



State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303)894-2100 Fax:(303)894-2109



FOR OGCC USE ONLY

EARTHEN PIT REPORT/PERMIT

This form is to be used for both reporting and permitting pits. Rule 903 describes when a Permit with prior approval, or a Report within 30 days, is required for pits. Submit required attachments and forms.

FORM SUBMITTED FOR:

☒ Pit Report

☒ Pit Permit

OGCC Operator Number: 86571
Name of Operator: OXY USA WTP LP
Address: P.O. Box 27757
City: Houston State: TX Zip: 77227-7557

Contact Name and Telephone:

Daniel Padilla

No: (970) 283-3837

Fax: (970) 243-2525

Complete the Attachment Checklist	
	Oper. OGCC
Detailed Site Plan	<input checked="" type="checkbox"/>
Topo Map w/ Pit Location	<input checked="" type="checkbox"/>
Water Analysis (Form 25)	<input checked="" type="checkbox"/>
Source Wells (Form 26)	<input checked="" type="checkbox"/>
Pit Design Plan & Cross Sect	<input checked="" type="checkbox"/>
Design Calculations	<input checked="" type="checkbox"/>
Sensitive Area Determin.	<input checked="" type="checkbox"/>
Mud Program	<input checked="" type="checkbox"/>
Form 2A	<input checked="" type="checkbox"/>

API Number (of associated well): 05-045-06887

OGCC Facility ID (of other associated facility): LOC# 323903

Pit Location (QtrQtr, Sec, Twp, Rng, Meridian): SENW, Sec 5, T6S, R97W, 6th PM

Latitude: 39.555766

Longitude: -108.247731

County: Garfield

Pit Use: ☒ Production

☐ Drilling (Attach mud program)

☐ Special Purpose (Describe Use):

Pit Type: ☒ Lined

☐ Unlined

Surface Discharge Permit: ☐ Yes

☒ No

Offsite disposal of pit contents: ☐ Injection

☒ Commercial

Pit/Facility Name: OXY Mesa FP Pit

PIU/Facility No: 605-01

Attach Form 26 to identify Source Wells and Form 25 to provide Produced Water Analysis results.

Existing Site Conditions

Is the location in a "Sensitive Area?" ☐ Yes ☒ No

Attach data used for determination.

Distance (in feet) to nearest surface water: 83' ground water: -25' water wells: 2271'

LAND USE (or attach copy of Form 2A if previously submitted for associated well) Select one which best describes land use:

Crop Land: ☐ Irrigated

☐ Dry Land

☐ Improved Pasture

☐ Hay Meadow

☐ CRP

Non-Crop Land: ☐ Rangeland

☐ Timber

☐ Recreational

☐ Other (describe):

Subdivided: ☐ Industrial

☐ Commercial

☐ Residential

SOILS (or attach copy of Form 2A if previously submitted for associated well)

Soil map units from USNRCS survey: Sheet No:

Soil Complex/Series No:

Soils Series Name:

Horizon thickness (in inches): A:

B:

C:

Soils Series Name:

Horizon thickness (in inches): A:

B:

C:

Attach detailed site plan and topo map with pit location.

Pit Design and Construction

Size of pit (feet): Length: 120' Width: 70' Depth: 10'

Calculated pit volume (bbls): 6711 Daily inflow rate (bbls/day): 30

Daily disposal rates (attach calculations): Evaporation: 12.7 bbls/day Percolation: none bbls/day

Type of liner material: Reinforced Polyethylene

Thickness: 38 mils

Attach description of proposed design and construction (include sketches and calculations).

Method of treatment of produced water prior to discharge into pit (separator, heater treater, other): Separator

Is pit fenced? ☒ Yes ☐ No

Is pit netted? ☐ Yes ☒ No

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct and complete.

Print Name: Daniel Padilla

Signed:

Title: Regulatory Coordinator

Date: 9/10/05

OGCC Approved: Key 4

Title: Env. Sup.

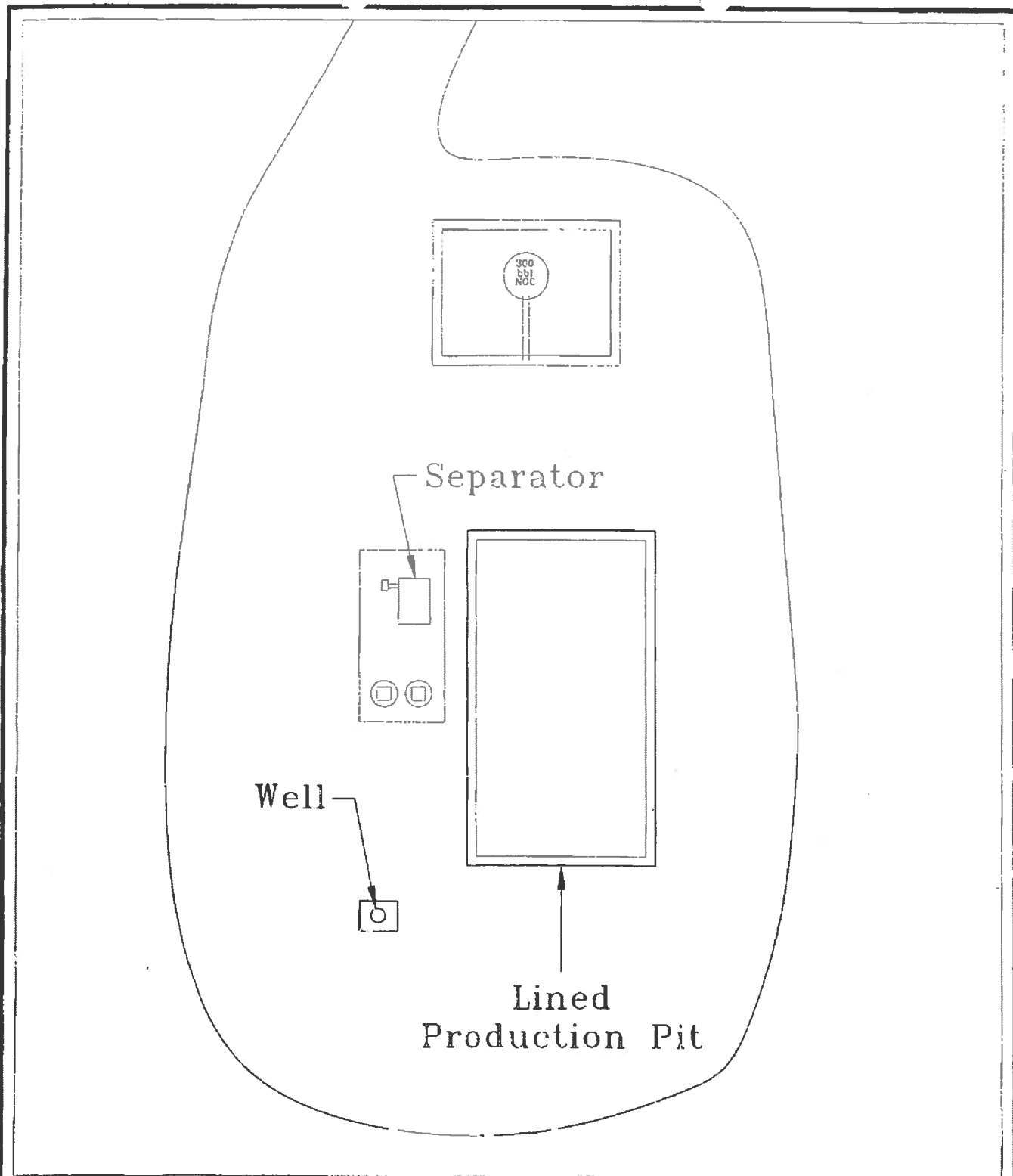
Date: 12/20/11

CONDITIONS OF APPROVAL, IF ANY:

FACILITY NUMBER: 427523

This pit was constructed but not used and has been closed (see Form 4 Doc. # 2221330).

ADP 12/20/11



Explanation

0 40 Feet
Approximate Scale

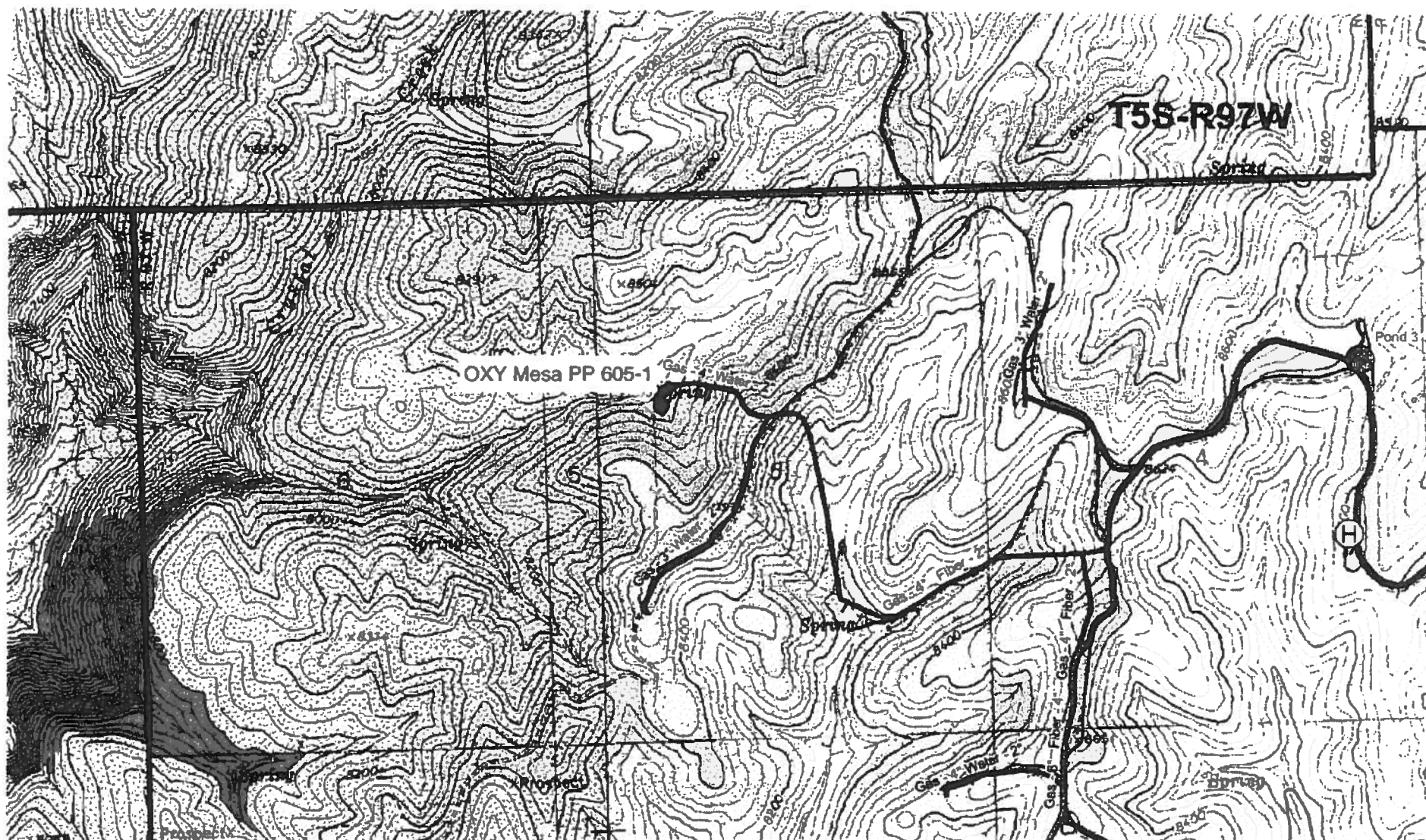


Walsh

Environmental Scientists and Engineers, LLC

As-Built of OXY's
605-01 Pad
Garfield County, Colorado

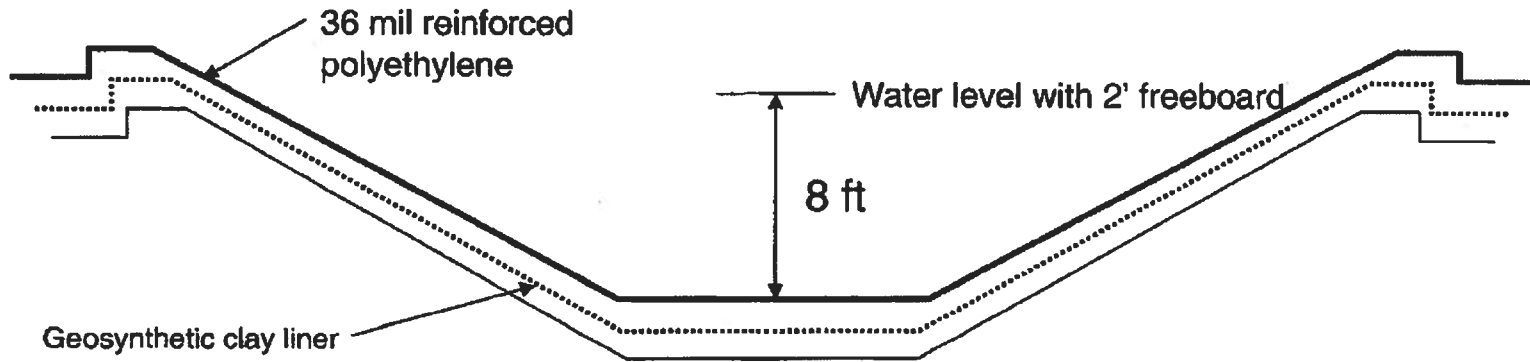
Job 7830-030 Date 9/08 Figure 1



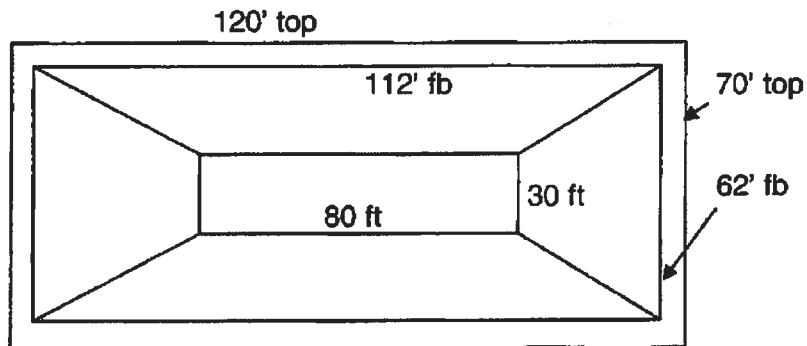
OXY Mesa PP 605-01 Pit, SENW, Sec 5, T6S, R97W, 6th PM

Side View

PRODUCTION PIT



Top View



Volume of Pit = 6,711 bbls (with 2' freeboard)

Volume Calculation:

$$= \frac{8 \times [(112 \times 62) + (87 \times 55) + (80 \times 30)]}{3}$$

$$= 37,677 \text{ cu ft} = 6,711 \text{ bbls}$$

Volume of 1" = 103.1 bbls @ free board line

OXY USA WTP LP	Production Pit		
	OXY Mesa PP 605-01 Pit/ 605-01 Pad (Garfield County)		
Sep 9, 2008		Not to scale	Page 1 of 1

Calculations for Earthen Pit Permit Applications

Calculation of Pit Capacities:

Pit capacities were estimated from length and width measured at ground level and at the bottom of the pit. Figure 1 shows the top view with the measured dimensions shown. For non-rectangular shapes, equivalent dimensions were used for volume calculations. For capacity calculations, the depth was reduced by two feet from the total pond depth to allow for a minimum of the required two feet of freeboard.

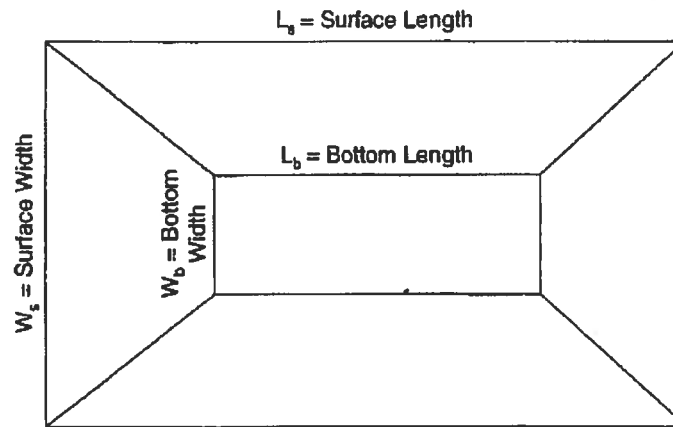


Figure 1. Top View of an earthen pit.

Figure 2 shows the dimensions and calculated terms in a cross-sectional view of a pit. The angle β is calculated from the length and width at the surface and the freeboard depth. Pits are designed to have a 2 (horizontal) to 1 (vertical) slope on the sides. With a 2 to 1 slope the angle β is 63.435° from vertical as shown by the yellow shaded area.

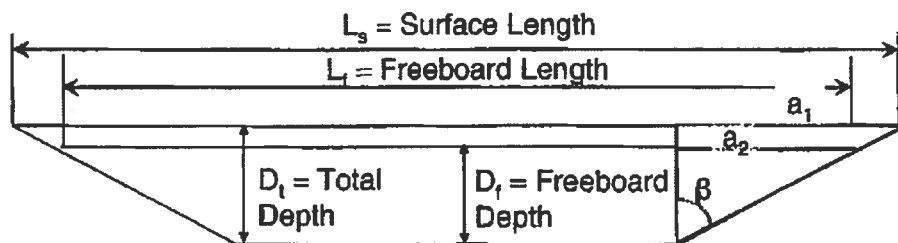


Figure 2. Cross-section of an earthen pit.

A sample calculation is shown based on the construction design for a 2500 barrel pit with a 10-ft depth. The following terms are defined:

L_s = surface length = 80'
 W_s = surface width = 50'
 L_b = length along bottom = 40'
 W_b = width along bottom = 10'
 D_t = total depth = 10'
 D_f = depth with 2' freeboard ($D_t - 2'$)

The distance a_1 can be calculated from the measured surface lengths:

$$a_1 = (L_s - L_b)/2 = (80' - 40')/2 = 20'$$

The angle β can be calculated using the two sides of the yellow-shaded triangle.

$$\tan\beta = \text{opposite side}/\text{adjacent side} = 20'/10' = 2.0 \text{ and taking the arctangent, } \beta = 63.435^\circ.$$

Side a_2 on the smaller yellow triangle can then be calculated using the angle β with the freeboard depth as:

$$a_2 = D_f * \text{Tangent } \beta = 8' * 2.0 = 16'$$

$$L_f = L_s - 2 * (a_1 - a_2) = 80' - 2*(20' - 16') = 72'$$

The widths were calculated in the same manner using the same angle β :

$$a_1 = (W_s - W_b)/2 = (50' - 10')/2 = 20'$$

$$a_2 = D_f * \text{Tangent } \beta = 8' * 2.0 = 16'$$

$$W_f = W_s - 2 * (a_1 - a_2) = 50' - 2*(20' - 16') = 42'$$

Capacities were calculated using the standard formula for a truncated rectangular pyramid as follows where V is the pit capacity in cubic feet:

$$V = \frac{D_f * \left[L_f * W_f + (L_f + W_f/2)(L_b + W_b/2) + L_b * W_b \right]}{3}$$

Substituting example values (all dimensions are in feet) into the volume equation:

$$V = \frac{8 * \left[72 * 42 + \left(72 + \frac{42}{2} \right) \left(40 + \frac{10}{2} \right) + 40 * 10 \right]}{3}$$

The resulting volume is 12,930.7 ft³.

Converting to barrels the capacity is:

$$\text{Capacity} = 12930.7 \text{ ft}^3 / 5.61458 \text{ ft}^3/\text{bbl} = 2303 \text{ bbls}$$

Freeboard Surface Calculations

Surface Volume at Freeboard Line

The volume at the freeboard line is calculated for a depth of 1 inch using the freeboard length and width and converting to barrels as:

$$\text{Surface Volume} = \frac{L_f (\text{ft}) * W_f (\text{ft}) * (1" \text{ depth})}{5.61458 \text{ cu ft/bbl}}$$

For the example calculation:

$$\text{Surface volume of 1" @ freeboard line} = (72') * (42') * (1/12') / 5.61458 \text{ ft}^3/\text{bbl} = 45 \text{ bbls}$$

Evaporation Rate

The evaporation rate is calculated from the surface area at the freeboard based on the average evaporation rate for Garfield County of 45 in/yr/sq ft surface area. The evaporation rate in barrels per day is calculated by the equation:

$$\text{Evaporation Rate} = \frac{L_f (\text{ft}) * W_f (\text{ft}) * (\text{evap rate (in)} / 12)}{(365 \text{ days/yr}) * (5.61458 \text{ cu ft/bbl})}$$

Using the sample calculation numbers the evaporation in bbl/day is:

$$\text{Evaporation rate} = (72') * (42') * (45 / 12) / (365 \text{ days/yr}) * (5.61458 \text{ ft}^3/\text{bbl}) = 5.5 \text{ bbl/day}$$



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DEPARTMENT OF NATURAL RESOURCES



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DRILL SITE/ACCESS ROAD RECLAMATION FORM

This form shall be submitted in duplicate with the application for permit-to-drill (OGCC Form 2) unless a Federal 13 point surface plan is included. Also required are a minimum of two photographs (site and access road). Soil and plant community information from United States Natural Resources Conservation Services (USNRCS).

1. OGCC Operator Number: 66561	4. Contact Name & Phone
2. Name of Operator: Oxy USA, Inc.	Don Woods
3. Address: P.O. Box 50250	No: (915) 685-5828
City: Midland State: TX Zip: 79710	Fax: (915) 685-5742
5. Well Name & Number: Cascade Creek 605-1	6. County: Garfield
7. Location (Qtr Qtr, Sec, Twp, Rng, Meridian): 82 NW Sec. 5, T6S, R97W	

Complete the
Attachment Checklist

Drill site and access photographs	XX
CGE Section 404 documentation	

Pre-Drilling Information

Current Land Use	
8. Cropland: <input type="checkbox"/> Irrigated <input type="checkbox"/> Dry Land <input type="checkbox"/> Improved Pasture <input type="checkbox"/> Hay Meadow <input type="checkbox"/> CRP	
9. Non-cropland: <input type="checkbox"/> Rangeland <input type="checkbox"/> Timber <input type="checkbox"/> Recreational <input checked="" type="checkbox"/> Other (describe): Constructed well pad.	
10. Subdivided: <input type="checkbox"/> Industrial <input type="checkbox"/> Commercial <input type="checkbox"/> Residential	
* Attach color photographs of drill site and access road; identify each photo by date, well name and location.	
Soils	
11. Soil map units from USNRCS survey: Sheet No:	Soil Complex/Series No:
Soil Series Name: Clay Loam	Horizon thickness (in inches): A: 5" ; B: ; C:
Soil Series Name: USNRCS soil map	Horizon thickness (in inches): A: ; B: ; C:
Info not available.	
Plant Community	
* Complete only if operations are to be conducted upon non-cropland	
12. Plant species from: <input type="checkbox"/> USNRCS or <input type="checkbox"/> Field Observation	Date of observation:
List individual species:	
13. Check one predominant plant community for the drill site:	
<input type="checkbox"/> Disturbed Grassland (Cactus, Yucca, Cheatgrass, Rye, Thistle)	
<input type="checkbox"/> Grassland (Buckhorn, Grama, Wheatgrass, Buffalo, Paspalum, Bromes)	
<input type="checkbox"/> Shrub and Brush Land (Manzanita, Sage, Serviceberry, Chokeberry)	
<input checked="" type="checkbox"/> Plains Deciduous Riparian (Cottonwood, Willow, Aspen, Maple, Pecan, Russian Olive, Tamarisk)	
<input type="checkbox"/> Mountain Conifer Riparian (Spruce, Fir, Ponderosa Pine)	
<input type="checkbox"/> Evergreen Forest Land (Spruce, Fir, Ponderosa Pine, Lodgepole Pine, Juniper, Piñon)	
<input type="checkbox"/> Aquatic (Bulrush, Sedges, Cattail, Arrowweed)	
<input type="checkbox"/> Tundra (Alpine, Willow, Currant, Raspberry)	
<input type="checkbox"/> Other (describe):	

14. Was an Army Corps of Engineers Section 404 Permit filed? ☐ Yes ☒ No If yes, attach appropriate documentation.

Comments, if any: Well pad was constructed in 1994 but was not used or reclaimed. Proposed Cascade Creek 605-1 well will use this existing well pad and access road.

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drill site and access road; that I am familiar with the conditions which presently exist; that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name

David R. Stewart

Signed

Title:

Regulatory Analyst

Date:

7/23/98