Laramie Energy 2021 Cascade Creek Oil and Gas Development Plan

Waste Management Plan
Rule 304.c.(11)

Laramie Energy, LLC
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Grand Junction, CO 81506

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1) Introduction

The following Waste Management Plan addresses the requirements of Rule 304.c.(11) *Waste Management Plan* as part of the Form 2A Location Assessment Permit Application of the 300 Series of the Colorado Oil and Gas Conservation Commission's (COGCC) Rules. Laramie's Waste Management Plan was developed in accordance with Rule *905.a.(4).* of the 900 Series of the COGCC Rules.

2) Cascade Creek Oil and Gas Development Waste Management Plan

The purpose of the Cascade Creek Oil and Gas Development Waste Management Plan (CC WMP) is to provide a systemic approached to management waste generated by Laramie Energy, LLC (Laramie) (Operator # 10433). Management of waste is necessary for compliance while operating in the State of Colorado. Compliance of environmental regulations reduces the company's operating costs and minimizes potential impacts.

The CC WMP provides guidelines for waste management during drilling, completions, and production at locations proposed in Laramie's Oil and Gas Development Plan (OGDP); titled *Laramie Energy 2021 Cascade Creek Oil and Gas Development Plan* (2021 CC OGDP). It is essential for all Laramie Energy personnel and contractors to properly managed and document waste generated in the Laramie's Cascade Creek (CC) production field.

Locations proposed in the 2021 CC OGDP consist of three (3) well sites and one (1) drill cuttings management facility (Exploration and Production Waste Management Facility). The CC WMP focuses on waste anticipated to be generated at the 4 locations. If unexpected types of wastes are generated that are not identified in the subject plan, please consult your EHS representative for assistance.

2021 Cascade Creek Oil OGDP Locations

The CC WMP was developed as part of Laramie's OGDP. The 2021 CC OGDP includes 4 proposed locations (**Appendix A**):

- **CC 0697-15-08 Well Site** - (Section 15, Township 6 South, Range 97 West)
- **CC 0610-21-41 Well Site** - (Section 10, Township 6 South, Range 97 West)
- **CC 0603-23-32 Well Site** - (Section 3, Township 6 South, Range 97 West)
- **Annex Cuttings Facility** (ACF) – Centralized Exploration & Production (E&P) Waste Management Facility - (Section 15, Township 6 South, Range 97 West)

Associated Plans

Plans that are associated with management of waste for the four (4) proposed locations are listed below. Please consult these plans prior to handling, transporting, manifesting and disposing of waste.

- ACF Operating Plan
- Site-specific Water Plans
- 2021 Cascade Creek Emergency Response Plan
- Cascade Creek Stormwater Management Plan

- Spill Prevention Control and Countermeasure Plan: Western Colorado Facilities

3) Regulatory Agencies

The following section lists regulatory agencies. Rules, regulations, and guidance was utilized for the development of the Cascade Creek Waste Management Plan.

Federal

- Environmental Protection Agency (EPA) regulates and oversees waste management regulations.
- OSHA – regulates employee safety and work environments hazards.

Colorado

- Colorado COGCC Colorado Oil and Gas Association
  - E&P Exempt Waste
- Colorado Department of Public Health and Environmental (CDPHE)
  - Hazardous and non-hazardous industrial waste
  - Municipal and domestic waste

Garfield County, Colorado

- Garfield County Landfill

4) Waste Identification and Classification

The following section addresses how to properly identify and classify wastes that may occur at the four proposed locations.

The EPA regulates household, industrial, and manufacturing solid and hazardous wastes under the Resource Conservation and Recovery Act (RCRA). The EPA classifies waste into two main categories: Hazardous Waste and Non-Hazardous Waste/Solid Waste. The EPA defines subcategories for each type of waste. Common classification of waste, based on the source of generation, are stated below:

1) Industrial Solid Waste;
2) Municipal/Domestic Solid Waste; and
3) Oil and Gas Exploration & Production (E&P) Waste.

4.1) Industrial Solid Waste

Industrial solid wastes are wastes that are generated by various industrial processes. Industrial solid waste can be found in a solid, liquid or gaseous form. Examples of industrial solid waste generated include non-friable asbestos, cleaning solutions, solvents or degreasers, absorbent media, filters, filter media, and/or some empty chemical containers.

Waste associated with down hole oil and gas exploration and production activities are excluded from Industrial Waste category. Laramie does not anticipate industrial solid waste to be generated from the activities associated with the proposed locations; therefore, the CC WMP does not address industrial waste handling and disposal.

4.2) Municipal/Domestic Solid Waste

Examples of municipal waste include office trash, paper, food waste and rubbish. Sewage is also classified as municipal/domestic solid waste unless contaminated with hazardous materials. Sewage includes both grey water and septic waste generated at office buildings, drilling rigs, galleys, and living quarters.

Laramie anticipates municipal solid waste to be generated from the activities associated with the proposed locations are domestic refuse. Domestic refuse may be disposed of at the Garfield County Landfill.

4.3) Oil and Gas Exploration & Production (E&P) Waste

Colorado Revised Statute (C.R.S.) § 34-60-103 defines Exploration and Production (E&P) Waste as:

"*Exploration and production waste" means those wastes that are generated during the drilling of and production from oil and gas wells or during primary field operations and that are exempt from regulation as hazardous wastes under subtitle c of the federal "Resource Conservation and Recovery Act of 1976", 42 U.S.C. sec. 6901 to 6934, as amended."*

E&P waste includes, but not limited to: flowback fluids, produced water, drilling fluids, oily waste, drill cuttings, and tank bottoms. Spilled or released product (crude oil or condensate) at primary field exploration operations and production facilities are also considered E&P waste.

A list of exempt and non-exempt oilfield wastes that may be generated at the four (4) OGDP site locations are provided in Appendix B.

E&P wastes are excluded or exempt from federal regulation, with the exception of items containing TENORM (Technologically Enhanced Naturally Occurring Radioactive Material), and as a result are generally regulated by the states. TENORM is a special class of waste that contains naturally occurring radioactive material resulting from human activity that has concentrated the radioactivity or increased the likelihood of exposure by making the radioactive material more accessible to human contact. When the level of TENORM is above a specified regulatory limit, the waste is considered TENORM waste and special precautions and waste disposal practices must be followed. Waste with TENORM levels below regulatory limits can usually be treated as E&P Waste. For 2021 CDPHE is requiring a TENORM field wide waste characterization and exposure sampling plan.

5) Waste Reduction and Minimization

Whenever feasible, Laramie will strive to minimization and reduce waste. Waste minimization and reduction efforts can be achieved by:

- Re-use of waste as part of makeup constituents

  - Re-injecting produced water
  - Recycling of produced water into Laramie's completions operations
  - Drill cuttings will be utilized as beneficial reuse for contouring a previously disturbed location. The drill cuttings will act as fill to reclaim the location to natural/pre-existing contours. Cuttings must be sampled accordingly before beneficial reuse to ensure compliance with Table 915.
  - Erosion and stormwater control features will be re-used when possible.
- Good housekeeping
  - To be always implemented by employees and contractors
  - Ensuring that contractors remove their own wastes
- Reduction of waste
  - Use of closed drilling systems to reduce the volume of drilling waste
  - Using bulk containers rather than drums
  - Unused chemicals will be transported to another site or will be sent back to the chemical provider company.
- Proper equipment maintenance and replacement
- Communication with subcontractors on waste minimization practices

For non-hazardous waste, Laramie employs the EPA's Waste Management Hierarchy as shown below.

Sustainable Materials Management: Non-Hazardous Materials and Waste Management Hierarchy | Sustainable Materials Management | US EPA

6) Waste Disposal

Laramie employs the EPA's Waste Management Hierarchy to reuse, recycled, and minimize waste. Waste disposal will occur when waste generation cannot be prevented or avoided. The following disposal methods may be used to properly dispose of waste generated at the four (4) OGDP locations:

- Injection
- Biodegradation

- Approved offsite third-party disposal facilities
- Burial / Beneficial reuse where applicable

6.1) Injection

After completions and flowback activities, unused produced water will be disposed of at Laramie's approved UIC Disposal Wells. The two permitted injection wells that will be utilized are the 604-12-13 SWD (UIC Facility ID: 160016) and 604-1 SWD (UIC Facility ID: 159398).

6.2) Biodegradation

Drill cuttings/oily waste that are generated from the CC 0697-15-08, CC 0610-21-41, and CC 0603-23-32 well sites will be treated at the source well site or at the ACF. Due to the topography of the proposed sites, the well sites will be able to accommodate all drill cuttings/oily waste generated from drilling activities. All cuttings will be dried on the source well site. Excess drill cuttings/oily waste will be transported to the ACF. The ACF will only receive, treat, and dispose of water-based bentonite drill cuttings (oily waste). Per COGCC Rule 905.g.(1).C. drilling cuttings are classified as "oily waste" if the subject drill cuttings have not been sampled. Please consult the ACF Operating Plan for treatment methods and facility procedures.

6.3) Approved offsite third-party disposal facilities

A list of approved third-party disposal facilities is provided in Appendix A. If offsite disposal must occur, all material will be transported and disposed of by manifest for tracking records. All material that will be disposed will have proper characterization for acceptance at approved disposal facility. Please confirm waste characterization and waste profile prior to disposal.

6.4) Burial

Once drill cuttings meet Table 915-1, a Sundry Form will be submitted to COGCC requesting burial. Subject drill cuttings will be buried at the ACF or the source well site.

7) Waste Handling and Storage

Proper handling and storage of waste will occur at all Laramie owned and operated facilities. Waste handling and storage must adhere to state and federal regulations to maintain compliance. Appropriate handling and storage of waste is essential for safety of personnel, public welfare and the environment.

The following guidelines identify proper waste handling and storage practices to be employed by personnel:

- The proper personal protective equipment (PPE) should always be worn when handling waste.

- Implement good housekeeping measures to minimally impact the operating area and maintain a well-kept appearance at all company facilities.
- Waste should always be segregated and stored according to its waste classification. Never mix exempt or non-hazardous wastes with hazardous wastes which may result in a reclassification of the waste.
- A designated storage area should be established for waste storage.

8) Waste Tracking and Records Management

In compliance with COGCC Rule 907.b.(8).F. *Record-keeping*, waste that is transported off the Cascade Creek operating field and transported on public roads will be documented. Records of the source(s) and the destination will be documented. Per COGCC Rule 907.b.(2), the following information will be kept on file for at least five years and will be made available upon request:

A. The date of the transport
B. The identity of the waste generator
C. The identity of the waste transporter
D. The location of the waste pickup site
E. The type and volume of waste
F. The name and location of the treatment or disposal site

Laramie will retain records at the field office located in Grand Junction. Inspection forms, maintenance records, analytical results, field notes, stormwater and weed inspections, records of receiving, treatment, and transportation will be maintained by Laramie. Physical and/or electric records will be kept in proprietary, with a minimum of 5 years. Documents and records may be made available to COGCC upon request.

9) Drill Cuttings Waste Sampling and Analysis

9.1) Drill Cuttings Sampling

The following sampling procedures were developed in accordance with applicable COGCC rules for water-based bentonite drilling cuttings (to be managed as Oily Waste per COGCC Rule 905.g.(1)C). The goal of the sampling program will be to ensure consistency, comparability, and completeness of data.

All samples will be collected by qualified individuals experienced with sampling and sent to a laboratory certified by the National Environmental Laboratory Accreditation Program.

9.2) Sampling of Water-based Bentonite Drilling Cuttings (to be managed as Oily Waste per COGCC Rule 905.g.(1)C)

Representative samples of water-based bentonite drilling cuttings (to be managed as Oily Waste per COGCC Rule 905.g.(1)C) will be collected and analyzed in accordance with

COGCC Rule 900 series. Sampling activities and methods will adhere to COGCC applicable rules and will follow soil sampling procedures.
Soil samples will consist of composite samples, a combination of two or more samples collected at different times, depths, or locations within a specified sample area. Upon collection of each composite sample, the individual aliquots will be combined and blended to represent one sample. Samples will be obtained by a shovel (surface sample, nominally 3 feet deep) or a hand auger (subsurface sample, nominally 10 feet deep. Equipment used for sample collection will be decontaminated prior to each sample to prevent cross-contamination.

Soil samples will be collected in laboratory-approved sterilized containers and preservatives will be obtained from the contract laboratory. Soil samples will be analyzed for contaminants as listed in COGCC Table 915-1 Concentration Levels.

9.3) Sampling Baseline and Waste Profile: Water-based bentonite drilling cuttings (to be managed as Oily Waste per COGCC Rule 905.g.(1)C)

As drill cuttings are generated at the source location(s), cuttings will be stockpiled and sampled. Drill cuttings to be treated at the ACF will be sampled prior to transport from the source well site. Based on geology and proposed drill depth, Laramie estimates about 500 cubic yards of water-based bentonite drilling cuttings (to be managed as Oily Waste per COGCC Rule 905.g.(1)C) will be generated from each well. After four (4) wells have been drilled and approximately 2,000 cubic yards of drill cuttings has accumulated, baseline samples of the cuttings will be collected to assess constituent levels listed in COGCC Table 915-1, the cuttings pile will be thoroughly mixed to create a composite of the stored materials.

A 5-point composite sample will be collected for every 500 cubic yards of material. Each point will represent 100 cubic yards as recommended by COGCC's Rule 915.e.(2) Soil Sampling and Analysis Guidance document. Water-based bentonite drilling cuttings (to be managed as Oily Waste per COGCC Rule 905.g.(1)C) will be derived from wells that will be drilled in the same geologic formation. This will result in an equivalent of four (4) 5-per every 2,000 cubic yards of water-based bentonite drilling cuttings (to be managed as Oily Waste per COGCC Rule 905.g.(1)C) material. Samples will be collected and submitted for laboratory analysis of the constituents from COGCC Table 915-1.

Each of the five aliquots representing the composite samples will be collected at random depths at least one foot below the surface of the pile. A homogenous sample of the accumulated cuttings will be gathered by an independent third-party contractor and analyzed according to Table 915-1 criteria, since all cuttings accumulated will be from the same geologic formation using the same drilling mud program. This data set will also establish baseline criteria levels for future remediation and reclamation.

9.4) Sampling at the Annex Cuttings Facility of water-based bentonite drilling cuttings (to be managed as Oily Waste per COGCC Rule 905.g.(1)C)

After transporting to the ACF, any cuttings that exceed COGCC Table 915-1 Criteria Concentration Levels will be remediated to comply with COGCC Rule 907.e.(2)F. blending with native soil.

Water-based bentonite drilling cuttings (to be managed as Oily Waste per COGCC Rule 905.g.(1)C) samples will be collected from subject drill cuttings after the material have been blended with soil. Laramie anticipates that the drill cuttings to soil ratio will be 1:1. The material excavated during initial grading activities will be utilized for blending material. Composite soil samples will be collected once blending is complete.

A 5-point composite sample will be collected for every 500 cubic yards of material. Each point will represent 100 cubic yards as recommended by COGCC's Rule 915.e.(2) Soil Sampling and Analysis Guidance document. The water-based bentonite drilling cuttings (to be managed as Oily Waste per COGCC Rule 905.g.(1)C.) will be generated from the same geologic formations and activities such as transportation, blending, and mixing will create a homogeneous material.

If subject blended water-based bentonite drilling cuttings (to be managed as Oily Waste per COGCC Rule 905.g.(1)C.) do not meet Table 915-1 (or current COGCC analytical requirements), the treatment cell will undergo additional blending and aeration/turning process. Samples will be collected approximately 2 weeks after re-blending. After treatment, on average, water-based bentonite drilling cuttings (to be managed as Oily Waste per COGCC Rule 905.g.(1)C.) samples will be collected monthly until material meets Table 915-1 or are within background limits in the footnotes listed in Table 915-1.

Water-based bentonite drilling cuttings (to be managed as Oily Waste per COGCC Rule 905.g.(1)C.) will be sampled per treatment cell/phase. A treatment cell will not exceed 3,000 cubic yards of dried drill cuttings. Each treatment cell will be sampled separately to determine if the subject treatment cell meets analytical requirements. Laramie will collect four 5-point composite soil samples per treatment cell per sampling collection.

Soils that were in contact with (beneath or adjacent to) the cuttings treatment area will be sampled according to Table 915-1 criteria and remediated as appropriate.

9.5) Source Well Site: Sampling of water-based bentonite drilling cuttings (to be managed as Oily Waste per COGCC Rule 905.g.(1)C) treated at the source well site.

If subject blended water-based bentonite drilling cuttings (to be managed as Oily Waste per COGCC Rule 905.g.(1)C.) do not meet Table 915-1 (or current COGCC analytical requirements), the cuttings will undergo additional blending and aeration/turning process. Samples will be collected approximately 2 weeks after re-blending. After treatment, on

average, water-based bentonite drilling cuttings (to be managed as Oily Waste per COGCC Rule 905.g.(1)C.) samples will be collected monthly until Table 915-1 or are within background limits in the footnotes listed in Table 915-1.

Water-based bentonite drilling cuttings (to be managed as Oily Waste per COGCC Rule 905.g.(1)C.) will be sampled at the source well site. The cuttings sampled to determine if the cuttings meets analytical requirements. Laramie will collect a 5-point composite soil samples per every 500 cubic yards of material treated at the source well site.

Soils that were in contact with (beneath or adjacent to) the cuttings treatment area will be sampled according to Table 915-1 criteria and remediated as appropriate.

9.6) Final Disposition of Waste

The material will be sampled and analyzed to determine if cuttings are in compliance with Table 915-1. Once the water-based bentonite drilling cuttings meet the requirements of Table 915-1 as determined upon sampling and analysis, the water-based bentonite drilling cuttings will be managed and disposed of pursuant to Rule 905.g.(2) *Drill Cuttings*.

"Operators will demonstrate compliance with Table 915-1 through sampling and analysis. Management of drill cuttings that exceed Table 915-1 for constituents listed under soil suitability for Reclamation by the methods listed below is subject to prior approval by the Director, pursuant to Rule 915.b. Operators may manage drill cuttings that comply with Table 915-1, are not Oily Waste, and are generated using water-based bentonitic drilling fluids through one of the following methods:"

Drill Cuttings Transported and Treated at the Annex Cuttings Facility

Water-based bentonite drilling cuttings at the ACF will be disposed of in accordance with Rule 905.g.(2).B. *Disposal at a Centralized E&P Waste Management Facility permitted pursuant to Rule 907*. The water-based bentonite drilling cuttings will be buried/disposed of at the ACF. The treated drill cuttings will serve as fill to allow for natural contouring during reclamation of the site.

Sampling, analysis, and determination of the material meeting the requirements of Rule 905.g.(2)B. will be conducted per treatment cell. Once a treatment cell meets Table 915-1 or are within background limits in the footnotes listed in Table 915-1, the treated cuttings will be graded alongside the western side of the sloped cutting treatment area. Individual treatment cells will be covered with overburden after meeting the analytical requirements of Table 915-1 or are within background limits in the footnotes listed in Table 915-1. The treatment area will be sampled post-treatment and after initial overburden has been applied to all cells.

The cuttings management area will be covered with overburden during final grading activities. The ACF will be covered with a minimum depth of 4 feet overburden as

recommended. Overburden depth was determined based on suitable vegetation root depth per *ACF Reclamation, Revegetation, and Noxious Weed Management Plan*.

Soils will be sourced from the ACF. The material excavated (excluding topsoil) during initial grading activities will be utilized for blending material and the source of overburden. Material for blending and overburden will be sourced from the berm of the eastern perimeter of the site. Spoil and topsoil piles for reclamation are identified in the Engineering Design Plans. Spoil piles for reclamation will have an estimated volume of 3,763 cubic yards and the topsoil pile will store an estimated 1,856 cubic yards.

Laramie will sample the site after grading activities have concluded and prior to seedings for final reclamation. The cuttings will be permanently buried at the ACF and will not be transported to another location. Laramie will submit a Form 27 for Director approval for cuttings burial. Laramie anticipates the lifespan of the site will be 3-5 years.

Drill Cuttings Treated at the Source Well Site

Sampling, analysis, and determination of the material meeting the requirements of Rule 905.g.(2)B. will be conducted at the source well site. Once cuttings meet Table 915-1 or are within background limits in the footnotes listed in Table 915-1, the treated cuttings will be stacked on the cut slope of the source well site as shown on the Layout Drawings and covered with a minimum of three feet of spoils from the original construction of the site and contoured to allow for topsoil spreading, and seeding. Once covered with spoils, a layer of topsoil up to six inches will be spread over the cuttings disposal site and seeded with the BLM recommended seed mix commonly used at the elevation of the site.

If subject blended water-based bentonite drilling cuttings (to be managed as Oily Waste per COGCC Rule 905.g.(1)C.) do not meet Table 915-1 (or current COGCC analytical requirements), the cuttings will undergo additional blending and aeration, and re-sampled until that time the cuttings meet the Table 915-1 or are within background limits in the footnotes listed in Table 915-1 . On average, water-based bentonite drilling cuttings (to be managed as Oily Waste per COGCC Rule 905.g.(1)C.) samples will be collected monthly until material meets Table 915-1 or are within background limits in the footnotes listed in Table 915-1.

Water-based bentonite drilling cuttings (to be managed as Oily Waste per COGCC Rule 905.g.(1)C.) will be sampled at the source well site. The cuttings sampled to determine if the cuttings meet analytical requirements. Laramie will collect a 5-point composite soil samples per every 500 cubic yards of material treated at the source well site.

10) Waste Transportation

During transportation of cuttings, 3rd party resources will be utilized to load cuttings into either tandem axle dump trucks or side load semi-trailers. Before transport, cuttings will be

free of loose/wet material to eliminate the possibility of losing cuttings material or free product during transportation. To achieve dry cuttings before transport, please refer to 9.6 *Disposition of Waste* of the OGDP WMP for presented ways to make cuttings acceptable for transport. All transportation efforts either to ACF or approved disposal facility will be documented and tracked for final burial and/or disposal location. If any spills occur during transportation, the COGCC will be notified, and a Form 19 will be submitted to document release.

Public Roads

Wastes that are to be transported off-site are identified by waste stream in **Appendix C.** Any waste material that is transported from the Cascade Creek operations area will access County Road (CR) 213 (Garfield County Public Road). Trips from the Cascade Creek operations area will access CR 213 (Conn Creek Road) from private property owned by the Operator. Upon accessing CR 213, traffic will proceed for about 4 miles until the CR 213 ends at the intersection of CR 204 (Roan Creek Road). Vehicles will turn left (South) onto CR 204 and proceed 4.25 miles until the road crosses the Garfield/Mesa County Line where the road transitions to Mesa County 45 Road. Vehicles will continue 3.75 miles to I-70 exit at DeBeque, Colorado. Vehicles may access I70 or continue of Mesa County 45 Road to Greenleaf Environmental Services.

Both CR 204 and CR 213 are preferred haul routes according to the Garfield County Road and Bridge Department. Both of these roads are generally used for access to ranches and agricultural operations, rural residential uses, oil and gas operations and access to public lands managed by the BLM.

According to the Garfield County Road and Bridge Department Director, Wyatt Keesbury, CR 213 is a two-lane gravel road with drainage ditches in good condition. County Road 204 (Roan Creek Road) is a two-lane asphalt roadway with graveled shoulders in good condition with a posted speed limit of 45 m.p.h.

Drilling Cuttings Haul Route

The Annex Cuttings Facility Haul Route map is provided in **Appendix A.** Drill cuttings treated at the ACF will remain within the Cascade Creek operations field and will not be transported via public roads. Drill cuttings will be generated at well sites located within 2.65 miles of the ACF.

11) Approved Waste Disposal Facilities

A list of approved disposal and recycling vendors and facilities are listed in **Appendix B**.

12) Waste List and Waste Management Guides

A list of potential wastes and waste management guides, detailing specific waste guidelines, are provided in **Appendix C**. Please contact the EHS Department for guidance on waste characterization and any final disposal.

13) Waste Best Management Practices (BMPs)

- Whenever feasible, the Operator will strive to minimization and reduce waste
- Recycling produced water for Laramie's completions operations
- Erosion and stormwater control features will be re-used when possible.
- Reduction of waste by use of closed drilling systems to reduce the volume of drilling waste
- Reduction of waste by use using bulk containers rather than drums
- Unused chemicals will be transported to another site or will be sent back to the chemical provider company.
- Proper equipment maintenance and replacement
- Communication with subcontractors on waste minimization practices
- The proper personal protective equipment (PPE) will always be worn when handling waste.
- Implement good housekeeping measures to minimally impact the operating area and maintain a well-kept appearance at all company facilities.
- Waste will be segregated and stored according to its waste classification.
- A designated storage area will be established for waste storage.
- Operator will properly characterize and dispose of all waste (i.e. the specific landfill/waste disposal location allows for acceptance of the waste stream)

Appendix A

Laramie Energy 2021 Cascade Creek Oil and Gas Development Plan Maps

A.1. Vicinity OGDP Map

A.2. Public Road Access Map

A.3. ACF Haul Route Map

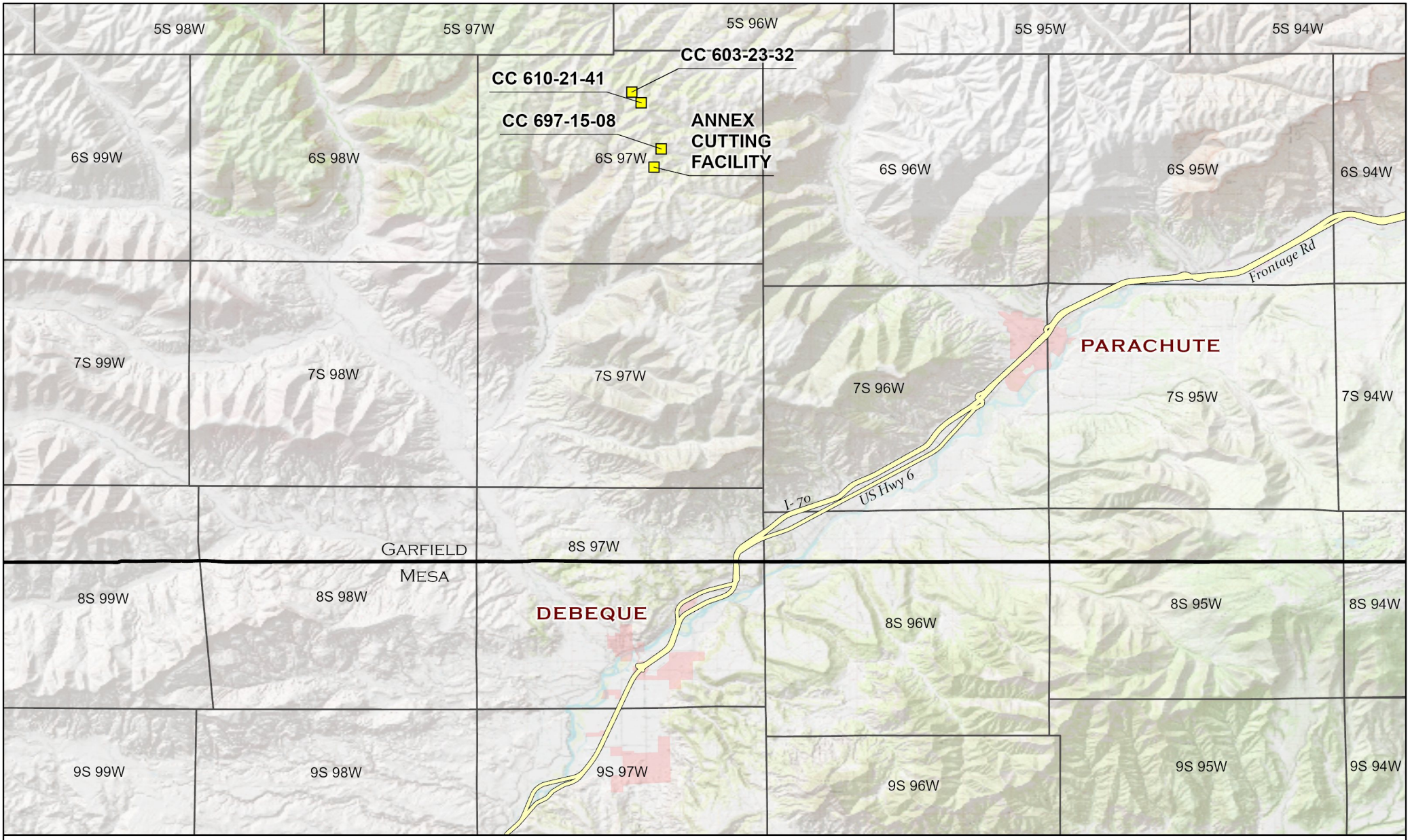
A.4. Layout Drawings

A.4.a. ACF Layout Drawings

A.4.b. CC 0697-15-08 Layout Drawings

A.4.c. CC 0610-21-41 Layout Drawings

A.4.d. CC 0603-23-32 Layout Drawings

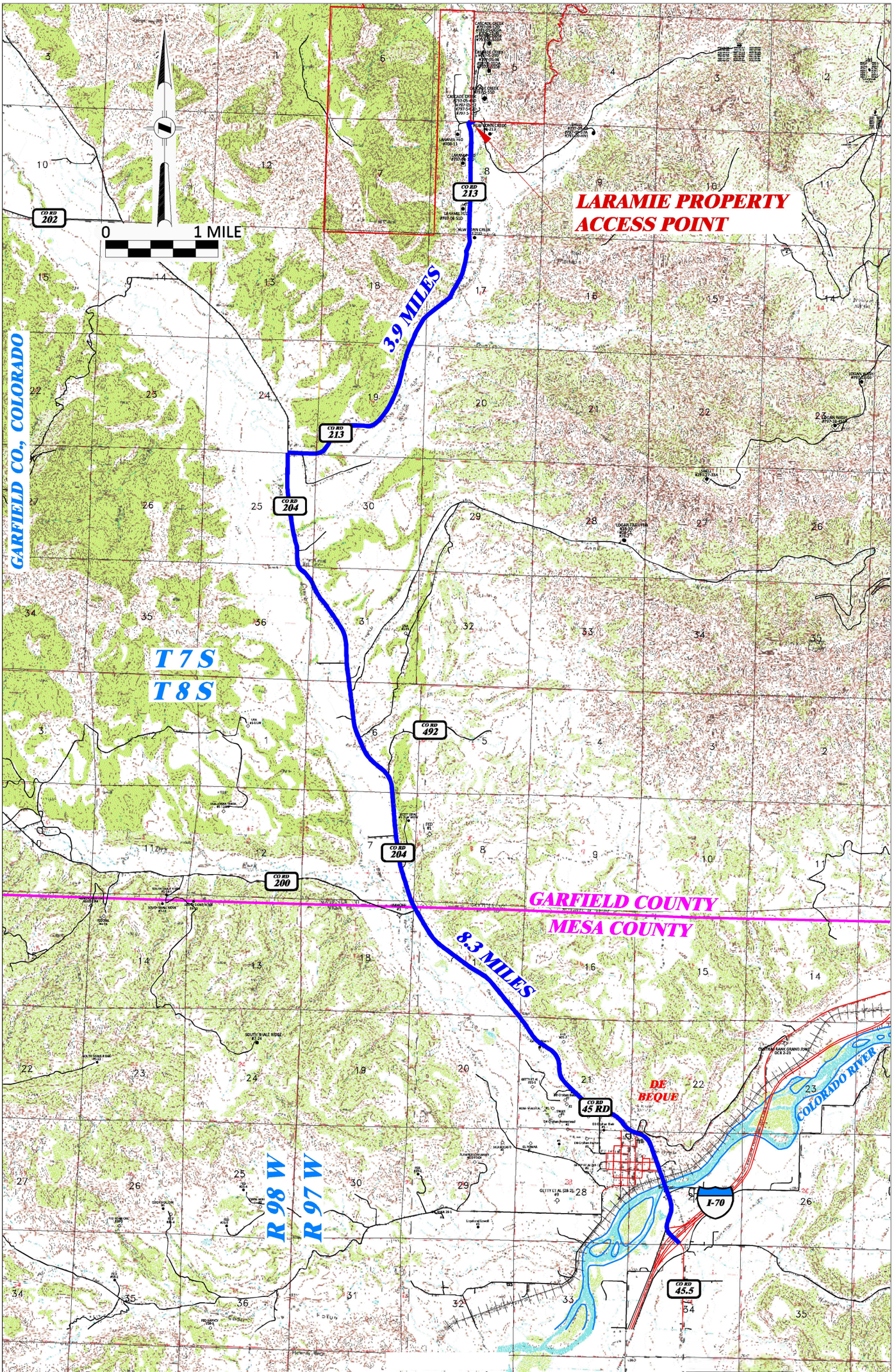


Project No:	021-039
Map By:	NDB
Date:	5/3/2021

Vicinity Map
Cascade Creek OGDP
Laramie Energy
Sections 3, 10, 15, T6S R97W, 6th P.M.
Garfield County, Colorado

ENTRADA CONSULTING GROUP
330 Grand Avenue, Unit C
Grand Junction, CO 81501
970-549-1015

Figure
1



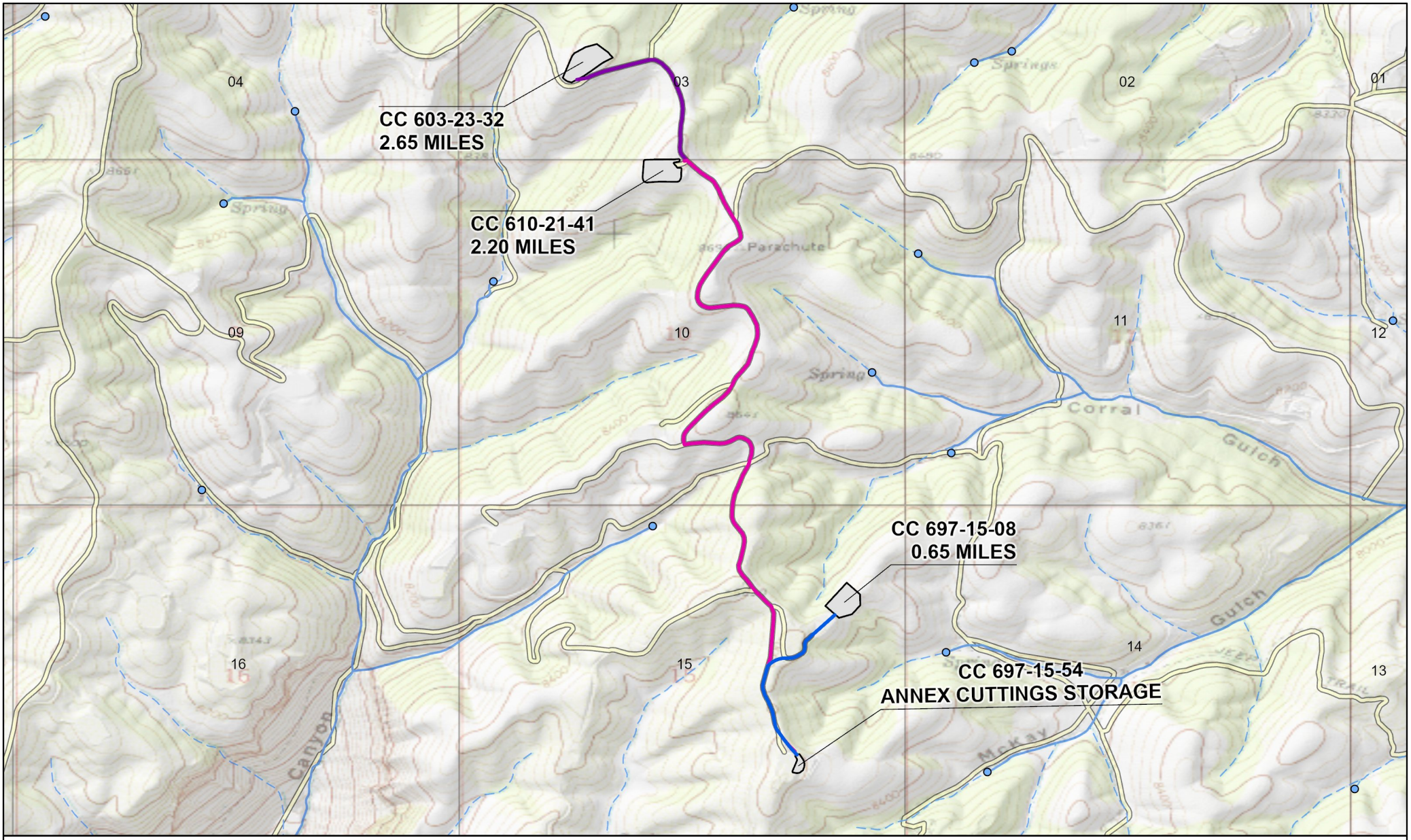
DRG GRIFFIN & ASSOCIATES, INC.
1414 ELK ST., ROCK SPRINGS, WY 82901
(307) 362-5028

PUBLIC ACCESS ROAD MAP

LARAMIE ENERGY, LLC.
OGDP.
T. 6 S., R. 97 W., 6th P.M.,
GARFIELD COUNTY, COLORADO

DRAWN: 12/8/2020 - DEH	SCALE: 1" = MILE
REVISED: 10/4/2021 - DEH	DRG JOB No. 22026
COGCC RULE REVISIONS	PUB ACCESS

PROPOSED ROUTE ——— EXISTING ROAD ———



Haul Route Name & Distance
- CC 603-23-32: 2.65 Miles
- CC 610-21-41: 2.20 Miles
- CC 697-15-08: 0.65 Miles

NHD Hydrology
- Spring/Seep
- Intermittent Stream
- Perennial Stream

Working Pad Surface (WPS)

0 1,000 2,000 3,000 Ft

1 inch = 2,000 ft

Project No:	021-039
Map By:	NDB
Date:	10/21/2021

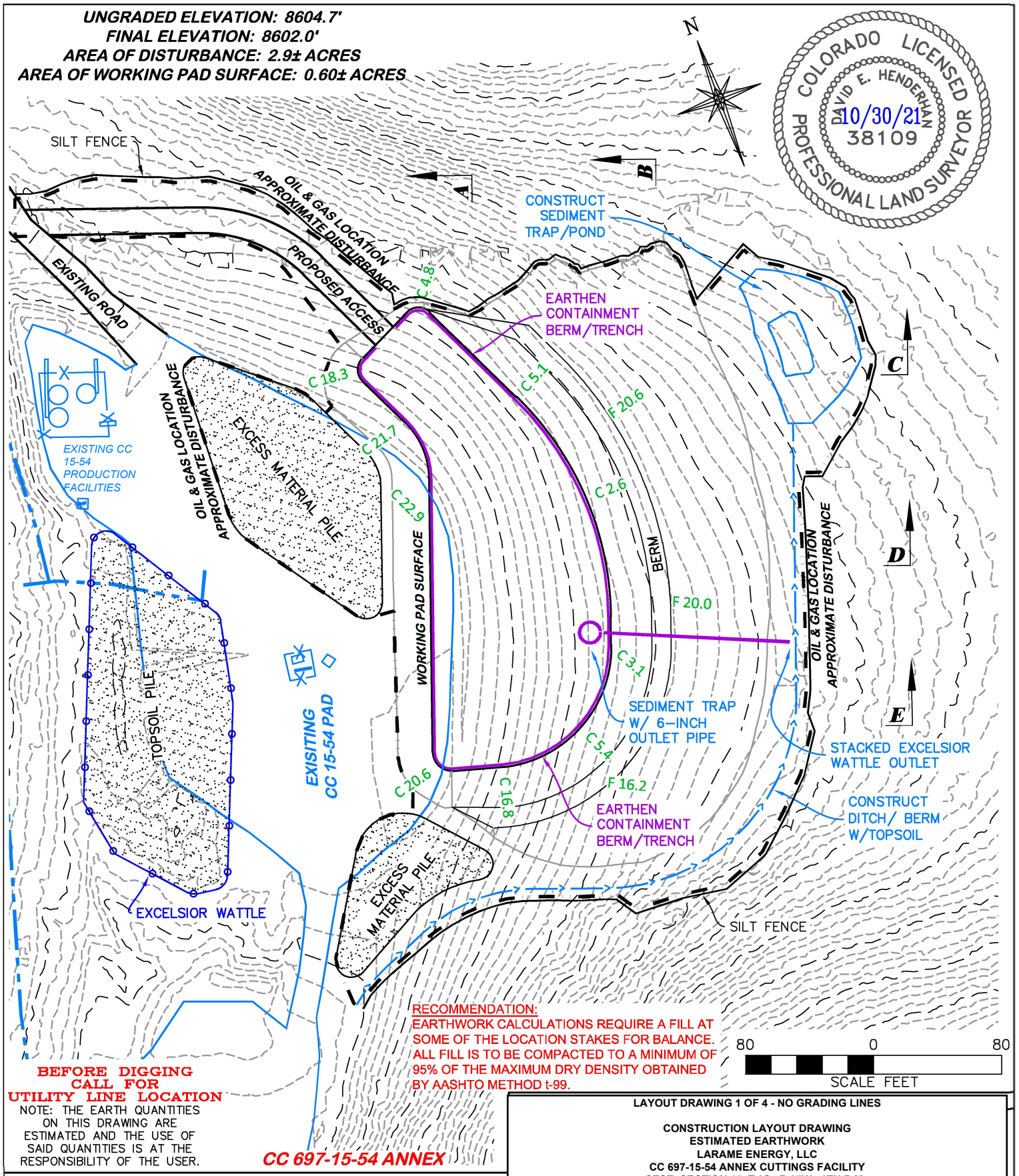
Drill Cuttings Haul Route
Route to Annex Cutting Facility
Laramie Energy
Garfield County, Colorado
Section 3, 10, 15, T6S R97W, 6th P.M.

ENTRADA CONSULTING GROUP
330 Grand Avenue, Unit C
Grand Junction, CO 81501
970-549-1015

Annex Cuttings Facility

Rule 304.b.(7).B. Layout Drawings

Laramie Energy, LLC
760 Horizon Drive, Suite 101
Grand Junction, CO 81506



RECOMMENDATION:
EARTHWORK CALCULATIONS REQUIRE A FILL AT SOME OF THE LOCATION STAKES FOR BALANCE. ALL FILL IS TO BE COMPACTED TO A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY OBTAINED BY AASHTO METHOD t-99.

BEFORE DIGGING CALL FOR UTILITY LINE LOCATION

NOTE: THE EARTH QUANTITIES ON THIS DRAWING ARE ESTIMATED AND THE USE OF SAID QUANTITIES IS AT THE RESPONSIBILITY OF THE USER.

CC 697-15-54 ANNEX

LAYOUT DRAWING 1 OF 4 - NO GRADING LINES

CONSTRUCTION LAYOUT DRAWING
ESTIMATED EARTHWORK
LARAME ENERGY, LLC
CC 697-15-54 ANNEX CUTTINGS FACILITY
SESE, SECTION 15, T.6S., R.97W., 6TH P.M.,
GARFIELD COUNTY, COLORADO

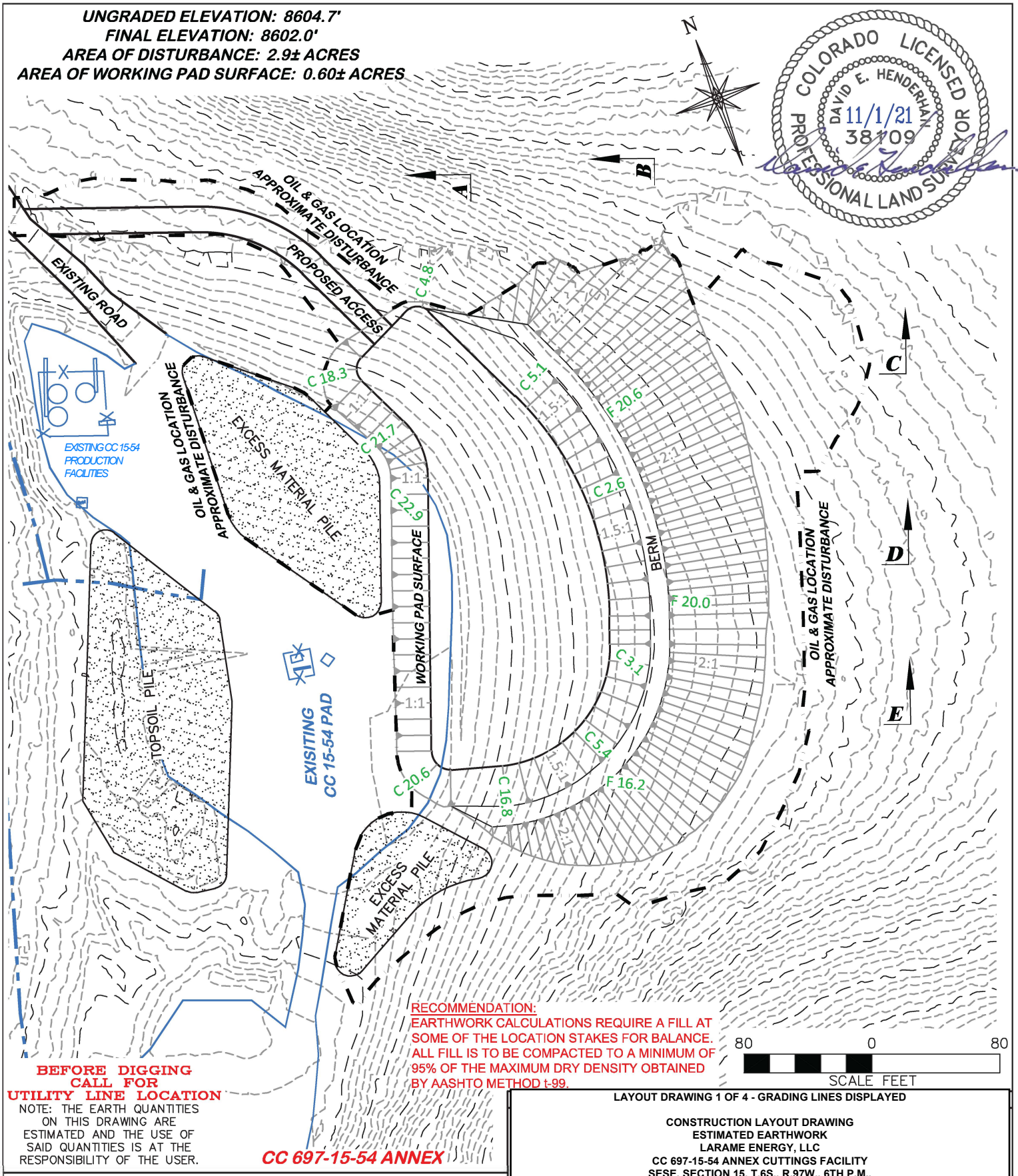
DRG GRIFFIN & ASSOCIATES, INC.
1414 ELK ST., ROCK SPRINGS, WY 82901
(307) 362-5028

DRAWN: 10/29/2021 - DEH	SCALE: 1" = 80'
REVISED: N/A	DRG JOB No. 21379
	304B(7)BI CONST

ESTIMATED EARTHWORK

ITEM	CUT	FILL	TOPSOIL	EXCESS
PAD	21,426 CY	16,376 CY	5,050 CY	0 CY
PIT	NONE			NONE
TOTALS	21,426 CY	16,376 CY	5,050 CY	0 CY

UNGRADED ELEVATION: 8604.7'
FINAL ELEVATION: 8602.0'
AREA OF DISTURBANCE: 2.9± ACRES
AREA OF WORKING PAD SURFACE: 0.60± ACRES



RECOMMENDATION:
EARTHWORK CALCULATIONS REQUIRE A FILL AT SOME OF THE LOCATION STAKES FOR BALANCE. ALL FILL IS TO BE COMPACTED TO A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY OBTAINED BY AASHTO METHOD t-99.

BEFORE DIGGING CALL FOR UTILITY LINE LOCATION

NOTE: THE EARTH QUANTITIES ON THIS DRAWING ARE ESTIMATED AND THE USE OF SAID QUANTITIES IS AT THE RESPONSIBILITY OF THE USER.

CC 697-15-54 ANNEX

LAYOUT DRAWING 1 OF 4 - GRADING LINES DISPLAYED

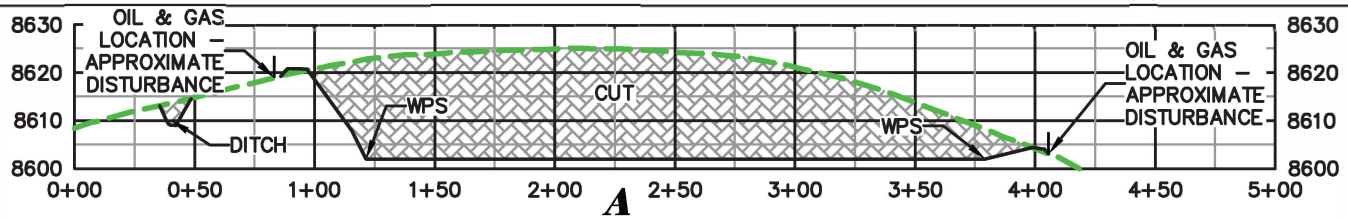
CONSTRUCTION LAYOUT DRAWING
ESTIMATED EARTHWORK
LARAME ENERGY, LLC
CC 697-15-54 ANNEX CUTTINGS FACILITY
SESE, SECTION 15, T.6S., R.97W., 6TH P.M.,
GARFIELD COUNTY, COLORADO

DRG GRIFFIN & ASSOCIATES, INC.
(307) 362-5028
1414 ELK ST., ROCK SPRINGS, WY 82901

DRAWN: 10/29/2021 - DEH	SCALE: 1" = 80'
REVISED: N/A	DRG JOB No. 21379
	304B(7)BI CONST

ESTIMATED EARTHWORK

ITEM	CUT	FILL	TOPSOIL	EXCESS
PAD	21,426 CY	16,376 CY	5,050 CY	0 CY
PIT	NONE			NONE
TOTALS	21,426 CY	16,376 CY	5,050 CY	0 CY



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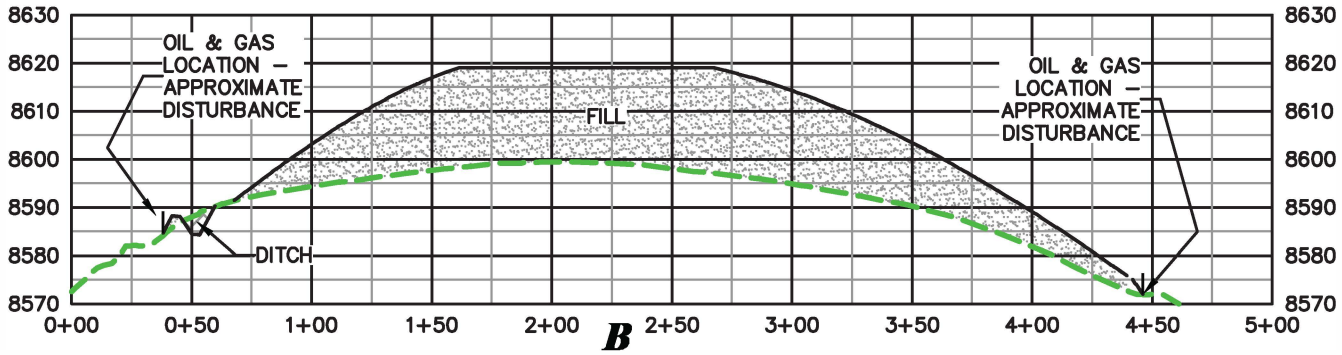

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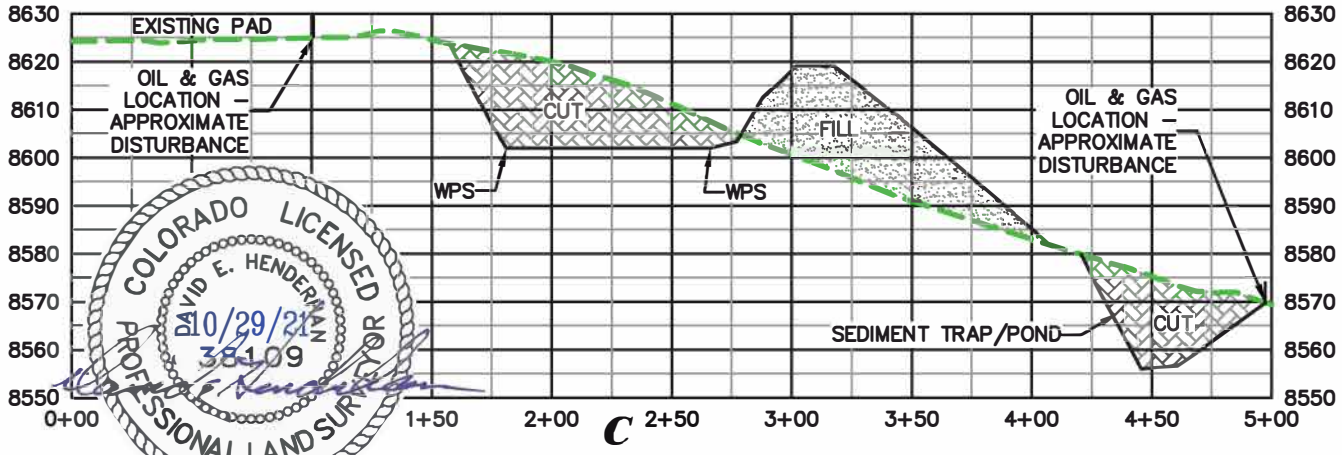

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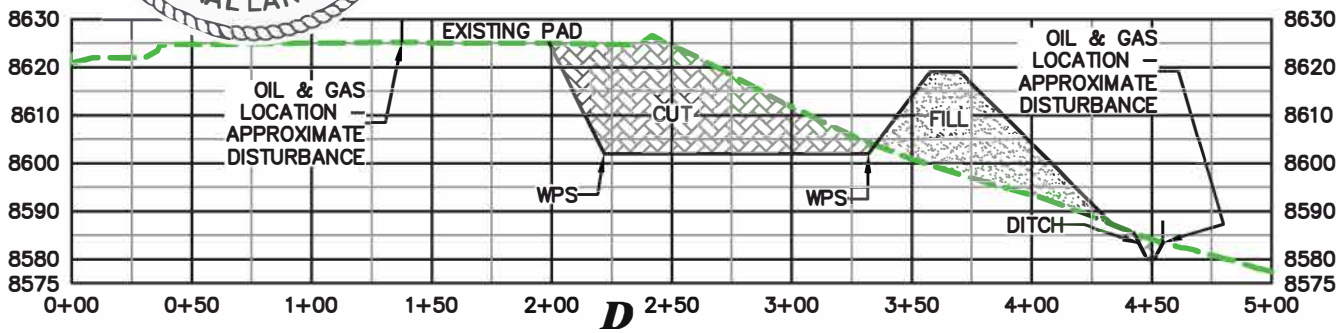

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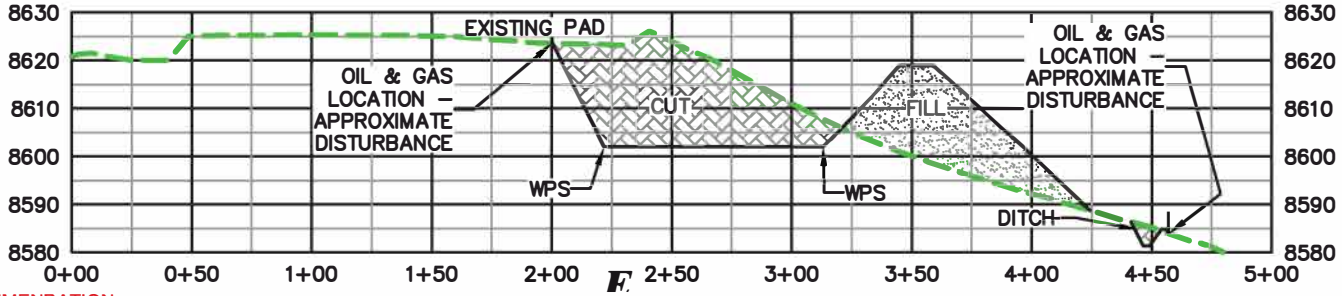


E

COLORADO LICENSED PROFESSIONAL LAND SURVEYOR
DAVID E. HENDERMAN
10/29/21
38109

RECOMMENDATION:
EARTHWORK CALCULATIONS REQUIRE A FILL AT SOME OF THE LOCATION STAKES FOR BALANCE. ALL FILL IS TO BE COMPACTED TO A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY OBTAINED BY AASHTO METHOD t-99.

CC 697-15-54 ANNEX

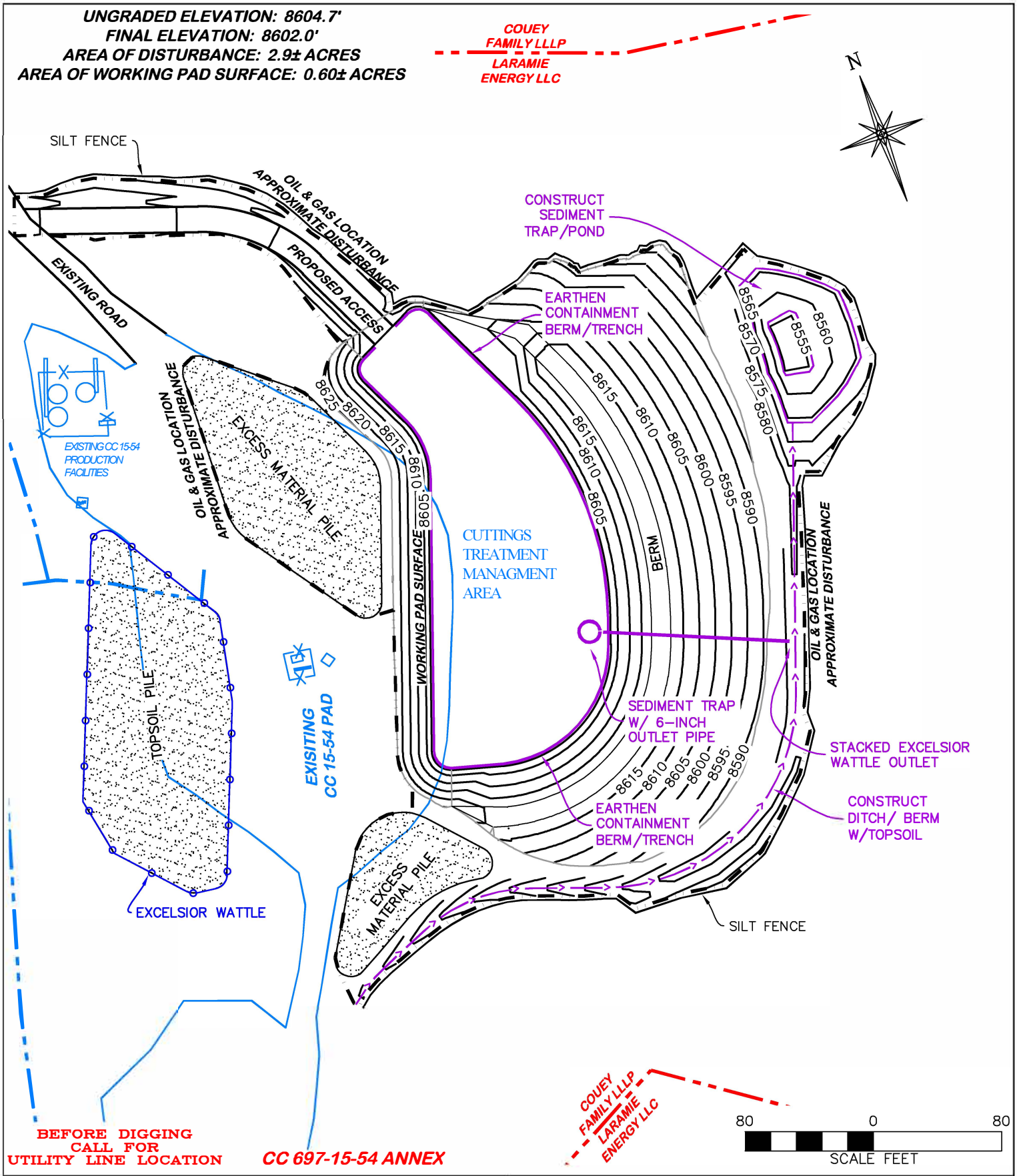
CUT SLOPES 1:1
FILL SLOPES 2:1

DRG GRIFFIN & ASSOCIATES, INC.
1414 ELK ST., ROCK SPRINGS, WY 82901
(307) 362-5028

DRAWN: 10/29/2021 - DEH	SCALE: H - 1" = 80' V - 1" = 80'
REVISED: N/A	DRG JOB No. 21379
	304b(7)Bi XSEC

LAYOUT DRAWING 2 OF 4

CONSTRUCTION LAYOUT DRAWING
CROSS SECTIONS
LARAME ENERGY, LLC
CC 697-15-54 ANNEX CUTTINGS FACILITY
SESE, SECTION 15, T.6S., R.97W., 6TH P.M.,
GARFIELD COUNTY, COLORADO

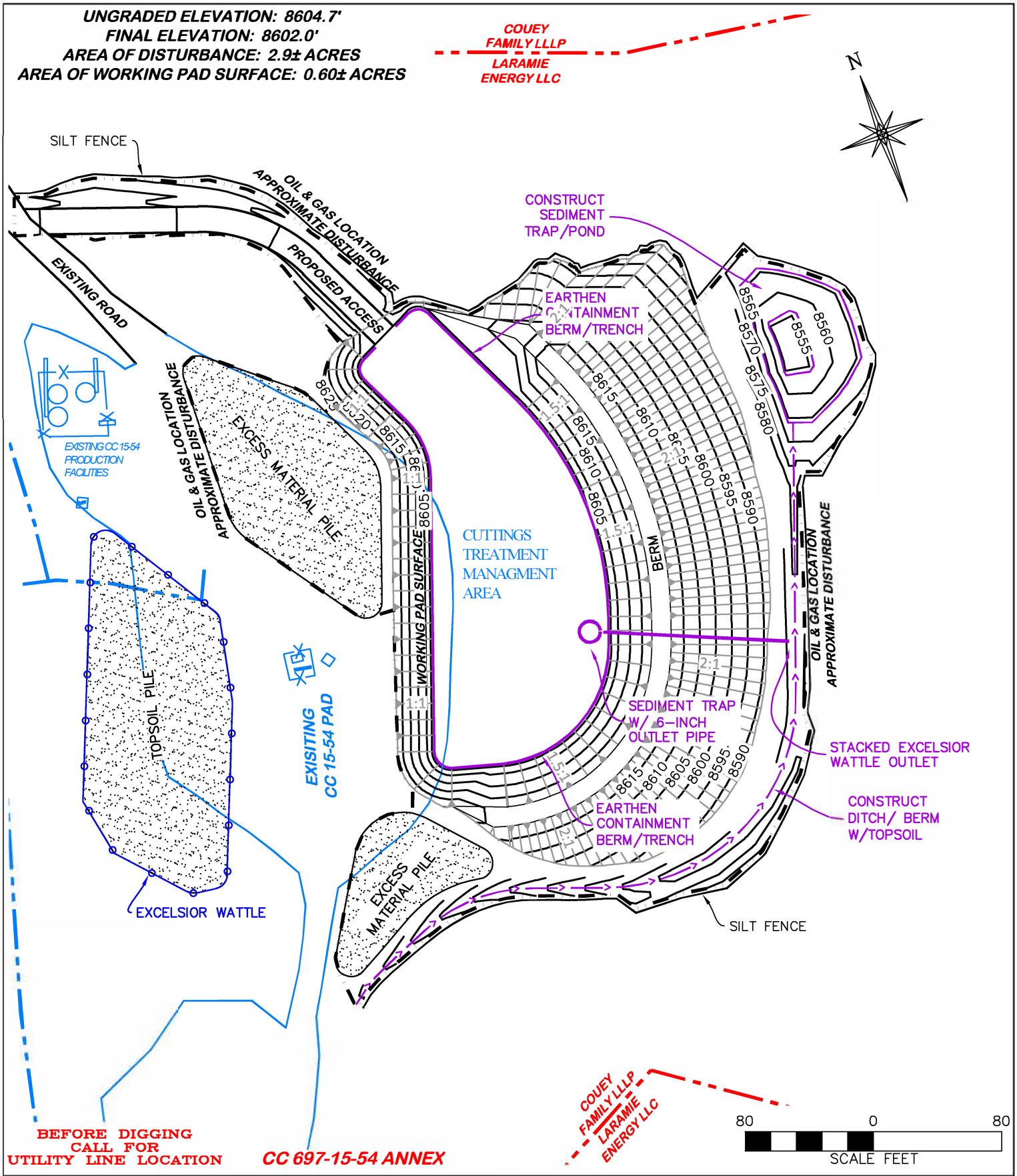


DRG GRIFFIN & ASSOCIATES, INC.
(307) 362-5028
1414 ELK ST., ROCK SPRINGS, WY 82901

DRAWN: 10/29/2021 - DEH	SCALE: 1" = 80'
REVISED: N/A	DRG JOB No. 21379
	304b(l)B

LAYOUT DRAWING 3 OF 4 - NO GRADING LINES

FACILITY LAYOUT DRAWING
LARAME ENERGY, LLC
CC 697-15-54 ANNEX CUTTINGS FACILITY
SESE, SECTION 15, T.6S., R.97W., 6TH P.M.,
GARFIELD COUNTY, COLORADO

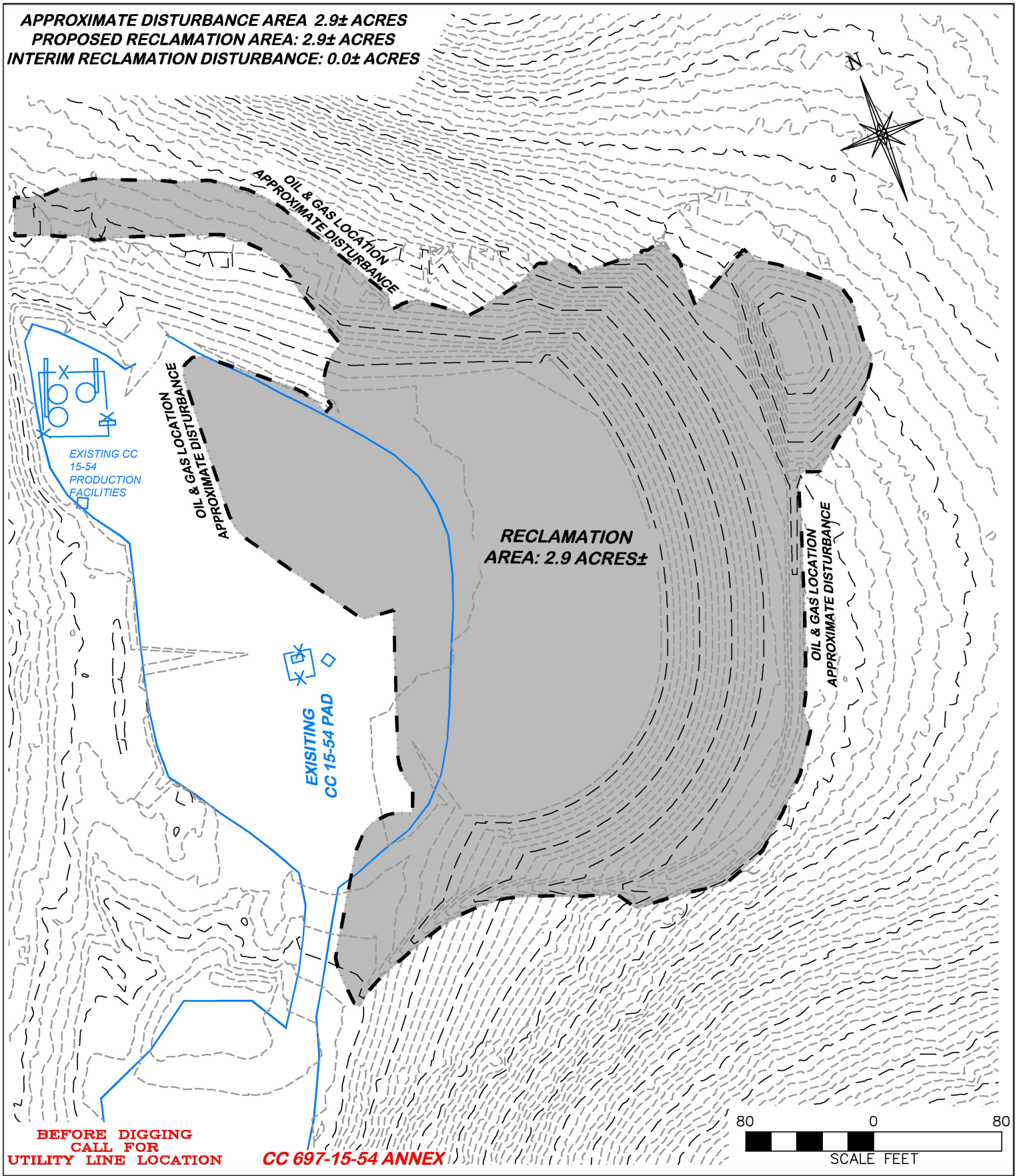


DRG GRIFFIN & ASSOCIATES, INC.
(307) 362-5028
1414 ELK ST., ROCK SPRINGS, WY 82901

DRAWN: 10/29/2021 - DEH	SCALE: 1" = 80'
REVISED: N/A	DRG JOB No. 21379
	304c(15) BMP

LAYOUT DRAWING 3 OF 4 - GRADING LINES DISPLAYED

FACILITY LAYOUT DRAWING
LARAME ENERGY, LLC
CC 697-15-54 ANNEX CUTTINGS FACILITY
SESE, SECTION 15, T.6S., R.97W., 6TH P.M.,
GARFIELD COUNTY, COLORADO



DRG GRIFFIN & ASSOCIATES, INC.
(307) 362-5028 1414 ELK ST., ROCK SPRINGS, WY 82901

DRAWN: 10/29/2021 - DEH	SCALE: 1" = 80'
REVISED: N/A	DRG JOB No. 21379
	304b.(7),B

LAYOUT DRAWING 4 OF 4

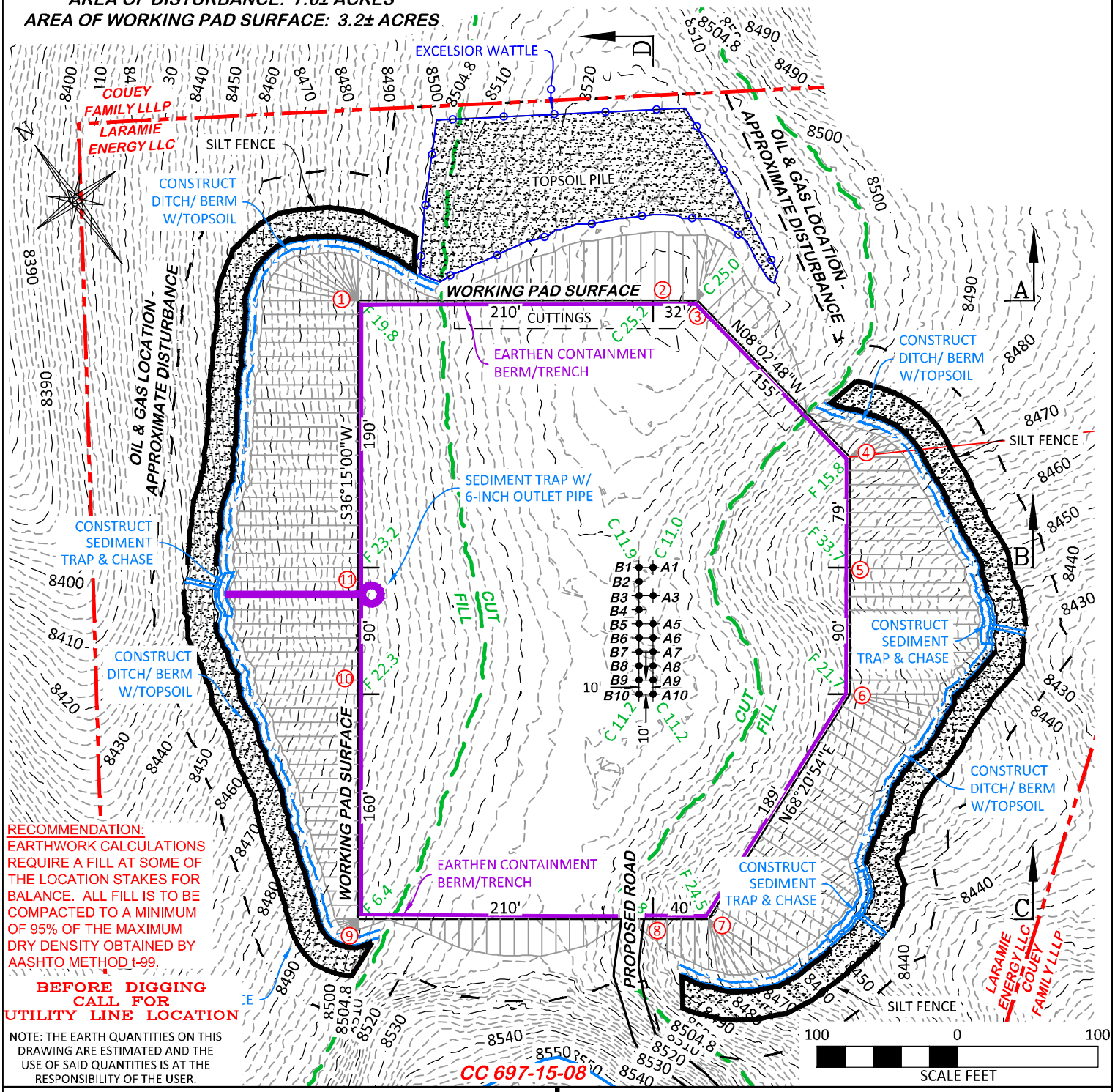
PROPOSED FINAL RECLAMATION
LARAMIE ENERGY, LLC.
CC 697-15-54 ANNEX CUTTINGS FACILITY
SESE, SECTION 15, T. 6 S., R. 97 W., 6th P.M., GARFIELD COUNTY, COLORADO

Cascade Creek 0697-15-08 Well Site

Layout Drawings
COGCC Rule 304.b.(7).B

Laramie Energy, LLC
760 Horizon Drive, Suite 101
Grand Junction, CO 81506

UNGRADED ELEVATION: 8515.8'
FINAL ELEVATION: 8504.8'
AREA OF DISTURBANCE: 7.6± ACRES
AREA OF WORKING PAD SURFACE: 3.2± ACRES



RECOMMENDATION:
EARTHWORK CALCULATIONS REQUIRE A FILL AT SOME OF THE LOCATION STAKES FOR BALANCE. ALL FILL IS TO BE COMPACTED TO A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY OBTAINED BY AASHTO METHOD t-99.

BEFORE DIGGING CALL FOR UTILITY LINE LOCATION

NOTE: THE EARTH QUANTITIES ON THIS DRAWING ARE ESTIMATED AND THE USE OF SAID QUANTITIES IS AT THE RESPONSIBILITY OF THE USER.

CC 697-15-08

ESTIMATED EARTHWORK BANK

ITEM	TOPSOIL	CUT	FILL	EXCESS
PAD	7,869 BCY	37,178 BCY	45,151 BCY	(15,842) BCY
PIT		NONE		NONE
TOTALS	7,869 BCY	37,178 BCY	45,151 BCY	(15,842) BCY

ESTIMATED EARTHWORK LOOSE (25% SWELL)

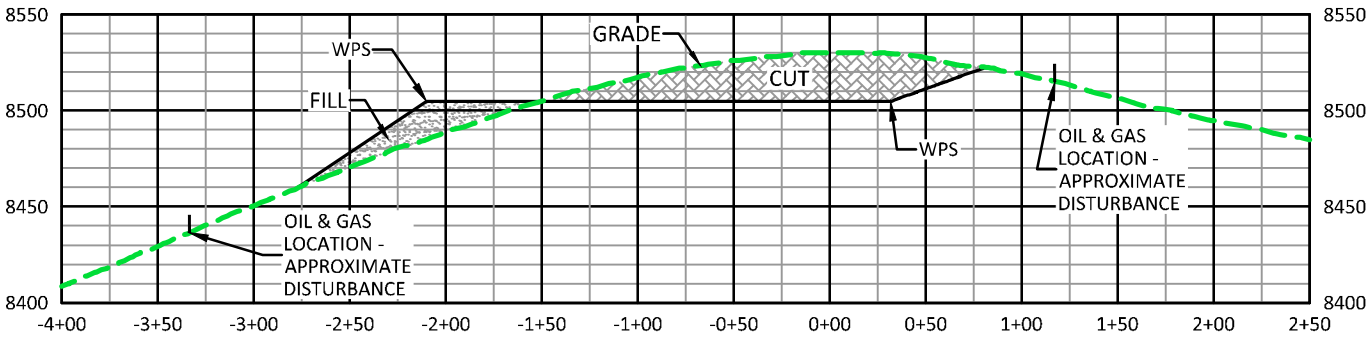
ITEM	TOPSOIL	CUT	FILL	EXCESS
PAD	7,869 BCY	46,473 LCY	45,151 LCY	(6,547) LCY
PIT		NONE		NONE
TOTALS	7,869 BCY	46,473 LCY	45,151 LCY	(6,547) LCY

LAYOUT DRAWING 1 OF 7

DRG GRIFFIN & ASSOCIATES, INC.
1414 ELK ST., ROCK SPRINGS, WY 82901
(307) 362-5028

DRAWN: 12/8/2020 - DEH	SCALE: 1" = 100'
REVISED: 10/4/2021 - DEH	DRG JOB No. 22026
COGCC RULE REVISIONS	304b(7)Bi CONST

CONSTRUCTION LAYOUT DRAWING
ESTIMATED EARTHWORK
LARAMIE ENERGY, LLC.
CC 697-15-08
SENE, SECTION 15, T. 6 S., R. 97 W., 6th P.M.,
GARFIELD COUNTY, COLORADO



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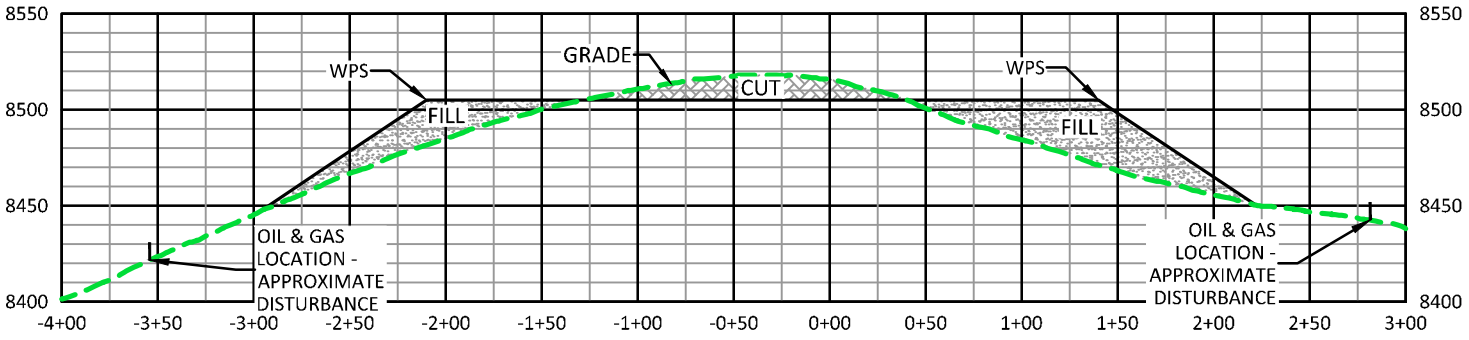

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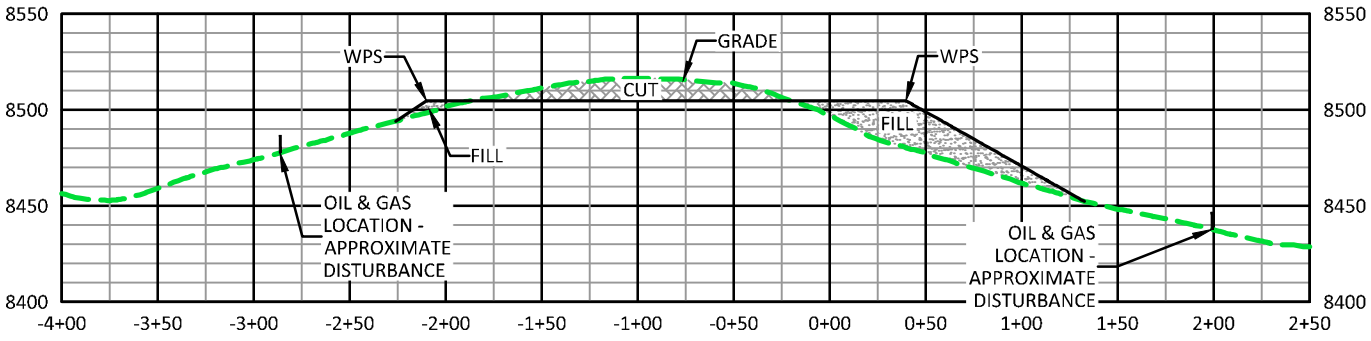

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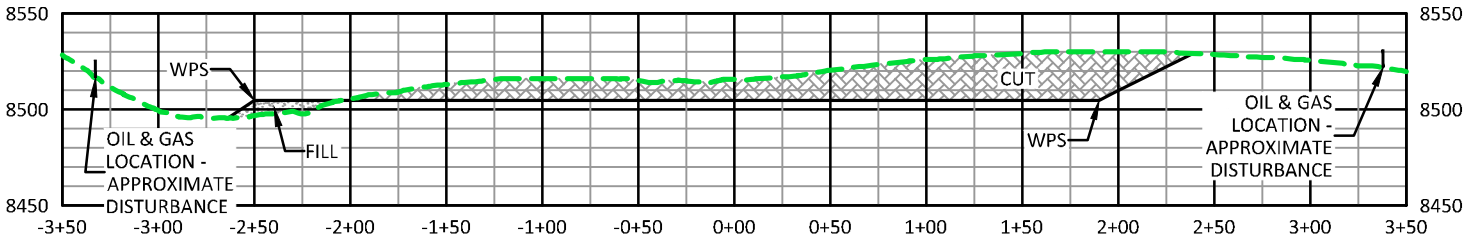


D

CUT SLOPES 2:1
FILL SLOPES 1.5:1

RECOMMENDATION:
EARTHWORK CALCULATIONS REQUIRE A FILL AT SOME OF THE LOCATION STAKES FOR BALANCE. ALL FILL IS TO BE COMPACTED TO A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY OBTAINED BY AASHTO METHOD t-99.

CC 697-15-08

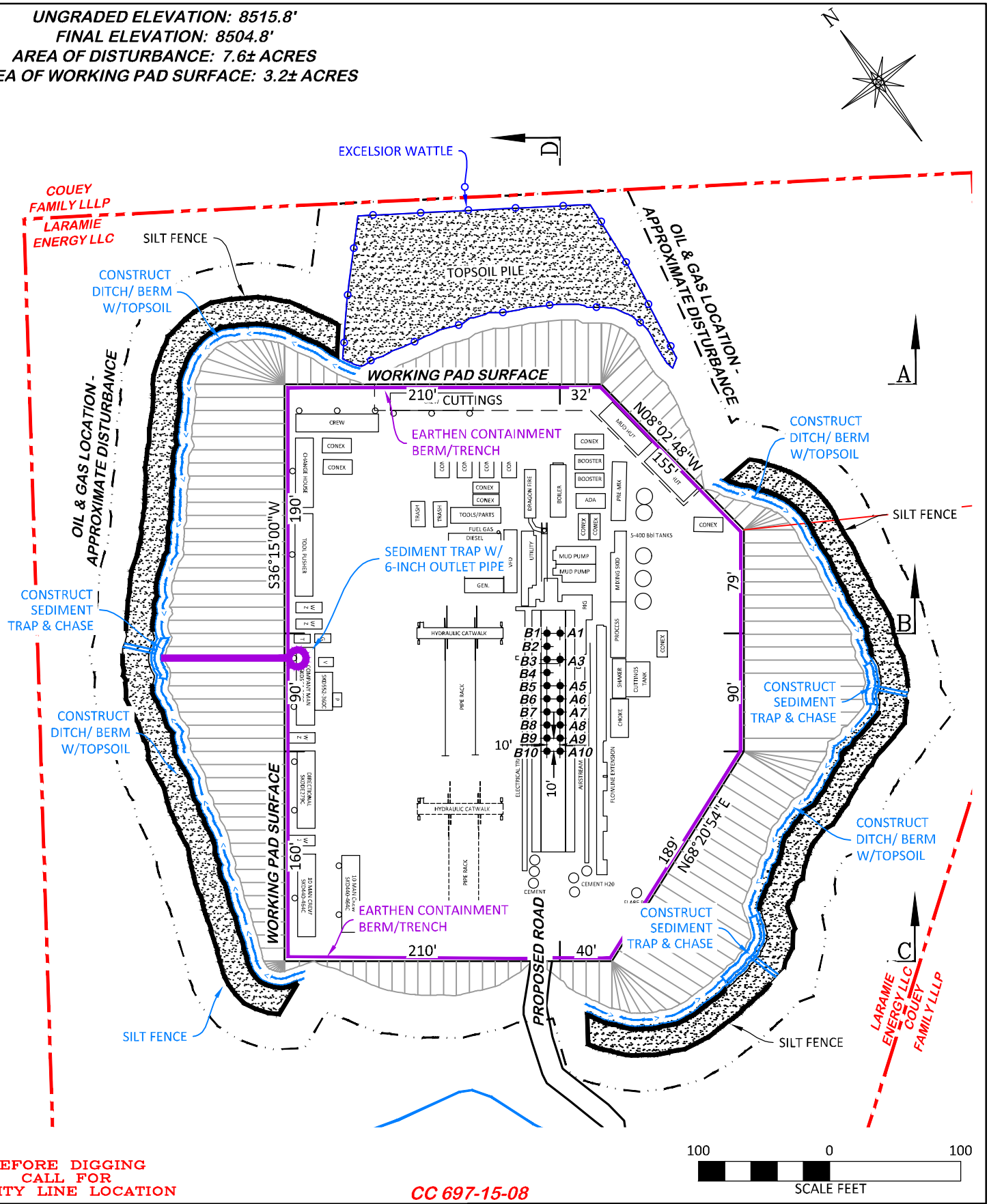
DRG GRIFFIN & ASSOCIATES, INC.
(307) 362-5028
1414 ELK ST., ROCK SPRINGS, WY 82901

DRAWN: 12/8/2020 - DEH	SCALE: H - 1" = 80' V - 1" = 80'
REVISED: 10/4/2021 - DEH	DRG JOB No. 22026
COGCC RULE REVISIONS	304b(7)Bi XSEC

LAYOUT DRAWING 2 OF 7

CONSTRUCTION LAYOUT DRAWING
CROSS SECTIONS
LARAMIE ENERGY, LLC.
CC 697-15-08
SENE, SECTION 15, T. 6 S., R. 97 W., 6th P.M.,
GARFIELD COUNTY, COLORADO

UNGRADED ELEVATION: 8515.8'
FINAL ELEVATION: 8504.8'
AREA OF DISTURBANCE: 7.6± ACRES
AREA OF WORKING PAD SURFACE: 3.2± ACRES



BEFORE DIGGING
CALL FOR
UTILITY LINE LOCATION

CC 697-15-08

100 0 100
SCALE FEET

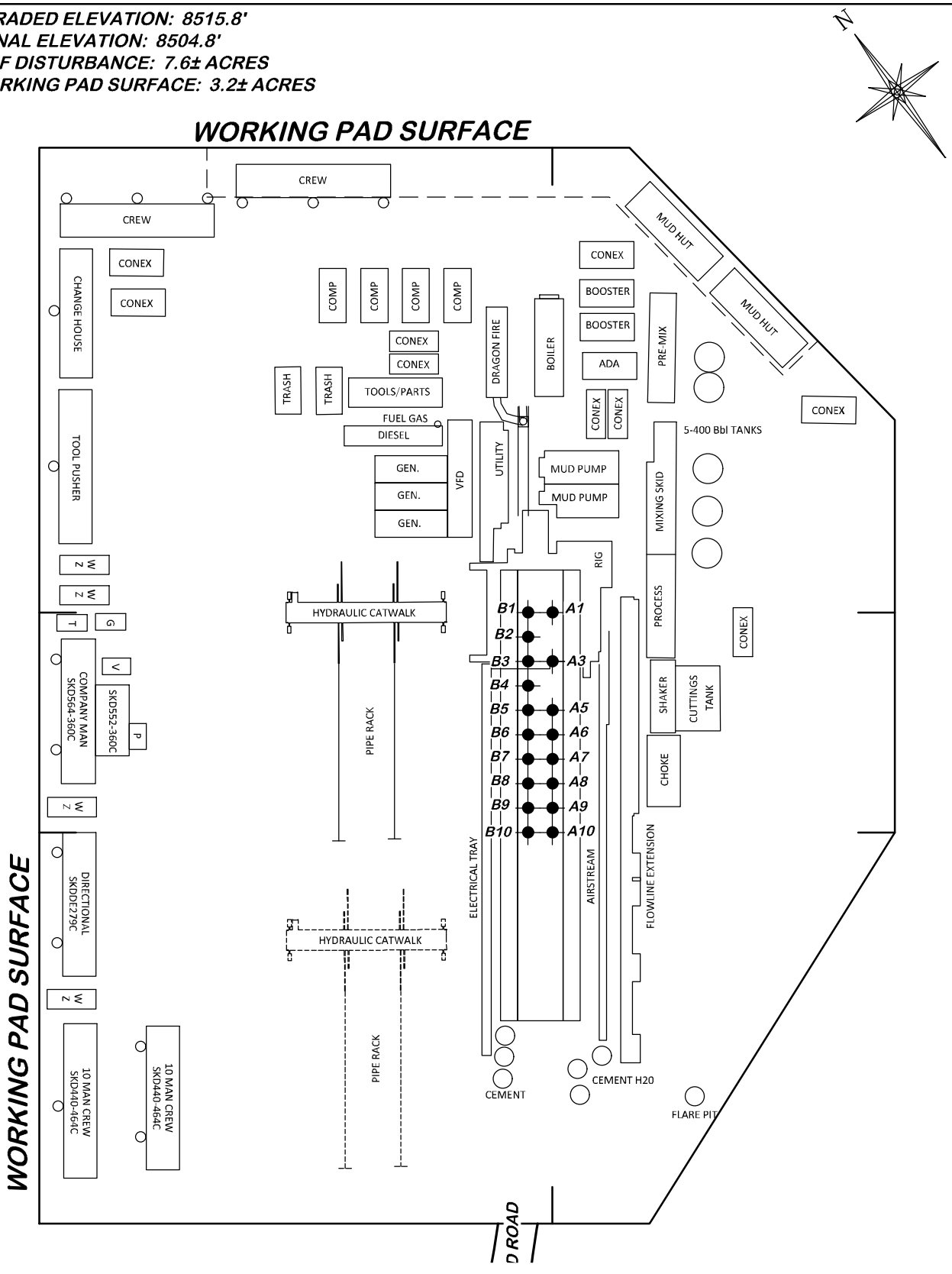
DRG RIFFIN & ASSOCIATES, INC.
(307) 362-5028
1414 ELK ST., ROCK SPRINGS, WY 82901

DRAWN: 12/8/2020 - DEH	SCALE: 1" = 100'
REVISED: 10/4/2021 - DEH	DRG JOB No. 22026
COGCC RULE REVISIONS	304B(7)BII RIG

LAYOUT DRAWING 3 OF 7

PRELIMINARY RIG LAYOUT
LARAMIE ENERGY, LLC.
CC 697-15-08
SENE, SECTION 15, T. 6 S., R. 97 W., 6th P.M., GARFIELD COUNTY, COLORADO

UNGRADED ELEVATION: 8515.8'
FINAL ELEVATION: 8504.8'
AREA OF DISTURBANCE: 7.6± ACRES
AREA OF WORKING PAD SURFACE: 3.2± ACRES



60 0 60
SCALE FEET

BEFORE DIGGING
CALL FOR
UTILITY LINE LOCATION

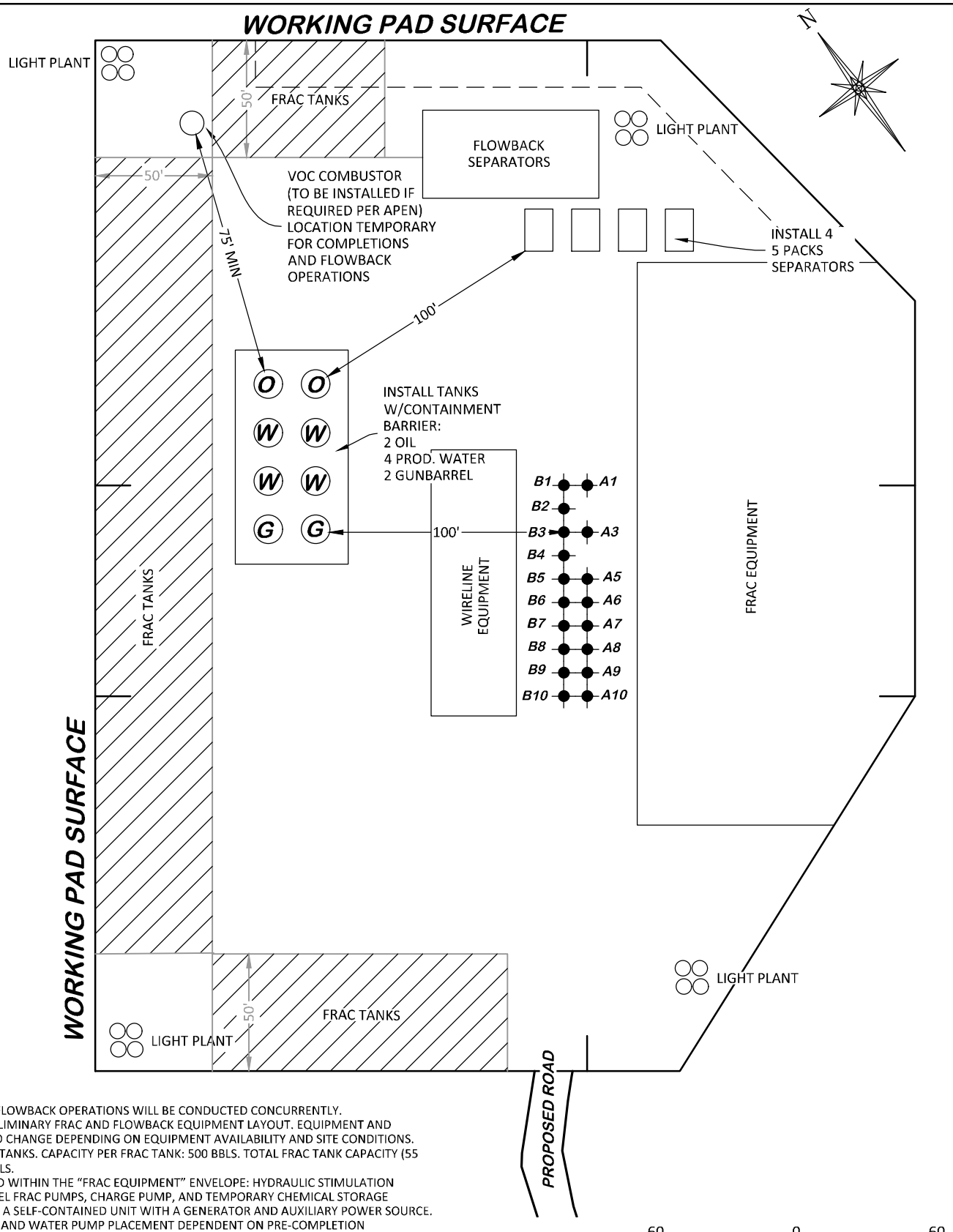
CC 697-15-08

LAYOUT DRAWING 4 OF 7

DRG GRIFFIN & ASSOCIATES, INC.
(307) 362-5028
1414 ELK ST., ROCK SPRINGS, WY 82901

DRAWN: 12/8/2020 - DEH	SCALE: 1" = 60'
REVISED: 10/4/2021 - DEH	DRG JOB No. 22026
COGCC RULE REVISIONS	304B(7)BII RIG DET

RIG DETAIL
LARAMIE ENERGY, LLC.
CC 697-15-08
SENE, SECTION 15, T. 6 S., R. 97 W., 6th P.M., GARFIELD COUNTY, COLORADO



NOTES:
1. COMPLETIONS AND FLOWBACK OPERATIONS WILL BE CONDUCTED CONCURRENTLY.
2. EXHIBIT DEPICTS PRELIMINARY FRAC AND FLOWBACK EQUIPMENT LAYOUT. EQUIPMENT AND LAYOUT ARE SUBJECT TO CHANGE DEPENDING ON EQUIPMENT AVAILABILITY AND SITE CONDITIONS.
3. FIFTY-FIVE (55) FRAC TANKS. CAPACITY PER FRAC TANK: 500 BBLS. TOTAL FRAC TANK CAPACITY (55 FRAC TANKS): 27,500 BBLS.
4. EQUIPMENT LOCATED WITHIN THE "FRAC EQUIPMENT" ENVELOPE: HYDRAULIC STIMULATION CONTROL TRAILER, DIESEL FRAC PUMPS, CHARGE PUMP, AND TEMPORARY CHEMICAL STORAGE
5. EACH LIGHT PLANT IS A SELF-CONTAINED UNIT WITH A GENERATOR AND AUXILIARY POWER SOURCE.
6. ACTUAL WATER LINE AND WATER PUMP PLACEMENT DEPENDENT ON PRE-COMPLETION ALIGNMENT OF FRAC TANKS.
7. OPERATOR WILL UTILIZE HEAT PUMPS FOR WINTER OPERATIONS BASED ON LOCATION SPACING.
8. FLOWBACK SUPPORT TRAILER IS LOCATED WITHIN "FLOWBACK SEPARATORS" ENVELOPE.
9. PLEASE REFER TO THE CONSTRUCTION LAYOUT DRAWING FOR STORMWATER CONTROL MEASURES.

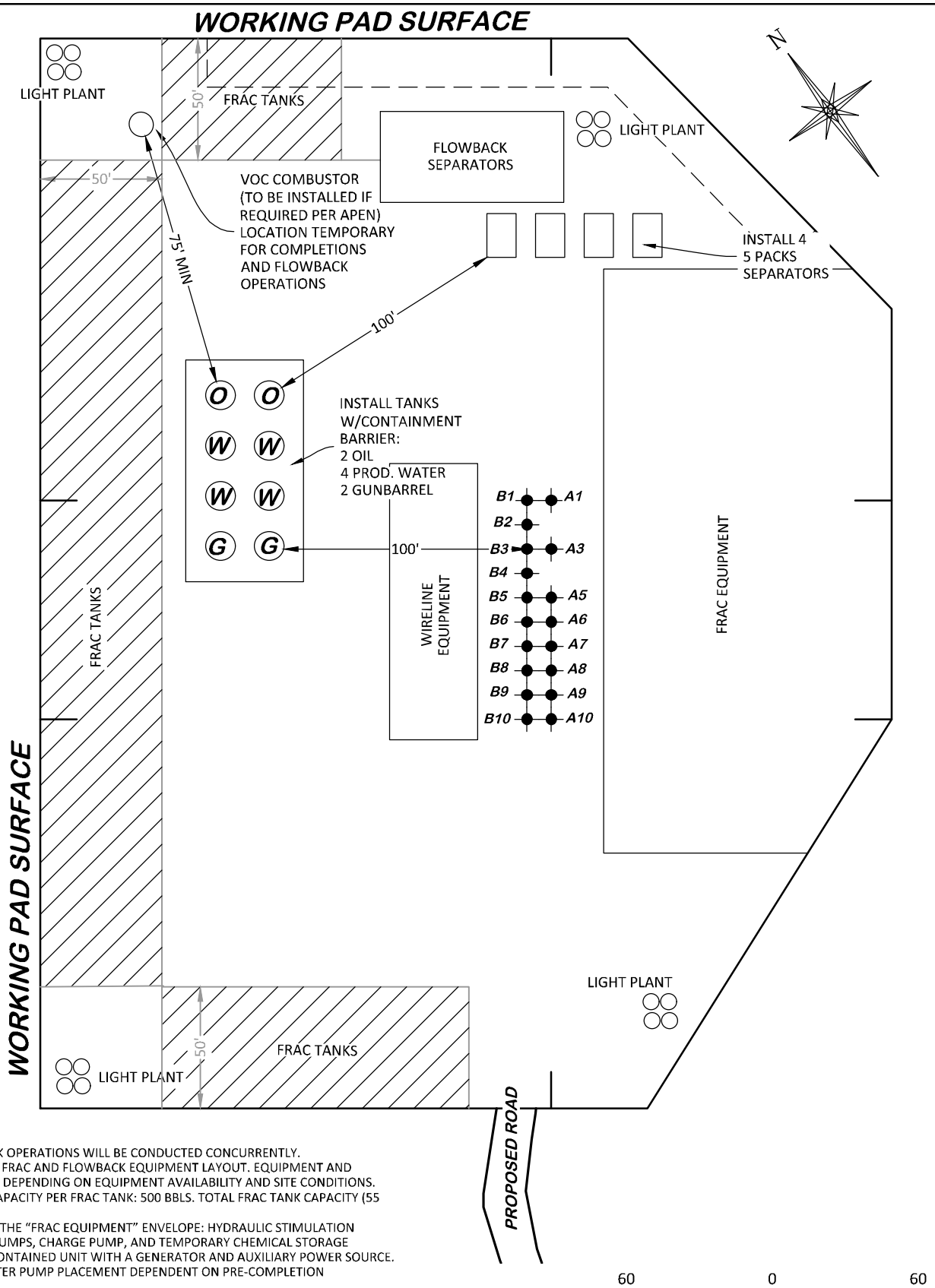
CC 697-15-08

DRG RIFFIN & ASSOCIATES, INC.
(307) 362-5028
1414 ELK ST., ROCK SPRINGS, WY 82901

DRAWN: 7/28/2021 - DEH	SCALE: 1" = 60'
REVISED: 10/12/2021 - DEH	DRG JOB No. 22026
COGCC RULE REVISIONS	304b(7)Biii COMP

LAYOUT DRAWING 5 OF 7

PRELIMINARY WELL COMPLETIONS AND STIMULATION LAYOUT
LARAMIE ENERGY, LLC.
CC 697-15-08
SENE, SECTION 15, T. 6 S., R. 97 W., 6th P.M., GARFIELD COUNTY, COLORADO



NOTES:
1. COMPLETIONS AND FLOWBACK OPERATIONS WILL BE CONDUCTED CONCURRENTLY.
2. EXHIBIT DEPICTS PRELIMINARY FRAC AND FLOWBACK EQUIPMENT LAYOUT. EQUIPMENT AND LAYOUT ARE SUBJECT TO CHANGE DEPENDING ON EQUIPMENT AVAILABILITY AND SITE CONDITIONS.
3. FIFTY-FIVE (55) FRAC TANKS. CAPACITY PER FRAC TANK: 500 BBLS. TOTAL FRAC TANK CAPACITY (55 FRAC TANKS): 27,500 BBLS.
4. EQUIPMENT LOCATED WITHIN THE "FRAC EQUIPMENT" ENVELOPE: HYDRAULIC STIMULATION CONTROL TRAILER, DIESEL FRAC PUMPS, CHARGE PUMP, AND TEMPORARY CHEMICAL STORAGE
5. EACH LIGHT PLANT IS A SELF-CONTAINED UNIT WITH A GENERATOR AND AUXILIARY POWER SOURCE.
6. ACTUAL WATER LINE AND WATER PUMP PLACEMENT DEPENDENT ON PRE-COMPLETION ALIGNMENT OF FRAC TANKS.
7. OPERATOR WILL UTILIZE HEAT PUMPS FOR WINTER OPERATIONS BASED ON LOCATION SPACING.
8. FLOWBACK SUPPORT TRAILER IS LOCATED WITHIN "FLOWBACK SEPARATORS" ENVELOPE.
9. PLEASE REFER TO THE CONSTRUCTION LAYOUT DRAWING FOR STORMWATER CONTROL MEASURES.

60 0 60
SCALE FEET

CC 697-15-08

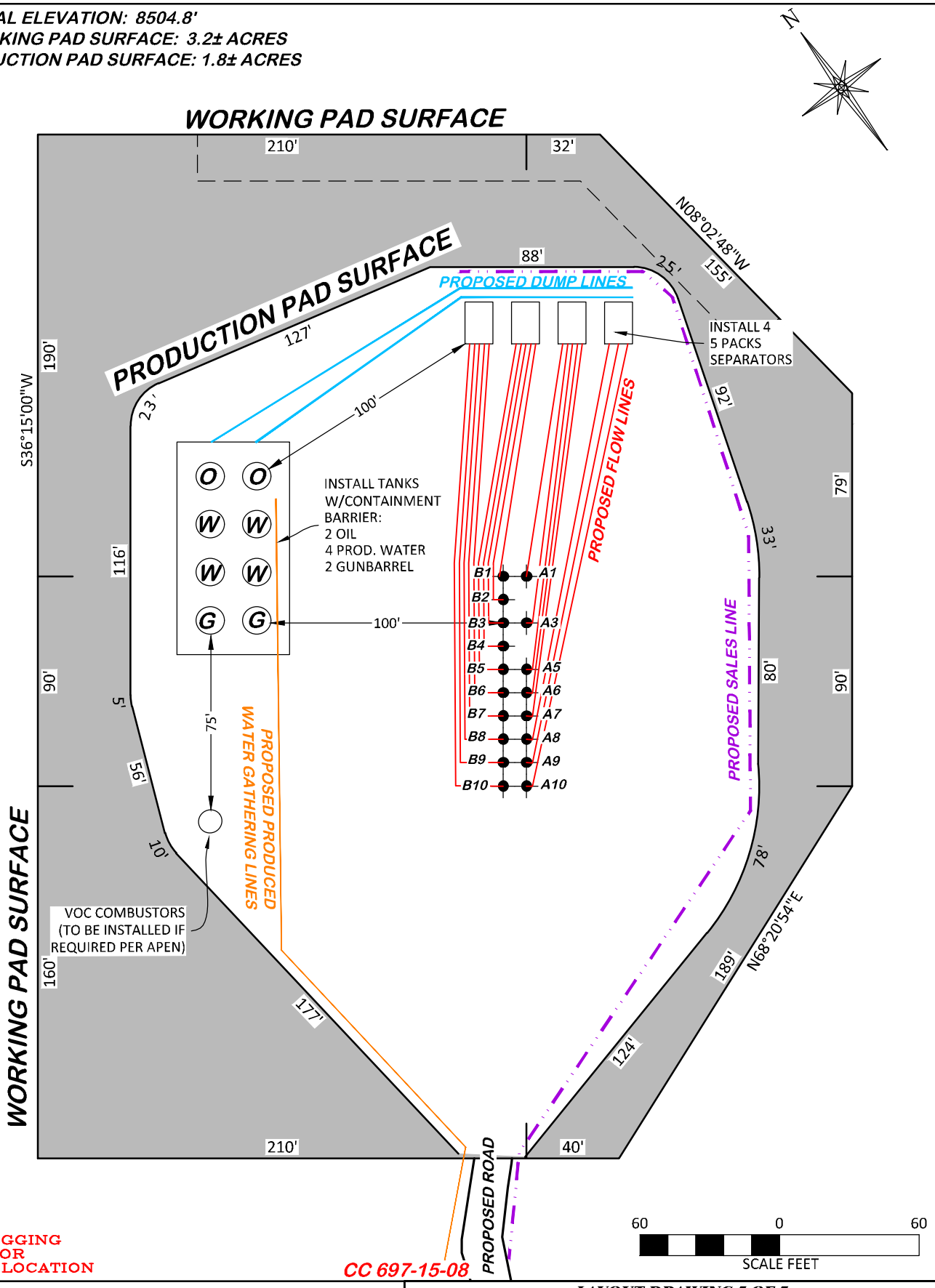
DRG GRIFFIN & ASSOCIATES, INC.
(307) 362-5028
1414 ELK ST., ROCK SPRINGS, WY 82901

DRAWN: 7/28/2021 - DEH	SCALE: 1" = 60'
REVISED: 10/12/2021 - DEH	DRG JOB No. 22026
COGCC RULE REVISIONS	304b(7)Biv FLOWBACK

LAYOUT DRAWING 6 OF 7

FLOWBACK EQUIPMENT LAYOUT
LARAMIE ENERGY, LLC.
CC 697-15-08
SENE, SECTION 15, T. 6 S., R. 97 W., 6th P.M., GARFIELD COUNTY, COLORADO

FINAL ELEVATION: 8504.8'
AREA OF WORKING PAD SURFACE: 3.2± ACRES
AREA OF PRODUCTION PAD SURFACE: 1.8± ACRES



BEFORE DIGGING
CALL FOR
UTILITY LINE LOCATION

CC 697-15-08

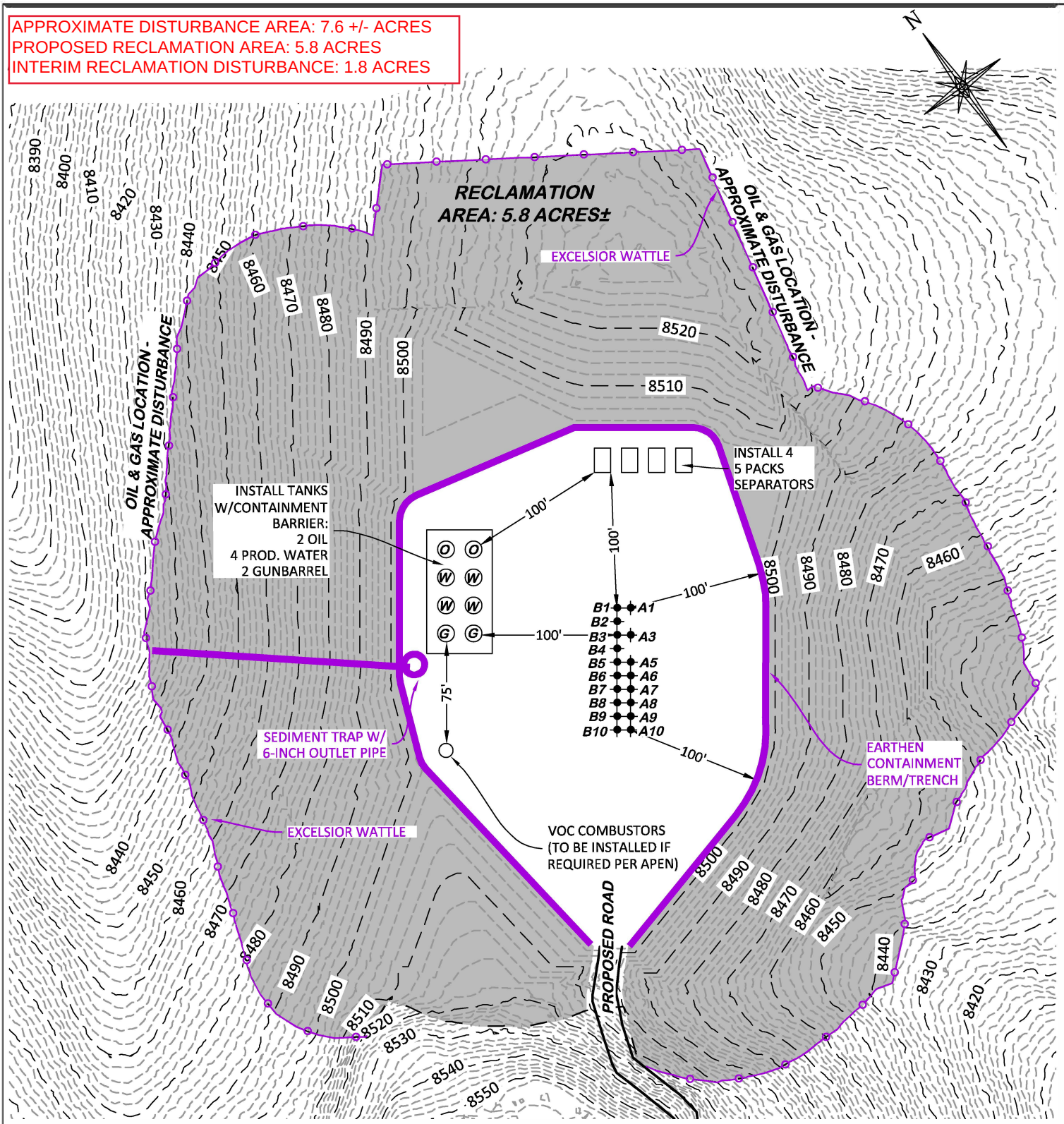
DRG GRIFFIN & ASSOCIATES, INC.
1414 ELK ST., ROCK SPRINGS, WY 82901
(307) 362-5028

DRAWN: 4/30/2021 - DEH	SCALE: 1" = 50'
REVISED: 10/4/2021 - DEH	DRG JOB No. 22026
COGCC RULE REVISIONS	304B(7)BV FACILITY

LAYOUT DRAWING 7 OF 7

PRELIMINARY FACILITY LAYOUT
LARAMIE ENERGY, LLC.
CC 697-15-08
SENE, SECTION 15, T. 6 S., R. 97 W., 6th P.M.,
GARFIELD COUNTY, COLORADO

APPROXIMATE DISTURBANCE AREA: 7.6 +/- ACRES
PROPOSED RECLAMATION AREA: 5.8 ACRES
INTERIM RECLAMATION DISTURBANCE: 1.8 ACRES



BEFORE DIGGING CALL FOR UTILITY LINE LOCATION

100 0 100
SCALE FEET

CC 697-15-08

FACILITY LAYOUT DRAWING - INTERIM RECLAMATION PLAN

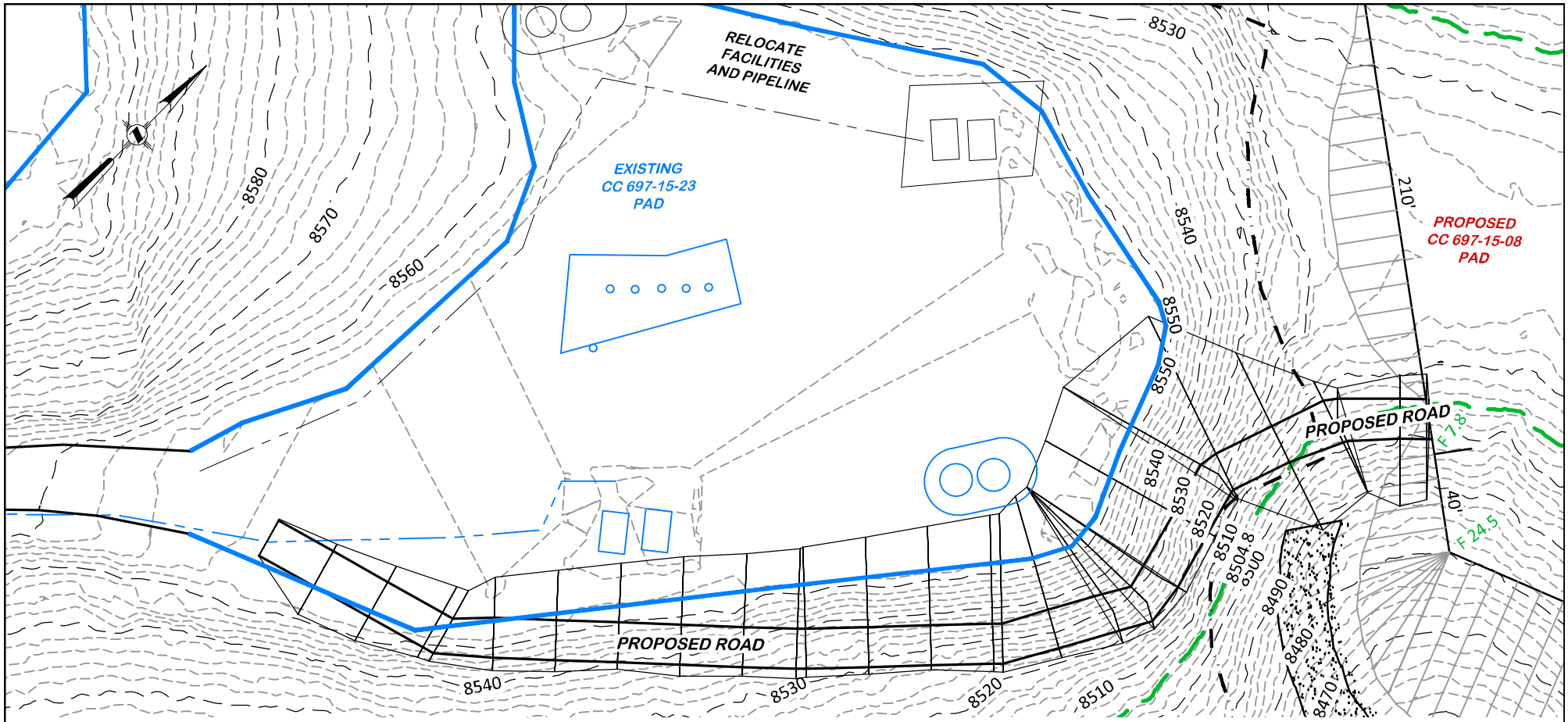
DRG GRIFFIN & ASSOCIATES, INC.
1414 ELK ST., ROCK SPRINGS, WY 82901
(307) 362-5028

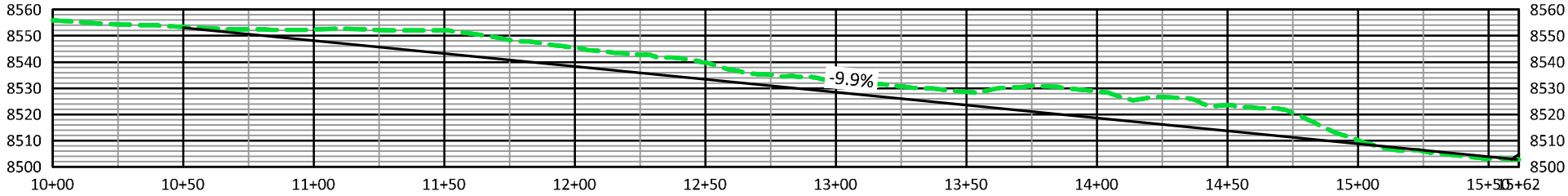
DRAWN: 12/8/2020 - DEH	SCALE: 1" = 100'
REVISED: 10/4/2021 - DEH	DRG JOB No. 22026
COGCC RULE REVISIONS	304C(16) RECLAMATION

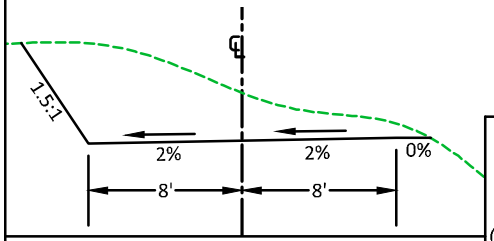
PROPOSED INTERIM RECLAMATION
LARAMIE ENERGY, LLC.

CC 697-15-08

SENE, SECTION 15, T. 6 S., R. 97 W., 6th P.M., GARFIELD COUNTY, COLORADO







CC 697-15-08

ESTIMATED EARTHWORK		
CUT	FILL	EXCESS
6,949 CY	193 CY	6,756 CY

DRIFFIN & ASSOCIATES, INC.
(307) 362-5028
1414 ELK ST., ROCK SPRINGS, WY 82901

DRAWN: 12/8/2020 - DEH	SCALE: H - 1" = 60' V - 1" = 60'
REVISED: 10/4/2021 - DEH	DRG JOB No. 22026
COGCC RULE REVISIONS	304B(7)F ROAD PP

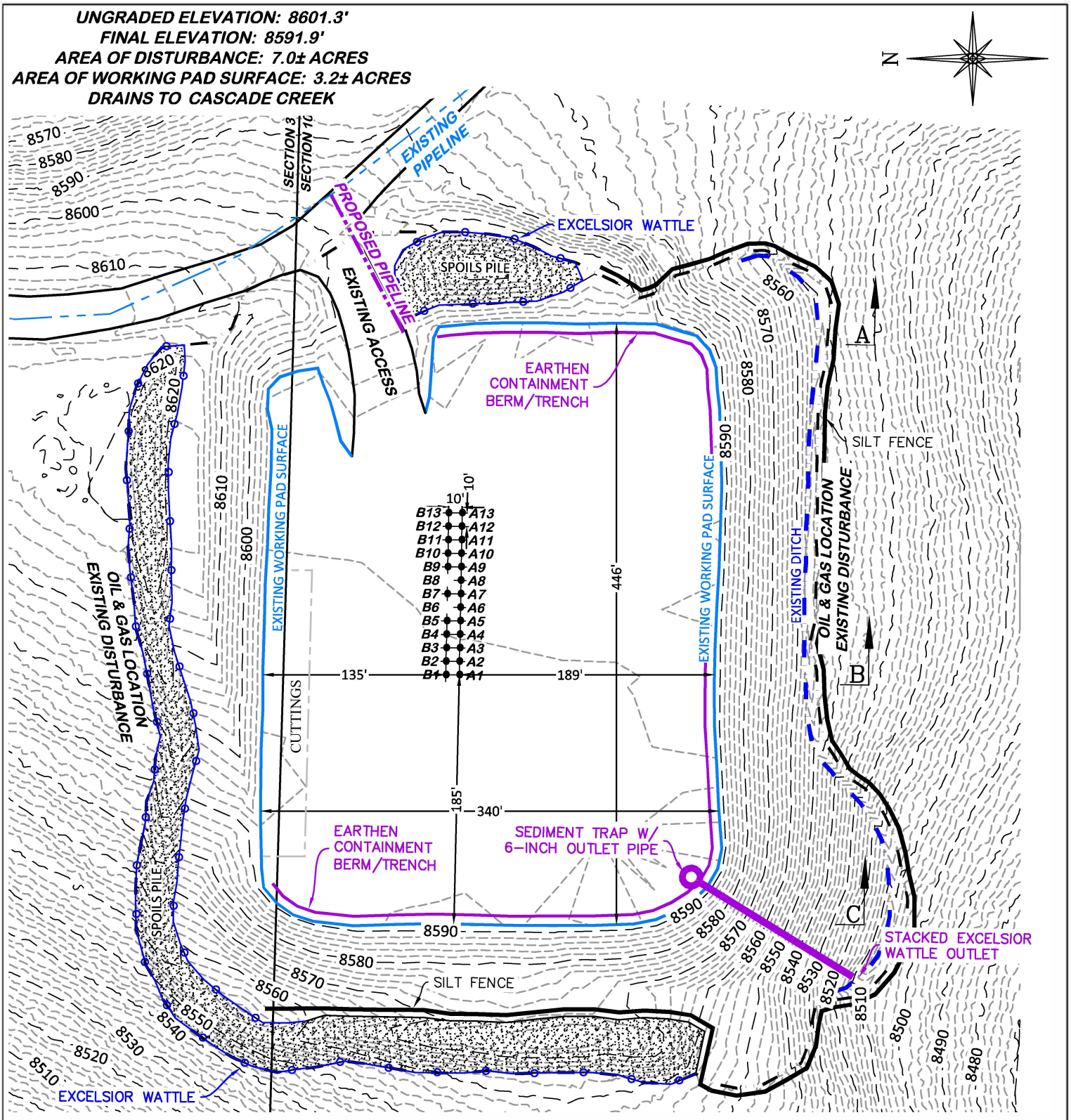
ACCESS PLAN AND PROFILE

LARAMIE ENERGY, LLC.
CC 697-15-08
SENE, SECTION 15, T. 6 S., R. 97 W., 6th P.M.,
GARFIELD COUNTY, COLORADO

Cascade Creek 0610-21-41 Well Site
Rule 304.b.(7).B. Layout Drawings

Laramie Energy, LLC
760 Horizon Drive, Suite 101
Grand Junction, CO 81506

UNGRADED ELEVATION: 8601.3'
FINAL ELEVATION: 8591.9'
AREA OF DISTURBANCE: 7.0± ACRES
AREA OF WORKING PAD SURFACE: 3.2± ACRES
DRAINS TO CASCADE CREEK



BEFORE DIGGING CALL FOR UTILITY LINE LOCATION

NOTE: THE EARTH QUANTITIES ON THIS DRAWING ARE ESTIMATED AND THE USE OF SAID QUANTITIES IS AT THE RESPONSIBILITY OF THE USER.

100 0 100
SCALE FEET

CC 610-21-41

LAYOUT DRAWING 1 OF 8

CONSTRUCTION LAYOUT DRAWING
ESTIMATED EARTHWORK
LARAMIE ENERGY, LLC

CC 610-21-41

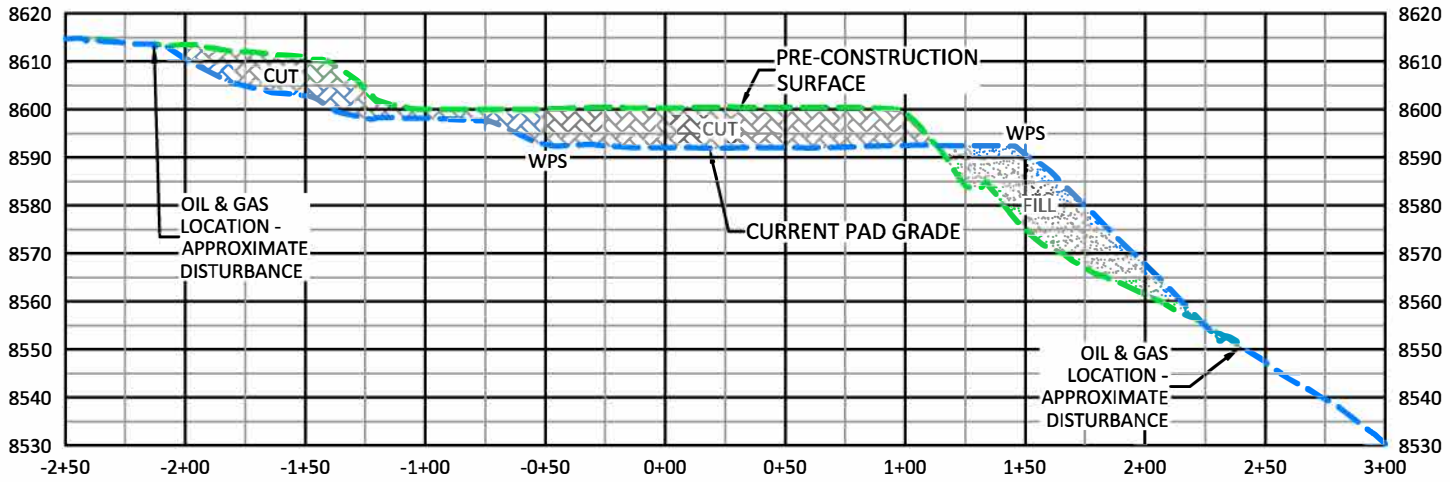
NENW, SECTION 10, T. 6 S., R. 97 W, 6th P.M.,
GARFIELD COUNTY, COLORADO

EXISTING LOCATION, NO ESTIMATED EARTHWORK

ITEM	CUT	FILL	TOPSOIL	EXCESS
PAD	NONE	NONE	NONE	NONE
PIT	NONE			NONE
TOTALS	NONE	NONE	NONE	NONE

DRG GRIFFIN & ASSOCIATES, INC.
1414 ELK ST., ROCK SPRINGS, WY 82901
(307) 362-5028

DRAWN: 10/30/20201 - DEH	SCALE: 1" = 100'
REVISED: N/A	DRG JOB No. 21293
	304B(7)BI CONST



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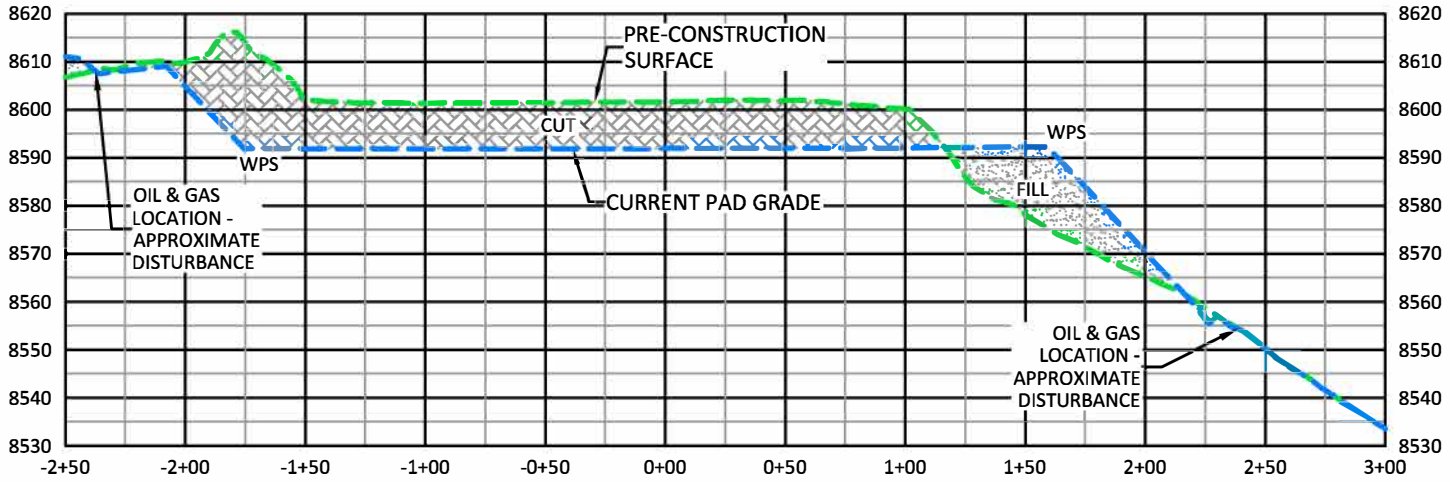
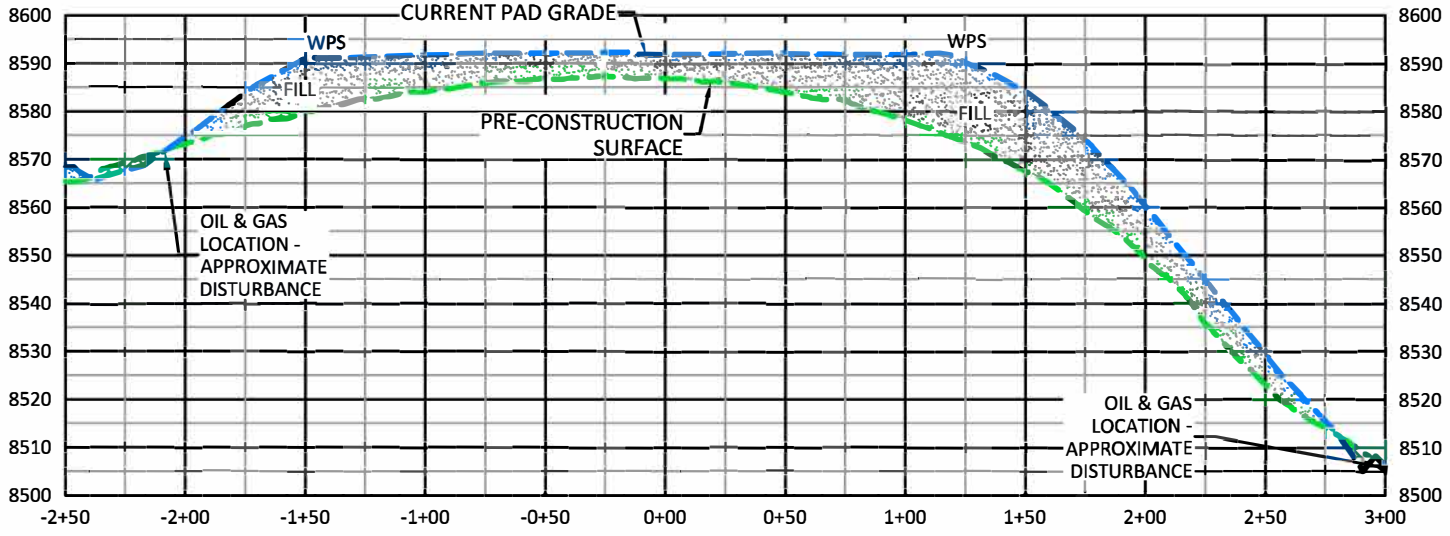


B



C

CC 610-21-41

GRIFFIN & ASSOCIATES, INC.
1414 ELK ST., ROCK SPRINGS, WY 82901
(307) 362-5028

DRAWN: 10/30/20201 - DEH	SCALE: H- 1"=80' V- 1"=40'
REVISED: N/A	DRG JOB No. 21293
	304B(7)BI XSEC

LAYOUT DRAWING 2 OF 8

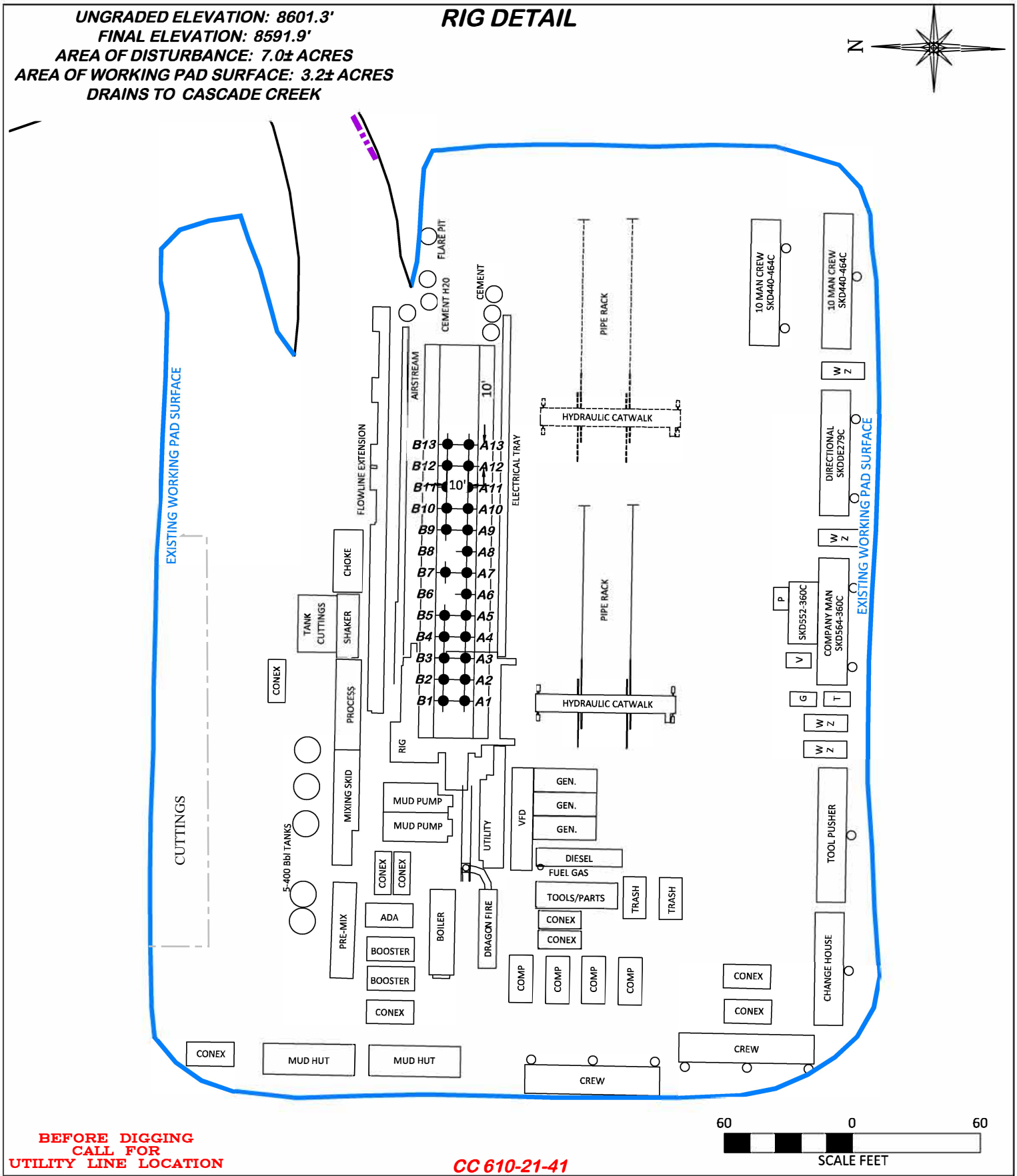
CONSTRUCTION LAYOUT DRAWING
CROSS SECTIONS
LARAMIE ENERGY, LLC

CC 610-21-41

NENW, SECTION 10, T. 6 S., R. 97 W, 6th P.M., GARFIELD COUNTY, COLORADO

UNGRADED ELEVATION: 8601.3'
FINAL ELEVATION: 8591.9'
AREA OF DISTURBANCE: 7.0± ACRES
AREA OF WORKING PAD SURFACE: 3.2± ACRES
DRAINS TO CASCADE CREEK

RIG DETAIL



60 0 60
SCALE FEET

BEFORE DIGGING
CALL FOR
UTILITY LINE LOCATION

CC 610-21-41

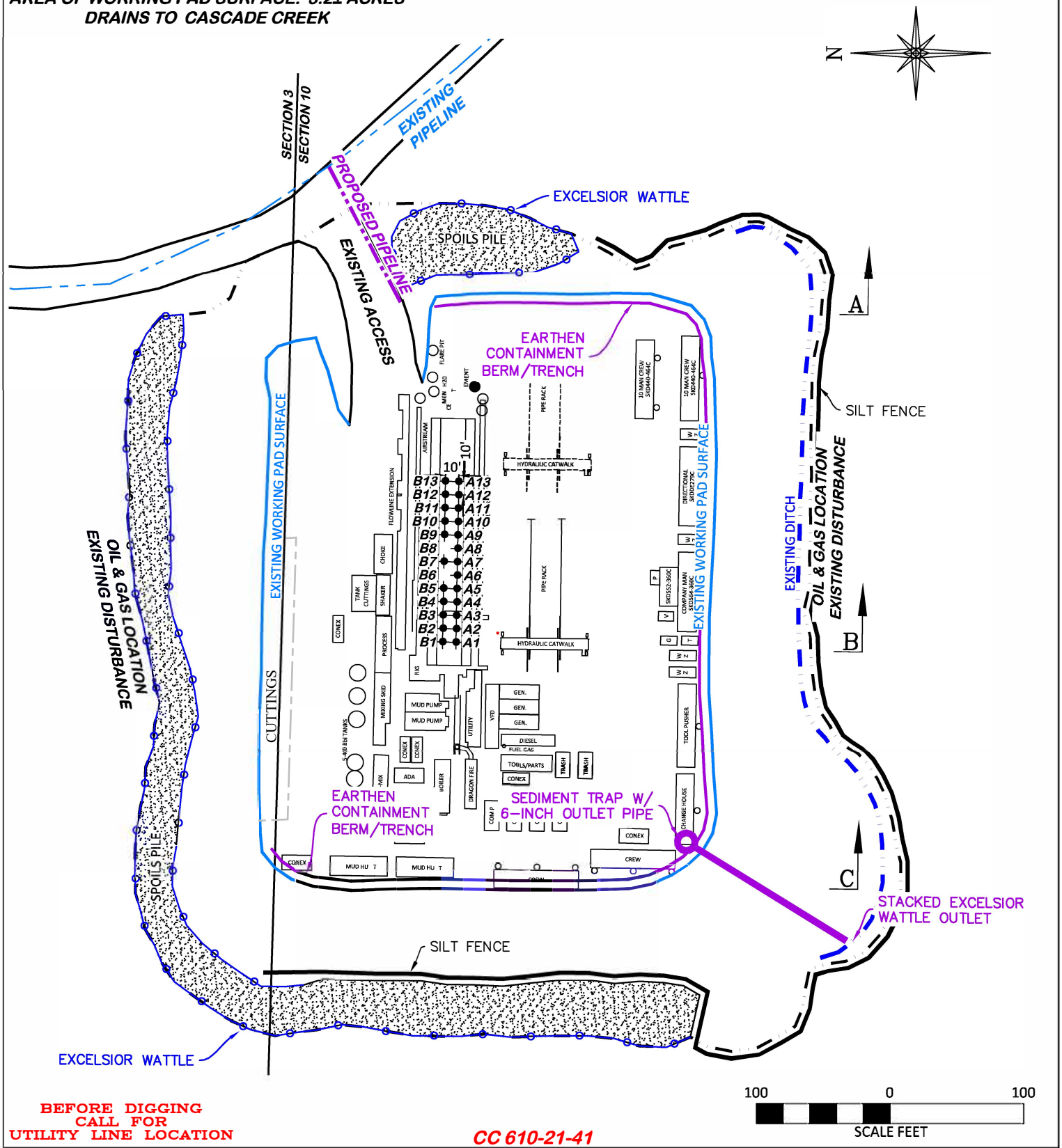
LAYOUT DRAWING 3 OF 8

DRIFFIN & ASSOCIATES, INC.
1414 ELK ST., ROCK SPRINGS, WY 82901
(307) 362-5028

DRAWN: 10/30/20201 - DEH	SCALE: 1" = 60'
REVISED: N/A	DRG JOB No. 21293
	304B(7)BII RIG DET

RIG DETAIL
LARAMIE ENERGY, LLC
CC 610-21-41
NENW, SECTION 10, T. 6 S., R. 97 W, 6th P.M., GARFIELD COUNTY, COLORADO

UNGRADED ELEVATION: 8601.3'
FINAL ELEVATION: 8591.9'
AREA OF DISTURBANCE: 7.0± ACRES
AREA OF WORKING PAD SURFACE: 3.2± ACRES
DRAINS TO CASCADE CREEK



BEFORE DIGGING
CALL FOR
UTILITY LINE LOCATION

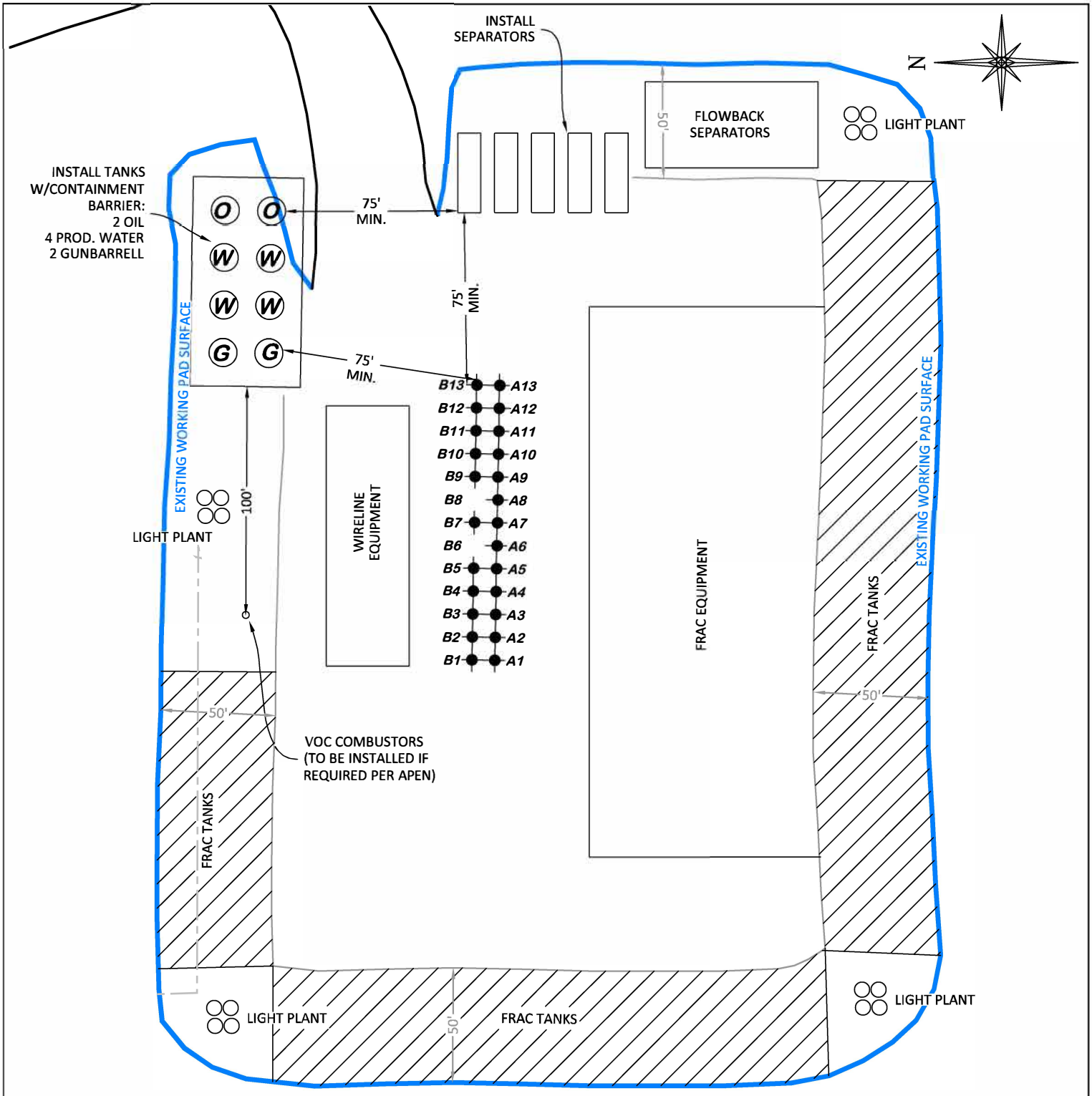
CC 610-21-41

DRIFFIN & ASSOCIATES, INC.
(307) 362-5028
1414 ELK ST., ROCK SPRINGS, WY 82901

DRAWN: 10/30/20201 - DEH	SCALE: 1" = 100'
REVISED: N/A	DRG JOB No. 21293
	304B(7)BII RIG

LAYOUT DRAWING 4 OF 8

PRELIMINARY RIG LAYOUT
LARAMIE ENERGY, LLC
CC 610-21-41
NENW, SECTION 10, T. 6 S., R. 97 W, 6th P.M., GARFIELD COUNTY, COLORADO



NOTES:

1. COMPLETIONS AND FLOWBACK OPERATIONS WILL BE CONDUCTED CONCURRENTLY.
2. EXHIBIT DEPICTS PRELIMINARY FRAC AND FLOWBACK EQUIPMENT LAYOUT. EQUIPMENT AND LAYOUT ARE SUBJECT TO CHANGE DEPENDING ON EQUIPMENT AVAILABILITY AND SITE CONDITIONS.
3. FIFTY-FIVE (55) FRAC TANKS. CAPACITY PER FRAC TANK: 500 BBLS. TOTAL FRAC TANK CAPACITY (55 FRAC TANKS): 27,500 BBLS.
4. EQUIPMENT LOCATED WITHIN THE "FRAC EQUIPMENT" ENVELOPE: HYDRAULIC STIMULATION CONTROL TRAILER, DIESEL FRAC PUMPS, CHARGE PUMP, AND TEMPORARY CHEMICAL STORAGE
5. EACH LIGHT PLANT IS A SELF-CONTAINED UNIT WITH A GENERATOR AND AUXILIARY POWER SOURCE.
6. ACTUAL WATER LINE AND WATER PUMP PLACEMENT DEPENDENT ON PRE-COMPLETION ALIGNMENT OF FRAC TANKS.
7. OPERATOR WILL UTILIZE HEAT PUMPS FOR WINTER OPERATIONS BASED ON LOCATION SPACING.
8. FLOWBACK SUPPORT TRAILER IS LOCATED WITHIN "FLOWBACK SEPARATORS" ENVELOPE.
9. PLEASE REFER TO THE CONSTRUCTION LAYOUT DRAWING FOR STORMWATER CONTROL MEASURES.

60 0 60
SCALE FEET

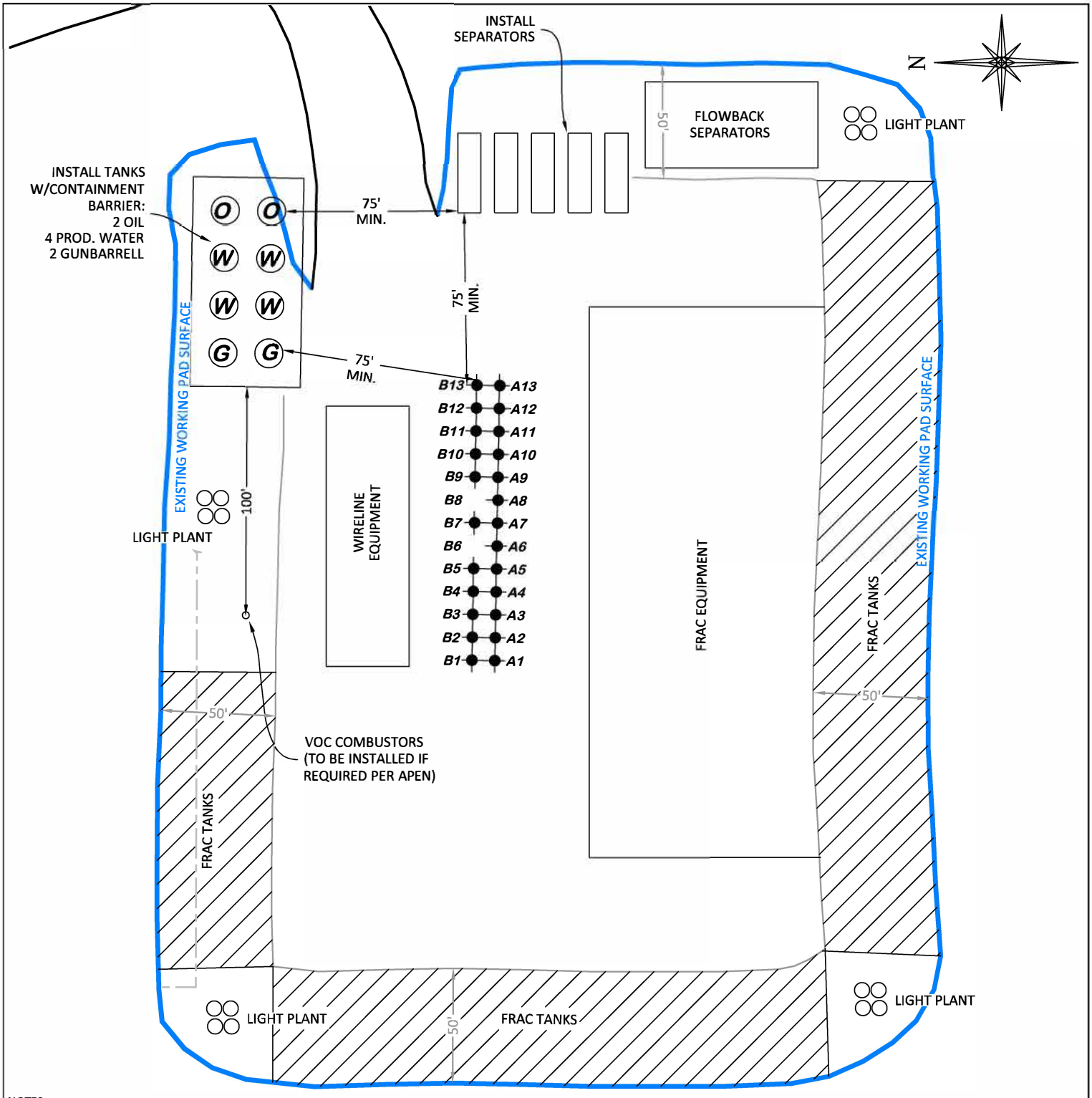
CC 610-21-41

DRG GRIFFIN & ASSOCIATES, INC.
(307) 362-5028
1414 ELK ST., ROCK SPRINGS, WY 82901

DRAWN: 10/30/20201 - DEH	SCALE: 1" = 60'
REVISED: N/A	DRG JOB No. 21293
	LIGHTING

LAYOUT DRAWING 5 OF 8

PRELIMINARY WELL COMPLETIONS AND STIMULATION LAYOUT
LARAMIE ENERGY, LLC
CC 610-21-41
NENW, SECTION 10, T. 6 S., R. 97 W, 6th P.M., GARFIELD COUNTY, COLORADO



NOTES:

1. COMPLETIONS AND FLOWBACK OPERATIONS WILL BE CONDUCTED CONCURRENTLY.
2. EXHIBIT DEPICTS PRELIMINARY FRAC AND FLOWBACK EQUIPMENT LAYOUT. EQUIPMENT AND LAYOUT ARE SUBJECT TO CHANGE DEPENDING ON EQUIPMENT AVAILABILITY AND SITE CONDITIONS.
3. FIFTY-FIVE (55) FRAC TANKS. CAPACITY PER FRAC TANK: 500 BBLS. TOTAL FRAC TANK CAPACITY (55 FRAC TANKS): 27,500 BBLS.
4. EQUIPMENT LOCATED WITHIN THE "FRAC EQUIPMENT" ENVELOPE: HYDRAULIC STIMULATION CONTROL TRAILER, DIESEL FRAC PUMPS, CHARGE PUMP, AND TEMPORARY CHEMICAL STORAGE
5. EACH LIGHT PLANT IS A SELF-CONTAINED UNIT WITH A GENERATOR AND AUXILIARY POWER SOURCE.
6. ACTUAL WATER LINE AND WATER PUMP PLACEMENT DEPENDENT ON PRE-COMPLETION ALIGNMENT OF FRAC TANKS.
7. OPERATOR WILL UTILIZE HEAT PUMPS FOR WINTER OPERATIONS BASED ON LOCATION SPACING.
8. FLOWBACK SUPPORT TRAILER IS LOCATED WITHIN "FLOWBACK SEPARATORS" ENVELOPE.
9. PLEASE REFER TO THE CONSTRUCTION LAYOUT DRAWING FOR STORMWATER CONTROL MEASURES.

60 0 60
SCALE FEET

CC 610-21-41

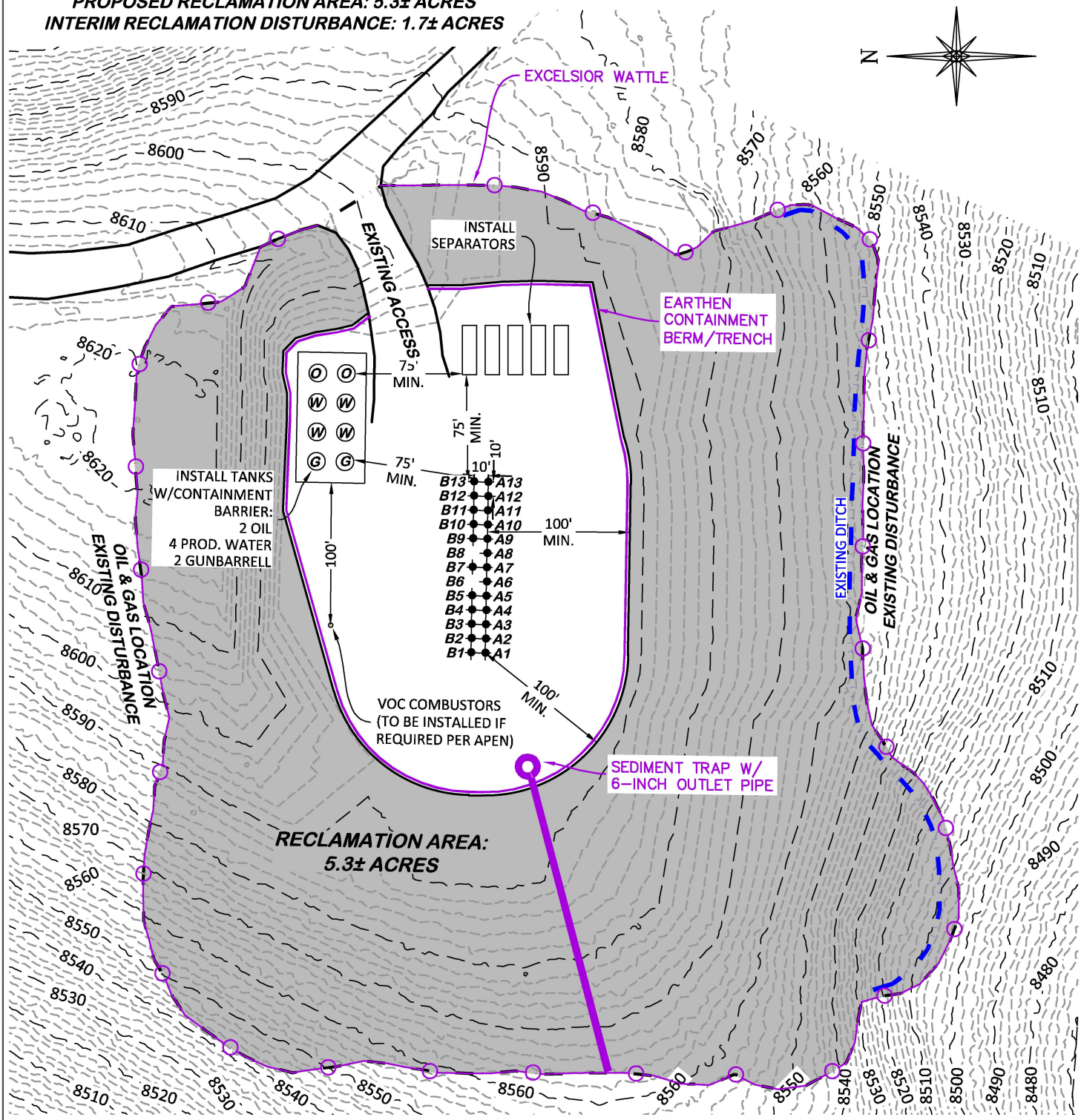
DRG GRIFFIN & ASSOCIATES, INC.
(307) 362-5028
1414 ELK ST., ROCK SPRINGS, WY 82901

LAYOUT DRAWING 6 OF 8

DRAWN: 10/30/20201 - DEH	SCALE: 1" = 60'
REVISED: N/A	DRG JOB No. 21293
	LIGHTING

FLOWBACK EQUIPMENT LAYOUT
LARAMIE ENERGY, LLC
CC 610-21-41
NENW, SECTION 10, T. 6 S., R. 97 W, 6th P.M., GARFIELD COUNTY, COLORADO

AREA OF DISTURBANCE: 7.0± ACRES
AREA OF WORKING PAD SURFACE: 3.2± ACRES
PROPOSED RECLAMATION AREA: 5.3± ACRES
INTERIM RECLAMATION DISTURBANCE: 1.7± ACRES



BEFORE DIGGING CALL FOR UTILITY LINE LOCATION

100 0 100
SCALE FEET

CC 610-21-41

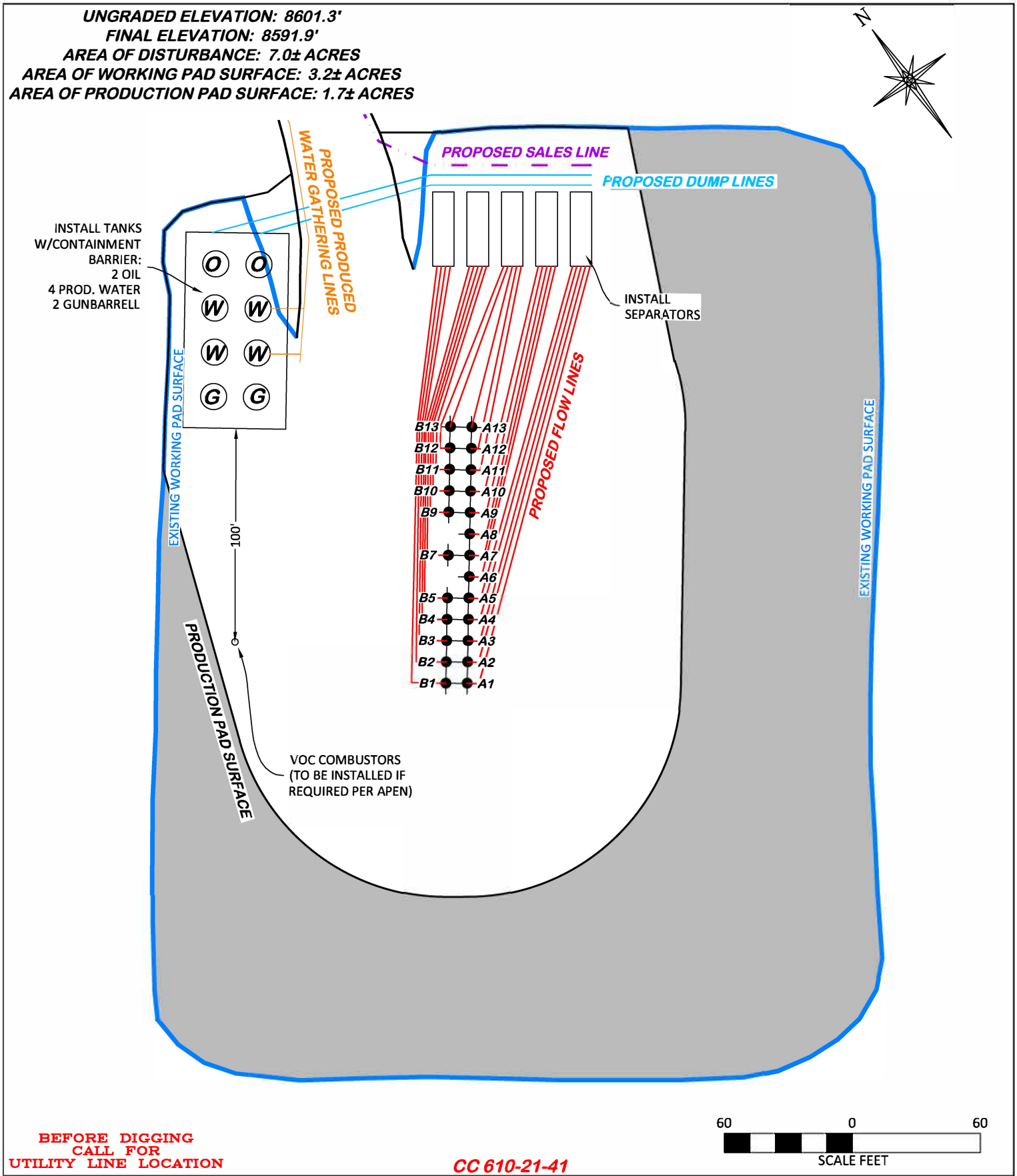
DRG GRIFFIN & ASSOCIATES, INC.
(307) 362-5028 1414 ELK ST., ROCK SPRINGS, WY 82901

DRAWN: 10/30/20201 - DEH	SCALE: 1" = 100'
REVISED: N/A	DRG JOB No. 21293
	304C(16) RECLAMATION

LAYOUT DRAWING 7 OF 8

INTERIM RECLAMATION PLAN PRELIMINARY FACILITY LAYOUT PROPOSED INTERIM RECLAMATION LARAMIE ENERGY, LLC CC610-21-41 NENW,SECTION 10, T.6S.,R.97W, 6thP.M., GARFIELD COUNTY, COLORADO

UNGRADED ELEVATION: 8601.3'
FINAL ELEVATION: 8591.9'
AREA OF DISTURBANCE: 7.0± ACRES
AREA OF WORKING PAD SURFACE: 3.2± ACRES
AREA OF PRODUCTION PAD SURFACE: 1.7± ACRES



BEFORE DIGGING CALL FOR UTILITY LINE LOCATION

CC 610-21-41

LAYOUT DRAWING 8 OF 8

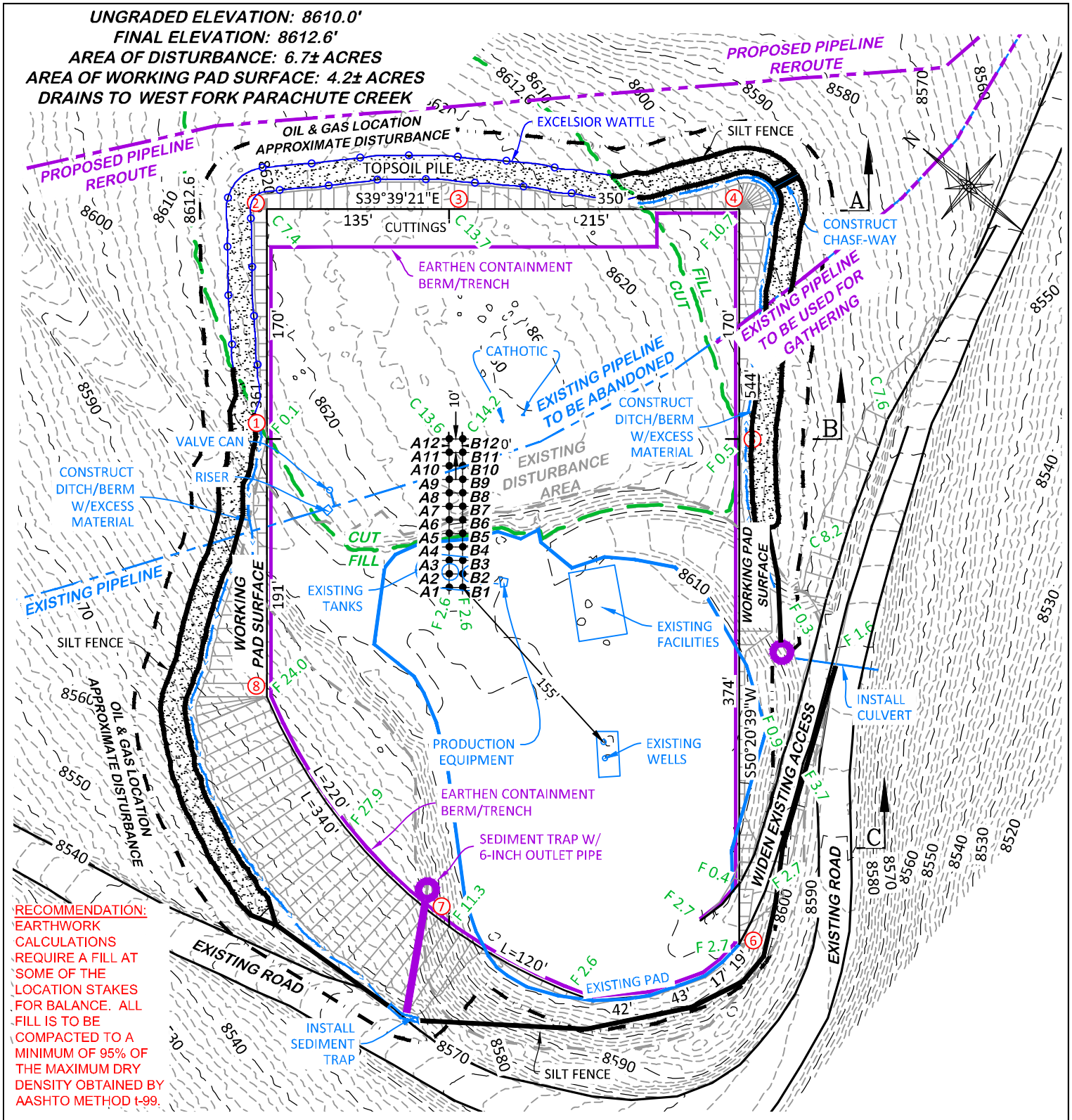
DRG GRIFFIN & ASSOCIATES, INC.
1414 ELK ST., ROCK SPRINGS, WY 82901
(307) 362-5028

DRAWN: 10/30/20201 - DEH	SCALE: 1" = 60'
REVISED: N/A	DRG JOB No. 21293
	304b(7)Bv FACILITY

PRELIMINARY FACILITY LAYOUT
LARAMIE ENERGY, LLC
CC 610-21-41
NENW, SECTION 10, T. 6 S., R. 97 W, 6th P.M., GARFIELD COUNTY, COLORADO

Cascade Creek 0603-23-32 Well Site
Rule 304.b.(7).B. Layout Drawings

Laramie Energy, LLC
760 Horizon Drive, Suite 101
Grand Junction, CO 81506



LAYOUT DRAWING 1 OF 7

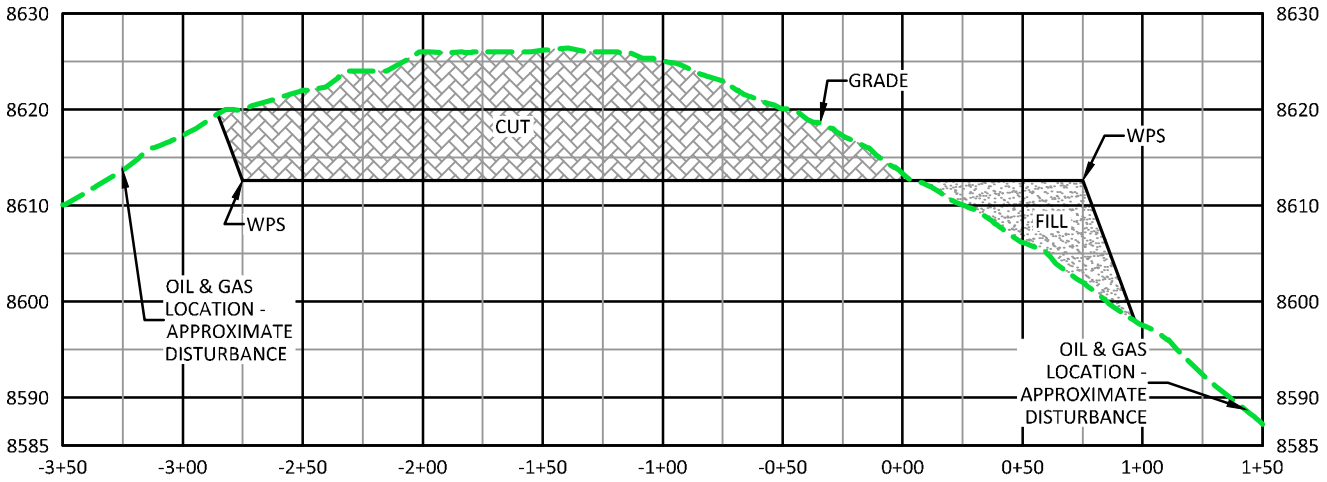
LARAMIE ENERGY, LLC.
CC 603-23-32 PAD
NESW, SECTION 3, T. 6 S., R. 97 W., 6th P.M.,
GARFIELD COUNTY, COLORADO

DRG GRIFFIN & ASSOCIATES, INC.
1414 ELK ST., ROCK SPRINGS, WY 82901
(307) 362-5028

DRAWN: 6/21/2017 - TCM	SCALE: 1" = 100'
REVISED: N/A	DRG JOB No. 21294
	304b(7)Bi CONST

ESTIMATED EARTHWORK

ITEM	CUT	FILL	TOPSOIL	EXCESS
PAD	31,467 CY	28,831 CY	2,154 CY	482 CY
PIT	NONE			NONE
TOTALS	31,467 CY	28,831 CY	2,154 CY	482 CY



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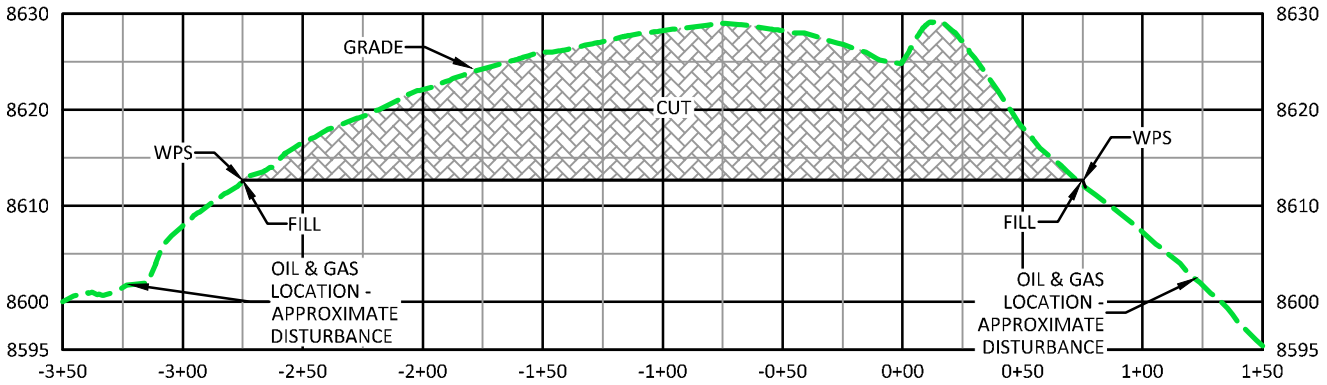

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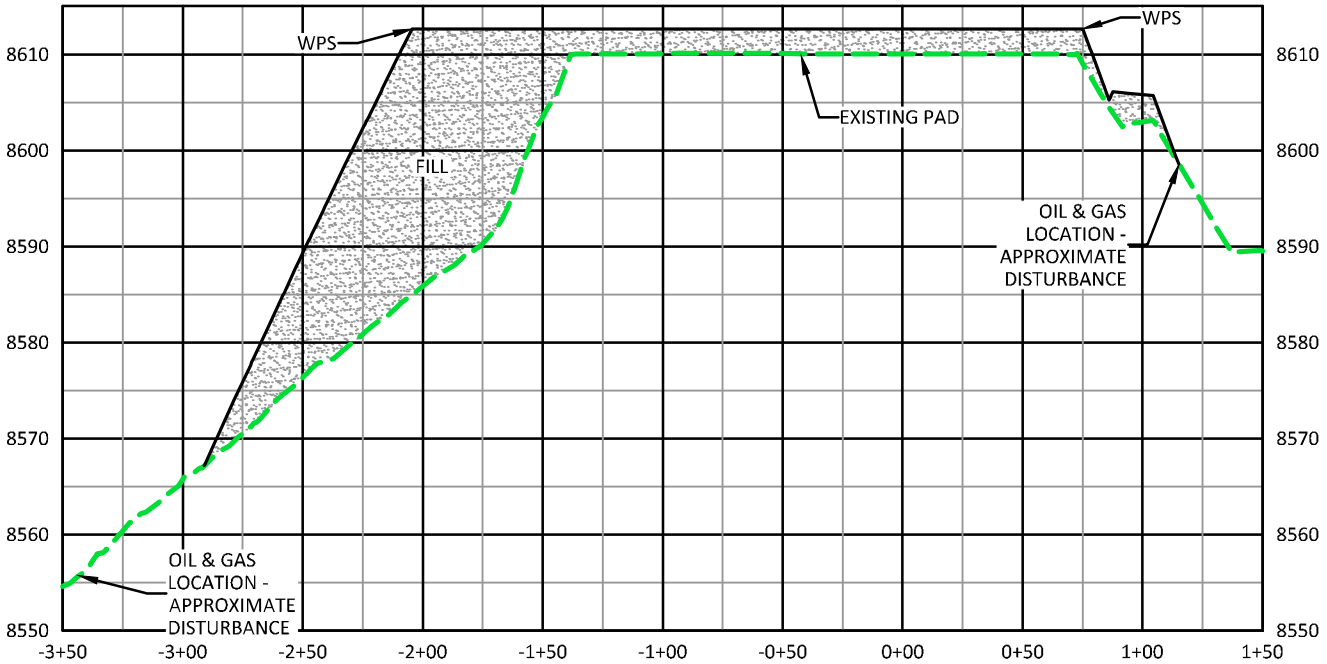


C

CUT SLOPES 1.5:1
FILL SLOPES 1.5:1

CC 603-23-32 PAD

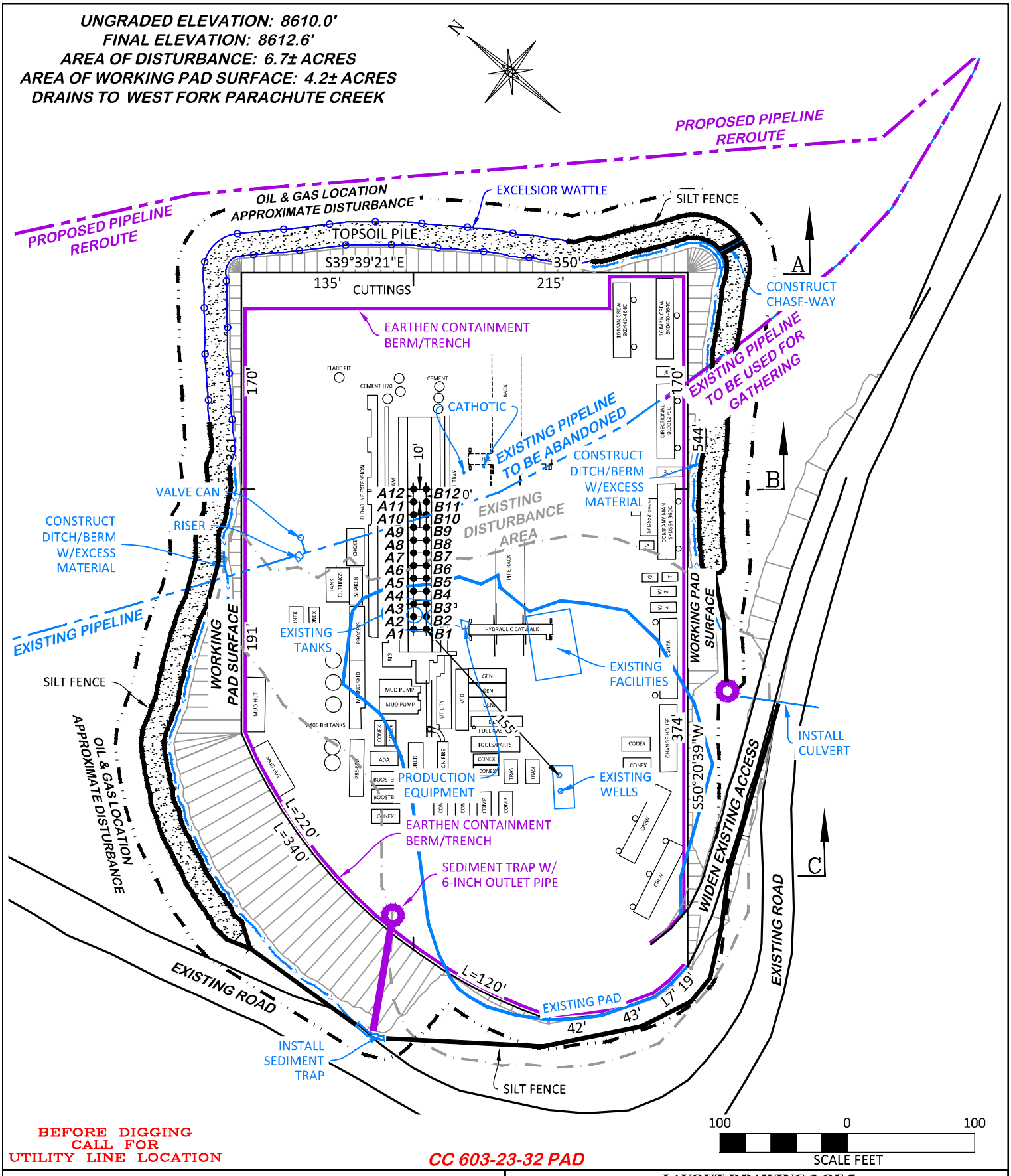
RECOMMENDATION:
EARTHWORK CALCULATIONS REQUIRE A FILL AT SOME OF THE LOCATION STAKES FOR BALANCE. ALL FILL IS TO BE COMPACTED TO A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY OBTAINED BY AASHTO METHOD t-99.

DRG RIFFIN & ASSOCIATES, INC.
(307) 362-5028
1414 ELK ST., ROCK SPRINGS, WY 82901

DRAWN: 6/21/2017 - TCM	SCALE: H-1" = 80' V- 1" = 20'
REVISED: N/A	DRG JOB No. 21294
	304b(7)Bi XSEC

LAYOUT DRAWING 2 OF 7

LARAMIE ENERGY, LLC.
CC 603-23-32 PAD
NESW, SECTION 3, T. 6 S., R. 97 W., 6th P.M.,
GARFIELD COUNTY, COLORADO



BEFORE DIGGING
CALL FOR
UTILITY LINE LOCATION

CC 603-23-32 PAD

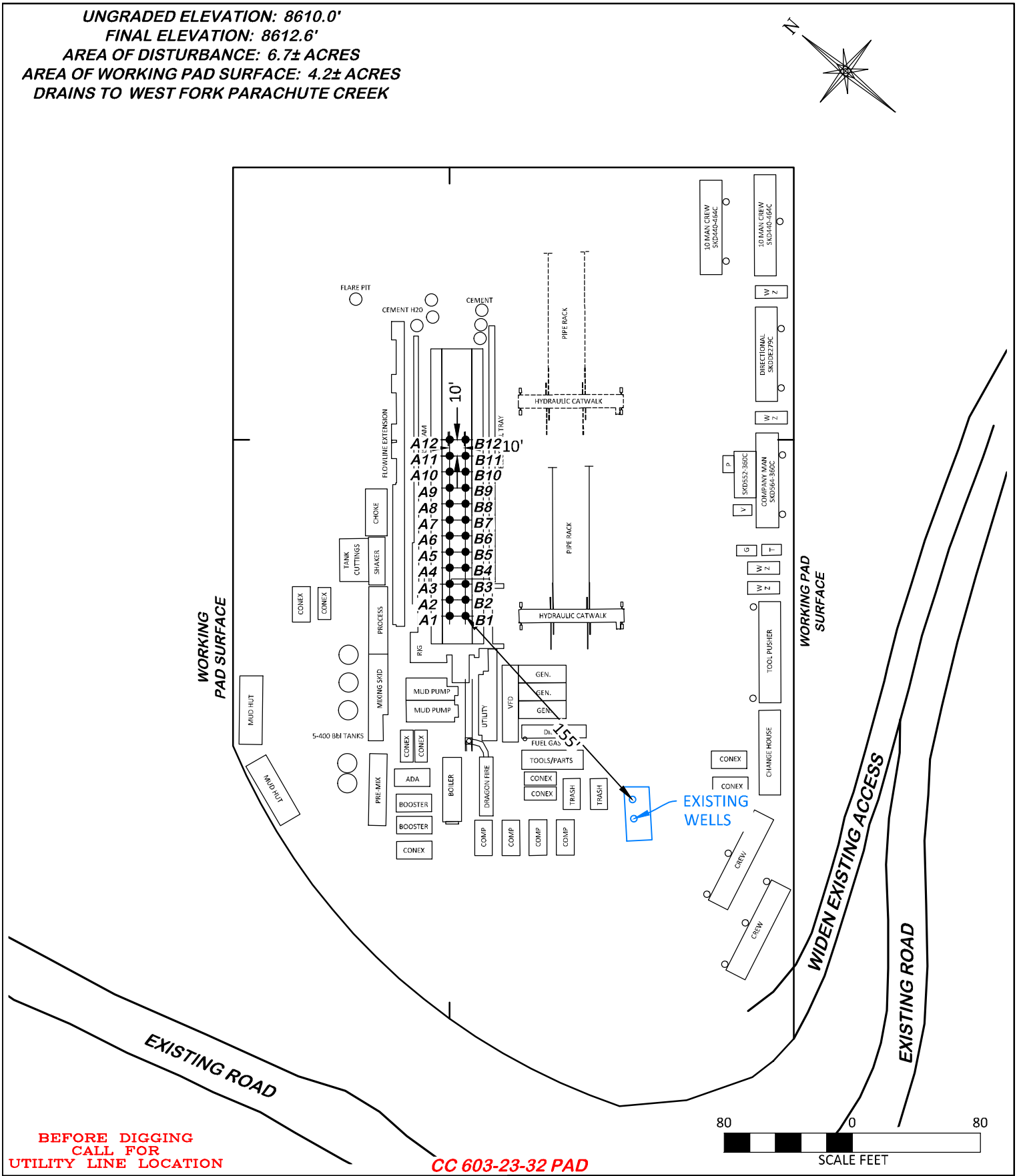
DRG RIFFIN & ASSOCIATES, INC.
(307) 362-5028
1414 ELK ST., ROCK SPRINGS, WY 82901

LAYOUT DRAWING 3 OF 7

PRELIMINARY RIG LAYOUT
LARAMIE ENERGY, LLC.
CC 603-23-32 PAD
NESW, SECTION 3, T. 6 S., R. 97 W., 6th P.M., GARFIELD COUNTY, COLORADO

DRAWN: 6/21/2017 - TCM	SCALE: 1" = 100'
REVISED: N/A	DRG JOB No. 21294
	304b(7)Bii RIG

UNGRADED ELEVATION: 8610.0'
FINAL ELEVATION: 8612.6'
AREA OF DISTURBANCE: 6.7± ACRES
AREA OF WORKING PAD SURFACE: 4.2± ACRES
DRAINS TO WEST FORK PARACHUTE CREEK



BEFORE DIGGING
CALL FOR
UTILITY LINE LOCATION

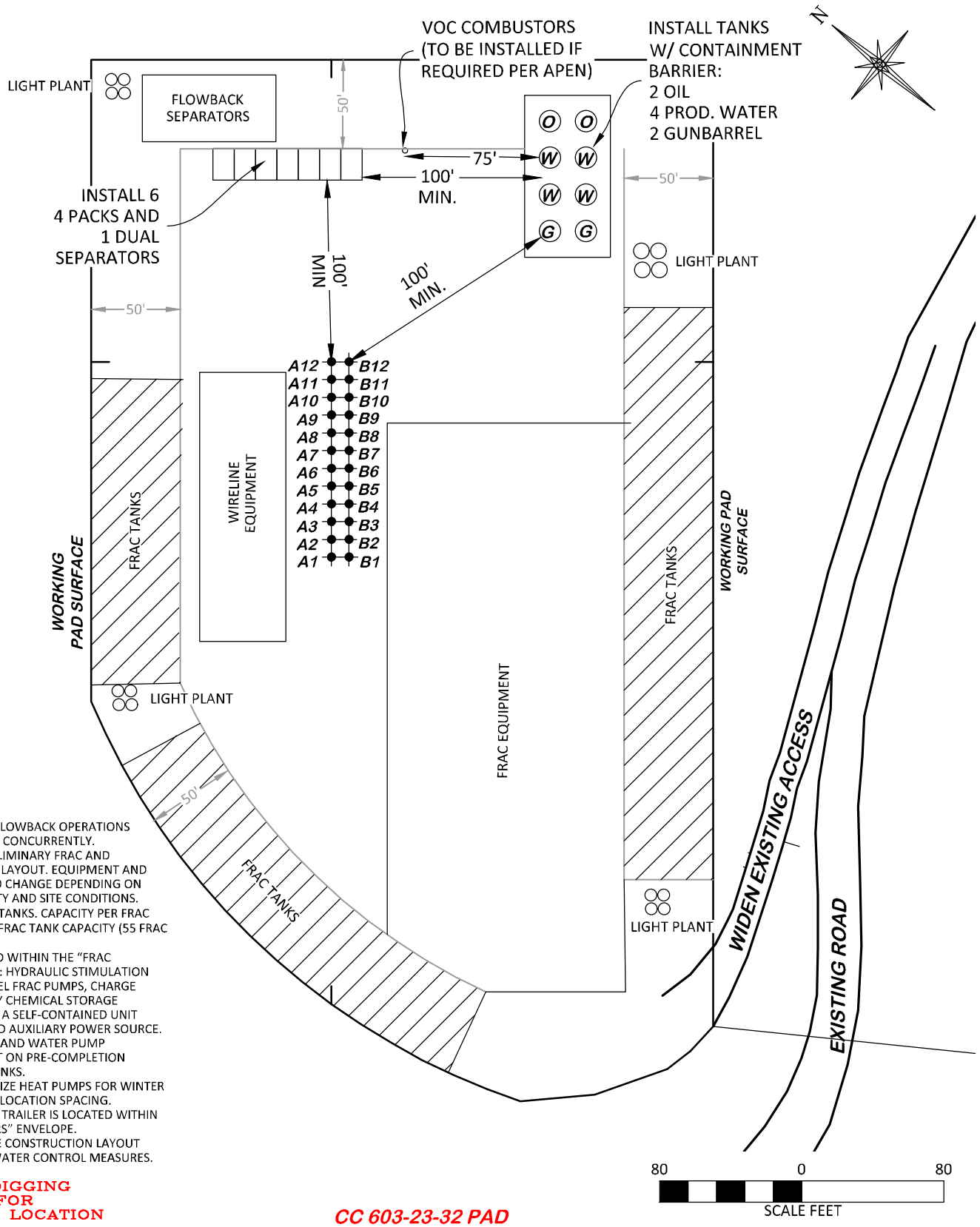
CC 603-23-32 PAD

DRG RIFFIN & ASSOCIATES, INC.
(307) 362-5028
1414 ELK ST., ROCK SPRINGS, WY 82901

DRAWN: 6/21/2017 - TCM	SCALE: 1" = 80'
REVISED: N/A	DRG JOB No. 21294
	304b(7)Bii RIG2 DET

LAYOUT DRAWING 4 OF 7

RIG DETAIL
LARAMIE ENERGY, LLC.
CC 603-23-32 PAD
NESW, SECTION 3, T. 6 S., R. 97 W., 6th P.M., GARFIELD COUNTY, COLORADO



NOTES:
1. COMPLETIONS AND FLOWBACK OPERATIONS
2. WILL BE CONDUCTED CONCURRENTLY.
3. EXHIBIT DEPICTS PRELIMINARY FRAC AND FLOWBACK EQUIPMENT LAYOUT. EQUIPMENT AND LAYOUT ARE SUBJECT TO CHANGE DEPENDING ON EQUIPMENT AVAILABILITY AND SITE CONDITIONS.
4. FIFTY-FIVE (55) FRAC TANKS. CAPACITY PER FRAC TANK: 500 BBLS. TOTAL FRAC TANK CAPACITY (55 FRAC TANKS): 27,500 BBLS.
5. EQUIPMENT LOCATED WITHIN THE "FRAC EQUIPMENT" ENVELOPE: HYDRAULIC STIMULATION CONTROL TRAILER, DIESEL FRAC PUMPS, CHARGE PUMP, AND TEMPORARY CHEMICAL STORAGE
6. EACH LIGHT PLANT IS A SELF-CONTAINED UNIT WITH A GENERATOR AND AUXILIARY POWER SOURCE.
7. ACTUAL WATER LINE AND WATER PUMP PLACEMENT DEPENDENT ON PRE-COMPLETION ALIGNMENT OF FRAC TANKS.
8. OPERATOR WILL UTILIZE HEAT PUMPS FOR WINTER OPERATIONS BASED ON LOCATION SPACING.
9. FLOWBACK SUPPORT TRAILER IS LOCATED WITHIN "FLOWBACK SEPARATORS" ENVELOPE.
10. PLEASE REFER TO THE CONSTRUCTION LAYOUT DRAWING FOR STORMWATER CONTROL MEASURES.

BEFORE DIGGING
CALL FOR
UTILITY LINE LOCATION

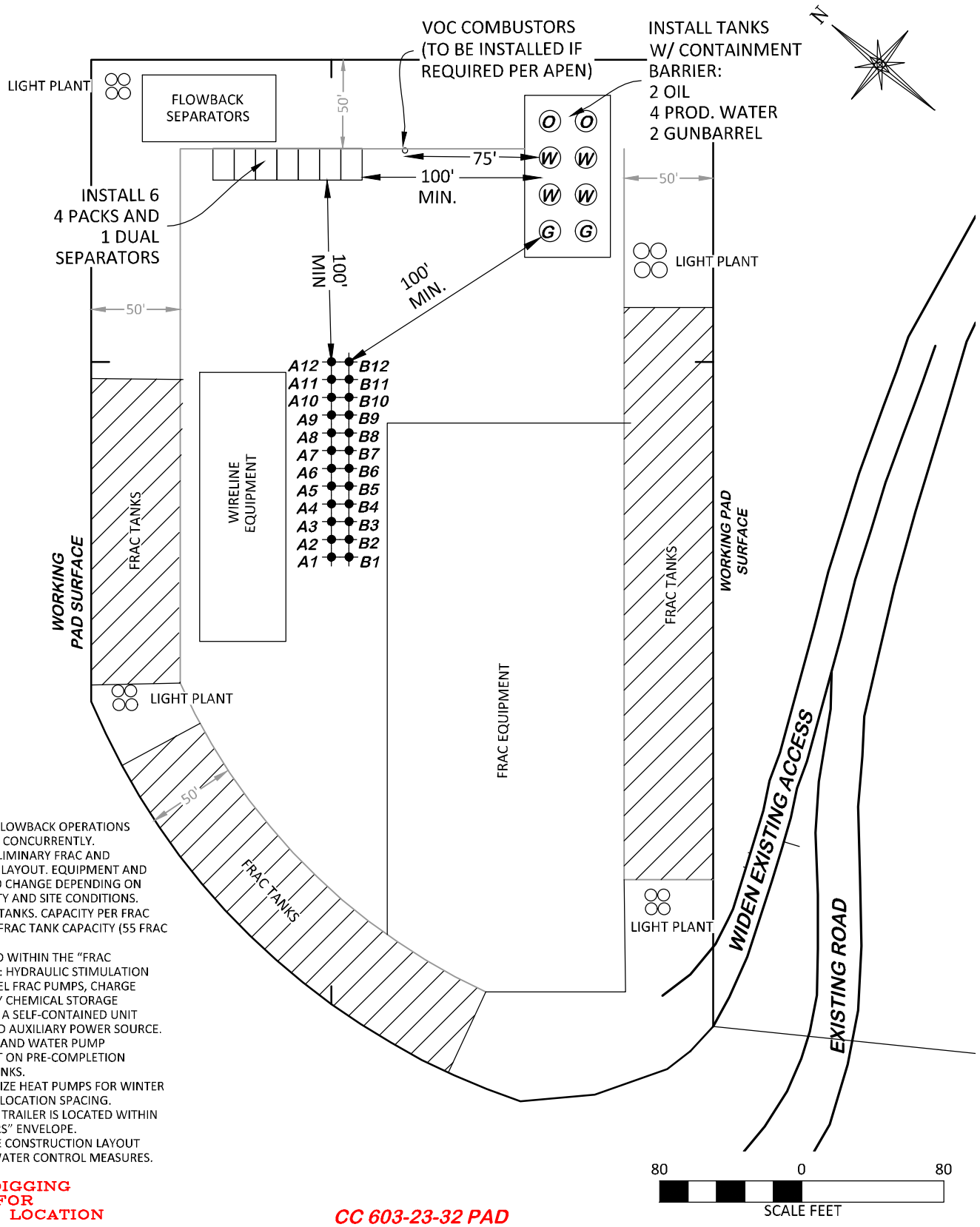
CC 603-23-32 PAD

DRG GRIFFIN & ASSOCIATES, INC.
(307) 362-5028
1414 ELK ST., ROCK SPRINGS, WY 82901

DRAWN: 6/21/2017 - TCM	SCALE: 1" = 60'
REVISED: N/A	DRG JOB No. 21294
	304b(7)Biii COMP

LAYOUT DRAWING 5 OF 7

PRELIMINARY WELL COMPLETIONS AND STIMULATION LAYOUT
LARAMIE ENERGY, LLC.
CC 603-23-32 PAD
NESW, SECTION 3, T. 6 S., R. 97 W., 6th P.M., GARFIELD COUNTY, COLORADO



NOTES:
1. COMPLETIONS AND FLOWBACK OPERATIONS
2. WILL BE CONDUCTED CONCURRENTLY.
3. EXHIBIT DEPICTS PRELIMINARY FRAC AND FLOWBACK EQUIPMENT LAYOUT. EQUIPMENT AND LAYOUT ARE SUBJECT TO CHANGE DEPENDING ON EQUIPMENT AVAILABILITY AND SITE CONDITIONS.
4. FIFTY-FIVE (55) FRAC TANKS. CAPACITY PER FRAC TANK: 500 BBLS. TOTAL FRAC TANK CAPACITY (55 FRAC TANKS): 27,500 BBLS.
5. EQUIPMENT LOCATED WITHIN THE "FRAC EQUIPMENT" ENVELOPE: HYDRAULIC STIMULATION CONTROL TRAILER, DIESEL FRAC PUMPS, CHARGE PUMP, AND TEMPORARY CHEMICAL STORAGE
6. EACH LIGHT PLANT IS A SELF-CONTAINED UNIT WITH A GENERATOR AND AUXILIARY POWER SOURCE.
7. ACTUAL WATER LINE AND WATER PUMP PLACEMENT DEPENDENT ON PRE-COMPLETION ALIGNMENT OF FRAC TANKS.
8. OPERATOR WILL UTILIZE HEAT PUMPS FOR WINTER OPERATIONS BASED ON LOCATION SPACING.
9. FLOWBACK SUPPORT TRAILER IS LOCATED WITHIN "FLOWBACK SEPARATORS" ENVELOPE.
10. PLEASE REFER TO THE CONSTRUCTION LAYOUT DRAWING FOR STORMWATER CONTROL MEASURES.

BEFORE DIGGING
CALL FOR
UTILITY LINE LOCATION

CC 603-23-32 PAD

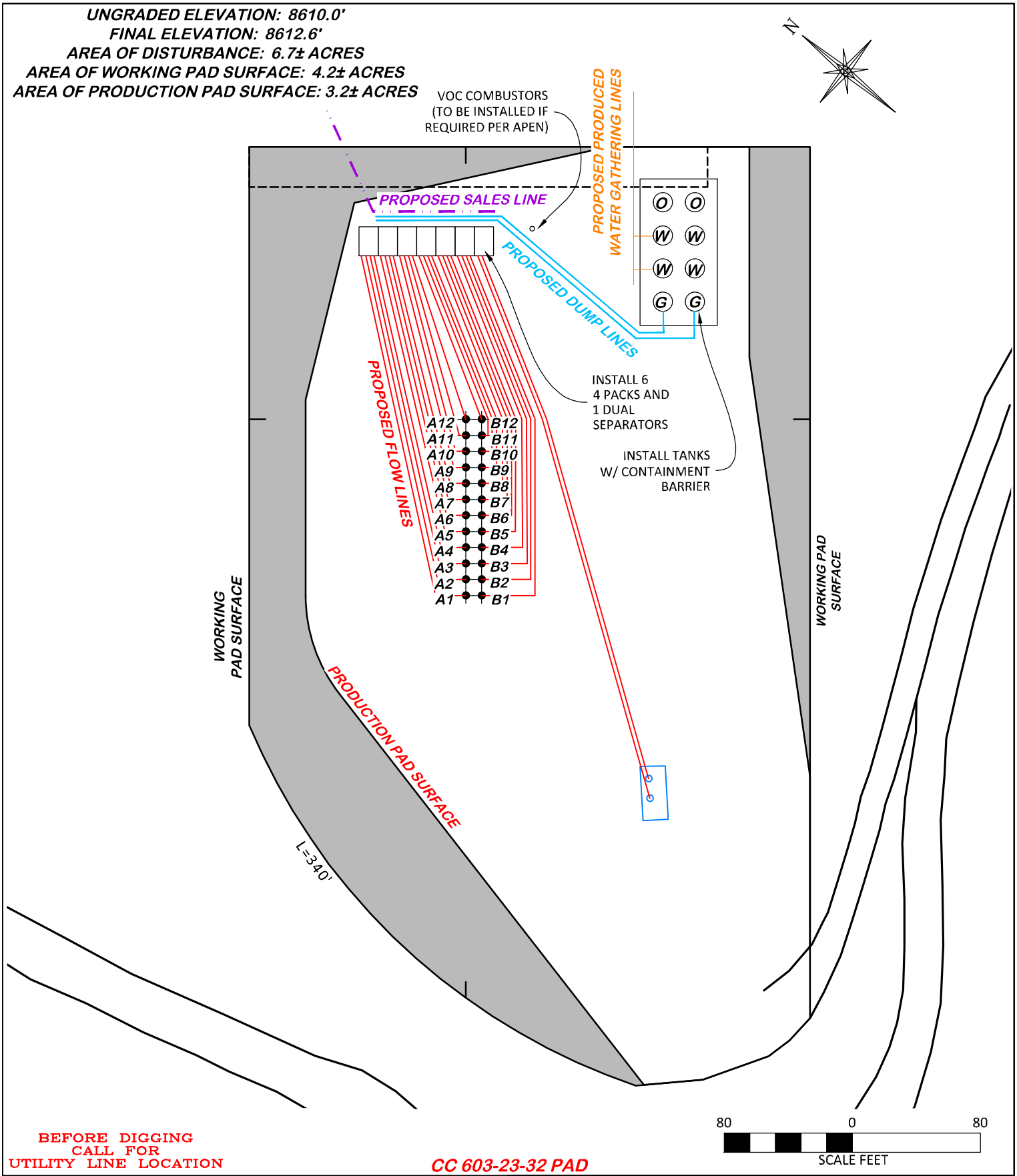
DRG GRIFFIN & ASSOCIATES, INC.
(307) 362-5028
1414 ELK ST., ROCK SPRINGS, WY 82901

DRAWN: 6/21/2017 - TCM	SCALE: 1" = 60'
REVISED: N/A	DRG JOB No. 21294
	304b(7)Biv FLOWBACK

LAYOUT DRAWING 6 OF 7

FLOWBACK EQUIPMENT LAYOUT
LARAMIE ENERGY, LLC.
CC 603-23-32 PAD
NESW, SECTION 3, T. 6 S., R. 97 W., 6th P.M., GARFIELD COUNTY, COLORADO

UNGRADED ELEVATION: 8610.0'
FINAL ELEVATION: 8612.6'
AREA OF DISTURBANCE: 6.7± ACRES
AREA OF WORKING PAD SURFACE: 4.2± ACRES
AREA OF PRODUCTION PAD SURFACE: 3.2± ACRES



BEFORE DIGGING
CALL FOR
UTILITY LINE LOCATION

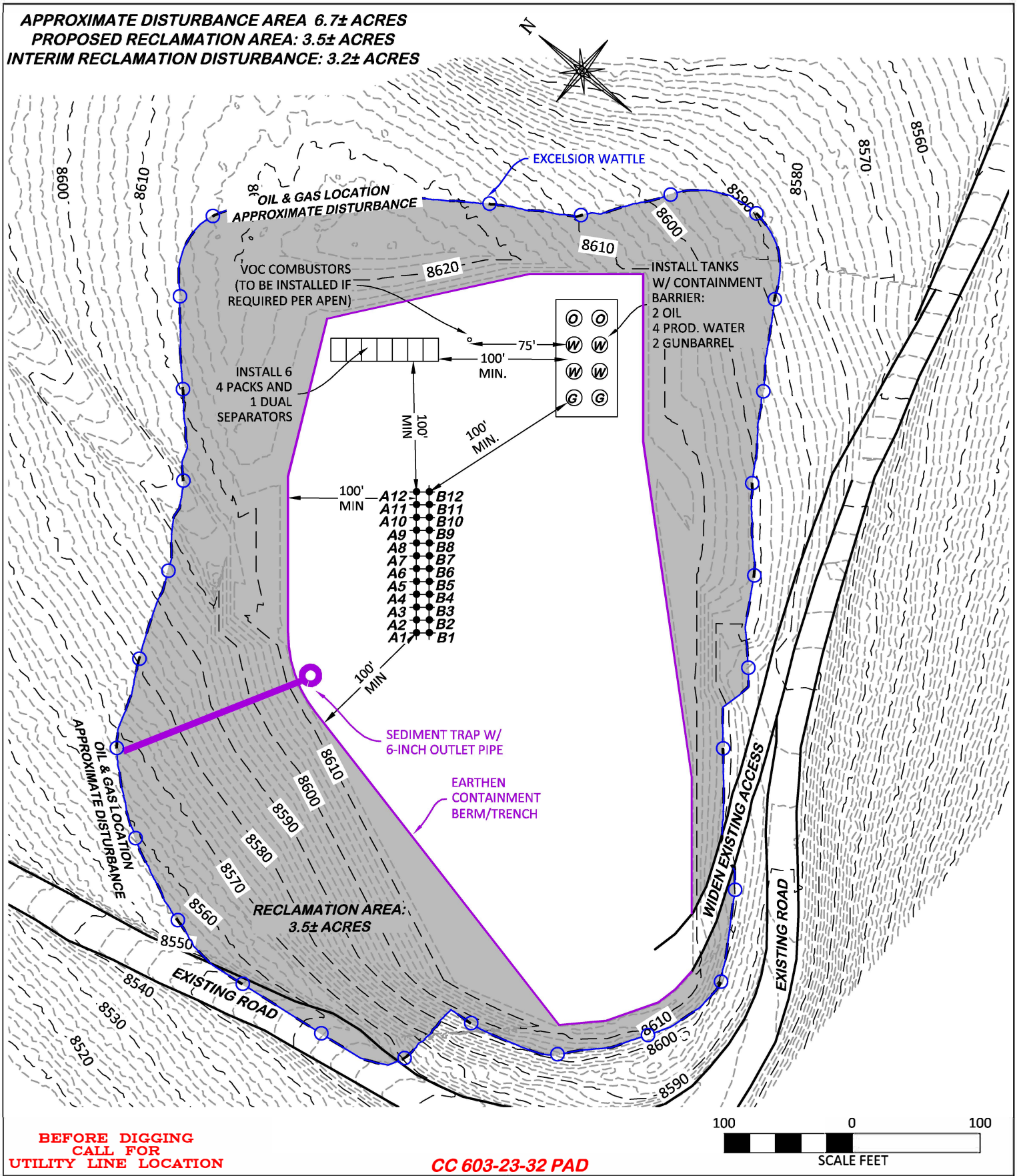
CC 603-23-32 PAD

DRG RIFFIN & ASSOCIATES, INC.
(307) 362-5028
1414 ELK ST., ROCK SPRINGS, WY 82901

DRAWN: 6/21/2017 - TCM	SCALE: 1" = 80'
REVISED: N/A	DRG JOB No. 21294
	304b(7)Bv FACILITY

LAYOUT DRAWING 7 OF 7

PRELIMINARY FACILITY LAYOUT
LARAMIE ENERGY, LLC.
CC 603-23-32 PAD
NESW, SECTION 3, T. 6 S., R. 97 W., 6th P.M.,
GARFIELD COUNTY, COLORADO



BEFORE DIGGING
CALL FOR
UTILITY LINE LOCATION

CC 603-23-32 PAD

FACILITY LAYOUT DRAWING - INTERIM RECLAMATION PLAN

DRG GRIFFIN & ASSOCIATES, INC.
1414 ELK ST., ROCK SPRINGS, WY 82901
(307) 362-5028

DRAWN: 6/21/2017 - TCM	SCALE: 1" = 100'
REVISED: N/A	DRG JOB No. 21294
	304c(16) RECLAMATION

PROPOSED INTERIM RECLAMATION LARAMIE ENERGY, LLC.
CC 603-23-32 PAD
NESW, SECTION 3, T. 6 S., R. 97 W., 6th P.M., GARFIELD COUNTY, COLORADO

Appendix B

Approved Third-Party Waste Disposal Facilities

Approved Third-Party Waste Disposal Facilities

Garfield County Landfill
0075 County Road 246
Rifle, CO 81650
(970)625-2516
https://www.garfield-county.com/landfill/

Greenleaf Environmental Services
15655 45 1/2 Road
De Beque, CO, 81630
(970) 283-8992
https://www.greenlfservices.com/

ECDC Environmental Landfill
1111 West Highway 123
East Carbon, UT 84520
(435) 888-4113

Safety Kleen
368 Bonny Street
Grand Junction, CO 81501
(970) 241-1343
https://www.safety-kleen.com/locations

Appendix C

Waste List and Waste Management Guidelines

Laramie Energy 2021 Cascade Creek OGDP

Waste List and Waste Management Guides

Cement - Excess	
Waste Generation Description	Unused cement used in drilling and well work operations.
Classification	Non-Hazardous
Classification Basis	Does not meet the requirements for hazardous waste as defined by 40 CFR 261 or UAC R315-5.
Handling/Storage	Containerize in leak-proof containers and keep dry. Keep containers closed when not in use and store in designated non-hazardous waste storage areas that reduce the potential for release.
Transportation	Waste must be transported by an authorized and certified transporter.
Disposal	If excess cement is in a slurry, place in reserve pit for subsequent pit closure. Dry excess cement should be returned to vendor.
Approved Waste Disposal Facilities	Refer to Appendix A for a list of approved waste disposal facilities.
Recycling	Return unused dry cement to vendor.

Crude Oil / Condensate Collected from Spills	
Waste Generation Description	Crude oil and condensate collected from spills, leaks, and operation upsets.
Classification	E&P Exempt
Classification Basis	Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53.
Handling/Storage	If not placed back into production system, containerize in rain-proof and leak-proof containers that are compatible with the material stored therein. Keep containers closed when not in use. Store containers in designated non-hazardous waste storage areas that reduce the potential for release.
Labeling	Label with contents.
Required Logs, Manifests, Notifications	Use the state specified method of shipment for E&P Waste (required manifest or standard bill of lading).
Transportation	Waste must be transported by an authorized and certified transporter.
Disposal	If not placed back in production system, dispose of at an approved E&P exempt waste landfill or landfarm.
Approved Waste Disposal Facilities	Refer to Appendix A for a list of approved waste disposal facilities.
Recycling	Return to production stream for recovery.
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of five (5) years.

Domestic Refuse	
Waste Generation Description	General personnel trash, paper, food waste, etc.
Classification	Municipal/Domestic Solid Waste
Classification Basis	Does not meet the criteria for hazardous waste as defined by 40 CFR 261 or UAC R315-5 but may be classified as hazardous if mismanaged.
Handling/Storage	Do not mix with material that is contaminated or may be hazardous. Place domestic refuse in trash receptacle if not recycled.
Transportation	Waste must be transported by an authorized and certified transporter.
Disposal	Dispose of at an approved municipal waste landfill.
Approved Waste Disposal Facilities	Garfield County Landfill or Greenleaf Environmental Services
Recycling	Recycle at an approved recycling facility.
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of five (5) years.

Drilling Fluid/Mud	
Waste Generation Description	Water-based circulating fluid/mud used in the rotary drilling of wells to clean and condition the hole and to counterbalance formation pressure.
Classification	E&P Exempt
Classification Basis	Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53, but may be classified as Hazardous if mismanaged.
Handling/Storage	Closed loop system will be used to separate solids from liquid. The majority of drilling fluids are anticipated to be clean and clean drilling fluids will be recycled and used in drilling operations at the next pad location. Any drilling fluids that are deemed to be unusable, will be transported to an approved off-site disposal facility.
Required Logs, Manifests, Notifications	Use the state specified method of shipment for E&P Waste (required manifest or standard bill of lading).
Transportation	Waste must be transported by an authorized and certified transporter.
Disposal	Dispose of at an approved E&P exempt waste landfill or approved subsurface injection facility.
Approved Waste Disposal Facilities	Refer to Appendix A for a list of approved waste disposal facilities.
Recycling	Reuse drilling fluid whenever possible, otherwise recycle at an approved recycling facility.
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of five (5) years.

Drilling Cuttings/Oily Waste	
Waste Generation Description	Particles and cuttings generated by drilling into the subsurface geological formations including cured cement carried to the surface with the drilling fluid (water based).
Classification	E&P Exempt
Classification Basis	Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53.
Handling/Storage	Store to dry on location then transport for treatment to ACF
Required Sampling/Analysis[1] for Classification Status	COGCC table 915-1
Required Logs, Manifests, Notifications	Use the state specified method of shipment for E&P Waste (required manifest or standard bill of lading).
Transportation	Drill cuttings/oily waste will be transported as stated in the ACF Operating Plan or treated onsite at the source well. If cuttings do not meet Table 915-1, then drill cuttings/oily waste will be disposed of at an approved waste disposal facility.
Disposal	Annex Cutting Facility or onsite at source well site. Drill cuttings/oily waste will be treated and analyzed to meet analytical standards of Table 915-1. Upon meeting Table 915-1 criteria and Form 27 approval, the subject cuttings will be buried/disposed.
Approved Waste Disposal Facilities	Drill Cuttings/Oily waste will be disposed of/buried at the ACF (Operator owned and operated facility), onsite, or maybe be disposed of offsite. Refer to Appendix A for a list of approved waste disposal facilities.
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of five (5) years.

Empty Drums and Bulk Containers	
Waste Generation Description	Metal and plastic drums and similar, returnable, bulk containers of various sizes, sorted by chemical when possible.
Classification	Non-Hazardous
Classification Basis	Does not meet the criteria for hazardous waste as defined by 40 CFR 261
Handling/Storage	Store empty drums and containers in a designated drum storage area. Ensure that all drums and containers are properly sealed. Effort should be made to empty the container completely before storage. Drums and containers previously containing hazardous and non-hazardous materials are considered empty when there is less than one inch of residue remaining. Drums and containers previously containing acute hazardous materials must be triple rinsed and the rinsate disposed of accordingly. Contact the EHS Dept. for more information.
Labeling	Label as "Empty".
Required Logs, Manifests, Notifications	Bill of Lading or Non-Hazardous Waste Manifest.
Transportation	Waste must be transported by an authorized and certified transporter.
Disposal	Crush and dispose of at an approved non-hazardous waste landfill.
Approved Waste Disposal Facilities	Refer to Appendix A for a list of approved waste disposal facilities.
Recycling	Return to vendor or recycle at an approved recycling facility. Drums and containers to be recycled must be completely empty of all liquid residue.
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of five (5) years.

Filters – Oil and Fuel	
Waste Generation Description	Filter material used in a process unit or E&P equipment which removes solid contaminants from fuel and oil.
Classification	Non-Hazardous
Classification Basis	Does not meet the criteria for hazardous waste as defined by 40 CFR 261 or UAC R315-5.
Handling/Storage	Used oil and fuel filters must be "hot drained" to remove all contents, by puncturing a hole in the filter and allowing to drain for 12-24 hours. Containerize used oil or fuel in leak-proof containers and manage according to state and federal guidelines. Mixing of used oil and hazardous waste is prohibited. Once drained, the used filters are required to be containerized within rainproof, leak-proof, closed containers and stored within designated non-hazardous waste storage areas prior to removal from facility. Filters that have not been "hot drained" may be considered hazardous waste.
Labeling	Label with contents.
Required Logs, Manifests, Notifications	Bill of Lading or Non-Hazardous Waste Manifest.
Transportation	Waste must be transported by an authorized and certified transporter.
Disposal	Dispose of at an approved non-hazardous waste landfill.
Approved Waste Disposal Facilities	Refer to Appendix A for a list of approved waste disposal facilities.
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of five (5) years.

Lubricating Oils and Hydraulic Oils	
Waste Generation Description	Used lubrication or hydraulic oil that originates from diesel and natural gas fired engines and from hydraulic equipment.
Classification	Non-Hazardous
Classification Basis	Does not meet the criteria for hazardous waste as defined by 40 CFR 261. However, if used oil is not recycled, generator must provide analytical proof that the waste is not hazardous prior to disposal.
Handling/Storage	Containerize in rain-proof and leak-proof containers that are compatible with chemicals stored therein. Keep containers closed when not in use. Store containers in designated non-hazardous waste storage areas that reduce the potential for release. Any container 55 gallons or greater must have secondary containment.
Labeling	Container must be labeled as "Used Oil".
Required Sampling/Analysis for Classification Status	If waste oils are recycled, then sampling is not required.
Required Logs, Manifests, Notifications	Bill of Lading or Non-Hazardous Waste Manifest.
Transportation	Waste must be transported by an authorized and certified transporter.
Approved Waste Disposal Facilities	Refer to Appendix A for a list of approved waste disposal facilities.
Recycling	Recycle at an approved recycling facility.
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of five (5) years.

Oil Contaminated Debris	
Waste Generation Description	Oily rags, oil pads and booms generated from equipment maintenance and spill response procedures
Classification	E&P Exempt
Classification Basis	Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53, but may be classified as Hazardous if mismanaged or contaminated with non-exempt waste.
Handling/Storage	Waste must be drained of all liquids. Containerize liquids in drums. Deposit oil contaminated debris in rain-proof, leak-proof containers. Keep containers closed when not in use. Store containers in designated non-hazardous waste storage areas that reduce the potential for release.
Labeling	Label with contents.
Required Logs, Manifests, Notifications	Use the state specified method of shipment for E&P Waste (required manifest or standard bill of lading).
Transportation	Waste must be transported by an authorized and certified transporter.
Disposal	Dispose of at an approved E&P exempt waste landfill.
Approved Waste Disposal Facilities	Refer to Appendix A for a list of approved waste disposal facilities.
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of five (5) years.

Pressurized Cylinders	
Waste Generation Description	Pressurized cylinders that can no longer be used and are to be decommissioned.
Classification	Non-Hazardous
Classification Basis	Non- Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53. Does not meet the criteria for hazardous waste as defined by 40 CFR 261
Handling/Storage	Completely discharge and depressurize cylinders prior to storage. Containerize and store in designated non-hazardous waste storage areas that reduce the potential for release. Cylinders that are empty of all product and propellant can be treated as scrap metal (see Waste Guide Sheet for Scrap Metal).
Labeling	Label as non-hazardous with contents.
Required Logs, Manifests, Notifications	Bill of Lading or Non-Hazardous Waste Manifest.
Transportation	Waste must be transported by an authorized and certified transporter.
Recycling	Return waste cylinders to vendor.
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of five (5) years.

Produced Solids and Tank Bottoms	
Waste Generation Description	All sediments/sand/sludge /salt removed from the bottoms of tanks or vessels when periodically cleaned out.
Classification	E&P Exempt
Classification Basis	Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53, but may be classified as Hazardous if mismanaged. If waste material contains TENORM, it must be treated as TENORM waste.
Handling/Storage	Containerize in rain-proof and leak-proof containers that are compatible with waste stored therein. Keep containers closed when not in use. Store containers in designated non-hazardous waste storage areas that reduce the potential for release.
Labeling	Label with contents.
Required Sampling/Analysis[1] for Classification Status	Check for TENORM before sending to disposal facility.
Required Logs, Manifests, Notifications	Use the state specified method of shipment for E&P Waste (required manifest or standard bill of lading).
Transportation	Waste must be transported by an authorized and certified transporter.
Disposal	Dispose of at an approved E&P exempt waste landfill or landfarm.
Approved Waste Disposal Facilities	Consult the EHS Department to determine appropriate disposal if TENORM. Refer to Appendix A for a list of approved waste disposal facilities.
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of five (5) years.

Produced Water	
Waste Generation Description	Water collected during the process of extracting and dewatering oil and gas.
Classification	E&P Exempt
Classification Basis	Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53,.
Handling/Storage	Containerize in rain-proof and leak proof containers, tanks or permitted evaporation ponds that are compatible with waste stored therein. Keep containers closed when not in use. Tanks, containers and evaporation ponds should be constructed to reduce the potential for release.
Labeling	Label with contents.
Required Sampling/Analysis[1] for Classification Status	Table 915-1: Benzene, Ethylbenzene, Xylene, and 1,3,5-trimethylbenzene
Required Logs, Manifests, Notifications	Use the state specified method of shipment for E&P Waste (required manifest or standard bill of lading).
Transportation	Waste must be transported by an authorized and certified transporter.
Disposal	Disposed of at Laramie's permitted injection wells: 604-12-13 SWD (UIC Facility ID: 160016) and 604-1 SWD (UIC Facility ID: 159398).
Recycling	Recycle and reuse for drilling, completions, and flowback. Please consult the site-specific Water Plan.
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of five (5) years.

Soil Contaminated with Chemical or Lube Oil	
Waste Generation Description	Chemical or lube oil contaminated soils resulting from spills, leaks and other operational upsets.
Classification	Non-Hazardous (but potentially hazardous depending on contaminants)
Classification Basis	Non- Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53. May contain components that meet the criteria for hazardous waste as defined by 40 CFR 261
Handling/Storage	Drain any excess chemical or lube oil from the soil. Containerize both the liquid and soil within separate rainproof, leak-proof containers. Keep containers closed when not in use and store in designated non-hazardous waste storage areas that reduce the potential for release. If classified as hazardous, dispose of as soon as possible. If you exceed 2204.6 pounds (1000 Kg) per month of hazardous waste, the storage time limit may change. Contact EHS Department for assistance.
Labeling	If non-hazardous, label contents. For example, "Non-Hazardous Lube Oil Contaminated Soil". If hazardous, label as "Hazardous Waste". Include contents, generator information and accumulation start date on label.
Required Sampling/Analysis[1] for Classification Status	Soil contaminated with chemicals or lube oil may be hazardous. Analysis is required to confirm waste classification.
Required Logs, Manifests, Notifications	If non-hazardous, use Bill of Lading or Non-Hazardous Waste Manifest. If hazardous, a Uniform Hazardous Waste Manifest is not required, but is highly recommended for Very Small Quantity Generators. Hazardous waste from Small Quantity or Large Quantity Hazardous Waste Generators always requires a Uniform Hazardous Waste Manifest.
Transportation	Waste must be transported by an authorized and certified transporter.

Soil Contaminated with Chemical or Lube Oil - Continued	
Disposal	Non-Hazardous – Dispose of at an approved non-hazardous waste landfill. Hazardous - Dispose of at an approved hazardous waste landfill or at a non-hazardous waste landfill that accepts hazardous waste from a Very Small Quantity Generator.
Approved Waste Disposal Facilities	Refer to Appendix A for a list of approved waste disposal facilities. Consult the EHS Department to determine appropriate disposal based on analysis and waste classification determination.
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of five (5) years (indefinitely if hazardous).

Soil Contaminated with Crude Oil, Condensate or Produced Water	
Waste Generation Description	Non-Refined Oil, condensate, or produced water contaminated soils resulting from spills, leaks or operational upsets.
Classification	E&P Exempt
Classification Basis	Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53, but may be classified as Hazardous if mismanaged.
Handling/Storage	Drain any excess oil or produced water from the soil. Containerize both the liquid and soil within separate rainproof, leak-proof containers. Keep containers closed when not in use and store in designated non-hazardous waste storage areas that reduce the potential for release.
Labeling	Label with contents.
Required Logs, Manifests, Notifications	Use the state specified method of shipment for E&P Waste (required manifest or standard bill of lading).
Transportation	Waste must be transported by an authorized and certified transporter.
Disposal	Dispose of at an approved E&P exempt waste landfill or land farm.
Approved Disposal Vendors	Refer to Appendix A for a list of approved waste disposal facilities.
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of five (5) years.

Spent Absorbents	
Waste Generation Description	Spent absorbents from dehydration units, sweetening units, hydrocarbon removal processes and used in removing impurities from process fluids.
Classification	E&P Exempt
Classification Basis	Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53, but may be classified as hazardous if mismanaged.
Handling/Storage	Waste intended for recycling or landfill must be drained of all liquids and dried. Containerize liquids and absorbent in separate rain-proof, and leak proof containers. Keep containers closed when not in use. Store containers in designated non-hazardous waste storage areas that reduce the potential for release.
Labeling	Label with contents.
Required Logs, Manifests, Notifications	Use the state specified method of shipment for E&P Waste (required manifest or standard bill of lading).
Transportation	Waste must be transported by an authorized and certified transporter.
Disposal	Dispose of at an approved E&P exempt waste landfill.
Approved Waste Disposal Facilities	Refer to Appendix A for a list of approved waste disposal facilities.
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of five (5) years.

Spent Acids and Caustics	
Waste Generation Description	Acid or caustic that has been used for well workover and stimulation. May contain surfactants, emulsifiers, solvents, and/or dispersant.
Classification	E&P Exempt
Classification Basis	Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53, but may be classified as hazardous if mismanaged.
Handling/Storage	Containerize spent acids in rain-proof and leak-proof containers that are compatible with corrosive materials. Keep containers closed when not in use. Store containers in designated non-hazardous waste storage areas that reduce the potential for release. If commingling with produced water, store in produced water tanks.
Labeling	Label with contents.
Required Logs, Manifests, Notifications	If shipping to 3rd party disposal, use the state specified method of shipment for E&P Waste (required manifest or standard bill of lading).
Transportation	Waste must be transported by an authorized and certified transporter.
Disposal	Dispose of at an approved E&P exempt waste landfill.
Approved Waste Disposal Facilities	Refer to Appendix A for a list of approved waste disposal facilities.
Recycling	Recycle at an approved recycling facility.
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of five (5) years.

Spent Aerosol Cans	
Waste Generation Description	Aerosol cans containing lubricants, degreasers, spray paint, etc.
Classification	Non-Hazardous if can is "RCRA empty" (See Classification Basis) of product. Hazardous if can is not "RCRA empty" and product can no longer be used.
Classification Basis	Can/container is RCRA empty if all product has been removed using practices commonly employed (spraying) and residue left in can is <1 inch or <3% of original product weight.
Handling/Storage	Containerize spent aerosol cans that are classified as hazardous waste in rain-proof and leak-proof containers that are compatible with the chemicals stored therein. Keep containers closed when not in use. If managed as hazardous waste, store cans for no more than 180 days. **Aerosol cans that are RCRA empty can be treated as municipal waste and placed in trash receptacles.** Contact EHS Department for assistance.
Labeling	The accumulation start date must also be recorded, either on the container or in written or electronic records. If non-hazardous, labeling is typically not required.
Required Logs, Manifests, Notifications	Waste aerosol cans that are disposed of as non-hazardous typically need no manifests. If disposed of a hazardous waste, a Uniform Hazardous Waste Manifest is not required, but is highly recommended for Very Small Quantity Generators. Hazardous waste from Small Quantity or Large Quantity Hazardous Waste Generators always requires a Uniform Hazardous Waste Manifest.
Transportation	Waste must be transported by an authorized and certified transporter.
Disposal	If hazardous, dispose of at an approved hazardous waste landfill. Confirm that landfill will accept waste aerosol cans. If RCRA empty, dispose of cans at approved non-hazardous waste landfill.
Approved Waste Disposal Facilities	Refer to Appendix A for a list of approved waste disposal facilities.
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of five (5) years (indefinitely if hazardous).

Spent Solvents	
Waste Generation Description	Solvents used for cleaning/maintenance including paint thinners, varsol, degreasers, methyl ethyl ketone (MEK), toluene, xylene, etc.
Classification	Hazardous
Classification Basis	Mets the criteria for hazardous waste as defined by 40 CFR 261
Handling/Storage	Containerize in rainproof, leak-proof containers that are compatible with the solvents contained therein. Keep containers closed when not in use and store in designated hazardous waste storage areas that reduce the potential for release. Hazardous waste should be disposed of as soon as possible. If you exceed 2204.6 pounds (1000 Kg) per month of hazardous waste, the storage time limit may change. Contact EHS Department for assistance.
Labeling	Label as "Hazardous Waste". Include contents (type of solvent), generator information and accumulation start date on label.
Required Sampling/Analysis[1] for Classification Status	Some solvents may be non-hazardous. Refer to the material safety data sheet (MSDS) to confirm waste classification.
Required Logs, Manifests, Notifications	If non-hazardous, use Bill of Lading or Non-Hazardous Waste Manifest. If hazardous, a Uniform Hazardous Waste Manifest is not required, but is highly recommended for Very Small Quantity Generators. Hazardous waste from Small Quantity or Large Quantity Hazardous Waste Generators always requires a Uniform Hazardous Waste Manifest.
Transportation	Waste must be transported by an authorized and certified transporter.
Disposal	Dispose of at an approved hazardous waste landfill or at a non-hazardous waste landfill that accepts hazardous waste from a Very Small Quantity Generator.
Approved Waste Disposal Facilities	Refer to Appendix A for a list of approved waste disposal facilities.
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office indefinitely.

Technologically Enhanced Naturally Occurring Radioactive Material (TENORM)	
Waste Generation Description	Material such as pipe scale, produced sand/clay, tank/vessel bottoms, filter media, etc. that exhibit gamma radioactivity above background levels.
Classification	Special Waste
Classification Basis	Exempt for oil and gas production under EPA Regulatory Determination Federal Register Vol. 58, No 53, but may be classified as hazardous if mismanaged or contaminated with non-exempt waste.
Handling/Storage	Do not cut, weld, burn, or rattle NORM contaminated materials or equipment without proper personal protective equipment. Place in designated drums or tanks of good integrity. Keep containers closed when not in use. Openings on NORM contaminated equipment must be sealed. Fence or rope off and label areas where NORM contaminated material is stored. Access to storage area should be limited to as few personnel as possible. Contact the EHS Dept. for more information.
Labeling	If equipment or waste has NORM levels above 50 µR/hr, label with "NORM" by securely attaching a clearly visible waterproof tag or marking with a legible waterproof paint or ink.
Required Sampling/Analysis[1] for Classification Status	Laboratory analysis required for NORM contaminated waste. Contact the EHS Dept. for more information.
Required Logs, Manifests, Notifications	Contact EHS Dept. for manifesting requirements.
Transportation	Waste must be transported by an authorized and certified transporter. Contact the EHS Dept. for potential DOT shipping requirements.
Disposal	Depending on the laboratory analysis, NORM waste must be disposed of at an approved NORM disposal facility or E&P exempt waste landfill. Contact the EHS Dept. for more information.
Approved Waste Disposal Facilities	Refer to Appendix A for a list of approved waste disposal facilities.
Recordkeeping	Maintain all logs, manifests and waste documentation at the facility or nearest office for a minimum of five (5) years.