

ASSESSMENT OF IMPACT REPORT

NORTH WESTERLY

Prepared for:

Town of Erie 645 Holbrook, PO Box 750 Erie, Colorado 80516

MARCH 2025

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TABLE OF CONTENTS

Introduction

- 1. Utilities/Municipal Services
- 2. Municipal Services Financing
- 3. Special Districts
- 4. Impact on Public School District Systems

Exhibit A - PD Zoning Map

Exhibit B1 - Water System Master Plan

Exhibit B2 - Waste Water System Master Plan

Exhibit C1 - 2015 Comprehensive Land Use Plan Map

Exhibit C2 - Erie Zoning Map

Introduction

This impact report is provided to the Town of Erie, Colorado, as required in the PD Zoning Development Guide. North Westerly is approximately 390 acres located within the Town of Erie, owned by: Southern Land Company.

The subject property is generally located north of Erie Parkway, east of Weld County Road 5, west of Weld County Road 7, and south of Weld County Road 10. This project is generally described as the portions of Section 16, Township 1 North, Range 68 West of the 6th Principal Meridian.

The property is proposed for zoning as Planned Development (PD), under Title 10 of the Town of Erie Municipal Code. Per the concept plan for the subject property, it is anticipated that approximately one thousand nine hundred fifty-five (1,955) residential dwelling units will be constructed within the area to be zoned Planned Development.

The concept plan is provided within the PD Zoning Map, some items contained within the PD will be conceptual in nature and are subject to change through preliminary plat and final plat stages.

The graphic drawings contained within the PD are intended to depict general locations and illustrate concepts of the textual provisions. During the platting process minor variations should be expected for the purpose of establishing:

Final road alignments
Final configuration of lot and tract sizes and shapes
Final building envelopes
Final access and parking locations
Landscape adjustments

I. PD Map

The subject property is depicted on the PD Map, Exhibit A, attached.

The present boundaries of the municipality in the vicinity of the proposed PD Zoning.

Shown on Exhibits B1 and B2 are the following:

The present streets, major trunk water mains, sewer interceptors and outfalls, other utility lines and ditches, and the proposed extension of such streets and utility lines in the vicinity of the annexations.

Shown on Exhibit C1 and C2, attached hereto, are the following:

The 2015 Comprehensive Plan-Land Use Plan Map showing existing and

proposed land use patterns in the vicinity of the properties to be zoned PD; and the current Zoning Map showing existing zoning in the vicinity of the properties to be zoned PD.

II. Utilities/Municipal Services

1. Water Distribution System

The North Westerly Development will draw its potable water from Pressure Zone 3 of the Town's system. Connections to the existing potable water system will be in several locations including connections to the existing 12-inch water main in CR5, the existing 30-inch water main in Erie Parkway, and the existing 20-inch water main in CR7.

2. Sanitary Sewer System

The North Westerly development will tie into the Town of Erie's existing sanitary sewer system via three proposed sewer outfalls.

Outfall #1 will serve the southwest corner of the site which is within the Town's Weld County Road 3 Sewer Basin. A sewer main will be extended from the site, west along the north side of Erie Parkway to connect to an existing manhole and eighteen-inch main that will convey flows northwest through the Colliers Hill development. Previous utility reports have allowed for approximately 900 single-family equivalents (SFE) of downstream capacity for this outfall.

Outfall #2 serves the northwest corner of the site which is also within the Town's Weld County Road 3 Sewer Basin. An eight-inch sewer main has been stubbed under CR 5 to the North Westerly property as part of the Colliers Hill Filing G4 development. It is anticipated that approximately two hundred units will utilize this outfall. Review of the Colliers Hill G4 utility report shows that this stub may have been overlooked in the sewer capacity calculations. Preliminary capacity calculations with the additional two hundred units show that a few runs of pipe may slightly exceed the Town's capacity criteria. During Final design a variance may be requested.

Outfall #3 serves the remaining portions of the site and corresponds with the Town's Weld County Road 5 sewer basin. There is not an existing outfall for this sewer basin. A proposed fifteen-inch main will be constructed from the sites northwest north along Weld County Road 5 to the intersection of Colorado Highway 52. At this point the sewer will connect to a proposed thirty-inch main to be construction with the Summerfield development.

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3. Roadway Network

It is anticipated that street connections will be made to Erie Parkway, WCR 10, WCR 5 and WCR 7. Each perimeter street along the property frontage will be improved according to the preliminary and final plat.

The interior streets will include curb and gutter. The street network will be developed to provide dual access to neighborhood pods to meet life safety requirements. Dead end alleys or stubbed streets for future connections will be designed to meet maximum allowable length criteria. Intersection locations will be designed with consideration of appropriate separation from existing streets.

4. Storm Drainage and Detention

There are no major drainageways that traverse the North Westerly Site. There are multiple outfall points along the perimeter of the site as the site in general drains away from the Community Ditch which traverses the site. The Site is in the Town of Erie Outfall Systems Plan (East of Coal Creek) by Merrick dated January 2020. The site is located within both Boulder Creek and Godding Hollow drainage basins. The proposed improvements are in general compliance with improvements contained within the Erie Outfall Systems Plan (East of Coal Cree). There are six extended detention basins as part of the North Westerly development. The extended detention basins will provide water quality capture volume, excess urban runoff volume, as well as 100-year detention. Each pond outfall will discharge to the historic outfall location of that drainage basin.

5. Other Utilities

AT&T currently provides telephone service within the proposed PD vicinity. No change in this service is proposed.

Black Hills Energy currently provides natural gas services within the proposed PD vicinity. No change in this service is proposed.

United Power currently provides electrical power services within the proposed PD vicinity. No change in this service is proposed.

Extension of these other utility services into the property proposed for PD will be the responsibility of the developer.

6. Police Protection

The Town of Erie provides its own police protection and will provide police protection services to the area proposed be zoned PD within the Town's boundaries.

7. Fire Protection

Mountain View Fire Protection District will provide fire protection services to the area proposed to be zoned PD within the Town's boundaries.

8. Street Maintenance and Improvements

Proposed streets within the PD area will be constructed by the developer. The Town will be providing maintenance of said streets after acceptance by the Public Works Division. Maintenance of sidewalks and tree lawns shall be provided by the adjacent property owner or HOA.

9. Open Space and Recreation

To be determined with the detailed planning of the community.

10. Other Municipal Services

The Town of Erie provides municipal services such as recreation and senior services and will extend these services to the area proposed to be zoned PD within the Town's boundaries. North Westerly will utilize re-use water where available.

III. Municipal Services Financing

No additional infrastructure is required or proposed to provide municipal services within the area proposed to be included within the Town's boundaries as part of this annexation. To the extent any additional service provision occurs, such service can be accommodated within the Town's current budget. The developer of the property will be responsible for on-site and off-site public improvements.

IV. Special Districts

The proposed PD Zoning area is encompassed within the following districts:

- Town of Erie Fire Protection District
- St. Vrain School District
- Mile High Flood District

The proposed PD Zoning area will petition to be within the following districts:

Northern Water Conservancy District

V. School District Impact

The proposed project's impact on the St. Vrain Valley School District in terms of the number of students to be generated by the project if 1,955 dwelling units

are developed, will be determined with Final Plat. The current cash-in-lieu requirements are listed below by housing type.

Single Family = \$1,143 Multi Family = \$695 Duplex/Triplex = \$997 Condo/Townhouse = \$409 Mobile Homes = \$925

In addition, any of Southern Land's Westerly housing credits remaining after Westerly is completed, could be applied to North Westerly units.

Per the Intergovernmental Agreement ("IGA") between the St. Vrain Valley School District, and the Town of Erie, the owner is required to pay fees to the School District prior to the issuance of building permits.

Exhibit A Legal Description of the Property to be Zoned PD

PD ZONING LEGAL DESCRIPTION

A PARCEL OF LAND LOCATED IN SECTION 16, TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE SIXTH PRINCIPAL MERIDIAN, COUNTY OF WELD, STATE OF COLORADO MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BASIS OF BEARINGS: BEARINGS ARE BASED ON THE ASSUMPTION THAT THE NORTH LINE OF THE SOUTHEAST 1/4 OF SECTION 16 BEING N 89°30′52″ E AND MONUMENTED AS FOLLOWS:

- -CENTER 1/4 CORNER OF SECTION 16, BEING A FOUND 3.25" ALUMINUM CAP, LS 6973, RW BAYER ASSOC., PER MON REC DATED 3-1-14.
- -EAST 1/4 CORNER OF SECTION 16, BEING A FOUND 2" ALUMINUM CAP IN RANGE BOX, PARTIALLY ILLEGIBLE, PLS 14083, PER MONUMENT RECORD DATED 4-9-96.

BEGINNING AT THE CENTER 1/4 CORNER OF SECTION 16;

THENCE N 89°30′52″ E ALONG THE NORTH LINE OF THE SOUTHEAST 1/4 OF SAID SECTION 16 A DISTANCE OF 2630.74 FEET TO A POINT ON THE WESTERLY RIGHT-OF-WAY LINE OF WELD COUNTY ROAD NO. 7 AS DESCRIBED IN BOOK 86 PAGE 273;

THENCE S 00°22'39" E ALONG SAID RIGHT-OF-WAY LINE A DISTANCE OF 2075.17 FEET TO THE NORTHEAST CORNER OF THAT SPECIAL WARRANTY DEED RECORDED AT RECEPTION NO. 4925429;

THENCE ALONG THE NORTHERLY BOUNDARY OF SAID SPECIAL WARRANTY DEED RECORDED AT RECEPTION NO. 4925429 THE FOLLOWING FIVE (5) COURSES;

- 1) S 89°37′21″ W A DISTANCE OF 40.00 FEET;
- 2) S 00°22'39" E A DISTANCE OF 473.00 FEET;
- 3) ALONG A CURVE TO THE RIGHT HAVING A CHORD OF S 44°37′59" W 35.36 FEET, A RADIUS OF 25.00 FEET, AN ARC OF 39.28 FEET, AND A DELTA OF 90°01′15";
- 4) S 89°38'36" W A DISTANCE OF 912.35 FEET;
- 5) S 00°21′24″ E A DISTANCE OF 40.00 FEET TO A POINT ON THE NORTHERLY RIGHT-OF-WAY LINE OF ERIE PARKWAY (AKA WELD COUNTY ROAD NO. 8) RECORDED IN BOOK 86 PAGE 273;

THENCE S 89°38'36" W ALONG SAID RIGHT-OF-WAY LINE A DISTANCE OF 1656.00 FEET;

THENCE S 89°38'17" W CONTINUING ALONG SAID RIGHT-OF-WAY LINE A DISTANCE OF 1343.47 FEET TO THE SOUTHEAST CORNER OF THAT PARCEL OF LAND RECORDED AT RECEPTION NO. 3158505;

THENCE N 00°13'30" W ALONG THE EASTERLY BOUNDARY OF SAID PARCEL A DISTANCE OF 1949.87 FEET TO A POINT ON THE SOUTHERLY BOUNDARY OF THAT PARCEL OF LAND RECORDED AT RECEPTION NO. 4206840;

THENCE ALONG THE SOUTHERLY, EASTERLY AND NORTHERLY BOUNDARY OF SAID PARCEL OF LAND THE FOLLOWING SIX (6) COURSES:

- 1) N 89°38′27" E A DISTANCE OF 2.00 FEET;
- 2) N 04°46′24" W A DISTANCE OF 110.00 FEET;
- 3) S 89°38'27" W A DISTANCE OF 48.00 FEET;
- 4) N 44°31′51" W A DISTANCE OF 339.83 FEET;
- 5) N 03°21'55" E A DISTANCE OF 545.00 FEET;
- 6) S 89°31'06" W A DISTANCE OF 1032.00 FEET TO A POINT ON THE EASTERLY RIGHT-OF-WAY LINE OF WELD COUNTY ROAD NO. 5 RECORDED IN SAID BOOK 86 PAGE 273;

THENCE N 00°12'52" W ALONG SAID EASTERLY RIGHT-OF-WAY LINE A DISTANCE OF 2358.50 FEET TO A POINT ON THE SOUTHERLY RIGHT-OF-WAY LINE OF WELD COUNTY ROAD NO. 10 RECORDED IN SAID BOOK 86 PAGE 273;

THENCE N 89°23'44" E ALONG SAID SOUTHERLY RIGHT-OF-WAY LINE A DISTANCE OF 2624.71 FEET TO A POINT ON THE NORTH-SOUTH CENTERLINE OF SAID SECTION 16;

THENCE S 00°18'49" E ALONG SAID NORTH-SOUTH CENTERLINE OF SAID SECTION 16 A DISTANCE OF 2607.31 FEET TO THE **POINT OF BEGINNING**.

THE ABOVE DESCRIBED PARCEL CONTAINS 17,026,720 SQUARE FEET OR 390.8797 ACRES MORE OR LESS.

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Memo

To: Southern Land Company

From: Andrew Knudtsen and Karen Chen, Economic & Planning Systems, Inc.

Subject: North Westerly Market Study

EPS #243067

Date: October 7, 2024

Economic & Planning Systems, Inc. ("EPS") was retained by Southern Land Company ("SLC") to develop near-term forecasts for residential and retail uses in the Town of Erie, as well as to assess the degree to which the North Westerly development can capture a portion of the overall demand.

North Westerly is a planned development in Erie, Colorado located on a parcel of land SLC recently acquired from the Colorado State Land Board. The North Westerly development is anticipated to include a mix of uses including 1,852 resident units and retail space.

The specific questions this analysis focuses on include the following:

- Can the master planned community support 220,000 square feet of retail floor area over the course of development?
- What are realistic assumptions about capture rates from households within the development as well as those from surrounding areas, in terms of supportable retail square footage?
- What elements are important to take into consideration as the team defines a retail town center that will be viable in perpetuity?

EPS has completed studies for the Town of Erie in the recent past that include a forecast for residential, commercial, and employment land uses to support the Town's comprehensive plan. EPS has drawn from the findings of that effort and focused the analysis on the North Westerly master planned community. The data in the tables reflect the market performance that can be expected from the addition of the proposed 1,852 units and fit within the larger development trends documented in the comprehensive plan.





Land Use Forecast Assumptions

Assumptions used to forecast retail demand are shown in **Table 1**. The number of annual residential units used in this forecast is based on historic construction trends in the Town of Erie. The bracketing of the performance for the North Westerly development is based on the developer's assumptions, reflecting past experience with master planned communities in the region.

The high and low figures used for the Town has been drawn from the work provided for the Comprehensive Plan and reflects a bracket that encompasses the full planning area (annexed and to be annexed). A more detailed set of data to support these figures is provided below. An average of 563 residential units per year reflects the midpoint and has been used for the forecast in the model provided later in this memo.

Table 1. Land Use Forecast Assumptions

Description	Value
Ann. Residential Units (Town of Erie)	
Low	444
Mid (Average of Low and High)	563
High	682
Residential Absorption (State Land Board Parcel)	
Low	100
High	150

Source: Southern Land Company; Zonda; Economic & Planning Systems

Historic residential construction closings were used to estimate a low and high figure for the number of units constructed annually in the Town of Erie as shown in **Table 2**. For a low figure, the 2010 to 2023 average of 444 annual units, and the 2019 to 2023 average of 682 annual units for a high figure. The resulting figures reflect historic performance for the Erie market, tapering the strong production of the recent past to establish a credible floor for production.

Table 2. Annual Residential Units 2010-2023 03

															2010-2	2023	2019-2	2023
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023 Q3	Total	Avg.	Total	Avg.
Annual Closings																		
Single Family Detached	150	112	186	262	190	404	502	507	581	695	607	552	382	366	5,496	393	2,236	559
Duplex	21	5	0	0	0	0	0	0	0	0	0	105	201	63	395	28	306	77
Townhome	2	0	0	0	16	19	1	15	44	81	13	54	37	9	291	21	185	46
Condo	<u>24</u>	<u>8</u>	<u>0</u>	<u>32</u>	<u>2</u>	<u>0</u>	<u>0</u>											
Total	197	125	186	262	206	423	503	522	625	776	620	711	620	438	6,214	444	2,727	682

Source: Zonda, Economic & Planning Systems

Retail Demand

Retail expenditure potential generated by existing and future households in Erie were estimated by using home sales price data provided by SLC. On average, homes in the North Westerly development will have an anticipated sales price of \$690,000.

Based on the anticipated household income correlated to anticipated home prices, new households generated by this development will have an average household income of approximately \$128,900 which generates a Total Personal Income (TPI) of \$238.7 million, as shown in **Table 3**.

Table 3. Total Personal Income, Town of Erie Existing Households and Projected Growth

Description	Town of Erie (2024)	New Households (Excl. SLB)	SLB Parcel
Town of Erie Households Avg. Household Income Total Personal Income	12,136 <u>\$199,665</u> \$2,423,134,440	15,305 <u>\$125,302</u> \$1,917,740,421	1,852 <u>\$128,900</u> \$238,722,663
Avg. Sales Price		\$670,738	\$690,000

Source: Town of Erie; ESRI; Economic & Planning Systems

Using data from the U.S. Census of Retail Trade, the percent of TPI by store category is estimated at the statewide level to estimate expected resident spending patterns at a level of geography large enough to negate the impacts of sales inflows and outflows. The percentage of TPI spent by store category in Colorado is then applied to the TPI of Erie to estimate expenditure potential (regardless of location of purchases). This shows the total amount that residents in each category are expected to spend on retail goods.

At full buildout, North Westerly households are anticipated to spend a total of \$87.3 million on retail goods annually, as shown in **Table 4**.

Table 4. Resident Expenditure Potential, Existing Households and Projected Growth

		Taxon of Evia	Now Households	
	Retail Sales	Town of Erie (2024)	New Households (Excl. SLB)	SLB Parcel
Store Type	% TPI (2017)	(\$000s)	(\$000s)	(\$000s)
Total Personal Income (TPI)	100%	\$2,423,134	\$1,917,740	\$238,723
Convenience Goods				
Supermarkets and Other Grocery Stores	7.3%	\$176,334	\$139,556	\$17,372
Convenience Stores (incl. Gas Stations)	2.9%	\$71,185	\$56,338	\$7,013
Specialty Food and Beer, Wine, & Liquor Stores	1.3%	\$32,565	\$25,773	\$3,208
Health and Personal Care	<u>1.7%</u>	\$41,996	<u>\$33,237</u>	\$4,137
Total Convenience Goods	13.3%	\$322,080	\$254,904	\$31,731
Shopper's Goods				
General Merchandise				
Department Stores	0.5%	\$12,302	\$9,737	\$1,212
Warehouse Clubs & Supercenters	5.7%	\$138,347	\$109,492	\$13,630
Subtotal	6.2%	\$150,650	\$119,229	\$14,842
Other Shopper's Goods				
Clothing & Accessories	2.0%	\$47,719	\$37,766	\$4,701
Furniture & Home Furnishings	1.3%	\$30,408	\$24,066	\$2,996
Electronics & Appliances	1.0%	\$23,343	\$18,474	\$2,300
Sporting Goods, Hobby, Book, & Music Stores	1.1%	\$27,537	\$21,794	\$2,713
Miscellaneous Retail	<u>1.6%</u>	\$37,839	<u>\$29,947</u>	\$3,728
Subtotal	6.9%	\$166,846	\$132,047	\$16,437
Total Shopper's Goods	13.1%	\$317,495	\$251,275	\$31,279
Eating and Drinking	6.8%	\$163,736	\$129,585	\$16,131
Building Material & Garden	3.4%	\$82,960	\$65,657	\$8,173
Total Retail Goods	36.6%	\$886,271	\$701,421	\$87,314

Source: 2017 Census of Retail Trade; Economic & Planning Systems

Residential expenditure potentials include spending regardless of location. To estimate the amount of retail sales that residents generate within Erie, a capture rate is applied to expenditure potential estimates, shown in **Table 5**.

The capture rates for the store categories likely to be found within North Westerly are shown in the table below. On average, local retail establishments are estimated to capture approximately 44.1 percent of total resident retail spending.

Table 5. Resident Estimated Local Sales

			Town of Er	rie (2024)	(Excl.	SLB)	SLB Pa	arcel
		Local	Exp.		Exp.		Exp.	Est.
Store Type	Retail Sales	Capture	Potential	Sales	Potential	Sales	Potential	Sales
	% TPI (2017)	%	(\$000s)	(\$000s)	(\$000s)	(\$000s)	(\$000s)	(\$000s)
Total Personal Income (TPI)	100.0%		\$2,423,134		\$1,917,740		\$238,723	
Convenience Goods								
Supermarkets and Other Grocery Stores	7.3%	80%	\$176,334	\$141,067	\$139,556	\$111,645	\$17,372	\$13,898
Convenience Stores (incl. Gas Stations)	2.9%	80%	\$71,185	\$56,948	\$56,338	\$45,070	\$7,013	\$5,610
Specialty Food and Beer, Wine, & Liquor Stores	1.3%	60%	\$32,565	\$19,539	\$25,773	\$15,464	\$3,208	\$1,925
Health and Personal Care	1.7%	80%	\$41,996	\$33,597	\$33,237	\$26,590	\$4,137	\$3,310
Total Convenience Goods	13.3%		\$322,080	\$251,151	\$254,904	\$198,768	\$31,731	\$24,743
Shopper's Goods General Merchandise								
Department Stores	0.5%	0%	\$12.302	\$0	\$9.737	\$0	\$1,212	\$0
Warehouse Clubs & Supercenters	5.7%	0%	\$138,347	\$0 \$0	\$109,492	\$0 \$0	\$13,630	\$0 \$0
Subtotal	6.2%	070	\$150,650	<u>\$0</u>	\$119,229	\$0	\$14,842	<u>φο</u> \$0
Other Shopper's Goods								
Clothing & Accessories	2.0%	10%	\$47.719	\$4,772	\$37.766	\$3,777	\$4.701	\$470
Furniture & Home Furnishings	1.3%	10%	\$30,408	\$3,041	\$24,066	\$2,407	\$2,996	\$300
Electronics & Appliances	1.0%	10%	\$23,343	\$2,334	\$18,474	\$1,847	\$2,300	\$230
Sporting Goods, Hobby, Book, & Music Stores	1.1%	10%	\$23,543	\$2,754	\$10,474	\$2,179	\$2,713	\$230 \$271
Miscellaneous Retail	1.6%	10%	\$37,839	\$3,784	\$29,947	\$2,175	\$3,728	\$373
Subtotal	6.9%	1070	\$166,846	\$16,685	\$132,047	\$13,205	\$16,437	\$1,644
Total Shopper's Goods	13.1%		\$317,495	\$16,685	\$251,275	\$13,205	\$31,279	\$1,644
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Eating and Drinking	6.8%	50%	\$163,736	\$81,868	\$129,585	\$64,793	\$16,131	\$8,065
Building Material & Garden	3.4%	50%	\$82,960	\$41,480	\$65,657	\$32,828	\$8,173	\$4,087
Total Retail Goods	36.6%	44.1%	\$886,271	\$391,183	\$701,421	\$309,594	\$87,314	\$38,539

Source: 2017 Census of Retail Trade; ICSC; Economic & Planning Systems

Resident expenditure by store category translates into supportable floor area based on typical annual sales revenues. As shown in **Table 6**, the retail square footage supportable by projected demand is estimated using average sales per square foot estimates for each store category.

Table 6. Supportable Retail Square Feet

Store Type	Tota	al Sales (\$000	s)	Demand (sq. ft.)			
	Per Sq. Ft.	Town of Erie (2024)	New Households (Excl. SLB)	SLB Parcel	Town of Erie (2024)	New Households (Excl. SLB)	SLB Parcel
Convenience Goods Supermarkets and Other Grocery Stores Convenience Stores (incl. Gas Stations) Beer, Wine, & Liquor Stores Health and Personal Care Total Convenience Goods	\$500 \$400 \$300 \$500	\$141,067 \$56,948 \$19,539 <u>\$33,597</u> \$251,151	\$111,645 \$45,070 \$15,464 <u>\$26,590</u> \$198,768	\$13,898 \$5,610 \$1,925 \$3,310 \$24,743	282,100 142,400 65,100 67,200 556,800	223,300 112,700 51,500 53,200 440,700	27,800 14,000 6,400 <u>6,600</u> 54,800
Shopper's Goods General Merchandise Department Stores Warehouse Clubs & Supercenters Subtotal	\$300 \$500	\$0 <u>\$0</u> \$0	\$0 <u>\$0</u> \$0	\$0 <u>\$0</u> \$0	0 <u>0</u> 0	0 <u>0</u> 0	0 <u>0</u> 0
Other Shopper's Goods Clothing & Accessories Furniture & Home Furnishings Electronics & Appliances Sporting Goods, Hobby, Book, & Music Miscellaneous Retail Total Total Shopper's Goods	\$500 \$300 \$500 \$250 \$300	\$4,772 \$3,041 \$2,334 \$2,754 \$3,784 \$16,685	\$3,777 \$2,407 \$1,847 \$2,179 \$2,995 \$13,205	\$470 \$300 \$230 \$271 <u>\$373</u> \$1,644	9,500 10,100 4,700 11,000 12,600 47,900	7,600 8,000 3,700 8,700 10,000 38,000	900 1,000 500 1,100 1,200 4,700
Eating and Drinking	\$350	\$81,868	\$64,793	\$8,065	233,900	185,100	23,000
Building Material & Garden	\$300	\$41,480	\$32,828	\$4,087	138,000	109,000	14,000
Total Retail Goods		\$391,183	\$309,594	\$38,539	976,600	772,800	96,500

Source: 2017 Census of Retail Trade; Economic & Planning Systems

Service retail, which is not included in the retail sales data used for other retail categories, adds 20 percent to the square footage figures shown in **Table 6**. A 5 percent square footage reduction is applied to account for the increase in online spending that has occurred nationwide since the 2017 Economic Census was released, thus redirecting a portion of household income that might otherwise be spent in brick and mortar locations.

After these adjustments, existing households in the Town of Erie, and new households generated by planned and proposed development at full buildout (including North Westerly) are estimated to support a total of approximately 2.1 million square feet of floor area, shown in **Table 7**.

Table 7. Total Retail Demand

Description	Factor	Town of Erie (2024)	New Households (Excl. SLB)	SLB Parcel	Total
Retail Type Convenience Goods General Merchandise Other Shopper's Goods Eating and Drinking Building Material & Garden Subtotal		556,800 0 47,900 233,900 138,000 976,600	440,700 0 38,000 185,100 109,000 772,800	54,800 0 4,700 23,000 14,000 96,500	1,052,300 0 90,600 442,000 261,000 1,845,900
Service Retail Online Spending	20% -5%	195,320 -48,830	154,560 -38,640	19,300 -4,825	369,180 -92,295
Total Demand		1,123,090	888,720	110,975	2,122,785

Source: Economic & Planning Systems

Retail Absorption Schedule

While **Table 7** shows total retail demand in the Town of Erie after future residential units reach full buildout, **Table 8** includes the supportable retail square footage that can be captured by North Westerly specifically.

A detailed retail absorption model using the middle tier residential growth projection of 563 annual residential units shown in **Table 8**, integrates development timing with projected retail demand. This model highlight the first five years of construction, and each year following in which the demand captured by North Westerly surpasses 75,000 square foot increments of retail space up to 225,000 square feet.

This forecast assumes that the North Westerly development has the potential to capture 10% of total demand generated by existing Town of Erie residents, 15% of demand generated by future households (due to the proximity of new residential development to this site), and 60% of demand generated by North Westerly residents. Based on Erie's current retail inventory, the square footage of unmet demand is calculated for the town overall. Note that the development's capture of demand generated by existing households applies to unmet demand in Erie to account for existing retail space in the town.

Table 8. Retail Absorption Forecast – Midlevel Forecast

				Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 15	Year 30
Description	Factor	Total	Const. Start	2024	2025	2026	2027	2028	2029	2030	2039	2054
Households (Annual)												
Town of Erie (2024)		12,136		12,136	0	0	0	0	0	0	0	
New Households (Excl. SLB)	413 - 463	15,305	2025	0	463	463	463	463	438	438	511	563
SLB Parcel Total New Households	100 - 150 563	1,852 17,157	2025	0	100 563	100 563	100 563	100 563	125 563	125 563	52 563	0 563
SLB Capture	363	17,137			17.8%	17.8%	17.8%	17.8%	22.2%	22.2%	9.2%	0.0%
Households (Cumulative)												
Town of Erie (2024)		12,136		12,136	12,136	12,136	12,136	12,136	12,136	12,136	12,136	12,136
New Households (Excl. SLB)		15,305		0	463	926	1,389	1,852	2,290	2,728	6,593	15,038
SLB Parcel Total Households		1,852		<u>0</u> 12,136	100 12,699	200 13,262	300 13,825	400 14,388	<u>525</u> 14,951	<u>650</u> 15,514	<u>1,852</u> 20,581	<u>1,852</u> 29,026
Total Households	-			12,130	12,033	13,202	13,023	14,300	14,931	13,314	20,301	23,020
Household Income												
Town of Erie (2024)	\$199,665		-	\$2,423,134,440	\$2,423,134,440	\$2,423,134,440		. , , ,				
New Households (Excl. SLB) SLB Parcel	\$125,302 \$128,900			\$0 \$0	\$58,014,624 \$12,889,993	\$116,029,247 \$25,779,985	\$174,043,871 \$38,669,978	\$232,058,495 \$51,559,970	\$286,940,579 \$67,672,461	\$341,822,664 \$83,784,952	\$826,113,205 \$238,722,663	\$1,884,284,904 \$238,722,663
Total	φ120,900				\$2,494,039,056							
				42,420,104,440	42 ,404,000,000	42,004,040,072	42,000,040,200	42,700,702,000	42 ,777,747,400	42,040,142,000	40,401,010,001	Q4,040,142,000
Retail Expenditure Potential				*****								
Town of Erie (2024)	36.6%			\$886,270,949	\$886,270,949	\$886,270,949	\$886,270,949	\$886,270,949	\$886,270,949	\$886,270,949	\$886,270,949	\$886,270,949
New Households (Excl. SLB) SLB Parcel	36.6% 36.6%			\$0 \$0	\$21,219,077 \$4,714,565	\$42,438,153 \$9,429,131	\$63,657,230 \$14,143,696	\$84,876,307 \$18,858,262	\$104,949,645 \$24,751,469	\$125,022,983 \$30,644,676	\$302,154,153 \$87,313,752	\$689,184,612 \$87,313,752
Total	30.070		-	\$886,270,949	\$912,204,591	\$938,138,233	\$964,071,875		\$1,015,972,062			
Local Expenditure Potential												
Town of Erie (2024)	44.1%			\$391,183,344	\$391,183,344	\$391,183,344	\$391,183,344	\$391,183,344	\$391,183,344	\$391,183,344	\$391,183,344	\$391,183,344
New Households (Excl. SLB)	44.1%			\$0	\$9,365,702	\$18,731,404	\$28,097,105	\$37,462,807	\$46,322,801	\$55,182,796	\$133,365,166	\$304,193,138
SLB Parcel	44.1%			<u>\$0</u>	\$2,080,921	<u>\$4,161,841</u>	\$6,242,762	\$8,323,682	\$10,924,833	\$13,525,984	\$38,538,650	\$38,538,650
Total		-		\$391,183,344	\$402,629,966	\$414,076,589	\$425,523,211	\$436,969,833	\$448,430,979	\$459,892,124	\$563,087,159	\$733,915,132
Supportable Retail Sq. Ft.												
Town of Erie (2024)	\$401		-	976,600	976,600	976,600	976,600	976,600	976,600	976,600	976,600	976,600
New Households (Excl. SLB) SLB Parcel	\$401 \$399			0	23,378 <u>5,211</u>	46,757 10,421	70,135 <u>15,632</u>	93,514 20,842	115,630 <u>27,356</u>	137,746 33,869	332,902 <u>96,500</u>	759,318 <u>96,500</u>
Total	\$399	-		<u>0</u> 976,600	1,005,189	1,033,778	1,062,367	1,090,956	1,119,585	1,148,215	1,406,002	1,832,418
				0.0,000	1,000,100	1,000,770	1,002,001	1,000,000	1,110,000	1,140,210	1,400,002	1,002,410
Total Retail Demand (w. Services)	450/			4 400 000	4 400 000	4 400 000	4 400 000	4 400 000	4 400 000	4 400 000	4 400 000	
Town of Erie (2024)	15% 15%		-	1,123,090 0	1,123,090 26,885	1,123,090 53,770	1,123,090 80,655	1,123,090 107,541	1,123,090 132,974	1,123,090 158,408	1,123,090 382,838	1,123,090 873,216
New Households (Excl. SLB) SLB Parcel	15%			0	26,885 5,992	11.984	17.977	23.969	31,459	38.949	382,838 110.975	110,975
Total	1070			1,123,090	1,155,967	1,188,845	1,221,722	1,254,599	1,287,523	1,320,447	1,616,903	2,107,281
Erie Retail Inventory (sq. ft.)		810,269		810,269	810,269	810,269	810,269	810,269	810,269	810,269	810,269	810,269
Unmet Demand (sq. ft.)				312,821	345,698	378,576	411,453	444,330	477,254	510,178	806,634	1,297,012
SLB Capture of Erie Demand												
Town of Erie (2024)	10%			31,282	31,282	31,282	31,282	31,282	31,282	31,282	31,282	31,282
New Households (Excl. SLB)	15%			0	4,033	8,066	12,098	16,131	19,946	23,761	57,426	130,982
SLB Parcel	60%			0	3,595	<u>7,191</u>	<u>10,786</u>	14,381	<u>18,875</u>	<u>23,369</u>	66,585	<u>66,585</u>
Total (sq. ft.)				31,282	38,910	46,538	54,166	61,794	70,104	78,413	155,293	228,850

Source: Zonda; CoStar; ESRI; Economic & Planning Systems

A summary of forecasted retail absorption timing is shown in **Table 9**. Retail absorption is shown in three phases with a hypothetical 75,000 square feet in each phase. Assuming that between 100 to 150 residential units in the North Westerly development will be absorbed annually, residential construction is expected to be completed in 15 years.

Table 9. Absorption Summary

Description	Threshold (sq. ft.)	North Westerly Demand (sq. ft.)	Y	ear
Residential				
Construction Start			2025	Year 1
Construction End			2039	Year 15
Retail Absorption				
Forecast (Low)				
Phase 1	75,000	79,458	2031	Year 7
Phase 2	150,000	151,325	2042	Year 18
Phase 3	225,000	228,645	2062	Year 36
Forecast (Mid)				
Phase 1	75,000	78,413	2030	Year 6
Phase 2	150,000	155,293	2039	Year 15
Phase 3	225,000	228,850	2054	Year 30
Forecast (High)				
Phase 1	75,000	75,275	2029	Year 5
Phase 2	150,000	153,428	2037	Year 13
Phase 3	225,000	230,210	2049	Year 25

Source: Economic & Planning Systems

Findings

After applying the capture rates to determine the supportable square footage onsite at North Westerly, the middle scenario in **Table 9** shows that it will take six years for 78,413 square feet of retail space to be absorbed, 15 years for 155,293 square feet, and 30 years for 228,850 square feet.

Based on this forecast, the middle scenario indicates that by Year 15 after residential construction at North Westerly kicks off, there is sufficient demand for at least 150,000 square feet of retail space on site, but it could take around 30 years for a total of 225,000 square feet of retail space to be absorbed.

The primary finding of this analysis is that the timing of the project is such that the commercial development that is supportable is the amount that can be built while the residential is being built. Any additional floor area, after the last certificate of occupancy is issued, represents sales transfers (cannibalization) from other locations elsewhere in town to this location.

The residential portion of North Westerly is anticipated to finish construction and reach full buildout in approximately 15 years. To generate support for more onsite retail would require redirecting sales flows from other sites within the Erie trade area. Reserving vacant land past that point in time comes at a high cost, one that does not serve the interests of the Town or the developer.



Aly Burkhalter | Senior Planner

Pronouns: She / Her / Hers / Ella Town of Erie | Planning & Development

Phone: 303-981-5985 aburkhalter@erieco.gov

10/2/2024

MARKET STUDY ADDITIONAL INFORMATION

The proposed amount of leasable commercial space in the North Westerly PD is approximately 145,000 square feet. The justification for a reduction from previously proposed totals is as follows:

- 1. From the Applicant's experience, the total square footage represents the suitable amount of space to maintain the mix of uses and quality of tenants to further the Goals of the Community and Vision of the Village. The quality of tenants, experiences and products incorporated into the Village is more important to its success than the total amount of commercial space built.
- 2. The total square footage proposed should be absorbed within the development horizon of the project. The Village will be built incrementally over time and the duration of the commercial development must coincide with the duration of the residential development.
- 3. The arrangement of the commercial space to create a central gathering place is central to the design of the community. Well-scaled spaces that provide the opportunity for small gatherings around a fire pit as well as a place for a neighborhood-sized concert have been designed into the concept plan. The applicant has a long history of actively programming events and engaging the community to keep this type of area active and interesting. A curated tenant mix that supports this vision is crucial to creating an environment that is successful as a community gathering place. Vacant commercial space pulls the life out of commercial areas. Vacant commercial space is particularly detrimental to a high-quality village that is the vision for this community.

The following is a detailed description of the Goals of the Community and Vision of the Village of North Westerly:

• • •

COMMUNITY GOALS

The vision of the proposed community is to create a place with a diversity of housing, many transportation options and an ease of living that encourages more time spent with friends and family and less time commuting and running errands. A major part of realizing that vision is to design, develop and manage a mixed-use, commercial village that is well-connected to the broader community and seamlessly integrated into this neighborhood. This Village is not only a place to buy and sell but the gathering place where true community is built.

VILLAGE VISION

The vision of the Village is to create a vibrant gathering place for the residents of this community and surrounding Erie neighborhoods. It will be a place that entices strolling treelined streets, taking an ice cream to the Village Green, and having a cocktail and dinner with friends while enjoying a sunset concert.

The proposed commercial program is intended to be destination-neighborhood services, daily needs, and F&B (or B&F) focused. The intention is not to be a regional draw or power-center type program, but rather a diverse mix of unique local and regional tenants that further the vision of the place with their products and services. Active storefronts, including outdoor dining and a market are planned for street corners and high-profile locations to evoke a sense of vitality and security.

The planned buildings are not to be larger than approximately 20,000 square feet and are to be delivered sequentially over time. This is to allow flexibility to respond to market conditions as well as to lessen the time pressure on the development and leasing teams. Without undue financial pressure to sign leases and fill space, the quality of the tenants can become more important than the quantity of leases needed.

The private community amenities are collocated with and in the Village to bolster the activity in the area and increase the visibility of the commercial tenants. The private amenities are planned to serve both the residents of this planned community as well as the residents of the Westerly community. The development will host many public and private events on the proposed Village Green and in community amenity spaces. The Village layout, Village Green, and planned programming are, from the applicant's experience, essential ideas to the success of the Village.

VILLAGE DESIGN

200 Kalamath St. Denver, CO 80223

The Village has been centrally located in the proposed community as well as adjacent to and easily accessible from the major thoroughfares of Erie Parkway and County Road 7. This is to encourage patronage by not only the proposed community, but also the surrounding neighborhoods by providing easy access.

The Village has been designed in a modified, traditional Town Square arrangement with streets surrounding a Village Green. The Village Green has been sized to accommodate daily use as well as large events. The streets create well-sized blocks with comfortably spaced street crossings.

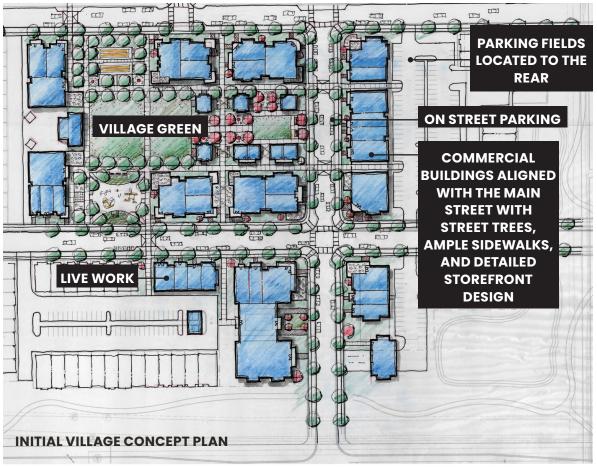
To the extent possible, the Village streets have been designed with active uses and commercial on the ground floor of both sides of the street. This will provide for a well-scaled, interesting and comfortable environment that encourages meandering through an interesting 'shopping loop'.

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The planned buildings are aligned and set back the appropriate distance to allow for a comfortable walking experience. Street trees, ample-width sidewalks, and detailed storefront design are the key design components of a comfortable Village commercial environment. The footprints of the building allow for space between that encourage interesting 'surprise' moments as well as convenient access to parking.

On-street parking is provided to allow for convenient access to the shopfronts. Parking fields at the back of the commercial streets have been strategically located to allow for easy ingress and egress as well as convenient pedestrian access to the street. Parking for the community amenities have been located proximate to the Village to allow for parking sharing and to encourage multiple-stop trips to reduce traffic volumes.

Live-Work townhomes radiate from the Village to provide a smooth transition from the activity of the Village area to the quieter residential streets. Live-Work units provide an opportunity to increase entrepreneurship in the community with the long-term goal of having successful startup businesses move into larger spaces in the Village.



ERIE PARKWAY

EXPERIENCE

The applicant has planned, developed, leased and/or managed (all in-house capabilities) over 1 million square feet of commercial space within the projects it has developed with the majority of it being at a village scale. The development and leasing of quality small-scale commercial space takes a tremendous amount of care and attention. To deliver buildings that fit the aesthetic vision of the community as well as tenants that fit the needs of the residents is

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difficult at best. It is the applicant's goal to build a beautiful and successful Village but, more importantly, to provide the right mix of quality experiences and products that make the Village the soul of the community.

CONCEPT PLANS/PRECEDENTS

The following are visual examples of concepts and projects that are representative of the Vision of the Village Area:

Village Concept Plan

The Initial Village Concept Plan (graphic on previous page) depicts how the pedestrian realm, tenant and building form are envisioned to be complimentary. As described above, the commercial spaces are adjacent to the community amenity and surround the Village Green. Tenant lineup, mix and square footage are conceptual only.

Bradburn, Westminster, CO

The design for Bradburn was created by Duany Plater-Zyberk. Bisected by Main Street, the Village Core fronts 120th Avenue, the primary access into the project. Designed around "the look and feel of a small town Main Street", where residents can walk from their homes to shop, eat, and work. the Village Core, offers nearly 140,000 square feet of retail, an event center, bank, restaurants, office space, services, fitness, daycare, a Whole Foods, and a church use.

The Village Core features a plaza along the Main Street, a community center with pool, the church, multistory rowhouse apartments and live/work units, single-family townhomes, and Cherrington Park, named after Linda Cherrington, an original member of the Westminster Historical Society and one of the leading ladies in the city's early education system.

Two areas of offices further define the Village Core. The Main Street Offices occupy the second floor above Main Street's shops and restaurants. And the Rowhouse Live Work are two-story buildings designed for professional uses such as physicians, attorneys, real estate, salon type uses.









Westhaven, Franklin, TN

Project developed by the Applicant, 2002-current Commercial delivered 2005-2021 200,000 sf Commercial

- 45,000 sf Grocer
- 22 Retail Tenants
- Medical Office
- Services







Pinehurst Village, NC
Original Plan by Frederick Law Olmstead – 1985
National Historic Landmark
Inspiration for Westhaven Village Design







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AQUATIC RESOURCE DELINEATION REPORT

FOR NORTH WESTERLY PROJECT

WELD COUNTY, COLORADO

DECEMBER 18, 2023

Prepared For:

NORTH WESTERLY OWNER, LLC 1225 17th Street, Suite 2420 Denver, CO 80202 Contact: Heidi Majerik

Phone: 720-531-8924



EXECUTIVE SUMMARY

Project N	ame	North We	North Westerly Project							
Applicant/0	Owner	NORTH W	NORTH WESTERLY OWNER, LLC							
Survey Are (Acres		392.8 acre	392.8 acres							
County, S	tate	Weld, Cold	Weld, Colorado							
		1987 Corp	1987 Corps of Engineers Wetlands Delineation Manual							
		Regional Supplement to the Corps of Engineers Wetland Delineation Man								
Methodo	logy	Great Plains Region (Version 2.0)								
	2008 Field Guide to the Identification of the Ordinary High Water I									
		(OHWM) i	n the Arid West	Region of the We	estern United States					
Summary of Findings										
			Summary	of Findings						
Aquatic	Size	Linear	Connectivity ¹		Description					
Aquatic Resource ID	Size (acres)	Linear Feet	•	Classification ²	Description					
•			Connectivity ¹		Description Manmade Intermittent Riverine					
•			Connectivity ¹		•					
Resource ID	(acres)	Feet	Connectivity ¹ (Yes/No)	Classification ²	Manmade Intermittent Riverine					
Resource ID	(acres)	Feet	Connectivity ¹ (Yes/No)	Classification ²	Manmade Intermittent Riverine (Community Ditch – east and west					
Resource ID	(acres) 2.36	Feet	Connectivity ¹ (Yes/No) No	Classification ²	Manmade Intermittent Riverine (Community Ditch – east and west branches)					

Note: All areas that have been investigated in the field are mapped on the enclosed Aquatic Resource Delineation Map (**Appendix A**).

-

¹ Connectivity Yes=Direct surface connection to other Waters of the US identified.

No=No direct surface connection to other Waters of the US identified.

² Habitat Type based on Cowardin et al. 1979.



CONTENTS

1.0 Introduction	
2.0 Survey Area Location	
3.0 Methodology	5
4.0 Existing Conditions	6
4.1 Landscape Setting	6
4.2 Aquatic Resources	g
Aquatic Resource A (2.36 acres) (10,839.1 Linear Feet)	<u>C</u>
Aquatic Resource B (0.04 acre)	11
4.3 Upland Habitat	12
4.4 Plant Species Identified in the Survey Area	13
4.5 Aquatic Resource Connectivity Assessment	14
5.0 References	16

APPENDIX A

Aquatic Resource Delineation Map Overview

APPENDIX B

ERC Wetland Determination Data Forms



1.0 INTRODUCTION

This report summarizes the delineation of aquatic resources completed by Ecological Resource Consultants, LLC (ERC) on behalf of NORTH WESTERLY OWNER, LLC for the North Westerly Project Site (survey area). This report documents aquatic resource boundary determinations for verification and jurisdictional review by the US Army Corps of Engineers (USACE), Omaha District Denver Regulatory Office.

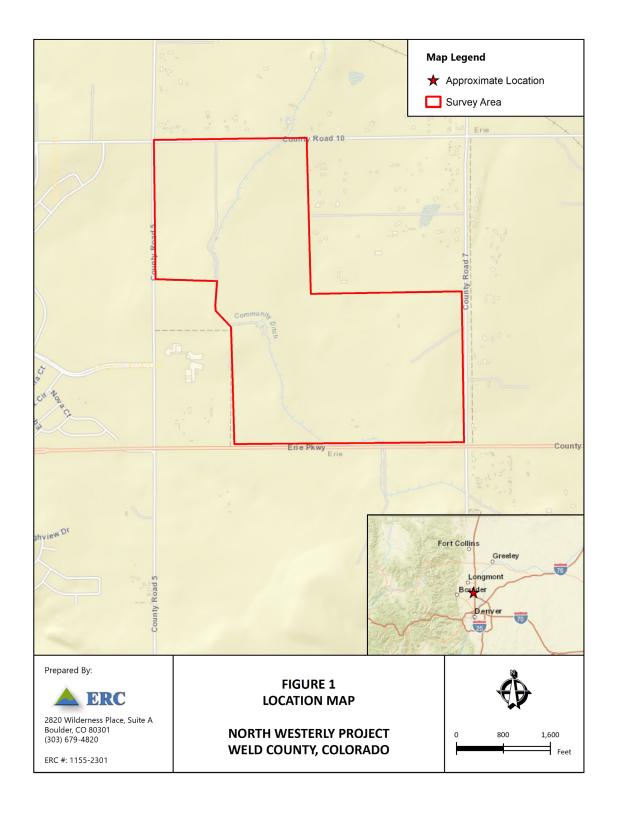
Project Contact information								
	Applicant/Owner	Representative						
Company Name	NORTH WESTERLY OWNER, LLC	Ecological Resource Consultants, LLC						
Contact Name	Heidi Majerik	Natalie Rothman						
Address	1225 17th Street, Suite 2420	2820 Wilderness Place, Suite A						
	Denver, CO 80202	Boulder, CO 80301						
Phone	720-531-8924	303-679-4820 x116						
Email	Heidi.Majerik@southernland.com	natalie@erccolorado.net						

2.0 SURVEY AREA LOCATION

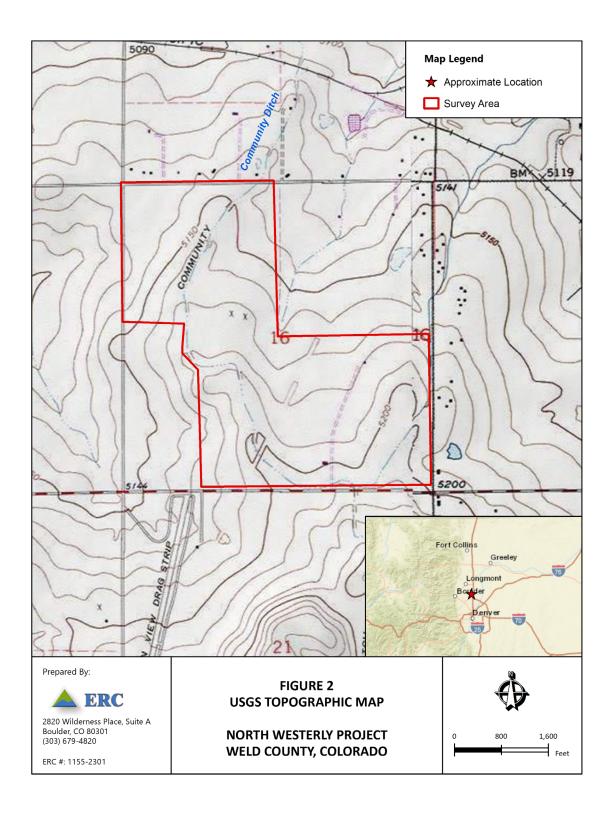
State	Colorado
County	Weld
County Parcel #	14-671-640-0004, 14-671-62-00076
Nearest Town	Erie
Street Address/	No designated address /
Nearest Intersection	Northwest corner of Erie Parkway and County Road 7
Latitude, Longitude	40.05081°N, -105.0089°W
(Center of Survey Area)	
Section, Township,	Section 16, Township 1 North, Range 68 West
Range	
Direction from Denver	Take CO-470 west towards I-70 for 13 miles. Take Exit 1 for I-70 East and
Regulatory Office	continue for approximately 9 miles. Exit I-70 using exit 269B for I-76 East
	and continue for 5 miles. Take exit 5 for I-25 North and continue for 16
	miles. Exit at 232 onto CR-8 heading west, then take the first right onto CR-
	7. After 1 mile, turn left on CR-10. For optimal access to the site, continue
Defeate Figure 4. 2 and 24	on CR-10 for 0.5 mile and park along the earthen parking on the left.

Refer to **Figures 1, 2 and 3** for a location map, a U.S. Geological Survey (USGS) topographic map and soil survey map of the survey area.











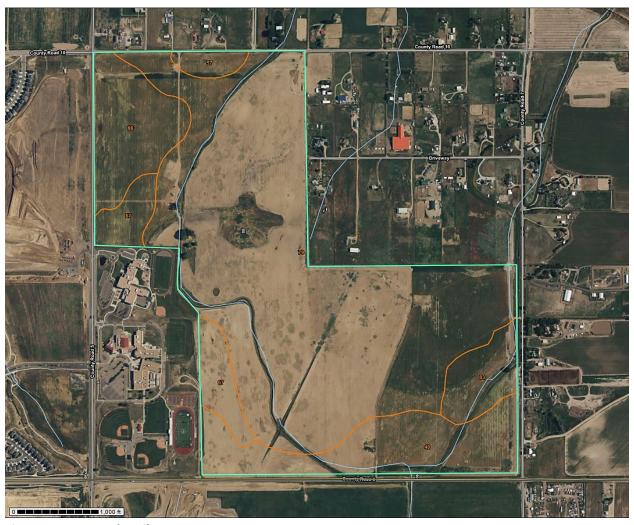


Figure 3. NRCS Web Soil Survey Map

Map Unit Symbol	Map Unit Name	Acres (+/-)	Hydric soil (Yes/No) ³
40	Nunn loam, 1 to 3 percent slopes	56.4	No
57	Renohill clay loam, 3 to 9 percent slopes	5.7	No
66	Ulm clay loam, 0 to 3 percent slopes	34.2	No
67	Ulm clay loam, 3 to 5 percent slopes	22.8	No
79	Weld loam, 1 to 3 percent slopes	255.9	No
83	Wiley-Colby complex, 3 to 5 percent slopes	17.7	No

³ Hydric (Yes/No) – obtained from the USDA State Soil Data Access (SDA) Hydric Soils List



3.0 METHODOLOGY

The aquatic resource delineation was conducted following the methodology enumerated in the 1987 Corps of Engineers Wetlands Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Version 2.0) (herein referred to as "Supplement") (Environmental Laboratory 1987, USACE 2010). During the field inspection, dominant vegetation was recorded, representative hydrologic indicators were noted, and soil samples were examined for hydric indicators.

The USACE and the Environmental Protection Agency (USEPA) jointly define wetlands as: "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" [40 CFR 230.3(t)]. Three general environmental parameters define a wetland. These parameters must include the presence of hydrophytic vegetation, hydric soils, and wetland hydrology. Except under certain situations, evidence of a minimum of one positive wetland indicator from each of the above parameters must be identified in order to make a positive wetland determination.

In addition, waters of the U.S. (WOTUS) are also defined as areas that "include essentially all surface waters such as rivers, streams and their tributaries, all wetlands adjacent to these waters, and all ponds, lakes and reservoirs". The boundaries of some WOTUS (i.e., such as streams or lakes) are further defined by the ordinary high-water mark (OHWM). The OHWM is characterized as "the line on the shores established by the fluctuations of water and indicated by physical characteristics such as: a clear natural line impressed on the bank, shelving, changes in the character of the soil, wetland vegetation, the presence of litter and debris, and other appropriate means that consider the characteristics of the surrounding areas" (USACE 2005). These definitions are the basis of this delineation method.

Areas that do not meet any one of the wetland parameters (hydrophytic vegetation, hydric soils and/or wetland hydrology) or non-vegetated stream channel/open water (OHWM) were classified as a non-wetland (upland) and mapped as such.

Any area determined to be potential WOTUS was delineated in the field using pink flags identified with 'WETLAND BOUNDARY' printed on it and sequentially labeled alpha-numerically (i.e., A1, A2...).

Each wetland determination point was recorded using a hand-held Trimble GeoXH global positioning system (GPS) receiver. The resulting GPS data were post-processed using GPS Pathfinder Office 5.85 software. Post-processing differential correction provided an average horizontal mapping accuracy of +/-2 feet. Post-processed GPS data were imported into ArcMap Geographic Information Systems (GIS) (Version 10.6) for spatial analysis and mapping. All aquatic resources delineated within the survey area are depicted on the Aquatic Resource Delineation Map (Appendix A). Wetland Determination data sheets are provided in Appendix B.



4.0 EXISTING CONDITIONS

4.1 LANDSCAPE SETTING

Average Elevation (Feet AMSL)	5,175'
Topography	Primarily flat, becomes gradually higher going from north (lowest) to the southeast corner (highest)
Subregion (LRR)	LRR G
Watershed HUC(s)	Outlet Boulder Creek – 101900050705
	Firestone Lake- Saint Vrain Creek — 101900050707
Nearest Waterbody	Boulder Creek
Current Landuse	Agriculture
Historic Landuse	Agriculture
Dominant Vegetation Communities	Cultivated Cropland
Reference	(NatureServe 2023)
General Vegetation Description	The majority of the survey area is dominated by cultivated cropland as the historic and current land use of the property and surrounding area is agriculture. The area is primarily Winter Wheat (<i>Triticum aestivum</i>).
	Around the earthen roads, the edges of the row crop fields, and near Community Ditch, the vegetation has been considerably disturbed due to agricultural practices. If not barren, these areas are dominated by upland grasses and shrubs such as cheatgrass (<i>Bromus tectorum</i>) and intermediate wheatgrass (<i>Thinopyrum intermedium</i>).
	A small adjacent wetland is located in the southeast portion of the survey area and dominated by Narrowleaf Willow (<i>Salix Exigua</i>).
Other Vegetation Communities	Great Plains Ruderal Grassland and Shrubland, Disturbed, Salix exigua / Mesic Graminoids Western Wet Shrubland
Reference	(NatureServe 2023)
Vegetation	Cultivated Cropland
Community Description(s)	The cultivated cropland community is characterized as a non-natural system which includes lands used for the production of annual crops where crop vegetation accounts for greater than 20 percent of the total vegetation and where the land is actively tilled (SWReGAP 2011). This community also includes all land being actively tilled. The cultivated cropland community within the survey area comprises relatively flat agricultural fields currently planted with row crops consisting primarily of winter wheat (<i>Triticum aestivum</i>). The agricultural fields appear to be regularly plowed and/or tilled and subject to flood irrigation practices throughout the growing season.
	Great Plains Ruderal Grassland and Shrubland The great plains ruderal grassland and shrubland is characterized being dominated by exotic, invasive grasses, forbs, or, in the south, deciduous shrubs. These species can become abundant after significant disturbance, often



associated with agricultural activities, or a disruption of natural disturbance regimes. Common disturbances which favor establishment of this macrogroup include long-term, heavy grazing, planting exotic species for livestock forage, plowing land and then abandoning it, and a disruption of the natural fire regime. Vegetation cover varies from low to very high. Common species in the project area include crested wheatgrass (*Agropyron cristatum*), smooth brome (*Bromus inermis*), field brome (*Bromus arvensis*), cheatgrass (*Bromus tectorum*), Kentucky bluegrass (*Poa pratensis*), and intermediate wheatgrass (*Thinopyrum intermedium*) and are located in small areas throughout the project area. This macrogroup can be found on mesic to dry sites on a variety of soils where disturbance regimes have been altered sufficiently to allow the establishment of the exotic species.

Disturbed

The Disturbed community includes the Community Ditch, an irrigation ditch which appears to be used solely for irrigational purposes. These features consist of barren grounds associated with oil and gas related activities, ditch excavation and urban materials such as pavement. Tree canopy varies from 0 to 50% (e.g., open to shaded lawns and gardens).

Salix exigua / Mesic Graminoids Western Wet Shrubland

This riparian association is found primarily in the Rocky Mountains and Intermountain West. The vegetation is characterized by the dominance of Salix exigua in a moderately dense tall-shrub canopy with a dense herbaceous layer dominated by graminoids. It typically occurs as a monoculture of Salix exiqua, but can have other woody species, including saplings of Populus deltoides or Salix amygdaloides, and shrubs such as Salix eriocephala, Salix lutea, and Amorpha fruticosa. Tall perennial grasses can appear to codominate the stand when Spartina pectinata, Panicum virgatum or other tall grasses are present. Other mesic graminoids, such as Carex spp., Eleocharis spp., Juncus spp., Pascopyrum smithii, Schoenoplectus pungens, and Sphenopholis obtusata, may be present. Common forb species include Bidens spp., Lobelia siphilitica, Lycopus americanus, Lythrum alatum, Polygonum spp., and Xanthium strumarium. Diagnostic features of this association include the nearly pure stands of Salix exigua shrubs, with a dense herbaceous layer of at least 30% cover of mesic graminoids. It generally occurs along backwater channels and other perennially wet but less scoured sites, such as floodplain swales and irrigation ditches.

Notable Features	Community Ditch
Dates of Field Work	December 7, 2023
Weather	Partly cloudy and high winds, 60°F
Typical Climatic/ Hydrologic Condition	Normal conditions for the time of year.



Refer to **Photos 1-6** below for general characteristics of the survey area. Photos were taken on December 7, 2023.



Photo 1. View south of the row crops, primarily winter wheat, in the northern portion of the survey area.



Photo 2. View facing southwest of barren row crop fields from the northern portion of the survey area.



Photo 3. View facing northeast of the ruderal grassland and shrublands from the central region of the survey area.



Photo 4. View facing east of agricultural fields from the central portion of the survey area.



Photo 5. View southwest from the northern portion of the survey area showing agricultural fields (left), disturbed vegetation around earthen road and edges of ditch (center), and Community Ditch (right). Aquatic Resource A marked with blue lines.



Photo 6. View facing northwest from southeast portion of survey area showing barren row crops in the foreground, Community Ditch - east branch in the background, and Aquatic Resource B on the far right (marked by yellow arrow).



4.2 AQUATIC RESOURCES

Delineated aquatic resources were classified according to the physical and biological characteristics using the Classification of Wetlands and Deepwater Habitat of the United States (Cowardin Classification System) (Cowardin et al. 1979). Within the survey area, wetland habitat types were classified based on field evaluation and are summarized in **Table 1**.

	Table 1. Summary of Aquatic Resources Delineated Within the Survey Area								
Aquatic		Classification		Linear					
Resource	⁴Cowardi	Location (lat/long)	Acres	Feet	Feature Type				
Name	n			reet					
А	R4SBCx	40.04801° N, -105.0087° W	2.36	10,839.1	Community Ditch				
В	PSS1C	40.04552° N, -105.0018° W	0.04		Palustrine Scrub-Shrub				
D	F331C	40.04332 N, -105.0016 W	0.04		Wetland				
		Total	2.40	10,839.1					

A total of 2.4 acres (10,839.1 linear feet) of aquatic resources were delineated by ERC within the survey area. A description of aquatic resource habitat types is provided below. The Aquatic Resource Delineation Map is provided in **Appendix A**. Wetland Determination data sheets are provided in **Appendix B**. Refer to **Table 2** for a list of plant species identified within the survey area (Lichvar et al. 2016).

AQUATIC RESOURCE A (2.36 ACRES) (10,839.1 LINEAR FEET)

Aquatic Resource A (Community Ditch) is a manmade, intermittent ditch (R4SBCx) excavated in uplands. Within the survey area, Community Ditch begins along the southern boundary and flows in 3 directions – northwest, northeast, and east. The first and largest portion, known as the Community Ditch - west branch, flows northwest through the entirety of the survey area, curves northeast and exits the survey area in the northeast corner of the northern parcel. The second portion, known as Community Ditch - east branch, flows northeast and remains in the southeast portion of the survey area. The last portion, an unnamed segment of an irrigation ditch stemming from Community Ditch - east branch, flows east along the southern boundary of the survey area and terminates in the southeast corner within the survey area.

Aquatic Resource A collects hydrology from upstream irrigation in Community Ditch. Surface water flow was not observed at the time of the delineation. Aquatic Resource A does not have connectivity with any designated WOTUS.

Overall, the vegetation community within Aquatic Resource A is dominated by species such as Hairy perennial panic grass (*Dichanthelium acuminatum*), Scratchgrass (*Muhlenbergia asperifolia*), and Green foxtail (*Setaria viridis*). Due to continual disturbance from agricultural practices, the dominant species within the wetland area consist of a range of species, from upland to hydrophytic (UPL-FACW). Some

-

⁴ Habitat Type based on Cowardin et al. 1979.



wetland areas within Community Ditch are stripped of vegetation from seasonal flooding of irrigation waters.

Soils within Aquatic Resource A are clay loam in texture, exhibiting hydric soil indicators Loamy Gleyed Matrix (F2) and Depleted Matrix (F3). At the time of the delineation, primary wetland hydrology indicators B7 (Inundation on Aerial Imagery), B9 (Water-Stained Leaves), C3 (Oxidized Rhizospheres on Living Roots, where not tilled), and C4 (Presence of Reduced Iron) were observed. Secondary indicators B8 (Sparsely Vegetated Concave Surface), B10 (Drainage Patterns), C3 (Oxidized Rhizospheres on Tilled Roots), D2 (Geomorphic Position), and D5 (FAC-Neutral Test) were also observed; however, no flow or saturation was present during the site visit. Aquatic Resource A meets the criteria for a wetland based on the presence of hydric soils and wetland hydrology and includes an OHWM. Hydrophytic vegetation was present in some areas within Aquatic Resource A and missing from other areas due to high rates of disturbance from agricultural use, making the vegetation significantly disturbed. Therefore, the vegetation does not impact the jurisdiction of wetlands for these portions of the survey area.

Aquatic Resource A comprises a total of 2.36 acres (10,839.1 linear feet) of manmade, intermittent riverine (R4SBCx) (**Appendix A**). Refer to **Photos 7-10** below for characteristics within Aquatic Resource A which were taken December 7, 2023.



Photo 7. Overview facing south of Aquatic Resource A, Community Ditch - west branch, taken from the center of the survey area. The OHWM is depicted by the blue line.



Photo 8. View facing south from inside Community Ditch — west branch in the central area of the property. The OHWM is depicted by the blue line.



Photo 9. View facing west (upstream) of Aquatic Resource A, showing the entrance of Community Ditch and the first segment of the east branch along the southern edge of the survey area. The OHWM is depicted by the blue line.



Photo 10. View north of Aquatic Resource A, Community Ditch — east branch, and Aquatic Resource B, adjacent wetland, on the right. The OHWM is depicted by the blue line and Aquatic Resource B location is shown with yellow arrow.



AQUATIC RESOURCE B (0.04 ACRE)

Aquatic Resource B is a seasonally flooded, palustrine scrub-shrub wetland (PSS1C) adjacent to Aquatic Resource A, Community Ditch - east branch. This wetland is located in the southeast portion of the survey area. Aquatic Resource B collects hydrology from seepage from Community Ditch irrigation flows. Aquatic Resource B does not have connectivity with any designated WOTUS.

Overall, the vegetation community within Aquatic Resource B is dominated by species such as Narrowleaf Willow (*Salix exigua*), Annual Beard-grass (*Polypogon monspeliensis*), Common Mullein (*Verbascum thapsus*), and Roundfruit Rush (*Juncus compressus*). The dominant species within the wetland area consist primarily of hydrophytic species (FACW).

Soils within Aquatic Resource B are mucky clay loam in texture, exhibiting hydric soil indicators 1 cm Muck (A9) and Loamy Mucky Mineral (F1). At the time of the delineation, primary wetland hydrology indicators B4 (Algal Mat or Crust) and C2 (Dry-Season Water Table) were observed. Additionally, the water table was present at 17 inches deep and saturation was observed at 15 inches. Secondary indicators C3 (Oxidized Rhizospheres on Tilled Roots) and D5 (FAC-Neutral Test) were also observed. Aquatic Resource B meets the criteria for a wetland based on the presence of hydrophytic vegetation, hydric soils, and wetland hydrology and includes an OHWM.

Aquatic Resource B comprises a total of 0.04 acre of palustrine scrub-shrub wetland (PSS1C) (**Appendix A**). Refer to **Photos 11-14** below, taken on December 7, 2023, for characteristics of Aquatic Resource B.

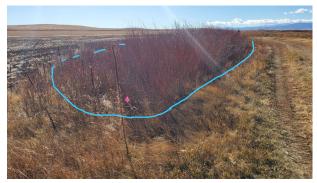


Photo 11. Overview facing south of Aquatic Resource B, PSS wetland, taken from the southeast corner of the survey area. Wetland boundary depicted by the blue line.



Photo 12. View facing northeast of the adjacent wetland, showing dominant species, *Salix exigua*. Wetland boundary depicted by the blue line.



Photo 13. View facing west showing eastern boundary of Aquatic Resource B. Wetland boundary depicted by the blue line.



Photo 14. View northwest of the scrub-shrub wetland. The wetland boundary is depicted by the blue line.



4.3 UPLAND HABITAT

The wetland delineation identified approximately 390.4 acres of upland habitat within the survey area consisting predominantly of cultivated cropland. The topography of the survey area slopes from the southern region (highest point) to the northern region (lowest). The topographic high point of 5,208 feet is in the southern portion of the survey area. The vegetation community characterized within and surrounding the survey area is primarily agricultural fields of winter wheat (*Triticum aestivum*). The peripheral sections, along the roads and ditches have been extensively disturbed by historic and current agricultural land use practices. The vegetation is dominated by invasive species such as smooth brome (*Bromus inermis*) and Canada Thistle (*Cirsium Arvense*). Hydric soils, a dominance of hydrophytic vegetation, and/or wetland hydrology as well as an OHWM were not present in the upland habitats within the survey area.

Refer to Table 2 for a list of plant species identified within the survey area (Lichvar et al. 2016).



4.4 PLANT SPECIES IDENTIFIED IN THE SURVEY AREA

Table 2. Plan	t Species Identified in Survey Area	
Scientific Name	Common Name	WIS*
Amaranthus blitoides	Prostrate Pigweed	FAC
Bassia scoparia	Kochia	FACU
Bromus inermis	Smooth Brome	UPL
Bromus tectorum	Cheatgrass	UPL
Bouteloua dactyloides	Buffalograss	FACU
Chenopodium album	Lamb's Quarters	FACU
Cirsium arvense	Canada Thistle	FACU
Dichanthelium acuminatum	Hairy Perennial Panic Grass	FAC
Helianthus annuus	Common Sunflower	FACU
Juncus compressus	Roundfruit Rush	FACW
Lactuca serriola	Prickly Lettuce	FAC
Lepidium latifolium	Perennial Pepperweed	FACW
Muhlenbergia asperifolia	Scratchgrass	FACW
Onopordum acanthium	Scotch Thistle	UPL
Plantago patagonica	Woolly Plantain	UPL
Polypogon monspeliensis	Annual Beard-grass	FACW
Salix exigua	Narrowleaf Willow	FACW
Salsola kali	Tumbleweed	FACU
Setaria viridis	Green Foxtail	UPL
Thinopyrum intermedium	Intermediate Wheatgrass	UPL
Tribulus terrestris	Tackweed	UPL
Verbascum thapsus	Common Mullein	UPL

* Wetland Indicator Status (WIS) – Great Plains Regions:

OBL = occurs in aquatic resources > 99% of time

FACW = occurs in aquatic resources 67-99% of time

FAC = occurs in aquatic resources 34-66% of time

FACU = occurs in aquatic resources 1-33% of time

UPL = occurs in uplands > 99% of time

WIS Source: Lichvar, R.W., D.L. Banks, W.N. Kirchner, and N.C. Melvin. 2016. *The National Wetland Plant List*: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X http://www.phytoneuron.net/



4.5 AQUATIC RESOURCE CONNECTIVITY ASSESSMENT

Based on aerial imagery and USGS National Hydrography Dataset map, Aquatic Resource A (Community Ditch - east and west branches) conveys seasonal irrigational flow from Community Ditch upstream waters during growing periods. Aquatic Resource B, the adjacent scrub-shrub wetland, receives water from a seep in Community Ditch East Branch. According to aerial imagery, both branches of Community Ditch end in upland agricultural fields. Neither of the aquatic resources have connectivity to a Traditional Navigable Water (TNW).

Table 3. Aquatic Resource Connectivity Assessment

	Connectivity to the Waters	of the U.S.	
Aquatic Resource Name	Connectivity Path and Direction	Endpoint	Feature Type
A	Aquatic Resource A, Community Ditch - east and west branches, is a manmade, intermittent ditch that flows offsite into upland agricultural fields.	Upland	Intermittent Riverine Channel/Ditch (R4SBC)
В	Aquatic Resource B is an adjacent scrub-shrub wetland and only has connectivity to Community Ditch - east branch.	Upland	Palustrine Scrub-Shrub Wetland (PSS1C)



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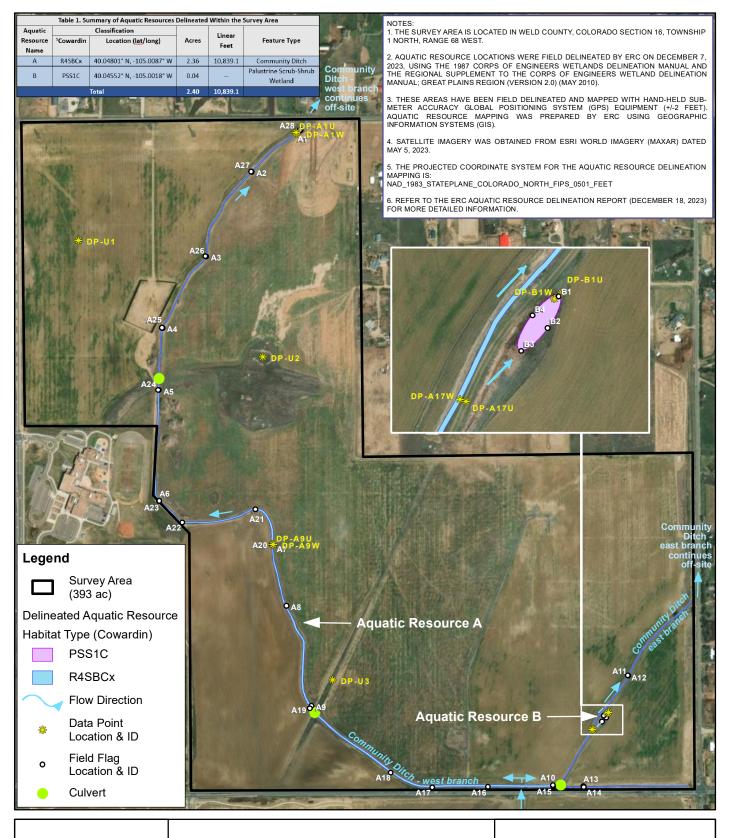


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APPENDIX A



Prepared By:

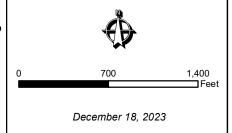


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ERC #: 1155-2301

APPENDIX A AQUATIC RESOURCE DELINEATION MAP

NORTH WESTERLY SITE WELD COUNTY, COLORADO





APPENDIX B

See ERDC/EL TR-10-1; the proponent agency is CECW-CO-R

- , , ,	5 7				
Project/Site: North Westerly Project Site	С	ty/County: Erie/We	ld	Sampling Date: 1	12/7/2023
Applicant/Owner: NORTH WESTERLY OWNER, LLC			State: CO	Sampling Point:	DP-A1U
Investigator(s): Natalie Rothman	Se	ction, Township, Ra	nge: Section 16, Towns	– ship 1 North, Range 6	8 West
Landform (hillside, terrace, etc.): field			ex, none): convex		
Subregion (LRR): LRR G Lat: 40.05811 °	N.	Long: -1	05.0104 °W	 Datum: V	WGS 1984
Soil Map Unit Name: Weld loam, 1 to 3 percent slopes				ication: None	
Are climatic / hydrologic conditions on the site typical for the	nis time of year	Yes X	No (If no, exp	olain in Remarks.)	
Are Vegetation , Soil , or Hydrology sign	ificantly disturb	ed? Are "Normal C			
Are Vegetation, Soil, or Hydrologynatu			olain any answers in Rer		
SUMMARY OF FINDINGS – Attach site map			•	•	res, etc.
	1			•	
Hydrophytic Vegetation Present? Yes No		Is the Sampled A		No. V	
Hydric Soil Present? Yes No Wetland Hydrology Present? Yes No	$\frac{\lambda}{x}$	within a Wetland	? Yes	No X	
Remarks:					
Upland data point in the northern portion of the survey are	ea. Paired with	wetland data point D	P-A1W.		
VEGETATION – Use scientific names of plan	nts.				
		inant Indicator			
Tree Stratum (Plot size:) % 1.	Cover Spec	cies? Status	Dominance Test wor		
2.		— — I	Number of Dominant S Are OBL, FACW, or F	•	(A)
3.			Total Number of Domi		` '
4.			Across All Strata:	1	(B)
<u> </u>	=Total	Cover	Percent of Dominant S	•	
Sapling/Shrub Stratum (Plot size:)			Are OBL, FACW, or F	AC: 0.09	<u>%</u> (A/B)
1. 2.			Prevalence Index wo		
3.			Total % Cover of:	Multiply by:	
4.			OBL species	x 1 =	
5			FACW species	x 2 =	
	=Total	Cover	FAC species	x 3 =	
Herb Stratum (Plot size:) 1. Bromus inermis	80 Y	es UPL	FACU species UPL species	x 4 = x 5 =	
Onopordum acanthium		lo UPL	Column Totals:	(A)	(B)
3. Cirsium arvense	5 N	lo FACU	Prevalence Index = B		`
4.					
5			Hydrophytic Vegetati		
6				Hydrophytic Vegetatio	on
7. 8.	 -		2 - Dominance Te 3 - Prevalence Inc		
		— — I		Adaptations ¹ (Provide	supporting
10.				s or on a separate sh	
	95 =Total	Cover	Problematic Hydro	ophytic Vegetation ¹ (E	Explain)
Woody Vine Stratum (Plot size:)			¹ Indicators of hydric so		
1			be present, unless dis	turbed or problematic	-
2	 =Total	Cover	Hydrophytic		
——————————————————————————————————————	ı oıaı	Covei	Vegetation Present? Yes	No X	
Remarks:					
Plants were typical for upland vegetation community in ag	gricultural area.	Did not meet criteria	for hydrophytic vegetati	ion.	

SOIL Sampling Point: DP-A1U

(inches)	Color (moist)	%	Color (moist)	ox Featur %	Type ¹	Loc ²	Texture		Remarks
0-10	10YR 3/4	100					Sandy		Sandy loam
10-18	10YR 3/4	97	10YR 5/8	3	С	PL	Sandy		Sandy loam
	- <u></u>	· -							, , , , , , , , , , , , , , , , , , ,
		· -							
	-	· —— -							
	oncentration, D=Dep					oated Sar			e Lining, M=Matrix.
-	ndicators: (Applica	ible to all L	.RRS, unless oth			striv (CA)			blematic Hydric Soils ³ :
Histosol				•	-	atrix (S4)	_	1 cm Muck (A9	
Black His	ipedon (A2)			Sandy R Stripped			-		Redox (A16) (LRR F, G, H)
	,			. ''	,	,	_	Dark Surface (, , ,
	n Sulfide (A4)	=\		•	•	neral (F1)	_		epressions (F16) tside of MLRA 72 & 73)
	Layers (A5) (LRR F			-	-	atrix (F2)		Reduced Verti	•
	ck (A9) (LRR F, G, I			Depleted Redox D		•	-	Red Parent Ma	` '
	Below Dark Surface rk Surface (A12)	e (ATT)		-		urface (F7	_		Dark Surface (F22)
	ucky Mineral (S1)			Redox D				Other (Explain	, ,
	lucky Peat or Peat (S2) (I RR (. H/	-	•	essions (F16)		ophytic vegetation and
	cky Peat or Peat (S	, 、			•	'3 of LRF			ogy must be present,
	ony i dat oi i dat (ot	5) (L IXIT)		(11121		O OI LIN	 ,	=	ed or problematic.
Restrictive L	ayer (if observed):								
Type:									
Depth (in	iches):						Hydric Soil Pre	sent?	Yes No _X
Remarks:									
No hydric soi	I indicators were obs	served; soil	s were uniform an	d dry. Do	es not m	aat aritar	ta de la lacadata de esta a		
				•	00 1101 111	eet criter	la for nydric solls	•	
				·	00 1101 111	eet criter	ia for nydric solls		
HYDROL O	GY					eet criter	ia for nydric solis	•	
						eet chter	ia for nydric solls		
Wetland Hyd	Irology Indicators:		red: check all that			eet criter			minimum of two required)
Wetland Hyd	Irology Indicators: ators (minimum of c			apply)		eet Criter	Seco	ndary Indicators (i	minimum of two required)
Wetland Hyd Primary Indic	Irology Indicators: ators (minimum of c		Salt Crust	apply)			Seco	ondary Indicators (i Surface Soil Crack	s (B6)
Wetland Hyde Primary Indice Surface V	Irology Indicators: ators (minimum of c Water (A1) ter Table (A2)		Salt Crust Aquatic Ir	apply) t (B11) nvertebrat	es (B13)		Seco	endary Indicators (i Surface Soil Crack Sparsely Vegetate	s (B6) d Concave Surface (B8)
Wetland Hyd Primary Indic Surface High Wa Saturatio	trology Indicators: ators (minimum of control of the control of th		Salt Crust Aquatic Ir Hydrogen	apply) t (B11) nvertebrat Sulfide (es (B13) Odor (C1		Seco	endary Indicators (i Surface Soil Crack Sparsely Vegetate Drainage Patterns	s (B6) d Concave Surface (B8) (B10)
Wetland Hyd Primary Indice Surface V High Wa Saturatio Water M:	trology Indicators: ators (minimum of control Water (A1) ter Table (A2) in (A3) arks (B1)		Salt Crust Aquatic Ir Hydrogen Dry-Seaso	apply) t (B11) nvertebrat Sulfide (on Water	es (B13) Odor (C1) Table (C) :2)	Seco	ondary Indicators (i Surface Soil Crack Sparsely Vegetate Orainage Patterns Oxidized Rhizosph	s (B6) d Concave Surface (B8)
Wetland Hyd Primary Indic Surface V High Wa Saturatio Water Ma	Arology Indicators: Leators (minimum of control of the control of		Salt Crust Aquatic Ir Hydrogen Dry-Sease Oxidized	apply) t (B11) nvertebrat Sulfide (on Water Rhizosph	es (B13) Odor (C1) Table (Ceres on I) :2)	Second Se	ondary Indicators (i Surface Soil Crack Sparsely Vegetate Drainage Patterns Dxidized Rhizosph (where tilled)	s (B6) d Concave Surface (B8) (B10) eres on Living Roots (C3)
Wetland Hyd Primary Indic Surface V High Wa Saturatio Water Mater	Arology Indicators: Leators (minimum of control of cont		Salt Crust Aquatic Ir Hydrogen Dry-Sease Oxidized I	apply) t (B11) nvertebrat Sulfide (on Water Rhizosph not tilled	es (B13) Odor (C1 Table (C eres on I	:2) Living Ro	Second Se	ondary Indicators (i Surface Soil Crack Sparsely Vegetate Orainage Patterns Oxidized Rhizosph (where tilled) Crayfish Burrows (i	s (B6) d Concave Surface (B8) (B10) eres on Living Roots (C3)
Primary Indic Surface \(^1\) High Wa Saturatio Water M: Sedimen Drift Dep Algal Ma	Arology Indicators: Arotors (minimum of control of the control of		Salt Crust Aquatic Ir Hydrogen Dry-Sease Oxidized I (where Presence	apply) t (B11) nvertebrat Sulfide (on Water Rhizosph not tilled	es (B13) Odor (C1 Table (C eres on I I) ced Iron (:2) Living Ro	Seco	endary Indicators (i Gurface Soil Crack Sparsely Vegetate Orainage Patterns Oxidized Rhizosph (where tilled) Crayfish Burrows (i Saturation Visible (i	s (B6) d Concave Surface (B8) (B10) eres on Living Roots (C3) C8) on Aerial Imagery (C9)
Wetland Hyd Primary Indice Surface V High Wa Saturatio Water M Sedimen Drift Dep Algal Ma Iron Dep	Arology Indicators: Leators (minimum of control of the control of	one is requi	Salt Crust Aquatic Ir Hydrogen Dry-Sease Oxidized I (where Presence Thin Mucl	apply) t (B11) nvertebrat Sulfide (on Water Rhizosph not tilled of Reduc	es (B13) Odor (C1) Table (C eres on I I) ced Iron (:2) Living Ro	<u>Seco</u>	endary Indicators (i Gurface Soil Crack Sparsely Vegetate Orainage Patterns Oxidized Rhizosph (where tilled) Crayfish Burrows (i Gaturation Visible of Geomorphic Positi	s (B6) d Concave Surface (B8) (B10) eres on Living Roots (C3) C8) on Aerial Imagery (C9) on (D2)
Wetland Hyd Primary Indio Surface V High Wa Saturatio Water M: Sedimen Drift Dep Algal Ma Iron Dep	Arology Indicators: Arotors (minimum of control of the control of	one is requi	Salt Crust Aquatic Ir Hydrogen Dry-Sease Oxidized I (where Presence Thin Mucl	apply) t (B11) nvertebrat Sulfide (on Water Rhizosph not tilled of Reduc	es (B13) Odor (C1) Table (C eres on I I) ced Iron (:2) Living Ro	Seco S I X (cots (C3)	endary Indicators (I Surface Soil Crack Sparsely Vegetated Drainage Patterns Dxidized Rhizosph (where tilled) Crayfish Burrows (I Saturation Visible of Geomorphic Positicators (I	s (B6) d Concave Surface (B8) (B10) eres on Living Roots (C3) C8) on Aerial Imagery (C9) on (D2)
Wetland Hyd Primary Indio Surface V High Wa Saturatio Water M: Sedimen Drift Dep Algal Ma Iron Dep	Arology Indicators: Leators (minimum of control of cont	one is requi	Salt Crust Aquatic Ir Hydrogen Dry-Sease Oxidized I (where Presence Thin Mucl	apply) t (B11) nvertebrat Sulfide (on Water Rhizosph not tilled of Reduc	es (B13) Odor (C1) Table (C eres on I I) ced Iron (:2) Living Ro	Seco S I X (cots (C3)	endary Indicators (I Surface Soil Crack Sparsely Vegetated Drainage Patterns Dxidized Rhizosph (where tilled) Crayfish Burrows (I Saturation Visible of Geomorphic Positicators (I	s (B6) d Concave Surface (B8) (B10) eres on Living Roots (C3) C8) on Aerial Imagery (C9) on (D2) (D5)
Wetland Hyd Primary Indice Surface V High Wa Saturatio Water Mater	Arology Indicators: Arotors (minimum of control of cont	magery (B7	Salt Crust Aquatic Ir Hydrogen Dry-Sease Oxidized I (where Presence Thin Mucl	apply) t (B11) nvertebrat Sulfide (on Water Rhizosph not tilled of Reduct k Surface plain in R	es (B13) Odor (C1 Table (C eres on I I) ced Iron ((C7) emarks)	:2) Living Ro	Seco S I X (cots (C3)	endary Indicators (I Surface Soil Crack Sparsely Vegetated Drainage Patterns Dxidized Rhizosph (where tilled) Crayfish Burrows (I Saturation Visible of Geomorphic Positicators (I	s (B6) d Concave Surface (B8) (B10) eres on Living Roots (C3) C8) on Aerial Imagery (C9) on (D2) (D5)
Primary Indice Surface V High Wa Saturatioe Water Mater St	Arology Indicators: Arotors (minimum of content (Mater (A1)) Arter (A1) Arter (A2) Arter (A3) Arter (B1) Arter (B2) Arter (B3) Arter (B4) Arter (B4) Arter (B4) Arter (B5) Arter (B5) Arter (B6) Arter (B9) Arter	magery (B7	Salt Crust Aquatic Ir Hydrogen Dry-Sease Oxidized I (where Presence Thin Mucl	apply) t (B11) nvertebrat Sulfide (on Water Rhizosph not tilled of Reduc	es (B13) Odor (C1 Table (C eres on L I) ced Iron ((C7) demarks)	:2) Living Ro	Seco S I X (cots (C3)	endary Indicators (I Surface Soil Crack Sparsely Vegetated Drainage Patterns Dxidized Rhizosph (where tilled) Crayfish Burrows (I Saturation Visible of Geomorphic Positicators (I	s (B6) d Concave Surface (B8) (B10) eres on Living Roots (C3) C8) on Aerial Imagery (C9) on (D2) (D5)
Wetland Hyderimary Indice Surface V High Wa Saturation Water Management Drift Dep Algal Management Iron Dep Inundation Water-St Field Observ Surface Water	Arology Indicators: Arotors (minimum of control of cont	magery (B7	Salt Crust Aquatic Ir Hydrogen Dry-Sease Oxidized I (where Presence Thin Mucl Other (Ex	apply) t (B11) nvertebrat Sulfide (on Water Rhizosph not tilled of Reduct k Surface plain in R	es (B13) Ddor (C1) Table (Ceres on I I) eed Iron ((C7) emarks) nches): _ nches): _	:2) Living Ro	Second Se	endary Indicators (I Surface Soil Crack Sparsely Vegetated Drainage Patterns Dxidized Rhizosph (where tilled) Crayfish Burrows (I Saturation Visible of Geomorphic Positicators (I	s (B6) d Concave Surface (B8) (B10) eres on Living Roots (C3) C8) on Aerial Imagery (C9) on (D2) (D5)
Wetland Hyderimary Indice Surface Verimary Indice Surface Verimary Indice Water Management Sediment Drift Dep Algal Management Iron Depo Inundation Water-St Field Observer Water Table	Arology Indicators: Arotors (minimum of control of con	magery (B7	Salt Crust Aquatic Ir Hydrogen Dry-Sease Oxidized I (where Presence Thin Mucl Other (Ex	apply) t (B11) nvertebrate Sulfide Con Water Rhizosph not tillect of Reduct x Surface plain in R	es (B13) Ddor (C1) Table (Ceres on I I) eed Iron ((C7) emarks) nches): _ nches): _	:2) Living Ro	Second Se	endary Indicators (in Surface Soil Crack Sparsely Vegetate Drainage Patterns Dxidized Rhizosph (where tilled) Crayfish Burrows (in Saturation Visible of Geomorphic Position FAC-Neutral Test (in Frost-Heave Humn	s (B6) d Concave Surface (B8) (B10) eres on Living Roots (C3) C8) on Aerial Imagery (C9) on (D2) (D5) nocks (D7) (LRR F)
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Wetland Hyderimary Indice Surface Verified Water Market Ma	Arology Indicators: Arotors (minimum of control of con	magery (B7	Salt Crust Aquatic Ir Hydrogen Dry-Sease Oxidized I (where Presence Thin Mucl Other (Ex	apply) t (B11) nvertebrat Sulfide (on Water Rhizosph not tilled t Surface plain in R Depth (ii Depth (iii	es (B13) Odor (C1) Table (Ceres on Let) ed Iron (C7) emarks) checks): nches): nches):	C4)	ots (C3) Wetland Hydr	endary Indicators (in Surface Soil Crack Sparsely Vegetated Drainage Patterns Dxidized Rhizosph (where tilled) Crayfish Burrows (in Saturation Visible of Geomorphic Position FAC-Neutral Test (in Frost-Heave Humn recology Present?	s (B6) d Concave Surface (B8) (B10) eres on Living Roots (C3) C8) on Aerial Imagery (C9) on (D2) (D5) nocks (D7) (LRR F)
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See ERDC/EL TR-10-1; the proponent agency is CECW-CO-R

Project/Site: North Westerly Project Site	City/County: Erie/We	ld	Sampling Date: 12/7/2023
Applicant/Owner: NORTH WESTERLY OWNER, LLC		State: CO	Sampling Point: DP-A1W
Investigator(s): Natalie Rothman	Section, Township, Rai	nge: Section 16, Townsh	nip 1 North, Range 68 West
Landform (hillside, terrace, etc.): ditch	Local relief (concave, conv	ex, none): concave	Slope (%): 0
Subregion (LRR): LRR G Lat: 40.05808 °N	N Long: <u>-1</u>	05.0104 °W	Datum: WGS 1984
Soil Map Unit Name: Weld loam, 1 to 3 percent slopes		NWI classific	eation: R4SBCx
Are climatic / hydrologic conditions on the site typical for this	s time of year? Yes X	No (If no, expla	ain in Remarks.)
Are Vegetation, Soil, or Hydrologysignifi	icantly disturbed? Are "Normal C	ircumstances" present?	Yes X No
Are Vegetation, Soil, or Hydrologynatura	ally problematic? (If needed, exp	olain any answers in Rem	arks.)
SUMMARY OF FINDINGS – Attach site map s	howing sampling point lo	cations, transects,	important features, etc.
Hydrophytic Vegetation Present? Yes X No Hydric Soil Present? Yes X No Wetland Hydrology Present? Yes X No	Is the Sampled Ai		No
Remarks: Wetland data point in an irrigation ditch, known as Commur DP-A1U.	nity Ditch, in the northern portion o	f the survey area. Paired v	with upland data point
VEGETATION – Use scientific names of plant			
	solute Dominant Indicator Cover Species? Status	Dominance Test work	sheet:
1		Number of Dominant S	pecies That
2. 3.		Are OBL, FACW, or FA Total Number of Domin	· · · · · · · · · · · · · · · · · · ·
4.		Across All Strata:	2 (B)
Sapling/Shrub Stratum (Plot size:) 1	=Total Cover	Percent of Dominant Sp Are OBL, FACW, or FA	
2.	— — —	Prevalence Index wor	ksheet:
3.		Total % Cover of:	Multiply by:
4		OBL species 0	
5	-Tetal Cours	FACW species 15	
Herb Stratum (Plot size:)	=Total Cover	FAC species 35 FACU species 0	x 3 = 105 x 4 = 0
	35 Yes FAC	UPL species 0	x 5 = 0
2. Muhlenbergia asperifolia	15 Yes FACW	Column Totals: 50	(A) 135 (B)
3		Prevalence Index = B/A	A = 2.70
4	— — —	Hydrophytic Vegetetic	an Indicatora
6.		Hydrophytic Vegetation 1 - Rapid Test for H	Hydrophytic Vegetation
7.		X 2 - Dominance Tes	
8.		X 3 - Prevalence Inde	ex is ≤3.0 ¹
9.			daptations ¹ (Provide supporting
10			or on a separate sheet)
	50 =Total Cover		ohytic Vegetation ¹ (Explain)
Woody Vine Stratum (Plot size:) 1		'Indicators of hydric soi be present, unless distu	I and wetland hydrology must urbed or problematic.
2.	<u> </u>	Hydrophytic	
% Bare Ground in Herb Stratum 50	=Total Cover	Vegetation Present? Yes	X No
Remarks:			
Plants were representative of wetland vegetation. Meets cri	iteria for hydrophytic vegetation.		

SOIL Sampling Point: DP-A1W

Depth	Matrix		Redo	x Feature						
(inches)	Color (moist)	<u>%</u>	Color (moist)	%	Type ¹	Loc ²	Texture	_	Remarks	
0-6	10YR 5/2	95	5YR 5/8	5	С	PL	Loamy/Clayey	_		
6-18	10YR 4/2	80	5YR 5/8	20	С	PL	Loamy/Clayey	_		
								_		
								_		
¹ Typo: C=C	oncentration, D=Depl	otion PM:	-Poducod Matrix (rod or C	oatod Sa	and Grains 21.	 ocation: PL=Pore	a Lining M=M	atriv
	ndicators: (Applica					oaleu Sa		dicators for Prol		
Histosol		Die to aii		Sandy G		atrix (S4)		1 cm Muck (A9	-	ic cons .
	oipedon (A2)			Sandy R	-			Coast Prairie R		RRFGH
Black His				Stripped				_ Dark Surface (\$. , .	, 0, 1
	n Sulfide (A4)			Loamy N	,	,		High Plains De	, ,	3)
	l Layers (A5) (LRR F	١		Loamy C	-	-	· —		side of MLRA	
	ck (A9) (LRR F, G, F			Depleted	•	•	,	Reduced Vertic		12 0 10,
	Below Dark Surface	•		Redox D		` '		Red Parent Ma	,	
	r Below Bark Surface irk Surface (A12)	(Д11)		Depleted		(/		Very Shallow D	, ,	-22)
	lucky Mineral (S1)			Redox D		,		Other (Explain	-	<i>LL</i>)
	lucky Peat or Peat (১	S2) (I RR (High Pla	•	` ,	(F16) 3In	_dicators of hydro	,	ion and
	cky Peat or Peat (S3					73 of LR		wetland hydrolo		
	,	, (=: :: - ,		(,	unless disturbe		
Restrictive L	ayer (if observed):									
Type:										
Type: Depth (ir	nches):		<u> </u>				Hydric Soil Prese	ent?	Yes X	No
-	nches):		<u>_</u>				Hydric Soil Prese	ent?	Yes X	No
Depth (ir	a depleted matrix an	d promine	nt redox concentra	tions as	pore linii	ngs, was				No
Depth (ir		d promine	nt redox concentra	itions as	pore linii	ngs, was				No
Depth (ir Remarks: Indicator F3,	a depleted matrix an	d promine	nt redox concentra	itions as	pore linir	ngs, was				No
Depth (ir Remarks: Indicator F3,	a depleted matrix an	d promine	nt redox concentra	tions as	pore linir	ngs, was				No
Depth (ir Remarks: Indicator F3,	a depleted matrix an				pore linir	ngs, was	observed. Meets cr	iteria for hydric s	soils.	
Depth (in Remarks: Indicator F3, HYDROLO Wetland Hyderimary Indicator F3)	a depleted matrix an GY drology Indicators: eators (minimum of o		ired; check all that	apply)	pore linir	ngs, was	observed. Meets cr	iteria for hydric s dary Indicators (n	oils.	
Depth (ir Remarks: Indicator F3, HYDROLO Wetland Hyd Primary Indic	a depleted matrix and GY drology Indicators: cators (minimum of o		red; check all that	apply) (B11)			observed. Meets cr	iteria for hydric s dary Indicators (n	ninimum of two	o required)
Depth (ir Remarks: Indicator F3, HYDROLO Wetland Hyd Primary Indic Surface High Wa	a depleted matrix an GY drology Indicators: cators (minimum of o Water (A1) ter Table (A2)		i <u>red; check all that</u> Salt Crust Aquatic In	apply) (B11) vertebrat	es (B13))	observed. Meets cr	iteria for hydric s dary Indicators (n rface Soil Cracks arsely Vegetatec	ninimum of two	o required)
Depth (in Remarks: Indicator F3, HYDROLO Wetland Hyde Primary Indic Surface High Wa Saturation	a depleted matrix and GY drology Indicators: cators (minimum of owater (A1) ter Table (A2) on (A3)		i <u>red; check all that</u> Salt Crust Aquatic In Hydrogen	apply) (B11) vertebrat Sulfide (es (B13))	observed. Meets cr	dary Indicators (n rface Soil Cracks arsely Vegetated ainage Patterns (ninimum of two s (B6) d Concave Sur	o required)
Depth (ir Remarks: Indicator F3, HYDROLO Wetland Hyd Primary Indic Surface High Wa Saturatic Water M	a depleted matrix and GY drology Indicators: cators (minimum of o Water (A1) ter Table (A2) on (A3) arks (B1)		ired; check all that Salt Crust Aquatic In Hydrogen Dry-Seaso	apply) (B11) vertebrat Sulfide C	es (B13) Odor (C1 Table (C))) C2)	observed. Meets or Second Su Sp X Dr. Ox	dary Indicators (n rface Soil Cracks arsely Vegetated ainage Patterns (idized Rhizosphe	ninimum of two s (B6) d Concave Sur	o required)
Depth (ir Remarks: Indicator F3, HYDROLO Wetland Hyd Primary Indic Surface High Wa Saturatic Water M Sedimen	a depleted matrix and depl		ired; check all that Salt Crust Aquatic In Hydrogen Dry-Seaso X Oxidized F	apply) (B11) vertebrat Sulfide Con Water Rhizosph	es (B13) Odor (C1 Table (Ceres on))) C2)	Second Second Sp X Dra Ox	dary Indicators (n rface Soil Cracks arsely Vegetated ainage Patterns (idized Rhizosphe where tilled)	ninimum of two s (B6) d Concave Sur (B10) eres on Living	o required)
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Depth (ir Remarks: Indicator F3, HYDROLO Wetland Hyd Primary Indic Surface High Wa Saturatic Water M Sedimen Drift Dep Algal Ma	a depleted matrix and GY drology Indicators: cators (minimum of or Water (A1) ter Table (A2) on (A3) arks (B1) ot Deposits (B2) osits (B3) t or Crust (B4)		sired; check all that Salt Crust Aquatic In Hydrogen Dry-Seasc X Oxidized F (where	apply) (B11) vertebrat Sulfide Con Water Rhizosph not tilled	es (B13) Odor (C1 Table (Ceres on I))) C2) Living Ro	Second Second Sp X Dr. Ox Ox Ox Sots (C3) Sa	dary Indicators (na face Soil Cracks arsely Vegetated ainage Patterns (didized Rhizosphewhere tilled) ayfish Burrows (Cuturation Visible of turation Visible of the state of t	ninimum of two s (B6) d Concave Sur (B10) eres on Living C8)	o required) face (B8) Roots (C3)
Depth (ir Remarks: Indicator F3, HYDROLO Wetland Hyd Primary Indic Surface High Wa Saturatic Water M Sedimen Drift Dep Algal Ma Iron Dep	a depleted matrix and GY drology Indicators: cators (minimum of or Water (A1) ter Table (A2) on (A3) arks (B1) at Deposits (B2) oosits (B3) t or Crust (B4) oosits (B5)	ne is requi	sired; check all that Salt Crust Aquatic In Hydrogen Dry-Seaso X Oxidized F (where in Presence Thin Muck	apply) (B11) vertebrat Sulfide Con Water Rhizosph not tillec of Reduc	es (B13) Odor (C1 Table (Ceres on II) eed Iron (C7))) C2) Living Ro	Second Su Sp X Dra Oots (C3) Cra Sa X Ge	dary Indicators (nurface Soil Cracks arsely Vegetated ainage Patterns (didized Rhizosphewhere tilled) ayfish Burrows (Cuturation Visible openorphic Positic	minimum of two s (B6) d Concave Sur (B10) eres on Living C8) on Aerial Image on (D2)	o required) face (B8) Roots (C3)
Depth (ir Remarks: Indicator F3, HYDROLO Wetland Hyde Primary Indic Surface High Wa Saturatio Water M Sedimen Drift Dep Algal Ma Iron Dep X Inundation	a depleted matrix and GY drology Indicators: cators (minimum of or Water (A1) ter Table (A2) on (A3) arks (B1) ot Deposits (B2) osits (B3) t or Crust (B4)	ne is requi	sired; check all that Salt Crust Aquatic In Hydrogen Dry-Seaso X Oxidized F (where in Presence Thin Muck	apply) (B11) vertebrat Sulfide Con Water Rhizosph not tillec of Reduc	es (B13) Odor (C1 Table (Ceres on II) eed Iron (C7))) C2) Living Ro	Second Su	dary Indicators (na face Soil Cracks arsely Vegetated ainage Patterns (didized Rhizosphewhere tilled) ayfish Burrows (Cuturation Visible of turation Visible of the state of t	minimum of two s (B6) d Concave Sur (B10) eres on Living C8) on Aerial Image on (D2) D5)	o required) face (B8) Roots (C3)
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Depth (ir Remarks: Indicator F3, HYDROLO Wetland Hyd Primary Indic Surface High Wa Saturatic Water M Sedimen Drift Dep Algal Ma Iron Dep X Inundatic X Water-St	a depleted matrix and a depleted matrix (minimum of or water (A1) and (A2) and (A3) arks (B1) arks (B1) and (B2) arks (B3) arks (B3) arks (B3) and (B4) arks (B4) arks (B5) and (B4) arks (B5)	ne is requi	sired; check all that Salt Crust Aquatic In Hydrogen Dry-Seaso X Oxidized F (where in Presence Thin Muck	apply) (B11) vertebrat Sulfide Con Water Rhizosph not tilled of Reduct surface blain in R	es (B13) Ddor (C1 Table (Ceres on I) Deed Iron (C7) Deemarks))) C2) Living Ro	Second Su	dary Indicators (narface Soil Cracks arsely Vegetated ainage Patterns (didized Rhizosphewhere tilled) ayfish Burrows (Cuturation Visible of comorphic Positic (C-Neutral Test (1)	minimum of two s (B6) d Concave Sur (B10) eres on Living C8) on Aerial Image on (D2) D5)	o required) face (B8) Roots (C3)
Depth (ir Remarks: Indicator F3, HYDROLO Wetland Hyd Primary Indic Surface High Wa Saturatic Water M Sedimen Drift Dep Algal Ma Iron Dep X Inundatic X Water-St	a depleted matrix and adepleted matrix (minimum of one water (A1) and (A2) and (A3) arks (B1) and (B4) arks (B3) arks (B3) arks (B4) arks (B4) arks (B4) arks (B5) and visible on Aerial Interpretation (B9) arks (ne is requi	ired; check all that Salt Crust Aquatic In Hydrogen Dry-Seasc X Oxidized F (where in Presence Thin Muck 7) Other (Exp	apply) (B11) vertebrat Sulfide Con Water Rhizosph not tilled of Reduct Surface blain in R	es (B13) Odor (C1 Table (Ceres on I) Deed Iron (C7) Deemarks))) C2) Living Ro	Second Su	dary Indicators (narface Soil Cracks arsely Vegetated ainage Patterns (didized Rhizosphewhere tilled) ayfish Burrows (Cuturation Visible of comorphic Positic (C-Neutral Test (1)	minimum of two s (B6) d Concave Sur (B10) eres on Living C8) on Aerial Image on (D2) D5)	o required) face (B8) Roots (C3)
Depth (ir Remarks: Indicator F3, HYDROLO Wetland Hyde Primary Indic Surface High Water M Sedimen Drift Dep Algal Ma Iron Dep X Inundatio X Water-Si Field Observ Surface Water	a depleted matrix and GY drology Indicators: cators (minimum of o Water (A1) ter Table (A2) on (A3) arks (B1) at Deposits (B2) oosits (B3) t or Crust (B4) oosits (B5) on Visible on Aerial Intained Leaves (B9) vations: er Present? Ye Present?	ne is requi	Salt Crust Salt Crust Aquatic In Hydrogen Dry-Seasc X Oxidized F (where in Presence Thin Muck 7) No X	apply) (B11) vertebrat Sulfide Con Water Rhizosph not tilled of Reduct surface blain in R	es (B13) Odor (C1 Table (Ceres on II) Ced Iron (C7) Cemarks) Cemarks))) C2) Living Ro	Second Su	dary Indicators (nurface Soil Cracks arsely Vegetated ainage Patterns (didzed Rhizosphewhere tilled) ayfish Burrows (Cuturation Visible openorphic Position C-Neutral Test (lost-Heave Humm	minimum of two s (B6) d Concave Sur (B10) eres on Living C8) on Aerial Image on (D2) D5)	o required) face (B8) Roots (C3
Depth (ir Remarks: Indicator F3, HYDROLO Wetland Hyde Primary Indic Surface High Wa Saturatio Water M Sedimen Drift Dep Algal Ma Iron Dep X Inundatio X Water-Si Field Observ Surface Water Water Table	a depleted matrix and GY drology Indicators: cators (minimum of o Water (A1) ter Table (A2) on (A3) arks (B1) at Deposits (B2) osits (B3) t or Crust (B4) osits (B5) on Visible on Aerial Intained Leaves (B9) vations: er Present? Ye Present? Ye resent? Ye	ne is requi	Salt Crust Aquatic In Hydrogen Dry-Seasc X Oxidized F (where in Presence Thin Muck 7) No X No X	apply) (B11) vertebrat Sulfide Con Water Rhizosph not tilled Surface Surface Depth (in	es (B13) Odor (C1 Table (Ceres on II) Ced Iron (C7) Cemarks) Cemarks))) C2) Living Ro	observed. Meets cr	dary Indicators (nurface Soil Cracks arsely Vegetated ainage Patterns (didzed Rhizosphewhere tilled) ayfish Burrows (Cuturation Visible openorphic Position C-Neutral Test (lost-Heave Humm	minimum of two s (B6) d Concave Sur (B10) eres on Living C8) on Aerial Image on (D2) D5) nocks (D7) (LR	o required) face (B8) Roots (C3 ery (C9)
Depth (ir Remarks: Indicator F3, HYDROLO Wetland Hyd Primary Indic Surface High Wa Saturatic Water M Sedimen Drift Dep Algal Ma Iron Dep X Inundatic X Water-Si Field Observ Surface Water Water Table Saturation Principles Cap	a depleted matrix and GY drology Indicators: cators (minimum of o Water (A1) ter Table (A2) on (A3) arks (B1) at Deposits (B2) osits (B3) t or Crust (B4) osits (B5) on Visible on Aerial Intained Leaves (B9) vations: er Present? Ye Present? Ye resent? Ye	ne is requi	ired; check all that Salt Crust Aquatic In Hydrogen Dry-Seaso X Oxidized F (where in Presence Thin Muck 7) Other (Exp	apply) (B11) vertebrat Sulfide Con Water Rhizosph not tilled of Reduct Surface blain in R Depth (in Depth (in	es (B13) Ddor (C1 Table (Ceres on l) ed Iron (C7) emarks) chees): _ nches): _)) C2) Living Ro (C4)	Second Su Sp X Dr Ox Ox Ox Sa X Ge X FA Fro Wetland Hydrol	dary Indicators (nurface Soil Cracks arsely Vegetated ainage Patterns (didzed Rhizosphewhere tilled) ayfish Burrows (Cuturation Visible openorphic Position C-Neutral Test (lost-Heave Humm	minimum of two s (B6) d Concave Sur (B10) eres on Living C8) on Aerial Image on (D2) D5) nocks (D7) (LR	o required) face (B8) Roots (C3 ery (C9)
Depth (ir Remarks: Indicator F3, HYDROLO Wetland Hyd Primary Indic Surface High Wa Saturatic Water M Sedimen Drift Dep Algal Ma Iron Dep X Inundatic X Water-Si Field Obsert Surface Wate Water Table Saturation Pi (includes cap Describe Rec	a depleted matrix and GY drology Indicators: cators (minimum of o Water (A1) ter Table (A2) on (A3) arks (B1) at Deposits (B2) cosits (B3) at or Crust (B4) cosits (B5) on Visible on Aerial Intained Leaves (B9) vations: er Present? Ye Present? Ye ersent? Ye ersent? Ye	ne is requi	ired; check all that Salt Crust Aquatic In Hydrogen Dry-Seaso X Oxidized F (where in Presence Thin Muck 7) Other (Exp	apply) (B11) vertebrat Sulfide Con Water Rhizosph not tilled of Reduct Surface blain in R Depth (in Depth (in	es (B13) Ddor (C1 Table (Ceres on l) ed Iron (C7) emarks) chees): _ nches): _)) C2) Living Ro (C4)	Second Su Sp X Dr Ox Ox Ox Sa X Ge X FA Fro Wetland Hydrol	dary Indicators (nurface Soil Cracks arsely Vegetated ainage Patterns (didzed Rhizosphewhere tilled) ayfish Burrows (Cuturation Visible openorphic Position C-Neutral Test (lost-Heave Humm	minimum of two s (B6) d Concave Sur (B10) eres on Living C8) on Aerial Image on (D2) D5) nocks (D7) (LR	o required) face (B8) Roots (C3 ery (C9)
Depth (ir Remarks: Indicator F3, HYDROLO Wetland Hyd Primary Indic Surface High Wa Saturatic Water M Sedimen Drift Dep Algal Ma Iron Dep X Inundatic X Water-Si Field Obsert Surface Wate Water Table Saturation Pr (includes car Describe Rec	a depleted matrix and GY drology Indicators: cators (minimum of o Water (A1) ter Table (A2) on (A3) arks (B1) at Deposits (B2) cosits (B3) at or Crust (B4) cosits (B5) on Visible on Aerial Intained Leaves (B9) vations: er Present? Ye Present? Ye ersent? Ye ersent? Ye	magery (B	No X	apply) (B11) vertebrat Sulfide C on Water Rhizosph not tilled of Reduc s Surface blain in R Depth (in Depth (in	es (B13) Ddor (C1 Table (Ceres on l) ed Iron (C7) emarks) nches): _ nches): _ previou)) C2) Living Ro (C4)	Second Su Sp X Dr Ox Ox Ox Ox FA X Ge X FA Fro Wetland Hydrol tions), if available:	dary Indicators (no react soil Cracks arsely Vegetated ainage Patterns (didized Rhizosphe where tilled) ayfish Burrows (Outuration Visible of the comorphic Position C-Neutral Test (Indicated Rhizosphe where tilled) ayfish Burrows (Outuration Visible of the comorphic Position C-Neutral Test (Indicated Rhizost-Heave Humming (Indicated Rhizost-Heave Humming) (Indicated Rhizost-Heave Rhizost-Hea	minimum of two is (B6) d Concave Sur (B10) eres on Living C8) on Aerial Image on (D2) D5) nocks (D7) (LR	face (B8) Roots (C3 ery (C9)

ENG FORM 6116-5, JUL 2018

See ERDC/EL TR-10-1; the proponent agency is CECW-CO-R

- 7 1 1	,					
Project/Site: North Westerly Project Site	City/Co	ounty: Erie/Wel	d	Samp	ling Date:	12/7/2023
Applicant/Owner: NORTH WESTERLY OWNER, LLC			State: 0	CO Sampl	ling Point:	DP-A9U
Investigator(s): Natalie Rothman	Section,	Township, Rar	nge: Section 16	, Township 1 N	orth, Range	e 68 West
Landform (hillside, terrace, etc.): field			ex, none): none			pe (%): 0
Subregion (LRR): LRR G Lat: 40.04927 °N	•	`	05.0111 °W			WGS 1984
Soil Map Unit Name: Weld loam, 1 to 3 percent slopes				classification:		
Are climatic / hydrologic conditions on the site typical for this tim	e of year?	Yes X		no, explain in R		
	•					
Are Vegetation X , Soil X , or Hydrology significant				-	X No	'
Are Vegetation, Soil, or Hydrologynaturally p		,	olain any answers	,		
SUMMARY OF FINDINGS – Attach site map show	ving sampli	ing point lo	cations, trans	sects, impo	rtant feat	tures, etc.
Hydrophytic Vegetation Present? Yes No X Hydric Soil Present? Yes No X Wetland Hydrology Present? Yes No X		he Sampled Ar hin a Wetland?		No_	X	
Remarks: Upland data point in the central portion of the survey area. Paire Due to heavy use of machinery for agricultural purposes, soil at			ficantly disturbed	l.		
VEGETATION – Use scientific names of plants.						
Tree Stratum (Plot size:) Absolut % Cove			Dominance Te	est worksheet:		
1			Number of Don Are OBL, FAC	minant Species W, or FAC:	That	(A)
3			Total Number of Across All Stra	of Dominant Spe	ecies	(B)
Sapling/Shrub Stratum (Plot size:)	=Total Cove	r		ninant Species ⁻	That	(A/B)
1			Duning laws a law	dex worksheet		
2. 3.			Total % Cover		 Multiply by:	
4.			OBL species		x 1 =	•
5.	_		FACW species		x 2 =	
	=Total Cove	r	FAC species		x 3 =	
Herb Stratum (Plot size:)			FACU species		x 4 =	
1			UPL species		x 5 =	
2. 3.			Column Totals: Prevalence Ind		<u> </u>	(B)
			Prevalence ind	ex - b/A -		
			Hydrophytic V	egetation Indic	cators:	
6.				Test for Hydroph		ation
7.			2 - Domina	ance Test is >50)%	
8.			3 - Prevale	ence Index is ≤3	.0 ¹	
9				ological Adaptati		
10				Remarks or on a		,
Woody Vino Stratum / Dlot size:	=Total Cove	er		ic Hydrophytic V	•	` ' '
Woody Vine Stratum (Plot size:) 1				ydric soil and w less disturbed o		
2.		·	'	oos disturbed 0	PIODICITIA	
% Bare Ground in Herb Stratum 100	=Total Cove	er	Hydrophytic Vegetation Present?	Yes	No X	
Remarks:			1 1636IIL!	163	110	_
Tilled and compacted by agricultural machinery. No vegetation	present.					

SOIL Sampling Point: DP-A9U

Profile Desc Depth	ription: (Describe t Matrix	to the depth		ument th x Featur		tor or o	confirm the a	absence of indic	cators.)	
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Textu	ıre	Remarks	
0-5	10YR 3/6	100	, ,				Loamy/C			
							-	<u> </u>		
							-			
	oncentration, D=Depl					oated S	and Grains.	² Location: F	PL=Pore Lining, M	=Matrix.
	Indicators: (Applica	ble to all LF	RRs, unless othe	rwise n	oted.)			Indicators f	or Problematic H	ydric Soils³:
Histosol	. ,			-	Sleyed Ma		·)		uck (A9) (LRR I, J	
	pipedon (A2)			-	Redox (S				rairie Redox (A16)	
Black Hi	,				Matrix (,			ırface (S7) (LRR G	
	n Sulfide (A4)			•	∕lucky Mi	•	•		ains Depressions (-
	l Layers (A5) (LRR F				Sleyed M		2)	•	R H outside of ML	.RA 72 & 73)
	ck (A9) (LRR F, G, F			•	d Matrix (,			d Vertic (F18)	
	l Below Dark Surface	e (A11)			ark Surf	, ,			rent Material (F21)	
	rk Surface (A12)				d Dark Si		=7)		allow Dark Surfac	
	lucky Mineral (S1)				epression	, ,			Explain in Remarks	
	Mucky Peat or Peat (S		H)	-	ins Depr		` '		of hydrophytic vege	
5 cm Mu	cky Peat or Peat (S3) (LRR F)		(MLF	RA 72 & 1	73 of LF	RR H)		hydrology must be disturbed or proble	
Restrictive I	_ayer (if observed):									
Type:	compacted		_							
Depth (ir	nches):	5					Hydric Soi	I Present?	Yes	No X
Remarks: No hydric so compacted s	il indicators were obs oil.□	erved; soils	were uniform and	l dry. Do	es not m	eet crite	eria for hydric	soils.Restrictive	layer at 5 inches f	rom severely
HYDROLO	GY									
_	drology Indicators:									
Primary India	cators (minimum of o	ne is require	ed; check all that a	apply)				Secondary Indic	<u>ators (minimum of</u>	two required)
	Water (A1)		Salt Crust	. ,			•		Cracks (B6)	
	ter Table (A2)		Aquatic Inv				•		getated Concave	Surface (B8)
Saturation			Hydrogen				1		atterns (B10)	
	arks (B1)		Dry-Seaso		,	,	,		izospheres on Livi	ng Roots (C3)
	t Deposits (B2)		Oxidized R			_iving R	oots (C3)	(where til		
	oosits (B3)		(where r		•		1	Crayfish Bu	` ,	
	it or Crust (B4)		Presence of			(C4)	1		isible on Aerial Im	agery (C9)
	osits (B5)		Thin Muck				•		Position (D2)	
Inundation	on Visible on Aerial Ir	magery (B7)	Other (Exp	lain in R	(emarks		,	FAC-Neutra	l Test (D5)	
Water-S	tained Leaves (B9)							Frost-Heave	Hummocks (D7)	(LRR F)
Field Obser	vations:									
Surface Wat	er Present? Ye	s			nches): _					
Water Table		s			nches): _					
Saturation P		s	No <u>X</u>	Depth (i	nches): _		Wetland	Hydrology Pres	sent? Yes	NoX
(includes cap										
Describe Re	corded Data (stream	gauge, mon	nitoring well, aeria	l photos,	previous	s inspec	tions), if avai	lable:		
Remarks:										
	/ indicators were obs	erved. Does	not meet criteria	for wetla	and hydro	ology.				
. 0.										

See ERDC/EL TR-10-1; the proponent agency is CECW-CO-R

Project/Site: North Westerly Project Site	City/County: Erie/V	Veld	Sampling Date:	12/7/2023
Applicant/Owner: NORTH WESTERLY OWNER, LLC		State: CO	Sampling Point:	DP-A9W
Investigator(s): Natalie Rothman	Section, Township,	Range: Section 16, Town	ship 1 North, Range	68 West
Landform (hillside, terrace, etc.): ditch	Local relief (concave, cc	nvex, none): concave	Slop	oe (%): 0-3
Subregion (LRR): LRR G Lat: 40.04927 °N	Long:	-105.0111 °W	 Datum:	WGS 1984
Soil Map Unit Name: Weld loam, 1 to 3 percent slopes			fication: R4SBCx	-
Are climatic / hydrologic conditions on the site typical for this tim	e of year? Yes X	No (If no, exp	olain in Remarks.)	
Are Vegetation X , Soil , or Hydrology significant			-)
Are Vegetation , Soil , or Hydrology naturally p		explain any answers in Re	·	
			•	turos oto
SUMMARY OF FINDINGS – Attach site map show			, important leat	.ures, etc.
Hydrophytic Vegetation Present? Yes No _X	Is the Sampled	Area		
Hydric Soil Present? Yes X No	within a Wetlar	nd? Yes	No X	
Wetland Hydrology Present? Yes X No				
Remarks:				
Data point within Community Ditch, below the Ordinary High W DP-A1U.	ater Mark, in the central po	rtion of the survey area. Pa	ired with upland data	a point
VEGETATION – Use scientific names of plants.	to Deminant Indicator	1		
Tree Stratum (Plot size:) % Cove		Dominance Test wor	ksheet:	
1		Number of Dominant	Species That	
2		Are OBL, FACW, or F	AC:	0 (A)
3		Total Number of Dom	inant Species	
4		Across All Strata:		1 (B)
Cardia a/Ohmuh Chastura / Diat aira	=Total Cover	Percent of Dominant	•	00/ (A/D)
Sapling/Shrub Stratum (Plot size:)		Are OBL, FACW, or F	AC: <u>0.</u>	.0% (A/B)
1. 2.		Prevalence Index wo	 orksheet:	
3.		Total % Cover of:	Multiply by:	
4.		OBL species (x 1 =	0
5.		FACW species () x 2 =	0
	=Total Cover		x 3 =	0
Herb Stratum (Plot size:)				0
1. Setaria viridis 30	Yes UPL	· · · · 		(D)
2. 3.		Column Totals: 3 Prevalence Index = E	` ′	(B)
		- Trevalence index = L	WA = 3.00	
5.		Hydrophytic Vegetat	ion Indicators:	
6.		•	Hydrophytic Vegeta	ation
7.		2 - Dominance Te	est is >50%	
8		3 - Prevalence Inc		
9			Adaptations ¹ (Provid	
10		.	s or on a separate s	•
Weady Vine Strature (District)	=Total Cover		ophytic Vegetation ¹	
Woody Vine Stratum (Plot size:)		¹ Indicators of hydric s be present, unless dis		
2		· ·	turbed or problemat	ю.
	=Total Cover	- Hydrophytic Vegetation		
% Bare Ground in Herb Stratum 70	_	Present? Yes	No X	
Remarks:		•		
Plot located in an agricultural ditch that floods and removes all	vegetation. Sparsely veget	ed with only upland vegeta	tion crossing over we	etland

SOIL Sampling Point: DP-A9W

(inches)	0-1 (1.0	0/		x Features		Loc ²	T (D !	
· /	Color (moist)	%	Color (moist)		Type ¹		Texture		Remarks	
0-10	10YR 4/2	60	10YR 5/6	20	С	M	Loamy/Clayey	Prominen	t redox concen	trations
			10YR 2/1	20	С	M		Faint re	edox concentra	ntions
10-18	10YR 4/2	70	10YR 5/6	20	С	M	Loamy/Clayey	Prominen	t redox concen	trations
			10YR 2/1	10	С	М		Faint re	edox concentra	ntions
		·								
	-									
1Type: C=Cc	ncentration, D=Dep	etion RM	-Reduced Matrix (S=Covere	ed or C	nated Sa	and Grains ² l oc	ation: DI -Por	e Lining, M=Ma	atriv
71	ndicators: (Applica	-	•			Jaleu Sa			blematic Hydr	
Histosol		Die to an		Sandy Gle		atrix (S4		1 cm Muck (A9	-	ic dolla .
	ipedon (A2)			Sandy Red	•	,		-	Redox (A16) (L	RR F. G. H
Black His				Stripped M	-			Dark Surface (, , ,
	n Sulfide (A4)			Loamy Mu	•	,			epressions (F16	3)
	Layers (A5) (LRR F)		Loamy Gle	-		· —	-	tside of MLRA	-
	ck (A9) (LRR F, G, I		X	Depleted N	-			` Reduced Verti		,
	Below Dark Surface	•		Redox Da				Red Parent Ma	aterial (F21)	
	rk Surface (A12)	, ,		Depleted [Dark S	urface (F		Very Shallow [Dark Surface (F	-22)
Sandy M	ucky Mineral (S1)			Redox De	pressio	ns (F8)		Other (Explain	in Remarks)	
2.5 cm M	lucky Peat or Peat (S2) (LRR	G, H)	High Plain	s Depr	essions	(F16) ³ Indi	cators of hydro	phytic vegetat	ion and
5 cm Mu	cky Peat or Peat (S3) (LRR F)		(MLRA	72 &	73 of LR	R H)	wetland hydrol	ogy must be pr	resent,
								unless disturbe	ed or problema	tic.
Danduladi I	ayer (if observed):									
Restrictive L	. , ,									
Type:										
			<u> </u>				Hydric Soil Presen	t?	Yes X	No
Type: _ Depth (in Remarks:	ches):		<u> </u>							No
Type: _ Depth (in Remarks:	ches):	d promine	ent redox concentra	tions as po	ore linir	ngs, was	Hydric Soil Presen			No
Type: Depth (in Remarks:	ches):	nd promine	ent redox concentra	tions as po	ore linir	ngs, was				No
Type: _ Depth (in Remarks: Indicator F3,	ches):a depleted matrix ar	d promine	ent redox concentra	tions as po	ore linir	ngs, was				No
Type:	ches): a depleted matrix ar	d promine	ent redox concentra	tions as po	ore linir	ngs, was				No
Type:	ches): a depleted matrix ar GY Irology Indicators:				ore linir	ngs, was	observed. Meets crite	eria for hydric s	soils.	
Type:	ches): a depleted matrix ar GY Irology Indicators: ators (minimum of o		ired; check all that	apply)	ore linir	ngs, was	observed. Meets crite	eria for hydric s	soils.	
Type:	ches): a depleted matrix ar GY Irology Indicators: ators (minimum of o		ired; check all that	apply) (B11)			observed. Meets crite Seconda	eria for hydric s ary Indicators (i ace Soil Crack	minimum of two	o required)
Type:	ches): a depleted matrix ar GY Irology Indicators: ators (minimum of or Water (A1) ter Table (A2)		ired; check all that Salt Crust Aquatic In	apply) (B11) vertebrates	s (B13)		observed. Meets crite Seconda Surf X Spal	eria for hydric s ary Indicators (i ace Soil Crack rsely Vegetated	minimum of two s (B6) d Concave Sur	o required)
Type:	ches): a depleted matrix ar GY Irology Indicators: ators (minimum of or Water (A1) ter Table (A2) n (A3)		ired; check all that Salt Crust Aquatic In Hydrogen	apply) (B11) vertebrates Sulfide Od	s (B13))	observed. Meets crite Seconda Surf X Spar X Drai	eria for hydric s ary Indicators (i ace Soil Crack rsely Vegetate nage Patterns	minimum of two s (B6) d Concave Sur (B10)	o required)
Type:	GY Irology Indicators: ators (minimum of o Water (A1) ter Table (A2) n (A3) arks (B1)		ired; check all thatSalt CrustAquatic InHydrogenDry-Seaso	apply) (B11) vertebrates Sulfide Od on Water T	s (B13) dor (C1)	observed. Meets crite Seconda Surf X Spai X Drai Oxid	eria for hydric s ery Indicators (i ace Soil Crack rsely Vegetated nage Patterns lized Rhizosph	minimum of two s (B6) d Concave Sur	o required)
Type:	GY Irology Indicators: ators (minimum of o Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2)		ired; check all that Salt Crust Aquatic In Hydrogen Dry-Seasc	apply) (B11) vertebrates Sulfide Od on Water T Rhizospher	s (B13) dor (C1)	Seconda Surf X Spar X Drai Oxide Oxi	eria for hydric some sury Indicators (in ace Soil Crack reely Vegetated nage Patterns lized Rhizosph here tilled)	minimum of two s (B6) d Concave Sur (B10) eres on Living	o required)
Type:	GY Irology Indicators: ators (minimum of o Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3)		ired; check all that Salt Crust Aquatic In Hydrogen Dry-Seaso Oxidized F	apply) (B11) vertebrates Sulfide Od on Water T Rhizospher not tilled)	s (B13) dor (C1 able (C) 22) Living Ro	observed. Meets crite Seconda Surf X Spai X Drai Oxid Coots (C3) (wCray	ary Indicators (i ace Soil Crack rsely Vegetated nage Patterns lized Rhizosph here tilled)	minimum of two s (B6) d Concave Sur (B10) eres on Living	o required) face (B8) Roots (C3)
Type:	GY Irology Indicators: ators (minimum of or Nater (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4)		ired; check all that Salt Crust Aquatic In Hydrogen Dry-Seasc Oxidized F (where	apply) (B11) vertebrates Sulfide Od on Water T Rhizospher not tilled) of Reduce	s (B13) dor (C1 able (C res on l) 22) Living Ro	Seconda	ary Indicators (I ace Soil Crack rsely Vegetated nage Patterns lized Rhizosph here tilled) fish Burrows (I	minimum of two s (B6) d Concave Sur (B10) eres on Living C8) on Aerial Image	o required) face (B8) Roots (C3)
Type:	GY Irology Indicators: ators (minimum of o Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3)	ne is requ	ired; check all that Salt Crust Aquatic In Hydrogen Dry-Seaso Oxidized F (where in Presence Thin Muck	apply) (B11) vertebrates Sulfide Od on Water T Rhizospher not tilled) of Reduces	s (B13) dor (C1 fable (C res on l d Iron () C2) Living Ro	observed. Meets crite Seconda Surf X Span X Drai Oxid Oxid Cray Satu X Geo	ary Indicators (in ace Soil Crack resely Vegetated nage Patterns lized Rhizosphhere tilled) Infish Burrows (in aration Visible of morphic Position	minimum of two s (B6) d Concave Sur (B10) eres on Living C8) on Aerial Image on (D2)	o required) face (B8) Roots (C3)
Type:	GY Irology Indicators: ators (minimum of or Nater (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5)	ne is requ	ired; check all that Salt Crust Aquatic In Hydrogen Dry-Seaso Oxidized F (where in Presence Thin Muck	apply) (B11) vertebrates Sulfide Od on Water T Rhizospher not tilled) of Reduce	s (B13) dor (C1 fable (C res on l d Iron () C2) Living Ro	Seconda Surf X Spai X Drai Oxio Oxio Cray Satu X Geo FAC	ary Indicators (in ace Soil Crack resely Vegetated rage Patterns lized Rhizosph here tilled) offish Burrows (in action Visible of morphic Positii-Neutral Test (minimum of two s (B6) d Concave Sur (B10) eres on Living C8) on Aerial Image on (D2)	o required) face (B8) Roots (C3) ery (C9)
Type:	GY Irology Indicators: ators (minimum of or Nater (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) on Visible on Aerial In ained Leaves (B9)	ne is requ	ired; check all that Salt Crust Aquatic In Hydrogen Dry-Seaso Oxidized F (where in Presence Thin Muck	apply) (B11) vertebrates Sulfide Od on Water T Rhizospher not tilled) of Reduces	s (B13) dor (C1 fable (C res on l d Iron () C2) Living Ro	Seconda Surf X Spai X Drai Oxio Oxio Cray Satu X Geo FAC	ary Indicators (in ace Soil Crack resely Vegetated rage Patterns lized Rhizosph here tilled) offish Burrows (in action Visible of morphic Positii-Neutral Test (minimum of two s (B6) d Concave Sur (B10) eres on Living C8) on Aerial Image on (D2)	o required) face (B8) Roots (C3) ery (C9)
Type: Depth (in Remarks: Indicator F3, IYDROLO Wetland Hyce Primary Indice Surface V High Wat Saturatio Water Mi Sedimen Drift Dep Algal Ma Iron Depo X Inundatic X Water-St Field Observ	GY Irology Indicators: ators (minimum of or Nater (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) on Visible on Aerial Inained Leaves (B9) rations:	ne is requ	ired; check all that Salt Crust Aquatic In Hydrogen Dry-Seasc Oxidized F (where in Presence Thin Muck 7) Other (Exp	apply) (B11) vertebrates Sulfide Od on Water T Rhizospher not tilled) of Reduces s Surface (Golain in Red	s (B13) dor (C1 fable (C res on l d Iron (C7) marks)) C2) Living Ro	Seconda Surf X Spai X Drai Oxio Oxio Cray Satu X Geo FAC	ary Indicators (in ace Soil Crack resely Vegetated rage Patterns lized Rhizosph here tilled) offish Burrows (in action Visible of morphic Positii-Neutral Test (minimum of two s (B6) d Concave Sur (B10) eres on Living C8) on Aerial Image on (D2)	o required) face (B8) Roots (C3) ery (C9)
Type: Depth (in Remarks: Indicator F3, IYDROLO Wetland Hyc Primary Indic Surface V High Wat Saturatio Water Mater	GY Irology Indicators: ators (minimum of or Nater (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) on Visible on Aerial III ained Leaves (B9) rations: er Present? Ye	ne is requ magery (B	ired; check all that Salt Crust Aquatic In Hydrogen Dry-Seaso Oxidized F (where in Presence Thin Muck	apply) (B11) vertebrates Sulfide Od on Water T Rhizospher not tilled) of Reduces	s (B13) dor (C1 fable (C res on l d Iron (C7) marks)) C2) Living Ro	Seconda Surf X Spai X Drai Oxio Oxio Cray Satu X Geo FAC	ary Indicators (in ace Soil Crack resely Vegetated rage Patterns lized Rhizosph here tilled) offish Burrows (in action Visible of morphic Positii-Neutral Test (minimum of two s (B6) d Concave Sur (B10) eres on Living C8) on Aerial Image on (D2)	o required) face (B8) Roots (C3) ery (C9)
Type: Depth (in Remarks: Indicator F3, IMPDROLO Wetland Hyc Primary Indic Surface V High War Saturatio Water Mary Sedimen Drift Dep Algal Mary Iron Dept X Inundation X Water-St Field Observ Surface Water Water Table	GY Irology Indicators: ators (minimum of orwater (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) in Visible on Aerial II ained Leaves (B9) rations: er Present? Yee Present? Yee	ne is requ magery (B	ired; check all that Salt Crust Aquatic In Hydrogen Dry-Seasc Oxidized F (where in Presence Thin Muck 7) No	apply) (B11) vertebrates Sulfide Od on Water T Rhizospher not tilled) of Reduces Surface (Golain in Red	s (B13) dor (C1 fable (Cres on l d Iron (C7) marks)) C2) Living Ro	observed. Meets crite Seconda Surf X Spar X Drai Oxio (w Cray Satu X Geo FAC	ary Indicators (i ace Soil Crack resely Vegetated nage Patterns lized Rhizosph here tilled) rfish Burrows (i aration Visible of morphic Positi -Neutral Test (t-Heave Humn	minimum of two s (B6) d Concave Sur (B10) eres on Living C8) on Aerial Image on (D2)	o required) face (B8) Roots (C3) ery (C9)
Type:	GY Irology Indicators: ators (minimum of orwater (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) on Visible on Aerial Inained Leaves (B9) rations: er Present? Present? Yeesent? Yeesent?	ne is requ magery (B	ired; check all that Salt Crust Aquatic In Hydrogen Dry-Seasc Oxidized F (where Presence Thin Muck 7) No No No	apply) (B11) vertebrates Sulfide Od on Water T Rhizospher not tilled) of Reduces s Surface (Colain in Red	s (B13) dor (C1 fable (Cres on l d Iron (C7) marks)) C2) Living Ro	Seconda Surf X Spai X Drai Oxio Oxio Cray Satu X Geo FAC	ary Indicators (i ace Soil Crack resely Vegetated nage Patterns lized Rhizosph here tilled) rfish Burrows (i aration Visible of morphic Positi -Neutral Test (t-Heave Humn	minimum of two s (B6) d Concave Sur (B10) eres on Living C8) on Aerial Image on (D2) (D5) nocks (D7) (LR	o required) face (B8) Roots (C3) ery (C9)
Type: Depth (in Remarks: Indicator F3, IYDROLO Wetland Hyce Primary Indic Surface N High Water Ma Sedimen Drift Dep Algal Ma Iron Depi X Inundation X Water-St Field Observ Surface Water Water Table Saturation Pr (includes cap	GY Irology Indicators: ators (minimum of orwater (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) on Visible on Aerial Inained Leaves (B9) rations: er Present? Present? Yeesent? Yeesent?	ne is requ magery (B s s	ired; check all that Salt Crust Aquatic In Hydrogen Dry-Seasc Oxidized F (where in Presence Thin Muck 7) Other (Exp	apply) (B11) vertebrates Sulfide Od on Water T Rhizospher not tilled) of Reduces Surface (colain in Reduced) Depth (incolappeth (incola	s (B13) dor (C1 Table (Cres on l C7) marks) ches): _ ches): _ ches): _) S2) Living Ro	Seconda Surf X Spai X Drai Oxio Oxis (C3) (w Cray Satu X Geo FAC Fros	ary Indicators (i ace Soil Crack resely Vegetated nage Patterns lized Rhizosph here tilled) rfish Burrows (i aration Visible of morphic Positi -Neutral Test (t-Heave Humn	minimum of two s (B6) d Concave Sur (B10) eres on Living C8) on Aerial Image on (D2) (D5) nocks (D7) (LR	o required) face (B8) Roots (C3) ery (C9)
Type:	GY Irology Indicators: ators (minimum of o Water (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) in Visible on Aerial II ained Leaves (B9) vations: er Present? Yeesent? Yeesent? Yeesent? Yeesent?	ne is requ magery (B s s	ired; check all that Salt Crust Aquatic In Hydrogen Dry-Seasc Oxidized F (where in Presence Thin Muck 7) Other (Exp	apply) (B11) vertebrates Sulfide Od on Water T Rhizospher not tilled) of Reduces Surface (colain in Reduced) Depth (incolappeth (incola	s (B13) dor (C1 Table (Cres on l C7) marks) ches): _ ches): _ ches): _) S2) Living Ro	Seconda Surf X Spai X Drai Oxio Oxis (C3) (w Cray Satu X Geo FAC Fros	ary Indicators (i ace Soil Crack resely Vegetated nage Patterns lized Rhizosph here tilled) rfish Burrows (i aration Visible of morphic Positi -Neutral Test (t-Heave Humn	minimum of two s (B6) d Concave Sur (B10) eres on Living C8) on Aerial Image on (D2) (D5) nocks (D7) (LR	o required) face (B8) Roots (C3) ery (C9)
Type: Depth (in Remarks: Indicator F3, Indicator F1, Indicator F3, Indicator F1, Indicator F3, Indicator F1, Indicator F	ches): a depleted matrix ar GY Irology Indicators: ators (minimum of o Nater (A1) ter Table (A2) n (A3) arks (B1) t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) on Visible on Aerial II ained Leaves (B9) rations: er Present? Ye esent? Ye	magery (B	ired; check all that Salt Crust Aquatic In Hydrogen Dry-Seasc Oxidized F (where Presence Thin Muck 7) No No No No No Onitoring well, aeria	apply) (B11) vertebrates Sulfide Od on Water T Rhizospher not tilled) of Reduces Surface (Colain in Red Depth (inco Depth (inco	s (B13) dor (C1 fable (Cres on l cres on l ches): ches): ches): ches):) C2) Living Ro	Seconda Surf X Spai X Drai Oxio Oxis (C3) (w Cray Satu X Geo FAC Fros	ary Indicators (I ace Soil Crack rsely Vegetated nage Patterns lized Rhizosph here tilled) fish Burrows (I aration Visible of morphic Position -Neutral Test (I t-Heave Humn	minimum of two s (B6) d Concave Sur (B10) eres on Living C8) on Aerial Image on (D2) (D5) nocks (D7) (LR	o required) face (B8) Roots (C3) ery (C9) RR F)

ENG FORM 6116-5, JUL 2018 Great Plains – Version 2.0

See ERDC/EL TR-10-1; the proponent agency is CECW-CO-R

1 1							
Project/Site: North Westerly Project Site		City/C	ounty: Erie/W	eld	Samp	ling Date:	12/7/2023
Applicant/Owner: NORTH WESTERLY OWNE	R, LLC			State: 0	CO Sampl	ling Point:	DP-A17U
Investigator(s): Natalie Rothman		Section	n, Township, Ra	ange: Section 16	, Township 1 No	orth, Range	e 68 West
Landform (hillside, terrace, etc.): field/roadside				vex, none): none			pe (%): 0
Subregion (LRR): LRR G Lat: 40).04526 °N		Long: -	105.0022 °W		Datum:	WGS 1984
Soil Map Unit Name: Nunn loam, 1 to 3 percent sl					classification:	None	•
Are climatic / hydrologic conditions on the site typi		of vear?	Yes X	No (If	no. explain in R	emarks.)	
Are Vegetation , Soil X , or Hydrology		•		Circumstances" pr			Ω
Are Vegetation, Soil, or Hydrology_				xplain any answers	-		<u> </u>
SUMMARY OF FINDINGS – Attach site					•	rtant foa	turas atc
Commant of Findings – Attach sit	- map snow		Thing point it	Joan Trans		- tant ica	
Hydrophytic Vegetation Present? Yes	No X		the Sampled A				
Hydric Soil Present? Yes	No X	wi	thin a Wetland	i? Yes	S No_	X	
Wetland Hydrology Present? Yes	No X						
Remarks: Upland data point in the southeastern portion of t	he survev area.	Paired with	data point DP-/	A17W. Due to hea	vv use of machi	nerv for ad	ıricultural
purposes, soil has been significantly disturbed.	,		·		,	, 0	
VEGETATION – Use scientific names	of plants.						
- O	Absolute			T			
Tree Stratum (Plot size:) 1.	% Cover	Species'	? Status		est worksheet:		
2.		-		Are OBL, FAC	minant Species [·] W or FAC [.]	That	0 (A)
3.		_			of Dominant Spe	—— ecies	<u> </u>
4.		_		Across All Stra		20103	2 (B)
		=Total Cov	er	Percent of Don	ninant Species ⁻	That	
Sapling/Shrub Stratum (Plot size:)			Are OBL, FAC	W, or FAC:	0	0.0% (A/B)
1.		-					
2.					dex worksheet		
3		-		Total % Cover OBL species		Multiply by $\times 1 =$	<u>•</u>
5.		_		FACW species		x 2 =	
		=Total Cov	er	FAC species		x 3 =	
Herb Stratum (Plot size:)				FACU species		x 4 =	
1. Bromus tectorum	40	Yes	UPL	UPL species		x 5 =	
2. Setaria viridis	40	Yes	UPL	Column Totals		.)	(B)
3. Verbascum thapsus	5	No	UPL	Prevalence Ind	ex = B/A =		
4 5.		-		Hydrophytic V	/egetation Indic	cators:	
6.					Test for Hydroph		ation
7.					ance Test is >50	-	
8.				3 - Prevale	ence Index is ≤3	.0 ¹	
9.		_			ological Adaptati	,	
10		_			Remarks or on a	•	
	85	_=Total Cov	er	I 	ic Hydrophytic V	•	, , ,
Woody Vine Stratum (Plot size:)				ydric soil and w		
1.		_		•	less disturbed or	r problema	tic.
2		=Total Cov		Hydrophytic			
% Bare Ground in Herb Stratum 15		-	. .	Vegetation Present?	Yes	No X	
Remarks:				!			
Plants were typical for upland vegetation commu	nity in agricultur	al area. Did	not meet criteri	ia for hydrophytic	vegetation.		

SOIL Sampling Point: DP-A17U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redo	ox Featur	es					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Text	ure	Remarks	
0-8	10YR 4/4	100		-			Loamy/0	Clayey		
										_
		 -					-			
				. —						
							_			
¹ Type: C=Co	ncentration, D=Deple	tion, RM=F	Reduced Matrix,	CS=Cove	ered or C	oated S	and Grains.	² Location: I	PL=Pore Lining, M	=Matrix.
	ndicators: (Applicab								for Problematic F	
Histosol			- ,		Sleyed M	atrix (S4	1)		uck (A9) (LRR I, J	-
	ipedon (A2)			•	Redox (S	,	-,		Prairie Redox (A16	
Black His				-	l Matrix (urface (S7) (LRR (
	n Sulfide (A4)			•	лиантх (Mucky M	,	:1)		ains Depressions	
				-	Sleyed M		-			
	Layers (A5) (LRR F)			•	•	•	<u> </u>		R H outside of MI	-RA 12 & 13)
	ck (A9) (LRR F, G, H)				d Matrix		`		ed Vertic (F18)	`
	Below Dark Surface ((A11)		-	Oark Surf	•	,		rent Material (F21	,
	rk Surface (A12)			•	d Dark S		-		nallow Dark Surfac	
	ucky Mineral (S1)			-	epressio				Explain in Remark	•
	lucky Peat or Peat (S2			-	ins Depi				of hydrophytic veg	
5 cm Mu	cky Peat or Peat (S3)	(LRR F)		(MLF	RA 72 &	73 of LF	RR H)		l hydrology must b	
								unless	disturbed or proble	ematic.
	.ayer (if observed):									
Type: _	compacted soil/ro	ot layer	_							
Depth (in	iches):	8	_				Hydric So	il Present?	Yes	NoX
-	l indicators were obse oil and root layer□	rved; soils	were uniform an	d dry. Do	es not m	eet crite	eria for hydrid	c soils.Restrictive	layer at 8 inches	from severely
HYDROLO	GY									
Wetland Hyd	Irology Indicators:									
	ators (minimum of one	e is require	ed: check all that	apply)				Secondary Indic	ators (minimum o	f two required)
-	Water (A1)	<u> </u>	Salt Crus					-	l Cracks (B6)	o
	ter Table (A2)		Aquatic Ir	` '	tes (B13)			egetated Concave	Surface (B8)
Saturatio	` '		Hydrogen		•	•			atterns (B10)	Carrado (Bo)
	arks (B1)		Dry-Seas		-				nizospheres on Liv	ing Roots (C3)
	t Deposits (B2)		Oxidized				note (C3)	(where til		ing redeta (dd)
	osits (B3)			not tilled		Living iv	.0013 (00)	Crayfish Bu	•	
	t or Crust (B4)		Presence			(C4)			/isible on Aerial In	nagony (CQ)
			Thin Muc			(04)				lagery (C9)
	osits (B5)	000m/ (D7)			, ,				Position (D2)	
	on Visible on Aerial Im	agery (b/)	Other (Ex	piain in F	kemarks)	,		FAC-Neutra	, ,	(1 DD E)
water-St	ained Leaves (B9)							Frost-Heave	e Hummocks (D7)	(LRR F)
Field Observ	/ations:									
Surface Water	er Present? Yes		No X	Depth (i	nches): _					
Water Table	Present? Yes		No X	Depth (i	nches): _					
Saturation Pr	resent? Yes		No X	Depth (i	nches): _		Wetland	l Hydrology Pres	sent? Yes	No X
(includes cap	illary fringe)									
Describe Red	corded Data (stream g	auge, mon	nitoring well, aeria	al photos	, previou	s inspec	ctions), if ava	ilable:		
Remarks:										
No hydrology	indicators were obser	rved. Does	not meet criteria	for wetla	and hydr	ology.				

ENG FORM 6116-5, JUL 2018 Great Plains – Version 2.0

See ERDC/EL TR-10-1; the proponent agency is CECW-CO-R

Project/Site: North Westerly Project Site	City/County: Erie/Wel	d	Sampling Date: 12/7/2023
Applicant/Owner: NORTH WESTERLY OWNER, LLC		State: CO	Sampling Point: DP-A17W
Investigator(s): Natalie Rothman	Section, Township, Ran	ge: Section 16, Towns	hip 1 North, Range 68 West
Landform (hillside, terrace, etc.): field/roadside	Local relief (concave, conve	ex, none): concave	Slope (%): 0
Subregion (LRR): LRR G Lat: 40.04527 °N	Long: -10	05.0022 °W	Datum: WGS 1984
Soil Map Unit Name: Nunn loam, 1 to 3 percent slopes			cation: R4SBCx
Are climatic / hydrologic conditions on the site typical for this time	of vear? Yes X	No (If no, expl	ain in Remarks.)
Are Vegetation X , Soil , or Hydrology significantly			
Are Vegetation , Soil , or Hydrology naturally pro		lain any answers in Rem	
SUMMARY OF FINDINGS – Attach site map showi		-	•
Command of Findings - Attach site map shown		- Tanoccio,	
Hydrophytic Vegetation Present? Yes No X	Is the Sampled Ar		
Hydric Soil Present? Yes X No	within a Wetland?	Yes	No X
Wetland Hydrology Present? Yes X No No			
Remarks: Data point within Community Ditch, below the Ordinary High Water Mark, in	n the southeastern portion of the	survey area. Paired with da	ta point DP-A17U. The aquatic
resource is an agricultural ditch with little to no vegetation. Vegetation has	•	-	
VEGETATION – Use scientific names of plants.			
Absolute	Dominant Indicator		
<u>Tree Stratum</u> (Plot size:) % Cover		Dominance Test work	(sheet:
1	. —— ——	Number of Dominant S	•
2		Are OBL, FACW, or FA	AC:(A)
3	· ——	Total Number of Domir	·
4	=Total Cover	Across All Strata:	(B)
Sapling/Shrub Stratum (Plot size:)	- Total Gover	Percent of Dominant S Are OBL, FACW, or FA	•
1		,,	(, ,
2.		Prevalence Index wor	ksheet:
3.		Total % Cover of:	Multiply by:
4		OBL species	x 1 =
5	· 	FACW species	x 2 =
	=Total Cover	FACIL and size	x 3 =
Herb Stratum (Plot size:) 1.		FACU species UPL species	x 4 = x 5 =
1		Column Totals:	(A) (B)
3.	· ——	Prevalence Index = B/	``
4.			
5.	[Hydrophytic Vegetation	on Indicators:
6			Hydrophytic Vegetation
7		2 - Dominance Tes	
8	. ——	3 - Prevalence Inde	
9	· 		Adaptations ¹ (Provide supportin s or on a separate sheet)
10	=Total Cover		phytic Vegetation ¹ (Explain)
Woody Vine Stratum (Plot size:)	Total Gover		il and wetland hydrology must
1		be present, unless dist	
2.	[Hydrophytic	
	=Total Cover	Vegetation	.,
% Bare Ground in Herb Stratum100		Present? Yes_	No_X
Remarks:			
Plot located in an agricultural ditch that floods and removes all ve	getation. No vegetation pres	ent (significantly disturbe	ed).

SOIL Sampling Point: DP-A17W

Depth	Matrix			x Feature					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture		Remarks
0-2	10YR 4/2	80	10YR 3/1	10	С	PL	Loamy/Clay	ey	
			7.5YR 6/8	10	С	M		Anaero	obic organic material
2-16	5GY 7/1	70	7.5YR 6/8	28	С	М	Loamy/Clay	ey Prominer	nt redox concentration
			5Y 7/1	2	С	M		Prominer	nt redox concentration
			_						
			_						
¹ Type: C=Cc	oncentration, D=Depl	etion RM=	Reduced Matrix C	S=Cove	red or C	nated Sa	and Grains	² Location: PL=Pol	re Lining, M=Matrix.
	ndicators: (Applica					oatou oc	ina Graino.		blematic Hydric So
Histosol				Sandy G		atrix (S4))	1 cm Muck (A	-
	ipedon (A2)			Sandy R					Redox (A16) (LRR F,
Black His	stic (A3)		<u> </u>	Stripped	Matrix (36)		Dark Surface	(S7) (LRR G)
Hydroge	n Sulfide (A4)		<u> </u>	Loamy M	lucky Mi	neral (F1	1)	High Plains De	epressions (F16)
Stratified	Layers (A5) (LRR F)	X	Loamy G	leyed M	atrix (F2)	(LRR H ou	tside of MLRA 72 &
1 cm Mu	ck (A9) (LRR F, G, H	ł)	<u>X</u>	Depleted	Matrix (F3)		Reduced Verti	` '
Depleted	l Below Dark Surface	e (A11)		Redox D	ark Surf	ace (F6)		Red Parent Ma	aterial (F21)
Thick Da	rk Surface (A12)			Depleted	Dark S	urface (F	7)	Very Shallow I	Dark Surface (F22)
	lucky Mineral (S1)			Redox D	•	` '		Other (Explain	,
	lucky Peat or Peat (S		S, H)	High Plai				•	ophytic vegetation ar
5 cm Mu	cky Peat or Peat (S3	s) (LRR F)		(MLR	A 72 & 7	73 of LR	R H)		logy must be present
Postriotivo I	aver (if cheeryed):							uniess disturb	ed or problematic.
Resulctive L	_ayer (if observed):								
Typo									
Type: Depth (ir	nches):						Hydric Soil Pi	resent?	Yes X No
Depth (in	nches):		<u> </u>				Hydric Soil Pi	resent?	Yes X No
Depth (ir	<u> </u>	eved Matri	x) and F3 (Deplete	d Matrix)	were bo	oth prese			Yes X No
Depth (ir	cators F2 (Loamy Gl	eyed Matri:	x) and F3 (Deplete	d Matrix)	were bo	th prese			Yes X No
Depth (ir	<u> </u>	eyed Matri:	x) and F3 (Deplete	d Matrix)	were bo	th prese			Yes X No
Depth (ir Remarks: Both soil indi	cators F2 (Loamy Gl	eyed Matrix	x) and F3 (Deplete	d Matrix)	were bo	th prese			Yes X No
Depth (in Remarks: Both soil indi	cators F2 (Loamy Gl	eyed Matri	x) and F3 (Deplete	d Matrix)	were bo	th prese			Yes X No
Depth (in Remarks: Both soil indi	cators F2 (Loamy Gl				were bo	th prese	nt. Meets criteri	a for hydric soils.	Yes X No
Depth (in Remarks: Both soil indi	GY drology Indicators: cators (minimum of or		red; check all that a	apply) (B11)			nt. Meets criteri	a for hydric soils. condary Indicators (Surface Soil Crack	minimum of two requ
Depth (in Remarks: Both soil indi	GY drology Indicators: cators (minimum of or Water (A1) ter Table (A2)		red; check all that a	apply) (B11) vertebrate	es (B13)		nt. Meets criteri	a for hydric soils. condary Indicators (Surface Soil Crack Sparsely Vegetate	minimum of two requ ss (B6) d Concave Surface (
Depth (in Remarks: Both soil indi	GY drology Indicators: eators (minimum of or Water (A1) ter Table (A2) on (A3)		red; check all that a Salt Crust Aquatic In Hydrogen	apply) (B11) vertebrate Sulfide C	es (B13))	nt. Meets criteri	a for hydric soils. condary Indicators (Surface Soil Crack Sparsely Vegetate Drainage Patterns	minimum of two requ is (B6) d Concave Surface ((B10)
Depth (ir Remarks: Both soil indi HYDROLO Wetland Hyd Primary Indic Surface V High Wa Saturatio Water M	GY drology Indicators: eators (minimum of or Water (A1) ter Table (A2) on (A3) arks (B1)		red; check all that a Salt Crust Aquatic In Hydrogen Dry-Seaso	apply) (B11) vertebrate Sulfide C	es (B13) dor (C1 Table (C)	nt. Meets criteri	a for hydric soils. condary Indicators (Surface Soil Crack Sparsely Vegetate Drainage Patterns Oxidized Rhizosph	minimum of two requ ss (B6) d Concave Surface (
Depth (ir Remarks: Both soil indi HYDROLO Wetland Hyd Primary India Surface V High Wa Saturatio Water M Sedimen	cators F2 (Loamy Global GY drology Indicators: cators (minimum of or Water (A1) ter Table (A2) on (A3) arks (B1) at Deposits (B2)		red; check all that a Salt Crust Aquatic In Hydrogen Dry-Seaso Oxidized F	apply) (B11) vertebrate Sulfide Con Water	es (B13) dor (C1 Table (C eres on I)	nt. Meets criteri	condary Indicators (Surface Soil Crack Sparsely Vegetate Drainage Patterns Oxidized Rhizosph (where tilled)	minimum of two requises (B6) d Concave Surface (B10) leres on Living Roots
Depth (ir Remarks: Both soil indi HYDROLO Wetland Hyd Primary Indic Surface High Wa Saturatic Water M Sedimen Drift Dep	cators F2 (Loamy Glo GY drology Indicators: cators (minimum of or Water (A1) ter Table (A2) on (A3) arks (B1) arks (B1) ot Deposits (B2)		red; check all that a Salt Crust Aquatic In Hydrogen Dry-Seaso Oxidized F	apply) (B11) vertebrate Sulfide Con Water Rhizosphe	es (B13) dor (C1 Table (C eres on I) 22) Living Ro	nt. Meets criteri	condary Indicators (Surface Soil Crack Sparsely Vegetate Drainage Patterns Oxidized Rhizosph (where tilled) Crayfish Burrows (minimum of two requ is (B6) d Concave Surface ((B10) leres on Living Roots
Depth (ir Remarks: Both soil indi HYDROLO Wetland Hyd Primary Indic Surface High Wa Saturatic Water M Sedimen Drift Dep Algal Ma	cators F2 (Loamy Global GY drology Indicators: cators (minimum of or Water (A1) ter Table (A2) on (A3) carks (B1) arks (B1) ot Deposits (B2) cosits (B3) tor Crust (B4)		red; check all that a Salt Crust Aquatic In Hydrogen Dry-Seaso Oxidized R (where r	apply) (B11) vertebrate Sulfide Con Water Rhizosphe not tilled	es (B13) dor (C1 Table (C eres on I) ed Iron () 22) Living Ro	nt. Meets criteri	condary Indicators (Surface Soil Crack Sparsely Vegetate Drainage Patterns Oxidized Rhizosph (where tilled) Crayfish Burrows (Saturation Visible	minimum of two requests (B6) d Concave Surface (B10) deres on Living Roots C8) on Aerial Imagery (C
Depth (ir Remarks: Both soil indi HYDROLO Wetland Hyd Primary Indic Surface High Wa Saturatio Water M Sedimen Drift Dep Algal Ma Iron Dep	cators F2 (Loamy Global GY Chrology Indicators: cators (minimum of or Water (A1) ter Table (A2) on (A3) carks (B1) arks (B1) ot Deposits (B2) cosits (B3) tor Crust (B4) osits (B5)	ne is requii	red; check all that a Salt Crust Aquatic In Hydrogen Dry-Seaso Oxidized F (where r X Presence	apply) (B11) vertebrate Sulfide Con Water Rhizosphe not tilled of Reduc Surface	es (B13) Odor (C1 Table (C eres on I) ed Iron () 22) Living Ro	nt. Meets criteri	condary Indicators (Surface Soil Crack Sparsely Vegetate Drainage Patterns Oxidized Rhizosph (where tilled) Crayfish Burrows (Saturation Visible Geomorphic Positi	minimum of two requests (B6) d Concave Surface (B10) teres on Living Roots C8) on Aerial Imagery (Con (D2)
Depth (ir Remarks: Both soil indi HYDROLO Wetland Hyd Primary Indic Surface High Wa Saturatic Water M Sedimen Drift Dep Algal Ma Iron Dep X Inundation	cators F2 (Loamy Global GY Cators F2 (Loamy Global GY Cators (Minimum of or Water (A1) ter Table (A2) on (A3) arks (B1) arks (B1) to Deposits (B2) cosits (B3) to Crust (B4) cosits (B5) on Visible on Aerial In	ne is requii	red; check all that a Salt Crust Aquatic In Hydrogen Dry-Seaso Oxidized F (where r X Presence	apply) (B11) vertebrate Sulfide Con Water Rhizosphe not tilled of Reduc Surface	es (B13) Odor (C1 Table (C eres on I) ed Iron () 22) Living Ro	nt. Meets criteri	condary Indicators (Surface Soil Crack Sparsely Vegetate Drainage Patterns Oxidized Rhizosph (where tilled) Crayfish Burrows (Saturation Visible Geomorphic Positi	minimum of two requises (B6) d Concave Surface (B10) heres on Living Roots C8) on Aerial Imagery (Con (D2) (D5)
Depth (ir Remarks: Both soil indi HYDROLO Wetland Hyd Primary Indic Surface High Wa Saturatic Water M Sedimen Drift Dep Algal Ma Iron Dep X Inundatic Water-St	cators F2 (Loamy Global GY drology Indicators: cators (minimum of or Water (A1) ter Table (A2) on (A3) arks (B1) arks (B1) ot Deposits (B2) oosits (B3) t or Crust (B4) oosits (B5) on Visible on Aerial Intained Leaves (B9)	ne is requii	red; check all that a Salt Crust Aquatic In Hydrogen Dry-Seaso Oxidized F (where r X Presence	apply) (B11) vertebrate Sulfide Con Water Rhizosphe not tilled of Reduc Surface	es (B13) Odor (C1 Table (C eres on I) ed Iron () 22) Living Ro	nt. Meets criteri	condary Indicators (Surface Soil Crack Sparsely Vegetate Drainage Patterns Oxidized Rhizosph (where tilled) Crayfish Burrows (Saturation Visible Geomorphic Positi	minimum of two requests (B6) d Concave Surface (B10) deres on Living Roots C8) on Aerial Imagery (Con (D2)
Depth (in Remarks: Both soil indi and soil i	cators F2 (Loamy Global GY Chrology Indicators: Cators (minimum of or Water (A1) ter Table (A2) on (A3) carks (B1) cators (B2) cosits (B3) tor Crust (B4) cosits (B5) on Visible on Aerial Intained Leaves (B9) costons:	ne is requin	red; check all that a Salt Crust Aquatic Int Hydrogen Dry-Seaso Oxidized F (where r X Presence of Thin Muck Other (Exp	apply) (B11) vertebrate Sulfide Con Water Rhizosphe not tilled of Reduc Surface blain in Re	es (B13) Odor (C1 Table (C eres on I) ed Iron ((C7) emarks)) 22) Living Ro	nt. Meets criteri	condary Indicators (Surface Soil Crack Sparsely Vegetate Drainage Patterns Oxidized Rhizosph (where tilled) Crayfish Burrows (Saturation Visible Geomorphic Positi	minimum of two requises (B6) d Concave Surface (B10) heres on Living Roots C8) on Aerial Imagery (Con (D2) (D5)
Depth (ir Remarks: Both soil indi HYDROLO Wetland Hyde Primary Indic Surface V High Wa Saturatio Water M Sedimen Drift Dep Algal Ma Iron Dep X Inundatio Water-St Field Observ Surface Water	cators F2 (Loamy Global GY Cators F2 (Loamy Global GY Cators (Minimum of or Water (A1) ter Table (A2) on (A3) arks (B1) at Deposits (B2) posits (B3) tor Crust (B4) osits (B5) on Visible on Aerial Intained Leaves (B9) cations:	ne is requin	red; check all that a Salt Crust Aquatic In Hydrogen Dry-Seaso Oxidized F (where r X Presence of Thin Muck Other (Exp	apply) (B11) vertebrate Sulfide Con Water Rhizosphe not tilled of Reduc Surface blain in Re	es (B13) Ddor (C1 Table (C eres on I) ed Iron ((C7) emarks)) 22) Living Ro	nt. Meets criteri	condary Indicators (Surface Soil Crack Sparsely Vegetate Drainage Patterns Oxidized Rhizosph (where tilled) Crayfish Burrows (Saturation Visible Geomorphic Positi	minimum of two requises (B6) d Concave Surface (B10) heres on Living Roots C8) on Aerial Imagery (Con (D2) (D5)
Depth (in Remarks: Both soil indi and soil indiante soil indi and soil i	cators F2 (Loamy Global GY drology Indicators: cators (minimum of or Water (A1) ter Table (A2) on (A3) arks (B1) at Deposits (B2) cosits (B3) at or Crust (B4) cosits (B5) on Visible on Aerial Intained Leaves (B9) vations: er Present? Yes	ne is requii magery (B7	red; check all that a Salt Crust Aquatic In Hydrogen Dry-Seaso Oxidized F (where r X Presence of Thin Muck Other (Exp	apply) (B11) vertebrate Sulfide Con Water Rhizosphe not tilled of Reduc Surface blain in Re	es (B13) odor (C1 Table (Ceres on I) ed Iron ((C7) emarks) aches): _ aches): _) 22) Living Ro	nt. Meets criteri	condary Indicators (Surface Soil Crack Sparsely Vegetate Drainage Patterns Oxidized Rhizosph (where tilled) Crayfish Burrows (Saturation Visible Geomorphic Positi	minimum of two requises (B6) d Concave Surface (B10) heres on Living Roots C8) on Aerial Imagery (Con (D2) (D5)
Depth (ir Remarks: Both soil indi HYDROLO Wetland Hyde Primary Indice Surface V High Wa Saturatio Water M Sedimen Drift Dep Algal Ma Iron Dep X Inundatio Water-Si Field Observ Surface Water Saturation Pr	cators F2 (Loamy Global GY drology Indicators: cators (minimum of or Water (A1) ter Table (A2) on (A3) arks (B1) at Deposits (B2) cosits (B3) t or Crust (B4) cosits (B5) on Visible on Aerial Intained Leaves (B9) vations: er Present? Yestersent? Yestersent?	ne is requii magery (B7	red; check all that a Salt Crust Aquatic In Hydrogen Dry-Seaso Oxidized F (where r X Presence of Thin Muck Other (Exp	apply) (B11) vertebrate Sulfide Con Water Rhizosphe not tilled of Reduc Surface blain in Re	es (B13) odor (C1 Table (Ceres on I) ed Iron ((C7) emarks) aches): _ aches): _) 22) Living Ro	nt. Meets criteri	a for hydric soils. condary Indicators (Surface Soil Crack Sparsely Vegetate Drainage Patterns Oxidized Rhizosph (where tilled) Crayfish Burrows (Saturation Visible Geomorphic Positi FAC-Neutral Test Frost-Heave Humr	minimum of two requises (B6) d Concave Surface (B10) heres on Living Roots C8) on Aerial Imagery (Con (D2) (D5) mocks (D7) (LRR F)
Depth (in Remarks: Both soil indi so	cators F2 (Loamy Global GY drology Indicators: cators (minimum of or Water (A1) ter Table (A2) on (A3) arks (B1) at Deposits (B2) cosits (B3) t or Crust (B4) cosits (B5) on Visible on Aerial Intained Leaves (B9) vations: er Present? Yestersent? Yestersent?	ne is requii magery (B7 s s	red; check all that a Salt Crust Aquatic Inv Hydrogen Dry-Seaso Oxidized F (where r X Presence of Thin Muck Other (Exp	apply) (B11) vertebrate Sulfide Con Water Rhizosphe not tilled of Reduc Surface blain in Re Depth (in	es (B13) Ddor (C1 Table (Ceres on I) ed Iron ((C7) emarks) aches): _ aches): _ aches): _) S2) Living Ro	See X X X X X X X X X X X X X X X X X X	condary Indicators (Surface Soil Crack Sparsely Vegetate Drainage Patterns Oxidized Rhizosph (where tilled) Crayfish Burrows (Saturation Visible Geomorphic Positi FAC-Neutral Test Frost-Heave Humn	minimum of two requises (B6) d Concave Surface (B10) heres on Living Roots C8) on Aerial Imagery (Con (D2) (D5) mocks (D7) (LRR F)
Depth (in Remarks: Both soil indi so	cators F2 (Loamy Global Cators F2 (Loamy Global Cators F2 (Loamy Global Cators F2 (Manager Ground Gr	ne is requii magery (B7 s s	red; check all that a Salt Crust Aquatic Inv Hydrogen Dry-Seaso Oxidized F (where r X Presence of Thin Muck Other (Exp	apply) (B11) vertebrate Sulfide Con Water Rhizosphe not tilled of Reduc Surface blain in Re Depth (in	es (B13) Ddor (C1 Table (Ceres on I) ed Iron ((C7) emarks) aches): _ aches): _ aches): _) S2) Living Ro	See X X X X X X X X X X X X X X X X X X	condary Indicators (Surface Soil Crack Sparsely Vegetate Drainage Patterns Oxidized Rhizosph (where tilled) Crayfish Burrows (Saturation Visible Geomorphic Positi FAC-Neutral Test Frost-Heave Humn	minimum of two requises (B6) d Concave Surface (B10) heres on Living Roots C8) on Aerial Imagery (Con (D2) (D5) mocks (D7) (LRR F)
Depth (ir Remarks: Both soil indi HYDROLO Wetland Hyde Primary Indice Surface Water Mand Sediment Drift Dept Algal Mand Iron Dept X Inundatice Water-St Field Observ Surface Water Water Table Saturation Prediction (includes caped) Remarks:	cators F2 (Loamy Global Cators F2 (Loamy Global Cators F2 (Loamy Global Cators F2 (Manager Ground Gr	magery (B7	red; check all that a Salt Crust Aquatic Inv Hydrogen Dry-Seaso Oxidized F (where r X Presence of Thin Muck Other (Exp No X No X No X No X Initoring well, aeria	apply) (B11) vertebrate Sulfide Con Water Rhizosphe not tilled of Reduc Surface blain in Re Depth (ir Depth (ir Depth (ir	es (B13) Dor (C1 Table (Ceres on I) ed Iron ((C7) emarks) aches): _ aches): _ previous) C2) Living Ro C4)	See X X X X X X X X X X X X X X X X X X	a for hydric soils. condary Indicators (Surface Soil Crack Sparsely Vegetate Drainage Patterns Oxidized Rhizosph (where tilled) Crayfish Burrows (Saturation Visible Geomorphic Positi FAC-Neutral Test Frost-Heave Humr drology Present?	minimum of two requests (B6) d Concave Surface (B10) deres on Living Roots C8) on Aerial Imagery (Con (D2) (D5) mocks (D7) (LRR F)

See ERDC/EL TR-10-1; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024 Requirement Control Symbol EXEMPT: (Authority: AR 335-15, paragraph 5-2a)

· · ·						
Project/Site: North Westerly Project Site		City/Cou	nty: Erie/We	eld	Sampling Date:	12/7/2023
Applicant/Owner: NORTH WESTERLY OWNER,	LLC			State: CO	Sampling Point:	DP-B1U
Investigator(s): Tyler Worley		Section, 7	ownship, Ra	ange: Section 16, Towns	ship 1 North, Range	68 West
Landform (hillside, terrace, etc.): Seep				vex, none): Concave		e (%): 1
Subregion (LRR): LRR G Lat: 40.04		,		105.0017°W		WGS 1984
Soil Map Unit Name: Nunn loam, 1 to 3 percent slope			<u> </u>		ication: None	
Are climatic / hydrologic conditions on the site typical		of vear?	Yes X	No (If no, exp		
Are Vegetation , Soil , or Hydrology	- '				<u> </u>	
Are Vegetation, Soil, or Hydrology	_			xplain any answers in Rer	,	
SUMMARY OF FINDINGS – Attach site n	nap showii	ng samplin	ig point lo	ocations, transects,	, important feat	ures, etc.
Hydric Soil Present? Yes N	No X No X		e Sampled A n a Wetland		No_X	
Remarks: Upland data point in southeastern portion of the surv	∕ey area, adja	cent to a seep	and within t	he agricultural field. Paire	ed with wetland poin	t DP-B1W.
VEGETATION – Use scientific names of						
<u>Tree Stratum</u> (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test wor	·kshoot·	
1.	70 COVE	Opecies:	Otatus	Number of Dominant S		
2.	-			Are OBL, FACW, or F.		3 (A)
3.				Total Number of Domi	inant Species	
4				Across All Strata:		4 (B)
	· ——	=Total Cover		Percent of Dominant S	•	
Sapling/Shrub Stratum (Plot size:	_)	Voo	EAC\A/	Are OBL, FACW, or F.	AC: 75	.0% (A/B)
1. Salix exigua 2.	15	Yes	FACW	Prevalence Index wo	rkshoot:	
2	-			Total % Cover of:	Multiply by:	
4				OBL species	x 1 =	
5.				FACW species	x 2 =	
·	15	=Total Cover		FAC species	x 3 =	
Herb Stratum (Plot size:)				FACU species	x 4 =	
1. Amaranthus blitoides	25	Yes	FAC	UPL species	x 5 =	
2. Verbascum thapsus	20	Yes	UPL	Column Totals:	(A)	(B)
3. Lepidium latifolium	20	Yes	FACW	Prevalence Index = B	/A =	
4. Plantago patagonica	10	No	UPL			
5. Bromus tectorum	10	No	UPL	Hydrophytic Vegetati	ion Indicators:	
6.				1 - Rapid Test for	Hydrophytic Vegeta	tion
7.				X 2 - Dominance Te	st is >50%	
8				3 - Prevalence Ind	lex is ≤3.0 ¹	
9				· · ·	Adaptations ¹ (Provid	
10					s or on a separate s	,
	85	=Total Cover		Problematic Hydro	ophytic Vegetation ¹ ((Explain)
Woody Vine Stratum (Plot size: 1.	_)			¹ Indicators of hydric so be present, unless dis		
2				Hydrophytic		
		=Total Cover		Vegetation		
% Bare Ground in Herb Stratum15				Present? Yes	No	-
Remarks:						

Upland data point paired with wetland point and is adjacent to the seep within the disturbed agricultural field. As a result, the vegetation is dominantly hydrophytic species. However, the other indicators are not present so this is not within a wetland nor below Ordinary High Water Mark.

SOIL Sampling Point: DP-B1U

Depth	ription: (Describe to Matrix	to the dept		edox Featur		ator or c	John the abse	ince of mulcators	o.)	
(inches)	Color (moist)	%	Color (moist)		Type ¹	Loc ²	Texture		Remarks	
0-5	10YR 4/3	100					Sandy		Sandy Ioam	
5-9	10YR 3/2	100					Sandy		Sandy loam	
9-21	10YR 3/1	100					Sandy		Sandy loam	
9-21	10110 3/1						Gariuy		Sandy Idam	
¹Type: C=Co	ncentration, D=Depl	etion, RM=I	Reduced Matri	x, CS=Cove	ered or C	oated Sa	and Grains.	² Location: PL=Po	ore Lining, M=	Matrix.
Hydric Soil I	ndicators: (Applica	ble to all L	RRs, unless o	therwise n	oted.)			Indicators for Pr	oblematic Hy	dric Soils ³ :
Histosol ((A1)		<u></u>	Sandy C	Sleyed M	latrix (S4	·)	1 cm Muck (A	49) (LRR I, J)	
Histic Ep	ipedon (A2)		_	Sandy F	Redox (S	5)		Coast Prairie	Redox (A16)	(LRR F, G, H
Black His	stic (A3)			Stripped	l Matrix (S6)		Dark Surface	(S7) (LRR G))
Hydroger	n Sulfide (A4)		_	Loamy I	Ииску M	ineral (F	1)	High Plains D	epressions (F	⁻ 16)
Stratified	Layers (A5) (LRR F)	_	Loamy (Gleyed M	1atrix (F2	2)	(LRR H o	utside of MLF	RA 72 & 73)
	ck (A9) (LRR F, G, H		_		d Matrix		•	Reduced Ver		
	Below Dark Surface		_	Redox D	ark Surf	ace (F6)	·)	Red Parent N		
	rk Surface (A12)	,	_	 Deplete	d Dark S	urface (F	=7)		Dark Surface	(F22)
	ucky Mineral (S1)		_	Redox D	Depression	ons (F8)			n in Remarks)	
	lucky Peat or Peat (S2) (LRR G	. H) _		ins Depi	٠,	(F16)	³ Indicators of hyd		
	cky Peat or Peat (S3	, .	·		RA 72 &			wetland hydro	ology must be bed or problen	present,
Restrictive L	ayer (if observed):							4	ээ э. р.ээ.э	
Type:										
Depth (in	ches):						Hydric Soil Pro	esent?	Yes	No X
Remarks:										
No hydric soil	l indicators present.	Data point i	s paired with w	etland poin	t and is a	adjacent	to seep in agricu	ıltural field.		
HYDROLO	GY									
-	Irology Indicators:						_			
-	ators (minimum of o	ne is require					<u>Sec</u>	condary Indicators	•	two required)
	Water (A1)			ust (B11)				Surface Soil Crac		
	ter Table (A2)			Invertebra				Sparsely Vegetat		urface (B8)
Saturatio	n (A3)			en Sulfide (-	-		Drainage Pattern		
Water Ma			Dry-Se	ason Water	Table (0	C2)		Oxidized Rhizosp	heres on Livin	g Roots (C3)
Sediment	t Deposits (B2)		Oxidize	d Rhizosph	eres on	Living R	oots (C3)	(where tilled)		
Drift Dep	osits (B3)		(whe	re not tilled	d)			Crayfish Burrows	(C8)	
Algal Mat	t or Crust (B4)		Presen	ce of Redu	ced Iron	(C4)		Saturation Visible	on Aerial Ima	agery (C9)
Iron Depo	osits (B5)		Thin M	uck Surface	e (C7)			Geomorphic Posi	tion (D2)	
Inundatio	n Visible on Aerial I	magery (B7)) Other (Explain in F	Remarks))	X	FAC-Neutral Test	(D5)	
Water-St	ained Leaves (B9)							Frost-Heave Hum	mocks (D7) (I	LRR F)
Field Observ	ations:									
Surface Water	er Present? Ye	s	No X	Depth (i	nches):					
Water Table I	Present? Ye	s	No X	Depth (i	nches):					
Saturation Pr	esent? Ye	s	No X	Depth (i	nches):		Wetland Hyd	Irology Present?	Yes	No_X
(includes cap					´ -			•		
(IIIOIGGGG GGP	mary minge,						· · · · · · · · · · · · · · · · · · ·			
	orded Data (stream	gauge, mor	nitoring well, a	erial photos	, previou	s inspec	tions), if available	9:		
		gauge, mor	nitoring well, a	erial photos	, previou	s inspec	tions), if available	2 :		
		gauge, mor	nitoring well, a	erial photos	, previou	s inspec	tions), if available	3 :		
Describe Rec				·		•	tions), if available	3:		

See ERDC/EL TR-10-1; the proponent agency is CECW-CO-R

Project/Site: North Westerly Project Site		City/Cou	nty: Erie/We	eld	Sampling Date:	12/7/2023
Applicant/Owner: NORTH WESTERLY OWNER, I	LLC			State: CO	Sampling Point:	DP-B1W
Investigator(s): Tyler Worley		Section, 7	Γownship, Ra	ange: Section 16, Towns	ship 1 North, Range	e 68 West
Landform (hillside, terrace, etc.): Seep		 Local relief (c	oncave, con	/ex, none): Concave	Slop	oe (%):1
Subregion (LRR): LRR G Lat: 40.04	5437°N		Long: -	105.001906°W	Datum:	WGS 1984
Soil Map Unit Name: Nunn loam, 1 to 3 percent slope				NWI classif		
Are climatic / hydrologic conditions on the site typical	for this time of	of year?	Yes X	No (If no, exp	olain in Remarks.)	
Are Vegetation , Soil , or Hydrology						0
Are Vegetation, Soil, or Hydrology	-					
SUMMARY OF FINDINGS – Attach site m	=					tures, etc.
Hydric Soil Present? Yes X	lo lo		e Sampled A		No	
Remarks: Wetland point is situated within a seep in the souther branch. Paired with upland point DP-B1U.	astern portion	of the project	area. The se	eep is likely supported by	the Community Dit	ch - east
VEGETATION – Use scientific names of	•					
<u>Tree Stratum</u> (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test wor	ksheet:	
1				Number of Dominant S		
2.				Are OBL, FACW, or F	AC:	3 (A)
3. 4.				Total Number of Domi Across All Strata:	nant Species	4 (B)
Sapling/Shrub Stratum (Plot size:		=Total Cover		Percent of Dominant S Are OBL, FACW, or F	•	5.0% (A/B)
1. Salix exigua	45	Yes	FACW			
2				Prevalence Index wo	rksheet:	
3.				Total % Cover of:	Multiply by	
4				OBL species		
5	45			FACW species		
Horb Stratum (Diot aiza:	45	=Total Cover		FAC species FACU species		
Herb Stratum (Plot size:) 1. Polypogon monspeliensis	25	Yes	FACW	UPL species	x 4 =	
Verbascum thapsus	15	Yes	UPL	Column Totals:	(A)	(B)
3. Juncus compressus 4.	15	Yes	FACW	Prevalence Index = B	`´	(5)
				Hydrophytic Vegetati	ion Indicators:	
6					Hydrophytic Veget	ation
7.	-			X 2 - Dominance Te		
8.				3 - Prevalence Inc		
9.	-				Adaptations ¹ (Provi	ide supporting
10.				data in Remark	s or on a separate	sheet)
	55	=Total Cover		Problematic Hydro	ophytic Vegetation ¹	(Explain)
Woody Vine Stratum (Plot size: 1.	_)			¹ Indicators of hydric so be present, unless dis		
2.		=Total Cover		Hydrophytic Vegetation		
% Bare Ground in Herb Stratum 45				_	<u>X</u> No	
Remarks: Wetland data point situated in an agricultural seep ad	djacent to the	Community D	itch - east br	anch.		

SOIL Sampling Point: DP-B1W

	Color (moist)	%	Color (moist)	<u></u> %	Type ¹	Loc ²	Texture	Remarks
0-3	10YR 2/1	100					Muck	
3-7	10YR 2/1	80	7.5YR 5/8	20	D	M	Mucky Loam/Clay	
7-18	10YR 2/1		7.5YR 5/8	25		M	Loamy/Clayey	
18-21	N 2.5/	100					Loamy/Clayey	•
10-21	IN 2.5/	100					Loamy/Clayey	
	-							
	· 							
1Type: C=C	oncentration, D=De	nletion PM:	-Reduced Matrix (ered or C	oated Sa	and Grains ² I o	cation: PL=Pore Lining, M=Matrix.
	Indicators: (Applie					oated of		icators for Problematic Hydric Soils ³ :
Histoso					Sleyed Ma	atrix (S4		1 cm Muck (A9) (LRR I, J)
Histic E	pipedon (A2)			Sandy F	Redox (S	5)		Coast Prairie Redox (A16) (LRR F, G, H
	istic (A3)			Stripped	Matrix (S6)		Dark Surface (S7) (LRR G)
— Hydrog	en Sulfide (A4)		X	Loamy I	Иucky Mi	neral (F	1)	High Plains Depressions (F16)
	d Layers (A5) (LRR	(F)			Gleyed M			(LRR H outside of MLRA 72 & 73)
X 1 cm M	uck (A9) (LRR F, G	, H)		Deplete	d Matrix ((F3)		Reduced Vertic (F18)
 Deplete	d Below Dark Surfa	ce (A11)		Redox E	ark Surf	ace (F6)		Red Parent Material (F21)
Thick D	ark Surface (A12)			Deplete	d Dark Si	urface (F	 7)	Very Shallow Dark Surface (F22)
Sandy I	Mucky Mineral (S1)			Redox [epressio	ns (F8)		Other (Explain in Remarks)
2.5 cm	Mucky Peat or Peat	(S2) (LRR	G, H)	High Pla	ins Depr	essions	(F16) ³ Inc	licators of hydrophytic vegetation and
5 cm M	ucky Peat or Peat (S3) (LRR F)		(MLF	RA 72 & 1	73 of LR	R H)	wetland hydrology must be present, unless disturbed or problematic.
	Layer (if observed):						
Type:								
Depth (Remarks:	· <u> </u>	Muck) and E	1 (Loamy Mucky N	lineral) w	vere pres	ent Data	Hydric Soil Preser	
Remarks: Hydric soil i east branch	ndicators A9 (1 cm l . Meets criteria for h		1 (Loamy Mucky N	fineral) w	ere pres	ent. Data	-	adjacent to the Community Ditch -
Remarks: Hydric soil i east branch	ndicators A9 (1 cm l . Meets criteria for h	ydric soils.	1 (Loamy Mucky M	lineral) w	ere pres	ent. Data	-	
Remarks: Hydric soil i east branch HYDROLO Wetland Hy	ndicators A9 (1 cm l . Meets criteria for h	nydric soils.			ere pres	ent. Data	a point within a seep	adjacent to the Community Ditch -
Remarks: Hydric soil i east branch HYDROLO Wetland Hy Primary Ind	ndicators A9 (1 cm l . Meets criteria for h DGY rdrology Indicators cators (minimum of	nydric soils.	ired; check all that	apply)	vere pres	ent. Data	a point within a seep	adjacent to the Community Ditch - ary Indicators (minimum of two required)
Remarks: Hydric soil i east branch HYDROLO Wetland Hy Primary Ind Surface	ndicators A9 (1 cm l . Meets criteria for h DGY vdrology Indicators cators (minimum of Water (A1)	nydric soils.	ired; check all that	apply) : (B11)			a point within a seep Second	adjacent to the Community Ditch - ary Indicators (minimum of two required) face Soil Cracks (B6)
Remarks: Hydric soil i east branch HYDROLO Wetland Hy Primary Ind Surface High W	ndicators A9 (1 cm I . Meets criteria for h DGY rdrology Indicators cators (minimum of Water (A1) ater Table (A2)	nydric soils.	red; check all that Salt Crust Aquatic In	apply) : (B11) :vertebra	tes (B13))	a point within a seep Second Sur Spa	adjacent to the Community Ditch - ary Indicators (minimum of two required) face Soil Cracks (B6) arsely Vegetated Concave Surface (B8)
Remarks: Hydric soil i east branch HYDROLO Wetland Hy Primary Ind Surface High W Saturat	ndicators A9 (1 cm I . Meets criteria for h DGY rdrology Indicators cators (minimum of Water (A1) ater Table (A2) on (A3)	nydric soils.	i <u>red; check all that</u> Salt CrustAquatic InHydrogen	apply) (B11) vertebra Sulfide (tes (B13) Odor (C1)	Second Sur Spa Dra	adjacent to the Community Ditch - ary Indicators (minimum of two required) face Soil Cracks (B6) arsely Vegetated Concave Surface (B8) inage Patterns (B10)
Remarks: Hydric soil i east branch HYDROLO Wetland Hy Primary Ind Surface High W Saturati Water N	ndicators A9 (1 cm l . Meets criteria for h DGY rdrology Indicators cators (minimum of Water (A1) ater Table (A2) on (A3) Marks (B1)	nydric soils.	ired; check all that Salt Crust Aquatic In Hydrogen X Dry-Seaso	apply) (B11) (vertebra Sulfide (on Water	tes (B13) Odor (C1 Table (C)) C2)	Second Sur Spa Dra X Oxi	adjacent to the Community Ditch - ary Indicators (minimum of two required) face Soil Cracks (B6) arsely Vegetated Concave Surface (B8) inage Patterns (B10) dized Rhizospheres on Living Roots (C3)
Remarks: Hydric soil i east branch HYDROLO Wetland Hy Primary Ind Surface High W Saturat Water N Sedime	ndicators A9 (1 cm landicators A9 (1 cm landicators A9 (1 cm landicators A9 (1 cm landicators A9 (1 cators (minimum of Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2)	nydric soils.	ired; check all that Salt Crust Aquatic In Hydrogen X Dry-Seaso Oxidized I	apply) (B11) (Vertebra Sulfide (on Water	tes (B13) Odor (C1 Table (C)) C2)	Second Sur Spa Dra X Oxi coots (C3)	adjacent to the Community Ditch - ary Indicators (minimum of two required) face Soil Cracks (B6) arsely Vegetated Concave Surface (B8) inage Patterns (B10) dized Rhizospheres on Living Roots (C3) where tilled)
Remarks: Hydric soil i east branch HYDROLO Wetland Hy Primary Ind Surface High W Saturat Water N Sedime Drift De	ndicators A9 (1 cm I . Meets criteria for ham. OGY Idrology Indicators Ideators (minimum of Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3)	nydric soils.	red; check all that Salt Crust Aquatic In Hydrogen X Dry-Sease Oxidized I	apply) (B11) Ivertebra Sulfide (on Water Rhizosph	tes (B13) Odor (C1 Table (C eres on I)) C2) Living Ro	Second Sur Spa Dra X Oxi pots (C3) Cra	adjacent to the Community Ditch - ary Indicators (minimum of two required) face Soil Cracks (B6) arsely Vegetated Concave Surface (B8) inage Patterns (B10) dized Rhizospheres on Living Roots (C3) where tilled) yfish Burrows (C8)
Remarks: Hydric soil i east branch HYDROLO Wetland Hy Primary Ind Surface High W Saturat: Water N Sedime Drift De X Algal M	ndicators A9 (1 cm landicators A9 (1 cm landicators A9 (1 cm landicators A9 (1 cm landicators A9 (1 cators (minimum of Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2)	nydric soils.	ired; check all that Salt Crust Aquatic In Hydrogen X Dry-Sease Oxidized I (where Presence	apply) (B11) Ivertebra Sulfide (In Water Rhizosph not tiller of Reduce	tes (B13) Odor (C1 Table (C eres on I i))) C2) Living Ro	Second Sur Spa Dra X Oxi Doots (C3) Second Cra Sat	ary Indicators (minimum of two required) face Soil Cracks (B6) arsely Vegetated Concave Surface (B8) inage Patterns (B10) dized Rhizospheres on Living Roots (C3) where tilled) yfish Burrows (C8) uration Visible on Aerial Imagery (C9)
Remarks: Hydric soil i east branch HYDROLO Wetland Hy Primary Ind Surface High W Saturat Water N Sedime Drift De X Algal M Iron De	ndicators A9 (1 cm I . Meets criteria for ham. OGY rdrology Indicators cators (minimum of Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4)	s: one is requ	ired; check all that Salt Crust Aquatic In Hydrogen X Dry-Sease Oxidized I (where Presence Thin Muck	apply) (B11) vertebra Sulfide (on Water Rhizosph not tilled of Reduc	tes (B13) Odor (C1 Table (Ceres on I)) C2) Living Ro (C4)	Second	adjacent to the Community Ditch - ary Indicators (minimum of two required) face Soil Cracks (B6) arsely Vegetated Concave Surface (B8) inage Patterns (B10) dized Rhizospheres on Living Roots (C3) where tilled) yfish Burrows (C8)
Remarks: Hydric soil i east branch HYDROLO Wetland Hy Primary Ind Surface High W Saturat Water N Sedime Drift De X Algal M Iron De Inundat	ndicators A9 (1 cm I . Meets criteria for head of the control of	s: one is requ	ired; check all that Salt Crust Aquatic In Hydrogen X Dry-Sease Oxidized I (where Presence Thin Muck	apply) (B11) vertebra Sulfide (on Water Rhizosph not tilled of Reduc	tes (B13) Odor (C1 Table (Ceres on I)) C2) Living Ro (C4)	Second	adjacent to the Community Ditch - ary Indicators (minimum of two required) face Soil Cracks (B6) arsely Vegetated Concave Surface (B8) inage Patterns (B10) dized Rhizospheres on Living Roots (C3) where tilled) yfish Burrows (C8) uration Visible on Aerial Imagery (C9) pmorphic Position (D2)
Remarks: Hydric soil i east branch HYDROLO Wetland Hy Primary Ind Surface High W Saturat Water N Sedime Drift De X Algal M Iron De Inundat	ndicators A9 (1 cm I . Meets criteria for ham. DGY rdrology Indicators cators (minimum of Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Visible on Aerial Stained Leaves (B9)	s: one is requ	ired; check all that Salt Crust Aquatic In Hydrogen X Dry-Sease Oxidized I (where Presence Thin Muck	apply) (B11) vertebra Sulfide (on Water Rhizosph not tilled of Reduc	tes (B13) Odor (C1 Table (Ceres on I)) C2) Living Ro (C4)	Second	adjacent to the Community Ditch - ary Indicators (minimum of two required) face Soil Cracks (B6) arsely Vegetated Concave Surface (B8) inage Patterns (B10) dized Rhizospheres on Living Roots (C3) where tilled) yfish Burrows (C8) uration Visible on Aerial Imagery (C9) omorphic Position (D2) C-Neutral Test (D5)
Remarks: Hydric soil i east branch HYDROLO Wetland Hy Primary Ind Surface High W Saturat: Water N Sedime Drift De X Algal M Iron De Inundat Water-S Field Obse	ndicators A9 (1 cm II). Meets criteria for his DGY rdrology Indicators cators (minimum of Water (A1) ater Table (A2) on (A3) Marks (B1) nt Deposits (B2) posits (B3) at or Crust (B4) posits (B5) ion Visible on Aerial Stained Leaves (B9)	s: one is requ	ired; check all that Salt Crust Aquatic In Hydrogen X Dry-Sease Oxidized I (where Presence Thin Muck	apply) (B11) vertebra Sulfide (on Water Rhizosph not tilled of Reduc	tes (B13) Odor (C1 Table (Ceres on I i) Ced Iron (et (C7) Remarks))) C2) Living Ro (C4)	Second	adjacent to the Community Ditch - ary Indicators (minimum of two required) face Soil Cracks (B6) arsely Vegetated Concave Surface (B8) inage Patterns (B10) dized Rhizospheres on Living Roots (C3) where tilled) yfish Burrows (C8) uration Visible on Aerial Imagery (C9) omorphic Position (D2) C-Neutral Test (D5)
Remarks: Hydric soil i east branch HYDROLO Wetland Hy Primary Ind Surface High W Saturat: Water N Sedime Drift De X Algal M Iron De Inundat Water-S Field Obse	ndicators A9 (1 cm I . Meets criteria for head of the control of	s: Sone is requ	ired; check all that Salt Crust Aquatic In Hydrogen X Dry-Sease Oxidized I (where Presence Thin Muck 7) Other (Ex	apply) (B11) Ivertebra Sulfide (on Water Rhizosph not tiller of Reduct Surface plain in F	tes (B13) Odor (C1 Table (Ceres on I i) Ced Iron (et (C7) Remarks))) C2) Living Ro (C4)	Second	adjacent to the Community Ditch - ary Indicators (minimum of two required) face Soil Cracks (B6) arsely Vegetated Concave Surface (B8) inage Patterns (B10) dized Rhizospheres on Living Roots (C3) where tilled) yfish Burrows (C8) uration Visible on Aerial Imagery (C9) omorphic Position (D2) C-Neutral Test (D5) st-Heave Hummocks (D7) (LRR F)
Remarks: Hydric soil i east branch HYDROLO Wetland Hy Primary Ind Surface High W Saturat Water N Sedime Drift De X Algal M Iron De Inundat Water-S Field Obse Surface Wa	ndicators A9 (1 cm I . Meets criteria for head of the control of	is: i one is requ I Imagery (B	ired; check all that Salt Crust Aquatic In Hydrogen X Dry-Sease Oxidized I (where Presence Thin Muck 7) Other (Ex	apply) (B11) Ivertebra Sulfide (on Water Rhizosph not tilled (Surface plain in F	tes (B13) Odor (C1 Table (Ceres on I i) Ced Iron (et (C7) Remarks))) C2) Living Ro (C4)	Second	adjacent to the Community Ditch - ary Indicators (minimum of two required) face Soil Cracks (B6) arsely Vegetated Concave Surface (B8) inage Patterns (B10) dized Rhizospheres on Living Roots (C3) where tilled) yfish Burrows (C8) uration Visible on Aerial Imagery (C9) comorphic Position (D2) C-Neutral Test (D5) st-Heave Hummocks (D7) (LRR F)
Remarks: Hydric soil i east branch HYDROLO Wetland Hy Primary Ind Surface High W Saturat Water N Sedime Drift De Inundat Water-S Field Obse Surface Water Table Saturation F	ndicators A9 (1 cm I . Meets criteria for head of the control of	is: I Imagery (B	Salt Crust Aquatic In Hydrogen X Dry-Seaso Oxidized I (where Presence Thin Muck 7) No X No	apply) (B11) Ivertebra Sulfide (on Water Rhizosph not tilled (Surface plain in F	tes (B13) Odor (C1 Table (C eres on I th ced Iron (e (C7) Remarks))) C2) Living Ro (C4)	Second Sur Spa Dra X Oxi Oxis (C3) Cra Sat Gec X FAC	adjacent to the Community Ditch - ary Indicators (minimum of two required) face Soil Cracks (B6) arsely Vegetated Concave Surface (B8) inage Patterns (B10) dized Rhizospheres on Living Roots (C3) where tilled) yfish Burrows (C8) uration Visible on Aerial Imagery (C9) omorphic Position (D2) C-Neutral Test (D5) st-Heave Hummocks (D7) (LRR F)
Remarks: Hydric soil i east branch HYDROLO Wetland Hy Primary Ind Surface High W Saturat Water N Sedime Drift De Inundat Water-S Field Obse Surface Wa Water Table Saturation F (includes ca	ndicators A9 (1 cm I . Meets criteria for head of the control of	I Imagery (B	ired; check all that Salt Crust Aquatic In Hydrogen X Dry-Sease Oxidized I (where Presence Thin Much 7) Other (Ex	apply) (B11) vertebra Sulfide (on Water Rhizosph not tilled Surface plain in F Depth (i Depth (i	tes (B13) Ddor (C1 Table (Ceres on late) Ced Iron (C7) Remarks) Inches): _ Inches): _ Inches): _)) C2) Living Ro (C4)	Second Sur Spa Dra X Oxi Oxis Cra Sat Gec X FAC Fro	adjacent to the Community Ditch - ary Indicators (minimum of two required) face Soil Cracks (B6) arsely Vegetated Concave Surface (B8) inage Patterns (B10) dized Rhizospheres on Living Roots (C3) where tilled) yfish Burrows (C8) uration Visible on Aerial Imagery (C9) omorphic Position (D2) C-Neutral Test (D5) st-Heave Hummocks (D7) (LRR F)
Remarks: Hydric soil i east branch HYDROLO Wetland Hy Primary Ind Surface High W Saturat Water N Sedime Drift De Inundat Water-S Field Obse Surface Wa Water Table Saturation F (includes ca	ndicators A9 (1 cm I . Meets criteria for head of the content of	I Imagery (B	ired; check all that Salt Crust Aquatic In Hydrogen X Dry-Sease Oxidized I (where Presence Thin Much 7) Other (Ex	apply) (B11) vertebra Sulfide (on Water Rhizosph not tilled Surface plain in F Depth (i Depth (i	tes (B13) Ddor (C1 Table (Ceres on late) Ced Iron (C7) Remarks) Inches): _ Inches): _ Inches): _)) C2) Living Ro (C4)	Second Sur Spa Dra X Oxi Oxis Cra Sat Gec X FAC Fro	adjacent to the Community Ditch - ary Indicators (minimum of two required) face Soil Cracks (B6) arsely Vegetated Concave Surface (B8) inage Patterns (B10) dized Rhizospheres on Living Roots (C3) where tilled) yfish Burrows (C8) uration Visible on Aerial Imagery (C9) omorphic Position (D2) C-Neutral Test (D5) st-Heave Hummocks (D7) (LRR F)

See ERDC/EL TR-10-1; the proponent agency is CECW-CO-R

Project/Site: North Westerly Project Site		City/County	: Erie/Wel	d	S:	ampling Date:	12/7/2023
Applicant/Owner: NORTH WESTERLY OW	NER, LLC			State:	co s	Sampling Point:	DP-U1
Investigator(s): Tyler Worley		Section, Tow	vnship, Ran	ge: Section 16	3, Township	1 North, Range	68 West
Landform (hillside, terrace, etc.): Agricultural fie	eld	Local relief (cond	cave, conve	ex, none): Non	ie	Slop	e (%): 0
Subregion (LRR): LRR G Lat:	40.055797°N		Long: -10)5.016508°W		Datum:	WGS 1984
Soil Map Unit Name: Ulm clay loam, 0 to 3 per					I classification	on: None	
Are climatic / hydrologic conditions on the site	typical for this time	of year? Ye	es X	No (If	f no, explain	in Remarks.)	
Are Vegetation X , Soil, or Hydrolog	y significantly						
Are Vegetation, Soil, or Hydrolog				lain any answer			
SUMMARY OF FINDINGS – Attach				-		•	ures, etc.
Hydrophytic Vegetation Present? Yes Hydric Soil Present? Yes Wetland Hydrology Present? Yes	No X No X No X		ampled Are Wetland?		s	No_X_	
Remarks: Upland data point in the northwest portion of t	he project area in a	n agricultural field	d. No vegeta	ation was presel	nt at time of	delineation.	
VEGETATION – Use scientific name		Danis and In	- di4 T				
<u>Tree Stratum</u> (Plot size:	Absolute) % Cover		ndicator Status	Dominance To	est worksh	eet:	
1				Number of Doi Are OBL, FAC			(A)
3. 4.				Total Number	of Dominant		(B)
Sapling/Shrub Stratum (Plot size:1.		=Total Cover		Percent of Dor Are OBL, FAC	minant Spec		(A/B)
2.		·		Prevalence In	dex worksl	neet:	
3.				Total % Cover	of:	Multiply by:	
4				OBL species		x 1 =	
5		 _	I	FACW species	s		
Harb Stratum (Plot size:	,	=Total Cover		FAC species FACU species	. ——	_ x3= x4=	
Herb Stratum (Plot size:1.	_'			UPL species	-	_ x 4 =	
2.				Column Totals	 3:		(B)
3.				Prevalence Inc			`
5.	<u> </u>			Hydrophytic \	/egetation l	Indicators:	
6.	· -				_	rophytic Vegeta	ition
7.				2 - Domina	ance Test is	>50%	
8.				3 - Prevale	ence Index is	s ≤3.0 ¹	
9. 10.					•	ptations ¹ (Provid on a separate s	
_		=Total Cover		Problemat	tic Hydrophy	rtic Vegetation ¹	(Explain)
Woody Vine Stratum (Plot size:1.)					nd wetland hydroed or problemat	
2.		=Total Cover		Hydrophytic Vegetation			
% Bare Ground in Herb Stratum 100		•		Present?	Yes	No X	_
Remarks: Upland data point situated in an agricultural filobserved.	eld in the northwest	portion of the pro	oject area. N	No vegetation at	the time of	the delineation	was

SOIL Sampling Point: DP-U1

Depth	ription: (Describe Matrix	to the dept		ox Featur		ator or c	ommin the abser	nice of indicators	s.,	
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture		Remarks	
0-5	10YR 4/4	100					Sandy	S	andy loam tex	ture
5-18	10YR 3/4	100					Sandy	S	andy loam tex	ture
	•									
¹ Type: C=Co	ncentration, D=Dep	letion, RM=	Reduced Matrix,	CS=Cove	red or C	oated S	and Grains.	Location: PL=P	ore Lining, M=	Matrix.
Hydric Soil II	ndicators: (Applica	ble to all L	RRs, unless oth	erwise n	oted.)			Indicators for Pr	oblematic Hy	/dric Soils ³ :
Histosol ((A1)			Sandy G	Sleyed M	atrix (S4	_	1 cm Muck (A	49) (LRR I, J)	
Histic Epi	pedon (A2)			Sandy F	Redox (S	5)	<u>_</u>	Coast Prairie	Redox (A16)	(LRR F, G, H
Black His	tic (A3)			Stripped	Matrix (S6)	_	Dark Surface	(S7) (LRR G)
Hydroger	Sulfide (A4)			Loamy N	∕lucky M	ineral (F	1)	High Plains [Depressions (F	⁻ 16)
Stratified	Layers (A5) (LRR F	·)		Loamy (Sleyed M	1atrix (F2	2)	(LRR H o	utside of MLI	RA 72 & 73)
1 cm Mud	ck (A9) (LRR F, G, F	H)		Depleted	d Matrix	(F3)	_	Reduced Ver	tic (F18)	
Depleted	Below Dark Surface	e (A11)		Redox D	ark Surf	ace (F6)	_	Red Parent N	/laterial (F21)	
	rk Surface (A12)			Depleted	d Dark S	urface (F	=7) _		Dark Surface	
	ucky Mineral (S1)			Redox D	•	٠,	-		n in Remarks	
	ucky Peat or Peat (, .	i, H)	_High Pla				³ Indicators of hyd		
5 cm Mud	cky Peat or Peat (S3	3) (LRR F)		(MLF	RA 72 &	73 of LF	RR H)		ology must be bed or probler	
	ayer (if observed):									
Type:									.,	
Depth (in	cnes):						Hydric Soil Pre	esent?	Yes	No X
Remarks:	indicators present.	Unland data	a noint is situated	l in an aa	ricultural	field				
	a.oa.o.o p.ooo	opiaira aan	a point to ottage							
HYDROLO	cv									
	rology Indicators:									
-	ators (minimum of o	ne ie requir	ed: check all that	annly)			Sec	ondary Indicators	(minimum of	two required)
<u>-</u>	Vater (A1)	ile is requir	Salt Crus					Surface Soil Crac	•	two required)
	er Table (A2)		Aquatic I		es (B13))		Sparsely Vegetat		Surface (B8)
Saturation			Hydroger					Drainage Pattern		dilace (Bo)
Water Ma	` ,		Dry-Seas					Oxidized Rhizosp		na Roots (C3)
	Deposits (B2)		Oxidized					(where tilled)		.9 . 10010 (00)
Drift Depo				not tilled		9	, ,	Crayfish Burrows	(C8)	
	or Crust (B4)		Presence		•	(C4)		Saturation Visible		agery (C9)
Iron Depo			Thin Muc			(- ')		Geomorphic Posi		9-17 (7
	n Visible on Aerial I	magery (B7)		FAC-Neutral Tes		
	ained Leaves (B9)	3 , (, <u> </u>		,			Frost-Heave Hum		LRR F)
Field Observ	ations:									
Surface Water	er Present? Ye	s	No X	Depth (i	nches):					
Water Table I	Present? Ye	s	No X	Depth (i	nches):					
Saturation Pro	esent? Ye	s	No X	Depth (i	nches):		Wetland Hyd	rology Present?	Yes	No_X
(includes cap	illary fringe)						<u> </u>			
Describe Rec	orded Data (stream	gauge, mo	nitoring well, aeri	al photos	previou	s inspec	tions), if available	:		
Remarks:										
No wetland h	odrology indicators r	resent. Upl	land data point is	situated	in an agr	icultural	tield.			
TTO TTOLIGITA II	yarology maloatoro p		·							

See ERDC/EL TR-10-1; the proponent agency is CECW-CO-R

·								
Project/Site: North Westerly Project Site		City/Cou	ınty: Erie/We	ld	Sa	ampling D	ate: 12/	7/2023
Applicant/Owner: NORTH WESTERLY OWNER, LL	C			State:	co s	ampling F	Point:	DP-U2
Investigator(s): Tyler Worley		Section,	Township, Ra	nge: Section 16	, Township	1 North, R	ange 68 V	Vest
Landform (hillside, terrace, etc.): Agricultural field		 Local relief (c	concave, conv	ex, none): Con	cave		Slope (%)): 1
Subregion (LRR): LRR G Lat: 40.0532		`		05.0113°W			um: WG	
Soil Map Unit Name: Weld loam, 1 to 3 percent slopes	-0 14		Long		classification		um. <u>vvo</u>	0 1004
								
Are climatic / hydrologic conditions on the site typical fo				No (If				
Are Vegetation, Soil, or Hydrologys	ignificantly o	disturbed? /	Are "Normal C	circumstances" pr	resent? Y	'es X	No	_
Are Vegetation, Soil, or Hydrologyn	aturally prob	olematic? ((If needed, ex	plain any answer	s in Remark	s.)		
SUMMARY OF FINDINGS – Attach site ma	p showir	ng samplir	ng point lo	cations, tran	sects, im	portant	feature	s, etc.
Hydrophytic Vegetation Present? Yes No	Х	Is th	e Sampled A	rea				
	$\frac{X}{X}$		in a Wetland			No X		
	X							
Remarks:								
Upland data point in the central portion of the project a	rea in a ger	neral refuse a	rea.					
VEGETATION – Use scientific names of p	lants.							
	Absolute	Dominant	Indicator					
Tree Stratum (Plot size:)	% Cover	Species?	Status	Dominance Te	est workshe	eet:		
1				Number of Dor	ninant Spec	ies That		
2				Are OBL, FAC	W, or FAC:	-	0	(A)
3				Total Number	of Dominant	Species		
4				Across All Stra	ta:		3	_(B)
	:	=Total Cover		Percent of Don		ies That		
Sapling/Shrub Stratum (Plot size:)				Are OBL, FAC	W, or FAC:	-	0.0%	_(A/B)
1								
2				Prevalence In			lu bu	
3.				Total % Cover OBL species	0	<u>Multip</u> x 1 =	0 0	
5.				FACW species		_ x1=.	0	_
o		Total Cover		FAC species	5	x3=	15	_
Herb Stratum (Plot size:)		10101 00101		FACU species		x 4 =	100	
1. Bassia scoparia	15	Yes	FACU	UPL species	35	x 5 =	175	_
2. Bromus tectorum	15	Yes	UPL	Column Totals	65	(A)	290	(B)
3. Tribulus terrestris	10	Yes	UPL	Prevalence Ind	lex = B/A =		4.46	_ ` `
4. Lactuca serriola	5	No	FAC			<u> </u>		
5. Salsola kali	5	No	FACU	Hydrophytic V	egetation I	ndicators	:	
6. Thinopyrum intermedium	5	No	UPL	1 - Rapid 1	est for Hyd	rophytic V	egetation	
7. Bromus inermis	5	No	UPL		ance Test is			
8. Chenopodium album	5	No	FACU		nce Index is			
9					logical Ada	,		
10					Remarks or			
	65	=Total Cover			ic Hydrophy	•		,
Woody Vine Stratum (Plot size:)				¹ Indicators of h				must
1.				be present, unl	ess disturbe	ea or probl	ematic.	
2		-Total Cover		Hydrophytic				
% Bare Ground in Herb Stratum 35		=Total Cover		Vegetation Present?	Yes	No	X	
				i ieseiit!	163			
Remarks: Upland data point situated in an area with general refu	se (bricks o	concrete four	ndations etc.)					
op.a.ia aata point oitaatoa iii aii aloa witii gollolal lelu	-5 (SHONS, C			•				

SOIL Sampling Point: DP-U2

Depth (inches)	Color (moist)	%	Color (moist)	dox Featur %	Type ¹	Loc ²	Texture		Remarks	
0-4	5YR 5/8	100	, ,				Sandy	Gravelly s	and with genera	l debris
4-8	7.5YR 3/4	100					Sandy		oam with bits of	
8-13	10YR 3/3	100					Sandy		Sandy loam	9
13-20	10YR 3/4	100					Sandy		Sandy loam	
10-20	1011(3/4					_	Candy		Candy Idam	
						<u> </u>		_		
¹ Type: C=Co	oncentration, D=De	epletion, RM=	Reduced Matrix	CS=Cove	ered or C	oated Sa	nd Grains. ² L	ocation: PL=Po	re Lining, M=Mat	trix.
Hydric Soil I	ndicators: (Appli	cable to all L	RRs, unless ot	herwise n	oted.)		In	dicators for Pro	blematic Hydri	c Soils³:
Histosol				_	Sleyed M			_ 1 cm Muck (A		
	ipedon (A2)			_	Redox (S	•	_		Redox (A16) (LR	RR F, G, H
Black His	` '			_ ''	l Matrix (,		Dark Surface	, , ,	
	n Sulfide (A4)				Mucky Mi	•	· —	_ ~	epressions (F16)	,
	Layers (A5) (LRR			_	Gleyed M)	•	tside of MLRA	72 & 73)
	ck (A9) (LRR F, G			_ '	d Matrix (,	_	Reduced Vert	` '	
	Below Dark Surfa	ice (A11)		_	ark Surf	` '	_	Red Parent M	` ,	
	rk Surface (A12)			_	d Dark S		-	_ ′	Dark Surface (F2	22)
	ucky Mineral (S1)			_	Depressio	, ,	3.	Other (Explain	,	
	lucky Peat or Peat	. , .	Ξ, H)	_ ~	ins Depr			ndicators of hydr		
5 cm Mu	cky Peat or Peat (S3) (LRR F)		(MLF	RA 72 & 1	73 of LR	К Н)	-	logy must be pre ed or problemati	
	ayer (if observed	l):								
Type:								10		
Depth (in	icnes):						Hydric Soil Pres	ent?	Yes	No X
foundations,	etc.). 🗆	t. Data point	located in the ce	ntral portion	on of the	project a	irea in an area that	has general refu	use (bricks, conc	crete,
HYDROLO										
-	drology Indicators									
	ators (minimum o	fone is requir						idary Indicators (required)
	Water (A1)		Salt Cru					urface Soil Crack		 .
	ter Table (A2)			Invertebra				parsely Vegetate		ace (B8)
Saturatio				n Sulfide (-			rainage Patterns	` '	
	arks (B1)			son Water	•	,		xidized Rhizosph	ieres on Living R	Roots (C3)
	t Deposits (B2)			Rhizosph		_iving Ro		(where tilled)	(C0)	
	osits (B3)			e not tilled		(04)		rayfish Burrows (•	m. (CO)
	t or Crust (B4)			e of Redu		(C4)		aturation Visible	_	ry (C9)
	osits (B5) on Visible on Aeria	I Imaganı (P7		ck Surface xplain in F				eomorphic Posit		
	tained Leaves (B9		Other (E	хріані ін г	(emarks)			AC-Neutral Test ost-Heave Humi		R F)
Field Observ	/ations:								. , ,	,
Surface Water	er Present?	Yes	No X	Depth (i	nches):					
Water Table		Yes	No X		nches):					
Saturation Pr		Yes	No X	Depth (i	_		Wetland Hydro	logy Present?	Yes	No_X
(includes cap										
				ial phatas			:\			
Describe Red	corded Data (strea	m gauge, mo	nitoring well, aer	iai priotos	, previous	s inspeci	ions), if available:			
	corded Data (strea	m gauge, mo	onitoring well, aer	iai priotos	, previous	s inspect	ions), if available:			
Remarks:				·		•	ions), if available: ion of the project a	rea in an area th	at has general re	efuse

See ERDC/EL TR-10-1; the proponent agency is CECW-CO-R

Project/Site: North Westerly Project Site		City/County: Erie/Weld Sampling Date:					e: <u>12/7</u>	12/7/2023	
Applicant/Owner: NORTH WESTERLY OWNER, LI	LC	State: CO				mpling Poir	nt: <u>D</u>	P-U3	
Investigator(s): Tyler Worley		Section, T	ownship, Ra	nge: Section 16,	Township	1 North, Ra	nge 68 W	/est	
Landform (hillside, terrace, etc.): Upland swale		Local relief (co	oncave, conv	/ex, none): Conc	ave	S	Slope (%)	: 1	
Subregion (LRR): LRR G Lat: 40.046	346°N	Long: -105.009429°W Datum: WGS 1984							
Soil Map Unit Name: Weld loam, 1 to 3 percent slopes					classification	n: None			
Are climatic / hydrologic conditions on the site typical for	or this time of	of year?	Yes X	No (If r	no, explain	in Remarks	.)		
Are Vegetation , Soil , or Hydrology s		-					-		
Are Vegetation, Soil, or Hydrologyr				· φlain any answers				_	
SUMMARY OF FINDINGS – Attach site ma						•	eatures	s, etc.	
Hydrophytic Vegetation Present? Yes No	. X	ls the	Sampled A	ıroa					
	$\frac{X}{X}$	Is the Sampled Area within a Wetland? Yes No X							
	X			•					
Remarks:		I I							
Upland data point in the southern portion of the project	t area withir	n an upland sw	vale.						
VEGETATION – Use scientific names of p									
<u>Tree Stratum</u> (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Te	st workshe	eet:			
1.	70 00101	ороског.	<u> </u>	Number of Dom					
2.				Are OBL, FACV			0	(A)	
3.				Total Number o	f Dominant	Species		_	
4				Across All Strat	a:		3	_(B)	
Sapling/Shrub Stratum (Plot size:)		=Total Cover		Percent of Dom Are OBL, FACV		ies That 	0.0%	_(A/B)	
1									
2				Prevalence Ind		ieet:			
3				Total % Cover of		Multiply	•		
4				OBL species	0	_ x1=_	0	_	
5		=Total Cover		FACW species FAC species	0 15	_ x2=_ x3=	0 45	_	
Herb Stratum (Plot size:)		- Total Cover		FACU species	70	_ x4=	280	_	
1. Bassia scoparia	25	Yes	FACU	UPL species	15	_ x5=	75	_	
2. Bouteloua dactyloides	20	Yes	FACU	Column Totals:		(A)	400	(B)	
3. Salsola kali	20	Yes	FACU	Prevalence Inde	ex = B/A =	4	.00	_	
4. Lactuca serriola	15	No	FAC					_	
5. Verbascum thapsus	10	No	UPL	Hydrophytic Vegetation Indicators:					
6. Thinopyrum intermedium	5	No	UPL	1 - Rapid To	-		getation		
7. Helianthus annuus	5	No	FACU	2 - Dominai					
8.				3 - Prevaler					
9.				4 - Morphol		otations ˈ (Pr on a separa			
10	100	=Total Cover		Problemation					
Woody Vine Stratum (Plot size:	100	- rotal Cover		-		•		•	
	1			¹ Indicators of hy be present, unle				must	
1. 2.					alotarbe	- or proble			
		=Total Cover		Hydrophytic Vegetation					
% Bare Ground in Herb Stratum0				Present?	Yes	No_	Χ		
Remarks:				•					
Upland data point situated in the southern portion of the	he project a	rea in an uplar	nd swale.						

SOIL Sampling Point: DP-U3

Depth	Matrix		Redo	x Feature	es				
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks	
0-6	10YR 5/4	100					Sandy		
6-15	10YR 4/3	100					Sandy		
15-22	10YR 3/3	100					Sandy		
13-22	1011(3/3	100					Januy		
							,		
								· ·	
¹Type: C=Cc	oncentration, D=Depl	etion, RM=Re	educed Matrix,	CS=Cove	red or C	oated Sa	and Grains.	² Location: PL=Pore Lining, M=Matri	X.
Hydric Soil I	ndicators: (Applica	ble to all LRI	Rs, unless oth	erwise no	oted.)			Indicators for Problematic Hydric	Soils ³ :
Histosol	(A1)			Sandy G	leyed Ma	atrix (S4)	1 cm Muck (A9) (LRR I, J)	
Histic Ep	ipedon (A2)			Sandy R	edox (S	5)		Coast Prairie Redox (A16) (LRR	R F, G, H
Black His	stic (A3)			Stripped	Matrix (S6)		Dark Surface (S7) (LRR G)	
Hydroger	n Sulfide (A4)			Loamy M	lucky Mi	neral (F	1)	High Plains Depressions (F16)	
Stratified	Layers (A5) (LRR F)		Loamy G	Bleyed M	atrix (F2	2)	(LRR H outside of MLRA 72	2 & 73)
1 cm Mu	ck (A9) (LRR F, G, H	l)		Depleted	l Matrix ((F3)		Reduced Vertic (F18)	
	l Below Dark Surface	(A11)		Redox D	ark Surf	ace (F6)		Red Parent Material (F21)	
Thick Da	rk Surface (A12)			Depleted	l Dark Si	urface (F	7)	Very Shallow Dark Surface (F22	2)
Sandy M	ucky Mineral (S1)			Redox D	epressio	ns (F8)		Other (Explain in Remarks)	
2.5 cm M	lucky Peat or Peat (S	62) (LRR G, I	H)	High Pla	ins Depr	essions	(F16)	³ Indicators of hydrophytic vegetation	
5 cm Mu	cky Peat or Peat (S3) (LRR F)		(MLR	A 72 & 7	73 of LR	R H)	wetland hydrology must be pres unless disturbed or problematic.	
Restrictive L	ayer (if observed):								
Type:			_						
Depth (in	nches):		_				Hydric Soil Pi	resent? Yes N	lo <u>X</u>
Remarks:						-			
No hydric soi	I indicators present.	Upland data p	point is within a	n upland s	swale in	the sout	hern portion of t	he project area.	
HYDROLO	GY								
Wetland Hyd	drology Indicators:								
Primary Indic	ators (minimum of o	ne is required	l; check all that	apply)			<u>Se</u>	condary Indicators (minimum of two re	equired)
Surface \	Water (A1)		Salt Crust	(B11)				Surface Soil Cracks (B6)	
High Wa	ter Table (A2)		Aquatic Ir	vertebrat	es (B13))		Sparsely Vegetated Concave Surface	e (B8)
Saturatio	on (A3)		Hydrogen	Sulfide C	Odor (C1)		Drainage Patterns (B10)	
Water Ma				\ \ / - 4		2)		O. daller al Dicler contract con 1 india a Di-	
	arks (B1)		Dry-Seas	on vvater	Table (C	,_)		Oxidized Rhizospheres on Living Ro	iots (C3)
Sedimen	arks (B1) t Deposits (B2)		Dry-Sease Oxidized				oots (C3)	Oxidized Knizospheres on Living Ro (where tilled)	ots (C3)
			Oxidized		eres on I		pots (C3)	•	oots (C3)
Drift Dep	t Deposits (B2)		Oxidized	Rhizosphe	eres on I	_iving Ro	poots (C3)	(where tilled)	, ,
Drift Dep Algal Ma	t Deposits (B2) osits (B3)		Oxidized (where	Rhizosphe not tilled of Reduc	eres on I I) ed Iron (_iving Ro	poots (C3)	(where tilled) Crayfish Burrows (C8)	, ,
Drift Dep Algal Ma Iron Dep	t Deposits (B2) osits (B3) t or Crust (B4)	nagery (B7)	Oxidized (where Presence	Rhizosphonot tilled of Reduce Surface	eres on I I) ed Iron ((C7)	_iving Ro	poots (C3)	(where tilled) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery	, ,
Drift Dep Algal Ma Iron Depo Inundation	t Deposits (B2) osits (B3) t or Crust (B4) osits (B5)	nagery (B7)	Oxidized (where Presence Thin Mucl	Rhizosphonot tilled of Reduce Surface	eres on I I) ed Iron ((C7)	_iving Ro	pots (C3)	(where tilled) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery Geomorphic Position (D2)	(C9)
Drift Dep Algal Ma Iron Depo Inundation	t Deposits (B2) osits (B3) t or Crust (B4) osits (B5) on Visible on Aerial Ir	nagery (B7)	Oxidized (where Presence Thin Mucl	Rhizosphonot tilled of Reduce Surface	eres on I I) ed Iron ((C7)	_iving Ro	pots (C3)	(where tilled) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery Geomorphic Position (D2) FAC-Neutral Test (D5)	(C9)
Drift Dep Algal Ma Iron Depo Inundatio Water-St	t Deposits (B2) losits (B3) t or Crust (B4) losits (B5) lon Visible on Aerial Interior (B9) lorications:		Oxidized (where Presence Thin Mucl	Rhizosphonot tilled of Reduce Surface	eres on I I) eed Iron ((C7) emarks)	_iving Ro	poots (C3)	(where tilled) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery Geomorphic Position (D2) FAC-Neutral Test (D5)	(C9)
Drift Dep Algal Ma Iron Dep Inundatio Water-St	at Deposits (B2) rosits (B3) t or Crust (B4) rosits (B5) ron Visible on Aerial International Leaves (B9) rotions: reference:	s	Oxidized (where Presence Thin Mucl Other (Ex	Rhizosphe not tilled of Reduc s Surface plain in R	eres on I I) eed Iron ((C7) emarks)	_iving Ro		(where tilled) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery Geomorphic Position (D2) FAC-Neutral Test (D5) Frost-Heave Hummocks (D7) (LRR	(C9)
Drift Dep Algal Ma Iron Depi Inundatio Water-St Field Observ Surface Wate Water Table Saturation Pr	t Deposits (B2) losits (B3) t or Crust (B4) losits (B5) on Visible on Aerial Ir lained Leaves (B9) lorations: ler Present? Present? Yellosits (B2) Yellosits (B4) Yellosits	s s	Oxidized (where Presence Thin Mucl Other (Ex	Rhizosphe not tilled of Reduc Surface plain in R	eres on I I) ed Iron ((C7) emarks) nches): _ nches): _	_iving Ro		(where tilled) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery Geomorphic Position (D2) FAC-Neutral Test (D5) Frost-Heave Hummocks (D7) (LRR	(C9)
Drift Dep Algal Ma Iron Dep Inundatio Water-St Field Observ Surface Water Water Table Saturation Pr (includes cap	at Deposits (B2) posits (B3) t or Crust (B4) posits (B5) por Visible on Aerial Interior Leaves (B9) positions: per Present? Yes present?	S S S	Oxidized (where Presence Thin Mucl Other (Ex	Rhizosphe not tilled of Reduc s Surface plain in R Depth (ir Depth (ir	eres on I ced Iron ((C7) emarks) nches): _ nches): _	Living Ro	Wetland Hy	(where tilled) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery Geomorphic Position (D2) FAC-Neutral Test (D5) Frost-Heave Hummocks (D7) (LRR	(C9) F)
Drift Dep Algal Ma Iron Depo Inundatio Water-St Field Observ Surface Water Water Table Saturation Pr (includes cap	t Deposits (B2) losits (B3) t or Crust (B4) losits (B5) on Visible on Aerial Ir lained Leaves (B9) lorations: ler Present? Present? Yellosits (B2) Yellosits (B4) Yellosits	S S S	Oxidized (where Presence Thin Mucl Other (Ex	Rhizosphe not tilled of Reduc s Surface plain in R Depth (ir Depth (ir	eres on I ced Iron ((C7) emarks) nches): _ nches): _	Living Ro	Wetland Hy	(where tilled) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery Geomorphic Position (D2) FAC-Neutral Test (D5) Frost-Heave Hummocks (D7) (LRR	(C9)
Drift Dep Algal Ma Iron Depe Inundation Water-St Field Observ Surface Water Water Table Saturation Pr (includes cap Describe Rec	at Deposits (B2) posits (B3) t or Crust (B4) posits (B5) por Visible on Aerial Interior Leaves (B9) positions: per Present? Yes present?	S S S	Oxidized (where Presence Thin Mucl Other (Ex	Rhizosphe not tilled of Reduc s Surface plain in R Depth (ir Depth (ir	eres on I ced Iron ((C7) emarks) nches): _ nches): _	Living Ro	Wetland Hy	(where tilled) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery Geomorphic Position (D2) FAC-Neutral Test (D5) Frost-Heave Hummocks (D7) (LRR	(C9) F)
Drift Dep Algal Ma Iron Depe Inundatio Water-St Field Observ Surface Water Water Table Saturation Pr (includes cap Describe Rec	at Deposits (B2) losits (B3) t or Crust (B4) losits (B5) lon Visible on Aerial International Leaves (B9) lorations: ler Present? ler Present? ler Present? ler Yesent?	ss ss gauge, monit	Oxidized (where Presence Thin Mucl Other (Ex	Rhizosphe not tilled of Reduc s Surface plain in R Depth (ir Depth (ir	eres on I ced Iron ((C7) emarks) nches): _ nches): _	Living Ro	Wetland Hy	(where tilled) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery Geomorphic Position (D2) FAC-Neutral Test (D5) Frost-Heave Hummocks (D7) (LRR	(C9) F)
Drift Dep Algal Ma Iron Depe Inundation Water-St Field Observ Surface Water Water Table Saturation Pr (includes cap) Describe Rec	at Deposits (B2) posits (B3) t or Crust (B4) posits (B5) por Visible on Aerial Interior Leaves (B9) positions: per Present? Yes present?	ss ss gauge, monit	Oxidized (where Presence Thin Mucl Other (Ex	Rhizosphe not tilled of Reduc s Surface plain in R Depth (ir Depth (ir	eres on I ced Iron ((C7) emarks) nches): _ nches): _	Living Ro	Wetland Hy	(where tilled) Crayfish Burrows (C8) Saturation Visible on Aerial Imagery Geomorphic Position (D2) FAC-Neutral Test (D5) Frost-Heave Hummocks (D7) (LRR	(C9) F)





SCREENING REPORT

FOR

FEDERAL-STATE LISTED THREATENED AND ENDANGERED SPECIES AND GENERAL WILDLIFE

FOR

NORTH WESTERLY PROPERTY

WELD COUNTY, COLORADO

December 18, 2023

Prepared For:

North Westerly Owner, LLC 1225 17th Street, Suite 2420 Denver, CO 80202

> Contact: Heidi Majerik Phone: (720) 531-8924

ERC Project #1155-2302



Screening Report

for

Federal-State Listed Threatened and Endangered Species and General Wildlife

North Westerly Property

Weld County, Colorado

December 18, 2023

Contents

1.0 INTRODUCTION	3
2.0 GENERAL SURVEY AREA DESCRIPTION	3
3.0 SCREENING METHODOLOGY	g
4.0 GENERAL WILDLIFE HABITAT (NON-REGULATED)	9
HIGH PRIORITY HABITAT AREAS	10
5.0 MIGRATORY BIRD TREATY ACT	10
6.0 SPECIES PROTECTED UNDER THE ENDANGERED SPECIES ACT OF 1973	12
MONARCH BUTTERFLY (DANAUS PLEXIPPUS)	13
TRICOLORED BAT (PERIMYOTIS SUBFLAVUS)	14
7.0 STATE THREATENED AND ENDANGERED SPECIES	15
BLACK-FOOTED FERRET (MUSTELA NIGRIPES)	16
BURROWING OWL (ATEHENE CUNICULARIA)	17
8.0 SUMMARY	17
9.0 REFERENCES	19

Figures

FIGURE 1 – SURVEY AREA LOCATION MAP

FIGURE 2 – SURVEY AREA VICINITY MAP

FIGURE 3 – VEGETATION COMMUNITY MAP



1.0 INTRODUCTION

Ecological Resource Consultants, LLC (ERC) has prepared this report on behalf of North Westerly Owner, LLC. The 393-acre property referred to herein as the North Westerly Property (survey area) is located west of Erie, Weld County, Colorado. The survey area is under consideration for potential residential development which includes single-family detached homes and attached unit townhomes which will likely alter a majority of the current survey area landscape; therefore, this report has been prepared to specifically identify potential federal and state listed threatened and endangered species and/or habitat that could exist on or immediately surrounding the survey area. In addition, this report provides a cursory screening of general wildlife use characteristics and existing vegetation community types.

This report has been prepared in accordance with the Migratory Bird Treaty Act (MBTA), Endangered Species Act (ESA), Colorado Parks and Wildlife (CPW) Colorado Statute Title 33 and the Bald and Golden Eagle Protection Act (BGEPA).

2.0 GENERAL SURVEY AREA DESCRIPTION

The survey area is located approximately 2.26 miles west of the intersection of Briggs Street and Erie Parkway and west of Erie in the *Outlet Boulder Creek* and *Firestone Lake-Stain Vrain* watersheds (HUC 101900050705 and 101900050707, respectively). More specifically, the survey area is located in Section 16, Township 1 North, Range 68 West, in Weld County. Approximate center point of survey area is latitude 40.050651° north, longitude -105.010531° west. From the intersection of Briggs Street and Erie Parkway in Erie, the survey area can be accessed by heading west on Erie Parkway for approximately 2.26 miles until reaching a dirt access road north of Erie Parkway. The survey area is comprised of agricultural fields with the Community Ditch West branch transecting the survey area from south to north and the Community Ditch East Branch transecting the southeastern portion of the survey area from southwest to northeast. Refer to Figure 1 for a location map and Figure 2 for a US Geological Survey (USGS) topographic map of the survey area.

The survey area is situated within the Great Plains ecoregion (Bailey 1976) at an approximate elevation of 5,175 feet above mean sea level (AMSL). The vicinity of the survey area is comprised of agricultural lands with private, single-family homes to the north, northeast and east. Additionally, the north is bound by Weld County Road 10, and the east is bound by Weld County Road 7. The south is bound by Weld County Road 8, open agricultural land, as well as the McStain neighborhood. The west is bound by Weld County Road 5, the Erie High School and Colliers Hill neighborhood. The landscape within the survey area is predominantly characterized as Cultivated Cropland with a small percentage being characterized as Great Plains Ruderal Grassland and Shrubland, Mesic Graminoids Western Wet Shrubland and Disturbed (NatureServe 2023). Refer to **Figure 3** for the vegetation community map of the survey area.

Cultivated Cropland

The cultivated cropland community is characterized as a non-natural system which includes lands used for the production of annual crops where crop vegetation accounts for greater than 20 percent of the total vegetation and where the land is actively tilled (SWReGAP 2011). This community also includes all land being actively tilled. The cultivated cropland community within the survey comprises relatively flat agricultural fields currently planted with row crops consisting primarily of winter wheat (*Triticum*



aestivum). The agricultural fields appear to be regularly plowed and/or tilled and subject to flood irrigation practices throughout the growing season.

Great Plains Ruderal Grassland and Shrubland

The great plains ruderal grassland and shrubland is characterized being dominated by exotic, invasive grasses, forbs, or, in the south, deciduous shrubs. These species can become abundant after significant disturbance, often associated with agricultural activities, or a disruption of natural disturbance regimes. Common disturbances which favor establishment of this macrogroup include long-term, heavy grazing, planting exotic species for livestock forage, plowing land and then abandoning it, and a disruption of the natural fire regime. Vegetation cover varies from low to very high. Abundant species vary greatly in this macrogroup, depending on the geographic location, seed sources, and nature of land use (NatureServe 2023). Common species in the survey area include crested wheatgrass (*Agropyron cristatum*), smooth brome (*Bromus inermis*), field brome (*Bromus arvensis*), cheatgrass (*Bromus tectorum*), Kentucky bluegrass *Poa pratensis*, and intermediate wheatgrass (*Thinopyrum intermedium*) and are located in small areas throughout the survey area. This macrogroup can be found on mesic to dry sites on a variety of soils where disturbance regimes have been altered sufficiently to allow the establishment of the exotic species.

Salix exigua / Mesic Graminoids Western Wet Shrubland

This riparian association is found primarily in the Rocky Mountains and Intermountain West semi-desert regions. The vegetation is characterized by the dominance of coyote willow (*Salix exigua*) in a moderately dense tall-shrub canopy with a dense herbaceous layer dominated by graminoids. It typically occurs as a monoculture of coyote willow, but can have other woody species, including saplings of eastern cottonwood (*Populus deltoides*) and shrubs such as yellow willow (*Salix lutea*). Tall perennial grasses can appear to codominate the stand when prairie cordgrass (*Spartina pectinata*), switchgrass (*Panicum virgatum*) or other tall grasses are present. Other mesic graminoids, such as sedges (*Carex spp.*), common Spikerush (*Eleocharis spp.*), rushes (*Juncus spp.*), western wheatgrass (*Pascopyrum smithii*), and three-square bulrush (*Schoenoplectus pungens*), may be present. Common forb species include winged loosestrife (*Lythrum alatum*), knotweed (*Polygonum spp.*), and cocklebur (*Xanthium strumarium*). It generally occurs along backwater channels and other perennially wet but less scoured sites, such as floodplain swales and irrigation ditches. Within the survey area, this community can be found in the small wetland adjacent to Community Ditch East Branch which appears to be supported by seepage from the Community Ditch East Branch.

Disturbed

The Disturbed community includes the Community Ditch West and East Branch, these are irrigation ditches which appear to be used solely for irrigational purposes. Additionally, existing and relatively recent oil and gas operations in the northwest, northeast, central and eastern portions of the survey area are also classified as disturbed. These features consist of barren grounds associated with oil and gas related activities, ditch excavation and urban materials such as pavement. Tree canopy varies from 0 to 50% (e.g., open to shaded lawns and gardens) (NatureServe 2023).

Refer to **Photos 1-8** below for typical characteristics within the survey area. Photos were taken on December 7, 2023.



Photo 1. View southwest from the northeast corner of the survey area. The survey area is dominated by agricultural fields and subject to frequent plowing/tilling.



Photo 3. View west from the center portion of the survey area in an existing ruderal grassland and shrubland vegetation community. This area contained general agricultural refuse (bricks, concrete, etc.) and remnants of a concrete foundation.



Photo 5. View north from the southern portion of the survey area. The survey area is dominated by agricultural fields and subject to frequent plowing/tilling.



Photo 2. View south from the central portion of the survey area. The survey area is dominated by agricultural fields and subject to frequent plowing/tilling.

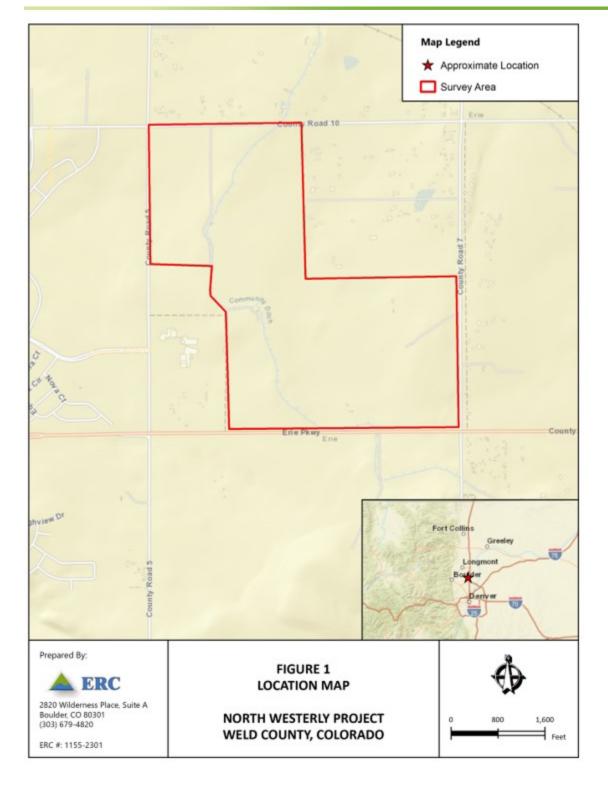


Photo 4. View west from the center portion of the survey area in the existing ruderal grassland and shrubland. Part of the concrete foundation noted in the previous photo can be seen. The large mature cottonwood trees in the background are located on the property but do not contain any MBTA nests.

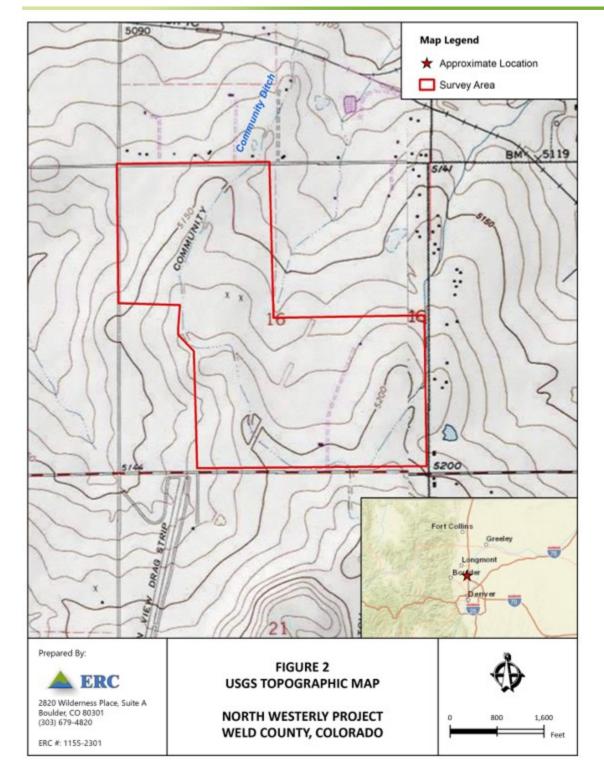


Photo 6. View southwest from the southern corner of the survey area. Weld County Road 7 is located in the left-hand side of the photo and Erie Parkway (Weld County Road 8 (not seen)) is located along the horizon.

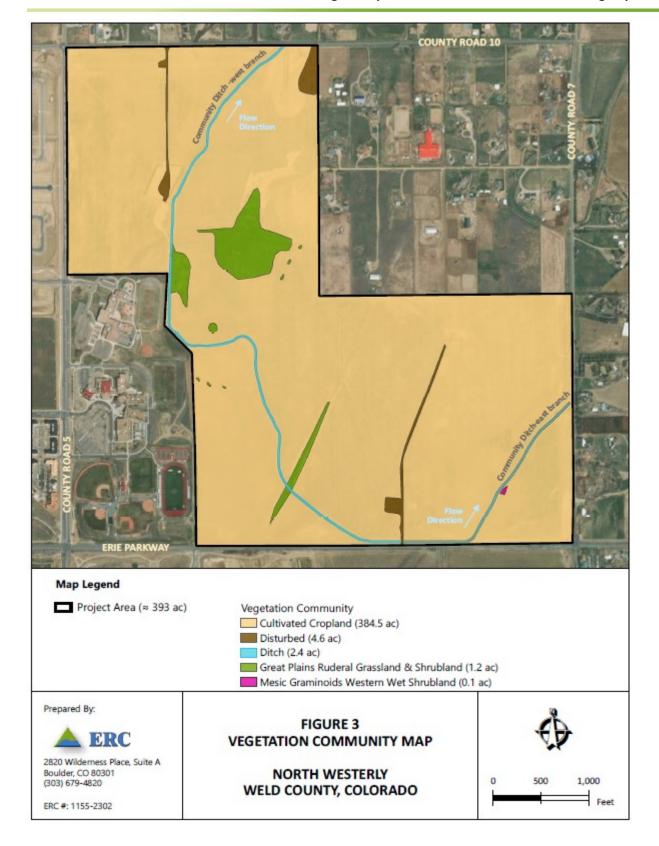














3.0 SCREENING METHODOLOGY

ERC conducted a literature review as part of initial data collection for preparation of this report. ERC reviewed available literature sources including: CPW information and the US Fish and Wildlife Service (USFWS) Federal Register.

A field inspection was subsequently conducted on December 7, 2023, to identify and document the presence of natural vegetation communities, general wildlife use and potential for threatened and endangered species/habitat. Upon review of all available resources, including literature and field inspections, ERC provides the following determination for the survey area.

4.0 GENERAL WILDLIFE HABITAT (NON-REGULATED)

Wildlife utilizes the general landscape in a multitude of ways and uses a variety of habitats as areas of permanent inhabitance, seasonal inhabitance, breeding grounds, migratory routes, for foraging purposes, or as temporary shelter. Potential wildlife habitat includes the entire survey area.

Historic and current land use associated with agricultural practices have restricted and/or degraded the development of any significant natural vegetation communities within a majority the survey area, which limits the overall quality of potential wildlife habitat. As discussed in Section 2.0, four habitat types were observed within the survey area and are characterized as Cultivated Cropland, Great Plains Ruderal Grassland and Shrubland, Mesic Graminoids Western Wet Shrubland and Disturbed. The Cultivated Cropland (98%), Great Plains Ruderal Grassland and Shrubland (<1%), Mesic Graminoids Western Wet Shrubland (<1%) and Disturbed (1%) vegetative community are dominated by non-native or weedy species and are not typically considered of high ecological value to wildlife; however, agricultural lands can have beneficial values to certain wildlife species. These areas at a minimum are considered "open space" providing limited foraging and hunting grounds, refuge and limited areas for nesting (Kingery 1998). Such lands often serve as a buffer between natural areas, providing food, cover, nesting and open-space habitat which allow movement and exchange of plant and animal populations. The vacant, agricultural land which is present across the survey area has largely replaced the native shortgrass prairie habitat which would have been present in this region. Herbaceous non-native species and ruderal native species which dominate the vegetation community generally do not provide quality habitat for most wildlife. In general, although agriculture practices have altered the structure, function, community composition, and habitat value of land within a majority of the survey area, some areas do provide a variety of wildlife habitat values in an otherwise agricultural landscape. Within the survey area, significant limitations for wildlife use exist due to land use activities such as regular plowing, tilling and mowing, habitat fragmentation from fences, travel corridors and general agricultural practices within the survey area.

Some other local wildlife species that may use this habitat within the survey area include coyote (*Canis latrans*), red fox (*Vulpes vulpes*), rabbit (*Lepus sp.*), cottontail (*Sylvilagus sp.*), black tailed prairie dog (*Cynomys ludovicianus*), white-tailed deer (*Odocoileus virginianus*), deer mouse (*Peromyscus maniculatus*), meadow vole (*Microtus pennsylvanicus*), mourning dove (*Zenaida macroura*), western meadowlark (*Sturnella neglecta*), barn owl (*Tyto alba*), hawks (*Buteo sp.*), and garter snake (*Thamnophis*



- *sp.*). These types of species may utilize the survey area; however, have not specifically been identified within the survey area.
 - Generally, there are features within the survey area and the surrounding area that provide
 general habitat for local songbirds, raptors, and small to mid-size mammals; however, the
 habitat within the survey area is characterized primarily as Cultivated Cropland, which is
 degraded from a wildlife perspective by historic and current land use practices.

HIGH PRIORITY HABITAT AREAS

CPW has recently developed Recommendations to Avoid and Minimize Impacts to Wildlife from Land Use Development in Colorado in July (CPW 2023). CPW is a recommending agency in regard to energy development and land use and has no regulatory authority over these processes (CPW 2023a). The recommendations identify High Priority Habitat (HPH) by species and provide general recommendations related to disturbances. These recommendations were originally developed specifically for the Colorado Oil and Gas Commission as part of fluid mineral development; however, CPW has provided these recommendations for other land use proposals.

• Within the survey area, no mapped HPH's are present. The survey area is dominated by cultivated cropland and highly fragmented from any natural vegetation communities that provide suitable habitat to general wildlife. Therefore, any future land use changes within the survey area would not be considered a significant impact to CPW listed HPH.

5.0 MIGRATORY BIRD TREATY ACT

Migratory birds are protected under the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 730-712). The MBTA makes it illegal for anyone to take, possess, import, export, transport, sell, purchase barter, or offer for sale, purchase, or barter any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued pursuant to Federal regulations. In Colorado, all birds except for the European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*) and rock pigeon (*Columba livia*) are protected under the MBTA. A total of 523 migratory bird species are known to occur in the Mountain-Prairie Region (USFWS Region 6, Montana, Wyoming, Utah, North Dakota, South Dakota, Nebraska, Kansas and Colorado); 320 of the 523 migratory bird species are known to breed in USFWS Region 6.

Migratory birds likely exist within the survey area. The vegetation communities in the survey area provide at the very least, potential nesting and foraging habitat for migratory birds. These migratory birds are protected under the MBTA and killing or possession of these birds (or their parts and nests) is prohibited under the MBTA. The following migratory birds were directly observed and likely utilize the survey area primarily for foraging and limited seasonal nesting.



Scientific Name	Common Name
Buteo jamaicensis	Red-tailed hawk
Columba livia	Common pigeon
Corvus corax	Common raven
Melospiza melodia	Song sparrow
Sturnella neglecta	Western meadowlark

Non-Raptor Migratory Birds

Non-raptor migratory birds likely utilize the survey area for nesting on a seasonal basis. These birds, their eggs, and active nests are protected under the MBTA and take or possession of these resources is prohibited. For these non-raptor migratory birds, only the active nest is protected and no buffers or restricted surrounding areas are required. Once the nest becomes inactive, disturbances can occur to the nest and no further agency authorization or coordination is required. Generally, the active nesting season for most non-raptor migratory birds in this region of Colorado occurs between April 1 and August 31.

 No non-raptor nests were observed within the survey area. However, seasonal MBTA non-raptor bird nesting activity status can vary seasonally and from year to year. Prior to vegetation removal, a nest survey should be conducted no more than 7-10 days prior any future land use changes to ensure that active nests are not disturbed during the nesting season.

Non-eagle Raptors

Non-eagle raptor nest sites are regulated by the USFWS under the MBTA with local review from the CPW. The CPW has established recommended protective buffer zones and seasonal activity restrictions for a variety of Colorado raptors (CPW 2020). The CPW species-recommended buffer zones are such that if implemented, should assure that the majority of the individual species will continue to occupy the area. CPW considers a nest to be active when it is frequented or occupied by a raptor during the breeding season, or which has been occupied in any of the five previous breeding seasons. Many raptors use alternate nests in various years. Thus, a nest site may be active even if a particular nest is not occupied in a given year. The CPW also maintains Species Activity Mapping (CPW SAM) data which is an online database that lists the known occurrences, status and recorded nest sites of select raptors and other species within the state of Colorado.

• No non-eagle raptor nests were observed and no CPW mapped non-eagle raptor nest protection buffer zones are located within the survey area (CPW 2023b). Inactive raptor nest sites have no regulatory restriction and do not require further agency coordination; however, nest activity status can vary seasonally and from year-to-year. Future land use changes may require additional nest surveys (generally between February 1 and September 15 (CPW 2020)) to determine activity status within ½ to ¼ mile of the survey area to ensure compliance with CPW recommendations.

Eagles

No eagle nest sites are identified on the CPW SAM data within the survey area. No eagles or eagle nests were observed during the site visit.



• If an eagle nest site were to become established within a ½-mile of the survey area or within the survey area, CPW recommends a "No Surface Occupancy" beyond that which has historically occurred. CPW also recommends "No Human Encroachment" within ¼-mile radius and that no human encroachment activities, including construction activities within ½-mile radius of active nest sites from December 1 though July 31. Future land use changes may require an additional nest survey, generally between December 1 and July 31 (CPW 2020) to determine activity status within ½-mile of the survey area to ensure compliance with CPW recommendations.

6.0 SPECIES PROTECTED UNDER THE ENDANGERED SPECIES ACT OF 1973

The ESA of 1973 was enacted by the United States to conserve endangered and threatened species and the ecosystems that they depend on. Under the ESA, species may be listed as either "endangered" or "threatened"; both designations are protected by law. The ESA is administered by the USFWS. The USFWS has developed project specific species lists, available online by request, identifying threatened, endangered, and proposed species, designated critical habitat (USFWS 2008), and candidate species protected under the ESA that may occur within the boundary of a proposed project and/or may be affected by a proposed project (USFWS 2023) (Project Code: 2024-0026445). The species list for the survey area has identified potential for a total of 10 threatened or endangered species within the survey area.

Species Not Present

The following federally listed threatened and endangered species are identified to occur within Weld County. However, these species are not known to exist within the specific vicinity of the survey area and/or have specific habitat requirements (i.e., elevation range) that are not common in the vicinity of the survey area.

Common Name	Scientific Name	Status*	Determination
Gray wolf	Canis lupus	FE	NO TAKE
Preble's Meadow Jumping Mouse	Zapus hundsonius preblei	FT	NO TAKE
Eastern black rail	Laterallus jamaicensis	FT	NO TAKE

^{*}Status key:

FT – Federally listed as threatened

FE—Federally listed as endangered

Water Depletions Species

The USFWS under the ESA has determined that water depletions in the South Platte River Basin are considered an adverse effect to the listed species identified below. The survey area is considered to be located within the South Platte River Basin.



Common Name	Scientific Name	Status*	Determination
Pallid sturgeon	Scaphirhycchus albus	FE	NOT PRESENT, NO TAKE^
Piping plover	Charadrius melodus	FT	NOT PRESENT, NO TAKE ^
Western prairie fringed orchid	Platanthera praeclara	FT	NOT PRESENT, NO TAKE^
Whooping crane	Grus Americana	FE	NOT PRESENT, NO TAKE^
Ute ladies'-tressese	Sprianthes diluvialis	FT	NOT PRESENT, NO TAKE^

^{*}Status key:

Any water related project conducted in the Platte River Basin that has a federal nexus; such as federal funding or a federal permit (i.e., Clean Water Act (CWA) Section 404 Permit), is subject to ESA Section 7 Consultation with the USFWS. The consultation is a mandate for water depletion projects that may affect threatened and endangered species that rely on the South Platte River.

• The survey area does not contain the specific habitat characteristics necessary to support the species listed above. These species and/or critical habitat is not present within the survey area (USFWS 2008). It is assumed herein that future land use changes would not be considered a new water depletion. Therefore, the project would result in No Take to these species.

Species Potentially within Range

The following federally listed threatened and endangered species are identified to occur or historically occur within Weld County (USFWS 2023). The survey area is located within the potential known range for these species to occur. Further analysis was conducted to determine if the species or habitat has the potential to exist within the survey area considering site-specific conditions and characteristics. A brief explanation is provided as to the species life cycle, habitat requirements and potential occurrence within the survey area. The survey area is not within designated critical habitat of any federally listed species (USFWS 2008).

Common Name	Scientific Name	Status*	Determination
Monarch Butterfly	Danaus plexippus	С	NO TAKE
Tricolored Bat	Perimyotis subflavus	PE	NO TAKE

^{*}Status key:

C – Candidate listed species

PE – Proposed Endangered

MONARCH BUTTERFLY (DANAUS PLEXIPPUS)

The monarch butterfly is listed as candidate species under the ESA. Adult monarch butterflies are large and conspicuous, with bright orange wings surrounded by a black border and covered with black veins. The black border has a double row of white spots, present on the upper side of the wings. Adult monarchs are sexually dimorphic, with males having narrower wing venation and scent patches. The bright coloring of a monarch serves as a warning to predators that eating them can be toxic.

FT – Federally listed as threatened

FE – Federally listed as endangered

[^]The project is associated with a proposed residential subdivision and a proposed water supply is not known at this time.



As a candidate species, the monarch butterfly has no statutory protection under the ESA, however the USFWS encourages cooperative conservation efforts because they are species that may warrant future protection under the ESA (USFWS 2017).

• No monarch butterflies were observed within or surrounding the survey area. However, showy milkweed (*Asclepias speciosa*) was observed infrequently along the Community Ditch East and West branches. The survey area historically has been highly modified with agricultural practices. However, future land use changes should consider and describe any planned conservation measures for the monarch butterfly. Conservation measures can include habitat management such as the inclusion of native milkweed plant species in restoration efforts, reducing herbicide and pesticide use within the survey area, and/or creating a conservation easement for habitat protection. Such best management practices will aid in maintaining and/or enhancing the future survival of the monarch butterfly survival. However, these are not regulatory requirements.

TRICOLORED BAT (PERIMYOTIS SUBFLAVUS)

The tricolored bat is a small insectivorous bat that is distinguished by its unique tricolored fur and often appears yellowish to nearly orange. The once common species is wide ranging across the eastern and central United States and portions of southern Canada, Mexico and Central America. During the winter, tricolored bats are often found in caves and abandoned mines, although in the southern United States, where caves are sparse, tricolored bats are often found roosting in road-associated culverts where they exhibit shorter torpor bouts and forage during warm nights. During the spring, summer and fall, tricolored bats are found in forested habitats where they roost in trees, primarily among leaves of live or recently dead deciduous hardwood trees, but may also be found in Spanish moss, pine trees, and occasionally human structures. Tricolored bats face extinction due primarily to the range-wide impacts of white-nose syndrome, a deadly disease affecting cave-dwelling bats across the continent. White-nose syndrome has caused estimated declines of more than 90 percent in affected tricolored bat colonies across the majority of the species range (R. Adams, 2018).

- No tri-colored bat individuals or caves were observed within or surrounding the survey area. While
 the survey area does contain deciduous trees and a small, relatively undisturbed habitat in the westcentral portion of the survey area that can be considered typical habitat for the tri-colored bat, no
 observations within the survey area were made.
- Conservation measures for the tricolored bat include ongoing research to monitor possible
 populations, protection and preservation of roosting habitats including deciduous trees, public
 education regarding the importance of bats, disease management and collaborative conservation
 with government agencies, non-profit organizations and the public to create conservation initiatives.
- Due to the information provided above, the tri-colored bat is not likely to be present within the survey area. Therefore, disturbance to habitat within the survey area should not adversely affect the tri-colored bat.



7.0 STATE THREATENED AND ENDANGERED SPECIES

Species identified as state threatened or endangered are protected by the CPW under Colorado Statute Title 33. State regulations prohibit "any person to take, possess, transport, export, process, sell or offer for sale, or ship and for any common or contract carrier to knowingly transport or receive for shipment" any species or subspecies listed as state endangered or threatened. The CPW also has identified State Species of Special Concern, which are species or subspecies of native wildlife that are currently vulnerable in their Colorado range and have the potential to become threatened or endangered. Species of Special Concern are not protected under State regulations but the 'take' of individuals and disturbance of their habitat is strongly discouraged.

All state listed species were screened as potential inhabitants of the survey area based on general habitat requirements and CPW Species Profiles (CPW 2023c). ERC evaluated the species listed by CPW as threatened or endangered that could potentially exist within the survey area. All animal species listed above as threatened or endangered by the USFWS are also listed by the CPW as threatened or endangered, respectively, therefore were not duplicated below.

Species Not Present

The following listed threatened and endangered species are identified to occur within the state (CPW 2023d). However, these species are not known to exist within the specific vicinity of the survey area and/or have specific habitat requirements (i.e., elevation range) that are not common in the vicinity of the survey area (CPW 2023c and USFWS 2023).

Common Name	Scientific Name	Status*
Boreal toad	Bufo boreas boreas	SE
Southwestern willow flycatcher	Empidonax traillii extimus	SE
Lesser prairie-chicken	Tympanuchus pallidicinctus	ST
Plains sharp-tailed grouse	Tympanuchus phasianellus jamesii	SE
Arkansas darter	Etheostoma cragini	ST
Bonytail	Gila elegans	SE
Razorback sucker	Xyrauchen texanus	SE
Humpback chub	Gila cypha	ST
Colorado pikeminnow	Ptychocheilus lucius	ST
Greenback cutthroat trout	Oncorhynchus clarki stomias	ST
Rio grande sucker	Catostomus plebeius	SE
Lake chub	Couesius plumbeus	SE
Plains minnow	Hybognathus placitus	SE
Suckermouth minnow	Phenacobius mirabilis	SE
Northern redbelly dace	Phoxinus eos	SE
Southern redbelly dace	Phoxinus erythrogaster	SE
Brassy minnow	Hybognathus hankinsoni	ST
Common shiner	Luxilus cornutus	ST
Grizzly bear	Ursus arctos	SE
Lynx	Lynx canadensis	SE
Wolverine	Gulo gulo	SE



Common Name	Scientific Name	Status*
Kit fox	Vulpes macrotis	SE
River otter	Lontra canadensis	ST

^{*}Status key:

ST – State listed as threatened

SE – State listed as endangered

• The survey area does not contain the specific habitat characteristics necessary to support the species listed above. These species and/or critical habitat is not present within the survey area. Therefore, any future land use changes will have no effect on the species, their habitats, or proposed or designated critical habitat.

Species Potentially within Range

The following state listed threatened and endangered species are identified to occur or historically occur within Weld County. The survey area is located within the potential known range for these species. Further analysis was conducted to determine if the species or habitat has the potential to exist on the survey area considering site-specific conditions and characteristics. A brief explanation is provided as to the species life cycle, habitat requirements and potential occurrence within the survey area.

Common Name	Scientific Name	Status*
Black-footed ferret	Mustela nigripes	SE
Burrowing owl	Athene cunicularia	ST

^{*}Status key:

ST - State listed as threatened

SE - State listed as endangered

BLACK-FOOTED FERRET (MUSTELA NIGRIPES)

The black-footed ferret (BFF) (Mustela nigripes) is a medium-sized mustelid (a member of the weasel family). The BFF is the only ferret species native to the Americas. Its historical range spanned much of western North America's intermountain and prairie grasslands, extending from Canada to Mexico. Historically, BFF habitat coincided with habitats of black-tailed prairie dog (C. ludovicianus), Gunnison's prairie dog (C. gunnisoni), and white-tailed prairie dog (C. leucurus). Prairie dogs make up more than 90% of the BFF's diet. BFF's are limited to open habitat, the same habitat used by prairie dogs: grasslands, steppe, and shrub steppe. It depends largely on prairie dogs: ferrets prey on prairie dogs and utilize their burrows for shelter and denning (Hillman and Clark, 1980). It has been estimated that about 40-60 hectares of prairie dog colony are needed to support one ferret (Belant and Biggins 2008). BFF's once numbered in the tens of thousands, but due to a combination of human-induced threats they were believed to be extinct twice in the 20th century. As of 2015, BFFs have been reintroduced in the wild at 24 sites across 8 states, Canada, and Mexico.

• No BFF individuals were observed on or surrounding the survey area. The survey area is located within the overall range of the black-tailed prairie dog; however, no colonies were observed within the survey area. Further, the survey area occurs within the block clearance zone for black-footed ferret surveys (USFWS 2009). Any future land use changes within the survey area should have no effect on the continued existence or potential habitat of this species.



BURROWING OWL (ATEHENE CUNICULARIA)

The burrowing owl (Owl) is listed as a state threatened species in Colorado. The Owl is small (length of 24 centimeters), long-legged, boldly spotted, and barred with brown and white. The Owl is a breeding species across the plains of eastern Colorado however rarely winters in the state. Nesting habitat is in burrows, especially in both active and inactive prairie dog colonies, located in grasslands, mountain parks, well-drained steppes, deserts, prairies and agricultural lands from late March through October. The Owl can usually be observed on low perches such as fence posts, dirt mounds or the ground. Clutch size of this Owl averages six to seven and incubation lasts up to 30 days. The owlets usually run and forage at 4 weeks and fly at 6 weeks. Primary threats to existence of this species are habitat loss due to intensive agriculture, habitat degradation and fragmentation due to control of burrowing mammals and predation by cats and dogs.

• No Owl individuals were observed on or surrounding the survey area. The survey area is located within the overall range of the black-tailed prairie dog; however, no black-tailed prairie dog colonies are located within the survey area. Much of the land within the survey area is regularly plowed/tilled which further limits the potential use of the survey area by this species. Therefore, any future land use changes within the survey area should have no effect on the continued existence or potential habitat of this species.

8.0 SUMMARY

ERC has conducted this screening for federal and state listed threatened and endangered species and general wildlife for the approximately 393-acre survey area. The survey area is under consideration for potential residential development which includes single-family detached homes, and attached unit townhomes which will likely alter a majority of the current survey area landscape. The following provides key items identified as part of this report:

- 1. Four primary land use class/vegetation cover types exist within the survey area. Habitat within the survey area is characterized as Cultivated Cropland (98%), Great Plains Ruderal Grassland and Shrubland (<1%), Mesic Graminoids Western Wet Shrubland (<1%) and Disturbed (1%). Historic land use for agricultural practices has led to degradation of the native vegetation community.
- 2. Generally, there are features on the survey area and the surrounding area that provide general habitat for local songbirds, raptors, and small to mid-size mammals. However, habitat within the survey area is somewhat degraded and of lower ecological value from a wildlife perspective due to historic and current land use for agriculture, which has restricted overall growth and establishment of vegetation. Per the CPW SAM data, no High Priority Habitat was mapped or observed within the survey area (CPW 2023b). The survey area has been subject to frequent agricultural practices and is fragmented on all sides. Therefore, impacts to HPH associated with the listed species is not anticipated.

3. Non-raptor birds

No non-raptor migratory bird nests were observed within the survey area. However, prior to vegetation removal a nest survey should be completed to ensure that no nests have become established within the survey area and active nests, if any, are not disturbed.



Non-eagle Raptors

No non-eagle raptor nests were observed and no CPW mapped non-eagle raptor nest protection zones are located within the survey area (CPW 2023b). However, nest activity status can vary seasonally and from year-to-year. Future land use changes may require additional nest surveys (generally between February 1 and September 15 (CPW 2020)) to determine activity status within $\frac{1}{2}$ to $\frac{1}{2}$ mile of the survey area to ensure compliance with CPW recommendations.

<u>Eagles</u>

No eagle nests or eagles were observed and no CPW mapped eagle nests are located within the survey area (2023a). However, nest activity status can vary seasonally and from year-to-year. If a nest does become established within a ½-mile of the survey area or within the survey area, CPW recommends a "No Surface Occupancy" and "No Human Encroachment" within ½-mile radius of active nest sites from December 1 through July 31. Future land use changes may require an additional nest survey (generally between December 1 and July 31 (CPW 2020) to determine activity status within ½-mile of the survey area to ensure compliance with CPW recommendations.

- 4. No federally listed threatened and endangered species and/or habitat protected under the ESA were identified within the survey area. The survey area is not within designated critical habitat of any federally listed species (USFWS 2008). The vegetation community and features within the survey area were investigated as potential habitat for federally listed species. Any future land use changes will result in No Take on any federal listed species, their habitats, or proposed or designated critical habitat.
- 5. No State listed threatened or endangered species and/or habitat protected by CPW under Colorado Statute Title 33 were identified within the survey area. The vegetation communities within the survey area were investigated as potential habitat for state listed species. Any future land use changes will have no effect on any state listed species, their habitats, or proposed or designated critical habitat.

This report has been prepared by:

ECOLOGICAL RESOURCE CONSULTANTS, LLC.

Tyler Worley, Project Ecologist, Certified Ecologist (303) 679-4820 x 105 / tyler@erccolorado.net

Reviewed and approved by:

David J. Blauch, V.P., Senior Ecologist PWS #2130

(303) 679-4820 x102 / dave@erccolorado.net



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October 1, 2024

Care of:
Carli Garcia-Rodriguez
PCS Group, Inc.
200 Kalamath Stree
Denver, CO 80223
carli@pcsgroupco.com

RE: Update: Native and Specimen Tree and Vegetation Survey-North Westerly Site, Weld County, CO (ERC# 1155-2403)

Ecological Resource Consultants, Inc. (ERC) provides this update of current conditions for a survey of existing trees and shrubs on the Site known as the North Westerly Site, located in Weld County, Colorado originally performed on December 20, 2023 (ERC 2023). The purpose of the survey was to locate and identify the species of trees/shrubs present, measure the trunk diameter at breast height (dbh), visually estimate height, and evaluate the general health of the trees and shrubs identified on the subject Site. The vegetation survey was completed in general accordance with Title 10 Section 10.6.2(C)(4) of the Town of Erie Unified Development Code (UDC).

General Site Description

The Site is approximately 392.8 acres in size and made up of predominantly agricultural land consisting mainly of planted with row crop vegetation. Two oil and gas installations were observed in the northern portion of the Site, and one was observed in the eastern portion. Community Ditch forks to the west and east as it enters the Site from the south with the eastern branch flowing northeast out of the Site and the western branch generally meandering north out of the Site. A dirt road parallels Community Ditch for most of the Site other than the northern most portion where the road continues north as the ditch flows to the northeast. The northern boundary is formed by County Road 10 and residential properties, the western boundary by County Road 5 and the Erie High School and Soaring Heights school campuses, the southern boundary by Erie Pkwy and the Soaring Heights school campus, and the eastern boundary by County Road 7 and residential properties. The majority of the Site has been heavily impacted by agricultural practices, nearly all herbaceous vegetation within the Site is either planted row crop vegetation, crop stubble, and/or ruderal herbaceous species. No significant areas of native plant communities exist within the Site. The weather was cool and cloudy, and the deciduous trees/shrubs were in a dormant state.

Method

ERC performed the vegetation survey field evaluation on September 25, 2024. ERC inventoried, per the UDC, each tree with a diameter of 4 inches and over by identifying the species, measuring the trunk diameter at breast height (dbh) (at approximately 54 inches above the ground) using a 20-foot diameter tape, and evaluating the general condition (health) of each tree. In addition, shrub species were identified to species and classified into a general condition (health) category. All trees and shrubs identified within the Site were given a range of height displayed in **Table 1.**

All trees/shrubs inventoried were categorized into one of five groups: excellent, good, fair, poor, and very poor. The tree/shrub condition categories are defined as follows:



Excellent

- Healthy, vigorous tree/shrub.
- No apparent signs of insect, disease or mechanical injury.
- No corrective work required.
- > Form representative of the species.

Good

- Better than average vigor.
- > Little corrective work needed.
- Not quite perfect form.

Fair

- > Average condition and vigor for the area.
- May be in need of some corrective pruning or repair.
- May lack desirable form characteristics of the species.
- May show minor insect injury, disease, or physiological problem.

Poor

- General state of decline.
- May show severe mechanical, insect or disease damage.
- Death not imminent.
- May require major repair or renovation.

Very Poor

Includes "poor" above but is more extreme in that no amount of repair or renovation will lead to a desirable and sustainable tree/shrub. Costs would exceed any benefit.

Specific tree/shrub information is provided in the enclosed table titled **Table 1.- Onsite Existing Tree/Shrub Vegetation.** A Tree/Shrub Location Map was prepared by ERC and is enclosed as **Figure 1.- North Westerly Site - Vegetation Survey.** The mapping depicts the location of each tree/shrub and provides an identification number that corresponds to the tree/shrub described in **Table 1.** Tree species and health were verified by a Licensed Certified Arborist (Contractor License # RM-0753A) on September 25, 2024. The location of each tree/shrub as identified in **Figure 1** is only approximate and has not been formally surveyed.

Summary of Results

In total, 32 individual trees (4" and larger DBH), and approximately 230 shrubs, composed of 7 separate species, were identified within the Site and immediate vicinity. The species include plains cottonwood (*Populus deltoides ssp. monilifera*), green ash (*Fraxinus penssylvanicus*), Siberian elm (*Ulmus pumila*), crack willow (*Salix fragilis*), Russian olive (*Elaeagnus angustifolia*), matrimony vine (*Lycium babarum*), and narrowleaf willow (*Salix exigua*).

Trees on the Site are generally located within near Community Ditch in four clusters. One in the northwestern portion of the Site near the Soaring Heights school campus, one near the central portion of the Site south of a bend in the western fork of Community Ditch, and two along the eastern fork of Community Ditch. Although trees located within the Site do not show signs of regular maintenance, most trees (29) exhibit significant reproductive structures and were categorized as having "Good" condition ratings. Two (2) trees were categorized as "Fair", and it is



recommended that these trees be regularly maintained to remove dead branches and/or be treated for disease that will improve overall health of the tree. No trees were categorized as either "Poor" and/or "Very Poor" (i.e., in a general state of decline).

Additionally, two (2) small section of shrubs was identified within the Site, one to the southeast of the eastern fork of Community Ditch and one in the western portion of the Site north of Community Ditch. These shrubs are contained within depressions that appears to receive water from the ditch and surrounding irrigation runoff. Due to the high density, and relatively small size of the species (narrowleaf willow and matrimony vine), individual shrubs counts were estimated in the field and the values given for caliper are intended to be an estimated average for the entire row. All shrubs appeared to be in the range of fair to good condition and health.

Native species (as listed by the US Department of Agriculture (USDA) PLANTS Database 2024 for Weld County and Colorado) present on the Site include plains cottonwood and narrowleaf willow. During any future land use changes, landscape plans should utilize native, Town of Erie approved tree species and remove or manage undesirable tree species.

Non-native species such as green ash, Siberian elm and crack willow are generally considered to be undesirable trees due to their clump or multi-stem growth and/or non-native status. These trees are easily damaged by storms, and prone to insect and disease infestations.

Report completed by:

Ecological Resource Consultants, Inc.

Tank By

Matthew Boyer, Project Ecologist

David J. Blauch, V.P., Senior Ecologist

Chris Becker, Certified Arborist (Contractor License # RM-0753A)

Schulhoff Tree and Lawn Care, Inc.

14200 W. 32nd Ave Golden, CO 80401 (303) 279-1910

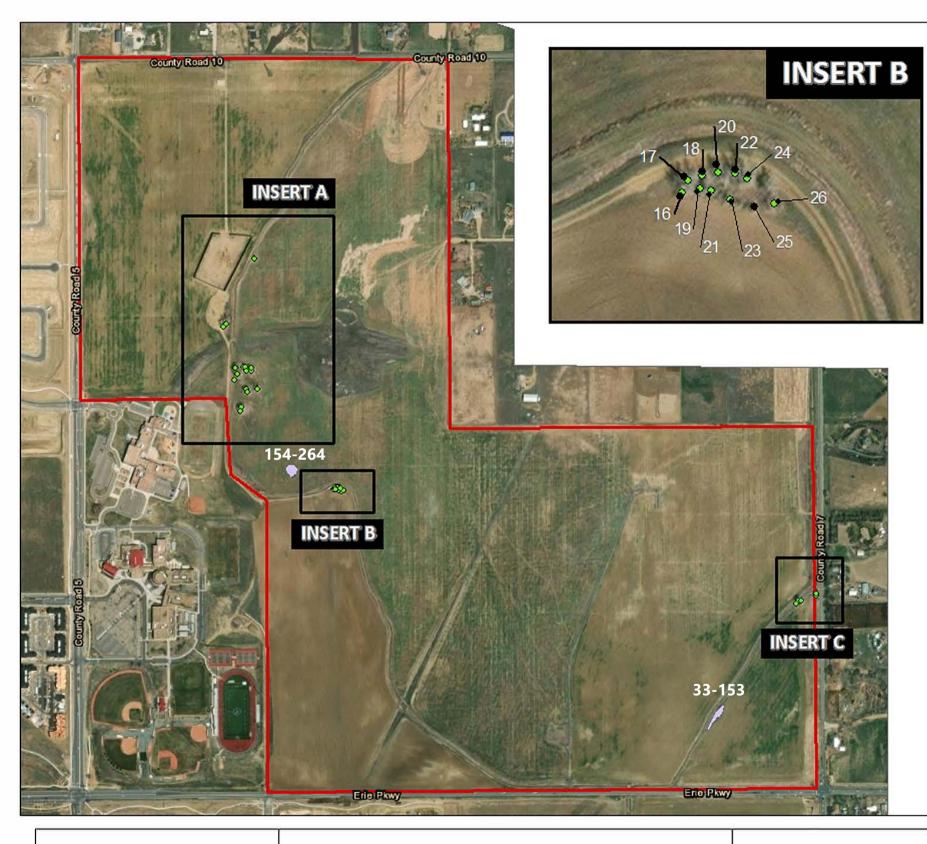
Table 1. Onsite Existing Tree/Shrub Vegetation

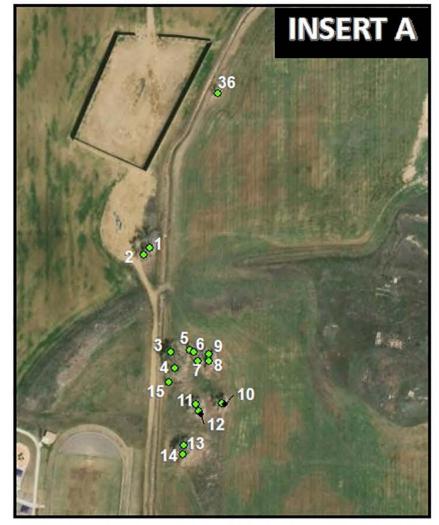
ID#	Common Name	Scientific Name	DBH (in)	Approx . Height	Condition	Comments
			(111)	(ft)		
1	Plains cottonwood	Populus deltoides ssp. monilifera	31.0	30-40	Good	Native
2	Plains cottonwood	Populus deltoides ssp. monilifera	55.0	50-60	Good	Native
3	Plains cottonwood	Populus deltoides ssp. monilifera	46.0	45-55	Good	Native
4	Plains cottonwood	Populus deltoides ssp. monilifera	60.0	50-60	Good	Native
5	Plains cottonwood	Populus deltoides ssp. monilifera	12.0	5-15	Good	Native
6	Plains cottonwood	Populus deltoides ssp. monilifera	22.0	10-20	Good	Native
7	Plains cottonwood	Populus deltoides ssp. monilifera	42.0	30-40	Good	Native
8	Plains cottonwood	Populus deltoides ssp. monilifera	42.0	20-30	Good	Native
9	Plains cottonwood	Populus deltoides ssp. monilifera	22.0	15-25	Fair	Native
10	Plains cottonwood	Populus deltoides ssp. monilifera	41.0	20-30	Good	Native
11	Plains cottonwood	Populus deltoides ssp. monilifera	43.0	25-35	Good	Native
12	Plains cottonwood	Populus deltoides ssp. monilifera	6.0	5-15	Good	Native
13	Plains cottonwood	Populus deltoides ssp. monilifera	60.0	35-45	Good	Native
14	Plains cottonwood	Populus deltoides ssp. monilifera	33.0	30-40	Good	Native
15	Crack willow	Salix fragilis	26.0	10-20	Fair	Nonnative
16	Plains cottonwood	Populus deltoides ssp. monilifera	1.0	5-15	Good	Native
17	Plains cottonwood	Populus deltoides ssp. monilifera	7.5	5-15	Good	Native
18	Plains cottonwood	Populus deltoides ssp. monilifera	7.0	2.5-7.5	Good	Native
19	Plains cottonwood	Populus deltoides ssp. monilifera	6.0	2.5-7.5	Good	Native
20	Plains cottonwood	Populus deltoides ssp. monilifera	5.5	2.5-7.5	Good	Native
21	Plains cottonwood	Populus deltoides ssp. monilifera	6.0	2.5-7.5	Good	Native
22	Plains cottonwood	Populus deltoides ssp. monilifera	9.0	5-15	Good	Native
23	Plains cottonwood	Populus deltoides ssp. monilifera	8.0	5-15	Good	Native
24	Plains cottonwood	Populus deltoides ssp. monilifera	8.5	5-15	Good	Native
25	Plains cottonwood	Populus deltoides ssp. monilifera	6.0	2.5-7.5	Good	Native
26	Plains cottonwood	Populus deltoides ssp. monilifera	19.0	10-20	Good	Native
27	Plains cottonwood	Populus deltoides ssp. monilifera	52.0	50-60	Good	Native
28	Green ash	Fraxinus pennsylvanicus	36.0	15-25	Good	Native
31	Siberian elm	Ulmus pumila	10.0	5-15	Good	Nonnative
32	Plains cottonwood	Populus deltoides ssp. monilifera	44.0	45-55	Good	Native
33- 153	Narrowleaf willow	Salix exigua	0.5-2	2.5-7.5	Good	Native; Labeled as Shrubs on map
154- 264	Matrimony vine	Lycium barbarum orth Westerly Site Vegetation Survey Undate	0.5-2	2.5-7.5	Fair-Good	Native; Labeled as Shrubs on map

⁻ID# refers to Figure 1. North Westerly Site Vegetation Survey Update

⁻DBH refers to diameter at breast height measured 54 inches above ground

^{*}DBH and Approx. Height Range is an estimated average/height range for the entire area. Shrubs are relatively uniform in approximate height and DBH.







Prepared By:



ERC

2820 Wilderness Place, Suite A Boulder, CO 80301 (303) 679-4820

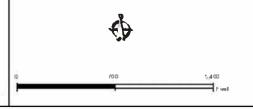
ERC # 1155-2403

Refer to Table 1 for tree ID, species identification and description.

Imagery Source: ESRI

FIGURE 1. NORTH WESTERLY SITE - VEGETATION SURVEY UPDATE

WELD COUNTY, COLORADO



Date: October 1, 2024



Ecological Resource Consultants, LLC

2820 Wilderness Place, Suite A~ Boulder, CO 80301~ (303) 679-4820

Date: December 20, 2023

To: North Westerly Owner, LLC

Attn: Heidi Majerik

Project: North Westerly Project – Cultural Historic Resources Screening (ERC Project #1155-2304)

Ecological Resource Consultants, LLC (ERC), on behalf of North Westerly Owner, LLC, completed an initial cultural/historic resource screening for the 392.8-acre project area (See **Figure 1** below). The project area is located northwest of the intersection with Erie Parkway and County Road 7 and includes parcels 146716200076 and 146716400004 in Weld County, Colorado. More specifically, the project area is in **Section 16, Township 1 North, Range 68 West**, in Weld County (latitude 40.05081° north, longitude - 105.0089° west).

On December 13, 2023, A&B Cultural Consultants, LLC (A&B) reviewed the online records in the Office of Archaeology and Historic Preservation (OAHP) Compass database in addition to several other historic databases and maps to identify any listed or eligible historic properties on or within the project area. A field investigation for archaeological and historical resources was not performed. The results of the screening are summarized as follows:

- The search of the Compass database revealed that two surveys had been performed and one cultural resource was previously recorded within Section 16, T1N, R68W, 6th P.M. (hereafter Section 16).
- The previously recorded resource within Section 16 is a segment of the Community Ditch (5WL.2247.15) that has been officially determined eligible for the NRHP. A portion of this segment along with an additional unrecorded segment is located within the project area.
- The real estate property records of the Weld County Assessor indicate that there are no structures located within the project area.
- Based on the results of previous archaeological surveys in the vicinity and the general geomorphological characteristics of the project area, it can be concluded that there is very little likelihood of significant prehistoric deposits being located within the project area. Because of the small probability of prehistoric resources within the project area, A&B does not recommend a Class III survey of the project area.
- Other records reviewed showed that the Clayton Mine was located within the project area and the ALTA survey provided by the client notes that concrete remnants related to this mine are located within the project area.
- If a federal nexus such as a Section 404 Clean Water Act permit or federal funding is required for the project, A&B recommends consultation with SHPO to evaluate NRHP eligibility for the Clayton Mine site and the additional segment of the Community Ditch through the project. If no federal



nexus or federal funding is required for the project, SHPO consultation would not be required however project review with the Erie Historical Society would be recommended.

The Cultural Resource Screening from A&B is enclosed as Attachment A.

If you have any questions or require additional information, please feel free to contact me.

Sincerely,

ECOLOGICAL RESOURCE CONSULTANTS, LLC

Diane Wright, Project Ecologist

Reviewed and approved by:

David J. Blauch, V.P., Senior Ecologist



ATTACHMENT A



A & B Cultural Consultants, LLC

1608 Sunset Drive Louisville, CO 80027

office: 303-666-0437 cell: 303-968-7880

email: rmutaw@comcast.net

TO: Diane Wright, Ecological Resource Consultants

FROM: Robert Mutaw, Ph.D., A&B Cultural Consultants, LLC (A&B)

DATE: December 15, 2023

RE: Archaeological and Historical Records Review for Westerly, Weld County, Colorado

At your request, A&B conducted an archaeological and historic records and literature review for the Westerly Study Area located as illustrated in Figure 1. This Study Area is located on private land in portions of Section 16, Township (T) 1 North (N), Range (R) 68 West (W) of the 6th Principal Meridian (P.M.). The Study Area appears to be located within two real estate parcels (Weld County Assessor Parcel Numbers: 146716200076 and 146716400004) encompassing a total of approximately 401 acres.

On December 13, 2023, A&B reviewed the records in Compass, the on-line database of Colorado cultural resources maintained by the Office of Archaeology and Historic Preservation (OAHP) at History Colorado and the following sources:

- Weld County Assessor Real Estate Parcel Records
- General Land Office (GLO) 1864 Plat Map for T1N, R68W of the 6th P.M.
- Historic trail map of the Greeley 1° x 2° quadrangle (Scott and Shwayder 1993)
- USGS Niwot 1:62,500 Quadrangle Map of 1902
- USHS Greeley 1:125,000 Quadrangle Map of 1902
- USGS Erie 1:24,000 Quadrangle Maps of 1950 and 1967
- USGS Frederick 1:24,000 Quadrangle Maps of 1950 and 1969 photorevised
- Maps Showing the Extent of Mining in the Boulder-Weld Coal Field (Roberts et al. 2001)

The purpose of this review was to determine if any resources listed in the National Register of Historic Places (NRHP) or State Register of Historic Properties (SRHP) have been previously recorded within the Study Area and to assess the potential for qualifying resources to be present based on existing information. A field investigation for archaeological and historical resources was not performed.

The search of the Compass database revealed that two surveys had been performed and one cultural resource was previously recorded within Section 16, T1N, R68W, 6th P.M. (hereafter Section 16). One of the surveys was a countywide survey of farms and ranches and the other was for a gas pipeline. Neither of these surveys covered any portion of the Study Aera. The previously recorded resource within Section 16 is a segment of the Community Ditch (5WL.2247.15) that has been officially determined eligible for the NRHP. A portion of this segment along with an additional unrecorded segment is located within the Study Area. An excerpt from the map of sites and surveys available through Compass is attached as Figure 2 shows the site and surveys in relation to Study Area.

The real estate property records of the Weld County Assessor indicate that there are no structures located within the Study Area.

The 1864 GLO Plat map for T1N, R68W shows various unnamed drainages originating just outside of Section 16 but no cultural features are shown within it or in the surrounding sections (Figure 3).

The historic trails map covering this area (Scott and Shwayder 1993) shows the Community Ditch running through the Study Area, several mines surrounding it, and a railroad spur entering it from the northwest where is connects with the Boulder Valley Branch of the Union Pacific Railroad (Figure 4).

The USGS Niwot 1902 and Greeley 1902 maps show a road along the southern edge of the Study Area and a railroad to the northeast of it (Figure 5).

The USGS Erie and Frederick 1950 quadrangle maps show that roads have been developed along all for sides of Section 16, the Clayton Mine (Inactive) within the Study Area near the center of the section, and the Community Ditch running through the Study Area (Figure 6).

The USGS Erie 1967 and Frederick 1950 (photorevised 1969) quadrangle maps shows essentially the same features as the previous maps (Figure 7).

A map depicting the extent of coal mine workings in the Boulder-Weld Coal Field (Roberts et al. 2001) shows coal mines in the vicinity of the Study Area and M30 - the Clayton Mine that operated from 1920 to 1942, within the Study Area. Portions of the Study Area have been mapped as being undermined by the underground workings of the Clayton and other mines to the southeast and northeast (Figure 8).

Based on the results of previous archaeological surveys in the vicinity and the general geomorphological characteristics of the Study Area, it can be concluded that there is very little likelihood of significant prehistoric deposits being located within the Study Area. Previous surveys in the general vicinity resulted in the discovery of few, if any prehistoric sites, and generally only documented occasional prehistoric isolated artifacts (Angulski 1989; Halisi 2008, Mutaw 2012, 2014, 2017, 2018; Phillips 1996; URS 2002) or sites in deflated contexts (Chambellan and Mehls 2000). Additionally, the geomorphology of the Study Area is predominantly characterized by wind borne deposits that can be suitable for the preservation of archaeological sites, but if these surfaces are stable, as it appears to be in this case, it makes discovery of such deposits unlikely. Sites have occasionally been found in areas with this type of setting on ridge crests and hill tops where they have been exposed by wind erosion and upon stream terraces along water courses where exposed by water erosion, neither setting appears to apply to the Study Area. Because of the small probability of prehistoric resources within the Study Area, we do not recommend a Class III survey of the Study Area.

The search of the Compass records revealed that a previously documented segment of the Community Ditch (**5WL.2247.15**) that has been officially determined to be eligible for the NRHP is located within the Study Area. Another segment of this ditch that has not been recorded extends north from this previously recorded segment through the Study Area. When evaluating segments of linear resources, such as ditches, the question is asked if the particular segment under study retains sufficient integrity to demonstrate its significance and thereby support the eligibility of the entire resource of which it is a part. If the particular segment lacks sufficient integrity, it is said to be unable to support the eligibility of the overall resource and is thereby considered not eligible for listing in the NRHP. We recommend that

Westerly Cultural Resources Records Review December 15, 2023 Page 3

this additional segment of the Community Ditch through the Study Area be recorded and evaluated for NRHP eligibility.

Other records reviewed showed that the Clayton Mine was located within the Study Area and the ALTA survey provided by ERC notes that concrete remnants related to this mine are located within the Study Area. Archaeological sites are generally eligible under NRHP criterion d when they can produce data through analysis of artifacts and features found in an original context, i.e., *in situ*, that can be used in answering important research questions. We recommend that the Clayton Mine site be recorded and evaluated for NRHP eligibility.

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URS Corporation (URS)

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FIGURES

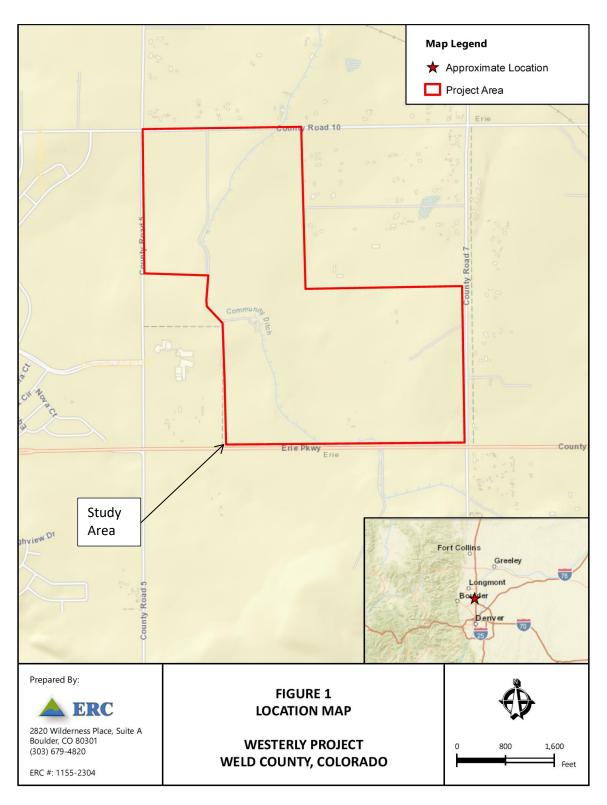


Figure 1. Study Area Location Map (from ERC).

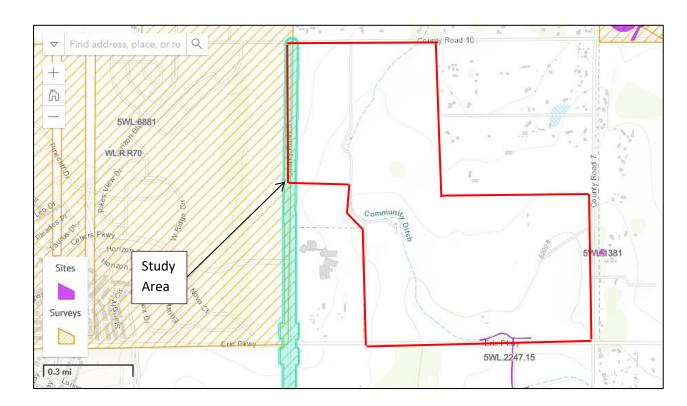


Figure 2. Excerpt from Compass Map.

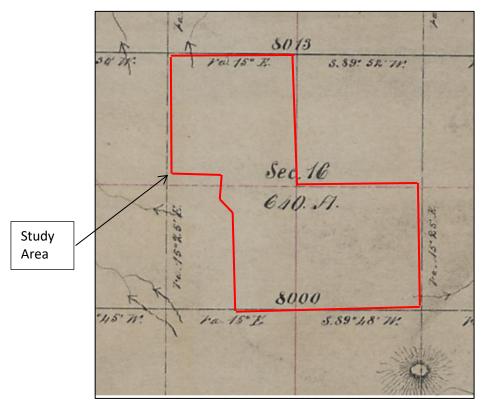


Figure 3. Excerpt from 1864 GLO Plat Map (GLO 1864).

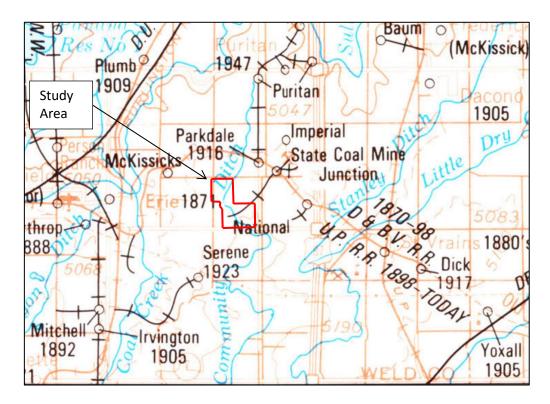


Figure 4. Excerpt from Historic Trails Map (Scott and Shwayder1993).

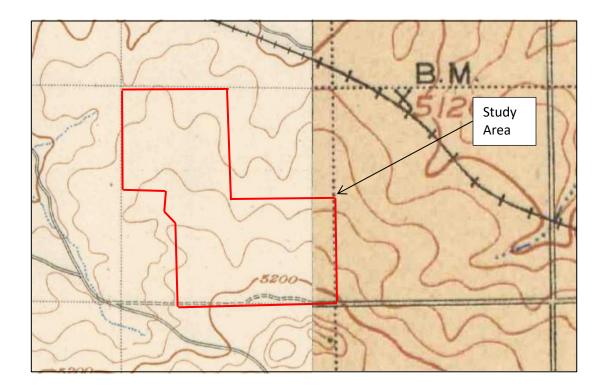


Figure 5. Excerpts from USGS Niwot (1902) and Greeley (1902) Maps.

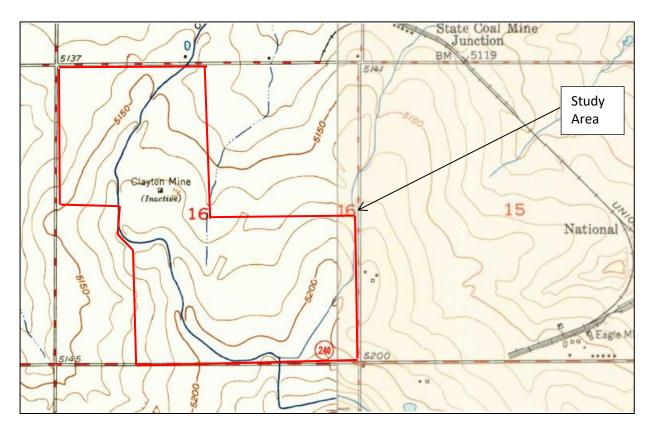


Figure 6. Excerpts from USGS Erie (1950) and Frederick (1950) Maps.

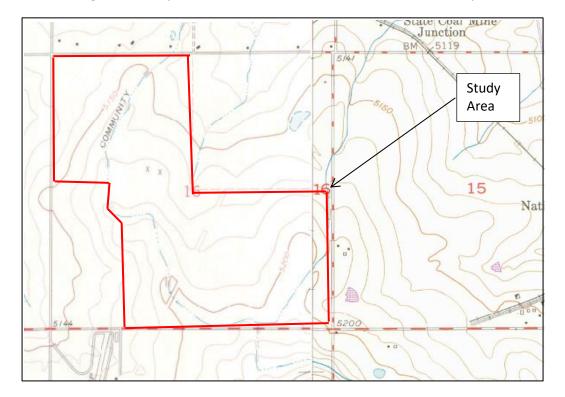


Figure 7. Excerpts from USGS Erie (1967) and Frederick (1969pr) Maps.

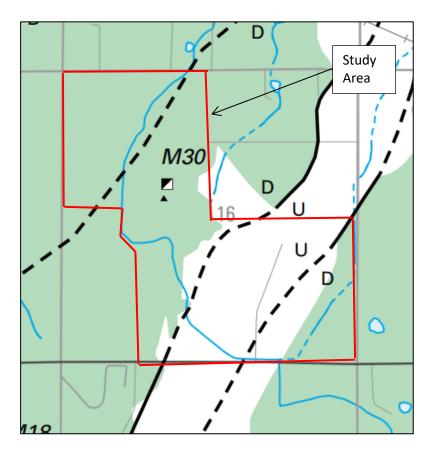
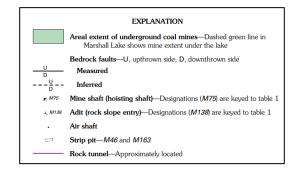


Figure 8. Excerpt from Roberts et al. 2001.



Phase I Environmental Site Assessment

393.16 Acres within Section 16, Township 1 North, Range 68 West, Weld County, Colorado 80516



Prepared for:

ERIE LAND COMPANY LLC

1225 17th Street, Suite 2420 Denver, Colorado 80202

WESTERN ENVIRONMENT AND ECOLOGY, INC.

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www.westernenvironment.com

Phase I Environmental Site Assessment

393.16 Acres within Section 16, Township 1 North, Range 68 West, Weld County, Colorado 80516

Western Environment and Ecology, Inc. **Project Number: 778-005-01**

November 18th, 2022

Prepared for:

ERIE LAND COMPANY, LLC

1225 17th Street, Suite 2420 Denver, Colorado 80202

Prepared by:

Brendan Calonge Senior Staff Scientist Greg D Sherman, P.G.

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TABLE OF CONTENTS

1.0	INTRODUCTION					
2.0	SITE DESCRIPTION					
3.0	RECO	RECORDS REVIEW				
	 3.1 Results 3.2 Colorado Oil and Gas Conservation Commission (COGCC) 3.3 Government Inquiries 3.4 Aerial Photo Review 3.5 Historic Topographical Maps 3.6 Previous Assessment 					
4.0	SITE INSPECTION / INTERVIEWS					
5.0	0.0 CONCLUSIONS					
	5.1 Deviations5.2 Recommendations					
FIGUI	RES					
FIGURE 1 SITE LOCAT FIGURE 2 SITE MAP		SITE LOCATION MAP SITE MAP	3			
APPENDICES						
APPE APPE	NDIX A NDIX I NDIX (NDIX I	Air Photo Documentation Environmental Issues Inquires/Supporting Documents				

1.0 INTRODUCTION

The purpose of this Phase I Environmental Site Assessment is to identify, to the extent feasible, recognized environmental conditions associated with the subject property. A Phase I Environmental Site Assessment has four components: Records Review, Site Reconnaissance, Interviews, and a Report. These specific activities are further defined by the American Society for Testing and Materials (ASTM 1527-21, Standard Practice for Environmental Site Assessments; Phase I Environmental Site Assessment Process, November, 2021).

The U.S. Environmental Protection Agency issued a final rule governing "All Appropriate Inquiries" (AAI) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) on November 1st, 2006 (40 C.F.R. Part 312). The EPA has determined that a Phase I Environmental Site Assessment prepared in accordance with ASTM 1527-13 meets the AAI requirements. Western Environment has performed this assessment in compliance with both ASTM 1527-13 and ASTM 1527-21 standards.

The following document was prepared at the request of Heidi Majerik, Vice President and General Manager for the Southern Land Company. Ms. Majerik indicated that this report was in response to the purchase and potential residential single family residential development of the property. On November 10th, 2022, Western Environment and Ecology, Inc. (Western Environment) sent an User Environmental Questionnaire to Gracy Weil of Southern Land Company and requested she forward an Owner Questionnaire to the current property owner. These questionnaires request copies of past environmental assessment reports and asked for any information regarding environmental issues, liens, covenants, or hazardous material spills associated with the sites. The Weld County Assessors Office currently lists the owner of the site as the State of Colorado.

On November 10th, 2022 Ms. Majerik, returned the User questionnaire (attached) stating that she has no knowledge of environmental issues regarding the site. On November 14th, 2022, Mr. Matthew LaFontaine, Acquisition and Disposition Manager for the Colorado State Land Board, returned the Owner Questionnaire, indicating the State has owned the property for over100 years. Mr. LaFontaine stated that current and historic use of the property includes agriculture, coal mining, petroleum production, and a former National Oceanic and Atmospheric Administration (NOAA) 300 meter research tower. Mr. LaFontaine also provided a previous Phase I Environmental Site Assessment, Performed by Terracon Consultants, Inc., dated July 1st, 2008. This report (attached) identified a leaking pad mounted transformer and the presence of petroleum production wells as REC's.

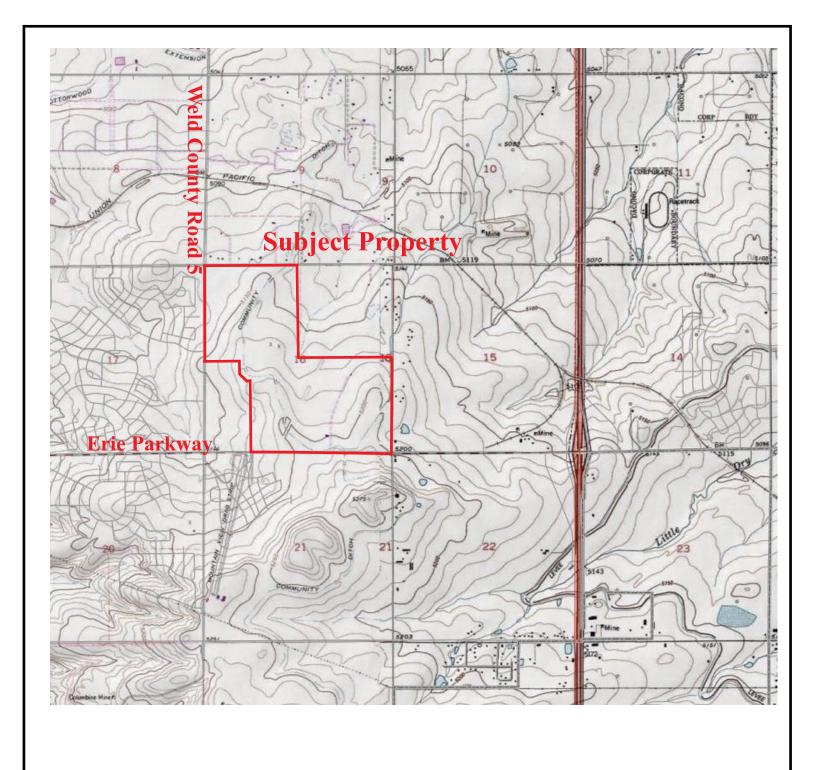
2.0 SITE DESCRIPTION

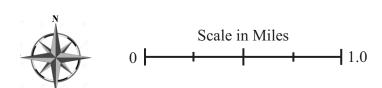
This Phase I Environmental Site Assessment was conducted for approximately 393.16 acres within Section 16, Township 1 North, Range 68 West, unincorporated Weld County, Colorado (Figure 1). According to the Weld County Assessor's Office, the property, which is vacant, is currently zoned for agricultural use. The Community Ditch forms a portions of the eastern, southern and western border of the property.

The site is located between Erie Parkway on the south Weld County Road (WCR) 10 on the north, WCR's 5 and WCR 7 on the west and east respectively (Figure 2). Portions of the site had recently been cultivated in alfalfa hay. Remnants of the abandoned Clayton Coal Mine production facilities, including hoist house and load out tipple and main and air shafts foundations occur on the property. A Union Pacific State Coal Mine rail spur right-of-way, the Community Ditch, and a communication line right-of-way bisect the site (see attached ALTA Survey, 2008). Surrounding properties include the Erie Junior and High School to the west, rural acreage residences to the north and east, a large single family residential development to the west and southwest. Currently, agricultural land is present to the south, across Erie Parkway. The Public Service Company of Colorado Valmont Power Station, 230 kv high tension electric transmission power line is present along the northern boundary. Panhandle Eastern Pipeline Company, Amoco Oil and Vessels Oil have natural gas and liquid petroleum gathering lines along the parameter of the property.



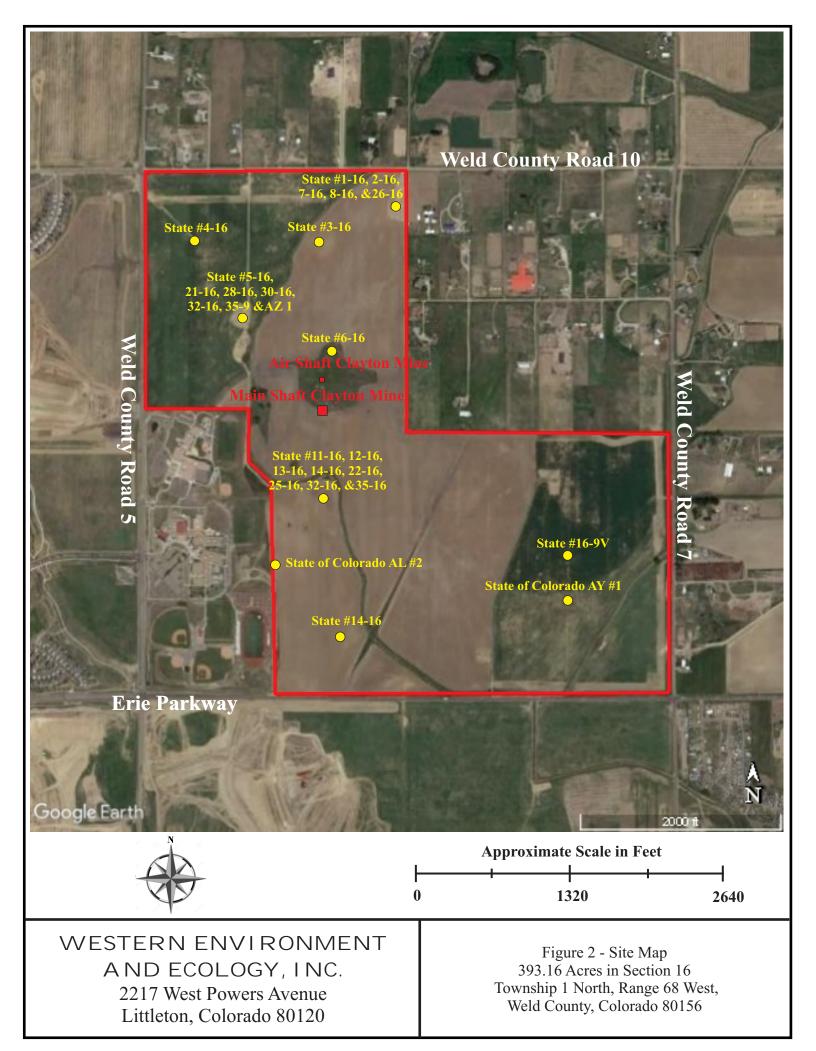
View to north showing 230 kv powerline, Community ditch, and mine debris





WESTERN ENVIRONMENT AND ECOLOGY, INC. 2217 West Powers Avenue Littleton, Colorado 80120

Figure 1 -Location Map 393.16 Acres in Section 16 Township 1 North, Range 68 West, Weld County, Colorado 80156



The site occurs at an elevation range of approximately 5,140 to 5,200 feet above sea level (USGS Erie 7.5 Minute Quadrangle, 2016). The topography is generally flat, with a gradual slope to the north. The site geology consists of the Cretaceous Age Laramie Formation and Fox Hills Sandstone (Ogden Tweto, 1979). The USRCS classifies the site soils as Weld loam on 1 to 3 percent slopes, Nunn loam on 1-3% slopes, Ulm clay loam on 0 to 3 and 3 to 5 percent slopes, Wiley-Colby complex on 3 to 5 percent slopes, and Renohill clay loam on 3 to 9 percent slopes. Review of the Federal Emergency Management Agency (FEMA) Flood Insurance Maps indicate that the site is not located within the 100-year flood plain.

Records maintained by the Colorado Division of Water Resources records identified a piezometer well constructed by the Town of Erie and three groundwater monitoring wells constructed by Kerr McGee Oil & Gas Onshore LP are located on the property. Lithologic logs for the wells (attached) identified clay from the surface to between 7 and 15 feet below grade. Weathered claytone to silty sandstone was described between 7 to 22 feet below grade, where clay and claystone were penetrated to the depths of the wells. Static groundwater was measured between 10 and 21 feet.



View to south

3.0 RECORDS REVIEW

The purpose of the records review is to obtain and review information that will help identify the potential for recognized environmental conditions in connection with the property. Availability of records varies from information source to information source, including governmental jurisdictions. Western Environment did not identify, obtain or review every possible record that might exist with respect to the property. Instead, record information from reasonably ascertainable standard sources was reviewed. The approximate minimum search distance utilized in the review, the resources utilized, and the number of sites found are listed below:

Lists Reviewed	ASTM Standard Minimum Search Distance	Number of Site Within Search Distance	
Federal and Colorado NPL List	1.0 mile	0	
Federal Delisted NPL site List	1.0 mile	0	
Federal and State CERCLIS List	0.5 Mile	0	
Federal RCRA TSD Facilities List	1.0	0	
Federal RCRA Generators List	Property and Adjoining Property	0	
Federal RCRA Corrective Action List	1.0	0	
Federal and State Institutional Control/Engineering Control Registry	Property and Adjoining Property	0	
Federal ERNS List	Property and Adjoining Property	0	
State Landfill and/or Solid Waste Disposal Site List	0.5	0	
State Leaking UST List	0.5	0	
State Registered UST List	Property and Adjoining Property	0	
State Brownfield / Voluntary Cleanup List	0.5	0	

Definitions:

NPL: National Priority List (Superfund)

CERCLIS: Comprehensive Environmental Response, Compensation and Liability Information System

RCRA: Resource Conservation and Recovery Act

TSD: Hazardous Waste Transport, Storage, and Disposal

UST: Underground Storage Tank

ERNS: Emergency Response Notification System

3.1 Results

No results were identified within the ASTM search radius. A complete listing of all environmental records is attached in the Appendix A.

WESTERN ENVIRONMENT AND ECOLOGY, INC

3.2 Colorado Oil and Gas Conservation Commission (COGCC)

Western Environment reviewed records maintained by the Colorado Oil and Gas Conservation Commission (COGCC) for petroleum wells permitted on the subject property.

Facility ID	Facility Name	Operator	Operator Status		
05-123-12626	State of Colorado AL #2	Kerr-McGee Oil & Gas Onshore LP	PA 1/26/2018	None	
05-123-15592	State of Colorado AZ #1	Kerr-McGee Oil & Gas Onshore LP	PA 8/30/2018	Corrective Action - Weed Control - closed 10/27/2015	
05-123-15597	State of Colorado AY #1	Kerr-McGee Oil & Gas Onshore LP	AL 6/13/1992	None	
05-123-16105	State #16-9V	Kerr-McGee Oil & Gas Onshore LP	PA 8/28/2015	None	
05-123-24339	State #4-16	Kerr-McGee Oil & Gas Onshore LP	AL 7/24/2008	None	
05-123-24338	State #6-16	Kerr-McGee Oil & Gas Onshore LP	AL 7/24/2008	None	
05-123-24397	State #11-16	Kerr-McGee Oil & Gas Onshore LP	PA 12/17/2018	None	
05-123-24396	State #3-16	Kerr-McGee Oil & Gas Onshore LP	AL 7/24/2008	None	
05-123-24481	State #5-16	Kerr-McGee Oil & Gas Onshore LP	PA 8/30/2008	Corrective Action - stained soil at crude oil tank, produced water tank, and pcc load pot (<5bbls) - closed 9/29/2014	
05-123-24511	State #14-16	Kerr-McGee Oil & Gas Onshore LP	AL 7/15/2008	None	
05-123-29021	State #14-16	Kerr-McGee Oil & Gas Onshore LP	PA 2/13/2018	None	
05-123-29022	State #13-16	Kerr-McGee Oil & Gas Onshore LP	PA 3/7/2018	None	
05-123-29023	State #12-16	Kerr-McGee Oil & Gas Onshore LP	PA 2/13/2018	None	
05-123-29024	State #25-16	Kerr-McGee Oil & Gas Onshore LP	PA 12/14/2018	None	
05-123-29025	State #22-16	Kerr-McGee Oil & Gas Onshore LP	PA 12/14/2018	None	
05-123-29026	State #33-16	Kerr-McGee Oil & Gas Onshore LP	PA 2/14/2018	None	

WESTERN ENVIRONMENT AND ECOLOGY, INC

Phase I Environmental Assessment: 393.16 Acres within S16, T1N, R68W, Weld County, Colorado Page -8-Kerr-McGee Oil & Gas PΑ 05-123-29027 State #35-16 None Onshore LP 2/13/2018 Corrective Action -Kerr-McGee Oil & Gas PA 05-123-29112 State #35-9 Weed Control - closed Onshore LP 11/13/2019 10/27/2015 Corrective Action -Kerr-McGee Oil & Gas PA 05-123-29113 State #21-16 Weed Control - closed Onshore LP 2/15/2018 10/27/2015 Corrective Action -Kerr-McGee Oil & Gas PA 05-123-29114 State #6-16 Weed Control - closed Onshore LP 8/31/2018 10/27/2015 Corrective Action -Kerr-McGee Oil & Gas PA Weed Control - closed 05-123-29115 State #30-16 Onshore LP 8/17/2021 10/27/2015 Release - Active Corrective Action -Kerr-McGee Oil & Gas PA05-123-29116 State #32-16 Weed Control - closed 8/30/2018 Onshore LP 10/27/2015 Corrective Action -Kerr-McGee Oil & Gas PA05-123-29117 State #3-16 Weed Control - closed Onshore LP 8/31/2018 10/27/2015 Corrective Action -Kerr-McGee Oil & Gas PA05-123-29118 State #4-16 Weed Control - closed Onshore LP 6/19/2018 10/27/2015 Corrective Action -Kerr-McGee Oil & Gas PA05-123-29119 State #28-16 Weed Control - closed Onshore LP 11/13/2019 10/27/2015 Corrective Action -No Secondary Kerr-McGee Oil & Gas PAContainment around State #7-16 05-123-30936 Onshore LP 7/13/2019 workover/blowdown tanks - closed 8/20/2014 Corrective Action -Casing appeared to be Kerr-McGee Oil & Gas SI 05-123-30937 State #8-16 leaking around pipe -Onshore LP 8/1/2020 securely fasten closed 12/10/2019 Corrective Action -Casing appeared to be leaking around pipe securely fasten -Kerr-McGee Oil & Gas SI 05-123-30942 State #2-16 closed 12/10/2019 12/1/2020 Onshore LP

Phase I Environmental Assessment: 393.16 Acres within S16, T1N, R68W, Weld County, Colorado Page -9-

05-123-30943	State #1-16	Kerr-McGee Oil & Gas Onshore LP	PA 11/29/2017	Corrective Action - No Secondary Containment around workover/blowdown tanks - closed 8/20/2014
05-123-30946	State #26-16	Kerr-McGee Oil & Gas Onshore LP	PA 11/20/2020	Corrective Action - Casing appeared to be leaking around pipe - securely fasten - closed 12/10/2019

PA (plugged and abandoned) SI (shut in) AL (abandoned location permit)

The State #30-16 facility, located in the center of the Northwest 1/4 of Section 16 (Figure 2), reported a release of thermogenic methane in soil vapor on May 26th, 2021 during site closure activities. Assessment activities have included the installation of several soil vapor probes and three soil vapor monitoring wells. Currently, the source of the contamination is under investigation, and future remediation will be performed based on additional assessment. This release represents a **Recognized Environmental Condition** (REC).

3.3 Government Inquiries

On November 10th, 2022, Western Environment submitted an Environmental Issues Inquiry to the Weld County Department of Public Health and Environment and the Mountain View Fire Rescue District. On November 16th, 2022, Ms. LuAnn Penfold, the Fire Prevention Specialist for Mountain View Fire Rescue, responded stating that no records of hazardous material responses were found for the project site. However, she did indicate a response to a natural gas "leak" within the middle school adjacent to the southwest at 3280 WCR 5, on December 4th, 2019. No response has been received from Weld County Department of Public Health and Environment.

3.4 Aerial Photography Review

Western Environment reviewed aerial photography to document past uses of the subject property. The available first photo dated June 22nd, 1947, showed the subject site and surrounding properties were in agricultural use. An active coal mine was observed on the site. Community Ditch and a railroad bisected the property.

No significant changes were observed until the photos from October 15th, 1975, in which the coal mine and rail road appeared to be abandoned. The image dated September 5th, 1985 showed single family residences constructed to the northeast.

Phase I Environmental Assessment: 393.16 Acres within S16, T1N, R68W, Weld County, Colorado P

Page -10-

Google Earth historic photos were reviewed for years following 1985. The image dated June 29th, 1992 showed several petroleum production facilities present on the subject property. Additionally, the NOAA tower and adjacent equipment buildings were observed on the site. In the August 5th, 2004 image, Erie High School was constructed adjacent to the southwest. No changes were observed until the image dated June 9th, 2017, which showed the middle school under construction adjacent to the southwest. Additionally, residential development was seen to the west, across WCR 5. The NOAA tower and several petroleum production facilities had been removed in the May 31st, 2018 image. Additional residential development was observed to the west and southwest in the most recent image, dated April 21st, 2022. A list of the photos reviewed is presented in Appendix B.

3.5 Historic Topographic Maps

Western Environment reviewed historical topographic maps to document past uses of the subject property. The first available map, dated 1950 showed the Clayton Mine (inactive) and Community Ditch on the subject property. The Mountain View Drag Strip occupied the property to the southwest in the 1967 maps. No significant changes were observed in the 1979 map.

3.6 Previous Assessment

Western Environment reviewed the provided previous Phase I Environmental Site Assessment, Performed by Terracon Consultants, Inc., dated July 1st, 2008. This report (attached) identified a leaking pad mounted transformer located adjacent to the NOAA tower and petroleum production as REC's. No evidence of the transformer or stained soil were observed during this assessment.



NOAA site

4.0 SITE INSPECTIONS / INTERVIEWS

The purpose of an environmental inspection is to obtain information indicating the likelihood of identifying recognized environmental conditions (REC's) in connection with the property. Western Environment and Ecology personnel inspected the property to the extent not obstructed by bodies of water, obstacles or debris. During a visit to the site on November 1st, 2022, Western Environment staff evaluated the project specifically for evidence of the site features listed in the following table. Those features which were observed on the site are also discussed in further detail below.

Storage Tanks		Placed Fill or Imported Soils
Vent Piping/Air Emissions Sources	X	Stockpiles of Soil or Debris
Unidentified Piping	X	Ditches, Surface Water, Streams, Pits, Ponds, Lagoons
Drains, Sumps		Waste Water and/or Storm Water Discharge
Stained Soil and/or Pavement		Waste Treatment Processes
Stressed Vegetation		Sand Traps, Septic Systems or Leach Fields
Solid Waste or Disposal Areas		Wells (Agricultural, Water Supply, Monitoring)
Hazardous Material Storage	X	Wells (Petroleum Production Facilities)
Petroleum Products Storage	X	Petroleum Pipelines
Drums	X	High Power Transmission Lines
Unidentified Substance Containers		Transformers (Potential PCB)
Vehicle Maintenance Areas		Odors

At the time of the inspection, the subject property was vacant agricultural land. Recently tilled soil, in preparation for spring planting, was present in the southern half of the site. The **Community Ditch** bisected the property along the western border. Several large cottonwood trees are clustered on the western portion of the property adjacent to the ditch. A red tailed hawk was observed roosting in the trees.



Cottonwood grove with Middle School to west

An active petroleum production facility (State #5-16, 21-16, 28-16, 30-16 32-16 and AZ-

1) surrounded by a temporary construction barrier, was present in the northwestern portion of the site. At the time of the inspection a "work over" rig was operating within the barrier. Concrete foundations and **debris** from the abandoned Clayton Mine was present in just east of the Community Ditch (Figure 2). Debris included broken concrete, metal, bricks and wire. This area had been left uncultivated due to the amount of trash and **mine waste consisting of coal and clinker (oxidized coal)**. What appeared to be a mine runoff holding pond was observed to the north of the abandoned coal load out rail spur.



Clayton Mine debris

Western Environment inspected the location of the support and equipment building associated with the NOAA tower site. No structures were observed with only crushed rock road base and small (less than 2-3 inches) plastic and ceramic debris, likely electric insulators used to protect the tower from lighting strikes.



Aerial view of NOAA site

Directly south of the Clayton Mine site, a large circular depression was observed in aerial views. Upon inspection, this depression was filled with **debris** including automotive parts, tires, bed springs and wood scrap. This material was likely the reason that no cultivation was possible, resulting the circular shape of the feature. Western Environment reviewed the original mine maps of the Clayton Mine to determine if this feature might be mine related. No correlation to any mine structures, shafts or de-watering wells, were made. This feature may be a low area that due to surface runoff or moisture from the adjacent irrigation ditch, could not be farmed.



Circular depression aerial view to the south

The site was bounded to the north by WCR 10, the south by Erie Parkway, the east by WCR 7 and the west by WCR 5. Review of the ALTA survey provided by Southern Land confirmed that several **petroleum and natural gas pipelines** are located along the adjacent highway right-of-ways. to the Erie High School was present to the southwest. A Public Service of Colorado 230 kv high tension **electric transmission power** lines run along the northern property border.

5.0 CONCLUSIONS

Western Environment and Ecology, Inc. performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E 1527-21 for approximately 393.16 acres within Section 16, Township 1 North, Range 68 West, Erie, Colorado. Any exceptions to, or deletions from, this practice are described in Section 5.1 of this report. This assessment has revealed **the following recognized environmental condition in connection with the subject property:**

The State #30-16 petroleum production facility has an active releases of thermogenic methane within soil vapor. Assessment of the source of the contamination is ongoing. This active release represents a REC. According to Title 34, Article 60 (As Amended) of the Oil and Gas Conservation Act, Section 34-06-102, the State of Colorado gives the Oil and Gas Commission legislative declaration over the development, production, and utilization of the natural resources in the state of Colorado. Moreover, this legislation gives the Commission the authority to force the operator to perform remediation activities deemed necessary in compliance with all Federal and State health regulations. Therefore, it is the opinion of Western Environment that no additional assessment, outside of the on-going remedial actions of the operator, are required.

5.1 Deviations from Standard Practices

A response has yet to be received from the Weld County Health Department. Should a response be received that significantly changes our conclusions, an addendum to the report will be issued. It is the opinion of Western Environment that this lack of information does not constitute a Data Failure as defined by ASTM E-1527-21, Section 8.3.2.3. No other significant "Data Gaps" as defined in ASTM E-1527-21, Section 12.7 were identified.

5.2 Recommendations

It has been our experience that undetected releases from petroleum production sites, flowlines and crude oil/produced water storage facilities are common. The potential future remediation of these "orphan" events and enforcement actions remains the obligation of the Oil and Gas Operator. However, we recommend developers be aware of these potential conditions

and have procedures in place to limit construction downtime and assure remediation to unrestricted (residential) use standards.

The debris and mine waste adjacent to the Clayton Mine is not considered "hazardous waste" based upon Western Environments past experience. However, due to the coal waste not being geo-technically acceptable for construction, it should be removed. Additionally, the concrete, metal and other debris will need to be removed and properly disposed prior to development.

APPENDICES

APPENDIX A

REFERENCE LISTS

Section 16

prepared for: Erie Land Ref: 778-005-01

2022-11-09

Environmental Radius Report



Summary

Federal

< 1/4	1/4 - 1/2	1/2 - 1
0	0	0
0	0	-
0	0	-
0	0	-
0	0	-
0	0	-
0	-	-
0	-	-
0	-	-
< 1/4	1/4 - 1/2	1/2 - 1
0	0	0
0	2	-
0	0	-
0	0	-
0	-	-
0	-	-
	0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Other

Lists of state and tribal voluntary cleanup sites Lists of state and tribal brownfields sites

0.1101			
	< 1/4	1/4 - 1/2	1/2 - 1

0

0

0

Lists of Federal NPL (Superfund) sites

The National Priorities List (NPL) is the list of sites of national priority among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States and its territories. The NPL is intended primarily to guide the EPA in determining which sites warrant further investigation. The NPL is updated periodically, as mandated by CERCLA.

There were no Federal NPL sites found within a one-mile radius of the target property.

Lists of Federal Delisted NPL sites

The EPA may delete a final NPL site if it determines that no further response is required to protect human health or the environment. Under Section 300.425(e) of the NCP (55 FR 8845, March 8, 1990), a site may be deleted when no further response is appropriate if EPA determines that one of the following criteria has been met: 1) EPA, in conjunction with the state, has determined that responsible parties have implemented all appropriate response action required, 2) EPA, in consultation with the state, has determined that all appropriate Superfund-financed responses under CERCLA have been implemented and that no further response by responsible parties is appropriate, 3) A remedial investigation/feasibility study (RI/FS) has shown that the release poses no significant threat to public health or the environment and, therefore, remedial measures are not appropriate.

There were no Federal Delisted NPL sites found within a half-mile radius of the target property.

Lists of Federal sites subject to CERCLA removals and CERCLA orders

CERCLA identifies the classes of parties liable under CERCLA for the cost of responding to releases of hazardous substances. In addition, CERCLA contains provisions specifying when Federal installations must report releases of hazardous substances and the cleanup procedures they must follow. Executive Order No. 12580, Superfund Implementation, delegates response authorities to EPA and the Coast Guard. Generally, the head of the Federal agency has the delegated authority to address releases at the Federal facilities in its jurisdiction.

There were no Federal sites subject to CERCLA removals and/or orders found within a half-mile radius of the target property.

Lists of Federal CERCLA sites with NFRAP

No Further Remedial Action Planned (NFRAP) is a decision made as part of the Superfund remedial site evaluation process to denote that further remedial assessment activities are not required and that the facility/site does not pose a threat to public health or the environment sufficient to qualify for placement on the National Priorities List (NPL) based on currently available information. These facilities/sites may be re-evaluated if EPA receives new information or learns that site conditions have changed. A NFRAP decision does not mean the facility/site is free of contamination and does not preclude the facility/site from being addressed under another federal, state or tribal cleanup program.

There were no Federal CERCLA sites with No Further Remedial Action Planned (NFRAP) decisions found within a half-mile radius of the target property.

Lists of Federal RCRA facilities undergoing Corrective Action

Corrective action is a requirement under the Resource Conservation and Recovery Act (RCRA) that facilities that treat, store or dispose of hazardous wastes investigate and cleanup hazardous releases into soil, ground water, surface water and air. Corrective action is principally implemented through RCRA permits and orders. RCRA permits issued to TSDFs must include provisions for corrective action as well as financial assurance to cover the costs of implementing those cleanup measures. In addition to the EPA, 44 states and territories are authorized to run the Corrective Action program.

There were no Federal RCRA facilities undergoing corrective action(s) found within a half-mile radius of the target property.

Lists of Federal RCRA TSD facilities

The final link in RCRA's cradle-to-grave concept is the treatment, storage, and disposal facility (TSDF) that follows the generator and transporter in the chain of waste management activities. The regulations pertaining to TSDFs are more stringent than those that apply to generators or transporters. They include general facility standards as well as unit-specific design and operating criteria.

There were no Federal RCRA treatment, storage and disposal facilities (TSDFs) found within a half-mile radius of target property.

Lists of Federal RCRA generators

A generator is any person who produces a hazardous waste as listed or characterized in part 261 of title 40 of the Code of Federal Regulations (CFR). Recognizing that generators also produce waste in different quantities, EPA established three categories of generators in the regulations: very small quantity generators, small quantity generators, and large quantity generators. EPA regulates hazardous waste under the Resource Conservation and Recovery Act (RCRA) to ensure that these wastes are managed in ways that protet human health and the environment. Generators of hazardous waste are regulated based on the amount of hazardous waste they generate in a calendar month, not the size of their business or facility.

There were no Federal RCRA generators found at the target property and/or adjoining properties.

Federal institutional control/engineering control registries

Institutional Controls (IC) are defined as non-engineered and/or legal controls that minimize the potential human exposure to contamination by limiting land or resource use. Whereas, Engineering Controls (EC) consist of engineering measures (e.g., caps, treatment systems, etc.) designed to minimize the potential for human exposure to contamination by either limiting direct contact with contaminated areas or controlling migration of contaminants through environmental media.

There were no Federal institutional or engineering controls found at the target property.

Federal ERNS list

The Emergency Response Notification System (ERNS) is a database used to store information on notification of oil discharges and hazardous substances releases. The ERNS program is a cooperative data sharing effort encompassing the National Response Center (NRC), operated by the US Coast Guard, EPA HQ and EPA regional offices. ERNS data is used to analyze release notifications, track EPA responses and compliance to environmental laws, support emergency planning efforts, and assist decision-makers in developing spill prevention programs.

There were no Federally recorded releases of oil and/or hazardous substances at the target property.

Lists of state and tribal Superfund equivalent sites

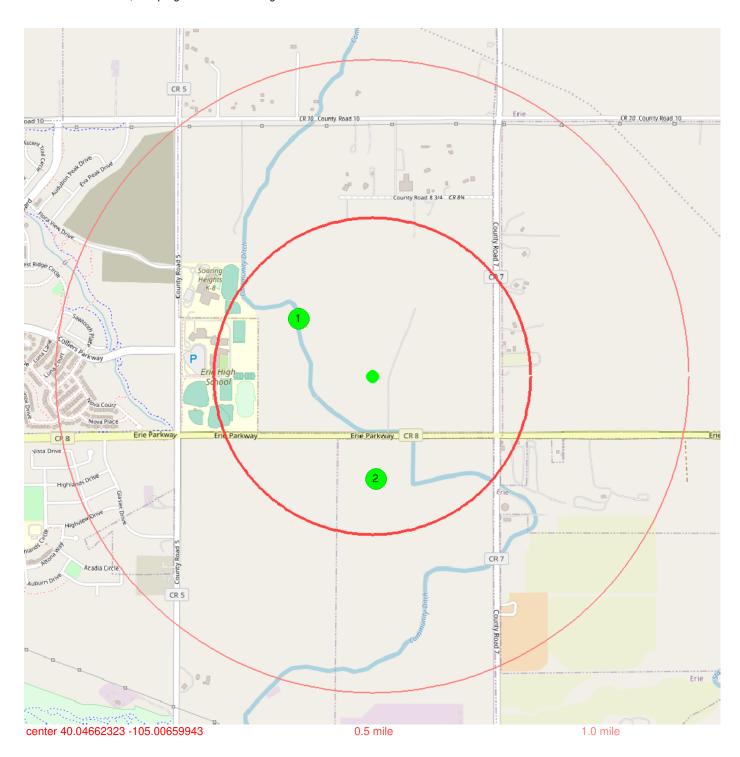
In order to maintain close coordination with the states and tribes in the NPL listing decision process, the EPA's policy is to determine the position of states and tribes on sites that EPA is considering for listing. Consistent with this policy, since 1996, it has been the EPA's general practice to seek the state or tribe's position on sites under consideration for NPL listing by submitting a written requiest to the governor/state environmental agency or tribe. Various states may have their own program for identifying, investigating and cleaning up sites where consequential amounts of hazardous waste may have been disposed that work in conjunction with the EPA's Superfund remedial program.

There were no State and/or tribal Superfund equivalent sites found within a one-mile radius of target property.

Lists of state and tribal hazardous waste facilities

CDPHE - RCRA REGULATED SITES

The Resource Conservation and Recovery Act (RCRA) gives the Colorado Department of Public Health and Environment (CDPHE) the authority to control hazardous waste from "cradle-to-grave." This includes the generation, transportation, treatment, storage and disposal of hazardous waste. To achieve this, EPA develops regulations, guidance and policies that ensure the safe management and cleanup of solid and hazardous waste, and programs that encourage source reduction and beneficial reuse.





Registry ID 110041630410

Primary Name KERR-MCGEE 35016776 - STATE OF COLO A.

Address NESW-16-1N-68W

City ERIE

Site Type STATIONARY
Program System AIR, AIRS/AFS, EIS

FRS Link Site Detail distance from center (miles) 0.2957

data source last updated 2021-11-08 from CDPHE-RCRA



Registry ID 110027220530

Primary Name KERR-MCGEE - 36156476
Address NWNE SEC 21 T1N R68W

City ERIE

Site Type STATIONARY
Program System AIR, AIRS/AFS, EIS

FRS Link Site Detail distance from center (miles) 0.3239

data source last updated 2021-11-08 from CDPHE-RCRA

Lists of state and tribal landfills and solid waste disposal facilities

Title 40 of the CFR parts 239 through 259 contain the regulations for non-hazardous solid waste programs set up by the states. EPA has requirements for state solid waste permit programs, guidelines for the processing of solid waste, guidelines for storage and collection of commercial, residential and institutional solid waste, and the criteria for municipal solid waste landfills. State solid waste programs may be more stringent than the federal code requires.

There were no State and/or tribal landfills or solid waste disposal facilities found within a half-mile radius of the target property.

Lists of state and tribal leaking storage tanks

A typical leaking underground storage tank (LUST) scenario involves the release of a fuel product from an underground storage tank (UST) that can contaminate surrounding soil, groundwater, or surface waters, or affect indoor air spaces. Once a leak is confirmed, immediate response actions must be taken to minimize or eliminate the source of the release and to reduce potential harm to human health, safety, and the environment. Each state has unique requirements for initiating responses to a release, and it is up to the UST owner or operator to conduct actions in compliance with his/her local rules.

There were no State and/or tribal leaking storage tanks found within a half-mile radius of the target property.

Lists of state and tribal registered storage tanks

EPA initially issued UST regulations in 1988. In 2015, EPA modified the UST regulation, which was effective October 13, 2015 in Indian Country and states without State Program Approval. EPA recognizes that, because of the size and diversity of the regulated community, state and local governments are in the best position to oversee USTs: 1) State and local authorities are closer to the situation in their domain and are in the best position to set priorities, 2) Subtitle I of the Solid Waste Disposal Act allows state UST programs approved by EPA to operate in lieu of the federal program, 3) the state program approval (SPA) regulations set criteria for states to obtain the authority to operate in lieu of the federal program. State programs must be at least as stringent as EPA's. A complete version of the law that governs USTs can be found in U.S. Code, Title 42, Chapter 82, Subchapter IX.

There were no State and/or tribal registered storage tanks found at subject and adjoining properties.

State and tribal institutional control/engineering control registries

Institutional controls are non-engineered instruments such as administrative and legal controls that help minimize the potential for human exposure to contamination and/or protect the integrity of the remedy. Engineering controls consist of engineering measures (e.g., caps, treatment systems, etc.) designed to minimize the potential for human exposure to contamination by either limiting direct contact with contaminated areas or controlling migration of contaminants through environmental media. It is EPA's expectation that treatment or engineering controls will be used to address principal threat wastes and that groundwater will be returned to its beneficial use whenever practicable.

There were no State and/or tribal institutional and/or engineering controls found filed against the target property.

Lists of state and tribal voluntary cleanup sites

State cleanup programs play a significant role in assessing and cleaning up contaminated sites. State cleanup programs typically are programs authorized by state statutes to address brownfields and other lower-risk sites that are not of federal interest. The EPA has historically supported the use of state cleanup programs and continues to provide grant funding to establish and enhance the programs. This approach was codified in 2002 as Section 182 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

There were no State and/or tribal voluntary cleanup sites found within a half-mile radius of the target property.

Lists of state and tribal brownfields sites

Since its inception in 1995, EPA's Brownfields and Land Revitalization Program has grown into a proven, results-oriented program that has changed the way communities address and manage contaminated property. The program is designed to empower states, tribes, communities, and other stakeholders to work together to prevent, assess, safely clean up, and sustainably reuse brownfields. Beginning in the mid-1990s, EPA provided small amounts of seed money to local governments that launched hundreds of two-year Brownfields pilot projects and developed guidance and tools to help states, communities and other stakeholders in the cleanup and redevelopment of brownfields sites.

There were no State and/or tribal brownfields sites found within a half-mile radius of the target property.

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Section 16

prepared for: Erie Land Ref: 778-005-01

2022-11-09

Environmental Radius Report



Summary

Federal

	< 1/4	1/4 - 1/2	1/2 - 1
Lists of Federal NPL (Superfund) sites	0	0	0
Lists of Federal Delisted NPL sites	0	0	-
Lists of Federal sites subject to CERCLA removals and CERCLA orders	0	0	-
Lists of Federal CERCLA sites with NFRAP	0	0	-
Lists of Federal RCRA facilities undergoing Corrective Action	0	0	-
Lists of Federal RCRA TSD facilities	0	0	-
Lists of Federal RCRA generators	0	-	-
Federal institutional control/engineering control registries	0	-	-
Federal ERNS list	0	-	-
State			
	< 1/4	1/4 - 1/2	1/2 - 1
Lists of state and tribal Superfund equivalent sites	0	0	0
Lists of state and tribal hazardous waste facilities	1	5	-
Lists of state and tribal landfills and solid waste disposal facilities	0	0	-
Lists of state and tribal leaking storage tanks	0	0	-
Lists of state and tribal registered storage tanks	0	-	-
State and tribal institutional control/engineering control registries	0	-	-

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Lists of state and tribal voluntary cleanup sites

Lists of state and tribal brownfields sites

Curo			
	< 1/4	1/4 - 1/2	1/2 - 1

0

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Lists of Federal NPL (Superfund) sites

The National Priorities List (NPL) is the list of sites of national priority among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States and its territories. The NPL is intended primarily to guide the EPA in determining which sites warrant further investigation. The NPL is updated periodically, as mandated by CERCLA.

There were no Federal NPL sites found within a one-mile radius of the target property.

Lists of Federal Delisted NPL sites

The EPA may delete a final NPL site if it determines that no further response is required to protect human health or the environment. Under Section 300.425(e) of the NCP (55 FR 8845, March 8, 1990), a site may be deleted when no further response is appropriate if EPA determines that one of the following criteria has been met: 1) EPA, in conjunction with the state, has determined that responsible parties have implemented all appropriate response action required, 2) EPA, in consultation with the state, has determined that all appropriate Superfund-financed responses under CERCLA have been implemented and that no further response by responsible parties is appropriate, 3) A remedial investigation/feasibility study (RI/FS) has shown that the release poses no significant threat to public health or the environment and, therefore, remedial measures are not appropriate.

There were no Federal Delisted NPL sites found within a half-mile radius of the target property.

Lists of Federal sites subject to CERCLA removals and CERCLA orders

CERCLA identifies the classes of parties liable under CERCLA for the cost of responding to releases of hazardous substances. In addition, CERCLA contains provisions specifying when Federal installations must report releases of hazardous substances and the cleanup procedures they must follow. Executive Order No. 12580, Superfund Implementation, delegates response authorities to EPA and the Coast Guard. Generally, the head of the Federal agency has the delegated authority to address releases at the Federal facilities in its jurisdiction.

There were no Federal sites subject to CERCLA removals and/or orders found within a half-mile radius of the target property.

Lists of Federal CERCLA sites with NFRAP

No Further Remedial Action Planned (NFRAP) is a decision made as part of the Superfund remedial site evaluation process to denote that further remedial assessment activities are not required and that the facility/site does not pose a threat to public health or the environment sufficient to qualify for placement on the National Priorities List (NPL) based on currently available information. These facilities/sites may be re-evaluated if EPA receives new information or learns that site conditions have changed. A NFRAP decision does not mean the facility/site is free of contamination and does not preclude the facility/site from being addressed under another federal, state or tribal cleanup program.

There were no Federal CERCLA sites with No Further Remedial Action Planned (NFRAP) decisions found within a half-mile radius of the target property.

Lists of Federal RCRA facilities undergoing Corrective Action

Corrective action is a requirement under the Resource Conservation and Recovery Act (RCRA) that facilities that treat, store or dispose of hazardous wastes investigate and cleanup hazardous releases into soil, ground water, surface water and air. Corrective action is principally implemented through RCRA permits and orders. RCRA permits issued to TSDFs must include provisions for corrective action as well as financial assurance to cover the costs of implementing those cleanup measures. In addition to the EPA, 44 states and territories are authorized to run the Corrective Action program.

There were no Federal RCRA facilities undergoing corrective action(s) found within a half-mile radius of the target property.

Lists of Federal RCRA TSD facilities

The final link in RCRA's cradle-to-grave concept is the treatment, storage, and disposal facility (TSDF) that follows the generator and transporter in the chain of waste management activities. The regulations pertaining to TSDFs are more stringent than those that apply to generators or transporters. They include general facility standards as well as unit-specific design and operating criteria.

There were no Federal RCRA treatment, storage and disposal facilities (TSDFs) found within a half-mile radius of target property.

Lists of Federal RCRA generators

A generator is any person who produces a hazardous waste as listed or characterized in part 261 of title 40 of the Code of Federal Regulations (CFR). Recognizing that generators also produce waste in different quantities, EPA established three categories of generators in the regulations: very small quantity generators, small quantity generators, and large quantity generators. EPA regulates hazardous waste under the Resource Conservation and Recovery Act (RCRA) to ensure that these wastes are managed in ways that protet human health and the environment. Generators of hazardous waste are regulated based on the amount of hazardous waste they generate in a calendar month, not the size of their business or facility.

There were no Federal RCRA generators found at the target property and/or adjoining properties.

Federal institutional control/engineering control registries

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Lists of state and tribal Superfund equivalent sites

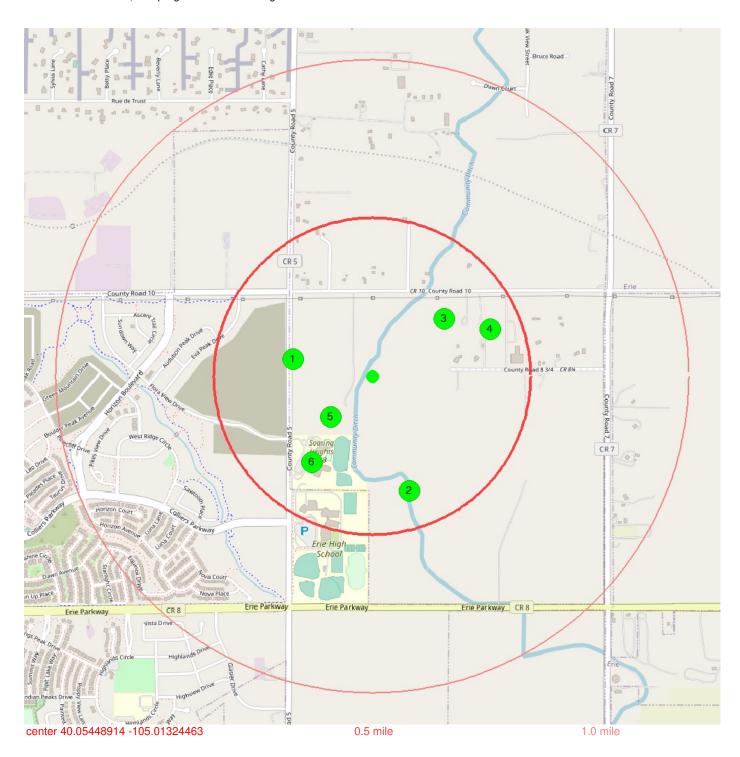
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Lists of state and tribal hazardous waste facilities

CDPHE - RCRA REGULATED SITES

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Registry ID 110063016052
Primary Name ERIE HUB PIPELINE

Address I 25 AND LEON A WURL PKWY

City ERIE
Site Type STATIONARY
Program System NPDES
FRS Link Site Detail
distance from center (miles) 0.2560

data source last updated 2021-11-08 from CDPHE-RCRA



Registry ID 110041630410

Primary Name KERR-MCGEE 35016776 - STATE OF COLO A.

Address NESW-16-1N-68W

City ERIE

Site Type STATIONARY
Program System AIR, AIRS/AFS, EIS

FRS Link Site Detail distance from center (miles) 0.3801

data source last updated 2021-11-08 from CDPHE-RCRA



Registry ID 110054270837

Primary Name

KERR-MCGEE 35027179

Address

NENW-16-1N-68W

City

ERIE AREA

Site Type

STATIONARY

Program System EIS
FRS Link Site Detail distance from center (miles) 0.2903

data source last updated 2021-11-08 from CDPHE-RCRA



Registry ID 110030743453
Primary Name KERR-MCGEE 61778
Address NWNE-16-1N-68W

City ERIE
Site Type STATIONARY
Program System AIR, AIRS/AFS, EIS

FRS Link Site Detail distance from center (miles) 0.4010

data source last updated 2021-11-08 from CDPHE-RCRA



Registry ID 110023147977

Primary Name KERR-MCGEE 62475
Address SWNW-16-1N-68W

City ERIE

Site Type STATIONARY
Program System AIR, AIRS/AFS, EIS

FRS Link Site Detail distance from center (miles) 0.1827

data source last updated 2021-11-08 from CDPHE-RCRA



 Registry ID
 110069999498

 Primary Name
 SVVSD ERIE PK 8

 Address
 23298 CR 5

City ERIE

Site Type STATIONARY

Program System NPDES
FRS Link Site Detail distance from center (miles) 0.3317

data source last updated 2021-11-08 from CDPHE-RCRA

Lists of state and tribal landfills and solid waste disposal facilities

Title 40 of the CFR parts 239 through 259 contain the regulations for non-hazardous solid waste programs set up by the states. EPA has requirements for state solid waste permit programs, guidelines for the processing of solid waste, guidelines for storage and collection of commercial, residential and institutional solid waste, and the criteria for municipal solid waste landfills. State solid waste programs may be more stringent than the federal code requires.

There were no State and/or tribal landfills or solid waste disposal facilities found within a half-mile radius of the target property.

Lists of state and tribal leaking storage tanks

A typical leaking underground storage tank (LUST) scenario involves the release of a fuel product from an underground storage tank (UST) that can contaminate surrounding soil, groundwater, or surface waters, or affect indoor air spaces. Once a leak is confirmed, immediate response actions must be taken to minimize or eliminate the source of the release and to reduce potential harm to human health, safety, and the environment. Each state has unique requirements for initiating responses to a release, and it is up to the UST owner or operator to conduct actions in compliance with his/her local rules.

There were no State and/or tribal leaking storage tanks found within a half-mile radius of the target property.

Lists of state and tribal registered storage tanks

EPA initially issued UST regulations in 1988. In 2015, EPA modified the UST regulation, which was effective October 13, 2015 in Indian Country and states without State Program Approval. EPA recognizes that, because of the size and diversity of the regulated community, state and local governments are in the best position to oversee USTs: 1) State and local authorities are closer to the situation in their domain and are in the best position to set priorities, 2) Subtitle I of the Solid Waste Disposal Act allows state UST programs approved by EPA to operate in lieu of the federal program, 3) the state program approval (SPA) regulations set criteria for states to obtain the authority to operate in lieu of the federal program. State programs must be at least as stringent as EPA's. A complete version of the law that governs USTs can be found in U.S. Code, Title 42, Chapter 82, Subchapter IX.

There were no State and/or tribal registered storage tanks found at subject and adjoining properties.

State and tribal institutional control/engineering control registries

Institutional controls are non-engineered instruments such as administrative and legal controls that help minimize the potential for human exposure to contamination and/or protect the integrity of the remedy. Engineering controls consist of engineering measures (e.g., caps, treatment systems, etc.) designed to minimize the potential for human exposure to contamination by either limiting direct contact with contaminated areas or controlling migration of contaminants through environmental media. It is EPA's expectation that treatment or engineering controls will be used to address principal threat wastes and that groundwater will be returned to its beneficial use whenever practicable.

There were no State and/or tribal institutional and/or engineering controls found filed against the target property.

Lists of state and tribal voluntary cleanup sites

State cleanup programs play a significant role in assessing and cleaning up contaminated sites. State cleanup programs typically are programs authorized by state statutes to address brownfields and other lower-risk sites that are not of federal interest. The EPA has historically supported the use of state cleanup programs and continues to provide grant funding to establish and enhance the programs. This approach was codified in 2002 as Section 182 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

There were no State and/or tribal voluntary cleanup sites found within a half-mile radius of the target property.

Lists of state and tribal brownfields sites

Since its inception in 1995, EPA's Brownfields and Land Revitalization Program has grown into a proven, results-oriented program that has changed the way communities address and manage contaminated property. The program is designed to empower states, tribes, communities, and other stakeholders to work together to prevent, assess, safely clean up, and sustainably reuse brownfields. Beginning in the mid-1990s, EPA provided small amounts of seed money to local governments that launched hundreds of two-year Brownfields pilot projects and developed guidance and tools to help states, communities and other stakeholders in the cleanup and redevelopment of brownfields sites.

There were no State and/or tribal brownfields sites found within a half-mile radius of the target property.

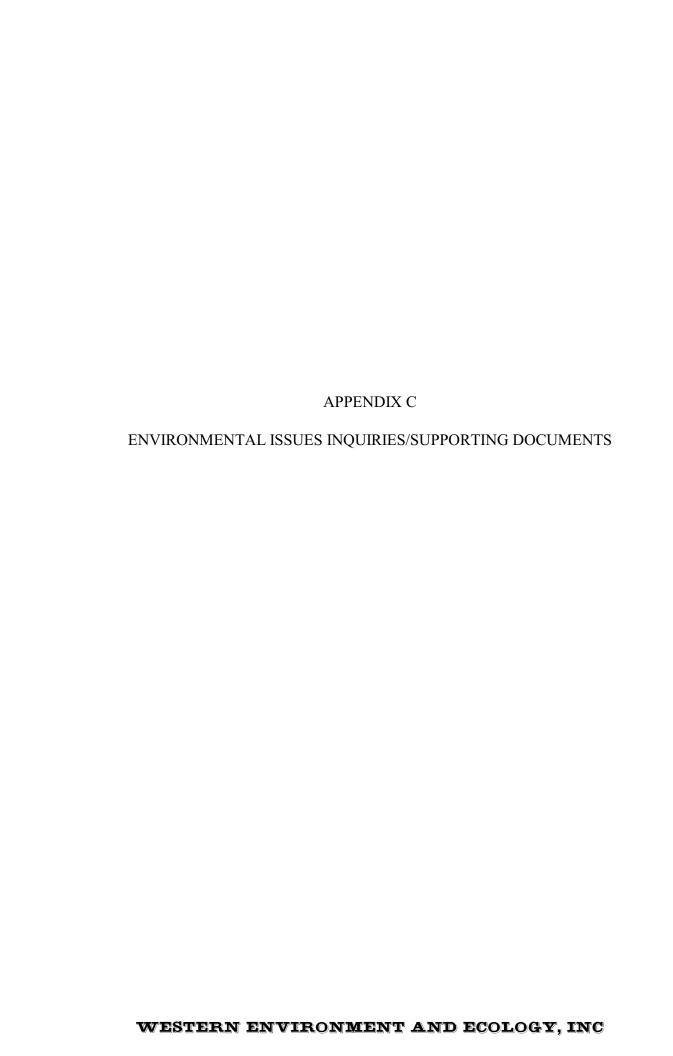
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APPENDIX B AIR PHOTO DOCUMENTATION



Greg Sherman

From: LaFontaine - DNR, Matthew

<matthew.lafontaine@state.co.us>

Sent: Tuesday, November 15, 2022 1:29 PM

To: Gracy Weil

Cc: Heidi Majerik; Greg Sherman

Subject: Re: Environmental Questionnaire

Attachments: Phase I ESA Erie Property.pdf; 19-008 Owner

Questionnaire.pdf

Hello All,

Please find attached the requested questionnaire and a 2008 phase 1 previously completed.

Matt

Matthew LaFontaine
Acquisition and Disposition Manager



State Land Board

An innovative land trust funding Colorado schools since 1876.

P 303.866.3454 x 3335

1127 Sherman Street, Suite 300, Denver, CO 80203

matthew.lafontaine@state.co.us | www.colorado.gov/statelandboard

On Thu, Nov 10, 2022 at 10:55 AM Gracy Weil < Gracy. Weil@southernland.com > wrote: Matt,

Please find attached the Owner (State Land Board) Environmental Questionnaire for Section 16. It would be great to have this filled out and returned to Greg Sherman, copied, and I at your earliest convenience.

Thank you, Gracy

Gracy Weil | Office Manager/ Executive Assistant

Southern Land Company

1225 17th Street, Suite 2420 | Denver, CO 80202

| **0** | 720-531-8938 | **M** | 843-568-6383

| **E** | Gracy.Weil@southernland.com

www.southernland.com

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Western Environment and Ecology, Inc. **User Questionnaire** for a Phase I Environmental Site Assessment, ASTM 1527-21

Subject Property Address or Description:

Approximately 414.380 acres in Section 16, Township 1 North, Range 68 West Weld County

In order to qualify for one of the Landowner Liability Protections (LLPs) offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001, The user of a Phase I Environmental Site Assessment must provide the following information (if available) to the environmental professional. Failure to provide this information could result in a determination that "all appropriate inquiry" is not complete.

1. Environmental cleanup nens that are filed or recorded against the site:
Are you aware of any environmental cleanup liens against the subject property that are
filed or recorded under federal, tribal, state, or local law?
If yes, please describe the lien and provide supporting documentation:
2. Activity and land use limitations (AULs) that are in place on the site or that have
been filed or recorded in a registry:
Are you aware of any AULs, such as engineering controls, land use restrictions, or
institutional controls that are in place at the subject property and/or have been filed or
recorded in a registry under federal, tribal, state, or local law?
If yes, please describe the AUL and provide supporting documentation:

Western Environment and Ecology, Inc. User Questionnaire for a Phase I Environmental Site Assessment, ASTM 1527-21

3. Specialized knowledge or experience of the person seeking to qualify for the LLP	
As the potential user of the subject property, do you have any specialized knowledge or	
experience related to the subject property or nearby properties? For example, are you	
involved in the same line of business as the current or former occupants of the property of	
adjoining property so that you would have specialized knowledge of the chemicals,	
processes, etc., used by this type of business?	
No	
If yes, please describe this specialized knowledge or experience:	
4. Relationship of the purchase price to the fair market value of the subject	
property if it were not contaminated.	
Has the purchase price of this property been lowered below fair market value because of	
any contamination or some type of environmental issue?	
If yes, please describe the reasons for the lower purchase price:	
5. Commonly known or reasonably ascertainable information about the property.	
Are you aware of commonly known or reasonably ascertainable information about the	
property that would help the environmental professional to identify conditions indicative	
of releases or threatened releases?	
A. Do you know the past uses of the property? (if "Yes", what?)	
B. Do you know of chemicals that are present or once were present at the	

Western Environment and Ecology, Inc. **User Questionnaire** for a Phase I Environmental Site Assessment, ASTM 1527-21

8. Are you aware or have you ever been notified that another property around the
subject site has caused or had an environmental impact to the property.
If yes, please describe which property and a brief description of the issue:
9. Are there any prior environmental reports concerning the subject property or
related addresses?
If yes, can you provide copies of these reports or know where there are copies of these reports?
Additional Information
How long have you had interest in acquiring the subject property?
Description of current activity on the subject property?
Do you have any knowledge of past ownership or activity on the subject property that
would be of environmental concern?
What is the reason the Phase I is being conducted? due diagrae
List all parties who will rely on the Phase I ESA report:
Southern Land Company
Completed by: Signature: Printed Name: Heidi Marievik
Date: 11/10/22

Western Environment and Ecology, Inc.

User Questionnaire for a Phase	I Environmental Site Assessment,	ASTM 1527-21
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	Do you know of any petroleum based products that are present or were once
	present on the subject property (in 5-gal or greater size containers, barrels, or
	tanks)?
D.	Do you know of any spills or other chemical releases that have taken place at
	the property?
E.	Do you know of any environmental cleanups that have taken place at the
	property?
If yes, ple	ase describe the information:
N.	
<u></u>	
7	
6. Do you	know of any special permits need for the operation of the business or
businesse	s that have occupied the subject property?
•	Waste water discharge permit?
•	Air emissions permit?
•	A
	Any other type of permits?
	Any other type of permits?
7. The de	Any other type of permits?
the ability	egree of obviousness of the presence of contamination at the property, and
the ability As the pot	egree of obviousness of the presence of contamination at the property, and y to detect the contamination by appropriate investigation.
the ability As the pote	egree of obviousness of the presence of contamination at the property, and y to detect the contamination by appropriate investigation. tential user of the subject property, based on your knowledge and experience
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Western Environment and Ecology, Inc. **Owner Questionnaire** for a Phase I Environmental Site Assessment, ASTM 1527-21

Subject Property Address or Description:

Approximately 414.380 Acres in Section 16, Township 1 North, Range 68 West,
Weld County, Colorado

In order to qualify for one of the Landowner Liability Protections (LLPs) offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001, The user of a Phase I Environmental Site Assessment must provide the following information (if available) to the environmental professional. Failure to provide this information could result in a determination that "all appropriate inquiry" is not complete.

1. Environmental cleanup liens that are filed or recorded against the site: Are you aware of any environmental cleanup liens against the subject property that are filed or recorded under federal, tribal, state, or local law?
If yes, please describe the lien and provide supporting documentation:
2. Activity and land use limitations (AULs) that are in place on the site or that have
been filed or recorded in a registry:
Are you aware of any AULs, such as engineering controls, land use restrictions, or
institutional controls that are in place at the subject property and/or have been filed or
recorded in a registry under federal, tribal, state, or local law?
If yes, please describe the AUL and provide supporting documentation:

Western Environment and Ecology, Inc. **Owner Questionnaire** for a Phase I Environmental Site Assessment, ASTM 1527-21

3. Specialized knowledge or experience of the person seeking to qualify for the LLP

As the owner of the subject property, do you have any specialized knowledge or

experience related to the subject property or nearby properties? For example, are you
involved in the same line of business as the current or former occupants of the property or
adjoining property so that you would have specialized knowledge of the chemicals,
processes, etc., used by this type of business?
No
If yes, please describe this specialized knowledge or experience:
4. Relationship of the purchase price to the fair market value of the subject
property if it were not contaminated.
Has the purchase price of this property been lowered below fair market value because of
any contamination or some type of environmental issue?
If yes, please describe the reasons for the lower purchase price:
5. Commonly known or reasonably ascertainable information about the property.
Are you aware of commonly known or reasonably ascertainable information about the
property that would help the environmental professional to identify conditions indicative
of releases or threatened releases? For example, as the owner:
A. Do you know the past uses of the property? (if "Yes", what?)
YES; AG, MINING, DEG, NOAR TOWER + SHE, ROW, PIPEUNG
B. Do you know of chemicals that are present or once were present at the
property? CRUSE OLL PER 2009 PHASE 1,
LINELY 05G, MINING, AG
March Colon, and the Colon

Western Environment and Ecology, Inc.

Owner Questionnaire for a Phase I Environmental Site Assessment ASTM 1527-21

C.	Do you know of any petroleum based products that are present or were once
	present on the subject property (in 5-gal or greater size containers, barrels, or
	tanks)? SEE PHASE 1
D.	Do you know of any spills or other chemical releases that have taken place at
	the property? u u
	Do you know of any environmental cleanups that have taken place at the
	property? _ ~ ~ ~
If yes, plea	se describe the information:
· ·	know of any special permits need for the operation of the business or that have occupied the subject property?
businesses	know of any special permits need for the operation of the business or that have occupied the subject property? Waste water discharge permit?
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Western Environment and Ecology, Inc. **Owner Questionnaire** for a Phase I Environmental Site Assessment, ASTM 1527-21

8. Are you aware or have you ever been notified that another property around
yours has caused or had an environmental impact to your property.
No
If yes, please describe which property and a brief description of the issue:
9. Are there any prior environmental reports (Phase 1 Environmental Site
Assessments or documentation of remedial activities) concerning the subject
property or related addresses?
If yes, can you provide copies of these reports or know where there are copies of these
reports? SEE ATTACHED
Additional Information
How long have you owned the subject property? 100+ 1ks
How long have you owned the subject property? 100 + YKS Description of current activity on the subject property? AG, 0½6; Row
Do you have any knowledge of past ownership or activity on the subject property that
would be of environmental concern? Ab, MINING, NOAA, 056
What is the reason the Phase I is being conducted? BUYEN DILLITAGE
List all parties who will rely on the Phase I ESA report:
COLONADO STATE LAWD BOARD
Complete them
Completed by: Signature: M. Liftertand
Signature:
Printed Name: MATTHEW LAFONTAINE Date: 1/14/2022
Date: 11/14/2022 AS ACQUISITION/DISPOSITION MG/h CORONNOO STATE LAND BOARD
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CORONADO STATE LAND DUTICES

Western Environment and Ecology, Inc. **Owner Questionnaire** for a Phase I Environmental Site Assessment, ASTM 1527-21

Additional Notes:	
EXTENSIVE 0+6 & ACT HISTORY. SEE COUCH LESSEE	
For UP TO PATE INFO.	
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PHASE I ENVIRONMENTAL SITE ASSESSMENT

ERIE PROPERTY TOWNSHIP 1 NORTH, RANGE 68 WEST, SECTION 16 ERIE, WELD COUNTY, COLORADO

Project Number: 25087780 Report Date: July 1, 2008



Prepared for:

COLORADO STATE LAND BOARD Denver, Colorado

Prepared by:

TerraconWheat Ridge, Colorado

July 1, 2008



Terracon Consultants, Inc. 10625 West I-70 Frontage Road North, Suite 3 Wheat Ridge, Colorado 80033 Phone 303.423.3300 Fax 303.423.3353 www.terracon.com

Mr. David Rodenberg Colorado State Land Board Governers Center II 600 Grant St Suite 306 Denver, Colorado 80203

Telephone: 303-318-0706

Re: Phase I Environmental Site Assessment

Erie Property

Township 1 North, Range 68 West, Section 16

Erie, Weld County, Colorado

Project No. 25087780

Dear Mr. Rodenberg:

Terracon Consultants, Inc. (Terracon) is pleased to submit the enclosed Phase I Environmental Site Assessment (ESA) report for the above-referenced site. This assessment was performed in accordance with our proposal dated June 25, 2008.

We appreciate the opportunity to perform these services for you. Please contact us if you have questions regarding this information or if we can provide any other services.

Sincerely,

Terracon Consultants, Inc.

Darren G. Bruns, MBA Environmental Scientist Russell Pickering, MS

Environmental Department Manager

Attachments

TABLE OF CONTENTS

EXEC	UTIVE	SUMMARY	i
1.0	INTR	DDUCTION	1
	1.1	Site Description	1
	1.2	Scope of Services	1
	1.3	Standard of Care	1
	1.4	Additional Scope Limitations, ASTM Deviations and Significant Data Gaps	2
	1.5	Reliance	3
	1.6	Client Provided Information	3
2.0	PHYS	ICAL SETTING	4
3.0	HIST	DRICAL USE INFORMATION	5
	3.1	Historical Topographic Maps	5
	3.2	Historical Aerial Photographs	6
	3.3	Historical City Directories	8
	3.4	Historical Fire Insurance Maps	8
	3.5	Property Tax File Information	8
	3.6	Title Search	8
	3.7	Environmental Liens	
	3.8	Zoning/Land Use Records	8
	3.9	Historical Interviews	8
	3.10	Prior Report Review	
	3.12	Historical Use Information Summary	9
4.0	RECO	ORDS REVIEW	9
	4.1	Federal and State/Tribal Databases	.10
	4.2	Local Agency Inquiries	.12
	4.3	Records Review Summary	.12
5.0	SITE	RECONNAISSANCE	.12
	5.1	General Site Information	.12
	5.2	General Description of Site, Occupants, and Operations	.13
	5.3	Site Observations	
	5.4	Site Reconnaissance Summary	.16
6.0	ADJC	INING PROPERTY RECONNAISSANCE	.16
7.0	ADDI	TIONAL SERVICES	.16
8.0	FIND	NGS, CONCLUSIONS, AND RECOMMENDATIONS	.16
	8.1	Findings and Conclusions	.16
	8.2	Recommendations	.16
9.0	DECL	ΔΡΑΤΙΟΝ	.18

TABLE OF CONTENTS (cont.)

APPENDICES

APPENDIX A	Figure 1 - Topographic Map, Figure 2 - Site Diagram
APPENDIX B	Description of Terms and Acronyms
APPENDIX C	Historical Documentation
APPENDIX D	Environmental Database Information
APPENDIX E	Site Photographs
APPENDIX F	Credentials

COMMON ACRONYMS 1

ACM Asbestos containing material	
AST Aboveground storage tank	
ASTM American Society for Testing and Materials	
AUL Activity and use limitation	
BGS Below ground surface	
BTEX Benzene, toluene, ethylbenzene, and xylenes	
CERCLA Comprehensive Environmental Response, Compensation, and Liability	Act
CFRCode of Federal Regulations	
DOT United States Department of Transportation	
EPA United States Environmental Protection Agency	
HREC Historical recognized environmental condition	
LUST Leaking underground storage tank	
MCL Maximum contaminant level	
MSDS Material safety data sheet	
NGVD National Geodetic Vertical Datum	
NOV Notice of violation	
NPL National Priority List	
NRCS USDA Natural Resource Conservation Service	
OSHA Occupational Safety and Health Administration	
PCB Poly-chlorinated biphenyl	
RCRA Resource Conservation and Recovery Act	
RECRecognized environmental condition	
SPCC Spill Prevention, Control and Countermeasure	
SWPPP Stormwater pollution prevention plan	
TEPH Total extractable petroleum hydrocarbons	
TPHTotal petroleum hydrocarbons	
TVPH Total volatile petroleum hydrocarbons	
TRI Toxic release inventory	
TSCA Toxic Substances Control Act	
USGS United States Geological Survey	
UST Underground storage tank	
VCPVoluntary cleanup program	
VOC Volatile organic compound	
<u>Units of measure</u>	

sq ft or ft2 square feet
mg/kg milligrams per kilogram
mg/l milligrams per liter
ug/l micrograms per liter
ppb parts per billion
ppmparts per million

 $^{^{\}rm 1}$ An additional list of acronyms and definitions is included in Appendix B.

PHASE I ENVIRONMENTAL SITE ASSESSMENT ERIE PROPERTY TOWNSHIP 1 NORTH, RANGE 68 WEST, SECTION 16 ERIE, WELD COUNTY, COLORADO

Project No. 25087780 Report Date: July 1, 2008

EXECUTIVE SUMMARY

This Phase I ESA was performed in accordance with our proposal dated June 25, 2008, and was conducted consistent with the procedures included in ASTM E 1527-05, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.* The ESA was conducted under the supervision or responsible charge of Russell Pickering, MS, environmental professional. Darren G. Bruns performed the site reconnaissance on June 24, 2008.

A cursory summary of findings is provided below. It should be recognized that details were not included or fully developed in this section, and the report must be read in its entirety for a comprehensive understanding of the items contained herein.

- The site is located at Township 1 North, Range 68 West, Section 16 in Erie, Weld County, Colorado. The site is an approximate 420-acre tract of land that has been improved with a guyed tower and two oil and/or natural gas wells.
- During Terracon's site reconnaissance, one leaking pad-mounted transformer and two oil and/or natural gas wells were observed on the site. De minimis staining was observed beneath the crude oil AST at the oil and/or natural gas well on the eastern portion of the site. The leaking pad-mounted transformer and the oil and/or natural gas operations present RECs to the site.
- Based on review of the historical information, the site was developed with residential farm houses and a coal mining operation on the west-central portion of the site as early as 1937. The coal mining operations terminated between 1974 and 1984. A guyed communications tower was constructed between 1974 and 1984. Two oil and/or natural gas wells have operated on the site since at least 1992. The two oil and/or natural gas wells present RECs to the site.
- Residential farm houses and Weld County Road 10, followed by residential farm houses, bound the site to the north. Weld County Road 7, followed by residential properties bound the site to the east. Weld County Road 8 and a high school, followed by undeveloped property bound the site to the south. Weld County Road 5, followed by undeveloped property bound the site to the west. None of the adjoining properties present RECs to the site.

EXECUTIVE SUMMARY (cont.)



• The regulatory database review identified no facilities listed within the ASTM 1527-05 search radii.

Recommendations

Terracon recommends contacting the electricity provider regarding the leaking pad-mounted transformer located within the NOAA lease compound.

Terracon recommends conducting a subsurface investigation to determine if the soil and/or groundwater have been impacted by the two oil and/or natural gas wells.

PHASE I ENVIRONMENTAL SITE ASSESSMENT ERIE PROPERTY TOWNSHIP 1 NORTH, RANGE 68 WEST, SECTION 16 ERIE, WELD COUNTY, COLORADO

Project No. 25087780 Report Date: July 1, 2008

1.0 INTRODUCTION

1.1 Site Description

Site Description

Site Name	Erie Property
Site Location/Address	Township 1 North, Range 68 West, Section 16, Erie, Weld County, Colorado
Land Area	Approximately 420 acres
Site Improvements	A guyed tower and two oil and/or natural gas wells

The site location is depicted on Figure 1 of Appendix A, which was reproduced from a portion of the USGS 7.5-minute series topographic map. A diagram of the site and adjoining properties is included as Figure 2 of Appendix A. Acronyms and terms used in this report are described in Appendix B.

1.2 Scope of Services

This Phase I ESA was performed in accordance with our proposal dated June 25, 2008, and was conducted consistent with the procedures included in ASTM E 1527-05, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process. The purpose of this ESA was to assist the client in developing information to identify RECs in connection with the site as reflected by the scope of this report. This purpose was undertaken through user-provided information, a regulatory database review, historical and physical records review, interviews, including local government inquiries, as applicable, and a visual noninvasive reconnaissance of the site and adjoining properties. Limitations, ASTM deviations, and significant gaps (if identified) are evident from reviewing the applicable scope of services and the report text.

1.3 Standard of Care

This ESA was performed in accordance with generally accepted practices of this profession, undertaken in similar studies at the same time and in the same geographical area. We have endeavored to meet this standard of care, but may be limited by conditions encountered during performance, a client-driven scope of work, or inability to review information not



received by the report date. When appropriate, these limitations are discussed in the text of the report, and an evaluation of their significance with respect to our findings has been conducted.

Phase I ESAs, such as the one performed at this site, are of limited scope, are noninvasive and cannot eliminate the potential that hazardous, toxic, or petroleum substances are present or have been released at the site beyond what is identified by the limited scope of this ESA. In conducting the limited scope of services described herein, certain sources of information and public records were not reviewed. It should be recognized that environmental concerns may be documented in public records that were not reviewed. No ESA can wholly eliminate uncertainty regarding the potential for RECs in connection with a property. Performance of this practice is intended to reduce, but not eliminate, uncertainty regarding the potential for RECs. No warranties, express or implied, are intended or made. The limitations herein must be considered when the user of this report formulates opinions as to risks associated with the site or otherwise uses the report for any other purpose. These risks may be further evaluated - but not eliminated - through additional research or assessment. We will, upon request, advise you of additional research or assessment options that may be available and associated costs.

1.4 Additional Scope Limitations, ASTM Deviations and Significant Data Gaps

Based upon the agreed-on scope of services, this ESA did not include subsurface or other invasive assessments, business environmental risk evaluations, or other services not particularly identified and discussed herein. Reasonable attempts were made to obtain information within the scope and time constraints set forth by the client; however, in some instances, information requested is not, or was not, received by the issuance date of the report. Consideration of such information is beyond the scope of this assessment. Information obtained for this ESA was received from several sources that we believe to be reliable; nonetheless, the authenticity or reliability of these sources cannot and is not warranted hereunder. This ESA was further limited by the following:

- Credentials of the company (Statement of Qualifications) have not been included in this report but are available upon request.
- Pertinent documents are referred to in the text of this report, and a separate reference section has not been included.
- A written request was submitted to the local government agency regarding documented RECs on the site. Records were not requested for off-site properties.



An evaluation of the significance of these limitations and missing information with respect to our findings has been conducted, and where appropriate, significant data gaps are identified and discussed in the text of the report. However, it should be recognized that an evaluation of significant data gaps is based on the information available at the time of report issuance, and an evaluation of information received after the report issuance date may result in an alteration of our conclusions, recommendations, or opinions. We have no obligation to provide information obtained or discovered by us after the issuance date of the report, or to perform any additional services, regardless of whether the information would affect any conclusions, recommendations, or opinions in the report. This disclaimer specifically applies to any information that has not been provided by the client.

This report represents our service to you as of the report date and constitutes our final document; its text may not be altered after final issuance. Findings in this report are based upon the site's current utilization, information derived from the most recent reconnaissance and from other activities described herein; such information is subject to change. Certain indicators of the presence of hazardous substances or petroleum products may have been latent, inaccessible, unobservable, or not present during the most recent reconnaissance and may subsequently become observable (such as after site renovation or development). Further, these services are not to be construed as legal interpretation or advice.

1.5 Reliance

This ESA report is prepared for the exclusive use and reliance of Colorado State Land Board. Use or reliance by any other party is prohibited without the written authorization of Colorado State Land Board and Terracon Consultants, Inc. (Terracon).

Reliance on the ESA by the client and all authorized parties will be subject to the terms, conditions and limitations stated in the proposal, ESA report, and Terracon's Agreement for Services. The limitation of liability defined in the Agreement for Services is the aggregate limit of Terracon's liability to the client and all relying parties.

Continued viability of this report is subject to ASTM E 1527-05 Sections 4.6 and 4.8. If the ESA will be used by a different user (third party) than the user for whom the ESA was originally prepared, the third party must also satisfy the user's responsibilities in Section 6 of ASTM E 1527-05.

1.6 Client Provided Information

Prior to the site visit, Mr. David Rodenberg, client's representative, provided the following information.



1.6.1 Specialized Knowledge or Experience

Mr. Rodenberg was not aware of specialized knowledge or experience that is material to RECs in connection with the site.

1.6.2 Actual Knowledge of Environmental Liens or AULs

Mr. Rodenberg did not have actual knowledge of environmental liens or AULs encumbering the site or in connection with the site.

1.6.3 Reason for Significantly Lower Purchase Price

Mr. Rodenberg was not aware of a significantly lower purchase price because of the presence of hazardous substances or petroleum products.

1.6.4 Commonly Known or Reasonably Ascertainable Information

Mr. Rodenberg was not aware of commonly known or reasonably ascertainable information within the local community about the site that is material to RECs in connection with the site.

1.6.5 Obvious Indicators of Contamination at the Site

Mr. Rodenberg was not aware of obvious indicators that point to the presence or likely presence of contamination at the site.

2.0 PHYSICAL SETTING

Physical Setting

PHYSICAL SETTING IN	SOURCE		
Topography (Refer to Ap	Topography (Refer to Appendix A for an excerpt of the Topographic Map)		
Site Elevation	Approximately Between 5,150 and 5,210 feet (NGVD)	USGS Topographic Map,	
Surface Runoff/ Topographic Gradient	Sloping towards the north-northwest	Erie and Frederick Quadrangle, 1967	
Closest Surface Water	An intermittent stream flowing from the southern border to the northern border	Map revised 1979	
Soil Characteristics			
Soil Type	Weld loam, 1 to 3 percent slopes, Nunn loam, 1 to 3 percent slopes, Ulm clay loam, 0 to 3 percent slopes, and Wiley-Colby complex, 3 to 5 percent slopes	Weld County, Colorado USDA, Natural Resources Conservation Service Soil	
Description	These well-drained soils are located on plains and terraces	Survey issued February 11, 2008	



PHYSICAL SETTING INFORMATION FOR SITE AND SURROUNDING AREA		SOURCE
Geology/Hydrogeology		
Formation	Eolium (Holocene and Pleistocene) and Artificial Fill (Upper Holocene)	
Description	Eolium (Holocene and Pleistocene): Light reddish-brown to olive-gray deposits of windblown clay, silt, and sand-sized particles of late Pinedale to Pinedale-Bull Lake interglacial age Artificial Fill (Upper Holocene): Includes compacted fill and uncompacted coal mine tailings	Preliminary Geologic Map of the Erie Quadrangle, Boulder County, Weld, and Adams Counties, Colorado by Colton and Anderson, 1977
Estimated Depth to First Occurrence of Ground water	Generally ranges between 5 feet and 20 feet below ground surface (bgs)	Depth to the Water Table (1976-1977) in the Boulder - Fort Collins -
Primary Aquifer	Colluvial, landslide, and windblown deposits, and in consolidated sedimentary rocks	Greeley Area, Front Range Urban Corridor, Colorado, 1979
*Hydrogeologic Gradient:	Not known - may be inferred to be parallel to topograph north-northwest)	ic gradient (primarily to the

^{*} The groundwater flow direction and the depth to shallow, unconfined groundwater, if present, would likely vary depending upon seasonal variations in rainfall and other hydrogeological features. Without the benefit of on-site groundwater monitoring wells surveyed to a datum, groundwater depth and flow direction beneath the site cannot be directly ascertained.

3.0 HISTORICAL USE INFORMATION

Terracon reviewed the following historical sources for indications of RECs. A summary of the historical review is included in Section 3.12. Copies of selected historical documents are included in Appendix C.

3.1 Historical Topographic Maps

Readily available historical USGS topographic maps were reviewed to identify RECs in connection with the site. Reviewed historical topographic maps are summarized below.

- Erie, Colorado, published 1950 from **1948/1949** aerials (1:24,000)
- Frederick, Colorado, published 1950 from **1950** aerials (1:24,000)
- Erie, Colorado, published 1967 from **1966** aerials (1:24,000)
- Frederick, Colorado, published 1950 from 1950 aerials, photorevised in 1969 from 1969 aerials (1:24,000)



- Erie, Colorado, published 1967 from 1966 aerials, photorevised in 1971 from **1971** aerials (1:24,000)
- Erie, Colorado, published 1967 from 1966 aerials, photorevised in 1979 from **1978** aerials (1:24,000)
- Frederick, Colorado, published 1950 from 1950 aerials, photorevised in 1994 from 1988 aerials (1:24,000)

Historical Topographic Maps

Direction	Description
Site	The inactive Clayton Mine, Community Ditch, and undeveloped property (1948/1949)
	Community Ditch and undeveloped property (1966 and 1971)
	Community Ditch, undeveloped property, and two small structures in the southeast portion of the site (1978)
	Undeveloped property and a medium-duty road, followed by undeveloped property (1948/1949)
North	Undeveloped property and a light-duty road, followed by undeveloped property with six small buildings (1966)
	Undeveloped property and a light-duty road, followed by undeveloped property with seven small buildings (1971 and 1978)
Foot	A light-duty road, followed by three small structures (1950 and 1969)
East	A light-duty road, followed by eight small structures (1988)
South	Undeveloped property and a medium-duty road, followed by undeveloped property (1948/1949, 1966, 1971 and 1978)
West	Undeveloped property and a medium-duty road, followed by undeveloped property (1948/1949)
	Undeveloped property and a light-duty road, followed by undeveloped property (1966, 1971, and 1978)

3.2 Historical Aerial Photographs

Selected historical aerial photographs from Colorado Aerial Photo Service (CAPS) were reviewed at approximately 10- to 15-year intervals, if readily available, to obtain information concerning the history of development on and near the site. Evaluation of these aerials may be limited by a photo's quality and scale. Selected photographs are summarized below.

• CAPS 1937, 1965, 1974, 1984, 1994, and 2005



Historical Aerial Photographs

Direction	Description
	A mining operation on the west-central portion of the site, four small structures in the southeastern corner of the site, four small structures on the northwestern corner of the site, and one dirt road that transects the site from the east to the west (1937)
	A mining operation on the west-central portion of the site, six small structures along the northern border of the site, ten small structures along the southern border of the site, three small structures along the western border, and four small structures along the eastern border (1965)
	A mining operation on the west-central portion of the site, two small structures along the northern border of the site, and one small structure along the eastern border (1974)
Site	One guyed communications tower in the southeastern corner of the site, the remnants of a mining operation in the west-central portion of the site, three small structures along the southern boundary, and three small structures along the northern boundary of the site (1984) One guyed communications tower in the southeastern corner of the site, the remnants of a mining operation in the west-central portion of the site, three small structures along the southern boundary, and five small structures along the northern boundary of the site with a transmission line (1994)
	One guyed communications tower in the southeastern corner of the site, one oil and/or natural gas well in the southeastern corner and one oil and/or natural gas well in the northwestern corner of the site (2005)
	A mining operation to the northeast, four small structures, and a dirt road, followed by undeveloped property (1937 and 1965)
	Six small structures and a road, followed by 11 small structures and undeveloped property (1974)
North	Ten small structures and a road, followed by 14 small structures and undeveloped property (1984)
	Fourteen small structures and a road, followed by 27 small structures and undeveloped property (1994)
	Fifteen small structures and a road, followed by 29 small structures and undeveloped property (2005)
	A dirt road, followed by undeveloped property (1937 and 1965)
F4	A dirt road, followed by three small structures and undeveloped property (1974)
East	A dirt road, followed by eight small structures and undeveloped property (1984)
	A dirt road, followed by 11 small structures and undeveloped property (1994) A dirt road, followed by 18 small structures and undeveloped property (2005)
	A dirt road, followed by undeveloped property (1937 and 1965)
South	A road, followed by a canal and undeveloped property (1974, 1984, and 1994)
	A school with athletic field and a road, followed by undeveloped property and a canal (2005)
West	A dirt road, followed by undeveloped property (1937, 1965, 1974, 1984, 1994, and 2005)



3.3 Historical City Directories

The Bresser's and Cole Companies annually publish city directories that contain listings of residences and businesses organized both alphabetically by name similar to a telephone book, and alphanumerically by street name then specifically by street address. Given the rural location of the site and the lack of historic development, city directories were not reviewed for this site.

3.4 Historical Fire Insurance Maps

Historical fire insurance maps produced by the Sanborn Map Company were requested from Environmental Data Resources Inc. (EDR) to evaluate past uses and relevant characteristics of the site and surrounding properties. Based upon inquiries to the above-listed Sanborn provider, Sanborn Maps were not available for the site.

3.5 Property Tax File Information

Based on a review of information obtained from Weld County Assessor's records, the current site owner is The State of Colorado.

3.6 Title Search

At the direction of the client, a title search was not included as part of the scope of services. Unless notified otherwise, we assume that the client is evaluating this information outside the context of this report.

3.7 Environmental Liens

Environmental lien records recorded against the site were not provided by the client. At the direction of the client, performance of a review of these records was not included as part of the scope of services and unless notified otherwise, we assume that the client is evaluating this information outside the context of this report.

3.8 Zoning/Land Use Records

According to Weld County Assessor, the site is currently zoned agricultural.

3.9 Historical Interviews

The following individuals were interviewed regarding historical use of the site.



Interviewees

<u>Interviewer</u>	Interviewee/Phone #	<u>Title</u>	<u>Date/Time</u>
Darren Bruns	Bruce Bartram	Owner Representative	June 23, 2008

Mr. Bartram was not aware of any pending, threatened or past environmental litigation, proceedings or notices of possible violations of environmental laws or liability in connection with the site.

3.10 Prior Report Review

Previous environmental reports, permits and registrations, or geotechnical reports for the site were not provided by the client to Terracon for review.

3.12 Historical Use Information Summary

Based on review of the historical information, the site was developed with residential farm houses and a coal mining operation on the west-central portion of the site as early as 1937. The coal mining operations terminated between 1974 and 1984. A guyed communications tower was constructed between 1974 and 1984. Two oil and/or natural gas wells were operated on the site since at least 1992. The two oil and/or natural gas wells present RECs to the site and are further discussed in Section 5.1.

4.0 RECORDS REVIEW

Regulatory database information was provided by EDR, a contract information services company. Information in this section is subject to the accuracy of the data provided by the information services company and the date at which the information is updated, and the scope herein did not include confirmation of facilities listed as "unmappable" by regulatory databases.

In some of the following subsections, the words up-gradient, cross-gradient and down-gradient refer to the topographic gradient in relation to the site. As stated previously, the groundwater flow direction and the depth to shallow groundwater, if present, would likely vary depending upon seasonal variations in rainfall and the depth to the soil/bedrock interface. Without the benefit of on-site groundwater monitoring wells surveyed to a datum, groundwater depth and flow direction beneath the site cannot be directly ascertained.



4.1 Federal and State/Tribal Databases

Listed below are the facility listings identified on federal and state/tribal databases within the ASTM-required search distances from the approximate site boundaries. Database definition, descriptions, and the database search report are included in Appendix D.

Federal and State Databases

<u>Database</u>	<u>Description</u>	Radius (miles)	<u>Listings</u>
	Federal		
NPL	The NPL is the EPA's database of uncontrolled or abandoned hazardous waste facilities that have been listed for priority remedial actions under the Superfund Program.	1.0	0
NPL (Delisted)	The NPL (Delisted) refers to facilities that have been removed from the NPL.	0.5	0
CERCLIS	The CERCLIS database is a compilation of facilities which the EPA has investigated or is currently investigating for a release or threatened release of hazardous substances pursuant to the CERCLA of 1980.	0.5	0
CERCLIS / NFRAP	CERCLIS/NFRAP refers to facilities that have been removed and archived from EPA's inventory of CERCLA sites.	0.5	0
RCRA CORRACTS/ TSD	The EPA maintains a database of RCRA facilities associated with treatment, storage, and disposal (TSD) of hazardous waste that are undergoing "corrective action." A "corrective action" order is issued when there has been a release of hazardous waste or constituents into the environment from a RCRA facility.	1.0	0
RCRA Non- CORRACTS/ TSD	The RCRA Non-CORRACTS/TSD Database is a compilation by the EPA of facilities which report storage, transportation, treatment, or disposal of hazardous waste. Unlike the RCRA CORRACTS/TSD database, the RCRA Non-CORRACTS/TSD database does not include RCRA facilities where corrective action is required.	0.5	0
RCRA Generators	The RCRA Generators database, maintained by the EPA, lists facilities that generate hazardous waste as part of their normal business practices. Generators are listed as either large (LQG), small (SQG), or conditionally exempt (CESQG). LQG produce at least 1000 kg/month of non-acutely hazardous waste or 1 kg/month of acutely hazardous waste. SQG produce 100-1000 kg/month of non-acutely hazardous waste. CESQG are those that generate less than 100 kg/month of non-acutely hazardous waste.	Site and adjoining properties	0



<u>Database</u>	<u>Description</u>	Radius (miles)	Listings
IC / EC	A listing of sites with institutional and/or engineering controls in place. IC include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls. EC include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.	Site	0
ERNS	The Emergency Response Notification System (ERNS) is a listing compiled by the EPA on reported releases of petroleum and hazardous substances to the air, soil and/or water.	Site	0
	State		
SHWS	The State of Colorado does not maintain a SHWS list. See the Federal CERCLIS list and Federal NPL list.	0.5	0
SWF/LF	State and/or Tribal database of solid waste facilities located within Colorado. The database information may include the facility name, class, operation type, area, estimated operational life, and owner.	0.5	0
LUST	State and/or Tribal database of leaking underground storage tanks in the state of Colorado.	0.5	0
UST	State and/or Tribal database of registered storage tanks in the State of Colorado which may include the owner and location of the tanks.	Site and adjoining properties	0
CO ERNS	Listing of spills reported to the CDPHE. Information includes releases of hazardous or potential hazardous chemical/materials into the environment.	Site	0
AUL	Activity and use limitations include both engineering controls and institutional controls. The Department of Public Health & Environment approve requests to restrict the future use of a property using an enforceable agreement called an environmental real covenant. When a contaminated site is not cleaned up completely, land use restrictions may be used to ensure that the selected cleanup remedy is adequately protective of human health and the environment.	Site	0
VCP	State and/or Tribal facilities included as Voluntary Cleanup Program sites.	0.5	0

In addition to the above ASTM-required listings, Terracon reviewed other federal, state, local and proprietary databases provided by the database firm. A list of the additional reviewed databases is included in the regulatory database report included in Appendix D.

No facilities were listed within the specified search distances.



Unmapped facilities are those that do not contain sufficient address or location information to evaluate the facility listing locations relative to the site. The report listed no facilities in the unmapped section.

4.2 Local Agency Inquiries

4.2.1 Health Department/Environmental Division

The Colorado Department of Public Health and Environment – Hazardous Materials and Waste Management Division (CDPHE) was contacted by phone regarding environmental records or information indicating environmental concerns for the site. According to Diana Huber, records center manager, no facilities were listed on the site.

4.3 Records Review Summary

The regulatory database review identified no facilities within the ASTM 1527-05 search radii.

5.0 SITE RECONNAISSANCE

5.1 General Site Information

Information contained in this section is based on a visual reconnaissance conducted while walking through the site and the accessible interior areas of structures, if any, located on the site. Figure 2 in Appendix A is a diagram of the site. Photo documentation of the site at the time of the visual reconnaissance is provided in Appendix E. Credentials of the individuals planning and conducting the site visit are included in Appendix F.

General Site Information

Site Reconnaissance	
Field Personnel	Darren G. Bruns
Reconnaissance Date	June 24, 2008
Weather Conditions	Sunny and warm
Site Contact/Title	None



Site Description	
Site Name	Erie Property
Site Location/Address	Township 1 North, Range 68 West, Section 16, Erie, Weld County, Colorado
Land Area	Approximately 420 acres
Site Improvements	A guyed tower and two oil and/or natural gas wells
Zoning	Agricultural
Site Topographic Relief	North-northwest
Site Utilities	
Electricity	United Power
Drinking Water	Lefthand Water District
Wastewater	Septic System
Natural Gas	United Power

5.2 General Description of Site, Occupants, and Operations

The site consists of a guyed communications tower, two oil and/or natural gas wells, and agricultural land.

5.3 Site Observations

The following table summarizes site observations and interviews. Affirmative responses (designated by an "X") are discussed in more detail following the table.

Site Characteristics

Category	Item or Feature	Observed
Site Operations,	Emergency generators	
Processes, and	Elevators	
Equipment	Air compressors	
	Hydraulic lifts	
	Dry cleaning	
	Photo processing	
	Laboratory hoods and/or incinerators	
	Waste treatment systems and/or water treatment	
	systems	
	Heating and/or cooling systems	



Category	Item or Feature	Observed
	Other processes or equipment	
Aboveground	Aboveground storage tanks	Х
Chemical or Waste	Drums, barrels and/or containers ≥ 5 gallons	
Storage	MSDS	
	Underground storage tanks or ancillary UST equipment	
l la de verre con d	Sumps, cisterns, catch basins and/or dry wells	
Underground Chemical or Waste	Grease traps	
Storage, Drainage or	Septic tanks and/or leach fields	
Collection Systems	Oil/water separators	
Concension dystems	Pipeline markers	
	Interior floor drains	
Electrical	Pad or pole mounted transformers and/or capacitors	Х
Transformers/ PCBs	Other equipment	
	Stressed vegetation	
	Stained soil	Χ
	Stained pavement or similar surface	
	Leachate and/or waste seeps	
Releases or Potential	Trash, debris and/or other waste materials	
Releases	Dumping or disposal areas	
Norousco	Construction/demolition debris and/or dumped fill dirt	
	Surface water discoloration, odor, sheen, and/or free	
	floating product	
	Strong, pungent or noxious odors	
	Exterior pipe discharges and/or other effluent discharges	
Other Notable Site	Surface water bodies	
Features	Quarries or pits	
, outuroo	Wells	Х

Aboveground storage tanks

Two ASTs were observed on the site during the site reconnaissance. The ASTs are associated with the two oil and/or natural gas wells on the site. The oil and natural gas wells are further discussed below.

Pad or pole mounted transformers and/or capacitors

During Terracon's site visit, four pad-mounted transformers, owned and serviced by United Power, were observed in the NOAA communication tower lease area; however, no information with regard to PCB content of the transformer fluids was observed. Transformers contain mineral oil which may contain minor amounts of PCB and could be considered "PCB contaminated" (PCB content of 50-500 ppm).



United Power maintains responsibility for the transformers, and if the transformers were "PCB contaminated," the utility company is not required to replace the transformer fluids until a release is identified. Dark staining was observed on one of the four transformers in the NOAA lease area. The remaining transformers had no evidence of current or prior release. Based on the visual observations, the leaking transformer presents a REC to the site. The remaining transformers do not present a REC to the site.

Stained soil

Stained soil was observed immediately beneath the eastern oil AST during the site reconnaissance. The area was approximately 6-square feet in area. The potential cause of this release is oil and gas operations. The oil and/or natural gas well presents a REC to the site and is further discussed below.

Other Notable Site Features

Wells

Two oil and/or natural gas wells were observed at the site. One oil and/or natural gas well was on the eastern portion of the site and one oil and/or natural gas well was on the western portion of the site. No soil staining above de minimis levels was observed around the oil and gas equipment.

Terracon reviewed records from the Colorado Oil and Gas Information System (COGIS) for the observed facilities (included in Appendix C). According to Colorado Oil and Gas Conservation Commission (COGCC), the wells were installed in 1992. Currently, the wells are producing oil and natural gas. Terracon interviewed Mr. Paul Schneider with Anadarko Petroleum Corp. (formerly Kerr McGee) regarding the oil and/or natural gas well located on the western portion of the site. Mr. Schneider stated Anadarko had no record of material releases of petroleum hydrocarbons associated with the on-site well and equipment (State of Colorado AZ #1).

Terracon interviewed Mr. Curtis Reader with Noble Energy regarding the oil and/or natural gas well located on the eastern portion of the site. At the issuance of this report, a response has not been received from Mr. Reader regarding the State #16-9 well.

Terracon did not identify releases of petroleum hydrocarbons associated with oil and gas operations on the site that would appear to exceed de minimis quantities. Based on historic oil and/or gas industry trends that suggest material releases are relatively common, the ongoing oil and gas operations on the site present a REC.



5.4 Site Reconnaissance Summary

During Terracon's site reconnaissance, one leaking pad-mounted transformer and two oil and/or natural gas wells were observed on the site. De minimis staining was observed beneath the crude oil AST at the oil and/or natural gas well on the eastern portion of the site. The leaking pad-mounted transformer and the oil and/or natural gas operations present RECs to the site.

6.0 ADJOINING PROPERTY RECONNAISSANCE

Visual observations of adjoining properties (from site boundaries) are summarized below.

Adjoining Properties

Direction	Description
North	Residential properties and a dirt road, followed by residential properties
East	A paved road, followed by agricultural property and residential properties
South	A school and a paved road, followed by undeveloped property
West	A paved road, followed by undeveloped property

7.0 ADDITIONAL SERVICES

Per the agreed scope of services specified in the proposal, additional services (e.g., asbestos sampling, lead-based paint sampling, wetlands evaluation, lead in drinking water testing, radon testing, etc.) were not conducted.

8.0 FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

8.1 Findings and Conclusions

This Phase I ESA was performed in accordance with our proposal dated June 25, 2008, and was conducted consistent with the procedures included in ASTM E 1527-05, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process. The ESA was conducted under the supervision or responsible charge of Russell Pickering, MS, environmental professional. Darren G. Bruns performed the site reconnaissance on June 24, 2008.



A cursory summary of findings is provided below. It should be recognized that details were not included or fully developed in this section, and the report must be read in its entirety for a comprehensive understanding of the items contained herein.

- The site is located at Township 1 North, Range 68 West, Section 16 in Erie, Weld County, Colorado. The site is an approximate 420-acre tract of land that has been improved with a guyed tower and two oil and/or natural gas wells.
- During Terracon's site reconnaissance, one leaking pad-mounted transformer and two oil and/or natural gas wells were observed on the site. De minimis staining was observed beneath the crude oil AST at the oil and/or natural gas well on the eastern portion of the site. The leaking pad-mounted transformer and the oil and/or natural gas operations present RECs to the site.
- Based on review of the historical information, the site was developed with residential farm houses and a coal mining operation on the west-central portion of the site as early as 1937. The coal mining operations terminated between 1974 and 1984. A guyed communications tower was constructed between 1974 and 1984. Two oil and/or natural gas wells have operated on the site since at least 1992. The two oil and/or natural gas wells present RECs to the site.
- Residential farm houses and Weld County Road 10, followed by residential farm houses, bound the site to the north. Weld County Road 7, followed by residential properties bound the site to the east. Weld County Road 8 and a high school, followed by undeveloped property bound the site to the south. Weld County Road 5, followed by undeveloped property bound the site to the west. None of the adjoining properties present RECs to the site.
- The regulatory database review identified no facilities listed within the ASTM 1527-05 search radii.

8.2 Recommendations

Terracon recommends contacting the electricity provider regarding the leaking pad-mounted transformer located within the NOAA lease compound.

Terracon recommends conducting a subsurface investigation to determine if the soil and/or groundwater have been impacted by the two oil and/or natural gas wells.

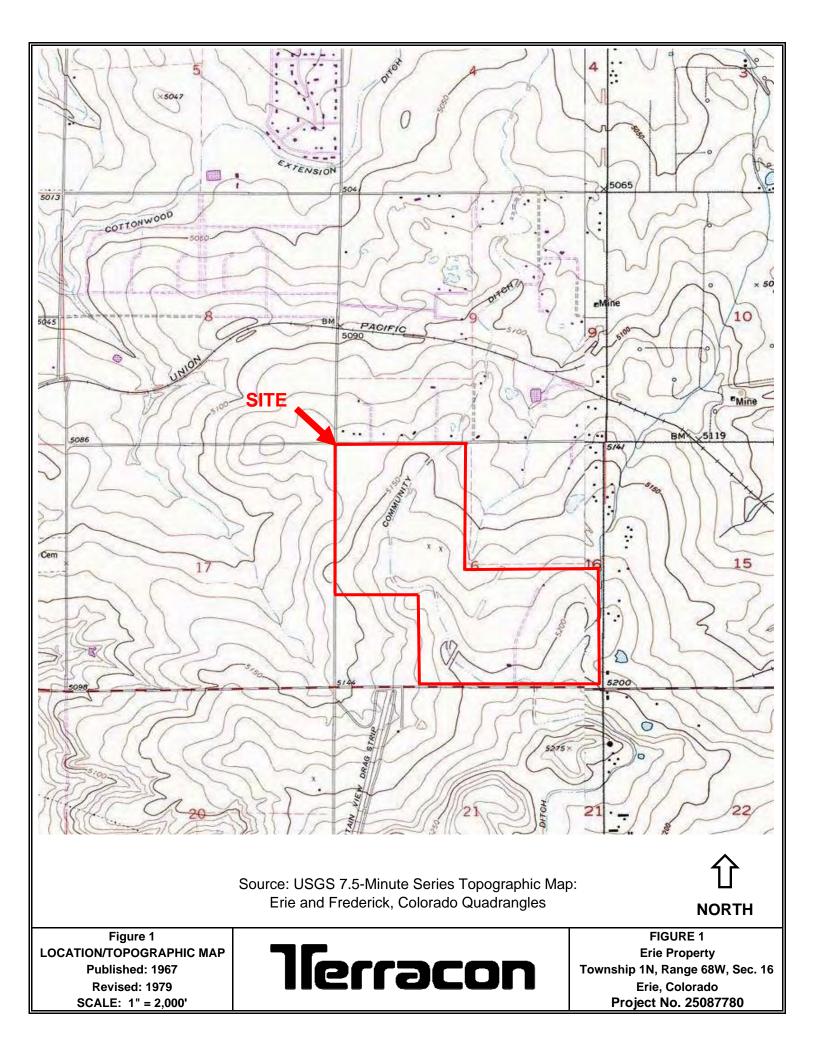


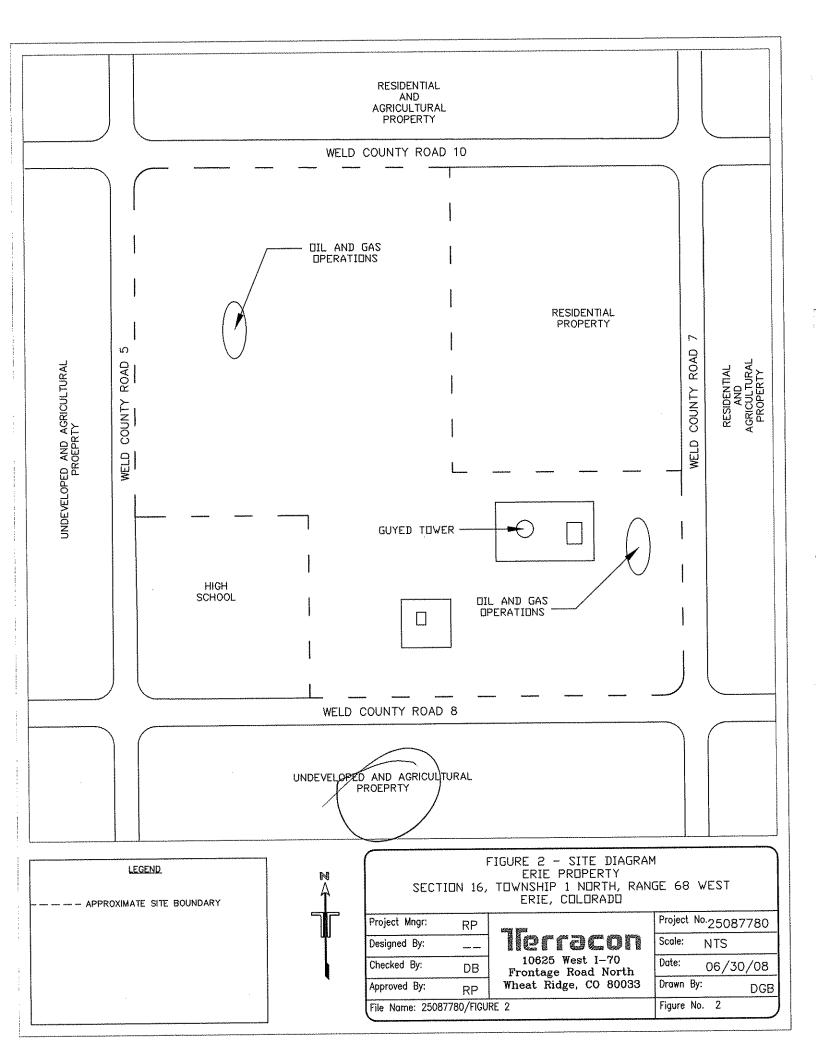
9.0 DECLARATION

I, Russell Pickering, MS, declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in Section 312.10 of 40 CFR 312; and I have the specific qualifications based on education, training, and experience to assess a site of the nature, history, and setting of the subject site. I have developed and performed the All Appropriate Inquiries in conformance with the standards and practice set forth in 40 CFR Part 312.

APPENDIX A

Figure 1 - Topographic Map, Figure 2 - Site Diagram





APPENDIX B

Description of Terms and Acronyms

Description of Selected General Terms and Acronyms

Term/Acronym	Description
	Asbestos Containing Material. Asbestos is a naturally occurring mineral, three varieties of which (chrysotile, amosite, crocidolite) have been commonly used as fireproofing or as binding agents in construction materials. Inhalation of asbestos fibers has been documented to cause asbestosis (scarring of the lung), lung cancer, and mesothelioma (a cancer of the chest wall lining). Most Federal and State agencies define ACM as a material containing more that one (1) percent asbestos, although some states, such as California, define ACM as material containing 0.1% or more asbestos. In order to determine the ACM status of suspect building materials, a minimum number of samples must be collected and analyzed, containing 0.1% or more asbestos. In order to determine the ACM status of suspect building materials, a minimum number of samples must be collected and analyzed.
ACM	depending on the type and quantity of the suspect material. A suspect material can only be confirmed as not-Activity when all ayours results of all required satisfies are below applicable regulatory limits. Asbestos concentrations are generally determined using polarized light microscopy or transmission electron microscopy. An asbestos containing material may be classified as either friable or non-friable. Friable materials are those that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. Non-friable ACM are materials in which the asbestos fibers are more firmly bound in a matrix of tar, plastic or other such material, and which have a lower potential for asbestos fiber release.
	Federal and State regulations require that that an asbestos survey be performed prior to renovation, dismantling, demolition or other activities that may disturb suspect or confirmed ACM unless such materials are removed as ACM prior to planned disturbances. ACM removal may also be required if confirmed ACM becomes damaged, or if renovation or demolition activities could result in damage to confirmed or suspect ACM. Depending upon the quantity, notification to Federal or State regulatory agencies may be required must be performed by a licensed abatement contractor in accordance with applicable folders.
AHERA	Asbestos Hazard Emergency Response Act
AST	Above Ground Storage Tanks. ASTs are generally described as storage tanks less than 10% of which are below ground (i.e., buried). Tanks located in a basement, but not buried, are also considered ASTs. Whether, and the extent to which, an AST is regulated, is determined on a case-by-case basis and depends upon tank size, its contents and the introduction of the location.
Alls	Activity and I se I imitations
BGS	Below Ground Surface
BTEX	Benzene, Toluene, Ethyl benzene, and Xylenes. BTEX are VOC components found in gasoline and commonly used as analytical indicators of a petroleum hydrocarbon release.
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act (a.k.a. Superfund). CERCLA is the federal act that regulates abandoned or uncontrolled hazardous waste sites. Under this Act, joint and several liability may be imposed on potentially responsible parties for cleanup-related costs.
CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System. An EPA compilation of sites having suspected or actual releases of hazardous substances to the environment. CERCLIS also contains information on site inspections, preliminary assessments and remediation of hazardous waste sites. These sites are typically reported to EPA by states and municipalities or by third parties pursuant to CERCLA Section 103.
CFR	Code of Federal Regulations
CESOG	Conditionally exempt small quantity generators.
DOT	U.S. Department of Transportation
ЕРА	U.S. Environmental Protection Agency
ERNS	Emergency Response Notification System. An EPA-maintained federal database which stores information on notifications of oil discharges and hazardous substance releases in quantities greater than the applicable reportable quantity under CERCLA. ERNS is a cooperative data-sharing effort between EPA, DOT, and the National Response Center.
ESA	Environmental Site Assessment

Description of Terms and Acronyms (cont.)

Elbardose Bairforred Diastir	
יויים דימאוני	
As defined under CERCLA, this is (A) any substance designated pursuant to section 1321(b)(2)(A) of Title 33, (B) any element, compound, mixture, solution, or substance	kture, solution, or substance
designated pursuant to section bouz of this line, (V) any hazardous waste having characteristics identified under of issted pursuant to section.	The Colle Vector Disposes Tox
(with some exclusions); (D) any toxic pollutant listed under section 1317(a) of Title 33; (E) any hazardous air pollutant listed under section 112 of the Clear Air Act; and (F) any	of the Clear Air Act; and (F) any
imminently hazardous chemical substance or mixture with respect to which the EPA Administrator has taken action under section 2606 of Title 15. This term does not include	15. This term does not include
petroleum, including crude oil or any fraction thereof which is not otherwise listed as a hazardous substance under subparagraphs (A) through (F) above, and the term does not	(F) above, and the term does not
include natural gas, or synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas).	
This is defined as having characteristics identified or listed under section 3001 of the Solid Waste Disposal Act (with some exceptions). RCRA, as amended by the Solid Waste	i, as amended by the Solid Waste
Disposal Act of 1980, defines this term as a "solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious	cal, chemical, or infectious
characteristics may (A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness; or (B) pose a	rsible illness; or (B) pose a
substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed."	ierwise managed."
Industrial Controls / Engineering Controls	
Innocent Landowner Program	
Innocent Owner/Operator Program	
Large quantity generators.	
Leaking Underground Storage Tank. This is a federal term set forth under RCRA for leaking USTs. Some states also utilize this term.	
Maximum Contaminant Level. This Safe Drinking Water concept (and also used by many states as a ground water cleanup criteria) refers to the limit on drinking water	he limit on drinking water
contamination that determines whether a supplier can deliver water from a specific source without treatment.	
Material Safety Data Sheets. Written/printed forms prepared by chemical manufacturers, importers and employers which identify the physical and chemical traits of hazardous	and chemical traits of hazardous
chemicals under OSHA's Hazard Communication Standard.	****
National Emissions Standard for Hazardous Air Pollutants (Federal Clean Air Act). This part of the Clean Air Act regulates emissions of hazardous air pollutants.	dous air pollutants.
Facilities where there is "No Further Remedial Action Planned," as more particularly described under the Records Review section of this report.	1
National Geodetic Vertical Datum	
Notice of Violation. A notice of violation or similar citation issued to an entity, company or individual by a state or federal regulatory body indicating a violation of applicable rule or	ating a violation of applicable rule or
regulations has been identified.	=
National Pollutant Discharge Elimination System (Clean Water Act). The federal permit system for discharges of polluted water.	
National Priorities List, as more particularly described under the Records Review section of this report.	
Occupational Safety and Health Administration or Occupational Safety and Health Act	
Presumed Asbestos-Containing Material. A material that is suspected of containing or presumed to contain asbestos but which has not been analyzed to confirm the presence or	analyzed to confirm the presence or
absence of asbestos.	
Polychiorinated Biphenyl. A halogenated organic compound commonly in the form of a viscous liquid or resin, a flowing yellow oil, or a waxy solid. This compound was historically	olid. This compound was historically
used as dielectric fluid in electrical equipment (such as electrical transformers and capacitors, electrical ballasts, hydraulic and heat transfer fluids), and for numerous heat and fire	iids), and for numerous heat and fire
sensitive applications. PCB was preferred due to its durability, stability (even at high temperatures), good chemical resistance, low volatility, flammability, and conductivity. PCBs,	ammability, and conductivity. PCBs,
however, do not break down in the environment and are classified by the EPA as a suspected carcinogen. 1978 regulations, under the Toxic Substances Confrol Act, prohibit	Substances Control Act, prohibit
manufacturing of PCB-containing equipment; however, some of this equipment may still be in use today.	**************************************
picoCuries per Liter of Air. Unit of measurement for Radon and similar radioactive materials.	
Polarized Light Microscopy (see ACM section of the report, if included in the scope of services)	
Vicroscopy (see ACM section of t	the report, if included in the scope of services)

Description of Terms and Acronyms (cont.)

Term/Acronym	Description
PST	Petroleum Storage Tank. An AST or UST that contains a petroleum product.
Radon	A radioactive gas resulting from radioactive decay of naturally-occurring radioactive materials in rocks and soils containing uranium, granite, shale, phosphate, and pitchblende. Radon concentrations are measured in picoCuries per Liter of Air. Exposure to elevated levels of radon creates a risk of lung cancer, this risk generally increases as the level of radon and the duration of exposure increases. Outdoors, radon is diluted to such low concentrations that it usually does not present a health concern. However, radon can accumulate in building basements or similar enclosed spaces to levels that can pose a risk to human health. Indoor radon concentrations depend primarily upon the building's construction, design and the concentration of radon in the underlying soil and ground water. The EPA recommended annual average indoor "action level" concentration for residential structures is 4.0 pCi/I.
RCRA RCRA Generators	Resource Conservation and Recovery Act. Federal act regulating solid and hazardous wastes from point of generation to time of disposal ("cradle to grave"). 42 U.S.C. 6901 et seq. The RCRA generators list is part of the RCRIS database maintained by EPA and lists facilities that generate hazardous waste as part of their normal business operations, as more
RCRA	particularly defined under Section 5.0 of this report. The USEPA maintains a database of RCRA facilities associated with treatment, storage, and disposal (TSD) of hazardous materials, which are undergoing "corrective action". A
CORRACTS/TSDs RCRA Non-	"corrective action" order is issued when there is a release of hazardous waste or constituents into the environment from a KCRA Tachiny. The RCRA Non-CORRACTS/TSD Database is a compilation by the USEPA of facilities, which report storage, transportation, treatment, or disposal of hazardous waste. Unlike the
CORRACTS/TSDs RCRA	RCRA CORRACT S/TSD database, the RCRA Non-CORRACTS/TSD database does not include north administrative Administr
Violators List	facilities for noncompliance.
RCRIS	Resource Conservation and Recovery Information System, as defined in the Records Review section of this report.
	Recognized Environmental Conditions are defined by ASTM E 1527-05 as "the presence or any hazardous substances or periodeur products on a property under conditions that indicate an existing release, a past release, or a material threat of release of any hazardous substances or petroleum products into structures on the property
Z III	or into the ground, ground water, or surface water of the property." The term includes hazardous substances or petroleum products even under conditions of compliance with laws. The term is not intended to include <i>de minimis</i> conditions that generally do not present a material risk of harm to the public health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.
SCL	State "CERCLIS" List (see SPL /State Priority List, below).
SPCC	Spill Prevention, Control and Countermeasures. SPCC plans are required under federal law (Clean Water Act and Oil Pollution Act) for any facility storing petroleum in tanks and/or containers of 55-gallons or more that when taken in aggregate exceed 1,320 gallons. SPCC plans are also required for facilities with underground petroleum storage tanks with capacities of over 42,000 gallons. Many states have similar spill prevention programs, which may have additional requirements.
SPL	State Priority List. State list of confirmed sites having contamination in which the state is actively involved in clean up activities or is actively pursuing potentially responsible parties for clean up. Sometimes referred to as a State "CERCLIS" List.
SQG	Small quantity generators.
SWF	Solid Waste Facility. Landfills listed by a state database. Total Detrolation Hydrocarbons
TRI	ine EPA report on releas munity Right to Know Ac
TSCA	Toxic Substances Control Act. A federal law regulating manufacture, import, processing and distribution of chemical substances not specifically regulated by other federal laws (such as asbestos, PCBs, lead-based paint and radon). 15 U.S.C 2601 et seq.
USACE	United States Army Corps of Engineers

Description of Terms and Acronyms (cont.)

	White the state of
Term/Acronym	Description
nsc	United States Code
nses	United States Geological Survey
USNRCS	United States Department of Agriculture-Natural Resource Conservation Service
UST	Underground Storage Tank. Most federal and state regulations, as well as ASTM E 1527-05, define this as any tank, incl., underground piping connected to the tank, that is or has been used to contain hazardous substances or petroleum products and the volume of which is 10% or more beneath the surface of the ground (i.e., buried).
VCP	Voluntary Cleanup Program
VOC	Volatile Organic Compound
Wetlands	Areas that are typically saturated with surface or ground water that creates an environment supportive of wetland vegetation (i.e., swamps, marshes, bogs). The <u>Corps of Engineers Wetlands Delineation Manual</u> (Technical Report Y-87-1) defines wetlands as areas inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. For an area to be considered a jurisdictional wetland, it must meet the following criteria: more than 50 percent of the dominant plant species must be categorized as Obligate, Facultative Wetland, or Facultative on lists of plant species that occur in wetlands; the soil must be hydric; and, wetland hydrology must be present. The federal Clean Water Act which regulates "waters of the US," also regulates wetlands, a program jointly administered by the USACE and the EPA. Waters of the U.S. are defined as: (1) waters used in interstate or foreign commerce, including all waters subject to the ebb and flow of tides; (2) all interstate waters including interstate wetlands; (3) all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, etc., which the use, degradation, or destruction could affect interstate/ foreign commerce; (4) all impoundments of waters otherwise defined as waters of the U.S., (5) ponds, etc., which the use, degradation, or destruction could affect interstate/ foreign commerce; (4) all impoundments of waters otherwise defined as waters of the U.S., (5) ponds, etc., which the use, degradation, or destructions are such as intrastate lakes, invers, streams (including all vegetations of the U.S., (5) ponds, etc., which the use, degradation, or destructions are such as intrastate lakes, inverse the program of the U.S., (6) and the U.S., (7) are the program of the U.S., (8) are the U.S., (9) and (
	tributaries of waters identified in 1 through 4 above; (b) the terriforal seas; and (7) wetlands adjacent to waters identified in 1 through 6 above. Only the concerning of th

Description of Terms and Acronyms (cont.)

Colorado	Description
Term/Acronym	
SHWS	The State of Colorado does not maintain a SHWS list. See the Federal CERCLIS list and Federal NPL list.
SWF/LF	State and/or Tribal database of solid waste facilities located within Colorado. The database information may include the facility name, class, operation type, area, estimated
	operational life, and owner.
LUST	State and/or Tribal database of leaking underground storage tanks in the state of Colorado.
UST	State and/or Tribal database of registered storage tanks in the State of Colorado which may include the owner and location of the tanks.
CO ERNS	Listing of spills reported to the CDPHE. Information includes releases of hazardous or potential hazardous chemical/materials into the environment.
AUL	Activity and use limitations include both engineering controls and institutional controls. The Department of Public Health & Environment approve requests to restrict the future use of
	a property using an enforceable agreement called an environmental real covenant. When a contaminated site is not cleaned up completely, land use restrictions may be used to
	ensure that the selected cleanup remedy is adequately protective of human health and the environment.
VCP	State and/or Tribal facilities included as Voluntary Cleanup Program sites.

APPENDIX C

Historical Documentation

COGIS - WELL Information

Related Insp. MIT GIS Doc If Wellbore Sorder Scout Card Surface Location Data for API # 05-123-15592 Status: F

Well Name/No:

STATE OF COLORADO AZ #1 (click well name for production)

Operator:

KERR-MCGEE OIL & GAS ONSHORE LP - 47120

Status Date:

4/14/1998

Federal or State Lease #: Location:

70/8570-S SWNW 16 1N 6

County:

WELD #123

Elevation:

5,158 ft.

Field: Planned Location WATTENBERG - #90750

Lat/Long: 40.054007/-105.014436

Lat/Long Calculat

Wellbore Data for Sidetrack #00

1555 FNL 1040 FWL

Status: PR 4/1

Spud Date:

2/22/1992

Spud Date is:

ACTUAL

Wellbore Permit

Permit #:

19920173

Expiration Date:

Υ

Prop Depth/Form: Mineral Owner:

8758 STATE Surface Mineral Owner Same:

Surface Owner:

Unit:

Unit Number:

7018570S

Code: DKJCD, Formation: DAKOTA-J-CODELL, Order: 499, Unit Acreage: 320, Drill Formation and Spacing:

Wellbore Completed

Completion Date:

1/11/1994

Measured TD:

8748

Measured PB depth:

8700

True Vertical TD:

True Vertical PB depth:

Log Types:

DIL, SP, GR, CAL, CNL, LDT

Casing:

String Type: SURF , Hole Size: 12.25, Size: 8.625, Top: 0, Depth: 1274, Weight: 24

Cement:

Sacks: 880, Top: 0, Bottom: , Method Grade:

Casing:

String Type: 1ST, Hole Size: 7.875, Size: 5.5, Top: 0, Depth: 8743, Weight: 17

Cement:

Sacks: 600, Top: 0, Bottom: , Method Grade: CBL

Formation	Log Top	Log Bottom	Сс
SUSSEX	4820		
SHANNON	5240		
NIOBRARA	7540		
CODELL	7880		
J SAND	8348		
DAKOTA	8504		

Completed information for formation CODL

1st Production Date:

N/A

Choke Size:

Status Date:

4/14/1998

Hole Completion: Production Method:

Commingled:

Formation Name:

Open Hole Top:

CODELL

Status:

PR

Formation Treatment:

Tubing Size:

2.375

8349

Tubing Packer Depth:

Tubing Setting Depth: Tubing Multiple Packer:

Open Hole Bottom:

No Initial Test Data was found for formation CODL.

Perforation Data:

Interval Bottom:

7822

Interval Top:

7904

1st Production Date:

N/A

Hole Size: 0.5 # of Holes: 72 Completed information for formation DKJCD 1st Production Date: N/A Choke Size: 0.000 Hole Completion: Status Date: N/A Υ Production Method: Commingled: DAKOTA-J-CODELL Status: Formation Name: Formation Treatment: **Tubing Setting Depth:** 8349 Tubing Size: 2.375 Tubing Multiple Packer: Tubing Packer Depth: Open Hole Top: Open Hole Bottom: Initial Test Data: Test Method: **FLOWING** Test Date: 1/11/1994 Gas Type: Hours Tested: 24 SOLD Gas Disposal: Measure **Test Type** BBLS_H2O 120 BBLS_OIL 72 13125 CALC GOR CASING PRESS 821 945 MCF_GAS 550 TUBING_PRESS Perforation Data: Interval Top: 7904 8526 Interval Bottom: 272 Hole Size: 0.5 # of Holes: Completed information for formation DKTA 8/6/1993 Choke Size: 1st Production Date: Hole Completion: Status Date: 4/14/1998 Production Method: **FLOWBACK** Υ Commingled: **DAKOTA** Status: PR Formation Name: FRAC DOWN CSG. PAD W/ 15,000 GAL 35# XLINK GAUR. PUMP 18,500 GAL XLINI Formation Treatment: 10,500# 20/40 M. FLUSH W/ 84 BBL 4% KCL H2O. MAX TUBING PRESS. 5,000 PSI. **Tubing Setting Depth:** 8501 2.375 Tubing Size: Tubing Multiple Packer: **Tubing Packer Depth:** Open Hole Bottom: Open Hole Top: Initial Test Data: **FLOWING** Test Date: 9/30/1993 Test Method: Gas Type: Hours Tested: Gas Disposal: SOLD **Test Type** Measure 10 BBLS_H2O 120 CALC BBLS H2O 1320 CALC MCF GAS CASING_PRESS 1648 110 MCF GAS 1558 TUBING PRESS Perforation Data: Interval Top: 8504 8526 Interval Bottom: Hole Size: 0.5 88 # of Holes: Completed information for formation JSND

Choke Size:

Status Date:

4/14/1998

Hole Completion:

Commingled: Formation Name: Υ

Production Method:

J SAND Status: PR

8501

Formation Treatment:

GAUR W/ 359,140# 20/40 M. FLUSH W/ 89 BBL 2% KCL H2O ATP 2,100 PSI. AIR 35

3,000 GAL 40# SLICK H2O & 4,500# DIVERTAFRAC SAND.

Tubing Size:

2.375

Tubing Setting Depth:

Tubing Packer Depth:

Tubing Multiple Packer:

Open Hole Top:

Open Hole Bottom:

No Initial Test Data was found for formation JSND.

Perforation Data:

Interval Bottom:

8476

Interval Top:

8348

of Holes:

112

Hole Size:

0.5

COGIS - Field Inspection Report

			Property Related
API Number:	05-123-15592- 00	Well Name:	STATE OF COLORADO AZ #1
Well Location:	SWNW 16 1N 68W	Lat: 40.054021	Long: -105.013864
Operator #:	47120	Operator Name:	KERR-MCGEE OIL & GAS ONSHORE LP
Inspection Date:	2/5/1996	Inspector:	DAVID SHELTON

Inspection was: No Satisfactory/Unsatisfactory Indicator

Insp. Type: PR

Insp. Stat: PR

Plugged: Pass/Fail: P

Violation: **N**UIC Violation Type:

NOAV Sent: Brhd. Pressure:

Inj. Pressure: Date Corrective Action Due: T-C Ann. Pressure: Date Remedied:

Field Inspection Comments and Observations

İ	Insp. Comment	Inspection/Violation Comments
	HISTORICAL	

COGIS - WELL Information

Related Insp. MIT GIS Doc If Wellbore Order Scout Card

Surface Location Data for API # 05-123-16105

Status: I

Well Name/No:

STATE #16-9V

(click well name for production)

Operator:

NOBLE ENERGY INC - 100322

Status Date:

5/4/2005

Federal or State Lease #:

County:

WELD #123

Location:

NESE 16 1N 68W 6

Field:

WATTENBERG - #90750 Elevation:

5.175 ft.

Lat/Long Calculated Fi

Planned Location

1450 FSL 990 FEL

Lat/Long: 40.047817/-105.002676

Status: PR 5/4

Spud Date:

9/6/1992

Spud Date is:

ACTUAL

Wellbore Permit

Permit #:

19921044

Expiration Date:

8717

Wellbore Data for Sidetrack #00

Surface Mineral Owner Same:

Mineral Owner: Unit:

Prop Depth/Form:

STATE

Surface Owner: Unit Number:

Formation and Spacing:

Code: DK-J, Formation: DAKOTA-JSND, Order: 499-1, Unit Acreage: 320, Drill Unit: Code: NB-CD, Formation: NIOBRARA-CODELL, Order: 407-66, Unit Acreage: 320, [

Formation and Spacing: **Wellbore Completed**

Completion Date:

2/22/1993

Measured TD:

8717

Measured PB depth:

8656

True Vertical TD:

True Vertical PB depth:

Log Types:

CDL/GR, DIFL/GR, VDL/GR

Casing:

String Type: SURF, Hole Size: 12.25, Size: 8.625, Top: 0, Depth: 715, Weight: 24

Cement:

Sacks: 500, Top: 0, Bottom: , Method Grade:

Casing:

String Type: 1ST, Hole Size: 7.875, Size: 4.5, Top: 0, Depth: 8700, Weight: 11.6

Cement:

Sacks: 370, Top: 0, Bottom: , Method Grade: CBL

Formation	Log Top	Log Bottom	Cored
PARKMAN	4324		
SUSSEX	4687		
NIOBRARA	7556		
FORT HAYS	7906		
CODELL	7926		
GREENHORN	7997		
J SAND	8357		
DAKOTA	8526		

Completed information for formation CODL

1st Production Date:

N/A

Choke Size:

Status Date:

2/24/2005

Hole Completion:

N

Commingled:

N

Production Method:

FLOWING

Formation Name:

CODELL

Status:

PR

Formation Treatment:

REMOVE RBP AND COMMINGLE WITH J SAND, 1/27/05.

Tubing Size:

2.375

Tubing Setting Depth:

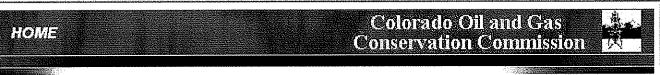
8368

Tubing Packer Depth:

Tubing Multiple Packer:

Open Hole Top:		Open Hole Bottom:	
Initial Test Data:			
Test Date:	2/24/2005	Test Method:	FLOWING
Hours Tested:	24	Gas Type:	WET
Gas Disposal:	SOLD		
Test Type	Measure		
BBLS_H2O	5		
BBLS_OIL	3		
BTU_GAS	1141		
CALC_BBLS_H2O	5		
CALC_BBLS_OIL	3		
CALC_GOR	37333		
CALC_MCF_GAS	112		
CASING_PRESS	175		
GRAVITY_OIL	50		
MCF_GAS	112		
TUBING_PRESS	175		
Perforation Data:			
Interval Bottom:	7950	Interval Top:	7928
# of Holes:	100	Hole Size:	0.42
Completed informa	ation for formation J	-CDL	
1st Production Date:	12/3/1994	Choke Size:	
Status Date:	N/A	Hole Completion:	
Commingled:	Υ	Production Method:	FLOWING
Formation Name:	J-CODELL	Status:	
Formation Treatment:			
Tubing Size:	2.375	Tubing Setting Depth:	8256
Tubing Packer Depth:		Tubing Multiple Packer:	
Open Hole Top:		Open Hole Bottom:	
Initial Test Data:			
Test Date:	3/29/1993	Test Method:	FLOWING
Hours Tested:	12	Gas Type:	
Gas Disposal:	SOLD		
Test Type	Measure		
BBLS_H2O	6		
BBLS_OIL	35		
CALC_BBLS_H2O	12		
CALC_BBLS_OIL	70		
CALC_GOR	2600		
CALC_MCF_GAS	182		
CASING_PRESS	150		
MCF_GAS	91		
TUBING_PRESS	700		
Perforation Data:			
Interval Bottom:	8384	Interval Top:	7928
# of Holes:	65	Hole Size:	0.38
Completed informa	ation for formation J	SND	
1st Production Date:	3/26/1993	Choke Size:	
Status Date:	5/4/2005	Hole Completion:	Ν
Commingled:	Υ	Production Method:	

Formation Name: Formation Treatment: Tubing Size: Tubing Packer Depth: Open Hole Top: Initial Test Data:	J SAND REMOVE RBP AND CO	Status: MMINGLE WITH CODELL, 1/27/05. Tubing Setting Depth: Tubing Multiple Packer: Open Hole Bottom:	PR
Test Date:	N/A	Test Method:	
Hours Tested:		Gas Type:	
Gas Disposal:			
Test Type	Measure		
BBLS_H2O	31		
BBLS_OIL	4		
CALC_GOR	157250		
CASING_PRESS	620		
MCF_GAS	629		
TUBING_PRESS	380		
Perforation Data:			
Interval Bottom:	8384	Interval Top:	8370
# of Holes:	21	Hole Size:	



A division of the Colorado Department of Natural Resources

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GENERAL
CONTACTS
LIBRARY
HEARINGS
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POLICIES
ORDERS
FORMS
STAFF RPT
PERMITS
NEWS/MEDIA
DATABASE
LOCAL GOV

IMAGES

COGIS - Field Inspection Report

☐→◎ Related ❷ GIS 🛕 Doc							
API Number:	05-123-16105- 00	Well Name:	STATE #16-9V				
Well Location:	NESE 16 1N 68W	Lat: 40.047826	Long: - 105.002097				
Operator #:	100322	Operator Name:	NOBLE ENERGY INC				
Inspection Date:	8/22/1996	Inspector:	DAVID SHELTON				

Inspection was: No Satisfactory/Unsatisfactory Indicator

Erie Property

T 1N, R 68W, Section 16 Erie, CO 80516

Inquiry Number: 2254345.2

June 25, 2008

Certified Sanborn® Map Report



Certified Sanborn® Map Report

6/25/08

Site Name:

Client Name:

Erie Property

Erie, CO 80516

Terracon, Inc.

T 1N, R 68W, Section 16

10625 West I-70 Frontage Rd N Wheat Ridge, CO 80033

 EDR^{ω} Environmental Data Resources Inc

EDR Inquiry # 2254345.2

Contact: Darren Bruns

The complete Sanborn Library collection has been searched by EDR, and fire insurance maps covering the target were identified for the years listed below. The certified Sanborn property location provided by Terracon, Inc. Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by Sanborn Library LLC, the copyright holder for the collection.

Certified Sanborn Results:

Site Name:

Erie Property

Address:

T 1N, R 68W, Section 16

City, State, Zip:

Erie, CO 80516

Cross Street:

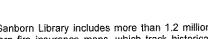
P.O. # Project:

25087780

NA

Certification #

ADAE-45BC-AECA



UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

The Sanborn Library includes more than 1.2 million Sanborn fire insurance maps, which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

Sanborn® Library search results Certification # ADAE-45BC-AECA

Library of Congress

✓ University Publications of America

✓ EDR Private Collection

Total Maps:

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ASTM E 1527-05 USER QUESTIONNAIRE

Page 1 of 2

Proposal No: 25080504

In order to qualify for one of the Landowner Liability Protections (LLPs) offered by the Small Business Relief and Brownfields Revitalization Act of 2001, the user must respond to the following questions. Failure to provide this information to the environmental professional may result in significant data gaps, which may limit our ability to identify recognized environmental conditions resulting in a determination that "all appropriate inquiry" is not complete. This form represents a type of interview and as such, the user has an obligation to answer all questions in good faith, to the extent of their actual knowledge.

Site Name: Eric School Trust Haperysite Address: Township IN 68W Section 1
1) Are you aware of any environmental cleanup liens against the site that are filed or recorded under federal, tribal, state, or local law (40 CFR 312.25)? NoYes If yes, please explain.
2) Are you aware of any activity and use limitations (AULs), such as engineering controls, land use restrictions, or institutional controls that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state, or local law (40 CFR 312.26)?NoYes If yes, please explain.
3) As the user of this ESA, do you have any specialized knowledge or experience related to the site or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the site or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business (40 CFR 312-28)?
4) Does the purchase price being paid for this site reasonably reflect the fair market value of the site (40 CFR 312.29)?NoYes/_A
If no, have you considered whether the lower purchase price is because contamination is known or believed to be present at the site (40 CFR 312.29)?NoYes If yes, please explain.
5) Are you aware of commonly known or reasonably ascertainable information about the site that would help the environmental professional to identify conditions indicative of releases or threatened releases (40 CFR 312.30)? NoYes If yes, please explain.
6) As the user of this ESA, based on your knowledge and experience related to the site, are there any obvious indicators that point to the presence or likely presence of contamination at the site (40 CFR 312.31)? NoYes If yes, please explain.

Request for Information and Documentation

In addition to the specific questions outlined above, the user is requested to provide the following information and documentation, as available. ASTM requires that this information, if available, be provided to the environmental professional prior to the site visit.

ASTM E 1527-05 USER QUESTIONNAIRE Page 2 of 2 Proposal No: 25080504

Date

Item Supplied "X"	Not Applicable, Not Available or Not Known "X"	Item Reques (See Propos			Contacts/Comments or Indicate Attachment
	>	Point of Contact for Access			Name/Phone:
1		Current Site Owner Lond	edo Quant	State d	Name/Phone: 303 3130706
		Current Facility Operator			Name/Phone:
	4	Contacts for Prior Owners			Name/Phone:
		Contacts for Prior Occupant	ts		Name/Phone:
- Linker		Access Restrictions	***************************************		Need to Contact Lessee's which Houndred y Been Assuided
	1	Notification of Special Requ Regarding Confidentiality	iireme	ents	The state of the s
		Legal Description and			Survey is Bory Conducted.
<u> </u>		Diagram / Survey of Site			TIN R686 Scalin 16: NW, SE; EZSEN; owned by SLB since Na NWSW
\.		Chain of Title with Grantor/0 Summary (back to 1940 or			
- American Company		use)			State has d
+		Reasons for Conducting ES	SA		Amerationa Zoning of Property
☐ Enviro ☐ Geote	nmental site assessr nmental compliance chnical studies ts regarding hydroge	audit reports ologic conditions on the		government violations of property or encumberin	other correspondence from any tal agency relating to past or current f environmental laws with respect to the relating to environmental liens ig the property as for underground injection systems
property or surrounding area Registrations for above or underground storage tanks			hazardous v	ntal permits/plans, solid waste permits, waste disposal permits, wastewater PDES permits, underground injection PDES plans	
Name (U, d Ro Authorized Clie	denker 9 ent Representative)			
Rc#/ Title		Molio Agent			
1	(3)	7/52			

APPENDIX D

Environmental Database Information

Erie Property T 1N, R 68W, Section 16 Erie, CO 80516

Inquiry Number: 2254345.1s

June 25, 2008

The EDR Radius Map™ Report

Prepared using the EDR FieldCheck® System

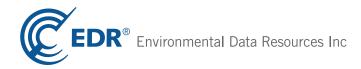


TABLE OF CONTENTS

SECTION	PAGE
Executive Summary	ES1
Overview Map	2
Detail Map.	 3
Map Findings Summary.	4
Map Findings.	6
Orphan Summary	7
Government Records Searched/Data Currency Tracking	GR-1
GEOCHECK ADDENDUM	•
GeoCheck - Not Requested	

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with any questions or comments.

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A search of the environmental records was conducted by Environmental Data Resources, Inc. (EDR). TERRACON, INC. used the EDR FieldCheck System to review and/or revise the results of this search, based on independent data verification by TERRACON, INC.. The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-05) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

T 1N, R 68W, SECTION 16 ERIE, CO 80516

COORDINATES

Latitude (North): 40.050690 - 40° 3' 2.5" Longitude (West): 105.008750 - 105° 0' 31.5"

Universal Tranverse Mercator: Zone 13 UTM X (Meters): 499253.6 UTM Y (Meters): 4433173.0

Elevation: 5170 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map: 40105-A1 ERIE, CO

Most Recent Revision: 1979

East Map: 40104-A8 FREDERICK, CO

Most Recent Revision: 1994

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No sites were identified in following databases.

FEDERAL RECORDS

NPL...... National Priority List

Proposed NPL Proposed National Priority List Sites

Delisted NPL National Priority List Deletions

NPL LIENS..... Federal Superfund Liens

CERCLIS...... Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS No Further Remedial Action Planned

RCRA-TSDF..... RCRA - Transporters, Storage and Disposal

RCRA-NonGen______ RCRA - Non Generators
US ENG CONTROLS Engineering Controls Sites List
US INST CONTROL Sites with Institutional Controls

ERNS..... Emergency Response Notification System

HMIRS Hazardous Materials Information Reporting System

DOT OPS. Incident and Accident Data
US CDL. Clandestine Drug Labs
US BROWNFIELDS. A Listing of Brownfields Sites
DOD. Department of Defense Sites
FUDS. Formerly Used Defense Sites

LUCIS Land Use Control Information System
CONSENT Superfund (CERCLA) Consent Decrees

MINES..... Mines Master Index File

TRIS..... Toxic Chemical Release Inventory System

TSCA..... Toxic Substances Control Act

FTTS______FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide

Act)/TSCA (Toxic Substances Control Act)

HIST FTTS...... FIFRA/TSCA Tracking System Administrative Case Listing

SSTS..... Section 7 Tracking Systems

ICIS...... Integrated Compliance Information System

PADS PCB Activity Database System
MLTS Material Licensing Tracking System
RADINFO Radiation Information Database

STATE AND LOCAL RECORDS

SHWS...... This state does not maintain a SHWS list. See the Federal CERCLIS list and Federal

NPL list.

METHANE SITE...... Methane Site Investigations - Jefferson County 1980

SWF/LF...... Solid Waste Sites & Facilities

Methane Investigation...... Methane Gas & Swamp Findings

HIST LF..... Historical Landfill List

LUST..... Leaking Underground Storage Tank List

LUST TRUST..... RAP Site Listing

UST______ Underground Storage Tank Database LAST______ Leaking Aboveground Storage Tank Listing

AST..... Aboveground Tank List

CO ERNS...... Spills Database

AUL..... Environmental Real Covenants List

VCP...... Voluntary Cleanup & Redevelopment Act Application Tracking Report

AIRS..... Permitted Facility & Emissions Listing

UMTRA..... Uranium Mill Tailings Sites

ASBESTOS..... Asbestos Abatement & Demolition Projects

TRIBAL RECORDS

INDIAN RESERV..... Indian Reservations

INDIAN ODI. Report on the Status of Open Dumps on Indian Lands
INDIAN LUST. Leaking Underground Storage Tanks on Indian Land
INDIAN UST. Underground Storage Tanks on Indian Land
INDIAN VCP. Voluntary Cleanup Priority Listing

EDR PROPRIETARY RECORDS

Manufactured Gas Plants ... EDR Proprietary Manufactured Gas Plants

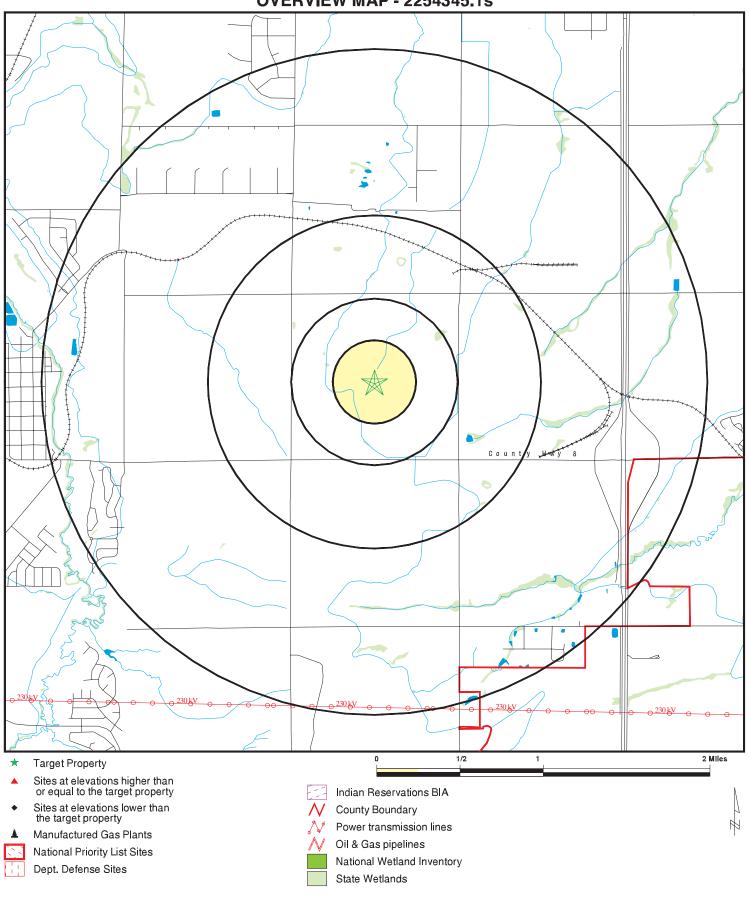
SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were not identified.

Unmappable (orphan) sites are not considered in the foregoing analysis.

Due to poor or inadequate address information, the following sites were not mapped: There were no unmapped sites in this report.

OVERVIEW MAP - 2254345.1s

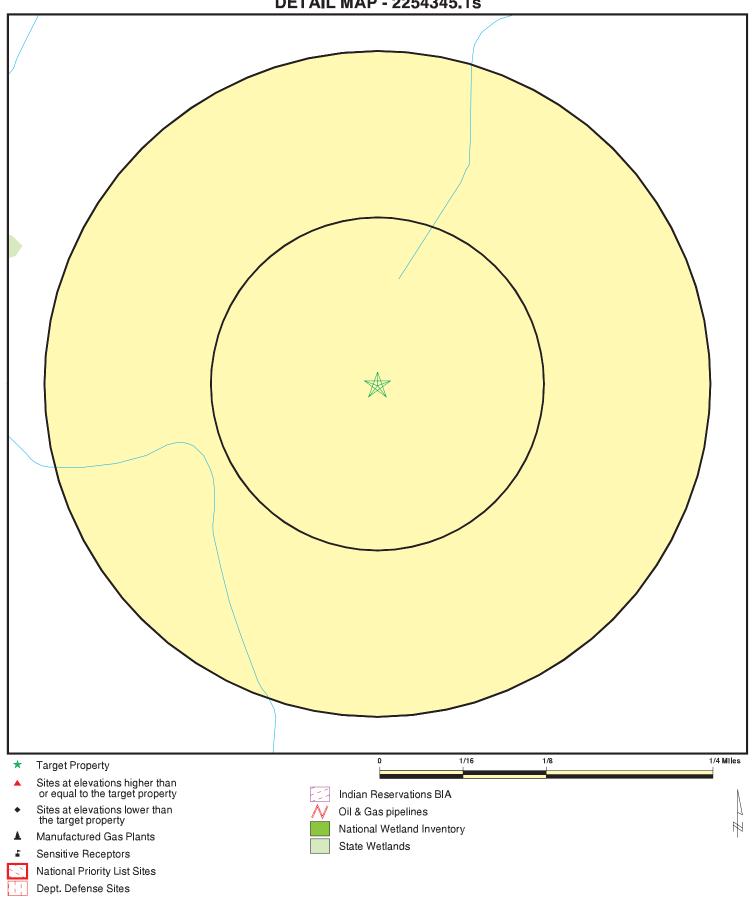


SITE NAME: Erie Property ADDRESS: T 1N, R 68W, Section 16

Erie CO 80516 LAT/LONG: 40.0507 / 105.0088 CLIENT: Terracon, Inc. CONTACT: Darren Bruns INQUIRY #: 2254345.1s

DATE: June 25, 2008 12:10 pm

DETAIL MAP - 2254345.1s



SITE NAME: Erie Property ADDRESS: T 1N, R 68W, Section 16

Erie CO 80516 LAT/LONG: 40.0507 / 105.0088 CLIENT: CONTACT: Terracon, Inc. Darren Bruns INQUIRY#: 2254345.1s

June 25, 2008 12:10 pm DATE:

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	>1	Total Plotted
FEDERAL RECORDS								
NPL Proposed NPL Delisted NPL NPL LIENS CERCLIS CERC-NFRAP LIENS 2 CORRACTS RCRA-TSDF RCRA-LQG RCRA-SQG RCRA-CESQG RCRA-ONTROLS US INST CONTROL ERNS HMIRS DOT OPS US CDL US BROWNFIELDS DOD FUDS LUCIS CONSENT ROD UMTRA ODI DEBRIS REGION 9 MINES TRIS TSCA FTTS HIST FTTS SSTS		1.500 1.500 1.500 0.500 1.000 1.000 0.500 1.500 1.500 0.750 0.750 0.250 1.000 1.000 0.500 0.500 0.500 1.500 1.500 1.500 1.500 1.500 1.500 1.500 1.500 1.500 1.500 0.500 0.500 0.500 0.500 0.500 0.500 0.500 0.500 0.500 0.500	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	O O O R O O R O O O O R O O R R R R R R	000 R R R R O R R R R R R R R R R R R O O R O O R R R R R R R R R R R R R R R R O O R O O R	
ICIS PADS MLTS RADINFO FINDS RAATS		0.500 0.500 0.500 0.500 0.500 0.500	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	NR NR NR NR NR NR	NR NR NR NR NR NR	0 0 0 0 0
STATE AND LOCAL RECOR	DS							
SHWS METHANE SITE SWF/LF Methane Investigation HIST LF		N/A 0.500 1.000 0.500 1.000	N/A 0 0 0 0	N/A 0 0 0 0	N/A 0 0 0 0	N/A NR 0 NR 0	N/A NR NR NR NR	N/A 0 0 0 0

MAP FINDINGS SUMMARY

Database	Target Property	Search Distance (Miles)	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LUST		1.000	0	0	0	0	NR	0
LUST TRUST		1.000	0	0	0	0	NR	0
UST		0.750	0	0	0	0	NR	0
LAST		TP	NR	NR	NR	NR	NR	0
AST		0.750	0	0	0	0	NR	0
CO ERNS		0.500	0	0	0	NR	NR	0
AUL		1.000	0	0	0	0	NR	0
VCP		1.000	0	0	0	0	NR	0
DRYCLEANERS		0.750	0	0	0	0	NR	0
CDL		0.500	0	0	0	NR	NR	0
NPDES		0.500	0	0	0	NR	NR	0
AIRS		0.500	0	0	0	NR	NR	0
UMTRA		1.000	0	0	0	0	NR	0
ASBESTOS		0.500	0	0	0	NR	NR	0
TRIBAL RECORDS								
INDIAN RESERV		1.500	0	0	0	0	0	0
INDIAN ODI		0.500	0	0	0	NR	NR	0
INDIAN LUST		1.000	0	0	0	0	NR	0
INDIAN UST		0.750	0	0	0	0	NR	0
INDIAN VCP		0.500	0	0	0	NR	NR	0
EDR PROPRIETARY RECOR	DS							
Manufactured Gas Plants		1.500	0	0	0	0	0	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

N/A = This State does not maintain a SHWS list. See the Federal CERCLIS list.

Map ID		MAP FINDINGS		
Direction				
Distance				EDR ID Number
Elevation	Site		Database(s)	EPA ID Number

NO SITES FOUND

ORPHAN SUMMARY

City EDR ID Site Name Site Address Zip Database(s)

NO SITES FOUND

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

FEDERAL RECORDS

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 04/30/2008 Source: EPA
Date Data Arrived at EDR: 05/06/2008 Telephone: N/A

Date Made Active in Reports: 06/09/2008 Last EDR Contact: 04/28/2008

Number of Days to Update: 34 Next Scheduled EDR Contact: 07/28/2008
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)

Telephone: 202-564-7333

EPA Region 1 EPA Region 6

Telephone 617-918-1143 Telephone: 214-655-6659

EPA Region 3 EPA Region 7

Telephone 215-814-5418 Telephone: 913-551-7247

EPA Region 4 EPA Region 8

Telephone 404-562-8033 Telephone: 303-312-6774

EPA Region 5 EPA Region 9

Telephone 312-886-6686 Telephone: 415-947-4246

EPA Region 10

Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 04/30/2008 Source: EPA
Date Data Arrived at EDR: 05/06/2008 Telephone: N/A

Number of Days to Update: 34 Next Scheduled EDR Contact: 07/28/2008
Data Release Frequency: Quarterly

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 04/30/2008 Source: EPA
Date Data Arrived at EDR: 05/06/2008 Telephone: N/A

Number of Days to Update: 34 Next Scheduled EDR Contact: 07/28/2008
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991 Date Data Arrived at EDR: 02/02/1994 Date Made Active in Reports: 03/30/1994

Number of Days to Update: 56

Source: EPA

Telephone: 202-564-4267 Last EDR Contact: 05/19/2008

Next Scheduled EDR Contact: 08/18/2008 Data Release Frequency: No Update Planned

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 04/08/2008 Date Data Arrived at EDR: 04/25/2008 Date Made Active in Reports: 05/21/2008

Number of Days to Update: 26

Source: EPA

Telephone: 703-412-9810 Last EDR Contact: 06/17/2008

Next Scheduled EDR Contact: 09/15/2008 Data Release Frequency: Quarterly

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 12/03/2007 Date Data Arrived at EDR: 12/06/2007 Date Made Active in Reports: 02/20/2008

Number of Days to Update: 76

Source: EPA

Telephone: 703-412-9810 Last EDR Contact: 06/17/2008

Next Scheduled EDR Contact: 09/15/2008 Data Release Frequency: Quarterly

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/08/2008 Date Data Arrived at EDR: 03/07/2008 Date Made Active in Reports: 03/20/2008

Number of Days to Update: 13

Source: Environmental Protection Agency

Telephone: 202-564-6023 Last EDR Contact: 05/19/2008

Next Scheduled EDR Contact: 08/18/2008 Data Release Frequency: Varies

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/26/2008 Date Data Arrived at EDR: 04/02/2008 Date Made Active in Reports: 05/06/2008

Number of Days to Update: 34

Source: EPA

Telephone: 800-424-9346 Last EDR Contact: 06/02/2008

Next Scheduled EDR Contact: 09/01/2008 Data Release Frequency: Quarterly

RCRA-TSDF: RCRA - Transporters, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/06/2008 Date Data Arrived at EDR: 03/06/2008 Date Made Active in Reports: 04/18/2008

Number of Days to Update: 43

Source: Environmental Protection Agency

Telephone: 303-312-6149 Last EDR Contact: 05/21/2008

Next Scheduled EDR Contact: 08/18/2008 Data Release Frequency: Quarterly

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/06/2008 Date Data Arrived at EDR: 03/06/2008 Date Made Active in Reports: 04/18/2008

Number of Days to Update: 43

Source: Environmental Protection Agency

Telephone: 303-312-6149 Last EDR Contact: 05/21/2008

Next Scheduled EDR Contact: 08/18/2008 Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/06/2008 Date Data Arrived at EDR: 03/06/2008 Date Made Active in Reports: 04/18/2008

Number of Days to Update: 43

Source: Environmental Protection Agency

Telephone: 303-312-6149 Last EDR Contact: 05/21/2008

Next Scheduled EDR Contact: 08/18/2008 Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/06/2008 Date Data Arrived at EDR: 03/06/2008 Date Made Active in Reports: 04/18/2008

Number of Days to Update: 43

Source: Environmental Protection Agency

Telephone: 303-312-6149 Last EDR Contact: 05/21/2008

Next Scheduled EDR Contact: 08/18/2008

Data Release Frequency: Varies

RCRA-NonGen: RCRA - Non Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/06/2008 Date Data Arrived at EDR: 03/06/2008 Date Made Active in Reports: 04/18/2008

Number of Days to Update: 43

Source: Environmental Protection Agency

Telephone: 303-312-6149 Last EDR Contact: 05/21/2008

Next Scheduled EDR Contact: 08/18/2008

Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 04/04/2008 Date Data Arrived at EDR: 04/17/2008 Date Made Active in Reports: 05/15/2008

Number of Days to Update: 28

Source: Environmental Protection Agency

Telephone: 703-603-0695 Last EDR Contact: 03/31/2008

Next Scheduled EDR Contact: 06/30/2008 Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 04/04/2008 Date Data Arrived at EDR: 04/17/2008 Date Made Active in Reports: 05/15/2008

Number of Days to Update: 28

Source: Environmental Protection Agency

Telephone: 703-603-0695 Last EDR Contact: 03/31/2008

Next Scheduled EDR Contact: 06/30/2008 Data Release Frequency: Varies

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2007 Date Data Arrived at EDR: 01/23/2008 Date Made Active in Reports: 03/17/2008

Number of Days to Update: 54

Source: National Response Center, United States Coast Guard

Telephone: 202-267-2180 Last EDR Contact: 04/22/2008

Next Scheduled EDR Contact: 07/21/2008 Data Release Frequency: Annually

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/31/2007 Date Data Arrived at EDR: 04/16/2008 Date Made Active in Reports: 05/15/2008

Number of Days to Update: 29

Source: U.S. Department of Transportation

Telephone: 202-366-4555 Last EDR Contact: 04/16/2008

Next Scheduled EDR Contact: 07/14/2008 Data Release Frequency: Annually

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 02/14/2008 Date Data Arrived at EDR: 02/27/2008 Date Made Active in Reports: 03/20/2008

Number of Days to Update: 22

Source: Department of Transporation, Office of Pipeline Safety

Telephone: 202-366-4595 Last EDR Contact: 05/28/2008

Next Scheduled EDR Contact: 08/25/2008 Data Release Frequency: Varies

CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/01/2007 Date Data Arrived at EDR: 12/03/2007 Date Made Active in Reports: 12/28/2007

Number of Days to Update: 25

Source: Drug Enforcement Administration

Telephone: 202-307-1000 Last EDR Contact: 03/28/2008

Next Scheduled EDR Contact: 06/23/2008 Data Release Frequency: Quarterly

US BROWNFIELDS: A Listing of Brownfields Sites

Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 04/01/2008 Date Data Arrived at EDR: 04/30/2008 Date Made Active in Reports: 05/30/2008

Number of Days to Update: 30

Source: Environmental Protection Agency

Telephone: 202-566-2777 Last EDR Contact: 04/30/2008

Next Scheduled EDR Contact: 07/14/2008 Data Release Frequency: Semi-Annually

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005 Date Data Arrived at EDR: 11/10/2006 Date Made Active in Reports: 01/11/2007

Number of Days to Update: 62

Source: USGS Telephone: 703-692-8801 Last EDR Contact: 05/09/2008

Next Scheduled EDR Contact: 08/04/2008 Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2006 Date Data Arrived at EDR: 08/31/2007 Date Made Active in Reports: 10/11/2007

Number of Days to Update: 41

Source: U.S. Army Corps of Engineers Telephone: 202-528-4285

Last EDR Contact: 04/03/2008

Next Scheduled EDR Contact: 06/30/2008 Data Release Frequency: Varies

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005 Date Data Arrived at EDR: 12/11/2006 Date Made Active in Reports: 01/11/2007

Number of Days to Update: 31

Source: Department of the Navy Telephone: 843-820-7326 Last EDR Contact: 06/09/2008

Next Scheduled EDR Contact: 09/08/2008 Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 02/08/2008 Date Data Arrived at EDR: 04/25/2008 Date Made Active in Reports: 05/30/2008

Number of Days to Update: 35

Source: Department of Justice, Consent Decree Library

Telephone: Varies

Last EDR Contact: 04/22/2008

Next Scheduled EDR Contact: 07/21/2008 Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical

and health information to aid in the cleanup.

Date of Government Version: 01/14/2008 Date Data Arrived at EDR: 01/22/2008 Date Made Active in Reports: 01/30/2008

Number of Days to Update: 8

Source: EPA

Telephone: 703-416-0223 Last EDR Contact: 03/31/2008

Next Scheduled EDR Contact: 06/30/2008 Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 07/13/2007 Date Data Arrived at EDR: 12/03/2007 Date Made Active in Reports: 01/24/2008

Number of Days to Update: 52

Source: Department of Energy Telephone: 505-845-0011 Last EDR Contact: 06/16/2008

Next Scheduled EDR Contact: 09/15/2008 Data Release Frequency: Varies

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004

Date Made Active in Reports: 09/17/2004 Number of Days to Update: 39 Source: Environmental Protection Agency

Telephone: 800-424-9346 Last EDR Contact: 06/09/2004 Next Scheduled EDR Contact: N/A

Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 03/25/2008 Date Data Arrived at EDR: 04/17/2008 Date Made Active in Reports: 05/15/2008

Number of Days to Update: 28

Source: EPA, Region 9 Telephone: 415-972-3336 Last EDR Contact: 06/23/2008

Next Scheduled EDR Contact: 09/22/2008 Data Release Frequency: Varies

MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/07/2008 Date Data Arrived at EDR: 03/26/2008 Date Made Active in Reports: 04/18/2008

Number of Days to Update: 23

Source: Department of Labor, Mine Safety and Health Administration

Telephone: 303-231-5959 Last EDR Contact: 06/25/2008

Next Scheduled EDR Contact: 09/22/2008 Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2006 Date Data Arrived at EDR: 02/29/2008 Date Made Active in Reports: 04/18/2008

Number of Days to Update: 49

Source: EPA

Telephone: 202-566-0250 Last EDR Contact: 06/16/2008

Next Scheduled EDR Contact: 09/15/2008 Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant

site.

Date of Government Version: 12/31/2002 Date Data Arrived at EDR: 04/14/2006 Date Made Active in Reports: 05/30/2006

Number of Days to Update: 46

Source: EPA

Telephone: 202-260-5521 Last EDR Contact: 04/28/2008

Next Scheduled EDR Contact: 07/14/2008 Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/11/2008 Date Data Arrived at EDR: 04/24/2008 Date Made Active in Reports: 05/21/2008

Number of Days to Update: 27

Source: EPA/Office of Prevention, Pesticides and Toxic Substances

Telephone: 202-566-1667 Last EDR Contact: 06/16/2008

Next Scheduled EDR Contact: 09/15/2008 Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/11/2008 Sou

Date Data Arrived at EDR: 04/24/2008 Date Made Active in Reports: 05/21/2008

Number of Days to Update: 27

Source: EPA

Telephone: 202-566-1667 Last EDR Contact: 06/16/2008

Next Scheduled EDR Contact: 09/15/2008 Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006 Date Data Arrived at EDR: 03/01/2007 Date Made Active in Reports: 04/10/2007

Number of Days to Update: 40

Source: Environmental Protection Agency

Telephone: 202-564-2501 Last EDR Contact: 12/17/2007

Next Scheduled EDR Contact: 03/17/2008 Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006 Date Data Arrived at EDR: 03/01/2007 Date Made Active in Reports: 04/10/2007

Number of Days to Update: 40

Source: Environmental Protection Agency

Telephone: 202-564-2501 Last EDR Contact: 12/17/2008

Next Scheduled EDR Contact: 03/17/2008 Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2006 Date Data Arrived at EDR: 03/14/2008 Date Made Active in Reports: 04/18/2008

Number of Days to Update: 35

Source: EPA

Telephone: 202-564-4203 Last EDR Contact: 04/14/2008

Next Scheduled EDR Contact: 07/14/2008 Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 02/28/2008 Date Data Arrived at EDR: 03/18/2008 Date Made Active in Reports: 05/06/2008

Number of Days to Update: 49

Source: Environmental Protection Agency

Telephone: 202-564-5088 Last EDR Contact: 04/14/2008

Next Scheduled EDR Contact: 07/14/2008 Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 12/04/2007 Date Data Arrived at EDR: 02/07/2008 Date Made Active in Reports: 03/17/2008

Number of Days to Update: 39

Source: EPA

Telephone: 202-566-0500 Last EDR Contact: 06/20/2008

Next Scheduled EDR Contact: 08/04/2008 Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/22/2008 Date Data Arrived at EDR: 05/06/2008 Date Made Active in Reports: 06/09/2008

Number of Days to Update: 34

Source: Nuclear Regulatory Commission

Telephone: 301-415-7169 Last EDR Contact: 03/31/2008

Next Scheduled EDR Contact: 06/30/2008 Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 04/29/2008 Date Data Arrived at EDR: 05/01/2008 Date Made Active in Reports: 05/21/2008

Number of Days to Update: 20

Source: Environmental Protection Agency

Telephone: 202-343-9775 Last EDR Contact: 05/01/2008

Next Scheduled EDR Contact: 07/28/2008 Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 04/03/2008 Date Data Arrived at EDR: 04/08/2008 Date Made Active in Reports: 05/06/2008

Number of Days to Update: 28

Source: EPA Telephone: (303) 312-6312 Last EDR Contact: 03/31/2008

Next Scheduled EDR Contact: 06/30/2008 Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995 Date Data Arrived at EDR: 07/03/1995 Date Made Active in Reports: 08/07/1995

Number of Days to Update: 35

Source: EPA

Telephone: 202-564-4104 Last EDR Contact: 06/02/2008

Next Scheduled EDR Contact: 09/01/2008 Data Release Frequency: No Update Planned

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2005 Date Data Arrived at EDR: 03/06/2007 Date Made Active in Reports: 04/13/2007

Number of Days to Update: 38

Source: EPA/NTIS Telephone: 800-424-9346 Last EDR Contact: 06/11/2008

Next Scheduled EDR Contact: 09/08/2008 Data Release Frequency: Biennially

STATE AND LOCAL RECORDS

SHWS: This state does not maintain a SHWS list. See the Federal CERCLIS list and Federal NPL list.

State Hazardous Waste Sites. State hazardous waste site records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. Available information varies by state.

Date of Government Version: N/A Date Data Arrived at EDR: N/A Date Made Active in Reports: N/A

Number of Days to Update: N/A

Source: Department of Public Health & Environment

Telephone: 303-692-3300 Last EDR Contact: 06/16/2008

Next Scheduled EDR Contact: 09/15/2008

Data Release Frequency: N/A

METHANE SITE: Methane Site Investigations - Jefferson County 1980

The objectives of the study are to define as closely as possible the boundaries of methane producing solid waste landfills.

Date of Government Version: 12/31/1980 Date Data Arrived at EDR: 02/13/1995 Date Made Active in Reports: 04/04/1995

Number of Days to Update: 50

Source: Jefferson County Health Department

Telephone: 303-239-7175 Last EDR Contact: 01/27/1995 Next Scheduled EDR Contact: N/A

Data Release Frequency: No Update Planned

SWF/LF: Solid Waste Sites & Facilities

Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/05/2008 Date Data Arrived at EDR: 03/18/2008 Date Made Active in Reports: 03/26/2008

Number of Days to Update: 8

Source: Department of Public Health & Environment

Telephone: 303-692-3300 Last EDR Contact: 06/04/2008

Next Scheduled EDR Contact: 09/01/2008 Data Release Frequency: Annually

METHANE INVESTIGATION: Methane Gas & Swamp Findings

The primary objective of this study was to assess methane gas related hazards at selected landfill sites in Colorado. These sites were selected by the Colorado Department of Health following evaluation of responses received from County and Municipal agencies about completed and existing landfills within their jurisdiction.

Date of Government Version: 03/15/1979 Date Data Arrived at EDR: 02/13/1995 Date Made Active in Reports: 04/04/1995

Number of Days to Update: 50

Source: Department of Health Telephone: 303-640-3335 Last EDR Contact: 01/27/1995 Next Scheduled EDR Contact: N/A

Data Release Frequency: No Update Planned

HISTORICAL LANDFILL: Historical Landfill List

Abandoned/Inactive Landfills.

Date of Government Version: 01/31/1993 Date Data Arrived at EDR: 04/24/1994 Date Made Active in Reports: 05/30/1994

Number of Days to Update: 36

Source: Department of Public Health & Environment

Telephone: 303-692-3300 Last EDR Contact: 09/05/1996 Next Scheduled EDR Contact: N/A

Data Release Frequency: No Update Planned

LUST: Leaking Underground Storage Tank List

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 04/01/2008 Date Data Arrived at EDR: 04/02/2008 Date Made Active in Reports: 04/18/2008

Number of Days to Update: 16

Source: Department of Labor and Employment, Oil Inspection Section

Telephone: 303-318-8521 Last EDR Contact: 04/02/2008

Next Scheduled EDR Contact: 06/30/2008 Data Release Frequency: Quarterly

TRUST: Lust Trust Sites

Reimbursement application package. The 1989 Colorado General Assembly established Colorado's Petroleum Storage Tank Fund. The Fund reimburses eligible applicants for allowable costs incurred in cleaning up petroleum contamination from underground and aboveground petroleum storage tanks, as well as for third-party liability expenses. Remediation of contamination caused by railroad or aircraft fuel is not eligible for reimbursement. The Fund satisfies federal Environmental Protection Agency financial assurance requirements. Monies in the Fund come from various sources, predominantly the state environmental surcharge imposed on all petroleum products except railroad or aircraft fuel.

Date of Government Version: 02/27/2008 Date Data Arrived at EDR: 02/28/2008 Date Made Active in Reports: 03/26/2008

Number of Days to Update: 27

Source: Department of Labor and Employment, Oil Inspection Section

Telephone: 303-318-8521 Last EDR Contact: 05/27/2008

Next Scheduled EDR Contact: 07/21/2008

Data Release Frequency: Varies

UST: Underground Storage Tank Database

Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 04/01/2008 Date Data Arrived at EDR: 04/02/2008 Date Made Active in Reports: 04/23/2008

Number of Days to Update: 21

Source: Department of Labor and Employment, Oil Inspection Section

Telephone: 303-318-8521 Last EDR Contact: 04/02/2008

Next Scheduled EDR Contact: 06/30/2008 Data Release Frequency: Quarterly

LAST: Leaking Aboveground Storage Tank Listing A listing of leaking aboveground storage tank sites.

Date of Government Version: 03/31/2008 Date Data Arrived at EDR: 04/01/2008 Date Made Active in Reports: 04/18/2008

Number of Days to Update: 17

Source: Department of Labor & Employment

Telephone: 303-318-8525 Last EDR Contact: 03/31/2008

Next Scheduled EDR Contact: 06/30/2008 Data Release Frequency: Varies

AST: Aboveground Tank List

Aboveground storage tank locations.

Date of Government Version: 04/01/2008 Date Data Arrived at EDR: 04/02/2008 Date Made Active in Reports: 04/23/2008

Number of Days to Update: 21

Source: Department of Labor and Employment, Oil Inspection Section

Telephone: 303-318-8521 Last EDR Contact: 04/02/2008

Next Scheduled EDR Contact: 06/30/2008 Data Release Frequency: Semi-Annually

CO ERNS: Spills Database State reported spills.

Date of Government Version: 04/28/2008 Date Data Arrived at EDR: 04/30/2008 Date Made Active in Reports: 05/16/2008

Number of Days to Update: 16

Source: Department of Public Health and Environmental

Telephone: 303-692-2000 Last EDR Contact: 04/28/2008

Next Scheduled EDR Contact: 07/28/2008 Data Release Frequency: Quarterly

AUL: Environmental Real Covenants List

Activity and use limitations include both engineering controls and institutional controls. The Colorado Department of Public Health and Environment to approve requests to restrict the future use of a property using an enforceable agreement called an environmental real covenant. When a contaminated site is not cleaned up completely, land use restrictions may be used to ensure that the selected cleanup remedy is adequately protective of human health and the environment.

Date of Government Version: 03/27/2008 Date Data Arrived at EDR: 03/28/2008 Date Made Active in Reports: 04/18/2008

Number of Days to Update: 21

Source: Department of Public Health & Environment

Telephone: 303-692-3331 Last EDR Contact: 06/16/2008

Next Scheduled EDR Contact: 08/25/2008 Data Release Frequency: Varies

VCP: Voluntary Cleanup & Redevelopment Act Application Tracking Report

The Voluntary Cleanup and Redevelopment Act is intended to permit and encourage voluntary cleanups by providing a method to determine clean-up responsibilities in planning the reuse of property. The VCRA was intended for sites which were not covered by existing regulatory programs.

Date of Government Version: 04/01/2008 Date Data Arrived at EDR: 04/23/2008 Date Made Active in Reports: 05/16/2008

Number of Days to Update: 23

Source: Department of Public Health and Environmental

Telephone: 303-692-3331 Last EDR Contact: 04/23/2008

Next Scheduled EDR Contact: 07/21/2008 Data Release Frequency: Semi-Annually

DRYCLEANERS: Drycleaner Facilities A listing of drycleaning facilities.

Date of Government Version: 04/16/2008 Date Data Arrived at EDR: 04/18/2008 Date Made Active in Reports: 05/16/2008

Number of Days to Update: 28

Source: Department of Public Health & Environment

Telephone: 303-692-3213 Last EDR Contact: 04/14/2008

Next Scheduled EDR Contact: 07/14/2008 Data Release Frequency: Varies

CDL: Meth Lab Locations

Meth lab locations that were reported to the Department of Public Health & Environment.

Date of Government Version: 08/20/2007 Date Data Arrived at EDR: 08/22/2007 Date Made Active in Reports: 09/18/2007

Number of Days to Update: 27

Source: Department of Public Health and Environment

Telephone: 303-692-3023 Last EDR Contact: 04/28/2008

Next Scheduled EDR Contact: 07/28/2008 Data Release Frequency: Quarterly

NPDES: Permitted Facility Listing

A listing of permitted facilities from the Water Quality Control Division.

Date of Government Version: 02/26/2008 Date Data Arrived at EDR: 02/27/2008 Date Made Active in Reports: 03/26/2008

Number of Days to Update: 28

Source: Department of Public Health & Environment

Telephone: 303-692-3611 Last EDR Contact: 05/27/2008

Next Scheduled EDR Contact: 08/25/2008 Data Release Frequency: Varies

AIRS: Permitted Facility & Emissions Listing

A listing of Air Pollution Control Division permits and emissions data.

Date of Government Version: 04/16/2008 Date Data Arrived at EDR: 04/18/2008 Date Made Active in Reports: 05/16/2008

Number of Days to Update: 28

Source: Department of Public Health & Environment

Telephone: 303-692-3213 Last EDR Contact: 04/14/2008

Next Scheduled EDR Contact: 06/30/2008

Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

There were nine uranium mill tailings sites in Colorado designated for cleanup under the federal Uranium Mill Tailings Radiation Control Act. These nine sites, know commonly as UMTRA sites, were remediated jointly by the State of Colorado and the U.S. Department of Energy during the late 1980's and early 1990's. Mill tailings were removed from 8 of the mill sites and relocated in engineered disposal cells. A disposal cell is designed to encapsulate the material, reduce radon emanation, and prevent the movement of water through the material. At one site, Maybell, CO, the tailings were stabilized in-place at the mill site. After remediation of the tailings was completed, the State and DOE began to investigate the residual impacts to groundwater at the mill sites. The groundwater phase of the UMTRA program is on-going.

Date of Government Version: 11/23/2004 Date Data Arrived at EDR: 03/21/2007 Date Made Active in Reports: 05/02/2007

Number of Days to Update: 42

Source: Department of Public Health & Environment

Telephone: 970-248-7164 Last EDR Contact: 06/16/2008

Next Scheduled EDR Contact: 09/15/2008 Data Release Frequency: Varies

ASBESTOS: Asbestos Abatement & Demolition Projects

Asbestos abatement and demolition projects by the contractor.

Date of Government Version: 03/17/2008 Date Data Arrived at EDR: 03/17/2008 Date Made Active in Reports: 03/26/2008

Number of Days to Update: 9

Source: Department of Public Health & Environment

Telephone: 303-692-3100 Last EDR Contact: 06/16/2008

Next Scheduled EDR Contact: 09/01/2008 Data Release Frequency: Semi-Annually

TRIBAL RECORDS

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater

than 640 acres.

Date of Government Version: 12/31/2005 Date Data Arrived at EDR: 12/08/2006 Date Made Active in Reports: 01/11/2007

Number of Days to Update: 34

Source: USGS

Telephone: 202-208-3710 Last EDR Contact: 05/09/2008

Next Scheduled EDR Contact: 08/04/2008 Data Release Frequency: Semi-Annually

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998 Date Data Arrived at EDR: 12/03/2007 Date Made Active in Reports: 01/24/2008

Number of Days to Update: 52

Source: Environmental Protection Agency

Telephone: 703-308-8245 Last EDR Contact: 05/27/2008

Next Scheduled EDR Contact: 08/25/2008 Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 02/25/2008 Date Data Arrived at EDR: 02/26/2008 Date Made Active in Reports: 03/17/2008

Number of Days to Update: 20

Source: Environmental Protection Agency

Telephone: 415-972-3372 Last EDR Contact: 05/19/2008

Next Scheduled EDR Contact: 08/18/2008 Data Release Frequency: Quarterly

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 02/21/2008 Date Data Arrived at EDR: 02/26/2008 Date Made Active in Reports: 03/20/2008

Number of Days to Update: 23

Source: EPA Region 10 Telephone: 206-553-2857 Last EDR Contact: 05/19/2008

Next Scheduled EDR Contact: 08/18/2008 Data Release Frequency: Quarterly

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 02/28/2008 Date Data Arrived at EDR: 02/29/2008 Date Made Active in Reports: 03/17/2008

Number of Days to Update: 17

Source: EPA Region 6 Telephone: 214-665-6597 Last EDR Contact: 05/19/2008

Next Scheduled EDR Contact: 08/18/2008 Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 03/17/2008 Date Data Arrived at EDR: 03/27/2008 Date Made Active in Reports: 05/06/2008

Number of Days to Update: 40

Source: EPA Region 4 Telephone: 404-562-8677 Last EDR Contact: 05/19/2008

Next Scheduled EDR Contact: 08/18/2008 Data Release Frequency: Semi-Annually

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 03/12/2008 Date Data Arrived at EDR: 03/14/2008 Date Made Active in Reports: 03/20/2008

Number of Days to Update: 6

Source: EPA Region 1 Telephone: 617-918-1313 Last EDR Contact: 05/19/2008

Next Scheduled EDR Contact: 08/18/2008 Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 03/17/2008 Date Data Arrived at EDR: 03/27/2008 Date Made Active in Reports: 05/06/2008

Number of Days to Update: 40

Source: EPA Region 7 Telephone: 913-551-7003 Last EDR Contact: 05/19/2008

Next Scheduled EDR Contact: 08/18/2008 Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 02/20/2008 Date Data Arrived at EDR: 03/04/2008 Date Made Active in Reports: 03/17/2008

Number of Days to Update: 13

Source: EPA Region 8 Telephone: 303-312-6271 Last EDR Contact: 05/19/2008

Next Scheduled EDR Contact: 08/18/2008 Data Release Frequency: Quarterly

INDIAN UST R4: Underground Storage Tanks on Indian Land

No description is available for this data

Date of Government Version: 03/17/2008 Date Data Arrived at EDR: 03/27/2008 Date Made Active in Reports: 05/06/2008

Number of Days to Update: 40

Source: EPA Region 4 Telephone: 404-562-9424 Last EDR Contact: 05/19/2008

Next Scheduled EDR Contact: 08/18/2008 Data Release Frequency: Semi-Annually

INDIAN UST R9: Underground Storage Tanks on Indian Land

No description is available for this data

Date of Government Version: 02/25/2008 Date Data Arrived at EDR: 02/26/2008 Date Made Active in Reports: 03/20/2008

Number of Days to Update: 23

Source: EPA Region 9 Telephone: 415-972-3368 Last EDR Contact: 05/19/2008

Next Scheduled EDR Contact: 08/18/2008 Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land

No description is available for this data

Date of Government Version: 02/21/2008 Date Data Arrived at EDR: 02/26/2008 Date Made Active in Reports: 03/20/2008

Number of Days to Update: 23

Source: EPA Region 10 Telephone: 206-553-2857 Last EDR Contact: 05/19/2008

Next Scheduled EDR Contact: 08/18/2008 Data Release Frequency: Quarterly

INDIAN UST R6: Underground Storage Tanks on Indian Land

No description is available for this data

Date of Government Version: 02/28/2008 Date Data Arrived at EDR: 02/29/2008 Date Made Active in Reports: 03/17/2008

Number of Days to Update: 17

Source: EPA Region 6 Telephone: 214-665-7591 Last EDR Contact: 05/19/2008

Next Scheduled EDR Contact: 08/18/2008 Data Release Frequency: Semi-Annually

INDIAN UST R7: Underground Storage Tanks on Indian Land

No description is available for this data

Date of Government Version: 06/01/2007 Date Data Arrived at EDR: 06/14/2007 Date Made Active in Reports: 07/05/2007

Number of Days to Update: 21

Source: EPA Region 7 Telephone: 913-551-7003 Last EDR Contact: 05/19/2008

Next Scheduled EDR Contact: 08/18/2008

Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

No description is available for this data

Date of Government Version: 02/20/2008 Date Data Arrived at EDR: 03/04/2008 Date Made Active in Reports: 03/17/2008

Number of Days to Update: 13

Source: EPA Region 8 Telephone: 303-312-6137 Last EDR Contact: 05/19/2008

Next Scheduled EDR Contact: 08/18/2008 Data Release Frequency: Quarterly

INDIAN UST R5: Underground Storage Tanks on Indian Land

No description is available for this data

Date of Government Version: 12/21/2007 Date Data Arrived at EDR: 12/21/2007 Date Made Active in Reports: 01/24/2008

Number of Days to Update: 34

Source: EPA Region 5 Telephone: 312-886-6136 Last EDR Contact: 05/19/2008

Next Scheduled EDR Contact: 08/18/2008 Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

A listing of underground storage tank locations on Indian Land.

Date of Government Version: 03/12/2008 Date Data Arrived at EDR: 03/14/2008 Date Made Active in Reports: 03/20/2008

Number of Days to Update: 6

Source: EPA, Region 1 Telephone: 617-918-1313 Last EDR Contact: 05/19/2008

Next Scheduled EDR Contact: 08/18/2008

Data Release Frequency: Varies

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 04/02/2008 Date Data Arrived at EDR: 04/22/2008 Date Made Active in Reports: 05/19/2008

Number of Days to Update: 27

Source: EPA, Region 1 Telephone: 617-918-1102 Last EDR Contact: 03/07/2008

Next Scheduled EDR Contact: 07/21/2008 Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008 Date Data Arrived at EDR: 04/22/2008 Date Made Active in Reports: 05/19/2008

Number of Days to Update: 27

Source: EPA, Region 7 Telephone: 913-551-7365 Last EDR Contact: 03/07/2008

Next Scheduled EDR Contact: 07/21/2008 Data Release Frequency: Varies

EDR PROPRIETARY RECORDS

Manufactured Gas Plants: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A Date Data Arrived at EDR: N/A Date Made Active in Reports: N/A

Number of Days to Update: N/A

Source: EDR, Inc. Telephone: N/A Last EDR Contact: N/A

Next Scheduled EDR Contact: N/A

Data Release Frequency: No Update Planned

COUNTY RECORDS

ADAMS COUNTY:

Summary Report on Methane Gas Hazards and Surveys Conducted on Domestic and Demolition Landfills in Adams County

As of May 8, 1978, all known landfills or dumping sites in the Adams County area have been surveyed.

Date of Government Version: 05/08/1978 Date Data Arrived at EDR: 02/16/1995 Date Made Active in Reports: 04/04/1995 Number of Days to Update: 47 Source: Tri-County Health Department Telephone: 303-761-1340 Last EDR Contact: 01/27/1995 Next Scheduled EDR Contact: N/A

Data Release Frequency: No Update Planned

ARAPAHOE COUNTY:

A Survey of Landfills in Arapahoe County

A survey of Arapahoe County was conducted from August through November, 1977, of all open and closed landfills and dumpsites in the county. Each of the sites found was classified as domestic or demolition.

Date of Government Version: 12/31/1978 Date Data Arrived at EDR: 02/16/1995 Date Made Active in Reports: 04/04/1995 Number of Days to Update: 47

Source: Tri-County Health Department Telephone: 303-761-1340 Last EDR Contact: 01/27/1995 Next Scheduled EDR Contact: N/A

Data Release Frequency: No Update Planned

BOULDER COUNTY:

Old Landfill Sites

Landfill sites in Boulder county.

Date of Government Version: 05/01/1986 Date Data Arrived at EDR: 11/14/1995 Date Made Active in Reports: 12/07/1995

Number of Days to Update: 23

Source: Boulder County Health Department

Telephone: 303-441-1182 Last EDR Contact: 01/30/1998 Next Scheduled EDR Contact: N/A

Data Release Frequency: No Update Planned

DENVER COUNTY:

Landfills in Denver County

Landfill sites in the city and county of Denver.

Date of Government Version: 12/01/1994 Date Data Arrived at EDR: 12/28/1994 Date Made Active in Reports: 01/31/1995

Number of Days to Update: 34

Source: City and County of Denver Telephone: 303-436-7300 Last EDR Contact: 12/18/1994 Next Scheduled EDR Contact: N/A

Data Release Frequency: No Update Planned

DOUGLAS COUNTY:

Douglas County Landfill Key

Landfill sites in Douglas county.

Date of Government Version: 06/12/1991 Date Data Arrived at EDR: 02/16/1995 Date Made Active in Reports: 04/04/1995

Number of Days to Update: 47

Source: Tri-County Health Department

Telephone: 303-761-1340 Last EDR Contact: 01/27/1995 Next Scheduled EDR Contact: N/A

Data Release Frequency: No Update Planned

PUEBLO COUNTY:

Designated Disposal & Landfill Sites

Only inert materials. Asphalt, cement, dirt & rock unless otherwise specified. These sites are no longer active.

Date of Government Version: 04/30/1990 Date Data Arrived at EDR: 11/16/1995 Date Made Active in Reports: 12/07/1995

Number of Days to Update: 21

Source: Pueblo City-County Health Department

Telephone: 719-583-4300 Last EDR Contact: 11/13/1995 Next Scheduled EDR Contact: N/A

Data Release Frequency: No Update Planned

TRI COUNTY:

Tri-County Area Solid Waste Facilities List (Adams, Arapahoe and Douglas Counties)

Closed Domestic Landfills in Adams County, Closed Domestic Landfills in Arapahoe County, Closed Demolition Landfills in Arapahoe County, Closed Domestic Landfills in Douglas County.

Date of Government Version: 10/15/1983 Date Data Arrived at EDR: 02/16/1995 Date Made Active in Reports: 04/04/1995

Number of Days to Update: 47

Source: Tri-County Health Department

Telephone: 303-761-1340 Last EDR Contact: 01/27/1995 Next Scheduled EDR Contact: N/A

Data Release Frequency: No Update Planned

WELD COUNTY:

Solid Waste Facilities in Weld County

Solid Waste Facilities in Weld County.

Date of Government Version: 03/01/2008 Date Data Arrived at EDR: 03/18/2008 Date Made Active in Reports: 03/26/2008

Number of Days to Update: 8

Source: Weld County Department of Public Health

Telephone: 970-304-6415 Last EDR Contact: 06/02/2008

Next Scheduled EDR Contact: 09/01/2008 Data Release Frequency: No Update Planned

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 12/31/2005 Date Data Arrived at EDR: 06/15/2007 Date Made Active in Reports: 08/20/2007

Number of Days to Update: 66

Source: Department of Environmental Protection

Telephone: 860-424-3375 Last EDR Contact: 06/13/2008

Next Scheduled EDR Contact: 09/08/2008 Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data

Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 02/15/2008 Date Data Arrived at EDR: 02/28/2008 Date Made Active in Reports: 04/09/2008

Number of Days to Update: 41

Source: Department of Environmental Conservation

Telephone: 518-402-8651 Last EDR Contact: 05/29/2008

Next Scheduled EDR Contact: 08/25/2008 Data Release Frequency: Annually

PA MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2006 Date Data Arrived at EDR: 12/21/2007 Date Made Active in Reports: 01/10/2008

Number of Days to Update: 20

Source: Department of Environmental Protection

Telephone: N/A

Last EDR Contact: 06/09/2008

Next Scheduled EDR Contact: 09/08/2008 Data Release Frequency: Annually

WI MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2006 Date Data Arrived at EDR: 04/27/2007 Date Made Active in Reports: 06/08/2007

Number of Days to Update: 42

Source: Department of Natural Resources

Telephone: N/A

Last EDR Contact: 04/07/2008

Next Scheduled EDR Contact: 07/07/2008 Data Release Frequency: Annually

Oil/Gas Pipelines: This data was obtained by EDR from the USGS in 1994. It is referred to by USGS as GeoData Digital Line Graphs from 1:100,000-Scale Maps. It was extracted from the transportation category including some oil, but primarily gas pipelines.

Electric Power Transmission Line Data

Source: PennWell Corporation Telephone: (800) 823-6277

This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:

Source: American Hospital Association, Inc.

Telephone: 312-280-5991

The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing

Source: Centers for Medicare & Medicaid Services

Telephone: 410-786-3000

A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services,

a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes

Source: National Institutes of Health

Telephone: 301-594-6248

Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools

Source: National Center for Education Statistics

Telephone: 202-502-7300

The National Center for Education Statistics' primary database on elementary

and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are

comparable across all states.

Private Schools

Source: National Center for Education Statistics

Telephone: 202-502-7300

The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Daycare Listing

Source: Department of Human Services

Telephone: 303-866-5958

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Riparian Vegetation Data

Source: Division of Wildlife Telephone: 970-416-3360

STREET AND ADDRESS INFORMATION

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APPENDIX E

Site Photographs



Photo #1 – View along the northern border of the site, shared Weld County Road 10. View to the east.



Photo #3 – View along the eastern border of the site, shared with Weld County Road 7. View to the north.



Photo #5 – View along the northeasterly adjoining residential properties. View to the northeast.



Photo #2 – View of the northerly adjoining residential properties. View to the northeast.



Photo #4 –View of the easterly adjoining residential properties. View to the northeast.



Photo #6 – View along the southern border of the site, shared with Weld County Road 8. View to the west.



Photo #7 – View of the southerly adjoining undeveloped property. View to the southwest.



Photo #9 – View along the western border of the site, shared with Weld County Road 5. View to the south.



Photo #11 – Typical view of the site from the northwest corner. View to the southeast.



Photo #8 View of the southwesterly adjoining high school and athletic field. View to the northwest.



Photo #10 – View of the westerly adjoining property. View to the northwest.



Photo #12 – Typical view of the site from the southeast corner. View to the northwest.



Photo #13 – View of the natural gas pipeline marker in the southeast corner of the site.



Photo #15 – View of the northern most NOAA compound. View to the north.



Photo #17 – View of the entrance to the eastern most oil and/or natural gas well. View to the southwest.



Photo #14 – View of the southern most NOAA compound. View to the northwest.



Photo #16 – View of the leaking padmounted transformer in the northern most NOAA lease compound.



Photo #18 – View of the eastern most oil and/or natural gas AST. View to the northwest.



Photo #19 – View of the stained soil beneath the eastern most oil and/or natural gas AST.



Photo #21 – View of the entrance and well head of the western most oil and/or natural gas well. View to the southwest.



Photo #23 – View of oil and gas operations equipment at the western most oil and/or natural gas well. View to the east.



Photo #20 View of oil and gas operations equipment at the eastern most oil and/or natural gas well. View to the north.



Photo #22 – View of the western most oil and/or natural gas AST. View to the southwest.



Photo #24 – View of oil and gas operations equipment at the western most oil and/or natural gas well. View to the west.



Photo #25 – View of oil and gas operations equipment at the western most oil and/or natural gas well. View to the west.

APPENDIX F

Credentials

F. RUSSELL PICKERING, MS

ENVIRONMENTAL DEPARTMENT MANAGER

PROFESSIONAL EXPERIENCE

Mr. Pickering is the Environmental Department Manager of Terracon's Denver, Colorado office and has more than 15 years of experience in managing and providing a range of environmental services to a variety of clients. Mr. Pickering's principal work is focused in the oil and gas industry providing project management and field services for Due Diligence, Limited Site Investigations, and NEPA investigations. Mr. Pickering also conducts Phase I and Phase II ESAs and provides assistance in remedial system design and business development. Russell has extensive experience in wetland delineation, wetland mitigation planning, and is certified by the U.S. Fish and Wildlife service to conduct threatened and endangered species surveys in support of a variety of Terracon projects.

PROJECT EXPERIENCE

- Phase I Environmental Site Assessments Various Locations
 Prepared Phase I Environmental Site Assessments (ESAs) for clients
 throughout Colorado, Wyoming, and Utah. The Phase I ESAs have
 been conducted on wide variety of properties including military
 installations, airports, gas stations, commercial properties, office and
 residential buildings, industrial facilities, and proposed communication
 tower sites. The Phase I ESAs have been performed in accordance
 with the current industry-recognized ASTM ESA guidelines and
 specific client requirements.
- Limited Site Investigations, Oil and Gas Clients Larimer and Weld Counties, CO

Conducted investigations to determine the vertical and lateral extent of condensate and other petroleum related contamination plumes at numerous production facilities located along the Front Range of Colorado. Projects included soil and groundwater sampling, monitoring well installations, plume modelling, remediation planning and oversight, and agency coordination.

 Environmental Due Diligence Audit, Cannon AFB, Former Roswell Industrial Air Field – Roswell, NM

Conducted an Environmental Due Diligence Audit of a World War II air field in New Mexico. The study focused on the identification of recognized environmental conditions including unexploded ordinance, fuel storage, poly-chlorinated biphenyl containing equipment, lead paint, and asbestos containing materials.

 Environmental Impact Statement, Jonah II Gas Field – Southwest Wyoming

Examined the effects of gas field development under the proposed action and several alternatives on the environment for a third-party EIS produced for the Bureau of Land Management. Principle issues evaluated included critical wildlife habitat and migration routes, noise, traffic, air quality, surface water, wetlands, and visual impacts.

EDUCATION

Masters of Science, Environmental Engineering, 2006, University of Wyoming

Masters of Science, Environmental Toxicology, 1995, Colorado State University

Bachelor of Science, Zoology/ Physiology, 1992, University of Wyoming

CERTIFICATIONS

USFWS Certification for Threatened & Endangered Species Surveys Certified Wetland Delineator 40-Hour OSHA Hazwoper Certification 8-Hour OSHA refresher courses

WORK HISTORY

Terracon Consultants, Inc., Environmental Depat. Manager, 2007--- Present

Terracon Consultants, Inc., Sr. Project Manager, 2006 – 2007

Aspen Environmental Services, Principal, 1997-2006

TRC Mariah Associates, Environmental Scientist, 1994–1997

PROJECT EXPERIENCE (continued)

- Environmental Protection Planning, South Platte River Restoration Denver, CO Prepared guidance documents including Spill Prevention, Control, and Countermeasure Plan, Stormwater Pollution Prevention Plan, Erosion Control Plan, Section 404 of the Clean Water Act Permit, Traffic Control Plan, Environmental Protection Training, Contaminant Prevention Plan, and Natural and Cultural Resource Management Plan.
- EIS Windpower Project Arlington, WY Worked as part of an integrated team to evaluate potential impacts to the environment resulting from the construction and operation of a large windpower project. Critical issues focused on cultural resources and impacts to wildlife, particularly raptor species.
- NEPA Environmental Assessment, U.S. Army Corps of Engineers and U.S. Border Patrol El Paso, TX Managed a NEPA EA for the improvement and replacement of fence and road structures along a 15 mile stretch of the United States/Mexico border. The project included assessments of wildlife, threatened and endangered species, cultural resources, noise and visual impacts, air quality, socioeconomics, traffic, and environmental justice.
- NEPA Environmental Assessment, Ft. Bliss, Gunnery Range El Paso, TX Conducted an EA to assess the effects of decommissioning an existing tank training area and the installation of a new training grounds. Critical issues included unexploded ordinance clearance at the site to be closed and air quality, noise, and visual impacts along with environmental justice at the proposed new site.
- Surfactant Enhanced Electrokinetic Remediation of Petroleum Contaminated Fine Grained Soils -Laramie, WY Designed and implemented a system to remove residual petroleum contamination from clay soils which had proven resistant to traditional remediation methods. The system involved the application of a direct current to the subsurface through an electrode array and the introduction of anionic surfactants to enhance contaminant mobilization.

ADDITIONAL COURSES

Engineering Applications of GIS and GPS, Colorado State University, Ft. Collins, CO

Ecological Risk Assessment and Management, Colorado State University, Ft. Collins, CO

Wetland Delineation and Mitigation Planning, Wetlands Training Institute, Kalispell, MT

Technical Writing and Peer Reviewing, Laramie, WY

PUBLICATIONS/PRESENTATIONS

Pickering, R., "Surfactant enhanced electrokinetic remediation of petroleum contaminated fine-grained soils" MS Thesis, Department of Civil and Architectural Engineering, University of Wyoming, 2006.

Pickering, R., "Relative importance of dietary versus aqueous exposures to copper, cadmium, lead, and zinc in Rainbow Trout (Oncorhynchus mykiss)". MS Thesis, Department of Fisheries and Wildlife Biology, Colorado State University, 1995.

Seville, R.S., D. Thomas, R. Pickering, and N. Stanton. "Species of Eimeria from the thirteen-lined ground squirrel, Spermophilus tridecemlineatus, from Wyoming". Great Basin Naturalist 52:309-312, 1992.

DARREN BRUNS, MBA

ENVIRONMENTAL SCIENTIST

PROFESSIONAL EXPERIENCE

Mr. Bruns is an environmental scientist in Terracon's Wheat Ridge, Colorado office supporting the Phase I Environmental Site Assessment (ESA) Group. He is responsible for site reconnaissance, site research, regulatory research, soil, and groundwater sampling, regulatory interpretation, and report preparation. He has experience performing National Environmental Protection Act (NEPA) screens, FCC Environmental Assessments (EAs), and Phase I and Phase II ESAs. In addition, Mr. Bruns coordinates and manages environmental and geotechnical projects for New Mexico, Arizona, Colorado, Montana, and Wyoming.

PROJECT EXPERIENCE

Phase I Environmental Assessments – Denver/Colorado

Mr. Bruns has conducted over 150 Phase I ESAs for undeveloped properties, commercial properties, industrial properties, and telecommunication installations.

Phase II Environmental Assessments – Denver/Colorado

On-site responsibilities include quarterly groundwater monitoring, soil sampling, and well installation. Mr. Bruns has collected soil samples via hand auger, geoprobe, and hollow/solid stem auger methods. Office responsibilities include investigation and report writing.

Asbestos, Radon, and Lead-Based Paint Sampling

Mr. Bruns has conducted radon testing, lead-based paint screens, and asbestos sampling in the Denver metropolitan area.

Phase I ESA Project Experience

Phase I ESAs of the Former RTD Administration and Maintainence / Denver Tramway Facility

Conducted the Phase I ESAs of Denver's historic Denver Tramway facility located at the intersection of Santa Fe Drive and West Alameda Avenue. Fees: \$4,800

Phase I ESAs of Gravel Mining Operations

Conducted the Phase I ESAs of 23 gravel mining operation facilities on the western slope of Colorado and the Colorado front range. Fees: \$80,796

Phase II Environmental Assessment Experience

U-Pump-It Gasoline Station

Responisble for quarterly groundwater monitoring, soil vapor monitoring, and report writing for submittal to the Colorado Division of Oil and Public Safety. Fees: \$30,500

Asbestos Surveying Experience

Buckingham Mall Demolition Survey

Collaborated with Terracon's Denver Asbestos Group and assissted in collection and assesment of suspected asbestos containing materials at the former Buckingham Mall in Aurora, Colorado. Fees: \$40,000

EDUCATION

Masters Degree, Business Administration, University of Phoenix

Bachelor of General Studies, Environmental Science, University of Kansas

Associate Degree, Biology, Kansas City Kansas Community College

CERTIFICATIONS

24-Hour OSHA Hazwoper Course
AHERA Asbestos Accredited
Building Inspector
Colorado Asbestos Accredited:
Building Inspector
Petroleum Geology

WORK HISTORY

Terracon Consultants, Environmental Scientist, 2005 – Present

Crest Oil & Gas, Ltd., Houston, Texas, Geological Technician, 2001-2005



Property Information (970) 400-3650 Technical Support (970) 400-4357

Account: R5728486

November 15, 2022

Account	Parcel	Space	Account Type	nt Type Tax Year		Actual Value	Assessed Value
R5728486	146716000070		Agricultural	2022	0	2,770,725	803,510

Legal
24861-A SE4 16 1 68 (1D 4R)

Subdivision	Block	Lot	Land Economic Area
			ERIE RURAL

Property Address	Property City	Zip	Section	Township	Range
			16	01	68

Account	Owner Name	Address
R5728486	COLORADO STATE OF	1127 N SHERMAN ST STE 300 DENVER, CO 802032398

Reception	Rec Date	Type	Grantor	Grantee	Doc Fee	Sale Date	Sale Price
<u>1879795</u>	01-13-1982	coz	WELD COUNTY ZONING	CASE: Z-355 ZONING A	0.00		0

^{*}If the hyperlink for the reception number does not work, try a manual search in the <u>Clerk and Recorder records</u>. Use the Grantor or Grantee in your search.

11/15/22, 2:16 PM Property Report

No buildings found.

Туре	Code	Description	Actual Value	Assessed Value	Acres	Land SqFt
Land	9129	EXEMPT-STATE NON RESIDENTIAL LAND	2,770,725	803,510	155.000	6,751,800
Totals	-	-	2,770,725	803,510	155.000	6,751,800

Comparable sales for your Residential or Commercial property may be found using our <u>SALES SEARCH TOOL</u>

Tax Area	District ID	District Name	Current Mill Levy
2390	1204	BOULDER VALLEY CONSERVATION	0.000
2390	1050	HIGH PLAINS LIBRARY	3.197
2390	0311	LEFT HAND WATER	0.000
2390	0512	MOUNTAIN VIEW FIRE PROTECTION DISTRICT	16.247
2390	0301	NORTHERN COLORADO WATER (NCW)	1.000
2390	0213	SCHOOL DIST RE1J-LONGMONT	57.358
2390	0100	WELD COUNTY	15.038
Total	-	-	92.84



11/15/22, 2:16 PM Property Report





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Get additional detail with the Map Search.

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Property Information (970) 400-3650 Technical Support (970) 400-4357

Account: R8947358

November 15, 2022

Account	Parcel	Space	Account Type	Tax Year	Buildings	Actual Value	Assessed Value
R8947358	146716200076		Exempt	2022	0	40,240	11,670

Legal

W2 16-1-68 EXC BEG SW COR SEC TH N0D08'E 30' TO POB N0D08'E 1950' E1320' S0D08'W 1950' W1320' TO POB ALSO EXC BEG W4 COR SEC TH N0D12'E 243.22' N89D31'E 1062' S03D21'W 545' S44D31'E 339.83' S89D38'E 48' S04D46'E 110' S89D38'W 1322' TO PT ON W LN SEC TH N0D13'W 651.78 TO POB

Subdivision	Block	Lot	Land Economic Area
			ERIE RURAL

Property Address	Property City	Zip	Section	Township	Range
			16	01	68

Account	Owner Name	Address
R8947358	COLORADO STATE OF	1127 N SHERMAN ST STE 300 DENVER, CO 802032398

Recep	otion	Rec Date	Туре	Grantor	Grantee	Doc Fee	Sale Date	Sale Price
18797	<u> 195</u>	01-13-1982	COZ	WELD COUNTY ZONING	CASE: Z-355 ZONING A	0.00		0
41575	<u>549</u>	11-12-2015	SURV	SURVEY	SURVEY	0.00	05-15-2015	0

11/15/22, 2:16 PM Property Report

*If the hyperlink for the reception number does not work, try a manual search in the <u>Clerk and Recorder records</u>. Use the Grantor or Grantee in your search.

No buildings found.

Туре	Code	Description	Actual Value	Assessed Value	Acres	Land SqFt
Land	9149	EXEMPT-POLITICAL NON RESIDENTIAL LAND	40,240	11,670	238.160	10,374,250
Totals	-	-	40,240	11,670	238.160	10,374,250

Comparable sales for your Residential or Commercial property may be found using our SALES SEARCH TOOL

Tax Area	District ID	District Name	Current Mill Levy
2391	1204	BOULDER VALLEY CONSERVATION	0.000
2391	1050	HIGH PLAINS LIBRARY	3.197
2391	0512	MOUNTAIN VIEW FIRE PROTECTION DISTRICT	16.247
2391	0213	SCHOOL DIST RE1J-LONGMONT	57.358
2391	0100	WELD COUNTY	15.038
Total	-	-	91.84



11/15/22, 2:16 PM Property Report





Get additional detail with the Map Search.

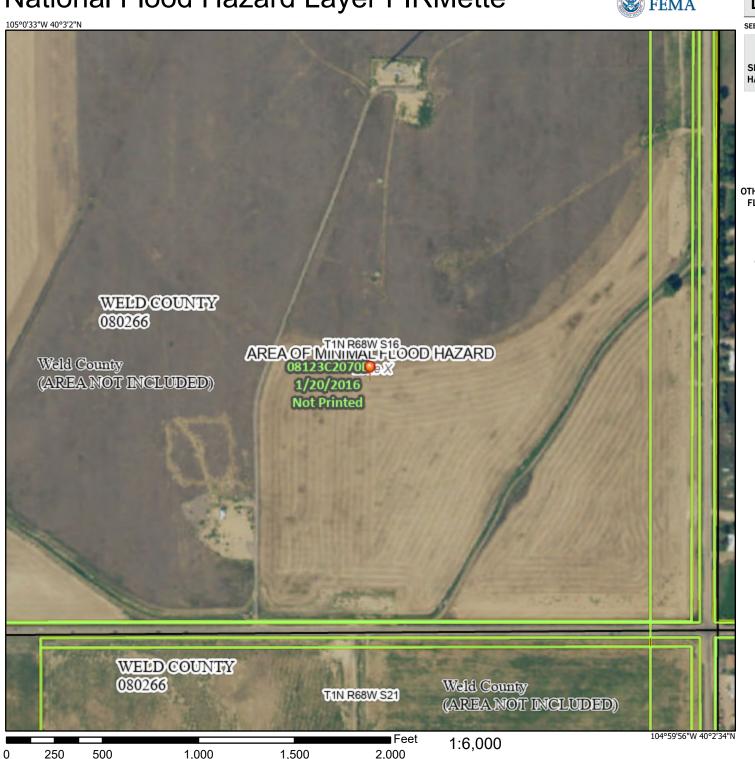
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National Flood Hazard Layer FIRMette

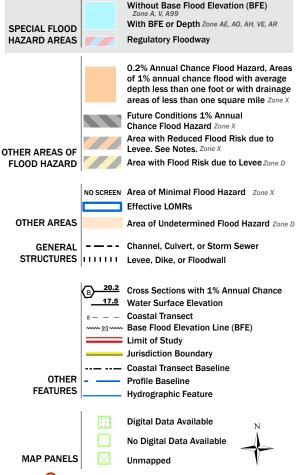


Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT



This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The pin displayed on the map is an approximate point selected by the user and does not represent

an authoritative property location.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/15/2022 at 3:57 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

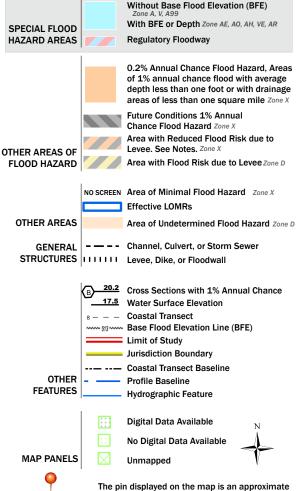


Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT



This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

point selected by the user and does not represent

an authoritative property location.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/15/2022 at 3:58 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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National Flood Hazard Layer FIRMette

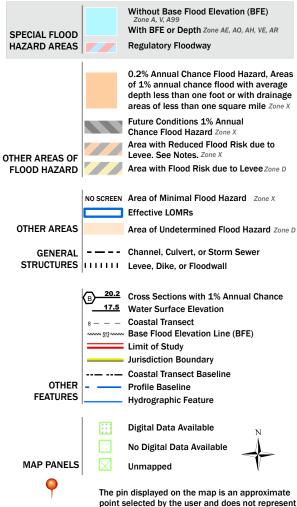


Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT



This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

an authoritative property location.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/15/2022 at 3:55 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

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Landowner's Name TOWN OF ERIE Well Owner's Name TOWN OF BRIE									
Location: SW 14, SE 14, Section 1/2 Township / (NS, Range 68 EN) 6 PM, County WELD									
Hole(s) to be Constructed: Number Estimated Depth Ft. Type Z" SCH_40_ DVC									
Purpose of Monitoring Hole(s) GROUNDINGTEN LEVELS MONITORING									
Approximate Date of Construction DEC 151 1978 Driller Lic. No. (if applicable)									
Consultant or Driller TERRA DRILLING Phone (703) 665-6283									
Consultant or Driller TETRICA DIRILLIANG Phone (703) 665-6283 Contact CHRISTOPHER GREEN EF CONSULTANTS THE Fax No (303) 665-6357									
Address 825 DELAWARE AVE Ste 500									
City, State, Zip LONGMONT CO 80501 Ch Agente									
Signature									
ACKNOW! EDGEMENT EDOM STATE ENGINEEDIS OFFICE									
ACKNOWLEDGEMENT FROM STATE ENGINEER'S OFFICE FOR OFFICE USE ONLY									
MH PROCESSED BY \\ \(\text{VML9}\)									
DATE NOTICE RECEIVED 11998 DATE ACKNOWLEDGED 119398									
DIV COUNTY LOZ_ WD OC GROUND ELEV USGS MAP NO									
CONDITIONS OF MONITORING HOLE ACKNOWLEDGEMENT									
A COPY OF THE WRITTEN NOTICE OR ACKNOWLEDGEMENT SHALL BE AVAILABLE AT THE DRILLING SITE, Notice was provided to the State Engineer at least 3 days prior to construction of monitoring & observation hole(s).									
Construction of the hole(s) must be completed within 90 days of the date notice was given to the State Engineer.									
Testing end/or pumping shell not exceed a total of 200 hours unless prior written approval is obtained from the State Engineer.									
Water diverted during testing shall not be used for beneficial purposes. The owner of the hole(s) is responsible for obtaining permit(s) and complying with all rules and regulations pertaining to the discharge of fluids produced during testing.									
All work must comply with the Water Well Construction Rules, 2 CCR 402-2. Minimum construction standards must be met or									
a variance obtained.									
Well Construction and Test Reports (GWS-S1) must be submitted to this office by the ilcensed contractor or authorized individual within 60 days of the completion of the work. Application to permit existing monitoring and observation holes should reference									
the MH number under which the report was filed or be accompanied by a copy of the report.									
Unless a well permit is obtained, the hole(s) must be plugged and sealed within one (1) year after construction. An Abandonment									
Report (form GWS-9) must be submitted within 60 days of plugging & sealing. The owner of the hole(s) should maintain records of water quality seales and submitted to a sealing.									
The owner of the hole(s) should maintain records of water quality testing and submit this data to the State Engineer upon request. The monitoring hole number, owner's structure name, and hole owner's name and address must be provided on all well permit									
application(s), well construction and abandonment reports.									
A monitoring hole can not be converted to a production water well (other than a recovery well) unless the hole or well was originally constructed by a licensed well construction contractor.									
THIS ACKNOWLEDGEMENT OF NOTICE DOES NOT INDICATE THAT WELL PERMIT(S) CAN BE APPROVED.									
Additional Conditions Valuance 98-4									
Additional Conditions VIXIVIII (CC.									

	RM NO. S-31	WELL CONSTI	RUCTION AND ADO, OFFICE OF THE	TEST REPO	RT ER	For Office	Use Only	
. 1		IT NUMBER:	MH-			_		
	OWNER NAME Mailing Address City, St., Zip Phone	s 1100 S. Sherman				-		
3.	WELL LOCAT	ION AS DRILLED:	<u>NE</u> 1/4	SW 1/4, Sec.	<u>18</u> Twp.	3	N Range	70 W
	2500 ft. fr. SUBDIVISION	ROM SEC. LINES: om West RESS AT WELL LOCATION	Sec. line. and _	LOT		line. OR CK	FILING	(UNIT)
4.		RFACE ELEVATION:	5345	ft. DRILL	ING METHOD			
	DATE COMPL	ETED10/15/98	TOTAL DE	PTH15	ft. DE	PTH COMP	LETED15	<u> </u>
5.	GEOLOGIC LO	DG dplion of Malerial (Type, Size, Colo	r, Watur Location)		6. HOLE DIA	M (in.)	From (ft)	To (ft)
	0-2'	Clay: silty, sandy, gravel	s, reddish brown					
	2'-8'	Sand: silty, clay-silt mix, poorly graded sand & gra			7. PLAIN CA OD (in) Kind 2 PVC			To (ft.)
		grained sands, gravels ar	nd cobbles generally co	parsening				
		with depth, brown-pink-gr	ey		.,			
	8'-11'	Sand: very fine sand to f				ING: Screen		0.02 inches 15
ļ ——	11'-15'	Sand: silty, clay-silt mix, poorly graded sand & gra						
		grained eands, gravels ar		parsoning				
		with depth, brown-pink-gr	е <u>у</u>	11.00	8. FILTER PA	SAND_	9. PACKER PL Type: N/A Depth:	ACEMENT:
					Size:	10-20		
					Interval:	7'-15'		
<u> </u>		<u>-</u>			10. GROUTII	NG RECORE		-
REI	MARKS: <u>MW</u>	- BP-1 Water at 11'			Material Bentonite Chips	Amount 100 lbs.	Density Interval	Poured &
		Water de 11			Onips			Hydrated
11,	DISINFECTIO	N: Type	N/A	<u></u>	Amt. Used			ни
12.		ATA:	Test Data is subr		No. GWS 3	9 Supplemental V	Vell Tost	
	Static Level Pumping Level Remarks		Date/Time measu Date/Time measu			. Production . Test Leng		gpm. hrs.
13.	I have read the sta C.R.S., the making	tements mad herein and know the of false statements herein constitu	contents thereof, and that the les perjury in the second dep	sy are true to my know gree end is punishablo	iodgo. [Pursuani t us a class 1 misd	Section 24-4-1 emeanor.]	04(13)(n)	•
	NTRACTOR	Rocky Mountain Consulta			Phone <u>(303)</u>	665-6283	Lic. No. N/A	
	ling Address	825 Delaware Ave., Sto. :					1	4.44 31 1 1 1 1 1
Nar	ne/Titlo (Please C.J. Greenlee/	* *		Signature	Treenle		Date // · / 9.	98

NOV 19'98 12:22 No.008 P.08

	S-31	WELL CONSTRUC STATE OF COLORADO,	OFFICE OF THE	STATE ENGIN	DRT EER		For Office	Use Only		
	WELL PERMIT NU	JMBER:	MH-			<u> </u>				
	OWNER NAME(S) Malling Address City, St., Zip	City of Longmont; Altn: 1100 S. Sherman Longmont, CO 80501 303-651-8340	Ken Huson							
	Phone WELL LOCATION AS		NW 1/4	SE 1/4, Sec	18	Two.	3	N	 Range	70 W
	DISTANCES FROM S 2000 It. from SUBDIVISION	SEC. LINES:	Sec. line. and		South	Sec. lin			-	
4	GROUND SURFACE		5347		LING MET	HOD	Hollow Ste	m Auger	- 17	
	DATE COMPLETED		TOTAL DE	PTH <u>20</u>	_ n.	DEP	TH COMP	LETED _	20	_fl
5.	GEOLOGIC LOG	Material (Type, Size, Color, Water	er Location)		6. HOLE	DIAM	(ln.)	From (ft) 0		To (ft)
	0'-1' Fill:	clay, silty, sandy, gravels,	reddish-rusty bro	wn						
		d: very fing sand to fine sa lly gravels, red-brown to b				Kind	NG Wall Size SCH 40)	To (fl.) 15
					┥━━					
<u> </u>		d: silty, clay-silt mix, fine t			┥── ·					<u> </u>
⊢		rly graded sand & gravel, g ned sands, gravels and ∞		arsening	PERE	CASIN	IG: Screer	Siot Size	p:	0.02 inches
		depth, brown-plnk-grey	obies deliarany co	ed oct mig			SCH 40			20
		d: very fine sand to fine sally gravels, red-brown to be	-//-							
┢	15'-20' San	d: silty, clay-silt mix, fine t	o medium grains,		8. FILTI	ER PAC	K	9. PAC	KER PL	ACEMENT:
		rly graded sand & gravel, o			Materia	d:	SAND	Type: N/A		
	grai	ned sands, gravels and co	bblos generally co	arsening				Depth:		
L	with	depth, brown-pink-grey			Size:		10-20			
 					Interva		10-20'	<u> </u>	· ·- 	
DE	AAADKO: AAAK DO:						RECORE		Intonial	Placement
KE	MARKS: <u>MW- BP-</u>				Material Bentonit		100 lbs.	Density	1'-	Poured &
一					Chips	-	100 104.		10'	Hydrated
		No Water				•				
11.	DISINFECTION:	Туре	N/A		Amt. Use	ed				
12.	WELL TEST DATA: TESTING METHOD	N/A		Test Data is su	ibmilted on				nental V	Vell Test
	Static Level Date/Time measured Pumping Level Date/Time measured Remarks						, Production . Test Leng			gpm. Irs.
13.		med heroin and know the conter statements heroin constitutes pe			bio as a class	1 misden	neanor.)			
CO		ky Mountain Consultants I			Phone	(303) 6	65-6283	Lic. No.	<u>N/</u> A	
··-		Delaware Ave., Ste. 500,				<u> </u>		1= .		
Na	me/Title (Please Type C.J. Greenlee/Geolog			Signature	Luce	Na		Date //	1.19.	98

	RM NO. S-31		WELL CONSTRU STATE OF COLORAD					_	For Office	Use Only	,	
		ERMIT N	UMBER:	MH-			4p .=					
	Mailing Ad	IAME(S) dress ip		n: Ken Huson								
		CATION A	S DRILLED:	NW1/4	SE	1/4, Sec.	18	Twp.	3	N	Rango	70 W
•	1350 SUBDIVIS	ft. from	SEC. LINES: EBST AT WELL LOCATION:	Sec. line. and	1650	fl. from LOT	South 5	Sec. IIn			FILING(UNIT)
4.			ELEVATION:	5343			ING METH					
	DATE CO	MPLETED	10/15/98	TOTAL	EPTH	34	<u>. </u>		TH COMPI			
5.	GEOLOG Dopih		Material (Type, Size, Color, W	ater Location)			6. HOLE	DIAM	(in.)	From (ft)	· -	To (ft) 34
	0'-1'	Fill:	clay, silty, sandy, grave	is, reddish-rusty br	own							
-	1'-5'	000	d: silty, clay-silt mix, fine rly graded sand & gravel	, grades to coarse			1	Kind	NG Wall Size SCH 40)	To (ft.)
			ned sands, gravels and o depth, brown-pink-grey		coarsenin	<u>g</u>		 -				
		With	deptil blown-park-grey									
	5'-16'		d: very fine sand to fine illy gravels, red-brown to		,		3		G: Screen SCH 40			0.02 inches 34
	16'-34'	San	d: silty, clay-silt mix, fine	to medium grains	·.	•••	-					
			rly graded sand & gravel									
			ned sands, gravels and o		<u>xoarsenin</u>	g				10.000	455.5	
	۸٠	. with	depth, brown-plnk-grey			,					ACEMENT: 	
				*]			Depth:		
					•		Size: Interval:		10-20 20'-34'			
				, s _y = 1 C.			10. GROUTING RECORD:					
RE	MARKS:	MW- BP-	3		·		1				Intorval	Placement
	· · · · ·			···.			Bentonite	<u>: </u>	200 lbs.		5'-	Poured &
	·		Water at 23'				Chips				20'	Hydrated
	-		votor or 20	,								
11.	DISINFE	CTION:	Туре	N/A			Amt. Usc	zd				
	WELL TE	ST DATA: METHOD	N/A	☐ Check box		ata is sub		orm No		1.	ental We	ell Test
	Static Lev Pumping I Remarks			Date/Time meas Date/Time meas			<u> </u>		Production Tost Lengi	_		gpm. hrs.
		naking of false	mad horoin and know the contrastements herein constitutes poly Mountain Consultants	perjury in the second de			ese class 1 m	comobair		(13)(a) Lic. No.	N/A	
1	iling Addres		Delaware Ave., Ste. 500		30501			/4/21/0	OEGO	ITV,	· NFS	*
_		ease Type			Signatu	re ₂	11			Date	•	<u> </u>
	C.J. Gree	nloc/Goolog	pist	- · · · · · · · · · · · · · · · · · · ·	6	1	Trees	la		//	.19.7	78
						(/	۲					

	/S-31	WELL CONSTRUC STATE OF COLORADO.				For Office	e Use Only			
	WELL PERMIT NU	MBER:	MH-	, ,						
2.		City of Longmont; Attn: 1100 S. Sherman Longmont, CO 80501 303-651-8340								
	WELL LOCATION AS DISTANCES FROM S 500 ft. from SUBDIVISION STREET ADDRESS A	EC. LINES: East TWELL LOCATION:	Sec. line, and	SE 1/4, Sec. 1150 ft. from LOT padway & 4th Ave.	South So	ec. line. OR LOCK	FILING	70 W		
4.	GROUND SURFACE I			(l. DRILL EPTH 15			tem Auger PLETED <u>15</u>	ft.		
5.	GEOLOGIC LOG	Material (Type, Size, Color, Walt	r Location)		6. HOLE I	DIAM (in.)	From (fl)	To (fl)		
	0'-1' Fill: (clay, slity, sandy, gravels,	reddish-rusty br	חשט						
		: very fine sand to fine sa y gravels, red-brown to br				CASING Sind Wall Size VC SCH 40		To (ft.)		
	11'-12' Sand	: silty, clayey, grey-brown	1							
	poorl	: silty, clay-silt mix, fine to y graded sand & gravel, g ed sands, gravels and col	rades lo coarse			ASING: Screet VC SCH 40		0.02 inches 15		
		depth, brown-pink-grey	obics generally c							
					8. FILTER Material: Size:		9. PACKER PI Type: N/A Depth:			
	· · · · · · · · · · · · · · · · · · ·				Interval:	7'-15'	<u> </u>			
RE	MARKS: <u>MW- BP-4</u>	Water at 9'			Material Bentonite Chips	JTING RECOR Amount 100 lbs.	Density Interva	Placement Poured & Hydrated		
_	I									
	DISINFECTION: WELL TEST DATA: TESTING METHOD	Type N/A	N/A Check box I	f Test Data is sub	Amt. Used mitted on Fo		39 Supplemental \	Well Test		
Static Level Date/Time measured Pumping Level Date/Time measured Remarks					Production Rate gpm. Test Length hrs.					
	C.R.S., the making of false s	nad herein and know the content statements herein constitutes per y Mountain Consultants in	jury in the second de		as a class 1 n	nisderneanor.)	-104(15)(a) Lic. No. N/A			
Mai	iling Address 825 L	Delaware Ave., Ste. 500, L								
Nai	me/Title (Please Type o C.J. Greenlec/Goologi	•		Signature	Green	la	Dale 11 - 19	98		

ROCKY MOUNTAIN CONSULTANTS, INC.

RIC

Premiere Bullding 825 Delaware Ave., Sulte 500 Longmont, CO 80501 (303) 772-5282 Metro (303) 665-6283 FAX (303) 665-6959 E-mail rmclong@rmii.com

- Via Faxmittal -

October 15, 1998

Mr. Jack Byers Colorado Department of Water Resources Office of the State Engineer 1313 Sherman Street Denver, Colorado 80203

Re: Installation of Monitoring Wells, County of Boulder, State of Colorado

Dear Mr. Byers:

Enclosed is the Notice of Intent to Construct Monitoring Wells for the City of Longmont, Water and Waste Water Department. Please review the location of interest as soon as possible and notify us with your authorization if applicable.

Please call with any questions or comments.

Sincerely,

ROCKY MOUNTAIN CONSULTANTS, INC.

Christopher J. Greenlee

Geologist

CG:sp

Enclosures

C:\Myfiles\Depi19\Well_inteni.hr.wpd

ROCKY MOUNTAIN CONSULTANTS, INC.

Premiere Building 825 Delaware Ave., Sulte 500 Longmont. CO 80501 (303) 777-5262 Metro (303) 665-6283 FAX (303) 665-6959 E-mail (mclong@tmil.com

November 19, 1998

Mr. Jack Byers
Colorado Department of Water Resources
Office of the State Engineer
1313 Sherman Street
Denver, Colorado 80203

Re: Notice of Intent to Construct Monitoring Wells

Dear Mr. Byers:

Included with this letter are forms describing the notice of intent to construct four monitoring wells for the Town of Erie, Colorado. These wells will be utilized to gather seasonal groundwater level data for the installation of a proposed treated water transmission pipeline. Attached is the blanket variance from Rules 10.4.3, 10.4.4, 10.5.2.1 and 12.3 granted by your office to construct monitoring wells.

Also included are the completed well construction reports with respect to the four monitoring wells installed October 15, 1998 located in the Town of Lyons, CO, Boulder County.

If you have any questions, please call.

Sincerely,

ROCKY MOUNTAIN CONSULTANTS, INC.

Christopher J. Greenlee

Geologist

CJG:cjg

Enclosures

COPY TO: _

		200
ROCKY MOUNTAIN CONSULT	ANTS, INC.	
TRANSMITTAL	RECEIVED NOV 1 9 1998	825 Delaware Ave., Suite 500 · Longmont, CO 8050 (303) 772-5282 · Metro (303) 665-628 Fax (303)665-698
10:SEO	STATE ENGINEER COLO.	FROM: CHRISTOPHER GREENISE
Colorado Depr		DATE: //-19.98
		PROJECT:
ATTN: Mr. JACK B	yers	JOB NO.:
•		
VIA: FAX: Number of	of pages sent inclu	iding this transmittal 12. If you do not
receive all pag	ges or if fransmissio	on is not clear please call RMC at 772-5282.
Messenger	Mall	
WE ARE SENDING YOU:		
Copies		Description
Inclusion	i Nonce of	INTENT TO CONSTRUCT MONTOUNC WELLS
	-	regarding momentum holes
Ù	·	KTOW RECONT
i		in reference to item (iii)
If	enclosures are not as n	noted, please notify us promptly.
THESE ARE TRANSMITTED	}	
For Approval		As Requested
For Your Use		For Review and Comment
		A. 2
REMARKS	any gr	restrons:
	please c	all of A
		Christopher /- recolle

STATE OF COLORADO

BOARD OF EXAMENERS OF WATER WELL CONSTRUCTION AND PUMP INSTALLATION CONTRACTORS

Division of Water Resources
Department of Natural Resources

1313 Sherman Street, Room 818 Denver, Colorado 80203 Phone (303) 866-3581 FAX (303) 866-3589

January 8, 1998



Roy Romer

James S. Lochhead
Executive Director, DNR

Hal D. Simpson Secretary

Mr. Christopher J. Greenlee Rocky Mountain Consultants, Inc. 825 Delaware Ave, Suite 500 Longmont, CO 80501

RE:

Request for Variance, Monitoring Holes

Request No: 98-4

Dear Mr. Greenlee:

Thank you for the Request for Variance received regarding monitoring holes. Your request has been reviewed for the Board of Examiners of Water Well Construction and Pump installation Contractors. The request is specifically for a blanket variance from Rules 10.4.3, 10.4.4, 10.5.2.1 and 12.3.

Pursuant to Rule 18 and the authority granted by the Board, the required blanket variance to Rules 10.4.3, 10.4.4, 10.5.2.1 and 12.3 is granted subject to the following conditions:

- 1) The well construction will be in accordance with the Water Well Construction Rules except those Rules for which a variance was granted.
- 2) The Monitoring holes shall be constructed in a similar manner to the diagrams provided.
- Please provide a copy of this variance approval with the Notice of Intent to Construct Monitoring Holes and Permit Applications submitted to this office.

Granting the request for variance to minimum water well construction standards does not relieve the owner of potential responsibility or liability in the event contamination of the water source results from such construction, nor does the grantor assume any responsibility or liability should contamination occur.

If you have any questions regarding this matter please contact Mr. George VanSlyke of this office.

Sincerely.

Jack G. Byers

Assistant State Engineer

JGB/GDV/gla:s:\bordexam\varlance\98-4.doc

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons



Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

36 Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill ۵

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot Sandy Spot

Severely Eroded Spot 0

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

â Stony Spot

00 Very Stony Spot

Wet Spot Other

Special Line Features

Water Features

Δ

Streams and Canals

Transportation

Rails ---

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24.000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Weld County, Colorado, Southern Part Survey Area Data: Version 21, Sep 1, 2022

Soil map units are labeled (as space allows) for map scales 1:50.000 or larger.

Date(s) aerial images were photographed: Jul 2, 2021—Aug 25. 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
40	Nunn loam, 1 to 3 percent slopes	56.9	14.5%
57	Renohill clay loam, 3 to 9 percent slopes	5.5	1.4%
66	Ulm clay loam, 0 to 3 percent slopes	35.1	8.9%
67	Ulm clay loam, 3 to 5 percent slopes	23.2	5.9%
79	Weld loam, 1 to 3 percent slopes	253.3	64.6%
83	Wiley-Colby complex, 3 to 5 percent slopes	18.3	4.7%
Totals for Area of Interest		392.2	100.0%

Form No.	v	WELL CONSTRU					For (Office Use Only
GWS-31	4242		orado, Office o					
02/2017		Sherman St., Rodwr.colorado.go	•	•		.		
1. Well Permit	t Number: N/A :	324885	Receipt I	Number: -N/-	A 100173	320		
	ell Designation: MW							
3. Well Owner	r Name: COLORADO	STATE OF						
4. Well Locati	on Street Address	WCR 5 X WCR	10, East 0.2 n	niles, South	0.25 miles int	0		
	S Well Location (re						792.3753171	3
	Location: <u>SW</u> 1/	/4, <u>NW</u> 1/4,	Sec., <u>16</u>	_Twp1	■ N or S	, Range 68	E or	W ■ , <u>6</u> P.M.
County: V	NELD							
Subdivision: \underline{N}	N/A	440 for	- Data Com			_, Block N/A		
8. Completed	face Elevation: 5.1 Aquifer Name : 1	Unnamed Quate	ernary Allu 🕇	otal Depth:	<u>23</u> fe	eet Depth	Completed:	
	otification: Was No							
10. Aquifer Ty (Check on		(One Confining l (Not overlain by	• ,		(Multiple Conf (Overlain by T	ining Layers) [Type III) [ox Hills Illuvial/colluvial)
11. Geologic I	Log:				12. Hole Di	ameter (in.)	From	
Depth	Туре	Grain Size	Color	Water Loc.	.1	3"	0	23
0-15'	Clay	N/A	Brown	10'				
15-16.5'	Sandstone	FG	Light brown					
16.5-23'	Clay	N/A	_	-	13. Plain Ca	sing		
					OD (in)		l Size (in)	From (ft) To (ft)
					1"	PVC	N/A	0 8
						ed Casing Screen		
					OD (in)		l Size (in)	From (ft) To (ft)
					1"	PVC	N/A	8 23
					14. Filter Pa		1	er Placement:
						ashed Silica Sand	Type	Bentonite
					Size	N/A		0-6'
					Interval	6-23'	Depth	U-U
					16. Grouting			
					Material	Amount	Density	Interval Method
Remarks: Log	ged cuttings fro	m surface			N/A			
9	god oddingss	m od.ides						
	ion: Type N/A				Amt. Used		- ::	
	I Estimate Data:	N1 / A	Check bo	ox if Test Dat	ta is submitted	d on Form Numb	er GWS-39, \	Well Yield Test Report
	Estimate Method:	N/A		T= , , ,				
Static Leve	કા: <u>N/A</u>				Yield (gpm) <u>N.</u>			
Date/Time	e measured:	N/A		Estimate Le	ength (hrs) N	/A		
Remarks:								
19. I have read t	the statements made	herein and know t	he contents ther	reof, and they	are true to my k	knowledge. This do	cument is sign	ned (or name entered if
	certified in accordance					_		
I .	riolation of section 37 er considers the entry			-	•		he contracting	g license. If filing online
				± to be compos				-
Company Name	e:		Email:			Phone w/area co		License Number:
WSP, USA			david.stainba	ack@wsp.cor	n	(970) 403	-4108	PG-4077
Mailing Address	s: 4600 W 60th Ave	Arvada, Colora	ado 80003					
Sign (or enter r	name if filing onlin	ie)	Print Nam	ne and Title				Date:
David Stainbac	ck		David Sta	inback, P.G.	., Consultant (Geologist		12/06/2021
			l l					1

WELL PERMIT NUMBER 324885-RECEIPT NUMBER 10017320

ORIGINAL PERMIT APPLICANT(S)

KERR MCGEE OIL & GAS ONSHORE LP (MICKELSON,

ERIK)

APPROVED WELL LOCATION

Water Division: 1 Water District: 5

Designated Basin: N/A
Management District: N/A
County: WELD
Parcel Name: N/A

Physical Address: N/A

SW 1/4 NW 1/4 Section 16 Township 1.0 N Range 68.0 W Sixth P.M.

UTM COORDINATES (Meters, Zone:13, NAD83)

Easting: 498751.7 Northing: 4433792.3

AUTHORIZED AGENT

WSP USA (STAINBACK, DAVID)

PERMIT TO USE AN EXISTING WELL

ISSUANCE OF THIS PERMIT DOES NOT CONFER A WATER RIGHT CONDITIONS OF APPROVAL

- 1) This well shall be used in such a way as to cause no material injury to existing water rights. The issuance of this permit does not ensure that no injury will occur to another vested water right or preclude another owner of a vested water right from seeking relief in a civil court action.
- The construction of this well shall be in compliance with the Water Well Construction Rules 2 CCR 402-2, unless approval of a variance has been granted by the State Board of Examiners of Water Well Construction and Pump Installation Contractors in accordance with Rule 18.
- 3) Approved pursuant to CRS 37-92-602(3)(b)(I) for uses as described in CRS 37-92-602(1)(f). Use of this well is limited to monitoring water levels and/or water quality sampling.
- 4) Approved for the use of an existing well known as MW03.
- 5) This well must be equipped with a locking cap or seal to prevent well contamination or possible hazards as an open well. The well must be kept capped and locked at all times except during sampling or measuring.
- 6) Records of water level measurements and water quality analyses shall be maintained by the well owner and submitted to the Division of Water Resources upon request.
- 7) Upon conclusion of the monitoring program the well owner shall plug this well in accordance with Rule 16 of the Water Well Construction Rules. A Well Abandonment Report must be completed and submitted to the Division of Water Resources within 60 days of plugging.
- 8) The owner shall mark the well in a conspicuous location with the well permit number and name of aquifer as appropriate, and shall take necessary means and precautions to preserve these markings.
- 9) This well must have been constructed by or under the supervision of a licensed well driller or other authorized individual according to the Water Well Construction Rules.
- 10) This well must be located not more than 200 feet from the location specified on this permit.

NOTE: Issuance of this permit does not guarantee that this well can be converted to a production well under a future permit. Additionally, pursuant to Rule 14.2 of the Water Well Construction Rules (2 CCR 402-2), monitoring holes constructed pursuant to a monitoring hole notice shall not be converted to a production well. (Upon obtaining a permit from the State Engineer, a monitoring hole may be converted to a monitoring well, recovery well for remediation of the aquifer, or a dewatering system for dewatering the aquifer.)

NOTICE - Construction of this well may have occurred without proper notice or permit, as required by the Water Well Construction Rules (2 CCR 402-2). Issuance of this permit does not relieve the well owner and/or their well construction contractor of responsibility or liability for any violations that may have occurred. The well owner and/or their well construction contractor may be contacted by the Chief Well Inspector regarding alleged violations.

NOTICE: This permit has been approved subject to the following change: The UTM coordinate values provided with the permit application were not used and the UTMs were taken from the Well Construction Report provided. You are hereby notified that you have the right to appeal the issuance of this permit, by filing a written request with this office within sixty (60) days of the date of issuance, pursuant to the State Administrative Procedures Act. (See Section 24-4-104 through 106, C.R.S.)

WELL PERMIT NUMBER 324885-

RECEIPT NUMBER 10017320

Date Issued:

12/20/2021

Expiration Date: N/A

Issued By A

ANITIA ARCHULETA

								1		
COLORADO DIVISION DEPARTMENT OF NA 1313 SHERMAN ST., S	TURAL F	RESOURC	ES		Office Use Only			Forn	n GW	S-46 (01/2020)
Phone: (303) 866-3581				mitsonline@state.co.us	RC\	D DV	VR			
MONITORIN				· -						
Water Well F	Water Well Permit Application				12/1	10/202	1			
	Review instructions on reverse side prior to completing form. The form must be typed, completed online or in black or blue ink.									
1. Well Owner Infe			ie or iii bi	ack of blue lik.	1					
Name of well owner										
KERR MCGEE OIL & GAS ONSHORE LP					6. Use Of Well Use of this well is limited to monitoring water levels and/or water quality sampling					
Mailing address										
P O BOX 173779					7. Well Data (pro	posea)	Aquifer			
City		State	Zip code		•	feet	'			A.1.
Denver		Colorad	o 80217	'-3779	23				uater	nary Alluvium
Telephone #		E-Mail	(If filing online	e it is required)	8. Consultant In	formation (if applica	able)		
(720)929-4306		Erik_	Mickels	on@oxy.com	Name of contact person					
2. Type Of Applic	ation (c	heck ap	olicable	boxes)	David Stainback,	P.G.				
■ Use existing well ☐ Construct new well		Replaceme	nt for exis	ting monitoring well:	Company name WSP, USA					
Other:	I	Permit no.:			Mailing address					
	licable)				4600 W 60th Ave					
	3. Refer To (if applicable) Monitoring hole acknowledgment Well name or #				City		State		Zip C	ode
MH-		I _{MW}	13		Arvada Colorado 80003					03
4. Location Of Proposed Well (Important! See Instructions)					Telephone # (970)403-4108					
1	County WELD SW 1/4 of the NW 1/4				9. Proposed We	II Driller Lie	oneo #/	ontion).	
WELD Section Township	p NorS		E or W	Principal Meridian	10. Name of Wel					+
Section Township			Eorw	Principal Mendian	The making of false s					
16 1	×	68	1	6	degree, which is puni	shable as a cla	iss 1 misd	emean	or pur	suant to C.R.S.
Distance of well from section lie	nes (section I		lly not proper	ty lines)	24-4-104 (13)(a). I had thereof and state that Sign or enter full name here				know	
For replacement wells only – d			ld well to nev		Erik Mickelson 12/07/2021					12/07/2021
	feet	·····		direction	If signing print name. Print t	itle if other than land	d owner.			
Well location address (Include	City, State, Z	(ip) L Che	k if well addr	ess is same as Item 1.	Erik Mickelson, Senior HSE Advisor					
Optional: GPS well locati	on informat	tion in UTM	ormat		Office Use Only					
You must check GPS unit					USGS map name		DWR map	no.	St	urface elev.
Format must be UTM										
Zone 12 or Zone 13		Eas	ting 4987	' 51		Receipt area	only			
Units must be Meters										
Datum must be NAD83		Nor	hing <u>443</u>	0192						
Unit must be set to true north	_		nember to	set Datum to NAD83				_		
Was GPS unit checked for abo	ve? 📕 YE	ES			_	1	001	17:	37	2()
· · · · · · · · · · · · · · · · · · ·	5. Property Owner Information]	•		. , \	<i></i>		
Name of property owner COLORADO STATE OF										
Mailing address]							
1127 N SHERMAN ST STE 300										
City State Zip Code				1						
Denver			- Iorado	80203-2398						
Telephone #				100200 2000	-					
,						_{DIV} 1_	WD_5	BA	N	1D
N/A]					

Form No.	v				WELL CONSTRUCTION AND YIELD ESTIMATE REPORT For Office Use Only						
GWS-31		State of Colora									
02/2017		Sherman St., Roo	•	•		581					
		dwr.colorado.gov									
	t Number: N/A	324884	Receipt	Number:N-/-4	<u>4 1001</u>	17319	_				
	ell Designation: MW						_				
	r Name: COLORADO		2 5 5 2 2 .	" C	2 25 - Mag (m)	-	_				
	on Street Address:						22020 2420024				
<u> </u>	S Well Location (re						33828.2120831				
County: V	Location: <u>SW</u> 1/ WFLD	4, <u>NW</u> 1/4, 3	эес., <u>то</u>	_ ıwp. <u>ı</u>	L INUI 3 L	, Kange _oo	L	W <u> </u>			
Subdivision: $\frac{V}{N}$	1/A				, Lot <u>N/A</u>	, Block N/A	, Filin	ng (Unit) N/A			
	face Elevation: 5,1			•		_		/Solid Stem augers			
	Aquifer Name : <u>L</u>						h Completed:				
	otification: Was No										
10. Aquifer Ty		(One Confining La	• ,		•	fining Layers)					
(Check on		(Not overlain by	Type III)	Type II ((Overlain by			alluvial/colluvial)			
11. Geologic						iameter (in.)	From	, ,			
Depth	Type	Grain Size	Color	Water Loc.		3"	0	30			
0-10	Clay	N/A	brown	-				-			
10-18'	Claystone	N/A	grey	-	12 51 :- 6	•					
18-22'	Sandstone	FG	tan	-	13. Plain Ca	•	11 C'== (im)	From (ft) To (ft)			
22-30'	Clayey Sands	VFG	brown	-	OD (in) 1"	Kind W PVC	all Size (in) N/A	From (ft) 10 (ft) 0 10			
	ļ	 			<u> </u>		N/A				
		<u> </u>									
		 		+							
	!	 			Porforate	ad Casing Cam	C' (C' ('.	` 040			
	ļ	 				ed Casing Scree					
		 			OD (in) 1"	Kind W PVC	all Size (in)				
		 			<u> </u>		N/A	10 30			
											
	'	 									
	'	 			14. Filter P		15 Packe	er Placement:			
	'	 				ack. 'ashed Silica Sar	1	Bentonite			
		+			Size	N/A	id Type				
		 			Interval	8-30'	Depth	0-8'			
	'	+			16. Groutin		νεμιι				
		 		+	Material	Amount	Density	Interval Method			
Pemarks*		<u> </u>			N/A	Amount	Density	IIICIVAL MCGIOG			
Sur	face cuttings log	gged									
					-						
17 Disinfecti	ion: Type N/A				Amt. Use						
	Estimate Data:		Check b	ox if Test Dat			her GWS-39.	Well Yield Test Report			
	Estimate Method:	N/A		O/ 11 , 222			1001 D.L.	11000 11000 1 000 1 00 p 0			
Static Leve				Testimated Y	/ield (gpm) N						
	e measured:	N/A			ength (hrs) N						
Remarks:	· Illeasureu.	-		LJCIIIIACC LO.	——————————————————————————————————————						
	the statements made	haroin and know the	- contonts the	areaf and they	are true to my	Inoulodge This	document is sign	ned (or name entered if			
I .	tne statements made r I certified in accordand										
						_		g license. If filing online			
I .	er considers the entry			-	•			•			
Company Name	<u>~~~~</u>		Email:			Phone w/area	rode:	License Number:			
WSP, USA		l —		oack@wsp.con	n	(970) 40		PG-4077			
	ss: 4600 W 60th Ave			,	··			<u> </u>			
	name if filing online			ne and Title				Date:			
,	•	.e)			Concultant	Coologist					
David Stainbac	ak		David Sta	ainback, P.G., Consultant Geologist 12/06/2021				12/06/2021			

WELL PERMIT NUMBER 324884-RECEIPT NUMBER 10017319

ORIGINAL PERMIT APPLICANT(S)

KERR MCGEE OIL & GAS ONSHORE LP (MICKELSON,

ERIK)

APPROVED WELL LOCATION

Water Division: 1 Water District: 5

Designated Basin: N/A
Management District: N/A
County: WELD
Parcel Name: N/A
Physical Address: N/A

AUTHORIZED AGENT

WSP USA (STAINBACK, DAVID)

SW 1/4 NW 1/4 Section 16 Township 1.0 N Range 68.0 W Sixth P.M.

UTM COORDINATES (Meters, Zone: 13, NAD83)

Easting: 498781.5 Northing: 4433828.2

PERMIT TO USE AN EXISTING WELL

ISSUANCE OF THIS PERMIT DOES NOT CONFER A WATER RIGHT CONDITIONS OF APPROVAL

- This well shall be used in such a way as to cause no material injury to existing water rights. The issuance of this permit does not ensure that no injury will occur to another vested water right or preclude another owner of a vested water right from seeking relief in a civil court action.
- The construction of this well shall be in compliance with the Water Well Construction Rules 2 CCR 402-2, unless approval of a variance has been granted by the State Board of Examiners of Water Well Construction and Pump Installation Contractors in accordance with Rule 18.
- 3) Approved pursuant to CRS 37-92-602(3)(b)(I) for uses as described in CRS 37-92-602(1)(f). Use of this well is limited to monitoring water levels and/or water quality sampling.
- 4) Approved for the use of an existing well known as MW02.
- 5) This well must be equipped with a locking cap or seal to prevent well contamination or possible hazards as an open well. The well must be kept capped and locked at all times except during sampling or measuring.
- 6) Records of water level measurements and water quality analyses shall be maintained by the well owner and submitted to the Division of Water Resources upon request.
- 7) Upon conclusion of the monitoring program the well owner shall plug this well in accordance with Rule 16 of the Water Well Construction Rules. A Well Abandonment Report must be completed and submitted to the Division of Water Resources within 60 days of plugging.
- 8) The owner shall mark the well in a conspicuous location with the well permit number and name of aquifer as appropriate, and shall take necessary means and precautions to preserve these markings.
- 9) This well must have been constructed by or under the supervision of a licensed well driller or other authorized individual according to the Water Well Construction Rules.
- 10) This well must be located not more than 200 feet from the location specified on this permit.

NOTE: Issuance of this permit does not guarantee that this well can be converted to a production well under a future permit. Additionally, pursuant to Rule 14.2 of the Water Well Construction Rules (2 CCR 402-2), monitoring holes constructed pursuant to a monitoring hole notice shall not be converted to a production well. (Upon obtaining a permit from the State Engineer, a monitoring hole may be converted to a monitoring well, recovery well for remediation of the aquifer, or a dewatering system for dewatering the aquifer.)

NOTICE - Construction of this well may have occurred without proper notice or permit, as required by the Water Well Construction Rules (2 CCR 402-2). Issuance of this permit does not relieve the well owner and/or their well construction contractor of responsibility or liability for any violations that may have occurred. The well owner and/or their well construction contractor may be contacted by the Chief Well Inspector regarding alleged violations.

NOTICE: This permit has been approved subject to the following change: The UTM coordinate values provided with the permit application were not used and the UTMs were taken from the Well Construction Report provided. You are hereby notified that you have the right to appeal the issuance of this permit, by filing a written request with this office within sixty (60) days of the date of issuance, pursuant to the State Administrative Procedures Act. (See Section 24-4-104 through 106, C.R.S.)

WELL PERMIT NUMBER 324884-

RECEIPT NUMBER 10017319

Date Issued:

12/20/2021

Expiration Date: N/A

Issued By ANITIA ARCHULETA

DEPARTMENT 1313 SHERMA	COLORADO DIVISION OF WATER RESOURCES DEPARTMENT OF NATURAL RESOURCES 1313 SHERMAN ST., Ste 821, DENVER CO 80203 Phone: (303) 866-3581 dwrpermitsonline@state.co.us					Office Use Only			For	n GW	/S-46 (01/2020)
MONITO Water W Review instru The form mus	MONITORING/OBSERVATION Water Well Permit Application Review instructions on reverse side prior to completing form. The form must be typed, completed online or in black or blue ink. 1. Well Owner Information						CVD D /10/20				
1. Well Own		matio	n			C Use Of Wall					
KERR MCGEE OIL & GAS ONSHORE LP Mailing address					6. Use Of Well Use of this well is limited to monitoring water levels and/or water quality sampling					er levels	
P O BOX 17	P O BOX 173779					7. Well Data (pro	posed)				
City				Total depth 30	feet	Aquifer Unnam	ned Q	uatei	rnary Alluvium		
Telephone #				L	it is required)	8. Consultant In	formation (if applica	able)		
(720)929-43		lan (a			on@oxy.com	Name of contact person David Stainback,	P.G.				
2. Type Of		······························				Company name					
■ Use existing □ Construct n □ Other:	-		Replacemer Permit no.:	t for exist	ing monitoring well:	WSP, USA Mailing address					
					4600 W 60th Ave						
3. Refer To (if applicable) Monitoring hole acknowledgment Well name or #				City		State		Zip C	Gode		
MH-	MH- MW02				Arvada		Color	ado	800	003	
4. Location Of Proposed Well (Important! See Instructions) County					Telephone # (970)403-4108						
WELD <u>SW</u> 1/4 of the <u>NW</u> 1/4				9. Proposed We	II Driller Lic	ense #	optio	nal):			
Section	Township	N or S	Range	E or W	Principal Meridian	10. Name of Wel					
16 Distance of well from			nes are typicall	y not propert		The making of false statements herein constitutes perjury in the second degree, which is punishable as a class 1 misdemeanor pursuant to C.R.S. 24-4-104 (13)(a). I have read the statements herein, know the contents thereof and state that they are true to my knowledge.					
	Ft. from	_ N _	S		Ft. from 🔲 E 🔲 W	Sign or enter full name here Date (mm/dd/yyyy)					
For replacement we	ills only – dista	nce and d feet		i well to new	well direction	Erik Mickelson 12/07/2021 If signing print name. Print title if other than land owner.					12/07/2021
Well location addres	ss (Include City	, State, Zi	ip)	if well addre	ess is same as Item 1.	Erik Mickelson, Senior HSE Advisor					
						Office Use Only					
Optional: GPS						USGS map name		DWR map	no.	S	urface elev.
Format must be UT											
Units must be Mete			Easti	ng <u>4987</u>	81		Receipt area	only			
Datum must be NA			North	ing 443 3	8828						
Unit must be set to	true north										
Was GPS unit chec	ked for above?	■ YE		ember to s	et Datum to NAD83		_	~~	. — .	~ 4	
	5. Property Owner Information]	1	001	17	31	9		
Name of property owner COLORADO STATE OF											
Mailing address											
1127 N SHERMAN ST STE 300											
City			State		Zip Code						
Denver			Col	orado ———	80203-2398	4					
Telephone #							DIV	WD5	BA	N	MD
·						1					

Form No.	WELL CONSTRUCTION AND YIELD ESTIMATE REPORT For Office Use Only							
GWS-31		State of Colora						
		Sherman St., Roo	•	*		5581		
02/2017		dwr.colorado.gov						
	t Number:-N/A 3		Receipt	Number:-N/-	4 10017	<u>'318</u>		
	ell Designation: MW							
	r Name: COLORADO							
	ion Street Address:		<u> </u>					
<u> </u>	S Well Location (re						33753.9359995	
	Location: <u>SW</u> 1/	'4, <u>NW</u> 1/4, Se	ec., <u>16</u>	_ Twp. <u>1</u>	■ N or S	, Range <u>68</u>	E or	W • , <u>6</u> P.M.
County: $\frac{V}{N}$	NELD				NI / A	NI/A		NI / A
Subdivision: $\overline{\mathbb{N}}$						_, Block N/A		
	face Elevation: 5,1			-		_		/Direct Push/Solid S
·	Aquifer Name :						h Completed:	
	otification: Was No							
10. Aquifer Ty		(One Confining Lay			•	fining Layers)		
(Check on		(Not overlain by T	ype III)	Туре II ((Overlain by			ılluvial/colluvial)
11. Geologic	,	T		T,		iameter (in.)	From	, ,
Depth	Type	Grain Size	Color	Water Loc.		3"	0	27
0-7'	Clay	N/A	brown	-				
7-13'	Claystone	N/A	brown	-	12 21 1 6	•	1	
13-20'	Silty sandstone	VFG	brown	-	13. Plain Ca	•	11.51 (2)	= (c) To (ft)
20-27'	Clay	N/A	brown	21'	OD (in) 1"	Kind W PVC	all Size (in)	From (ft) To (ft)
				 		PVC	N/A	0 7
								~
		<u> </u>				ed Casing Scree		
					OD (in)		all Size (in)	From (ft) To (ft)
		-			1"	PVC	N/A	7 27
	!	 						
					14. Filter P	1	I 4E Dooks	Di
					4			er Placement:
		 			4	ashed Silica Sar	nd Type	Bentonite
					Size	N/A	Dth	0-6'
	!	 			Interval	6-27'	Depth	
	<u> </u>	<u> </u>		 	16. Groutin		Donaitu	Internal Mothod
Bomarke:					Material	Amount	Density	Interval Method
Remarks. 0-6'	' hand augered t	to clear potenti:	al utilities		N/A			
17 Disinfecti	ion: Type N/A				Amt. Use	ad NI/A		
	I Estimate Data:	1	Check by	ov if Test Dat			her GWS-39	Well Yield Test Report
	Estimate Method:	Ν/Δ	Check by	X II TEST DUT	.a is subinities	a on i onn indi	IDEI GTTS 57,	Well Held rest heport
Static Leve		11// 1		Testimated Y	ield (gpm) <u>N</u>	 1 / Λ		
	·	N/A						
	e measured:			Estimate Lei	ngth (hrs) N	1/ A		
Remarks:				- 146		The		-116
I .								ned (or name entered if
	l certified in accordand riolation of section 37 °					_		nat contains raise g license. If filing online
I .	er considers the entry			-	•		. the continuent	; ticenser it rising simile
			mail:	·				Trianna Number
Company Name	e:	1		ack@wsp.com	va .	Phone w/area (970) 40		License Number: PG-4077
WSP, USA				ack@wsp.com	[]	(2/0)-10	13-4100	PG-4077
	ss: 4600 W 60th Ave			· 				T ;
Sign (or enter i	name if filing online	e)	ı	ne and Title				Date:
David Stainback			David Sta	Pavid Stainback, P.G., Consultant Geologist 12/06/2021				

WELL PERMIT NUMBER 324883-RECEIPT NUMBER 10017318

ORIGINAL PERMIT APPLICANT(S)

KERR MCGEE OIL & GAS ONSHORE LP (MICKELSON,

ERIK)

APPROVED WELL LOCATION

Water Division: 1 Water District: 5

Designated Basin: N/A
Management District: N/A
County: WELD
Parcel Name: N/A
Physical Address: N/A

AUTHORIZED AGENT Physical Address:

SW 1/4 NW 1/4 Section 16 Township 1.0 N Range 68.0 W Sixth P.M.

UTM COORDINATES (Meters, Zone:13, NAD83)

Easting: 498765.1 Northing: 4433753.9

PERMIT TO USE AN EXISTING WELL

WSP USA (STAINBACK, DAVID)

ISSUANCE OF THIS PERMIT DOES NOT CONFER A WATER RIGHT CONDITIONS OF APPROVAL

- 1) This well shall be used in such a way as to cause no material injury to existing water rights. The issuance of this permit does not ensure that no injury will occur to another vested water right or preclude another owner of a vested water right from seeking relief in a civil court action.
- The construction of this well shall be in compliance with the Water Well Construction Rules 2 CCR 402-2, unless approval of a variance has been granted by the State Board of Examiners of Water Well Construction and Pump Installation Contractors in accordance with Rule 18.
- 3) Approved pursuant to CRS 37-92-602(3)(b)(I) for uses as described in CRS 37-92-602(1)(f). Use of this well is limited to monitoring water levels and/or water quality sampling.
- 4) Approved for the use of an existing well known as MW01.
- 5) This well must be equipped with a locking cap or seal to prevent well contamination or possible hazards as an open well. The well must be kept capped and locked at all times except during sampling or measuring.
- 6) Records of water level measurements and water quality analyses shall be maintained by the well owner and submitted to the Division of Water Resources upon request.
- 7) Upon conclusion of the monitoring program the well owner shall plug this well in accordance with Rule 16 of the Water Well Construction Rules. A Well Abandonment Report must be completed and submitted to the Division of Water Resources within 60 days of plugging.
- 8) The owner shall mark the well in a conspicuous location with the well permit number and name of aquifer as appropriate, and shall take necessary means and precautions to preserve these markings.
- 9) This well must have been constructed by or under the supervision of a licensed well driller or other authorized individual according to the Water Well Construction Rules.
- 10) This well must be located not more than 200 feet from the location specified on this permit.

NOTE: Issuance of this permit does not guarantee that this well can be converted to a production well under a future permit. Additionally, pursuant to Rule 14.2 of the Water Well Construction Rules (2 CCR 402-2), monitoring holes constructed pursuant to a monitoring hole notice shall not be converted to a production well. (Upon obtaining a permit from the State Engineer, a monitoring hole may be converted to a monitoring well, recovery well for remediation of the aquifer, or a dewatering system for dewatering the aquifer.)

NOTICE - Construction of this well may have occurred without proper notice or permit, as required by the Water Well Construction Rules (2 CCR 402-2). Issuance of this permit does not relieve the well owner and/or their well construction contractor of responsibility or liability for any violations that may have occurred. The well owner and/or their well construction contractor may be contacted by the Chief Well Inspector regarding alleged violations.

NOTICE: This permit has been approved subject to the following change: The UTM coordinate values provided with the permit application were not used and the UTMs were taken from the Well Construction Report provided. You are hereby notified that you have the right to appeal the issuance of this permit, by filing a written request with this office within sixty (60) days of the date of issuance, pursuant to the State Administrative Procedures Act. (See Section 24-4-104 through 106, C.R.S.)

WELL PERMIT NUMBER 324883-

RECEIPT NUMBER 10017318

Lastice Lieber Last

Date Issued: 12

12/20/2021

Expiration Date: N/A

COLORADO DIVISION OF WATER DEPARTMENT OF NATURAL RESO 1313 SHERMAN ST., Ste 821, DEN	OURCES		Office Use Only			Form	GWS	S-46 (01/2020)		
Phone: (303) 866-3581 MONITORING/OBSE	<u>dwrpe</u>	mitsonline@state.co.us	RCV	D DW	/R					
Water Well Permit A			12/1/	0/202	1					
Review instructions on reverse side prior to completing form.			12/10		ı					
The form must be typed, complete 1. Well Owner Information	d online or in b	lack or blue ink.	1							
Name of well owner										
KERR MCGEE OIL & GAS ON	6. Use Of Well Use of this well is limited to monitoring water levels and/or water quality sampling									
P O BOX 173779			7. Well Data (pro	nocod)						
	to 17:0 and		Total depth	poseu)	Aquifer					
City	l '		27	feet	Unname	д Оп	ateri	nary Alluvium		
	lorado 8021		8. Consultant In	formation (i				iary / waviarii		
Telephone #	E-Mail (If filing onlin		Name of contact person	ioimation (i	аррпсас	, ic j				
` '		on@oxy.com	David Stainback,	P.G.						
2. Type Of Application (chec		······································	Company name							
Construct new well		sting monitoring well:	WSP, USA							
Other:	nit no.:		Mailing address							
3. Refer To (if applicable)			4600 W 60th Ave							
Monitoring hole acknowledgment	City	****	State		Zip Co	de				
MH-	MH- MW01				Arvada Colorado 80003					
4. Location Of Proposed We County	Telephone # (970)403-4108									
WELD	SIM AND AND AND				ense #(o	ption	al):			
Section Township N or S	Range E or W	Principal Meridian	10. Name of Wel			~				
16 1	68 G	6	The making of false s degree, which is puni 24-4-104 (13)(a). I ha	shable as a cla	ss 1 misden	neano	r purs	uant to C.R.S.		
Distance of well from section lines (section lines a	are typically not prope	rty lines) Ft. from E E W	thereof and state that they are true to my knowledge. Sign or enter full name here Date (mm/dd/yyyy)							
For replacement wells only – distance and direction	on from old well to ne	w well	Erik Mickelson 12/07/2021							
feet		direction	If signing print name. Print title if other than land owner.							
Well location address (Include City, State, Zip)	Check if well add	ress is same as Item 1.	Erik Mickelson, Senior HSE Advisor							
			Office Use Only					***************************************		
Optional: GPS well location information in You must check GPS unit for required sett			USGS map name		DWR map no),	Sui	face elev.		
Format must be UTM			† '							
☐ Zone 12 or ■ Zone 13	Easting 498	765		Receipt area	only					
Units must be Meters										
Datum must be NAD83	Northing 443	3753								
Unit must be set to true north	Remember to	set Datum to NAD83		_	004	7 ^	4 ^			
Was GPS unit checked for above? YES				1	001	/3	18			
5. Property Owner Information			1							
Name of property owner COLORADO STATE OF										
Mailing address			1							
1127 N SHERMAN ST STE 300								***************************************		
City	1									
Denver	State Colorado	Zip Code 80203-2398								
Telephone #			1	4	-					
				_{DIV} _1	WD 5	BA	MI	D		
N/A	4									

FORM 19 Rev 03/21

State of Colorado Oil and Gas Conservation Commission

Name of Operator: KERR MCGEE OIL & GAS ONSHORE LP

DNR

47120

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

Operator No:

Document Number:

402792735

Date Received:

08/26/2021

SPILL/RELEASE REPORT (INITIAL /w SUPPLEMENTAL)

This form is to be submitted by the party responsible for the oil and gas spill or release. Refer to COGCC Rule 912.b. for reporting requirements of spills or releases of E&P Waste, produced Fluids, or unauthorized Releases of natural gas. Submit a Site Investigation and Remediation Workplan (Form 27) if Rule 913.c. applies.

Spill report taken by:

CANFIELD, CHRIS

Spill/Release Point ID:

480594

Phone Numbers

OPERATOR INFORMATON

Address: P O BOX 173779	Phone: <u>(720) 929-4306</u>
City: DENVER State: CO Zip: 80217-3779	Mobile: ()_
Contact Person: Erik Mickelson	Email: <u>Erik Mickelson@oxy.c</u> om
Transfer of Operatorship: Pursuant to Rule 912.f, this Supplemental Form 19 is being submitted as the responsible Operator for this Spill and Release.	d to designate the Buying Operator
INITIAL SPILL/RELEASE REPORT Initial Spill/Release Report Doc# 402792735	
Initial Report Date: 08/26/2021 Date of Discovery: 08/26/2021 Spill 7	Type: Historical Release
Spill/Release Point Location:	TypeTilstoffedi Nelease
QTRQTR SWNW SEC 16 TWP 1N RNG 68W MERIDIAN 6	
Latitude: 40.054299 Longitude: -105.014555	
`Municipality (if within municipal boundaries): County: WELD	
Enter Lat./long measurement of the actual Spill/Release Point. Lat./Long. Data shall meet standar	rds of Rule 216.
Reference Location:	
Facility Type: WELL SITE Facility/Location ID No	
Spill/Release Point Name: State 30-16 X Well API No. (Only if the reference	e facility is well) 05-123-29115
No Existing Facility or Location ID	
Estimated Total Spill Volume: use same ranges as others for values	
Estimated Oil Spill Volume(bbl): 0 Estimated Condensat	te Spill Volume(bbl):0
Estimated Flow Back Fluid Spill Volume(bbl): 0 Estimated Produced Water	er Spill Volume(bbl):0
Estimated Other E&P Waste Spill Volume(bbl): Unknown Estimated Drilling Flui	id Spill Volume(bbl):0
Specify: Thermogenic gas	
Has the subject Spill/Release been controlled at the time of reporting? No	
Land Use:	
Current Land Use: CROP LAND Other(Specify):	
Weather Condition: Sunny 90°F	
Surface Owner: FEE Other(Specify):	

Describe what is known about the spill/release event (what happened -- including how it was stopped, contained, and recovered):

During plugging and abandonment activities at the State 30-16 wellhead, five shallow soil vapor points were installed in the vicinity of the wellhead. On August 20, 2021, methane was detected at SVP03 (2.7%). The volume of the methane release is unknown. WSP collected samples from SVP03 using IsoTubes™ and an IsoTube™ sampling manifold in conjunction with the pump on a GEM 5000. The samples were submitted to Dolan Integration Group (DIG) for gas composition analysis. Results from the gas composition analysis were received from DIG on August 25, 2021 and are attached. The analytical results indicate the detected soil gas is thermogenic in origin. An investigation into the source of the soil gas in on-going. The assessment details will be summarized in a supplemental Form 27 report (Remediation No. 18298; Form 27 Initial Document No. 402697754). The topographic Site Location Map showing the geographic setting of the release is provided as Figure 1.

List of Agencies and Other Parties Notified Pursuant to Rule 912.b.(7)-(11):

OTHER NOTIFICATIONS

<u>Date</u>	Agency/Party	Contact	<u>Phone</u>	Response
8/26/2021	Weld County	Weld County	-	Notified via email
8/26/2021	Surface Owner	Surface Owner	-	Notified via telephone

REPORT CRITERIA

No	 Rule 912.b.(1).A: A Spill or Release of any size to System, residence or occupied structure, livestor 	that impacts or threatens to impact any Waters of the State, Public Water ck, wildlife, or publicly-maintained road.				
	Waters of the State:	Public Water System:				
	Residence or Occupied Structure:	Livestock:				
	Wildlife:	Publicly-Maintained Road:				
No	Rule 912.b.(1).B: A Spill or Release in which 1 b berms or other secondary containment.	parrel or more of E&P Waste or produced fluids is spilled or released outside of				
No	Rule 912.b.(1).C: A Spill or Release of 5 barrels Release is completely contained within berms or	or more of E&P Waste or produced Fluids regardless of whether the Spill or other secondary containment.				
No		Grade 1 Gas Leak. For a Grade 1 Gas Leak from a Flowline, the Operator also nber on a Form 44, Flowline Report, for the Grade 1 Gas Leak				
	Enter the approximate time of discovery	(HH:MM)				
	Enter the Document Number of the Grade 1 Gas	s Leak Report, Form 44				
	Was there a reportable accident associated with either a Grade 1 Gas Leak or an E&P waste spill or release?					
	Enter the Document Number of the Initial Accide	nt Report, Form 22				
	Was there damage during excavation?					
	Was CO 811 notified prior to excavation?					
No		ds or more of impacted material resulting from a current or historic Spill or tingent upon confirmation samples demonstrating exceedance of Table 915-1				
	Estimated Volume of Impacted Solids (cu. yd.):					
No	contingent upon confirmation samples demonstration	ters of the State, including Groundwater. Discovery and reporting will not be ating exceedance of Table 915-1 standards. The presence of free product or water is reportable. The presence of contaminated soil in contact with eck all that apply:				
	The presence of free product or hydrocarbon	sheen Surface Water				
	The presence of free product or hydrocarbon	sheen on Groundwater				
	The presence of contaminated soil in contact	t with Groundwater				
	The presence of contaminated soil in contact	t with Surface water				

No	Rule 912.b.(1).G: A suspected or actual Spill or Release of any volume where the volume cannot be immediately determined, including a spill or release of any volume that daylights from the subsurface.
No	Rule 912.b.(1).H: Spill or Release resulting in vaporized hydrocarbon mists that leave the Oil and Gas Location or Off-Location Flowline right of way from an Oil and Gas Location and impacts or threatens to impact off-location property.
	Areas offsite of Oil & Gas Location Off-Location Flowline right of way
Yes	Rule 912.b.(1).I: A Release of natural gas that results in an accumulation of soil gas or gas seeps.
No	Rule 912.b.(1).J: A Release that results in natural gas in Groundwater.
	SPILL/RELEASE DETAIL REPORTS
#1	Supplemental Report Date: 08/26/2021

#1 Supplemental Repo	rt Date: 08/26/	2021		
FLUIDS	BBL's SPILLED	BBL's RECOVERED	Unknown	
OIL	0	0	OTIKITOWIT	
CONDENSATE	0			
			_	
PRODUCED WATER	0	0	_	
DRILLING FLUID	0	0	_	
FLOW BACK FLUID	0	0		
OTHER E&P WASTE			×	
specify: Thermogenic gas				
Was spill/release completely of		•		an Emergency Pit constructed? NO
Secondary containment, in any discharge from primary			iction material , must	t be sufficiently impervious to contain
A Form 15 Pit Report shall b	e submitted within	30 calendar days after t	he construction of a	ın emergency pit
Impacted Media (Check all tha	at apply) 🗵 Soil	Groundwater	Surface Water	Dry Drainage Feature
Surface Area Impacted	: Length of Impact (feet):	,	Width of Impact (feet):
De	epth of Impact (feet B	GS):	Depth of	Impact (inches BGS):
How was extent determined?				
Assessment and remediation a Form 27 report (Remediation I				s will be provided in a supplemental
Soil/Geology Description:				
Clayey Sand (SC)				
Depth to Groundwater (feet B0	GS) 20	Number Wate	er Wells within 1/2 mi	le radius:11
If less than 1 mile, distance in	feet to nearest V	Vater Well 1850 N	one S	Surface Water 160 None 📃
		Wetlands N	one 🔀	Springs None X
		Livestock 1700 N	one Occu	pied Building 1200 None
Additional Spill Details Not Pro				

CORRECTIVE ACTIONS

#1 Supplemental Report	t Date: 08/26/2021		
Root Cause of Spill/Release	Unknown (Historical)		
Other (specify)			
Type of Equipment at Point of	Spill/Release: Other		
If "Other" selected above,	specify or describe here:		
Wellhead			
Describe Incident & Root Caus	se (include specific equipmen	t and point of failure)	
			soil vapor points were installed in the vicinity lume of the methane release is unknown.
Describe measures taken to p	revent the problem(s) from re	occurring:	
An investigation to determin	e the source of the soil gas is	ongoing.	
Volume of Soil Excavated (cub	pic yards):		
Disposition of Excavated Soil ((attach documentation)	Offsite Disposal	Onsite Treatment
		Other (specify)	
Volume of Impacted Ground W	/ater Removed (bbls):		
Volume of Impacted Surface W	/ater Removed (bbls):		
	REQU	EST FOR CLOSURE	
Spill/Release Reports shou actions will take place unde		have been remediated or w	hen further investigation and corrective
Basis for Closure: Co	orrective Actions Completed (d	documentation attached, chec	ck all that apply)
	Horizontal and Vertical external	nts of impacts have been deli	neated.
	Documentation of compliance	ce with Table 915-1 is attache	ed.
	All E&P Waste has been pro	operly treated or disposed.	
X Wo	ork proceeding under an appr	oved Form 27 (Rule 912.c).	
Fo	rm 27 Remediation Project N	o: <u>18298</u>	
SU	ISPECTED Spill/Release did	not occur or was below Rule	912.a.(5) reporting thresholds.
OPERATOR COMMENTS:			
I hereby certify all statements	made in this form are to the	best of my knowledge true, co	prrect, and complete.
Signed:		Print Name:	Erik Mickelson
Title: Sr. HSE Advisor	Date:	08/26/2021 Email:	Erik_Mickelson@oxy.com
	Cond	dition of Approval	
COA Type	Description		
2.004			
0 COA			

Attachment List

Att Doc Num	<u>Name</u>
402792735	SPILL/RELEASE REPORT(I/S)
402792763	SITE MAP
402793106	CORRESPONDENCE
402793107	ANALYTICAL RESULTS
402794116	FORM 19 SUBMITTED

Total Attach: 5 Files

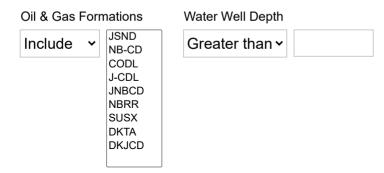
General Comments

<u>User Group</u>	Comment	Comment Date
		Stamp Upon Approval

Total: 0 comment(s)

Interactive Map Selected Items Report

Selection Result Filters



Hold down the CTRL key to select multiple formations

Filter Results Reset **Export Results to Excel**

Oil & Gas Wells - 80 Records

API		Location	Status	Status	Well	Operator	Qtr	Section	Township	Range	Meridian	Sidetrack	Formation	Тор	Bottom	TD	Formation
County	Sequence	ID		Date			Qtr										Status
123	09634	<u>318659</u>	PA	7/2/2018	-	KERR MCGEE OIL & GAS ONSHORE LP	NWNE	16	1N	68W	6	00	JSND	8342	8357	8490	АВ
123	09634	<u>318659</u>	PA	7/2/2018	STATE OF COLORADO AL *1	KERR MCGEE OIL & GAS ONSHORE LP	NWNE	16	1N	68W	6	00	NB-CD	7526	7910	8490	AB
123	09634	<u>318659</u>	PA	7/2/2018	STATE OF COLORADO AL *1	KERR MCGEE OIL & GAS ONSHORE LP	NWNE	16	1N	68W	6	00	CODL	7892	7910	8490	СМ
123	09634	<u>318659</u>	PA	7/2/2018	STATE OF COLORADO AL *1	KERR MCGEE OIL & GAS ONSHORE LP	NWNE	16	1N	68W	6	00	J-CDL	7892	8357	8490	СМ
123	09634	<u>318659</u>	PA	7/2/2018	STATE OF COLORADO AL *1	KERR MCGEE OIL & GAS ONSHORE LP	NWNE	16	1N	68W	6	00	JNBCD			8490	СМ
123	09634	<u>318659</u>	PA	7/2/2018	STATE OF COLORADO AL *1	KERR MCGEE OIL & GAS ONSHORE LP	NWNE	16	1N	68W	6	00	NBRR	7526	7690	8490	СМ
123	12626	<u>323150</u>	PA	1/26/2018	STATE OF COLORADO AL *2	KERR MCGEE OIL & GAS ONSHORE LP	CSW	16	1N	68W	6	00	JSND	8347	8367	8500	АВ
123	12626	<u>323150</u>	PA	1/26/2018	STATE OF COLORADO AL *2	KERR MCGEE OIL & GAS ONSHORE LP	CSW	16	1N	68W	6	00	NB-CD	7513	7914	8500	AB

123	12626	323150	PA	1/26/2018	STATE OF COLORADO AL *2	KERR MCGEE OIL & GAS ONSHORE LP	CSW	16	1N	68W	6	00	SUSX	4850	4876	8500	АВ
123	12626	<u>323150</u>	PA	1/26/2018	<u>*2</u>	KERR MCGEE OIL & GAS ONSHORE LP	CSW	16	1N	68W	6	00	CODL	7904	7914	8500	СМ
123	12626	<u>323150</u>	PA	1/26/2018	STATE OF COLORADO AL *2	KERR MCGEE OIL & GAS ONSHORE LP	CSW	16	1N	68W	6	00	JNBCD	7513	8367	8500	СМ
123	12626	<u>323150</u>	PA	1/26/2018	STATE OF COLORADO AL *2	KERR MCGEE OIL & GAS ONSHORE LP	CSW	16	1N	68W	6	00	NBRR	7513	7669	8500	СМ
123	15592	335609	PA	8/30/2018	STATE OF COLORADO AZ *1	KERR MCGEE OIL & GAS ONSHORE LP	SWNW	16	1N	68W	6	00	CODL	7822	7904	8748	АВ
123	15592	<u>335609</u>	PA	8/30/2018	STATE OF COLORADO AZ *1	KERR MCGEE OIL & GAS ONSHORE LP	SWNW	16	1N	68W	6	00	DKTA	8504	8526	8748	AB
123	15592	335609	PA	8/30/2018	STATE OF COLORADO AZ *1	KERR MCGEE OIL & GAS ONSHORE LP	SWNW	16	1N	68W	6	00	JSND	8348	8476	8748	AB
123	15592	335609	PA	8/30/2018	STATE OF COLORADO AZ *1	KERR MCGEE OIL & GAS ONSHORE LP	SWNW	16	1N	68W	6	00	DKJCD	7904	8526	8748	СМ
123	15597	408698	AL	6/13/1992	STATE OF COLORADO /AY/ *1	AMOCO PRODUCTION COMPANY	SESE	16	1N	68W	6						
123	16105	<u>328532</u>	PA	8/28/2015	STATE *16-9V	KERR MCGEE OIL & GAS ONSHORE LP	NESE	16	1N	68W	6	00	CODL	7928	7950	8717	AB
123	16105	328532	PA	8/28/2015	STATE *16-9V	KERR MCGEE OIL & GAS ONSHORE LP	NESE	16	1N	68W	6	00	JSND	8370	8384	8717	АВ
123	16105	328532	PA	8/28/2015	STATE *16-9V	KERR MCGEE OIL & GAS ONSHORE LP	NESE	16	1N	68W	6	00	J-CDL	7928	8384	8717	СМ
123	24399	409917	AL	7/24/2008	STATE *4-16	KERR MCGEE OIL & GAS ONSHORE LP	NWNW	16	1N	68W	6						
123	24398	409916	AL	7/24/2008	STATE *6-16	KERR MCGEE OIL & GAS ONSHORE LP	SENW	16	1N	68W	6						
123	24397	<u>335885</u>	PA	12/17/2018	STATE *11-16	KERR MCGEE OIL & GAS ONSHORE LP	NESW	16	1N	68W	6	00	NB-CD	7564	7964	8110	AB
123	24397	335885	PA	12/17/2018	STATE *11-16	KERR MCGEE OIL & GAS ONSHORE LP	NESW	16	1N	68W	6	00	CODL	7948	7964	8110	СМ
123	24397	<u>335885</u>	PA	12/17/2018	STATE *11-16	KERR MCGEE OIL & GAS ONSHORE LP	NESW	16	1N	68W	6	00	NBRR	7564	7721	8110	СМ
						1								l I			

123	24396	<u>409915</u>	AL	7/24/2008	STATE *3-16	KERR MCGEE OIL & GAS ONSHORE LP	NENW	16	1N	68W	6						
123	24481	306343	PA	8/30/2018	STATE *5-16	KERR MCGEE OIL & GAS ONSHORE LP	SWNW	16	1N	68W	6	00	NB-CD	7614	8004	8165	AB
123	24481	306343	PA	8/30/2018	STATE *5-16	KERR MCGEE OIL & GAS ONSHORE LP	SWNW	16	1N	68W	6	00	CODL	7989	8004	8165	СМ
123	24481	306343	PA	8/30/2018	STATE *5-16	KERR MCGEE OIL & GAS ONSHORE LP	SWNW	16	1N	68W	6	00	NBRR	7614	7859	8165	СМ
123	24511	<u>409946</u>	AL	7/15/2008	STATE *14-16	KERR MCGEE OIL & GAS ONSHORE LP	SESW	16	1N	68W	6						
123	29021	<u>335885</u>	PA	2/13/2018	STATE *14-16	KERR MCGEE OIL & GAS ONSHORE LP	NESW	16	1N	68W	6	00	NB-CD	7856	8122	8320	AB
123	29021	<u>335885</u>	PA	2/13/2018	STATE *14-16	KERR MCGEE OIL & GAS ONSHORE LP	NESW	16	1N	68W	6	00	CODL	8104	8122	8320	СМ
123	29021	<u>335885</u>	PA	2/13/2018	STATE *14-16	KERR MCGEE OIL & GAS ONSHORE LP	NESW	16	1N	68W	6	00	NBRR	7856	7981	8320	СМ
123	29022	<u>335885</u>	PA	3/7/2018	STATE *13-16	KERR MCGEE OIL & GAS ONSHORE LP	NESW	16	1N	68W	6	00	NB-CD	7862	8282	8445	АВ
123	29022	<u>335885</u>	PA	3/7/2018	STATE *13-16	KERR MCGEE OIL & GAS ONSHORE LP	NESW	16	1N	68W	6	00	CODL	8266	8282	8445	СМ
123	29022	<u>335885</u>	PA	3/7/2018	STATE *13-16	KERR MCGEE OIL & GAS ONSHORE LP	NESW	16	1N	68W	6	00	NBRR	7832	8141	8445	СМ
123	29023	<u>335885</u>	PA	2/13/2018	STATE *12-16	KERR MCGEE OIL & GAS ONSHORE LP	NESW	16	1N	68W	6	00	NB-CD	7721	8129	8282	AB
123	29023	335885	PA	2/13/2018	STATE *12-16	KERR MCGEE OIL & GAS ONSHORE LP	NESW	16	1N	68W	6	00	CODL	8113	8129	8282	СМ
123	29023	<u>335885</u>	PA	2/13/2018	STATE *12-16	KERR MCGEE OIL & GAS ONSHORE LP	NESW	16	1N	68W	6	00	NBRR	7721	7994	8282	СМ
123	29024	<u>335885</u>	PA	12/14/2018	STATE *25-16	KERR MCGEE OIL & GAS ONSHORE LP	NESW	16	1N	68W	6	00	NB-CD	7698	8104	8665	AB
123	29024	335885	PA	12/14/2018	STATE *25-16	KERR MCGEE OIL & GAS ONSHORE LP	NESW	16	1N	68W	6	00	CODL	8087	8104	8665	СМ
123	29024	<u>335885</u>	PA	12/14/2018	STATE *25-16	KERR MCGEE OIL & GAS ONSHORE LP	NESW	16	1N	68W	6	00	NBRR	7698	7967	8665	СМ
						1	1							l I			

123	29025	<u>335885</u>	PA	12/14/2018	STATE *22-16	KERR MCGEE OIL & GAS ONSHORE LP	NESW	16	1N	68W	6	00	NB-CD	7629	8024	8210	AB
123	29025	335885	PA	12/14/2018	STATE *22-16	KERR MCGEE OIL & GAS ONSHORE LP	NESW	16	1N	68W	6	00	CODL	8010	8024	8210	СМ
123	29025	<u>335885</u>	PA	12/14/2018	STATE *22-16	KERR MCGEE OIL & GAS ONSHORE LP	NESW	16	1N	68W	6	00	NBRR	7629	7891	8210	СМ
123	29026	<u>335885</u>	PA	2/14/2018	STATE *33-16	KERR MCGEE OIL & GAS ONSHORE LP	NESW	16	1N	68W	6	00	NB-CD	7889	8295	8458	АВ
123	29026	<u>335885</u>	PA	2/14/2018	STATE *33-16	KERR MCGEE OIL & GAS ONSHORE LP	NESW	16	1N	68W	6	00	CODL	8280	8295	8458	СМ
123	29026	<u>335885</u>	PA	2/14/2018	STATE *33-16	KERR MCGEE OIL & GAS ONSHORE LP	NESW	16	1N	68W	6	00	NBRR	7889	8161	8458	СМ
123	29027	335885	PA	2/13/2018	STATE *35-16	KERR MCGEE OIL & GAS ONSHORE LP	NESW	16	1N	68W	6	00	NB-CD	7935	8306	8489	AB
123	29027	<u>335885</u>	PA	2/13/2018	STATE *35-16	KERR MCGEE OIL & GAS ONSHORE LP	NESW	16	1N	68W	6	00	CODL	8284	8306	8489	СМ
123	29027	335885	PA	2/13/2018	STATE *35-16	KERR MCGEE OIL & GAS ONSHORE LP	NESW	16	1N	68W	6	00	NBRR	7935	8156	8489	СМ
123	29112	335609	PA	11/13/2019	STATE *35-9	KERR MCGEE OIL & GAS ONSHORE LP	SWNW	16	1N	68W	6	00	NB-CD	7783	8172	8341	AB
123	29112	335609	PA	11/13/2019	STATE *35-9	KERR MCGEE OIL & GAS ONSHORE LP	SWNW	16	1N	68W	6	00	CODL	8154	8172	8341	СМ
123	29112	335609	PA	11/13/2019	STATE *35-9	KERR MCGEE OIL & GAS ONSHORE LP	SWNW	16	1N	68W	6	00	NBRR	7783	8031	8341	СМ
123	29113	335609	PA	2/15/2018	STATE *21-16	KERR MCGEE OIL & GAS ONSHORE LP	SWNW	16	1N	68W	6	00	NB-CD	7826	8208	8368	AB
123	29113	<u>335609</u>	PA	2/15/2018	STATE *21-16	KERR MCGEE OIL & GAS ONSHORE LP	SWNW	16	1N	68W	6	00	CODL	8193	8208	8368	СМ
123	29113	335609	PA	2/15/2018	STATE *21-16	KERR MCGEE OIL & GAS ONSHORE LP	SWNW	16	1N	68W	6	00	NBRR	7826	8062	8368	СМ
123	29114	335609	PA	8/31/2018	STATE *6-16	KERR MCGEE OIL & GAS ONSHORE LP	SWNW	16	1N	68W	6	00	NB-CD	7657	8054	8228	АВ
123	29114	335609	PA	8/31/2018	STATE *6-16	KERR MCGEE OIL & GAS ONSHORE LP	SWNW	16	1N	68W	6	00	CODL	8038	8054	8228	СМ
				1	İ	1				i i						1	

123	29114	335609	PA	8/31/2018	STATE *6-16	KERR MCGEE OIL & GAS ONSHORE LP	SWNW	16	1N	68W	6	00	NBRR	7657	7908	8228	СМ
123	29115	335609	PA	8/17/2021	STATE *30-16	KERR MCGEE OIL & GAS ONSHORE LP	SWNW	16	1N	68W	6	00	NB-CD	7846	8240	8390	AB
123	29115	335609	PA	8/17/2021	STATE *30-16	KERR MCGEE OIL & GAS ONSHORE LP	SWNW	16	1N	68W	6	00	CODL	8220	8240	8390	СМ
123	29115	335609	PA	8/17/2021	STATE *30-16	KERR MCGEE OIL & GAS ONSHORE LP	SWNW	16	1N	68W	6	00	NBRR	7846	8100	8390	СМ
123	29116	335609	PA	8/30/2018	STATE *32-16	KERR MCGEE OIL & GAS ONSHORE LP	SWNW	16	1N	68W	6	00	NB-CD	7796	8193	8350	AB
123	29116	335609	PA	8/30/2018	STATE *32-16	KERR MCGEE OIL & GAS ONSHORE LP	SWNW	16	1N	68W	6	00	CODL	8178	8193	8350	СМ
123	29116	335609	PA	8/30/2018	STATE *32-16	KERR MCGEE OIL & GAS ONSHORE LP	SWNW	16	1N	68W	6	00	NBRR	7796	8048	8350	СМ
123	29117	335609	PA	8/31/2018	STATE *3-16	KERR MCGEE OIL & GAS ONSHORE LP	SWNW	16	1N	68W	6	00	NB-CD	8089	76096	8245	AB
123	29117	335609	PA	8/31/2018	STATE *3-16	KERR MCGEE OIL & GAS ONSHORE LP	SWNW	16	1N	68W	6	00	CODL	8069	8089	8245	СМ
123	29117	335609	PA	8/31/2018	STATE *3-16	KERR MCGEE OIL & GAS ONSHORE LP	SWNW	16	1N	68W	6	00	NBRR	7696	7953	8245	СМ
123	29118	335609	PA	6/19/2018	STATE *4-16	KERR MCGEE OIL & GAS ONSHORE LP	SWNW	16	1N	68W	6	00	NB-CD	7619	8004	8160	AB
123	29118	335609	PA	6/19/2018	STATE *4-16	KERR MCGEE OIL & GAS ONSHORE LP	SWNW	16	1N	68W	6	00	CODL	7990	8004	8160	СМ
123	29118	335609	PA	6/19/2018	STATE *4-16	KERR MCGEE OIL & GAS ONSHORE LP	SWNW	16	1N	68W	6	00	NBRR	7619	7870	8160	СМ
123	29119	<u>335609</u>	PA	11/13/2019	STATE *28-16	KERR MCGEE OIL & GAS ONSHORE LP	SWNW	16	1N	68W	6	00	NB-CD	7972	8366	8561	AB
123	29119	<u>335609</u>	PA	11/13/2019	STATE *28-16	KERR MCGEE OIL & GAS ONSHORE LP	SWNW	16	1N	68W	6	00	CODL	8347	8366	8561	СМ
123	29119	335609	PA	11/13/2019	STATE *28-16	KERR MCGEE OIL & GAS ONSHORE LP	SWNW	16	1N	68W	6	00	NBRR	7972	8216	8561	СМ
123	30936	414828	PA	7/23/2019	STATE *7-16	KERR MCGEE OIL & GAS ONSHORE LP	NENW	16	1N	68W	6	00	NB-CD	7848	8252	8930	AB
		i		1	İ	1											

123	30937	414828	SI	8/1/2020 <u>S</u>	 KERR MCGEE OIL & GAS ONSHORE LP	NENW	16	1N	68W	6	00	NB-CD	8130	8522	9075	SI
123	30942	414828	SI	12/1/2020 S	KERR MCGEE OIL & GAS ONSHORE LP	NENW	16	1N	68W	6	00	NB-CD	7596	7992	8148	SI
123	30943	<u>414828</u>	PA	11/29/2017	KERR MCGEE OIL & GAS ONSHORE LP	NENW	16	1N	68W	6	00	NB-CD	7988	8390	8540	AB
123	30946	<u>414828</u>	PA	11/10/2020 §	KERR MCGEE OIL & GAS ONSHORE LP	NENW	16	1N	68W	6	00	NB-CD	8098	8496	9035	АВ

Water Wells - 0 Records

FORM 6

Rev 05/18

State of Colorado Oil and Gas Conservation Commission

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Document Number:

401778507

Date Received:

09/28/2018

WELL ABANDONMENT REPORT

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

This form is to be submitted as an Intent to Abandon whenever an abandonment is planned on a borehole. After the abandonment is complete, this form shall again be submitted as a Subsequent Report of the actual work completed. The approved intent shall be valid for six months after the approval date, after that period, a new intent will be required. Attachments required with the Intent to Abandon are wellbore diagrams of the current configuration and the proposed configuration with plugs set.

A Subsequent Report of Abandonment shall indicate the actual work completed. Attachments required with a Subsequent Report are a wellbore diagram showing plugs that were set and casing remaining in the hole, the job summaries from all plugging contractors used, including wireline and

cementing (third party verification) and any logs that may have been run during abandonment.

	3			
OGCC Operator Number: 47120	_	Cor	ntact Name: CRYSTAL MCC	CLAIN
Name of Operator: KERR MCGEE OIL	& GAS ONSHORE LF	Ph	one: (720) 929-4398	
Address: P O BOX 173779			Fax:	
City: DENVER State:	CO Zip: 80	217E	mail: CRYSTAL.MCCLAIN@AN	NADARKO.C
For "Intent" 24 hour notice required,	Name:		Tel:	
COGCC contact:	Email:			
API Number 05-123-15592-00				
Well Name: STATE OF COLOR	ADO AZ	V	Vell Number: 1	
Location: QtrQtr: SWNW Se	ection: 16 To	wnship: 1N	Range: 68W Meridia	an:6
County: WELD	Feder	al, Indian or State Leas	e Number: 70/8570-S	_
Field Name: WATTENBERG	Fie	d Number: 90°	750	
Notice of Intent to	Abandon	⊠ Subsequen	t Report of Abandonm	ent
Only Complete th	e Following Backg	round Information	for Intent to Abandon	
Latitude: 40.054103	Longitude	e: -105.014489		
GPS Data:				
Date of Measurement: 08/06/2008	PDOP Reading:	GPS Instrume	nt Operator's Name: Cody	Mattson
Reason for Abandonment: Dry	Production Sub-	economic	Mechanical Problems	
Other				
Casing to be pulled: Yes	No	Estimated Depth:		
Fish in Hole: Yes	No If ye	s, explain details below		
Wellbore has Uncemented Casing leaks:	Yes	No If yes, ex	plain details below	
Details:				
	Current and Previo	usly Abandoned Zoi	<u>1es</u>	
<u>Formation</u>	Perf. Top Perf. Btm	Abandoned Date	Method of Isolation	Plug Depth
CODELL	7904 7922	06/22/2018	B PLUG CEMENT TOP	7850
J SAND	8348 8376	06/22/2018	B PLUG CEMENT TOP	8290
DAKOTA	8504 8526	06/22/2018	B PLUG CEMENT TOP	8450
Total: 3 zone(s)				
	Casin	g History		
				

Casing Type	Size of Hole	Size of Casing	Weight Per Foot	Setting Depth	Sacks Cement	Cement Bot	Cement Top	Status
SURF	12+1/4	8+5/8	24	1,232	880	1,232	0	VISU
1ST	7+7/8	5+1/2	17	8,743	920	8,743	3,532	CBL
S.C. 1.1				1,600	150	1,678	852	CBL
Plugging Procedure for Intent and Subsequent Report								
CIBP #1: Dep	th 8450	with2	sacks cmt on t	top. CIPB #2: De	epth 8290	with2	sacks cm	on top.
CIBP #3: Dep	th	with60	sacks cmt on t	top. CIPB #4: De	epth <u>4480</u>	with2	sacks cm	on top.
CIBP #5: Dep	th 80	_ with41	sacks cmt on t	top.			:: Two(2) sacks ed on all CIBPs	
Set60	sks cmt fro	om <u>7850</u>	ft. to7147	ft. Plu	g Type: CASIN	IG	Plug Tagged:	
Set15	sks cmt fro	om <u>3160</u>	ft. to2956	ft. Plu	g Type: CASIN	IG	Plug Tagged:	X
Set 9	sks cmt fro	om2575	ft. to2446	ft. Plu	g Type: CASIN	IG	Plug Tagged:	
Set	sks cmt fro	om	ft. to	ft. Plu	g Туре:		Plug Tagged:	
Set	sks cmt fro	om	ft. to	ft. Plu	g Type:		Plug Tagged:	
Perforate and	squeeze at	3500 ft. w	ith100 sa	acks. Leave at le	east 100 ft. in cas	sing 3160	CICR Dept	า
Perforate and	squeeze at	2930 ft. w	ith106 sa	acks. Leave at le	east 100 ft. in cas	sing 2575	CICR Dept	า
Perforate and	squeeze at	ft. w	ithsa	acks. Leave at le	east 100 ft. in cas	sing	CICR Dept	า
						(Cast Ir	on Cement Retaine	r Depth)
Set140	sacks half	in. half out surfa	ace casing from	1335 ft. to	340 ft.	Plug Tagge	d: 🔀	
Set41	sacks at s	urface						
Cut four feet b	pelow ground	level, weld on pla	ate Above G	round Dry-Hole	Marker: Ye	s N	0	
Set	sacks in ra	at hole	5	Set	sacks in mouse	hole		
		A al al:4: a m a l	Diversion Inform	ation for Cub	comment Dono	ut Oude		
		-	Plugging Inform		•	<u>-</u>		
Casing Recover	red: <u>550</u>	ft. 5+	1/2 inch casing	g	Plugging Date:	08/30/2018	_	
*Wireline Contra	actor: PION	EER		*Cemer	nting Contractor:	SCHLUMBE	RGER	
Type of Cemen					Ū			
•		pandoned per Ri	ule 1105 👿 Y	es 🔲 I	No	*ATT	ACH JOB SUM	MARY
Technical Detai	il/Comments:							
			ONLY LISTS THE "STATE OF COL			OLORADO" H	OWEVER WE	HAVE
I hereby certify	all statements	made in this for	m are, to the best	of my knowleda	e, true, correct a	and complete		
Signed:			,		e: CRYSTAL M	•		
	JLATORY ANA	J YST			Email: CRYSTAL		NADARKO COM	1
	ZATORI ANA		- Juio. 3/20			vioot/iiive/Ai		<u> </u>
Based on the in orders and is h			s Well Abandonme	ent Report (Forn	n 6) complies wit	h COGCC Rule	es and applicat	le
COGCC Appro	oved: Strath	nman, Elliot				Date: 6/	18/2019	
CONDITIONS	OF APPROV	AL, IF ANY:						

COA Type	<u>Description</u>

Attachment Check List

Att Doc Num	<u>Name</u>
401778507	FORM 6 SUBSEQUENT SUBMITTED
401778565	OPERATIONS SUMMARY
401778566	CEMENT JOB SUMMARY
401778568	WIRELINE JOB SUMMARY
401778570	CEMENT BOND LOG
401778571	CEMENT BOND LOG
401778574	WELLBORE DIAGRAM

Total Attach: 7 Files

General Comments

User Group	Comment	Comment Date
		Stamp Upon
		Approval

Total: 0 comment(s)

FORM 6 Rev

05/18

State of Colorado Oil and Gas Conservation Commission

CO

ET	OE	ES

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

Document Number:

401554176

Date Received:

DE

02/23/2018

WELL ABANDONMENT REPORT

This form is to be submitted as an Intent to Abandon whenever an abandonment is planned on a borehole. After the abandonment is complete, this form shall again be submitted as a Subsequent Report of the actual work completed. The approved intent shall be valid for six months after the approval date, after that period, a new intent will be required. Attachments required with the Intent to Abandon are wellbore diagrams of the current configuration and the proposed configuration with plugs set.

A Subsequent Report of Abandonment shall indicate the actual work completed. Attachments required with a Subsequent Report are a wellbore diagram showing plugs that were set and casing remaining in the hole, the job summaries from all plugging contractors used, including wireline and competing (third party verification) and any loss that may have been run during abandonment.

cementing (third party verification) and any logs that may have be	een run during a	bandonment.						
OGCC Operator Number: 47120 Contact Name: Jennifer Thomas								
Name of Operator: KERR MCGEE OIL	Ph	one: (720) 929	9-6808					
Address: P O BOX 173779		Fax:						
City: State:	CO Z	Zip: 802	<u>17-</u> E	mail: jennifer.tl	nomas@anadark	o.com		
For "Intent" 24 hour notice required, Name: Tel:								
COGCC contact:	Email:					_		
API Number 05-123-12626-00								
Well Name: STATE OF COLOR	ADO AL		V	Vell Number: 2				
Location: QtrQtr: CSW Se	ection: 16	Tov	vnship: 1N	Range: 68W	Meridia	an: 6		
County: WELD		Federa	, Indian or State Leas	e Number:	70/8570-S	_		
Field Name: WATTENBERG		Field	Number: 90	750				
Notice of Intent to	Abando	n	⊠ Subsequen	t Report of	Abandonm	ent		
Only Complete th	e Followir	ng Backgr	ound Information	for Intent to A	bandon			
Latitude: 40.047540		Longitude:	-105.013540					
GPS Data:								
Date of Measurement: 08/06/2008	PDOP R	eading: 3.	6 GPS Instrume	nt Operator's Na	ime: Cody	Mattson		
Reason for Abandonment: Dry	Produ	ction Sub-ed	conomic	Mechanical P	roblems			
Other								
Casing to be pulled: Yes	No		Estimated Depth:					
Fish in Hole: Yes	No	If yes,	explain details below					
Wellbore has Uncemented Casing leaks:	Yes		No If yes, ex	plain details bel	ow			
Details:								
<u>(</u>	Current an	d Previou	sly Abandoned Zor	<u>1es</u>				
<u>Formation</u>	Perf. Top	Perf. Btm	Abandoned Date	Method o	f Isolation	Plug Depth		
SUSSEX	4850	4876	12/19/2017	B PLUG CEME	NT TOP	4790		
NIOBRARA	7513	7669	12/18/2017	B PLUG CEME	NT TOP	7440		
CODELL	7904	7914	12/18/2017	B PLUG CEME	NT TOP	7440		
J SAND	8347	8367	12/18/2017	B PLUG CEME	NT TOP	8275		
Total: 4 zone(s)								
		Cacina	Lietory					

	CBL CBL CBL CCBL CCBL
The image of the	CBL CBL CBL CBL CMt on top. cks cement BPs. led: led: led: l
S.C. 1.1 Blugging Procedure for Intent and Subsequent Report	cmt on top. cmt on top. cks cement BPs. led: led: led: led: led: led: led: led:
Plugging Procedure for Intent and Subsequent Report CIBP #1: Depth 8275 with 2 sacks cmt on top. CIPB #2: Depth 7440 with 40 sack CIBP #3: Depth 4790 with 2 sacks cmt on top. CIPB #4: Depth 4480 with 2 sacks CIBP #5: Depth 80 with 21 sacks cmt on top. Set 40 sks cmt from 7440 ft. to 6982 ft. Plug Type: CASING Plug Tag Set sks cmt from ft. to ft. Plug Type: Plug Tag Set sks cmt from 1100 ft. to 915 ft. Plug Type: CASING Plug Tag Set sks cmt from 1100 ft. to 915 ft. Plug Type: CASING Plug Tag Set sks cmt from ft. to ft. Plug Type: CASING Plug Tag Set sks cmt from 1100 ft. to 915 ft. Plug Type: CASING Plug Tag Set sks cmt from 1100 ft. to 915 ft. Plug Type: CASING Plug Tag Set sks cmt from 1100 ft. to 915 ft. Plug Type: CASING Plug Tag Set sks cmt from ft. to ft. Plug Type: CASING Plug Tag Set sks cmt from ft. to ft. Plug Type: CASING Plug Tag Set sks cmt from ft. to ft. Plug Type: CASING Plug Tag Set sks cmt from ft. to ft. Plug Type: CASING Plug Tag Set sks cmt from ft. to ft. Plug Type: CASING Plug Tag Set sks cmt from ft. to ft. Plug Tag CICR Perforate and squeeze at 650 ft. with 135 sacks. Leave at least 100 ft. in casing CICR (Cast Iron Cement R Set sacks half in. half out surface casing from ft. to ft. Plug Tagged: CICR Set 21 sacks at surface Cut four feet below ground level, weld on plate Above Ground Dry-Hole Marker: Yes No Set sacks in rat hole Set sacks in mouse hole Additional Plugging Information for Subsequent Report Only Casing Recovered: ft. inch casing Plugging Date: 01/26/2018 "Wireline Contractor: PIONEER "Cementing Contractor: SCHLUMBERGER Type of Cement and Additives Used: Flowline/Pipeline has been abandoned per Rule 1105 Yes No "ATTACH JOB S	cmt on top. cmt on top. cks cement BPs. led: led: led:
CIBP #1: Depth 8275 with 2 sacks cmt on top. CIPB #2: Depth 7440 with 40 sacks CIBP #3: Depth 4790 with 2 sacks cmt on top. CIPB #4: Depth 4480 with 2 sacks CIBP #5: Depth 80 with 21 sacks cmt on top. Set 40 sks cmt from 7440 ft. to 6982 ft. Plug Type: CASING Plug Tag Set sks cmt from ft. to ft. Plug Type: Plug Tag Set sks cmt from 1100 ft. to 915 ft. Plug Type: CASING Plug Tag Set 15 sks cmt from 1100 ft. to 915 ft. Plug Type: CASING Plug Tag Set sks cmt from ft. to ft. Plug Type: CASING Plug Tag Set sks cmt from 1100 ft. to 915 ft. Plug Type: CASING Plug Tag Set 15 sks cmt from ft. to ft. Plug Type: Plug Tag Set sks cmt from ft. to ft. Plug Type: CASING Plug Tag Set sks cmt from ft. to ft. Plug Type: CASING Plug Tag Set sks cmt from ft. to ft. Plug Type: CASING Plug Tag Set sks cmt from ft. to ft. Plug Type: CASING Plug Tag Set sks cmt from ft. to ft. Plug Type: CASING Plug Tag Set sks cmt squeeze at 1500 ft. with 135 sacks. Leave at least 100 ft. in casing CICR Perforate and squeeze at ft. with sacks. Leave at least 100 ft. in casing CICR (Cast fron Cement Reset 100 ft. in casing CICR Set 100 sacks half in. half out surface casing from ft. to ft. Plug Tagged: Set 11 sacks at surface Cut four feet below ground level, weld on plate Above Ground Dry-Hole Marker: Yes No Set sacks in rat hole Set sacks in mouse hole Additional Plugging Information for Subsequent Report Only Casing Recovered: ft. inch casing Plugging Date: 01/26/2018 "Wireline Contractor: PIONEER *Cementing Contractor: SCHLUMBERGER Type of Cement and Additives Used: Flowline/Pipeline has been abandoned per Rule 1105 Yes No *ATTACH JOB S	cmt on top. cks cement BPs. ded:
CIBP #3: Depth 4790 with 2 sacks cmt on top. CIPB #4: Depth 4480 with 2 sacks CIBP #5: Depth 80 with 21 sacks cmt on top. Set 40 sks cmt from 7440 ft. to 6982 ft. Plug Type: CASING Plug Tag Set sks cmt from ft. to ft. Plug Type: Plug Tag Set sks cmt from 1100 ft. to 915 ft. Plug Type: CASING Plug Tag Set sks cmt from 1100 ft. to 915 ft. Plug Type: CASING Plug Tag Set sks cmt from 1100 ft. to 915 ft. Plug Type: CASING Plug Tag Set sks cmt from 1100 ft. to 915 ft. Plug Type: CASING Plug Tag Set sks cmt from 1100 ft. to 915 ft. Plug Type: CASING Plug Tag Set sks cmt from 1100 ft. to 915 ft. Plug Type: CASING Plug Tag Set sks cmt from 1100 ft. to 915 ft. Plug Type: CASING Plug Tag Set sks cmt from 1100 ft. with 135 sacks. Leave at least 100 ft. in casing 1230 CICR Perforate and squeeze at 650 ft. with 100 sacks. Leave at least 100 ft. in casing CICR Perforate and squeeze at ft. with sacks. Leave at least 100 ft. in casing CICR Perforate and squeeze at ft. with sacks. Leave at least 100 ft. in casing CICR Perforate and squeeze at sacks at surface Cut four feet below ground level, weld on plate Above Ground Dry-Hole Marker: Yes No Set sacks in rat hole Set sacks in mouse hole Additional Plugging Information for Subsequent Report Only Casing Recovered: ft. inch casing Plugging Date: 01/26/2018 "Wireline Contractor: PIONEER *Cementing Contractor: SCHLUMBERGER Type of Cement and Additives Used: Flowline/Pipeline has been abandoned per Rule 1105 Yes No *ATTACH JOB S	cmt on top. cks cement BPs. ded:
CIBP #5: Depth 80 with 21 sacks cmt on top. NOTE: Two(2) Sequer	cks cement BPs. ded:
Set 40 sks cmt from 7440 ft. to 6982 ft. Plug Type: CASING Plug Tag Set sks cmt from ft. to ft. Plug Type: Plug Tag Set sks cmt from ft. to ft. Plug Type: Plug Tag Set sks cmt from ft. to ft. Plug Type: Plug Tag Set 15 sks cmt from 1100 ft. to 915 ft. Plug Type: CASING Plug Tag Set sks cmt from ft. to ft. Plug Type: CASING Plug Tag Set sks cmt from ft. to ft. Plug Type: Plug Tag Set sks cmt from ft. to ft. Plug Type: Plug Tag Set sks cmt from ft. to ft. Plug Type: Plug Tag Set sks cmt from ft. to ft. Plug Type: Plug Tag Set sks cmt from ft. to ft. Plug Type: Plug Tag Set sks cmt from ft. to ft. Plug Type: Plug Tag Set sks cmt from ft. with 135 sacks. Leave at least 100 ft. in casing CICR I Perforate and squeeze at ft. with sacks. Leave at least 100 ft. in casing CICR I Set sacks half in. half out surface casing from ft. to ft. Plug Tagged: Set 21 sacks at surface Cut four feet below ground level, weld on plate Above Ground Dry-Hole Marker: Yes No Set sacks in rat hole Set sacks in mouse hole Additional Plugging Information for Subsequent Report Only Casing Recovered: ft. inch casing Plugging Date: 01/26/2018 "Wireline Contractor: PIONEER "Cementing Contractor: SCHLUMBERGER Type of Cement and Additives Used: Flowline/Pipeline has been abandoned per Rule 1105 Yes No "ATTACH JOB S"	ed:
Set 40 sks cmt from 7440 ft. to 6982 ft. Plug Type: CASING Plug Tag Set sks cmt from ft. to ft. Plug Type: Plug Tag Set sks cmt from ft. to ft. Plug Type: Plug Tag Set sks cmt from ft. to ft. Plug Type: Plug Tag Set sks cmt from 1100 ft. to 915 ft. Plug Type: CASING Plug Tag Set sks cmt from ft. to ft. Plug Type: CASING Plug Tag Set sks cmt from ft. to ft. Plug Type: Plug Tag Set sks cmt from ft. to ft. Plug Type: Plug Tag Set sks cmt from ft. to ft. Plug Type: Plug Tag Set sks cmt from ft. to ft. Plug Type: CASING Plug Tag Set sks cmt from ft. to ft. Plug Type: Plug Tag Set sks cmt from ft. to ft. Plug Type: Plug Tag Set sks cmt from ft. with 135 sacks. Leave at least 100 ft. in casing CICR I Perforate and squeeze at ft. with sacks. Leave at least 100 ft. in casing CICR I Set sacks half in. half out surface casing from ft. to ft. Plug Tagged: Set 21 sacks at surface Cut four feet below ground level, weld on plate Above Ground Dry-Hole Marker: Yes No Set sacks in rat hole Set sacks in mouse hole Additional Plugging Information for Subsequent Report Only Casing Recovered: ft. inch casing Plugging Date: 01/26/2018 *Cementing Contractor: SCHLUMBERGER Type of Cement and Additives Used: Flowline/Pipeline has been abandoned per Rule 1105 Yes No *ATTACH JOB S	ed:
Set sks cmt from ft. to ft. Plug Type: Plug Tag Set sks cmt from ft. to ft. Plug Type: Plug Tag Set 15 sks cmt from 1100 ft. to 915 ft. Plug Type: CASING Plug Tag Set sks cmt from ft. to ft. Plug Type: CASING Plug Tag Set sks cmt from ft. to ft. Plug Type: Plug Tag Set sks cmt from ft. to ft. Plug Type: Plug Tag Perforate and squeeze at 1500 ft. with 135 sacks. Leave at least 100 ft. in casing 1230 CICR I Perforate and squeeze at 650 ft. with 100 sacks. Leave at least 100 ft. in casing CICR I Set sacks half in. half out surface casing from ft. to ft. Plug Tagged: Set 1 sacks at surface Cut four feet below ground level, weld on plate Above Ground Dry-Hole Marker: Yes No Set sacks in rat hole Set sacks in mouse hole Additional Plugging Information for Subsequent Report Only Casing Recovered: ft. inch casing Plugging Date: 01/26/2018 *Wireline Contractor: PIONEER *Cementing Contractor: SCHLUMBERGER Type of Cement and Additives Used: Flowline/Pipeline has been abandoned per Rule 1105 Yes No *ATTACH JOB S	ed:
Set sks cmt from 1100 ft. to 915 ft. Plug Type: Plug Tag Set 15 sks cmt from 1100 ft. to 915 ft. Plug Type: CASING Plug Tag Set sks cmt from ft. to ft. Plug Type: Plug Tag Perforate and squeeze at 1500 ft. with 135 sacks. Leave at least 100 ft. in casing 1230 CICR I Perforate and squeeze at 650 ft. with 100 sacks. Leave at least 100 ft. in casing CICR I Perforate and squeeze at ft. with sacks. Leave at least 100 ft. in casing CICR I Cast Iron Cement R Set sacks half in. half out surface casing from ft. to ft. Plug Tagged: Set 21 sacks at surface Cut four feet below ground level, weld on plate Above Ground Dry-Hole Marker: Yes No Set sacks in rat hole Set sacks in mouse hole Additional Plugging Information for Subsequent Report Only Casing Recovered: ft. inch casing Plugging Date: 01/26/2018 *Wireline Contractor: PIONEER *Cementing Contractor: SCHLUMBERGER Type of Cement and Additives Used: Flowline/Pipeline has been abandoned per Rule 1105 Yes No *ATTACH JOB S	red: X
Set sks cmt from 1100 ft. to 915 ft. Plug Type: Plug Tag Set 15 sks cmt from 1100 ft. to 915 ft. Plug Type: CASING Plug Tag Set sks cmt from 1100 ft. to 915 ft. Plug Type: CASING Plug Tag Set sks cmt from ft. to ft. Plug Type: Plug Tag Perforate and squeeze at 1500 ft. with 135 sacks. Leave at least 100 ft. in casing 1230 CICR I Perforate and squeeze at 650 ft. with 100 sacks. Leave at least 100 ft. in casing CICR I Perforate and squeeze at ft. with sacks. Leave at least 100 ft. in casing CICR I Cast Iron Cement R Set sacks half in. half out surface casing from ft. to ft. Plug Tagged: Set 21 sacks at surface Cut four feet below ground level, weld on plate Above Ground Dry-Hole Marker: Yes No Set sacks in rat hole Set sacks in mouse hole Additional Plugging Information for Subsequent Report Only Casing Recovered: ft. inch casing Plugging Date: 01/26/2018 *Wireline Contractor: PIONEER *Cementing Contractor: SCHLUMBERGER Type of Cement and Additives Used: Flowline/Pipeline has been abandoned per Rule 1105 Yes No *ATTACH JOB S	red: X
Set 15 sks cmt from 1100 ft. to 915 ft. Plug Type: CASING Plug Tag Set sks cmt from ft. to ft. Plug Type: Plug Tag Perforate and squeeze at 1500 ft. with 135 sacks. Leave at least 100 ft. in casing 1230 CICR I Perforate and squeeze at 650 ft. with 100 sacks. Leave at least 100 ft. in casing CICR I Perforate and squeeze at ft. with sacks. Leave at least 100 ft. in casing CICR I Set sacks half in. half out surface casing from ft. to ft. Plug Tagged: Set 21 sacks at surface Cut four feet below ground level, weld on plate Above Ground Dry-Hole Marker: Yes No Set sacks in rat hole Set sacks in mouse hole Additional Plugging Information for Subsequent Report Only Casing Recovered: ft. inch casing Plugging Date: 01/26/2018 *Wireline Contractor: PIONEER *Cementing Contractor: SCHLUMBERGER Type of Cement and Additives Used: Flowline/Pipeline has been abandoned per Rule 1105 Yes No *ATTACH JOB S	ned: 🔀
Set sks cmt from ft. to ft. Plug Type: Plug Tag Perforate and squeeze at 1500 ft. with 135 sacks. Leave at least 100 ft. in casing 1230 CICR least and squeeze at 650 ft. with 100 sacks. Leave at least 100 ft. in casing CICR least and squeeze at ft. with sacks. Leave at least 100 ft. in casing CICR least and squeeze at ft. with sacks. Leave at least 100 ft. in casing CICR least least 100 ft. in casing CICR least least 100 ft. in casing CICR least least 100 ft. in casing CICR least least 100 ft. in casing CICR least least 100 ft. in casing CICR least least 100 ft. in casing CICR least least 100 ft. in casing CICR least least 100 ft. in casing CICR least least 100 ft. in casing CICR least least 100 ft. in casing CICR least least 100 ft. in casing CICR least least 100 ft. in casing CICR least least 100 ft. in casing CICR least least 100 ft. in casing CICR least least 100 ft. in casing CICR least least 100 ft. in casing Plug Tagged: In casing Plug Tagged: In casing No Set Set Sacks at surface Cut four feet below ground level, weld on plate Above Ground Dry-Hole Marker: Yes No Set Sacks in mouse hole Additional Plugging Information for Subsequent Report Only	jed:
Perforate and squeeze at 1500 ft. with 135 sacks. Leave at least 100 ft. in casing 1230 CICR Perforate and squeeze at 650 ft. with 100 sacks. Leave at least 100 ft. in casing CICR Perforate and squeeze at ft. with sacks. Leave at least 100 ft. in casing CICR Perforate and squeeze at ft. with sacks. Leave at least 100 ft. in casing CICR	
Perforate and squeeze at 650 ft. with 100 sacks. Leave at least 100 ft. in casing CICR I Perforate and squeeze at ft. with sacks. Leave at least 100 ft. in casing CICR I (Cast Iron Cement R. In Cast Iron Ce	~P
Perforate and squeeze at	enth
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Set sacks half in. half out surface casing from ft. to ft. Plug Tagged: Set sacks at surface Cut four feet below ground level, weld on plate Above Ground Dry-Hole Marker: Yes No Set sacks in rat hole Set sacks in mouse hole Additional Plugging Information for Subsequent Report Only Casing Recovered: ft inch casing Plugging Date: 01/26/2018 *Wireline Contractor: PIONEER	•
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Set sacks in rat hole sacks in mouse hole Additional Plugging Information for Subsequent Report Only Casing Recovered: ft inch casing Plugging Date: 01/26/2018 *Wireline Contractor: PIONEER	
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Casing Recovered: ft. ofinch casing Plugging Date:01/26/2018 *Wireline Contractor: PIONEER	
*Wireline Contractor: PIONEER *Cementing Contractor: SCHLUMBERGER Type of Cement and Additives Used: Flowline/Pipeline has been abandoned per Rule 1105 Yes No *ATTACH JOB S	
*Wireline Contractor: PIONEER *Cementing Contractor: SCHLUMBERGER Type of Cement and Additives Used: Flowline/Pipeline has been abandoned per Rule 1105 Yes No *ATTACH JOB S	
Type of Cement and Additives Used: Flowline/Pipeline has been abandoned per Rule 1105 Yes No *ATTACH JOB S	
Flowline/Pipeline has been abandoned per Rule 1105 Yes No *ATTACH JOB S	
Technical Detail/Comments:	JMMARY
I hereby certify all statements made in this form are, to the best of my knowledge, true, correct, and complete.	
Signed: Print Name: Jennifer Thomas	
Title: Regulatory Analyst Date: 2/23/2018 Email: rscdjpostdrill@anadarko.com	
Based on the information provided herein, this Well Abandonment Report (Form 6) complies with COGCC Rules and approveds and is hereby approved.	
COGCC Approved: Mangama, Christelle Date: 8/17/2018	cable
	cable
CONDITIONS OF APPROVAL, IF ANY:	cable
COA Type Description	cable
	cable

Attachment Check List						
Att Doc Num	<u>Name</u>					
401554176	FORM 6 SUBSEQUENT SUBMITTED					
401554198	GYRO SURVEY					
401554200	OPERATIONS SUMMARY					
401554203	WELLBORE DIAGRAM					
401554205	WIRELINE JOB SUMMARY					
401554207	CEMENT BOND LOG					
401554208	CEMENT BOND LOG					
401554209	CEMENT BOND LOG					
401554210	CEMENT JOB SUMMARY					
401554211	OTHER					

Total Attach: 10 Files

General Comments

User Group	Comment	Comment Date
		Stamp Upon Approval

Total: 0 comment(s)

FORM 6

Rev 05/18

State of Colorado Oil and Gas Conservation Commission

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



DE	ET	OE	ES

Document Number:

401572225

Date Received:

03/13/2018

WELL ABANDONMENT REPORT

This form is to be submitted as an Intent to Abandon whenever an abandonment is planned on a borehole. After the abandonment is complete, this form shall again be submitted as a Subsequent Report of the actual work completed. The approved intent shall be valid for six months after the approval date, after that period, a new intent will be required. Attachments required with the Intent to Abandon are wellbore diagrams of the current configuration and the proposed configuration with plugs set.

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comonang (ama party	crinication, and any	logo that may have been	Truit during abandon	non.						
OGCC Operato	r Number:	47120				Cont	tact Nar	me: Jenni	fer Thomas	
Name of Opera	tor: KERF	R MCGEE OIL &	GAS ONSHO	RE LP)	Pho	one: <u>(</u> 7	720) 929-6808		
Address: P	O BOX 1737	79				F	ax: _			
City: DE	NVER	State: CC	Zip:	802	217-	En	nail: <u>j</u> e	ennifer.thomas	@anadarko.c	om
For "Intent" 24 hour notice required, Name: Tel:										
COGCC con	tact:		Email:							
API Number	05-123-2	29027-00								
Well Name:	STAT	Έ				W	ell Num	nber: <u>35-16</u>		
Location:	QtrQtr: NE	SW Secti	ion:16	То	wnship: 1N		Range	e: <u>68W</u>	Meridian:	6
County:	WELD		F	edera	al, Indian or St	tate Lease	Numb	er: 70/857	70-S	
Field Name:	WATTEN	BERG		Fiel	ld Number: _	907	50			
■ Notice of Intent to Abandon Subsequent Report of Abandonment										
Only Complete the Following Background Information for Intent to Abandon Latitude: 40.049067										
		Cu	rrent and Pr	eviou	usly Abando	ned Zon	<u>es</u>			
	<u>Formation</u>	<u>P</u>	erf. Top Perf	. Btm	Abandoned	d Date	<u>M</u>	lethod of Isolat	tion Pl	ug Depth
CODELL			8284 83	306	11/06/2	017 E	B PLUG	CEMENT TO	Р	7860
NIOBRARA			7935 8	156	11/06/2	017 E	B PLUG	CEMENT TO	Р	7860
Total: 2 zone(s))									
			<u>C</u>	asing	g History					
Casing Type	Size of Hole	Size of Casing	Weight Per F	oot S	Setting Depth	Sacks Co	ement	Cement Bot	Cement Top	Status
SURF	12+1/4	8+5/8	24		907	570)	907	0	VISU
1ST	7+7/8	4+1/2	11.6		8 473	640)	8 473	1 800	CBI

1,432

183

1,420

S.C. 1.1

CBL

592

		99	•				t and S		-		•	
CIBP #1: Depth		with	40			on top. CIP	•		4850	with	2	sacks cmt on top.
CIBP #3: Depth		with	35			on top. CIP	B #4: Dept	th 		with		sacks cmt on top.
CIBP #5: Depth		with		sa	cks cmt c	on top.					NOTE: 7 required	Two(2) sacks cement on all CIBPs.
Set40	sks cmt from	۱	7860	ft. to	7157	ft.	Plug T	Гуре:	CASIN	G	F	Plug Tagged: 🔲
Set	sks cmt from	۱		ft. to		ft.	Plug T	Гуре:			F	Plug Tagged: 🔲
Set	sks cmt from	۱		ft. to		ft.	Plug T	Гуре:			F	Plug Tagged: 🔲
Set	sks cmt from	۱		ft. to		ft.	Plug T	Гуре:			F	Plug Tagged: 🔲
Set	sks cmt from	۱		ft. to		ft.	Plug T	Гуре:			F	Plug Tagged:
Perforate and so	ueeze at	3700) ft. v	vith	120	sacks. Le	ave at leas	st 100	ft. in cas	ing	3410	CICR Depth
Perforate and so	ueeze at	3050) ft. v	vith	145	sacks. Le	ave at leas	st 100	ft. in cas	ing	2780	CICR Depth
Perforate and so	ueeze at	2400) ft. v	vith	135	sacks. Le	ave at leas	st 100	ft. in cas	ing	2120 (Cast Iron	CICR Depth Cement Retainer Depth)
Set135	sacks half in	ı. half	out surf	ace cas	sing from	1345	_ ft. to _	305	_ ft.	Plug	Tagged:	X
Set35	sacks at surf	face										
Cut four feet below	ow ground lev	∕el, w	eld on p	late	Above	Ground D	ry-Hole Ma	arker:	Ye	s	No No	
Set	sacks in rat l	hole				Set	sa	acks ir	n mouse	hole		
		Ado	<u>litional</u>	Plugg	<u>ing Info</u>	rmation f	or Subse	<u>equen</u>	t Repo	t Only	L	
Casing Recovered	500	ft. of	4+	-1/2	inch cas	sing	Р	luggin	ng Date:	02/13	3/2018	
*Wireline Contract	or: PIONEE	∃R					*Cementin	ng Cor	ntractor:	OTE	X, SCHLU	MBERGER
Type of Cement a	nd Additives l	Used:										
Flowline/Pipeline I	nas been aba	ndone	ed per R	tule 110	05	Yes	No	١			*ATTAC	H JOB SUMMARY
Technical Detail/C	omments:											
I hereby certify all	statements m	nada i	in this fo	rm are	to the he	set of my kr	nowledge	true c	correct s	and con	nnlete	
Signed:	statements n	iauc i	11 1113 10	iiii aic,	to the be	-	rint Name:				ipiete.	
Title: Regulato	rv Analyst			Dat	e· :						adarko.con	
Title. Regulate	Ty / trialySt			_		3/13/2010		- Idii. 13	ocajposta	illi e ali	adarko.com	
Based on the info			erein, th	nis Well	Abandor	nment Repo	ort (Form 6	6) com	plies wit	h COG	CC Rules	and applicable
orders and is here			hristelle							Da	to: E/0.4	/2049
COGCC Approve	d: <u>Iviariyar</u>	iia, C	illistelle							Da	te: <u>5/24/</u>	/2018
CONDITIONS OF	APPROVAL	., IF A	NY:									
			Descr	<u>iption</u>								
COA Type												

Att Doc Num Name 401572225 FORM 6 SUBSEQUENT SUBMITTED 401572250 WELLBORE DIAGRAM 401572251 OPERATIONS SUMMARY 401572252 CEMENT JOB SUMMARY 401572253 WIRELINE JOB SUMMARY 401572256 CEMENT BOND LOG

Total Attach: 6 Files

General Comments

User Group	Comment	Comment Date
		Stamp Upon Approval

Total: 0 comment(s)

Date Run: 5/24/2018 Doc [#401572225] Well Name: STATE 35-16

> Rev 02/20

State of Colorado Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 Phone: (303) 894-2100 Fax: (303) 89

DE ES EΤ OE

Document Number:

402253384

Date Received:

12/04/2019

WELL ABANDONMENT REPORT

This form is to be submitted as an Intent to Abandon whenever an abandonment is planned on a borehole. After the abandonment is complete, this form shall again be submitted as a Subsequent Report of the actual work completed. The approved intent shall be valid for six months after the approval date, after that period, a new intent will be required. Attachments required with the Intent to Abandon are wellbore diagrams of the current configuration and the proposed configuration with plugs set.

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OGCC Operato	or Number:	47120				Contac	t Name: Je	nnifer Thomas	
Name of Opera	tor: KERF	R MCGEE OIL &	GAS ONS	SHORE L	_P	Phone	e: <u>(720)</u> 929-68	08	
Address: P	O BOX 1737	79				Fax	c :		
City: DE	NVER	State: Co	O 2	Zip:8	0217-	Emai	l: jennifer_tho	nas@oxy.com	
For "Intent" 24 hour notice required, Name: Silver, Randy Tel: (720) 827-6688									
COGCC contact: Email: randy.silver@state.co.us									
Type of Well A	bandonment l	Report:	Notice o	of Inten	t to Abandon	▼ Sul	bsequent Re	ort of Aband	onment
API Number	05-123-2	29112-00							
Well Name:	STAT	Έ				Well	Number: 35-9		
Location:	QtrQtr: SW	/NW Sect	tion:16	_ 1	Fownship: 1N	I F	Range: 68W	Meridian:	6
County:	WELD			Fede	eral, Indian or S	tate Lease N	lumber: 70	8570-S	
Field Name:	WATTEN	BERG		Fi	eld Number:	90750			
	40.054527 GPS Quality Vocandonment:	Pent Operator's Na Dry Yes Yes Pasing leaks:	vpe of GPS ame: Product No No Ves	Longitudes Quality PAT MC ection Sub	de:105.014 Value: PDOP CLUREeconomic Estimate es, explain deta	Med Depth:ils below	Date of Me lechanical Prob	asurement: 11/	13/2019
		<u>Curr</u>	ent and	Previo	ously Aband	loned Zor	<u>ies</u>		
	<u>Formation</u>	<u> </u>	Perf. Top	Perf. Bt	<u>M</u> <u>Abandone</u>	d Date_	Method of Is	olation P	ug Depth
CODELL			8154	8172	10/02/2	019 B F	PLUG CEMENT	TOP	7710
NIOBRARA			7783	8031	10/02/2	019 B F	PLUG CEMENT	TOP	7710
Total: 2 zone(s)								
				Casi	ng History				
Casing Type	Size of Hole	Size of Casing	Weight F	Per Foot	Setting Depth	Sacks Cem	ent Cement E	ot Cement Top	Status
SURF	12+1/4	8+5/8	24	4	989	620	989	0	VISU

4+1/2

11.6

640

8,330

8,330

7+7/8

1ST

CBL

3,376

			•	•				t and Subs	•		•	
	1: Depth		with	25			•	B #2: Depth	4660	with	2	sacks cmt on top.
	3: Depth		with	-			-	B #4: Depth _		with		sacks cmt on top.
CIBP #	5: Depth		with		sa	cks cmt c	on top.					Гwo(2) sacks cement l on all CIBPs.
Set _	25	sks cmt from	ı	7710	ft. to	7265	ft.	Plug Type:	CASIN	G		Plug Tagged: 🔲
Set _	50	sks cmt from	n	1600	ft. to	1293	ft.	Plug Type:	STUB	PLUG		Plug Tagged: 💢
Set _	60	sks cmt from	n	150	ft. to	0	ft.	Plug Type:	CASIN	G		Plug Tagged:
Set _		sks cmt from	ı		ft. to		ft.	Plug Type:				Plug Tagged: 🔲
Set _		sks cmt from	ı 		ft. to		ft.	Plug Type:				Plug Tagged:
Perfora	ate and sq	ueeze at	3350) ft. v	with	115	sacks. Lea	ave at least 100) ft. in cas	ing	2980	CICR Depth
Perfora	ate and sq	ueeze at		ft. \	with			ave at least 100		-		CICR Depth
Perfora	ate and sq	ueeze at		ft. \	with		sacks. Lea	ave at least 100) ft. in cas	ing	(Cast Iron	CICR Depth Cement Retainer Depth)
Set _	230	sacks half in	. half	out surf	ace cas	ing from	1293	ft. to 542	ft.	Plug	Tagged:	X
Set _	60	sacks at sur	face									
	ır feet beld	ow ground lev	/el, w	eld on p	late	Above		ry-Hole Marker:	Ye	5	▼ No	
Set _		sacks in rat	hole				Set	sacks i	in mouse	hole		
*Wireling Type of Flowline	/Pipeline ł	or: RMWS nd Additives I		:	+1/2 Rule 110	inch cas		Cut and C *Cementing Co No	•		LUMBER	GER
		roval was ext	ende	d to 10/3	31/19. T	hank you	J.					
I hereby	certify all	statements m	nade	in this fo	orm are,	to the be	est of my kr	nowledge, true,	correct, a	nd con	nplete.	
Signed:							Pr	int Name: Jeni	nifer Thor	nas		
Title:	Regulato	ry Analyst			Date	e: ·	_ 12/4/2019	Email: r	scdjpostd	rill@ana	adarko.cor	 n
orders a	and is here CApprove	eby approved	on, E	ric	nis Well	Abandor	nment Repo	ort (Form 6) con	nplies wit		CC Rules	
				Descr	iption							
COA T	<u>/pe</u>											

	Attachment Check List
Att Doc Num	<u>Name</u>
402253384	FORM 6 SUBSEQUENT SUBMITTED
402253449	OTHER
402253450	OTHER
402253454	WELLBORE DIAGRAM
402253455	OPERATIONS SUMMARY
402253458	WIRELINE JOB SUMMARY
402253460	CEMENT JOB SUMMARY
402253461	CEMENT BOND LOG

Total Attach: 8 Files

General Comments

<u>User Group</u>	Comment	Comment Date
		Stamp Upon Approval

Total: 0 comment(s)

Date Run: 3/4/2020 Doc [#402253384] Well Name: STATE 35-9

05/18

1ST

State of Colorado Oil and Gas Conservation Commission

DE ET OE

Document Numb

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

WELL ABANDONMENT REPORT

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Document Number:
401576523
Date Received:
03/15/2018

ES

OGCC Operato	or Number:	47120				Con	tact Na	me: Jenni	fer Thomas	
Name of Opera	itor: KERF	R MCGEE OIL &	GAS ONS	SHORE L	_P	Pho	one: <u>(</u> 7	720) 929-6808		
Address: P	O BOX 1737	79					Fax:			
City: DE	NVER	State: C	O Z	Zip:8	0217-	Er	mail: <u>je</u>	ennifer.thomas	@anadarko.co	m
For "Intent" 24 hour notice required, Name: Tel:										
COGCC con	tact:		Email:							
API Number	05-123-2	29026-00								
Well Name:	STAT	E.				V	Vell Nun	nber: <u>33-16</u>		
Location:	QtrQtr: NE	Sect	tion:16	_ 7	Fownship: 1N	<u> </u>	Range	e: <u>68W</u>	Meridian:	6
County:	WELD			Fede	eral, Indian or S	tate Lease	e Numb	er: 70/85	70-S	
Field Name:	WATTEN	BERG		Fi	eld Number: _	907	750			
	Notice of	of Intent to A	Abando	n	⊠ Subs	equen	t Rep	ort of Aba	ndonment	
	Only (Complete the	Followin	ng Back	ground Infor	mation f	or Inte	nt to Aband	lon	
Latitude:	40.049158			Longitue	de: -105.011	439				
GPS Data:										
Date of M	easurement:	03/24/2009	PDOP R	eading:	3.4 GPS	Instrumen	nt Opera	itor's Name: _	Cody Mat	tson
Reason for Aba	andonment:	Dry]	Produc	ction Sub	o-economic		Mecha	anical Problem	s	
Other										
Casing to be pu	ılled:	Yes	No		Estimate	ed Depth:				
Fish in Hole:		Yes	No	If y	es, explain deta	ils below				
Wellbore has U	Incemented C	asing leaks:	Yes		No	If yes, exp	plain de	tails below		
Details:										
		<u>Cı</u>	urrent an	d Previ	ously Abando	ned Zor	nes_			
	<u>Formation</u>	<u>F</u>	Perf. Top	Perf. Bt	m Abandone	d Date	<u>N</u>	lethod of Isolat	tion Plu	g Depth
CODELL			8280	8295	08/28/2	017	B PLUG	CEMENT TO	P	7830
NIOBRARA			7889	8161	08/28/2	017	B PLUG	CEMENT TO	P	7830
Total: 2 zone(s)									
				Casi	ng History					
Casing Type	Size of Hole	Size of Casing	Weight F	Per Foot	Setting Depth	Sacks C	ement	Cement Bot	Cement Top	Status
SURF	12±1//	8±5/8	2/	1	908	610	n	908	0	VISH

4+1/2

11.6

8,435

640

8,435

3,890

7+7/8

CBL

CIBP #1	: Depth	7830	with	40	sack	ks cmt on	top. CIPB	3 #2: Depth	4750	with	2	_ sacks cn	nt on top.
CIBP #3	: Depth	80	with	35	sack	ks cmt on	top. CIPB	3 #4: Depth		with		_ sacks cn	nt on top.
CIBP #5	: Depth		with		sack	ks cmt on	top.					wo(2) sack on all CIBF	
Set	40	sks cmt from	m	7830	ft. to	7129	ft.	Plug Type:	CASIN	IG	F	Plug Tagged	l: 🔲
Set	96	sks cmt from	m _	1450	ft. to	1199	ft.	Plug Type:	STUB	PLUG	F	Plug Tagged	l: 🔲
Set	45	sks cmt from	m _	1199	ft. to	1049	ft.	Plug Type:	OPEN	HOLE	F	Plug Tagged	l: 🔲
Set		sks cmt from	m _		ft. to		ft.	Plug Type:			F	Plug Tagged	l: 🔲
Set		sks cmt from	m		ft. to		ft.	Plug Type:			F	Plug Tagged	l: 🔲
Perforat	e and sq	ueeze at _		ft. w	vith	S	sacks. Lea	ve at least 100	ft. in cas	sing		CICR Dep	th
Perforat	e and sq	ueeze at _		ft. w	vith	s	sacks. Lea	ve at least 100	ft. in cas	sing		CICR Dep	th
Perforat	e and sq	ueeze at _		ft. w	vith	s	sacks. Lea	ve at least 100	ft. in cas	sing	(Cast Iron	CICR Dep Cement Retain	
Set	70	sacks half in	n. half	f out surfa	ace casir	ng from	970	ft. to	ft.	Plug	Tagged:	X	
Set	35	sacks at su	rface										
Cut four	feet belo	ow ground le	vel, w	eld on pl	late	Above C	Ground Dry	y-Hole Marker:	Ye	S	No		
Set		sacks in rat	hole				Set	sacks i	n mouse	hole			
_			ft. of			ng Inforr	ng	or Subsequer Pluggir Cementing Cor	ng Date:	02/14/ OTE	/2018 K, SCHLU	MBERGER	,
Wireline	Contract		ft. of ER	4+			ng	Pluggir	ng Date:	02/14/ OTE	/2018	MBERGER	,
Wireline Type of C	Contract	or: PIONE	ft. of ER Used		-1/2 i	inch casir	ng	Pluggir	ng Date:	02/14/ OTE	/2018 K, SCHLU BURTON	MBERGER H JOB SUN	
Wireline Type of C	Contract ement a Pipeline h	or: PIONE	ft. of ER Used		-1/2 i	inch casir	ng * ₁	Pluggir Cementing Cor	ng Date:	02/14/ OTE	/2018 K, SCHLU BURTON		
Wireline Type of C	Contract ement a Pipeline h	or: PIONE nd Additives nas been aba	ft. of ER Used		-1/2 i	inch casir	ng * ₁	Pluggir Cementing Cor	ng Date:	02/14/ OTE	/2018 K, SCHLU BURTON		
Wireline Type of C Tlowline/F Technical	Contract ement a Pipeline I Detail/C	or: PIONE nd Additives nas been aba comments:	ft. of ER Used	4+ l: ned per R	-1/2 i	inch casir	rg *	Pluggir Cementing Cor	ng Date:	O2/14/	/2018 K, SCHLU BURTON *ATTAC		
Wireline Type of C Towline/F Technical hereby of	Contract ement a Pipeline I Detail/C	or: PIONE nd Additives nas been aba comments:	ft. of ER Used	4+ l: ned per R	-1/2 i	inch casir	Yes	Pluggir Cementing Cor	ng Date: ntractor:	O2/14/	/2018 K, SCHLU BURTON *ATTAC		
Flowline/Flo	Contract ement a Pipeline I Detail/C	or: PIONE nd Additives nas been aba comments:	ft. of ER Used	4+ l: ned per R	-1/2 i	o the best	Yes	Pluggir Cementing Cor No owledge, true, out Name: Jenr	ng Date: ntractor: correct, a	O2/14/ OTE> HALII	/2018 K, SCHLU BURTON *ATTAC	H JOB SUN	
Wireline Type of C Flowline/F Technical hereby c Signed: Title:	Contract ement a Pipeline h Detail/C	or: PIONE and Additives has been aba comments: statements i	ft. of ER Used andon made	d+	rm are, to	o the best	Yes t of my kno Prir	Pluggir Cementing Cor No owledge, true, out Name: Jenry	ng Date: ntractor: correct, a	O2/14/ OTE> HALII	/2018 K, SCHLU BURTON *ATTAC aplete. adarko.con	H JOB SUM	IMARY
Wireline Type of Colorine/Frechnical Technical Title: Based or orders ar	Contract ement a Pipeline I Detail/C eertify all Regulato a the info	or: PIONE and Additives and been abase comments: statements in ary Analyst rmation prove aby approved	ft. of ER Used andon made	d+	rm are, to	o the best	Yes t of my kno Prir	Pluggir Cementing Cor No No owledge, true, ont Name: Jenr Email: re	ng Date: ntractor: correct, a	O2/14/ OTE> HALII	/2018 K, SCHLU BURTON *ATTAC aplete. adarko.con CC Rules	n and applica	IMARY
Wireline Type of C Flowline/F Technical hereby of Signed: Title: Based or orders ar COGCC	Contract ement a Pipeline I Detail/C ertify all Regulato a the info	or: PIONE and Additives and been abase comments: statements in ary Analyst rmation prove aby approved	ft. of ER Used andon made	d+	rm are, to	o the best	Yes t of my kno Prir	Pluggir Cementing Cor No No owledge, true, ont Name: Jenr Email: re	ng Date: ntractor: correct, a	O2/14/ OTE> HALII and commas rill@ana	/2018 K, SCHLU BURTON *ATTAC aplete. adarko.con CC Rules	n and applica	IMARY
Wireline Type of C Towline/F Technical hereby of Signed: Title: Based or orders ar COGCC	Contract ement a Pipeline I Detail/C ertify all Regulato a the info ad is here Approve	or: PIONE and Additives and been abactomments: statements in ary Analyst armation prove aby approved d: Manga	ft. of ER Used andon made	d+	rm are, to	o the best	Yes t of my kno Prir	Pluggir Cementing Cor No No owledge, true, ont Name: Jenr Email: re	ng Date: ntractor: correct, a	O2/14/ OTE> HALII and commas rill@ana	/2018 K, SCHLU BURTON *ATTAC aplete. adarko.con CC Rules	n and applica	IMARY

Att Doc Num Name 401576523 FORM 6 SUBSEQUENT SUBMITTED 401576547 WELLBORE DIAGRAM 401576548 OPERATIONS SUMMARY 401576549 CEMENT JOB SUMMARY 401576550 WIRELINE JOB SUMMARY

Total Attach: 5 Files

General Comments

<u>User Group</u>	Comment	Comment Date
		Stamp Upon
		Approval

Total: 0 comment(s)

Date Run: 8/17/2018 Doc [#401576523] Well Name: STATE 33-16

05/18

State of Colorado Oil and Gas Conservation Commission

DNR DE ET OE

Document Nu

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

WELL ABANDONMENT REPORT

This form is to be submitted as an Intent to Abandon whenever an abandonment is planned on a borehole. After the abandonment is complete, this form shall again be submitted as a Subsequent Report of the actual work completed. The approved intent shall be valid for six months after the approval date, after that period, a new intent will be required. Attachments required with the Intent to Abandon are wellbore diagrams of the current configuration and the proposed configuration with plugs set.

A Subsequent Report of Abandonment shall indicate the actual work completed. Attachments required with a Subsequent Report are a wellbore diagram showing plugs that were set and casing remaining in the hole, the job summaries from all plugging contractors used, including wireline and cementing (third party verification) and any logs that may have been run during abandonment.

Doc	ument	Numb	er:
	4017	77504	
Date	Rece	ived:	
	00/20	/2018	

ES

OGCC Operator Number: 47120 Contact Name: Jennifer Thomas
Name of Operator: KERR MCGEE OIL & GAS ONSHORE LP Phone: (720) 929-6808
Address: P O BOX 173779 Fax:
City: DENVER State: CO Zip: 80217- Email: jennifer.thomas@anadarko.com
For "Intent" 24 hour notice required, Name: Tel:
Email:
COGCC contact:
API Number 05-123-29116-00
Well Name: STATE Well Number: 32-16
Location: QtrQtr: SWNW Section: 16 Township: 1N Range: 68W Meridian: 6
County: WELD Federal, Indian or State Lease Number: 70.8570-S
Field Name: WATTENBERG Field Number: 90750
■ Notice of Intent to Abandon
Only Complete the Following Background Information for Intent to Abandon
Latitude: 40.054258 Longitude: -105.014580
GPS Data: Data of Macaurament: 00/43/2017 PDOR Reading: 4.2 CDS Instrument Operator's Name: DANNY BASMUSSEN.
Date of Measurement: 09/13/2017 PDOP Reading: 1.3 GPS Instrument Operator's Name: DANNY RASMUSSEN Production Sub-according: Measurement Production Sub-according: Measurement Production Sub-according: Measurement Production Sub-according: Measurement Production Sub-according: Measurement Production Sub-according: Measurement Production Sub-according: Measurement Production Sub-according: Measurement Production Sub-according: Measurement Production Sub-according: Measurement Production Sub-according: Measurement Production Sub-according: Measurement Production Sub-according: Measurement Production Sub-according: Measurement Production Sub-according: Measurement Production Sub-according: Measurement Production Sub-according: Measurement Production Sub-according Su
Reason for Abandonment: Dry Production Sub-economic Mechanical Problems
Other Na Na Fatimated Parties
Casing to be pulled: Yes No Estimated Depth:
Fish in Hole: Yes No If yes, explain details below
Wellbore has Uncemented Casing leaks: Yes No If yes, explain details below
Details:
Current and Previously Abandoned Zones
Formation Perf. Top Perf. Btm Abandoned Date Method of Isolation Plug Depth
CODELL 8178 8193 03/23/2018 B PLUG CEMENT TOP 7740
NIOBRARA 7796 8048 03/23/2018 B PLUG CEMENT TOP 7740
Total: 2 zone(s)
<u>Casing History</u>

				g				
Casing Type	Size of Hole	Size of Casing	Weight Per Foot	Setting Depth	Sacks Cement	Cement Bot	Cement Top	Status
SURF	12+1/4	8+5/8	24	997	770	997	0	VISU
1ST	7+7/8	4+1/2	11.6	8,329	160	8,329	7,200	CBL
S.C. 1.1				1,400	184	1,476	726	CBL
			Stage Tool	5,932	290	5,974	3,680	CBL
	·	·		•	·		•	

			ggi	ing Pi	ocea	ure to	ııııe	nt and Subs	sequei	ii Ke	port		
CIBP #	:1: Depth	7740	with	40	sa	cks cmt c	n top. C	IPB #2: Depth	4725	with	2	sacks cmt	on top.
CIBP #	3: Depth	80	with	40	sa	cks cmt c	n top. C	IPB #4: Depth		with		sacks cmt	on top.
CIBP #	5: Depth		with		sa	cks cmt c	on top.					wo(2) sacks on all CIBPs	
Set _	40	sks cmt fron	n	7740	ft. to	7039	ft.	Plug Type:	CASIN	G	F	Plug Tagged:	
Set _	156	sks cmt fron	n _	1804	ft. to	1357	ft.	Plug Type:	CASIN	G	F	Plug Tagged:	
Set _	3	sks cmt fron	n	1080	ft. to	1025	ft.	Plug Type:	OPEN	HOLE	F	Plug Tagged:	\overline{X}
Set _	136	sks cmt fron	n _	1025	ft. to	380	ft.	Plug Type:	STUB	PLUG	F	Plug Tagged:	X
Set _		sks cmt fron	n _		ft. to		ft.	Plug Type:			F	Plug Tagged:	
Perfora	ate and sq	ueeze at	336	0 ft. v	with	115	sacks. I	Leave at least 100	ft. in cas	ing	2990	CICR Depth	1
Perfora	ate and sq	ueeze at	275	0 ft. v	with	115	sacks. I	Leave at least 100	ft. in cas	ing	2380	CICR Depth	1
Perfora	ate and sq	ueeze at	220	0 ft. v	with	86	sacks. I	Leave at least 100	ft. in cas	ing	1830 (Cast Iron	CICR Depth Cement Retainer	
Set _		sacks half in	n. half	f out sur	face cas	ing from		ft. to	ft.	Plug	Tagged:		
Set _	40	sacks at sur	face										
Cut for	ır feet beld	ow ground lev	vel, w	veld on p	late	Above	Ground	Dry-Hole Marker:	Ye	S	No		
Set _		sacks in rat	hole				Set _	sacks i	n mouse	hole			
*Wireline	e Contract	or: RELIAN		PIONEE	+1/2 ER	inch cas	sing	Pluggir *Cementing Cor	ng Date:		/2018 LUMBERO LIBURTON		
		nd Additives nas been aba		-	Rule 110)5	Yes	No			*ATTAC	H JOB SUMN	ЛARY
	•	omments:		· · · · · ·									
			et. Th	e unit of	measui	re for the	guantity	reported is barrels	S.				
Signed:	certify all Regulato		nade	in this fo	orm are,		-	knowledge, true, of Print Name: _Jenr	nifer Thor	nas	nplete. adarko.con	1	
		rmation provi		herein, tl	his Well	Abandor	ment Re	eport (Form 6) com	nplies wit	h COG	CC Rules	and applicab	le
COGCC	2 Approve	d: Jacobs	on, E	ric						Da	te: 12/3/	2018	
CONDI	TIONS OF	APPROVAL	_, IF /	ANY:									
	/pe			Desci	ription								
COA Ty	<u> </u>												

	Attachment Check List								
Att Doc Num	<u>Name</u>								
401777504	FORM 6 SUBSEQUENT SUBMITTED								
401777505	WELLBORE DIAGRAM								
401777506	OPERATIONS SUMMARY								
401777507	WIRELINE JOB SUMMARY								
401777508	CEMENT JOB SUMMARY								

Total Attach: 5 Files

General Comments

<u>User Group</u>	Comment	Comment Dat	<u>te</u>
		Stamp Upor	n
		Approva	al

Total: 0 comment(s)

Date Run: 12/3/2018 Doc [#401777504] Well Name: STATE 32-16

Rev 11/20

State of Colorado Oil and Gas Conservation Commission



DE ES EΤ OE

Document Number:

402805573

Date Received:

09/09/2021

WELL ABANDONMENT REPORT

This form is to be submitted as an Intent to Abandon whenever an abandonment is planned on a borehole. After the abandonment is complete, this form shall again be submitted as a Subsequent Report of the actual work completed. The approved intent shall be valid for six months after the approval date, after that period, a new intent will be required. Attachments required with the Intent to Abandon are wellbore diagrams of the current configuration and the proposed configuration with plugs set.

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OGCC Operator Number: 47120	_		Co	ontact Nam	ne: CANDIC	E BARBER			
Name of Operator: KERR MCGEE OIL	& GAS ONSI	HORE LP	P	hone: (3	07) 233-4513				
Address: P O BOX 173779				Fax:					
City: DENVER State:	CO Zi	p: 802	17	Email: CA	ANDICE_BARBE	R@OXY.COM			
For "Intent" 24 hour notice required, Name: Tel:									
COGCC contact:	COGCC contact:								
Type of Well Abandonment Report: Notice of Intent to Abandon Subsequent Report of Abandonment									
API Number 05-123-29115-00									
Well Name: STATE		_		Well Num	ber: <u>30-16</u>				
Location: QtrQtr: SWNW Se	ection: 16	Tov	vnship: 1N	Range	e: <u>68W</u>	Meridian: 6			
County: WELD	_	Federal	, Indian or State Lea	ise Numbe	er: 70/8570-9	3			
Field Name: WATTENBERG		Field	Number: 90	0750	_				
Only Complete the Following Background Information for Intent to Abandon Latitude: 40.054298									
Cu	rrent and	<u>Previous</u>	sly Abandoned	<u>Zones</u>					
<u>Formation</u>	Perf. Top [Perf. Btm	Abandoned Date	<u>Me</u>	ethod of Isolation	Plug Depth			
CODELL	8220	8240	02/12/2021	B PLUG	CEMENT TOP	7790			
NIOBRARA	7846	8100	02/12/2021	B PLUG	CEMENT TOP	7790			
Total: 2 zone(s)	1	,							
		Casing	History						

Casing Type	Size of Hole	Size of Casing	<u>Grade</u>	Wt/Ft	Csg/Liner Top	<u>Setting</u> <u>Depth</u>	Sacks Cmt	Cmt Btm	Cmt Top	<u>Status</u>
SURF	12+1/4	8+5/8	J-55	24	0	1003	705	1003	0	VISU
1ST	7+7/8	4+1/2	I-80	11.6	0	8373	635	8373	3673	CBL
S.C. 1.1	7+7/8	4+1/2		11.6	0	1410	135	1410	740	CBL
	j	Pluggin	g Proc	edure	for Inter	nt and Su	bsequer	nt Repo	rt	
CIBP #1: Dept	th7790	with	2	sacks c	mt on top. CI	BP #2: Depth	4733	with	2 sacl	ks cmt on top.
CIBP #3: Dept	th	with		sacks c	mt on top. CI	BP #4: Depth		with	sacl	ks cmt on top.
CIBP #5: Dep	th	with		sacks c	mt on top.				TE: Two(2)	sacks cement CIBPs.
Set 30	sks cmt	from 1	1105 ft.	to 7	'23 ft.	Plug Ty	pe: CASIN	 G	Plug Ta	gged: 🔀
Set 218	— sks cmt	from	723 ft.	to	0 ft.	Plug Ty	pe: CASIN	G	Plug Ta	gged:
Set	— sks cmt	from	ft.	to	ft.	Plug Ty	pe:		Plug Ta	gged:
Set	— sks cmt	from	ft.	to	ft.	Plug Ty	pe:		Plug Ta	gged:
Set	— sks cmt	from	ft.	to	ft.	Plug Ty	pe:		Plug Ta	gged:
Perforate and	— squeeze at	2500	ft. with	230	sacks. L	eave at least		ing 2	-	Depth
Perforate and	-	-	— ft. with	100		eave at least				Depth
Perforate and	-		— ft. with	150		eave at least			 340 CICR	Depth
	•		_					(Ca	st Iron Cement F	•
Set	sacks h	alf in. half o	out surface	casing f	rom	ft. to	ft.	Plug Tag	iged:	
Set	— sacks a	t surface								
Cut four feet b	— pelow groun	id level, we	ld on plate	Ak	oove Ground	Dry-Hole Mark	ker: Yes	s X	No	
Set	-	rat hole	•		Set	-	ks in mouse			
		Additio	nal Plug	aina Ir	formation	for Subse	guent Rer	ort Only	,	
Casing Recover	red:	ft. of			n casing			•	_	
Surface Plug Se	-	 06/17/20)21 Cı		· ·		lumber of Da Capping or			Plug
-	-				·		•	J		
*Wireline Contra	actor: CU	ITERS & F	PATRIOT			*Cementing	Contractor:	SCHLUM	BERGER &	NEXTIER
Type of Cemen	t and Additi	ves Used:						-		
Flowline/Pipelin			d per Rule	1105	Yes	■ No				
Technical Detai	I/Comment	S:								
CONT'D PLUG										
			1405 01/ 0		0100 057 :	T4470 B1 0 1	OING			
PERF and SQL CASING PUNC			1 105 SX C	EMENI,	CICR SET A	11170 IN CA	SING			
I hereby certify	all stateme	nts made ir	this form	are, to th	e best of my	knowledge, tru	ue, correct, a	nd complet	e.	
Signed:					ı	Print Name: (CANDICE BA	RBER		
Title: REGU	JLATORY A	NALYST		Date:	9/9/2021	Emai	I: DJPOSTD	RILL@ANA	DARKO.COM	1
				_						
Based on the ir			erein, this V	Vell Abar	ndonment Re	port (Form 6)	complies with	COGCC F	Rules and ap	plicable
orders and is h		ovea. cobson, Eri	C					Doto	11/12/2024	
COGCC Appro	veu. Jac	Jouann, Ell						Date:	11/12/2021	

CONDITIONS OF APPROVAL, IF ANY:

COA Type Description O COA

Attachment List

Att Doc Num	<u>Name</u>
402805573	FORM 6 SUBSEQUENT SUBMITTED
402805629	OPERATIONS SUMMARY
402805631	CEMENT BOND LOG
402805635	OTHER
402805637	CEMENT JOB SUMMARY
402805639	OTHER
402805650	WELLBORE DIAGRAM
402805652	WIRELINE JOB SUMMARY

Total Attach: 8 Files

General Comments

<u>User Group</u>	Comment	Comment Date
		Stamp Upon Approval

Total: 0 comment(s)

Date Run: 11/12/2021 Doc [#402805573] Well Name: STATE 30-16

> Rev 02/20

State of Colorado Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 Phone: (303) 894-2100 Fax: (303) 89

DE	ET	OE	ES

Document Number:

402253686

Date Received:

12/04/2019

WELL ABANDONMENT REPORT

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OGCC Operato	r Number:	47120				Contact Na	ame: Jenni	fer Thomas	
Name of Opera	itor: KERF	R MCGEE OIL &	GAS ON	SHORE L	.P	Phone:	(720) 929-6808		
Address: P	O BOX 1737	79				Fax:			
City: DE	NVER	State: Co	<u> </u>	Zip:8	0217-	Email: j	ennifer_thomas	@oxy.com	
For "Intent"	24 hour notic	ce required,	Name: S	Silver, Ra	ndy	Т	el: (72	0) 827-6688	
COGCC con	tact:		Email: ra	andy.silve	er@state.co.us		-		
Type of Well A	bandonment	Report:	Notice (of Inten	t to Abandon	⋉ Subse	quent Repor	t of Abando	nment
API Number	05-123-2	29119-00							
Well Name:	STAT	Έ				Well Nu	mber: <u>28-16</u>		
Location:	QtrQtr: SW	/NW Sect	ion:16	_	Township: 1N	Rang	ge: <u>68W</u>	Meridian:	6
County:	WELD			Fede	eral, Indian or S	tate Lease Numl	ber: 70/85	70-S	
Field Name:	WATTEN	IBERG		Fi	eld Number:	90750			
Only Complete the Following Background Information for Intent to Abandon									
Latitude:	• • •								
GPS Data: G	GPS Data: GPS Quality Value: 1.5 Type of GPS Quality Value: Date of Measurement: 11/13/2019								
	GPS Instrume	ent Operator's Na	ame:	PAT MC	CLURE				
Reason for Aba	andonment:	Dry [▼ Produ	ction Sub	-economic	Mech	nanical Problem	S	
Other									
Casing to be pu	ılled:	Yes	No		Estimate	ed Depth:			
Fish in Hole:		Yes	No	If y	es, explain deta	ils below			
Wellbore has U	Incemented C	asing leaks:	Yes		No I	f yes, explain de	etails below		
Details:									
		Curr	ent and	l Previo	ously Aband	oned Zones			
	<u>Formation</u>		erf. Top	Perf. Bti	•		Method of Isolat	tion Plu	g Depth
CODELL			8347	8366	10/10/2	019 B PLU	G CEMENT TO	1	7890
NIOBRARA			7972	8216	10/10/2	D19 B PLUG CEMENT TOP 78			7890
Total: 2 zone(s)								
				Casi	ng History				
Casing Type	Size of Hole	Size of Casing	Weight F		Setting Depth	Sacks Cement	Cement Bot	Cement Top	Status
SURF	12+1/4	8+5/8	2	4	993	620	993	0	VISU
1ST	7+7/8	4+1/2	11	.6	8,548	625	8,548	3,704	CBL

1,504

150

1,504

S.C. 1.1

CBL

690

		Plu	ggi	ng Pı	roced	lure fo	r Inte	ent and Subs	equent Re	eport
CIBP	#1: Depth	7890	with	25	5sa	cks cmt c	on top. C	CIPB #2: Depth	with	sacks cmt on top.
CIBP	#3: Depth		with		sa	cks cmt c	on top. C	CIPB #4: Depth	with	sacks cmt on top.
CIBP	#5: Depth		with		sa	cks cmt c	on top.			NOTE: Two(2) sacks cement required on all CIBPs.
Set	25	sks cmt fron	n	7890	_ ft. to	7445	ft.	Plug Type:	CASING	Plug Tagged:
Set	15	sks cmt fron	n	4840	_ ft. to	4582	ft.	Plug Type:	CASING	Plug Tagged:
Set	19	sks cmt fron	n	2410	_ ft. to	2079	ft.	Plug Type:	CASING	Plug Tagged: 👿
Set	21	sks cmt fron	n	1590	_ ft. to	1307	ft.	Plug Type:	CASING	Plug Tagged: 🔽
Set	80	sks cmt fron	n	1095	ft. to	457	ft.	Plug Type:	STUB PLUG	Plug Tagged: 🔽
Perfo	rate and so	ueeze at	2500	0 ft.	with	46	sacks.	Leave at least 100	ft. in casing	2410 CICR Depth
Perfo	rate and so	ueeze at	1900	0 ft.	with	125	sacks.	Leave at least 100	ft. in casing	1590 CICR Depth
Perfo	rate and so	ueeze at		ft.	with		sacks.	Leave at least 100	ft. in casing	CICR Depth (Cast Iron Cement Retainer Depth)
Set		sacks half in	n. half	out sur	face cas	sing from		ft. to	_ ft. Plug	Tagged:
Set		sacks at sur	face						_	
Cut f	our feet bel	ow ground lev	vel, w	eld on p	olate	Above	Ground	d Dry-Hole Marker:	Yes	▼ No
Set		sacks in rat	hole				Set	sacks ir	n mouse hole	
Type of Towling Technic Addition	e/Pipeline I cal Detail/C onal perfs a	nd Additives nas been aba	indon		Rule 110	05	Yes	*Cementing Cor	stractor: SCH	LUMBERGER
hereb Signe		statements n	nade	in this fo	orm are	, to the be	est of my	/ knowledge, true, c		nplete.
Title	e: Regulato	ry Analyst			Dat	e:	_ 12/4/201	9 Email: rs	cdjpostdrill@ana	adarko.com
orders COG(and is here CC Approve	eby approved	l. and, I	Nick	his Well		nment R	eport (Form 6) com		CC Rules and applicable ate: 3/12/2020
				•						

Attachment Check List							
Att Doc Num	<u>Name</u>						
402253686	FORM 6 SUBSEQUENT SUBMITTED						
402253785	OTHER						
402253787	OTHER						
402253789	WELLBORE DIAGRAM						
402253801	OPERATIONS SUMMARY						
402253804	WIRELINE JOB SUMMARY						
402253805	CEMENT JOB SUMMARY						

Total Attach: 7 Files

General Comments

User Group	Comment	Comment Date
Engineer	GPS location appears accurate on maps.	03/12/2020
	Pre-PA bradenhead test performed.	
	Ops notice given.	
	Form 7 reporting PA status.	
	42 filed for flowline abandonment.	
	Zones and casing history are consistent with approved intent.	
	Procedure, WBD and tickets are consistent.	

Total: 1 comment(s)

Date Run: 3/12/2020 Doc [#402253686] Well Name: STATE 28-16

> Rev 11/20

State of Colorado Oil and Gas Conservation Commission



DE	ET	OE	ES

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 Phone: (303) 894-2100 Fax: (303) 89

WELL ABANDONMENT REPORT

This form is to be submitted as an Intent to Abandon whenever an abandonment is planned on a borehole. After the abandonment is complete, this form shall again be submitted as a Subsequent Report of the actual work completed. The approved intent shall be valid for six months after the approval date, after that period, a new intent will be required. Attachments required with the Intent to Abandon are wellbore diagrams of the current configuration and the proposed configuration with plugs set.

A Subsequent Report of Abandonment shall indicate the actual work completed. Attachments required with a Subsequent Report are a wellbore diagram showing plugs that were set and casing remaining in the hole, the job summaries from all plugging contractors used, including wireline and cementing (third party verification) and any logs that may have been run during abandonment.

Document	Numb	er:

402533556

Date Received:

11/17/2020

OGCC Operator Number: 47120 Contact Name: CANDICE	BARBER						
Name of Operator: KERR MCGEE OIL & GAS ONSHORE LP Phone: (307) 233-4513							
Address: P O BOX 173779 Fax:							
City: DENVER State: CO Zip: 80217- Email: CANDICE_BARBER	@OXY.COM						
For "Intent" 24 hour notice required, Name: Tel:							
COGCC contact: Email:							
Type of Well Abandonment Report: Notice of Intent to Abandon Subsequent Report of Abandonment							
API Number 05-123-30946-00							
Well Name: STATE Well Number: 26-16							
Location: QtrQtr: NENW Section: 16 Township: 1N Range: 68W Me	eridian: 6						
County: WELD Federal, Indian or State Lease Number:							
Field Name: WATTENBERG Field Number: 90750							
Only Complete the Following Background Information for Intent to Abandon							
Latitude: 40.057469 Longitude: -105.009239							
GPS Data: GPS Quality Value: 4.0 Type of GPS Quality Value: PDOP Date of Measurement	nt: 11/03/2020						
Reason for Abandonment: Dry Production Sub-economic Mechanical Problems							
Other							
Casing to be pulled: Yes No Estimated Depth:							
Fish in Hole:							
Wellbore has Uncemented Casing leaks: Yes No If yes, explain details below							
Details:							
Current and Previously Abandoned Zones							
Formation Perf. Top Perf. Btm Abandoned Date Method of Isolation	Plug Depth						
CODELL 8476 8496 09/25/2020 B PLUG CEMENT TOP	8020						
NIOBRARA 8098 8346 09/25/2020 B PLUG CEMENT TOP	8020						
Total: 2 zone(s)							
Casing History							

Size of

<u>Casing</u>

8+5/8

4+1/2

Casing Type

SURF

1ST

Size of

<u>Hole</u>

12+1/4

7+7/8

Wt/Ft

24

11.6

Grade

J55

M80

Csg/Liner

Top

<u>Setting</u>

Depth

1017

9026

Sacks Cmt Cmt Btm Cmt Top

1017

9026

0

2710

711

1090

Status

VISU

CBL

		Plu	ıggi	ng Pr	oced	ure fo	r Inten	t and Subs	seque	nt Re	port		
CIBP #	1: Depth	8020	with	2	sac	cks cmt or	n top. CIF	PB #2: Depth _	4790	with	2	sacks cmt	on top.
CIBP #3	3: Depth		with		sac	cks cmt or	n top. CIF	PB #4: Depth _		with		sacks cmt	on top.
CIBP #	5: Depth		with		sac	cks cmt or	n top.					Гwo(2) sacks l on all CIBPs	
Set	60	sks cmt from	n	2560	ft. to	2220	ft.	Plug Type:	OPE	N HOLE	F	Plug Tagged:	X
Set		sks cmt from	n		ft. to		ft.	Plug Type:			F	Plug Tagged:	
Set		sks cmt from	n		ft. to		ft.	Plug Type:			F	Plug Tagged:	
Set		sks cmt from	n _		ft. to		ft.	Plug Type:			F	Plug Tagged:	
Set		sks cmt from	n		ft. to		ft.	Plug Type:			F	Plug Tagged:	
Perfora	te and so	jueeze at		ft. v	with		sacks. Le	eave at least 100) ft. in ca	sing		CICR Depth	า
Perfora	te and so	lueeze at _		ft. v	with		sacks. Le	eave at least 100) ft. in ca	sing		CICR Depth	า
Perfora	te and so	lueeze at		ft. v	with		sacks. Le	eave at least 100) ft. in ca	sing	(Cast Iron	CICR Depth Cement Retainer	
Set _	120 36	sacks half in		out surf	ace casi	ing from	1120	ft. to824	ft.	Plug	Tagged:	X	
Set		ow ground le		eld on n	lato	Above	Ground F	Dry-Hole Marker	. - v	es	No		
Set	i ieet bei	sacks in rat		reid on p	iale	Above	Set	•	in mous		X NO		
								for Subsequ			•		
pe of C		nd Additives has been aba	Used		2ula 110	5	Yes	*Cementing Co	ntractor	: SCHI	JLUMBEF	RGER	
	•		ariuuri	ieu pei n	tule 110	3	165	INO					
echnica	l Detail/C	comments:											
nereby (certify all	statements r	nade	in this fo	rm are,	to the bes	st of my k	nowledge, true,	correct,	and com	plete.		
igned:							_ P	rint Name: CAN	NDICE E	BARBER			
Title:	REGULA	ATORY ANAL	YST		_ Date	e:1′	1/17/2020	Email: I	DJPOST	DRILL@	ANADARK	(O.COM	
		rmation proved		nerein, th	nis Well .	Abandoni	ment Rep	oort (Form 6) cor	nplies w	ith COG	CC Rules	and applicab	le
COGCC	Approve	d: Jacobs	on, E	ric						Da	te: 2/2/2	2021	
ONDIT	IONS OF	APPROVAI	L, IF /	ANY:									
ОА Ту	pe			Descr	<u>iption</u>	_							
				•									

Attachment List					
Att Doc Num	<u>Name</u>				
402533556	FORM 6 SUBSEQUENT SUBMITTED				
402533571	CEMENT BOND LOG				
402533575	OPERATIONS SUMMARY				
402533576	CEMENT JOB SUMMARY				
402533578	WELLBORE DIAGRAM				
402533579	WIRELINE JOB SUMMARY				
402534122	OTHER				

Total Attach: 7 Files

General Comments

User Group	Comment	Comment Date
		Stamp Upon Approval

Total: 0 comment(s)

Date Run: 2/2/2021 Doc [#402533556] Well Name: STATE 26-16

05/18

State of Colorado Oil and Gas Conservation Commission

CO

ÞΕ	ET	OE	ES

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

Document Number:

WELL ABANDONMENT REPORT

401901358

This form is to be submitted as an Intent to Abandon whenever an abandonment is planned on a borehole. After the abandonment is complete, this form shall again be submitted as a Subsequent Report of the actual work completed. The approved intent shall be valid for six months after the approval date, after that period, a new intent will be required. Attachments required with the Intent to Abandon are wellbore diagrams of the current configuration and the proposed configuration with plugs set.

Date Received:

A Subsequent Report of Abandonment shall indicate the actual work completed. Attachments required with a Subsequent Report are a wellbore diagram showing plugs that were set and casing remaining in the hole, the job summaries from all plugging contractors used, including wireline and cementing (third party verification) and any logs that may have been run during abandonment.

01/10/2019

0 (1)	, , , , , , , ,								
OGCC Operato	or Number:	47120	Contact N	lame: CRY	STAL MCCLA	ılN			
Name of Operator: KERR MCGEE OIL & GAS ONSHORE LP							(720) 929-4398		
Address: P	O BOX 1737	79				Fax:			
City: DE	NVER	State: C0	<u> </u>	Zip:8	30217-	Email:	CRYSTAL.MCC	CLAIN@ANAI	DARKO.C
For "Intent"	24 hour notic	ce required,	Name:				Tel:		
COGCC con	tact:		Email:				_		
API Number	05-123-2	29024-00							
Well Name:	STAT	E		_		Well N	umber: 25-16		
Location:	QtrQtr: NE	SW Sect	ion:16		Township: 1N	I Rar	nge: _68W	Meridian:	6
County:	WELD			Fed	eral, Indian or S	tate Lease Nun	nber: 70/85	70-S	
Field Name:	WATTEN	BERG		F	ield Number:	90750			
	■ Notice of Intent to Abandon Subsequent Report of Abandonment								
	Only	Complete the	Followin	g Back	kground Infor	mation for In	tent to Aband	lon	
Latitude:	40.049262	·		Longitu	de: -105.011	450			
GPS Data:									
Date of M	leasurement:	12/14/2018	PDOP R	eading:	1.7 GPS	Instrument Ope	erator's Name:	PAT MCC	LURE
Reason for Aba	andonment:	Dry	Produc	ction Sub	o-economic	☐ Med	hanical Problem	ıs	
Other									
Casing to be po	ulled:	Yes	No		Estimate	ed Depth:			
Fish in Hole:		Yes	No	If y	es, explain deta	ails below			
Wellbore has L	Incemented C	asing leaks:	Yes		No	If yes, explain	details below		
Details:									
	Current and Previously Abandoned Zones								
	Formation		erf. Top		<u>-</u>	_	Method of Isola	tion P	ug Depth
CODELL	<u> </u>		8087	8104	09/21/2		JG CEMENT TO		7640
NIOBRARA			7698	7967	09/21/2	017 B PLUG CEMENT TOP 7640			7640
Total: 2 zone(s)								
				Casi	ng History				
Casing Type	Size of Hole	Size of Casing	Weight F			Sacks Cemer	t Cement Bot	Cement Top	Status
SURF	12+1/4	8+5/8	24	4	900	570	900	0	VISU
1ST	7+7/8	4+1/2	11	.6	8,664	230	8,664	6,400	CBL

1,439

5,762

Stage Tool

160

290

1,438

5,784

S.C. 1.1

CBL

460

3,524

	Plu	ggi	ng Pr	oce	edure fo	r Inte	nt and Subs	eque	nt Re	port		
CIBP #1: Depth	7640	with	25		sacks cmt c	n top. CI	PB #2: Depth	4650	with	2	sacks cmt	on top.
CIBP #3: Depth	80	with	45		sacks cmt c	n top. Cl	PB #4: Depth		with		 sacks cmt	on top.
CIBP #5: Depth		with			sacks cmt c	on top.					Two(2) sacks on all CIBPs	
Set 25	sks cmt from	1	7640	ft. t	o 7198	ft.	Plug Type:	CASIN	IG	F	Plug Tagged:	
Set 15	sks cmt from	1	1670	ft. t	o 1578	ft.	Plug Type:	CASIN	IG	 F	Plug Tagged:	\overline{X}
Set 25	sks cmt from	۱	852	ft. t	o 591	ft.	Plug Type:	CASIN	IG	F	Plug Tagged:	X
Set40	sks cmt from	າ	591	ft. t	o <u>310</u>	ft.	Plug Type:	STUB	PLUG	F	Plug Tagged:	\overline{X}
Set	sks cmt from	ı		ft. t	o	ft.	Plug Type:			F	Plug Tagged:	
Perforate and sq	ueeze at	316	5 ft. v	vith	40	sacks. L	eave at least 100	ft. in cas	sing	3140	CICR Depth	1
Perforate and sq	ueeze at	1780	0 ft. v	vith	25	sacks. L	eave at least 100	ft. in cas	sing	1670	CICR Depth	1
Perforate and sq	ueeze at	1560	0 ft. v	vith	35	sacks. L	eave at least 100	ft. in cas	sing	1490 (Cast Iron	CICR Depth	
Set <u>25</u> Set 45	sacks half in		out surf	ace o	casing from	1110	0 ft. to 852	ft.	Plug	Tagged:	X	
Cut four feet belo	ow ground lev	∕el, w	eld on p	late	Above	Ground	Dry-Hole Marker:	Ye	:S	No		
Set	sacks in rat					Set	-	n mouse				
Type of Cement ar	nd Additives I	Used	:									
Flowline/Pipeline h	nas been aba	ndon	ed per R	ule 1	1105	Yes	■ No			*ATTAC	H JOB SUM	//ARY
Technical Detail/C	omments:											
1. CICR at 1740' v	was the resul	t of a	n unsuc	cessf	ul squeeze.							
2. Casedhole solu	tions was als	so a v	vireline c	ontra	actor, but the	ere wasn	't enough room to	list them	in the	"Plugging	Procedure" ta	ab.
3. Received appro to latch back on to	oval from Dia the top of th	ne M le cas	cCoy to paing stub	oump	a stub pluç cument has	g from 58 been atta	32' (TOC from prevached as "Other."	vious wo	rk on the	e well) rat	her than atter	mpting
Additional PERFS	at 950 & 10°	10										
Additional PERFS	at 830 & 730)										
Additional tubing p	ounch holes a	at 780	0									
hereby certify all	statements m	nade	in this fo	rm a	re, to the be	est of my	knowledge, true,	correct, a	and com	nplete.		
Signed:						_	Print Name: CRY	STAL M	CCLAIN	٧		
Title: REGULA	TORY ANALY	/ST			Date:	 1/10/2019	Email: 0	CRYSTAL	.MCCL	AIN@ANA	DARKO.COM	
Based on the infor			nerein, th	is W	ell Abandor	nment Re	port (Form 6) con	nplies wit	h COG	CC Rules	and applicab	le
COGCC Approve			∃lliot						Da	te: 4/1/2	2019	

CONDITIONS OF APP	PROVAL, IF ANY:	
COA Type	<u>Description</u>	

Attachment Check List

Att Doc Num	<u>Name</u>
401901358	FORM 6 SUBSEQUENT SUBMITTED
401901377	CEMENT BOND LOG
401901380	CEMENT BOND LOG
401901382	CEMENT BOND LOG
401901385	OPERATIONS SUMMARY
401901387	OTHER
401901393	CEMENT JOB SUMMARY
401901394	WIRELINE JOB SUMMARY
401901396	WELLBORE DIAGRAM

Total Attach: 9 Files

General Comments

User Group	Comment	Comment Date
		Stamp Upon
		Approval

Total: 0 comment(s)

Rev 05/18

1ST

S.C. 1.1

State of Colorado Oil and Gas Conservation Commission

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



DE	ET	OE	ES

Document Number:

401901325

Date Received:

01/10/2019

WELL ABANDONMENT REPORT

This form is to be submitted as an Intent to Abandon whenever an abandonment is planned on a borehole. After the abandonment is complete, this form shall again be submitted as a Subsequent Report of the actual work completed. The approved intent shall be valid for six months after the approval date, after that period, a new intent will be required. Attachments required with the Intent to Abandon are wellbore diagrams of the current configuration and the proposed configuration with plugs set.

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OGCC Operato	r Number:	47120				Cor	ntact Na	me: Jenni	fer Thomas	
Name of Opera	tor: KERF	R MCGEE OIL &	GAS ONS	SHORE L	_P	Ph	one: <u>(</u> 7	720) 929-6808		
Address: P	O BOX 1737	79				ı.	Fax: _			
City: DE	NVER	State: C	0 z	Zip:8	0217-	E	mail: <u>j</u> e	ennifer.thomas	@anadarko.co	m
For "Intent"	24 hour notic	ce required,	Name:				Te	el:		
COGCC con	tact:		Email:							
API Number	05-123-2	29025-00								
Well Name:	STAT	E		_		V	Vell Nun	nber: 22-16		
Location:	QtrQtr: NE	SW Sec	tion:16	_ 1	Fownship: 1N	<u> </u>	Range	e: _68W	Meridian:	6
County:	WELD			Fede	eral, Indian or S	tate Leas	e Numb	er: 70/85	70-S	
Field Name:	WATTEN	BERG		Fi	eld Number:	907	750			
	Notice of	of Intent to A	Abando	n	⊠ Subs	equen	t Rep	ort of Aba	ndonment	
Latitude: GPS Data: Date of M Reason for Aba Other Casing to be putilish in Hole: Wellbore has U Details:	easurement: Indonment:	Yes Yes	PDOP R	Longitude eading: _	de:105.011 1.7 GPS p-economic Estimate es, explain deta	Instrumer ded Depth:	Mecha	ator's Name: _ anical Problem	PAT MCCI	URE
		Cı	urrent an	d Previ	ously Abando	ned Zor	nes			
	<u>Formation</u>		Perf. Top	Perf. Bti	<u>M</u> <u>Abandone</u>	d Date	<u>N</u>	Method of Isolat		g Depth
CODELL			8010	8024	10/26/2	017	B PLUG	S CEMENT TO	P	7570
NIOBRARA			7629	7891	10/26/2	017	B PLUG	S CEMENT TO	P	7570
Total: 2 zone(s)									
				<u>Casi</u>	ng History	·				
Casing Type	Size of Hole	Size of Casing	Weight F	er Foot	Setting Depth	Sacks C	ement	Cement Bot	Cement Top	Status
SURF	12+1/4	8+5/8	24	4	894	56	0	894	0	VISU

4+1/2

11.6

8,193

1,500

620

165

8,193

1,500

7+7/8

CBL

CBL

4,060

540

	Pluç	gging P	rocedu	re for Inter	nt and Subs	equent Re	port
CIBP #1: Depth	n <u>7570</u> v	with40	sacks	s cmt on top. CI	PB #2: Depth	4560 with	2 sacks cmt on top.
CIBP #3: Depth	1 V	with	sack	s cmt on top. CI	PB #4: Depth	with	sacks cmt on top.
CIBP #5: Depth) v	with	sacks	s cmt on top.			NOTE: Two(2) sacks cement required on all CIBPs.
Set40	sks cmt from	7570	_ ft. to	6867 ft.	Plug Type:	CASING	Plug Tagged:
Set24	sks cmt from	2147	_ ft. to	1900 ft.	Plug Type:	CASING	Plug Tagged: 💢
Set20	sks cmt from	1898	_ ft. to	1820 ft.	Plug Type:	CASING	Plug Tagged: 👿
Set80	sks cmt from	1770	_ ft. to	1165 ft.	Plug Type:	CASING	Plug Tagged: 👿
Set2	sks cmt from	1150	_ ft. to	1144 ft.	Plug Type:	CASING	Plug Tagged: 🔽
Perforate and s	queeze at	4000 ft.	with1	05 sacks. L	eave at least 100	ft. in casing	3732 CICR Depth
Perforate and s	queeze at	3465 ft.	with1	48 sacks. L	eave at least 100	ft. in casing	3190 CICR Depth
Perforate and s	equeeze at	2830 ft.	with1	55 sacks. L	eave at least 100	ft. in casing	2520 CICR Depth (Cast Iron Cement Retainer Depth)
Set 115 Set 5	sacks half in.		face casing	g from903	ft. to211	_ ft. Plug	Tagged: X
Cut four feet be	_		olate	Above Ground	Dry-Hole Marker:	Yes	No
Set	sacks in rat h	-		Set		n mouse hole	
	_						
Casing Recovere		of	+1/2 ir	nch casing	Pluggin *Cementing Cor	g Date: 12/14/	2018 LUMBERGER, C&J
Type of Cement	and Additives U	Jsed:					
Flowline/Pipeline	has been abar	ndoned per l	Rule 1105	Yes	☐ No		*ATTACH JOB SUMMARY
Technical Detail/	Comments:						
Please note: Cement plug list Cement plug list Cement plug list 17 sacks of cem 3.5 barrels of na 40 sacks of cem 115 sacks of cem 66 sacks of cem	ed at 1898' was ed at 1770' was ent was set in c no-sealant was ent was set in c ment was set in	s a cement s s a cement s casing at 11 s also pumpe open hole at casing (stul	squeeze, w squeeze, w 44', TOC ta ed at 1144' 965', TOC o plug) at 9	ith CICR set at ith CICR set at agged at 967' tagged at 903' 103', TOC tagge	1868' 1740'		
I hereby certify a	ll statements ma	ade in this f	orm are, to	the best of my	knowledge, true, o	correct, and com	plete.
Signed:					Print Name: Jenn	ifer Thomas	
Title: Regula	tory Analyst		Date:	1/10/2019	Email: rs	cdjpostdrill@ana	darko.com
Based on the inforders and is he		ded herein, t	his Well At	pandonment Re	port (Form 6) com	plies with COGO	CC Rules and applicable
COGCC Approv		nd, Nick				Dat	te: 4/4/2019
CONDITIONS O	F APPROVAL,	, IF ANY:		_			

COA Type	<u>Description</u>

Attachment Check List

Att Doc Num	<u>Name</u>
401901325	FORM 6 SUBSEQUENT SUBMITTED
401901428	CEMENT BOND LOG
401901431	CEMENT BOND LOG
401901432	OTHER
401901438	OTHER
401901439	WELLBORE DIAGRAM
401901441	OPERATIONS SUMMARY
401901442	CEMENT JOB SUMMARY
401901445	CEMENT BOND LOG
401901455	WIRELINE JOB SUMMARY

Total Attach: 10 Files

General Comments

<u>User Group</u>	Comment	Comment Date
Engineer	GPS location accurate per mapping. Zones consistent with approved intent and plugging procedure. Casing history consistent with approved intent. Bradenhead test performed, form 17 submitted, and sample on file with COGCC per COA. Form 42, 48 hr notice for P&A ops, and form 42 for abandoned flowlines submitted per COA. Modifications to plugging procedure approved by COGCC engineer via email. Condition of tagging plug below casing shoe was met. Plugs and cement verified by service tickets. WBD and procedure consistent with ops summary.	04/04/2019

Total: 1 comment(s)

Rev 05/18

1ST

State of Colorado Oil and Gas Conservation Commission

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



|--|

Document Number:

401576693

Date Received:

03/15/2018

WELL ABANDONMENT REPORT

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OGCC Operator Number: 47120 Contact Name: Jennifer Thomas KERR MCGEE OIL & GAS ONSHORE LP Phone: (720) 929-6808 Name of Operator: Address: P O BOX 173779 Fax: City: **DENVER** CO Zip: 80217jennifer.thomas@anadarko.com Email: For "Intent" 24 hour notice required, Name: Email: **COGCC** contact: API Number 05-123-29113-00 Well Name: STATE Well Number: 21-16 Location: QtrQtr: SWNW 1N Section: 16 Township: Range: 68W Meridian: 6 County: WELD Federal, Indian or State Lease Number: Field Name: WATTENBERG Field Number: 90750 Notice of Intent to Abandon Subsequent Report of Abandonment Only Complete the Following Background Information for Intent to Abandon 40.054376 -105.014505 Latitude: Longitude: GPS Data: GPS Instrument Operator's Name: PRESTON KNUTSON Date of Measurement: 12/07/2017 PDOP Reading: 1.5 Production Sub-economic Reason for Abandonment: Dry Mechanical Problems Other Casing to be pulled: Yes No Estimated Depth: Fish in Hole: No If yes, explain details below Yes Wellbore has Uncemented Casing leaks: Yes If yes, explain details below Details: **Current and Previously Abandoned Zones Formation** Perf. Top Perf. Btm Abandoned Date Method of Isolation Plug Depth CODELL **B PLUG CEMENT TOP** 8193 8208 09/28/2017 7775 **NIOBRARA** 7826 8062 09/28/2017 B PLUG CEMENT TOP 7775 Total: 2 zone(s) **Casing History** Size of Hole | Size of Casing | Weight Per Foot | Setting Depth | Status Casing Type Sacks Cement Cement Bot Cement Top **SURF** 12+1/4 8+5/8 24 997 770 997 VISU

720

8.355

8.355

3.030

4+1/2

11.6

7+7/8

CBL

CIDD #4. D.												
CIBP #1: De	epth77	75 wit	h40	sac	ks cmt o	n top. CIF	PB #2: Depth	4725	with	2	sacks cm	t on top.
CIBP #3: De	epth 8	0 wit	h33	sac	ks cmt o	n top. CIF	PB #4: Depth		with		sacks cm	t on top.
CIBP #5: De	epth	wit	:h 	sac	ks cmt oi	n top.				NOTE: required	Two(2) sacks d on all CIBPs	cement
Set40	sks cı	mt from	7775	ft. to	7072	ft.	Plug Type:	CASIN	IG		Plug Tagged:	
Set79	sks cı	mt from	1400	ft. to	1200	ft.	Plug Type:	STUB	PLUG		Plug Tagged:	\overline{X}
Set70	sks cı	mt from	1200	ft. to	1020	ft.	Plug Type:	OPEN	HOLE		Plug Tagged:	X
Set130	Sks ci	mt from	1020	ft. to	619	ft.	Plug Type:	STUB	PLUG		Plug Tagged:	X
Set	sks ci	mt from		ft. to		ft.	Plug Type:				Plug Tagged:	
Perforate ar	nd squeeze	at	ft. \	with		sacks. Le	eave at least 100	ft. in cas	sing		CICR Deptl	า
Perforate ar	nd squeeze	at	ft. \	with		sacks. Le	eave at least 100	ft. in cas	sing		CICR Depti	า
Perforate ar	nd squeeze	at	ft. \	with		sacks. Le	eave at least 100	ft. in cas	sing		CICR Deptl	
_										,	Cement Retaine	r Depth)
Set			alf out surf	ace casi	ng from		ft. to	_ ft. _	Plug	Tagged:		
Set33		at surfac			A 1	0 1		v				
Cut four fee	_		•	late	Above		Ory-Hole Marker:	Ye		No		
Set	sacks	in rat hol	e 			Set	sacks if	n mouse	noie			
Casing Recov				+1/2	mon cas	irig	Pluggin	g Date:	02/15/	/2018		
		RELIANCE			inch cas		*Cementing Cor	g Date:		/2018 _UMBER	GER	
Type of Ceme	ent and Add	RELIANCE	ed:			Yes				LUMBER	GER CH JOB SUMI	MARY
Type of Ceme	ent and Add	RELIANCE ditives Use en abande	ed:				*Cementing Cor			LUMBER		MARY
Type of Ceme Flowline/Pipe Fechnical De	ent and Add	RELIANCE ditives Use en abande nts:	ed: oned per F	Rule 1105	5	Yes	*Cementing Cor	ntractor:	SCHL	LUMBER		MARY
Type of Ceme Flowline/Pipe Technical De	ent and Add	RELIANCE ditives Use en abande nts:	ed: oned per F	Rule 1105	5	Yes st of my k	*Cementing Cor	ntractor:	SCHI	LUMBER		MARY
Type of Cemeron Flowline/Pipe Technical Definition hereby certifications	ent and Add	RELIANCE ditives Use en abando nts:	ed: oned per F	Rule 1105	to the bes	Yes st of my k	*Cementing Cor	correct, a	SCHI	*ATTAC	CH JOB SUMI	MARY
Type of Cemeron Flowline/Pipe Technical De Technical De Thereby certifor Signed: Title: Reg	ent and Add line has be tail/Comme fy all statem gulatory Ana	RELIANCE ditives Use en abande ints: hents mad	ed: oned per F	orm are, 1	to the bes	Yes st of my k - F	*Cementing Cor	correct, a	SCHI	*ATTAC	CH JOB SUMI	
Flowline/Pipe Flowline/Flo	ent and Add line has be- tail/Comme fy all statem gulatory Ana e informatio s hereby ap	RELIANCE ditives Use en abande ints: nents mad	ed: oned per F	Orm are, 1	to the bes	Yes st of my k - F	*Cementing Cor No nowledge, true, cor Print Name: Jenn Email: rs	correct, a	SCHI	*ATTAC	CH JOB SUMI	
Type of Cemeron Flowline/Pipe Technical De Thereby certifor Signed: Title: Reg	ent and Add line has be- tail/Comme fy all statem gulatory Ana e informatio s hereby ap	RELIANCE ditives Use en abande ints: nents mad	ed: poned per F de in this fo	Orm are, 1	to the bes	Yes st of my k - F	*Cementing Cor No nowledge, true, cor Print Name: Jenn Email: rs	correct, a	SCHL and commas lrill@ana	*ATTAC	m and applicab	
Type of Cemeron Flowline/Pipe Technical December I hereby certification Signed: Title: Regulation	ent and Add line has be tail/Comme fy all statem gulatory Ana e informatio s hereby approved:	RELIANCE ditives Use en abande ints: nents mad lyst n provided proved. Mangama	ed: poned per F de in this fo	Orm are, 1	to the bes	Yes st of my k - F	*Cementing Cor No nowledge, true, cor Print Name: Jenn Email: rs	correct, a	SCHL and commas lrill@ana	*ATTAC	m and applicab	
Signed: Title: Reg Based on the orders and is	ent and Add line has be tail/Comme fy all statem gulatory Ana e informatio s hereby approved:	RELIANCE ditives Use en abande ints: nents mad lyst n provided proved. Mangama	ed: poned per F de in this for d herein, the Christelle F ANY:	Orm are, 1	to the bes	Yes st of my k - F	*Cementing Cor No nowledge, true, cor Print Name: Jenn Email: rs	correct, a	SCHL and commas lrill@ana	*ATTAC	m and applicab	

Att Doc Num Name 401576693 FORM 6 SUBSEQUENT SUBMITTED 401576694 WELLBORE DIAGRAM 401576695 OPERATIONS SUMMARY 401576696 WIRELINE JOB SUMMARY 401576697 CEMENT JOB SUMMARY

Total Attach: 5 Files

General Comments

<u>User Group</u>	Comment	Comment Date
		Stamp Upon
		Approval

Total: 0 comment(s)

Date Run: 5/24/2018 Doc [#401576693] Well Name: STATE 21-16

12/05

SURF

S.C. 1.1

1ST

State of Colorado Oil and Gas Conservation Commission

OE ES

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

WELL ABANDONMENT REPORT

This form is to be submitted as an Intent to Abandon whenever an abandonment is planned on a borehole. After the abandonment is comple form shall again be submitted as a Subsequent Report of the actual work completed. The approved intent shall be valid for six months after the date, after that period, a new intent will be required. Attachments required with the Intent to Abandon are wellbore diagrams of the current co and the proposed configuration with plugs set.

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	Doc	ument	Numb	er:	
TM	400892874				
te, this ne approval	Date Received:				
nfiguration	09/02/2015				

OGCC Operator Number: 47120 Contact Name: REBECCA HEIM							
Name of Operator: KERR MCGEE OIL & GAS ONSHORE LP Phone: (720) 929-6361							
Address: P O BOX 173779 Fax: (720) 929-7361							
City:DENVER State:CO Zip:80217 Email: REBECCA.HEIM@ANADARKO.COM							
For "Intent" 24 hour notice required, Name: Tel:							
COGCC contact: Email:							
API Number 05-123-16105-00							
Well Name: STATE Well Number: 16-9V							
Location: QtrQtr: NESE Section: 16 Township: 1N Range: 68W Meridian: 6							
County: WELD Federal, Indian or State Lease Number:							
Field Name:WATTENBERG Field Number:90750							
■ Notice of Intent to Abandon							
Only Complete the Following Background Information for Intent to Abandon							
Latitude: 40.047892 Longitude: -105.002757							
GPS Data:							
Date of Measurement: 04/01/2010 PDOP Reading: 2.2 GPS Instrument Operator's Name: Paul Tappy							
Reason for Abandonment: Production Sub-economic Mechanical Problems							
Other							
Casing to be pulled: Yes No Estimated Depth:							
Fish in Hole: Yes No If yes, explain details below							
Wellbore has Uncemented Casing leaks: Yes No If yes, explain details below							
Details:							
Current and Previously Abandoned Zones							
Formation Perf. Top Perf. Btm Abandoned Date Method of Isolation Plug Depth							
CODELL 7928 7950 08/18/2015 B PLUG CEMENT TOP 7860							
J SAND 8370 8384 08/18/2015 B PLUG CEMENT TOP 8320							
Total: 2 zone(s)							
Casing History							

8+5/8

4+1/2

4+1/2

24

11.6

11.6

715

8,700

8,700

500

325

370

715

8,717

5,140

0

7,200

4,492

12 + 1/4

7+7/8

7+7/8

VISU

CBL

CBL

	1: Depth	8320 v	with	2 sa	acks cmt o	n top. CIP	B #2: Depth	7860	with	45	_ sacks cmt	on top
CIBP #	3: Depth	75 v	with	sacks cmt on top. CIPB #4: Depth					with		_ sacks cmt	on top
CIBP #	5: Depth	v	vith	S	acks cmt o	n top.				NOTE: T	wo(2) sacks on all CIBPs	cemen
Set	50	sks cmt from	5090) ft. to	4545	ft.	Plug Type:	CASII	١G	F	Plug Tagged:	X
Set _	600	sks cmt from	1468	8 ft. to	211	ft.	Plug Type:	STUB	PLUG	F	Plug Tagged:	X
Set _		sks cmt from		ft. to		ft.	Plug Type:			F	Plug Tagged:	
Set _		sks cmt from		ft. to		ft.	Plug Type:			F	Plug Tagged:	
Set _		sks cmt from		ft. to		ft.	Plug Type:			F	Plug Tagged:	
Perfora	te and sq	ueeze at		ft. with _		sacks. Le	eave at least 100	ft. in ca	sing		CICR Depth	1
Perfora	te and sq	ueeze at		ft. with _		sacks. Le	eave at least 100	ft. in ca	sing		CICR Depth	1
Perfora	te and sq	ueeze at		ft. with _		sacks. Le	eave at least 100	ft. in ca	sing	(Cast Iron (CICR Depth Cement Retainer	
Set		sacks half in.	half out	surface ca	sing from		ft. to	ft.	Plug	Tagged:		
Set	34	sacks at surfa	ace									
Cut fou	r feet belo	ow ground leve	el, weld c	n plate	Above	Ground D	Ory-Hole Marker:	Y	es	No		
Set		sacks in rat h	ole			Set	sacks ii	n mouse	hole			
Vireline		: <u>1360</u> or: <u>CUTTER</u>	ft. of S/WARR	4+1/2	ging Infor		for Subsequen Pluggir *Cementing Cor	ng Date:	08/28			
Wireline Type of C	Contract Cement and Pipeline h	: 1360 or: CUTTER nd Additives U nas been aban	ft. of S/WARR Jsed:	4+1/2	inch cas		Pluggir	ng Date:	08/28	/2015 JEL 45	H JOB SUMN	ИARY
Wireline Type of C	Contract Cement and Pipeline h	: 1360 or: CUTTER nd Additives U	ft. of S/WARR Jsed:	4+1/2	inch cas	ing	Pluggir *Cementing Cor	ng Date:	08/28	/2015 JEL 45	H JOB SUMN	ЛARY
Wireline Type of Colored	Contract Cement an Pipeline h	: 1360 or: CUTTER nd Additives U nas been aban omments:	ft. of — S/WARF Jsed: ndoned po	4+1/2 LIOR er Rule 11	inch cas	Yes	Pluggir *Cementing Cor	ng Date:	08/28 SAN	/2015 JEL 45 *ATTACI	H JOB SUMN	//ARY
Wireline Type of Control Technicate Thereby	Contract Cement an Pipeline h	: 1360 or: CUTTER nd Additives U nas been aban omments:	ft. of — S/WARF Jsed: ndoned po	4+1/2 LIOR er Rule 11	inch cas	Yes	*Cementing Cor	ng Date:	08/28 SAN	/2015 JEL 45 *ATTACI	H JOB SUMN	ЛARY
Wireline Type of C Flowline Technicat hereby Signed:	Contract Cement at Pipeline h I Detail/C	: 1360 or: CUTTER nd Additives U nas been aban omments:	ft. of — RS/WARF Jsed: ndoned po	4+1/2 LIOR er Rule 11	03	Yes	*Cementing Cor No No nowledge, true, or	ng Date:	08/28 SAN	/2015 JEL 45 *ATTACI		MARY
Wireline Type of C Flowline Technica hereby Signed: Title: Based o	Contract Cement an Pipeline h I Detail/C certify all SR. REG	cr: 1360 or: CUTTER and Additives Unas been aban omments: statements ma	ft. of	4+1/2 LIOR er Rule 11 s form are	on to the beater.	Yes st of my k P 9/2/2015	*Cementing Cor No No nowledge, true, or	ng Date: ntractor: correct, ECCA I	08/28 SAN and com HEIM drill@ana	#ATTACI	n	
Wireline Type of Control Technica Thereby Signed: Title: Based of	Contract Cement an Pipeline h I Detail/C certify all SR. REG	critical control or co	ft. of SS/WARF Used: Indoned po	4+1/2 LIOR er Rule 11 s form are	on to the beater.	Yes st of my k P 9/2/2015	*Cementing Cor No No nowledge, true, or rint Name: REB Email: rs	ng Date: ntractor: correct, ECCA I	08/28 SAN and com HEIM drill@ana	*ATTACI	n and applicab	
Wireline Type of C Flowline Technica hereby Signed: Title: Based oorders a COGCC	Contract Cement at Pipeline h I Detail/C certify all SR. REG In the info	critical control or co	ft. of S/WARF Jsed: Indoned position ALYST Iled herein In, Eric	4+1/2 LIOR er Rule 11 s form are Da n, this Wel	on to the beater.	Yes st of my k P 9/2/2015	*Cementing Cor No No nowledge, true, or rint Name: REB Email: rs	ng Date: ntractor: correct, ECCA I	08/28 SAN and come HEIM drill@ana	*ATTACI	n and applicab	
Wireline Type of Condition Technicate Technicate Technicate Title: Title: Title: Title: COGCC	Contract Cement at Pipeline h I Detail/C certify all SR. REG In the informatis here Approve	cr: 1360 or: CUTTER and Additives Unas been aban omments: statements ma sullatory AN rmation provide by approved. d: Jacobso	ft. of SS/WARF Used: Indoned position ade in thi ALYST Hed herein on, Eric	4+1/2 LIOR er Rule 11 s form are Da n, this Wel	o3 o3 te:	Yes st of my k P 9/2/2015	*Cementing Cor No No nowledge, true, or rint Name: REB Email: rs	ng Date: ntractor: correct, ECCA I	08/28 SAN and come HEIM drill@ana	*ATTACI	n and applicab	
Wireline Type of C Flowline Flowline Flowline Signed: Title: Based oorders a COGCC	Contract Cement at Pipeline h I Detail/C certify all SR. REG In the informatis here Approve	cr: 1360 or: CUTTER and Additives Unas been aban omments: statements ma sullatory AN rmation provide by approved. d: Jacobso	ft. of — SS/WARR Ised:	4+1/2 HOR er Rule 11 s form are Da n, this Wel scription A: Opera	inch cas	Yes st of my k P9/2/2015 ment Rep	*Cementing Cor No No nowledge, true, or rint Name: REB Email: rs	correct, secdiposte will howing	and come HEIM The COGO Da	*ATTACI adarko.com CC Rules te: 1/25/	and applicab 2018	le

Attachment Check List						
Att Doc Num	<u>Name</u>					
400892874	FORM 6 SUBSEQUENT SUBMITTED					
400892888	OPERATIONS SUMMARY					
400892889	CEMENT JOB SUMMARY					
400892890	GYRO SURVEY					
400892891	CEMENT BOND LOG					
400892892	WIRELINE JOB SUMMARY					
400894161	WELLBORE DIAGRAM					

Total Attach: 7 Files

General Comments

User Group	Comment	Comment Date
		Stamp Upon Approval

Total: 0 comment(s)

Date Run: 1/25/2018 Doc [#400892874] Well Name: STATE 16-9V

05/18

State of Colorado Oil and Gas Conservation Commission

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

OE

ES

Document Number:

401572846

Date Received:

ΕT

DE

03/13/2018

WELL ABANDONMENT REPORT

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cementing (third party verification) and any logs that may have been run during abandonment.

OGCC Operator Number: 47120 Contact Name: Jennifer Thomas									
Name of Opera	itor: KERF	R MCGEE OIL &	GAS ON	SHORE I	_P	Phone:	(720) 929-6808		_
Address: P	O BOX 1737	79				Fax:			
City: DE	NVER	State: C	02	Zip:8	0217-	Email:	jennifer.thomas	@anadarko.co	m
For "Intent" 24 hour notice required, Name: Tel:									
COGCC contact:									
API Number	05-123-2	29021-00							
Well Name:	STAT	E				Well N	umber: 14-16		
Location:	QtrQtr: NE	SW Sect	ion: 16		Γownship: 1N	I Ra	nge: 68W	Meridian:	6
County:	WELD			Fede	eral, Indian or S	tate Lease Nui	mber: 70/85	70-S	
Field Name:	WATTEN	BERG		Fi	eld Number:	90750			
	Notice of	of Intent to A	Abando	n	⊠ Subs	sequent Re	eport of Aba	ndonment	
	Only (Complete the	Followir	ng Back	ground Infor	mation for Ir	tent to Abana	lon	
Latitude:	40.049048			Longitu	de: -105.011	427			
GPS Data:									
Date of M	easurement:	06/09/2009	PDOP R	eading:	2.8 GPS	Instrument Op	erator's Name:	CHRIS PEA	RSON
Reason for Aba	andonment:	Dry]	Produ	ction Sub	o-economic	Me	chanical Problem	s	
Other									
Casing to be pu	ılled:	Yes	No		Estimate	ed Depth:			
Fish in Hole:		Yes	No	If y	es, explain deta	ails below			
Wellbore has U	Incemented C	asing leaks:	Yes		No	If yes, explain	details below		
Details:									
		<u>Cı</u>	urrent an	d Previ	ously Abando	ned Zones			
	<u>Formation</u>	<u>F</u>	Perf. Top	Perf. Bt	m <u>Abandone</u>	d Date	Method of Isola	tion Plu	g Depth
CODELL			8104	8122	08/21/2		UG CEMENT TO		7800
NIOBRARA			7856	7981	08/21/2	017 B PL	UG CEMENT TO)P	7800
Total: 2 zone(s)								
				Casi	ng History				
Casing Type	Size of Hole	Size of Casing	Weight I	Per Foot	Setting Depth	Sacks Ceme	nt Cement Bot	Cement Top	Status
SURF	12+1/4	8+5/8	2	4	907	690	907	0	VISU
1ST	7+7/8	4+1/2	11	.6	8,260	652	8,260	4,032	CBL

CIDD #4. Damath											
CIBP #1: Depth	7800	with	40	sac	ks cmt or	top. CIP	B #2: Depth	4700	with	2	sacks cmt on top.
CIBP #3: Depth	80	with	69	sac	ks cmt or	n top. CIP	B #4: Depth		with		sacks cmt on top.
CIBP #5: Depth		with		sac	cks cmt or	n top.					Two(2) sacks cement d on all CIBPs.
Set40	sks cmt fron	n	7800	ft. to	7097	ft.	Plug Type:	CASI	IG		Plug Tagged: 🔲
Set	sks cmt fron	n		ft. to		_ ft.	Plug Type:				Plug Tagged: 🔲
Set	sks cmt fron	n		ft. to		_ ft.	Plug Type:				Plug Tagged: 🔲
Set	sks cmt fron	n		ft. to		ft.	Plug Type:				Plug Tagged: 🔲
Set	sks cmt fron	n		ft. to		ft.	Plug Type:				Plug Tagged: 🔲
Perforate and so	lueeze at		ft. w	ith		sacks. Le	ave at least 100	ft. in ca	sing		CICR Depth
Perforate and so	ueeze at		ft. w	ith		sacks. Le	ave at least 100	ft. in ca	sing		CICR Depth
Perforate and so	ueeze at _		ft. w	ith		sacks. Le	ave at least 100	ft. in ca	sing		CICR Depth
Cot 225	anaka half in	, half	out ourfe		ina from	1442	ft to 200	41	Dlug		Cement Retainer Depth)
Set 335 Set 69	sacks half in sacks at sur		out suna	ace casi	ing irom	1443	_ ft. to	_ ft.	Plug	Tagged:	X
Cut four feet belo			eld on nl	ate	Ahove	Ground D	ry-Hole Marker:	Ye	ıs.	☐ No	
Set	sacks in rat		old on pi	aio	710010	Set	•	n mouse		110	
		۸۸	ditional	Dluggi	ina Infor	mation (for Subsequer	of Dono	rt Only		
2	1045		ullionai	riuggi	ng mor	<u>mation i</u>	<u>for Subsequer</u>	ii Kepo	rt Only	<u>-</u>	
			4	4 /0			ъ.	. .	00/40	10040	
Jasing Recovered	l: <u>1345</u>	ft. of	4+	1/2	inch casi	ng	Pluggir	ng Date:	02/13	/2018	
_		of	4+	1/2	inch casi	ng	Pluggir			/2018 LUMBER	GER
Wireline Contract	tor: PIONE	of ER		1/2	inch casi	ng 					GER
*Wireline Contract	or: PIONEE	of ER Used	:			ng Yes				LUMBER	GER CH JOB SUMMARY
*Wireline Contract Type of Cement a Flowline/Pipeline I	nd Additives	of ER Used	:				*Cementing Co			LUMBER	
*Wireline Contract Type of Cement a Flowline/Pipeline I	nd Additives	of ER Used	:				*Cementing Co			LUMBER	
Wireline Contract Type of Cement a Flowline/Pipeline I Technical Detail/C	nd Additives has been aba	of ER Used	ed per R	ule 110	5	Yes	*Cementing Col	ntractor:	SCH	LUMBER	
*Wireline Contract Type of Cement a Flowline/Pipeline I Technical Detail/C	nd Additives has been aba	of ER Used	ed per R	ule 110	5	Yes	*Cementing Col	ntractor:	SCH	LUMBER	
Wireline Contract Type of Cement a Flowline/Pipeline I Technical Detail/C hereby certify all Signed:	nd Additives has been aba comments:	of ER Used	ed per R	ule 110	5 to the bes	Yes st of my ki	*Cementing Col No No nowledge, true, or	correct,	SCH	*ATTAC	CH JOB SUMMARY
*Wireline Contract Type of Cement a Flowline/Pipeline I Technical Detail/C	nd Additives has been aba comments:	of ER Used	ed per R	ule 110	5 to the bes	Yes	*Cementing Col No No nowledge, true, or	correct,	SCH	LUMBER	CH JOB SUMMARY
*Wireline Contract Type of Cement a Flowline/Pipeline I Technical Detail/C I hereby certify all Signed: Title: Regulato Based on the info	nd Additives has been aba comments: statements n bry Analyst	Used andon	ed per R	ule 110: rm are, Date	to the bes	Yes st of my ki	*Cementing Col No No nowledge, true, of	correct,	SCH and com mas drill@ana	*ATTAC	CH JOB SUMMARY
*Wireline Contract Type of Cement a Flowline/Pipeline I Technical Detail/C I hereby certify all Signed: Title: Regulato Based on the info orders and is here	nd Additives nas been aba comments: statements n ory Analyst ormation provideby approved	of ER Used andon made	ed per R	ule 110: rm are, Date	to the bes	Yes st of my ki	*Cementing Col No No nowledge, true, of	correct,	SCH and com mas drill@ana	*ATTAC	m and applicable
*Wireline Contract Type of Cement a Flowline/Pipeline I Technical Detail/C hereby certify all Signed: Title: Regulato Based on the info	nd Additives nas been aba comments: statements n ory Analyst ormation provideby approved	of ER Used andon made	ed per R	ule 110: rm are, Date	to the bes	Yes st of my ki	*Cementing Col No No nowledge, true, of	correct,	SCH and com mas drill@ana	*ATTAC	CH JOB SUMMARY
*Wireline Contract Type of Cement a Flowline/Pipeline I Technical Detail/C I hereby certify all Signed: Title: Regulate Based on the info orders and is here COGCC Approve	nd Additives nas been aba comments: statements n ory Analyst rmation provideby approved d: Manga	of ER Used andon made ided h f. ma, C	ed per R in this for	ule 110: rm are, Date	to the bes	Yes st of my ki	*Cementing Col No No nowledge, true, of	correct,	SCH and com mas drill@ana	*ATTAC	m and applicable
Based on the info	nd Additives nas been aba comments: statements n ory Analyst rmation provideby approved d: Manga	of ER Used andon made ided h f. ma, C	ed per R in this for	ule 110	to the bes	Yes st of my ki	*Cementing Col No No nowledge, true, of	correct,	SCH and com mas drill@ana	*ATTAC	m and applicable

Att Doc Num Name 401572846 FORM 6 SUBSEQUENT SUBMITTED 401572870 WELLBORE DIAGRAM 401572873 OPERATIONS SUMMARY 401572874 WIRELINE JOB SUMMARY 401572875 CEMENT JOB SUMMARY

Total Attach: 5 Files

General Comments

<u>User Group</u>	Comment	Comment Date
		Stamp Upon
		Approval

Total: 0 comment(s)

Date Run: 5/24/2018 Doc [#401572846] Well Name: STATE 14-16

Rev 05/18

1ST

S.C. 1.1

State of Colorado Oil and Gas Conservation Commission

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



DE	ET	OE	ES

Document Number:

401596297

Date Received:

04/04/2018

		REPORT

This form is to be submitted as an Intent to Abandon whenever an abandonment is planned on a borehole. After the abandonment is complete, this form shall again be submitted as a Subsequent Report of the actual work completed. The approved intent shall be valid for six months after the approval date, after that period, a new intent will be required. Attachments required with the Intent to Abandon are wellbore diagrams of the current configuration and the proposed configuration with plugs set.

A Subsequent Report of Abandonment shall indicate the actual work completed. Attachments required with a Subsequent Report are a wellbore diagram showing plugs that were set and casing remaining in the hole, the job summaries from all plugging contractors used, including wireline and cementing (third party verification) and any logs that may have been run during abandonment.

OGCC Operator Number: 47120 Contact Name: Jennifer Thomas KERR MCGEE OIL & GAS ONSHORE LP Phone: (720) 929-6808 Name of Operator: Address: P O BOX 173779 Fax: City: **DENVER** CO Zip: 80217jennifer.thomas@anadarko.com Email: For "Intent" 24 hour notice required, Name: Email: **COGCC** contact: API Number 05-123-29022-00 Well Name: STATE Well Number: 13-16 Location: QtrQtr: NESW 1N Section: 16 Township: Range: 68W Meridian: 6 County: WELD Federal, Indian or State Lease Number: Field Number: Field Name: WATTENBERG 90750 Notice of Intent to Abandon Subsequent Report of Abandonment Only Complete the Following Background Information for Intent to Abandon 40.049136 Longitude: -105.011450 Latitude: GPS Data: Cody Mattson Date of Measurement: 03/24/2009 PDOP Reading: 3.5 GPS Instrument Operator's Name: Production Sub-economic Reason for Abandonment: Dry Mechanical Problems Other Casing to be pulled: Yes No Estimated Depth: Yes No If yes, explain details below Fish in Hole: Wellbore has Uncemented Casing leaks: Yes If yes, explain details below Details: **Current and Previously Abandoned Zones Formation** Perf. Top Perf. Btm Abandoned Date Method of Isolation Plug Depth CODELL **B PLUG CEMENT TOP** 8266 8282 08/24/2017 7790 **NIOBRARA** 7862 8141 08/24/2017 B PLUG CEMENT TOP 7790 Total: 2 zone(s) **Casing History** Status Casing Type Size of Hole | Size of Casing | Weight Per Foot | Setting Depth | Sacks Cement Cement Bot Cement Top SURF 12+1/4 8+5/8 24 907 570 907 VISU

4+1/2

11.6

8,428

1,432

7+7/8

CBL

CBL

8,428

1,430

640

183

3,480

420

	5.	jiiig i i	ocedui	e ioi iiiteii	t and Subs	equei		,port
CIBP #1: Depth	7790 wit	h 40	sacks	cmt on top. CIP	PB #2: Depth	4750	with	sacks cmt on top
CIBP #3: Depth	80 wit	h8	sacks	cmt on top. CIF	PB #4: Depth		with	sacks cmt on top
CIBP #5: Depth	wit	h	sacks	cmt on top.				NOTE: Two(2) sacks cemer required on all CIBPs.
Set40	sks cmt from	7790	ft. to	7089 ft.	Plug Type:	CASIN	G	Plug Tagged:
Set	sks cmt from		ft. to	ft.	Plug Type:			Plug Tagged:
Set	sks cmt from		ft. to	ft.	Plug Type:			Plug Tagged:
Set	sks cmt from		ft. to	ft.	Plug Type:			Plug Tagged:
Set	sks cmt from		ft. to	ft.	Plug Type:			Plug Tagged:
Perforate and so	lueeze at	ft. w	vith	sacks. Le	eave at least 100	ft. in cas	ing	CICR Depth
Perforate and so	ueeze at	ft. w	vith	sacks. Le	eave at least 100	ft. in cas	ing	CICR Depth
Perforate and so	ueeze at	ft. w	vith	sacks. Le	eave at least 100	ft. in cas	ing	CICR Depth
								(Cast Iron Cement Retainer Depth)
Set145	sacks half in. ha	alf out surfa	ace casing	from 1337	ft. to115	_ ft.	Plug	Tagged: 🔀
Set8	sacks at surface							
Cut four feet bel	ow ground level,	•	ate ,	Above Ground D	Ory-Hole Marker:	Yes	6	No
Set	sacks in rat hole	е		Set	sacks ir	n mouse	hole	
Casing Recovered	d: <u>350</u> f			ch casing	for Subsequen Pluggin *Cementing Cor	ng Date:	03/07	- 1/2018
Type of Cement a	nd Additives Use	ed:			· ·			
Flowline/Pipeline	nas been abando	oned per R	ule 1105	Yes	No			*ATTACH JOB SUMMARY
Technical Detail/C	comments:							
Casing stub was	filled to surface v	vith 8 sack	s cement.					
hanahu aantifu all		a in this fa	4	tha haat af	va avula dara tuvua la			
hereby certify all	Staternents mad	C III IIIIS 101	iiii aie, to	-	-			iipiele.
Signed:	A		Data		rint Name: Jenn			
Title: Regulate	ory Analyst		Date:	4/4/2018	Email: rs	scajposta	nii@an	adarko.com
Based on the info		d herein, th	is Well Ab	andonment Rep	oort (Form 6) com	nplies witl	n COG	CC Rules and applicable
COGCC Approve	d: Mangama,	Christelle					Da	ate: 8/15/2018
	E APPROVAL IF	- ΔΝΥ-						
		ANT.						
CONDITIONS OF	- ,	. .						
	- ,	Descri	<u>iption</u>					

Att Doc Num Name 401596297 FORM 6 SUBSEQUENT SUBMITTED 401596493 WELLBORE DIAGRAM 401596504 OPERATIONS SUMMARY 401596505 WIRELINE JOB SUMMARY 401596510 CEMENT JOB SUMMARY

Total Attach: 5 Files

General Comments

<u>User Group</u>	Comment	Comment Date
		Stamp Upon
		Approval

Total: 0 comment(s)

Date Run: 8/15/2018 Doc [#401596297] Well Name: STATE 13-16

FORM 6

Rev 05/18

State of Colorado Oil and Gas Conservation Commission

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



DE	ET	OE	ES

Document Number:

401572097

Date Received:

03/13/2018

WELL ABANDONMENT REPORT

This form is to be submitted as an Intent to Abandon whenever an abandonment is planned on a borehole. After the abandonment is complete, this form shall again be submitted as a Subsequent Report of the actual work completed. The approved intent shall be valid for six months after the approval date, after that period, a new intent will be required. Attachments required with the Intent to Abandon are wellbore diagrams of the current configuration and the proposed configuration with plugs set.

A Subsequent Report of Abandonment shall indicate the actual work completed. Attachments required with a Subsequent Report are a wellbore diagram showing plugs that were set and casing remaining in the hole, the job summaries from all plugging contractors used, including wireline and cementing (third party verification) and any logs that may have been run during abandonment.

OGCC Operator Number: 47120 Contact Name: Jennifer Thomas KERR MCGEE OIL & GAS ONSHORE LP Phone: (720) 929-6808 Name of Operator: Address: P O BOX 173779 Fax: City: **DENVER** CO Zip: 80217jennifer.thomas@anadarko.com Email: For "Intent" 24 hour notice required, Name: Email: **COGCC** contact: 05-123-29023-00 API Number Well Name: STATE Well Number: 12-16 Location: QtrQtr: NESW 1N Range: 68W Section: 16 Township: Meridian: 6 County: WELD Federal, Indian or State Lease Number: Field Name: WATTENBERG Field Number: 90750 Notice of Intent to Abandon Subsequent Report of Abandonment Only Complete the Following Background Information for Intent to Abandon 40.049244 Longitude: -105.011408 Latitude: GPS Data: Cody Mattson Date of Measurement: 03/24/2009 PDOP Reading: 3.5 GPS Instrument Operator's Name: Reason for Abandonment: Production Sub-economic Dry Mechanical Problems Other Casing to be pulled: Yes No Estimated Depth: Fish in Hole: No If yes, explain details below Yes Wellbore has Uncemented Casing leaks: Yes If yes, explain details below Details: **Current and Previously Abandoned Zones Formation** Perf. Top Perf. Btm Abandoned Date Method of Isolation Plug Depth CODELL **B PLUG CEMENT TOP** 8113 8129 12/12/2017 7650 **NIOBRARA** 7721 7994 12/12/2017 B PLUG CEMENT TOP 7650 Total: 2 zone(s) Casina History

			<u>Casi</u>	ng History				
Casing Type	Size of Hole	Size of Casing	Weight Per Foot	Setting Depth	Sacks Cement	Cement Bot	Cement Top	Status
SURF	12+1/4	8+5/8	24	906	610	906	0	VISU
1ST	7+7/8	4+1/2	11.6	8,270	640	8,270	4,174	CBL
S.C. 1.1				1,500	165	1,514	610	CBL

		יפפ	•		ure for Inten		-	11 110	port	
CIBP #1: Depth		with	25		ks cmt on top. CIF	• –	4700	with	2	sacks cmt on top.
CIBP #3: Depth	80	with	35	sac	ks cmt on top. CIF	PB #4: Depth		with		sacks cmt on top.
CIBP #5: Depth		with		sac	ks cmt on top.				NOTE: T required	wo(2) sacks cement on all CIBPs.
Set25	sks cmt from	n	7650	ft. to	7218 ft.	Plug Type:	CASIN	IG	F	Plug Tagged: 🔲
Set	sks cmt from	١		ft. to	ft.	Plug Type:			F	Plug Tagged: 🔲
Set	sks cmt from	ı		ft. to	ft.	Plug Type:			F	Plug Tagged:
Set	sks cmt from	n		ft. to	ft.	Plug Type:			F	Plug Tagged: 🔲
Set	sks cmt from	ı		ft. to	ft.	Plug Type:			F	Plug Tagged: 🔲
Perforate and so	queeze at		ft. w	/ith	sacks. Le	eave at least 100) ft. in cas	sing		CICR Depth
Perforate and so	queeze at		ft. w	ith	sacks. Le	eave at least 100) ft. in cas	ing		CICR Depth
Perforate and so	queeze at		ft. w	ith	sacks. Le	eave at least 100) ft. in cas	sing	(Cast Iron	CICR Depth Cement Retainer Depth)
Set135	sacks half in	. half	out surfa	ace casi	ng from1440	ft. to364	ft.	Plug	Tagged:	×
Set35	sacks at sur	face								
Cut four feet bel	ow ground lev	∕el, w	eld on pl	ate	Above Ground I	Ory-Hole Marker:	Ye	S	No	
Set	sacks in rat	hole			Set	sacks i	in mouse	hole		
Casing Recovered Wireline Contract Type of Cement a	tor: CASED		E, PIONE		inch casing	Pluggii *Cementing Co	ng Date:		3/2018 X, SCHLU	MBERGER
Flowline/Pipeline	has been aba	ndon	ed per R	ule 110	5 Yes	No			*ATTAC	H JOB SUMMARY
Technical Detail/C		nade	in this fo	rm are,	o the best of my k	nowledge, true,	correct, a	and con	nplete.	
Signed:					P	rint Name: Jeni	nifer Tho	mas		
Title: Regulato	ory Analyst			Date	3/13/2018	Email: r	scdjpostd	rill@an	adarko.con	n
orders and is here COGCC Approve	eby approved ed: Mangar	ma, C	Christelle	is Well /	Abandonment Rep	oort (Form 6) con	nplies wit		CC Rules	
CONDITIONS OF			Docor	iption						
CONDITIONS OF COA Type			Desci	ption						

Att Doc Num Name 401572097 FORM 6 SUBSEQUENT SUBMITTED 401572108 WELLBORE DIAGRAM 401572109 OPERATIONS SUMMARY 401572110 CEMENT JOB SUMMARY 401572111 WIRELINE JOB SUMMARY

Total Attach: 5 Files

General Comments

<u>User Group</u>	Comment	Comment Date
		Stamp Upon
		Approval

Total: 0 comment(s)

Date Run: 5/24/2018 Doc [#401572097] Well Name: STATE 12-16

FORM 6

Rev 05/18

1ST

S.C. 1.1

State of Colorado Oil and Gas Conservation Commission

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



DE	ET	OE	ES

Document Number:

401905021

Date Received:

01/15/2019

WELL ABANDONMENT REPORT

This form is to be submitted as an Intent to Abandon whenever an abandonment is planned on a borehole. After the abandonment is complete, this form shall again be submitted as a Subsequent Report of the actual work completed. The approved intent shall be valid for six months after the approval date, after that period, a new intent will be required. Attachments required with the Intent to Abandon are wellbore diagrams of the current configuration and the proposed configuration with plugs set.

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OGCC Operator Number: 47120 Contact Name: Jennifer Thomas KERR MCGEE OIL & GAS ONSHORE LP Phone: (720) 929-6808 Name of Operator: Address: P O BOX 173779 Fax: City: **DENVER** CO Zip: 80217jennifer.thomas@anadarko.com Email: For "Intent" 24 hour notice required, Name: Email: **COGCC** contact: API Number 05-123-24397-00 Well Name: STATE Well Number: 11-16 Location: QtrQtr: NESW 1N Section: 16 Township: Range: 68W Meridian: 6 County: WELD Federal, Indian or State Lease Number: Field Number: Field Name: WATTENBERG 90750 Notice of Intent to Abandon Subsequent Report of Abandonment Only Complete the Following Background Information for Intent to Abandon 40.049306 -105.011456 Latitude: Longitude: GPS Data: PAT MCCLURE Date of Measurement: 12/17/2018 PDOP Reading: 1.2 GPS Instrument Operator's Name: Production Sub-economic Reason for Abandonment: Dry Mechanical Problems Other Casing to be pulled: Yes No Estimated Depth: No If yes, explain details below Fish in Hole: Yes Wellbore has Uncemented Casing leaks: Yes If yes, explain details below Details: **Current and Previously Abandoned Zones Formation** Perf. Top Perf. Btm Abandoned Date Method of Isolation Plug Depth CODELL **B PLUG CEMENT TOP** 7948 7964 10/13/2017 7510 **NIOBRARA** 7564 7721 10/13/2017 B PLUG CEMENT TOP 7510 Total: 2 zone(s) **Casing History** Size of Hole | Size of Casing | Weight Per Foot | Setting Depth | Status Casing Type Sacks Cement Cement Bot Cement Top SURF 12 + 1/48+5/8 24 905 630 905 VISU

4+1/2

11.6

620

165

8,097

1,500

8,097

1,520

4.220

628

7+7/8

CBL

CBL

			ggi	ilig Fi	oce	dure 10	ııııeı	nt and Sub	sec	lue	nt Ke	port	
CIBP	#1: Depth	7510	with	40) s	acks cmt c	n top. CI	PB #2: Depth	62	16	with	2	sacks cmt on top.
CIBP:	#3: Depth	4510	with	2	s	acks cmt c	n top. Cl	PB #4: Depth	99	95	with	5	sacks cmt on top.
CIBP	#5: Depth	80	with	35	ss	acks cmt c	on top.						wo(2) sacks cement on all CIBPs.
Set _	40	sks cmt fron	n	7510	ft. to	6809	ft.	Plug Type	: <u>C</u>	ASIN	G	F	Plug Tagged: 🔲
Set _	105	sks cmt fron	n _	1340	ft. to	1000	ft.	Plug Type	: <u>C</u>	ASIN	G	F	Plug Tagged: 🔀
Set _	5	sks cmt fron	n	995	ft. to	965	ft.	Plug Type	: <u>C</u>	ASIN	G	F	Plug Tagged: 🔀
Set _		sks cmt fron	n		ft. to		ft.	Plug Type	: _			F	Plug Tagged: 🔲
Set _		sks cmt fron	n		ft. to		ft.	Plug Type	:			F	Plug Tagged:
Perfor	ate and sq	ueeze at	404	5 ft. v	with _	80	sacks. L	eave at least 10	0 ft. i	n cas	ing	3850	CICR Depth
Perfor	ate and sq	ueeze at	297	0 ft. v	with _	115	sacks. L	eave at least 10	0 ft. i	n cas	ing	2680	CICR Depth
Perfor	ate and sq	ueeze at	231	0 ft. v	with _	135	sacks. L	eave at least 10	0 ft. i	n cas	ing	2040 (Cast Iron 0	CICR Depth Cement Retainer Depth)
Set _	70	sacks half in	n. half	f out surf	face ca	asing from	965	ft. to368	3ft		Plug	Tagged:	X
Set	35	sacks at sur	face										
Cut fo	ur feet belo	ow ground le	vel, w	veld on p	late	Above	Ground	Dry-Hole Marke	r:	Ye	s	No	
Set		sacks in rat	hole				Set	sacks	in m	ouse	hole		
ype of		nd Additives	Used			105		*Cementing C	Ontra		3011		GER, OTEX
lowline	e/Pipeline h	nas been aba	ndon	ned per F	Rule 1	105	Yes	No No				*ATTACI	H JOB SUMMARY
Γechnic	al Detail/C	omments:											
hereby	certify all	statements n	nade	in this fo	orm are	e, to the be	est of my	knowledge, true	, corr	ect, a	ınd con	nplete.	
Signed	:						_	Print Name: Jer	nnifer	Tho	mas		
Title:	Regulato	ry Analyst			_ Da	ate:	1/15/2019	Email:	rscdj	postd	rill@an	adarko.com	า
orders	and is here C Approve	eby approved	I. and, l	Nick	nis We	II Abandor	nment Re	port (Form 6) co	mplie	es wit		CC Rules	
	vne			Desci	riptio	<u>1</u>							
COA T	<u>ype</u>												

Attachment Check List Att Doc Num <u>Name</u> 1801768 WELLBORE DIAGRAM- CURRENT 401905021 FORM 6 SUBSEQUENT SUBMITTED 401905160 CEMENT BOND LOG 401905168 CEMENT BOND LOG 401905169 CEMENT BOND LOG 401905170 **OPERATIONS SUMMARY** 401905172 CEMENT JOB SUMMARY 401905174 WIRELINE JOB SUMMARY

Total Attach: 8 Files

General Comments

User Group	Comment	Comment Date
Engineer	Form 7 status set to PA. GPS accurate per mapping. Zones match approved intent. Casing history matches approved intent. Forms 42s for 48 hour ops notice and flowline abandonment submitted per COA. Bradenhead test performed and form 17 submitted. Sample taken per COA. Ops summary, tickets, plugging procedure are all consistent with WBD.	04/05/2019

Total: 1 comment(s)

FORM 6

Rev 05/18

State of Colorado Oil and Gas Conservation Commission

Ē	ET	OE	ES

Document Number:

402142810

Date Received:

08/13/2019

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

WELL ABANDONMENT REPORT

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cementing (third party verification) and any logs that may have been run during abandonment.

OGCC Operato	or Number:	47120				Conta	ct Name	e: Doree	en Green		
Name of Opera	tor: KERF	R MCGEE OIL &	GAS ONS	SHORE L	_P	Phon	ne: <u>(</u> 970	0) 336-3555			
Address: P	O BOX 1737	79				. Fa	ax:				
City: DE	NVER	State: CO	<u> </u>	Zip:8	0217-	Ema	ail: dore	een.green@a	anadarko.com		
For "Intent"	24 hour notic	ce required,	Name:				Tel:				
COGCC con	tact:		Email: _								
API Number	05-123-3	30936-00									
Well Name:	STAT	E				Wel	ell Numbe	er: 7-16			
Location:	QtrQtr: NE	NW Sect	ion:16		Fownship: 1N	<u> </u>	Range:	68W	Meridian:	6	
County:	WELD			Fede	eral, Indian or S	tate Lease N	Number:	·			
Field Name:	WATTEN	BERG		Fi	eld Number:	90750	0	_			
Notice of Intent to Abandon											
	Only (Complete the	Followin	ng Back	ground Infor	mation for	r Intent	t to Abande	on		
Latitude: 40.057292 Longitude: -105.009241											
GPS Data:											
Date of M	easurement:	07/23/2019	PDOP R	eading:	1.5 GPS	Instrument (Operator	r's Name: _	PAT MCCI	_URE	
Reason for Aba	andonment:	Dry	Produc	ction Sub	o-economic	N	Mechani	ical Problems	S		
Other											
Casing to be po	ulled:	Yes	No		Estimate	ed Depth: _					
Fish in Hole:		Yes	No	If y	es, explain deta	ails below					
Wellbore has L	Incemented C	asing leaks:	Yes		No	If yes, expla	ain detail	ils below			
Details:											
		<u>Cu</u>	irrent an	d Previ	ously Abando	ned Zone	<u>s</u>				
	<u>Formation</u>	<u>P</u>	erf. Top	Perf. Bt	m Abandone	d Date	Met	thod of Isolat	<u>ion</u> <u>Plu</u>	g Depth	
CODELL			8232	8252	06/28/2	019 B	PLUG C	CEMENT TO	Р	7653	
NIOBRARA			7848	8100	06/28/2	019 B	PLUG C	CEMENT TO	Р	7653	
Total: 2 zone(s)										
				Casi	ng History						
Casing Type	Size of Hole	Size of Casing	Weight F	Per Foot	Setting Depth	Sacks Cen	ment C	Cement Bot	Cement Top	Status	
SURF	12+1/4	8+5/8	24	4	1,058	760		1,058	0	VISU	
1ST	7+7/8	4+1/2	11.	.6	8,801	1,080		8,801	2,400	CBL	

		Plu	uggi	ing Pr	oced	lure fo	r Inter	nt and Subs	eque	nt Re	port		
CIBP	#1: Depth	8600	with	2	sa	cks cmt c	on top. CIF	PB #2: Depth	7653	with	25	sacks cmt	on top.
CIBP	#3: Depth	4730	with	2	sa	cks cmt c	on top. CIF	PB #4: Depth	80	with	40	sacks cmt	on top.
CIBP	#5: Depth		with		sa	cks cmt c	on top.				NOTE requir	E: Two(2) sacks ed on all CIBPs	cement
Set	25	sks cmt froi	m	7653	ft. to	7220	ft.	Plug Type:	CASI	NG		Plug Tagged:	
Set	170	sks cmt froi	m	1375	ft. to	1070	ft.	Plug Type:	STUE	PLUG		Plug Tagged:	X
Set _		sks cmt froi	m _		ft. to		ft.	Plug Type:				Plug Tagged:	
Set _		sks cmt froi	m _		ft. to		ft.	Plug Type:				Plug Tagged:	
Set _		sks cmt froi	m _		ft. to		ft.	Plug Type:				Plug Tagged:	
Perfor	ate and sq	ueeze at _		ft. \	with		sacks. L	eave at least 100	ft. in ca	sing		CICR Depth	1
Perfor	ate and sq	ueeze at _		ft. \	with		sacks. L	eave at least 100	ft. in ca	sing		CICR Depth	1
Perfor	ate and sq	ueeze at _		ft. \	with		sacks. L	eave at least 100	ft. in ca	sing	(Cast Ir	CICR Depth ron Cement Retainer	
Set _	84	sacks half i		f out surf	ace cas	sing from	1070	ft. to	ft.	Plug	Tagge	d: 🔀	
Set _	40	sacks at su											
	ur feet belo	ow ground le		veld on p	late	Above		Dry-Hole Marker: 		es	N	lo	
Set _		sacks in rat	hole				Set _	sacks I	n mouse	e hole			
*Wirelin	Recovered e Contract		ft. of OHOL	4- E/CUTT	+1/2	inch cas		Cut and C *Cementing Cor	ap Date	e: <u>07/23</u>		_	
		nas been ab			Rule 110	05	Yes	No			*ATT	ACH JOB SUMN	//ARY
Technic	al Detail/C	comments:					'						
NOTE,	FORM 17						EAD SAM	IPLE WAS TAKE	N.				
		SACKS PUM LED OUT CI					BED						
I hereby	certify all	statements	made	in this fo	orm are	to the be	est of my k	knowledge, true,	correct,	and con	nplete.		
Signed								Print Name: Dore					
Title:	Analyst				Dat	e:	— 8/13/2019	Email: d	loreen.g	reen@ox	ky.com		
orders		eby approve	d.		nis Well	Abandor	nment Rep	port (Form 6) com	nplies w			es and applicab	le
										Da			
		APPROVA	L, IF										
COA T	<u>ype</u>			Desci	<u>ription</u>								

Att Doc Num Name 402142810 FORM 6 SUBSEQUENT SUBMITTED 402143065 CEMENT JOB SUMMARY 402143067 OTHER 402143069 OPERATIONS SUMMARY 402143071 WELLBORE DIAGRAM 402143073 WIRELINE JOB SUMMARY

Total Attach: 6 Files

General Comments

User Group	Comment	Comment Date
Engineer	Form 17 filed; 285 psi on bradenhead flowing gas down to 115 psi. 42 filed for flowline abandonment. 48 hour ops notice given. Form 7 reporting PA status. GPS location appears accurate on maps. Zones and casing history are consistent with approved intent. Procedure, WBD and tickets are consistent.	10/16/2019
Engineer	jacobsoe06/28/201947120123-3093606/28/2019Edit Good afternoon Eric, We are currently rigged up on the State 7-16 and we were able to set the JSand plug at 8600' with 2 sx cement. On the way down for the Nio plug we got hung up, and to avoid getting stuck, set the plug at 7653' instead of 7760'. I was wondering if we were okay to pump the 25 sx on top of the plug. Please let me know your thoughts on this. Approved as outlined. E	10/16/2019

Total: 2 comment(s)

FORM 6 Rev

05/18

State of Colorado Oil and Gas Conservation Commission

CO

DE ET OE ES

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

Document Number:

WELL ABANDONMENT REPORT

401779039

This form is to be submitted as an Intent to Abandon whenever an abandonment is planned on a borehole. After the abandonment is complete, this form shall again be submitted as a Subsequent Report of the actual work completed. The approved intent shall be valid for six months after the approval date, after that period, a new intent will be required. Attachments required with the Intent to Abandon are wellbore diagrams of the current configuration and the proposed configuration with plugs set.

Date Received:

A Subsequent Report of Abandonment shall indicate the actual work completed. Attachments required with a Subsequent Report are a wellbore diagram showing plugs that were set and casing remaining in the hole, the job summaries from all plugging contractors used, including wireline and cementing (third party verification) and any logs that may have been run during abandonment.

09/29/2018

OGCC Operato	or Number:	47120				Contact Na	ıme: Jenni	fer Thomas	
Name of Opera	itor: KERF	R MCGEE OIL &	GAS ONS	HORE L	_P	Phone: (720) 929-6808		
Address: P	O BOX 1737	79				Fax:			
City: DE	NVER	State: Co	0 z	ip:8	0217-	Email: j	ennifer.thomas	@anadarko.co	m
For "Intent"	24 hour notic	ce required,	Name:			Te	el:		
COGCC con	tact:		Email:						
API Number	05-123-2	29114-00							
Well Name:	STAT	E		_		Well Nu	mber: 6-16		
Location:	QtrQtr: SW	/NW Sect	ion: 16	_	Fownship: 1N	I Rang	e: <u>68W</u>	Meridian:	6
County:	WELD			Fede	eral, Indian or S	tate Lease Numb	oer: 70/87	50-S	
Field Name:	WATTEN	BERG		Fi	eld Number:	90750			
	Notice of	of Intent to A	Abando	n	⊠ Subs	equent Rep	ort of Aba	ndonment	
	Only (Complete the	Followin	g Back	ground Infor	mation for Inte	ent to Aband	lon	
Latitude:	40.054338			Longitue	de: -105.014	532			
GPS Data:									
Date of M	easurement:	09/13/2017	PDOP Re	eading: _	1.4 GPS	Instrument Opera	ator's Name: _	DANNY RASI	MUSSEN
Reason for Aba	andonment:	Dry	Produc	tion Sub	-economic	Mech	anical Problem	s	
Other									
Casing to be po	ılled:	Yes	No		Estimate	ed Depth:			
Fish in Hole:		Yes	No	If y	es, explain deta	ils below			
Wellbore has L	Incemented C	asing leaks:	Yes		No	If yes, explain de	etails below		
Details:									
		<u>Cı</u>	urrent and	d Previ	ously Abando	ned Zones			
	<u>Formation</u>	E	Perf. Top	Perf. Bti	m Abandone	d Date N	Method of Isola	tion Plu	g Depth
CODELL			8038	8054	01/27/2	018 B PLU	G CEMENT TO	P P	7600
NIOBRARA			7657	7908	01/27/2	018 B PLU	G CEMENT TO	P	7600
Total: 2 zone(s)								
				Casi	ng History				
Casing Type	Size of Hole	Size of Casing	Weight P	er Foot	Setting Depth	Sacks Cement	Cement Bot	Cement Top	Status
SURF	12+1/4	8+5/8	24	ļ	999	630	999	0	VISU
1ST	7+7/8	4+1/2	11.	6	8,218	635	8,218	3,496	CBL

3,420

1,700

300

200

3,420

1,700

S.C. 1.1

S.C. 1.2

CBL

CBL

2,870

840

		Piu	ggi	ng P	roced	ure to	r inter	nt and Subs	seque	nt Ke	port	
CIBP	#1: Depth	7600	with	4() sa	cks cmt c	on top. CIF	PB #2: Depth	4570	with	2	sacks cmt on top.
CIBP	#3: Depth	1568	with	0	sa	cks cmt c	on top. CIF	PB #4: Depth	80	with	41	sacks cmt on top.
CIBP	#5: Depth		with		sa	cks cmt c	n top.					Two(2) sacks cement d on all CIBPs.
Set _	40	sks cmt from	ı 	7600	_ ft. to	6899	ft.	Plug Type:	CASII	NG		Plug Tagged:
Set _	3	sks cmt from	n	1558	_ ft. to	1475	ft.	Plug Type:	OPEN	HOLE		Plug Tagged: 🔽
Set _	20	sks cmt from	n	1475	_ ft. to	1172	ft.	Plug Type:	OPEN	HOLE		Plug Tagged: 🔀
Set _	105	sks cmt from	n	1170	_ ft. to	270	ft.	Plug Type:	STUE	PLUG		Plug Tagged: 🔀
Set _		sks cmt from	ı 		ft. to		ft.	Plug Type:				Plug Tagged:
	ate and sq		324	0 ft.	with	130	sacks. Le	eave at least 100	ft. in ca	sing	2960	CICR Depth
	ate and sq		270		with	170		eave at least 100		-	2330	CICR Depth
Perfor	ate and sq	ueeze at	210	0 ft.	with	140	sacks. Le	eave at least 100	ft. in ca	sing	1830 (Cast Iron	CICR Depth Cement Retainer Depth)
Set _		sacks half in	. hal	f out sur	face cas	ing from		ft. to	ft.	Plug	Tagged	
Set _	41	sacks at sur	face									
Cut fo	ur feet belo	ow ground lev	∕el, w	/eld on p	olate	Above	Ground I	Dry-Hole Marker:	Y	es	No	
Set _		sacks in rat	hole				Set	sacks i	n mouse	hole		
ype of	Cement a	or: CUTTEI nd Additives I nas been aba	Used	l:			Yes	*Cementing Co	initractor.	TIALL		CH JOB SUMMARY
	al Detail/C											
Please	note that r	esin was pun	nped	at 1558	feet, an	d the qua	antity repo	orted is in barrels.	•			
hereby	certify all	statements m	nade	in this fo	orm are,	to the be	est of my k	knowledge, true,	correct,	and com	nplete.	
Signed	:						_ F	Print Name: Jenr	nifer Tho	mas		
Title:	Regulato	ry Analyst			Date	e:	9/29/2018	Email: r	scdjpost	drill@ana	adarko.cc	om
orders	and is here C Approve	eby approved	on, E	ric	his Well	Abandor	nment Rep	oort (Form 6) con	nplies wi	th COG		s and applicable
	vne			Desc	<u>ription</u>							
COA T	ypc											

	Attachment Check List
Att Doc Num	<u>Name</u>
401779039	FORM 6 SUBSEQUENT SUBMITTED
401779048	WIRELINE JOB SUMMARY
401779049	WELLBORE DIAGRAM
401779050	OPERATIONS SUMMARY
401779051	CEMENT JOB SUMMARY
401779052	CEMENT BOND LOG
401779053	OTHER
401779054	OTHER

Total Attach: 8 Files

General Comments

User Group	Comment	Comment Date
		Stamp Upon
		Approval

Total: 0 comment(s)

Date Run: 12/3/2018 Doc [#401779039] Well Name: STATE 6-16

FORM 6

Rev 05/18

1ST

S.C. 1.1

State of Colorado Oil and Gas Conservation Commission

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



DE	ET	OE	ES

Document Number:

401776220

Date Received:

09/27/2018

WELL ABANDONMENT REPORT

This form is to be submitted as an Intent to Abandon whenever an abandonment is planned on a borehole. After the abandonment is complete, this form shall again be submitted as a Subsequent Report of the actual work completed. The approved intent shall be valid for six months after the approval date, after that period, a new intent will be required. Attachments required with the Intent to Abandon are wellbore diagrams of the current configuration and the proposed configuration with plugs set.

A Subsequent Report of Abandonment shall indicate the actual work completed. Attachments required with a Subsequent Report are a wellbore diagram showing plugs that were set and casing remaining in the hole, the job summaries from all plugging contractors used, including wireline and cementing (third party verification) and any logs that may have been run during abandonment.

OGCC Operator Number: 47120 Contact Name: Jennifer Thomas KERR MCGEE OIL & GAS ONSHORE LP Phone: (720) 929-6808 Name of Operator: Address: P O BOX 173779 Fax: City: **DENVER** CO Zip: 80217jennifer.thomas@anadarko.com Email: For "Intent" 24 hour notice required, Name: Email: **COGCC** contact: 05-123-24481-00 API Number Well Name: STATE Well Number: 5-16 Location: QtrQtr: SWNW 1N Section: 16 Township: Range: 68W Meridian: 6 County: WELD Federal, Indian or State Lease Number: Field Number: Field Name: WATTENBERG 90750 Notice of Intent to Abandon Subsequent Report of Abandonment Only Complete the Following Background Information for Intent to Abandon 40.054221 -105.014602 Latitude: Longitude: GPS Data: GPS Instrument Operator's Name: DANNY RASMUSSEN Date of Measurement: 09/13/2017 PDOP Reading: 1.4 Production Sub-economic Reason for Abandonment: Dry Mechanical Problems Other Casing to be pulled: Yes No Estimated Depth: No If yes, explain details below Fish in Hole: Yes Wellbore has Uncemented Casing leaks: Yes If yes, explain details below Details: **Current and Previously Abandoned Zones Formation** Perf. Top Perf. Btm Abandoned Date Method of Isolation Plug Depth CODELL **B PLUG CEMENT TOP** 7989 8004 06/13/2018 7550 **NIOBRARA** 7614 7859 06/13/2018 B PLUG CEMENT TOP 7550 Total: 2 zone(s) **Casing History** Weight Per Foot | Setting Depth | Status Casing Type Size of Hole | Size of Casing Sacks Cement Cement Bot Cement Top SURF 12+1/4 8+5/8 24 998 930 998 VISU

4+1/2

11.6

8,156

1,490

655

200

7+7/8

CBL

CBL

3,306

574

8,156

1,490

		1 14	ggi	ing Pr	oceo	dure to	rinter	nt and Subs	seque	nt Ke	eport	
CIBP #	1: Depth	7550	with	40) sa	acks cmt o	n top. CII	PB #2: Depth _	4595	with	2	_ sacks cmt on top.
CIBP #	3: Depth	80	with	47	sa	acks cmt o	n top. CII	PB #4: Depth _		with		_ sacks cmt on top.
CIBP #	5: Depth		with		Sa	acks cmt o	n top.					wo(2) sacks cement on all CIBPs.
Set _	40	sks cmt fron	n	7550	_ ft. to	6848	ft.	Plug Type:	CASIN	G	F	Plug Tagged: 🔲
Set _	9	sks cmt fron	n _	2770	ft. to	2577	ft.	Plug Type:	CASIN	G	F	Plug Tagged: 🔲
Set _	14	sks cmt fron	n _	2250	ft. to	1968	ft.	Plug Type:	CASIN	G	F	Plug Tagged: 🔀
Set _	9	sks cmt fron	n _	1600	ft. to	1407	ft.	Plug Type:	CASIN	G	F	Plug Tagged: 🔲
Set _		sks cmt fron	n		ft. to		ft.	Plug Type:			F	Plug Tagged:
Perfora	ate and sq	ueeze at	311	0 ft. v	with _	106	sacks. L	eave at least 100) ft. in cas	ing	2770	CICR Depth
Perfora	ate and sq	ueeze at	240	0 ft. v	with _	44	sacks. L	eave at least 100) ft. in cas	ing	2250	CICR Depth
Perfora	ate and sq	ueeze at	195	0 ft. v	with _	106	sacks. L	eave at least 100) ft. in cas	ing	1600 (Cast Iron (CICR Depth Cement Retainer Depth)
Set _	130	sacks half in	n. hali	f out sur	face ca	sing from	1295	ft. to 340	ft.	Plug	Tagged:	×
Set	47	sacks at sur	face									
Cut for	ır feet beld	ow ground lev	vel, w	veld on p	olate	Above	Ground I	Dry-Hole Marker	: Ye	S	No	
Set		sacks in rat	hole				Set	sacks	in mouse	hole		
	e Contract Cement a	or: PIONEE		l:				*Cementing Co	ontractor:	SCH	LUMBERG	SER
Flowline	/Pipeline h	nas been aba	ındor	ned per F	Rule 11	05 🔀	Yes	☐ No			*ATTACI	H JOB SUMMARY
Γechnica	al Detail/C	omments:										
hereby	certify all	statements n	nade	in this fo	orm are	, to the be	st of my l	knowledge, true,	correct, a	nd con	nplete.	
Signed:							F	Print Name: Jen	nifer Tho	nas		
Title:	Regulato	ry Analyst			Da	te: 9	- 9/27/2018	Email:	rscdjpostc	rill@an	adarko.con	n
orders a	ind is here Approve	eby approved	l. nan, l	Elliot	his Wel	I Abandon	ment Rep	oort (Form 6) cor	nplies wit		CC Rules	
	/ne			Desci	ription	<u>l</u>						
COA TY	<u> </u>											

	Attachment Check List
Att Doc Num	<u>Name</u>
401776220	FORM 6 SUBSEQUENT SUBMITTED
401776526	WELLBORE DIAGRAM
401776527	OPERATIONS SUMMARY
401776554	WIRELINE JOB SUMMARY
401776555	CEMENT BOND LOG
401776558	CEMENT JOB SUMMARY

Total Attach: 6 Files

General Comments

<u>User Group</u>	Comment	Comment Date
		Stamp Upon Approval

Total: 0 comment(s)

Date Run: 1/11/2019 Doc [#401776220] Well Name: STATE 5-16

FORM 6 Rev

05/18

1ST

S.C. 1.1

State of Colorado Oil and Gas Conservation Commission

CO

Ε	ET	OE	ES

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

Document Number:

WELL ABANDONMENT REPORT

401706308

This form is to be submitted as an Intent to Abandon whenever an abandonment is planned on a borehole. After the abandonment is complete, this form shall again be submitted as a Subsequent Report of the actual work completed. The approved intent shall be valid for six months after the approval date, after that period, a new intent will be required. Attachments required with the Intent to Abandon are wellbore diagrams of the current configuration and the proposed configuration with plugs set.

Date Received:

A Subsequent Report of Abandonment shall indicate the actual work completed. Attachments required with a Subsequent Report are a wellbore diagram showing plugs that were set and casing remaining in the hole, the job summaries from all plugging contractors used, including wireline and cementing (third party verification) and any logs that may have been run during abandonment.

07/18/2018

OGCC Operato	or Number:	47120				Con	tact Na	me: Jenni	fer Thomas	
Name of Opera	tor: KERF	R MCGEE OIL &	GAS ON	SHORE I	_P	. Ph	one: <u>(</u> 7	720) 929-6808		
Address: P	O BOX 1737	79					Fax: _			
City: DE	NVER	State: Co	O 2	Zip:8	0217-	Er	mail: <u>j</u> e	ennifer.thomas	@anadarko.d	om
For "Intent"	24 hour notic	ce required,	Name:				Te	l:		
COGCC con	tact:		Email:							
API Number	05-123-2	29118-00								
Well Name:	STAT	E				V	Vell Nun	nber: 4-16		
Location:	QtrQtr: SW	/NW Sect	tion: 16		Γownship: 1N	<u> </u>	Range	e: 68W	Meridian:	6
County:	WELD			Fede	eral, Indian or S	tate Leas	e Numb	er: 70-85	70-S	
Field Name:	WATTEN	IBERG		Fi	eld Number:	907	750	<u> </u>		
	Notice of	of Intent to A	Abando	n	⊠ Subs	equen	t Rep	ort of Aba	ndonmer	t
	Only	Complete the	Followir	ng Back	ground Infor	mation f	or Inte	nt to Aband	on	
Latitude:	40.054452	·		Longitu	•					
GPS Data:										
Date of M	easurement:	12/07/2017	PDOP R	eading:	1.3 GPS	Instrumer	nt Opera	tor's Name:	PRESTON K	NUTSON
Reason for Aba	andonment:	Dry]	Produ	ction Sub	o-economic		Mecha	anical Problem	s	
Other										
Casing to be po	ulled:	Yes	No		Estimate	ed Depth:				
Fish in Hole:		Yes	No	If y	es, explain deta	ils below				
Wellbore has L	Incemented C	asing leaks:	Yes		No	If yes, exp	plain de	tails below		
Details:										
		Cı	urrent an	d Previ	ously Abando	ned Zor	nes			
	<u>Formation</u>	·		Perf. Bt	•			lethod of Isolat	tion P	ug Depth
CODELL	<u>1 Olimanoli</u>		7990	8004	04/19/2			CEMENT TO		7560
NIOBRARA			7619	7870	04/19/2	018	B PLUG	CEMENT TO	Р	7560
Total: 2 zone(s)									
				Casi	ng History					
Casing Type	Size of Hole	Size of Casing	Weight F	Per Foot	Setting Depth	Sacks C	ement	Cement Bot	Cement Top	Status
SURF	12+1/4	8+5/8	2.	4	995	730	0	995	0	VISU

4+1/2

11.6

8,148

1,490

630

155

7+7/8

CBL

CBL

3,090

998

8,148

1,490

			יפנ		OCE	auic ic	, iiico	nt and Subs	scque	11 110	port		
CIBP	#1: Depth	7560 v	vith	40	Sa	acks cmt o	on top. C	IPB #2: Depth _	4530	with	2	sacks cm	on top.
CIBP	#3: Depth	80 v	vith	48	sa	acks cmt o	on top. C	IPB #4: Depth _		with		sacks cm	on top.
CIBP	#5: Depth	v	with		Sa	acks cmt o	on top.					Two(2) sacks d on all CIBPs	
Set	40	sks cmt from		7560	ft. to	6818	ft.	Plug Type:	CASIN	IG		Plug Tagged:	
Set	9	sks cmt from		2750	ft. to	2557	ft.	Plug Type:	CASIN	IG		Plug Tagged:	
Set	15	sks cmt from		1620	ft. to	1390	ft.	Plug Type:	CASIN	IG		Plug Tagged:	X
Set	25	sks cmt from		1390	ft. to	1076	ft.	Plug Type:	CASIN	IG		Plug Tagged:	X
Set	50	sks cmt from		1045	ft. to	1000	ft.	Plug Type:	STUB	PLUG		Plug Tagged:	X
Perfo	rate and sq	ueeze at	3020) ft. v	vith _	85	sacks. I	Leave at least 100) ft. in cas	sing	2750	CICR Deptl	า
Perfo	rate and sq	ueeze at	1920) ft. v	vith _	96	sacks. I	Leave at least 100) ft. in cas	sing	1620	CICR Depti	า
Perfo	rate and sq	ueeze at		ft. v	vith _		sacks. I	Leave at least 100) ft. in cas	sing	(Cast Iron	CICR Deptl Cement Retaine	
Set	80	sacks half in.	half	out surf	ace ca	sing from	100	0 ft. to 725	ft.	Plug	Tagged:	\overline{x}	
Set	48	sacks at surfa	ace										
Cut fo	our feet belo	ow ground leve	el, w	eld on p	late	Above	e Ground	Dry-Hole Marker:	Ye	s	No		
Set		sacks in rat h	ole				Set	sacks	in mouse	hole			
Wirelir	Recovered ne Contract			ELIANC	+1/2 E	inch ca		*Cementing Co	ng Date:			HALLIBURTOI	N
Flowlin	e/Pipeline h	nas been abar	ndon	ed per R	Rule 11	05 🔀	Yes	☐ No			*ATTA	CH JOB SUMI	MARY
Techni	cal Detail/C	omments:											
hereb	y certify all	statements ma	ade	in this fo	rm are	, to the be	est of my	knowledge, true,	correct, a	ind con	nplete.		
Signed	l:						_	Print Name: Jen	nifer Tho	mas			
Title	: Regulato	ry Analyst			_ Da	te:	7/18/2018	8 Email:	rscdjposto	Irill@an	adarko.co	om	
orders COGC	and is here C Approve	by approved.	an, E	Elliot	nis Wel	I Abandoi	nment Re	eport (Form 6) cor	nplies wit			s and applicab	ile
				Descr	iption	1							
COA 1	<u>ype</u>			<u>DC3</u> C1									

Attachment Check List					
Att Doc Num	<u>Name</u>				
401706308	FORM 6 SUBSEQUENT SUBMITTED				
401706367	CEMENT JOB SUMMARY				
401706370	OTHER				
401706371	WELLBORE DIAGRAM				
401706372	OPERATIONS SUMMARY				
401706374	CEMENT BOND LOG				
401706378	WIRELINE JOB SUMMARY				

Total Attach: 7 Files

General Comments

User Group	Comment	Comment Date
		Stamp Upon Approval

Total: 0 comment(s)

Date Run: 11/17/2018 Doc [#401706308] Well Name: STATE 4-16

FORM 6 Rev

05/18

SURF

1ST

State of Colorado Oil and Gas Conservation Commission

DOCUMENT NU

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

WELL ABANDONMENT REPORT

This form is to be submitted as an Intent to Abandon whenever an abandonment is planned on a borehole. After the abandonment is complete, this form shall again be submitted as a Subsequent Report of the actual work completed. The approved intent shall be valid for six months after the approval date, after that period, a new intent will be required. Attachments required with the Intent to Abandon are wellbore diagrams of the current configuration and the proposed configuration with plugs set.

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Document Number:					
4	01777	101			
Date R	Receive	ed:			
0	9/27/20)18			

ES

OGCC Operator Number: 47120 Contact Name: Jennifer Thomas
Name of Operator: KERR MCGEE OIL & GAS ONSHORE LP Phone: (720) 929-6808
Address: P O BOX 173779 Fax:
City:DENVERState:COZip:80217 Email: jennifer.thomas@anadarko.com
For "Intent" 24 hour notice required, Name: Tel:
COGCC contact: Email:
API Number 05-123-29117-00
Well Name: STATE Well Number: 3-16
Location: QtrQtr: SWNW Section: 16 Township: 1N Range: 68W Meridian: 6
County: WELD Federal, Indian or State Lease Number: 70/8570-S
Field Name: WATTENBERG Field Number: 90750
■ Notice of Intent to Abandon 区 Subsequent Report of Abandonment
Only Complete the Following Background Information for Intent to Abandon
Latitude: 40.054413 Longitude: -105.014483
GPS Data:
Date of Measurement: 09/13/2017 PDOP Reading: 1.3 GPS Instrument Operator's Name: DANNY RASMUSSEN
Reason for Abandonment: Dry Production Sub-economic Mechanical Problems
Other
Casing to be pulled: Yes No Estimated Depth:
Fish in Hole:
Wellbore has Uncemented Casing leaks: Yes No If yes, explain details below
Details:
Current and Previously Abandoned Zones
Formation Perf. Top Perf. Btm Abandoned Date Method of Isolation Plug Depth
CODELL 8069 8089 09/25/2017 B PLUG CEMENT TOP 7640
NIOBRARA 7696 7953 09/25/2017 B PLUG CEMENT TOP 7640
Total: 2 zone(s)
Casing History
Casing Type Size of Hole Size of Casing Weight Per Foot Setting Depth Sacks Cement Cement Bot Cement Top Status

8+5/8

4+1/2

24

11.6

1,000

8,225

730

660

1,000

8,225

0

2,890

12 + 1/4

7+7/8

VISU

CBL

	Fiu	ıggı	ing Pi	roced	ure to	r inter	nt and Subs	seque	nt Ke	port	
CIBP #1: Dep	th7640	with	40) sad	cks cmt o	on top. CIF	PB #2: Depth _	4650	with	2	sacks cmt on top.
CIBP #3: Dep	th1325	with	3	sa	cks cmt o	n top. CIF	PB #4: Depth _	85	with	45	sacks cmt on top.
CIBP #5: Dep	th	with		sa	cks cmt o	n top.					Two(2) sacks cement d on all CIBPs.
Set40	sks cmt fron	n	7640	ft. to	6939	ft.	Plug Type:	CASII	٧G		Plug Tagged:
Set3	sks cmt from	n	1325	ft. to	1230	ft.	Plug Type:	OPEN	I HOLE		Plug Tagged: 🔀
Set15	sks cmt fron	n _	1230	ft. to	1120	ft.	Plug Type:	OPEN	HOLE		Plug Tagged: 🔀
Set95	sks cmt from	n _	1060	ft. to	450	ft.	Plug Type:	STUB	PLUG		Plug Tagged: 🔀
Set	sks cmt fron	n		ft. to		ft.	Plug Type:				Plug Tagged:
Perforate and	_	236		with	110	0 sacks. Leave at least 100 ft. in casing			2130	CICR Depth	
Perforate and	_	187		with	105		eave at least 100		·	1650	CICR Depth
Perforate and	squeeze at		ft. '	with		sacks. L	eave at least 100	ft. in ca	sing	(Cast Iron	CICR Depth Cement Retainer Depth)
Set	sacks half ir	n. hali	f out sur	face cas	ing from		ft. to	ft.	Plug	Tagged:	• •
Set 45	sacks at sur	face									
Cut four feet b	pelow ground le	vel, w	veld on p	olate	Above	Ground I	Dry-Hole Marker:	Y	es	No	
Set	sacks in rat	hole				Set	sacks i	n mouse	hole		
pe of Cemen	actor: CHS, C It and Additives The has been aba The has been aba The has been aba The has been aba The has been aba	Used	l:			Yes	*Cementing Co				CH JOB SUMMARY
	at resin was pur	nped	at 1325	'. The qu	antity re	ported is i	in barrels.				
	all statements r	nade	in this fo	orm are,	to the be		knowledge, true,			nplete.	
Signed:	otoni Anglijot			Dote		- 9/27/2018	Print Name: Jeni			adarka aa	
Title. Regul	atory Analyst			Date	;.	9/2//2010		scujposi	Jilli@ana	adarko.cc	OTTI
orders and is h	ereby approved	l. on, E	Eric	his Well	Abandon	nment Rep	oort (Form 6) con	nplies wi	th COGO		s and applicable
			Desc	<u>ription</u>							
COA Type											

Attachment Check List					
Att Doc Num	<u>Name</u>				
401777101	FORM 6 SUBSEQUENT SUBMITTED				
401777173	OTHER				
401777174	OTHER				
401777175	OTHER				
401777177	WELLBORE DIAGRAM				
401777179	OPERATIONS SUMMARY				
401777180	WIRELINE JOB SUMMARY				
401777193	CEMENT JOB SUMMARY				
401777195	CEMENT BOND LOG				

Total Attach: 9 Files

General Comments

User Group	Comment	Comment Date
		Stamp Upon
		Approval

Total: 0 comment(s)

Date Run: 12/3/2018 Doc [#401777101] Well Name: STATE 3-16

FORM 6

Rev 05/18

1ST

S.C. 1.1

State of Colorado Oil and Gas Conservation Commission

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



ΣE	ET	OE	ES

Document Number:

401489509

Date Received:

12/18/2017

WELL ABANDONMENT REPORT

This form is to be submitted as an Intent to Abandon whenever an abandonment is planned on a borehole. After the abandonment is complete, this form shall again be submitted as a Subsequent Report of the actual work completed. The approved intent shall be valid for six months after the approval date, after that period, a new intent will be required. Attachments required with the Intent to Abandon are wellbore diagrams of the current configuration and the proposed configuration with plugs set.

A Subsequent Report of Abandonment shall indicate the actual work completed. Attachments required with a Subsequent Report are a wellbore diagram showing plugs that were set and casing remaining in the hole, the job summaries from all plugging contractors used, including wireline and cementing (third party verification) and any logs that may have been run during abandonment.

OGCC Operator Number: 47120 Contact Name: Jennifer Thomas KERR MCGEE OIL & GAS ONSHORE LP Phone: (720) 929-6808 Name of Operator: Address: P O BOX 173779 Fax: City: **DENVER** Zip: 80217jennifer.thomas@anadarko.com Email: For "Intent" 24 hour notice required, Name: Email: **COGCC** contact: API Number 05-123-30943-00 Well Name: STATE Well Number: 1-16 Location: QtrQtr: NENW 1N Range: 68W Section: 16 Township: Meridian: 6 County: WELD Federal, Indian or State Lease Number: Field Number: Field Name: WATTENBERG 90750 Notice of Intent to Abandon Subsequent Report of Abandonment Only Complete the Following Background Information for Intent to Abandon 40.057428 Longitude: -105.009253 Latitude: GPS Data: GPS Instrument Operator's Name: Date of Measurement: 06/22/2010 PDOP Reading: 3.2 Renee Doiron Production Sub-economic Reason for Abandonment: Dry Mechanical Problems Other Casing to be pulled: Yes No Estimated Depth: Yes No If yes, explain details below Fish in Hole: Wellbore has Uncemented Casing leaks: Yes If yes, explain details below Details: **Current and Previously Abandoned Zones Formation** Perf. Top Perf. Btm Abandoned Date Method of Isolation Plug Depth CODELL **B PLUG CEMENT TOP** 8370 8390 08/30/2017 7920 **NIOBRARA** 7988 8240 08/30/2017 B PLUG CEMENT TOP 7920 Total: 2 zone(s) **Casing History** Status Casing Type Size of Hole | Size of Casing | Weight Per Foot | Setting Depth | Sacks Cement Cement Bot Cement Top SURF 12+1/4 8+5/8 24 1.061 670 1.061 VISU

4+1/2

11.6

8,522

1,400

970

7+7/8

CBL

CBL

1,400

520

8.522

1,400

	Plugg	ing Proced	ure for Intent and Sub	sequent Re	port
CIBP #1: Depth	7920 with	40sac	cks cmt on top. CIPB #2: Depth	4820 with	2 sacks cmt on top.
CIBP #3: Depth	80 with	39sac	cks cmt on top. CIPB #4: Depth	with	sacks cmt on top.
CIBP #5: Depth	with	sac	cks cmt on top.		NOTE: Two(2) sacks cement required on all CIBPs.
Set40	sks cmt from	7920 ft. to	7219 ft. Plug Type	e: CASING	Plug Tagged:
Set	sks cmt from	ft. to	ft. Plug Type	e:	Plug Tagged:
Set	sks cmt from	ft. to	ft. Plug Type): 	Plug Tagged:
Set	sks cmt from	ft. to	ft. Plug Type): 	Plug Tagged:
Set	sks cmt from _	ft. to	ft. Plug Type	e:	Plug Tagged:
Perforate and s	queeze at	ft. with	sacks. Leave at least 10	00 ft. in casing	CICR Depth
Perforate and s	queeze at	ft. with	sacks. Leave at least 10	00 ft. in casing	CICR Depth
Perforate and s	queeze at	ft. with	sacks. Leave at least 10	00 ft. in casing	CICR Depth (Cast Iron Cement Retainer Depth)
Set 140 Set 39	sacks half in. hal	If out surface cas	ing from <u>1300</u> ft. to <u>159</u>	9 ft. Plug	Tagged: X
Cut four feet be	low ground level, v	veld on plate	Above Ground Dry-Hole Marke	r: Yes	No
Set	sacks in rat hole		Set sacks	in mouse hole	
Casing Recovered Wireline Contract Type of Cement a	of		inch casing Plugg *Cementing C	ontractor: SCH	LUMBERGER
	has been abandoi		5 Yes No		*ATTACH JOB SUMMARY
echnical Detail/0	Comments:				
hereby certify al	statements made	in this form are,	to the best of my knowledge, true	, correct, and com	nplete.
Signed:			Print Name: Jei	nnifer Thomas	
Title: Regulat	ory Analyst	Date	e: 12/18/2017 Email:	rscdjpostdrill@ana	adarko.com
Based on the info orders and is her		herein, this Well	Abandonment Report (Form 6) cc	omplies with COG	CC Rules and applicable
COGCC Approve	ed: Mangama,	Christelle		Da	te: 7/31/2018
	F APPROVAL, IF	ANY:			
CONDITIONS O					
CONDITIONS O		<u>Description</u>			

Att Doc Num Name 401489509 FORM 6 SUBSEQUENT SUBMITTED 401489524 WELLBORE DIAGRAM 401489525 OPERATIONS SUMMARY 401489528 WIRELINE JOB SUMMARY 401489533 CEMENT JOB SUMMARY

Total Attach: 5 Files

General Comments

<u>User Group</u>	Comment	Comment Date
		Stamp Upon
		Approval

Total: 0 comment(s)

Date Run: 7/31/2018 Doc [#401489509] Well Name: STATE 1-16

APPENDIX D

Western Environment and Ecology Inc.
Statement of Qualifications

"We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental professional as defined in 40 CFR 312 and we have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed the appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312."

REAL ESTATE TRANSFER ENVIRONMENTAL AUDITS (RETA)

In response to provisions contained within the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and the Resource Conservation and Recovery Act (RCRA), lending institutions, firms and individuals involved with property transfers have become painfully aware of the costs associated with environmental liabilities. In an attempt to make informed decisions and potentially avail themselves of the "innocent purchaser defense" as defined in CERCLA, lending institutions are requiring the completion of an environmental audit. Previously, the completeness and the thoroughness of these audits varied as greatly as the cost. However, in late 1992, the American Society of Testing and Materials (ASTM) adopted specific standards for completion of Phase I audits. The ASTM standards (E-1527 and E-1528) are quite specific as to the level of investigation necessary to complete the audit. **WESTERN**

ENVIRONMENT AND ECOLOGY, INC. has performed Real Estate Transfer
Environmental Audits to ASTM standards long before the standards were adopted. Additionally,
WESTERN ENVIRONMENT AND ECOLOGY, INC. personnel have
provided training to FDIC regional offices on environmental compliance and financial institution
liabilities. This familiarity with lending institutions and more than fifteen years of experience in
performing RETA's allows WESTERN ENVIRONMENT AND ECOLOGY,

INC. to provide efficient and complete reports meeting short time frame requirements.

SERVICES

♦ Historical Photo Records Search Lead-Based Paint Survey
 ♦ Environmental Records Search Asbestos Survey
 ♦ Interviews Radon Survey
 ♦ On-site Inspection PCB Survey

SELECTED CLIENT LIST

Community Development Group Denver, Colorado
City of Aurora, Aurora, Colorado
City of Wheat Ridge, Colorado
Shively, Strommen & Holst, Longmont, Colorado
Town of Lyons, Colorado

GREG D. SHERMAN, P.G. President

PROFESSIONAL CAPABILITIES:

Mr. Sherman has more than 42 years of professional experience. He is currently President of **WESTERN ENVIRONMENT AND ECOLOGY, INC.** Prior to his current position, he was the Principal Geologist with SEACOR in its Lakewood, Colorado office and Project Director with Roy F. Weston also in Lakewood.

Duties performed in these capacities involved responsibility for CERCLA RI/FS studies and RCRA investigations. His professional assignments include project management and technical direction of the design and installation of the 2,000-foot long the 881 Hillside Groundwater Interception trench at the Rocky Flats Nuclear Weapons Plant in Jefferson County, Colorado. Mr. Sherman was Field Operations Manager for the installation of 75 groundwater extraction wells and vapor extraction and sparging points. This work was completed on the Stanford Research Park Superfund site in Palo Alto, California. Recently, he has concentrated on VOC remediation system design and installation utilizing on-site re-injection of treated groundwater and enhanced oxygenation systems. Mr. Sherman was lead investigator for the City of Wheat Ridge regarding the characterization of the Jay Street Park. This project, which was submitted to the Colorado Voluntary Clean-Up Program, received a grant from the Colorado Department of Public Health and Environment for innovative use of a Brownsfields site. Mr. Sherman and Western Environment and Ecology, Inc. was selected by the Cities of Aurora and Lakewood as their approved USEPA Brownsfields contractor.

Mr. Sherman is past Chairman of the Rocky Mountain Section of the Association of Engineering Geologists. He has served as Chairman of Executive Enterprises Seminars on Sampling and Data Analysis. He has extensive experience in geotechnical and geological investigations, groundwater studies, UST testing and evaluation, construction materials testing and mineral resource evaluation.

Mr. Sherman is recognized in the region as one of the leading experts in underground storage tank management and mine subsidence. He has placed special emphasis on the application of geophysical techniques to environmental and geotechnical investigations. Clients for these projects range from Federal, state and local governments to private industry and commercial developments. The project types included petroleum distribution facilities, nuclear power plants, highways and streets, dams and reservoirs, transmission lines, sewage treatment plants and sewage systems, hazardous and industrial waste disposal areas, and mining facilities, as well as residential and commercial developments. Mr. Sherman has performed geotechnical and geological investigations in Alaska, Arizona, California, Colorado, Idaho, Illinois, Montana, New Mexico, New York, Nevada, North Dakota, South Dakota, Texas, Utah and Wyoming. Additionally, he has international evaluation experience in the Middle East and Mexico.

REGISTRATION/CERTIFICATION

Wyoming Professional Geologist #2296
Indiana Certified Geologist #786
Certified Professional Geologist, CPG #6586
Petro Tite Training Course, 1986
40-Hour OSHA Training Course, 1987
8-Hour OSHA Supervisor Course, 1987
Nuclear Density Gauge Operation and Safety Training Course, 1984
NRC Quality Assurance Training, 1978
Asbestos Inspector, 1996

EXPERIENCE

Western Environment and Ecology, Inc., Littleton, Colorado; President, 1994.

SEACOR, Inc., Lakewood, Colorado; Principal Scientist, 1992-1993.

Roy F. Weston, Inc., Lakewood, Colorado; Principal Geologist, 1990-1992.

ATEC Associates, Inc., Denver, Colorado; Environmental Division Manager, 1985-1990.

Tierra Consultants, Inc., Denver, Colorado; President, 1982-1985.

Apache Energy and Minerals, Denver, Colorado; Senior Project Geologist, 1979-1982.

Dames and Moore, Denver, Colorado; Project Geologist, 1977-1979.

Resource Associates of Alaska, Fairbanks, Alaska; Staff Geologist, 1976.

Uranerez U.S.A., Inc., Casper, Wyoming; Staff Geologist, 1975-1976.

Amoco Production Company, Denver, Colorado; Lab Technician, 1974.

Cities Service Company, Durango, Colorado; Field Technician, 1973.

EDUCATION

B.S., Geology, University of Northern Colorado, 1975 Graduate Studies, New Mexico Institute of Mining and Technology, 1977

AWARDS

Rocky Mountain Associate of Geologists, Outstanding Senior, 1975 Who's Who in the West, 1988 Colorado Wildlife Federation, 1996 Conservationist of the Year (Owl Mountain Partnership)

PROFESSIONAL ASSOCIATIONS

Association of Engineering Geologists American Institute of Professional Geologists Senior Scientist Colca Canyon Scientific Expedition, 1990 Colorado School of Mines, Non-facility Senior Design Team Advisor

PUBLICATIONS/PRESENTATIONS

- Sherman Greg D., "Mine Subsidence Assessment, Boulder-Weld Coal Field, Using British National Coal Board Methods" The Mountain Geologist, Volume 46, Number 1 January 2009.
- Sherman Greg D. and Brian R. Partington., "Abandoned Mine Subsidence Prediction Using
 - British National Coal Board Methods, Boulder/Weld Coal Field, Denver, Colorado" Proceedings for the International Association of Engineering Geologists, 2006 Meeting Nottingham, United Kingdom. September 2006.
- Sherman, Greg D., "Sampling and Data Analysis"; Executive Enterprises Seminar, Chairman, May 1992.
- Sherman, Greg D., "Statistical Design of Sampling Plans"; Executive Enterprises Seminar, June 1990.
- Sherman, Greg D., "Impact of the EPA UST Regulations"; Tri-State Petroleum Marketer, December 1988.
- Sherman, Greg D., "Variables Effecting Volumetric Leak Detection Methods for Underground Storage Tanks"; Paper given to the Colorado Section, American Society of Civil Engineers, 1988.
- Sherman, Greg D., "The Impact of Underground Storage Tank Regulations on Industry"; Extended Abstracts, American Institute of Chemical Engineers, National Meeting, 1988.
- Sherman, Greg D., "Assessment of Subsidence Damage to Existing Structures in Louisville, Lafayette, Colorado"; Proceedings of the Colorado Governor's Conference on Subsidence, 1985.
- Sherman, Greg D., "Geology and Mining History of the Boulder/Weld Coal Field"; Paper given at Denver Coal Club Meeting, 1985.
- Sherman, Greg D., "The New Mexico Gold Belt Regional Structural Implications"; Proceedings of the Western Mining Association, 1982 Convention.
- Sherman, Greg D., "Colorado Front Range Uranium Deposits, A Possible Origin": in review.
- Sherman, Greg D., "Origin of Monoclinal Folding Near Livermore, Colorado"; The Mountain Geologist, April 1976.

Geotechnical Site Development Study Colorado State Land Board Parcel Erie, Colorado



Southern Land Company, LLC 1225 17th Street, Suite 2420 Denver, Colorado 80202



3211 South Zuni Street Englewood, Colorado 80110 www.agwco.com (303) 759-8100

Project Number 223122 December 20, 2022

TABLE OF CONTENTS

1.0		CUTIVE SUMMARY					
2.0		POSE					
3.0	PROPOSED CONSTRUCTION						
4.0	_	CONDITIONS					
5.0		D EXPLORATION					
6.0		DRATORY TESTING					
7.0		SURFACE CONDITIONS					
	7.1	Fill					
	7.2	Natural Soil					
	7.3	Bedrock					
0.0	7.4	Ground Water					
8.0		TECHNICAL CONCERNS					
	8.1	Existing Structures, Existing Fill, and Underground Utilities					
	8.2	Expansive Soils and Bedrock					
	8.3	Shallow Ground Water and Associated Soft/Loose Soils	5				
	8.4	Ironstone	6				
	8.5	Moderately to Well Cemented Sandstone	6				
0.0	8.6	Lignite and Coal Mines DEVELOPMENT Overlot Grading	6				
9.0	SITE	: DEVELOPMENT	/ -				
		Overlot Grading	/				
	9.2	Overexcavation and Placement of Moisture Treated Fill	9				
	9.3	Slopes and Retaining Walls	11				
	9.4	Construction Excavation					
	9.5	Utility Construction					
	9.6	Subsurface Drainage					
	9.7	Surface Drainage					
10.0		CONCRETE AND CORROSIVITY					
11.0		LIMINARY FOUNDATION DESIGN CONCEPTS					
	11.1	J-					
	11.2	3					
	11.3						
	11.4						
	11.5	5					
	11.6	,					
	11.7	- 1					
	11.8						
12.0		LIMINARY STREET PAVEMENT DESIGN					
13.0		AL DESIGN CONSULTATION AND CONSTRUCTION OBSERVATION					
14.0		TECHNICAL RISK					
15.0	LIMI	TATIONS	17				

TABLE OF CONTENTS (cont'd)

ATTACHMENTS

SITE PLAN AND VICINITY MAP	FIGURE 1
TEST BORING LOGS	
ESTIMATED DEPTH TO BEDROCK	FIGURE 26
ESTIMATED ELEVATION OF BEDROCK	FIGURE 27
ESTIMATED DEPTH TO GROUND WATER	FIGURE 28
ESTIMATED ELEVATION OF GROUND WATER	FIGURE 29
GENERALIZED BENCHING DETAIL	FIGURE 30
LABORATORY TEST RESULTS	APPENDIX A
SPECIFICATIONS FOR PLACEMENT OF FILL	APPENDIX P



1.0 EXECUTIVE SUMMARY

A. G. Wassenaar, Inc. (AGW) completed the geotechnical site development study for the proposed residential development at the subject site. The data collected during our field exploration and laboratory work and our analysis, opinions, and conclusions are presented. The purpose of our study is to provide design recommendations for planning, site development, and preliminary design concepts for foundation systems, interior floor support, and streets.

The subsurface materials encountered in our test borings consist of fill, topsoil, clay, and sand, overlying sedimentary bedrock. Claystone, sandstone, or siltstone bedrock was encountered at depths ranging from 1 to 27 feet. Ground water was measured at depths ranging from $4\frac{1}{2}$ to 43 feet.

Site development considerations should include provisions for the presence of existing structures, existing fill and underground utilities, high to very high expansive clays and claystone bedrock, isolated areas of shallow ground water and the associated soft/loose soils, ironstone, cemented sandstone, lignite, and coal mines.

If the site is overexcavated, the structures could be founded on spread or pad-type footings bearing on the moisture treated fill below frost depth. If the site is not overexcavated, straight-shaft drilled piers or helical piles are recommended. Preliminary foundation design concepts are presented.

Floors and flatwork being considered for construction on-grade will require a specific risk analysis by the Client because of the potential for movement of the soils and bedrock encountered. Where the structures are founded upon deep foundations, engineered structural floors or modification of the floor supporting soils or bedrock can be anticipated. Where footings are constructed, slabs-on-grade may be possible depending on the expansion potential of the supporting materials and the Client's analysis of risk. Slabs supported by soil will be subject to movement. Options for floor support are discussed.

Foundation subsurface drainage systems will be necessary for all below grade areas. Extensive drain systems will be required when foundations are within 4 feet of ground water. Water soluble sulfate test results indicate that site and foundation concrete should be designed for very severe sulfate exposure. Preliminary pavement and other geotechnical-related recommendations are presented in the following report. We encourage the Client to read this report in its entirety and not to solely rely on the cursory information contained in this summary.

2.0 PURPOSE

This report presents the results of a geotechnical site development study for the proposed residential development to be located southeast of Weld County Road 10 and Weld County Road 5 in Erie, Colorado. The study was conducted by AGW to assist in determining geotechnical design criteria for planning, site evaluation, and development considerations. Preliminary geotechnical design concepts are also presented for foundations, interior floor support, foundation drainage, and street construction. Factual data gathered during the field and laboratory work are summarized on Figures

1 through 25 and in Appendix A. Our opinions and recommendations presented in this report are based on the data generated during our field exploration, laboratory testing, our understanding of the proposed project, and our experience with similar projects and geotechnical conditions.

This study was performed in general conformance with our Proposal Number 223122, dated May 31, 2022. This report is not intended to provide design criteria for individual foundations or street construction. Additional geotechnical studies will be required to provide final design criteria and construction recommendations.

3.0 PROPOSED CONSTRUCTION

We understand the proposed development will include single family lots and the associated utility and roadway infrastructure. Products with basements or crawl spaces are planned. Site and grading plans were not available at the time of this study. AGW should be contacted to review the contents of this study when grading plans are available.

4.0 SITE CONDITIONS

Oil and gas facilities are located in the center of the northwest portion of the site and in the east portion of the site. A ditch runs from northwest to south across the site, along the south property boundary, crosses the southeast corner, and along the east property boundary. The northwest and southeast portions of the site are being used for agriculture. The abandoned Clayton Coal Mine right-of-way is in the center of the site with remnants of the previous coal mine operation. An abandoned railroad embankment crosses the southern portion of the site. An abandoned homestead was observed in the center of the site. Construction debris, trash, and concrete pads were observed in the vicinity of the abandoned structures and in oil and gas facilities. Several utilities cross the site in various locations and are located along the north and east property boundaries. High tensioned powerlines are located along the north property boundary. Vegetation consists of grasses and weeds with occasional old growth cottonwood trees. The ground surface is rolling and slopes gently to the northwest. The site is bounded by Weld County Road 10 and rural residences to the north, Erie Parkway to the south, rural residences and Weld County Road 7 to the east, and residential subdivisions and Weld County Road 5 to the west. No bedrock outcrops were observed on the site.

5.0 FIELD EXPLORATION

Subsurface conditions were explored by drilling 137 test borings at the approximate locations indicated on Figure 1. The test borings were advanced using a 4-inch diameter, continuous flight auger powered by a truck-mounted drill rig. At frequent intervals, samples of the subsurface materials were obtained using a Modified California sampler which was driven into the soil by dropping a 140-pound hammer through a free fall of 30 inches. The Modified California sampler is a 2.5-inch outside diameter by 2-inch inside diameter device. The number of blows required for the sampler to penetrate 12 inches and/or the number of inches that the sampler is driven by 50 blows gives an indication of the consistency or relative density of the soils and bedrock materials encountered. Results of the penetration tests and locations of sampling are presented on the "Test Boring Logs", Figures 2 through 25. Ground water measurements were made at the time of drilling and after drilling.

6.0 LABORATORY TESTING

The samples obtained during drilling were returned to the laboratory where they were visually classified by a geotechnical engineer. Laboratory testing was then assigned to specific samples to evaluate their engineering properties. The laboratory tests included swell-consolidation tests to evaluate the effect of wetting and loading on the selected samples. Gradation analysis, Atterberg limits, specific gravity, and hydrometer tests were conducted to evaluate grain size distribution and plasticity. Standard Proctor tests and remolded swell-consolidation tests were performed on blended bulk samples of the soils anticipated to be used as fill. In addition, representative samples were tested for water soluble sulfates, pH, resistivity, and chlorides. The test results are summarized on Figures 2 through 25 and presented in Appendix A.

7.0 SUBSURFACE CONDITIONS

The subsurface materials encountered in our test borings consist of fill, topsoil, clay, and sand, overlying sedimentary bedrock. Claystone, sandstone, or siltstone bedrock was encountered at depths ranging from 1 to 27 feet. Ground water was measured at depths ranging from 4½ to 43 feet. A more complete description of the subsurface conditions is shown on Figures 2 through 25.

7.1 Fill

Fill was encountered in one of the 137 test borings (Test Boring 15) and was approximately $1\frac{1}{2}$ feet thick. The fill consisted of sand and gravel and was medium dense, clayey, moist, and mottled brown. The existing fill are more fully discussed under "Geotechnical Concerns".

7.2 Natural Soil

Topsoil was encountered in 135 of the 137 test borings. The topsoil consisted of sandy clay up to 1-foot thick. It was organic, moist, and dark brown.

Clay was encountered in 135 of the 137 test borings. The clay was soft to very stiff, silty, slightly sandy to very sandy, with trace gravel to slightly gravelly, with sand and silt lenses, slightly moist to very moist, and brown. Soft to medium stiff clay was encountered in 33 of the 137 test borings at depths ranging from $\frac{1}{2}$ to 9 feet and was between 1 and $\frac{26}{2}$ feet thick. The stiff to very stiff clay has high to very high expansion potential and low consolidation potential. The soft to medium stiff clay has low expansion potential and moderate to high consolidation potential.

Sand was encountered in 12 of the 137 test borings. The sand was loose to dense, silty to very silty, slightly clayey to very clayey, slightly gravelly, with clay and silt lenses, slightly moist to wet, and brown to light brown. Loose sand was encountered in one of the 137 test borings and was 2½ feet thick. The sand has low expansion potential. The medium dense to dense sand has low settlement potential. The loose sand has moderate settlement potential.

7.3 Bedrock

Claystone bedrock was encountered in all 137 test borings at depths ranging from 2½ to 39 feet. The claystone was weathered to very hard, silty to very silty, with trace sand to very sandy, with sandstone and siltstone lenses, iron stained, with lignite and ironstone lenses, slightly moist to very

moist, and brown to gray to olive to rust. Lignite lenses were encountered in the claystone bedrock in 26 of the 137 test borings at depths ranging from $10\frac{1}{2}$ to 41 feet and were between 1 and 11 feet thick. Lignite layers were encountered in nine of the 137 test borings at depths ranging from 11 to 31½ feet. These layers ranged from 1 to 8 feet thick. Ironstone lenses were encountered in 17 of the 137 test borings at depths ranging from $8\frac{1}{2}$ to 34 feet and were between $\frac{1}{2}$ and 5 feet thick. The claystone has very high expansion potential.

Sandstone bedrock was encountered in 50 of the 137 test borings at depths ranging from 2 to 40 feet. The sandstone was firm to very hard, poorly cemented, with moderately to well cemented lenses, silty to very silty, clean to very clayey, with claystone and siltstone lenses, iron stained, moist to wet, and brown to light brown to gray to olive to rust. Well cemented sandstone lenses were encountered in 6 of the 137 test borings at depths ranging from $11\frac{1}{2}$ to $32\frac{1}{2}$ feet and were between 1 and 5 feet thick. The sandstone has low expansion potential.

Siltstone bedrock was encountered in 37 of the 137 test borings at depths ranging from 1 to $41\frac{1}{2}$ feet. The siltstone was weathered to very hard, clayey to very clayey, with trace sand to very sandy, with sandstone and claystone lenses, iron stained, slightly moist to very moist, and brown to gray to olive to rust. The siltstone has low expansion potential. Estimated depth and elevation of bedrock are shown on Figures 26 and 27.

7.4 Ground Water

Ground water was measured at depths ranging from 6 to 40 feet in 53 of the 137 at the time of drilling. When checked one to nine days after drilling, ground water was measured at depths ranging from 4½ to 43 feet in 71 of the 137 test borings. Twenty-three of the 137 test borings wet caved at depths ranging from 6½ to 43½ feet. Test Borings 1 and 2 were destroyed when checked eight days after drilling. Ground water levels fluctuate with changing seasons and irrigation patterns and are expected to rise after construction is complete and landscape irrigation commences. Estimated depth and elevation of ground water are shown on Figures 28 and 29.

8.0 GEOTECHNICAL CONCERNS

8.1 Existing Structures, Existing Fill, and Underground Utilities

As discussed in "Site Conditions", abandoned coal mine infrastructure, and an abandoned homestead occupy portions of the site. Any structures, including shallow foundation elements, must be removed from the site. If the existing structures were founded on piers, the piers should be removed or cut off down to a depth of at least 2 feet below the bottom of any planned construction. Any below grade appurtenances encountered should also be removed. All concrete pads should be removed from the site. Our experience indicates that other below grade or undisclosed structures such as root cellars, wells, cisterns, septic systems, etc. may be present. Any of these structures encountered should also be removed. Any wells encountered should be abandoned in accordance with the regulations of the Colorado State Engineer.

All existing fill encountered during development should be considered to have not been placed as fill capable of supporting a structure. The existing fill should be excavated prior to placement of new fill,

structures, or other structural appurtenances. Any fill encountered should be evaluated for quality at the time of removal to determine its suitability for placement as new fill on the site.

Underground utilities to be abandoned should be removed. This includes any pipes and trench backfill. After removal, the existing utility trenches should be widened at the base to a minimum of 8-feet and the sides of the trench should be sloped per the soil types described in Appendix B. Any new fill placed in the trench area should be placed and compacted as described in Appendix B.

8.2 Expansive Soils and Bedrock

Clay and claystone bedrock with high to very high expansion potential were encountered across the site. The average measured swell in the clay across the site was 1.6% under a 1,000 psf surcharge with a range from -0.5% to 8.5%. The average measured swell in the claystone bedrock across the site was 6.0% under a 1,000 psf surcharge with a range from -0.1% to 14.7%. We believe that the structures across the site will be constructed near expansive materials should traditional methods of grading be employed. Overexcavation and placement of a moisture treated fill to reduce swell potential will be necessary. This may allow for shallow foundations and slab-on-grade construction or a reduction in the length of the straight shaft piers. The entire site will require overexcavation. The interior floors for the structures founded on drilled piers or helical piles will need to be supported structurally.

8.3 Shallow Ground Water and Associated Soft/Loose Soils

Ground water was encountered less than 15 feet beneath the existing ground surface in 32 of the 137 test borings located near the ditch. Ground water less than 15 feet below the site grading elevation will likely affect utility construction and some site grading operations. Ground water was encountered less than 10 feet below the existing ground surface in 10 of the 137 test borings. Ground water less than 10 feet below the site grading elevation will likely affect foundation excavations. In addition, ground water was encountered less than 5 feet beneath the existing ground surface in 32 of the 137 test borings. Ground water less than 5 feet below the existing or final ground surface will pose stabilization problems during site grading, foundation construction, and may cause problems during pavement construction. We recommend that foundations be constructed at least 4 feet above ground water level to reduce the potential for future water problems.

Site development should be planned to avoid or manage the ground water. Avoidance may entail raising the site grades to provide sufficient distance between the bottom of foundations and the ground water, allowing only at-grade construction (no basements) or other methods. Removing the ground water may entail the construction of drain systems and/or barriers that draw the ground water down sufficiently to allow below grade construction. A geohydrologist familiar with long term dewatering of projects of this nature should be consulted.

Soft to medium stiff and loose soils were encountered near the ground surface or assumed excavation elevations in 34 of the 137 test borings. The soft to medium stiff clays and loose sands presents concerns for site grading, foundation excavations, and pavement construction. Any significant fills or foundation loads placed on top of the soft or loose soils could cause significant settlement over time. Movement of large, rubber-tired equipment may cause severe rutting which may result in not being

able to traverse the areas. It will be necessary to stabilize the soft areas prior to fill placement. It will also be necessary to stabilize the soils prior to foundation and pavement construction.

8.4 Ironstone

Ironstone lenses were encountered in the claystone bedrock in 17 of the 137 test borings at depths ranging from 8½ to 34 feet and were between ½ and 5 feet thick. We believe the ironstone will need to be ripped for excavation using a single hydraulic ripper tooth mounted on a dozer. Excavation of the ironstone will require more effort. Trench or foundation excavations that encounter ironstone may require specialized excavation equipment, hydraulic hammering, or blasting. Materials loosened by hydraulic hammering or blasting should be removed from the site or, if feasible, broken down (crushed) to sizes that would allow for placement in fills on the site. If deep foundations are to be constructed, the use of a commercial drill rig or specialized drilling equipment may be necessary where ironstone is encountered. Predrilling may be required for helical piles.

8.5 Moderately to Well Cemented Sandstone

Moderately to well cemented sandstone bedrock was encountered in 19 of the 137 test borings at depths ranging from 8½ to 34 feet. We believe the moderately cemented sandstone will need to be ripped for excavation using a single hydraulic ripper tooth mounted on a dozer. Excavation of well cemented sandstone bedrock will require more effort. Trench or foundation excavations that encounter very hard sandstone may require specialized excavation equipment, hydraulic hammering, or blasting. Materials loosened by hydraulic hammering or blasting should be removed from the site or broken down (crushed) to sizes that would allow for placement in fills on the site.

8.6 Lignite and Coal Mines

Lignite lenses were encountered in the claystone bedrock in 26 of the 137 test borings at depths ranging from 10½ to 41 feet and were between 1 and 11 feet thick. Lignite layers were encountered in nine of the 137 test borings at depths ranging from 11 to 31½ feet. These layers ranged from 1 to 8 feet thick. Lignite is a soft coal which is commonly found within the bedrock formation which underlies this site. It can be found in thin layers within claystone or in layers that are very soft and wet to relatively hard and dry. Our experience in areas underlain by this bedrock formation indicates that the presence and amount of lignite and coal in the bedrock can be very erratic in consistency and distribution, exhibiting itself in a random manner across the site. Since the material is not considered suitable for foundation support, its presence adds another level of uncertainty to the drilling of piers. Often lignite or coal is encountered only in a portion of the piers for a structure. Where the lignite is wet, it must be cased to prevent caving and inflow of water. If it is encountered at the bottom of a long pier, it may not be possible to extend the pier through the lignite or coal with currently available residential drill rigs. Additionally, placement of excavated lignite and coal during the site grading process will require close monitoring and may require placement in non-structural areas or exporting from the site.

The site is identified as being underlain by abandoned underground coal mines on the "Statewide Historic Underground Coal Mine Extents and Reported Coal Mine-Related Subsidence Events Map" available on the Colorado Geological Survey's website. Evaluation of the condition of these areas is beyond the scope of this report. The "Preliminary Mine Subsidence Investigation, State Land Board

Parcel, 414.38 Acres in Section 16, Township 1 North, Range 68 West, Weld County, Colorado" report, prepared by Western Environment and Ecology, Inc. (WEE), WEE Project Number 778-005-02, dated December 19, 2022, was prepared for this site.

9.0 SITE DEVELOPMENT

9.1 Overlot Grading

We understand the fill materials to be used at the site will be from on-site cut areas. In general, suitable inorganic on-site or off-site soils may be used for structural fill. Existing fill should be excavated prior to placement of new fill. Topsoil, soil containing significant vegetation, organic debris or other deleterious material should be excavated and removed from the structural areas. Off-site material considered for new fill should be evaluated by AGW prior to importing to the site. Construction of the fill embankments throughout the site should consist of proper foundation preparation, constructing embankment benching where necessary, disposition of strippings, proper fill placement and compaction, and designing slopes in accordance with the recommendations provided in this report and the applicable governing regulations. The following are general site grading recommendations:

- 1. Grading plans should be provided to AGW prior to commencement of work at the site.
- 2. It is recommended that we be retained on an essentially full-time basis to observe and test the fill placement. We should also be retained to provide observations and/or testing of the other items discussed below. The purpose of this observation and testing is to provide the Client with a greater degree of confidence that the work is being performed within the recommendations of this geotechnical study and the project specifications.
- 3. Various structures were observed within the site. The existing structures, including their foundations, should be completely removed from the site. Our experience indicates that other below grade or undisclosed structures such as root cellars, wells, cisterns, septic systems, etc. may be present. Any of these structures encountered should also be removed. Any wells encountered should be abandoned in accordance with the regulations of the Colorado State Engineer.
- 4. Existing fill was found in Test Boring 15 and abandoned railroad embankments were observed in portions of the site. The fill was placed under unknown conditions. Therefore, we recommend that the fill be entirely excavated. The fill should be observed during excavation in order to determine whether the excavated material may be re-used in the structural areas as new fill. Excavation of isolated test pits (with or without density-compaction testing) will not provide enough information, in our opinion, to allow the fill to remain in place.
- Utilities beneath structural areas that are to be abandoned should be entirely removed. The excavation should then be widened to allow access to a self-propelled compactor. New fill should be placed and compacted as described in this section and Appendix B.
- 6. All topsoil and vegetation should be stripped and removed prior to fill placement. The vegetation, organic soils, or topsoil should be wasted from the site, placed in

- non-structural areas (e.g., parks, landscaping, tracts, etc.) and/or stockpiled for future use in revegetating the surface of exposed slopes. In no case should these materials be used in the structural areas or where the stability of slopes will be affected. If placed in lots, topsoil must be placed outside of the structure setbacks and should not be placed where the fill depths exceed 5 feet. If placed in depth across the back of lots, movements of fences and dry utilities should be expected.
- 7. Ironstone and moderately to well cemented sandstone was encountered in the test borings. These materials will likely require some extra effort to remove and process. The use of a Caterpillar D8 or larger dozer using a single shank ripper tool may be necessary. Some areas of well cemented sandstone may require removal using hydraulic hammers or blasting.
- 8. Where soft, rutting soils are found beneath planned fill areas, removal, in-place drying, or stabilization may be necessary. Stabilization prior to fill placement may be accomplished by placing crushed rock or equivalent material, which should be evaluated by AGW prior to use. The material should be spread across the area and worked into the underlying soft or loose soils with fully-loaded rubber-tired equipment. This procedure should continue until scraper-type equipment can be supported on the rock fill with no significant deflection or rutting. In some instances, a geogrid or geotextile stabilization fabric may be economical for use in conjunction with rock stabilization.
- 9. Where the existing slopes are steeper than a 5:1 (horizontal:vertical), benching will be required for structural integrity of any fills (see Figure 30).
- The stripped foundation areas should be observed by AGW prior to fill placement.
 Any soft soils found in these areas must be removed or stabilized as necessary prior to fill placement.
- 11. After the fill areas have been cleared, the exposed soils should be scarified to a minimum depth of 6 inches, brought to the proper moisture content, and then compacted according to Appendix B.
- 12. Should significant amounts of lignite be excavated by individual scrapers, it should be stockpiled or wasted. Significant layers of lignite must not be constructed within the grading fills.
- 13. The compaction and moisture content of the soils will be dependent upon material types and the depth and location of placement. The specifications outlined in Appendix B are based upon providing a fill with sufficient shear strength to support structures and sufficient moisture to reduce the potential of swell of the expansive soil used in the fill.
- 14. The results of standard Proctor tests performed on bulk samples of the upper level soils likely to be used for fill are shown on Figures A-230 and A-231 in Appendix A. These results can be used as a guideline for contractors to estimate how much additional moisture may be required to bring the on-site soils to the required moisture content.
- 15. Additional processing of the excavated claystone bedrock may be required due to the hardness of the material and low moisture content. The

earthwork contractor should be made aware of the extra processing required.

- 16. Where fill depths exceed 20 feet, additional compactive effort will be necessary to limit settlement of the fill. Where fill depths exceed 25 feet, we recommend a granular fill (less than 35% passing the U. S. Standard Number 200 Sieve) be placed below the 25-foot depth. If this is not feasible, additional testing of the proposed deep fill material will be required to estimate settlements. In any case, monitoring of fills greater than 25 feet in depth will be necessary. Compaction and moisture content specifications are provided in Appendix B.
- 17. Particular attention should be paid to compaction of the exterior faces of slopes.
- 18. Placement and compaction of fill should continue to final overlot grade. We recommend that the lots not be left low or "dished-out" and that placement of fill not stop at foundation elevation.
- 19. Other specifications outlined in Appendix B should be followed.

9.2 Overexcavation and Placement of Moisture Treated Fill

Based on the expansion potential of the clay and claystone bedrock, we recommend the site be overexcavated if the use of shallow foundations is desired. Our experience indicates that overexcavation and placement of a moisture treated fill would be most effectively performed using mass grading techniques. The ideal time to do this would be during site development operations. As some overexcavation beneath the roadways will likely be required, it would be advantageous to perform this overexcavation during site grading. The following recommendations should be followed in order to enable the placement of a moisture treated fill that could be used for slab and foundation support. These recommendations may be modified during construction if soil conditions differing from those anticipated are encountered.

- These recommendations are based upon our understanding that basement or crawl space depth products will be constructed. If a different product is considered, these recommendations must be reviewed by AGW.
- The final site grading plans should be provided to AGW prior to commencement of work at the site in order to evaluate which areas and to what depth overexcavation should be performed.
- 3. The expansive clay and claystone should be excavated to a depth of at least 12 feet below the basement foundation elevation or 14 feet below crawl spaces. The base of the excavation should extend, at a minimum, to a width of at least 5 feet beyond the foundation footprint (including any counterforts, covered porches, patios, decks, etc.). Excavations that do not extend to these minimums risk future foundation performance issues. It may be prudent to extend the base of the excavation to 5 feet outside of the front and rear setbacks in order to accommodate potential changes in structure dimension. Additionally, the street subgrade should be overexcavated as described in the "Preliminary Street Pavement Design" section. The excavation should be sloped following current OSHA regulations. We will not be responsible for testing near excavations that do not meet OSHA regulations. A licensed surveyor must verify the extents of the excavation prior to any fill placement.

- 4. Water flow into the overexcavation may occur in areas of shallow ground water. We believe that the water can be handled during construction by channeling the water in the excavation(s) and pumping from sumps. It may be prudent to provide permanent drains at the base of the overexcavation in these areas. However, if an outfall for the drains cannot be found, they should not be constructed. The drain(s) should be sloped to a positive gravity outfall. Depending on the location of the inflow, chimney drains may be necessary to convey water from sidewall seepage areas to the drain. The configuration of these drains should be determined at the time of construction.
- Should significant amounts of lignite be excavated by individual scrapers, it should be stockpiled or wasted. Significant layers of lignite must not be constructed within the grading fills.
- 6. Once the excavation depth and width have been verified, fill placement may begin. The bottom of the excavation should be scarified and moistened prior to fill placement. The fill, consisting of the excavated materials, should be placed in maximum 8-inch loose lifts. Moisture should be added and the lift processed. The use of a construction disc to mix and process each lift is suggested. Mixing should be performed until the moisture content is relatively uniform throughout the lift and the majority of the particles are less than 3 inches in dimension. Additional processing of the excavated claystone bedrock may be required due to the hardness of the material and low moisture content. The earthwork contractor should be made aware of the extra processing required. It may be necessary to excavate the soils and bedrock, apply moisture to the excavated material, and stockpile prior to use as fill. The stockpiled material should then be moisture conditioned and used as fill, following the specifications described in Appendix B. The fill should then be compacted as described in Appendix B.
- 7. The results of standard Proctor tests performed on bulk samples of the upper level soils likely to be used for fill are shown on Figures A-230 and A-231 in Appendix A. These results can be used as guideline for contractors to estimate how much additional moisture may be required to bring the on-site soils to the required moisture content.
- 8. Essentially full-time observation and testing of fill placement must be performed by AGW. Testing should include in-place moisture content and dry density. Swell-consolidation or other testing may also be performed at the discretion of AGW.
- 9. Placement and compaction of fill should continue to final overlot grade. We recommend that the lots not be left low or "dished-out" and that placement of fill not stop at foundation elevation. If the structures will not be constructed within two years of completion of the fill, additional effort may be necessary to help maintain the moisture within the fill. This may include the addition of more soil to blanket the compacted fill, the placement of mechanical or chemical barriers, or applying water periodically to the fill surface. We are available to discuss this with you.

It must be understood that while this method is used to reduce the likelihood of future heave, it is not free of risk of foundation movement. While future heave is less likely, the possibility of settlement induced by excess moisture is increased. Therefore, the control and removal of surface water at the site will continue to be very important. Our experience indicates that clay materials of the type encountered at this site will likely exhibit an average swell of less than 2% under a surcharge load of 1,000 pounds per square foot (psf) when thoroughly mixed with water and processed with typical

earthmoving equipment. It is anticipated that if this level of swell reduction is achieved, the foundations may be constructed by placing footings upon the fill. This level of swell should also provide for a low to moderate risk of basement slab movement. However, it must be understood that even with the procedures outlined above, it is highly likely that moderate to high measured swells will be found in the fill. This will require rework of portions of the fill or the use of deep foundations and structural support of interior floors. Additional drilling after the soil modification has been completed will be required to provide final foundation recommendations and basement slab risk assessments for each residence.

9.3 Slopes and Retaining Walls

Slope stability and retaining wall analyses were not conducted as part of this study. In areas where existing slopes exceed 5:1 (horizontal:vertical), benching prior to fill placement will be required (see Figure 30). Construction of conventional fill slopes should be limited to 3 to 1 or flatter. Cut slopes steeper than 2 to 1 should be evaluated for stability. Specific analysis will also be necessary if retaining walls are to be constructed.

9.4 Construction Excavation

In our opinion, the site grading, utility, and foundation excavations may be constructed using conventional earth-moving equipment for the Front Range area. In some areas, unstable soils beneath earth-moving equipment may be encountered. Care should be taken so that the foundation soils are not disturbed or are properly stabilized. It was previously mentioned the sandstone is very hard. Very hard ironstone lenses should be anticipated. Poorly to moderately cemented sandstone may be excavated using a single tooth hydraulic ripper tooth mounted on a D8 Dozer. Well cemented bedrock and ironstone will require more effort. Very hard sandstone or ironstone may be encountered in trenches which may require excavation with specialized equipment, hydraulic hammering or blasting for removal. Material loosened by hydraulic hammering or blasting must be removed.

Excavations deeper than 3 feet should be properly sloped or braced to prevent collapse of potentially caving soils. For planning purposes, the fill, sand, and any soil influenced by ground water are "Type C" soils, the clay is a "Type B" soil, and the underlying bedrock is a "Type A" soil according to OSHA regulations. A final determination of the soil type must be made by the Contractor's "Competent Person" (as defined by OSHA Regulation). Local, city, county, state, and federal (OSHA) regulations should be followed.

The presence of ground water will be a constraint on construction excavation in portions of the site. It will be necessary to dewater all excavations constructed below the ground water level. Dewatering may include pumping from the work area or construction of well points. The excavation and utility contractor(s) must be made aware of the ground water conditions so that contract bidding will include the appropriate provisions.

9.5 Utility Construction

In our experience, utility excavations may be constructed using conventional earth-moving equipment for the Front Range area. Utility excavations may encounter hard to very hard bedrock or ironstone that may require extra effort to remove in portions of the site. The use of rock buckets,

hydraulic hammers, specialty equipment, or light blasting may be required. All excavations should be sloped or shored in the interest of safety, following local and federal (OSHA) regulations. For planning purposes, OSHA soil type designations are discussed under "Construction Excavations". Final determination of the soil types must be made by the contractor's "Competent Person" (as defined by OSHA) at the time of construction.

Trench backfill within all structural areas should, as a minimum, be compacted using the same methods and to the same specifications as required for overlot grading. This is especially important where utility lines and laterals are constructed beneath foundation, alley, and driveway areas. Trenches in streets should be compacted to the Town of Erie specifications. Observation and testing of fill placement must be performed during trench backfilling.

The presence of ground water will likely be a constraint upon utility construction in portions of the site. It will be necessary to dewater all trenches constructed below the ground water level. A possible method for dewatering would be to begin construction of the deeper (sewer) utilities at their outfall and to work upstream. Other methods include pumping from the trench in the work area or construction of well points along the trenches. The utility contractor must be made aware of the ground water conditions.

The choice of compaction equipment can have a significant effect on the performance of trench fills. It is our experience that utility trench backfills compacted with a compaction wheel attached to an excavator experience more settlement (both in area and magnitude) than those compacted with self-propelled equipment. While the contractor has control of the means and methods of construction, the Client should be aware of this issue.

9.6 Subsurface Drainage

The Developer, after consideration, may or may not elect to construct an area drain for this subdivision, it is entirely the Developer's choice, unless there are jurisdictional regulations requiring an area drain be installed. The existing ground water levels may cause problems in portions of the site during development. In addition, clay soils and bedrock were encountered in the test borings drilled for this study. These types of material have a relatively low permeability and can develop a perched water condition. Perched water conditions generally occur after development and construction have taken place, when landscape irrigation and surface drainage conditions are changed.

An overall area drain, if constructed, could provide a discharge and collection point for individual foundation drains. If an area drain discharge is not available, the individual foundation drains will discharge collected water to the ground surface near each residence. Surface discharge can result in water recycling to the foundation drain and ponding of water where surface grading is not sufficient for water flow. Foundation drain discharge can also result in algae growth where water continually crosses sidewalks which become ice hazards on walkways and gutters in the winter months.

Typically, overall area drains can be designed and constructed with installation of the sanitary sewer system. However, the local municipality should be consulted to determine where an overall system

is allowed. The civil engineering company contracted to design the infrastructure should be able to provide this design. We are available to assist in drain design. For the system to work, the area drain must be graded to a positive discharge point. If a permanent outfall for an area drain cannot be determined, the area drain should not be constructed.

If it is decided not to install an overall area drain, an alternative would be to establish points of positive gravity discharge for the gravel bedding beneath the sewer. We also recommend any basement or below grade area be provided with a perimeter subsurface drainage system sloped to drain to a positive gravity discharge such as a sump or connected directly to the overall area drain system.

9.7 Surface Drainage

We recommend that provisions be made to divert surface runoff away from development areas. This may reduce potential problems associated with excess water in structure bearing soils. The site should be designed such that a 10% slope can be established near the structures after foundation construction. Slopes of at least 2% should be planned in landscaped areas once the water is away from the foundations.

10.0 SITE CONCRETE AND CORROSIVITY

Laboratory tests conducted on selected soil samples yielded water soluble sulfates ranging from less than 100 parts per million (ppm) to 28,400 ppm. Based upon these results and our experience in the area, the site soils and bedrock are assigned to possess very severe (S3 or RS3) sulfate exposure per ACI 318 or ACI 332. We recommend the "ACI Manual of Concrete Practice", of the most recent edition be used for proper concrete mix design properties as they relate to these conditions.

The pH test results ranged from 7.9 to 8.5, the resistivity test results ranged from 260 to 4,500 ohm cm, and the chloride test results ranged from 0.0002% to 0.0087%. These results are summarized on Figures 2 through 25 and in Appendix A. The results of this testing should be used as an aid in choosing the construction materials in contact with these soils which will be resistant to the various corrosive forces. Manufacturer's representatives should be contacted regarding the specific corrosivity resistance for their products. In addition, local specifications should be consulted when selecting pipe materials.

11.0 PRELIMINARY FOUNDATION DESIGN CONCEPTS

The foundation recommendations for each structure are dependent upon the subsurface profile and engineering properties of the materials encountered at and near the depth of the proposed foundation. These are dependent upon the final configuration of and construction methods used during overlot grading at the site. The information in the following sections presents preliminary foundation concepts which must be finalized for each building site upon completion of the overlot grading operations. AGW should be retained to perform design level soil and foundation studies after completion of site grading.

11.1 Footings

If the site is overexcavated, it likely that the structures could be founded on spread or pad type footings bearing on moisture treated fill. The footings must be founded below frost depth. The footings will likely be designed for maximum soil bearing pressures ranging from 1,000 to 3,000 psf. Minimum dead load pressure on the order of 700 to 1,000 psf will be required.

11.2 Straight Shaft Piers

If overexcavation is not performed, the structures may be founded on straight shaft piers drilled into bedrock. The piers will likely be designed for an end bearing pressure in the range of 25,000 to 30,000 psf, a minimum dead load pressure in the range of 25,000 to 35,000 psf, and a side shear in the range of 2,000 to 3,000 psf. Pier lengths on the order of 35 to 45 feet with bedrock penetration from 15 to 25 feet can be anticipated. If lignite is encountered at the bottom of a pier, the pier must be extended to competent bedrock. Difficult drilling may be experienced should strongly cemented sandstone lenses or ironstone be encountered. A commercial drill rig will be required.

11.3 Helical Piles

If overexcavation is not performed, helical piles drilled into the underlying bedrock may be considered. The length of piles will be dependent upon the depth of fill beneath the structures. Where no fill is placed beneath the structure, pile lengths ranging from 25 to 35 feet below the foundation can be anticipated. The piles should extend to bedrock in which a minimum installation torque of 3,000 ft-lbs is achieved. Higher installation torques may be required depending upon structural loading conditions. Due to the hardness of the bedrock and ironstone lenses, pre-drilling may be required.

11.4 Lateral Earth Pressures

Foundation walls with fill on only one side will need to be designed for lateral earth pressures. For this site, lateral earth pressures calculated based upon equivalent fluid densities on the order of 50 to 90 pcf should be anticipated. The preliminary estimates are for properly placed and compacted fill at foundation walls. They should not be used for site retaining walls.

11.5 Interior Floors (Footings)

Where footings are constructed, the structures will likely be assessed low to moderate slab risk performance evaluations. If the risk tolerance for slab movement is zero, structural floors should be constructed.

11.6 Interior Floors (Deep Foundations)

Where deep foundations are required for foundation support, the structures will be assessed with moderate to very high slab risk performance. If structural floor is not desired, soil modification to a depth of at least 10 feet below the basement slab-on-grade may be considered. This may allow for the construction of slab-on-grade floors depending on the amount of potential floor movement acceptable to the Client. Structures with at least 10 feet of fill beneath the slab will likely be assessed low to moderate slab risk performance evaluations.

11.7 Drain Systems

Drain systems will be required around the lowest excavation level for below grade spaces for each structure. Either interior or exterior drains may be used for most of the site. Where ground water is within 4 feet of the foundation, a more extensive drain system will be required. This may include gravel across the entire foundation, drain laterals, or combination interior and exterior drains. The drains must be led to a positive gravity outfall or sump.

11.8 Backfill and Surface Drainage

Foundation backfill should be moistened and compacted to reduce future settlement. The site grading should consider a slope of 10% away from the foundation at the completion of construction. All other drainage swales in landscaped areas should slope at a minimum of 2%.

12.0 PRELIMINARY STREET PAVEMENT DESIGN

Pavement design is based on the engineering properties of the subgrade and pavement materials, the assumed design traffic conditions, and the Town of Erie pavement regulations. Effective pavement structures are composed of various pavement materials bearing upon properly prepared subgrade soils. The following preliminary pavement recommendations are based upon the subsurface conditions encountered and our experience in the area.

It appears the proposed subgrade materials will likely be clays and claystone, or fill constructed from these materials with an AASHTO Soil Classification System of A-4, A-6, and A-7-6. Based upon our laboratory testing and our experience in the area, it is anticipated that the subgrade materials encountered on this site can be expected to exhibit enough swell to negatively impact the performance of the pavement and will likely be in excess of those allowed by the Town of Erie. Therefore, we recommend that the expansive subgrade materials be modified during site grading operations to reduce the potential future heave of the pavement. The clays and claystone should be overexcavated to a depth of at least 5 feet/below the pavement subgrade. The overexcavation should be performed during site grading prior to construction of utilities within the right-of-way. Overexcavation should cover the area from 1 foot beyond back of sidewalk (for attached sidewalk areas) or back of curb (for detached sidewalks). The excavated material may be placed as moisture treated fill (see Appendix B) within the right-of-way. This should result in a reduction in pavement thickness. All fill placed within 5 feet of the subgrade elevation should be placed as moisture treated fill. Lime or other chemical treatment, placement of additional base course, or other methods of subgrade preparation will likely be required dependent upon the results of the final pavement design report.

Moisture treatment is the process of removing subgrade materials, adding moisture between 0 to 4% above optimum moisture content, and compacting the subgrade to at least 95% of Proctor maximum dry density. The Client should understand soils treated to 4% above optimum moisture content will have low support values and may be soft and yielding under load. Stabilization by chemical or mechanical means will likely be necessary to achieve a stable paving platform.

Based upon the subgrade soil classifications, we have estimated the relative strengths of the subgrade soils presented above to determine the preliminary pavement thicknesses. Based on this information and utilizing the design methodology determined from the pavement design regulations for the Town of Erie, the alternatives presented below were calculated.

Pavement Thickness Alternatives for Interior Streets		
Traffic Category	HBP / ABC (in)	Concrete (in)
Alleys	-	8.0 - 9.0*
Local Street	4.5 - 6.0 / 8.0 - 12.0	-
Collector	5.5 - 6.5 / 10.0 - 12.0	-

HBP = Hot Bituminous Pavement ABC = Aggregate Base Course

The above preliminary thickness recommendations are based on a design life of 20 years. It should be emphasized that the design alternatives provided above are preliminary for the materials anticipated. The final design thicknesses could be more or less than indicated depending upon the materials sampled during the final pavement design.

Proper surface and subsurface drainage are essential for adequate performance of pavements. It has been our experience that water from landscaped areas can infiltrate pavement subgrade soils and result in softening of the subgrade followed by pavement damage. Therefore, provisions should be made to maintain adequate drainage and/or contain runoff from such areas. The Town of Erie requires an edge drain be constructed along the pavement in landscaped areas. In addition, water and irrigation lines should be thoroughly pressure tested for leaks prior to placement of pavement materials.

The information contained in this section is preliminary in nature. More detailed information will be required by the Town of Erie prior to issuance of a paving permit. Therefore, when overlot grading is complete at the site, a final pavement evaluation must be performed.

13.0 FINAL DESIGN CONSULTATION AND CONSTRUCTION OBSERVATION

This report has been prepared for the exclusive use of Southern Land Company, LLC for the purpose of providing geotechnical criteria for the proposed project. The data gathered and the conclusions and recommendations presented herein are based upon the consideration of many factors including, but not limited to, the type of structures proposed, the configuration of the structures, the proposed usage of the site, the configuration of surrounding structures, the geologic setting, the materials encountered, and our understanding of the level of risk acceptable to the Client. Therefore, the conclusions and recommendations contained in this report should not be considered valid for use by others unless accompanied by written authorization from AGW.

AGW should be contacted if the Client desires an explanation of the contents of this report. AGW should be retained to provide future geotechnical services for the site including, but not limited to, design level geotechnical studies, consultation during design, observation and testing during

^{*9.0} if inverted

construction, and other geotechnically related services. Failure to contract with AGW for these services or selection of a firm other than AGW to provide these services will eliminate liability for AGW. We are available to discuss this with you.

14.0 GEOTECHNICAL RISK

The concept of risk is an important aspect of any geotechnical evaluation. The primary reason for this is that the analytical methods used to develop geotechnical recommendations do not comprise an exact science. The analytical tools which geotechnical engineers use are generally empirical and must be tempered by engineering judgment and experience. Therefore, the solutions or recommendations presented in any geotechnical evaluation should not be considered risk-free and, more importantly, are not a guarantee that the interaction between the soils and the proposed structures will perform as desired or intended. What the engineering recommendations presented in the preceding sections do constitute is our judgement of those measures that increase the chances for the structures and improvements performing satisfactorily. The Developer, Builder, and Owner must understand this concept of risk, as it is they who must ultimately decide what is an acceptable level of risk for the proposed development of the site.

15.0 LIMITATIONS

We believe the professional judgments expressed in this report are consistent with that degree of skill and care ordinarily exercised by practicing design professionals performing similar design services in the same locality, at the same time, at the same site and under the same or similar circumstances and conditions. No other warranty, express or implied, is made. In the event that any changes in the nature, design or location of the facility are made, the conclusions and recommendations contained in this report should not be considered valid unless the changes are reviewed and the conclusions of this report are modified or verified in writing. Because of the constantly changing state of the practice in geotechnical engineering, and the potential for site changes after our field exploration, this report must not be relied upon after a period of three years without AGW being given the opportunity to review and, if necessary, revise our findings.

The test borings drilled for this study were spaced to obtain an understanding of subsurface conditions for design purposes. Variations frequently occur from these conditions which are not indicated by the test borings. These variations are sometimes sufficient to necessitate modifications in the designs. If unexpected subsurface conditions are observed by any party during site development, we must be notified to review our recommendations.

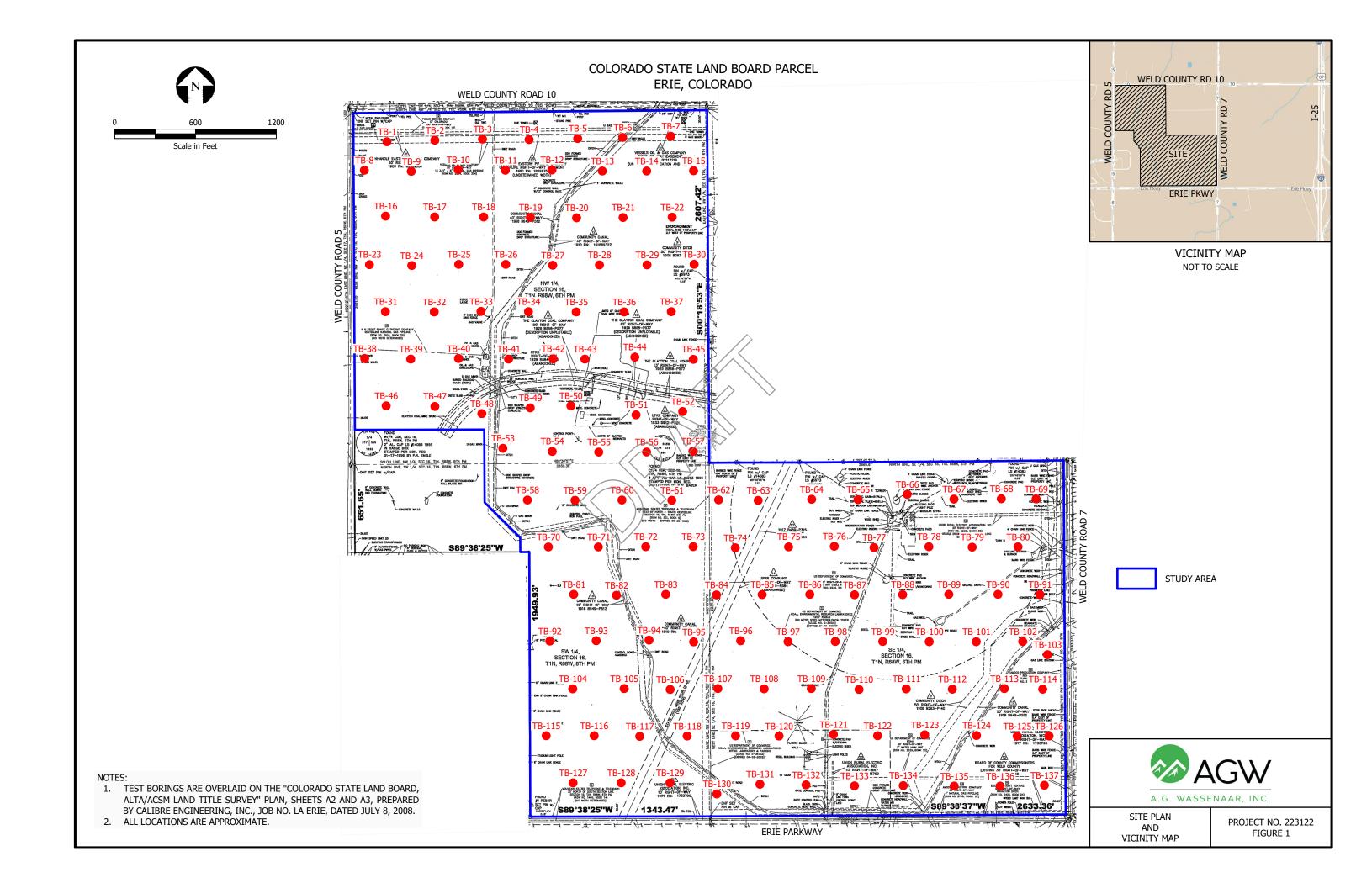
Our scope of services for this project did not include, either specifically or by implication, any research, identification, testing, or assessment relative to past or present contamination of the site by any source, including biological (i.e., mold, fungi, bacteria, etc.). If such contamination were present, it is likely that the exploration and testing conducted for this report would not reveal its existence. If the Client is concerned about the potential for such contamination or pollution, additional studies should be undertaken. We are available to discuss the scope of such studies with you.

Our scope of services for this project did not include a local or global geological risk assessment. Therefore, issues such as mine subsidence, slope stability, faults, etc. were not researched or addressed as part of this study. If the Client is concerned about these issues, we are available to discuss the scope of such studies upon your request.

Sincerely,		
A. G. Wassenaar, Inc.	Reviewed by:	
Ashley A. McDaniels, P.E.	Kathleen A. Noonan, M.S., P.E.	
Senior Engineer	Senior Geotechnical Engineer	

AAM/KAN/aam



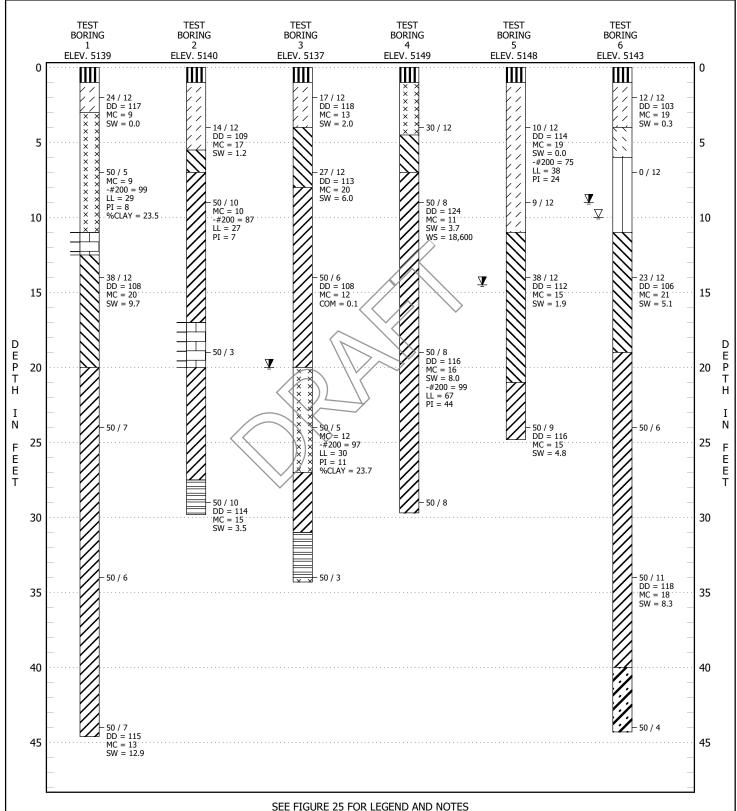




PROJECT NAME Colorado State Land Board Parcel

PROJECT NUMBER 223122

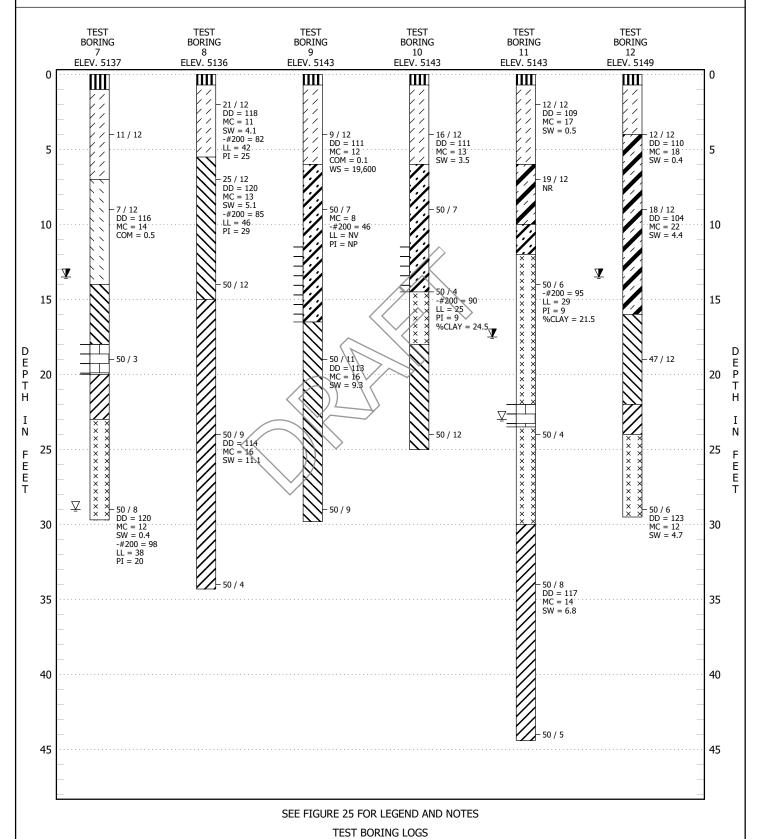
PROJECT LOCATION Erie, Colorado





PROJECT NAME Colorado State Land Board Parcel

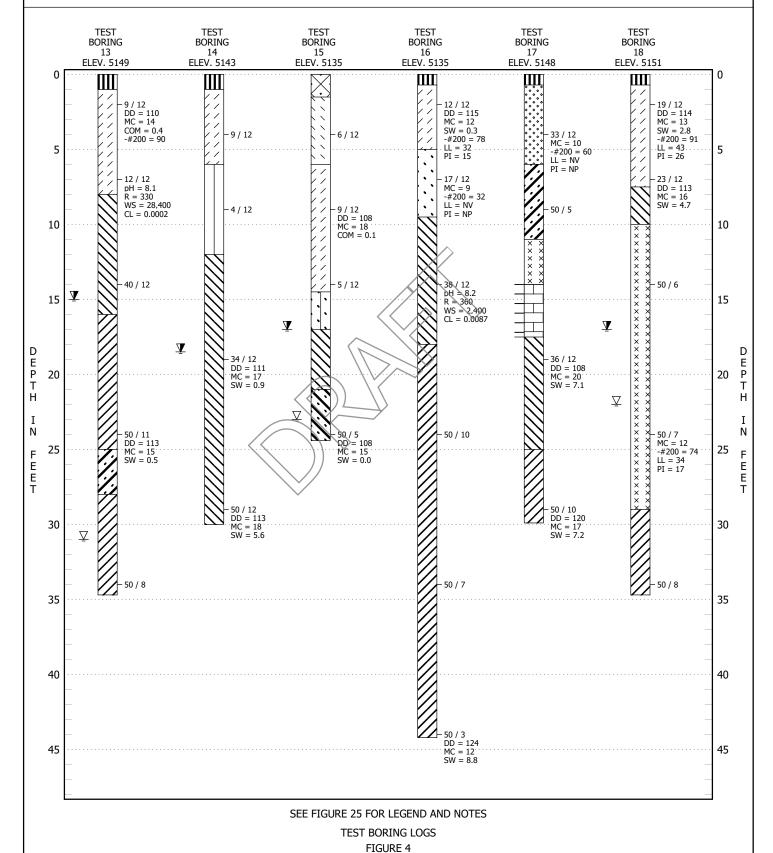
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PROJECT NAME Colorado State Land Board Parcel

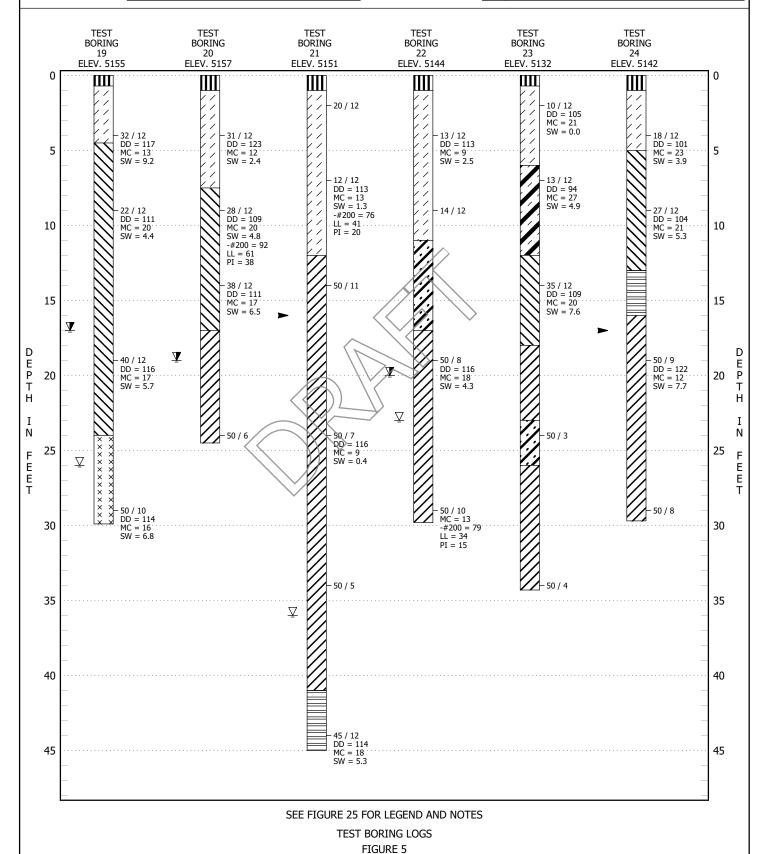
PROJECT NUMBER 223122 PROJECT LOCATION Erie, Colorado





PROJECT NAME Colorado State Land Board Parcel

PROJECT NUMBER 223122 PROJECT LOCATION Erie, Colorado

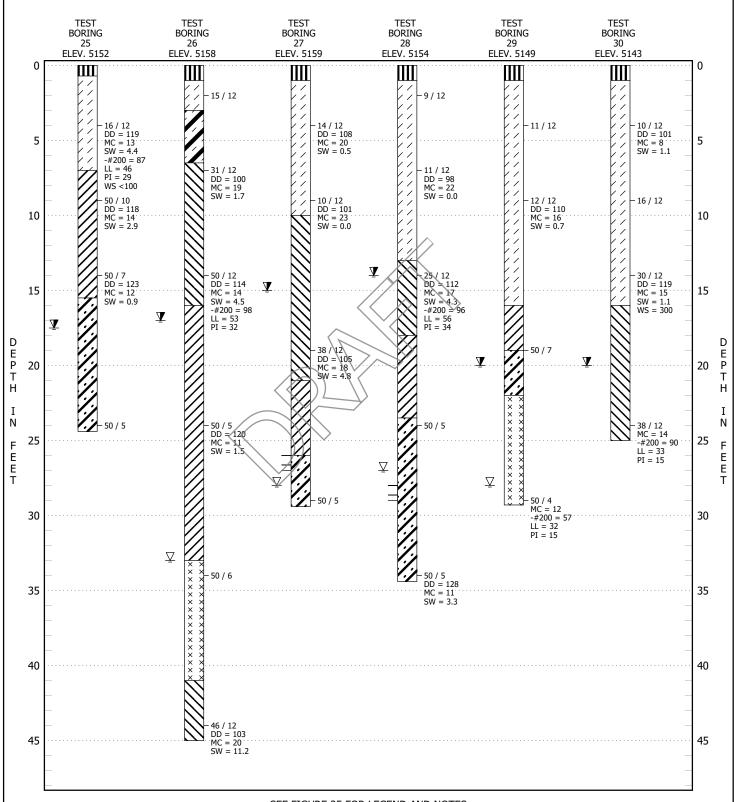




PROJECT NAME Colorado State Land Board Parcel

PROJECT NUMBER 223122

PROJECT LOCATION Erie, Colorado



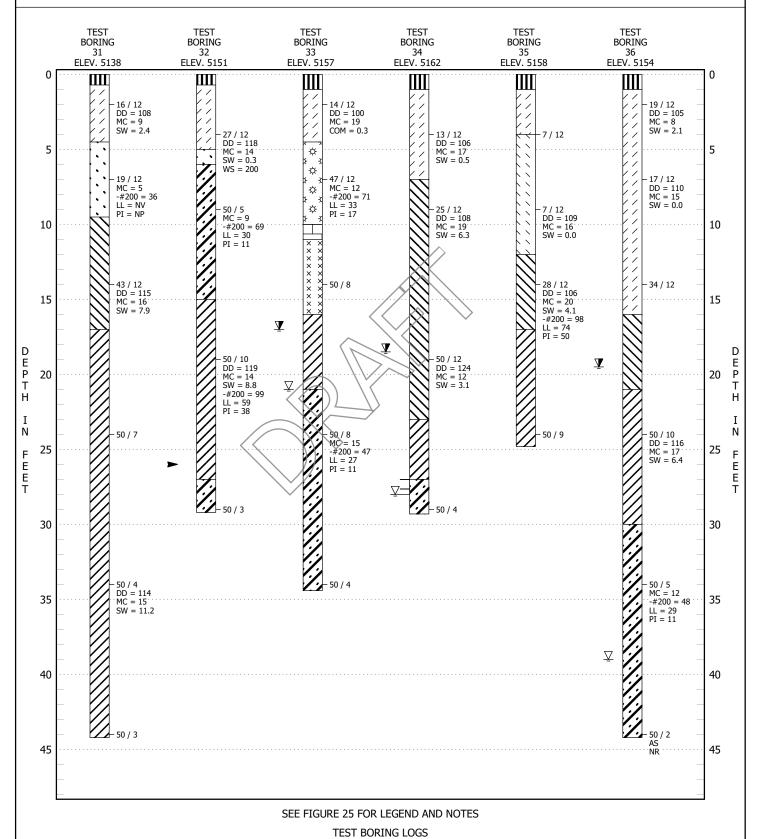
SEE FIGURE 25 FOR LEGEND AND NOTES
TEST BORING LOGS



PROJECT NAME Colorado State Land Board Parcel

PROJECT NUMBER 223122

PROJECT LOCATION Erie, Colorado

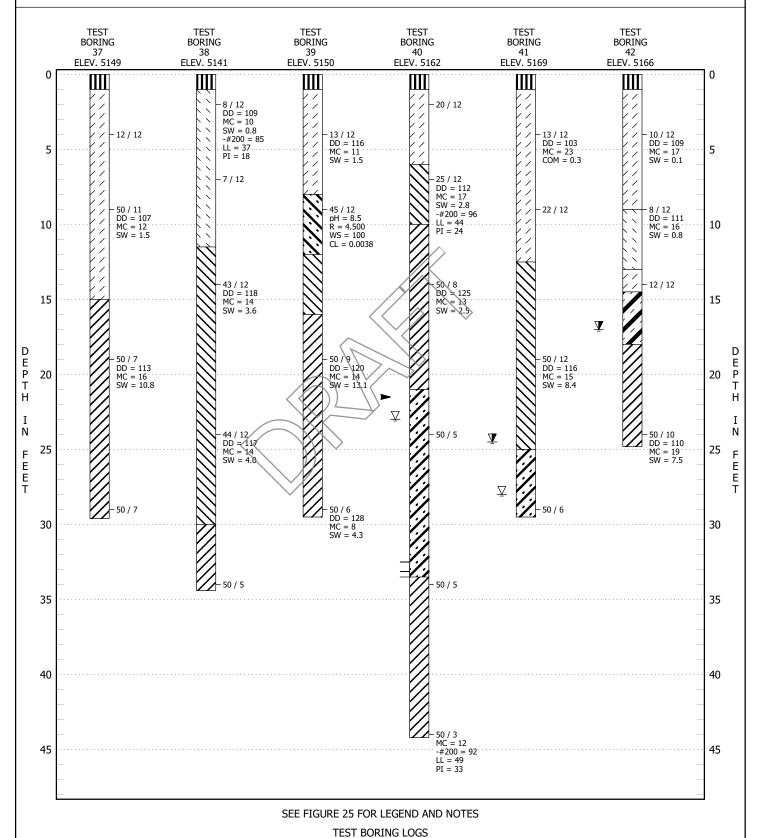




PROJECT NAME Colorado State Land Board Parcel

PROJECT NUMBER 223122

PROJECT LOCATION Erie, Colorado

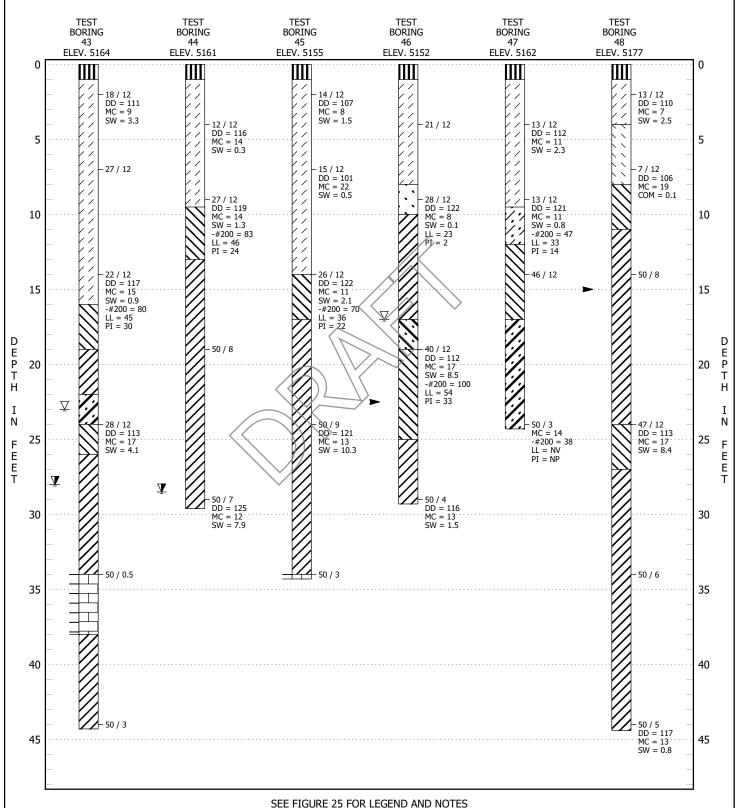




PROJECT NAME Colorado State Land Board Parcel

PROJECT NUMBER 223122

PROJECT LOCATION Erie, Colorado



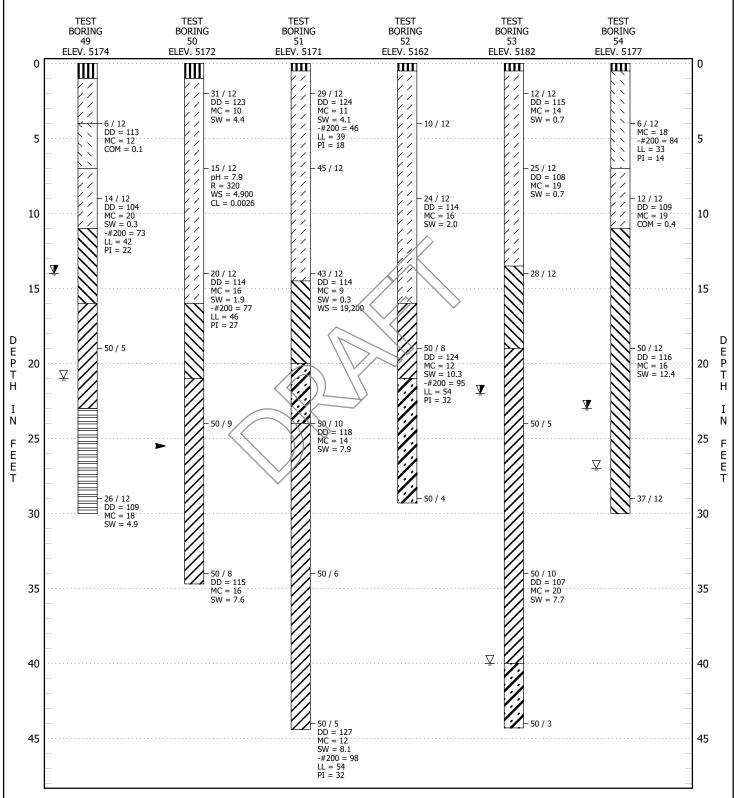
TEST BORING LOGS



PROJECT NAME Colorado State Land Board Parcel

PROJECT NUMBER 223122

PROJECT LOCATION Erie, Colorado



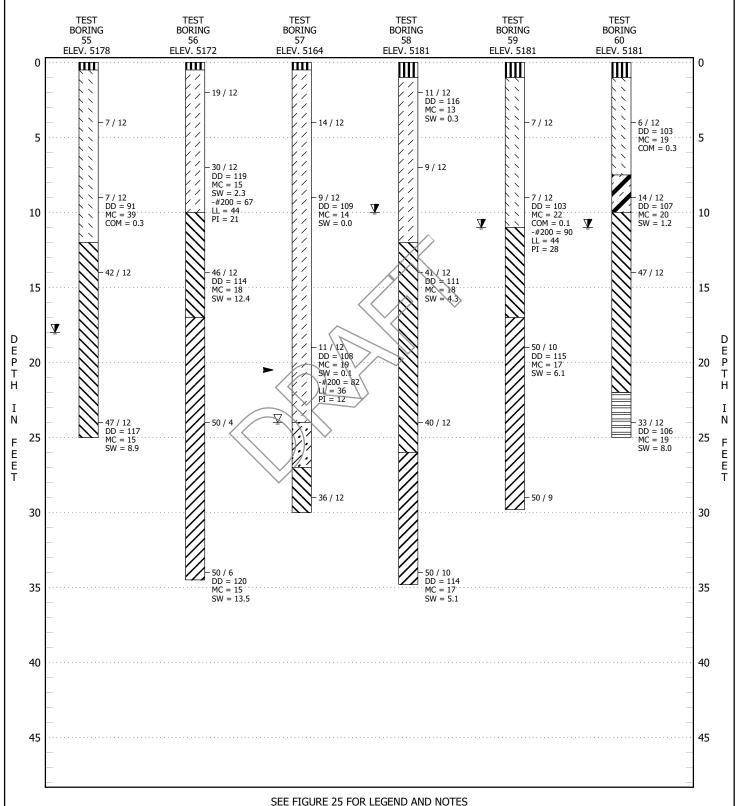
SEE FIGURE 25 FOR LEGEND AND NOTES



PROJECT NAME Colorado State Land Board Parcel

PROJECT NUMBER 223122

PROJECT LOCATION Erie, Colorado



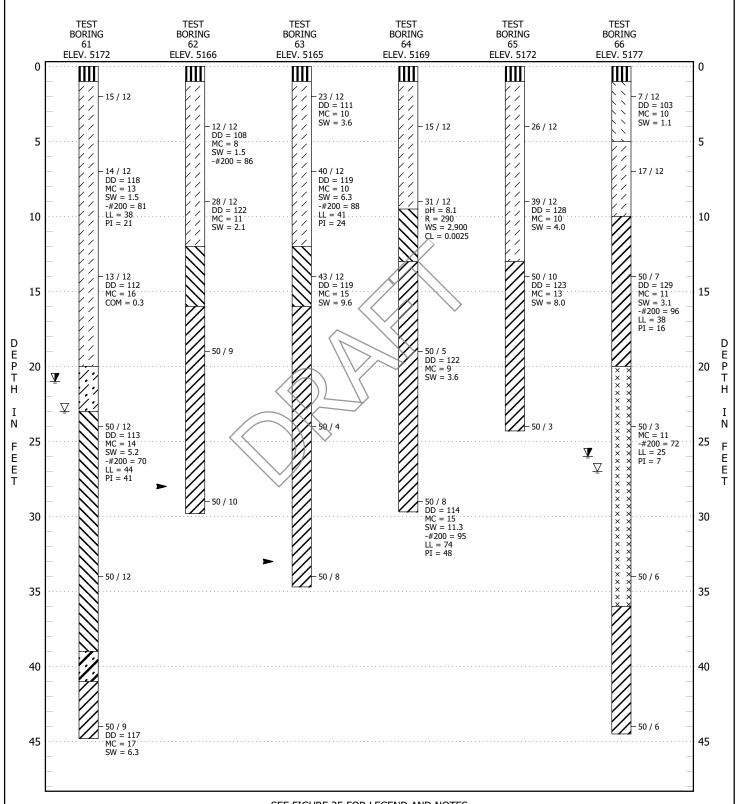
SEE FIGURE 25 FOR LEGEND AND NOTES



PROJECT NAME Colorado State Land Board Parcel

PROJECT NUMBER 223122

PROJECT LOCATION Erie, Colorado



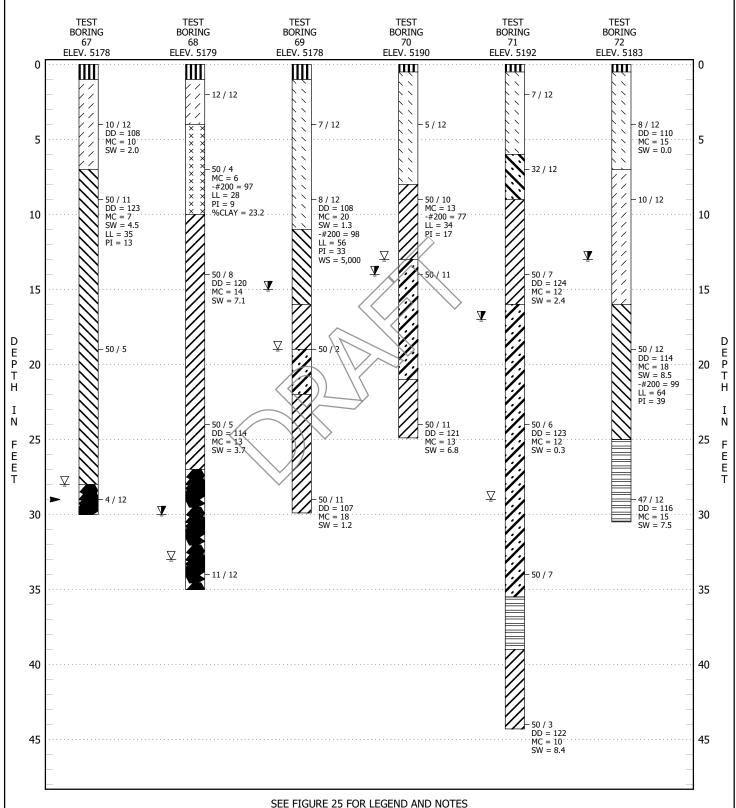
SEE FIGURE 25 FOR LEGEND AND NOTES



PROJECT NAME Colorado State Land Board Parcel

PROJECT NUMBER 223122

PROJECT LOCATION Erie, Colorado

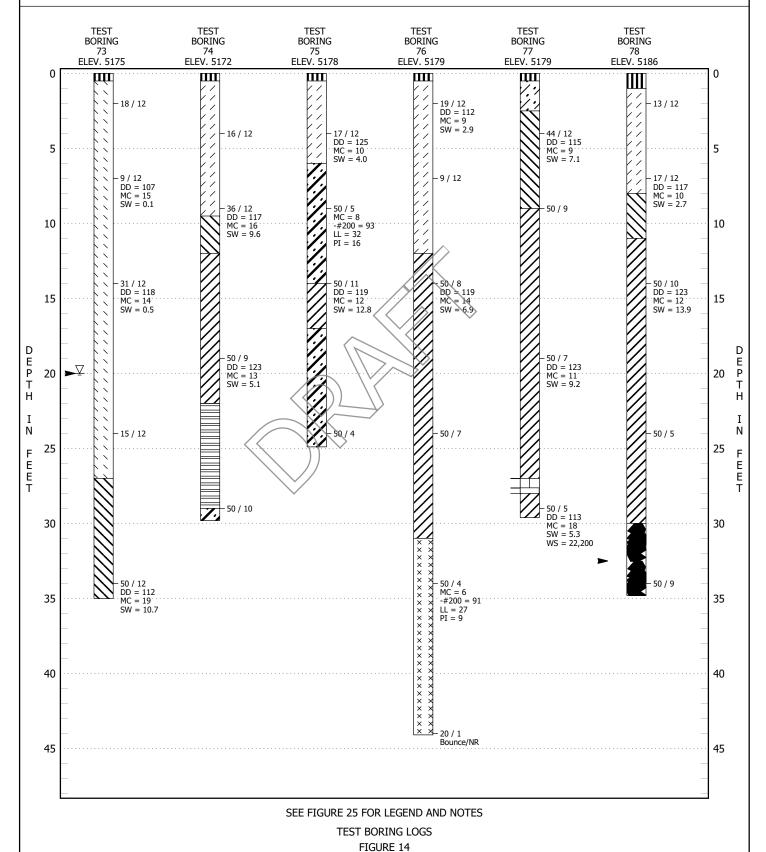


TEST BORING LOGS



PROJECT NAME Colorado State Land Board Parcel

PROJECT NUMBER 223122 PROJECT LOCATION Erie, Colorado

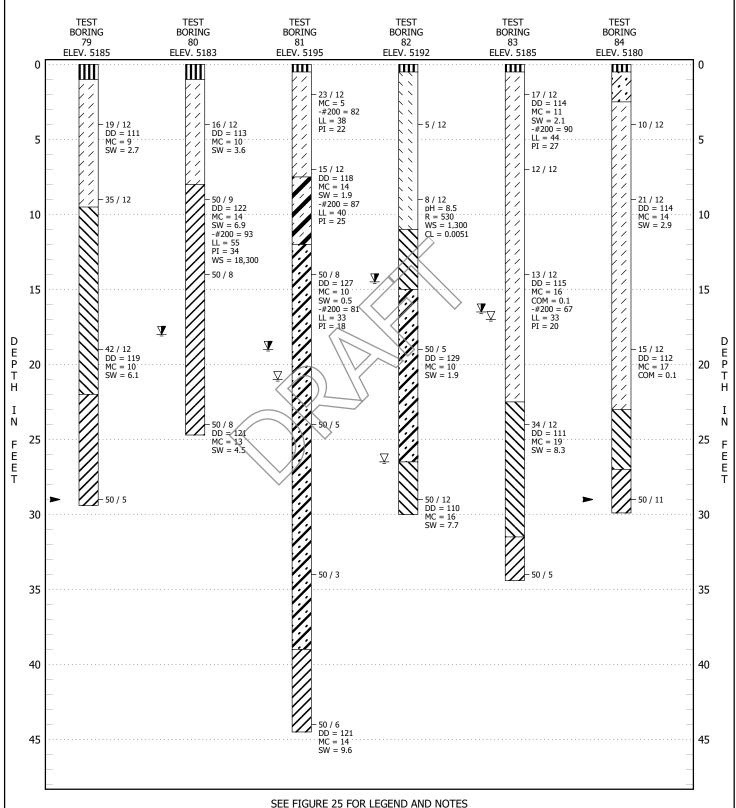




PROJECT NAME Colorado State Land Board Parcel

PROJECT NUMBER 223122

PROJECT LOCATION Erie, Colorado



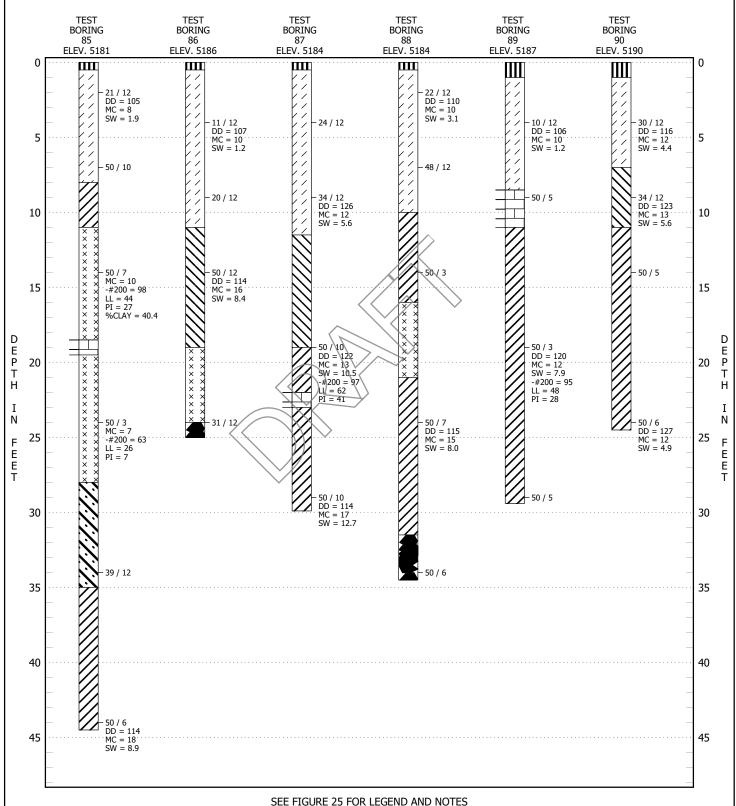
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PROJECT NUMBER 223122

PROJECT LOCATION Erie, Colorado



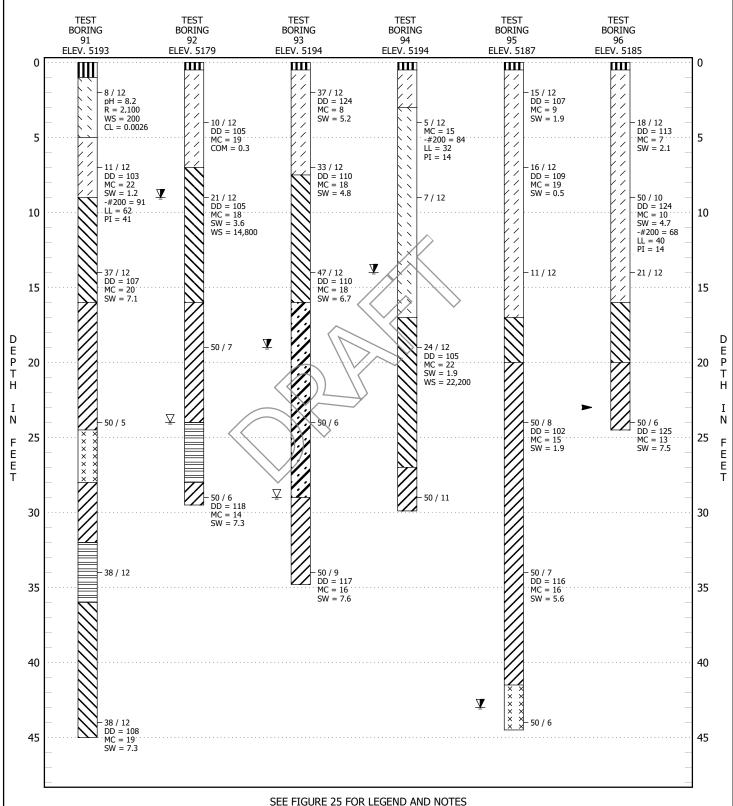
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PROJECT NAME Colorado State Land Board Parcel

PROJECT NUMBER 223122

PROJECT LOCATION Erie, Colorado



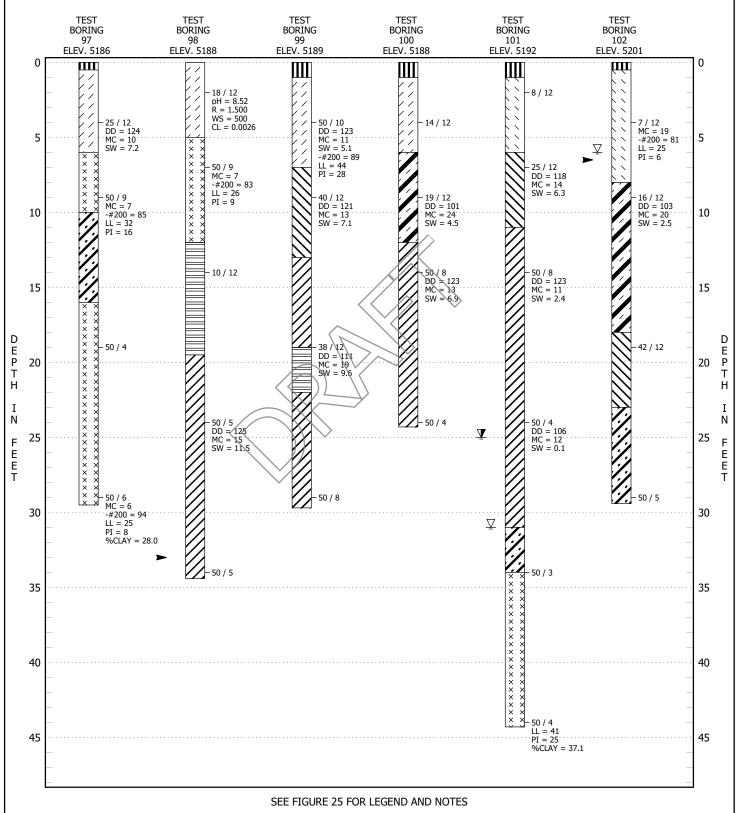
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PROJECT LOCATION Erie, Colorado



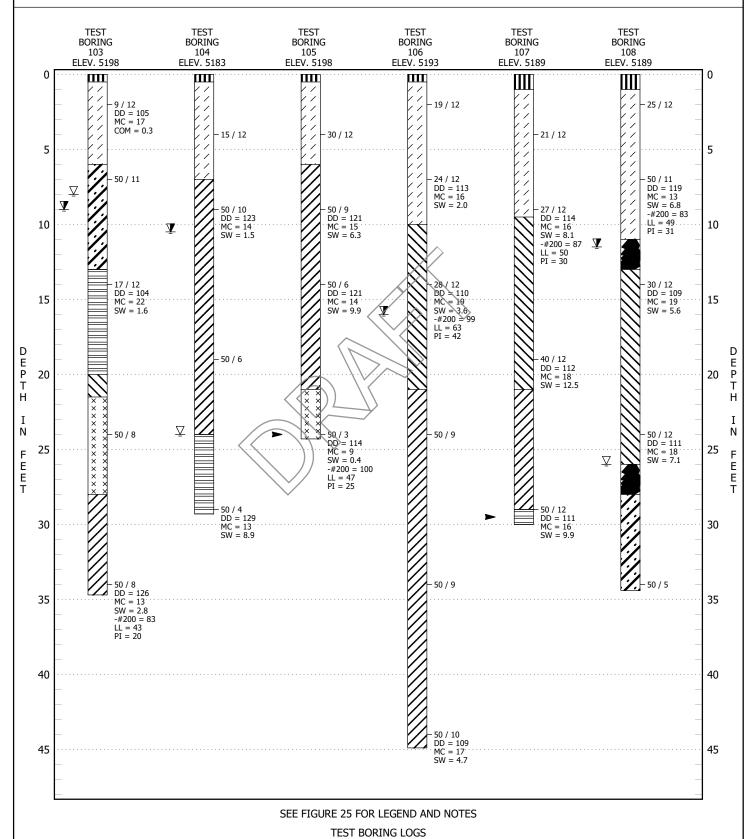
TEST BORING LOGS



PROJECT NAME Colorado State Land Board Parcel

PROJECT NUMBER 223122

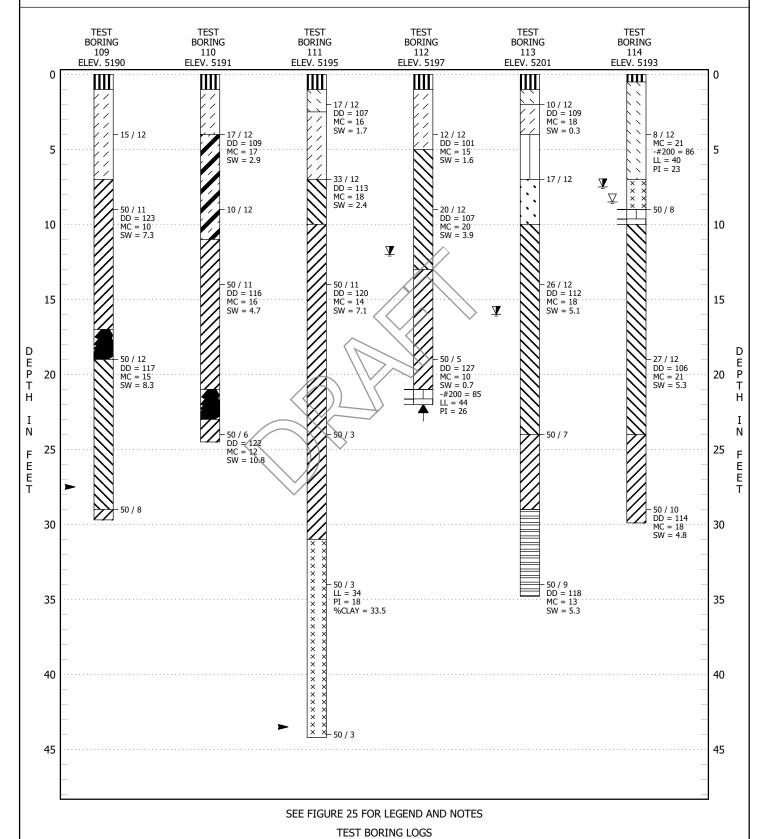
PROJECT LOCATION Erie, Colorado





PROJECT NAME Colorado State Land Board Parcel

PROJECT NUMBER 223122 PROJECT LOCATION Erie, Colorado

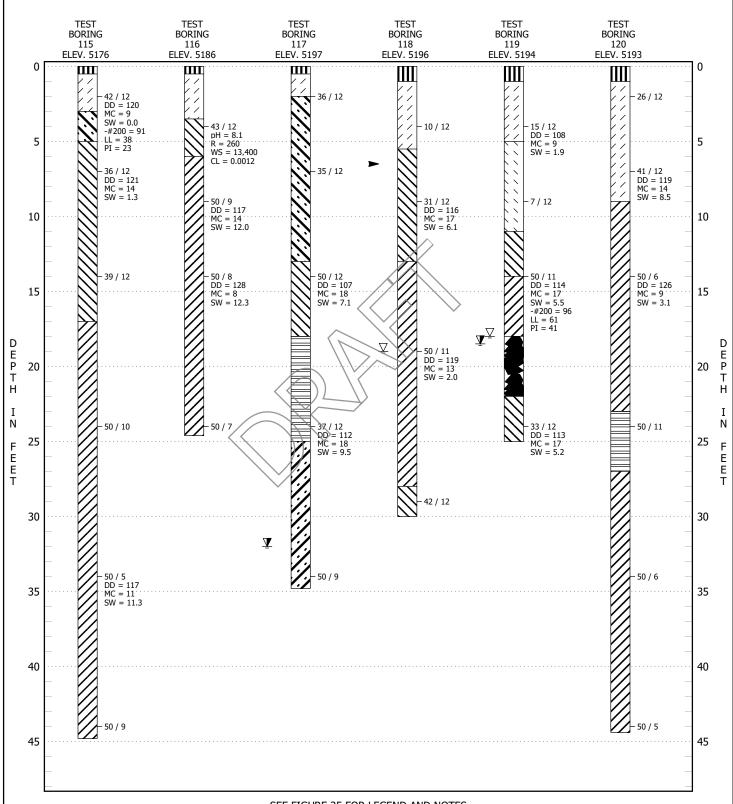




PROJECT NAME Colorado State Land Board Parcel

PROJECT NUMBER 223122

PROJECT LOCATION Erie, Colorado



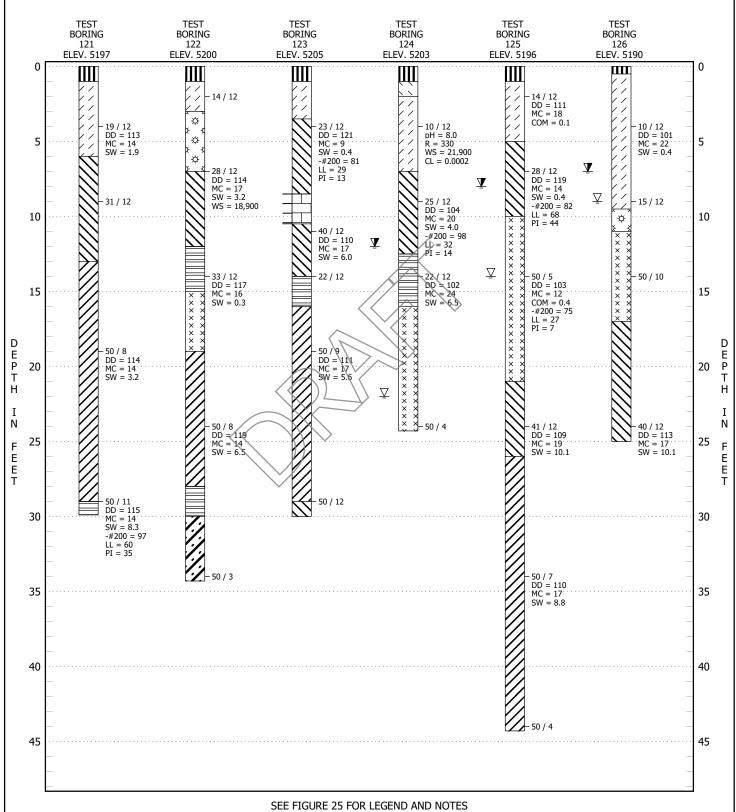
SEE FIGURE 25 FOR LEGEND AND NOTES
TEST BORING LOGS



PROJECT NAME Colorado State Land Board Parcel

PROJECT NUMBER 223122

PROJECT LOCATION Erie, Colorado



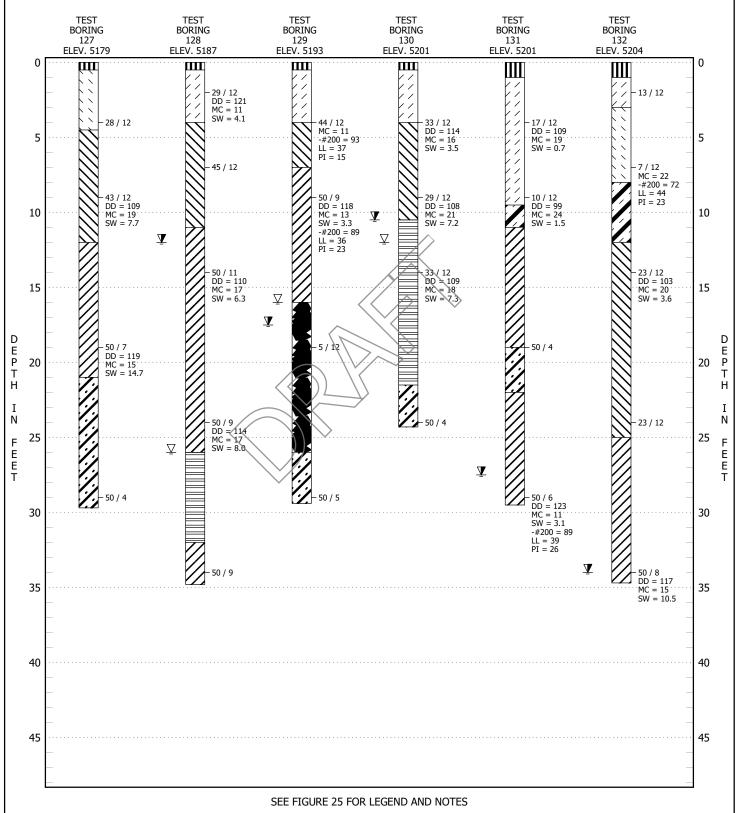
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PROJECT NAME Colorado State Land Board Parcel

PROJECT NUMBER 223122

PROJECT LOCATION Erie, Colorado



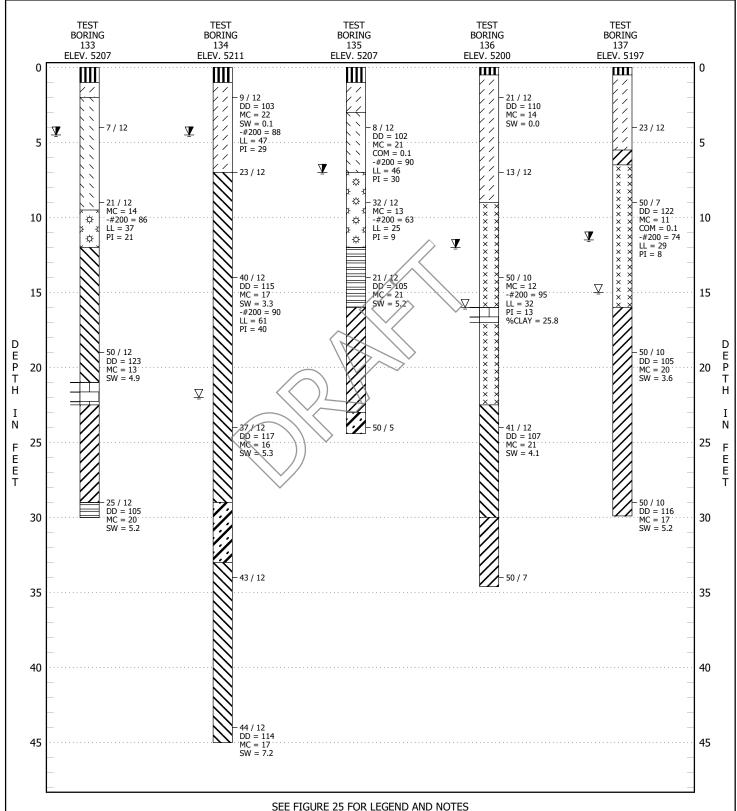
TEST BORING LOGS



PROJECT NAME Colorado State Land Board Parcel

PROJECT NUMBER 223122

PROJECT LOCATION Erie, Colorado



TEST BORING LOGS



PROJECT NAME Colorado State Land Board Parcel PROJECT LOCATION Erie, Colorado

PROJECT NUMBER 223122

SOIL DESCRIPTIONS

Fill, sand, medium dense, silty, clayey

Topsoil, clay, sandy, organic

Clay, soft

Clay, medium stiff

Clay, stiff to very stiff

Sand, loose



Sand, medium dense, silty



Sand, medium dense, silty, clayey



Sand, dense to very dense, silty



Clay (Weathered Claystone), medium stiff to stiff



Claystone (Bedrock), firm to medium hard



Claystone (Bedrock), hard to very hard



Claystone (Bedrock), with lignite



Ironstone (Bedrock), very hard



Lignite, black



Siltstone (Bedrock), weathered to medium hard



Siltstone (Bedrock), hard to very hard



Sandstone (Bedrock), firm to medium hard



Sandstone (Bedrock), hard to very hard

ABBREVIATIONS

DD Dry density of sample, pounds per cubic foot (pcf)

MC Moisture content, percentage of dry weight of soil (%)

Swell under a surcharge of 1000 pounds per square foot (psf) upon wetting (%) $\,$ SW

COM Compression under a surcharge of 1000 psf upon wetting (%)

UC Unconfined compressive strength (psf) -#200 Percent passing the No. 200 sieve (%)

LL Liquid Limit PΙ Plasticity Index NP Nonplastic

NV No Value

Ηq Acidity or alkalinity of sample

Resistivity (ohms-cm)

Water soluble sulfates, parts per million (ppm)

QĹ. Chlorides (%)

x blows of a 140-pound hammer falling 30 inches were required to drive a 2.5-inch outside diameter sampler y inches

x blows of a 140-pound hammer falling 30 inches were required to drive a 2.0-inch outside diameter sampler y inches x/y SS

C-x Depth of cut to grade of x feet

Depth of fill to grade of x feet F-x

FG Finished grade NR No sample recovered ND No drive taken

Bounce Sampler bounced during driving

В Bulk sample AS Auger sample

Well to very well cemented layer \equiv

Practical drilling refusal

 ∇ Water level at time of drilling

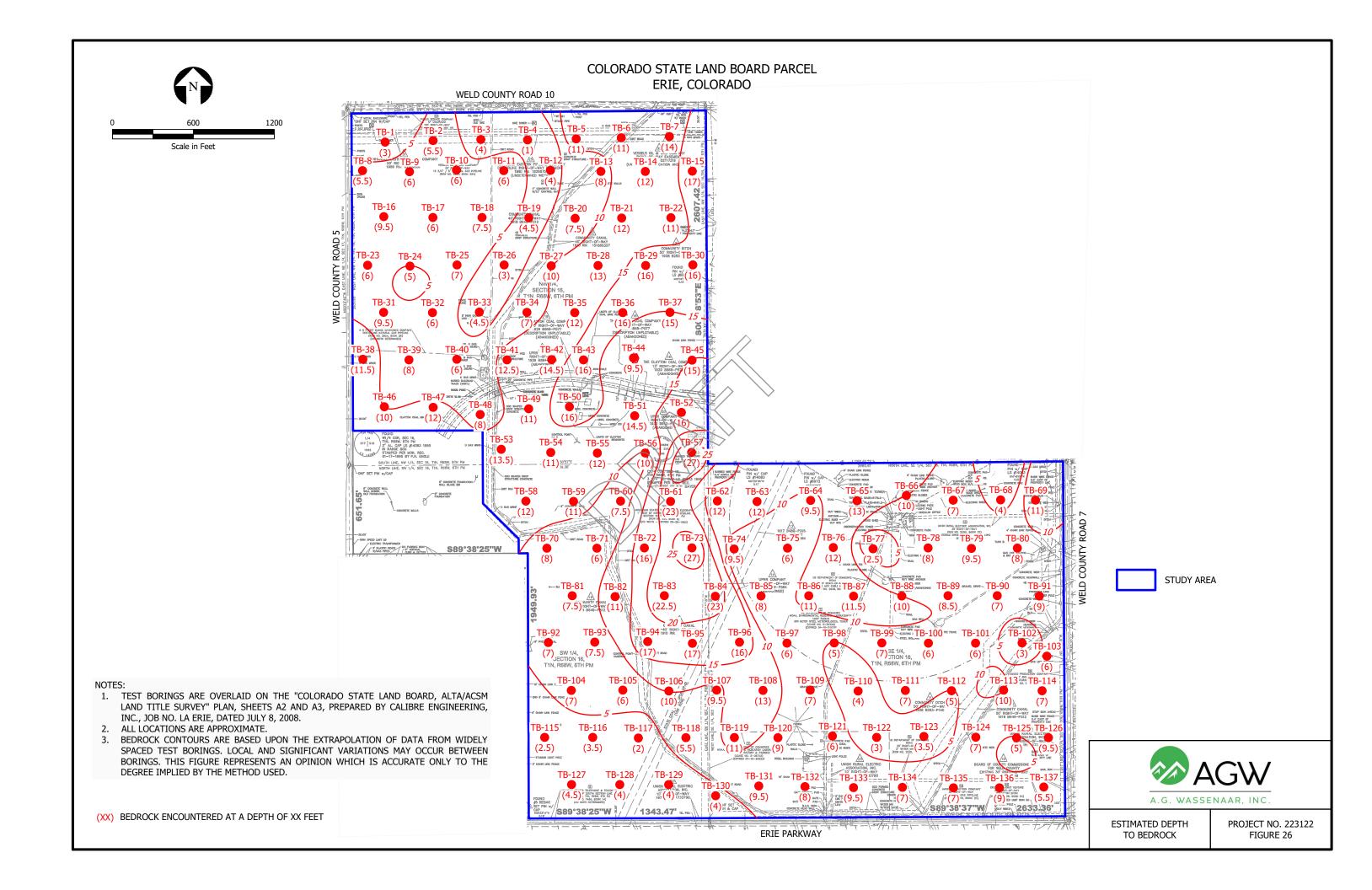
 \mathbf{V} Water level 1 to 9 day(s) after drilling

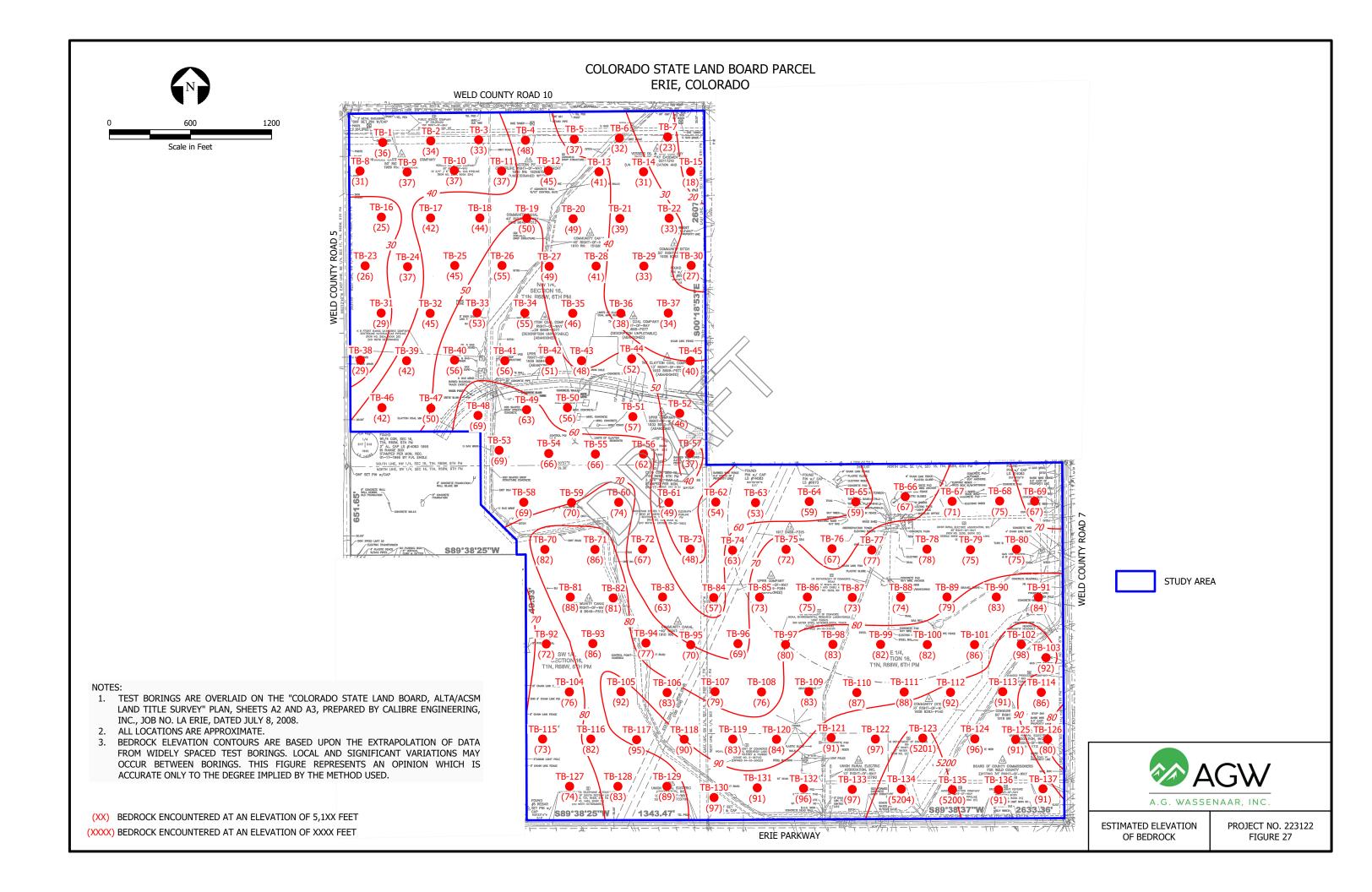
Caved depth 1 to 9 day(s) after drilling

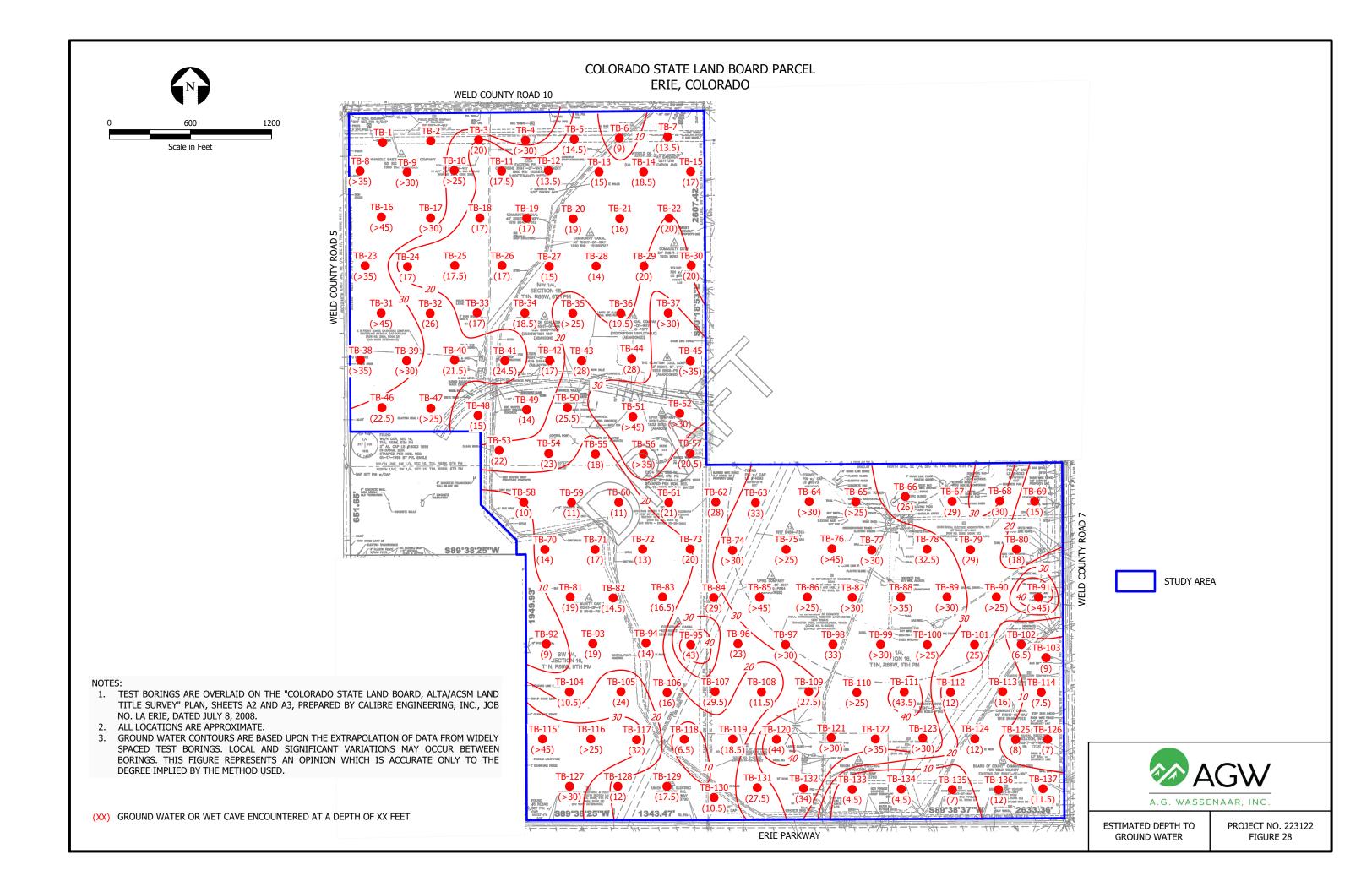
Notes:

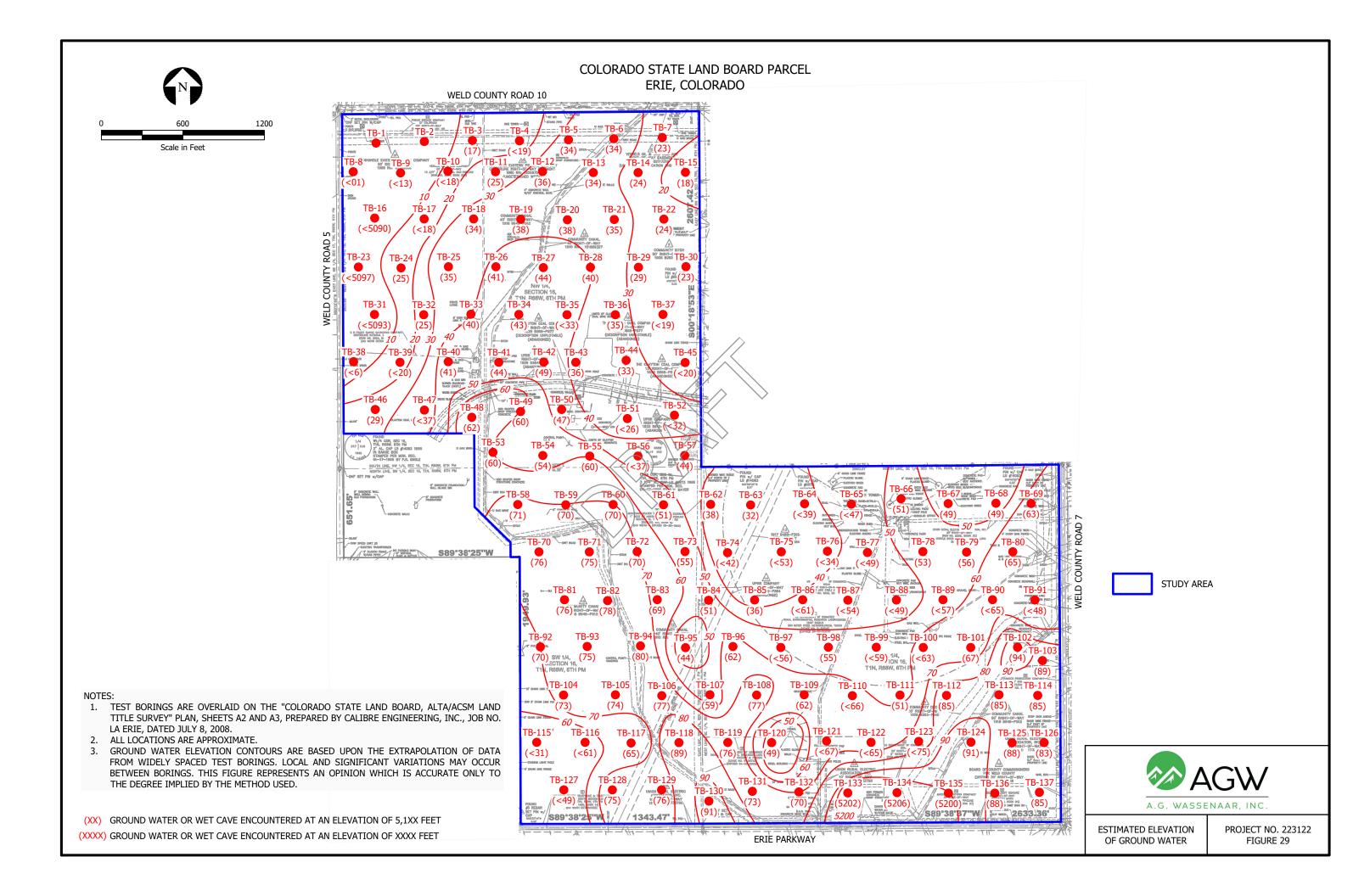
- 1. Test borings were drilled October 7, 2022 to November 1, 2022.
- 2. Locations of the test borings were staked by others at locations chosen by
- 3. The horizontal lines shown on the logs differentiate materials and represent the approximate boundaries between materials. The transitions between materials may be gradual.
- 4. Elevations were obtained from staking provided by others and have been rounded to the nearest foot.
- 5. Test boring logs shown are subject to the limitations, explanations, and conclusions of this report.

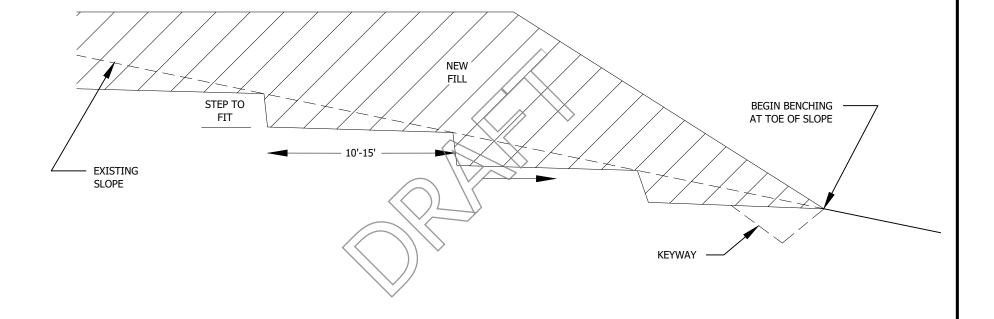
LEGEND AND NOTES FIGURE 25











NOTES:

- 1. BENCHING REQUIRED WHEN EXISTING SLOPE IS 5 : 1 (HORIZONTAL : VERTICAL) OR STEEPER
- 2. CONTINUE BENCHING UNTIL NATURAL SLOPE FLATTENS OR DAYLIGHTS
- 3. DRAINS MAY BE REQUIRED IF GROUND WATER IS ENCOUNTERED
- 4. ADDITIONAL EXCAVATION MAY BE REQUIRED BY AGW IF SLOPE INSTABILITY IS NOTED
- 5. A KEYWAY MAY BE REQUIRED BY AGW DEPENDING UPON SLOPE CONFIGURATION
- 6. NOT TO SCALE



GENERALIZED BENCHING DETAIL

PROJECT NO. 223122 FIGURE 30

APPENDIX A LABORATORY TEST RESULTS

SUMMARY OF LABORATORY TEST RESULTS	TABLE A-1
SWELL-CONSOLIDATION TEST RESULTS	FIGURES A-1 THROUGH A-175
GRADATION/ATTERBERG TEST RESULTS	FIGURES A-176 THROUGH A-225
GRADATION/ATTERBERG WITH HYDROMETE	ER
TEST RESULTS	FIGURES A-226 THROUGH A-229
STANDARD PROCTOR TEST RESULTS	FIGURES A-230 AND A-231

Project Number 223122 Colorado State Land Board Parcel Erie, Colorado

1 of 17

Test Boring Number	Depth (feet)	Soil Type	Natural Dry Density (pcf)	Natural Moisture (%)	Swell / Consolidation (-) (%) 1	Swell Pressure (psf)	Specific Gravity	% Passing #200 Sieve	% Clay	Atte Liquid Limit LL	rberg Plasticity Index PI	pН	Resistivity (ohm•cm)	Water Soluble Sulfates (ppm)	Chlorides (%)
1	2	Clay, sandy	117	9	0.0	NA	J. 4.1.07	0.010	70 0.071			P	(6	(pp)	(70)
1	7	Siltstone, clayey, trace sand		9			2.711	99	23.5	29	8				
1	14	Claystone, slightly sandy	108	20	9.7	_									
1	44	Claystone, slightly sandy	115	13	12.9	14,800	/								
2	4	Clay, sandy	109	17	1.2	5,400									
2	9	Claystone, slightly sandy		10			// ^	87		27	7				
2	29	Claystone, slightly sandy	114	15	3.5	5,800		***							
3	2	Clay, sandy	118	13	2.0	7,100									
3	7	Claystone, slightly sandy	113	20	6.0	8,500									
3	14	Claystone, slightly sandy	108	12	-0.1)NA									
3	24	Siltstone, clayey, trace sand		12			2.696	97	23.7	30	11				
4	9	Claystone, trace sand	124	11	3.7	10,000								18,600	
4	19	Claystone, trace sand	116	16	8.0	26,200		99		67	44				
5	4	Clay, sandy, trace gravel	114	19	0.0	NA		75		38	24				
5	14	Claystone, slightly sandy	112	15	1.9	5,000									
5	24	Claystone, slightly sandy	116	15	4.8	13,200									
6	2	Clay, sandy	103	19	0.3	2,100									
6	14	Claystone, slightly sandy	106	21	5.1	3,500									
6	34	Claystone, slightly sandy	118	18	8.3	1									
7	9	Clay, sandy	116	14	-0.5	NA									
7	29	Siltstone, clayey, trace sand	120	12	0.4	2,100		98		38	20				
8	2	Clay, sandy, trace gravel	118	11	4.1	11,000		82		42	25				
8	7	Claystone, sandy	120	13	5.1	13,200		85		46	29				
8	24	Claystone, slightly sandy	114	16	11.1	20,600									
9	4	Clay, sandy	111	12	-0.1	NA								19,600	

Colorado State Land Board Parcel

Project Number 223122

Erie, Colorado

2 of 17

										Atte	berg				
Test Boring Number	Depth (feet)	Soil Type	Natural Dry Density (pcf)	Natural Moisture (%)	Swell / Consolidation (-) (%) ¹	Swell Pressure (psf)	Specific Gravity	% Passing #200 Sieve	% Clay	Liquid Limit LL	Plasticity Index PI	pН	Resistivity (ohm•cm)	Water Soluble Sulfates (ppm)	Chlorides (%)
9	9	Sandstone, very silty		8				46		NV	NP				
9	19	Claystone, slightly sandy	113	16	9.3	16,700									
10	4	Clay, sandy	111	13	3.5	6,700		^							
10	14.5	Siltstone, clayey, slightly sandy					2.693	90	24.5	25	9				
11	2	Clay, sandy	109	17	0.5	2,500									
11	14	Siltstone, clayey, slightly sandy				<	2,652	95	21.5	29	9				
11	34	Claystone, slightly sandy	117	14	6.8	12,200									
12	4	Clay (Weathered Claystone), sandy	110	18	0.4	2,300	<i>}</i> />>								
12	9	Clay (Weathered Claystone), sandy	104	22	4.4	7,500									
12	29	Claystone, sandy (lens)	123	12	4.7	32,000									
13	2	Clay, sandy	110	14	0.4	NA		90							
13	7	Clay, sandy										8.1	330	28,400	0.0002
13	24	Claystone, slightly sandy	113	15	0.5	2,300									
14	19	Claystone, slightly sandy	111	17	0.9	3,000									
14	29	Claystone, slightly sandy	113	18	5.6	12,700									
15	9	Clay, sandy	108	18	-0.1	NA									
15	24	Claystone, slightly sandy (lens)	108	15	0.0	NA									
16	2	Clay, sandy	115	12	0.3	2,000		78		32	15				
16	7	Sand, very silty		9				32		NV	NP				
16	14	Claystone, slightly sandy										8.2	360	2,400	0.0087
16	44	Claystone, slightly sandy	124	12	8.8	35,000									
17	4	Silt, very sandy (lens)		10				60		NV	NP				
17	19	Claystone, slightly sandy	108	20	7.1	11,000									1

Project Number 223122 Colorado State Land Board Parcel Erie, Colorado 3 of 17

			Natural		Swell /					Atte	rberg			Water	
Test Boring Number	Depth (feet)	Soil Type	Dry Density (pcf)	Natural Moisture (%)	Consolidation (-) (%) 1	Swell Pressure (psf)	Specific Gravity	% Passing #200 Sieve	% Clay	Liquid Limit LL	Plasticity Index PI	pН	Resistivity (ohm•cm)	Soluble Sulfates (ppm)	Chlorides (%)
17	29	Claystone, slightly sandy	120	17	7.2	23,900	•					•			, ,
18	2	Clay, slightly sandy	114	13	2.8	10,600		91		43	26				
18	7	Claystone, slightly sandy	113	16	4.7	9,500		^							
18	24	Siltstone, clayey, sandy		12			/	74		34	17				
19	4	Claystone, slightly sandy	117	13	9.2	15,200									
19	9	Claystone, slightly sandy	111	20	4.4	9,100	// ^								
19	19	Claystone, slightly sandy	116	17	5.7	13,000		7							
19	29	Claystone, sandy (lens)	114	16	6.8	15,500									
20	4	Clay, sandy	123	12	2.4	10,000									
20	9	Claystone, slightly sandy	109	20	4.8	8,700	\	92		61	38				
20	14	Claystone, slightly sandy	111	17	6.5	11,900									
21	7	Clay, sandy	113	13	1.3	4,500		76		41	20				
21	24	Claystone, slightly sandy	116	9	0.4	2,300									
21	44	Claystone, slightly sandy	114	18	5.3	12,600									
22	4	Clay, sandy	113	9	2.5	5,500									
22	19	Claystone, sandy	116	18	4.3	7,800									
22	29	Claystone, sandy		13				79		34	15				
23	2	Clay, sandy	105	21	0.0	NA									
23	7	Clay (Weathered Claystone), sandy	94	27	4.9	5,500									
23	14	Claystone, slightly sandy	109	20	7.6	13,500									
24	4	Clay, sandy	101	23	3.9	5,500									
24	9	Claystone, slightly sandy	104	21	5.3	4,100									
24	19	Claystone, slightly sandy	122	12	7.7	16,200									
25	4	Clay, slightly sandy	119	13	4.4	15,900		87		46	29			<100	
25	9	Claystone, slightly sandy	118	14	2.9	9,300									

December 20, 2022

Project Number 223122 Colorado State Land Board Parcel Erie, Colorado 4 of 17

										Atter	bera				
Test Boring Number	Depth (feet)	Soil Type	Natural Dry Density (pcf)	Natural Moisture (%)	Swell / Consolidation (-) (%) ¹	Swell Pressure (psf)	Specific Gravity	% Passing #200 Sieve	% Clay	Liquid Limit LL	Plasticity Index PI	pН	Resistivity (ohm•cm)	Water Soluble Sulfates (ppm)	Chlorides (%)
25	14	Claystone, slightly sandy	123	12	0.9	5,000									
26	7	Claystone, trace sand	100	19	1.7	3,300									
26	14	Claystone, trace sand	114	14	4.5	4,500		98		53	32				
26	24	Claystone, trace sand	120	11	1.5	4,600	/								
26	44	Claystone, trace sand	103	20	11.2	11,400									
27	4	Clay, sandy	108	20	0.5	2,100	// ^								
27	9	Clay, sandy	101	23	0.0	NA									
27	19	Claystone, slightly sandy	105	18	4.8	7,400									
28	7	Clay, sandy	98	22	0.0	NA									
28	14	Claystone, trace sand	112	17	4.3	3,200		96		56	34				
28	34	Claystone, sandy (lens)	128	11	3.3	13,600									
29	9	Clay, sandy	110	16	0.7	3,000									
29	29	Siltstone, very sandy, clayey		12				57		32	15				
30	4	Clay, sandy	101	8	1.1	2,500									
30	14	Clay, sandy	119	15	1.1	3,600								300	
30	24	Claystone, slightly sandy		14				90		33	15				
31	2	Clay, sandy	108	9	2.4	5,200									
31	7	Sand, very silty		5				36		NV	NP				
31	14	Claystone, slightly sandy	115	16	7.9	13,300									
31	34	Claystone, slightly sandy	114	15	11.2	22,100									
32	4	Clay, sandy	118	14	0.3	3,000								200	
32	9	Claystone, very sandy (lens)	_	9	_			69		30	11				
32	19	Claystone, trace sand	119	14	8.8	24,500		99		59	38				
33	2	Clay, sandy	100	19	-0.3	NA									
33	7	Siltstone, clayey, sandy		12				71		33	17				

Project Number 223122 Colorado State Land Board Parcel Erie, Colorado 5 of 17

Test			Natural Dry	Natural	Swell / Consolidation	Swell		% Passing		Liquid	rberg Plasticity			Water Soluble	
Boring Number	Depth (feet)	Soil Type	Density (pcf)	Moisture (%)	(-) (%) ¹	Pressure (psf)	Specific Gravity	#200	% Clay	Limit LL	Index PI	pН	Resistivity (ohm•cm)	Sulfates (ppm)	Chlorides (%)
33		Sandstone, very clayey	(pci)	15	(70)	(psi)	Glavity	47	70 Clay	27	11	рп	(Onini Citi)	(ррпт)	(70)
34		Clay, sandy	106	17	0.5	2,600									
34		Claystone, slightly sandy	108	19	6.3	10,000									
34	19	Claystone, slightly sandy	124	12	3.1	6,200									
35	9	Clay, sandy	109	16	0.0	NA									
35	14	Claystone, trace sand	106	20	4.1	4,000	// ^	98		74	50				
36	2	Clay, sandy	105	8	2.1	3,300		~							
36	7	Clay, sandy	110	15	0.0	NA									
36	24	Claystone, slightly sandy	116	17	6.4	16,500	/\\\\								
36	34	Sandstone, very clayey		12)) [48		29	11				
37	9	Clay, sandy	107	12	1.5	3,000									
37	19	Claystone, slightly sandy	113	16	10.8	15,500									
38	2	Clay, sandy	109	10	0.8	5,000		85		37	18				
38	14	Claystone, slightly sandy	118	14	3.6	10,000									
38	24	Claystone, slightly sandy	117	14	4.0	9,100									
39	4	Clay, sandy	116	11	1.5	6,000									
39	9	Sandstone, silty										8.5	4,500	100	0.0038
39	19	Claystone, slightly sandy	120	14	13.1	28,300									
39	29	Claystone, slightly sandy	128	8	4.3	12,400									
40	7	Claystone, trace sand	112	17	2.8	5,000		96		44	24				
40	14	Claystone, trace sand	125	13	2.5	13,600									
40	44	Claystone, slightly sandy		12				92		49	33				
41	4	Clay, sandy	103	23	-0.3	NA									
41	19	Claystone, slightly sandy	116	15	8.4	15,700									
42	4	Clay, sandy	109	17	0.1	1,300									

Project Number 223122 Colorado State Land Board Parcel

Erie, Colorado

6 of 17

			Natural		Swell /					Atte	rberg			Water	
Test Boring Number	Depth (feet)	Soil Type	Dry Density (pcf)	Natural Moisture (%)	Consolidation (-) (%) 1	Swell Pressure (psf)	Specific Gravity	% Passing #200 Sieve	% Clay	Liquid Limit LL	Plasticity Index PI	pН	Resistivity (ohm•cm)	Soluble Sulfates (ppm)	Chlorides (%)
42	9	Clay, sandy	111	16	0.8	3,000									
42	24	Claystone, slightly sandy	110	19	7.5	15,900									
43	2	Clay, sandy	111	9	3.3	7,400									
43	14	Clay, sandy, trace gravel	117	15	0.9	3,300		80		45	30				
43	24	Claystone, slightly sandy	113	17	4.1	9,100									
44	4	Clay, sandy	116	14	0.3	1,800	// ^								
44	9	Claystone, sandy	119	14	1.3	4,100		83		46	24				
44	29	Claystone, sandy	125	12	7.9	21,900									
45	2	Clay, sandy	107	8	1.5	4,100									
45	7	Clay, sandy	101	22	0.5	2,200									
45	14	Claystone, sandy	122	11	2.1	5,000		70		36	22				
45	24	Claystone, slightly sandy	121	13	10.3	21,400									
46	9	Sand, very clayey	122	8	0.1	2,500		46							
46	19	Claystone, silty	112	17	8.5	17,900		100		54	33				
46	29	Claystone, silty	116	13	1.5	3,500									
47	4	Clay, sandy	112	11	2.3	7,500									
47		Sand, very clayey, slightly gravelly	121	11	0.8	4,200		47		33	14				
47	24	Sandstone, very silty		14				38		NV	NP				
48	2	Clay, sandy	110	7	2.5	5,900									
48	7	Clay, sandy	106	19	-0.1	NA									
48	24	Claystone, slightly sandy	113	17	8.4	15,900									
48	44	Claystone, slightly sandy	117	13	0.8	6,600									
49	4	Clay, sandy	113	12	-0.1	NA									
49	9	Clay, sandy	104	20	0.3	2,500		73		42	22				
49	29	Claystone, slightly sandy	109	18	4.9	7,800									

TABLE A-1 SUMMARY OF LABORATORY TEST RESULTS December 20, 2022

SI RESULIS

Project Number 223122 Colorado State Land Board Parcel Erie, Colorado 7 of 17

										Atte	rberg				
Test Boring Number	Depth (feet)	Soil Type	Natural Dry Density (pcf)	Natural Moisture (%)	Swell / Consolidation (-) (%) ¹	Swell Pressure (psf)	Specific Gravity	% Passing #200 Sieve	% Clay	Liquid Limit LL	Plasticity Index PI	рН	Resistivity (ohm•cm)	Water Soluble Sulfates (ppm)	Chlorides (%)
50	2	Clay, sandy	123	10	4.4	32,000									
50	7	Clay, sandy										7.9	320	4,900	0.0026
50	14	Clay, sandy, trace gravel	114	16	1.9	4,300		<u></u>		46	27				
50	34	Claystone, slightly sandy	115	16	7.6	24,100									
51	2	Clay, very sandy, slightly gravelly	124	11	4.1	18,700		46		39	18				
51	14	Claystone, slightly sandy	114	9	0.3	1,300 <		\bigcirc						19,200	
51	24	Claystone, trace sand	118	14	7.9	20,700									
51	44	Claystone, trace sand	127	12	8.1	17,000		98		54	32				
52	9	Clay, sandy	114	16	2.0	7,600									
52	19	Claystone, slightly sandy	124	12	10.3	32,000	>	95		54	32				
53	2	Clay, sandy	115	14	0.7	2,500									
53	7	Clay, sandy	108	19	0.7	4,200									
53	34	Claystone, slightly sandy	107	20	7.7	13,300									
54	4	Clay, sandy		18				84		33	14				
54	9	Clay, sandy	109	19	-0.4	NA									
54	19	Claystone, slightly sandy	116	16	12.4	12,200									
55	9	Clay, sandy	91	39	-0.3	NA									
55	24	Claystone, slightly sandy	117	15	8.9	11,900									
56	7	Clay, very sandy	119	15	2.3	10,000		67		44	21				
56	14	Claystone, slightly sandy	114	18	12.4	18,500									
56	34	Claystone, slightly sandy	120	15	13.5	21,700									
57	9	Clay, sandy	109	14	0.0	NA									
57	19	Clay, sandy	108	19	0.1	1,800		82		36	12				
58	2	Clay, sandy	116	13	0.3	1,800									
58	14	Claystone, slightly sandy	111	18	4.3	7,900	_					_			

Project Number 223122 Colorado State Land Board Parcel Erie, Colorado 8 of 17

			Natural		Swell /						rberg			Water	
Test Boring Number	Depth (feet)	Soil Type	Dry Density (pcf)	Natural Moisture (%)	Consolidation (-) (%) ¹	Swell Pressure (psf)	Specific Gravity	% Passing #200 Sieve	% Clay	Liquid Limit LL	Plasticity Index PI	pН	Resistivity (ohm•cm)	Soluble Sulfates (ppm)	Chlorides (%)
58	34	Claystone, slightly sandy	114	17	5.1	7,700									
59	9	Clay, slightly sandy	103	22	-0.1	NA		90		44	28				
59	19	Claystone, slightly sandy	115	17	6.1	33,000		^							
60	4	Clay, sandy	103	19	-0.3	NA									
60	9	Clay (Weathered Claystone), sandy	107	20	1.2	2,800	//								
60	24	Claystone, slightly sandy	106	19	8.0	9,700 <									
61	7	Clay, sandy	118	13	1.5	5,900		81		38	21				
61	14	Clay, sandy	112	16	-0.3	NA									
61	24	Claystone, sandy	113	14	5.2	6,700		70		44	41				
61	44	Claystone, sandy	117	17	6.3	18,500	>								
62	4	Clay, slightly sandy	108	8	1.5	4,600		86							
62	9	Clay, sandy	122	11	2.1	10,800									
63	2	Clay, slightly sandy	111	10	3.6	12,000									
63	7	Clay, slightly sandy	119	10	6.3	24,500		88		41	24				
63	14	Claystone, slightly sandy	119	15	9.6	13,400									
64	9	Claystone, slightly sandy										8.1	290	2,900	0.0025
64	19	Claystone, slightly sandy	122	9	3.6	14,100									
64	29	Claystone, slightly sandy	114	15	11.3	25,700		95		74	48				
65	9	Clay, sandy	128	10	4.0	14,100									
65	14	Claystone, slightly sandy	123	13	8.0	16,800									
66	2	Clay, sandy	103	10	1.1	2,600									
66	14	Claystone, trace sand	129	11	3.1	11,300		96		38	16				
66	24	Siltstone, clayey, sandy		11				72		25	7				
67	4	Clay, sandy	108	10	2.0	4,100									
67	9	Claystone, slightly sandy	123	7	4.5	6,500				35	13				

Project Number 223122 Colorado State Land Board Parcel Erie, Colorado

9 of 17

										Atte	rberg				
Test Boring Number	Depth (feet)	Soil Type	Natural Dry Density (pcf)	Natural Moisture (%)	Swell / Consolidation (-) (%) ¹	Swell Pressure (psf)	Specific Gravity	% Passing #200 Sieve	% Clay	Liquid Limit LL	Plasticity Index PI	pН	Resistivity (ohm•cm)	Water Soluble Sulfates (ppm)	Chlorides (%)
68	7	Siltstone, clayey, trace sand		6			2.681	97	23.2	28	9				
68	14	Claystone, slightly sandy	120	14	7.1	17,100									
68	24	Claystone, slightly sandy	114	13	3.7	28,000		^							
69	9	Clay, trace sand	108	20	1.3	2,700	/	98		56	33			5,000	
69	29	Claystone, slightly sandy	107	18	1.2	4,300	//								
70	9	Claystone, sandy		13			$// \wedge$	77		34	17				
70	24	Claystone, slightly sandy	121	13	6.8	11,200									
71	14	Claystone, sandy	124	12	2.4	8,100									
71	24	Sandstone, clayey	123	12	0.3	2,500	?/\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\								
71	44	Claystone, slightly sandy	122	10	8.4	20,800	\								
72	4	Clay, sandy	110	15	0.0	NA									
72	19	Claystone, trace sand	114	18	8.5	12,700		99		64	39				
72	29	Claystone, trace sand	116	15	7.5	13,500									
73	7	Clay, sandy	107	15	0.1	1,800									
73	14	Clay, sandy	118	14	0.5	2,100									
73	34	Claystone, slightly sandy	112	19	10.7	16,200									
74	9	Claystone, slightly sandy	117	16	9.6	14,700									
74	19	Claystone, slightly sandy	123	13	5.1	16,400									
75	4	Clay, sandy	125	10	4.0	21,700									
75	9	Claystone, slightly sandy (lens)		8				93		32	16				
75	14	Claystone, slightly sandy	119	12	12.8	24,900									
76	2	Clay, sandy	112	9	2.9	6,400									
76	14	Claystone, slightly sandy	119	14	6.9	17,700									
76	34	Claystone, slightly sandy		6				91		27	9				
77	4	Claystone, sandy	115	9	7.1	14,100									

Project Number 223122 Colorado State Land Board Parcel Erie, Colorado 10 of 17

Test Boring Number	Depth (feet)	Soil Type	Natural Dry Density (pcf)	Natural Moisture (%)	Swell / Consolidation (-) (%) 1	Swell Pressure (psf)	Specific Gravity	% Passing #200 Sieve	% Clay	Atte Liquid Limit LL	rberg Plasticity Index PI	pН	Resistivity (ohm•cm)	Water Soluble Sulfates (ppm)	Chlorides (%)
77	19	Claystone, slightly sandy	123	11	9.2	21,500									
77	24	Claystone, slightly sandy													
77	29	Claystone, slightly sandy	113	18	5.3	11,800		^						22,200	
78	7	Clay, sandy	117	10	2.7	8,400									
78	14	Claystone, slightly sandy	123	12	13.9	32,000	//								
79	4	Clay, sandy	111	9	2.7	6,400	// ^								
79	19	Claystone, slightly sandy	119	10	6.1	11,200									
80	4	Clay, sandy	113	10	3.6	7,200									
80	9	Claystone, slightly sandy	122	14	6.9	32,000		93		55	34			18,300	
80	24	Claystone, slightly sandy	121	13	4.5	12,200									
81	2	Clay, sandy		5		$\langle \rightarrow \rangle$		82		38	22				
81	7	Clay (Weathered Claystone), slightly sandy	118	14	1.9	3,900		87		40	25				
81	14	Claystone, sandy (lens)	127	10	0.5	2,000		81		33	18				
81	44	Claystone, slightly sandy	121	14	9.6	20,000									
82	9	Clay, sandy										8.5	530	1,300	0.0051
82	19	Claystone, sandy (lens)	129	10	1.9	5,700									
82	29	Claystone, slightly sandy	110	16	7.7	10,800									
83	2	Clay, slightly sandy	114	11	2.1	6,800		90		44	27				
83	14	Clay, sandy, trace gravel	115	16	-0.1	NA		67		33	20				
83	24	Claystone, slightly sandy	111	19	8.3	15,300									
84	9	Clay, sandy	114	14	2.9	10,000									
84	19	Clay, sandy	112	17	-0.1	NA									
85	2	Clay, sandy	105	8	1.9	4,600									
85	14	Siltstone, very clayey, trace sand		10			2.661	98	40.4	44	27				

Project Number 223122 Colorado State Land Board Parcel Erie, Colorado 11 of 17

			Natural		Swell /					Atte	rberg			Water	
Test Boring Number	Depth (feet)	Soil Type	Dry Density (pcf)	Natural Moisture (%)	Consolidation (-) (%) ¹	Swell Pressure (psf)	Specific Gravity	% Passing #200 Sieve	% Clay	Liquid Limit LL	Plasticity Index PI	pН	Resistivity (ohm•cm)	Soluble Sulfates (ppm)	Chlorides (%)
85	24	Siltstone, clayey, very sandy		7				63		26	7				
85	44	Claystone, slightly sandy	114	18	8.9	25,300									
86	4	Clay, sandy	107	10	1.2	2,600									
86	14	Claystone, slightly sandy	114	16	8.4	18,700									
87	9	Clay, sandy	126	12	5.6	13,600									
87	19	Claystone, trace sand	122	13	10.5	30,000		97		62	41				
87	29	Claystone, trace sand	114	17	12.7	13,700									
88	2	Clay, sandy	110	10	3.1	7,400									
88	24	Claystone, slightly sandy	115	15	8.0	18,700	/\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\								
89	4	Clay, sandy	106	10	1.2	2,800									
89	19	Claystone, slightly sandy	120	12	7.9	15,500		95		48	28				
90	4	Clay, sandy	116	12	4.4	17,200									
90	9	Claystone, slightly sandy	123	13	5.6	7,700									
90	24	Claystone, slightly sandy	127	12	4.9	10,000									
91	2	Clay, slightly sandy			*							8.2	2,100	200	0.0026
91		Clay, slightly sandy, trace gravel	103	22	1.2	3,200		91		62	41				
91	14	Claystone, slightly sandy	107	20	7.1	11,100									
91	44	Claystone, slightly sandy	108	19	7.3	10,800									
92	4	Clay, sandy	105	19	-0.3	NA									
92	9	Claystone, slightly sandy	105	18	3.6	5,000								14,800	
92	29	Claystone, slightly sandy	118	14	7.3	12,600									
93	2	Clay, sandy	124	8	5.2	12,400									
93	7	Claystone, slightly sandy	110	18	4.8	11,500									
93	14	Claystone, slightly sandy	110	18	6.7	10,700									
93	34	Claystone, slightly sandy	117	16	7.6	14,900									

Project Number 223122 Colorado State Land Board Parcel Erie, Colorado 12 of 17

Test			Natural Dry	Natural	Swell / Consolidation	Swell		% Passing		Atte Liquid Limit	rberg Plasticity Index			Water Soluble	
Boring Number	Depth (feet)	Soil Type	Density (pcf)	Moisture (%)	(-) (%) ¹	Pressure (psf)	Specific Gravity	#200 Sieve	% Clay	LL	PI	pН	Resistivity (ohm•cm)	Sulfates (ppm)	Chlorides (%)
94		Clay, sandy		15				84		32	14	·			
94	19	Claystone, slightly sandy	105	22	1.9	4,200								22,200	
95	2	Clay, sandy	107	9	1.9	3,900									
95	7	Clay, sandy	109	19	0.5	2,200									
95	24	Claystone, slightly sandy	102	15	1.9	2,500									
95	34	Claystone, slightly sandy	116	16	5.6	10,800	// ^								
96	4	Clay, very sandy	113	7	2.1	4,100									
96	9	silt, very sandy (lens)	124	10	4.7	10,500		68		40	14				
96	24	Claystone, slightly sandy	125	13	7.5	27,400									
97	4	Clay, sandy	124	10	7.2	24,500									
97	9	Siltstone, clayey, sandy		7		$\langle \rangle$		85		32	16				
97	29	Siltstone, clayey, slightly sandy		6			2.658	94	28.0	25	8				
98	2	Clay, sandy										8.5	1,500	500	0.0026
98	7	Siltstone, clayey, sandy		7				83		26	9				
98	24	Claystone, slightly sandy	125	15	11.5	23,800									
99	4	Clay, slightly sandy	123	11	5.1	11,900		89		44	28				
99	9	Claystone, slightly sandy	121	13	7.1	26,600									
99	19	Claystone, slightly sandy	111	19	9.6	-									
100	9	Clay (Weathered Claystone), sandy	101	24	4.5	8,300									
100	14	Claystone, slightly sandy	123	13	6.9	16,800									
101	7	Claystone, slightly sandy	118	14	6.3	12,800									
101	14	Claystone, slightly sandy	123	11	2.4	8,700									
101	24	Claystone, slightly sandy	106	12	0.1	1,900									
101	44	Siltstone, very clayey, sandy					2.694		37.1	41	25				

Project Number 223122 Colorado State Land Board Parcel Erie, Colorado 13 of 17

Test Boring Number	Depth (feet)	Soil Type	Natural Dry Density (pcf)	Natural Moisture (%)	Swell / Consolidation (-) (%) 1	Swell Pressure (psf)	Specific Gravity	% Passing #200 Sieve	% Clay	Atte Liquid Limit LL	rberg Plasticity Index PI	рН	Resistivity (ohm•cm)	Water Soluble Sulfates (ppm)	Chlorides (%)
102		Siltstone, clayey, sandy	(F 5.7)	19	(10)	(60.)		81		25	6	F 2 2		(FF7	(10)
102		Clay (Weathered Claystone), sandy	103	20	2.5	3,600									
103	2	Clay, sandy	105	17	-0.3	NA		$\langle \rangle$							
103	14	Claystone, sandy	104	22	1.6	3,200									
103	34	Claystone, sandy	126	13	2.8	12,300		83		43	20				
104	9	Claystone, slightly sandy	123	14	1.5	2,700 <									
104	29	Claystone, slightly sandy	129	13	8.9	21,700									
105	9	Claystone, slightly sandy	121	15	6.3	20,000									
105	14	Claystone, slightly sandy	121	14	9.9	22,900)								
105	24	Claystone, silty	114	9	0.4	1,900	>	100		47	25				
106	7	Clay, sandy	113	16	2.0	5,300									
106	14	Claystone, trace sand	110	19	3.6	6,600		99		63	42				
106	44	Claystone, trace sand	109	17	4.7	11,900									
107	9	Claystone, slightly sandy	114	16	8.1	17,000		87		50	30				
107	19	Claystone, slightly sandy	112	18	12.5	17,300									
107	29	Claystone, slightly sandy	111	16	9.9	13,300									
108	7	Clay, sandy	119	13	6.8	38,000		83		49	31				
108	14	Claystone, slightly sandy	109	19	5.6	11,900									
108	24	Claystone, slightly sandy	111	18	7.1	16,500									
109	9	Claystone, slightly sandy	123	10	7.3	13,000									
109	19	Claystone, slightly sandy	117	15	8.3	18,000									
110	4	Clay (Weathered Claystone), sandy	109	17	2.9	5,700									
110	14	Claystone, slightly sandy	116	16	4.7	11,100									
110	24	Claystone, slightly sandy	122	12	10.8	36,000									

Project Number 223122 Colorado State Land Board Parcel Erie, Colorado 14 of 17

Tool			Natural	National	Swell / Consolidation	Contl		0/		Atte Liquid	rberg Plasticity			Water	
Test Boring	Depth		Dry Density	Natural Moisture	(-)	Swell Pressure	Specific	% Passing #200		Limit	Index		Resistivity	Soluble Sulfates	Chlorides
Number	(feet)	Soil Type	(pcf)	(%)	(%) ¹	(psf)	Gravity	Sieve	% Clay	LL	PI	pН	(ohm•cm)	(ppm)	(%)
111	2	Clay, sandy	107	16	1.7	2,900									
111	7	Claystone, slightly sandy	113	18	2.4	5,700									
111	14	Claystone, slightly sandy	120	14	7.1	19,200									
111	34	Siltstone, very clayey, sandy (lens)					2.640		33.5	34	18				
112	4	Clay, sandy	101	15	1.6	2,700									
112	9	Claystone, sandy	107	20	3.9	5,900 <									
112	19	Claystone, sandy	127	10	0.7	3,400		85		44	26				
113	2	Clay, sandy	109	18	0.3	1,900									
113	14	Claystone, slightly sandy	112	18	5.1	6,200									
113	34	Claystone, slightly sandy	118	13	5.3	13,500	>								
114	4	Clay, slightly sandy		21				86		40	23				
114	19	Claystone, slightly sandy	106	21	5.3	7,400									
114	29	Claystone, slightly sandy	114	18	4.8	11,900									
115	2	Clay, slightly sandy	120	9	0.0	NA		91		38	23				
115	7	Claystone, slightly sandy	121	14	1.3	3,900									
115	34	Claystone, slightly sandy	117	11	11.3	27,900									
116	4	Claystone, slightly sandy										8.1	260	13,400	0.0012
116	9	Claystone, slightly sandy	117	14	12.0	24,500									
116	14	Claystone, slightly sandy	128	8	12.3	25,900									
117	14	Claystone, slightly sandy	107	18	7.1	11,300									
117	24	Claystone, slightly sandy	112	18	9.5	11,500									
118	9	Claystone, slightly sandy	116	17	6.1	11,700									
118	19	Claystone, slightly sandy	119	13	2.0	7,900									
119	4	Clay, sandy	108	9	1.9	3,300									
119	14	Claystone, trace sand	114	17	5.5	12,600		96		61	41				

Project Number 223122 Colorado State Land Board Parcel Erie, Colorado 15 of 17

Test Boring Number	Depth (feet)	Soil Type	Natural Dry Density (pcf)	Natural Moisture (%)	Swell / Consolidation (-) (%) 1	Swell Pressure (psf)	Specific Gravity	% Passing #200 Sieve	% Clay	Atte Liquid Limit LL	rberg Plasticity Index PI	рН	Resistivity (ohm•cm)	Water Soluble Sulfates (ppm)	Chlorides (%)
119	24	Claystone, trace sand	113	17	5.2	11,500						·			
120	7	Clay, sandy	119	14	8.5	21,400									
120	14	Claystone, slightly sandy	126	9	3.1	11,200		^							
121	4	Clay, sandy	113	14	1.9	6,400									
121	19	Claystone, trace sand	114	14	3.2	7,700									
121	29	Claystone, trace sand	115	14	8.3	17,900		97		60	35				
122	7	Claystone, slightly sandy	114	17	3.2	7,100								18,900	
122	14	Claystone, slightly sandy	117	16	0.3	2,500									
122	24	Claystone, slightly sandy	119	14	6.5	11,000									
123	4	Claystone, sandy	121	9	0.4	2,000		81		29	13				
123	11	Claystone, sandy	110	17	6.0	9,600									
123	19	Claystone, sandy	111	17	5.6	7,200									
124	4	Clay, sandy										8.0	330	21,900	0.0002
124	9	Claystone, trace sand	104	20	4.0	6,200		98		32	14				
124	14	Claystone, trace sand	102	24	6.5	10,300									
125	2	Clay, sandy	111	18	-0.1	NA									
125	7	Claystone, sandy	119	14	0.4	1,800		82		68	44				
125	14	Siltstone, clayey, sandy	103	12	-0.4	NA		75		27	7				
125	24	Claystone, slightly sandy	109	19	10.1	12,700									
125	34	Claystone, slightly sandy	110	17	8.8	17,500									
126	4	Clay, sandy	101	22	0.4	2,300									
126	24	Claystone, slightly sandy	113	17	10.1	15,500									
127	9	Claystone, slightly sandy	109	19	7.7	15,700									
127	19	Claystone, slightly sandy	119	15	14.7	26,900									
128	2	Clay, sandy	121	11	4.1	11,300	_			_	_	_			

Project Number 223122 Colorado State Land Board Parcel Erie, Colorado 16 of 17

										Atte	rberg				
Test Boring Number	Depth (feet)	Soil Type	Natural Dry Density (pcf)	Natural Moisture (%)	Swell / Consolidation (-) (%) ¹	Swell Pressure (psf)	Specific Gravity	% Passing #200 Sieve	% Clay	Liquid Limit LL	Plasticity Index PI	pН	Resistivity (ohm•cm)	Water Soluble Sulfates (ppm)	Chlorides (%)
128	14	Claystone, slightly sandy	110	17	6.3	12,300									
128	24	Claystone, slightly sandy	114	17	8.0	20,600									
129	4	Siltstone, clayey, slightly sandy (lens)		11				93		37	15				
129	9	Claystone, slightly sandy	118	13	3.3	6,300		89		36	23				
130	4	Claystone, slightly sandy	114	16	3.5	9,000									
130	9	Claystone, slightly sandy	108	21	7.2	12,200 <		\Diamond							
130	14	Claystone, slightly sandy	109	18	7.3	10,590									
131	4	Clay, sandy	109	19	0.7	2,100									
131	9	Clay (Weathered Claystone), sandy	99	24	1.5	2,400									
131	29	Claystone, slightly sandy	123	11	3.1	8,700		89		39	26				
132	7	Clay, sandy, slightly gravelly		22				72		44	23				
132	14	Claystone, slightly sandy	103	20	3.6	6,900									
132	34	Claystone, slightly sandy	117	15	10.5	17,500									
133	9	Siltstone, slightly sandy		14	*			86		37	21				
133	19	Claystone, slightly sandy	123	13	4.9	12,600									
133	29	Claystone, slightly sandy	105	20	5.2	8,300									
134	2	Clay, slightly sandy	103	22	0.1	2,200		88		47	29				
134	14	Claystone, slightly sandy	115	17	3.3	7,100		90		61	40				
134	24	Claystone, slightly sandy	117	16	5.3	15,600									
134	44	Claystone, slightly sandy	114	17	7.2	11,800									
135	4	Clay, slightly sandy	102	21	-0.1	NA		90		46	30				
135	9	Siltstone, very sandy, clayey		13				63		25	9				
135	14	Claystone, slightly sandy	105	21	5.2	7,500									
136	2	Clay, sandy	110	14	0.0	NA									



December 20, 2022

Project Number 223122 Colorado State Land Board Parcel Erie, Colorado 17 of 17

Test Boring	Depth		Natural Dry Density	Natural Moisture	Swell / Consolidation (-)	Swell Pressure	Specific	% Passing #200		Atter Liquid Limit	rberg Plasticity Index		Resistivity	Water Soluble Sulfates	Chlorides
Number	(feet)	Soil Type	(pcf)	(%)	(%) ¹	(psf)	Gravity		% Clay	LL	PI	pН	(ohm•cm)	(ppm)	(%)
136	14	Siltstone, clayey, slightly sandy		12			2.710	95	25.8	32	13				
136	24	Claystone, slightly sandy	107	21	4.1	6,800									
137	9	Siltstone, clayey, sandy	122	11	-0.1	NA		/>74		29	8				
137	19	Claystone, slightly sandy	105	20	3.6	5,400									
137	29	Claystone, slightly sandy	116	17	5.2	16,600									
Bulk 1 ²	_	Clay, slightly sandy	107.6 ⁴	18.0 ⁴		<		89		41	23			11,400	
Bulk 1 ²	ı	Clay, slightly sandy	102	18	0.0 5	ŅA									
Bulk 2 ³	_	Clay, slightly sandy, trace gravel	103.5 ⁴	20.1 4				82		43	22			8,800	
Bulk 2 ³	_	Clay, slightly sandy, trace gravel	98	20	0.0 5	NA	>								

Notes:

NA - Not Applicable, NV - No Value, NP - Nonplastic

¹ Indicates percent swell or consolidation (-) when wetted under a 1,000 psf load

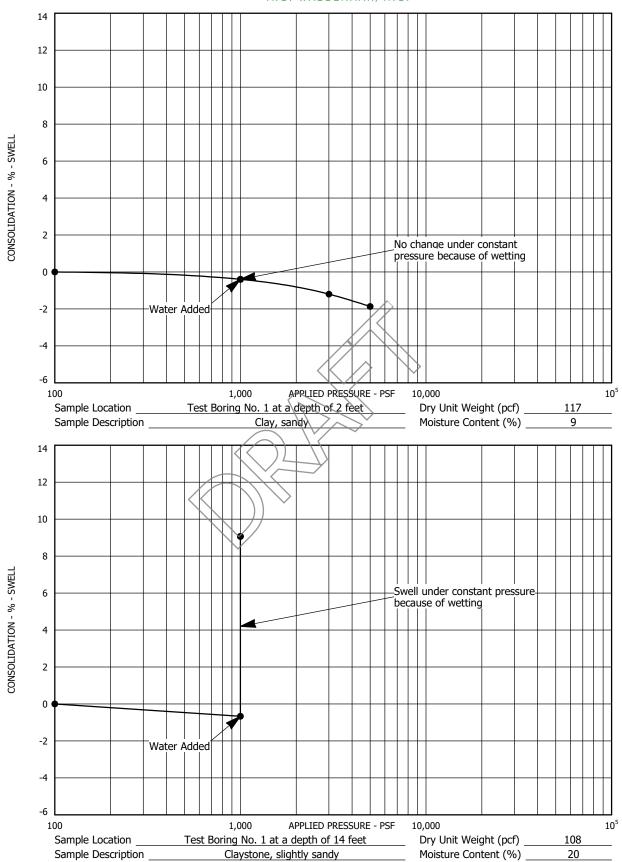
² Bulk 1 is a blended bulk sample obtained from the auger cuttings of Test Borings 1 through

 $^{^{3}}$ Bulk 2 is a blended bulk sample obtained from the auger cuttings of Test Borings 51 throu

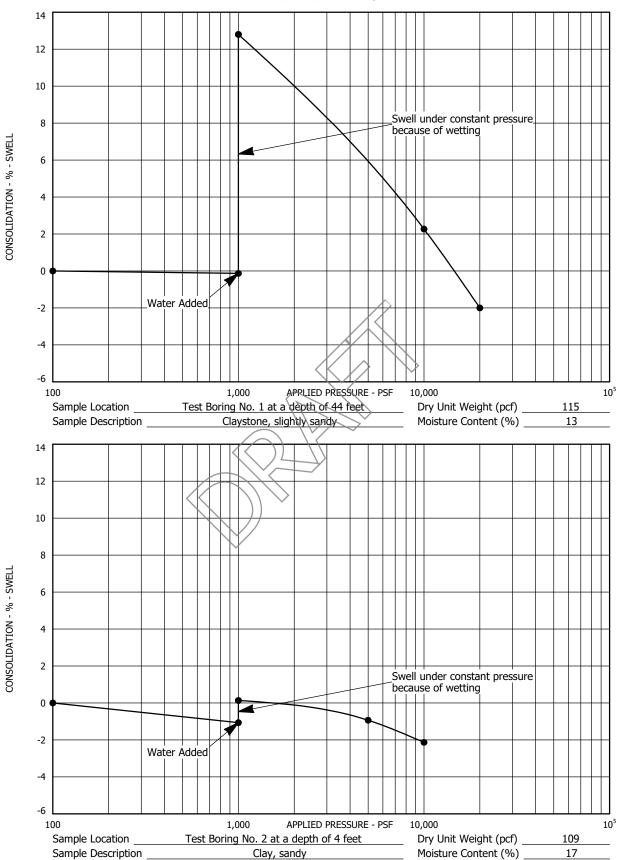
⁴ Maximum dry density (MDD) and optimum moisture content (OMC)

⁵ Sample was remolded to approximately 95% MDD

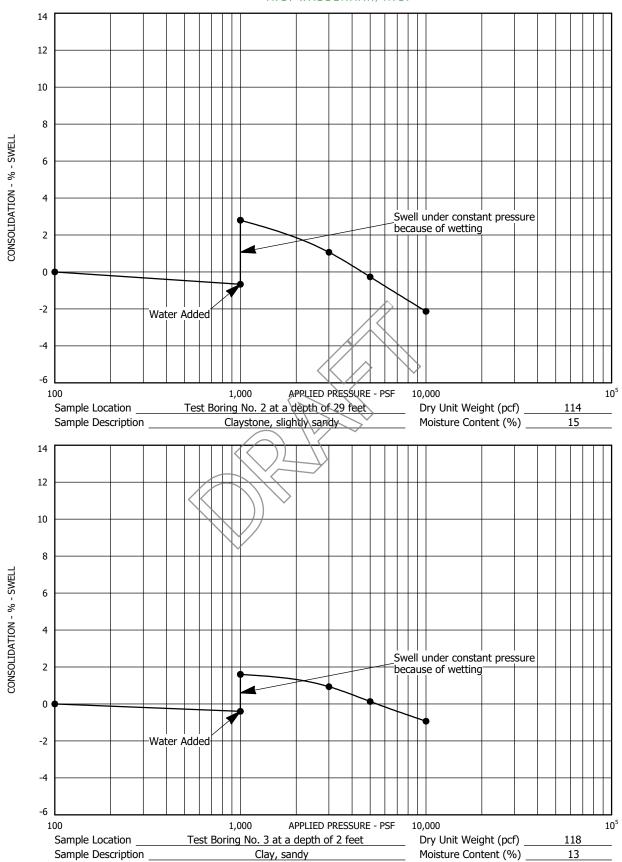




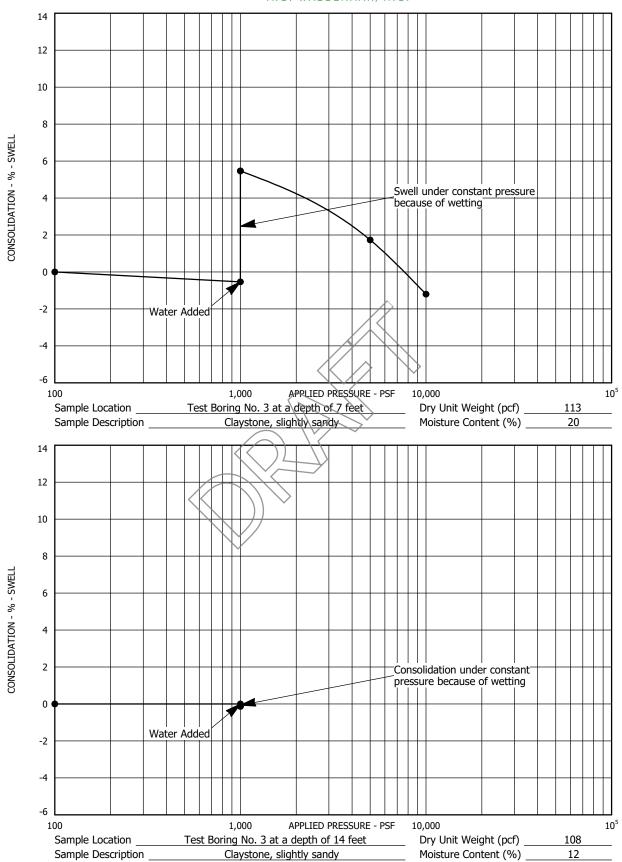




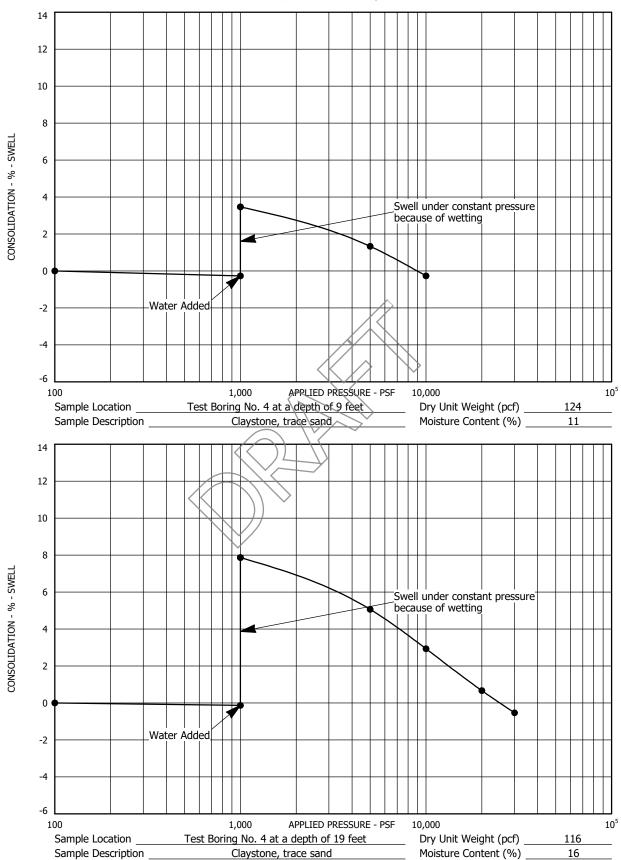




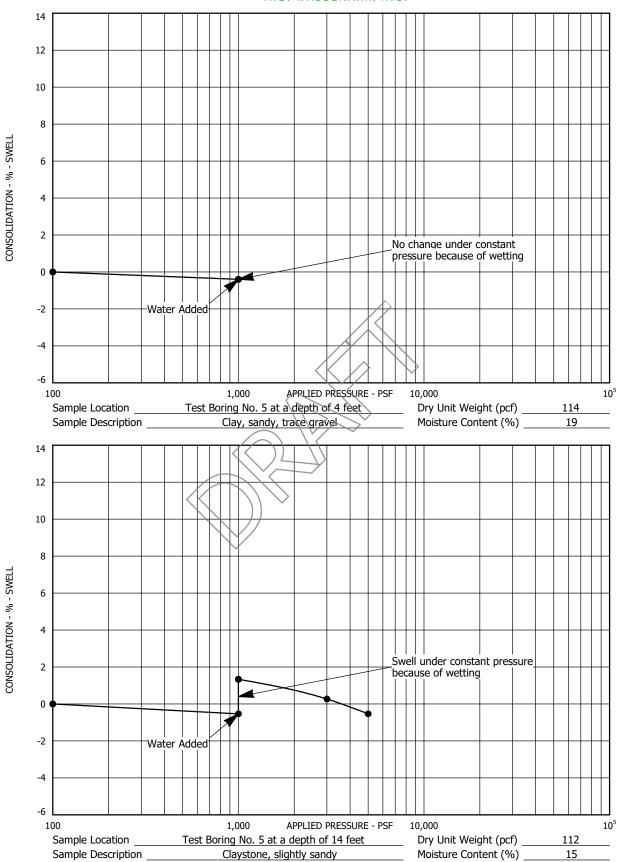




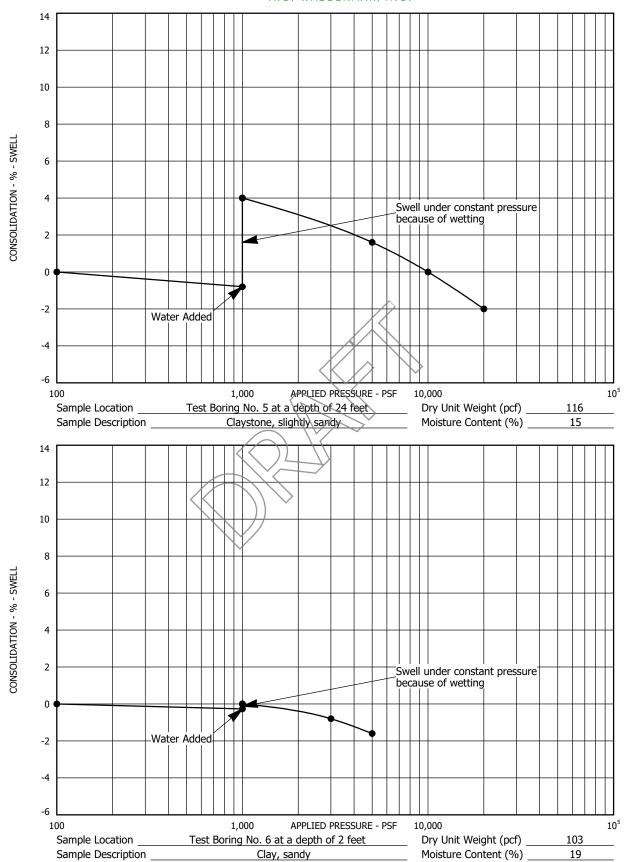




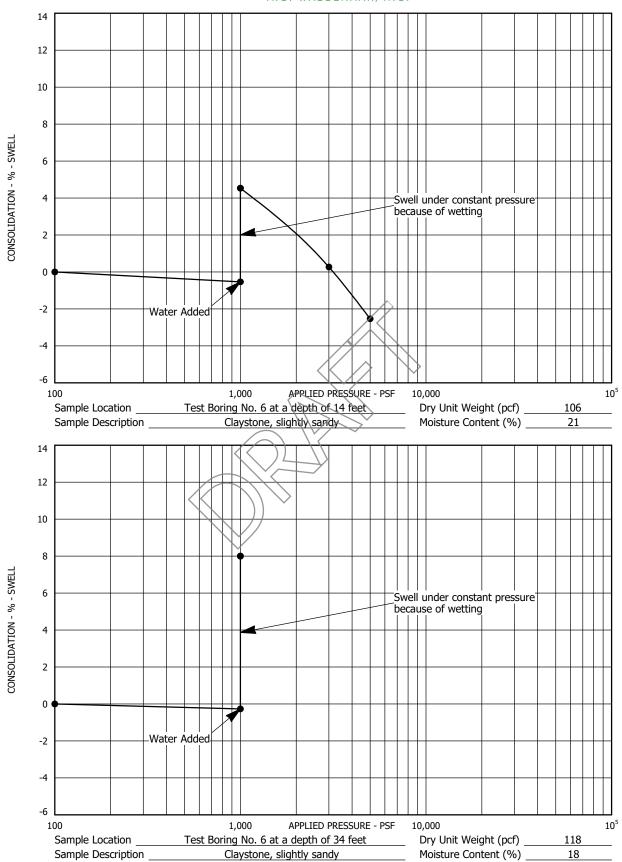




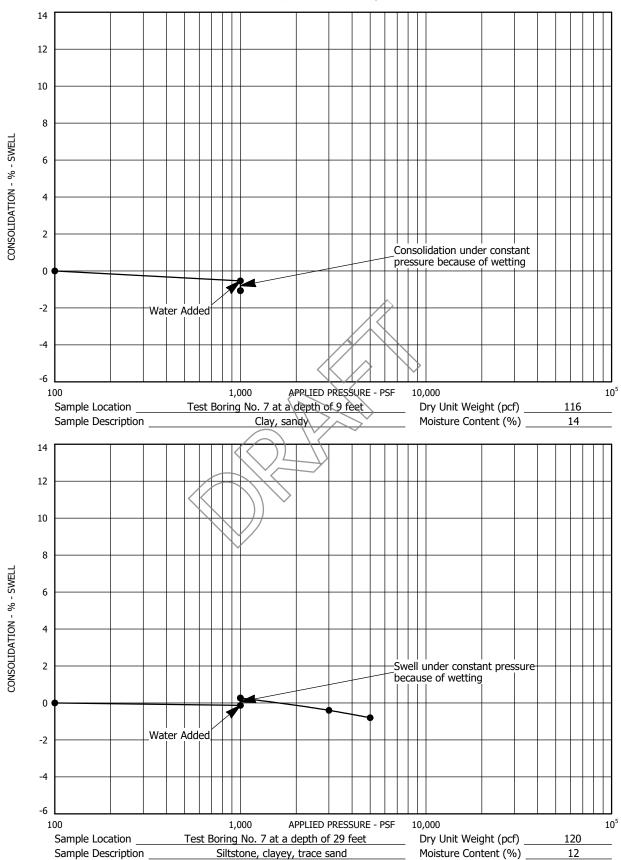




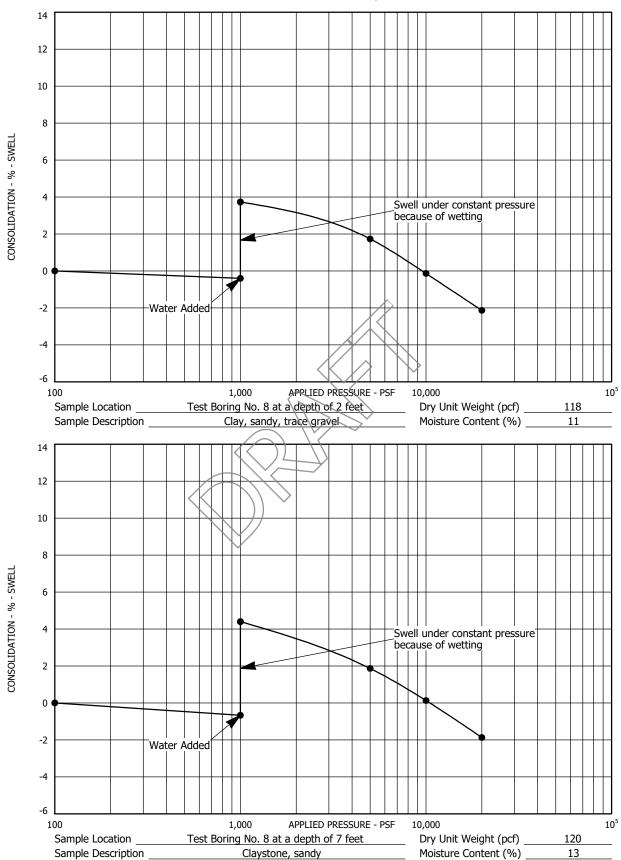




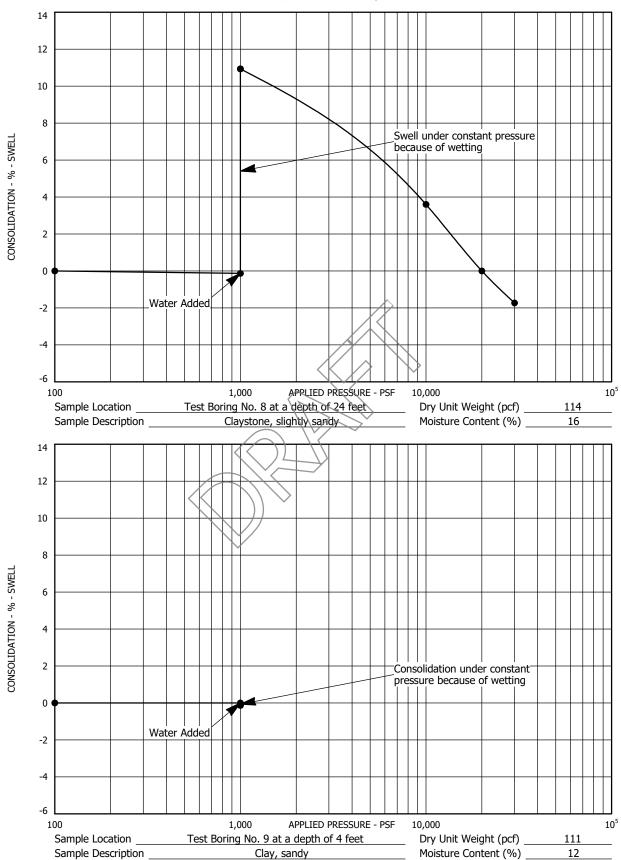




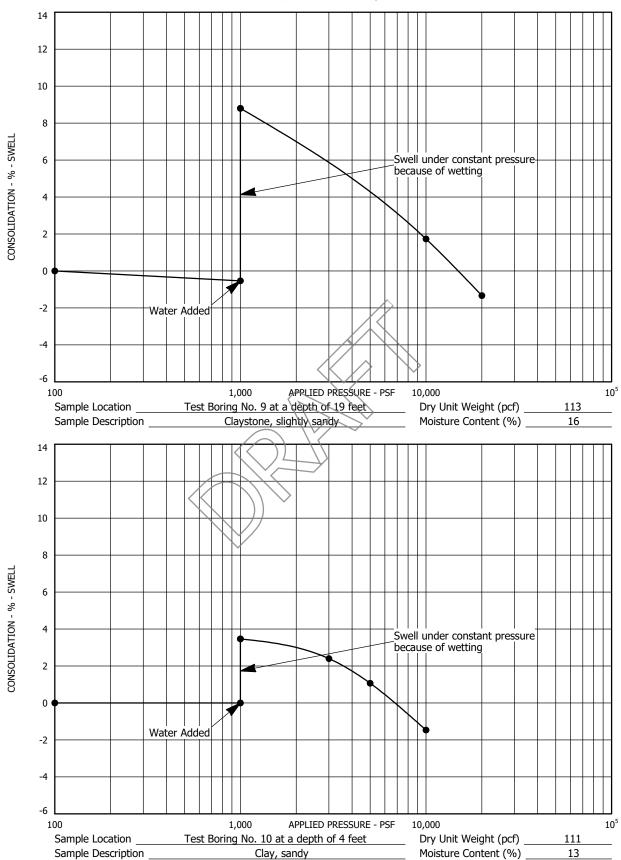




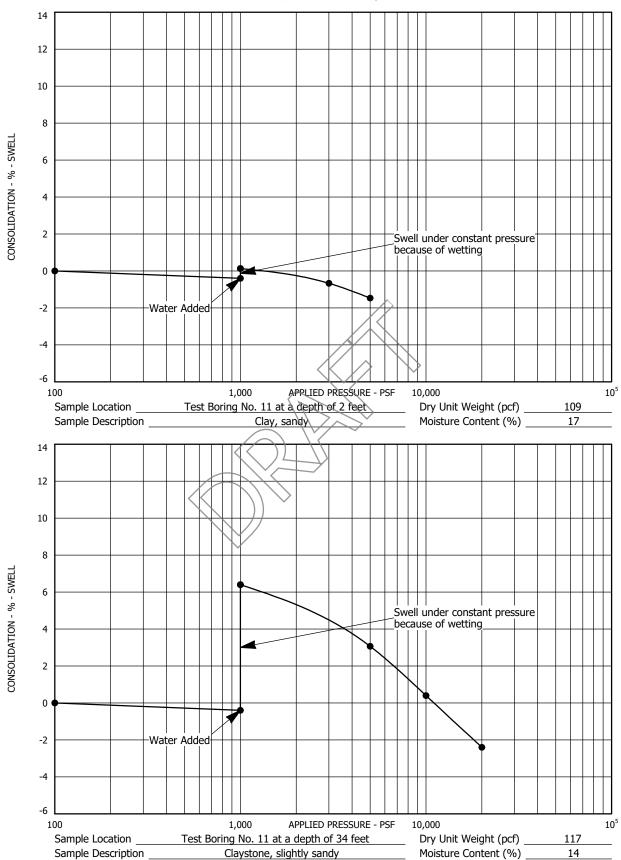




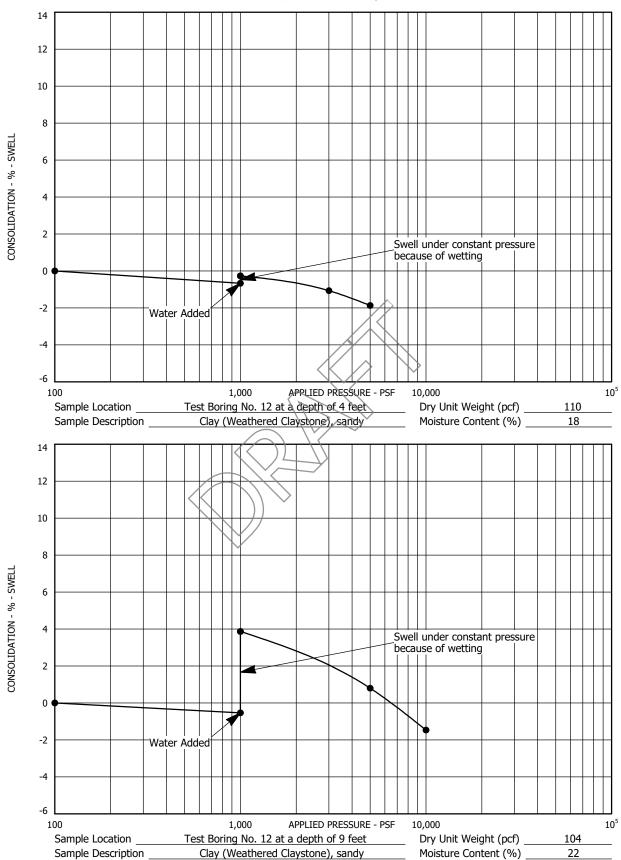




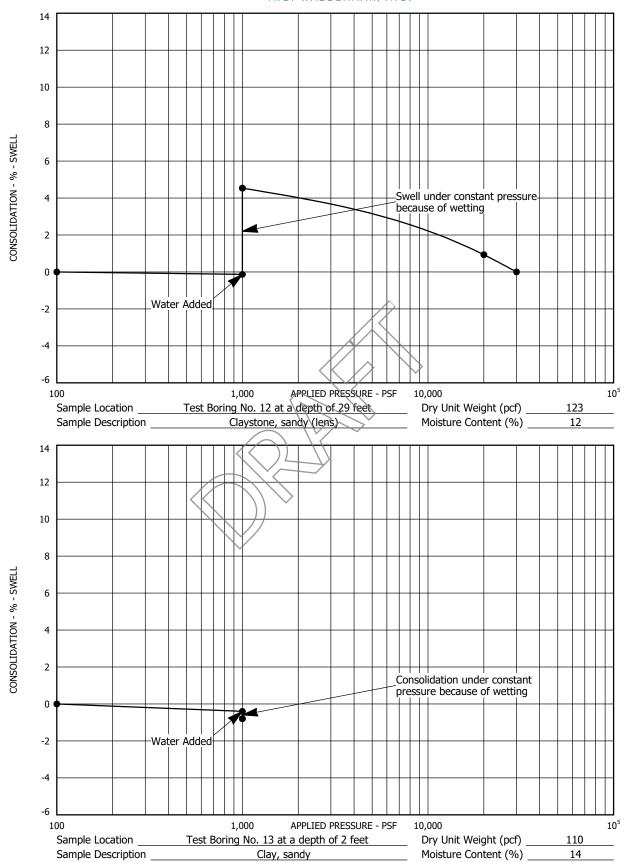




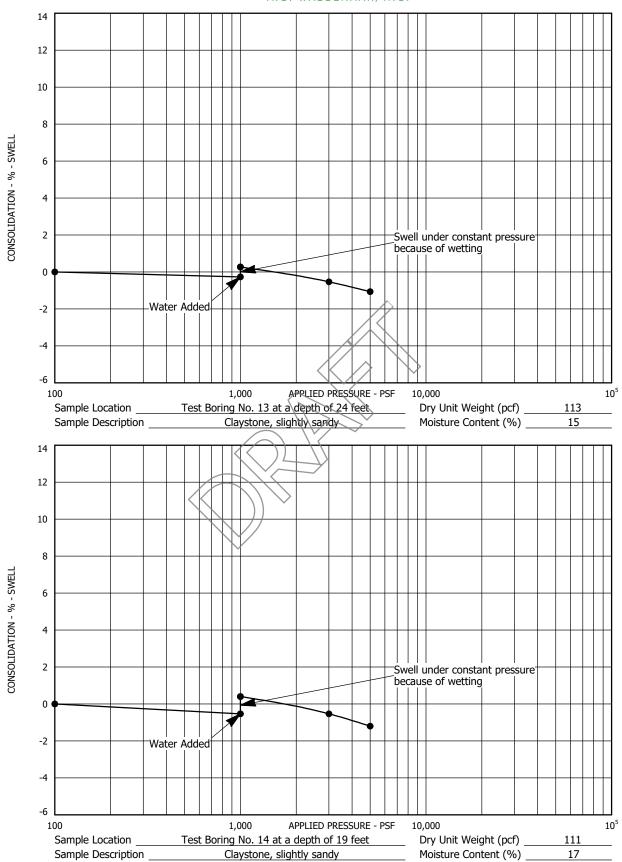




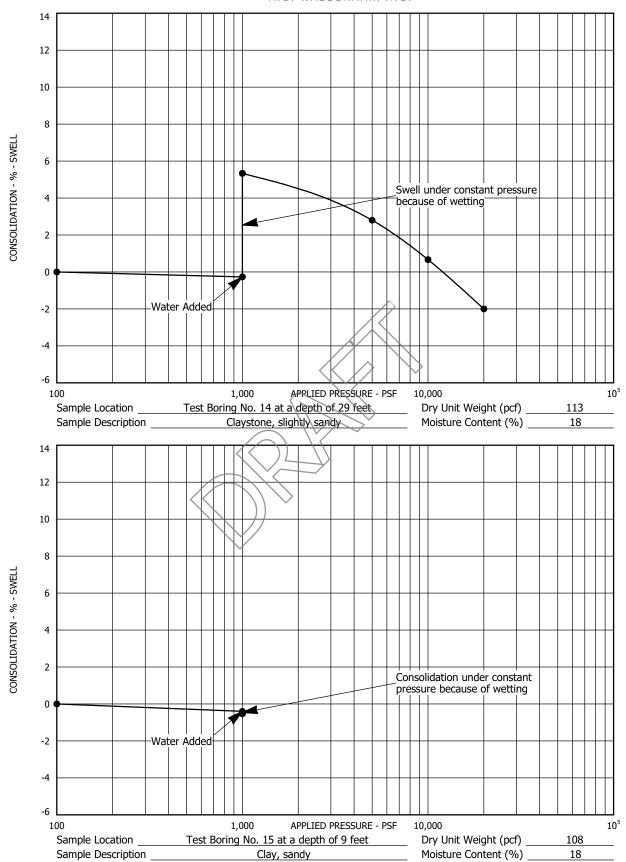




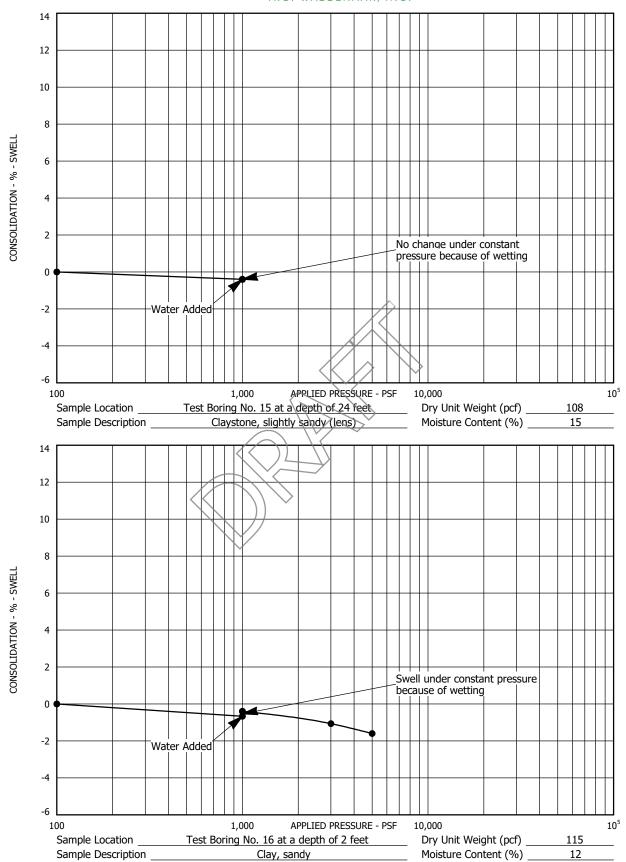




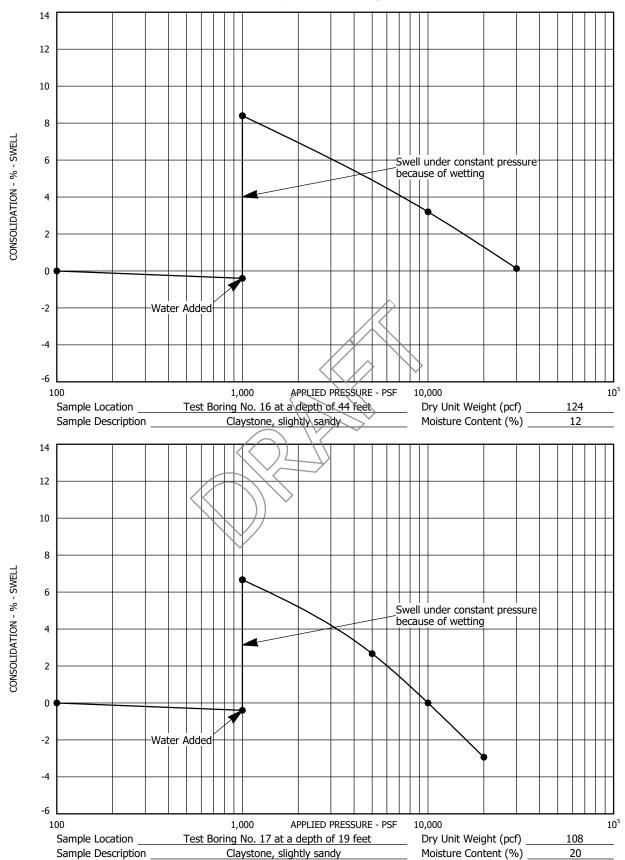




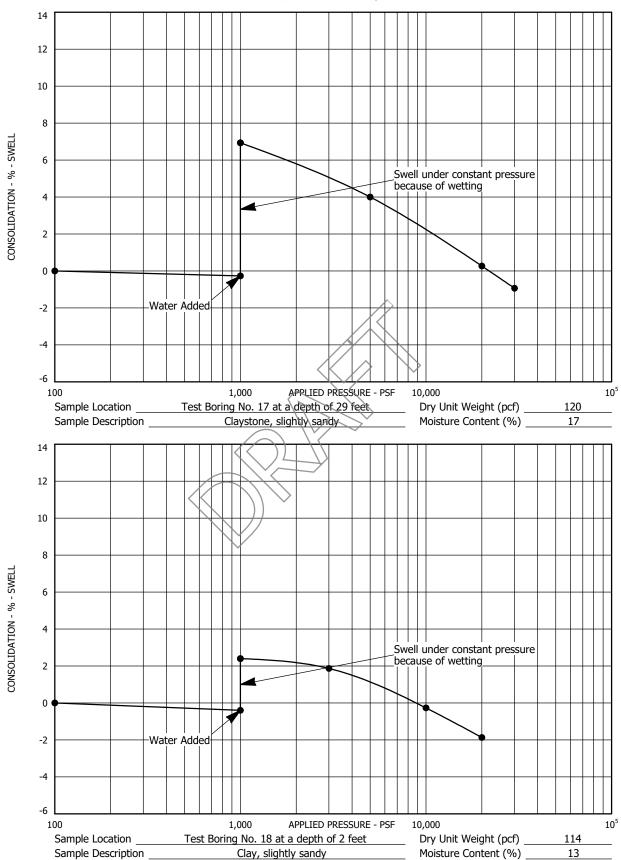




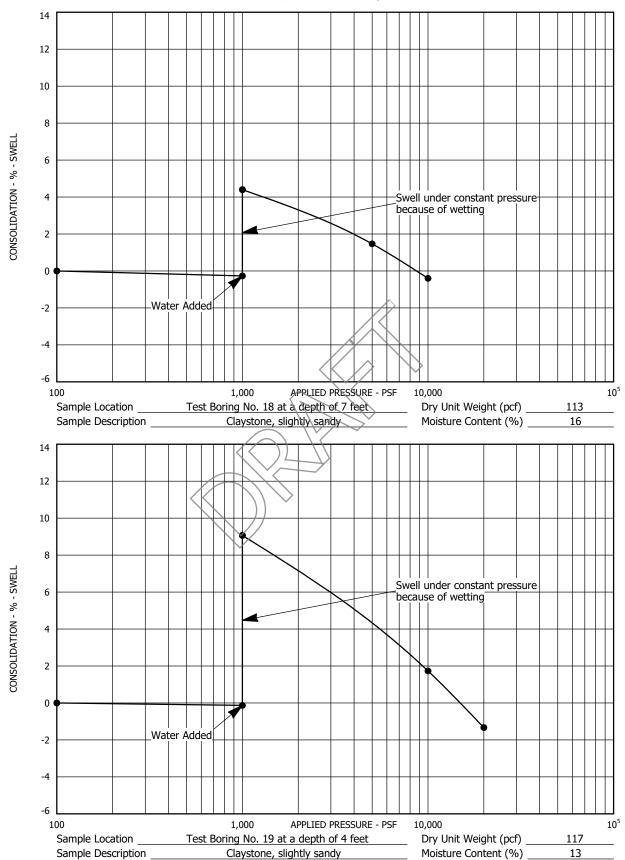




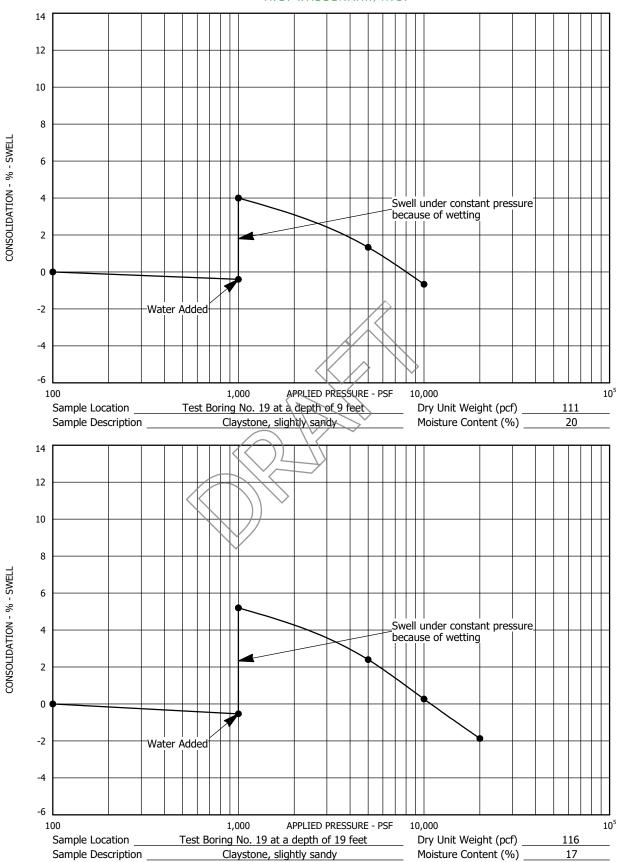




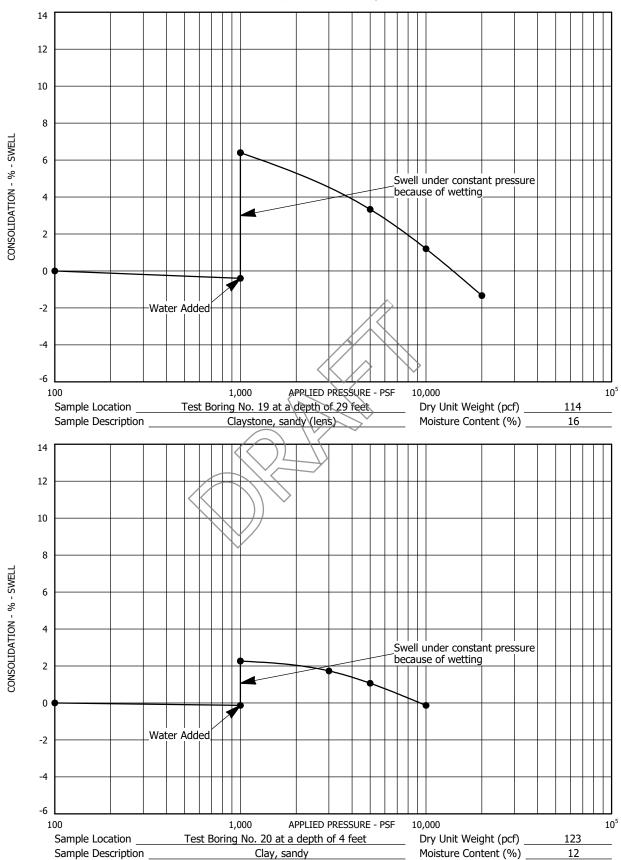




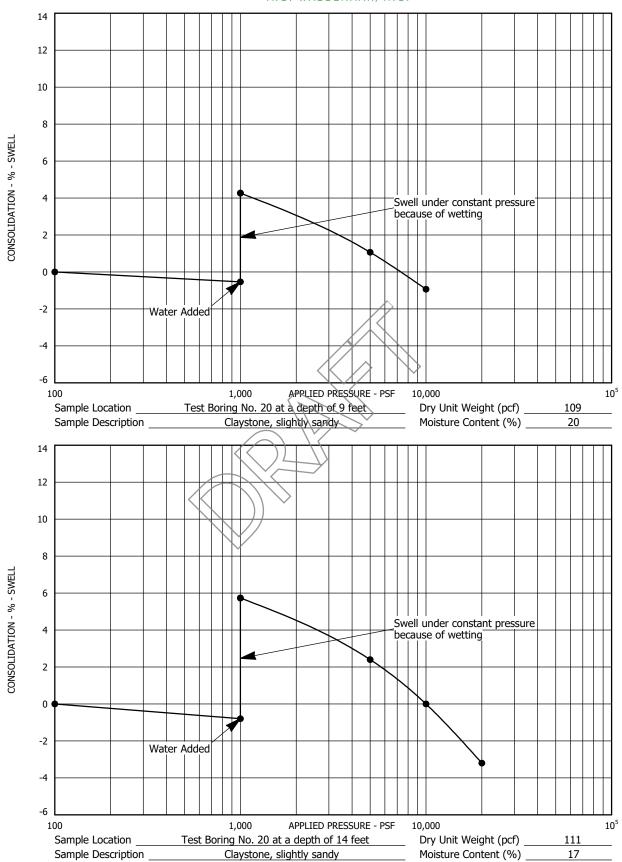




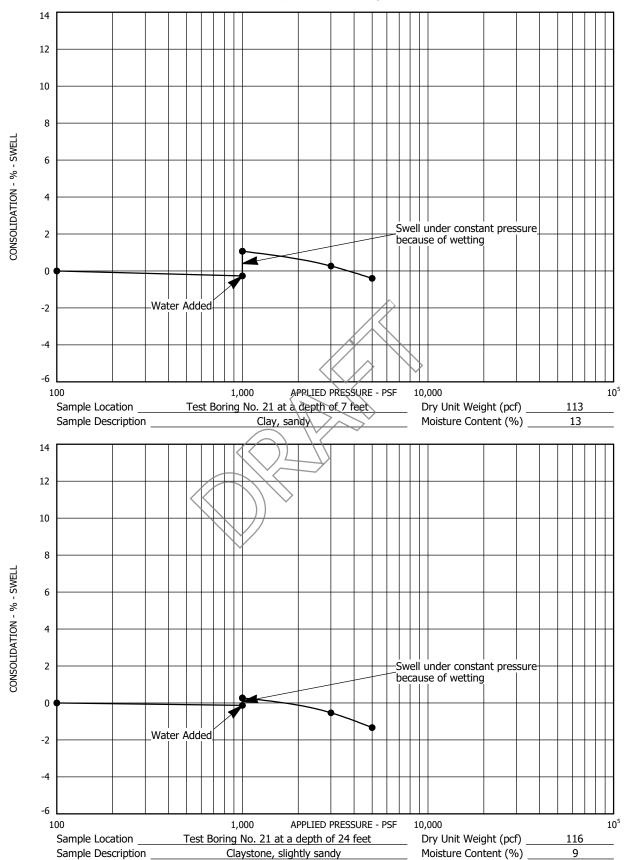




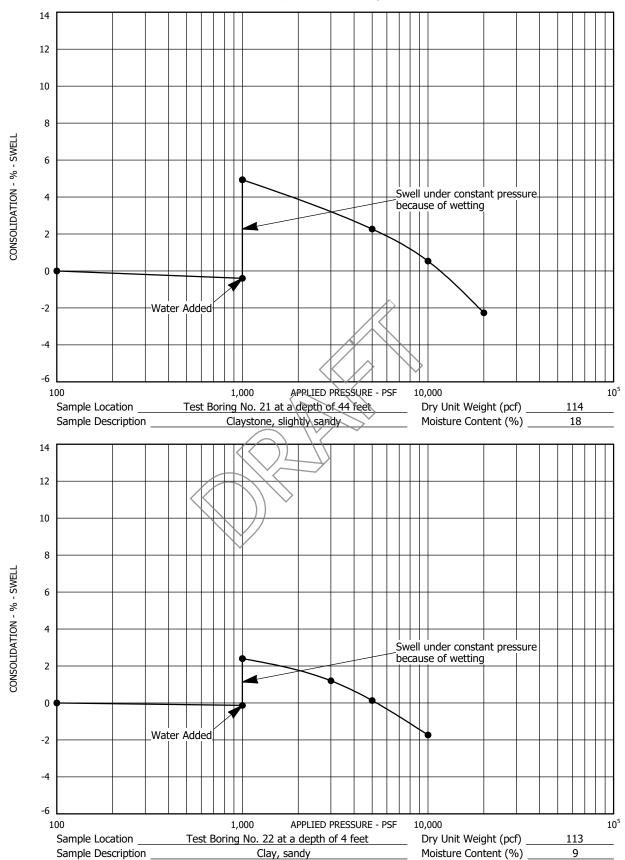




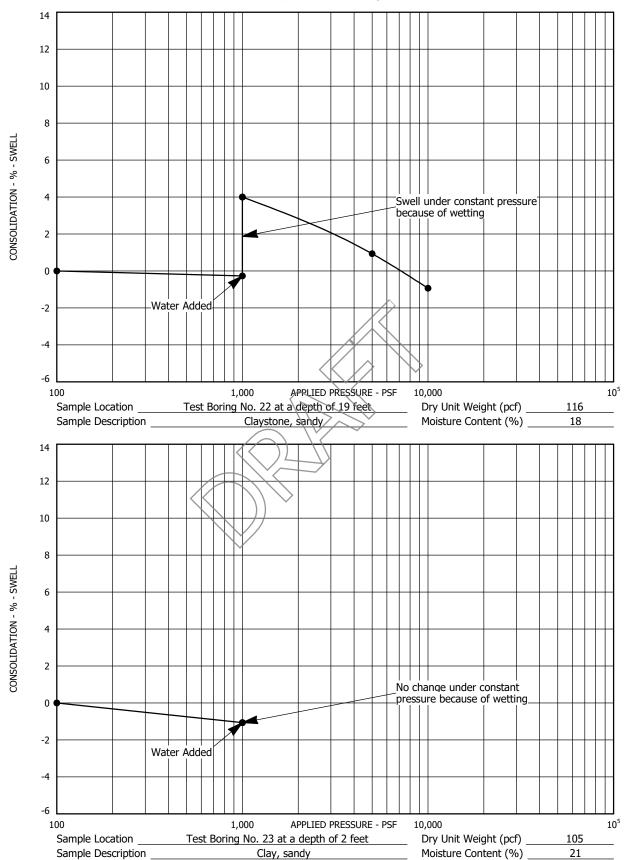




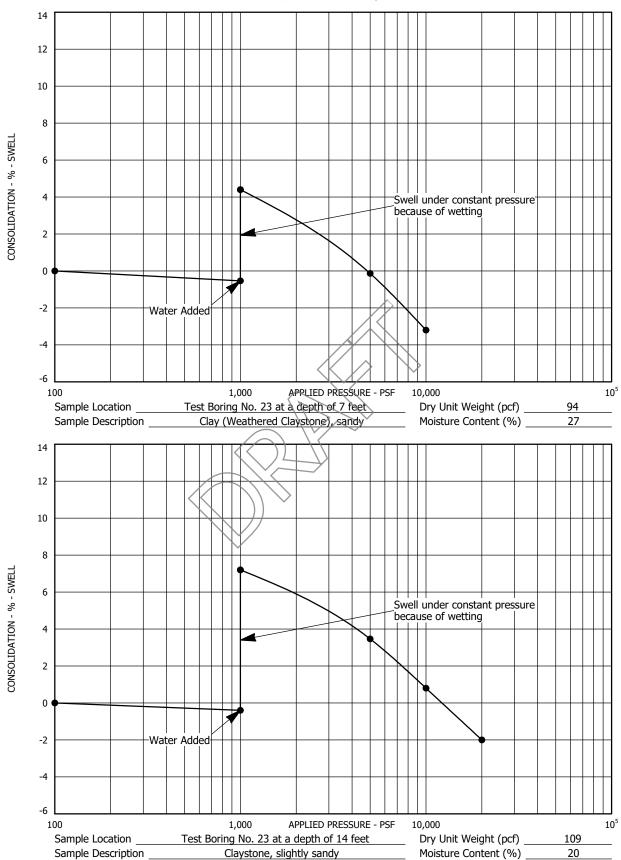




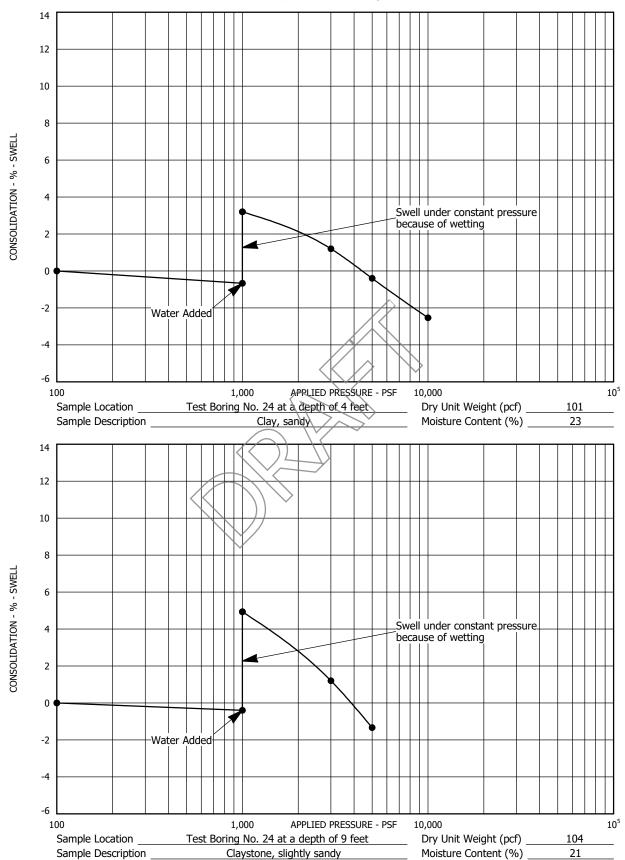




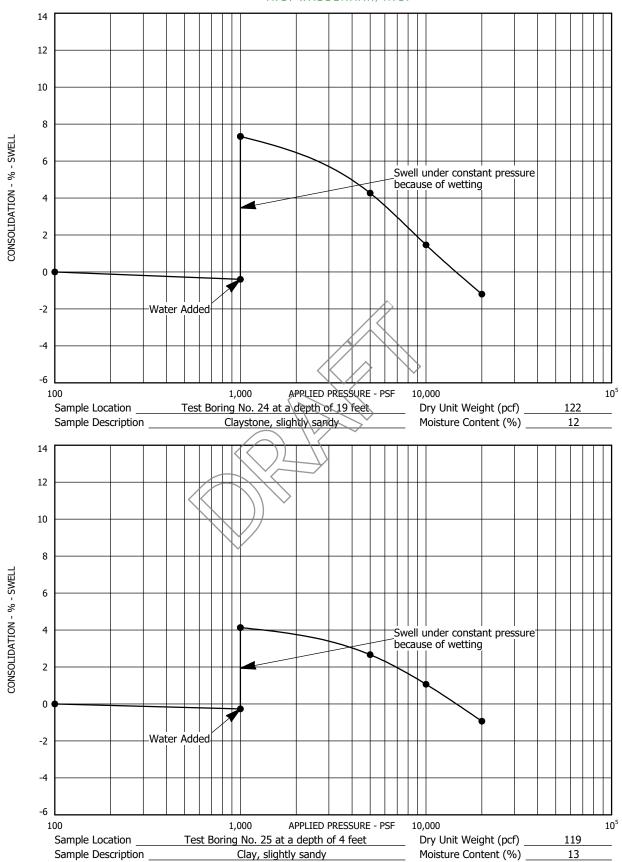




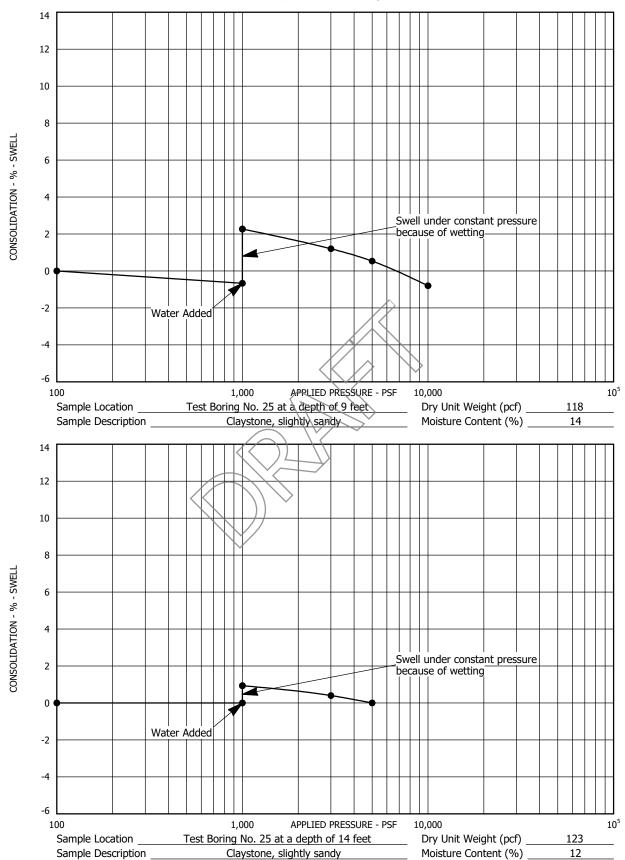




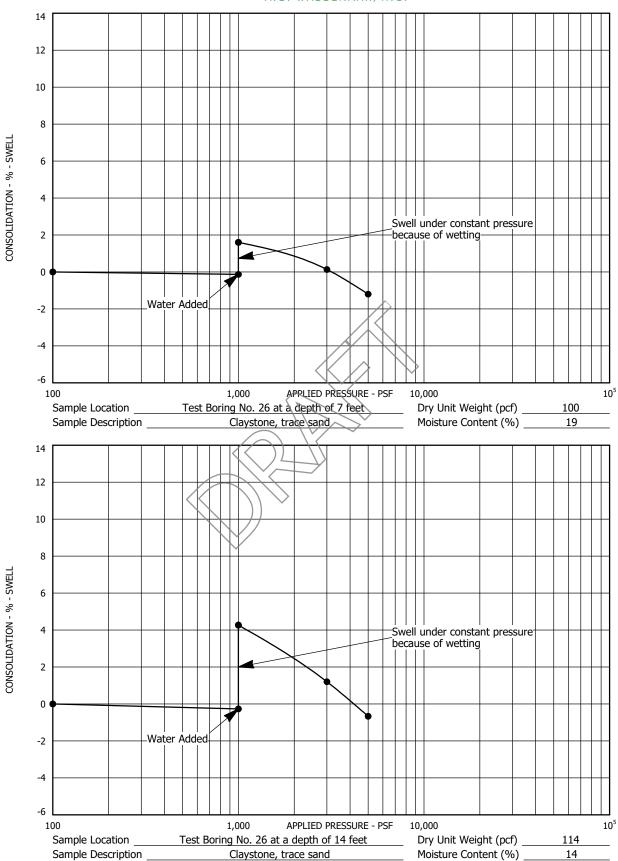




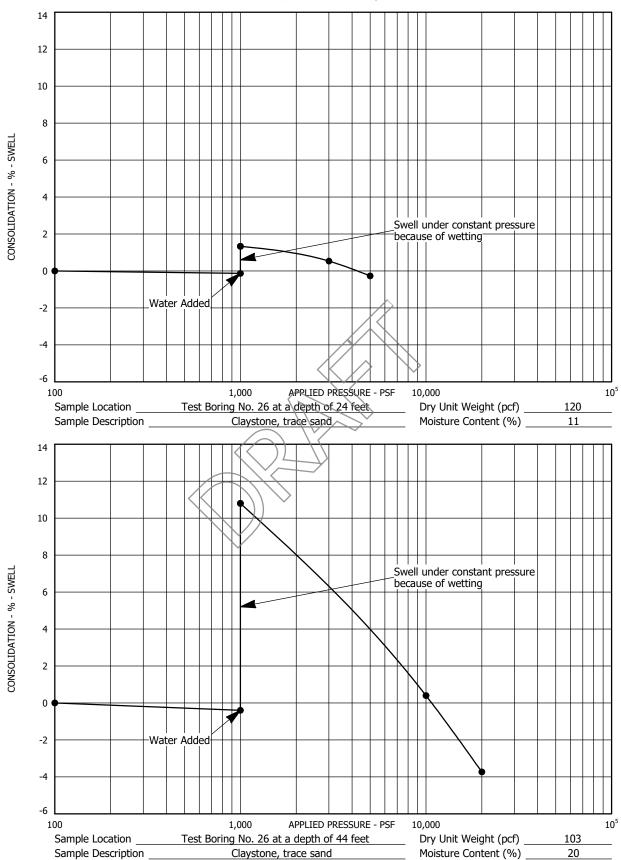




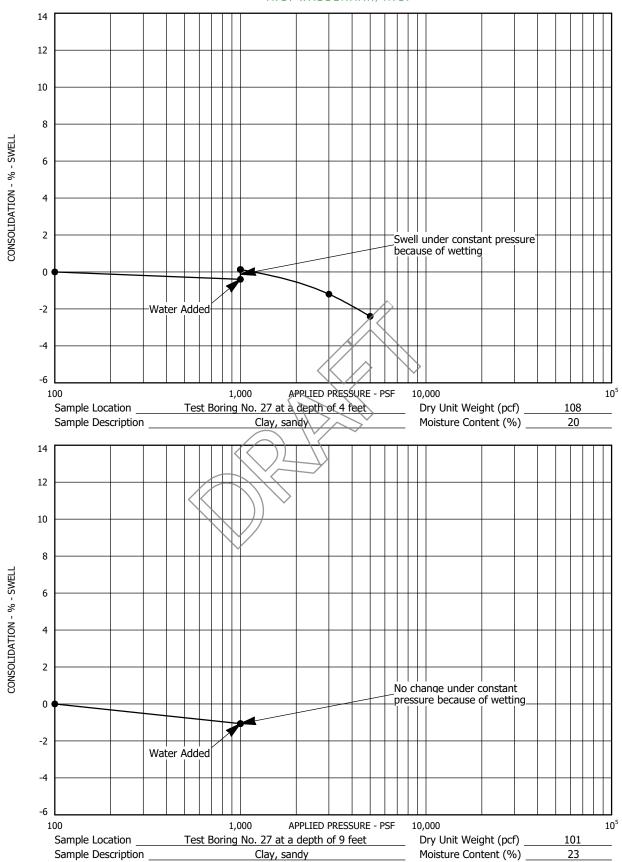




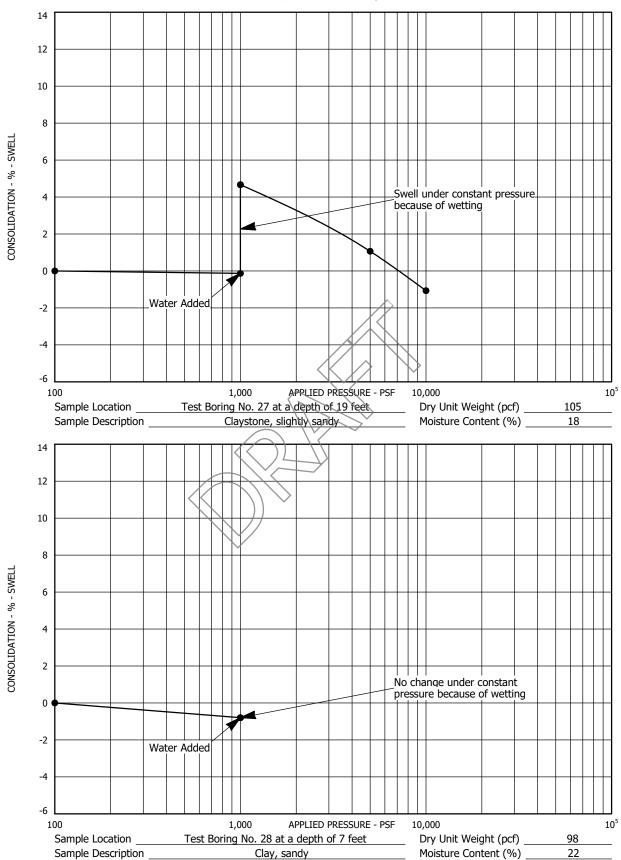




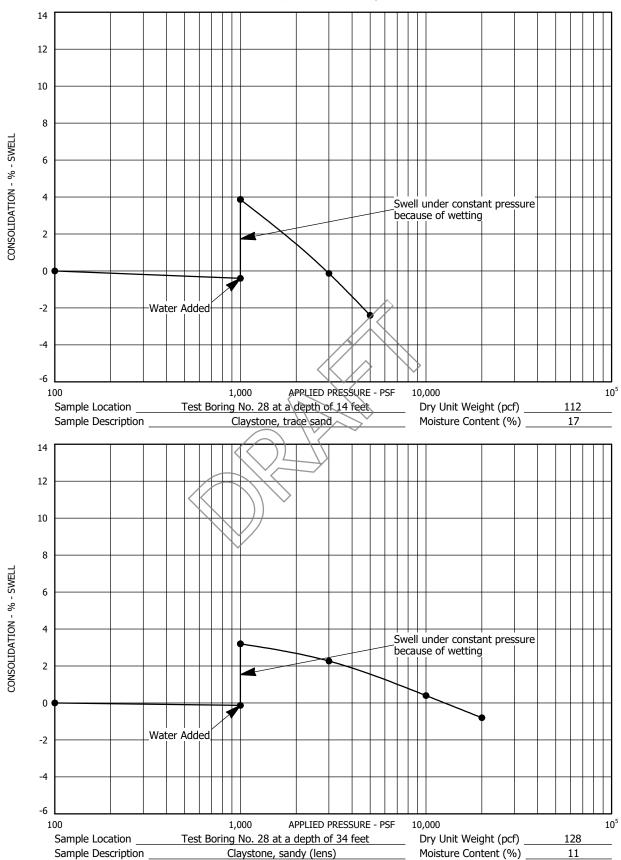




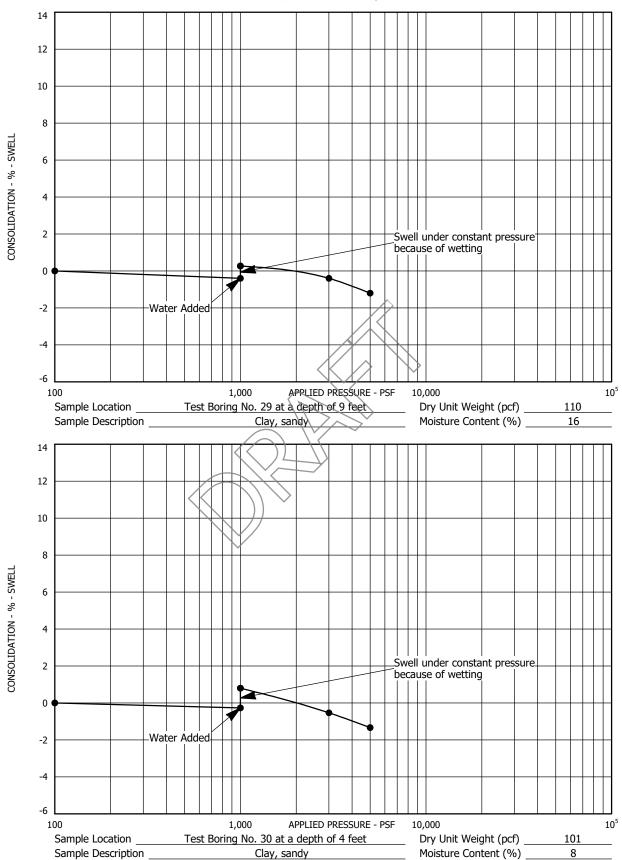




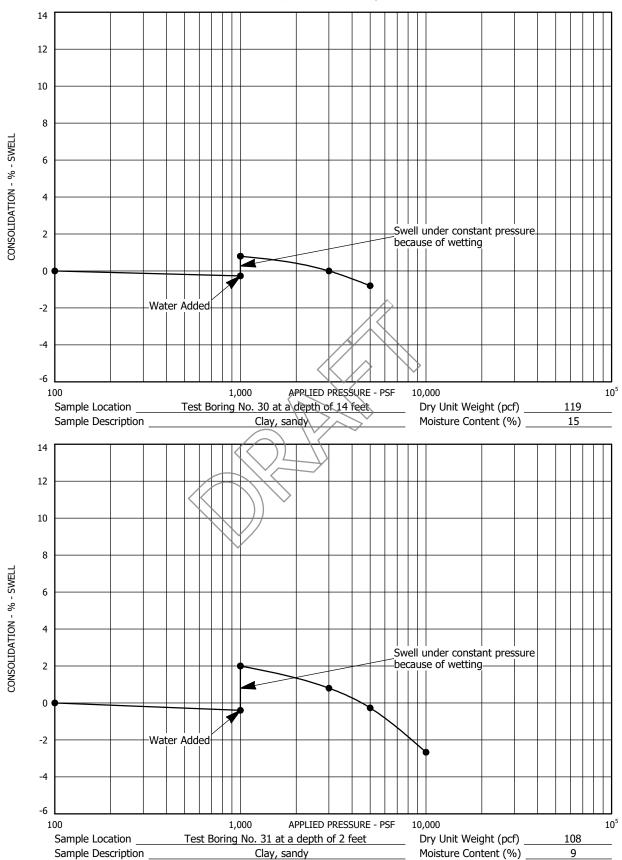




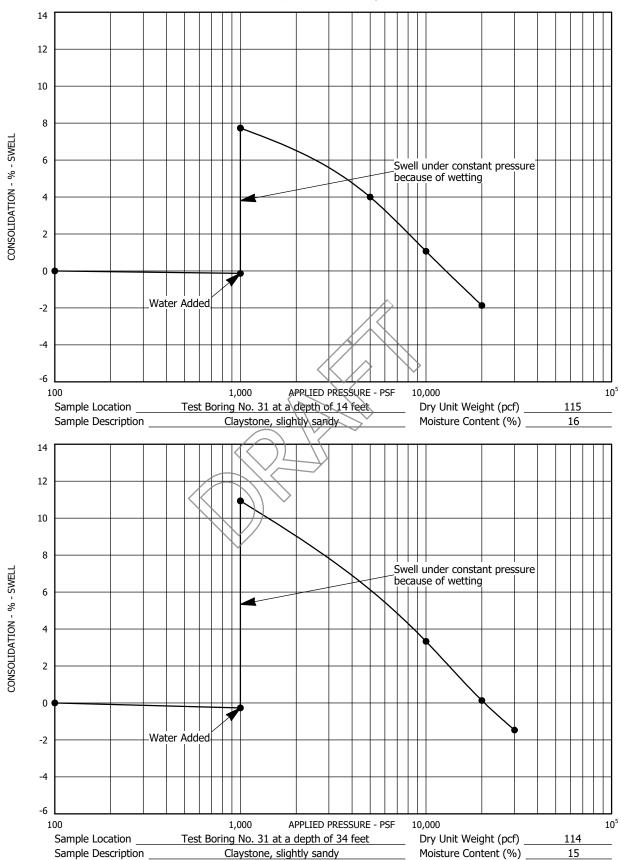




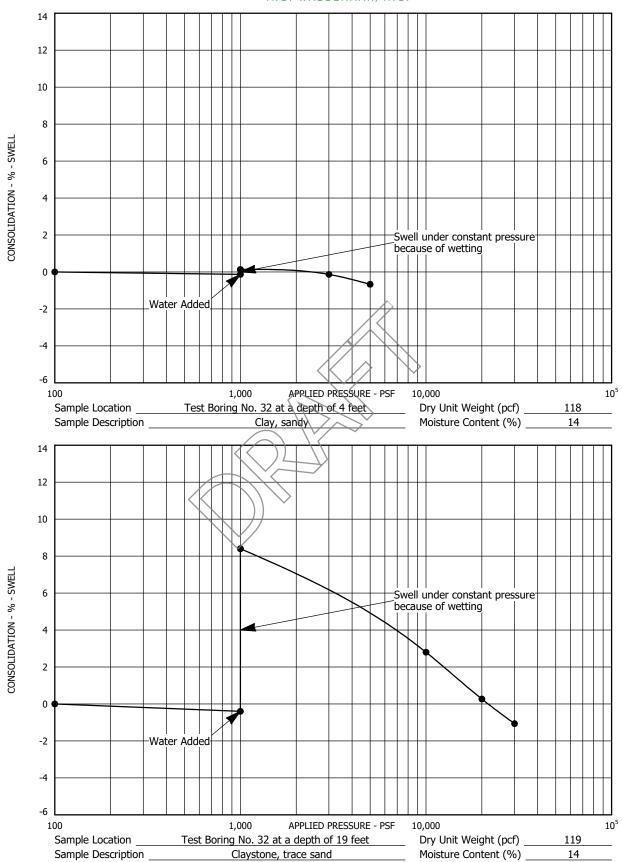




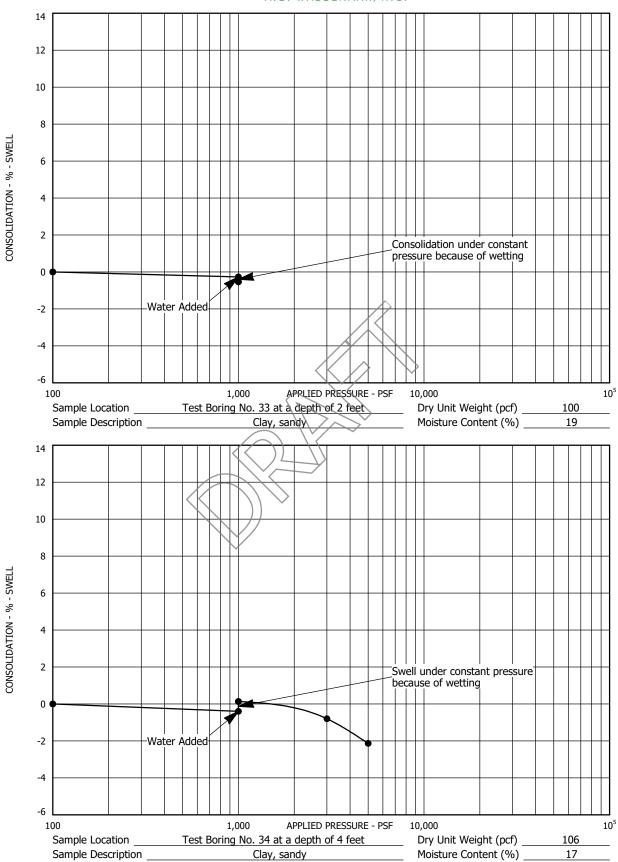




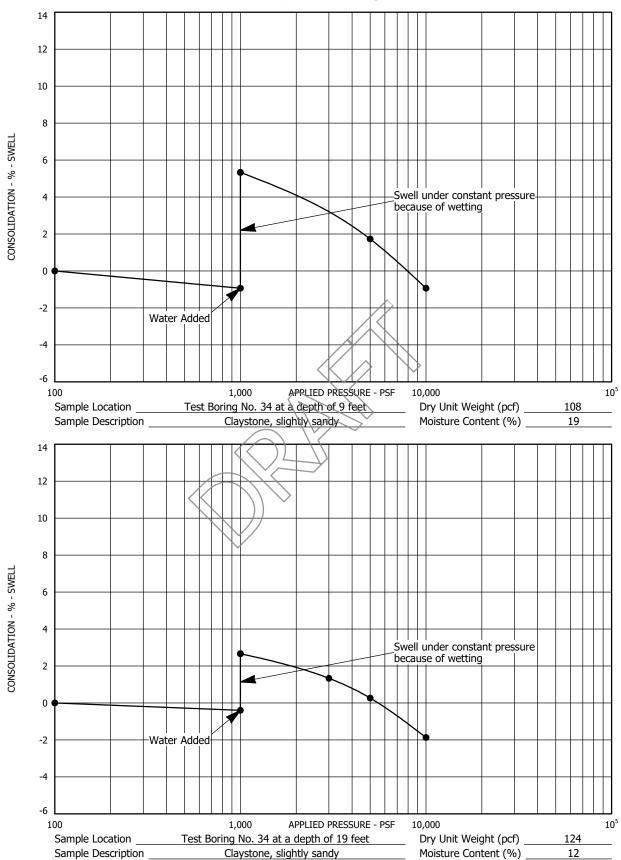




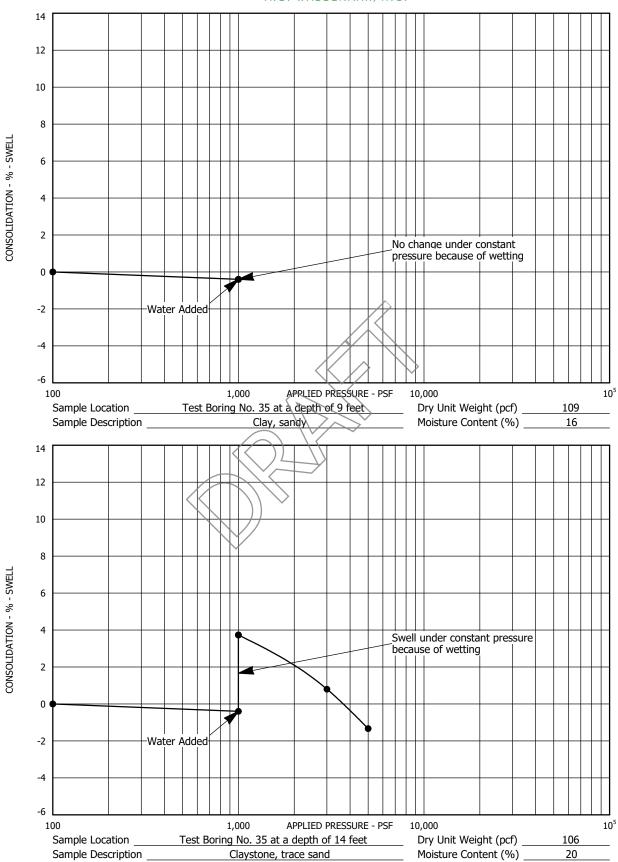




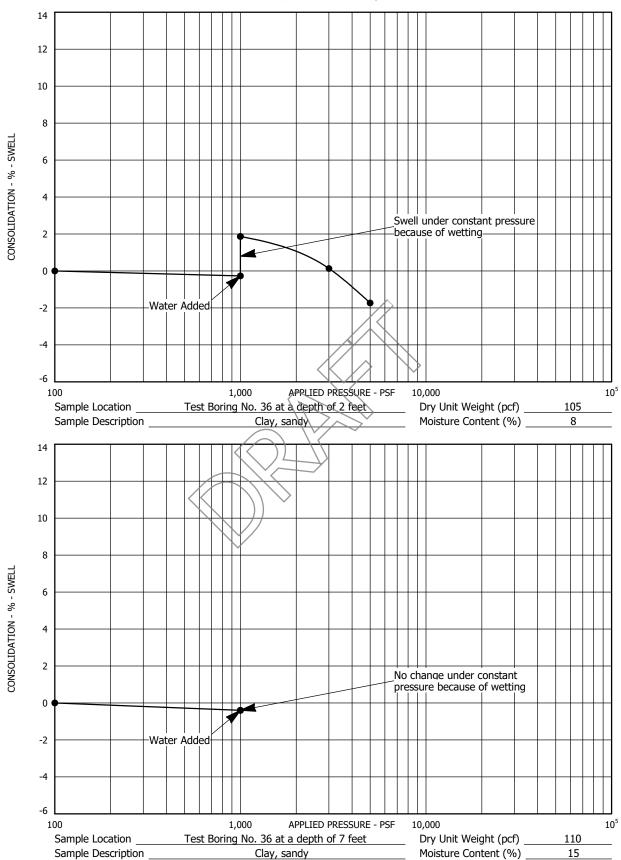




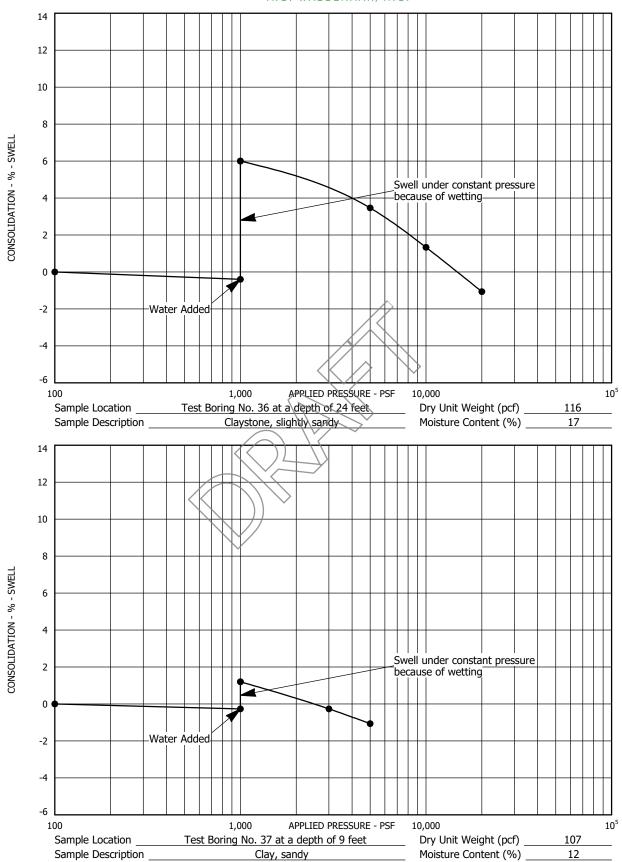




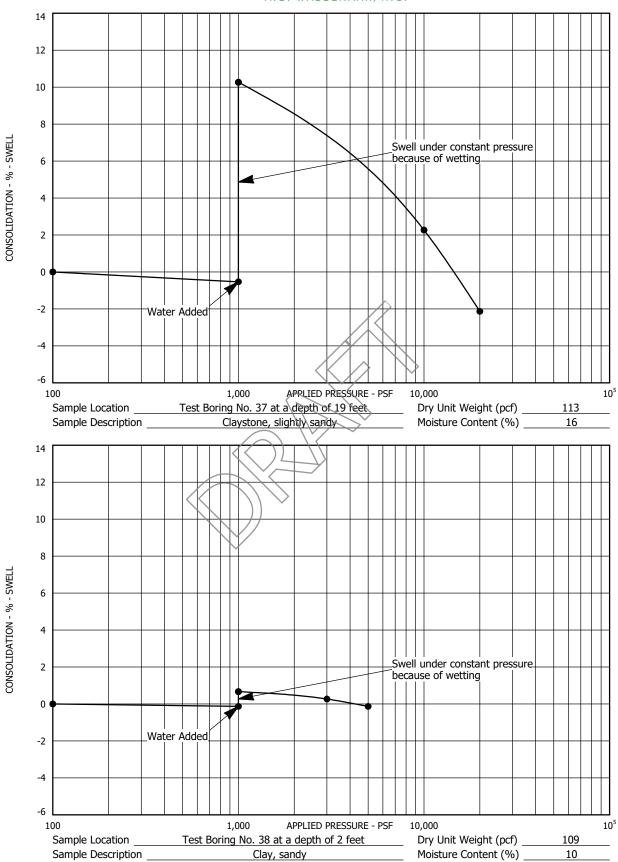




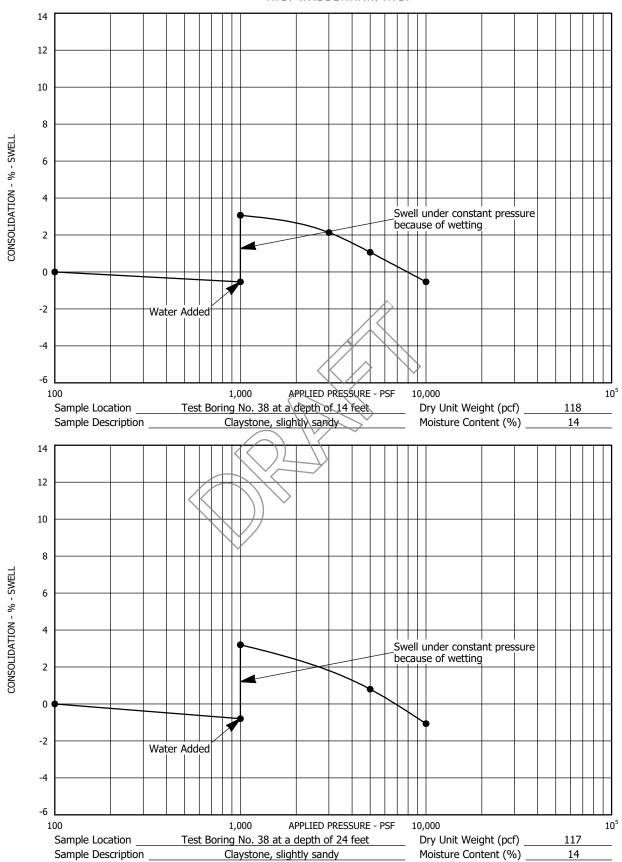




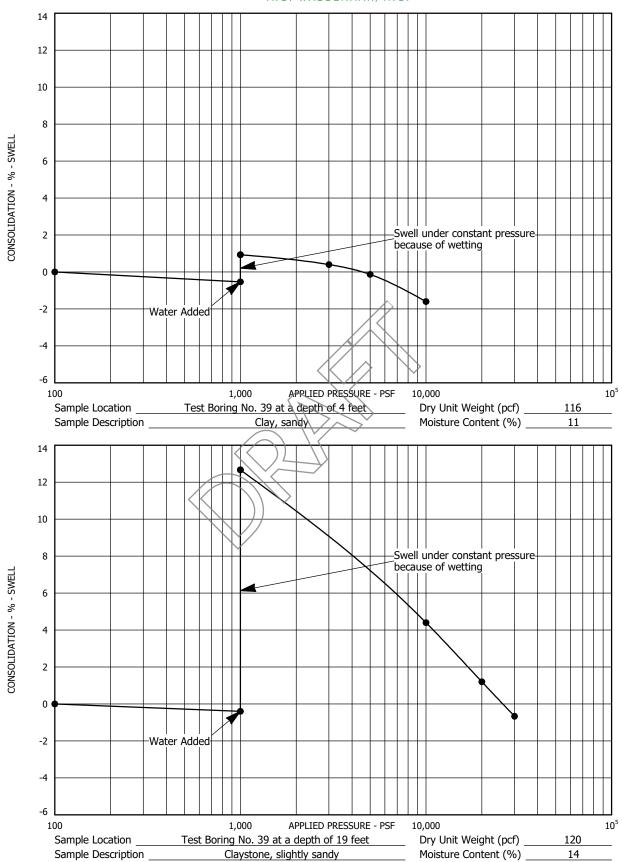




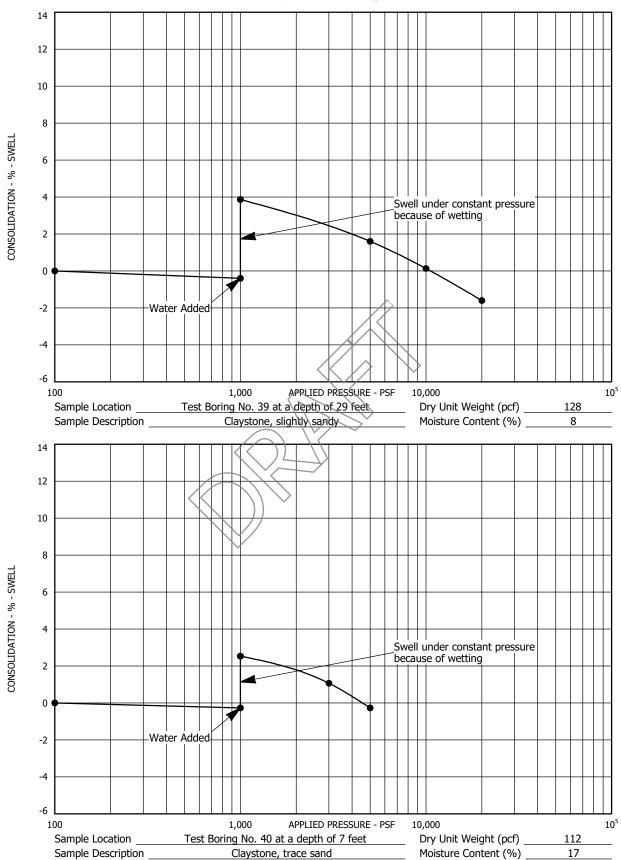




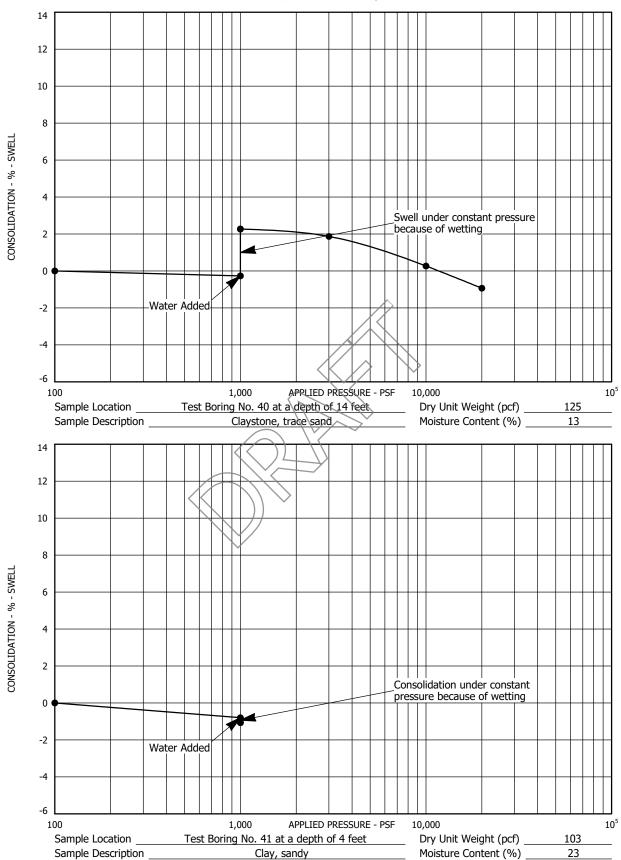




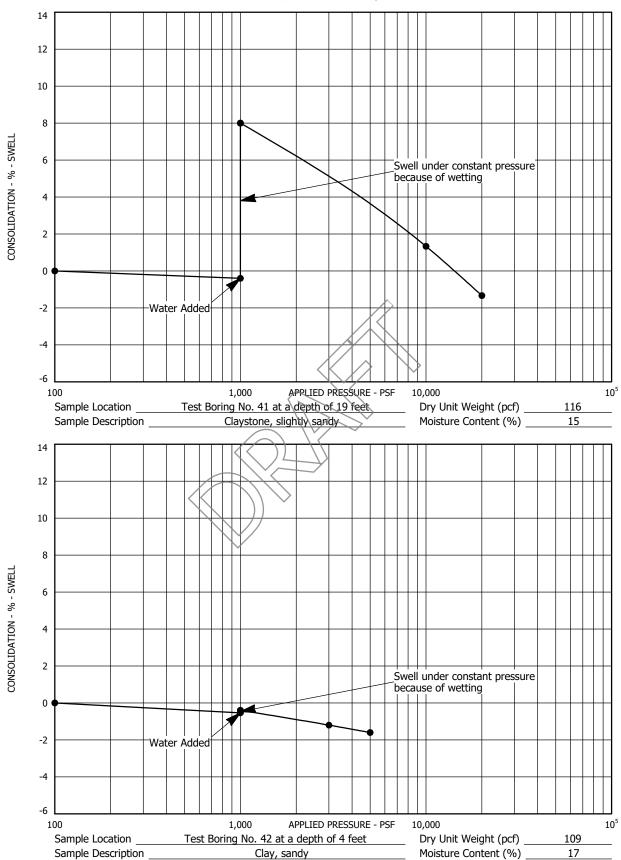




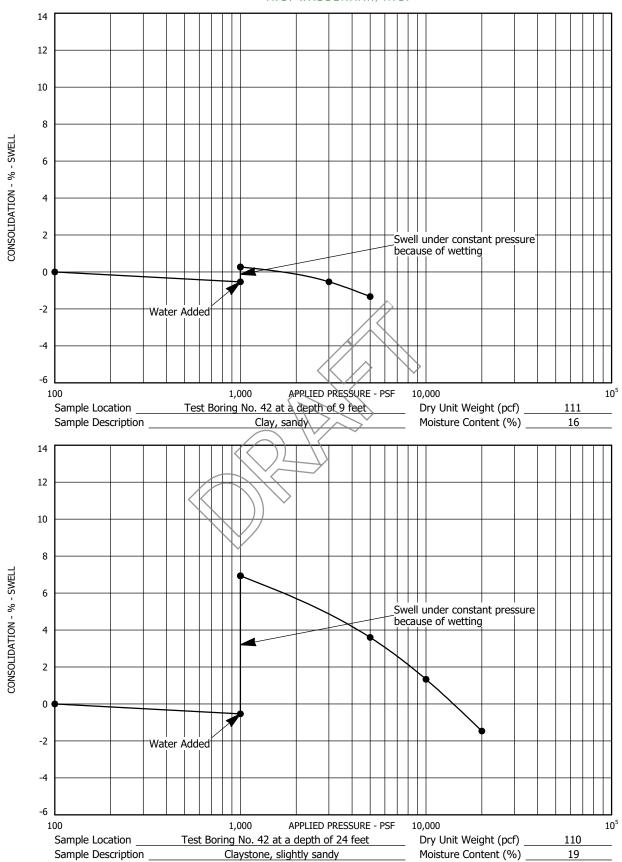




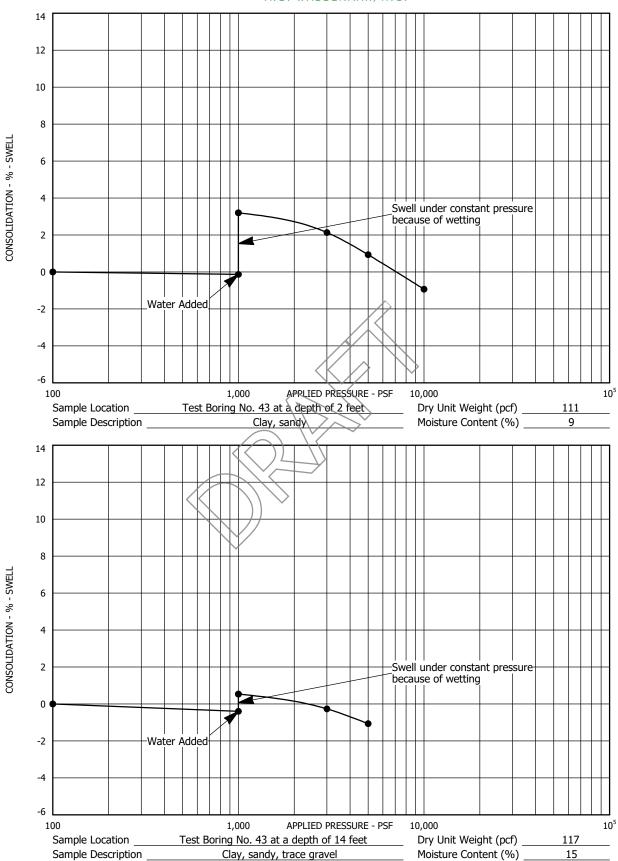




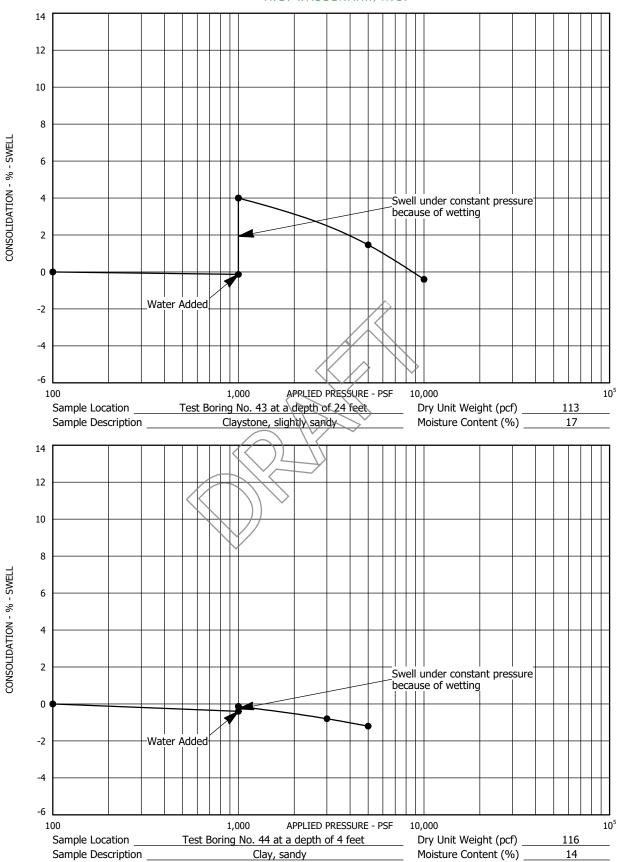




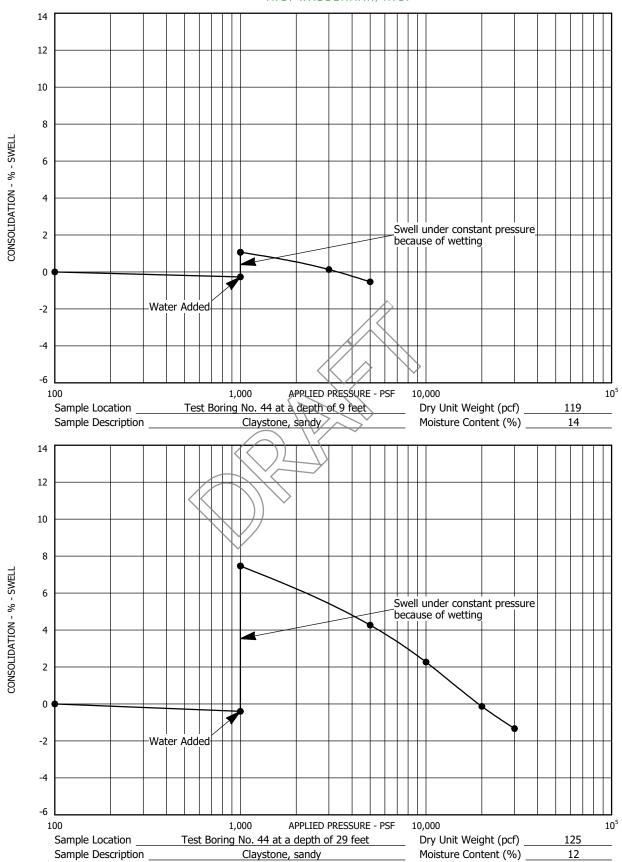




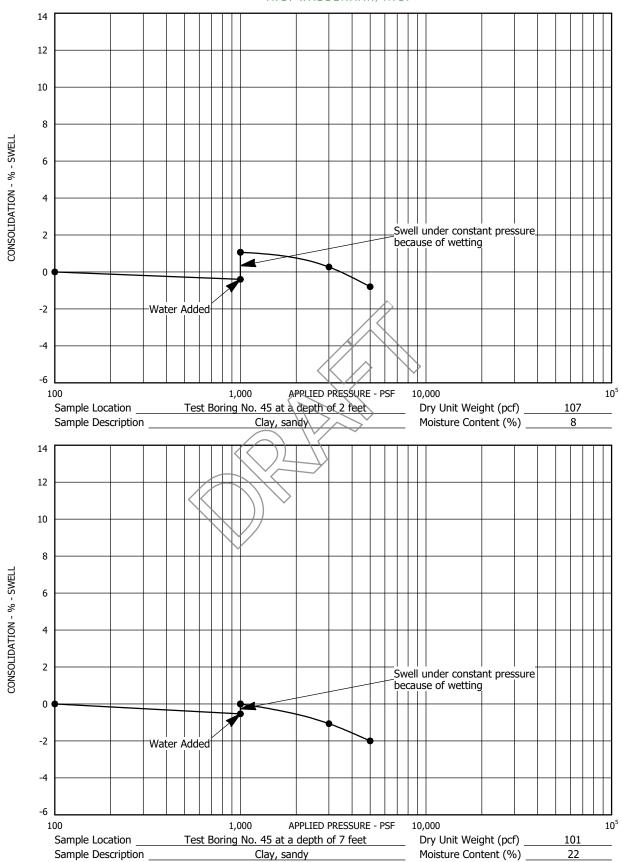




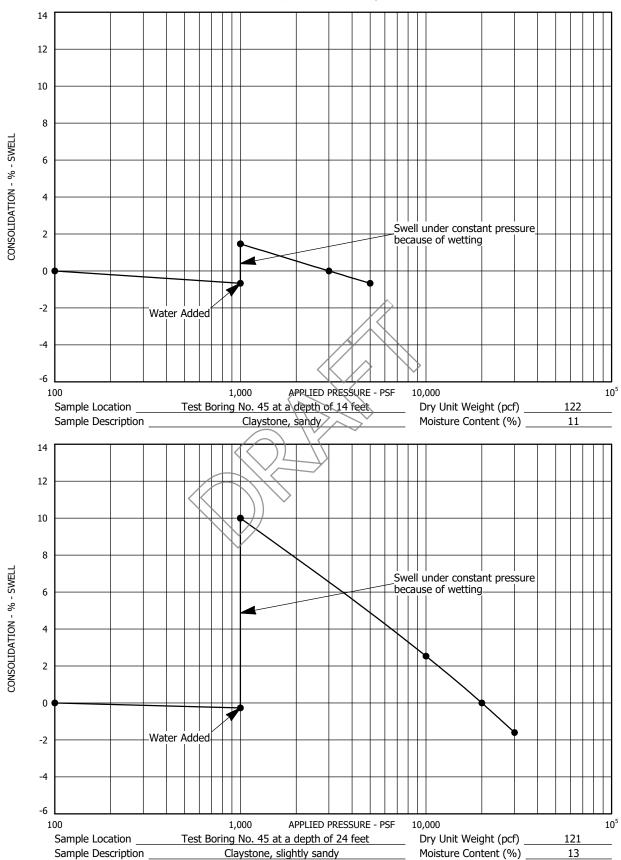




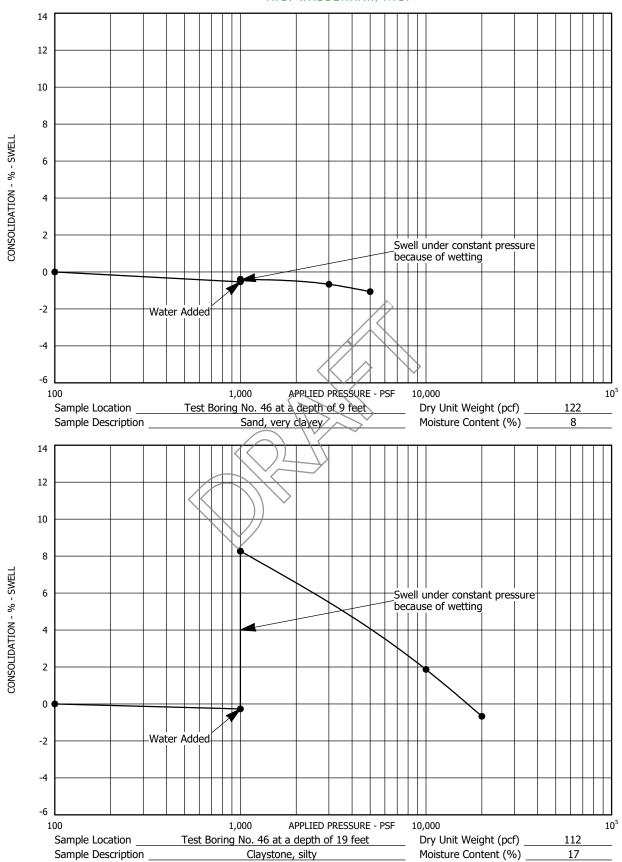




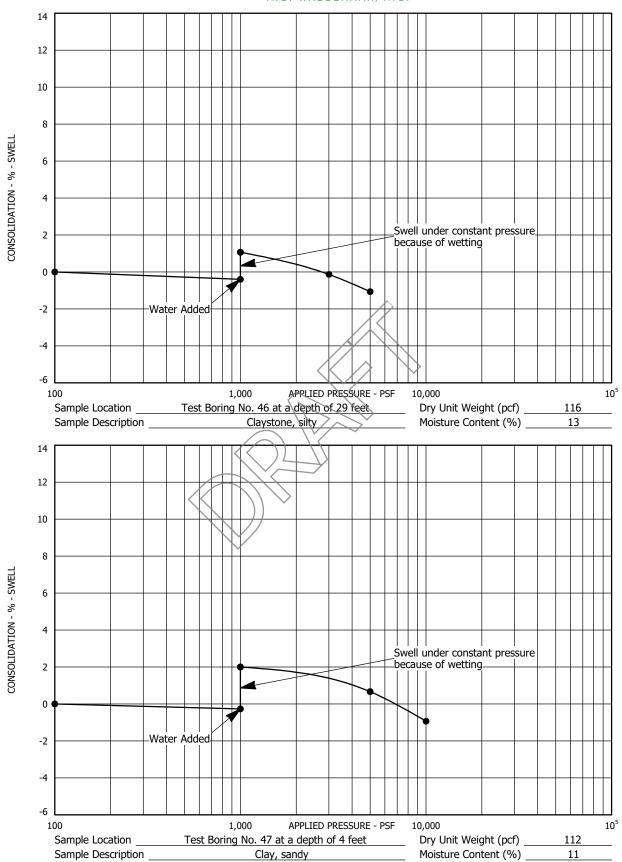




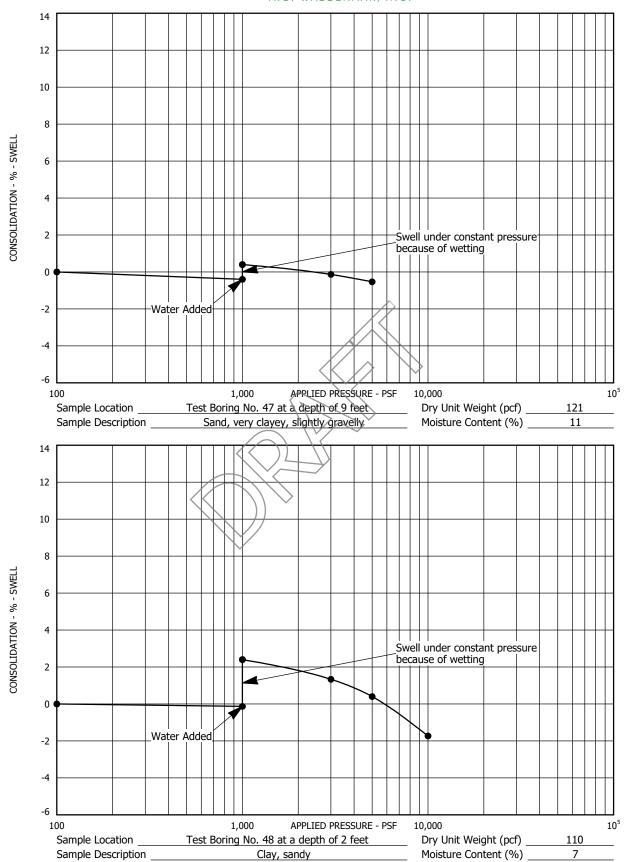




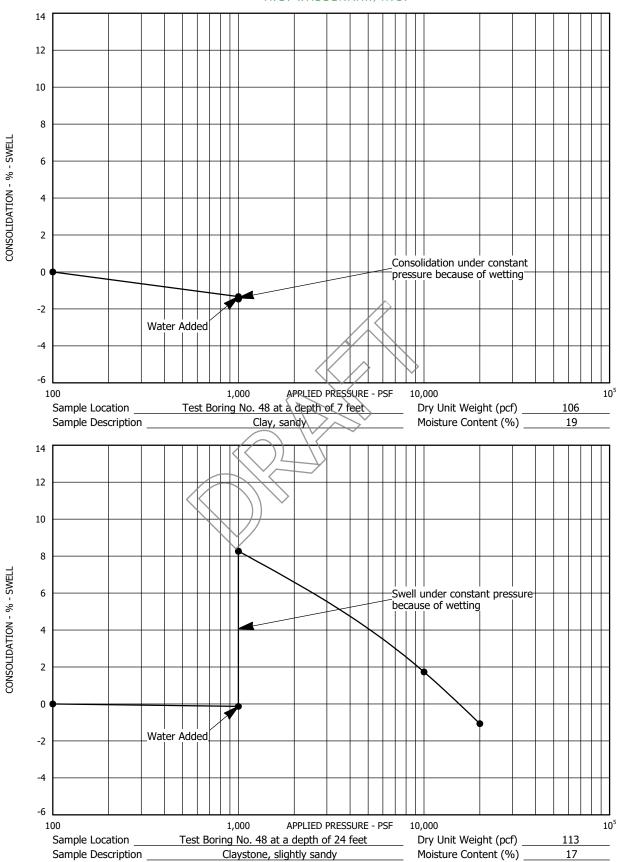




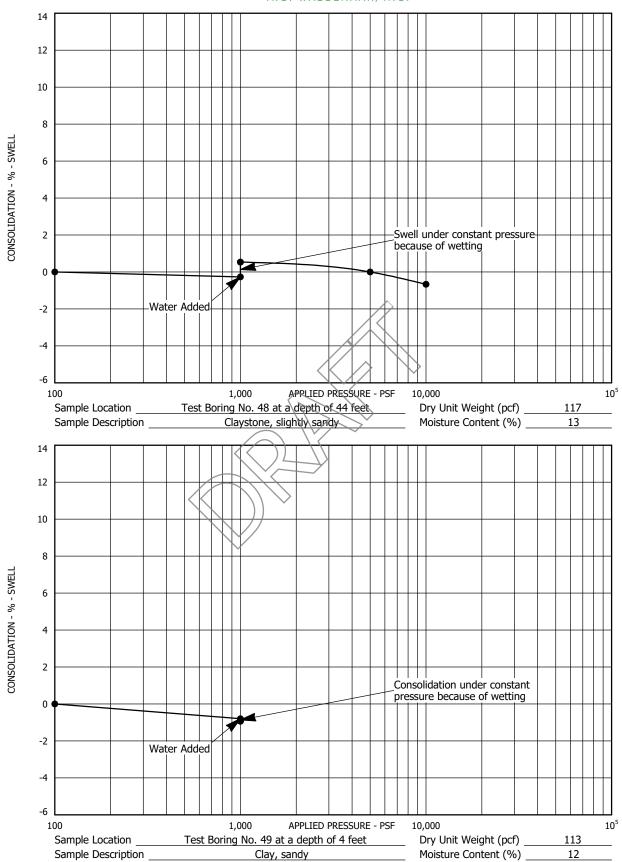




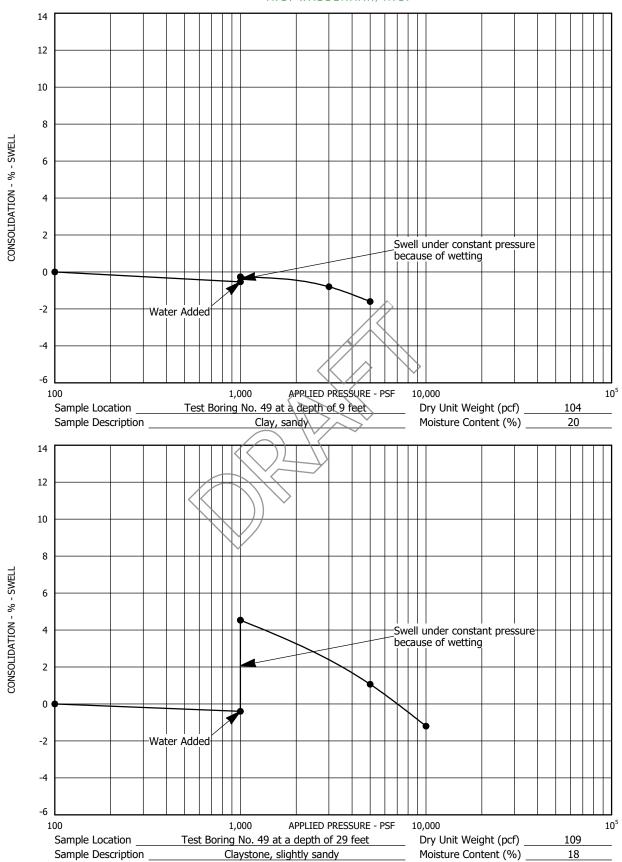




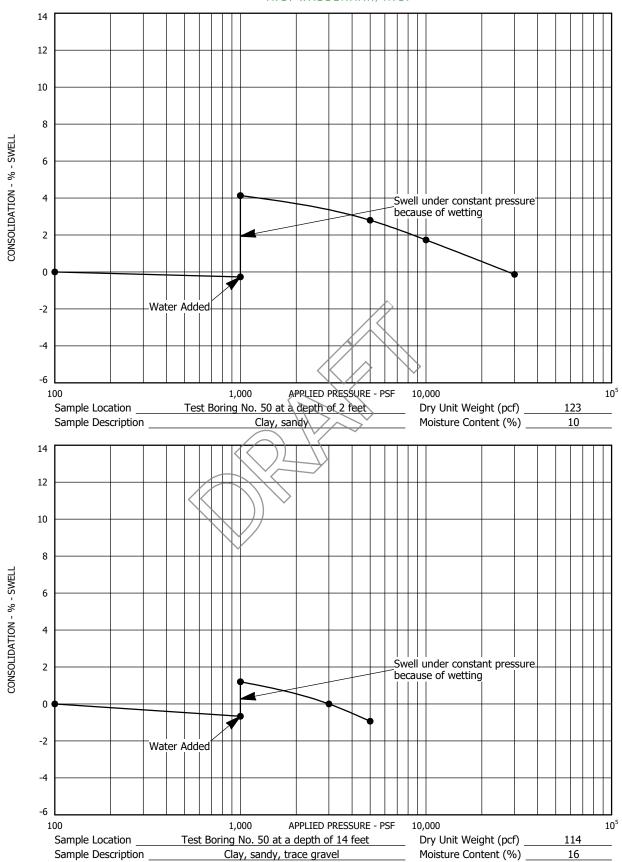




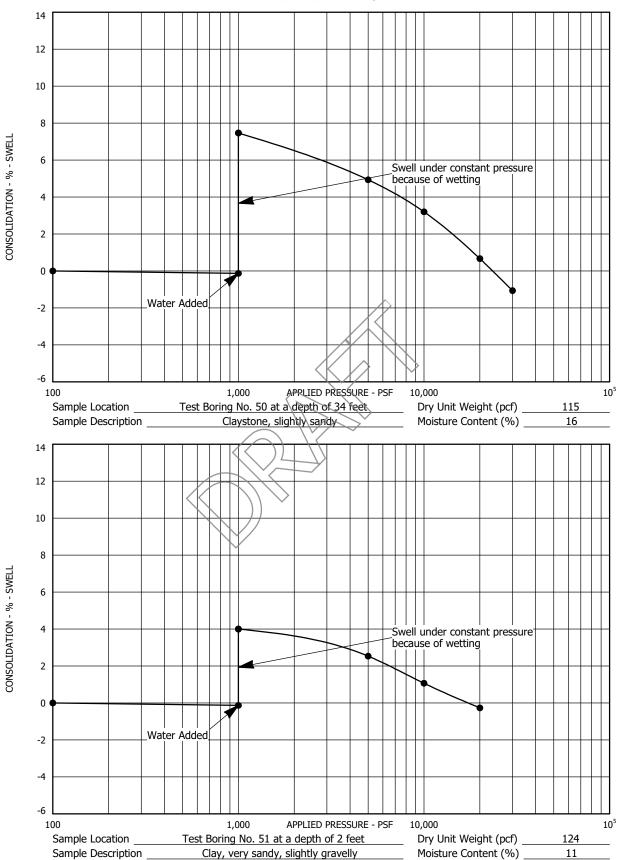




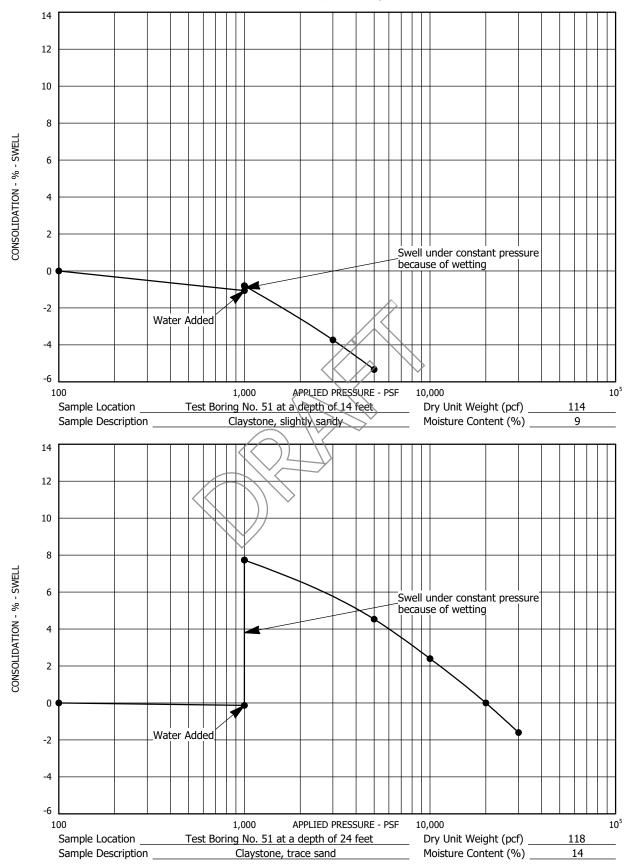




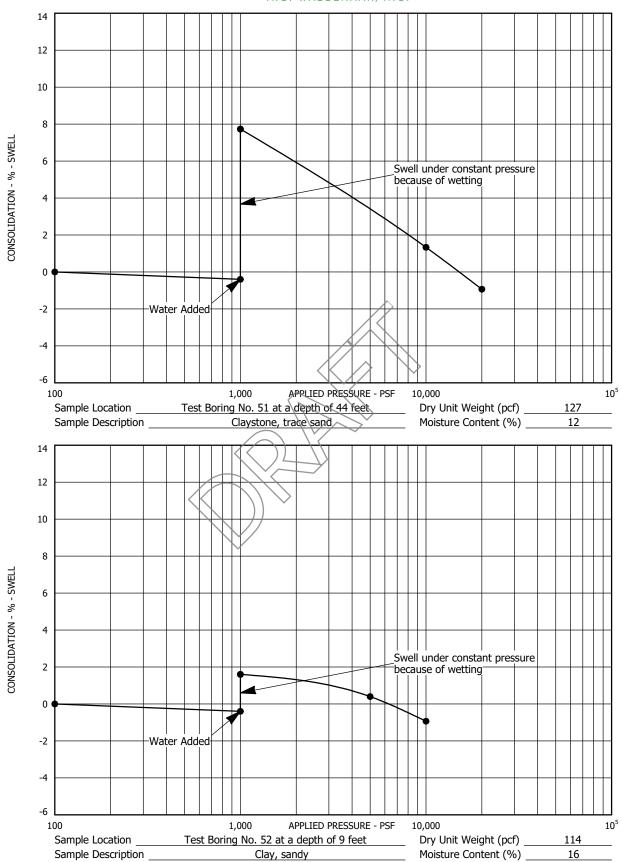




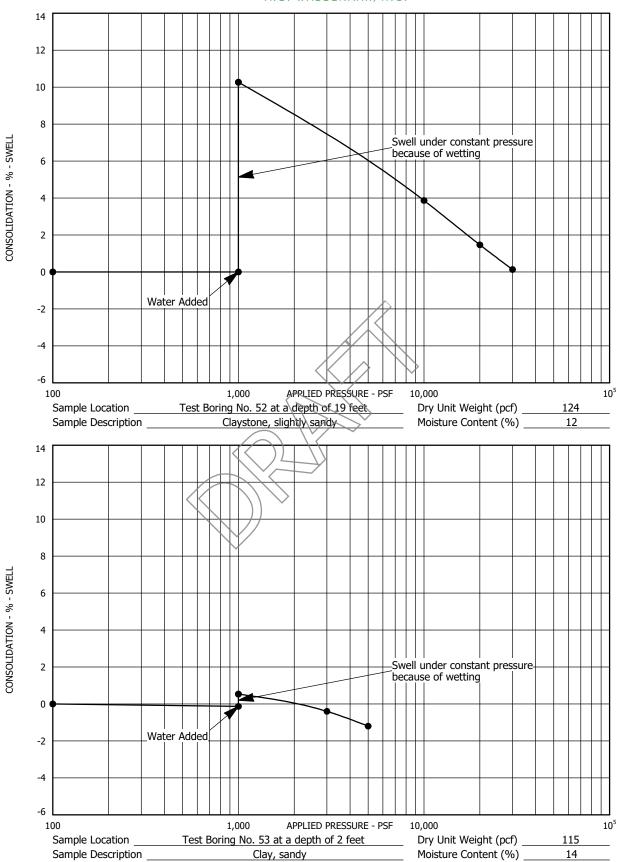




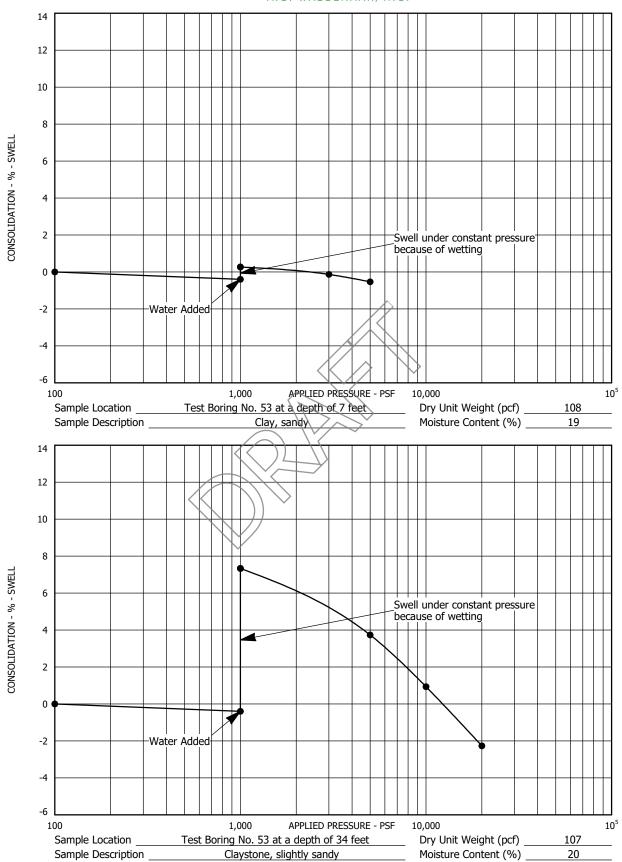




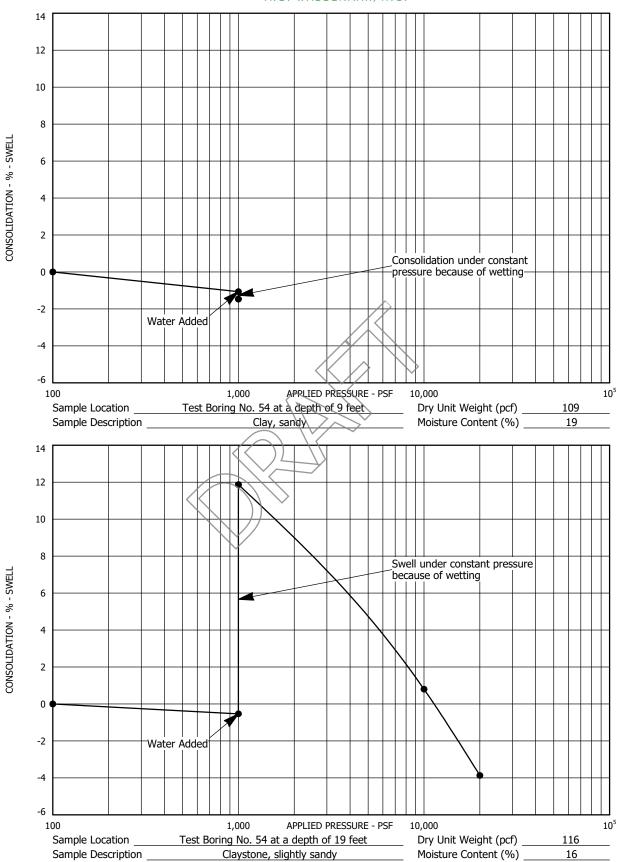




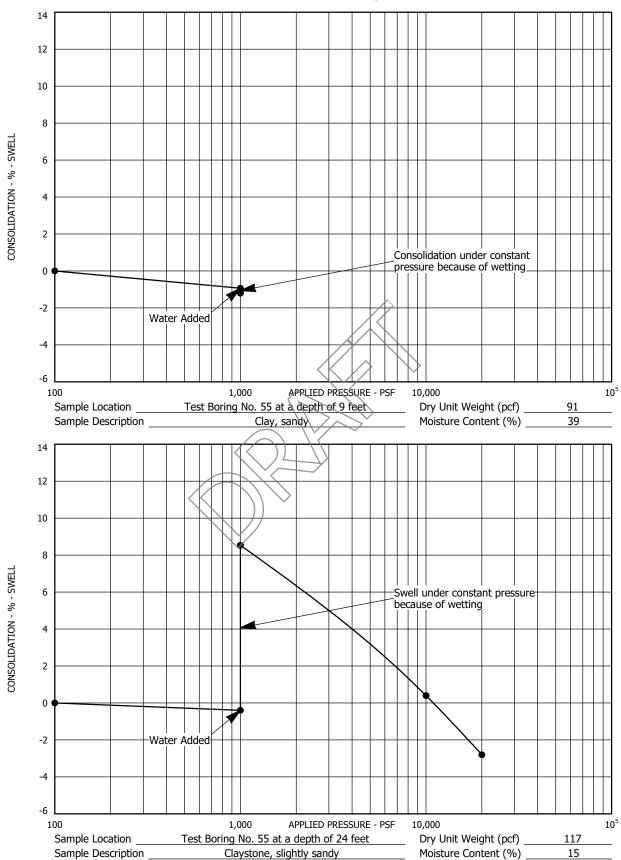




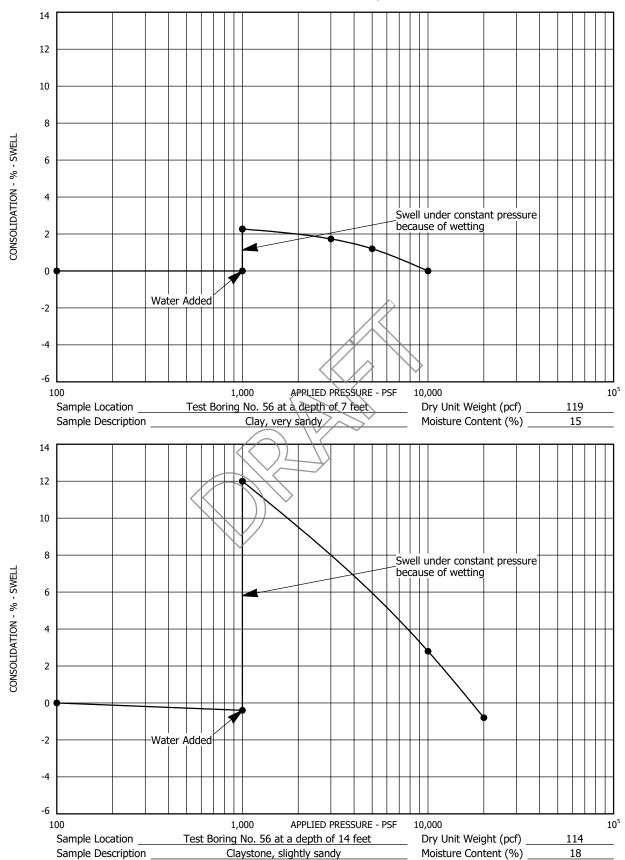




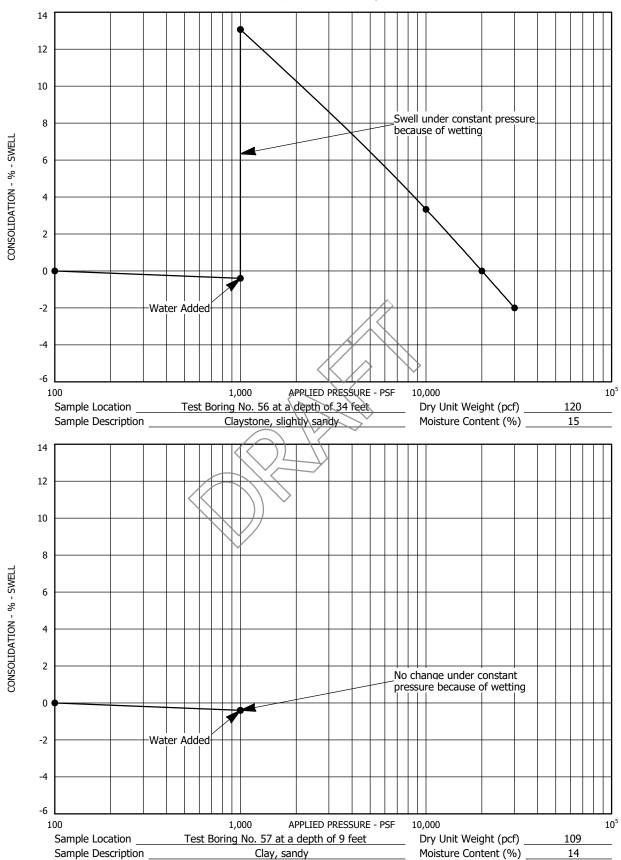




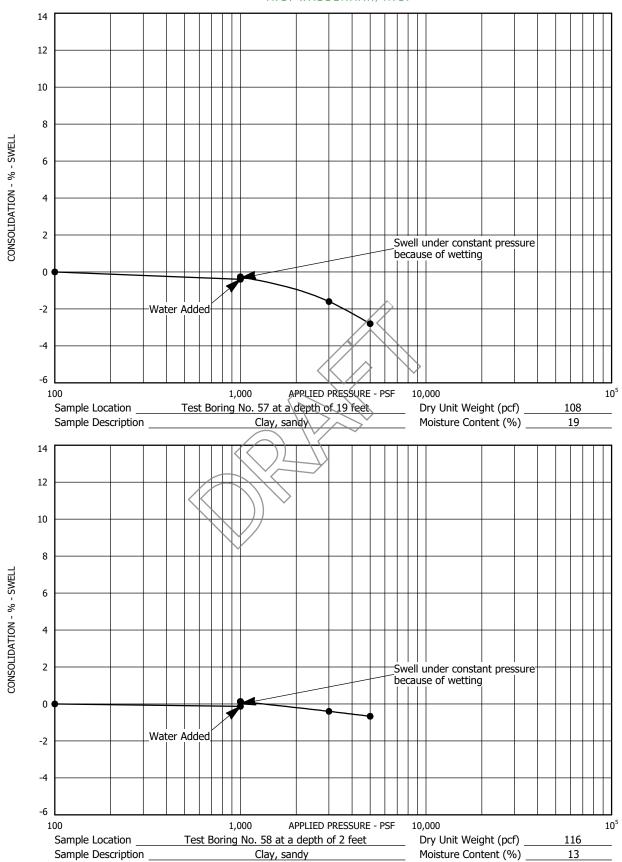




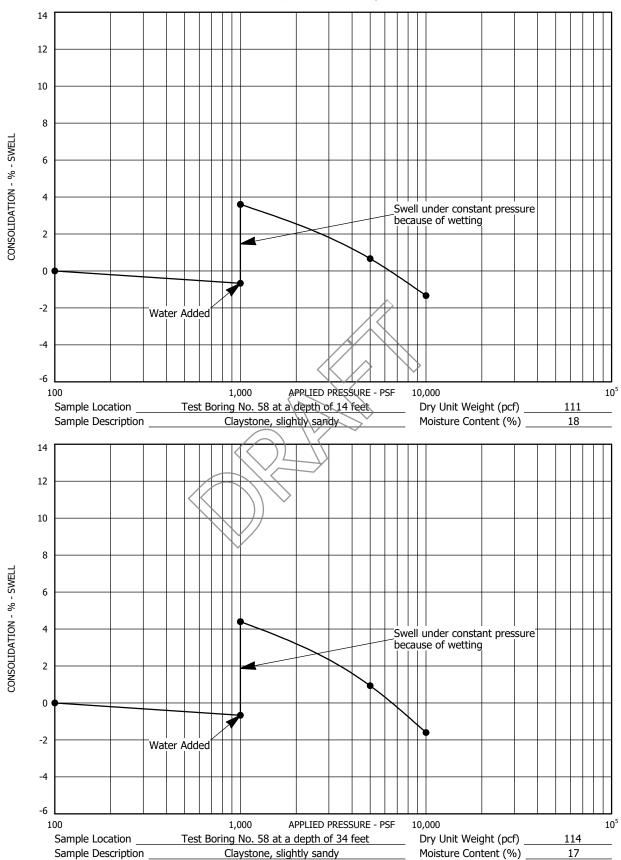




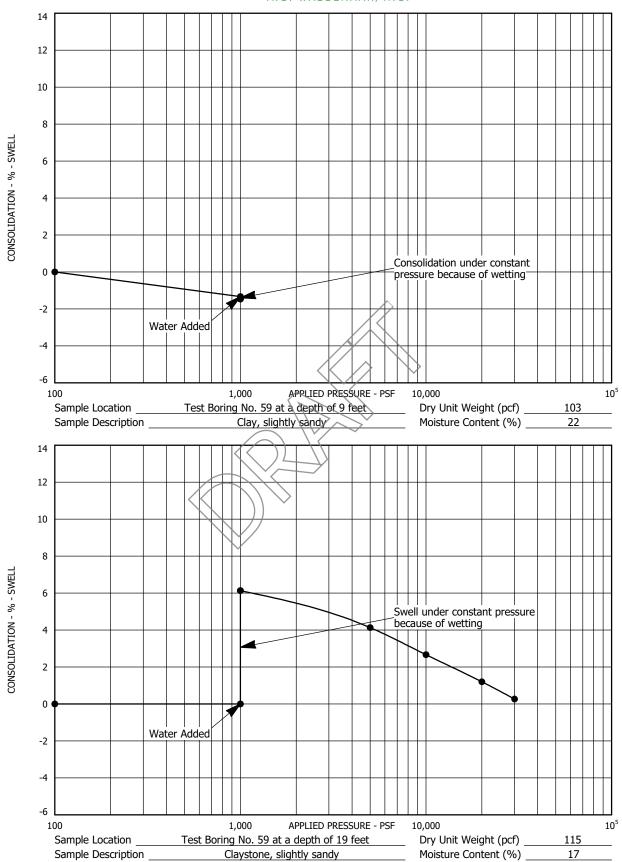




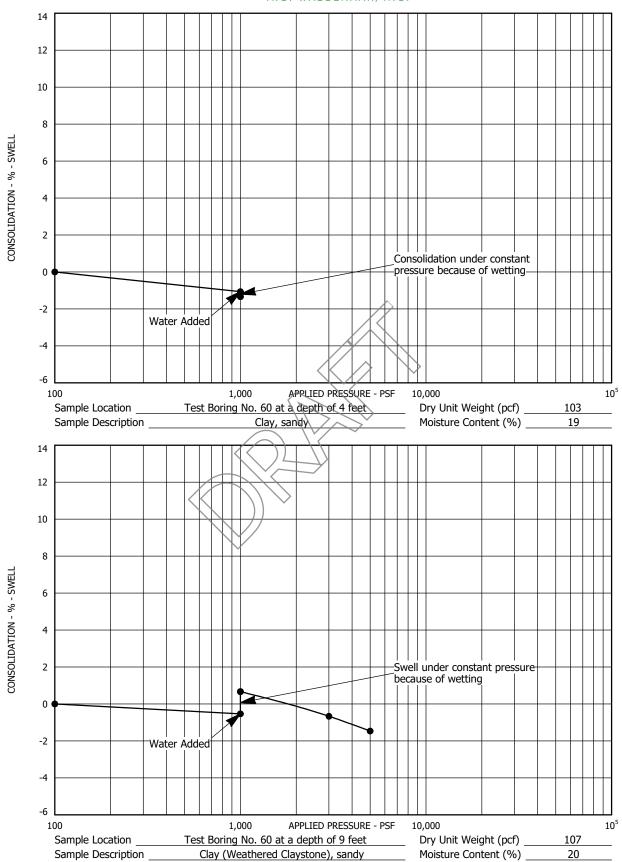






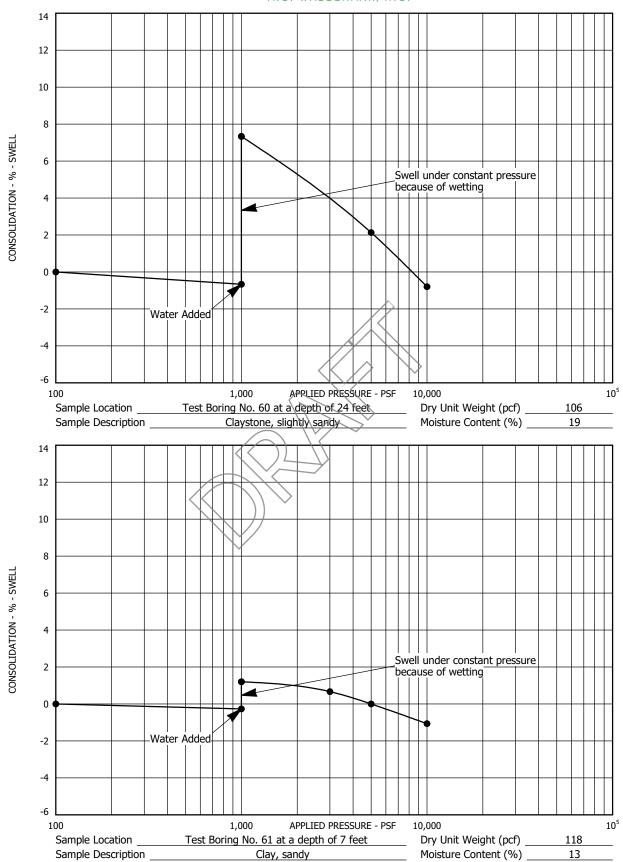




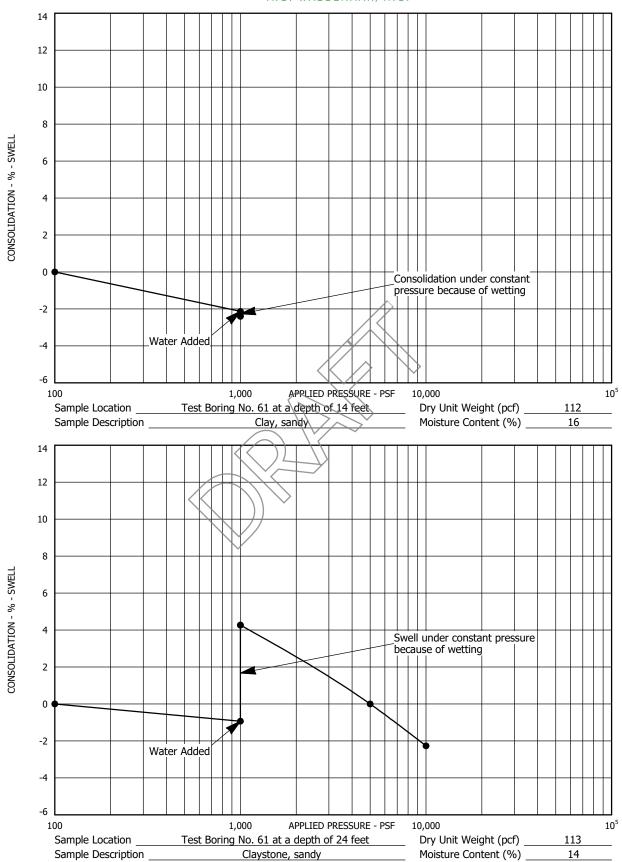


PROJECT NO. 223122



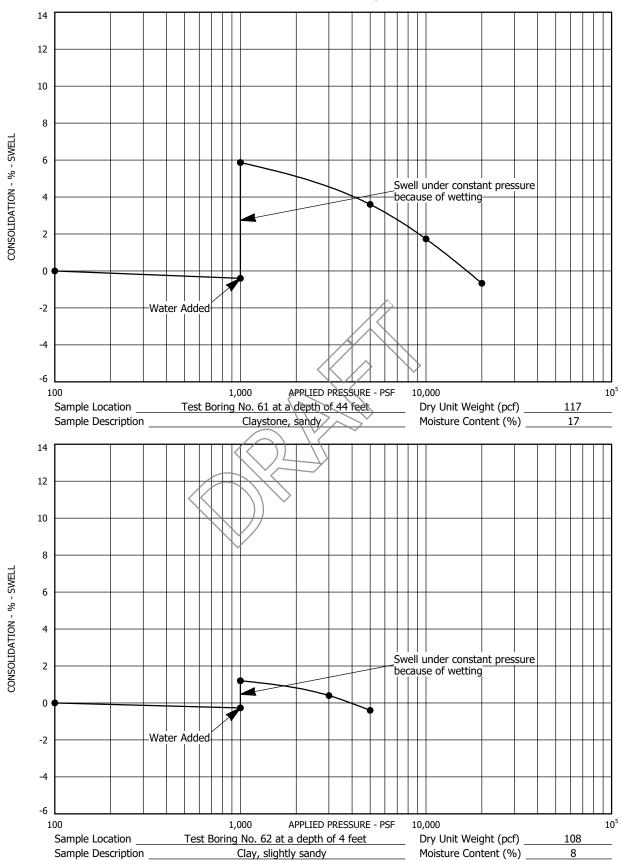




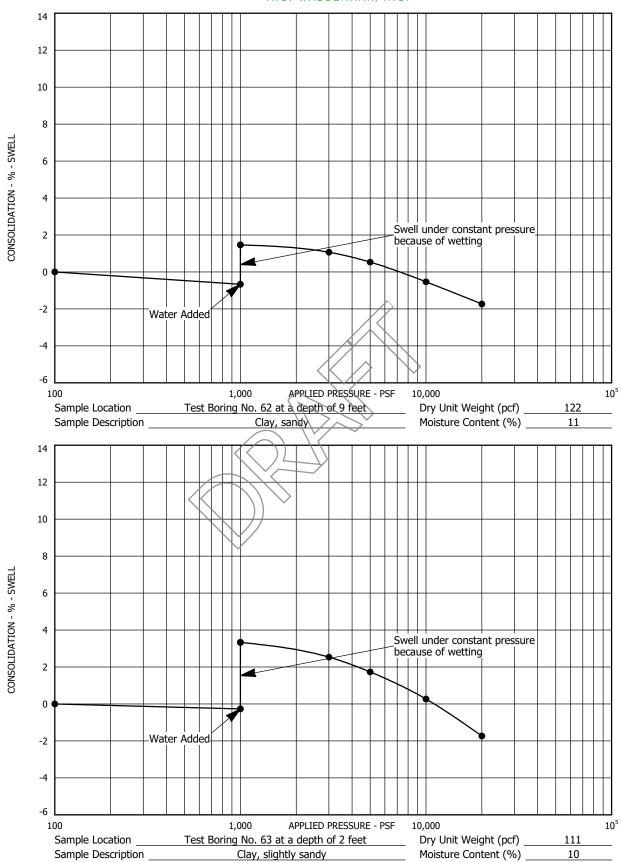


PROJECT NO. 223122

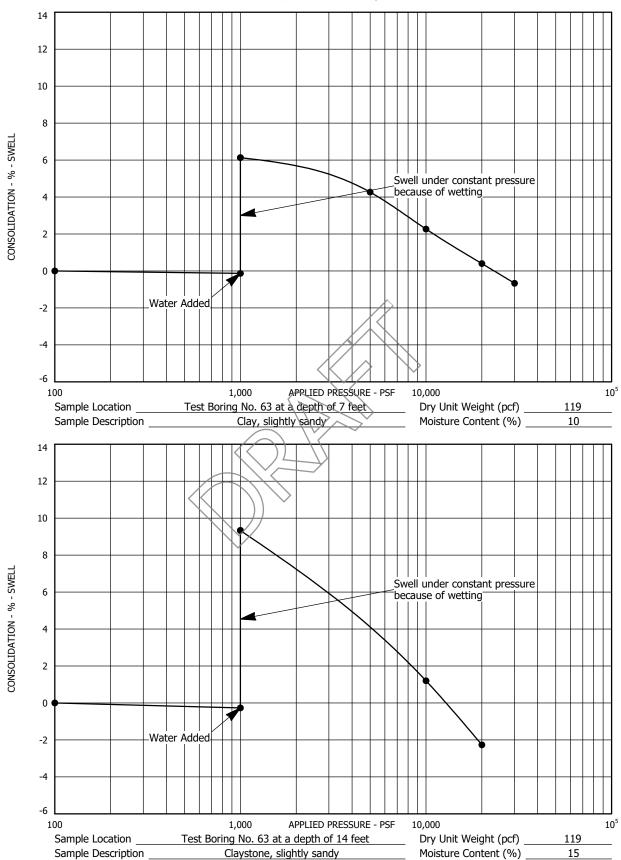




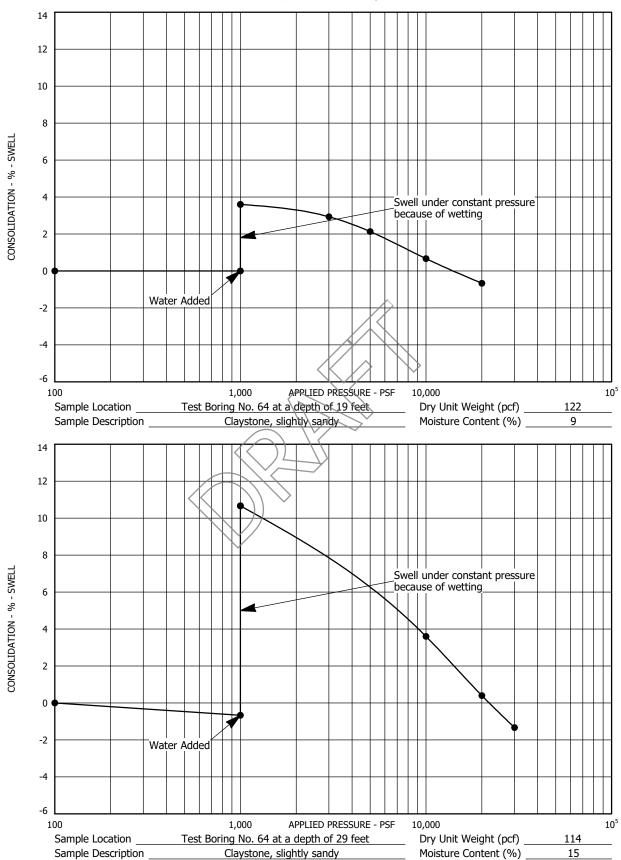




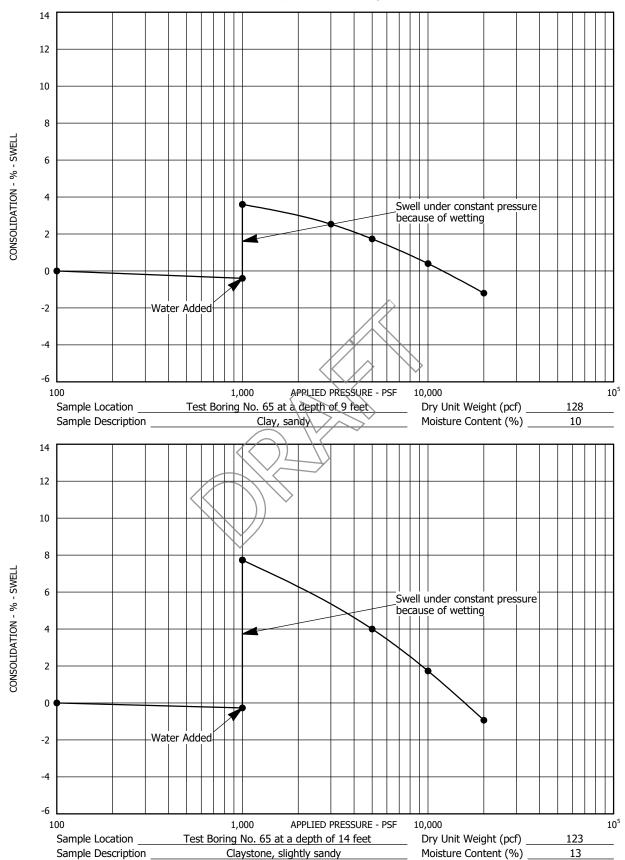




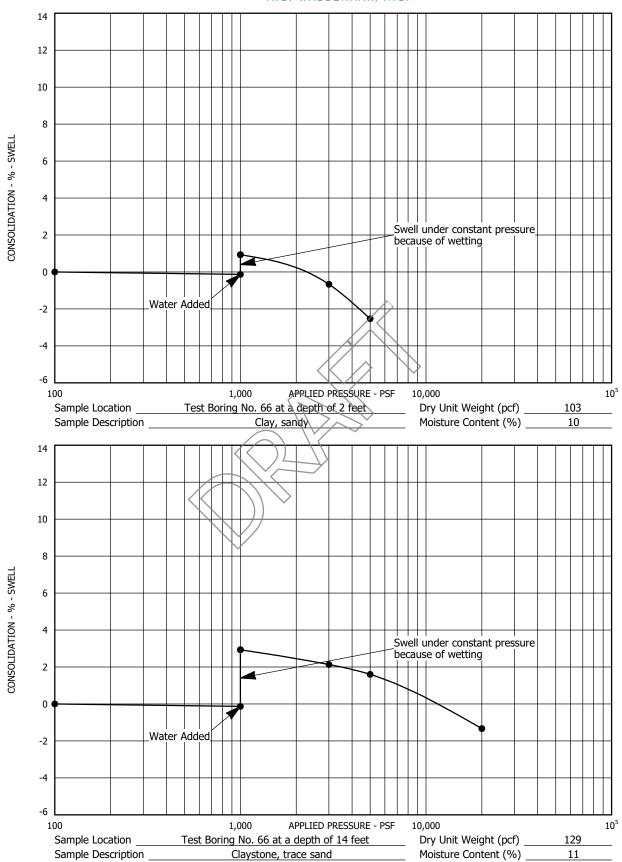




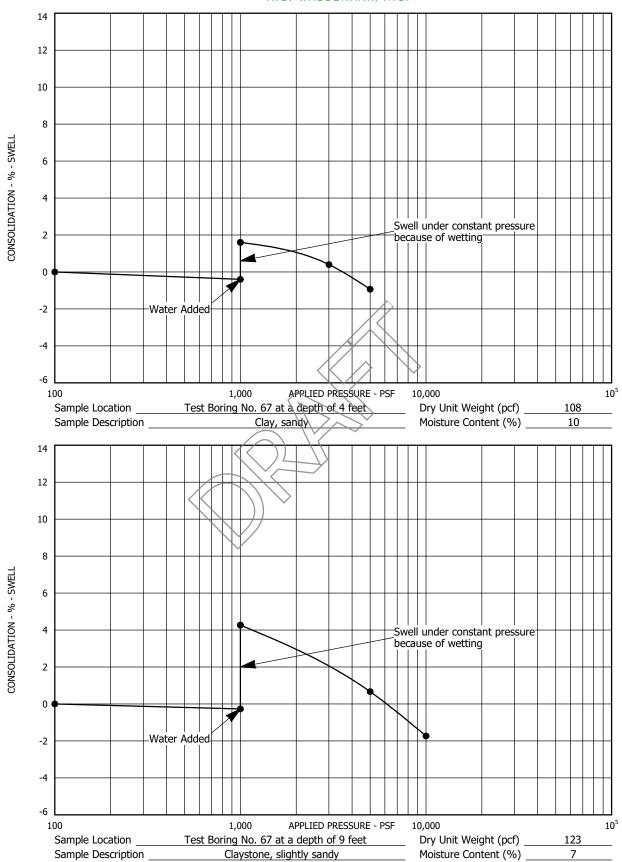




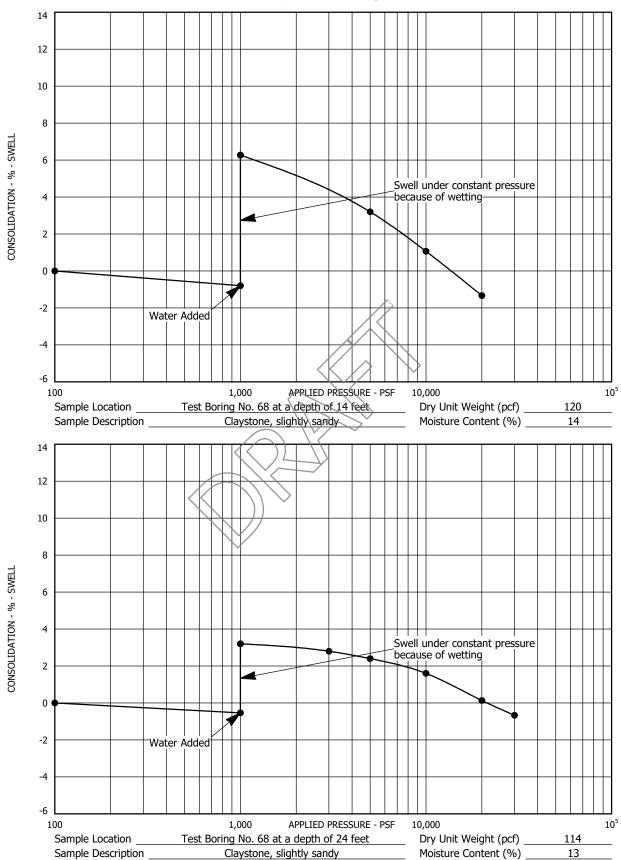




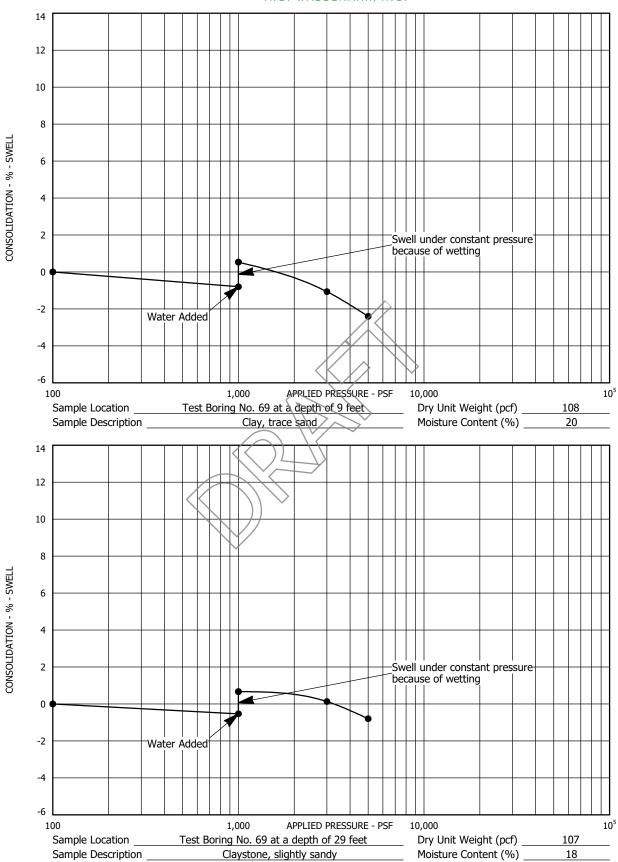




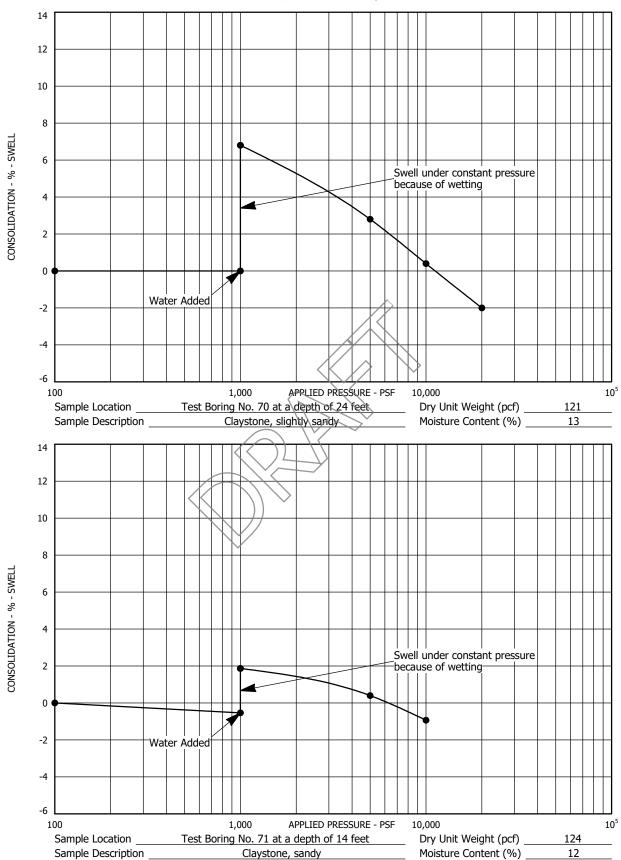




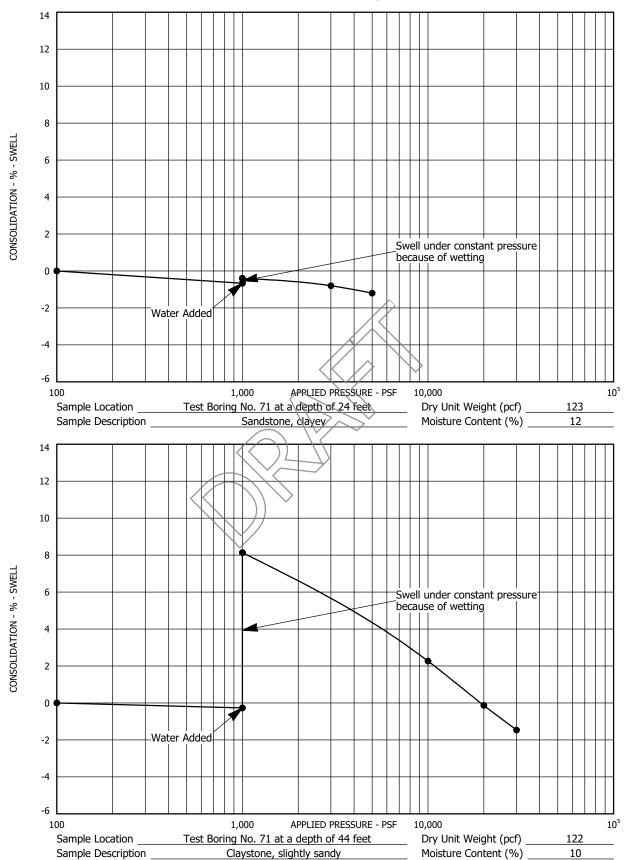




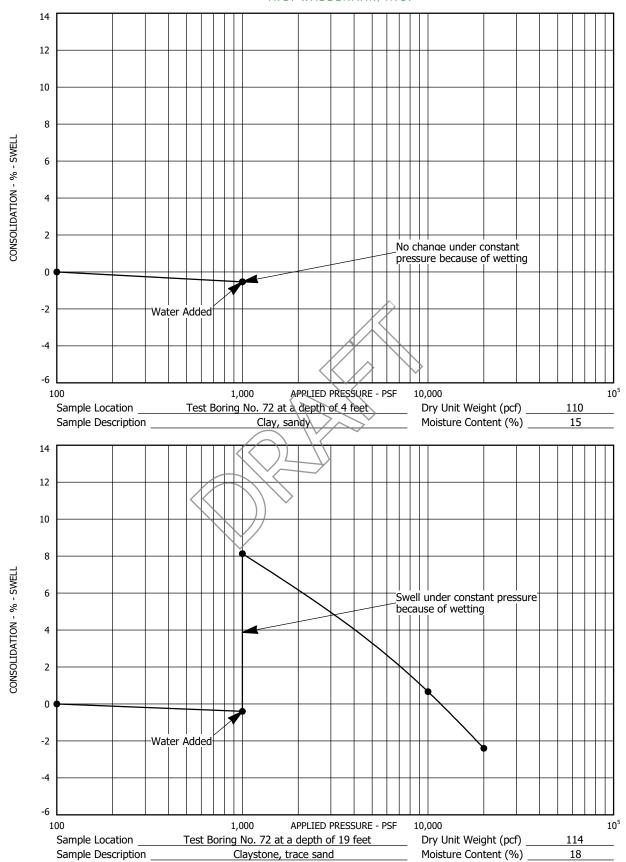




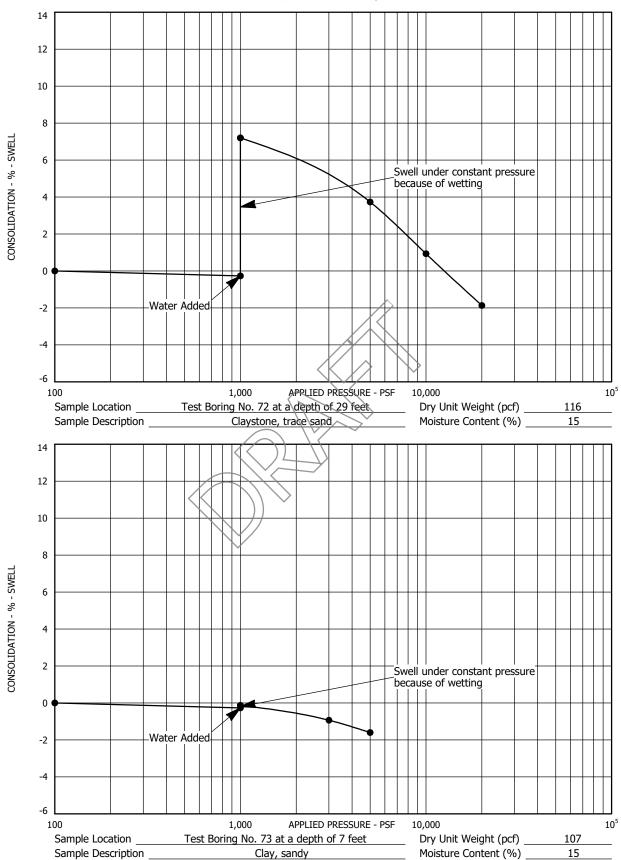




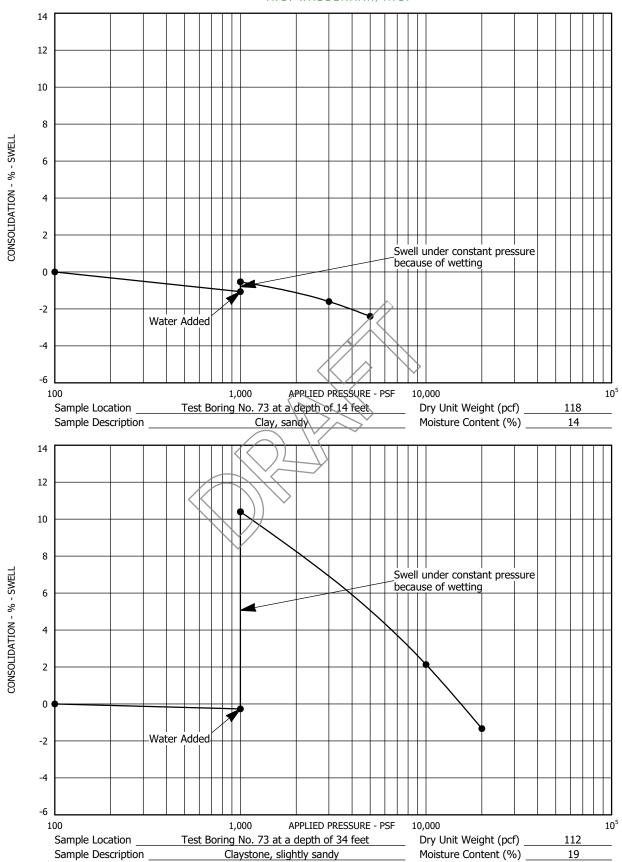




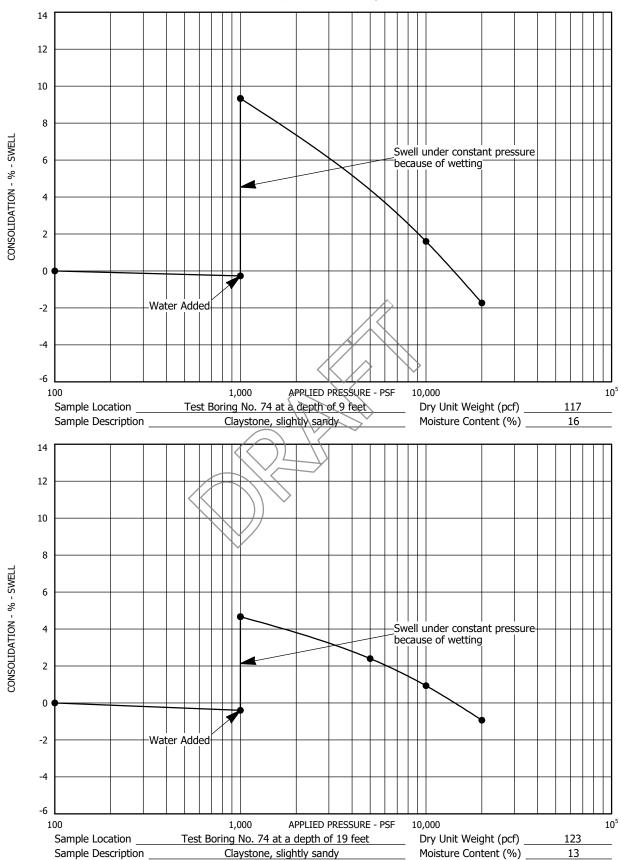




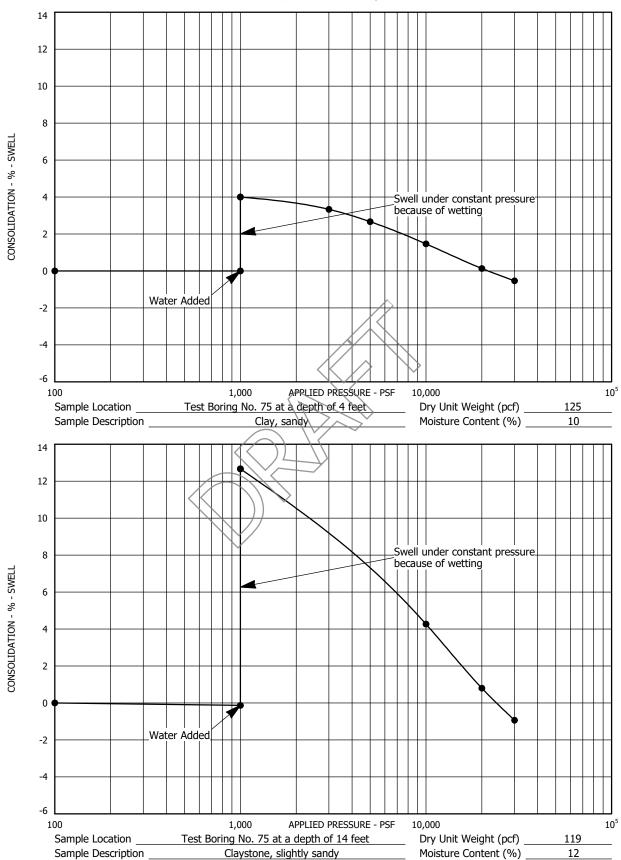




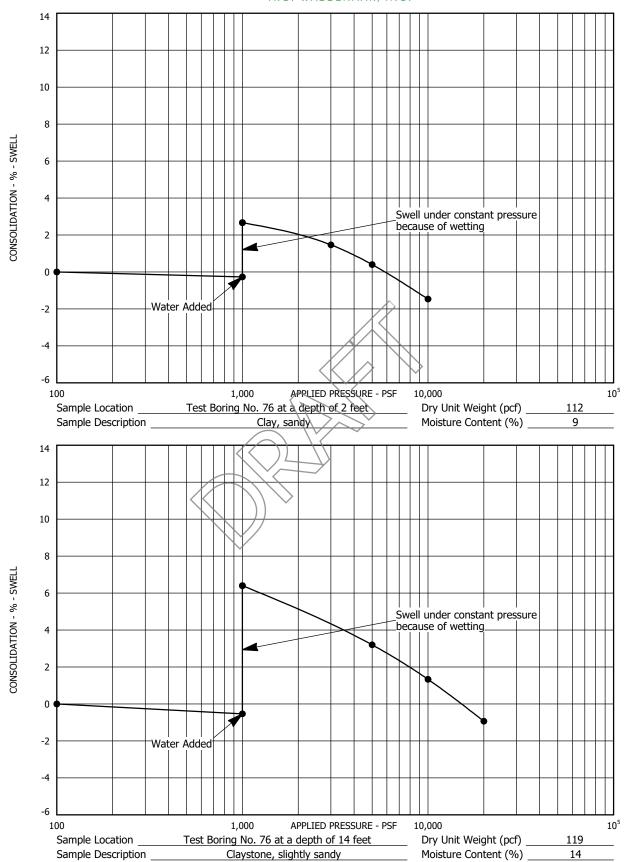




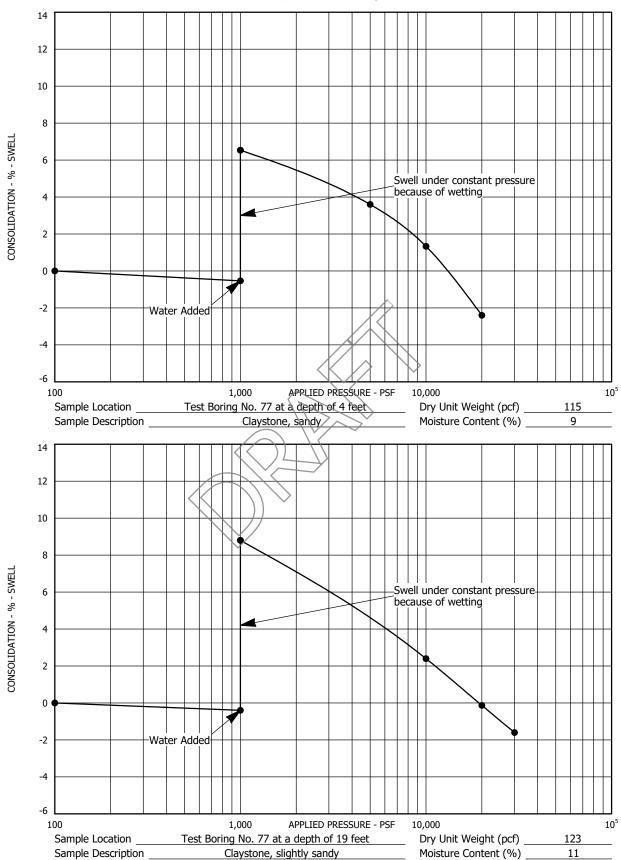




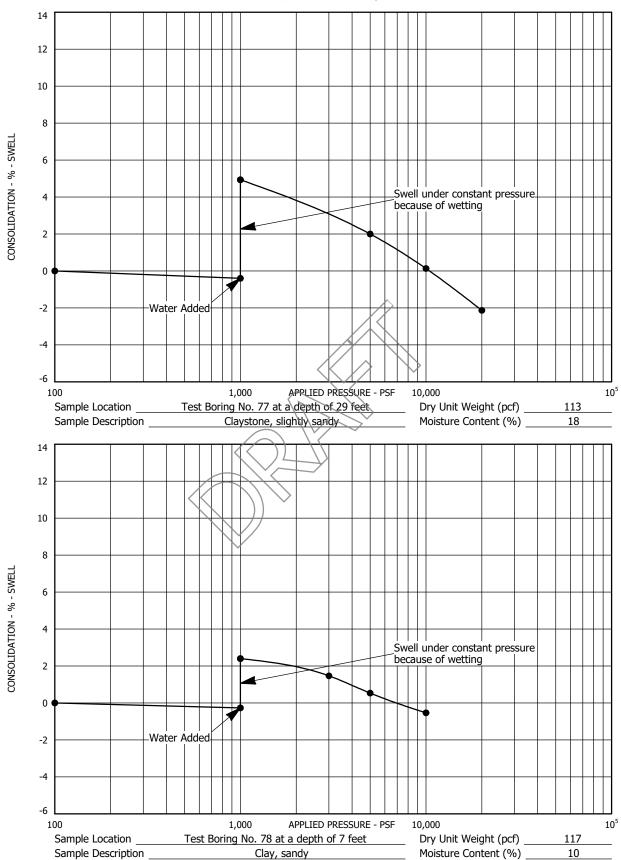




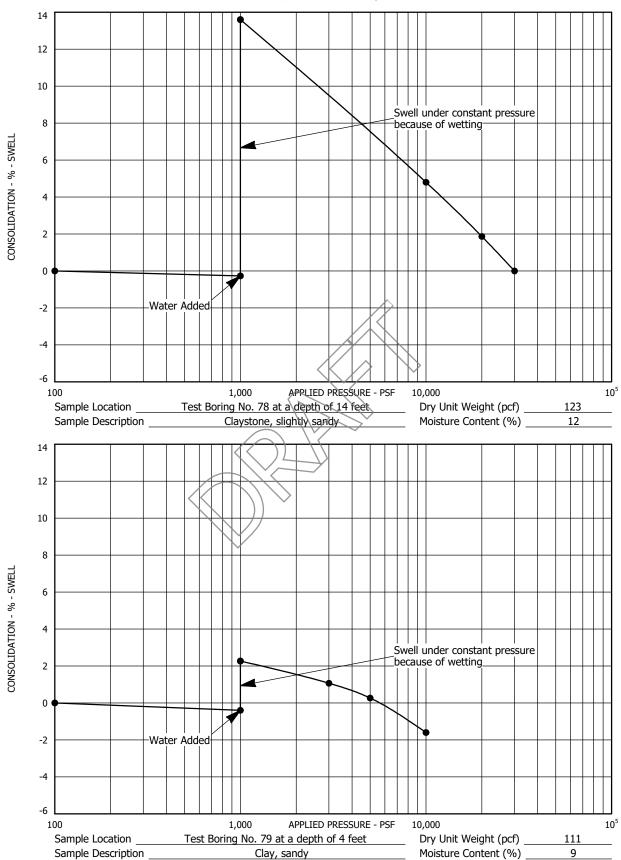




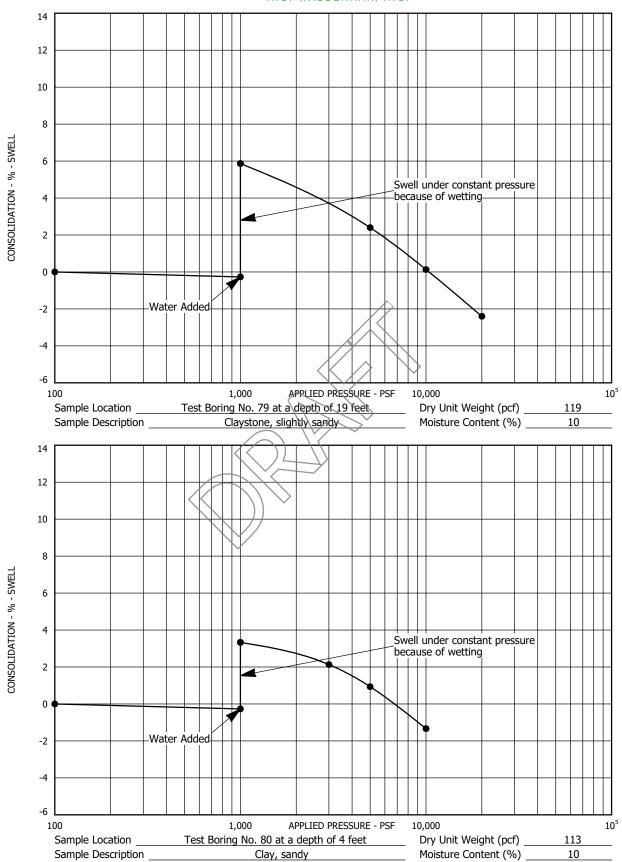




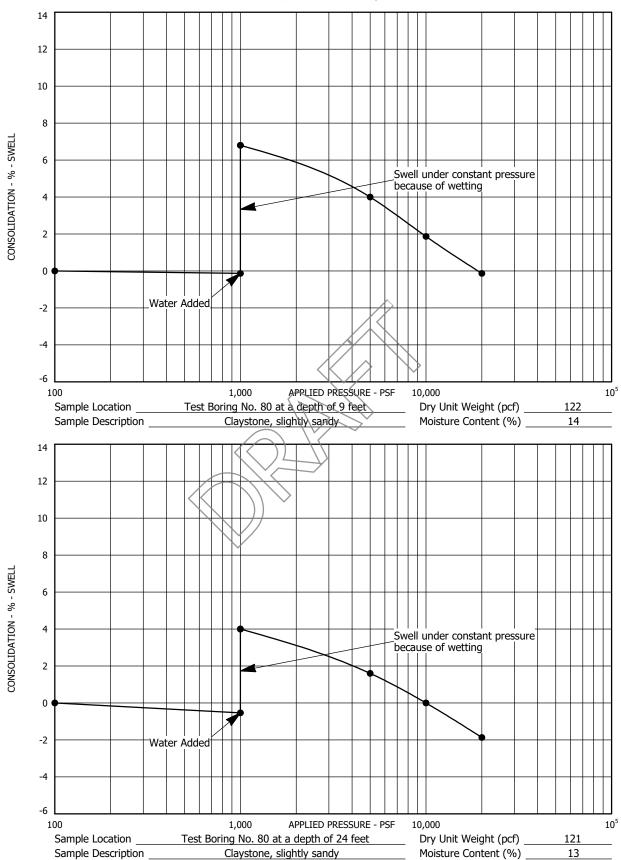




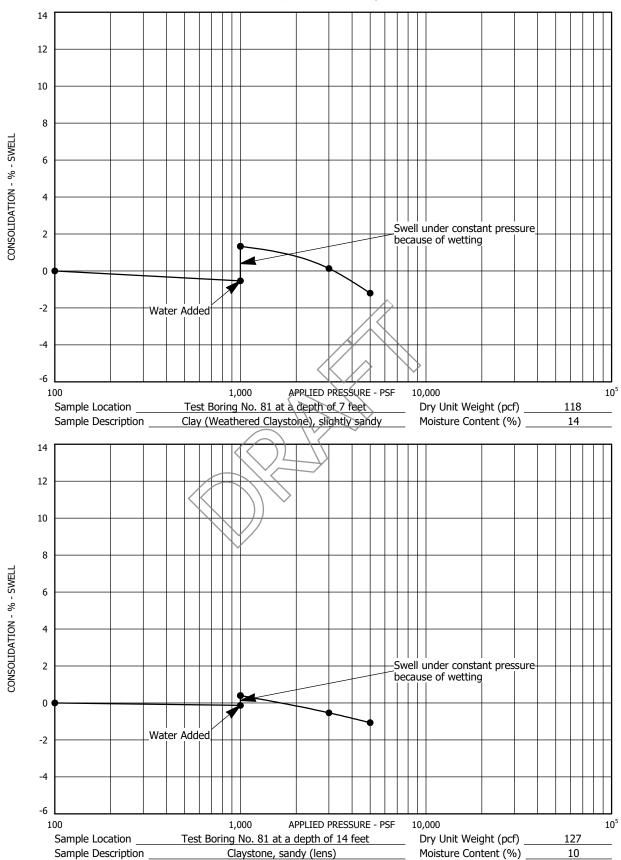




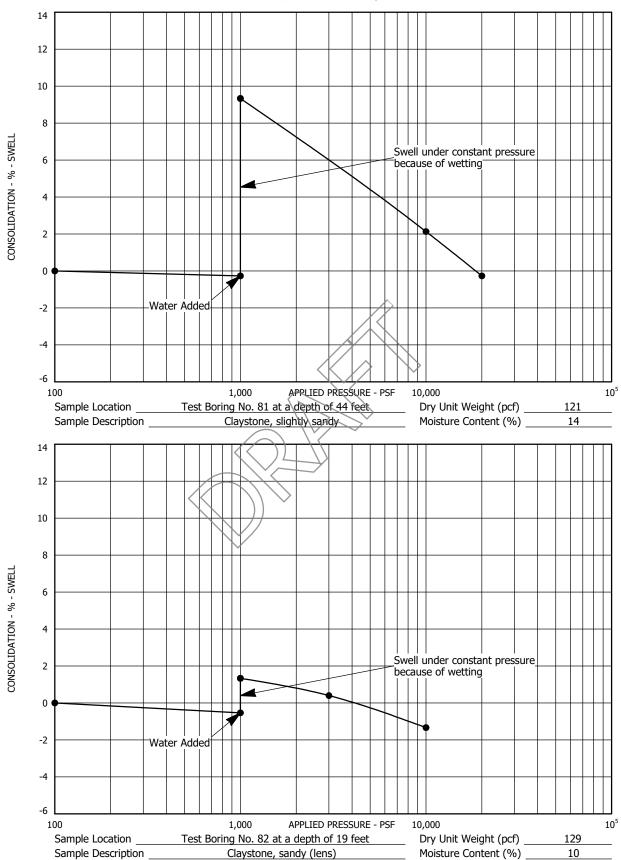




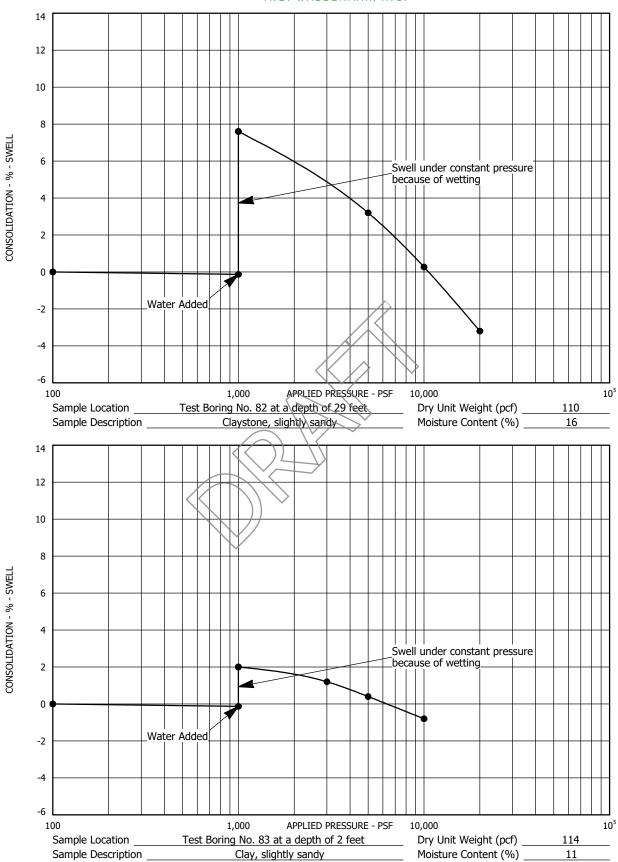




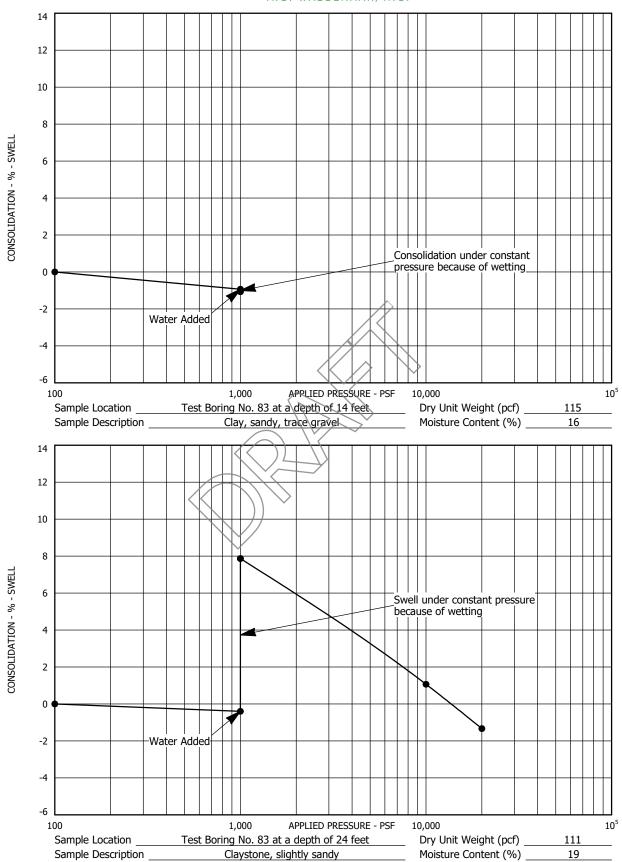




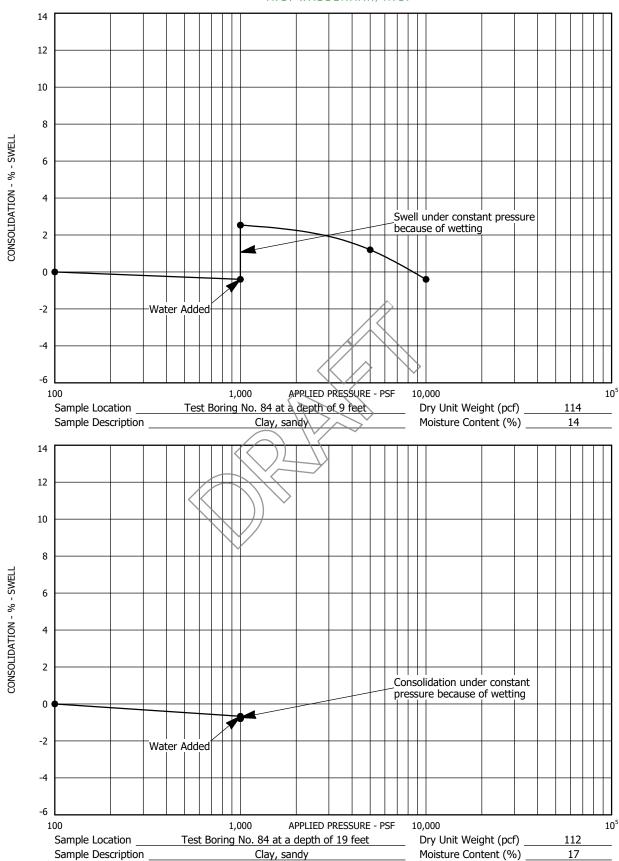




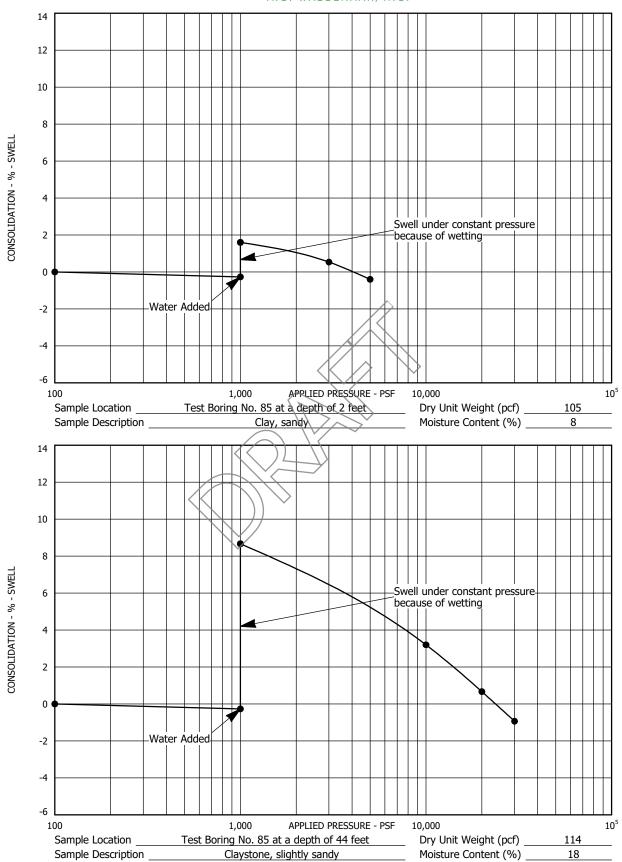




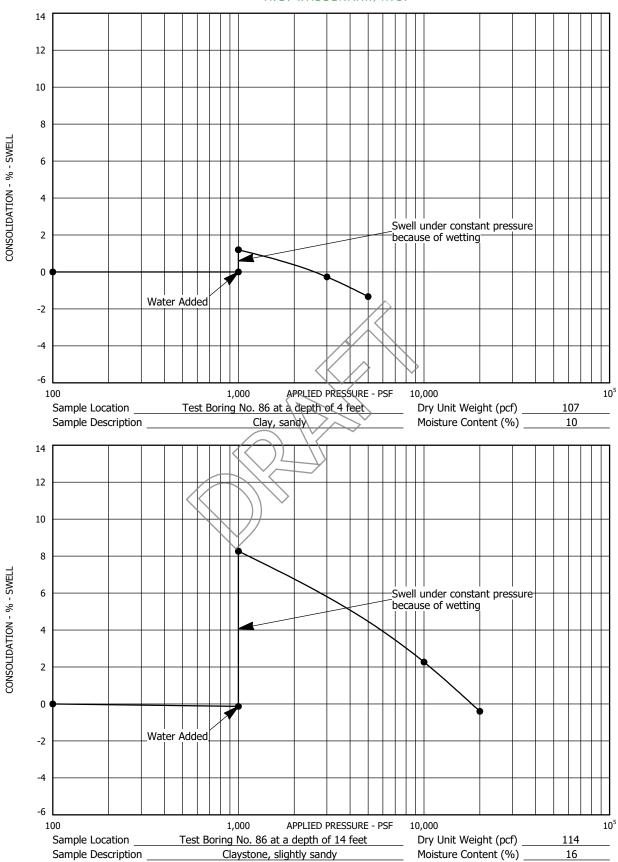




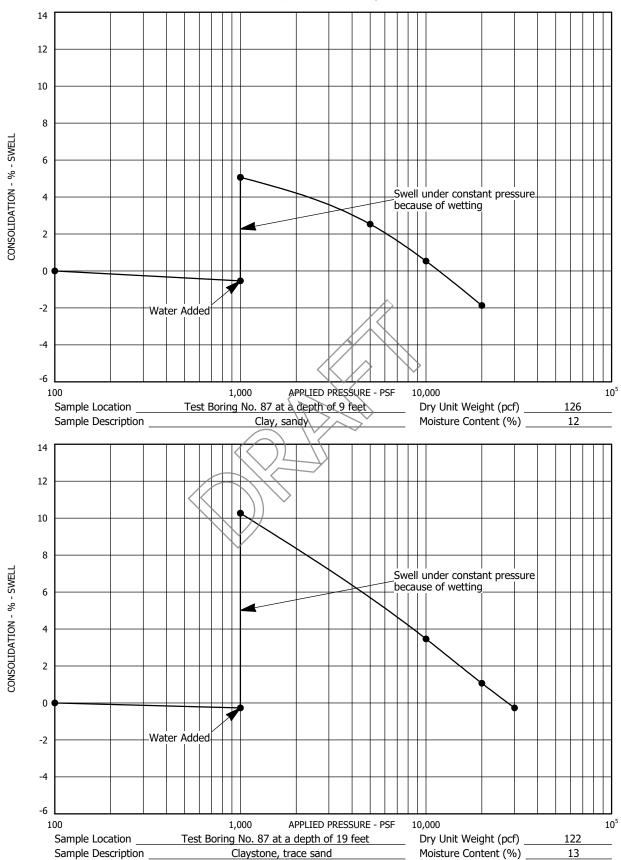




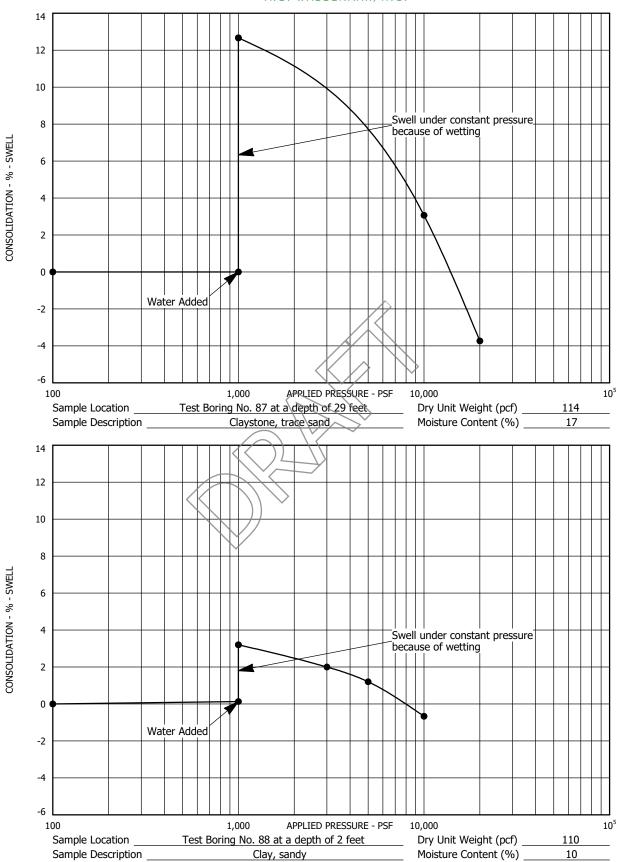




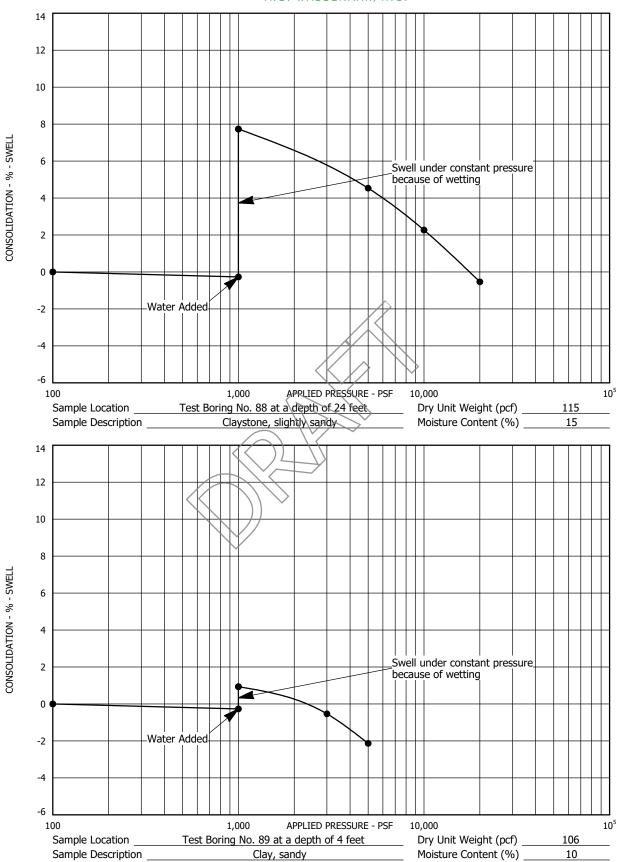




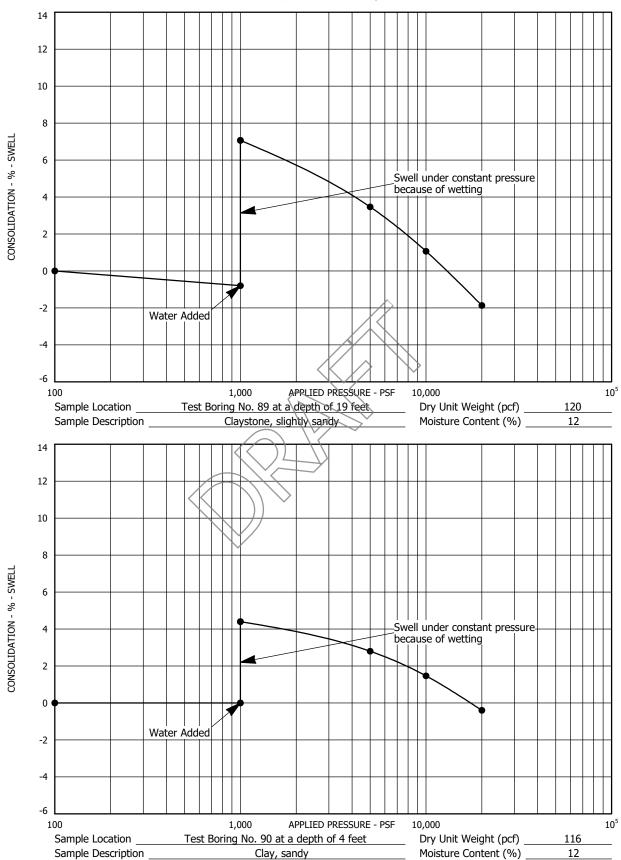




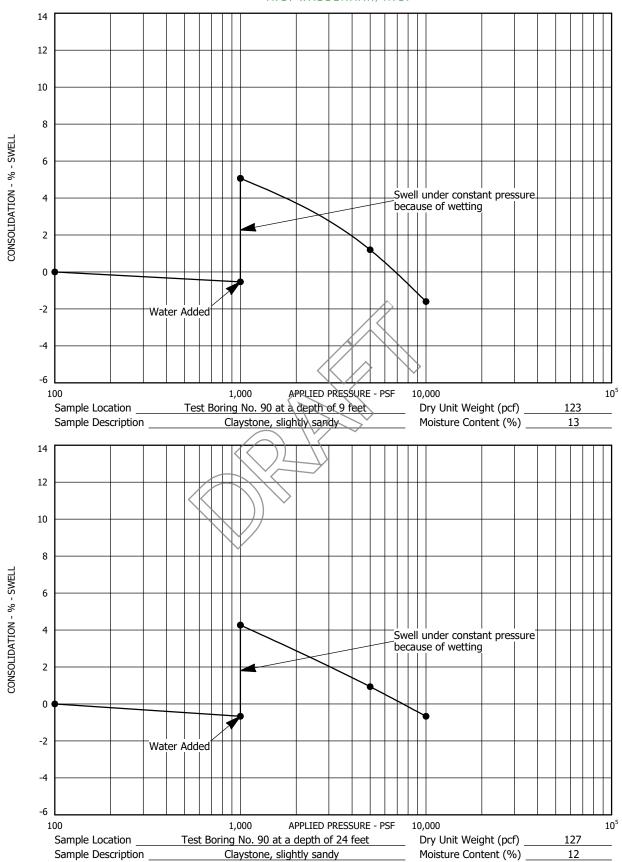




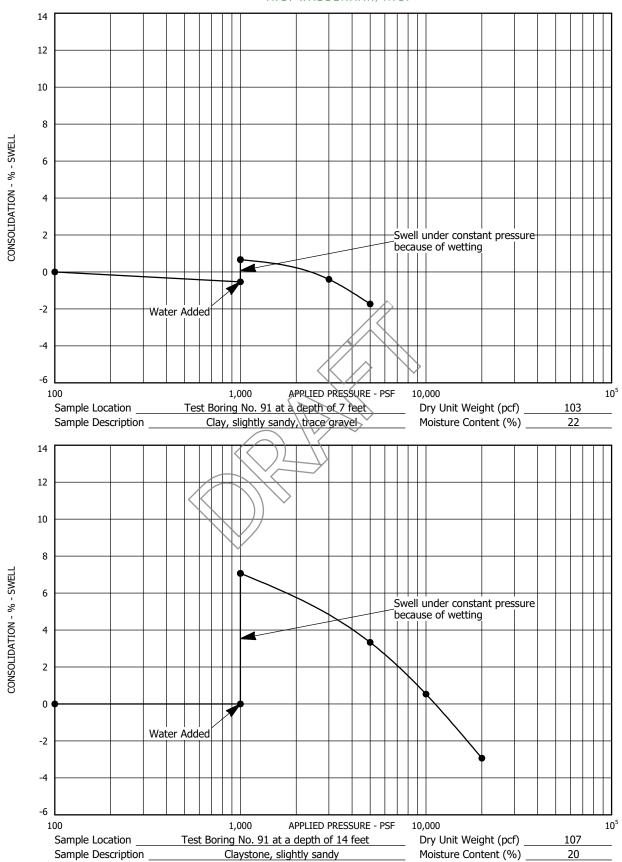




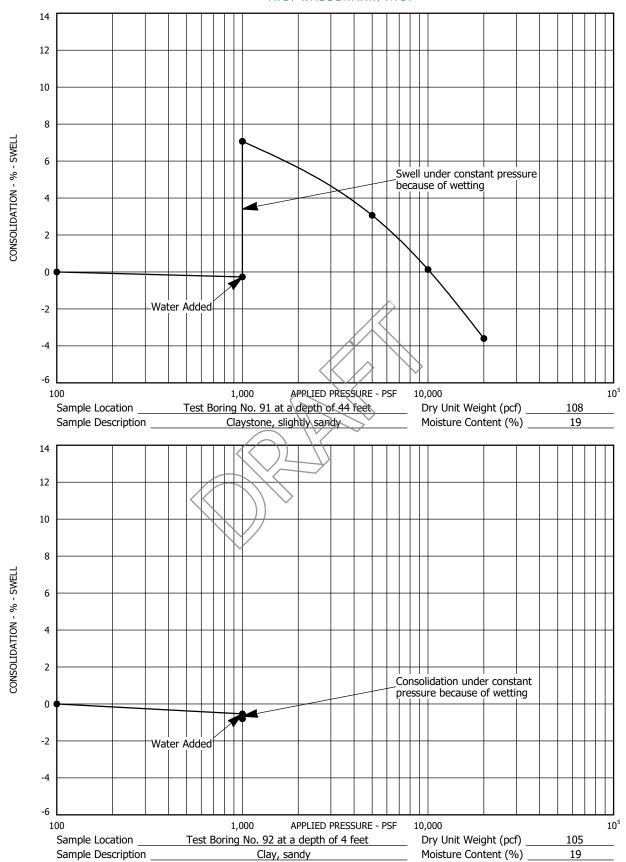




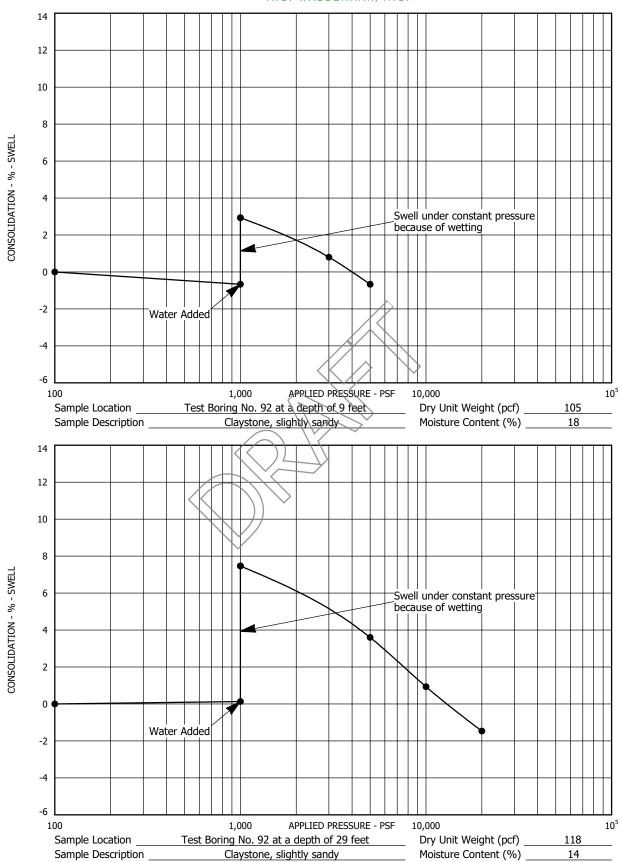




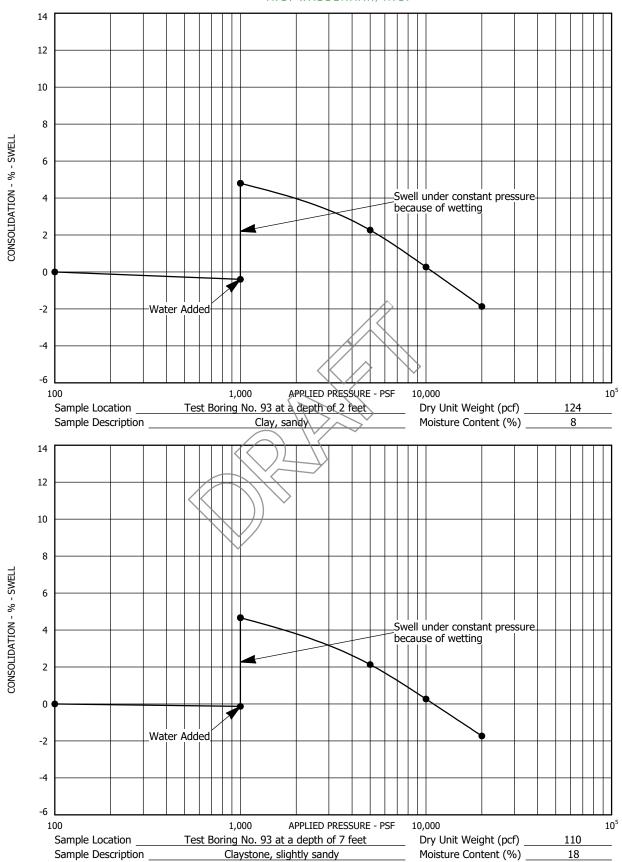




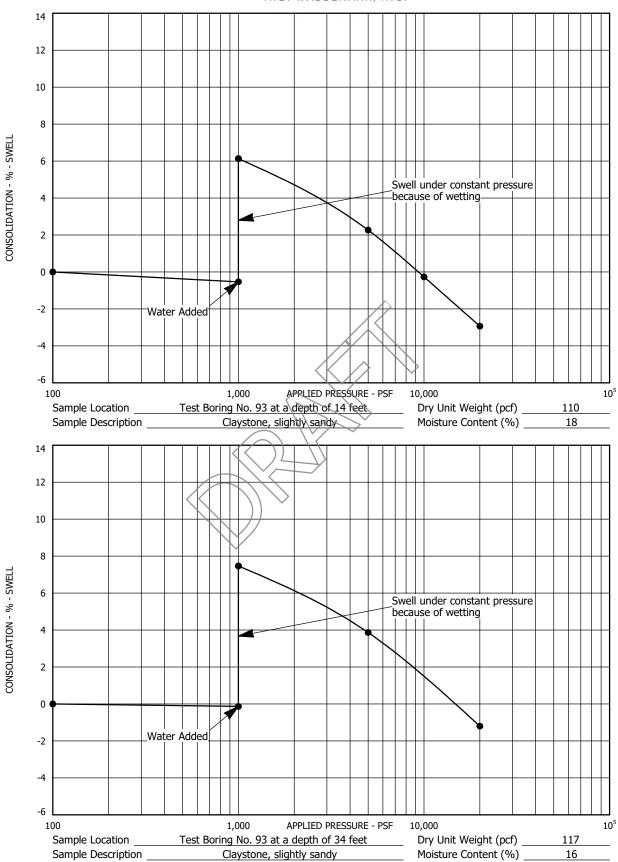




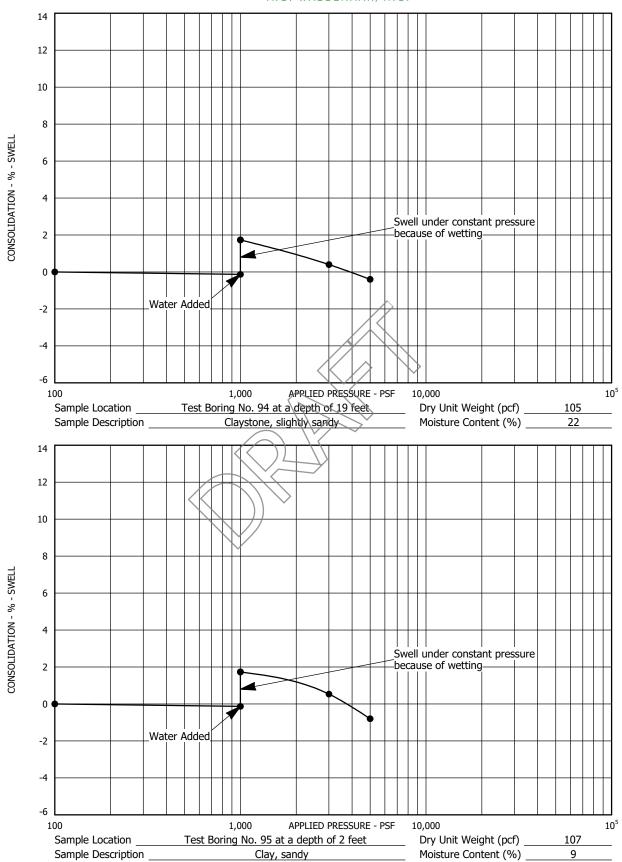




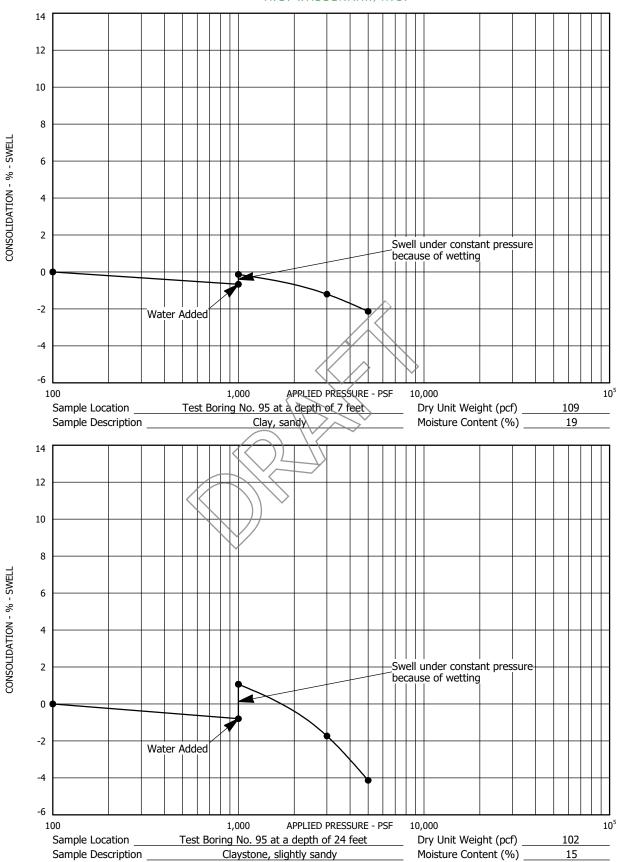




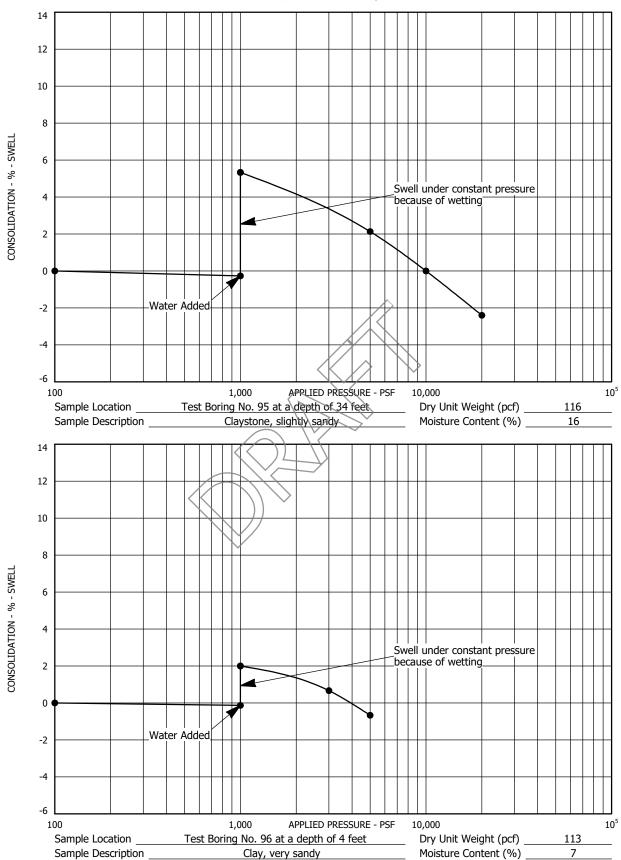




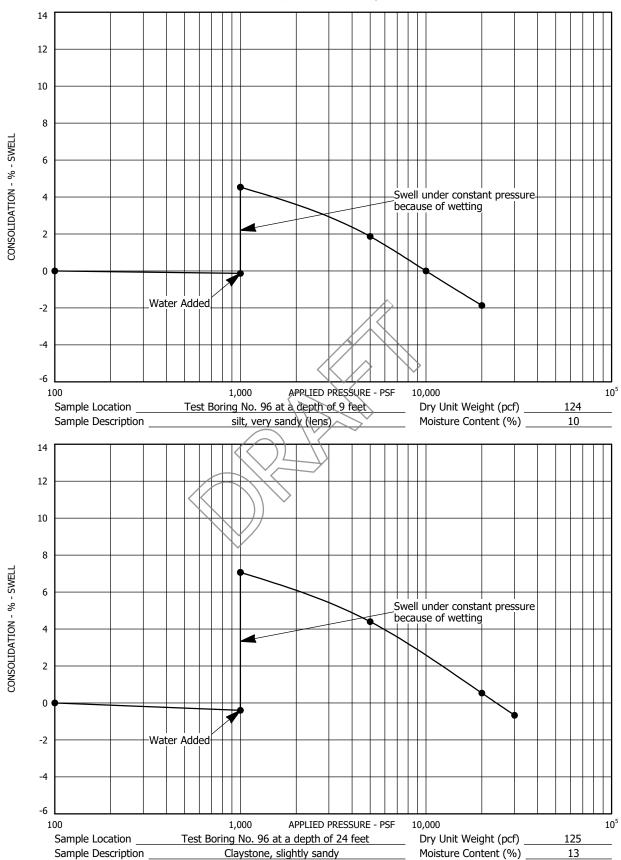






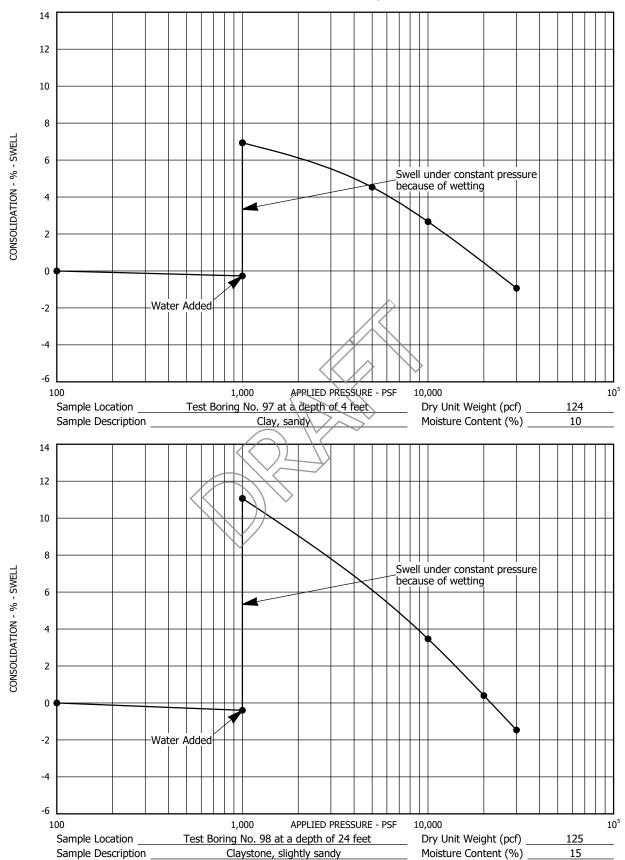




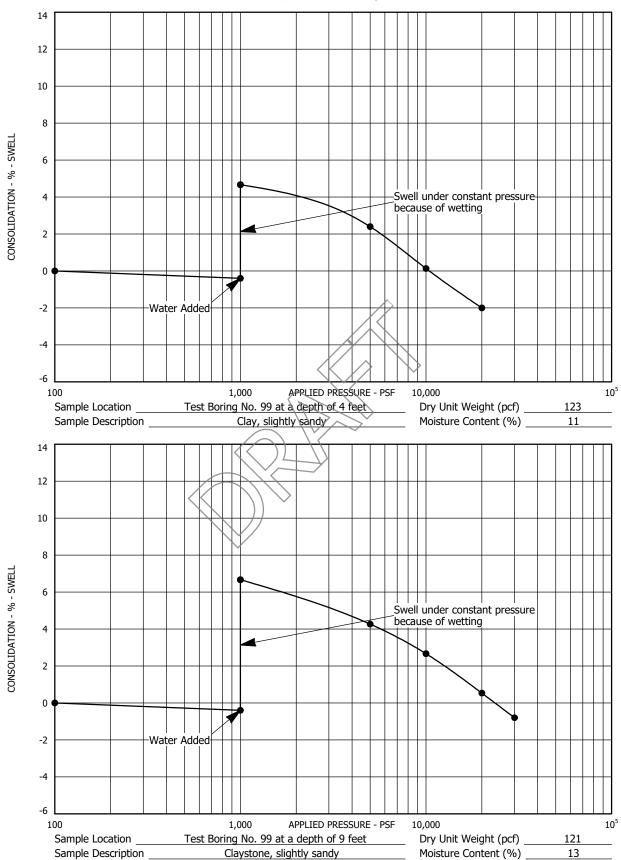


PROJECT NO. 223122

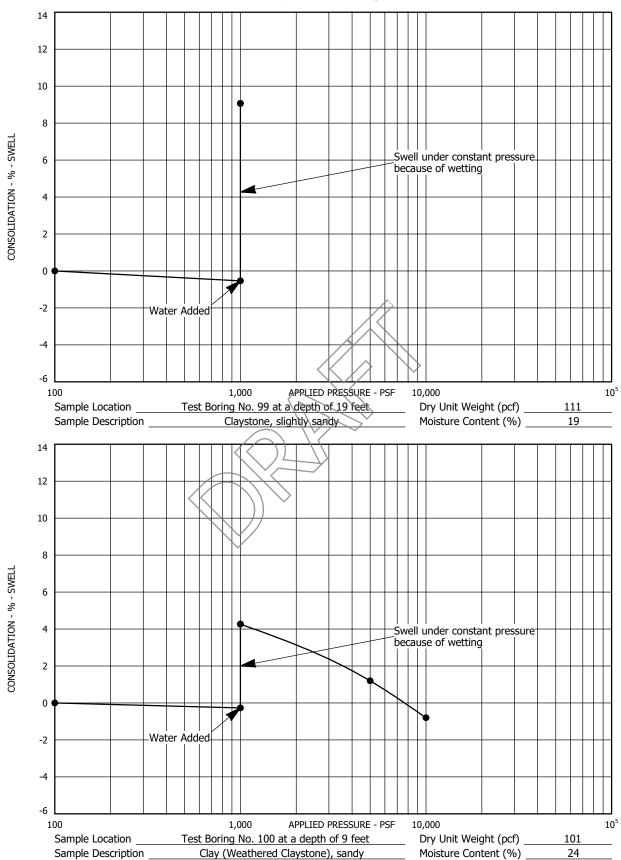






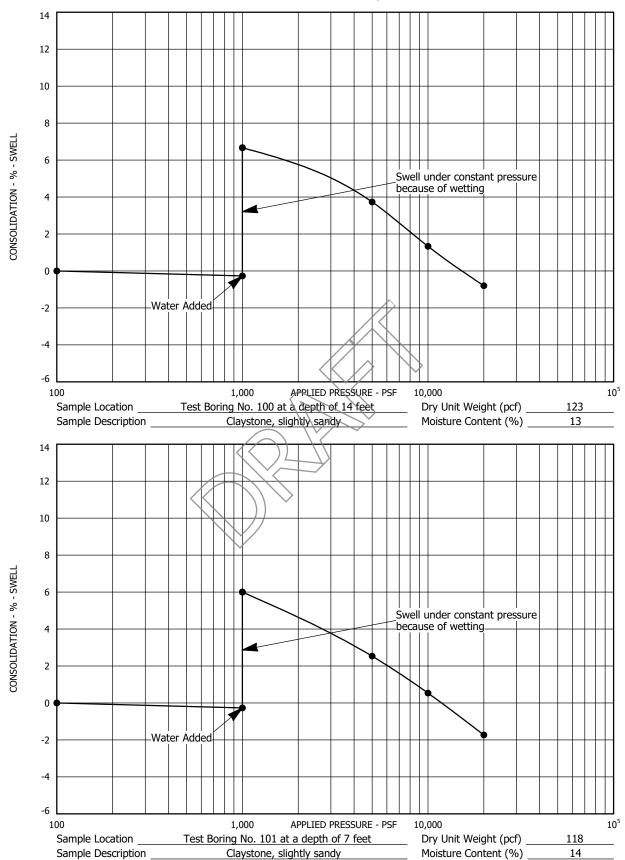




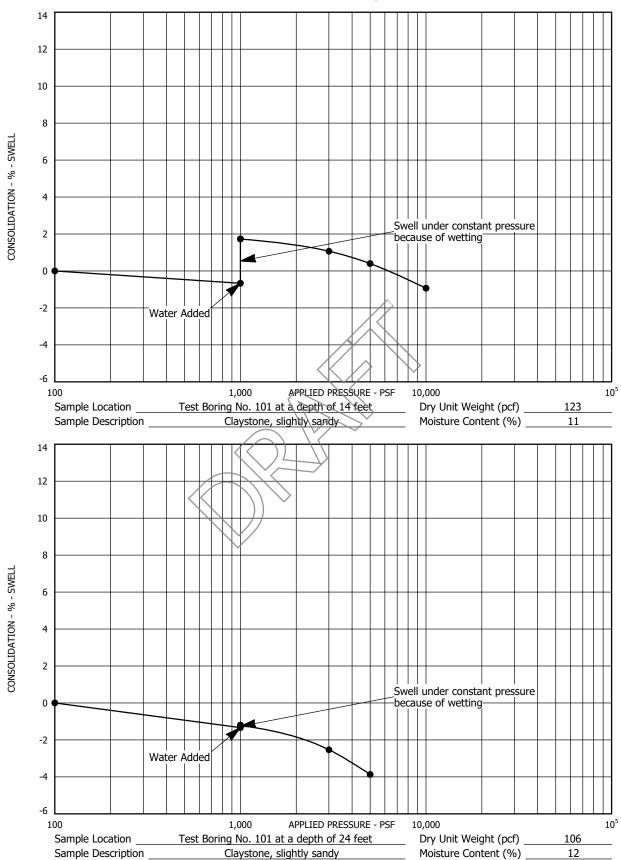


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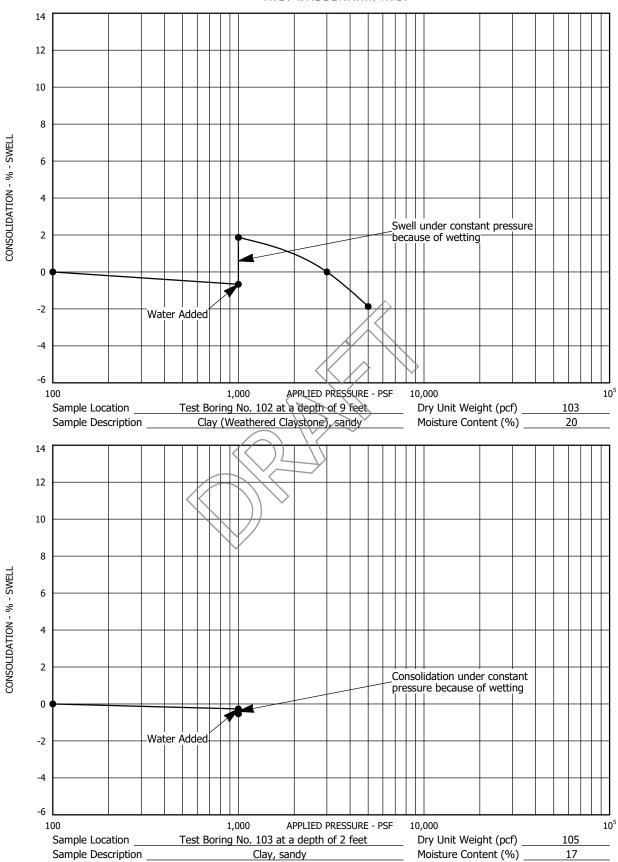




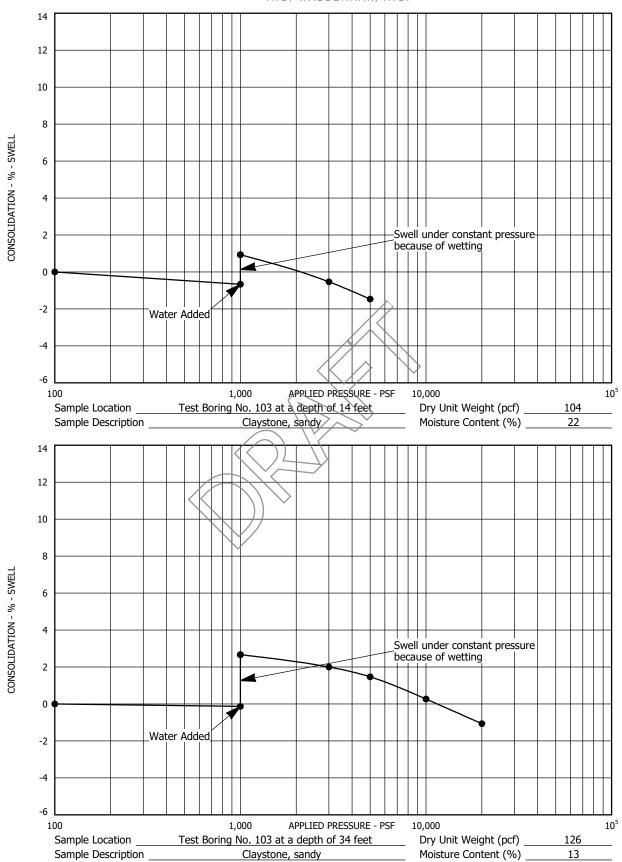




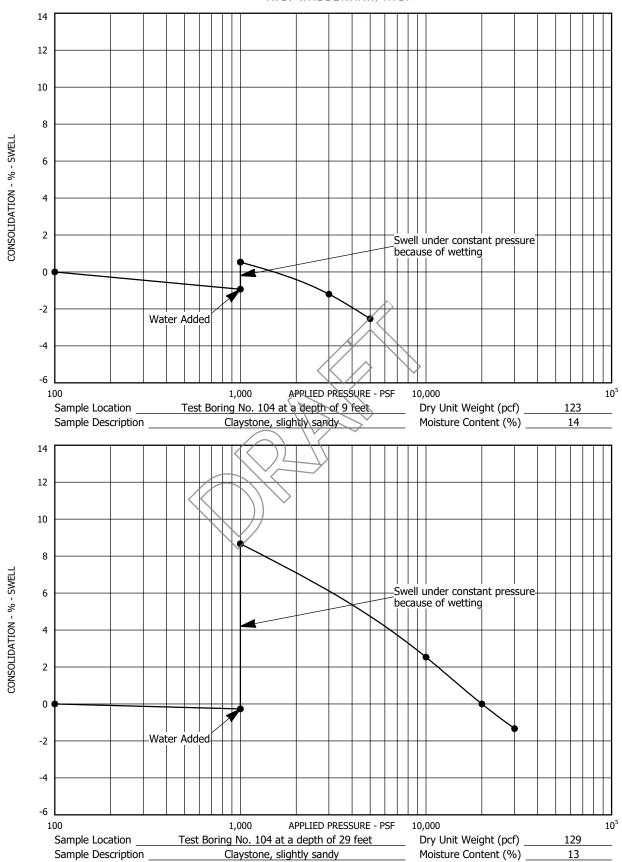




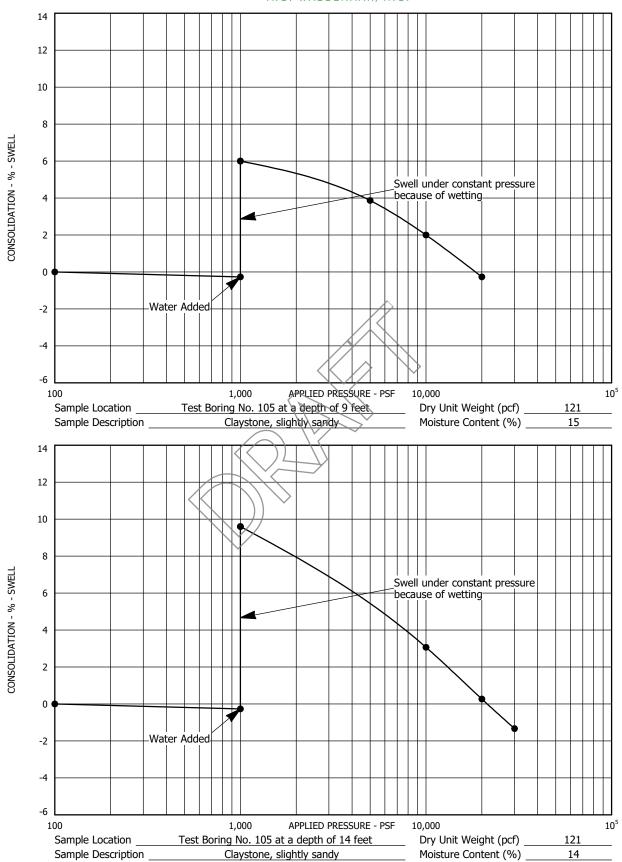




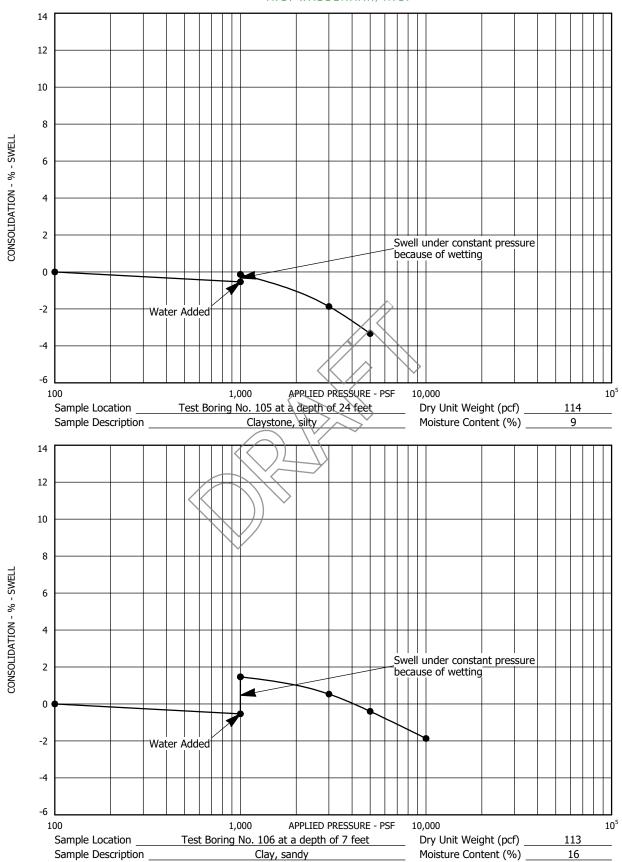




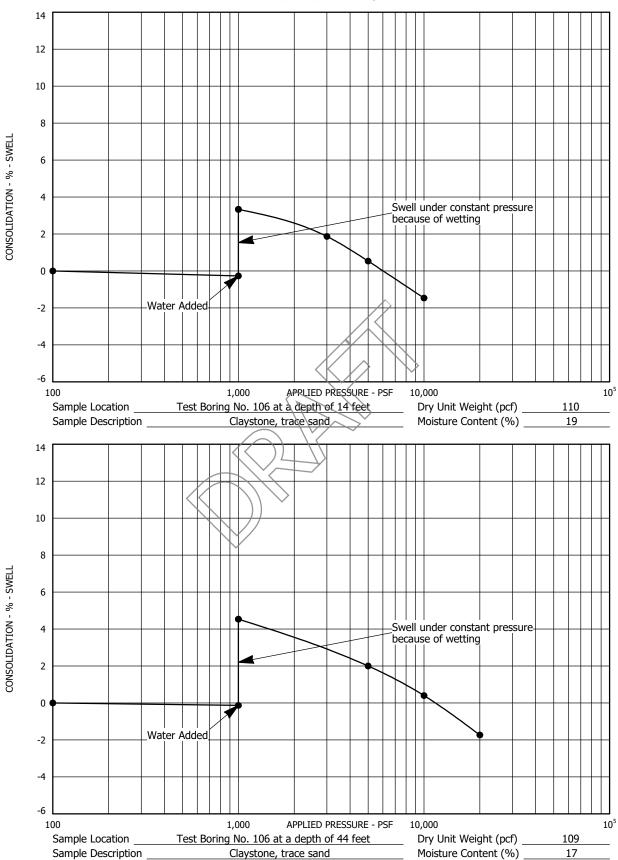






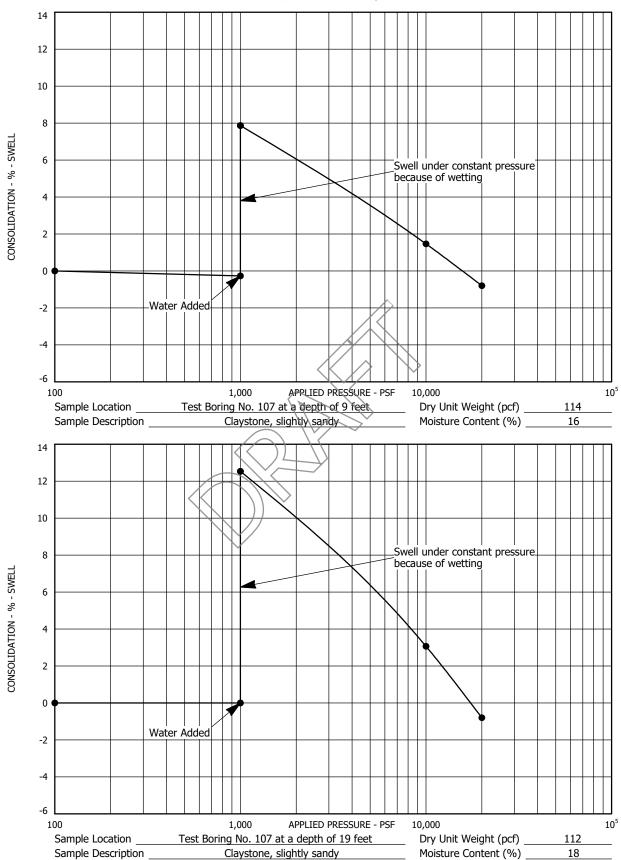




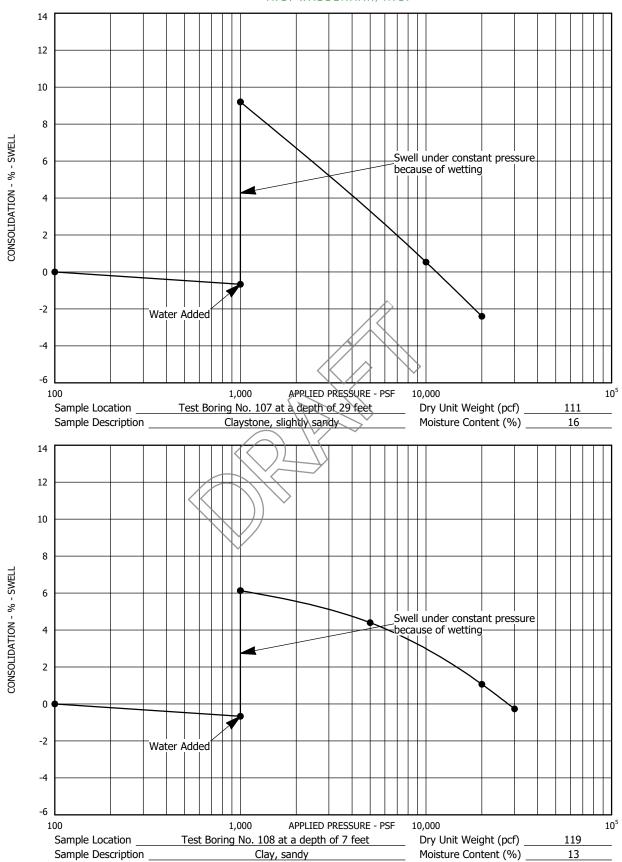


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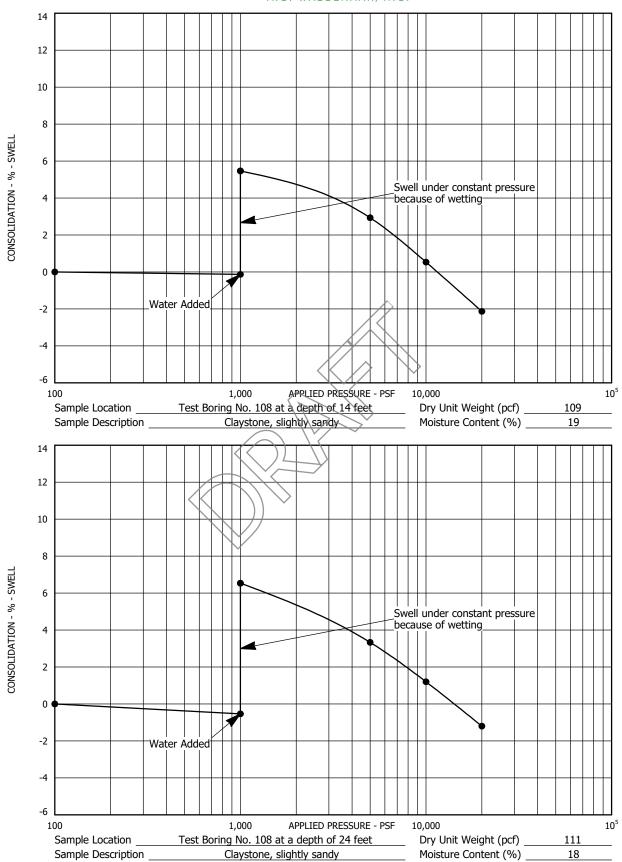




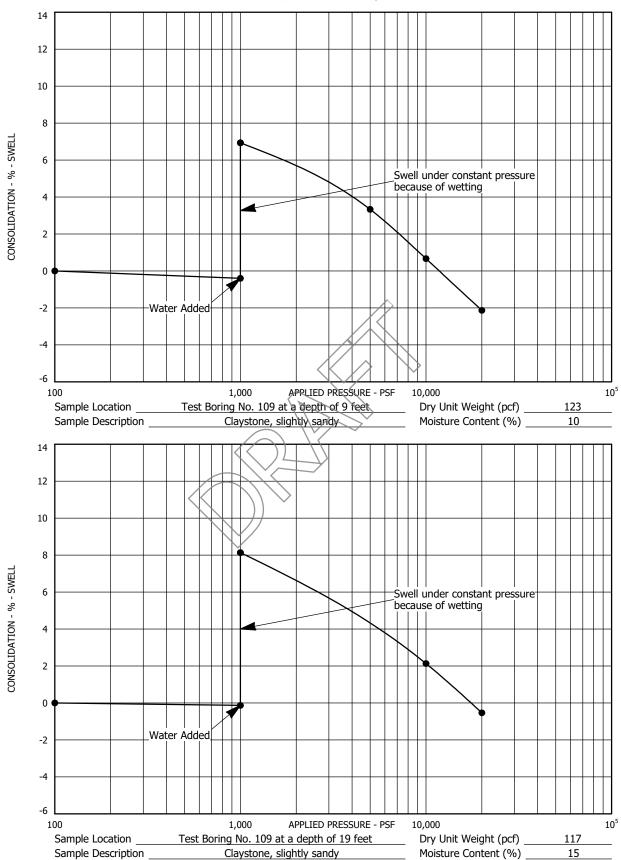




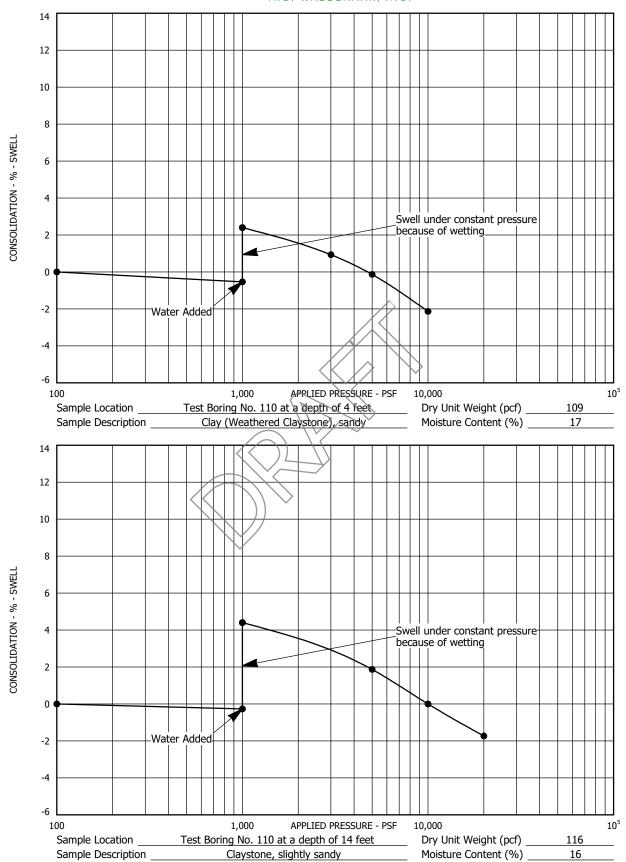




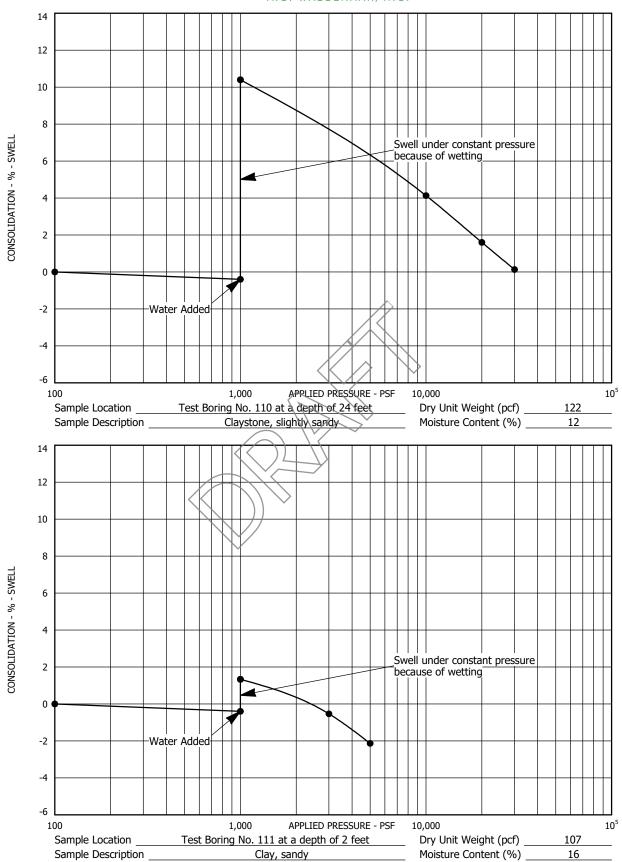




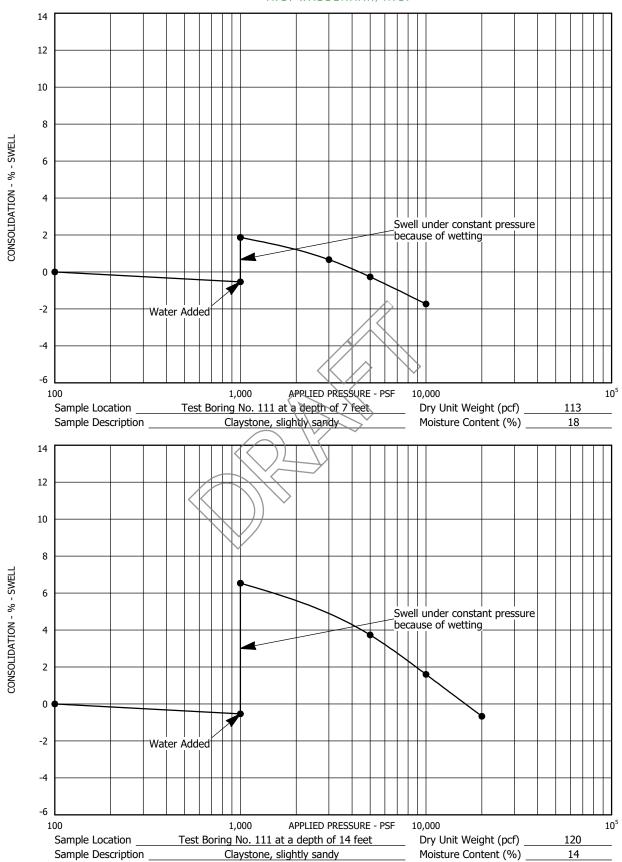




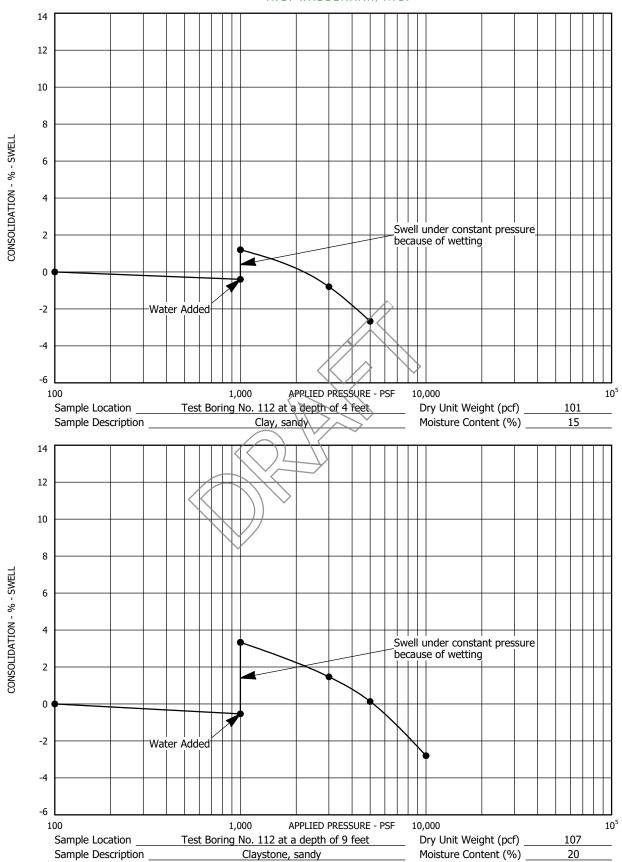




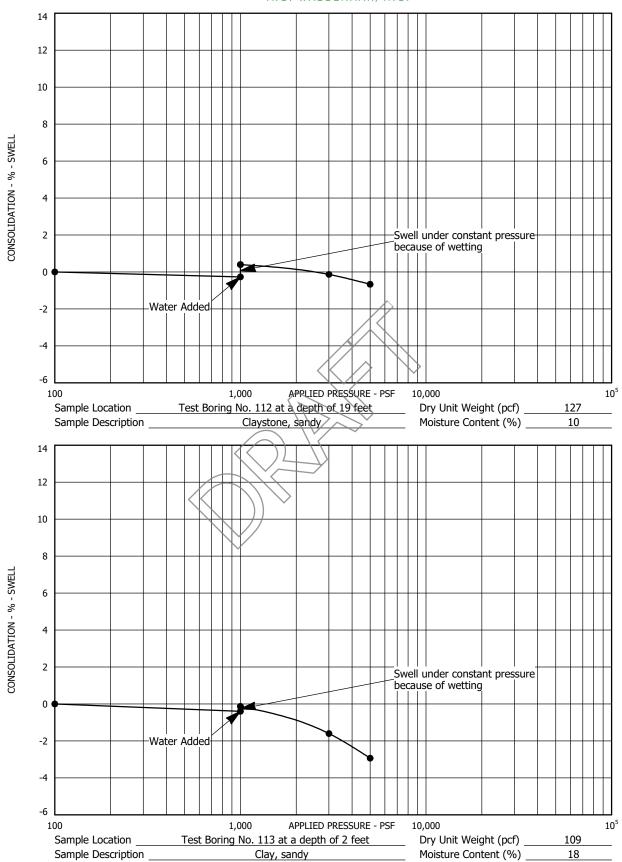




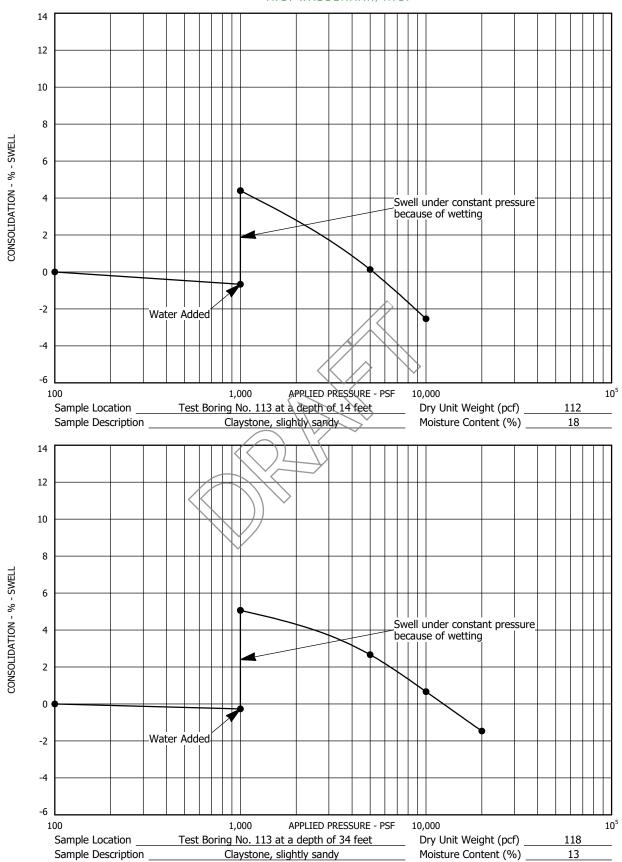




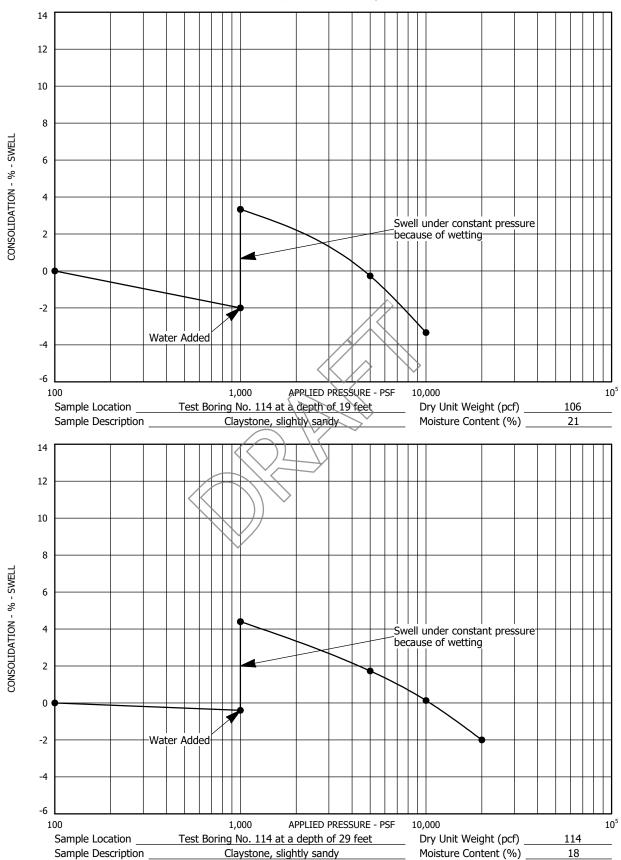




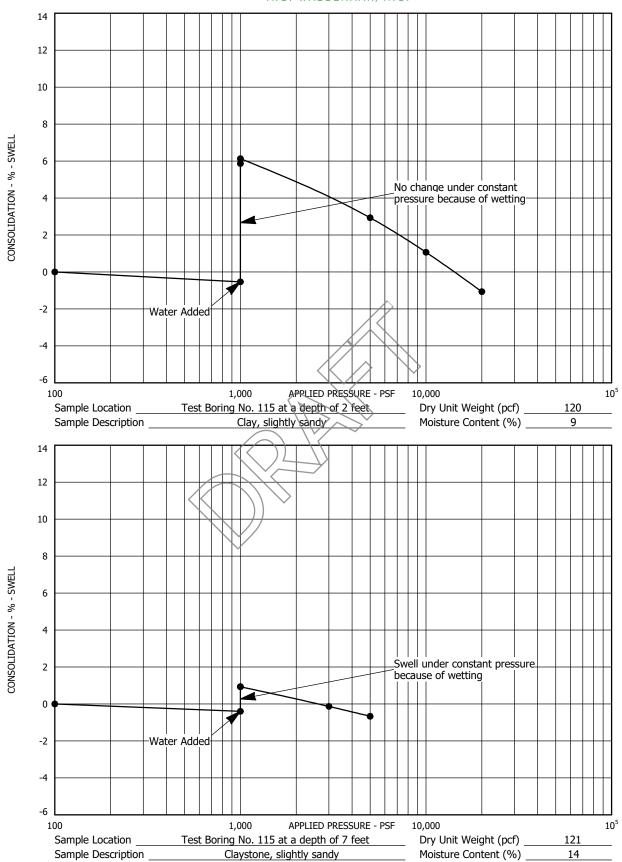




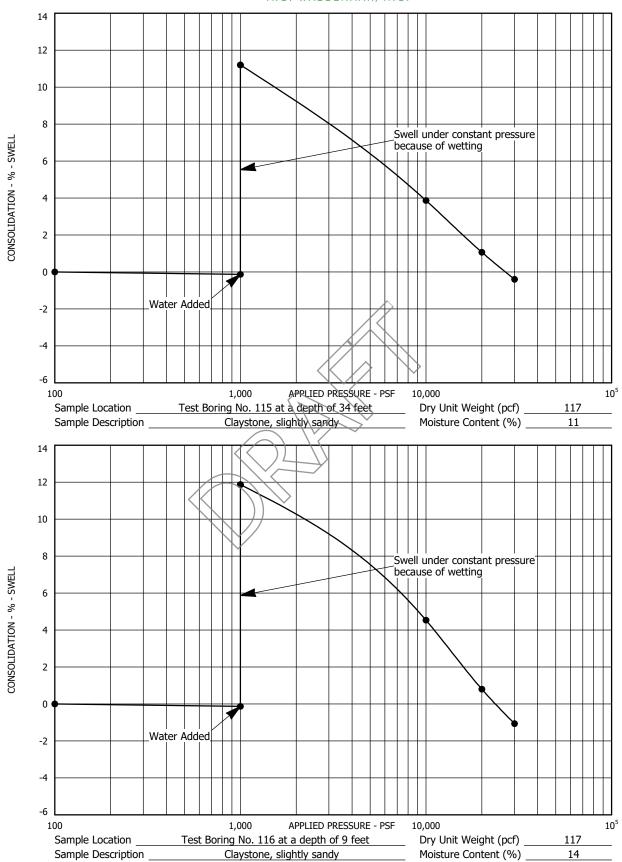




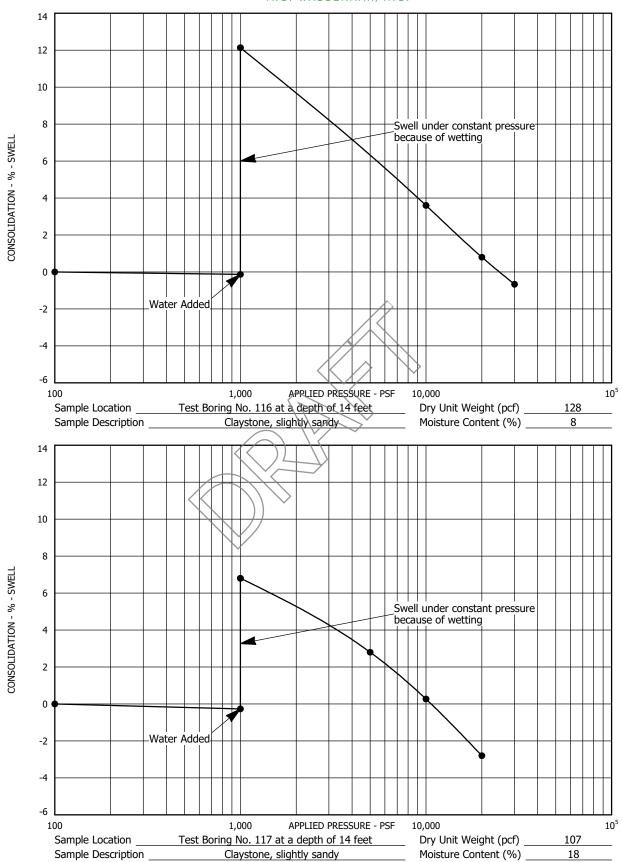




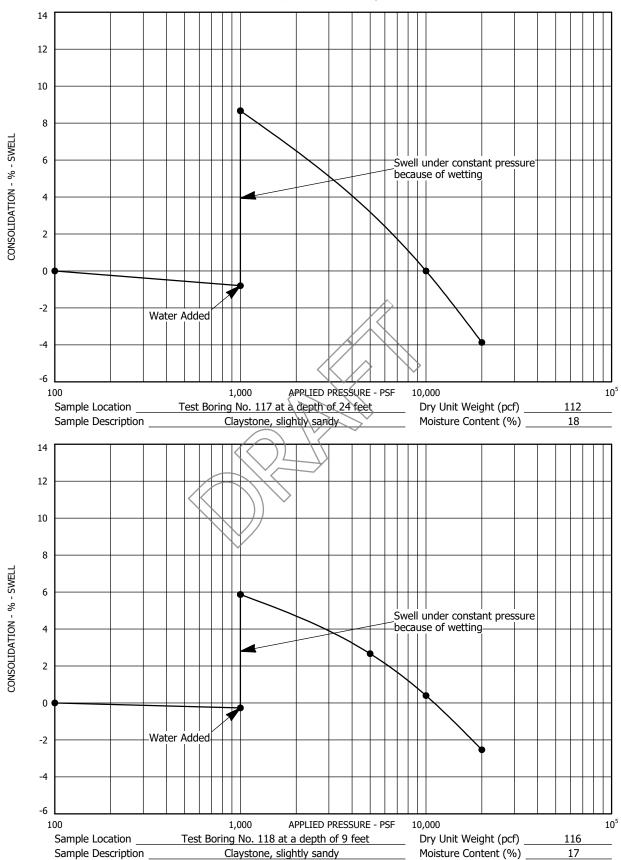




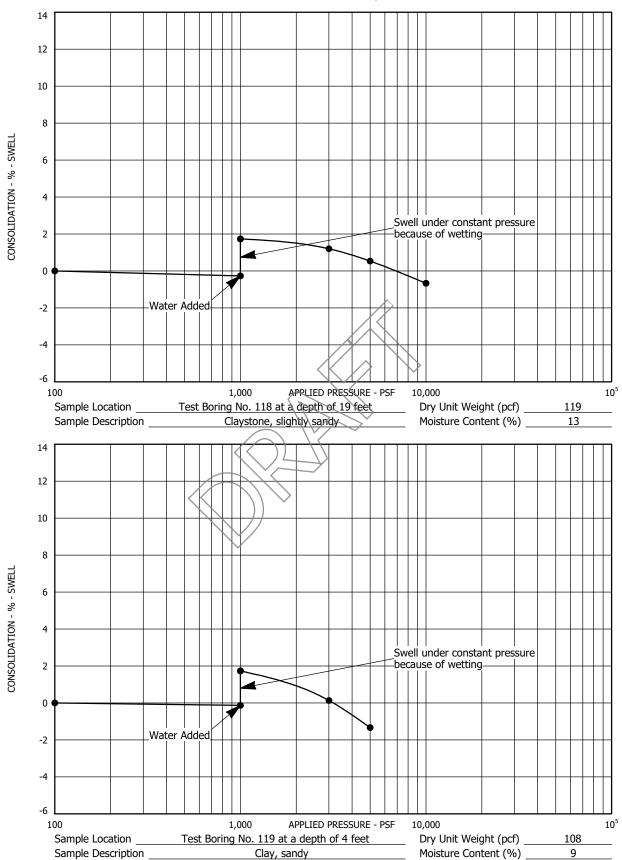




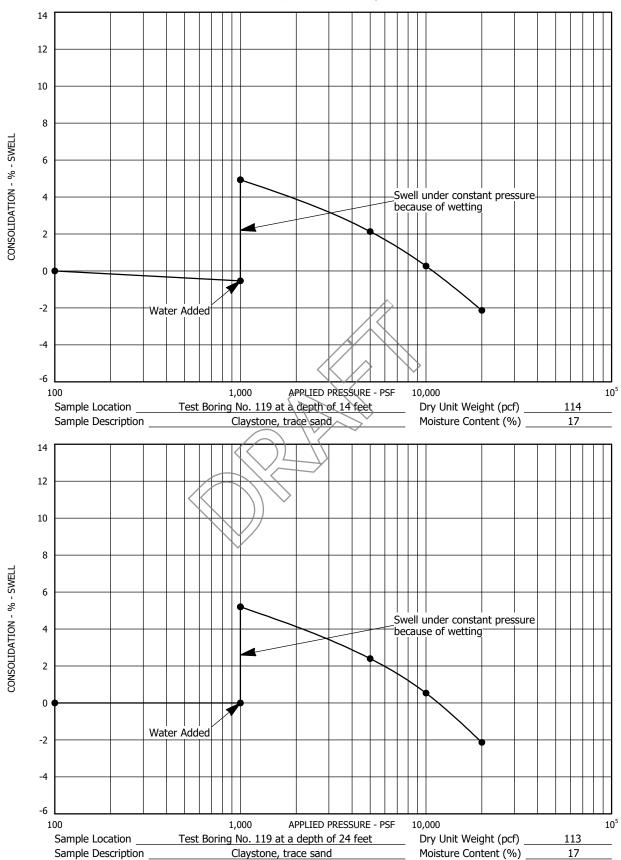




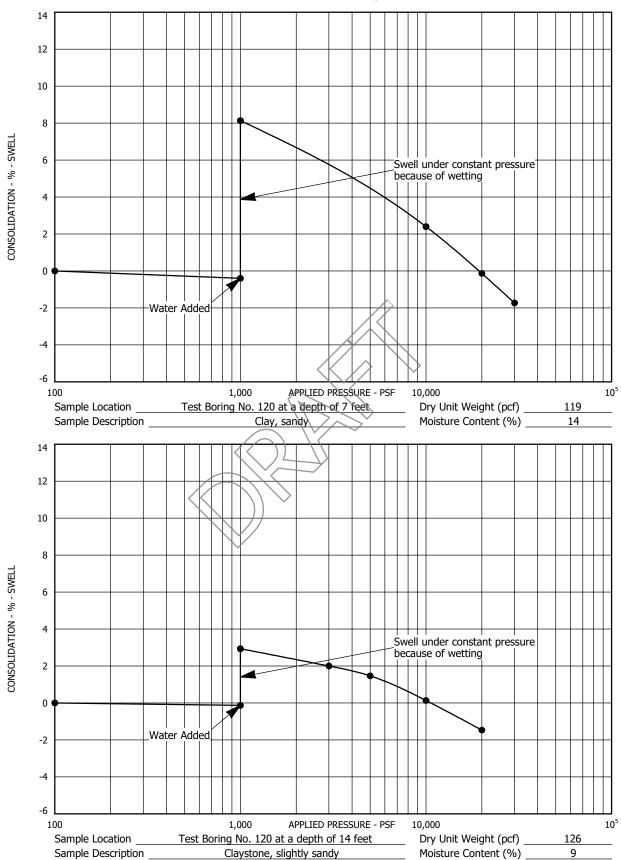




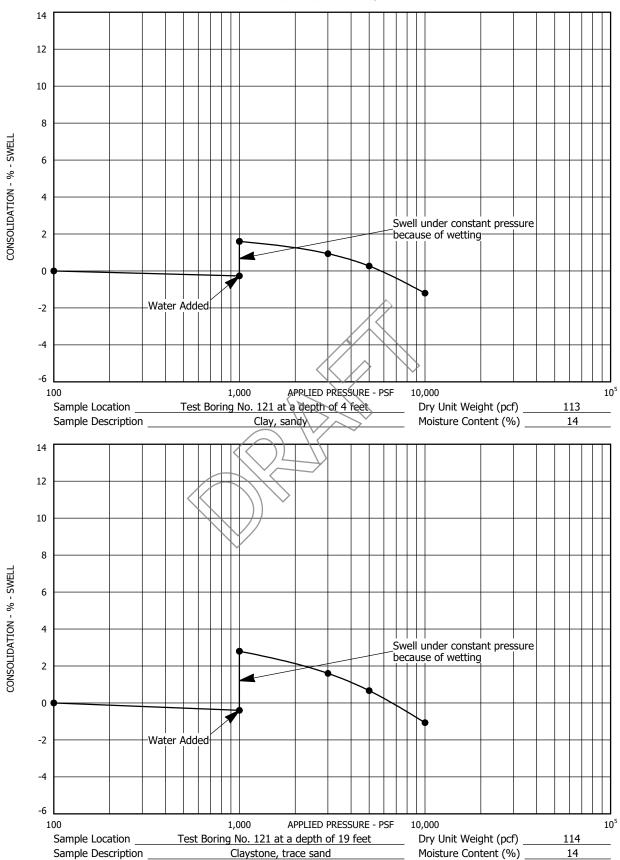




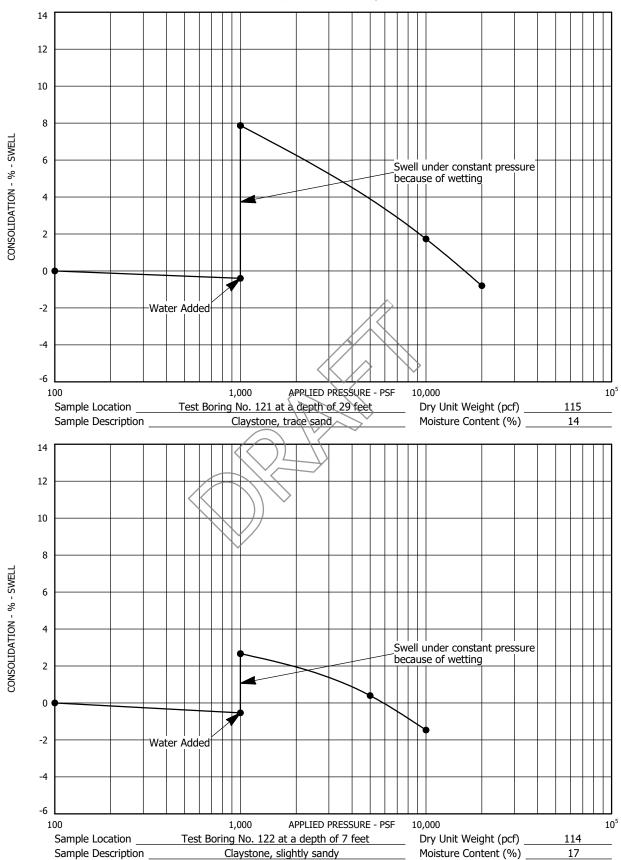




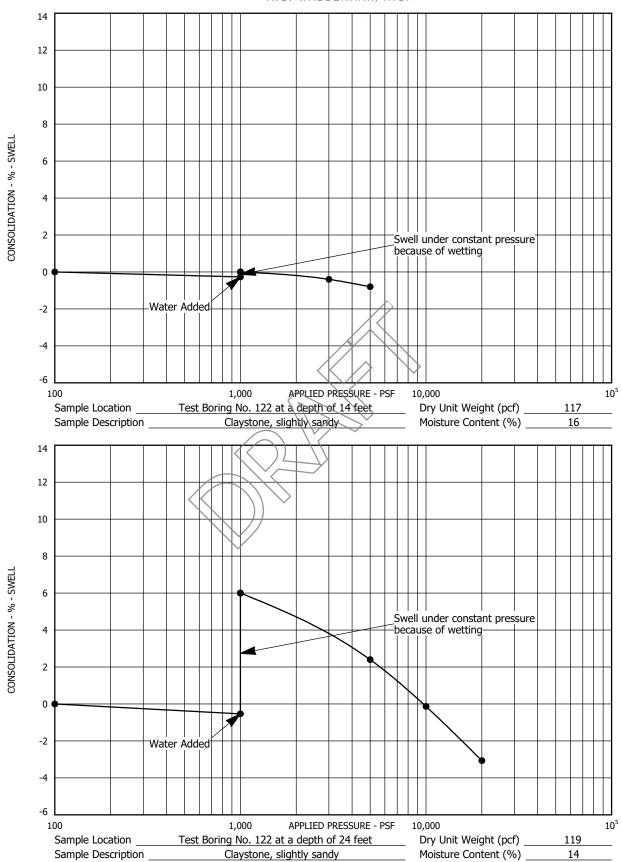




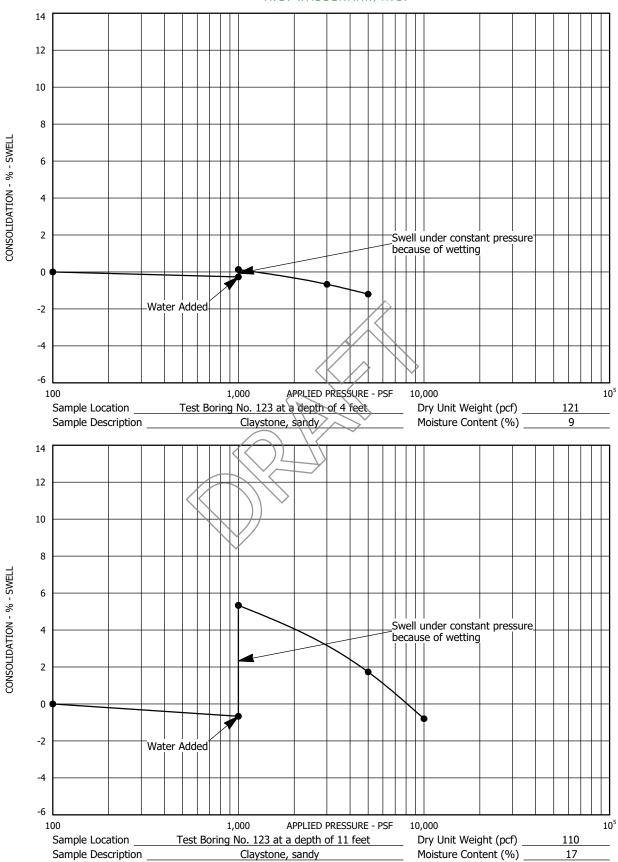




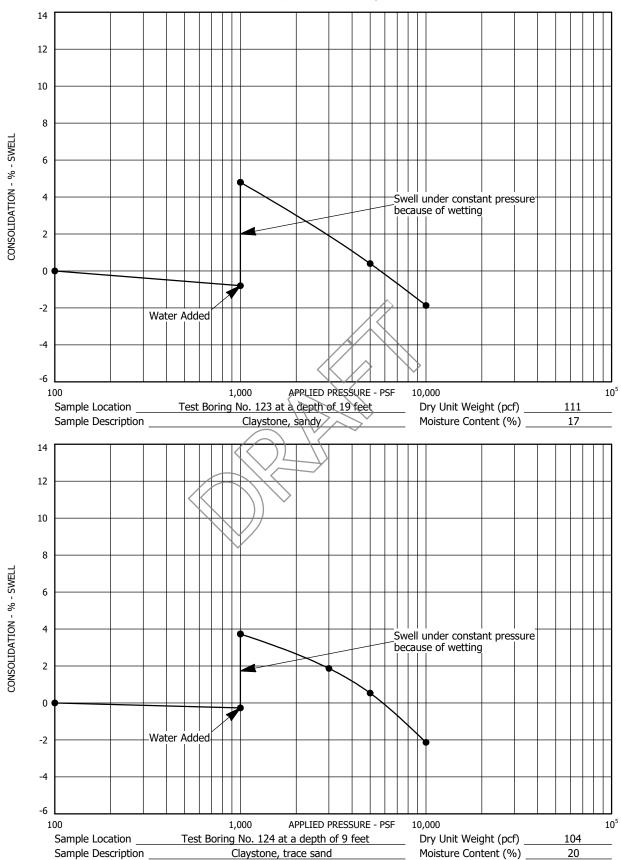




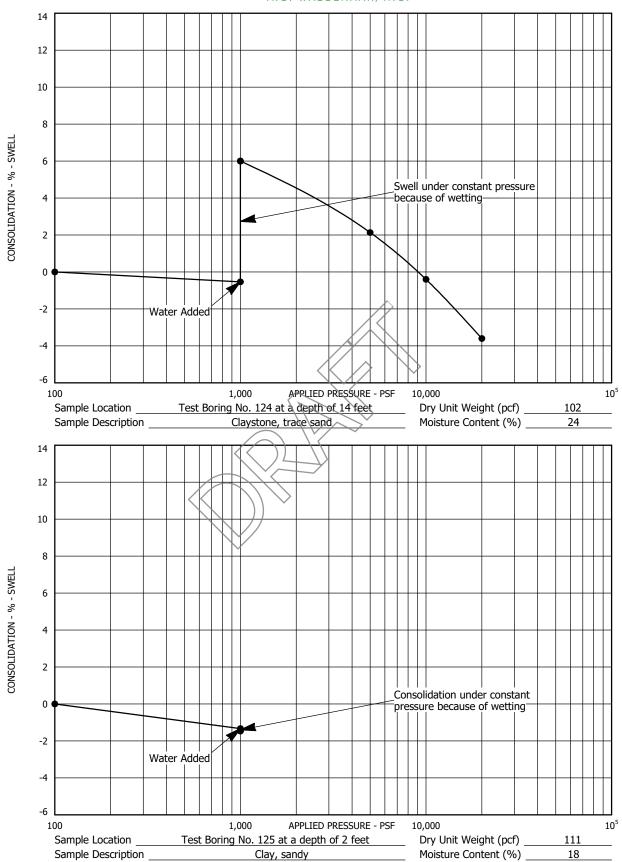




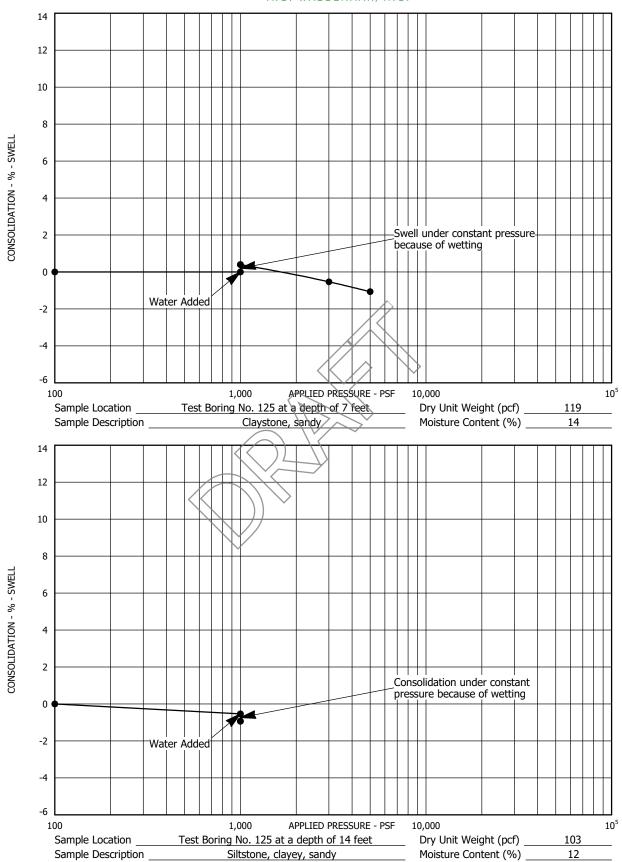




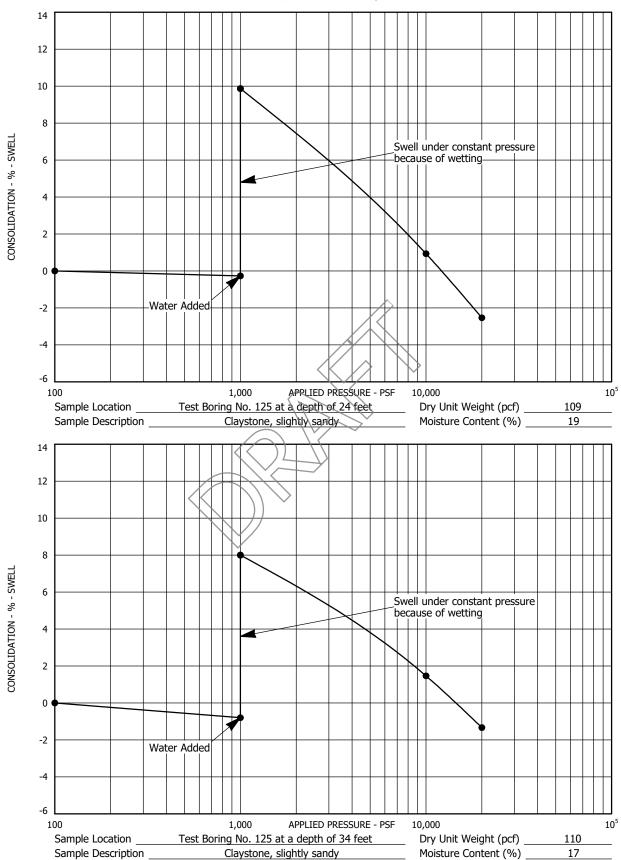




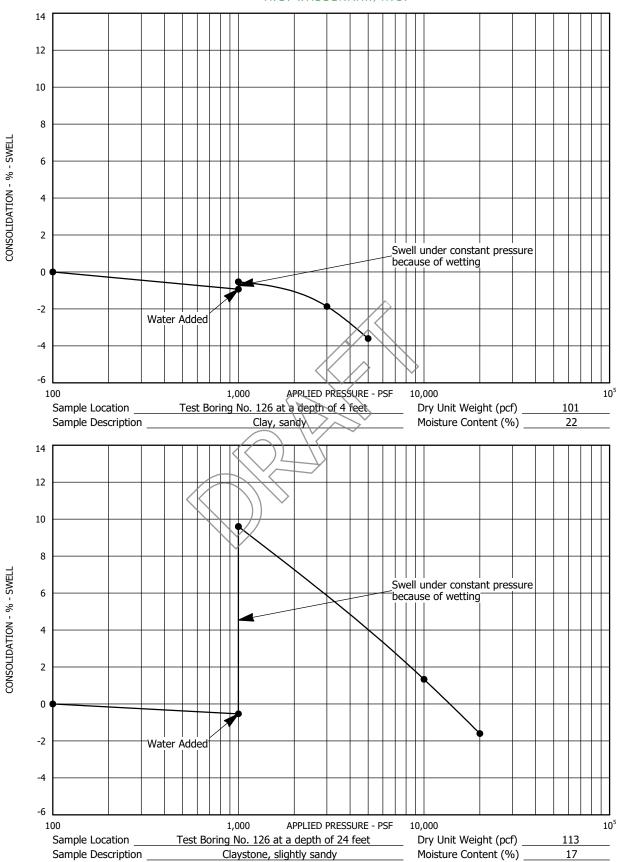




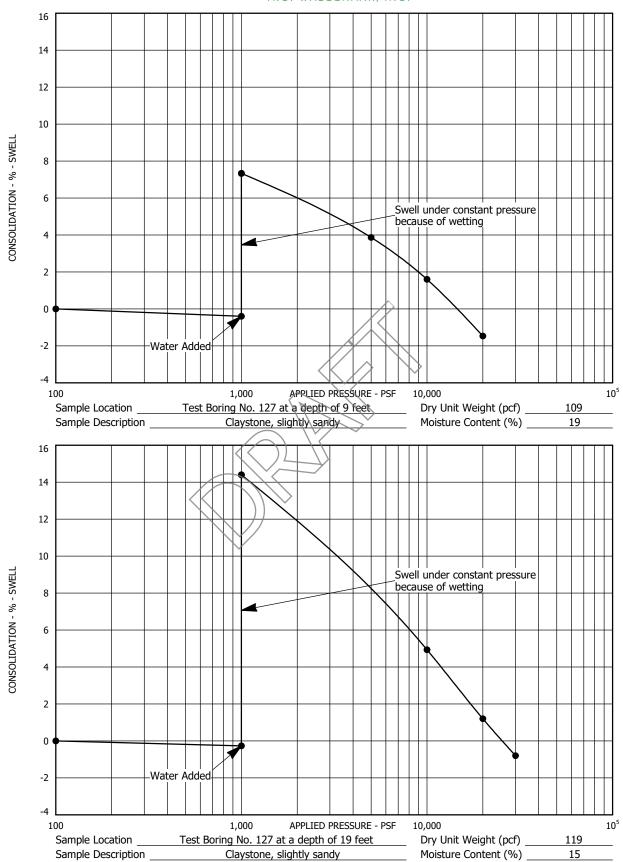




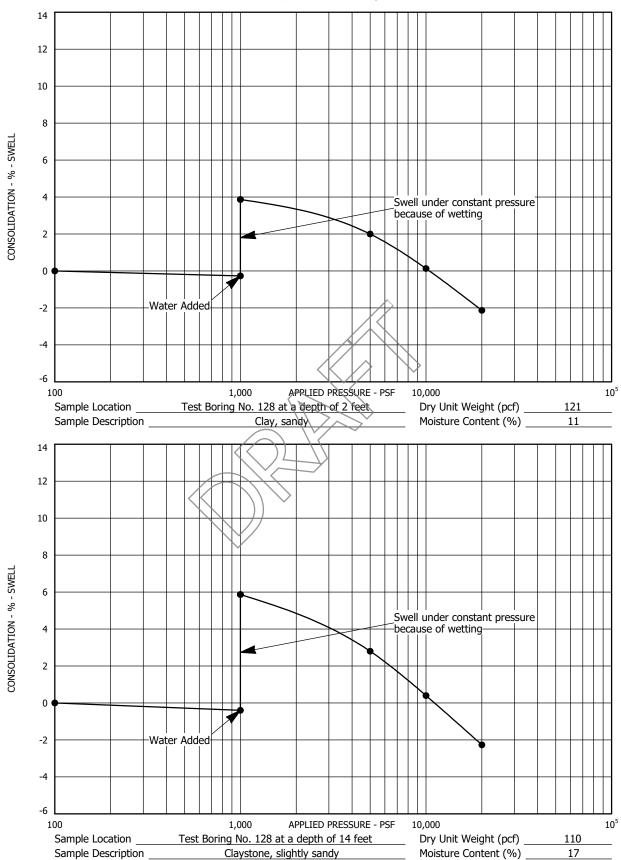




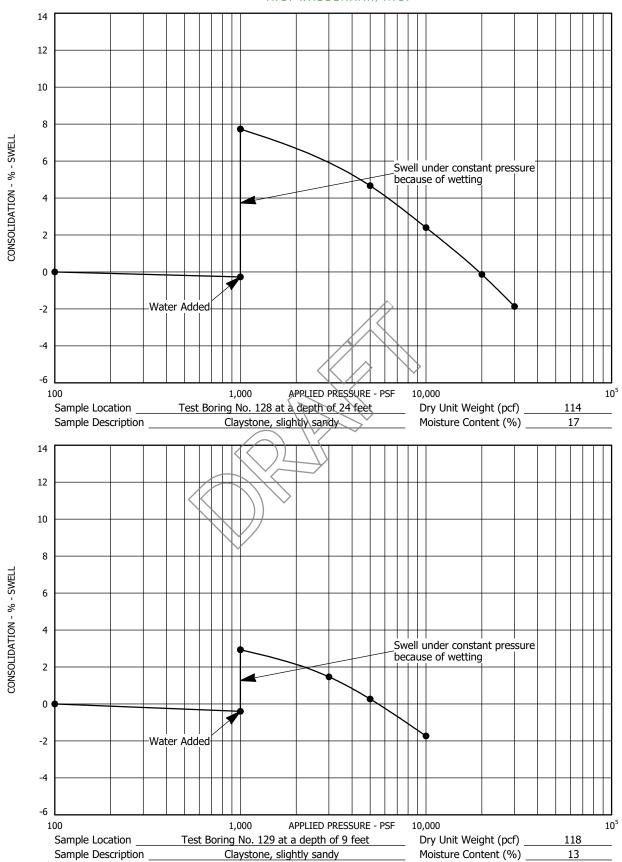




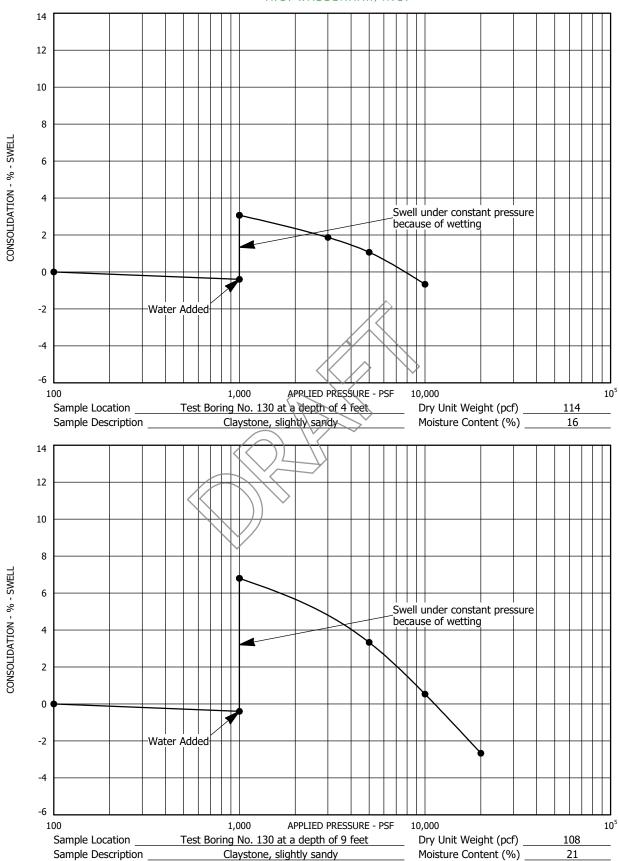




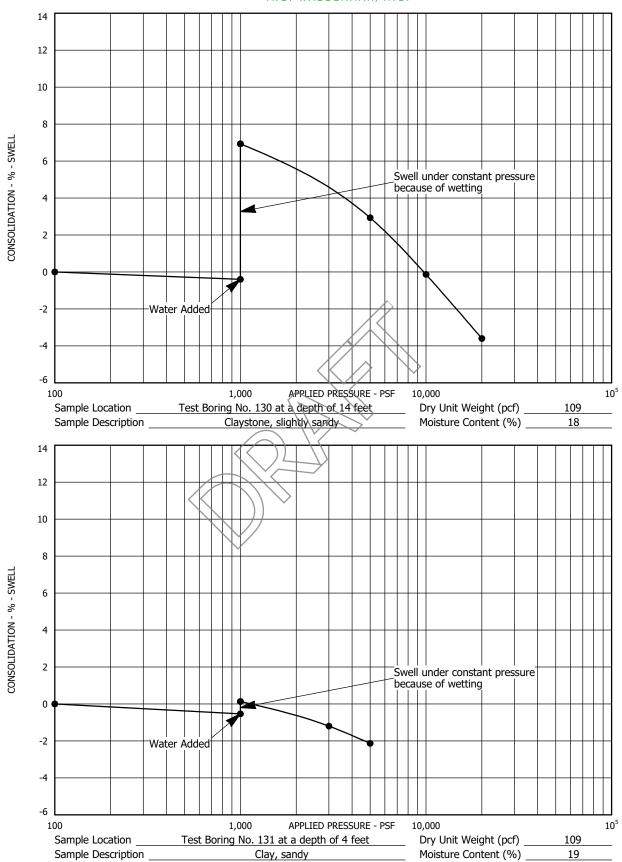




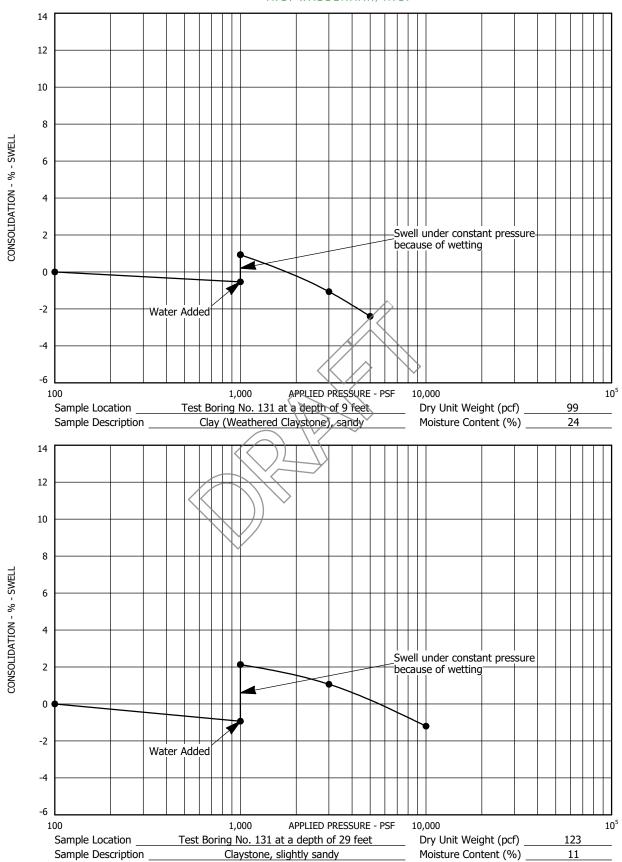




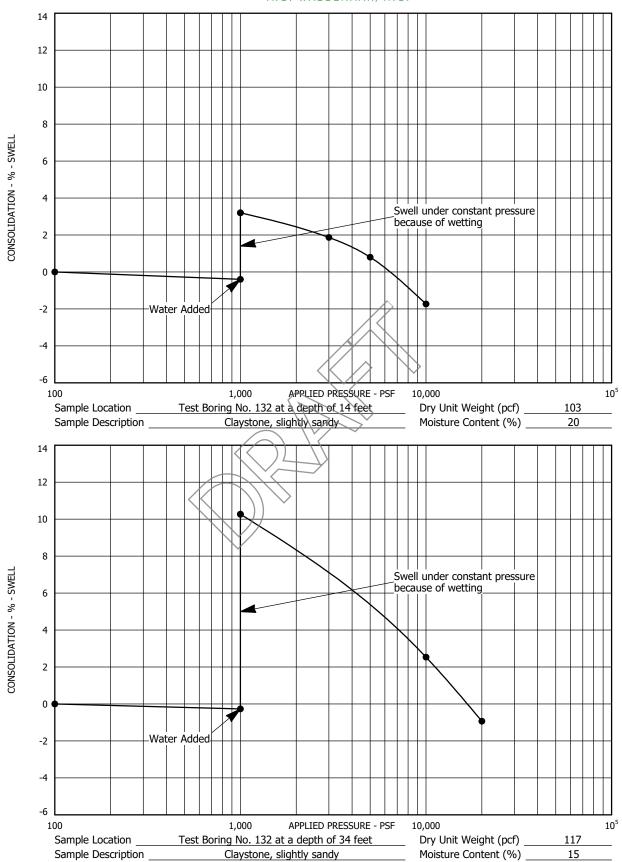




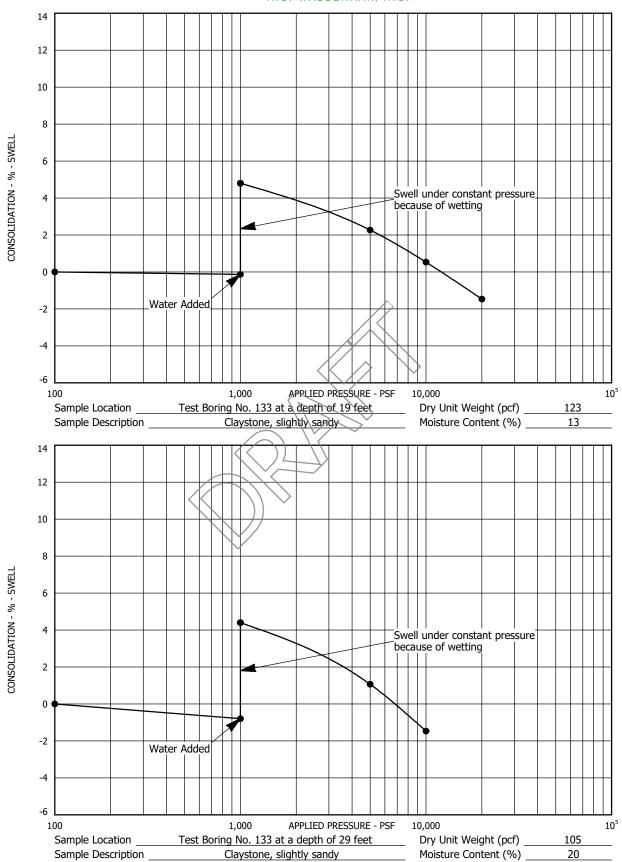




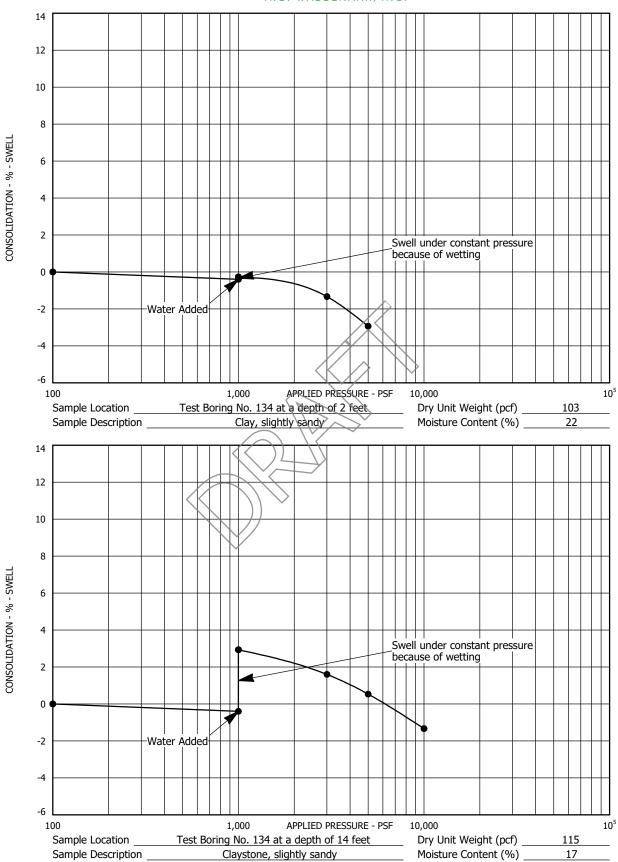




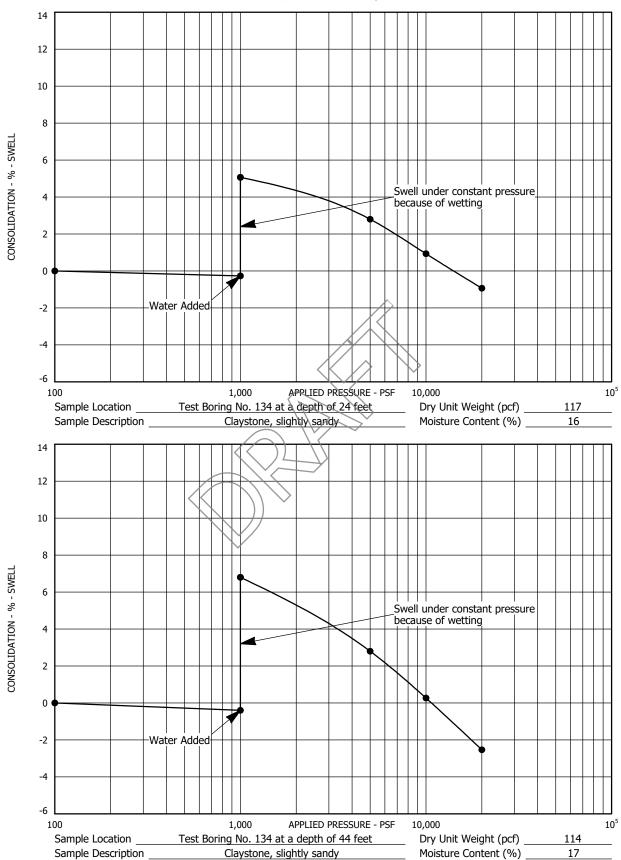




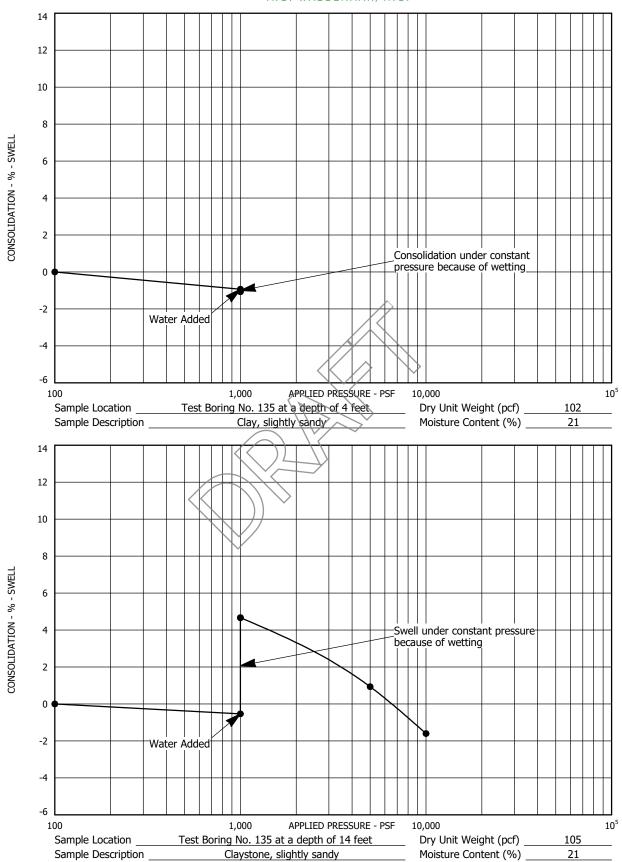




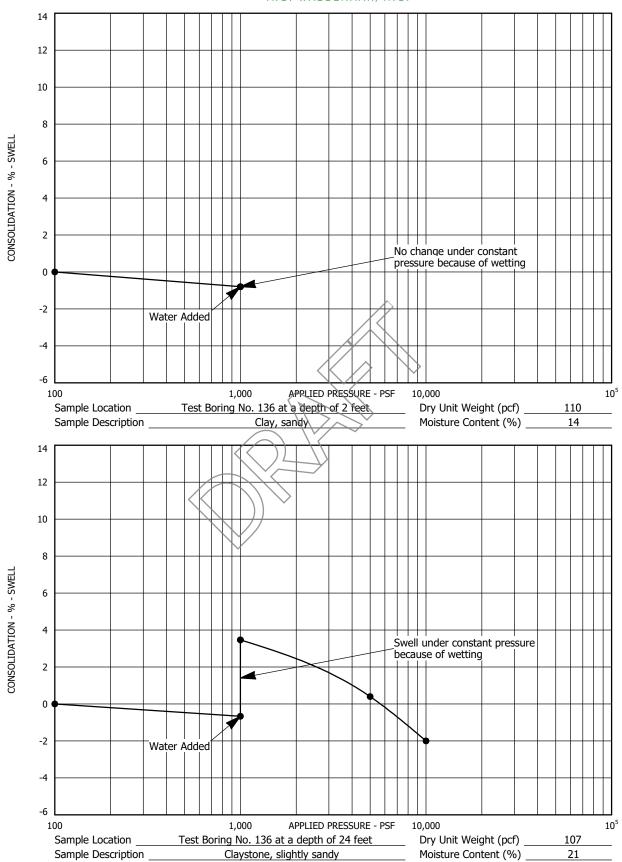




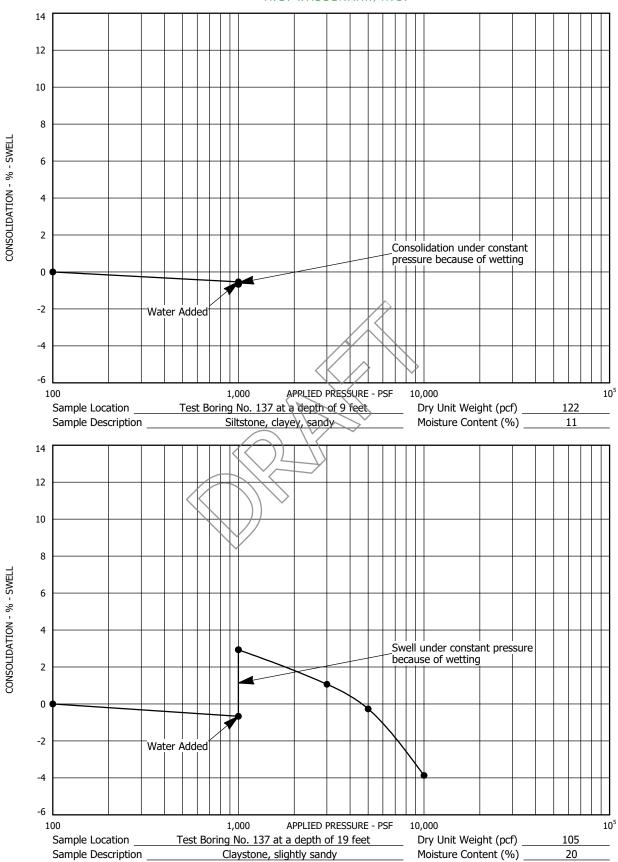




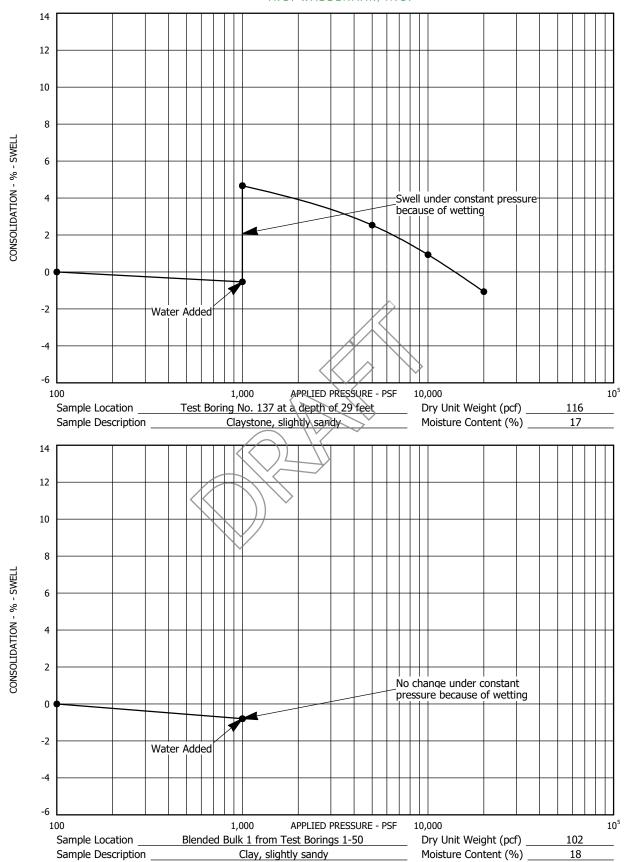




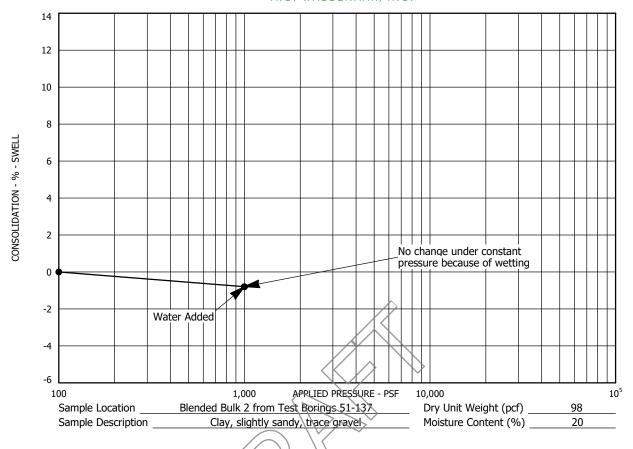




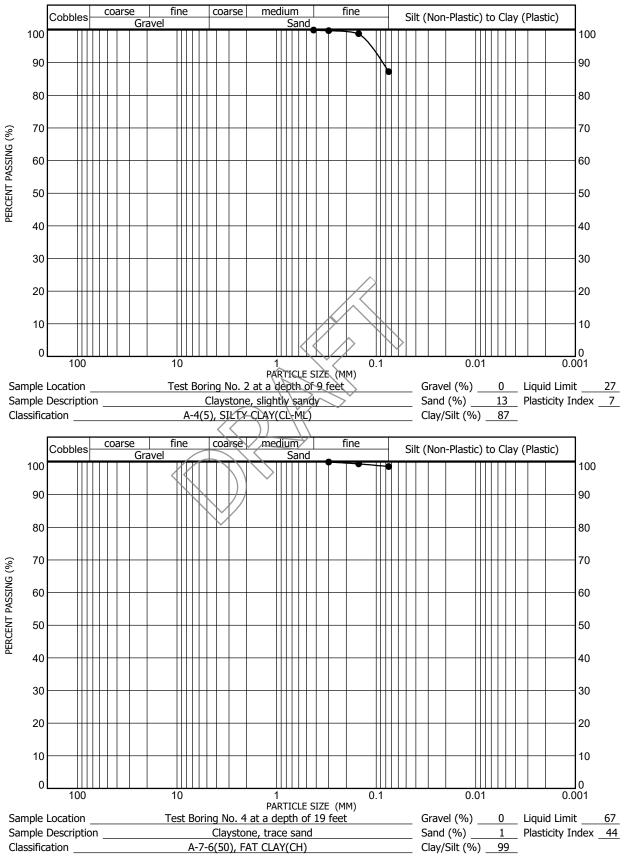




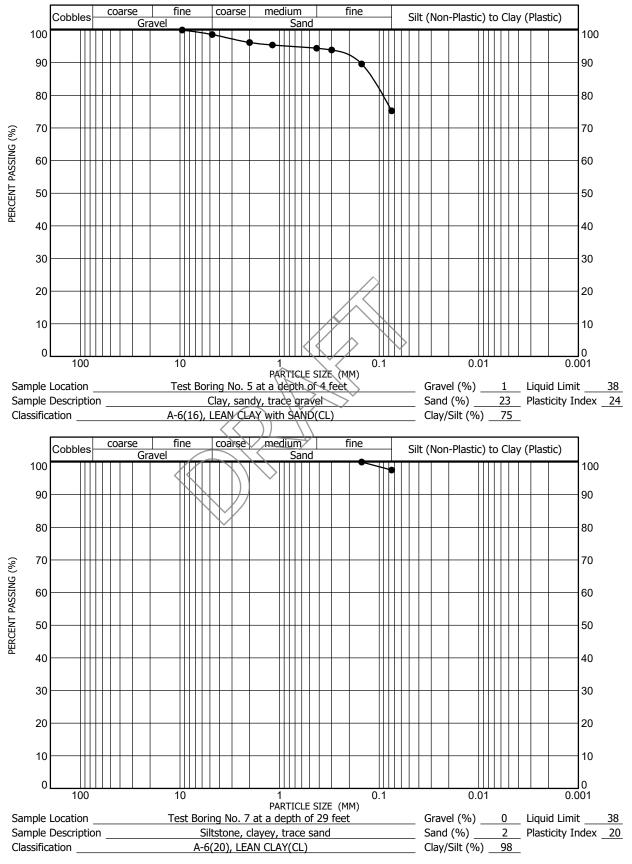




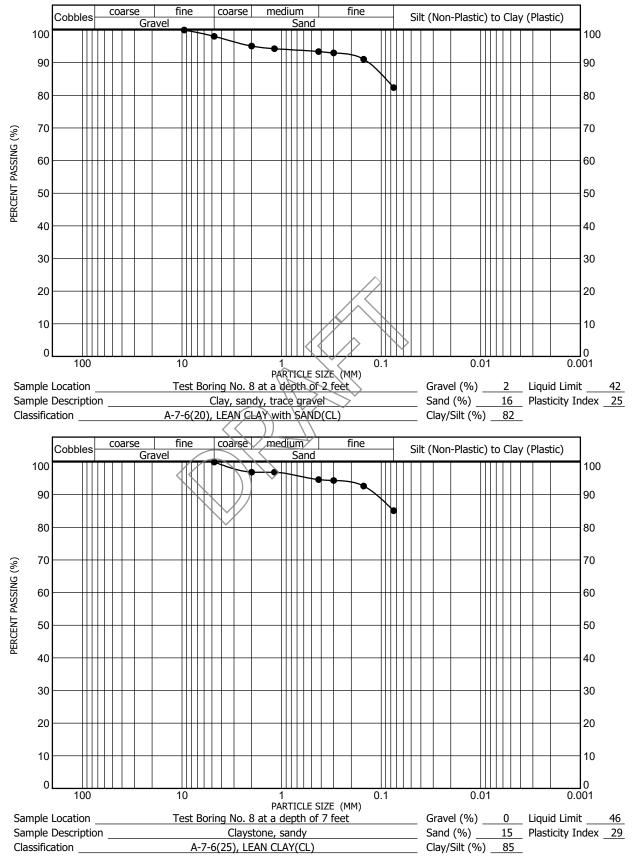




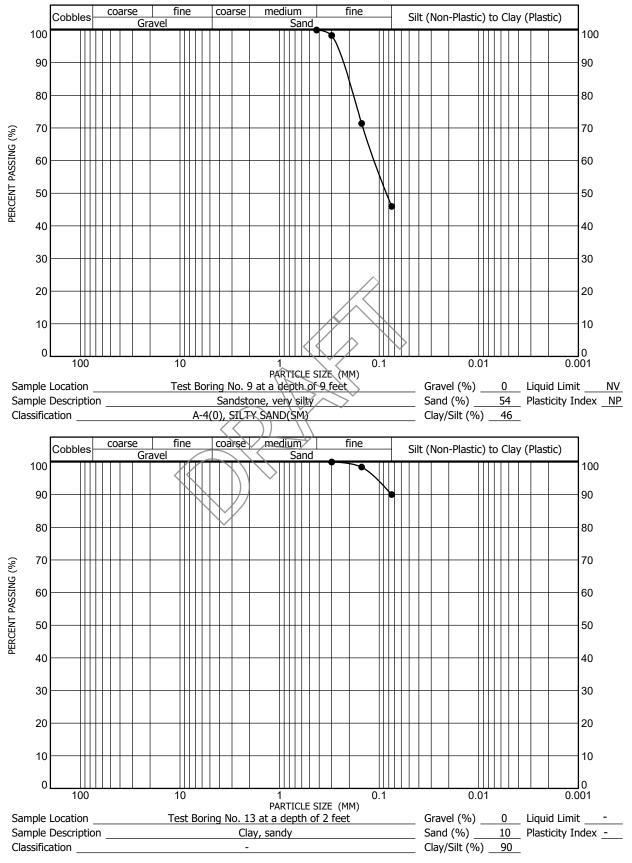




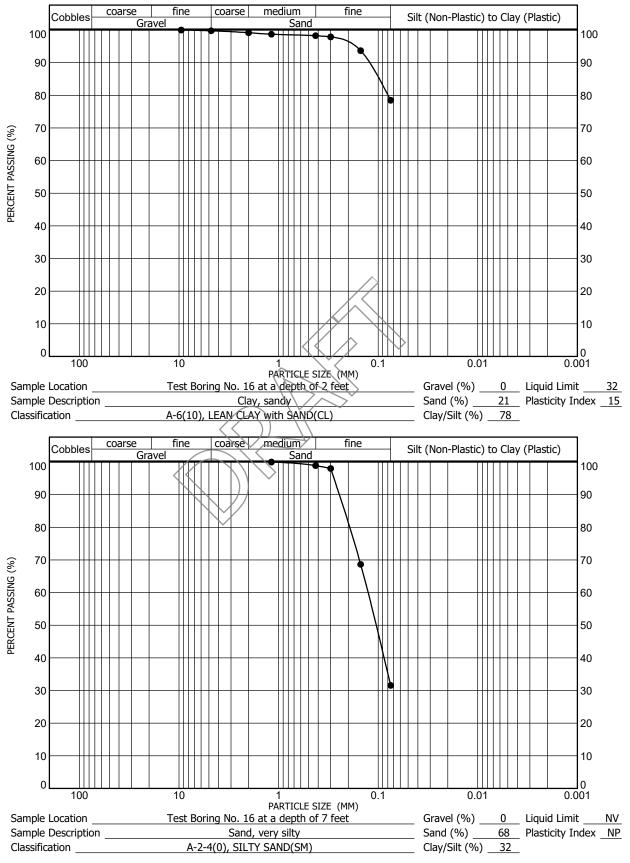




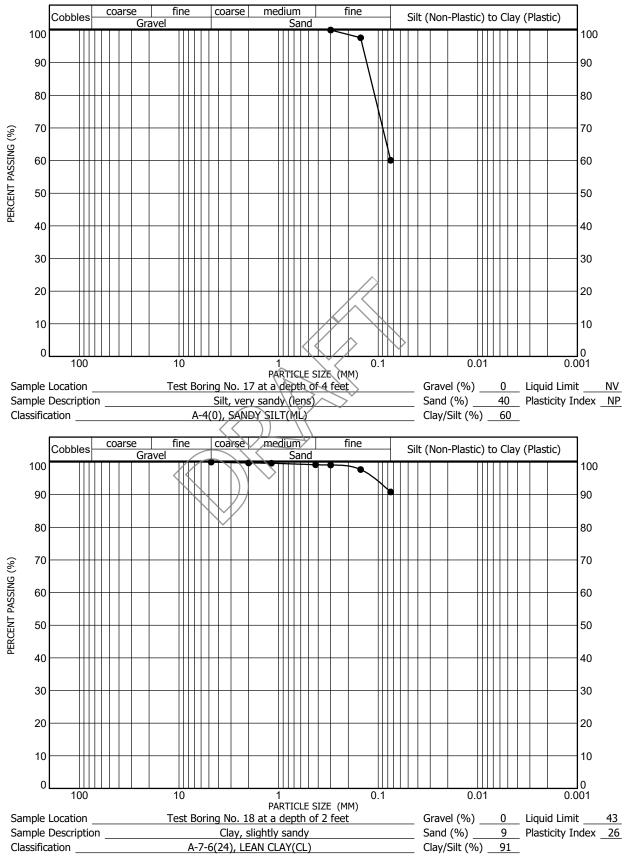




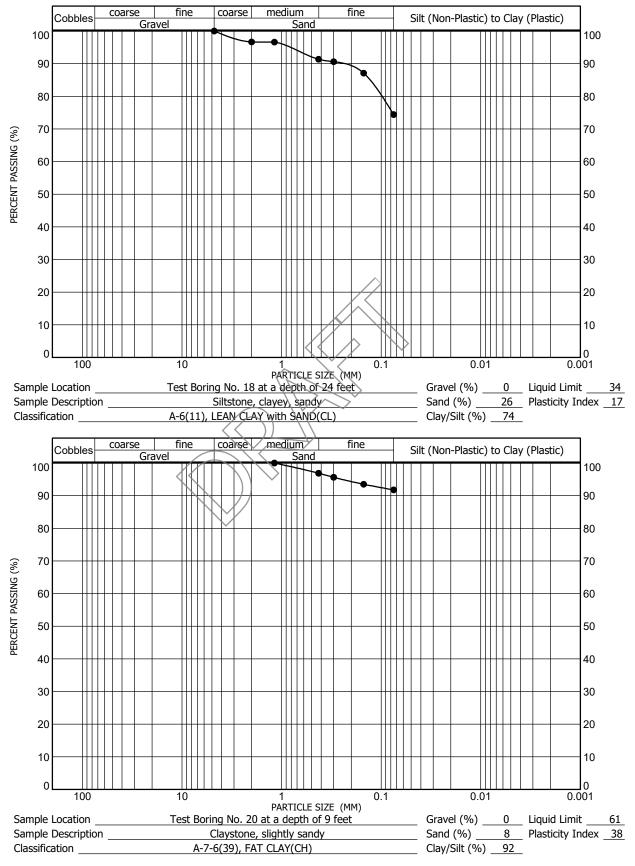




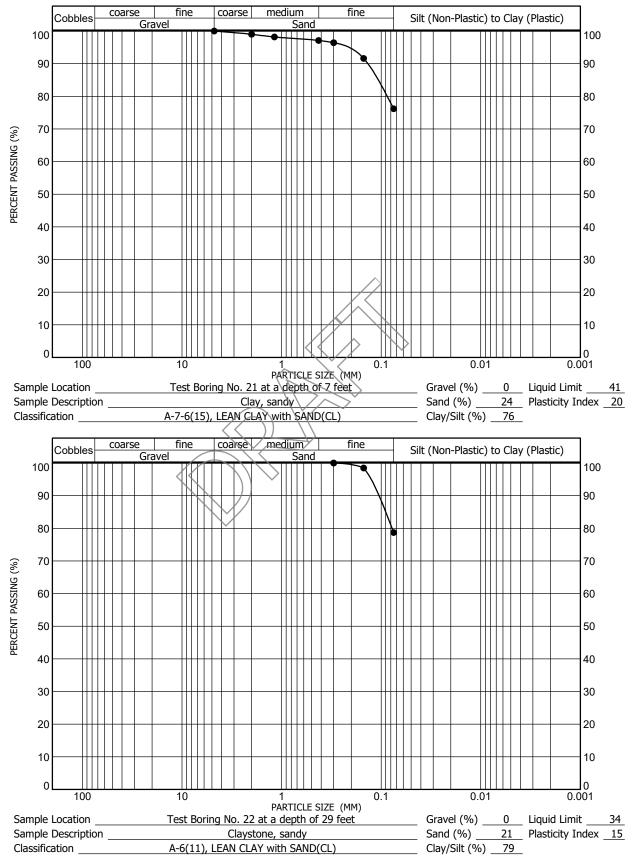




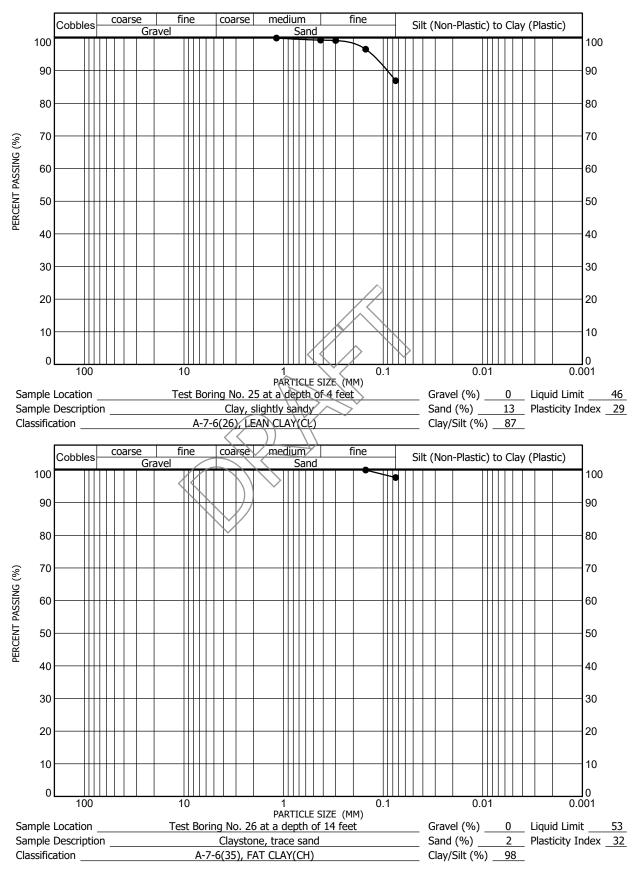




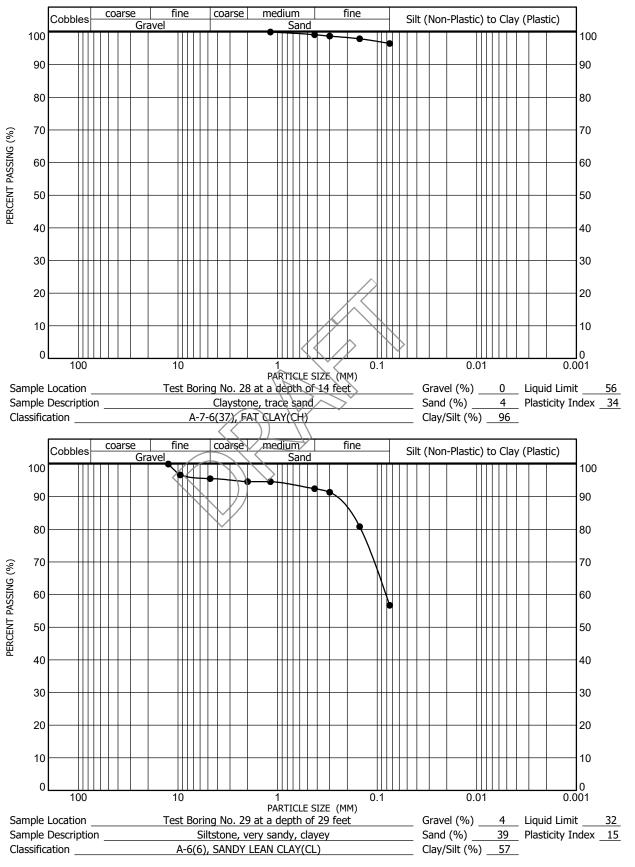




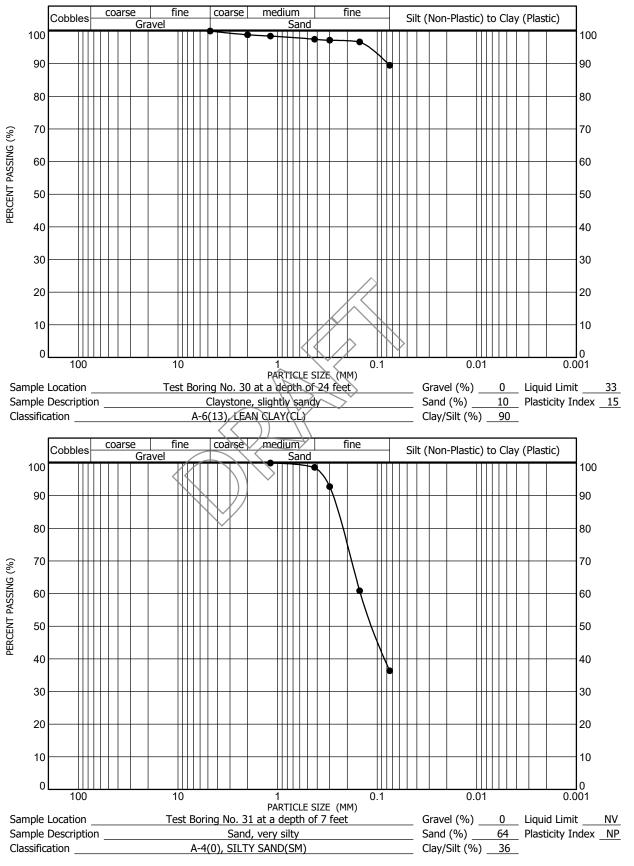




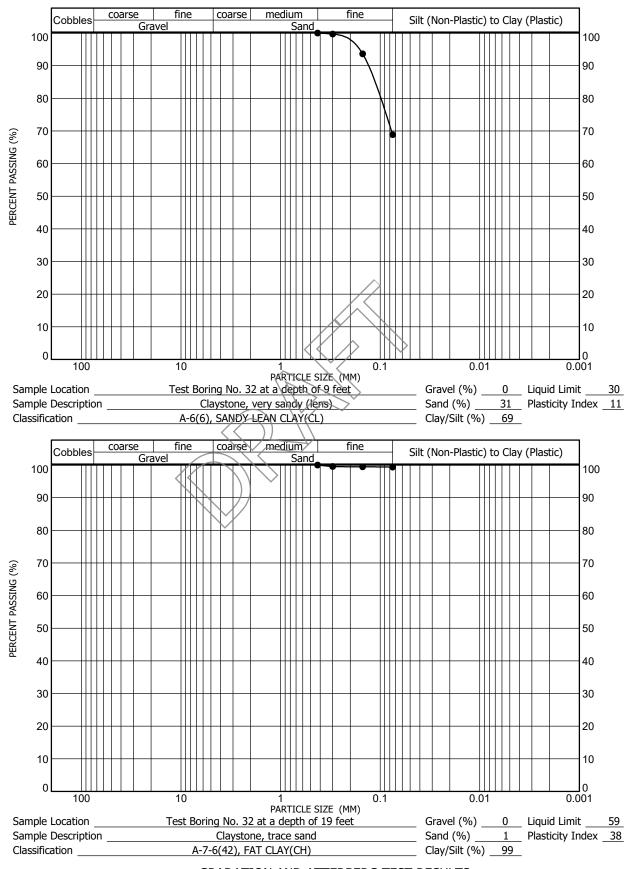




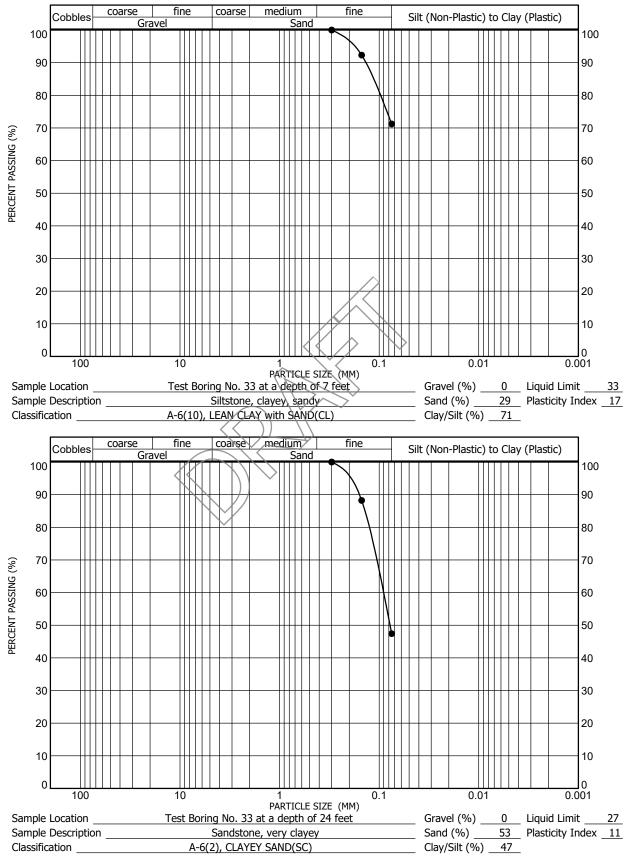




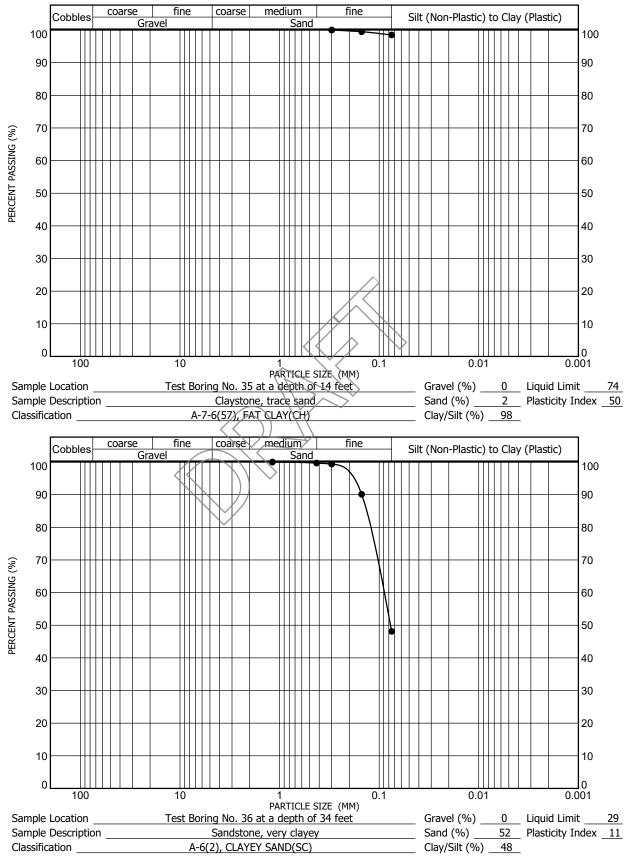




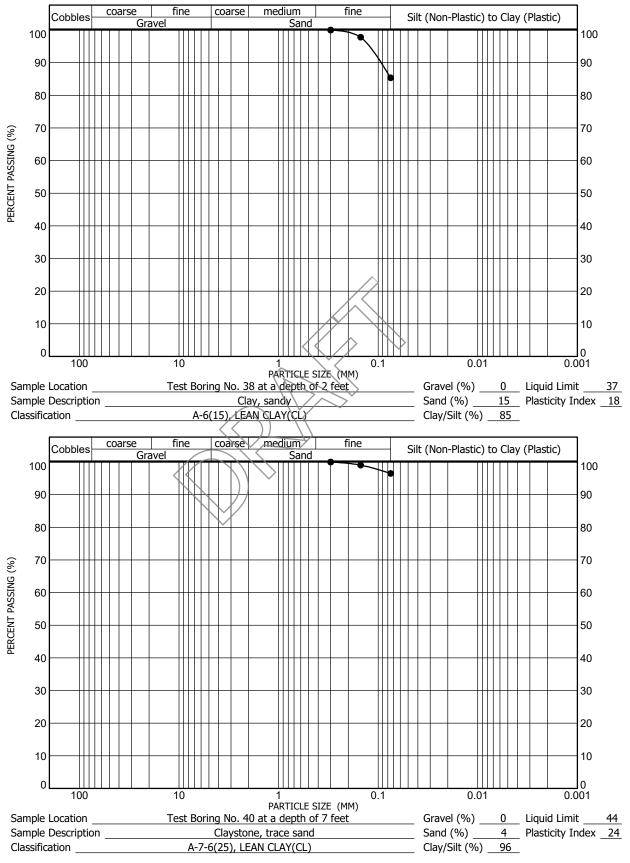




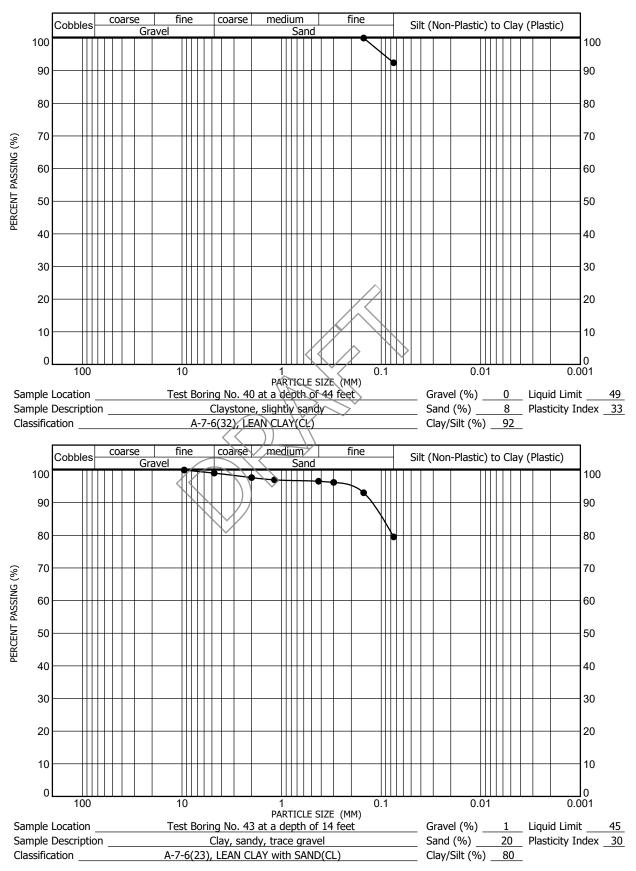




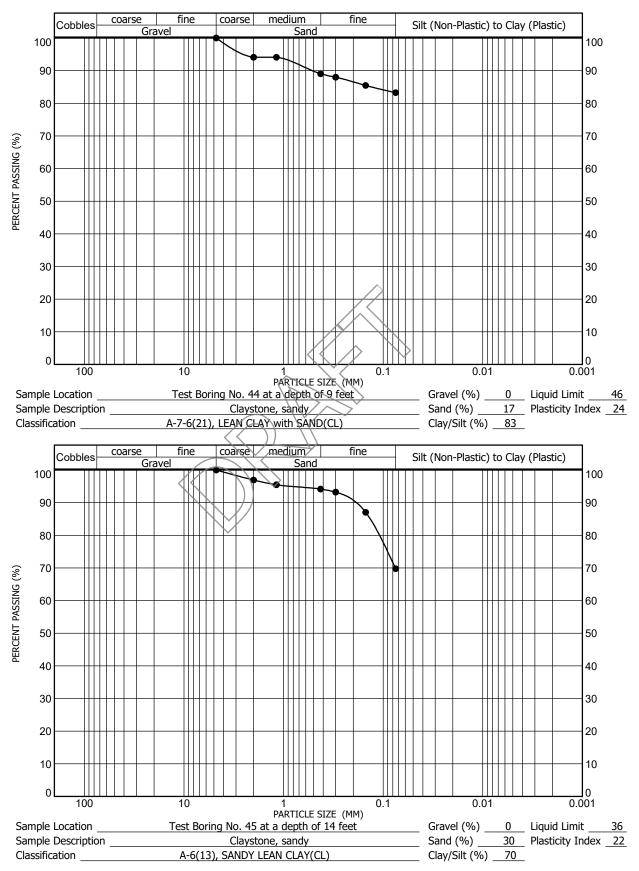




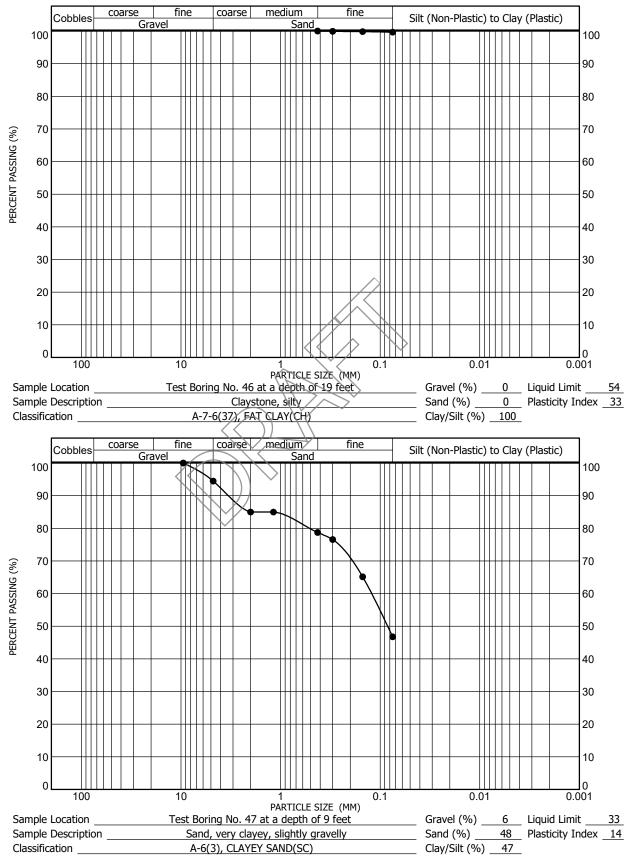




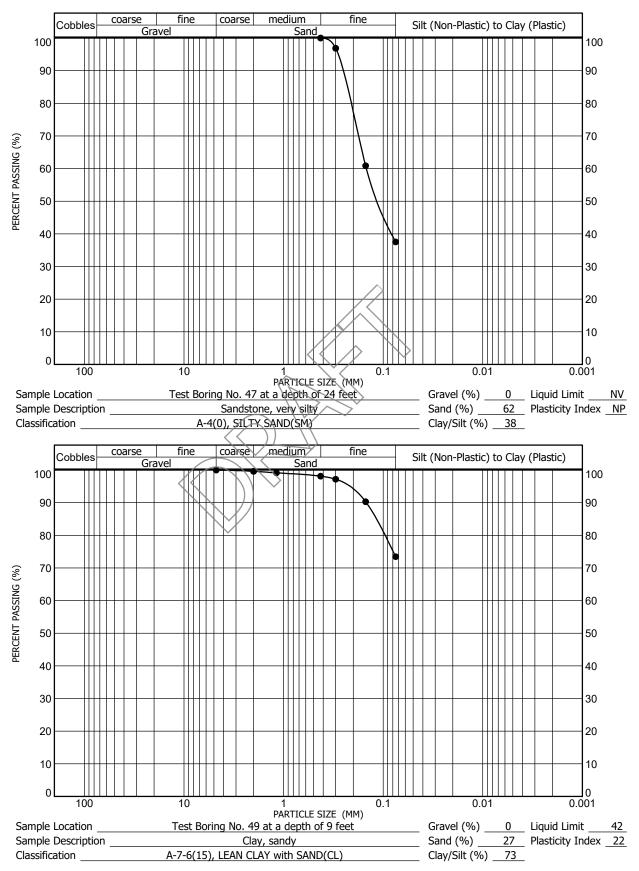




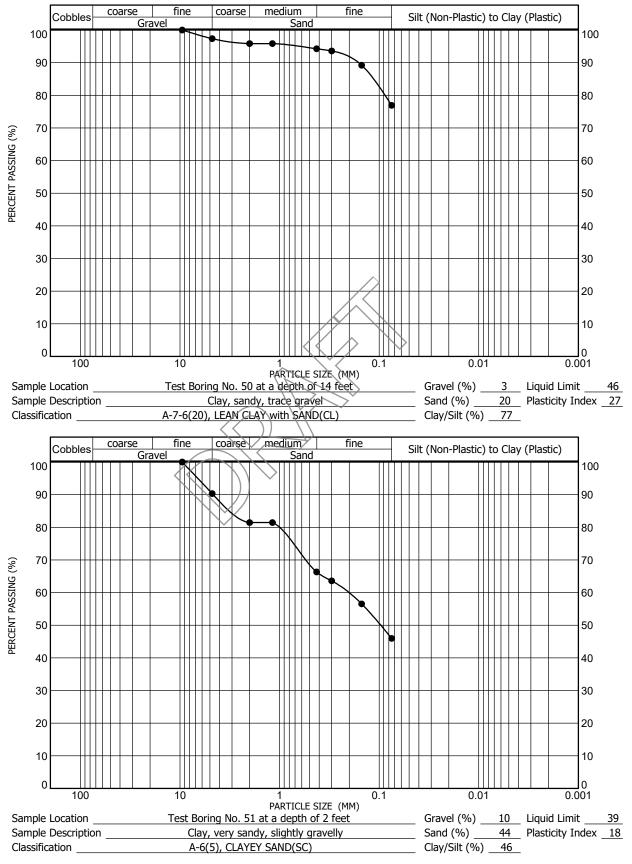




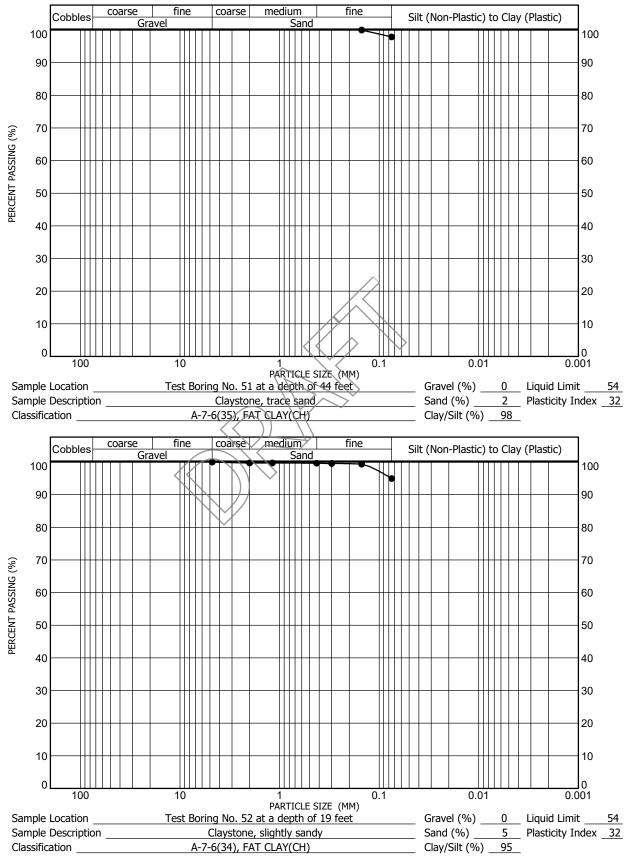




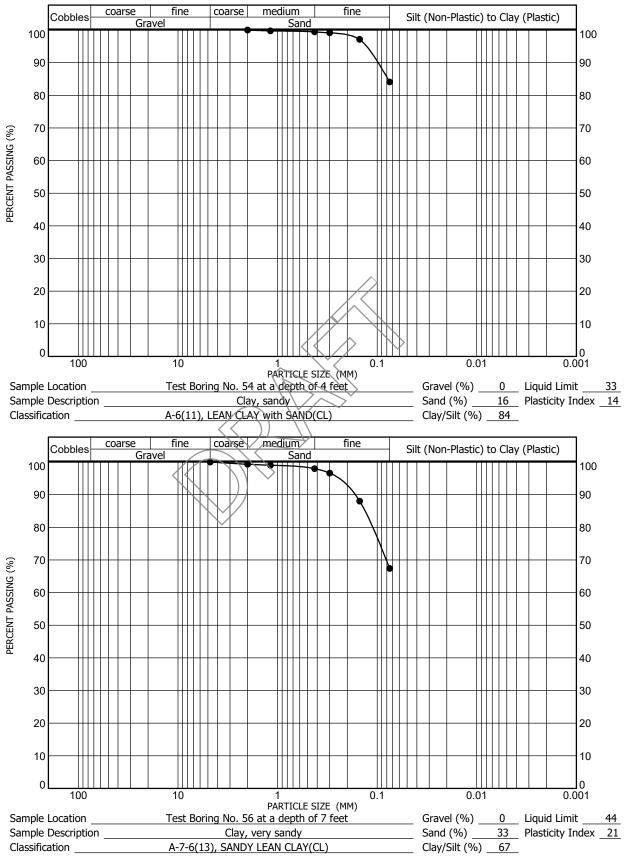




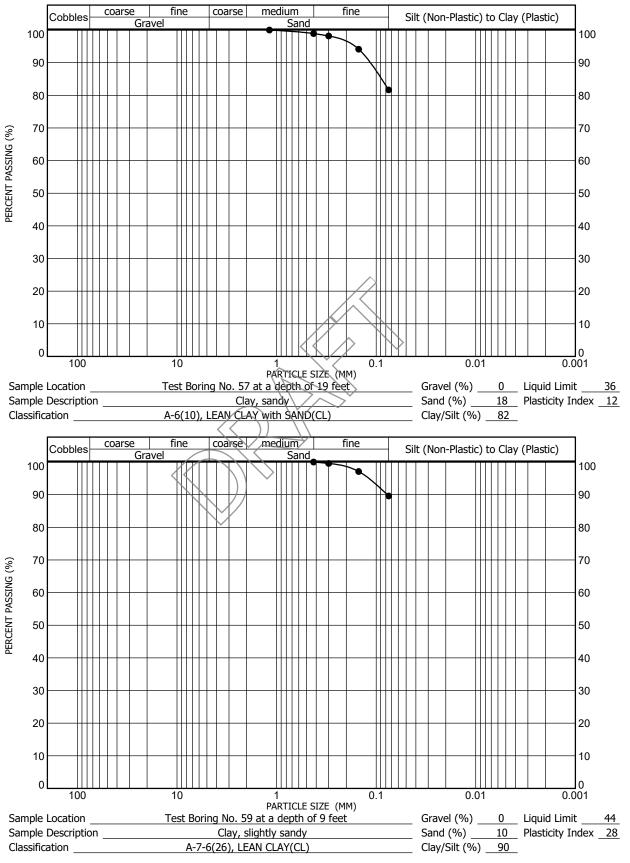




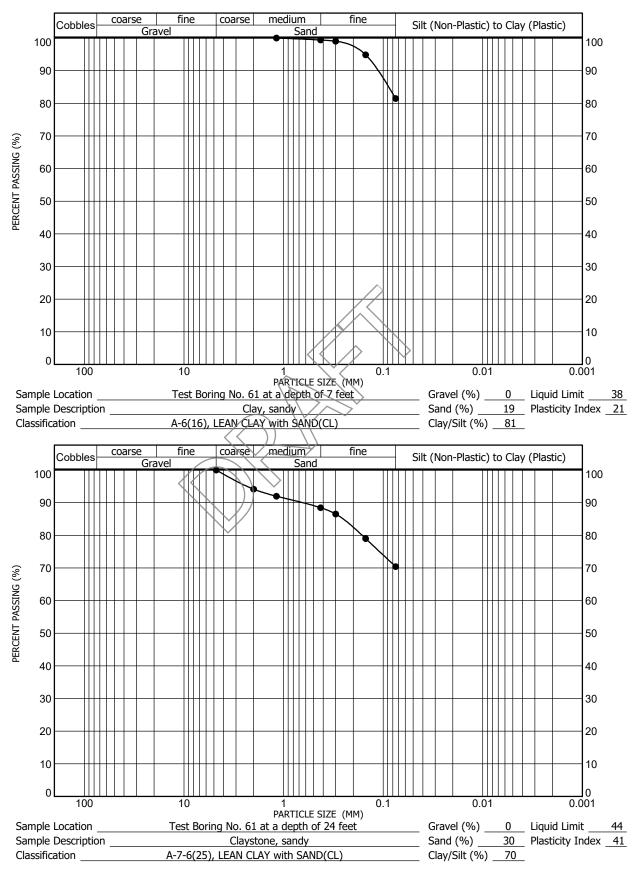




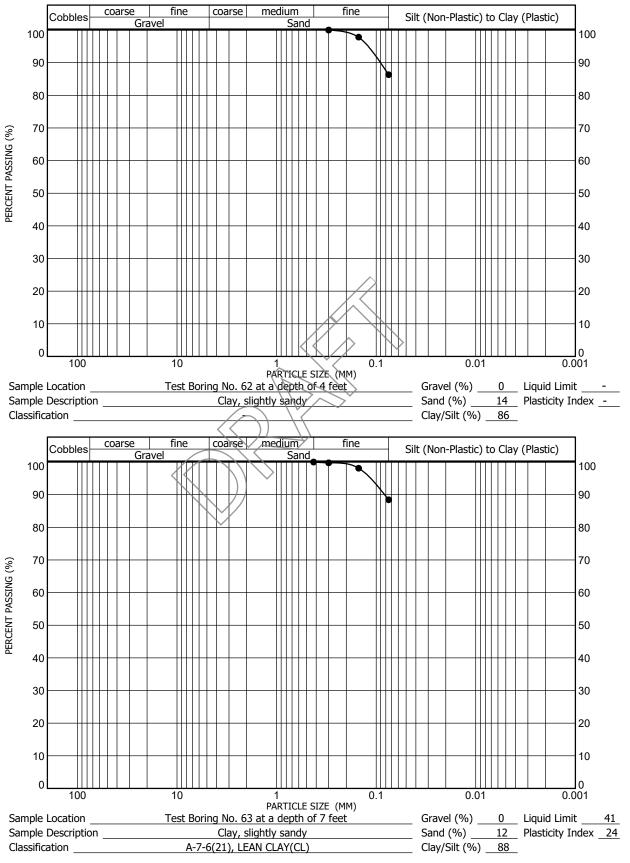




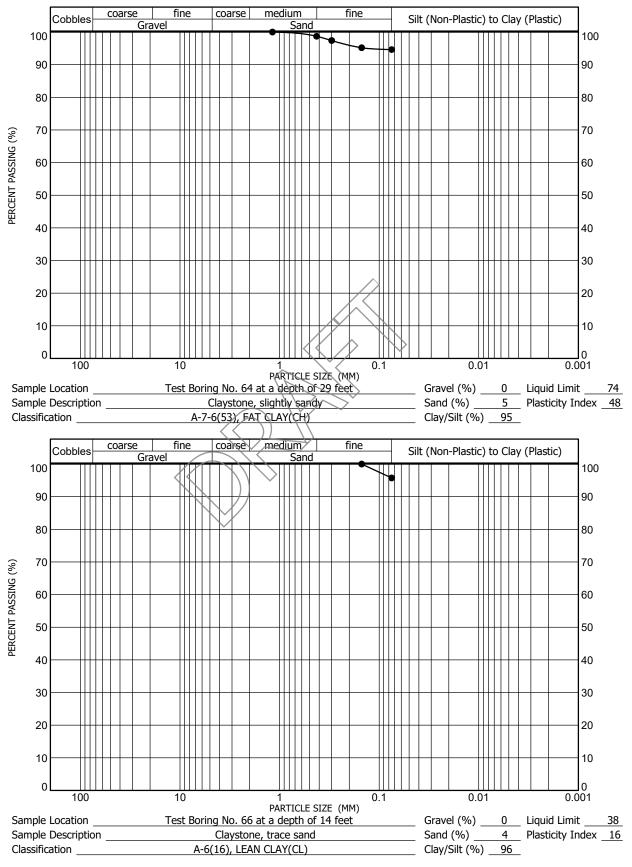




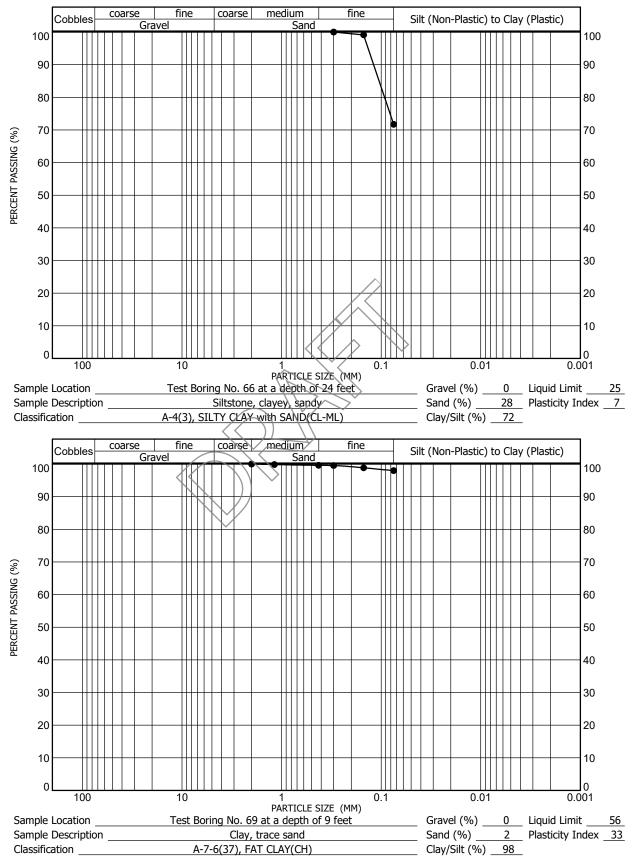




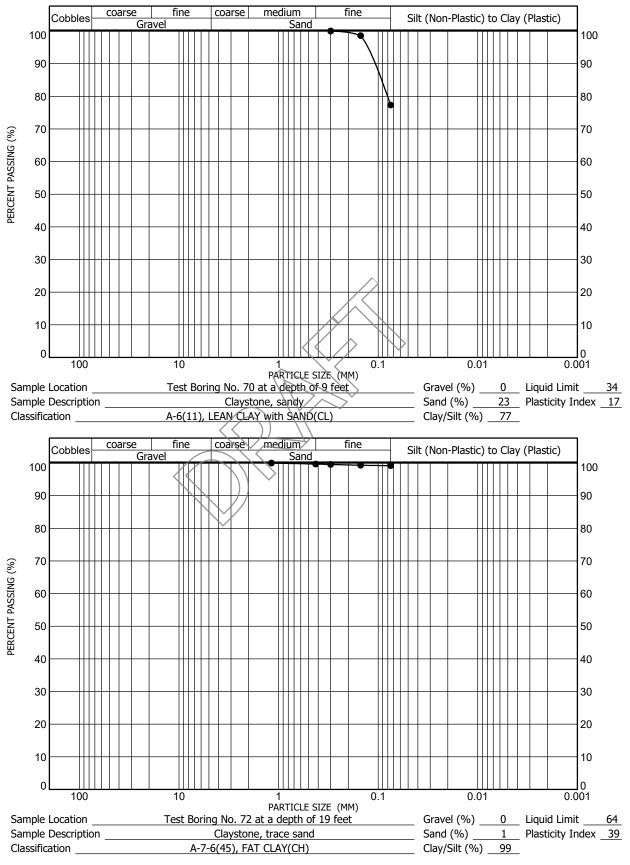




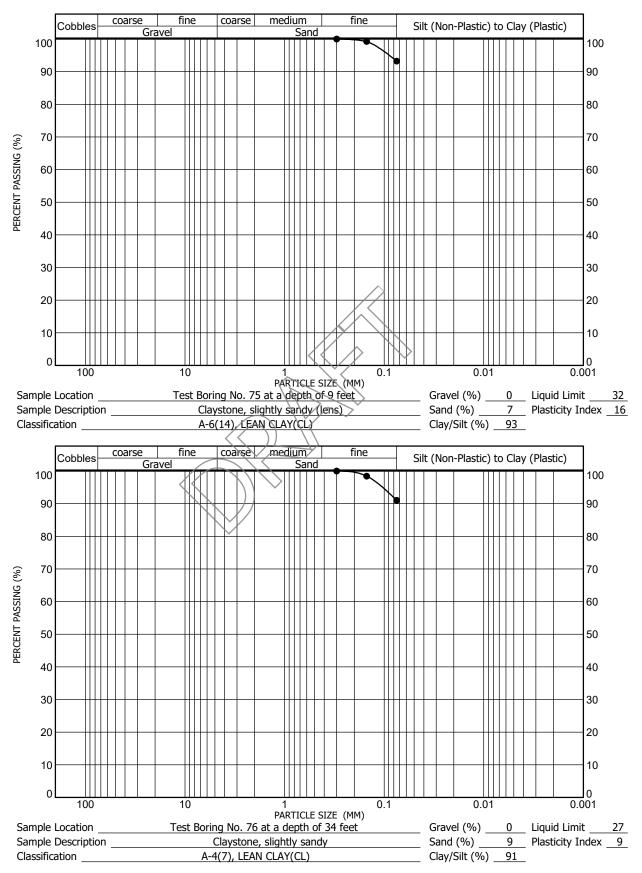




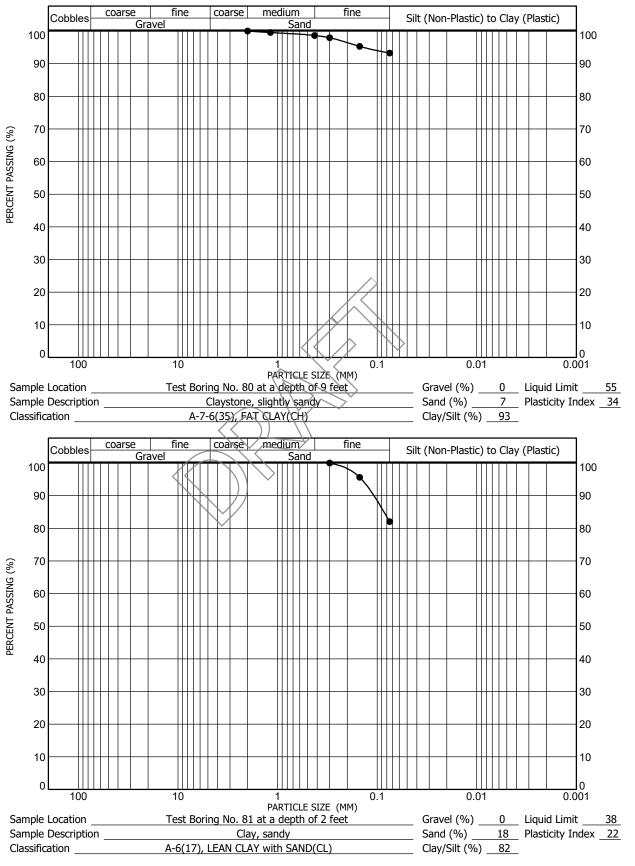




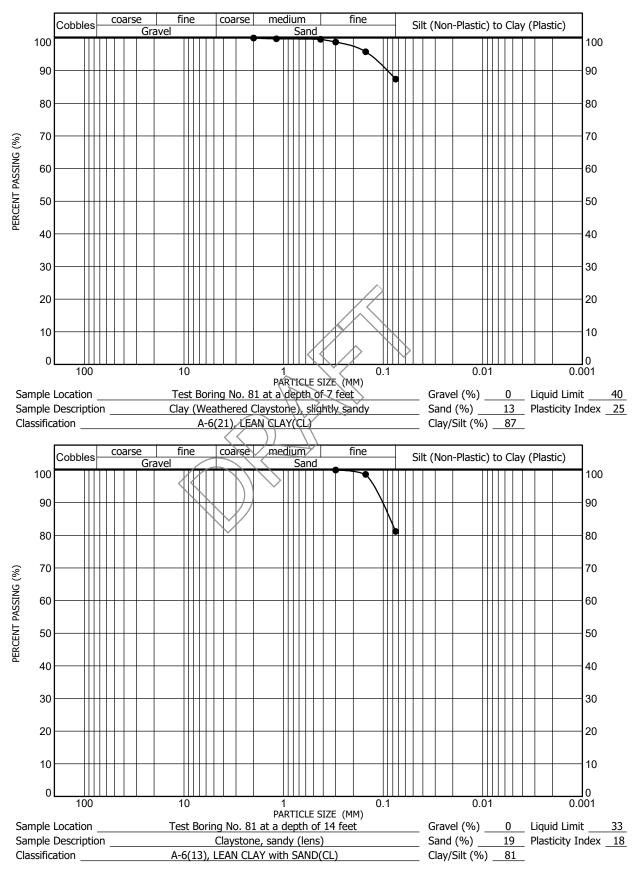




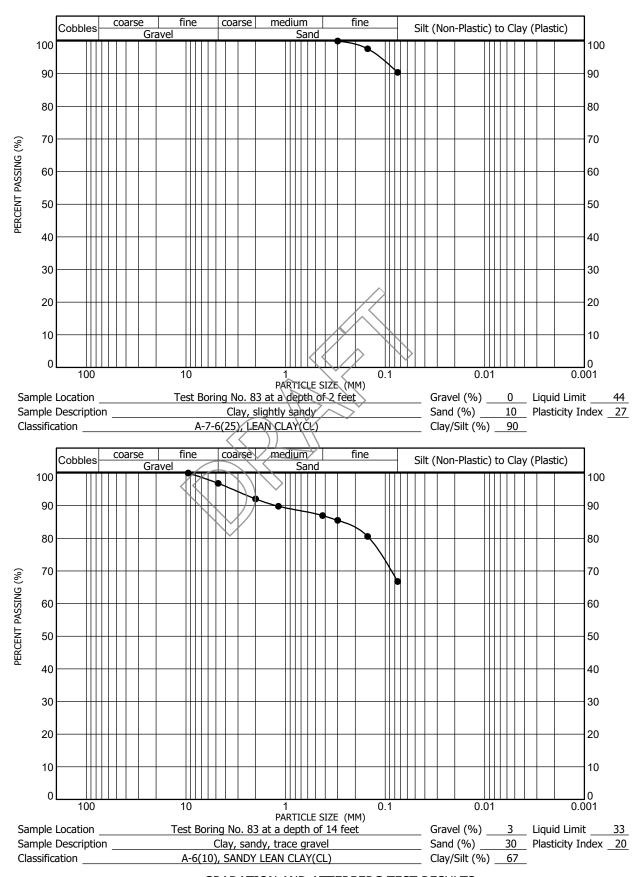




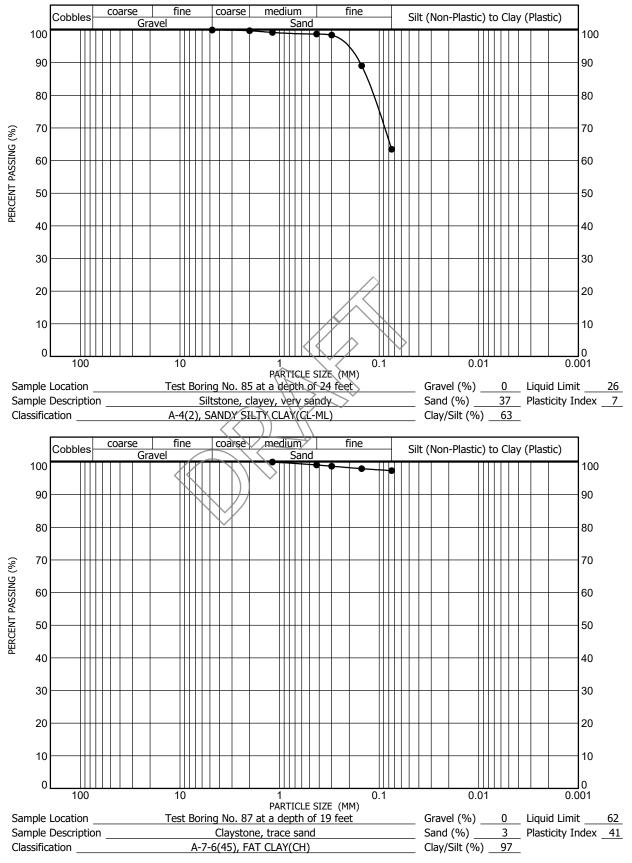




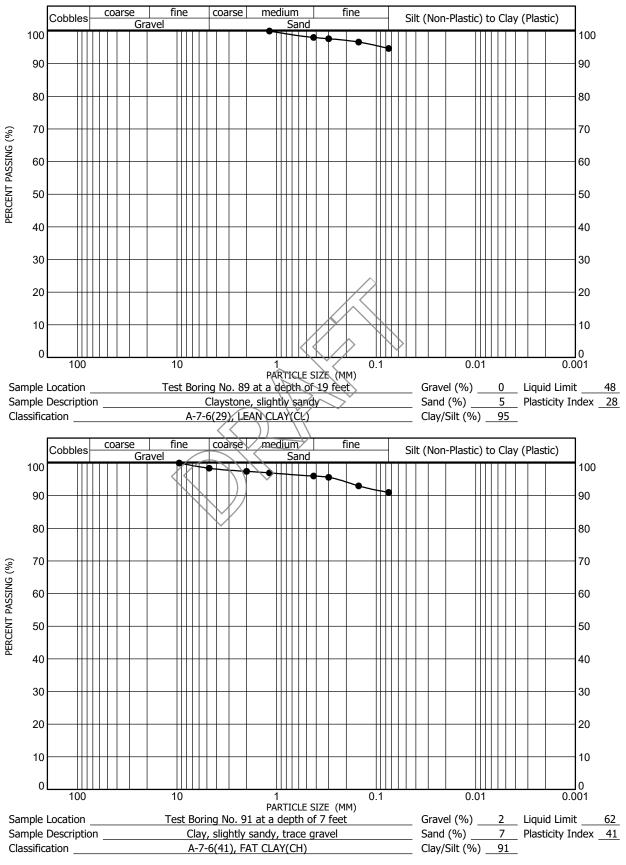




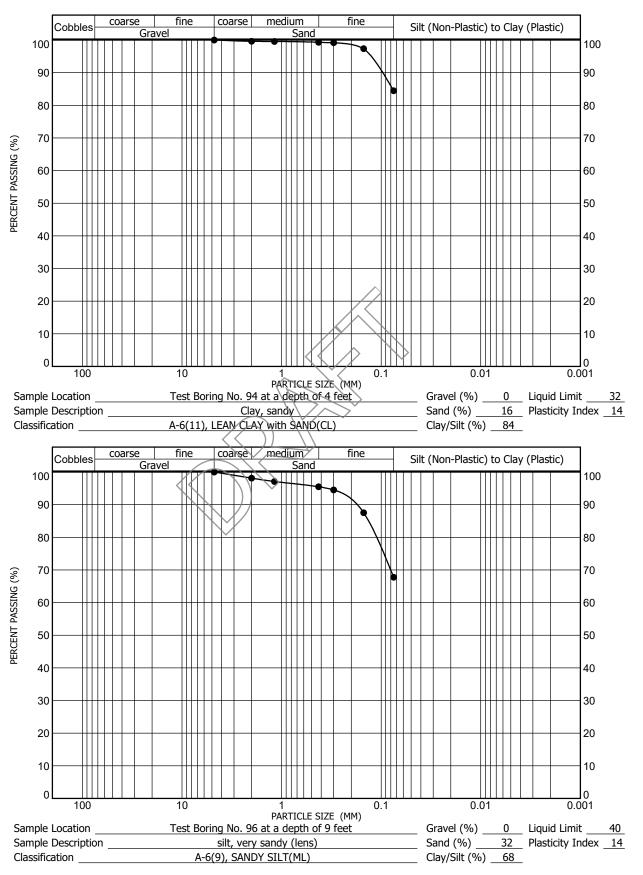




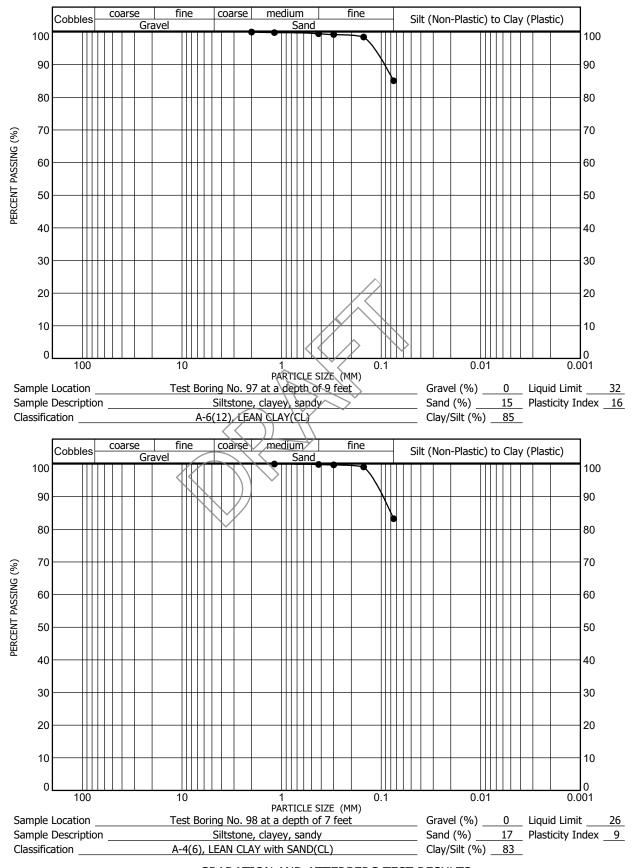




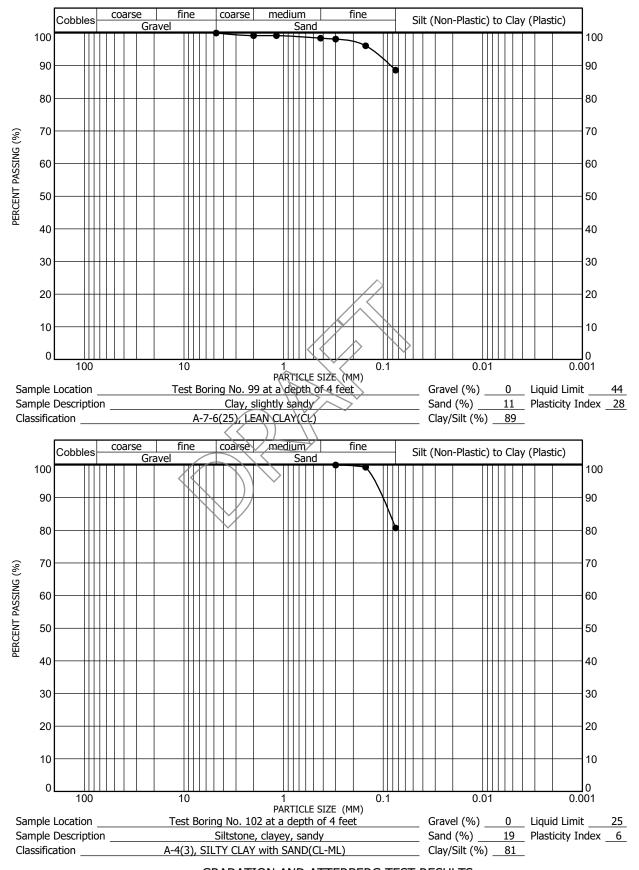




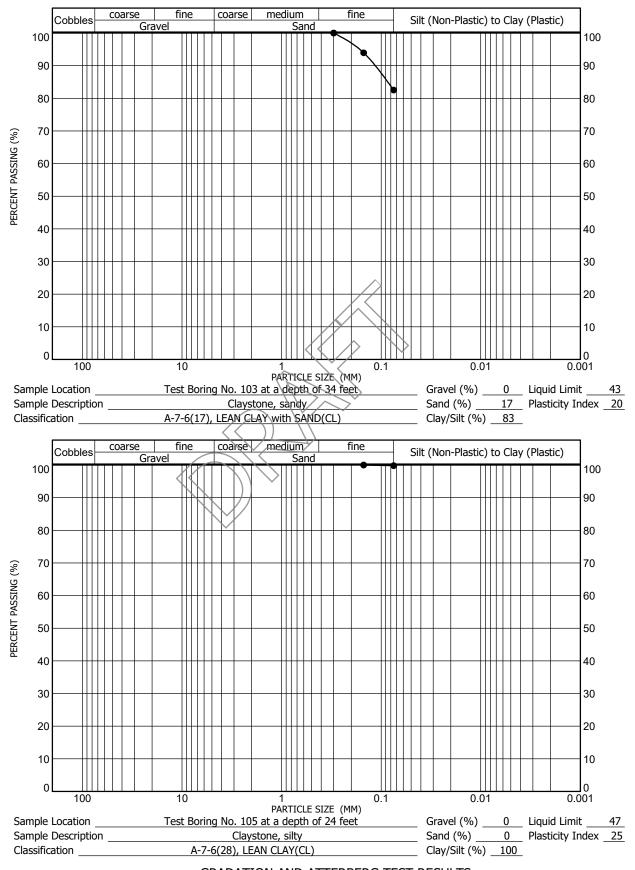




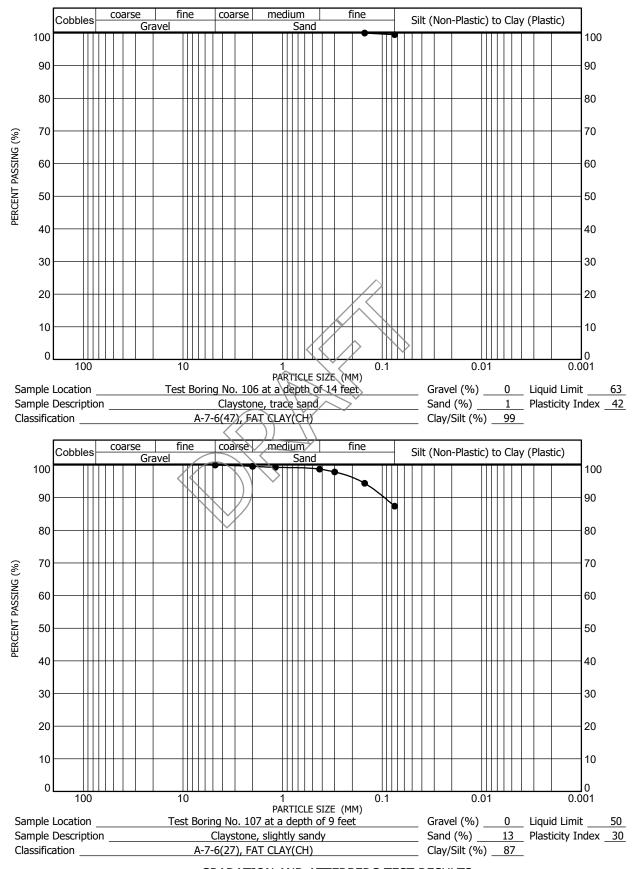




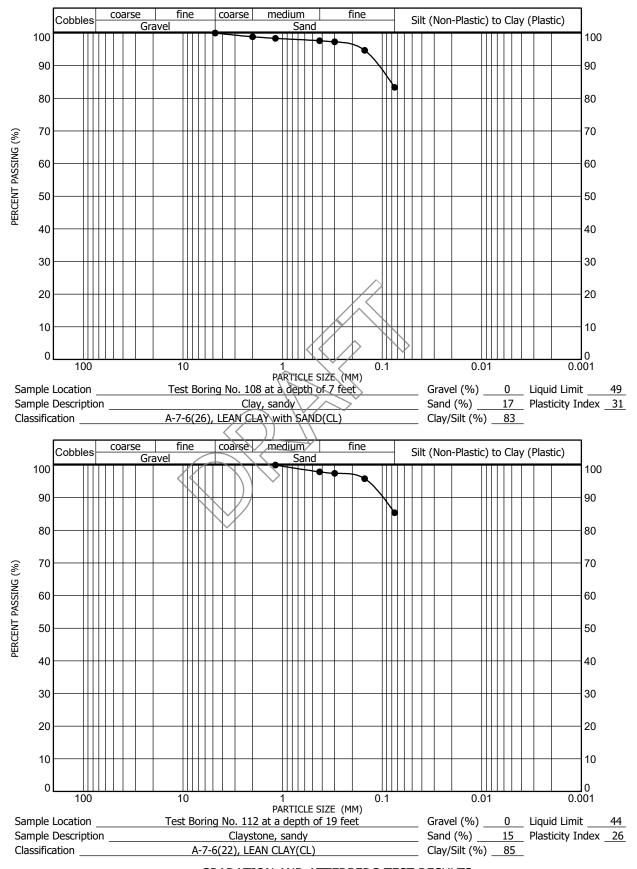




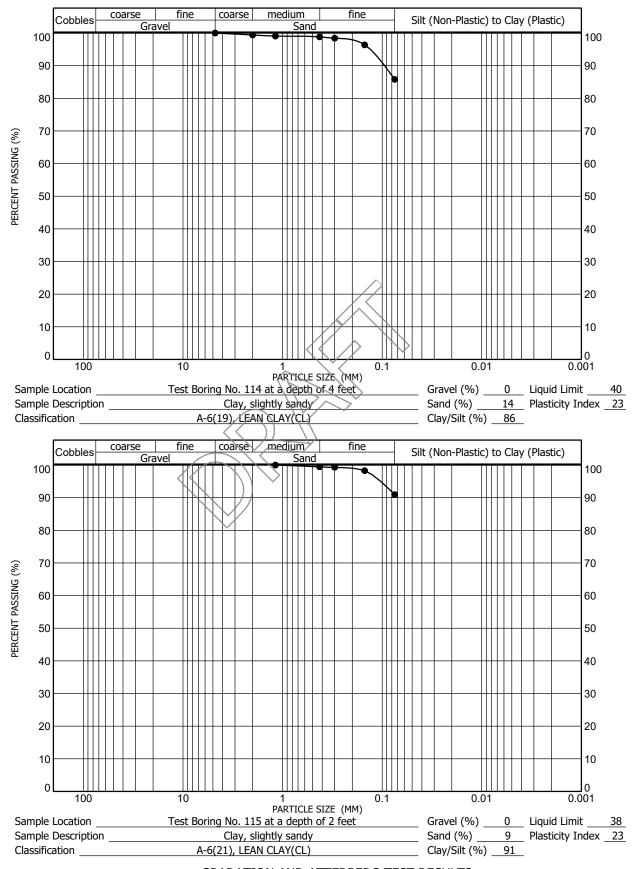




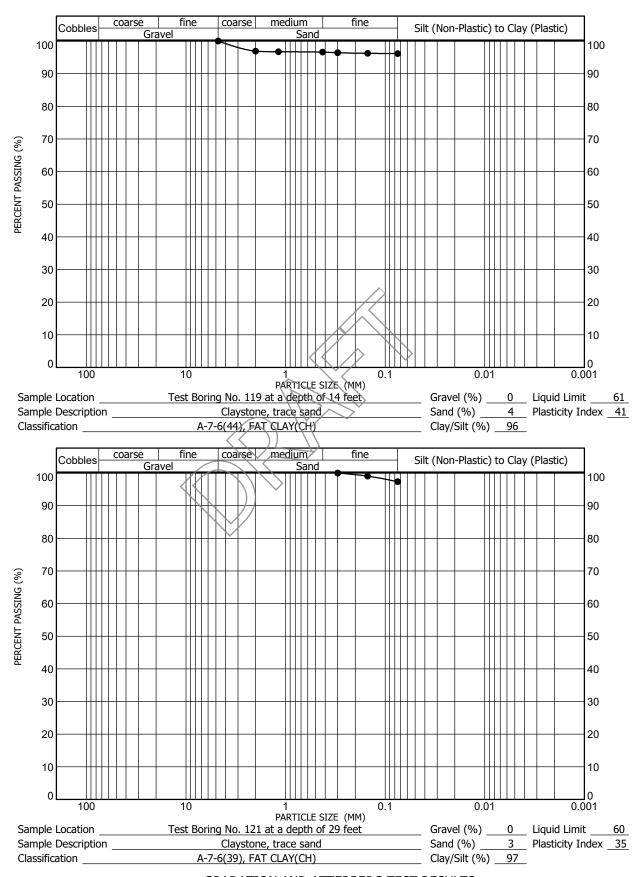




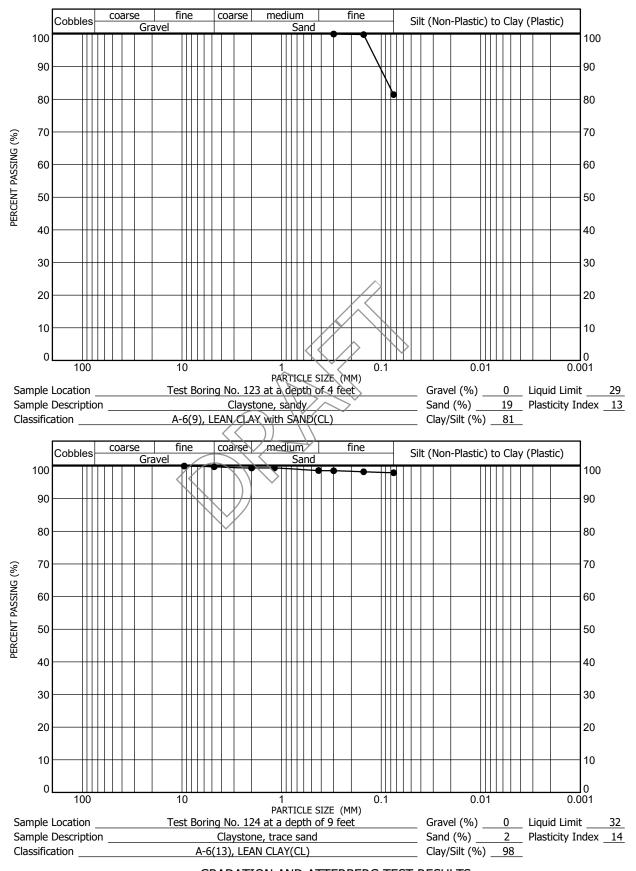




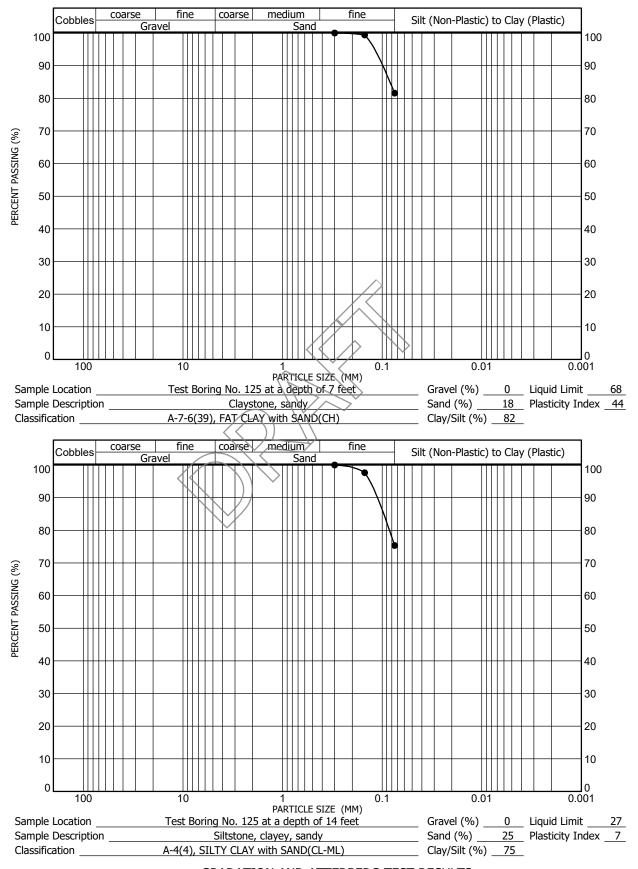




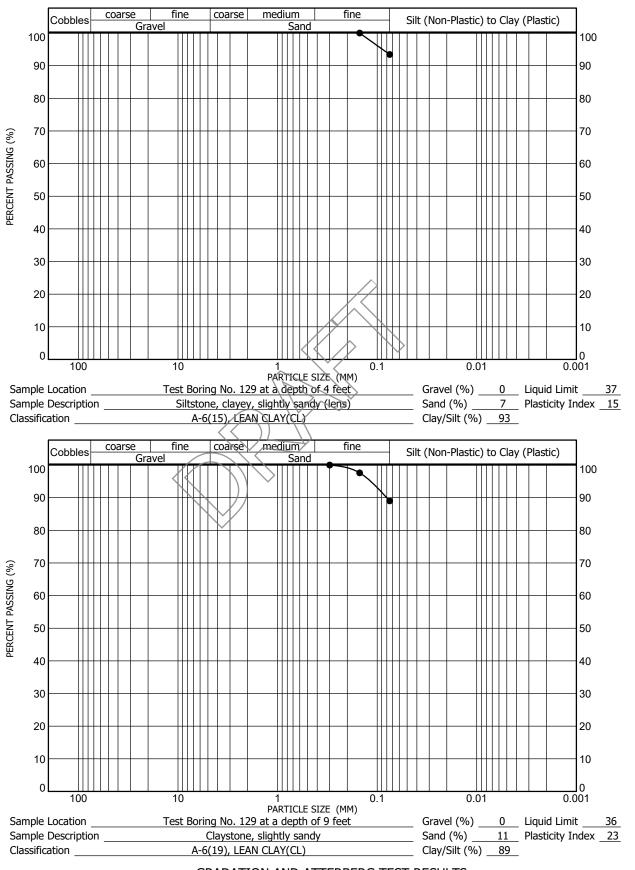




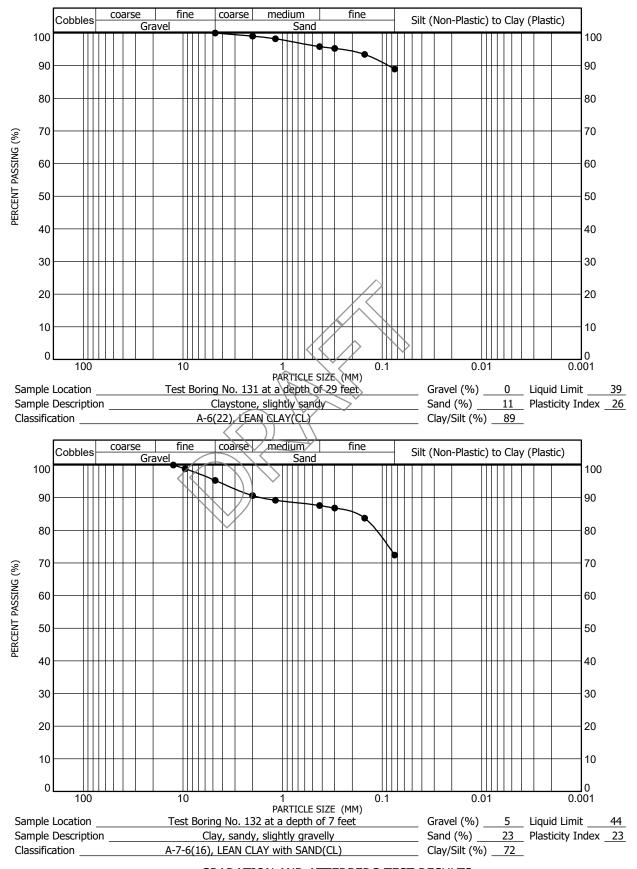




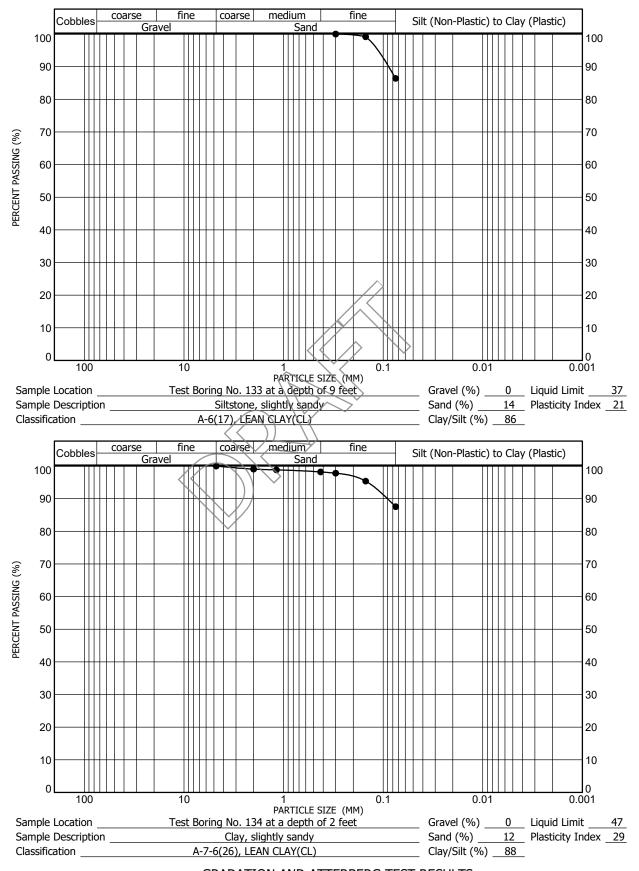




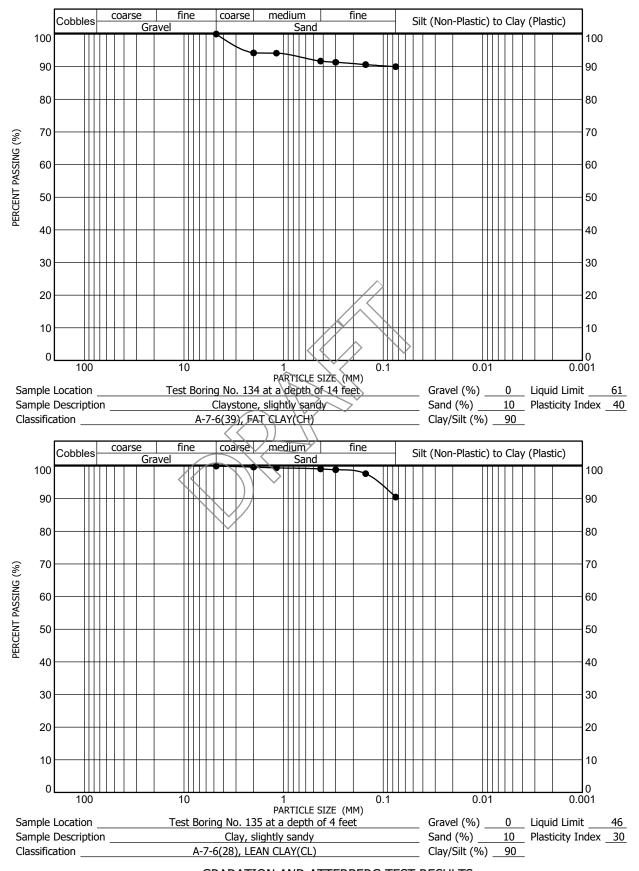




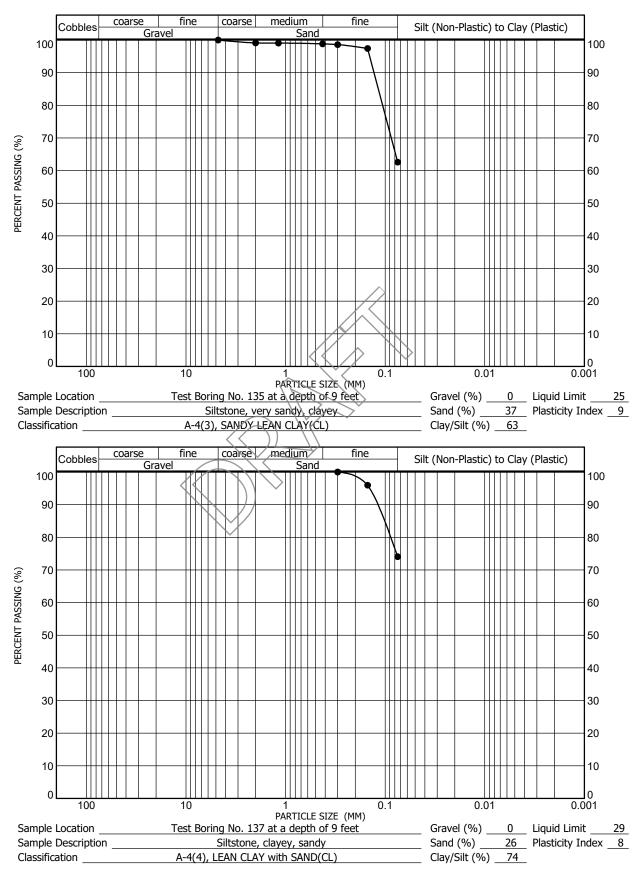




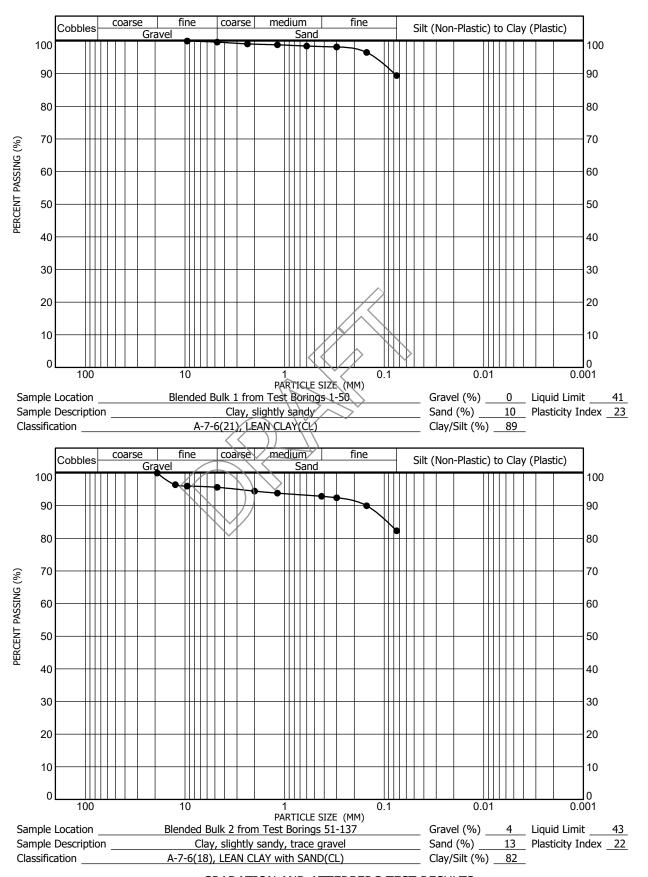




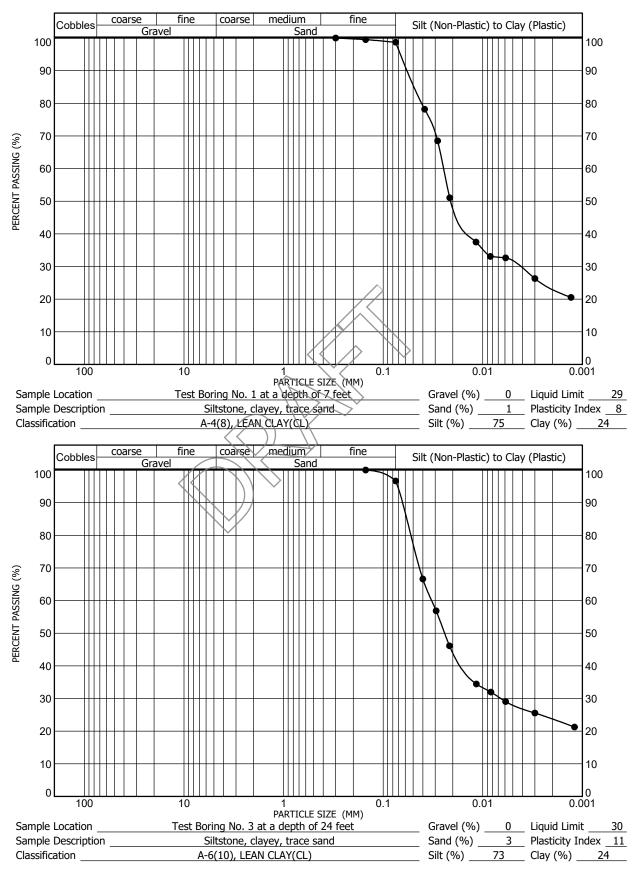




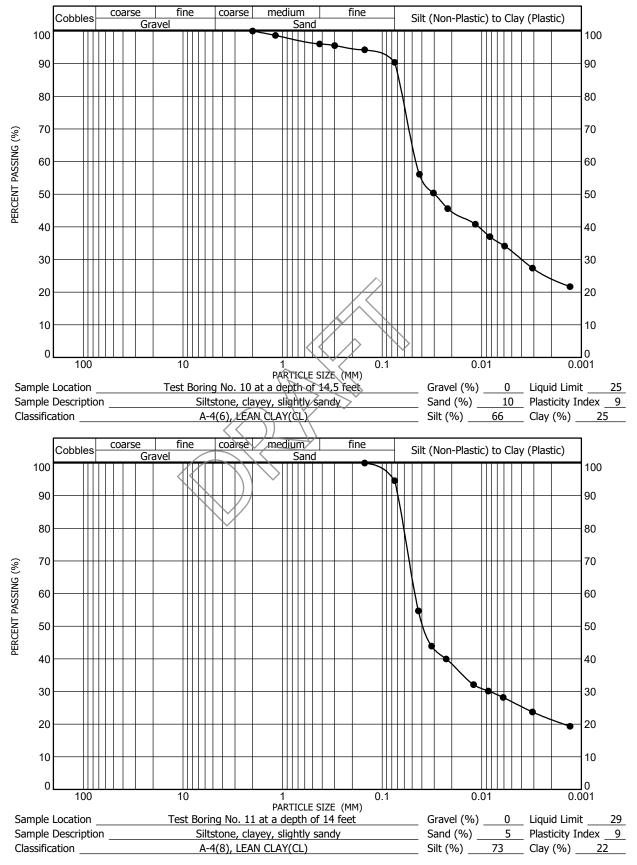




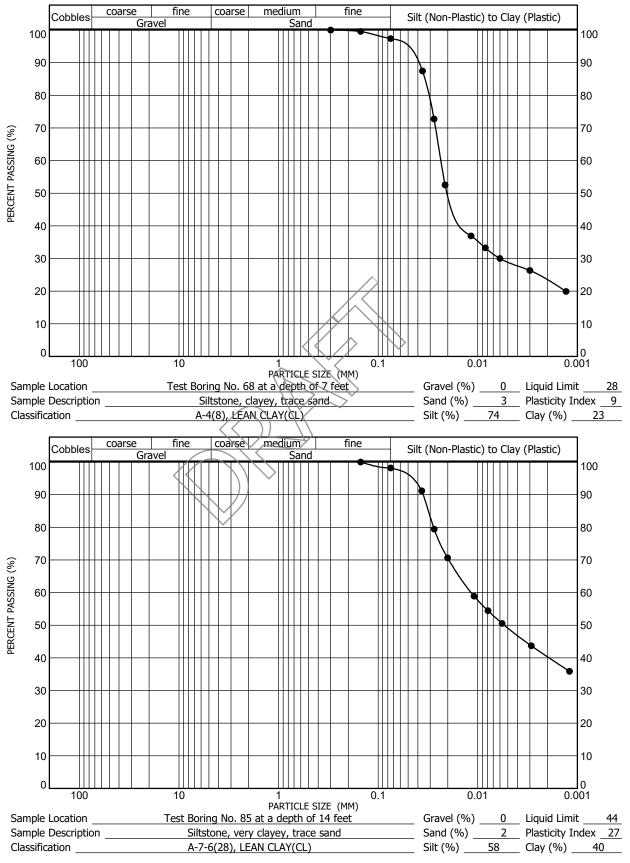




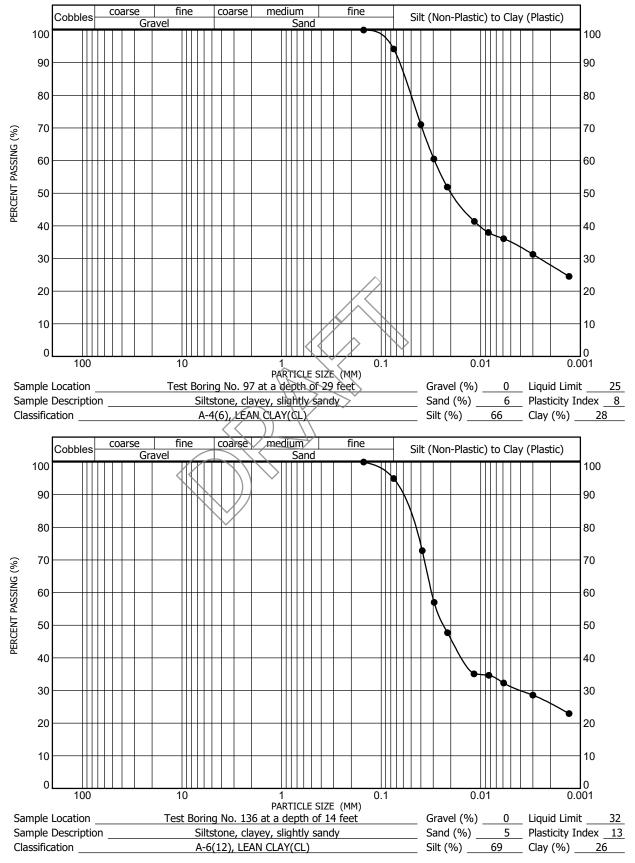












A.G. WASSENAAR, INC CLIENT Southern Land Company, LLC PROJECT NAME Colorado State Land Board Parcel PROJECT NUMBER 223122 PROJECT LOCATION Erie, Colorado 135 **TEST RESULTS 107.6** PCF Maximum Dry Density **18.0** % **Optimum Water Content** 130 Sample Location Blended Bulk 1 from Test Borings 1-50 Sample Source 125 **AGW Description** Clay, slightly sandy **USCS** Classification LEAN CLAY(CL) 120 AASHTO Classification A-7-6(21) Test Method D698A 0 Gravel (%) 115 11 Sand (%) 89 Silt/Clay (%) 41 Liquid Limit 110 Plasticity Index 23 DRY DENSITY, pcf 105 100 95 Curves of 100% Saturation for Specific Gravity Equal to: 90 2.80 2.70 85 2.60 80 75 20 25 WATER CONTENT, % 30 10 15 35 40 45 FIGURE A-230

MOISTURE-DENSITY RELATIONSHIP

A.G. WASSENAAR, INC CLIENT Southern Land Company, LLC PROJECT NAME Colorado State Land Board Parcel PROJECT NUMBER 223122 PROJECT LOCATION Erie, Colorado 135 **TEST RESULTS** 103.5 PCF Maximum Dry Density 20.1 % **Optimum Water Content** 130 Sample Location Blended Bulk 2 from Test Borings 51-137 Sample Source 125 **AGW Description** Clay, slightly sandy, trace gravel **USCS** Classification LEAN CLAY with SAND(CL) 120 AASHTO Classification A-7-6(18) Test Method D698A 4 Gravel (%) 115 14 Sand (%) 82 Silt/Clay (%) 43 Liquid Limit 110 Plasticity Index 22 DRY DENSITY, pcf 105 100 95 Curves of 100% Saturation for Specific Gravity Equal to: 90 2.80 2.70 85 2.60 80 75 20 25 WATER CONTENT, % 30 10 15 35 40 45 FIGURE A-231

MOISTURE-DENSITY RELATIONSHIP

APPENDIX B SPECIFICATIONS FOR PLACEMENT OF FILL



APPENDIX B SPECIFICATIONS FOR PLACEMENT OF FILL

General

AGW, as the Client's representative, should observe fill placement and conduct tests to determine if the materials placed, methods of placement, and compaction are in reasonable conformance with these specifications. Specifications presented in this Appendix are general in nature. They should be used for construction except where specifically superseded by those presented in the attendant geotechnical study.

For the purpose of this specification, structural areas include those areas that will support constructed appurtenances (e.g., foundations, slabs, flatwork, pavements, etc.) and fill embankments or slopes that support significant fills or constructed appurtenances. Structural areas will be as defined by AGW.

Fill Material

Fill material should consist of on or off-site soils which are relatively free of vegetable matter and rubble. Off-site materials should be evaluated by AGW prior to importation. No organic, frozen, perishable, rock greater than 6 inches, or other unsuitable material should be placed in the fill. For the purpose of this specification, cohesive soil is defined as a mixture of clay, sand, and silt with more than 35% passing a U. S. Standard #200 sieve and a Plasticity Index of at least 11. These materials will classify as an A-6 or A-7 by the AASHTO Classification system. Granular soils are all materials which do not classify as cohesive.

Preparation of Fill Subgrade

Vegetation, organic topsoil, any existing fill, and any other deleterious materials should be removed from the fill area. The area to be filled should then be scarified, moistened or dried as necessary, and compacted to the moisture content and compaction level specified below prior to placement of subsequent layers of fill.

Placement of Fill Material

The materials should be delivered to the fill in a manner which will permit a well and uniformly compacted fill. Before compacting, the fill material should be properly broken down, mixed, and spread in approximately horizontal layers not greater than 8 inches in loose thickness.

Moisture Control

The material must contain uniformly distributed moisture for proper compaction. The Contractor will be required to add moisture to the materials if, in the opinion of AGW, sufficient and uniform moisture is not present in the fill. If the fill materials are too wet for proper compaction, aerating and/or mixing with drier materials will be required.

Moisture content should be controlled as a percentage deviation from optimum. Optimum moisture content is defined as the moisture content corresponding to the maximum density of a laboratory compacted sample performed according to ASTM D698 for cohesive soils or ASTM D1557 for granular soils. The moisture content specifications for the various areas are as follows:

		Cohesive Soils	Granular Soils
1.	Beneath Structural Areas:	0 to +4%	-2 to +2%
2.	Beneath Non-Structural Areas:	-3 to $+3%$	-3 to $+3%$
3.	Moisture Treated Fill:	0 to +4%	-2 to +2%

Compaction

When the moisture content and conditions of each layer spread are satisfactory, the fill should be compacted. Laboratory moisture-density tests should be performed on typical fill materials to determine the maximum density. Field density tests must then be made to determine fill compaction. The compaction standard to be utilized in determining the maximum density is ASTM D698 for cohesive soils or ASTM D1557 for granular soils. The following compaction specifications should be followed for each area:

Beneath Structural Areas:
 Beneath Non-Structural Areas:
 Moisture Treated Fill:
 95% of Maximum Dry Density
 90% of Maximum Dry Density
 95% of Maximum Dry Density

If the fill contains less than 10% passing the No. 200 sieve, it may be necessary to control compaction based on relative density (ASTM D2049). If this is the case, then compaction around the structures and beneath walkway or other slabs should be to at least 70% relative density, and compaction beneath foundations and vehicle supporting should be to at least 80% relative density.

Deep Fills

In areas where fill depths exceed 20 feet beneath structural areas, additional compaction considerations will be required to reduce fill settlement. Fill placed within 20 feet of final overlot grade should be compacted as required above. Deeper fills should be compacted to 100% of maximum dry density at a moisture content of $\pm 2\%$ of optimum moisture content. Relative density of at least 85% will be required when necessary.

Responsibility

Any mention of essentially full-time testing and observation does not mean AGW will accept responsibility for future fill performance. AGW shall not be responsible for constant or exhaustive inspection of the work, the means and methods of construction or the safety procedures employed by Client's contractor. Performance of construction observation services does not constitute a warranty or guarantee of any type, since even with diligent observation, some construction defects, deficiencies or omissions in the Contractor's work may occur undetected. Client shall hold its contractor solely responsible for the quality and completion of the project, including construction in accordance with the construction documents. Any duty hereunder is for the sole benefit of the Client and not for any third party, including the contractor or any subcontractor.

MINE SUBSIDENCE INVESTIGATION

North Westerly
414.38 Acres in Section 16,
Township 1 North, Range 68 West,
Erie, Colorado



Prepared For:

SOUTHERN LAND COMPANY

105 Wells Street, Suite 200A Erie, Colorado 80516

WESTERN ENVIRONMENT AND ECOLOGY, INC.

2217 West Powers Avenue Littleton, Colorado 80210 phone (303) 730-3452

MINE SUBSIDENCE INVESTIGATION

North Westerly 414.38 Acres in Section 16, Township 1 North, Range 68 West, Erie, Colorado

Prepared For:

SOUTHERN LAND COMPANY

105 Wells Street, Suite 200A Erie, Colorado 80516

Project Number 778-005-02

YEARS OF EXCELLENCE Western Environment & Ecology

July 11th, 2024

Greg D. Sherman, P.G. President

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TABLE OF CONTENTS

1.0	CONCLUSIONS AND RECOMMENDATIONS		
2.0	INTRODUCTION		
3.0	SITE CHARACTERISTICS		
4.0	COAL MINE DESCRIPTIONS		
5.0	DRILLING PROCEDURES		
6.0	REG	IONAL GEOLOGY - WELD COUNTY, COLORADO	11
	6.1	OUTCROPPING UNITS	11
	6.2	STRUCTURE	11
7.0	SITE	GEOLOGY	15
8.0	DESC	CRIPTIONS OF HOLES	16
9.0	DISC	CUSSION OF SUBSIDENCE PREDICTION METHODS	21
10.0	STRA	AIN ANALYSIS	22
11.0	CLOSURE		
12.0	SELECTED REFERENCES		
FIGU	RES:		
Figure		Project Location Map	3
Figure		Borehole Location Map	5
Figure		Mine Location Map	8
Figure		Generalized Composite Stratigraphic Section	12
Figure		Generalized Stratigraphic Model	13
Figure	e 6	Strain Percent to Damage	23

APPENDICES:

Appendix A	Architectural Techniques to Reduce Subsidence
Appendix B	Lithologic Descriptions and Geophysical/Caliper Logs

1.0 CONCLUSIONS AND RECOMMENDATIONS

The results of the mine subsidence investigation completed on the Erie Land Company's North Westerly Project, consisting of 414.38 acres in Section 16, Township 1 North, Range 68 West, Erie, Weld County, Colorado, identified two abandoned coal mines beneath the proposed residential development. Based upon these data, Western Environment and Ecology, Inc. (Western Environment) presents the following:

- The depth to the Clayton Mine "main" seam beneath Subsidence Zone A is 302 feet.
- The depth to the Morrison Mine "main" seam beneath Subsidence Zone B is 188 feet.
- The "theoretical" surface strain calculated for Subsidence Zone A is 0.113%.
- The "theoretical" subsidence occurring within Subsidence Zone A is 0.25 feet.
- The "theoretical" surface strain calculated for **Subsidence Zone B** is **0.310%**.
- The "theoretical" subsidence occurring within Subsidence Zone B is 0.78 feet.

Using these conclusions, the following general subsidence related recommendations for development are presented:

- Areas occurring east of the 0% strain line as shown on Figure 3, have no mine subsidence related development restrictions.
- The theoretical "worst case" strains identified for **Subsidence Zone A** will allow construction of buildings or building segments equal to or less than **151 feet**. Larger structures may be built if additional studies, including drilling, are conducted. Structures within the **Subsidence Zone A**, should be limited to two stories or less (without additional analysis) and be constructed using wood or metal framing. Utilities should take into account the potential for 0.113% surface strains and 0.25 feet of subsidence over 286 feet.
- The theoretical "worst case" strains identified for **Subsidence Zone B** will allow construction of buildings or building segments equal to or less than **64 feet**. Larger structures may be built if additional studies, including drilling, are conducted. Structures within the **Subsidence Zone B**, should be limited to two stories or less and be constructed using wood or metal framing. Utilities should take into account the potential for 0.310 % surface strains and 0.78 feet of subsidence over 207 feet.
- A structural cap, as presented in the Appendix, and pressure grouting, should be performed on both the "Main" and "Air" shafts of the Clayton Mine. These features must be accurately field located and shown on the proposed development plat. No structures should be located within 25 feet of the capped shafts.

2.0 INTRODUCTION

Western Environment was retained by Ms. Heidi Majerik of the Southern Land Company to conduct a mine subsidence investigation of 414.38 acres in Section 16, Township 1 North, Range 68 West, Erie, Colorado (Figure 1). The working name of this residential project is the North Westerly PD.

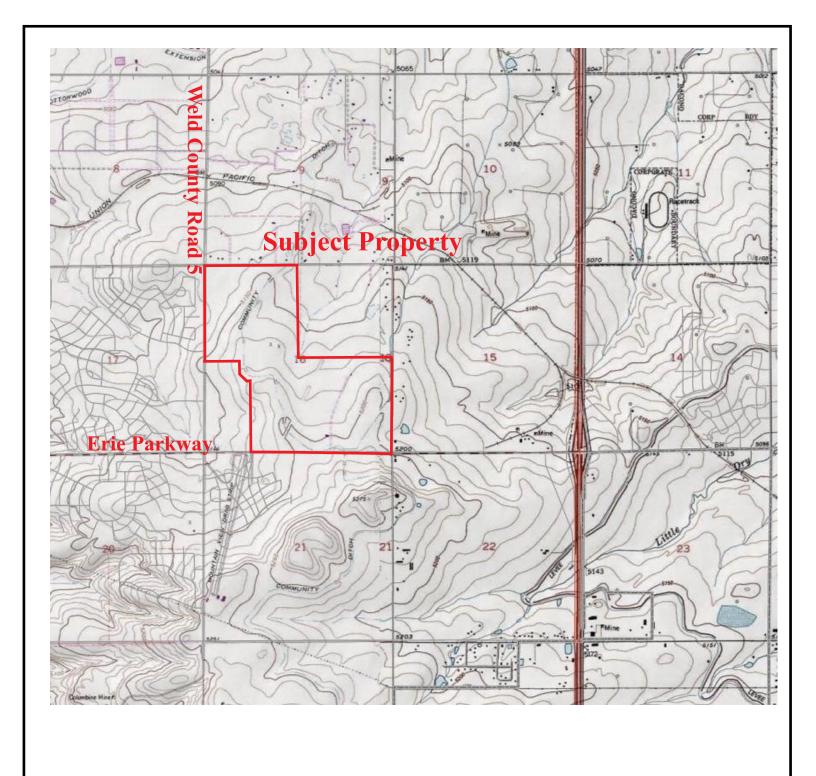
The purpose of this investigation is to evaluate the subsidence potential of the Clayton and Morrison Mines, and estimate "theoretical" surface strains from a "worst case" subsidence event. Additionally, recommendations for subsidence resistant development procedures and techniques are given.

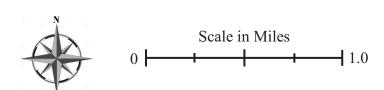
In addition to the current assessment, Western Environment has completed several mine subsidence investigations adjacent to the North Westerly Property. However, only a report conducted adjacent to the North Westerly PUD entitled "Mine Subsidence Investigation, Proposed Erie High School Site, May 10, 2003 (Project Number 256-002-01) was incorporated in this report.

The results and recommendations contained within the current report are intended for use as an aid in planning and design. This report should accompany the PD submitted to the Town of Erie. The Town will then forward the report to the Colorado Geological Survey review and comment. This process will aid in assuring a more predictable and thus economic development process.



Drill support equipment





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Figure 1 -Location Map 414.38 Acres in Section 16 Township 1 North, Range 68 West, Weld County, Colorado 80156

3.0 SITE CHARACTERISTICS

This Mine Subsidence Assessment was conducted for approximately 414.38 acres within Section 16, Township 1 North, Range 68 West, Town of Erie, Weld County, Colorado (Figure 1). According to the Weld County Assessor's Office, the property, currently owned by North Westerly, LLC and is zoned for agricultural use.

The site is located between Erie Parkway on the south Weld County Road (WCR) 10 on the north, WCR's 5 and WCR 7 on the west and east respectively (Figure 2). Portions of the site had recently been cultivated. Remnants of the abandoned Clayton Coal Mine, including hoist house, load out tipple and main and air shafts foundations, occur on the property. The Union Pacific State Coal Mine rail spur right-of-way, the Community Ditch, and a communication line right-of-way bisect the site.

Surrounding properties include the Erie Junior and Senior High Schools to the west, rural acreage residences to the north and east, and large single family residential developments to the west and southwest. Currently, the Westerly residential subdivision is present to the south, across Erie Parkway. The Public Service Company of Colorado Valmont Power Station, 230 kv high tension electric transmission power line is present along the northern boundary. Panhandle Eastern Pipeline Company, Amoco Oil and Vessels Oil have natural gas and liquid petroleum gathering lines along the parameter of the site.



View to south showing Erie Parkway and residential development



EL-1 40.050128, -105.006889

EL-2 40.045642, -105.009297

EL-3 40.050283, -105.011505

EL-4 40.052637, -105.013800

EL-6 40.056573, -105.016316

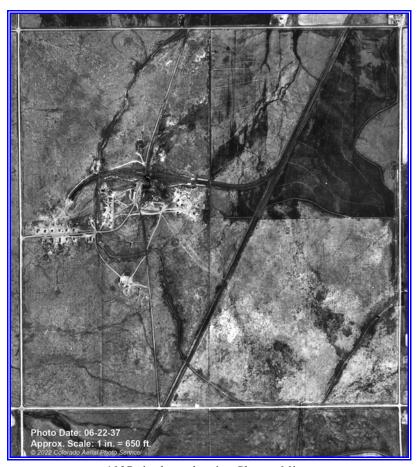
EL-8 40.056255, -105.009298

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2217 West Powers Avenue Littleton, Colorado 80120

Figure 2 -Boring Location Map North Westerly Parcel 414.38 Acres in Section 16 Township 1 North, Range 68 West, Weld County, Colorado 80156 The site occurs at an elevation range of approximately 5,140 to 5,200 feet above sea level (USGS Erie 7.5 Minute Quadrangle, 2016). The topography is generally level, with gradual slopes to the north and northwest on the west half of the project. The site geology consists of the Cretaceous Age Laramie Formation and Fox Hills Sandstone (Ogden Tweto, 1979). The USRCS classifies the site soils as Weld loam on 1 to 3 percent slopes, Nunn loam on 1-3% slopes, Ulm clay loam on 0 to 3 and 3 to 5 percent slopes, Wiley-Colby complex on 3 to 5 percent slopes, and Renohill clay loam on 3 to 9 percent slopes. Review of the Federal Emergency Management Agency (FEMA) Flood Insurance Maps indicate that the site is not located within the 100-year flood plain.

Records maintained by the Colorado Division of Water Resources records identified a piezometer well constructed by the Town of Erie and three groundwater monitoring wells constructed by Kerr McGee Oil & Gas Onshore LP are located on the property. Lithologic logs for the wells identified sandy clay from the surface to between 7 and 15 feet below grade. Weathered claystone to silty sandstone was described between 7 to 22 feet below grade, where medium gray claystone was encountered. Static groundwater was measured between 10 and 21 feet.



1937 air photo showing Clayton Mine

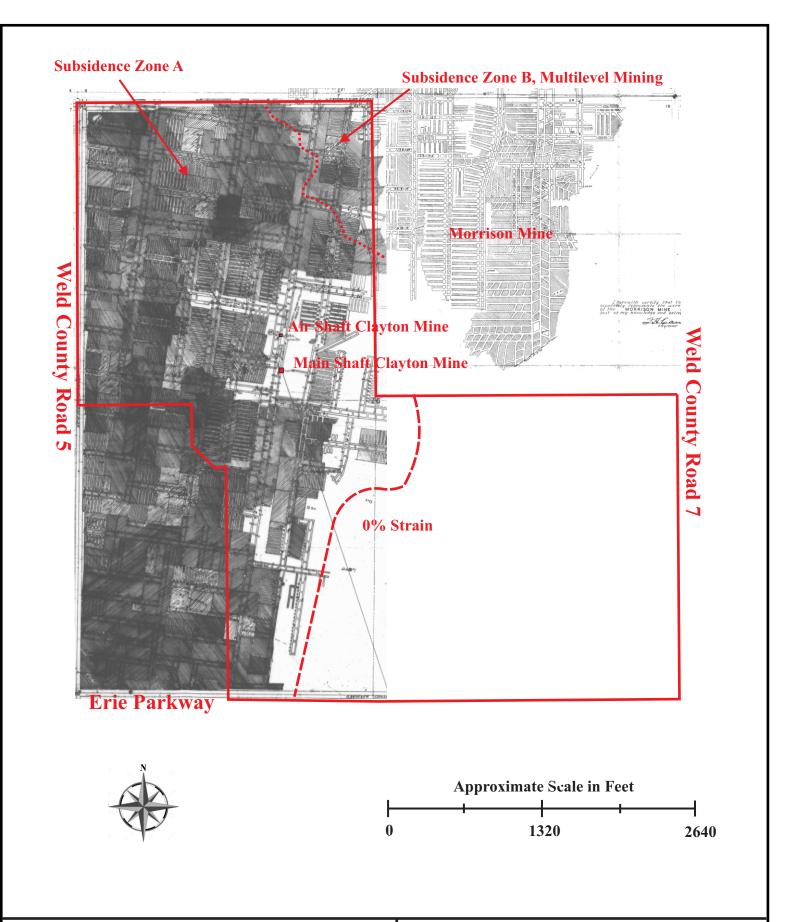
4.0 COAL MINE DESCRIPTIONS

Two abandoned coal mines occur beneath the North Westerly Parcel. The mine present in a portion of the northeast corner of the project is referred to as the **Morrison Mine** (Figure 3). Records on file with the Colorado Division of Mines (attached) show that production began in 1930 and the operation was officially closed on December 20th 1966 after producing 2,169,664 tons. Entry to the Morrison Mine was gained via a 160 foot deep shaft located approximately 2,500 feet northeast of the subject property in Section 9. Maximum production for the Morrison Mine was 132,000 tons in 1945. At the time the mine closed, it was owned by the Clayton Coal Company.



Clayton Mine, Photo provided by the Erie Historical Society

The second mine occurring beneath the west one half of Section16 is the **Clayton Mine** (Figure 3). The Clayton Mine began operation in 1920 and continued to 1942 having a recorded production of 3,333,225 tons. The maximum yearly production of 260,000 tons occurred in 1925. Based upon review of the original maps, the mining method was classified as a modified room and pillar mine using the Pillar Retreat method of mining. Entry to the mine occurred from a 350 foot deep production shaft located on the subject property (Figure 3). An air shaft also approximately 350 feet in depth was located 250 feet north of the main production shaft.



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Figure 3 - Mine Location Map North Westerly Parcel 414.38 Acres in Section 16 Township 1 North, Range 68 West, Weld County, Colorado 80156



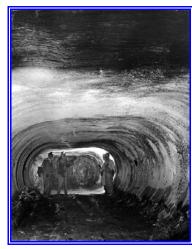
Clayton Mine 1923. Photo provided by the Erie Historical Society

Unlike other large operations the Clayton Mine did not convert to the shortwall mining method introduced in the early to mid 1940's. This equipment radically changed coal mining after its wide spread use in the early 1950's, substantially increasing production and worker safety. Western Environment has determined that coal extraction rates increased from 60-70% in the older (Pillar Retreat) mines, to 70-80% or greater in the mines operating after introduction of the continuous miner.

Western Environment reviewed the records of the Colorado Department of Natural Resources, Mined Land Reclamation Division and found that the Main and Air shafts of the Clayton Mine had been "stabilized" in 1990 by injecting with low strength "fly ash based" grout. This would eliminate the potential for a open void forming, however not surface subsidence resulting from shaft fill compaction. Western Environment recommends that the location of the shafts be surveyed and, prior to development, capped and pressure grouted to prevent subsidence.



Room and Pillar mining



Continuous Miner

5.0 DRILLING PROCEDURES

Thirteen mud rotary borings (Figures 1 and 2), were completed on the North Westerly Project and the adjacent Erie High School site. These borings were completed under the supervision of Western Environment. A truck mounted drill was used to advance the borings completed on the High School Project (SV-1 through SV-7, Figure 1) while the recent borings (EL-1,2,3,4,6 and 8, Figure 1 and 2) utilized a track mounted drill. To reduce fluid loss, the recent borings advanced 5.5 inch surface casing to the soil/bedrock interface. The casing was removed following the completion of the borings.

All holes were both lithologically and geophysically logged. Lithologic strip logs were taken of cutting samples at five foot intervals. Geophysical logs consisting of natural gamma, spontaneous potential (SP), single point resistance, 16" and 64 " resistance were run on the holes complete for the North Westerly Project. A three arm caliper was run on all holes intercepting the mine workings for both the North Westerly and High School Projects.

The caliper tool was calibrated prior to each use to graphically show the diameter of the hole. The full extension of the arms would indicate a cavity of at least greater than 18 inches. The drill will normally make a 5.125 hole. Therefore, any significant variance in hole diameter could indicate mining activity.

After drilling and logging, each hole required plugging in a manner which would not allow water to enter the workings. On all holes, a simple cement plug was set from 2 to 15 feet or the bottom of the surface casing (after removal) with the remaining footage of the hole being filled with bentonite chips to inhibit fluid penetration. Native soil was then replaced from 2 feet to the surface.



Drilling and logging equipment, view to the west of EL-4

6.0 REGIONAL GEOLOGY

6.1 Outcropping Units

Outcropping units within and surrounding the project area are the Pierre Shale, the Fox Hills Sandstone, the Laramie Formation and Quaternary gravels and soils (Figure 4).

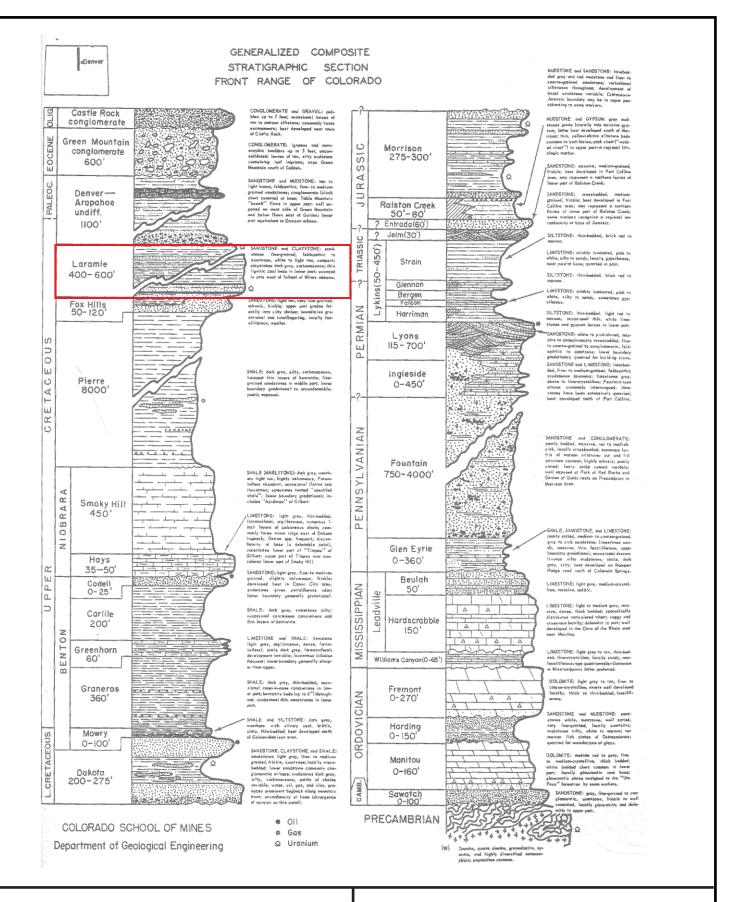
The Pierre Shale is a lead gray to brown and black shale of marine origin. Total thickness in the area is greater than 7,000 feet (Blair 1951), with the majority of the formation made up of shale. Near the top of the Pierre Shale it becomes increasingly sandy and contains beds of fine sandstones and siltstones as it grades into the Fox Hills Sandstone.

The Fox Hills Sandstone is a massive to crossbedded sandstone. It was deposited in a beach and/or delta-front environment and comfortably overlies the Pierre Shale. The lower two-thirds of the formation is a fine to coarse grained, bluff colored sandstone which weathers to a light tan to tan color. The Fox Hills Sandstone contains numerous iron colored calcareous concretions, ranging in size from fractions of an inch to several feet. The upper one-third of the Fox Hills Sandstone is a fine to medium grained, light grey to pale yellow, crossbedded sandstone. The total thickness of the formation near this location is about 140 feet as measured in the NW 1/4 of Section 28, T1S, R70W. However, thickness varies from 60 feet near Ralston Creek (Van Horn, 1957) to 250 feet near Baseline Reservoir.

The Laramie Formation, which underlies the site, is predominantly a fresh water deltaic sequence, consisting of clays, sands, silts and coals (Figure 5). The lower portion is approximately 100 feet thick and is composed of sandstones, sandy shales, claystones, and coal beds. The upper unit has a thickness of approximately 600 feet and is made up of mostly clay shales, very fine sandy shales, and lenticular beds of sandstone. The shales are largely carbonaceous and in places becomes lignitic. The Laramie Formation lies comfortably on the Fox Hills Sandstone.

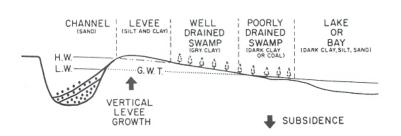
6.2 Structure

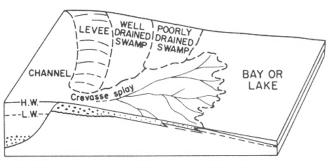
The proposed subdivision lies on the western edge of the Denver-Julesberg Basin against the Front Range Uplift. This basin contains up to 13,000 feet of sediments derived from the ancestral Rockies which laid to the west. Three kinds of faulting occur in this portion of the basin. A basement-controlled late Cretaceous Laramide faulting is the most prevalent and is the result of deformation associated with uplift. The second has been described by Davis and Weimer (1976) as growth-faulting as a result of differential loading of the deltaic sequence at the time of deposition. The third type, recently identified, is low angle reverse faults.



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Figure 4- Generalized Stratigraphic Section North Westerly Project Section 16, Township 1 North, Range 68 West Weld County, Colorado

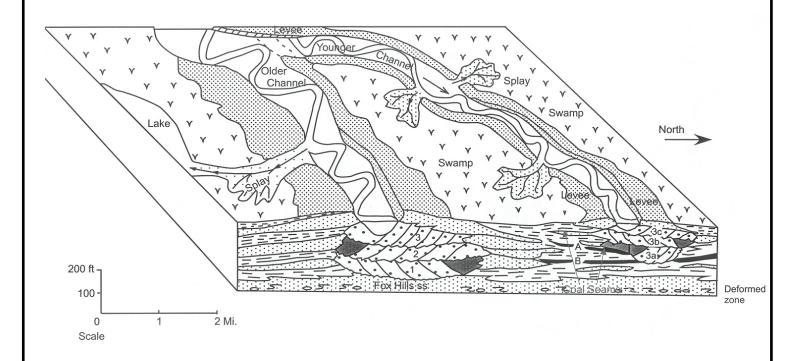




LARAMIE ENVIRONMENTS OF DEPOSITION

Channel and channel margin environments for lithologies in Laramie Formation.

Relationship of channel margin environments to crevasse splay deltas.



Figures from: A Guide to the uppermost Cretaceous stratigraphy, central Front Range Colorado, deltaic sedimentation, growth faulting and early Lamide vertical Movement Weimer, R.J. 1973

WESTERN ENVIRONMENT AND ECOLOGY, INC. 2217 West Powers Avenue Littleton, Colorado 80120 Figure 5 - Generalized Stratigraphic Model
Laramie Formation
North Westerly Project
Section 16, Township 1 North, Range 68 West
Weld County, Colorado

Growth faulting is the major structural feature seen in the area. A zone is present with dominant faults trending in a northeasterly direction. This system is ten miles wide and thirty miles long. These faults are high-angle, normal structures near the surface, but seismic work has shown that they tend to flatten and die out at depth. Work by Davis and Weimer (1976) shows that these listric normal faults do not continue below the Hygiene Member of the Pierre Shale. Antithetic faults resulting from tension then form horst and grabens. This effect had resulted in the increased thickness of sediments in the graben areas. The Fox Hills Sandstone has been reported to have a thickness near a growth fault of 484 feet (Spencer, 1961). The Laramie Formation also has increased thickness in these zones and this is believed to be the reason for the increased thickness of the coal seams in the Boulder-Weld coal field.

Recently investigators have recognized low angle reverse faults in the Boulder-Weld area. Kittleson (2009) describes the Longmont Detachment and identifies the Romero Fault as the footwall to the Detachment. These detachments are analogous to landslides, on a vastly larger scale, and occur in rocks exhibiting incomplete lithification. The footwalls to these detachments are low angle reverse faults seen on several projects in the Erie area.



1950 aerial photo Morrison Mine

7.0 SITE GEOLOGY

Three distinct lithologic units were encountered during drilling for the North Westerly and High School projects. Geologically, the most recent unit, of Pleistocene to Holocene Age, is a silty sandy soil occurring from the surface to 40 feet in depth. This unit appears to be aeolian (wind deposited) in origin. Western Environment's experience with the geo-technical properties of the unit has shown that, although high swell potentials are unlikely, collapsing upon saturation can occur.

Below the soil was the interbedded clays, silts, fine-grained sands, and coals of the Cretaceous Age Laramie Formation. This formation occurred from approximately 25 to 40 feet beneath the surface over the majority of the Erie Land Project site. A persistent 5 foot thick coal, designated the A Seam, occurred from 140 to 188 feet beneath the surface. Western Environment concluded that this coal was also the "main seam" of the Morrison Mine. Between 130 and 136 feet separated the A Seam (Morrison Mine) from the Clayton Mine "main seam". The depth of the Clayton Mine "main" coal seam ranged from 276 (EL-6) to 348 (EL-3) feet with an average depth of 302 feet. The average thickness of the Clayton Mine "main seam" varied from 5.0 to 10.0 feet. The depth of the Morrison Mine "main seam" was 188 feet as encountered in boring EL-8. The third significant geologic unit, identified only in the borings completed of the Erie High School Project, was the fine-grained quartzose sands of the Cretaceous Fox Hills Formation. The contact between the Laramie and the Fox Hills occurred at 355 in feet boring SV-1.

8.0 DESCRIPTION OF HOLES

The description of rotary holes drilled on the project and adjacent projects are from the drill cuttings taken every five feet, and interpretation of geophysical logs for each boring. North Westerly project borings are shown with **EL**, with **SV** indicating borings drilled on the Erie High School project.

Erie Land

- A light gray silt with sand soil occurred from 0 to 31 feet. Casing was set from the surface to 30 feet where light gray claystone was penetrated from 31 to 50 feet. A light gray very fine grained quartzose sandstone was encountered from 52 to 64. From 64 feet to 120 feet light gray claystone with thin sandstone lens occurred. The boring was not advanced due to an advancing thunderstorm with heavy rain requiring the equipment to be moved to a dry location. Total depth of the boring was 120 feet. No mine workings were encountered.
- A light gray silt with sand occurred from the surface 40 feet. Casing was set to 40 feet where light gray claystone was present to 51 feet. Light gray very fine grained quartzose sandstone was penetrated from 51 to 56 feet with gray claystone with thin sandstone lens encountered to 100 feet. A gray fine grained sandstone occurred from 100 to 105 feet. Medium gray claystone was penetrated from 105 to 174 feet where the **A seam** (Morrison Mine main seam) was encountered. The **A seam** was present from 174 to 180 feet carbonaceous claystone with thin sandstone ledges was drilled to 210 feet. Light gray very fine grained quartzose sandstone occurred from 210 feet to the total depth of the boring at 250 feet. Circulation was not lost and no mine workings were encountered.
- A light gray silt with sand occurred from the surface to 44 feet. Casing was set to 47 feet. Light gray claystone was encountered from 44 feet to 185 feet where medium gray carbonaceous claystone with thin quartzone sandstone lens was penetrated to 218 feet. The **A seam** (Morrison Mine main seam) was drilled from 218 feet to 222 feet. Medium gray claystone with sandstone lens occurred from 222 feet to 305 feet where circulation was momentarily lost with partial circulation returning at 315 feet. The **Clayton Mine main seam interval** was encountered from 348 feet to 355 feet the total depth of the boring. The calipar log indicated that collapse was complete with **no open voids**.

- Light gray silt with sand soil occurred from 0 to 52 feet. Light gray sandstone occurred from 52 to 64 feet. Light gray claystone was penetrated from 52 to 105 feet. Surface casing was set to 70 feet. Light gray very fine grained quartzose sandstone occurred from 105 feet 120 feet. Medium gray claystone was drilled from 120 feet to 182 feet where the A seam (Morrison Mine main seam) was encountered. The A seam was penetrated from 182 feet to 188 feet. Dark gray carbonaceous claystone with thin sandstone lens occurred from 188 feet to 230 where medium gray claystone was penetrated 280 feet where circulation was lost. From 280 feet to the total depth of the boring at 320 feet loose drilling and no sample recovery occurred. The Clayton Mine main seam interval was penetrated from 314 feet to 320 feet the total depth of the hole. The maximum caliper deflection of 9 inches was observed from 276 to 277 feet. The caliper log indicated collapse was complete with no open voids.
- EL-6 Light gray silt with sand occurred from the surface to 30 feet. Light gray claystone with thin fine grained quartzose sandstone lens was observed from 30 feet to 140 feet. Casing was set from the surface to 36 feet. The A seam (Morrison Mine main seam) was encountered from 140 to 145 feet. From 145 feet to 255 feet dark gray carbonaceous claystone with fine grained sandstone lens was observed. Circulation was momentarily lost from 256 feet to 263 feet. Loose drilling occurred from 286 to 292 feet. The Clayton Mine main seam interval was penetrated from 276 feet to 290 feet. The total depth of the boring was 310 feet. The caliper log indicated that collapse was complete with no open voids.
- EL-8 Light gray silt with sand soil occurred from the surface to 35 feet. Surface casing was set to 36 feet. From 35 feet to 152 feet light gray claystone with thin sandstone lens was present. Circulation was lost at 152 feet with loose drilling to 175 feet. The Morrison Mine main seam interval (A seam) was present from 188 to 195. The total depth of the boring was 200 feet. No caliper log was run due to an equipment failure

Erie High School

- SV-1 Light brown argillaceous soil was penetrated from 0 to 10 feet. From 10 to 40 feet medium brown claystone was drilled. Medium brown to medium gray claystone was penetrated from 40 to 60 feet. From 60 to 145 feet medium gray claystone was found. Medium gray carbonaceous claystone was drilled from 145 to 155 feet. Medium gray claystone was found from 155 to 260 feet. From 260 to 295 feet carbonaceous claystone was penetrated. Vitreous coal was drilled from 295 to 305 feet. Medium gray claystone was found from 305 to 355 feet. The Fox Hills Sandstone was penetrated from 355 to 360 feet. The total depth of the boring was 360 feet. No mine workings were encountered.
- From 0 to 5 feet light brown argillaceous soil with claystone was drilled. From 5 to 40 feet medium brown to medium gray claystone was found. Medium gray claystone was drilled from 40 to 65 feet. Medium gray carbonaceous claystone was penetrated from 65 to 70 feet. Medium gray to brown claystone was found from 70 to 100 feet. Medium gray claystone with carbonaceous intervals was drilled from 100 to 160 feet. Vitreous coal was found from 160 to 165 feet. Medium gray claystone with slight carbonaceous intervals was drilled from 165 to 190 feet. From 190 to 300 feet medium gray claystone was found. Circulation was lost at 300 feet. No samples were obtained from 300 to 340 feet. The maximum caliper deflection was 9.70 inches at 292 feet. The "main" seam interval was encountered from 292 to 298 feet. The total depth of the boring was 340 feet. Collapse was complete with no open voids.
- From 0 to 5 feet light brown argillaceous soil was penetrated. Medium brown to medium gray claystone was drilled from 5 to 50 feet. Medium gray claystone was penetrated from 50 to 115 feet. From 115 to 120 feet carbonaceous claystone was drilled. From 120 to 165 feet medium gray claystone was found. Medium gray carbonaceous claystone was drilled from 165 to 170 feet. From 170 to 175 feet medium gray claystone was penetrated. Vitreous coal and dark gray claystone was found from 175 to 180 feet. Medium gray claystone was drilled from 180 to 300 feet. Circulation was lost at 300 feet. From 300 to 340 feet no samples were

obtained. The maximum caliper deflection was 12.6 inches at 301 feet. The "main" seam interval was encountered from 298 to 304 feet. The total depth of the boring was 340 feet. Collapse was complete with no open voids.

- Light brown argillaceous soil was found from 0 to 10 feet. Light gray claystone was drilled from 10 to 40 feet. From 40 to 50 feet medium brown claystone was found. From 50 to 55 feet medium gray claystone was drilled. Light gray claystone was penetrated from 55 to 120 feet. Medium gray claystone was found from 120 to 165 feet. Vitreous coal was drilled from 165 to 170 feet. Medium gray claystone with carbonaceous intervals was found from 170 to 300 feet. Circulation was lost at 300 feet. No samples were obtained from 300 to 320 feet. The maximum caliper deflection was 14.5 inches at 298 feet. The "main" seam interval was encountered from 297 to 300 feet. The total depth of the boring was 320 feet. Collapse was complete with no open voids.
- Light brown argillaceous soil was found from 0 to 10 feet. From 10 to 135 feet light to medium gray claystone was drilled. Dark gray claystone was penetrated from 135 to 160 feet. Dark gray carbonaceous claystone was found from 160 to 165 feet. Medium gray claystone was found from 165 to 205 feet. From 205 to 220 feet dark gray carbonaceous claystone was penetrated. Medium gray claystone was found from 220 to 240 feet. From 240 to 275 medium gray claystone with sandstone was drilled. Dark gray carbonaceous claystone was found from 275 to 290 feet. Circulation was lost at 290 feet. No samples were retrieved from 290 to 320 feet. The maximum caliper deflection was 6.2 inches at 293 feet. The "main" seam interval was encountered from 292 to 298 feet. The total depth of the boring was 320 feet. Collapse was complete with no open voids.
- SV-6 Light brown argillaceous soil was penetrated from 0 to 5 feet. From 5 to 40 feet light gray claystone was found. From 40 to 50 feet dark gray carbonaceous claystone was drilled. Light gray claystone was found from 50 to 80 feet. Dark gray claystone was penetrated from 80 to 90 feet. From 90 to 115 feet light gray fine-grained quartzose sandstone was drilled. From 115 to 175 light to medium gray claystone was found. From 175 to 185 feet dark gray claystone was found. Light to medium gray claystone was penetrated from 185 to 275 feet. From 275 to

280 feet light gray fine-grained quartzose was penetrated. Medium gray claystone

was drilled from 280 to 300 feet. From 300 to 310 feet vitreous coal was drilled. Medium gray claystone with slight vitreous coal was found from 310 to 315 feet. From 3 15 to 340 feet dark gray claystone was drilled. The total depth of the boring was 340 feet. No mine workings were encountered.

Light brown argillaceous soil was drilled from 0 to 10 feet. From 10 to 80 feet light to medium gray claystone was penetrated. From 80 to 90 feet light gray fine-grained quartzose sandstone was drilled. Light to medium gray claystone was penetrated from 90 to 125 feet. Dark gray claystone was found from 125 to 130 feet. Light gray claystone was drilled from 130 to 180 feet. Light gray fine-grained quartzose sandstone was drilled from 180 to 185 feet. From 185 to 260 feet light to medium gray claystone was drilled. Dark gray claystone was penetrated from 260 to 265 feet. Light gray fine-grained quartzose sandstone was found from 265 to 270 feet. Medium gray claystone was drilled from 270 to 285 feet. Circulation was lost at 285 feet. No samples were obtained from 285 to 320 feet. The maximum caliper deflection was 5.5 inches at 290 feet. The top of the mined interval was at 290 feet. The total depth of the boring was 320 feet. Collapse was complete with no open voids.

9.0 DISCUSSION OF SUBSIDENCE PREDICTION METHODS

Piggot and Eynon (1977) states that "subsidence will not propagate to the ground surface over room and pillar workings where the overburden to extraction thickness ratio (H/h) exceeds 10." Additionally, Piggot and Eynon indicate that "Caving of the roof above a mine can continue until the extraction and collapse area is filled with broken and bulked rock or caving reaches the surface." Using a bulking factor of 40% as referenced in Piggot and Eynon (1977) and applying a safety factor of 1.5, caving will not propagate more than 90 feet above the mine. These assessments result in Piggot and Eynon concluding erroneously that no significant effects of subsidence occurs when a mine is greater than 90 feet in depth.

However, in a paper presented at the 1985 Conference on Coal Mine Subsidence in the Rocky Mountain Region, Sherman (1986) inventoried structural damage to over 100 buildings in the Louisville and Lafayette area constructed before mining. The results of this study were used to confirm, if not the validity, the conservatism of using the British National Coal Boards (NCB) Graphical Strain Profiling Method of subsidence prediction for projects in the Boulder/Weld Coal Field. Subsequently, the study also determined that "no two-story brick buildings built prior to mining survived through the late 1920's." This investigation together with other studies (Amuedo and Ivey, 1975) and (Myers, 1975), and reports of damage to buildings and roads in local newspapers (Denver Post, 1969) and (Louisville Times, 1978) indicate that surface subsidence as a result of coal mining has occurred throughout the Boulder/Weld area at mining depths greater 400 feet.

The subsidence prediction method employed by Western Environment, the NCB Graphical Strain Prediction method, was developed for long wall mining methods. It is our opinion that the pillar retreat method and certainly the shortwall method used in the Boulder Valley, Columbine and Eagles Mines, more closely resembles the long wall method in recovery percentage and surface subsidence (Oravecz, 1977) and (Sherman, 1986) then the classical room and pillar method evaluated by Piggot and Eynon (1977).

The use of the Piggot and Eynon (1977) research regarding collapse and bulking is valid when mine geometry is similar to room and pillar extraction methods. However, Western Environment would agree that post-extraction collapse of mines that utilize the pillar retreat method, would more closely resemble room failure and therefor not propagate to the surface when a bedrock thicknesses are in excess of 90 feet.

10.0 STRAIN ANALYSIS

The strain analysis performed for this study is adapted from the United Kingdom National Coal Board's graphical strain profiling system. This method of strain prediction was developed for on-going long wall mining operations. To make the method applicable to abandoned room and pillar mines, several modifications and assumptions were made.

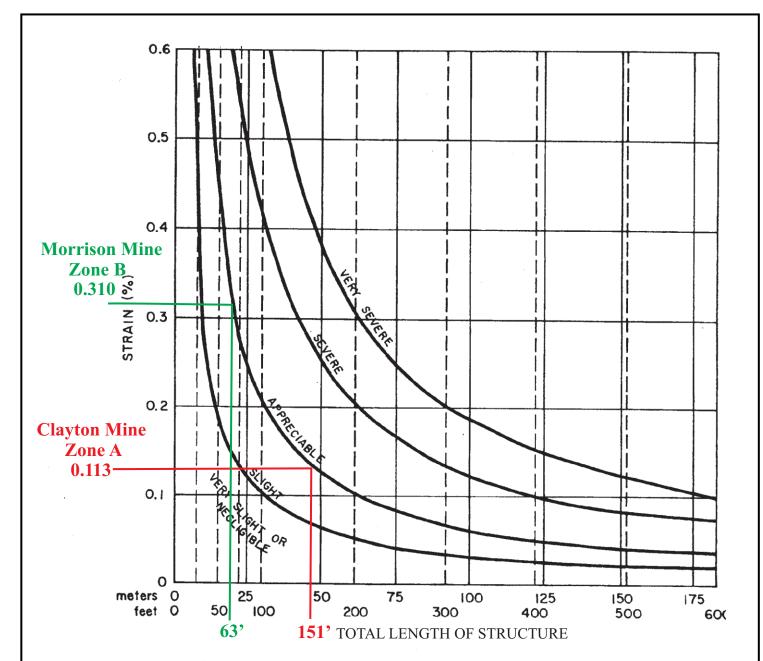
The first modification is to define the thickness of the void space. The standard method is to use the actual mined thickness of coal. However, the drill holes completed on the referenced projects show collapse to be complete. Therefore, to proceed with a "worst case" theoretical analysis, the following assumption was made: any increase in hole diameter greater than 50% (9 inches for 5 1/8 inch boring) will be treated as an open void. The amount of "theoretical" void for all holes intercepting the "main seam" mine of the Clayton Mine was averaged as **0.94 feet**. Western Environment used the average the depth to the top of the Clayton Mine or mine interval for all borings completed within Section 16. These produced an average depth of **302 feet**.

Table 1. Depth to top of mined interval and theoretical void, Clayton Mine

Boring	Depth to Top of Main Seam/Mined Interval (Feet)	Theoretical Void (Feet)
EL-1	N/A	N/A
EL-2	(311')	N/A
EL-3	348'	0.0'
EL-4	314'	1.0'
EL-6	276'	0.0'
EL-8	(323')	N/A
SV-1	295'	N/M
SV-2	292'	2.0'
SV-3	298'	2.5'
SV-4	297'	2.0'
SV-5	292'	0.0'
SV-6	296'	N/M
SV-7	290'	0.0'
AVERAGE	302'	0.94'

(311') Estimated depth

The width of the extraction is critical to the analysis. Several options are available to use in the analysis. They include distance between drill holes, actual width (length) of the workings, or arbitrary values to produce the maximum amount of subsidence. Western Environment chose to use the actual width (length) of the workings shown on the original mine maps, which is approximately **150 feet** for both the Clayton and Morrison Mines.



CLASS OF DAMAGE

VERY SLIGHT OR NEGLIGIBLE

SLIGHT

APPRECIABLE

VERY SEVERE

SEVERE

(FROM N.C.B.)

DESCRIPTION OF TYPICAL DAMAGE

SLIGHT CRACKS SHOWING IN WALLS AND CEILINGS INSIDE BUILDINGS, BUT NOT VISIBLE ON OUTSIDE.

SLIGHT CRACKS SHOWING INSIDE THE BUILDING, DOORS AND WINDOWS WILL NOT CLOSE.

SLIGHT CRACKS SHOWING BOTH OUTSIDE AND INSIDE BUILDING. DOORS AND WINDOWS WILL NOT CLOSE. DRAINS, SEWERS, AND GAS PIPES FRACTURE.

DRAINS, SEWERS, AND GAS PIPES FRACTURE. OPEN FRACTURES THROUGH WALLS OF BUILDING. WINDOW AND DOOR FRAMES DISTORTED, FLOORS NOTICEABLY SLOPING, WALLS LEANING OR BULGING NOTICEABLY. SOME LOSS OF BEARING OF BEAMS ON WALLS. PORTICOES AND FLOORS BUCKLE.

WORSE THAN ABOVE AND REQUIRING PARTIAL OR COMPLETE REBUILDING ROOF AND FLOOR BEAMS LOSE BEARING AND WALLS LEAN BADLY AND NEED EXTERNAL SUPPORT. WINDOWS BROKEN AND DISTORTED. SEVERE SLOPES, BUCKLING AND BULGING OF ROOFS AND WALLS

WESTERN ENVIRONMENT AND ECOLOGY, INC. 2217 West Powers Avenue Littleton, Colorado 80120 Figure 6 - Strain Percent to Length
of Structure
State Land Board Parcel
Section 16, Township 1 North, Range 68 West,
Weld County, Colorado

The reader is here encouraged to review both the United Kingdom National Coal Board's Subsidence Handbook, and the previous studies for the mechanics of the process. By using this information, the maximum "worst case" theoretical horizontal strains for the Clayton Mine with **Subsidence Zone A** would be **0.113%**. This "theoretical worst case" strain would cause "slight" damage to structures or foundation segments (Figure 6)

Both the Morrison and Clayton Mines occur beneath **Subsidence Zone B.** However, only a single boring EL-8 penetrated the Morrison Mine. Theoretical surface strains and subsidence in areas above multi-level mining are additive producing appreciably greater strain values and surface subsidence. Western Environment used the theoretical void thickness for the Clayton Mine of 0.94 feet and the depth to the Morrison Mine in boring EL-8 of 188 feet to produce a strain of 0.197% for the Morrison Mine. Adding the Clayton strain to the Morrison strain produced a combined surface strain of **0.310%**. This results in foundation length restriction of **64.0 feet** for Subsidence Zone B (Figure 6).

The areas of the proposed development affected by these structure length restrictions are shown on Figure 3. Portions of project outside of the 0% strain line shown have no subsidence related development restrictions.

11.0 CLOSURE

The recommendations provided herein were developed from the information obtained from field exploration which reflect subsurface conditions only at the specific locations, at the particular times designated. Subsurface conditions at other locations and times may differ from conditions occurring at these locations. The nature and extent of any variations between the drill holes may not become evident until or during the course of construction. If variations then appear, it may be necessary to re-evaluate the recommendations of this report after performing on-site observations during the excavation period and noting the characteristics of any variations.

This report was prepared by a Professional Geologist, not an engineer, and should not be construed as, or substituted for, engineering. This report is intended to inform geotechnical and structural engineers working on building design of the potential earth forces that could develop at the site, and to assist the client in determining whether to acquire and build on the site in question.

Our professional services have been performed, our findings, and our recommendations prepared in, accordance with generally accepted geological principles and practices. This warranty is in lieu of all other warranties, either expressed or implied.

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Appendix A

Architectural Techniques to Reduce Subsidence

ARCHITECTURAL TECHNIQUES TO REDUCE STRUCTURAL DAMAGE DUE TO SUBSIDENCE

Numerous papers have been written concerning building techniques designed to accommodate strain associated with subsidence (NTIS 1979). Presented below are some very basic strain reduction techniques which could be incorporated into structures located in these areas.

A structure of simple box form, designed to act as a unit, is best suited to resist the effects of mining subsidence. The smaller the plan of the building, the less likelihood there is of damage, and therefore, attached structures should be avoided. Where it is desired to retain the attached plan, this can be achieved by building units with adequate gaps between them to permit movement. Semi-detached buildings are preferable to detached. Outbuildings should not be attached structurally to the main building; they should be able to move independently.

The gaps between the structural units should be kept free from obstructions and should extend through the foundations; they should be sufficient to prevent adjacent units from coming into contact when the ground is deformed by subsidence. A gap of at least four inches is suggested for two-story buildings. Suitable gaps should be provided in all boundary walls especially when they abut a structure.

If required, areas between units should be paved with a flexible material, such as asphalt, incapable of offering any appreciable resistance to horizontal compression. Solid concrete paving should not be used.

Openings are a source of weakness in walls and should be kept as small as other considerations permit. Windows and doors are best arranged with substantial widths of brickwork around them so that the wall, wether reinforced or not, may be as strong as possible. Arched lintels should not be used. Corner windows, bay windows, and other similar projections weaken the structure, door openings have more serious weakening effects than windows and are best located in the shorter sides of buildings. If in the longer sided, they should be installed in the middle rather than at the ends of the building. Front and back doors should not be arranged closely side by side.

Floors and flat roofs should be fastened to all walls and not merely to those which carry joists and rafters. Plasterboard or fiberboard should be used for ceilings. To ensure continued effective drainage if the building has been tilted by subsidence, the gradients of gutters should be kept higher than normal.

For complete protection against damage due to subsidence, a building would have to be able to resist the effects of vertical and horizontal differential movements. Protection against most damage by differential horizontal movements is comparatively simple and may be obtained by building the structure on a lightly reinforced concrete base slab which is bedded on granular material. The base slab ties the walls together and the flat underside forms slip surface. The total tensile strength of the slab in the direction of either principal axis should be adequate to resists a force equal to the product of half the weight of the structure on the slab and the coefficient of friction between the slab and granular material. Before placing the reinforcement and concrete in the base slab, the granular material in the sub-grade should be covered with a layer of stout waterproof paper (to form a slip plane). The provision of a reinforced base slab, combined with the recommendations already made, should be sufficient to prevent damage except where differential vertical movement occur.

The resistance of the walls to flexure may be increased by the introduction of steel reinforcement in any brickwork. The additional cost of such reinforcement is justifiable only in structures certain to be subjected to severe differential vertical movements, such as those near the boundaries of mine workings. Horizontal reinforcement may be used in brick walls of any thickness, but vertical reinforcement can only be used in wall 9 inches thick or more. Special care is necessary where steel reinforcement is to be used in conjunction with brickwork; the metal will not be protected from corrosion in the same way as rods in well made concrete. Lime mortar should be used in brickwork. Damp-proof courses should be of the bituminous type.

The weakest mortar consistent with the normal load-carrying requirements of the walls should be used. This will allow the walls to adjust themselves to moderate changes of curvature of the ground without serious cracking. If the ground on which the structures are built is of a yielding nature, the conditions will be more favorable than if it is yielding since abrupt changes of curvature are less likely.

APPENDIX B

Lithologic and Geophysical Logs

HOLE NUMBER: EL- 1	LOCATION: Section 16 Subsidence S16,T1N, R68W	JOB NO.: 778-005-02											
DRILLED BY: Authentic (John Tegtmeier)	LOGGED BY: GDS	TOTAL DEPTH: 120'											
DATE: 5/1/2024	BIT SIZE: 4.75"	DRILLED WITH: AIR MUD _X_											
DEPTH	SAMPLE DESCRIPTION												
5	Light gray silt with sand												
10													
15													
20													
25													
30	Light gray claystone												
35													
40													
45	Light gray sandstone												
50													
55													
60													
65	Light gray claystone with thin sandstone lens												
70													
75													
80													
85													
90													
95													
100													
105													
110													
115													
120	TD-120'												
125	NOTE: Hole stopped due to advancing rain												
130													
135													
140													
145													
150													
155													
160													
165													
170													
175													
180													
185													
190													
195													
200													

HOLE NUMBER: EL- 2	LOCATION: Section 16 Subsidence S16,T1N, R68W	JOB NO.: 778-005-02									
DRILLED BY: Authentic (John Tegtmeier)	LOGGED BY: GDS	TOTAL DEPTH: 250'									
DATE: 5/3/2024	BIT SIZE: 4.75"	DRILLED WITH: AIR MUD _X_									
DEPTH		ESCRIPTION									
5	Light gray silt with sand										
10											
15											
20											
25											
30											
35											
40	Light gray claystone										
45	Light gray sandstone										
50	Light gray claystone with thin sandstone lens										
55											
60											
65											
70											
75											
80											
85											
90											
95											
100	Gray very fine grained quartzose sandstone										
105	Medium gray claystone										
110											
115											
120											
125											
130											
135											
140											
145											
150											
155											
160											
165											
170											
175											
180	Coal (A seam)										
185	Medium gray claystone										
190											
195											
200											

HOLE NUMBER: EL- 2	LOCATION: Section 16 Subsidence S16,T1N, R68W	JOB NO.: 778-005-02
DRILLED BY: Authentic (John Tegtmeier)	LOGGED BY: GDS	TOTAL DEPTH: 250'
DATE: 5/3/24	BIT SIZE: 4.75"	DRILLED WITH: AIR MUD _X_
DEPTH	SAMPLE DE	
205	Light gray qtz sandstone	
210		
215		
220		
225		
230		
235		
240		
245		
250	TD 250' Circulation not lost, no mine w	orkings encountered
255		
260		
265		
270		
275		
280		
285		
290		
295		
300		
305		
310		
315		
320		
325		
330		
335		
340		
345		
350		
355		
360		
365		
370		
375		
380		
385		
390		
395		
400		

HOLE NUMBER: EL- 3	LOCATION: Section 16 Subsidence S16,T1N, R68W	JOB NO.: 778-005-02
DRILLED BY: Authentic (John Tegtmeier)	LOGGED BY: GDS	TOTAL DEPTH: 360'
DATE: 5/8/2024	BIT SIZE: 4.75"	DRILLED WITH: AIR MUD_X_
DEPTH	SAMPLE DI	SCRIPTION
5	Light gray silt with sand	
10		
15		
20		
25		
30		
35		
40	Light gray claystone	
45		
50		
55		
60		
65		
70		
75		
80		
85		
90		
95		
100		
105		
110		
115		
120		
125		
130		
135		
140		
145		
150		
155		
160	Medium gray claystone	
165		
170		
175		
180		
185		
190	Light gray qtz sandstone	
195		
200		

HOLE NUMBER: EL- 3	LOCATION: Section 16 Subsidence S16,T1N, R68W	JOB NO.: 778-005-02											
DRILLED BY: Authentic (John Tegtmeier)	LOGGED BY: GDS	TOTAL DEPTH: 360'											
DATE: 5/7/24	BIT SIZE: 4.75"	DRILLED WITH: AIR MUD_X											
DEPTH	SAMPLE DESCRIPTION												
205	Light gray qtz sandstone												
210													
215													
220	Coal (A seam)												
225	Medium gray claystone with thin sandstone lens												
230													
235													
240													
245													
250													
255													
260													
265													
270													
275													
280													
285													
290													
295													
300													
305	Lost circulation												
310													
315	Circulation partially returned												
320													
325													
330													
335													
340													
345													
350	Coal (main seam)												
355	Collapse complete no open void												
360	TD 360'												
365													
370													
375													
380													
385													
390													
395													
400													

HOLE NUMBER: EL- 4	LOCATION: Section 16 Subsidence S16,T1N, R68W	JOB NO.: 778-005-02											
DRILLED BY: Authentic (John Tegtmeier)	LOGGED BY: GDS	TOTAL DEPTH: 320'											
DATE: 5/11/2024	BIT SIZE: 4.75"	DRILLED WITH: AIR MUD_X											
DEPTH	SAMPLE DE												
5	Light gray silt with sand												
10	(5.5" casing from surface to 70')												
15													
20													
25													
30													
35													
40	Light gray claystone												
45													
50	Light gray very fine grained qtz sandstone												
55													
60													
65	Medium gray claystone												
70													
75													
80													
85													
90													
95													
100													
105													
110	Light gray very fine grained qtz sandstone												
115													
120	Medium gray claystone												
125													
130													
135													
140													
145													
150													
155													
160	Medium gray claystone												
165													
170													
175													
180	Coal (A seam)												
185	Dark gray carbonaceous claystone with thin sandstone ler	18											
190													
195													
200													

HOLE NUMBER: EL- 4	LOCATION: Section 16 Subsidence S16,T1N, R68W	JOB NO.: 778-005-02										
DRILLED BY: Authentic (John Tegtmeier)	LOGGED BY: GDS	TOTAL DEPTH: 320'										
DATE: 5/11/24	BIT SIZE: 4.75"	DRILLED WITH: AIR MUD _X										
DEPTH	SAMPLE DE											
205	Dark gray carbonaceous claystone with thin sandstone ler	18										
210												
215												
220	Light gray very fine grained qtz sandstone											
225	0 0 0 0 0 1											
230	Medium gray claystone											
235												
240												
245												
250												
255												
260												
265												
270												
275												
280	Circulation lost, loose drilling	g to 315' no samples										
285												
290												
295												
300	Main seam interval											
305												
310												
315	Main seam interval											
320	TD 320'											
325												
330												
335												
340												
345												
350												
355												
360												
365												
370												
375												
380												
385												
390												
395												
400												

HOLE NUMBER: EL- 6	LOCATION: Section 16 Subsidence S16,T1N, R68W	JOB NO.: 778-005-02										
DRILLED BY: Authentic (John Tegtmeier)	LOGGED BY: GDS	TOTAL DEPTH: 310'										
DATE: 5/14/2024	BIT SIZE: 4.75"	DRILLED WITH: AIR MUD_X_										
DEPTH	SAMPLE DI	ESCRIPTION										
5	Light gray silt with sand											
10												
15												
20												
25	Light gray claystone with thin fine grained qtz sandstone	lens										
30												
35												
40												
45												
50												
55												
60												
65												
70												
75												
80												
85												
90												
95												
100	Medium gray claystone											
105												
110												
115												
120												
125												
130												
135												
140	Coal (A seam)											
145												
150	Dark gray carbonaceous claystone											
155												
160												
165												
170												
175												
180												
185												
190												
195												
200												

HOLE NUMBER: EL- 6	LOCATION: Section 16 Subsidence S16,T1N, R68W	JOB NO.: 778-005-02											
DRILLED BY: Authentic (John Tegtmeier)	LOGGED BY: GDS	TOTAL DEPTH: 310'											
DATE: 5/14/24	BIT SIZE: 4.75"	DRILLED WITH: AIR MUD _X_											
DEPTH	SAMPLE DE												
205	Dark gray carbonaceous claystone with thin sandstone len												
210													
215													
220	Light gray very fine grained qtz sandstone												
225	5 5 7 17 10 11 11 11 11 11												
230	Medium gray claystone												
235													
240													
245													
250													
255	Circulation lost 256'-263'												
260													
265													
270	Main seam interval												
275													
280	Loose drilling 286'-292'												
285													
290	Main seam interval												
295													
300													
305													
310	TD 310'												
315													
320													
325													
330													
335													
340													
345													
350													
355													
360													
365													
370													
375													
380													
385													
390													
395													
400													

HOLE NUMBER: EL- 8	LOCATION: Section 16 Subsidence S16,T1N, R68W	JOB NO.: 778-005-02										
DRILLED BY: Authentic (John Tegtmeier)	LOGGED BY: GDS	TOTAL DEPTH: 200'										
DATE: 5/17/2024	BIT SIZE: 4.75"	DRILLED WITH: AIR MUD_X										
DEPTH		ESCRIPTION										
5	Light gray silt with sand											
10												
15												
20												
25												
30												
35	Light gray claystone with thin fine grained quartzose sand	dstone lens										
40												
45												
50												
55												
60												
65												
70												
75												
80												
85												
90												
95												
100	Medium gray claystone											
105	Light gray very fine grained sandstone											
110												
115												
120												
125	Medium gray claystone											
130												
135												
140												
145	Dark gray carbonaceous claystone											
150	Poor circulation	n										
155	Lost circulation	152' no samples loose drilling 152'-175'										
160												
165												
170	Coal (A seam) collapse interval 170'-196'											
175												
180												
185												
190												
195												
200	TD 200' No caliper log du	ue to equipment failure										



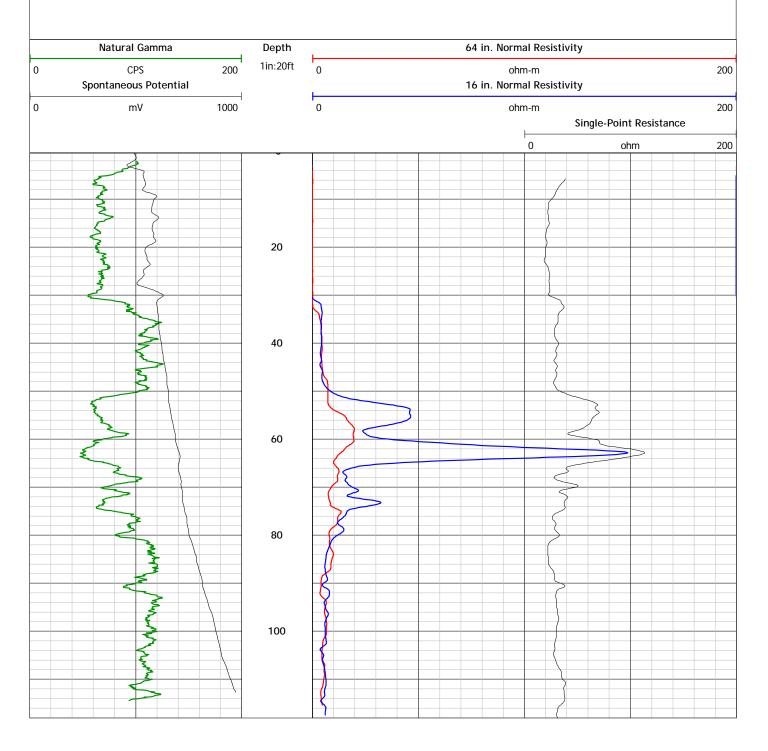
COMPANY: Western Environment | PI

PROJECT: Erie, CO

DATE LOGGED: 3 May 2024

WELL: EL-1

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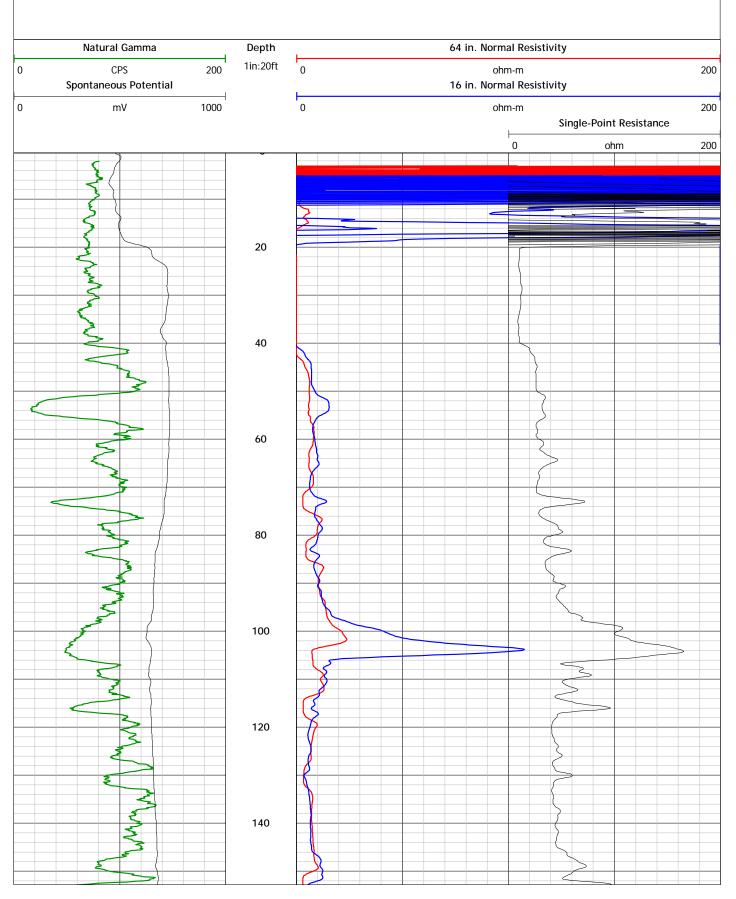
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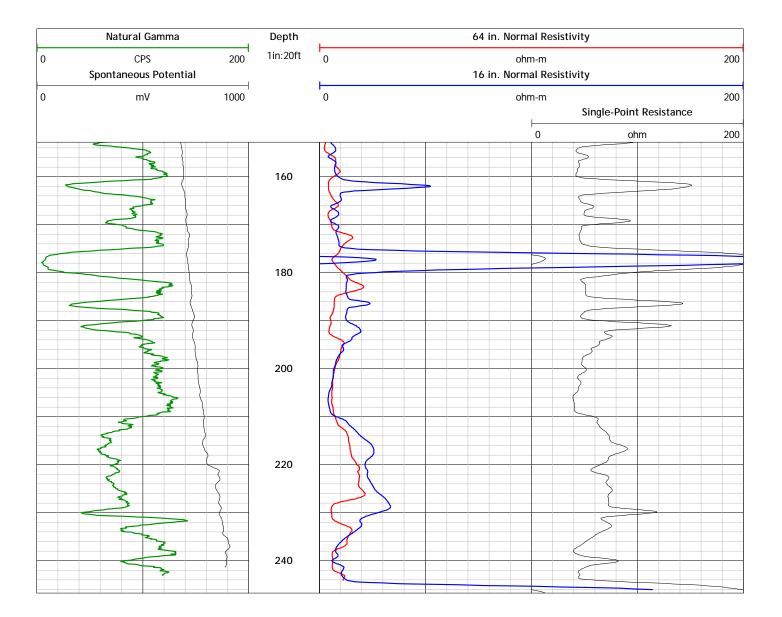
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DATE LOGGED: 3 May 2024

WELL: EL-2

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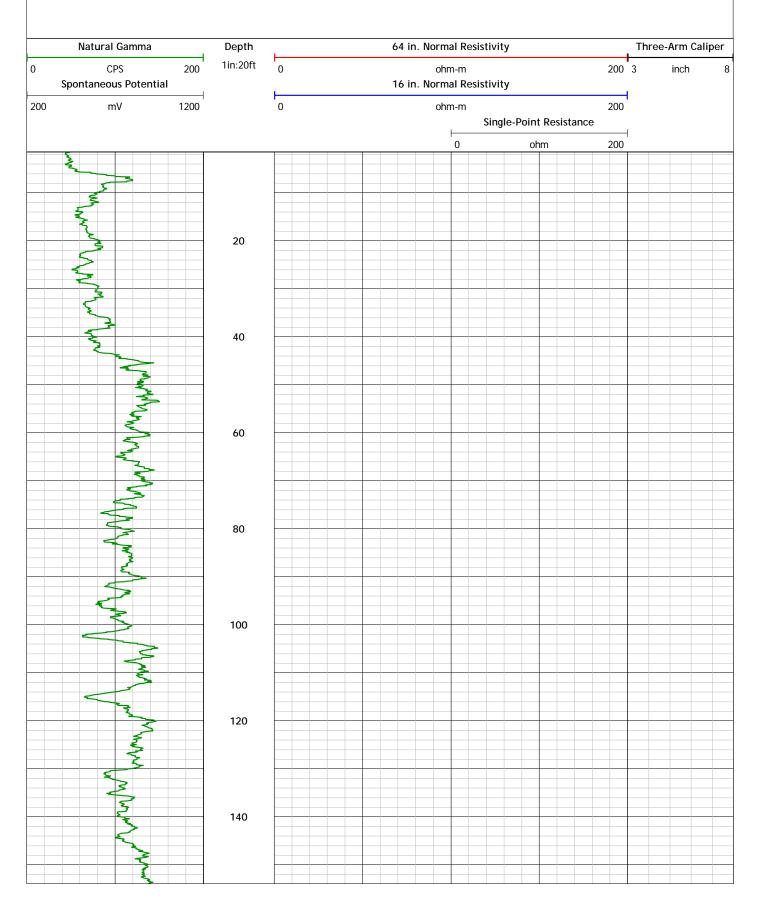


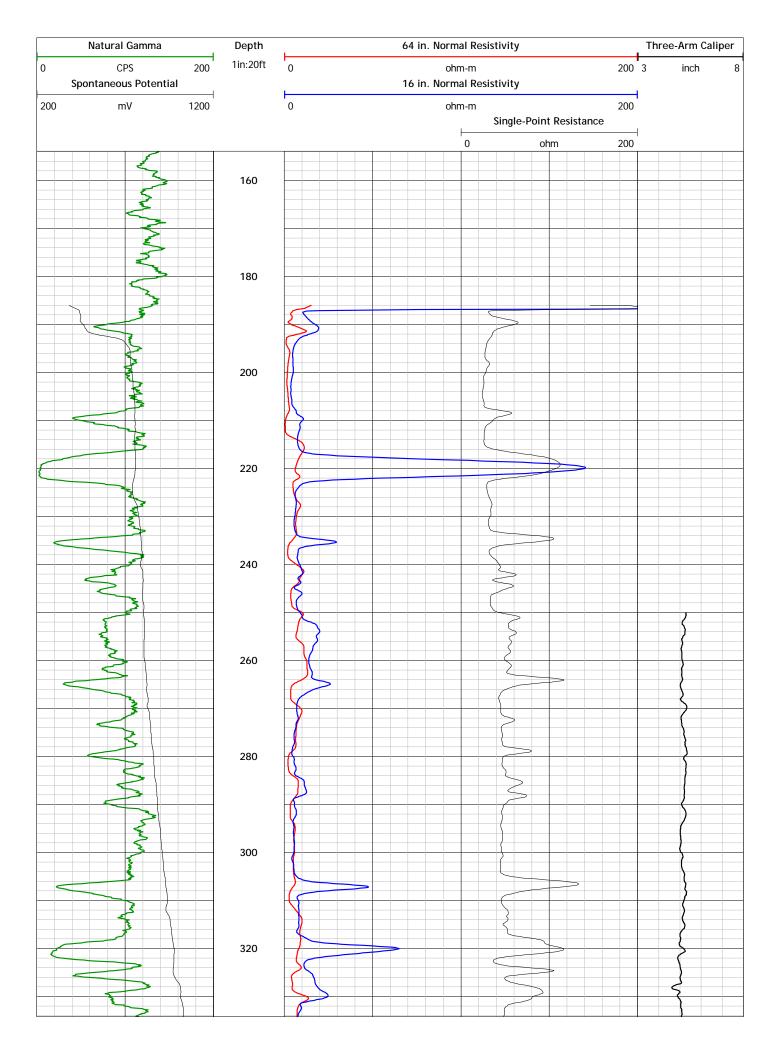
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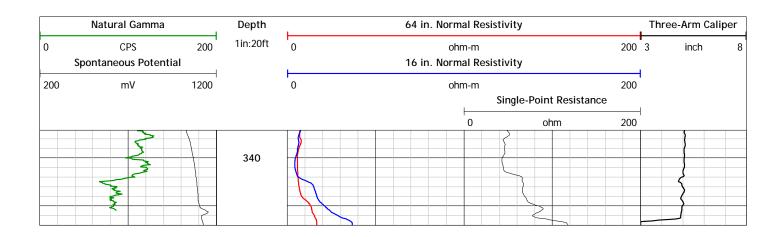
PROJECT: Erie, CO

WELL: EL-3

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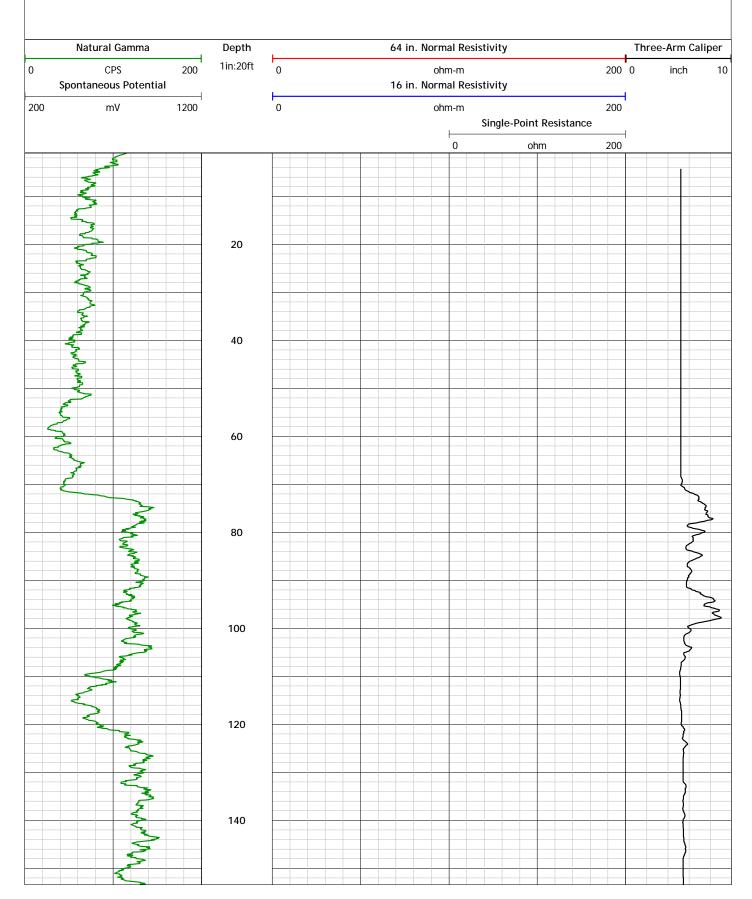


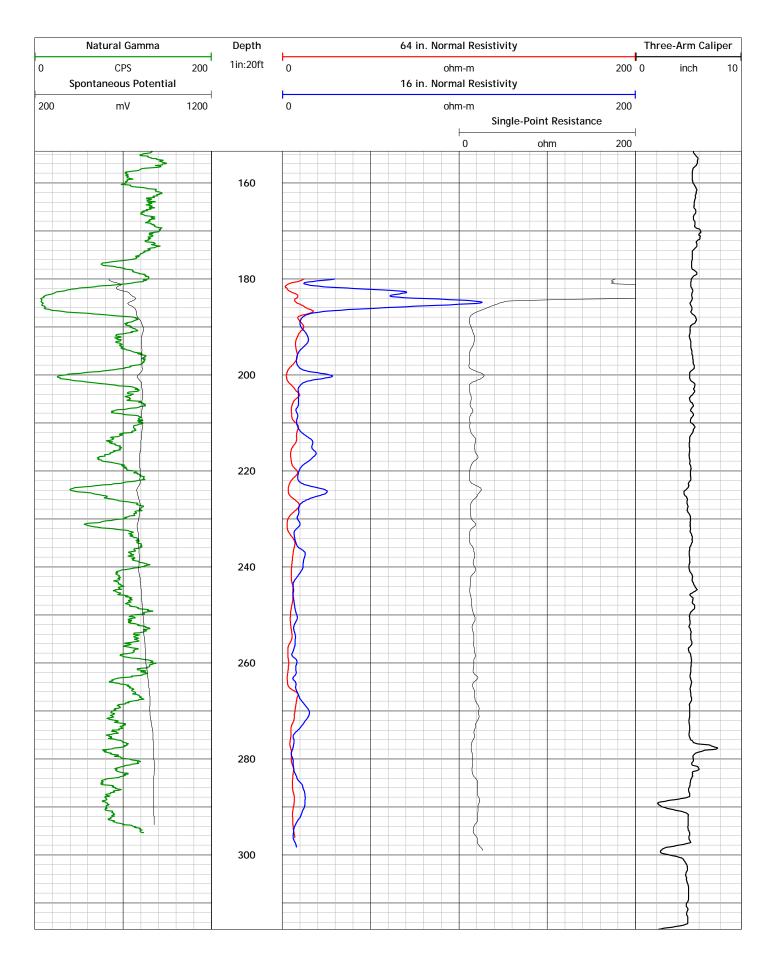


COMPANY: Western Environment | PROJECT: Erie, CO

DATE LOGGED: 11 May 2024 WELL: EL-4

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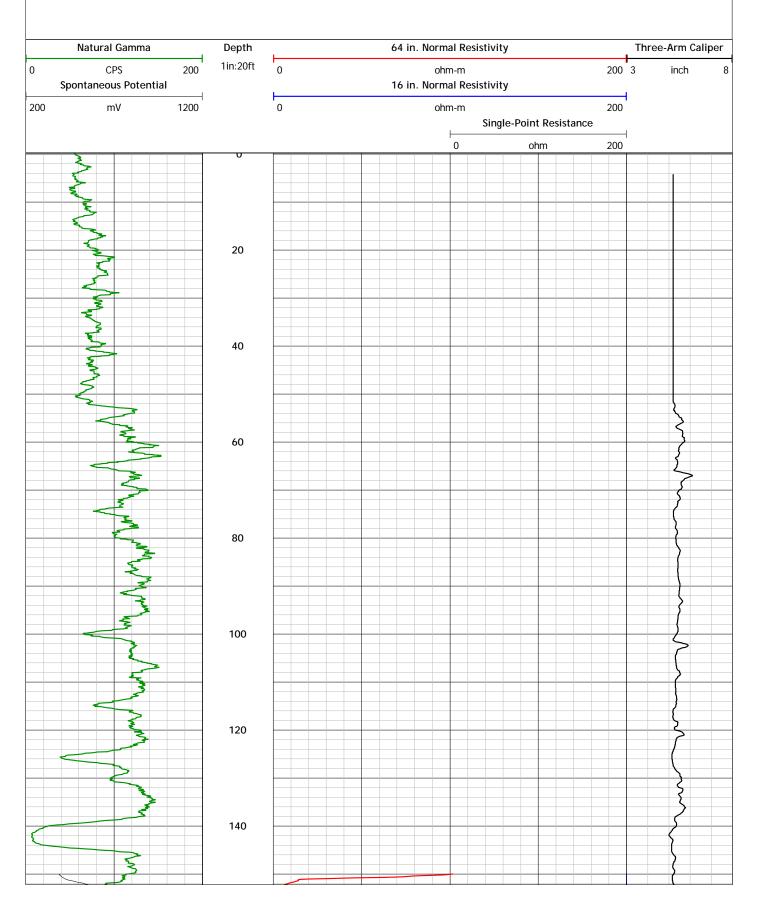


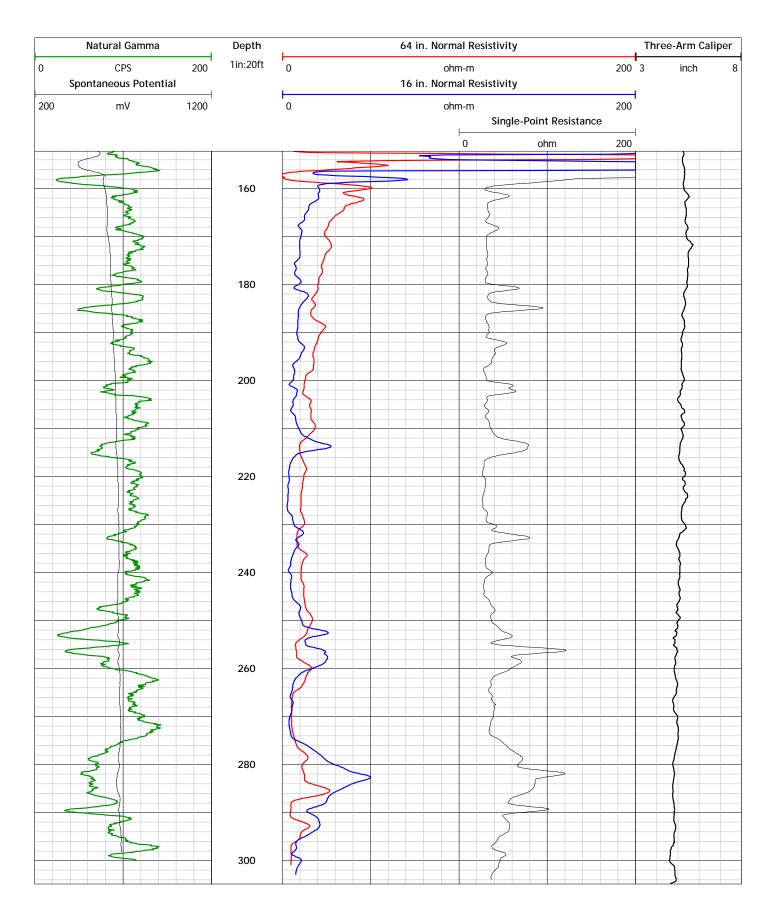


COMPANY: Western Environment | PROJECT: Erie, CO

DATE LOGGED: 14 May 2024 WELL: EL-6

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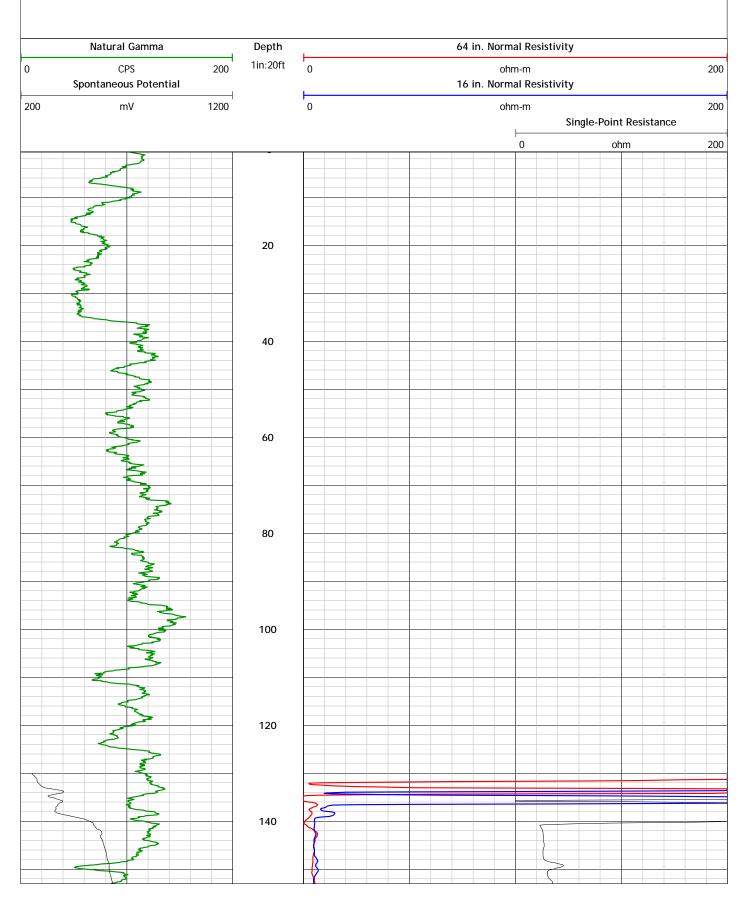


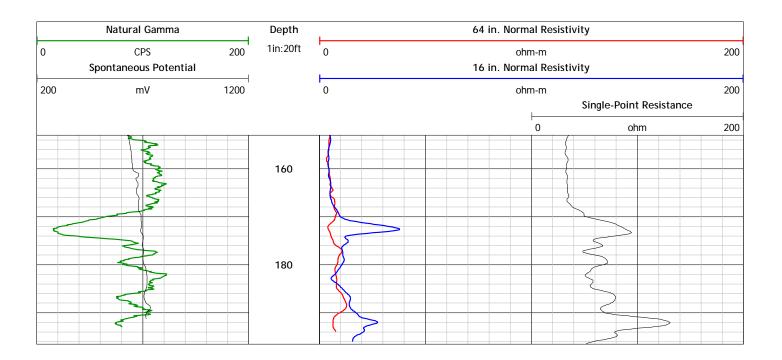


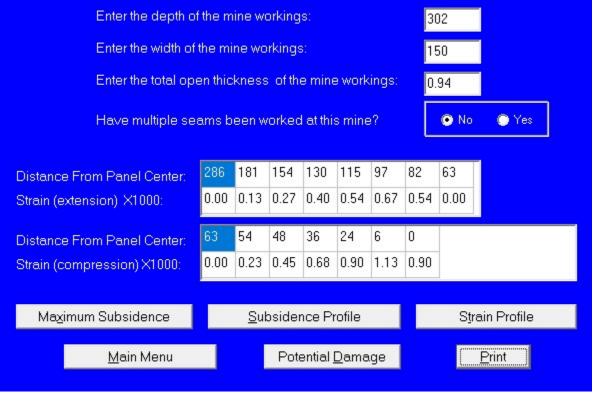
COMPANY: Western Environment | PROJECT: Erie, CO

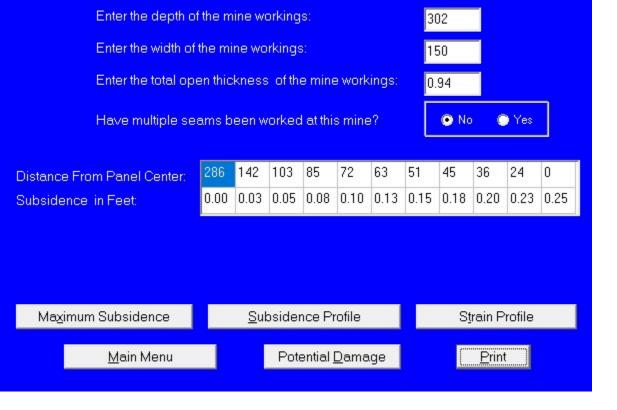
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borehole geophysics / hydrophysics DATE LOGGED: 16 May 2024 WELL: EL-8









Relationship of Damage to Length of Structure and Horizontal Ground

0.005 0.0045 0.004 0.0035 0.003 1.2" Change in Length Strain 2.4" Change in Length 0.0025 4.7" Change in Length 7.1" Change in Length 0.002 0.0015 0.001 0.0005 0 100 150 300 0 350 400 450 500

Length of \$ tructure (ft.)

Strain:

.0013

Building Length:

151

Plot

Damage will be appreciable.
Typical damage includes a slight fracture showing on the outside of the building. Doors and windows sticking and service pipes fracturing.

<u>M</u>ain Menu

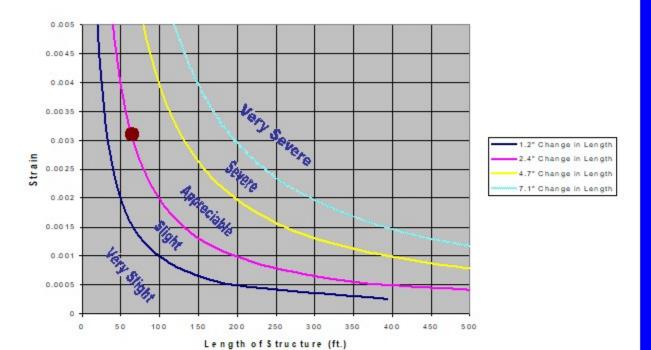
 \underline{S} ubsidence and Strain

Print





Relationship of Damage to Length of Structure and Horizontal Ground



Strain:

.0031

Building Length:

63

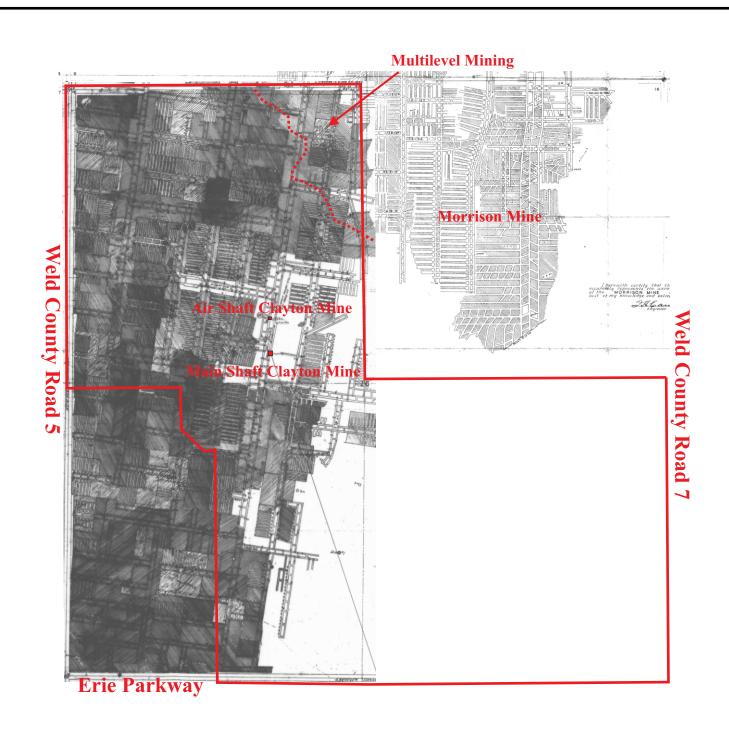
Plot

Damage will be slight. Typical damage includes several slight fractures showing inside the building. Doors and windows may stick slightly.

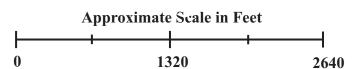
<u>M</u>ain Menu

 \underline{S} ubsidence and Strain

Print







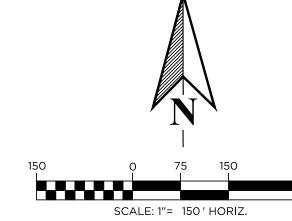
WESTERN ENVIRONMENT AND ECOLOGY, INC. 2217 West Powers Avenue Littleton, Colorado 80120

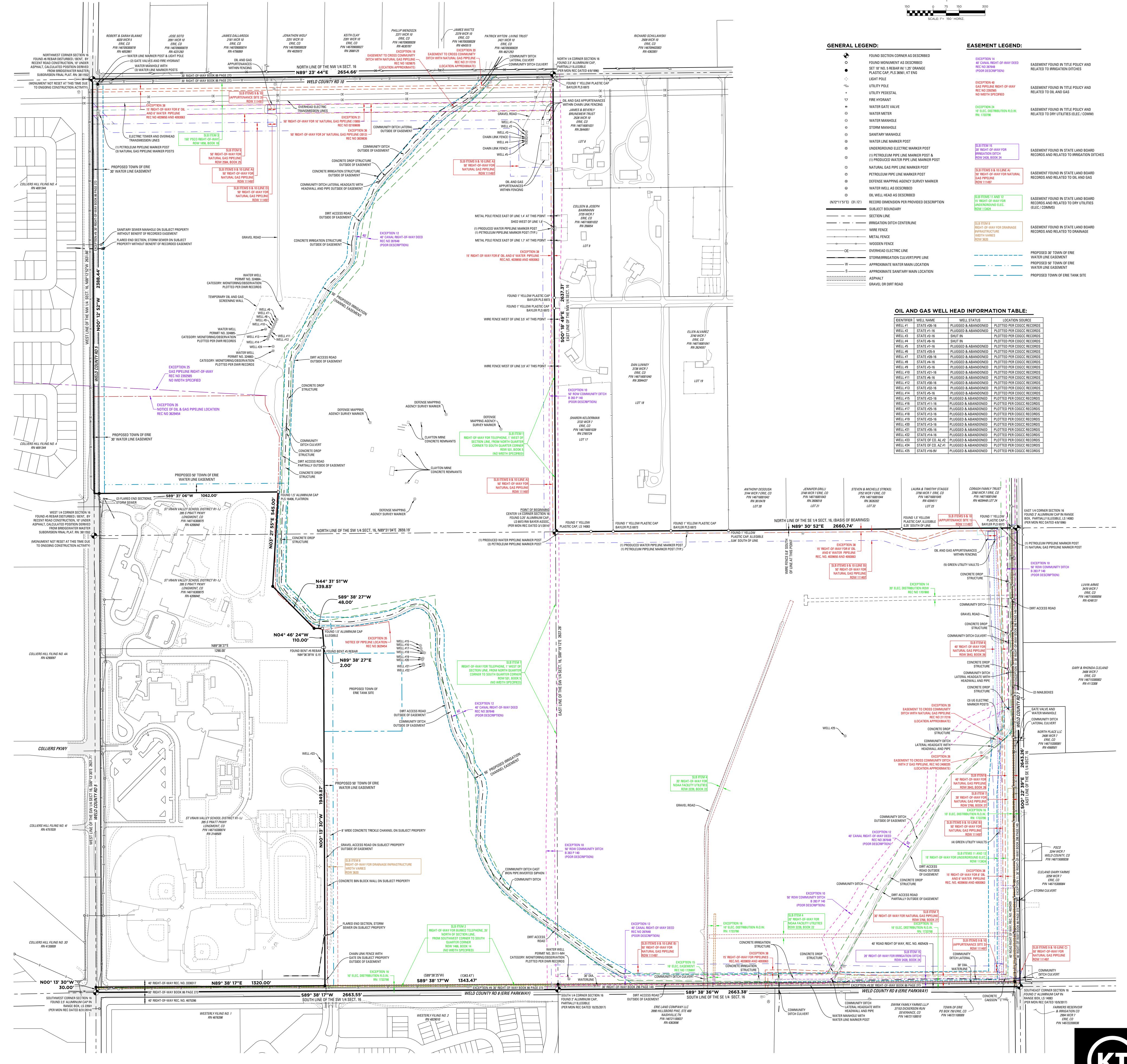
Figure 3 - Mine Location Map 414.38 Acres in Section 16 Township 1 North, Range 68 West, Weld County, Colorado 80156

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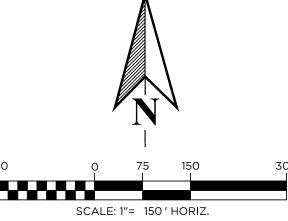
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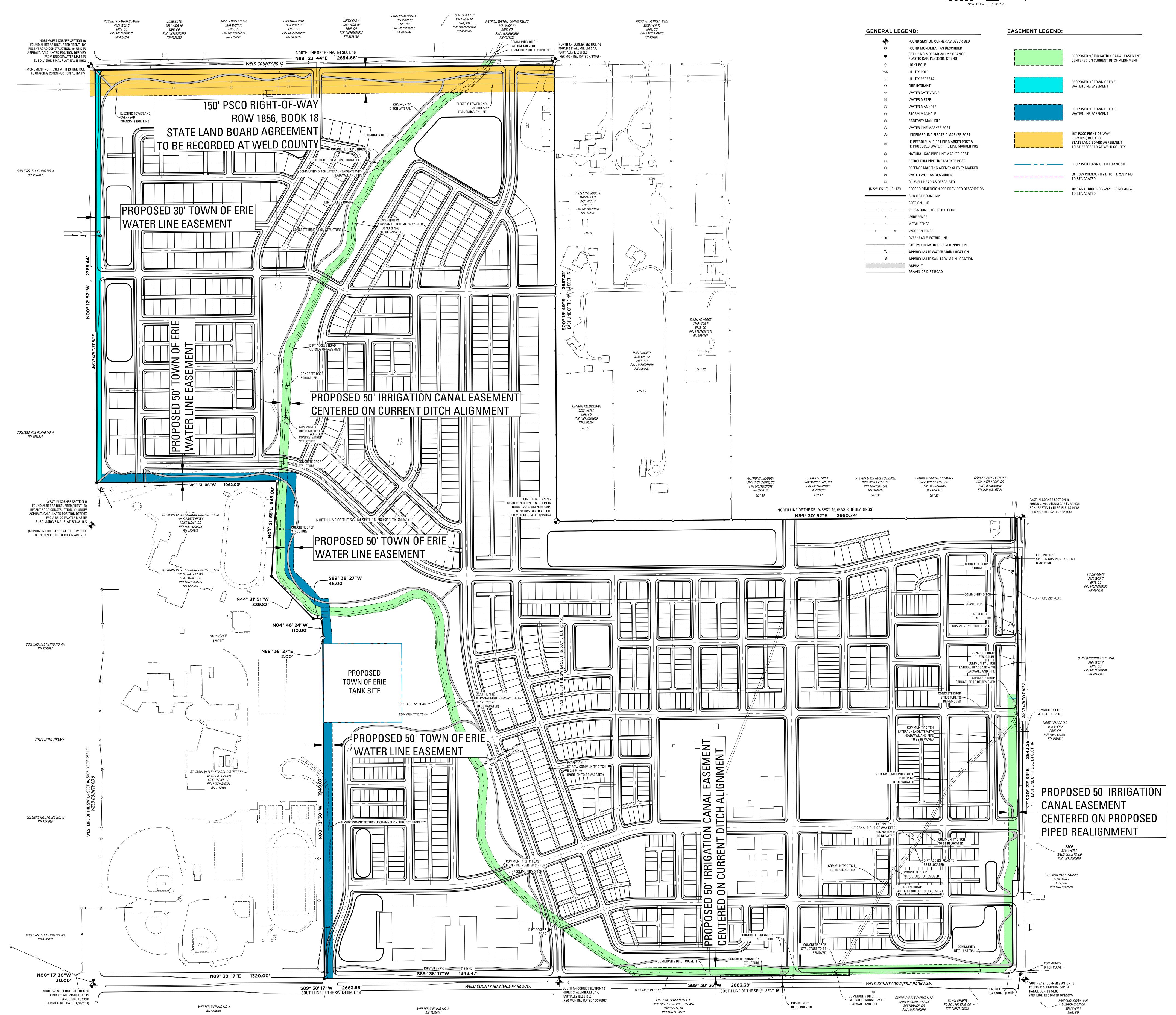
NORTH WESTERLY EXISTING EASEMENT EXHIBIT





NORTH WESTERLY PROPOSED MAJOR EASEMENT EXHIBIT





RN 4362696



PIN 146722200036

5303 Spine Road, Suite 202 Boulder, Colorado 80301 Telephone: 303.443.6151 www.vrlaw.com

January 14, 2025

Aly Burkhalter Town of Erie Planning & Development developmentreferral@erieco.gov

Sent Via E-Mail

Re: North Westerly PD – PD 001700-2024 – Third Referral Review

Dear Aly:

You requested our comments regarding the above-referenced planned development zoning application, third referral review, by today. We previously provided comments by letter dated March 19, 2024, and August 6, 2024. This letter provided our comments at this time, and we will likely have additional comments as the development process continues.

In response to our prior comments, the Applicant's combined response letter (titled "NW PD 2ND RESPONOSE TO COMMENTS LETTER") indicates that our comments "require a response" and directs us to the "Engineering Response Comment letter." The separate "NW-2ND PD ENGINEERING COMMENT RESPONSES" letter, however, does not include any information that is responsive to our prior comments. Accordingly, we reiterate our prior comments in full.

As noted in our previous comment letters, all parcels associated with the project must be included into both the Northern Colorado Water Conservancy District ("NCWCD") and its Municipal Subdistrict before receiving any water service from the Town. Based upon our review and discussions with NCWCD staff, only a portion of the subject property (the SE 1/4) has been included in the NCWCD boundaries (but not the Municipal Subdistrict), and the remainder of the property is not included in either the NCWCD or the Municipal Subdistrict boundaries. As previously noted, all parcels associated with the project must be included in both the NCWCD and its Municipal Subdistrict before the Town can provide water service.

Response: The applicant acknowledges the requirement that the property must be included into both NCWCD and its Municipal Subdistrict prior to final plat approval.

In the Applicant's prior responsive materials, it notes that the property is currently included in the Left Hand Water District ("Left Hand"), and will be excluded prior to the final plat. As described in our previous comment letter, the Applicant should provide written confirmation that the property will be excluded from Left Hand prior to approval of the final plat and before the Town provides any water service.

Response: The applicant acknowledges the requirement that the property must be excluded from LHWD prior to final plat approval.

The Applicant's prior responsive materials indicate that no surface and/or ground water rights were conveyed with the property. In our previous comment letter, we noted that the Applicant must complete the Town's Declaration of Water Rights form. That form must be completed even if no water rights were conveyed with the property. We note again that the Applicant's initial submittal materials suggest there "is 1 shut in well on the property and several plugged and abandoned wells." The Applicant's responsive materials acknowledge that such wells "shall be plugged and abandoned." The Applicant should provide confirmation that all wells on the property have been plugged and abandoned, when that work has been completed.

Response: Applicant will provide well reports when the work has been completed.

With respect to water use assumptions, our prior comment letters requested that Applicant provide additional explanation and support for those values, including the assumptions in the prior initial utility reports and the KT Engineering Conceptual Utility Report, dated September 2024. To date, that additional explanation and support has not been provided. Accordingly, we reiterate our earlier requests that Applicant provide the water use assumptions used to calculate all projected water demands (including the irrigation water demand, which is substantial).

Response: Please refer to the included utility report for the assumptions used to calculate projected water demands.

We appreciate the opportunity to provide these comments, and we anticipate providing additional comments as the project progresses. Please contact us with any questions or comments.

Sincerely,

VRANESH AND RAISCH, LLP

s/ Bradley N. Kershaw

Bradley N. Kershaw, Esq. Andrea A. Kehrl, Esq.

cc: Todd Fessenden; Peter C. Johnson, Esq.