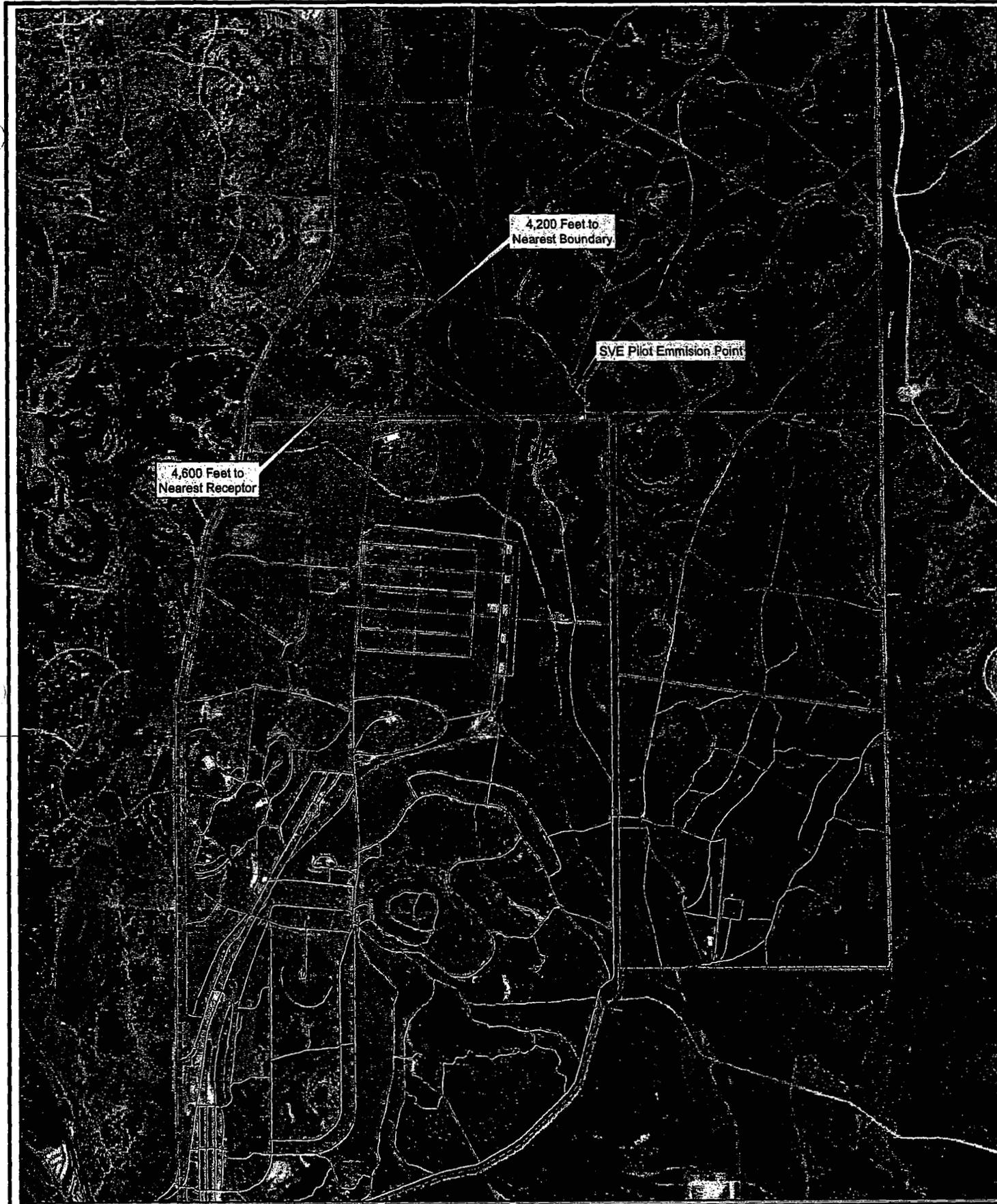
I certify under the penalty of law that this document and all its attachments were prepared by me or were prepared under my direction, supervision or review. Based on my knowledge and inquiry of the person or persons who performed the associated tasks, or those persons directly responsible for gathering the information, the results submitted are, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.



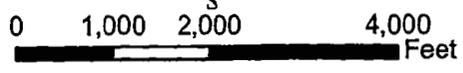
A handwritten signature in black ink, appearing to read "Henry C. Dress".

June 9, 2006

ATTACHMENTS



 CSSA Boundary



December, 2003

Figure 1

**SWMU B-3
Location Diagram**

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C:\Documents and Settings\41015\Desktop\CSSA\B-3\Permit by Rule\KRR 6-2006\B-3 Mod Emission Estimates.xls\Aqueous

Estimate emissions rate of trichloroethene (TCE) from SWMU B-3 using evaporation as the remedial technique							
Emission fraction = F_t							
$F_t = 0.72 (K_d t)^{1/2}$		where F_t is fraction of constituent emitted to atmosphere after time t					
$K_d = \frac{K_{eq} D_e (\pi l)^2}{4l^2}$		where K_d is the volatilization constant for constituents ¹ ;					
		l is depth of waste in pile, cm; and					
		D_e is the effective diffusion coefficient of the constituent in solid waste, cm^2/s ; and					
		K_{eq} is the ratio of gas-phase constituent to total constituent in solid waste.					
$K_{eq} = \frac{Hc}{RT} \epsilon_a$		where P^* is constituent vapor pressure, atm					
R		Hc is Henry's constant in $\text{atm}\cdot\text{m}^3/\text{gmol}$					
		R is gas const. $82.05 \text{ atm}\cdot\text{cm}^3/\text{gmol}\cdot\text{K}$					
		T is temperature K					
		L is the waste loading, $\text{g organic phase}/\text{cm}^3$ of solid waste					
$D_e = D_a \epsilon_a^{3.33} / \epsilon_T^2$		where D_a is the diffusion of constituent in air, cm^2/s ;					
		ϵ_a is the void fraction or air porosity of solid waste					
		ϵ_T is the total porosity of solid waste					
		D_e is the effective diffusion coefficient of constituent in waste, cm^2/s					
Emission rate = E							
$E = M_o \left[\frac{1}{1 + \frac{k_G K_{eq} [K_{eq} D_e]^{1/2}}{\epsilon_a + [\pi t]^{1/2}}} \right]$		for $K_{eq} D_e t/l^2 \leq 0.213$					
$M_o = ILC$		where M_o is the area loading of constituent, g/cm^2					
		C is the weight fraction of constituent in the organic phase					
		l is the depth of the wastepile, cm					
$k_G = 4.82 (10^{-3}) U^{0.78} Sc_G^{-0.67} d_e^{-0.11}$		where d_e is effective diameter of area $(4A/\pi)^{1/2}$, m					
		A is area of open wastepile, m^2			proposed wastepile area		
Proposed conditions:							
A , surface area =		6000 ft^2 ,	5,574,182 cm^2	$d_e = 15 \text{ m}$			
l , proposed depth =		12 inches	or	30 cm			
Temperature		Assume daily average summer temperature of			86 F	30 C	303.2 K
U , windspeed		Assume summertime daily average of San Antonio,			10 mph	4.47	m/s
ϵ_a Air porosity of waste		0.25	assumed as typical ¹				
ϵ_T Total porosity of waste		0.50	assumed as typical ¹				
Assume trichloroethene properties represent worst-case scenario ² :							

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**Exemption §106.262 Checklist
(Previously Standard Exemption 118)**

Facilities (Emission and Distance Limitations)

This exemption requires registration with a PI-7 and submittal of supporting documentation within ten days of installation or modification of facilities.

The following checklist has been developed to help you confirm that you meet the requirements of Exemption §106.262, previously Standard Exemption 118 (STDX 118). Any "no" answers indicate that the claim of exemption may not meet all the requirements for the use of Exemption §106.262. If you do not meet all the requirements, you may alter the project design/operation in such a way that all requirements of the exemption are met or obtain other authorization (i.e. construction permit, standard permit, etc.).

<u>YES</u>	<u>NO</u>	<u>NA</u>	<u>DESCRIPTION</u>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Have you included a description of how this exemption claim meets the general rule for the use of standard exemptions? (A §106.4 checklist is available to satisfy this demonstration.)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Have you reviewed all other exemptions to ensure that none would have authorized the proposed construction or change had all requirements of the exemption been met?
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	If this claim is to qualify the use of other chemicals at a facility authorized by another exemption, are all the requirements of that specific exemption met? (Include a description of how that exemption's requirements are met.)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Is each emission source located at least 100 feet from any recreational area, residence, or other structure not occupied or used solely by the owner or operator of the facilities or the owner of the property upon which the facilities are located? (Attach a scaled map.)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Do all the chemicals that will be part of new or changed emissions at the facility appear in Table 262 or in the 1997 version of the list of Threshold Limit Values (TLV) published by the American Conference of Governmental Industrial Hygienists? (List the compounds and their L value from Table 262 or their TLV.)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are the calculated new or increased emissions, including fugitives, for each chemical less than or equal to 5 tons per year? (Attach calculations.)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Are the calculated new or increased emissions, including fugitives, for each chemical less than or equal to "E" pounds per hour as determined using the formula in §106.262(3), or 6 pounds per hour, whichever is lower? (Attach both the "E" and emissions calculations for each compound.)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Has a completed PI-7 been submitted?

Exemption §106.262 Checklist

Page 2

Are the following included with the PI-7 notification form:

- description of the project?
- emission calculations?
- data identifying specific chemical names (MSDS, CAS number, etc.)?
- limit (L) values?
- distance (D) values? and
- description of control equipment, if any?

Are all the facilities in which the compounds listed in §106.262(e) are handled, located at least 300 feet from the nearest property line and 600 feet from the nearest off-property receptor? (Attach scaled map showing the effected facilities, the nearest fence lines, and receptors.)

Are the total on-property quantities of each compound listed in §106.262(5) less than or equal to 500 pounds? (This requirement does not apply to permit authorizations.)

Are all compounds listed in §106.262(5) handled only in unheated containers operated in compliance with U.S. Department of Transportation Regulations (49 CFR 171 through 178)?

Are the containers containing chemicals listed in §106.262(5) not vented or opened directly to the atmosphere? (Attach descriptions as necessary.)

For physical changes or modifications to existing facilities, does all air pollution abatement equipment remain unchanged (i.e. no change or addition is allowed)? (This requirement does not mean that new facilities may not have control equipment.)

Will all visible emissions, except uncombined water, have opacity less than or equal to 5 percent in any five-minute period?

**TEXAS NATURAL RESOURCE CONSERVATION COMMISSION
AIR PERMITS DIVISION**

TITLE 30 TAC § 106.4 "QUICK-CHECK" APPLICABILITY CHECKLIST

Company Name: Department of the Army, Camp Stanley Storage Activity

Checklist completed by: Henry Dress, PE Parsons Date: 6-8-2006

Facility Type: Soil Vapor Extraction System

Permit(s) by rule claimed: 30 TAC Chapter §106: 533 & 262

Project Description (including equipment, materials, and brief process description):

The proposed modification will implement evaporation to remediate chemical contamination underlying Solid Waste Management Unit (SWMU) B-3, which is a former landfill.

The soils and groundwater in proximity to SWMU B-3 were contaminated with chlorinated volatile organic compounds (VOCs). This proposed modification to the original project is excavation and evaporation of contaminated soil in piles to remove the chlorinated VOCs from the subsurface.

List the maximum annual emission rates, in TONS PER YEAR (TPY), for this project:

CO None	NO _x None	VOC 3.1
PM None	SO ₂ None	Other None

The following questions require a "Yes" or "No" answer to be indicated for this permit by rule claim:

A. Title 30 TAC § 106.4(a)(5): Current Permit by Rule Requirements

Yes No Have you checked to determine if this exempt project is being claimed under the current version of 30 TAC 106?

If "Yes", continue to next question

If "No", please contact the TNRCC Air Permits Division for a copy of the current permit by rule to be claimed.

~~B. Title 30 TAC § 106.4(a)(7): Permit by rule prohibition check~~

Yes No Are there any air permits under the same account containing permit conditions, which prohibit or restrict the use of permits by rule?

If "No", continue to next question

If "Yes", permits by rule may not be used or their use must meet the restrictions of the permit.

A new permit or permit amendment may be required.

List permit number(s): _____

C. Title 30 TAC § 106.4(b): Circumvention check

Title 30 TAC § 106.4(b) states "No person shall circumvent by artificial limitations the requirements of §116.110 of this title (covering permitting)." Circumvention by artificial limitations may include but is not limited to:

- A. dividing a complete project into separate segments to circumvent §106.4(a)(1) limits;*
- B. claiming feed or production rates below the physical capacity of the project's equipment in order to begin constructing facilities before a permit or permit amendment is approved for full scale operations, particularly when the unit will not be economically viable at less than permitted capacity;*
- C. claiming a limited chemical list in order to begin constructing facilities before a permit or permit amendment is approved for additional chemicals, particularly when the unit will not be economically viable until the additional chemicals are authorized.*

Yes No Does your project meet any of the criteria listed above?

If "No", continue to next rule question

If "Yes", a permit by rule may not be claimed

D. Title 30 TAC § 106.4(c) and (d): Compliance with all Rules

Yes No Will the facility comply with all rules and regulations of the TNRCC, the intent of the Texas Clean Air Act, and any local permitting or registration requirements?

If "Yes", continue to next rule question

If "No", a permit by rule may not be claimed.

E. Title 30 TAC § 106.4(a)(1): Emission limits check

Yes No The maximum emissions from all facilities at the site, including this permit by rule claim, are less than 25 tpy of any contaminant.

If the answer to this questions is "Yes", no further review is needed to complete this checklist.

Forward all information needed to verify your permit by rule claim to the TNRCC.

If "No", this checklist cannot be used. Please complete the standard 30 TAC § 106.4 Applicability Checklist

**Exemption §106.533 Checklist
(Previously Standard Exemption 68)**

Contaminated Water and Soil Remediation Equipment

REGISTRATION IS REQUIRED BEFORE CONSTRUCTION OF FACILITIES COVERED BY THIS EXEMPTION MAY BEGIN

The following checklist is designed to help you confirm that you meet Exemption §106.533, previously standard exemption 68 (STDX 68), requirements. Any "no" answers indicate that the claim of exemption may not meet all requirements for the use of Exemption §106.533, previously standard exemption 68. If you do not meet all the requirements, you may alter the project design/operation in such a way that all the requirements of the exemption are met or obtain a construction permit.

YES NO NA DESCRIPTION

- | | | | |
|----------|---|----------|---|
| <u>✓</u> | — | — | Have you included a description of how this exemption claim meets the general rule for the use of exemptions (§106.4 checklist is available)? |
| <u>✓</u> | — | — | Will the remediation be at the property where the contamination originally occurred or at a nearby property secondarily affected by the contamination? |
| — | — | <u>✓</u> | Is the total emissions rate of petroleum hydrocarbons (except benzene) less than or equal to one (1) pound per hour? Attach calculations and supporting data such as soil/water contaminant concentrations. |
| — | — | <u>✓</u> | Do benzene emissions meet the emissions limits of §106.262, previously STDX 118(c)? Attach calculations, contaminant concentrations, and a scaled map showing the emission(s) point(s) and nearby off-property receptors. |
| <u>✓</u> | — | — | Do chemical emissions other than those from petroleum hydrocarbons meet the requirements of §106.262, previously STDX 118(b) and (c)? Attach calculations, contaminant concentrations, and a scaled map showing the emission(s) point(s). |
| <u>✓</u> | — | — | Will the handling, processing, and conditioning of contaminated and remediated soil be free of visible emissions (except for moisture)? |
| — | — | <u>✓</u> | If you use abatement equipment to meet the exemption's emissions limits, does it completely satisfy one of the conditions stated in §106.533, previously STDX 68(e)(1)-(4)? Which one?
____ Describe the abatement process in an attachment. |