WR OGDP4 CUMULATIVE IMPACTS PLAN

Version: 3

Date: January 17, 2022

Location: WR OGDP 4/Wells Ranch CDP AB28-13 Multi & AB32-01 Well Pad

Legal Description: E2 Section 28; W2, W2E2 Section 33, Township 7 North, Range 64 West; E2 Section 5; W2, W2E2 Section 4 Township 6 North, Range 64 West, Weld County, Colorado

Table of Contents

ARTICLE I. INTRODUCTION **2**

ARTICLE II. WR OGDP4 CUMULATIVE IMPACTS **4**

RESOURCE IMPACTS 4

Water Resources *4*

Terrestrial & Aquatic Wildlife Resources & Ecosystems *6*

PUBLIC WELFARE 6

Noise *6*

Light *7*

Odor *7*

Dust *7*

ARTICLE III. PRIORITY AREAS **7**

Article I. Introduction

Under Order No. 1-241 (the "Order"), on March 25, 2020, the Colorado Oil and Gas Conservation Commission ("COGCC") approved the Wells Ranch Comprehensive Drilling Plan ("Wells Ranch CDP") submitted by Noble Energy, Inc. ("Noble").[1] The Wells Ranch CDP was filed pursuant to prior COGCC Rule 216 relating to Comprehensive Drilling Plans. The approved Wells Ranch CDP covers approximately 41,000 acres in Weld County, Colorado. The Order, among other things, designated Noble as the operator over the Wells Ranch CDP for an Initial Term of ten (10) years from the effective date of the Order and provided preliminary approval of the siting of the Oil and Gas Locations proposed in Noble's CDP Application.

Coinciding with the Wells Ranch CDP approval process were COGCC's rulemaking efforts to incorporate SB 19-181's directives to protect and minimize adverse impacts to public health, safety, welfare, and the environment and wildlife. The rulemaking process resulted in a focus on Cumulative Impacts. In accordance to Rule 303.a.(5) and Rule 304.c.(19), Cumulative Impacts consist of Surrounding Oil and Gas Impacts; Other Industrial Impacts; and Resource Impacts which are further distinguished as Air Resources; Public Health; Water Resources; Aquatic Wildlife Resources and Ecosystems; Soil Resources; and Public Welfare.

Consistent with those mandates, Noble completed a comprehensive Cumulative Impacts Plan for the entire Wells Ranch CDP, and this plan has been submitted separately to the COGCC. This WR OGDP 4 Cumulative Impacts Plan is a summation of the Cumulative Impacts Plan filed for the entire Wells Ranch CDP which explores potential impacts and offsetting benefits associated with the Wells Ranch CDP.

There are primarily three (3) recurring themes that are the "Driving Forces" contributing not only to offsetting and mitigating adverse Cumulative Impacts, but also to promoting beneficial Cumulative Impacts. The 3 Driving Forces are as follows:

1) Plugging and removal of existing operated and non-operated legacy wells ("Legacy Wells");

2) Implementation of technologically advanced completion and production designs engineered to significantly reduce overall impacts; and

3) Going beyond compliance to enhance ecosystem restoration and land conversion back to vegetative states, enabling carbon capture and sequestration.

Development of the Wells Ranch CDP will consist of a robust program to retire existing operated and non-operated legacy wells ("Legacy Wells") within the boundaries of the Wells Ranch CDP. The plugging and removal of the Legacy Wells will have a positive effect to neighboring Residential Building Units ("RBUs") by lessening the Surrounding Oil and Gas Impacts. Removal of the Legacy Wells will eliminate point sources for emissions and interactions with wildlife and the community, thereby reducing Resource Impacts and Public Welfare Impacts.

Through the implementation of technologically advanced designs at the proposed Wells Ranch CDP locations, overall Resource Impacts, including Air Resources; Public Health; Water Resources; Terrestrial and Aquatic Wildlife Resources; and Soil Resources, will be minimized

[1] In 2020, Chevron acquired Noble Energy, Inc. ("Noble"). Noble and its subsidiaries and affiliates are continuing to operate as wholly owned subsidiaries of Chevron.

within the Wells Ranch CDP. The Wells Ranch CDP will incorporate a number of efficiencies and improvements to operations made possible through economies of scale and the landscape level planning efforts designed to protect public health, safety, welfare, environment, and wildlife. Examples of positive offsetting benefits include, but are not limited to, the use of consolidated shared facilities known as “EcoNodes;” modern flowback technology; pipeline infrastructure; and tankless production design. It is recognized that pre-production activities (e.g., drilling and completions) will introduce some short-term impacts to the surrounding area, such as traffic, noise and light, however, Noble has submitted plans for mitigating these impacts as part of the OGDP process.

The contiguous nature of the Wells Ranch CDP enables consolidated shared facilities known as EcoNodes that will minimize surface footprints compared to stand-alone facilities required for Legacy Wells. The reduced footprints will have a positive impact to Public Welfare, Soil Resources, and Terrestrial and Aquatic Wildlife Resources. Reduced surface disturbances translate into fewer points of contact with wildlife nesting and migration; fewer interactions; and decreased viewshed obstructions.

Innovative designs such as modern flowback methodology and tankless production removes onsite storage of oil, gas, condensate, and water. These technologies also, eliminate flowback vapors and emissions traditionally associated with development, resulting in zero uncontrolled emissions. The elimination of onsite storage and emission sources has correlating benefits to Resource Impacts. Air Resources and Public Health will benefit from fewer emissions and emission point sources alleviating the potential for chronic, short- or long-term incremental impacts to Public Health. Water Resources, Terrestrial and Aquatic Wildlife Resources, and Soil Resources will benefit from the removal of onsite storage tanks that have the potential for upset conditions and contamination with water sources, habitat, and soil.

The installation of pipeline infrastructure for takeaway of oil, gas, and fresh and produced water eliminates traditional truck hauling of product; leads to the elimination of onsite product storage; and eliminates emissions associated with hauling and storage. Replacing truck hauling with pipeline takeaway removes the potential for oil and gas related traffic accidents with wildlife and community members, and removes Public Welfare concerns of Noise, Dust, and overall traffic congestion.

In addition to the path-breaking completion and development design benefits, the removal and reclamation of historic surface footprints associated with Legacy Wells will have benefits to Resource Impacts, Public Welfare, and lessen Surrounding Oil and Gas Impacts. As older wells and facilities are replaced, lands will be returned to vegetative surfaces increasing the habitat and grazing areas for wildlife, as well as, the potential for recreational and agricultural sources available for community development. Revegetating impervious surfaces at Legacy Wells will increase the ability of the soil and restored plants to capture carbon dioxide, improving the overall greenhouse gas profile while advancing goals of reducing carbon footprint towards net-zero. Noble will return more land to productive uses than will be used for new pads and facilities.

The combination of retiring older, less technologically sophisticated operations, with advanced oil and gas designs for the proposed Wells Ranch CDP locations and establishing carbon balance with ecosystem restoration utilizing carbon capture and sequestration will result in beneficial impacts to the surrounding community, RBUs, wildlife, and the environment. Those beneficial impacts highlighted here and analyzed in greater detail in the Cumulative Impacts Plan filed for the entire Wells Ranch CDP will largely offset any incremental or cumulative impacts anticipated

with new oil and gas development associated with the Wells Ranch CDP locations. Furthermore, Noble's ongoing commitment to continuous improvement and innovation has led to positive design plans adopted and fit for purpose to the Wells Ranch CDP resulting in positive and offsetting Cumulative Impacts. That same unrelenting pursuit of progress will provide future opportunities to advance and adopt measures for the improvement and protection of public health, safety, welfare, the environment, and wildlife.

Article II. WR OGDP4 Cumulative Impacts

The information contained in this Article II is intended to provide specific information related to WR OGDP4 as a supplement to the Cumulative Impacts Plan for the entire Wells Ranch CDP. This Article II follows the same structure as the Cumulative Impacts Plan for the entire Wells Ranch CDP, and similarly refers to topic headings such as "Resource Impacts," etc.

For the complete Cumulative Impacts Plan for the Wells Ranch CDP, including all tables and narrative, please refer to the entire Cumulative Impacts Plan filed for the Wells Ranch CDP posted to the COGCC at the following link:

https://cogcc.state.co.us/documents/library/Special_Projects/Noble_Wells_Ranch_CDP/Cumulative%20Impacts_11-30-21_FINAL.pdf

Resource Impacts

Water Resources

Map 1 depicts the floodplains and other aquatic features that are present in the vicinity of the WR OGDP4 locations. For a more detailed site-specific analysis of WR OGDP4 and the associated Oil and Gas Locations, please consult the individual Rule 304.c. Wildlife Protection Plans, Water Plans, Waste Management Plans, and Stormwater Management Plans submitted with the WR OGDP4 Form 2A application.

GIS Services

MAP 1 Chevron RBU Wells Ranch CDP- OGDP 4

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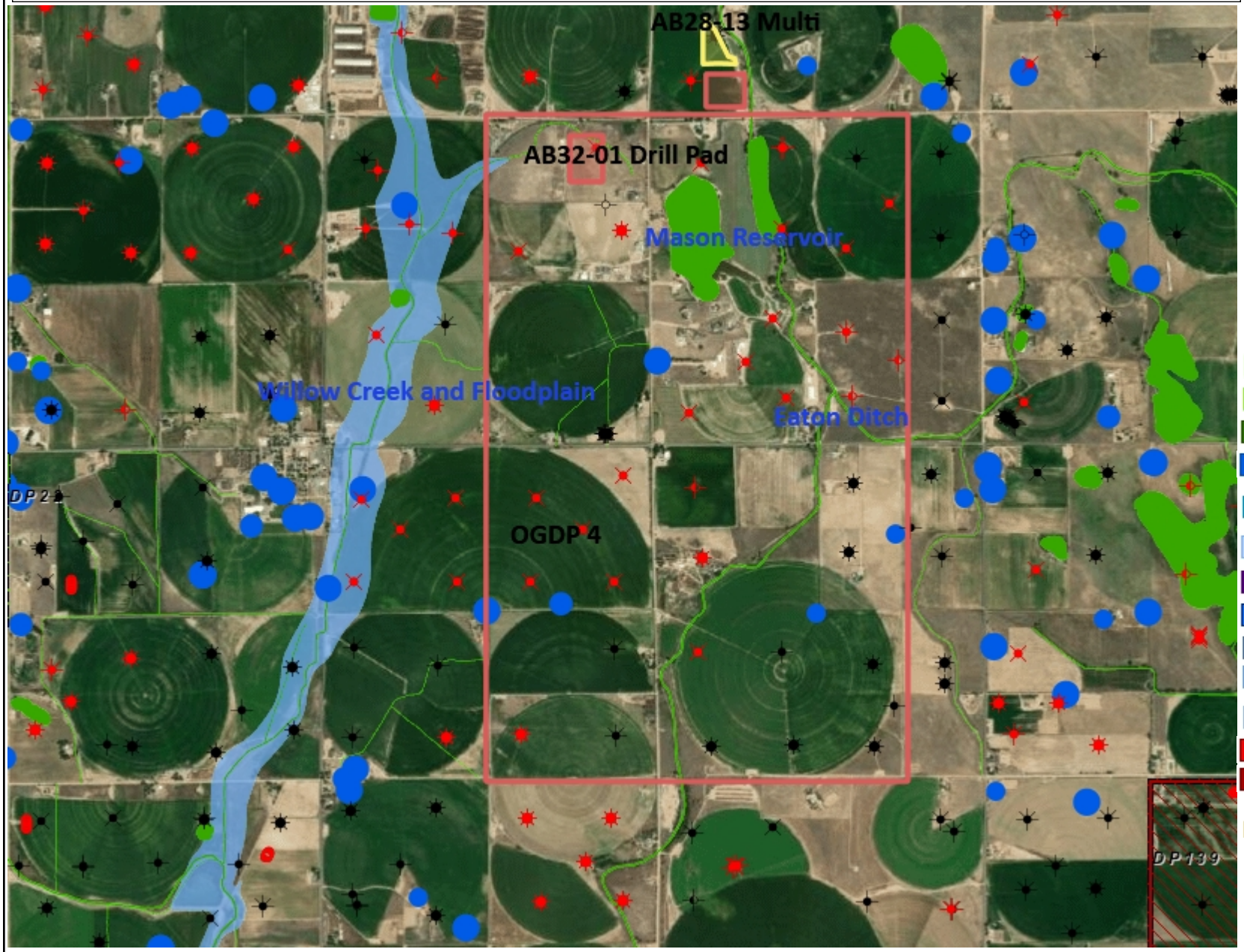


Water Wells ft below ground surf

- 0 - 25 ft
- 25 - 100 ft
- 100 - 200 ft
- 200 - 400 ft
- > 400 ft

- USFWS Wetlands
- USFWS Riparian Areas
- FEMA 100 yr Floodplain
- Facilities
- Gathering
- Bald Eagle Nest Sites 10/7/19
- Bald Eagle Roost Sites 10/7/19
- Bald Eagle Winter Conc 10/7/19
- Cutthroat Trout Designated Crucial Habitat 5/21/20
- Aquatic Sport Fish Management Waters 5/21/20
- Aquatic Native Species Conservation Waters 5/21/20
- Pronghorn Severe Winter Range
- Mule Deer Migration Corridors
- Mule Deer Severe Winter Range
- Mule Deer Winter Concentration Area
- Mule Deer Winter Range 10/7/19
- Golden Eagle Active Nest Site
- Half Mile Golden Eagle Active Nest Site
- Ferruginous Hawk Active Nest Site

0 0.57 1.1 Miles

1: 36,112

Source: iNAV

Map Date: 5/6/2021

Disclaimer: All data is licensed for Noble Energy, Inc. use only. Noble Energy, Inc. makes every effort to ensure this map is free of errors, but does not warrant the map or its features are either spatially or temporally accurate or fit for a particular use. Noble Energy, Inc. provides this map without any warranty of any kind whatsoever, either express or implied.

Notes

MAP 1

Terrestrial & Aquatic Wildlife Resources & Ecosystems

The proposed WR OGDP4 development will necessitate the installation of new technologically enhanced pads and facilities, with the average aggregate estimated WPS footprint and Interim Reclamation footprint of approximately 34 acres and 12 acres, respectively, across the WR OGDP4. The surface footprints of the proposed Wells Ranch CDP locations are further offset by the positive gains that are concomitant with the plugging and removal of the Legacy Wells. Development of the WR OGDP4 will result in approximately 52 acres of surface footprint related to the Legacy Wells that will be reclaimed and restored and made available for wildlife habitat and ecosystems. Based on the footprint differences between the acreage related to the Legacy Wells and the acreage related to the WPS of the proposed WR OGDP4 locations, there is a positive offset of approximately 18 acres. Following the Interim Reclamation of the proposed WR OGDP4 locations, there is a positive offset to the Legacy Wells of approximately 40 acres. Thus, for every acre needed to establish the WPS for the proposed WR OGDP4 locations, approximately 1.5 acres can be reclaimed with the plugging and restoration of the Legacy Wells. Or for every acre needed to conduct production operations at the proposed WR OGDP4 locations, approximately 4.5 acres can be reclaimed with the plugging and restoration of the Legacy Wells. The acreage savings realized through the proposed WR OGDP4 development in combination with the plugging and restoring of the Legacy Well footprint is a beneficial Cumulative Impact to Terrestrial and Aquatic Wildlife Resources and Ecosystems.

Throughout the WR OGDP4 development process, Noble will conduct field surveys and engage with the Colorado Parks and Wildlife ("CPW") for consultations, as necessary, to protect Wildlife Resources. All locations will be pre-cleared according to CPW guidance meeting Migratory Bird Treaty Act ("MBTA"); Bald and Golden Eagle Protection Act ("BGEPA"); and Endangered Species Act ("ESA") laws. Surveys and consultations that have been conducted as part of the OGDP planning process for WR OGDP4 are described in detail in the Wildlife Protection Plans and Consultation Summaries included with the WR OGDP4 Form 2A application.

Public Welfare

There are a total of 20RBUs located within 2,000 feet of the proposed locations (AB28-13 Multi-, 9 RBUs; and AB32-10 Pad, 3 RBUs) but there are no High Occupancy Building Units, School Properties, School Facilities, or Designated Outside Activity Centers located within 1 mile of any of the proposed locations. For a more detailed site-specific analysis of WR OGDP4 and the associated Oil and Gas Locations, please consult the individual Rule 304.c. Plans submitted with the WR OGDP4 Form 2A OGDP application.

Noise

As detailed in the Noise Mitigation Plans submitted as part of the WR OGDP4 Form 2A application, Noble Energy has already conducted noise modeling to estimate noise levels from various operations and BMPs to mitigate impacts to nearby RBUs. Those plans also detail Noble Energy's commitment to implement BMPs such as baseline studies including A and C scale measurements conducted prior to construction and dirt work; and continuous sound measurements during pre-production and ongoing operations, all to confirm adequacy of sound abatement measures or to inform additional mitigation measures. Where necessary, a third-party vendor will be employed to design and install temporary noise barriers. Prior to construction of a well pad, each location will be evaluated for the presence of occupied

structures within ¼ mile of the well heads. For any Oil and Gas Location with a WPS within 2,000' of an RBU, at least one and up to six noise points of compliance will be identified for monitor installation.

Light

The Light Mitigation Plans submitted as part of the WR OGDP4 Form 2A application detail the modeling of lighting that has been conducted and the proposed BMPs to mitigate light impact.

Odor

Details of the potential impact of odors on RBUs, other sources of odors present in the vicinity, and proposed BMPs to control odors are presented in the Odor Mitigation Plan submitted with the WR OGDP4 Form 2A.

Dust

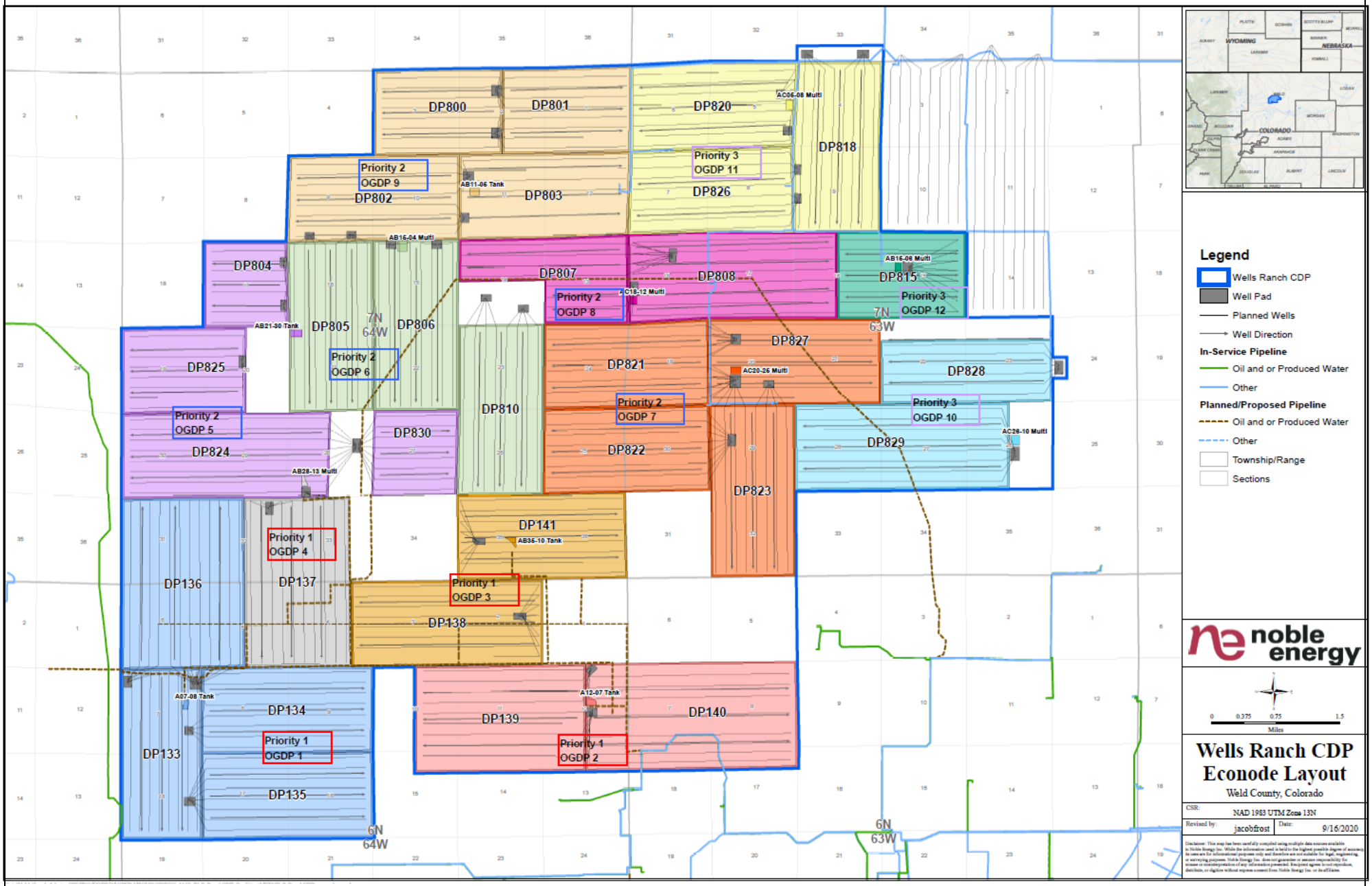
Details of the potential sources of impact of and proposed BMPs to control dust are presented in the Dust Mitigation Plan submitted with the WR OGDP4 Form 2A.

Article III. PRIORITY AREAS

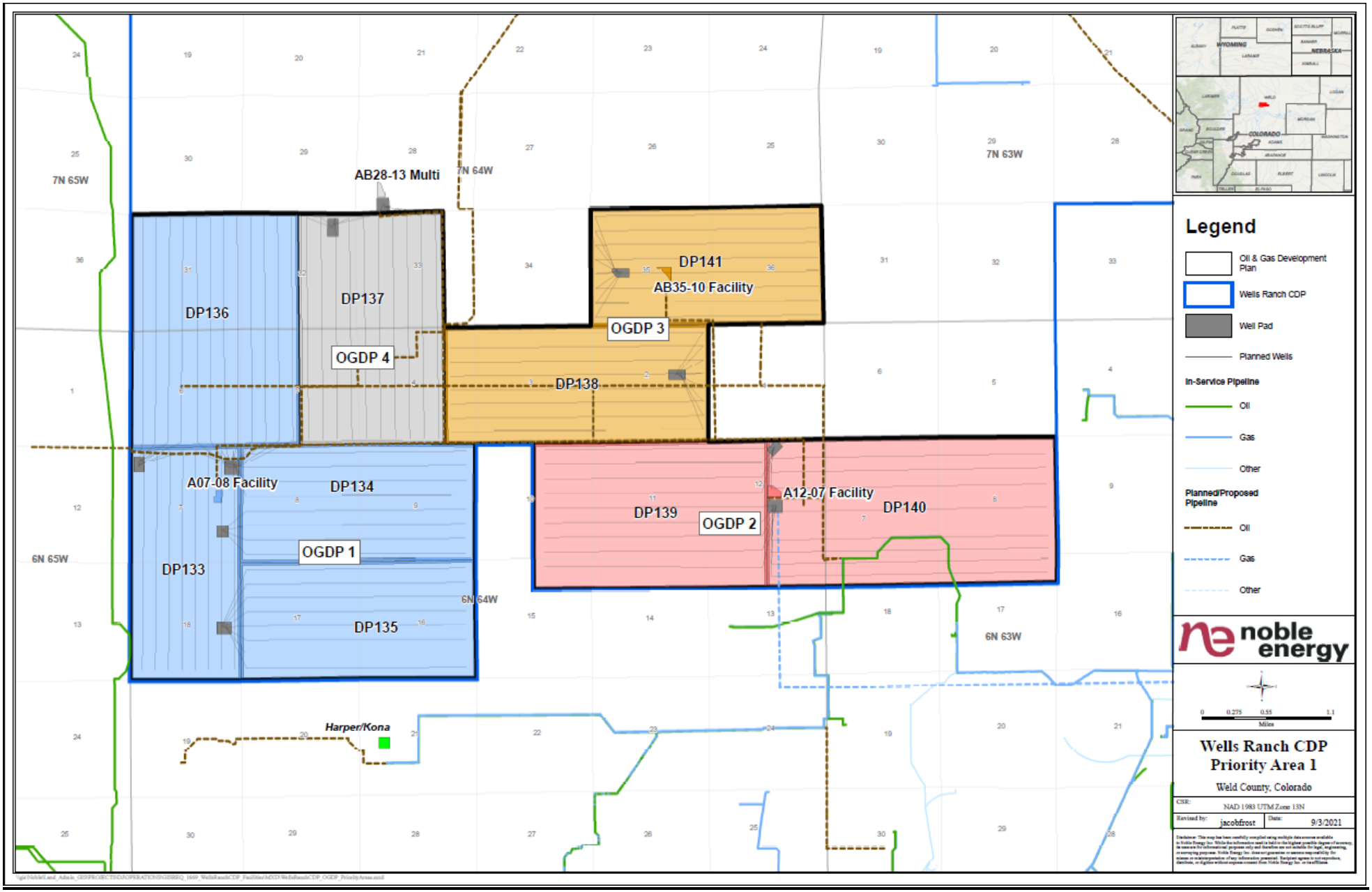
The figures, maps, and tables in this OGDP Cumulative Impacts Plan depict the discrete OGDP breakdown to the individual pad; the associated RBUs; owners of the RBUs; and surrounding Legacy Wells. Also included are ownership tables identifying the Surface Use Agreement ("SUA") owner; the New Well RBUs; and the Direct Impact Legacy Wells delineated as "inside" or "outside" of the 2,000-foot halo surrounding the proposed WPS. For clarity, a Direct Impact Legacy Well may be located outside of the 2,000-foot halo of the proposed Working Pad Surface ("WPS"), but is captured as a Direct Impact Legacy Well by virtue of being within 2,000 feet of an RBU that is also within 2,000 feet of the proposed WPS. The Direct Impact Legacy Wells listed in the below tables may be repeated in more than one table, as the Direct Impact Legacy Well may be within 2,000 feet of more than one RBU for different Facilities or Pads for multiple OGDPs. For example, a well may be listed in a table for a Well Pad in WR OGDP 1 and for a Well Pad in WR OGDP 2, depending on how the 2,000-foot halos or perimeters surrounding a WPS and the 2,000-foot halo surrounding an RBU overlap.

The RBUs and wells identified and used for calculations within this Cumulative Impacts Plan may be further refined throughout the permitting process, to support evolving technology improvements; finalized location drawings and measurements; and RBU development.

Map 2


DP800
DP801
DP820
AC05-08 Multi
DP818
Priority 2
OGDP 9
DP802
AB11-06 Tank
DP803
Priority 3
OGDP 11
DP826
AB16-04 Multi
DP804
DP807
DP808
AB16-08 Multi
DP815
Priority 2
OGDP 8
AC18-12 Multi
Priority 3
OGDP 12
7N
64W
7N
63W
AB21-30 Tank
DP805
DP806
DP827
DP825
Priority 2
OGDP 6
DP821
AC20-26 Multi
DP828
DP810
Priority 2
OGDP 7
Priority 3
OGDP 10
Priority 2
OGDP 5
DP824
DP830
DP822
DP829
AC28-10 Multi
AB28-13 Multi
DP823
DP141
AB36-10 Tank
Priority 1
OGDP 4
DP136
DP137
Priority 1
OGDP 3
DP138
A07-08 Tank
DP134
A12-07 Tank
DP139
DP140
DP133
Priority 1
OGDP 1
Priority 1
OGDP 2
DP135
6N
64W
6N
63W
Legend
Wells Ranch CDP
Well Pad
Planned Wells
Well Direction
In-Service Pipeline
Oil and or Produced Water
Other
Planned/Proposed Pipeline
Oil and or Produced Water
Other
Township/Range
Sections
noble energy
0 0.375 0.75 1.5
Miles
Wells Ranch CDP
Econode Layout
Weld County, Colorado
CSR:
NAD 1983 UTM Zone 13N
Revised by:
jacobfrost
Date:
9/16/2020

PRIORITY AREA 1


AB28-13 Multi
7N 65W
7N 64W
7N 63W
DP136
DP137
OGDP 4
DP138
OGDP 3
DP141
AB35-10 Facility
A07-08 Facility
DP134
DP133
OGDP 1
DP135
6N 65W
6N 64W
6N 63W
DP139
OGDP 2
A12-07 Facility
DP140
Harper/Kona
Legend
Oil & Gas Development Plan
Wells Ranch CDP
Well Pad
Planned Wells
In-Service Pipeline
Oil
Gas
Other
Planned/Proposed Pipeline
Oil
Gas
Other
noble energy
Miles
Wells Ranch CDP
Priority Area 1
Weld County, Colorado
CSR:
NAD 1983 UTM Zone 13N
Revised by:
jacobfrost
Date:
9/3/2021

OGDP 4
AB28-13 MULTI

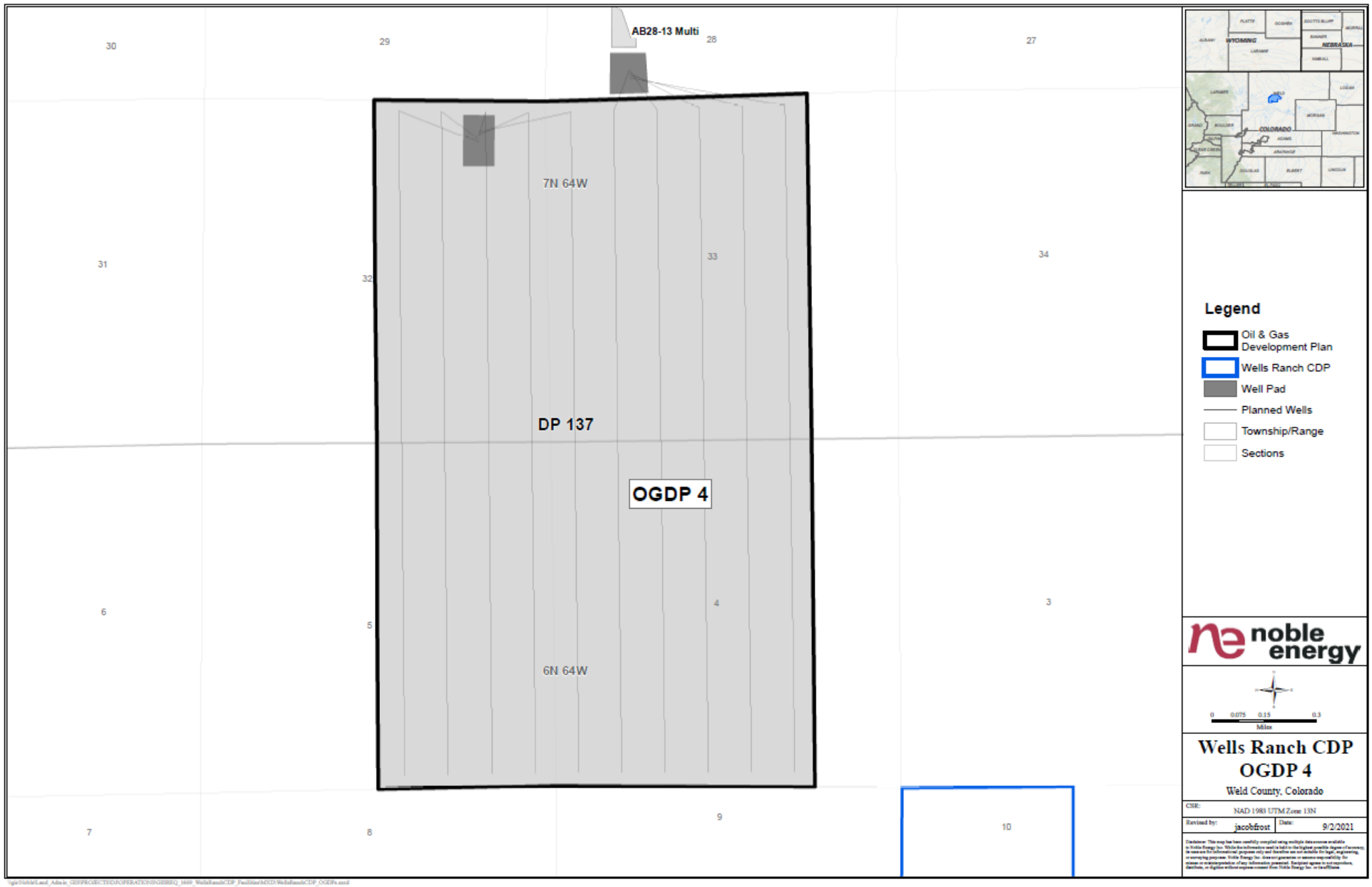
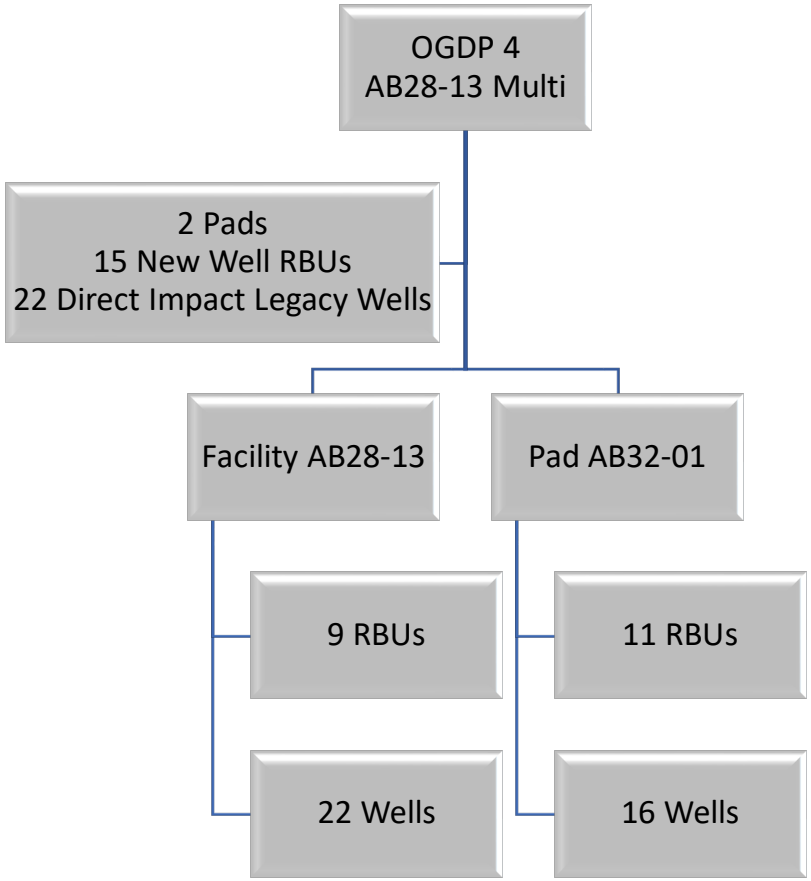

AB28-13 Multi
30
29
28
27
7N 64W
31
32
33
34
DP 137
OGDP 4
6
5
4
3
6N 64W
7
8
9
10
WYOMING
NEBRASKA
COLORADO
Legend
Oil & Gas Development Plan
Wells Ranch CDP
Well Pad
Planned Wells
Township/Range
Sections
noble energy
0 0.075 0.15 0.3
Miles
Wells Ranch CDP
OGDP 4
Weld County, Colorado
CSR: NAD 1983 UTM Zone 13N
Revised by: jacobfrost
Date: 9/2/2021

Figure 1

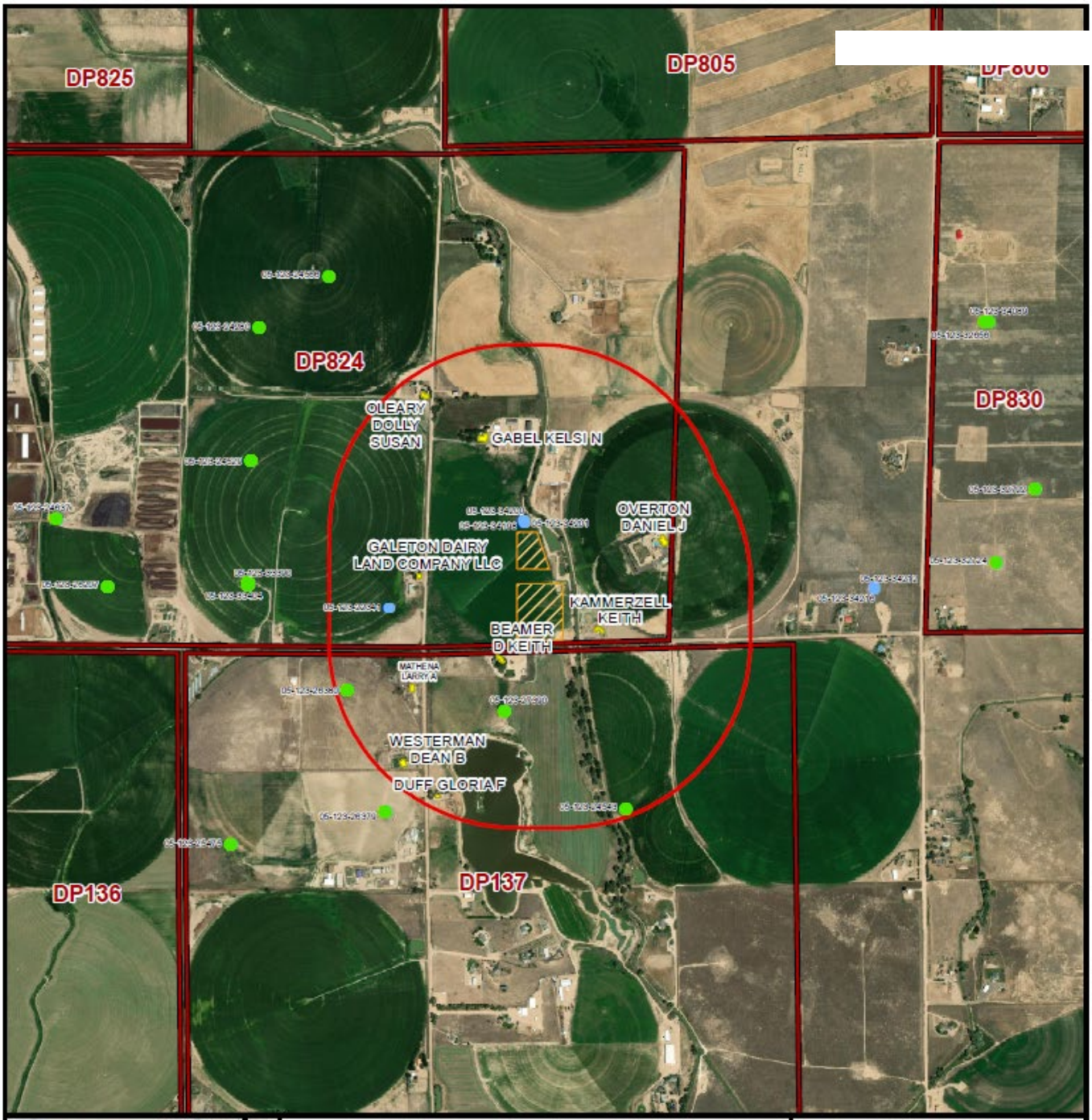


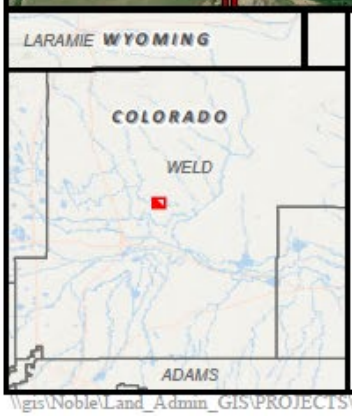
[2]

[2] The RBUs and Wells listed in the above table under the pad level may be repeated. For example, a well in one pad may also be a well counted under another pad.

OGDP 4
AB28-13 MULTI FACILITY

Multi AB28-13
Buffer Zone Analysis
Weld County, Colorado
noble energy
DP824
DP137
DP800
DP801
DP820
DP818
DP802
DP803
DP826
DP807
DP808
DP816
DP805
DP806
DP825
DP821
DP827
DP828
DP810
DP824
DP830
DP822
DP829
DP823
DP141
DP136
DP137
DP138
DP134
DP133
DP139
DP140
DP135
8 N - 6 4 W
8 N - 6 3 W
7 N - 6 4 W
7 N - 6 3 W
6 N - 6 4 W
6 N - 6 3 W
Legend
Facility/Pad Locations
2,000' Buffer
Building Units
Developement Plan (DP)
Excluded Developed Lands
Comprehensive Drilling Plan (CDP)
Well Direction





Facility/Pad Locations

2,000' Buffer

Building Units

Developement Plan (DP)

Wells Within 2,000' of Building Units

Noble Energy

Other Operators

Comprehensive Drilling Plan (CDP)

0 0.1 0.2 0.4

Miles

Disclaimer: This map has been carefully compiled through different data sources available to Noble Energy Inc. While the information is held to the highest degree of accuracy possible, its uses are for informative purposes only and therefore is not suitable for legal, engineering, and surveying purposes. Noble Energy Inc. does not guarantee nor assumes responsibility for misuse or misinterpretation of any information present. Recipient agrees not to reproduce, distribute, nor digitize without expressed consent from Noble Energy inc. and it's affiliates.

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Multi AB28-13
Wells Ranch CDP

Weld County, Colorado

CSR:
NAD 1983 UTM Zone 13N

Revised by: jacobfrost

Date: 9/9/2021

\\gis\Noble\Land_Admin_GIS\PROJECTS\DJ\OPERATIONS\GISREQ_764_WellsRanch_CDP\MXD\BufferZoneAnalysis\MultiAB2813_zoom.mxd

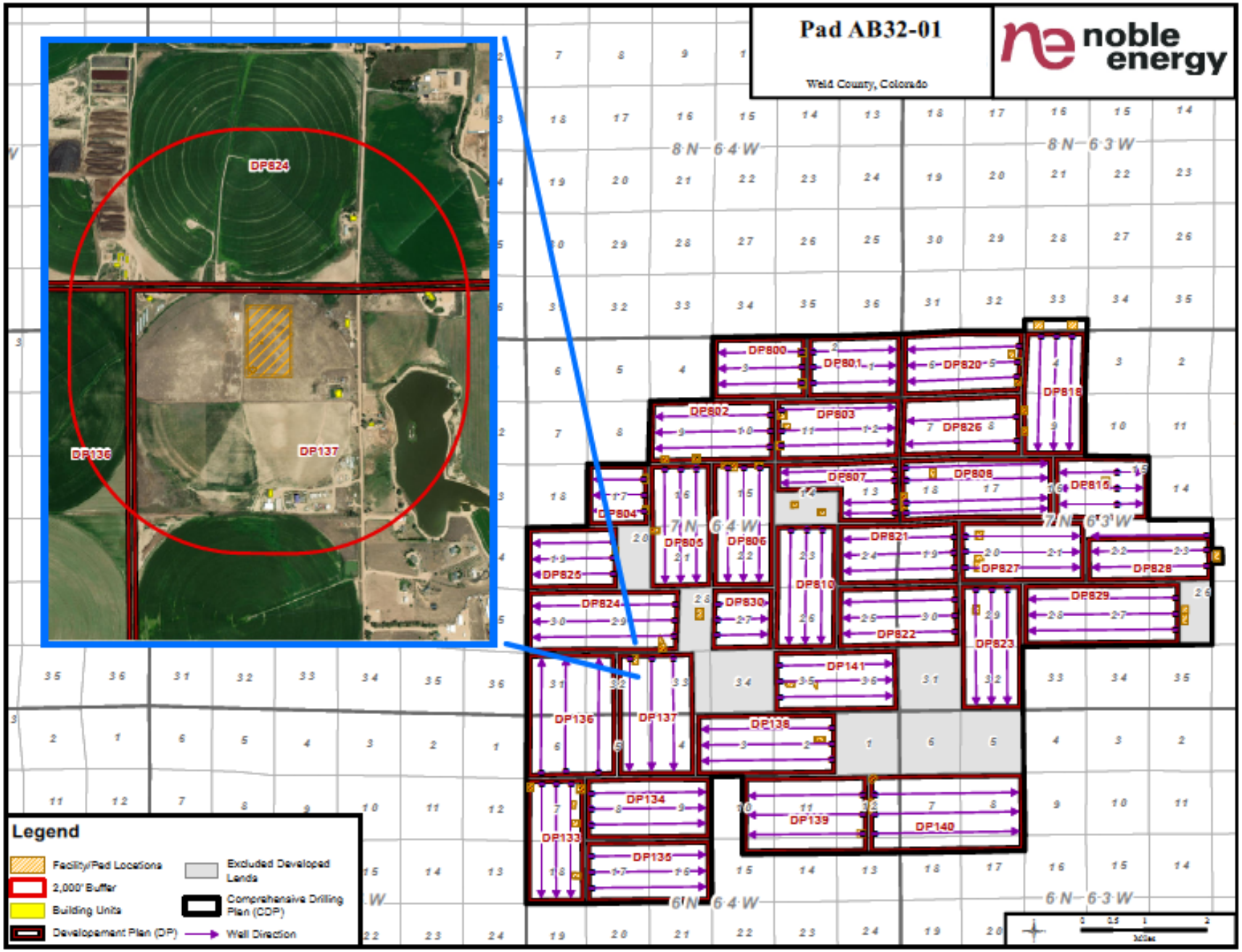
OGDP 4
AB28-13 MULTI FACILITY – TABLES

SURFACE USE AGREEMENT OWNER	
PAD NAME	SUA Owner
AB28-13 MULTI	GABEL CASE P

RBU BY OWNER WITHIN 2,000' OF WORKING PAD SURFACE	
Pad Name	BU Owner
AB28-13 MULTI	GALETON DAIRY LAND COMPANY LLC
AB28-13 MULTI	OLEARY DOLLY SUSAN
AB28-13 MULTI	KAMMERZELL KEITH
AB28-13 MULTI	OVERTON DANIEL J
AB28-13 MULTI	BEAMER D KEITH
AB28-13 MULTI	MATHENA LARRY A
AB28-13 MULTI	DUFF GLORIA F
AB28-13 MULTI	WESTERMAN DEAN B
AB28-13 MULTI	GABEL KELSI N

LEGACY WELLS WITHIN 2000' OF RBU THAT ARE ALSO WITHIN 2000' OF WORKING PAD SURFACE			
Pad Name	WELL 2000' BUFFER LOCATION	Near Analysis Well Name	API
AB28-13 MULTI	INSIDE 2000'	HEINZE 44-29	05-123-22341
AB28-13 MULTI	INSIDE 2000'	HOWE USX AB 33-4	05-123-27390
AB28-13 MULTI	INSIDE 2000'	HOWE-USX AB 33-6	05-123-24543
AB28-13 MULTI	INSIDE 2000'	ROBEL 12-28	05-123-34200
AB28-13 MULTI	INSIDE 2000'	ROBEL 14-28	05-123-34198
AB28-13 MULTI	INSIDE 2000'	ROBEL 19-28	05-123-34201
AB28-13 MULTI	INSIDE 2000'	WESTERMAN 32-11	05-123-26380
AB28-13 MULTI	OUTSIDE 2000'	DILLARD - USX AB 29-17	05-123-24566
AB28-13 MULTI	OUTSIDE 2000'	DILLARD USX AB 29-7	05-123-24280
AB28-13 MULTI	OUTSIDE 2000'	FAULKNER-USX AB 29-14	05-123-26207
AB28-13 MULTI	OUTSIDE 2000'	FAULKNER-USX AB 29-25	05-123-24637
AB28-13 MULTI	OUTSIDE 2000'	HEINZE - USX AB 29-10	05-123-24529
AB28-13 MULTI	OUTSIDE 2000'	HEINZE USX AB 29-09D	05-123-33404
AB28-13 MULTI	OUTSIDE 2000'	HEINZE USX AB 29-15	05-123-33390
AB28-13 MULTI	OUTSIDE 2000'	RICHTER USX AB 27-05	05-123-32656
AB28-13 MULTI	OUTSIDE 2000'	RICHTER USX AB 27-13	05-123-32724
AB28-13 MULTI	OUTSIDE 2000'	RICHTER USX AB 27-25	05-123-32722
AB28-13 MULTI	OUTSIDE 2000'	RICHTER USX AB27-65HN	05-123-34089
AB28-13 MULTI	OUTSIDE 2000'	SCOTT 32-13	05-123-25475
AB28-13 MULTI	OUTSIDE 2000'	SCOTT 32-14	05-123-26379
AB28-13 MULTI	OUTSIDE 2000'	WELD COUNTY 16-28	05-123-34212
AB28-13 MULTI	OUTSIDE 2000'	WELD COUNTY 9-28	05-123-34216

OGDP 4
AB32-01 WELL PAD


Pad AB32-01
Weld County, Colorado
noble energy
DP824
DP136
DP137
DP800
DP801
DP820
DP818
DP802
DP803
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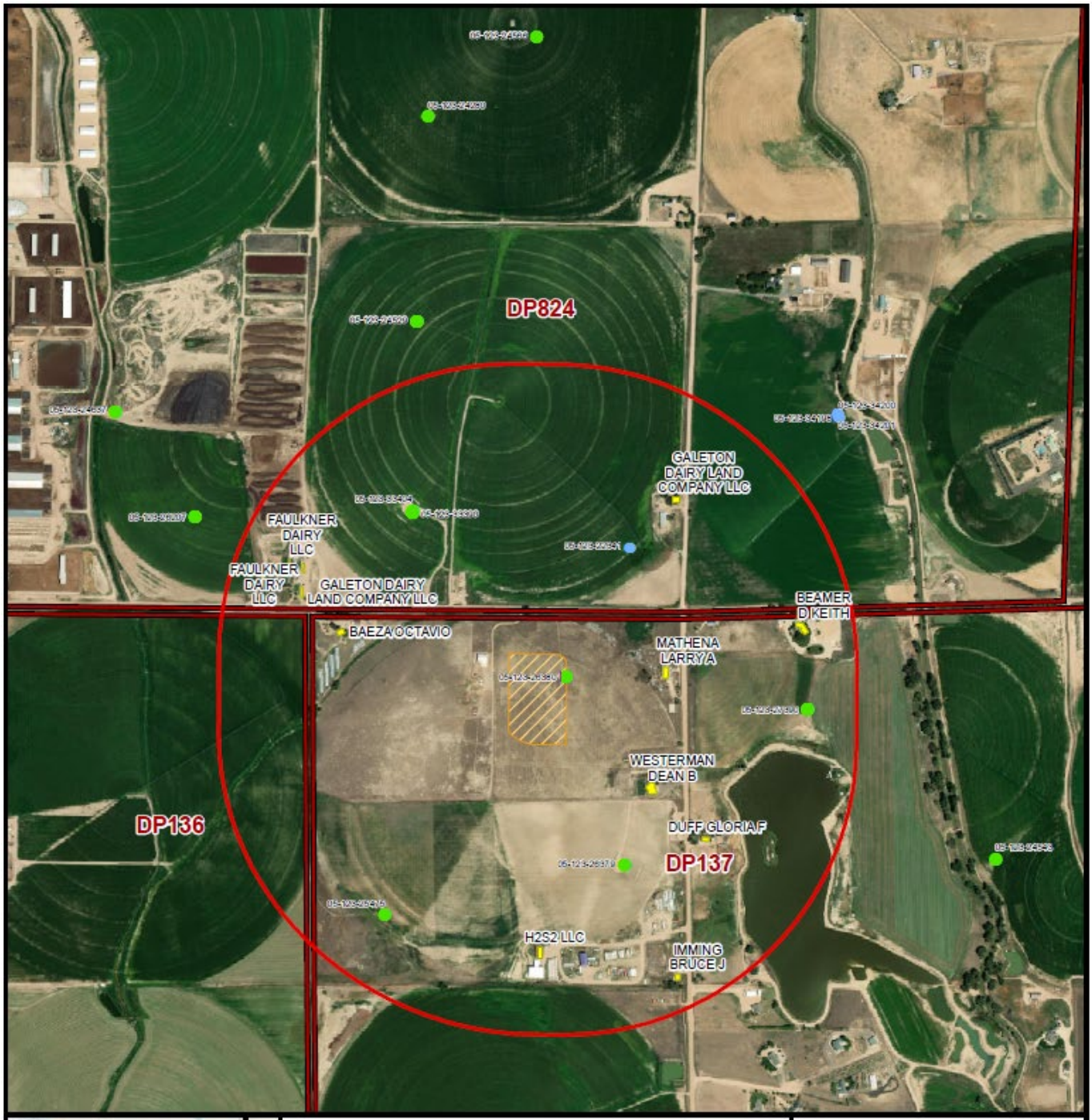
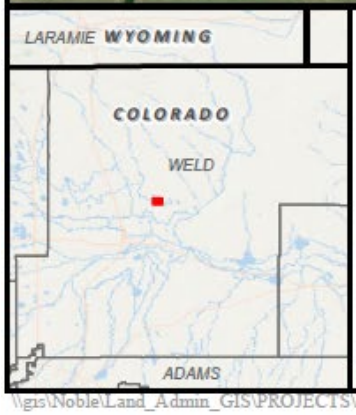
DP807
DP808
DP816
DP804
DP805
DP806
DP821
DP827
DP828
DP825
DP810
DP824
DP830
DP822
DP829
DP823
DP141
DP136
DP137
DP138
DP134
DP139
DP140
DP133
DP135
8 N - 6 4 W
8 N - 6 3 W
7 N - 6 4 W
7 N - 6 3 W
6 N - 6 4 W
6 N - 6 3 W
Legend
Facility/Pad Locations
2,000' Buffer
Building Units
Developement Plan (DP)
Excluded Developed Lands
Comprehensive Drilling Plan (CDP)
Well Direction





Facility/Pad Locations

2,000' Buffer

Building Units

Developement Plan (DP)

Wells Within 2,000' of Building Units

Noble Energy

Other Operators

Comprehensive Drilling Plan (CDP)

0 0.05 0.1 0.2

Miles

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noble energy

Pad AB32-01
Wells Ranch CDP

Weld County, Colorado

CSR:

NAD 1983 UTM Zone 13N

Revised by: jacobfrost

Date: 9/13/2021

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OGDP 4
AB32-01 WELL PAD – TABLES

SURFACE USE AGREEMENT OWNER	
PAD NAME	SUA Owner
AB32-01 PAD	WESTERMAN DEAN B

RBU BY OWNER WITHIN 2,000' OF WORKING PAD SURFACE	
Pad Name	BU Owner
AB32-01 PAD	GALETON DAIRY LAND COMPANY LLC
AB32-01 PAD	GALETON DAIRY LAND COMPANY LLC
AB32-01 PAD	BEAMER D KEITH
AB32-01 PAD	MATHENA LARRY A
AB32-01 PAD	DUFF GLORIA F
AB32-01 PAD	WESTERMAN DEAN B
AB32-01 PAD	BAEZA OCTAVIO
AB32-01 PAD	H2S2 LLC
AB32-01 PAD	FAULKNER DAIRY LLC
AB32-01 PAD	FAULKNER DAIRY II LLC
AB32-01 PAD	IMMING BRUCE J

LEGACY WELLS WITHIN 2000' OF RBU THAT ARE ALSO WITHIN 2000' OF WORKING PAD SURFACE			
Pad Name	WELL 2000' BUFFER LOCATION	Near Analysis Well Name	API
AB32-01 PAD	INSIDE 2000'	HEINZE 44-29	05-123-22341
AB32-01 PAD	INSIDE 2000'	HEINZE USX AB 29-09D	05-123-33404
AB32-01 PAD	INSIDE 2000'	HEINZE USX AB 29-15	05-123-33390
AB32-01 PAD	INSIDE 2000'	HOWE USX AB 33-4	05-123-27390
AB32-01 PAD	INSIDE 2000'	SCOTT 32-13	05-123-25475
AB32-01 PAD	INSIDE 2000'	SCOTT 32-14	05-123-26379
AB32-01 PAD	INSIDE 2000'	WESTERMAN 32-11	05-123-26380
AB32-01 PAD	OUTSIDE 2000'	DILLARD - USX AB 29-17	05-123-24566
AB32-01 PAD	OUTSIDE 2000'	DILLARD USX AB 29-7	05-123-24280
AB32-01 PAD	OUTSIDE 2000'	FAULKNER-USX AB 29-14	05-123-26207
AB32-01 PAD	OUTSIDE 2000'	FAULKNER-USX AB 29-25	05-123-24637
AB32-01 PAD	OUTSIDE 2000'	HEINZE - USX AB 29-10	05-123-24529
AB32-01 PAD	OUTSIDE 2000'	HOWE-USX AB 33-6	05-123-24543
AB32-01 PAD	OUTSIDE 2000'	ROBEL 12-28	05-123-34200
AB32-01 PAD	OUTSIDE 2000'	ROBEL 14-28	05-123-34198
AB32-01 PAD	OUTSIDE 2000'	ROBEL 19-28	05-123-34201

Attachment A

NOBLE ENERGY:

WELLS RANCH
COMPREHENSIVE DRILLING PLAN ("CDP")

CUMULATIVE IMPACTS PLAN

CUMULATIVE IMPACTS PLAN

EXECUTIVE SUMMARY

Under Order No. 1-241 (the "Order"), on March 25, 2020, the Colorado Oil and Gas Conservation Commission ("COGCC") approved the Wells Ranch Comprehensive Drilling Plan ("Wells Ranch CDP") submitted by Noble Energy, Inc. ("Noble").[1] The Wells Ranch CDP was filed pursuant to prior COGCC Rule 216 relating to Comprehensive Drilling Plans. The approved Wells Ranch CDP covers approximately 41,000 acres in Weld County, Colorado. The Order, among other things, designated Noble as the operator over the Wells Ranch CDP for an Initial Term of ten (10) years from the effective date of the Order and provided preliminary approval of the siting of the Oil and Gas Locations proposed in Noble's CDP Application.

Coinciding with the Wells Ranch CDP approval process were COGCC's rulemaking efforts to incorporate SB 19-181's directives to protect and minimize adverse impacts to public health, safety, welfare, and the environment and wildlife. The rulemaking process resulted in a focus on Cumulative Impacts. In accordance to Rule 303.a.(5) and Rule 304.c.(19), Cumulative Impacts consist of Surrounding Oil and Gas Impacts; Other Industrial Impacts; and Resource Impacts which are further distinguished as Air Resources; Public Health; Water Resources; Aquatic Wildlife Resources and Ecosystems; Soil Resources; and Public Welfare.

Consistent with those mandates, this Cumulative Impacts Plan has been compiled to provide a thorough review of potential impacts and offsetting benefits associated with the Wells Ranch CDP.

Within this Cumulative Impacts Plan, there are primarily three (3) recurring themes that are the "Driving Forces" contributing not only to offsetting and mitigating adverse Cumulative Impacts, but also to promoting beneficial Cumulative Impacts. The 3 Driving Forces are as follows:

1) Plugging and removal of existing operated and non-operated legacy wells ("Legacy Wells");

2) Implementation of technologically advanced completion and production designs engineered to significantly reduce overall impacts; and

3) Going beyond compliance to enhance ecosystem restoration and land conversion back to vegetative states, enabling carbon capture and sequestration.

Each Driving Force listed above is explored in more detail throughout this Cumulative Impacts Plan.

Previewing the Cumulative Impacts Plan, development of the Wells Ranch CDP will consist of a robust program to retire existing operated and non-operated legacy wells ("Legacy Wells") within the boundaries of the Wells Ranch CDP. The plugging and removal of the Legacy Wells will have a positive effect to neighboring Residential Building Units ("RBUs") by lessening the Surrounding Oil and Gas Impacts. Removal of the Legacy Wells will eliminate point sources for emissions and interactions with wildlife and the community, thereby reducing Resource Impacts and Public Welfare Impacts.

[1] In 2020, Chevron acquired Noble Energy, Inc. ("Noble"). Noble and its subsidiaries and affiliates are continuing to operate as wholly owned subsidiaries of Chevron.

Through the implementation of technologically advanced designs at the proposed Wells Ranch CDP locations, overall Resource Impacts, including Air Resources; Public Health; Water Resources; Terrestrial and Aquatic Wildlife Resources; and Soil Resources, will be minimized within the Wells Ranch CDP. The Wells Ranch CDP will incorporate a number of efficiencies and improvements to operations made possible through economies of scale and the landscape level planning efforts designed to protect public health, safety, welfare, environment, and wildlife. Examples of positive offsetting benefits explored within this Cumulative Impacts Plan include, but are not limited to, the use of consolidated shared facilities known as "EcoNodes;" modern flowback technology; pipeline infrastructure; and tankless production design.

The contiguous nature of the Wells Ranch CDP enables consolidated shared facilities known as EcoNodes that will minimize surface footprints compared to stand-alone facilities required for Legacy Wells. The reduced footprints will have a positive impact to Public Welfare, Soil Resources, and Terrestrial and Aquatic Wildlife Resources. Reduced surface disturbances translate into fewer points of contact with wildlife nesting and migration; fewer interactions; and decreased viewshed obstructions.

Innovative designs such as modern flowback methodology and tankless production removes onsite storage of oil, gas, condensate, and water. These technologies also, eliminate flowback vapors and emissions traditionally associated with development, resulting in zero uncontrolled emissions. The elimination of onsite storage and emission sources has correlating benefits to Resource Impacts. Air Resources and Public Health will benefit from fewer emissions and emission point sources alleviating the potential for chronic, short- or long-term incremental impacts to Public Health. Water Resources, Terrestrial and Aquatic Wildlife Resources, and Soil Resources will benefit from the removal of onsite storage tanks that have the potential for upset conditions and contamination with water sources, habitat, and soil.

The installation of pipeline infrastructure for takeaway of oil, gas, and fresh and produced water eliminates traditional truck hauling of product; leads to the elimination of onsite product storage; and eliminates emissions associated with hauling and storage. Replacing truck hauling with pipeline takeaway removes the potential for oil and gas related traffic accidents with wildlife and community members, and removes Public Welfare concerns of Noise, Dust, and overall traffic congestion.

In addition to the path-breaking completion and development design benefits, the removal and reclamation of historic surface footprints associated with Legacy Wells will have benefits to Resource Impacts, Public Welfare, and lessen Surrounding Oil and Gas Impacts. As older wells and facilities are replaced, lands will be returned to vegetative surfaces increasing the habitat and grazing areas for wildlife, as well as, the potential for recreational and agricultural sources available for community development. Revegetating impervious surfaces at Legacy Wells will increase the ability of the soil and restored plants to capture carbon dioxide, improving the overall greenhouse gas profile while advancing goals of reducing carbon footprint towards net-zero. Noble will return more land to productive uses than will be used for new pads and facilities.

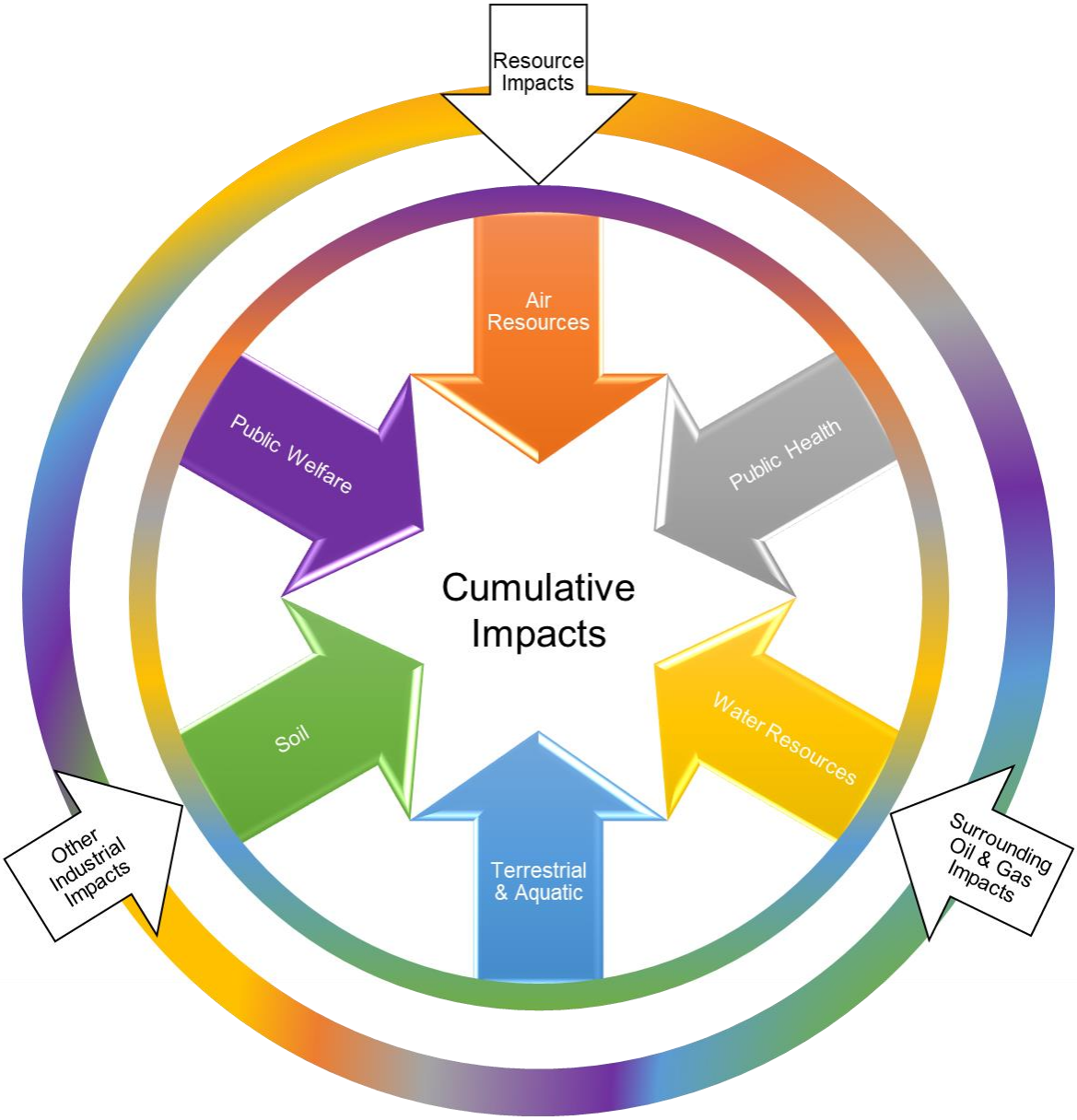
The combination of retiring older, less technologically sophisticated operations, with advanced oil and gas designs for the proposed Wells Ranch CDP locations and establishing carbon balance with ecosystem restoration utilizing carbon capture and sequestration will result in beneficial impacts to the surrounding community, RBUs, wildlife, and the environment. Those beneficial impacts highlighted here and analyzed throughout this Cumulative Impacts Plan will largely offset any incremental or cumulative impacts anticipated with new oil and gas development associated

with the Wells Ranch CDP locations. Furthermore, Noble's ongoing commitment to continuous improvement and innovation has led to positive design plans adopted and fit for purpose to the Wells Ranch CDP resulting in positive and offsetting Cumulative Impacts. That same unrelenting pursuit of progress will provide future opportunities to advance and adopt measures for the improvement and protection of public health, safety, welfare, the environment, and wildlife.

ASSESSMENT & APPLICATION

To address Cumulative Impacts within the Wells Ranch CDP, the Surrounding Oil and Gas Impacts; Other Industrial Impacts, and Resource Impacts that comprise Cumulative Impacts per Rule 303.a.(5). are viewed as dynamic and symbiotic elements, often with interrelated impacts and benefits, as shown in Figure 1. Design efficiencies and benefits to one element will often have similar Cumulative Impact benefits to other elements within the Wells Ranch CDP.

Figure 1



With the intention of capturing the intricacies and fluidity of Cumulative Impacts, Noble has undertaken this review to identify mitigations and beneficial contributions to Cumulative Impacts from the Wells Ranch CDP development. This analysis reflects the overlapping elements of Cumulative Impacts, and to best address the scale and scope the Wells Ranch CDP, the components of Rule 303.a.(5). may be discussed in varying order. Additionally, this Cumulative Impacts Plan is intended to focus on the collective analysis of the Surrounding Oil and Gas

Impacts, Resource Impacts, and Other Industrial Impacts as they relate and apply generally throughout the Wells Ranch CDP. Certain elements of Cumulative Impacts may also be addressed in site-specific Rule 304.c Plans submitted in accordance with individual Form 2A Oil and Gas Development Plans ("OGDP") applications for the Wells Ranch CDP.

The RBUs and wells identified and used for calculations within this Cumulative Impacts Plan may be further refined throughout the permitting process, to support evolving technology improvements; finalized location drawings and measurements; and RBU development. Similarly, the emissions, truck trips, and mileage identified may be subject to further revision during the permitting process as new technologies and efficiencies become available and are implemented.

Surrounding Oil and Gas Impacts

The Commission's rules require an analysis of Surrounding Oil and Gas Impacts (Rule 303.a.(5)). That analysis will help in understanding the universe or playing field of the Wells Ranch CDP. It will also provide the necessary foundation for identifying Resource Impacts, Public Welfare Impacts, and Other Industrial Impacts.

To establish a permitting hierarchy, Noble has divided the Wells Ranch CDP into three (3) "Priority Areas" which will be used for phasing permit submissions. For example, the area selected for Priority Area 1 is based on the locations closest to existing infrastructure to facilitate buildout, as well as considerations for RBUs. Development of locations with the most RBUs, as in Priority Area 1, ahead of less populous areas, will allow Noble to get out ahead of any future residential sprawl.

The Priority Areas are comprised of numerous OGDPs for multiple EcoNodes and Pads. Table 1 depicts the Priority Areas and associated OGDPs and EcoNodes throughout the Wells Ranch CDP. For more detail on the individual Pads and Facilities and how they relate to the OGDPs and Priority Areas please consult the Priority Area section of this Cumulative Impacts Plan.

Table 1

PRIORITY AREA	OGDP	ECONODE
Priority 1	OGDP 1	A07-08 Facility
Priority 1	OGDP 2	A12-07 Facility
Priority 1	OGDP 3	AB35-10 Facility
Priority 1	OGDP 4	AB28-13 Multi
Priority 2	OGDP 5	AB21-30 Facility
Priority 2	OGDP 6	AB15-04 Multi
Priority 2	OGDP 7	AC20-25 Multi
Priority 2	OGDP 8	AC18-12 Multi
Priority 2	OGDP 9	AB11-05 Facility
Priority 3	OGDP 10	AC26-10 Multi
Priority 3	OGDP 11	AC05-08 Multi
Priority 3	OGDP 12	AB15-06 Multi

Using the groupings in Table 1, this Cumulative Impacts Plan identifies Legacy Wells within the Wells Ranch CDP (Table 2.) As noted elsewhere, the vast majority of these Legacy Wells will be plugged, abandoned, and remediated, thereby reducing the impacts to RBUs and restoring lands to productive uses.

Table 2

PRIORITY AREA	OGDP	ECONODE	LEGACY WELLS
Priority 1	OGDP 1	A07-08 Facility	105
Priority 1	OGDP 2	A12-07 Facility	98
Priority 1	OGDP 3	AB35-10 Facility	48
Priority 1	OGDP 4	AB28-13 Multi	35
Priority 2	OGDP 5	AB21-30 Facility	57
Priority 2	OGDP 6	AB15-04 Multi	30
Priority 2	OGDP 7	AC20-25 Multi	31
Priority 2	OGDP 8	AC18-12 Multi	8
Priority 2	OGDP 9	AB11-05 Facility	47
Priority 3	OGDP 10	AC26-10 Multi	0
Priority 3	OGDP 11	AC05-08 Multi	4
Priority 3	OGDP 12	AB15-06 Multi	6
Excluded Developed Lands			90
		Grand Total	**555**

Evaluating how those Legacy Wells, and their removal, may impact RBUs within the Wells Ranch CDP boundaries is an important part of informing Cumulative Impacts and the potential for avoiding, minimizing, and offsetting adverse impacts to RBUs.

Noble also identified RBUs that would be located within 2,000 feet of a proposed new Working Pad Surface ("WPS").[2] Those are rolled-up to the EcoNode level and counted in Table 3 as a "New Well RBUs." Although individuals may own more than one RBU, we listed each RBU to accurately account for impacts at the RBU level.

Table 3

PRIORITY AREA	OGDP	ECONODE	NEW WELL RBUs
Priority 1	OGDP 1	A07-08 Facility	36
Priority 1	OGDP 2	A12-07 Facility	5
Priority 1	OGDP 3	AB35-10 Facility	18
Priority 1	OGDP 4	AB28-13 Multi	15
Priority 2	OGDP 5	AB21-30 Facility	9
Priority 2	OGDP 6	AB15-04 Multi	0
Priority 2	OGDP 7	AC20-25 Multi	9
Priority 2	OGDP 8	AC18-12 Multi	0
Priority 2	OGDP 9	AB11-05 Facility	0
Priority 3	OGDP 10	AC26-10 Multi	1
Priority 3	OGDP 11	AC05-08 Multi	0
Priority 3	OGDP 12	AB15-06 Multi	0
		Total	**93**

After identifying the Legacy Wells found within the Wells Ranch CDP and the New Well RBUs, the next step in understanding Surrounding Oil and Gas Impacts is to identify Legacy Wells that are within 2,000 feet of any of identified New Well RBUs. We are including this set of wells to fully assess the potential impacts of proposed locations within 2,000 feet of an RBU. In other words, an RBU might be affected by the installation of a proposed WPS, but those impacts may be offset by the removal of a Legacy Well(s) that is also within 2,000 feet of the RBU. Therefore, the subset

[2] It is important to note that while these Residential Building Units will be within 2,000 feet of a Working Pad Surface, in most cases that distance will be measured from the edge of the pad and working facilities will be further from the Residential Building Unit.

of Legacy Wells that are within 2,000 feet of a New Well RBU, hereinafter referred to as "Direct Impact Legacy Well", are subcategorized in Table 4.

Table 4

PRIORITY AREA	OGDP	ECONODE	DIRECT IMPACT LEGACY WELLS
Priority 1	OGDP 1	A07-08 Facility	49
Priority 1	OGDP 2	A12-07 Facility	20
Priority 1	OGDP 3	AB35-10 Facility	24
Priority 1	OGDP 4	AB28-13 Multi	8
Priority 2	OGDP 5	AB21-30 Facility	20
Priority 2	OGDP 6	AB15-04 Multi	0
Priority 2	OGDP 7	AC20-25 Multi	7
Priority 2	OGDP 8	AC18-12 Multi	0
Priority 2	OGDP 9	AB11-05 Facility	0
Priority 3	OGDP 10	AC26-10 Multi	0
Priority 3	OGDP 11	AC05-08 Multi	0
Priority 3	OGDP 12	AB15-06 Multi	0
		Total	**128**

When identifying the Direct Impact Legacy Wells, it became apparent that some of these wells fall within multiple 2,000-foot halos or perimeters surrounding a proposed WPS. In other words, some Direct Impact Legacy Wells affect multiple RBUs from different OGDPs. The Direct Impact Legacy Wells that affect at least one RBU in a particular OGDP are provided as a distinct count in Table 4, but are not counted for each overlapping WPS halo among OGDPs.[3] The Direct Impact Legacy Wells as counted in Table 4 are used for determining Resource Impacts, such as air emissions, to avoid duplication.

Finally, to provide a more complete picture of the Surrounding Oil and Gas Impacts, wells within a one-mile radius of the proposed WPS ("1 Mile Wells") are totaled in Table 5. Table 5 also displays the well status for these 1 Mile Wells. Note that the one-mile perimeter around the proposed WPS results in a number of wells that are outside of the Wells Ranch CDP that contribute to the total in Table 5.

Table 5

PRIORITY AREA	OGDP	ECONODE	STATUS	1 MILE WELLS
Priority 1	OGDP 1	A07-08 Facility	PR	4
Priority 1	OGDP 1	A07-08 Facility	PR	28
Priority 1	OGDP 1	A07-08 Facility	SI	6
Priority 1	OGDP 1	A07-08 Facility	SI	41
Priority 1	OGDP 1	A07-08 Facility	TA	1
Priority 1	OGDP 1	A07-08 Facility	TA	5
Priority 1	OGDP 1	AB28-13 Multi	SI	5
Priority 1	OGDP 2	A12-07 Facility	PR	4
Priority 1	OGDP 2	A12-07 Facility	PR	12
Priority 1	OGDP 2	A12-07 Facility	SI	1
Priority 1	OGDP 2	A12-07 Facility	SI	5
Priority 1	OGDP 2	A12-07 Facility	SI	13
Priority 1	OGDP 2	A12-07 Facility	TA	4
Priority 1	OGDP 2	A12-07 Facility	TA	3

[3] The Direct Impact Legacy Wells within overlapping 2,000-foot halos to RBUs from different OGDPs are considered for the discrete Surrounding Oil and Gas Impacts to each affected RBU. For example, the removal of one overlapping Direct Impact Legacy Well may impact two RBUs from different OGDPs.

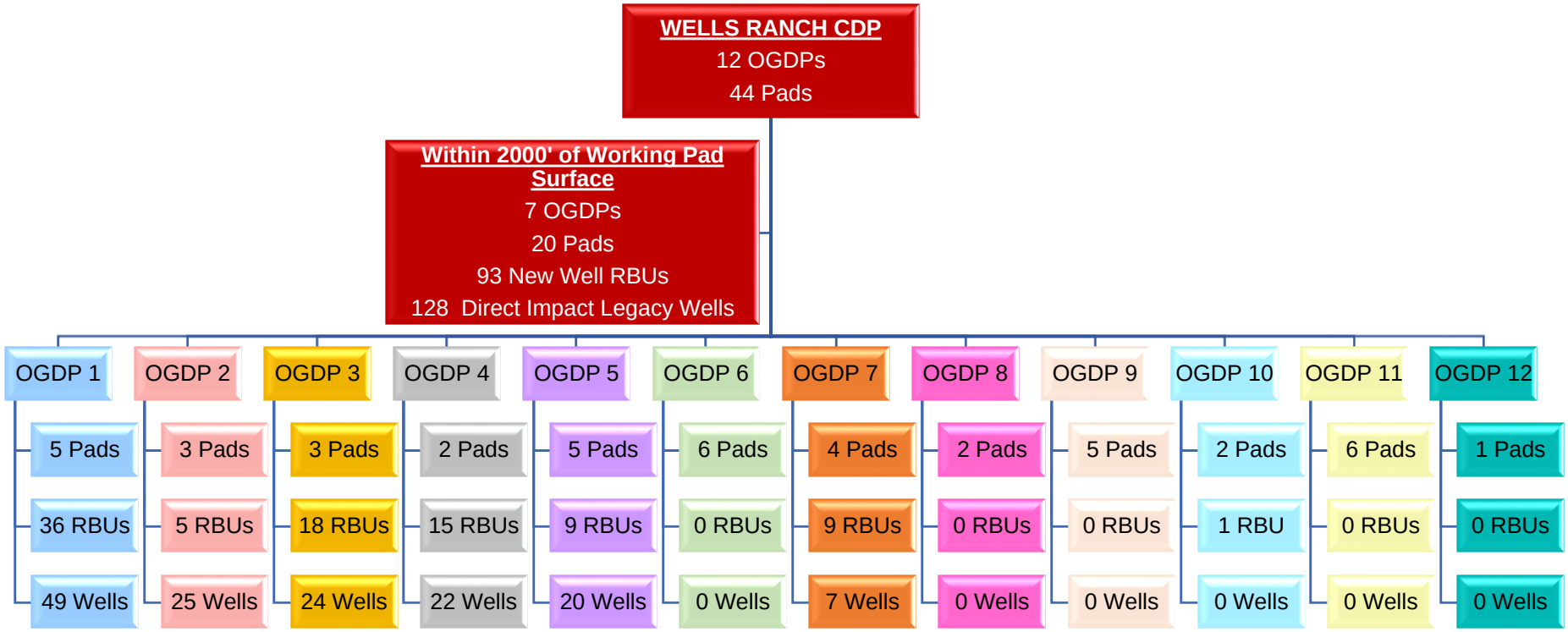
PRIORITY AREA	OGDP	ECONODE	STATUS	1 MILE WELLS
Priority 1	OGDP 2	A12-07 Facility	TA	9
Priority 1	OGDP 2	AB35-10 Facility	PR	5
Priority 1	OGDP 2	AB35-10 Facility	SI	3
Priority 1	OGDP 2	AB35-10 Facility	TA	3
Priority 1	OGDP 3	AB35-10 Facility	PR	2
Priority 1	OGDP 3	AB35-10 Facility	PR	8
Priority 1	OGDP 3	AB35-10 Facility	SI	6
Priority 1	OGDP 3	AB35-10 Facility	SI	17
Priority 1	OGDP 3	AB35-10 Facility	TA	9
Priority 1	OGDP 3	AB35-10 Facility	TA	8
Priority 1	OGDP 4	A07-08 Facility	SI	3
Priority 1	OGDP 4	AB21-30 Facility	PR	2
Priority 1	OGDP 4	AB21-30 Facility	SI	10
Priority 1	OGDP 4	AB21-30 Facility	TA	2
Priority 1	OGDP 4	AB28-13 Multi	PR	4
Priority 1	OGDP 4	AB28-13 Multi	SI	2
Priority 1	OGDP 4	AB28-13 Multi	TA	1
Priority 2	OGDP 5	AB21-30 Facility	PR	1
Priority 2	OGDP 5	AB21-30 Facility	PR	14
Priority 2	OGDP 5	AB21-30 Facility	PR	15
Priority 2	OGDP 5	AB21-30 Facility	SI	1
Priority 2	OGDP 5	AB21-30 Facility	SI	4
Priority 2	OGDP 5	AB21-30 Facility	SI	17
Priority 2	OGDP 5	AB21-30 Facility	TA	1
Priority 2	OGDP 5	AB21-30 Facility	TA	12
Priority 2	OGDP 5	AB28-13 Multi	PR	1
Priority 2	OGDP 6	AB15-04 Multi	PR	3
Priority 2	OGDP 6	AB15-04 Multi	SI	4
Priority 2	OGDP 6	AB15-04 Multi	SI	6
Priority 2	OGDP 6	AB15-04 Multi	TA	1
Priority 2	OGDP 6	AB21-30 Facility	SI	2
Priority 2	OGDP 6	AB21-30 Facility	TA	9
Priority 2	OGDP 6	AB35-10 Facility	SI	4
Priority 2	OGDP 7	AB15-04 Multi	SI	5
Priority 2	OGDP 7	AB35-10 Facility	TA	1
Priority 2	OGDP 7	AC20-25 Multi	PR	2
Priority 2	OGDP 7	AC20-25 Multi	PR	3
Priority 2	OGDP 7	AC20-25 Multi	PR	6
Priority 2	OGDP 7	AC20-25 Multi	SI	1
Priority 2	OGDP 7	AC20-25 Multi	SI	4
Priority 2	OGDP 7	AC20-25 Multi	TA	1
Priority 2	OGDP 7	AC20-25 Multi	TA	1
Priority 2	OGDP 8	AB11-05 Facility	TA	2
Priority 2	OGDP 8	AB15-04 Multi	SI	2
Priority 2	OGDP 8	AB15-04 Multi	TA	2
Priority 2	OGDP 8	AC18-12 Multi	SI	2
Priority 2	OGDP 9	AB11-05 Facility	PR	9
Priority 2	OGDP 9	AB11-05 Facility	SI	1
Priority 2	OGDP 9	AB11-05 Facility	SI	19
Priority 2	OGDP 9	AB11-05 Facility	TA	9
Priority 2	OGDP 9	AB15-04 Multi	SI	2
Priority 2	OGDP 9	AC18-12 Multi	PR	1
Priority 2	OGDP 9	AC18-12 Multi	SI	1
Priority 3	OGDP 10	AC26-10 Multi	PA	1
Priority 3	OGDP 10	AC26-10 Multi	PR	3
Priority 3	OGDP 10	AC26-10 Multi	SI	4
Priority 3	OGDP 11	AC05-08 Multi	PR	1
Priority 3	OGDP 11	AC05-08 Multi	SI	1
Priority 3	OGDP 11	AC05-08 Multi	SI	2
Priority 3	OGDP 11	AC18-12 Multi	SI	1
Priority 3	OGDP 12	AB15-06 Multi	PA	1

PRIORITY AREA	OGDP	ECONODE	STATUS	1 MILE WELLS
Priority 3	OGDP 12	AB15-06 Multi	SI	2
			Total	**411**

Legend:
SI = Shut In
TA = Temporarily Abandoned
PR = Producing
PA = Plugged & Abandoned

Noble developed this Cumulative Impacts Plan as a means of identifying existing well impacts to RBUs and potential impacts from future development of the Wells Ranch CDP. Figure 2 below, shows the breakdown of the Wells Ranch CDP among the twelve (12) OGDPs and the proposed Pads, RBUs, and existing Direct Impact Legacy Wells as rolled-up to each OGDP. The scope outlined in Figure 2, has enabled Noble to focus on addressing potential impacts and determining opportunities for offsetting impacts.

Figure 2

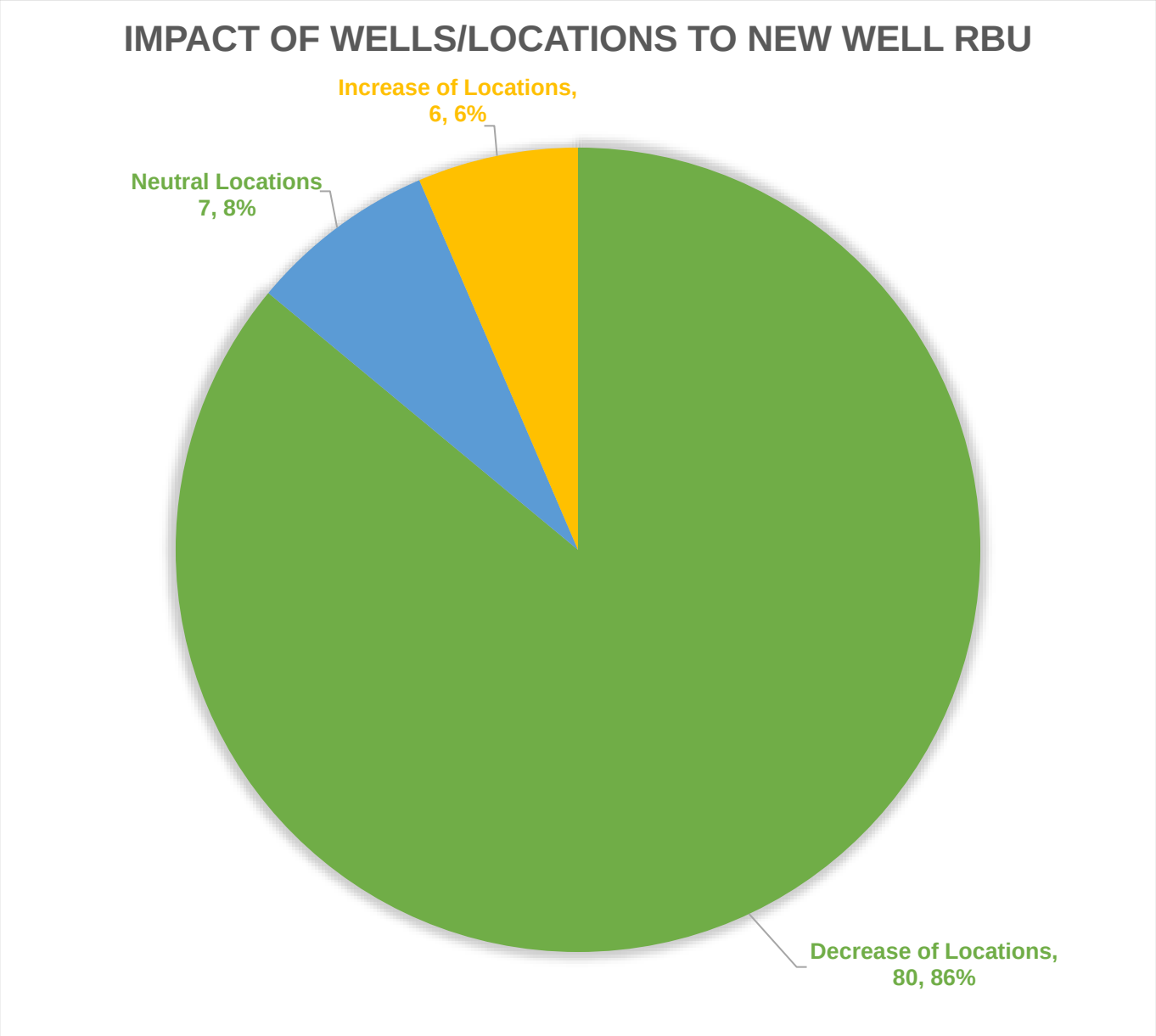


[4]

[4] The RBUs and wells listed in the above figure under the OGDP level may be repeated as an RBU may be within 2,000 feet of more than one proposed WPS and an existing well may affect more than one RBU. For example, a well in OGDP 1 may also be a well counted under OGDP 2 as the well is within 2,000 feet of an RBU from OGDP 1 and an RBU from OGDP 2. There are 128 Direct Impact Legacy Wells, but there are some wells that are within 2,000 feet of an RBU in more than one OGDP totaling 146 wells under the individual OGDPs. The wells as counted under each OGDP label represent a discrete impact to each affected RBU.

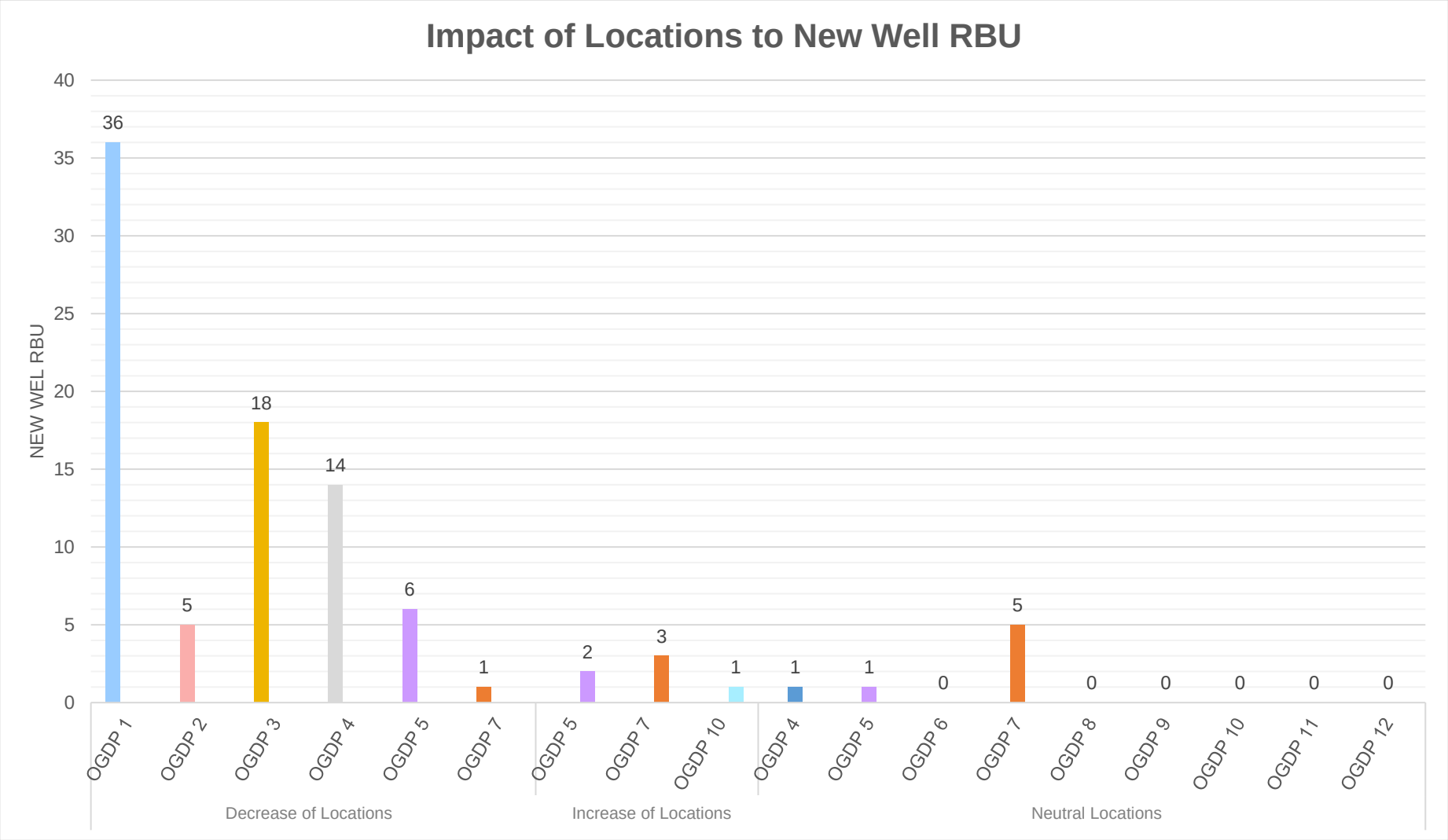
Based on the information collected, Figure 3 shows the New Well RBUs and the impact of the installation of the Wells Ranch CDP Pads offset against the removal of the Direct Impact Legacy Wells in relation to each affected RBU. Figure 3 illustrates that the vast majority of New Well RBUs, will benefit from a decrease in locations as the plugging and removal of Direct Impact Legacy Wells offsets the installation of new locations.

Figure 3



Similarly, Figure 4 below depicts the same New Well RBUs and the impact of the installation of the proposed WPS offset against the removal of the Direct Impact Legacy Wells as depicted on an OGDP basis. Figure 4 illustrates on an OGDP level that the same New Well RBUs, will benefit from a decrease in locations, as the plugging and removal or Direct Impact Legacy Wells as impacting each RBU offsets the installation of new locations.

Figure 4


Impact of Locations to New Well RBU
NEW WEL RBU
40
35
30
25
20
15
10
5
0
36
5
18
14
6
1
2
3
1
1
1
0
5
0
0
0
0
0
OGDP 1
OGDP 2
OGDP 3
OGDP 4
OGDP 5
OGDP 7
OGDP 5
OGDP 7
OGDP 10
OGDP 4
OGDP 5
OGDP 6
OGDP 7
OGDP 8
OGDP 9
OGDP 10
OGDP 11
OGDP 12
Decrease of Locations
Increase of Locations
Neutral Locations

Surrounding Oil and Gas Impacts Summary

The offsetting benefits of plugging and removing largely stand-alone Legacy Wells with the proposed consolidated Wells Ranch CDP locations will lessen the Surrounding Oil and Gas Impacts to the RBUs. As detailed above, even with the proposed development, the majority of the RBUs within the Wells Ranch CDP will realize a decrease in proximate well footprints through the plugging and removal process of the Direct Impact Legacy Wells. Overall, the Well Ranch CDP will have a positive Cumulative Impact on a Surrounding Oil and Gas Impacts basis, and Noble does not anticipate adverse impacts.

Resource Impacts

Moving on from the foundational playing field established in the above Surrounding Oil and Gas Impacts section, this Cumulative Impacts Plan will now introduce the Resource Impacts component of Rule 303.a.(5), particularly as to ascertaining the impacts and the offsets to Air Resources, Public Health, Water Resources, Terrestrial and Aquatic Wildlife Resources, and Soil Resources.

Continuing to build on the offsetting benefits detailed in the Surrounding Oil and Gas Impacts section of this Cumulative Impacts Plan, the removal of Legacy Wells will similarly have a positive correlation to Resource Impacts as described below. Plugging and restoring Legacy Wells will result in beneficial Cumulative Impacts, particularly in reducing emissions under Air Resources and Public Health; and providing restored habitat and ecosystems in Terrestrial and Aquatic Wildlife Resources, and Soil Resources.

Complementing the benefits of retiring outdated Legacy Wells, is the implementation of technological advancements and enhanced designs of the proposed Wells Ranch CDP locations. The new designs are engineered to reduce overall Resource Impacts, with fewer emissions, consolidated footprints, and eliminating point sources.

Leveraging reclaimed legacy footprints and consolidated enhanced operations provides the opportunity to convert lands back to vegetative states, providing beneficial Resource Impacts. The restoration of impervious legacy surfaces and preservation of areas from larger than necessary disturbances with enhanced consolidated designs will help create carbon balance and ecosystem restoration with the ability for carbon capture and sequestration.

While many of the Resource Impacts are explored in depth at the specific OGDP level and will be submitted as separate Rule 304.c. Plans accompanying the permit applications, Air Resources; Public Health; Water Resources; Terrestrial and Aquatic Wildlife Resources and Ecosystems, Soil Resources; and Public Welfare will be examined for potential adverse and beneficial contributions to Cumulative Impacts by the Wells Ranch CDP.

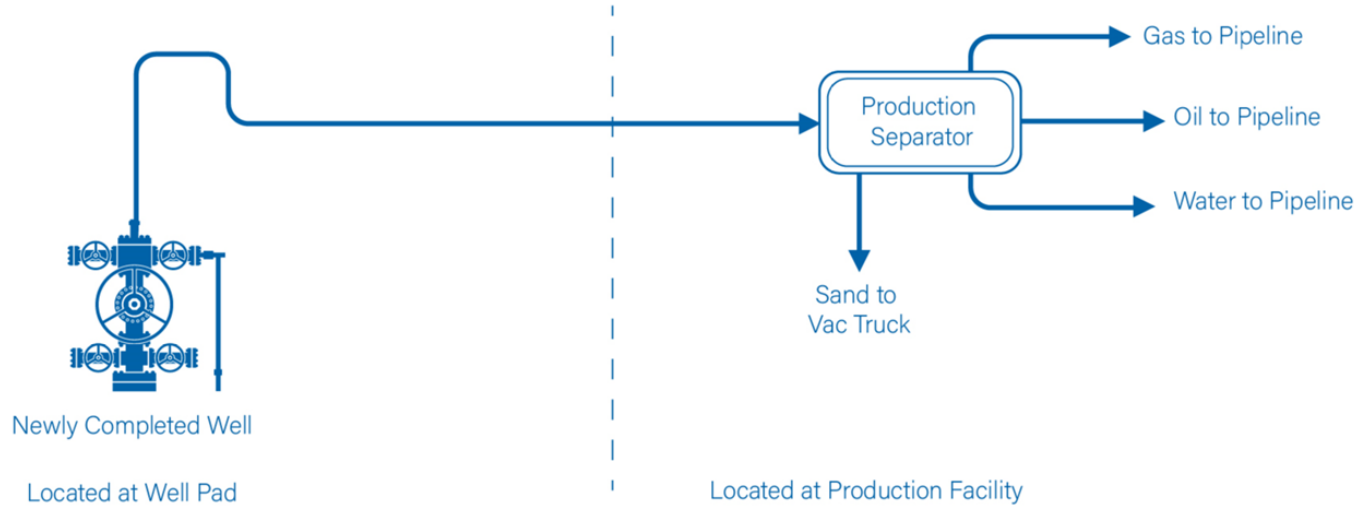
Air Resources

In a concerted effort to reduce our emissions profile, Noble is reducing and/or removing production tanks and water tanks, converting to closed loop systems with surge vessels in place. When possible, Noble is implementing electric LP compression and VRUs, removing combustors, and installing pneumatic controllers powered by instrument air.

The Wells Ranch CDP will utilize a modern flowback methodology that connects the newly completed well directly to the production separators then into the pipelines for oil, gas, and water takeaway, thereby eliminating flowback vapors and emissions as depicted in Diagram 1.

Diagram 1

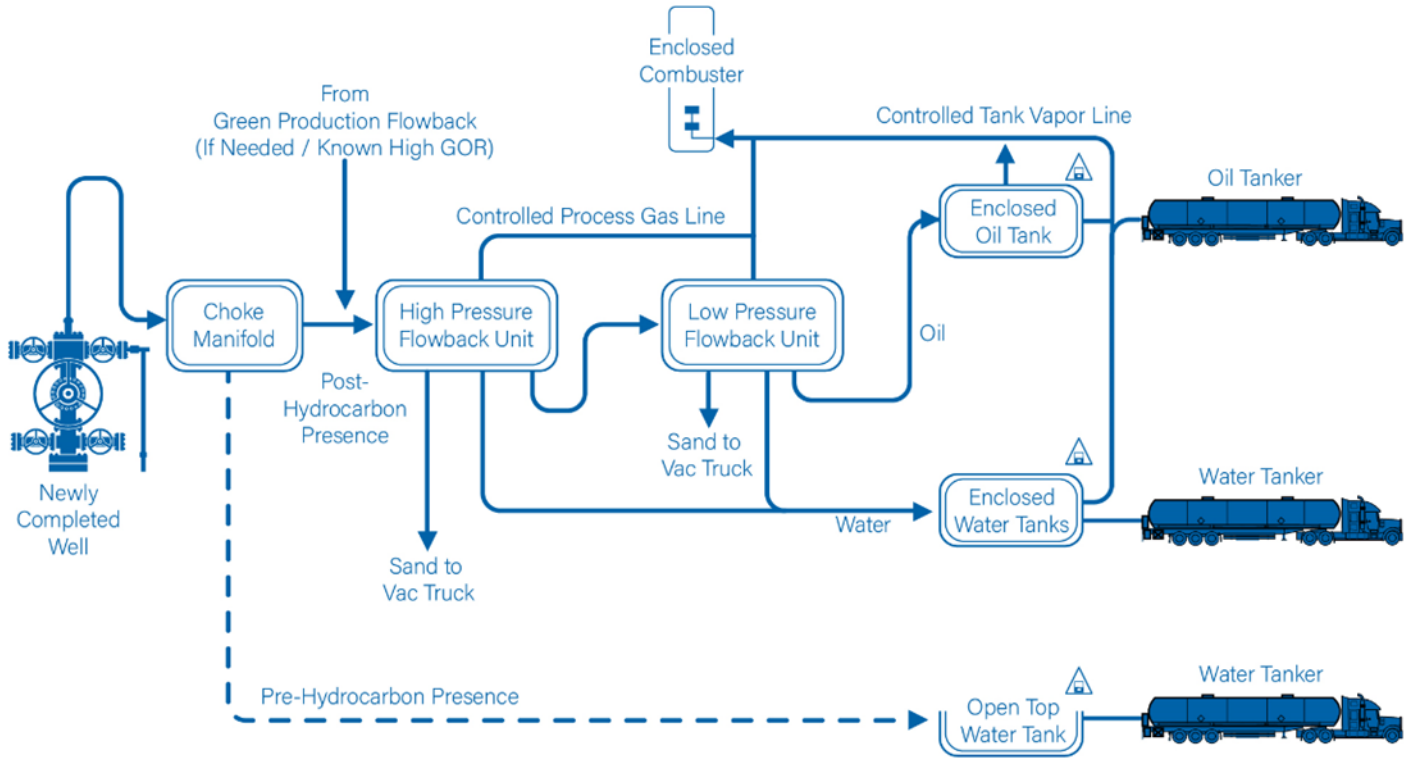
MODERN PRODUCTION FLOWBACK METHODOLOGY - DIRECT TO FACILITY



The traditional flowback design as shown in Diagram 2 depicts the various flowback equipment that has been eliminated through the implementation of the simplified modern flowback design as from Diagram 1.

Diagram 2

GREEN PRODUCTION FLOWBACK METHODOLOGY - TEMPORARY EQUIPMENT ON PAD



Flowback

The streamlined flowback design eliminates equipment and processes such as oil and water tanks; transfers to trucks; flowback units; and other flowback equipment on pad. Thus, the Wells Ranch CDP modern flowback design will result in zero uncontrolled emissions flowback point sources.

Pneumatics

Additional equipment advances that will be incorporated into the Wells Ranch CDP locations relate to natural gas pneumatic devices. Traditional natural gas pneumatic devices are valves that use natural gas pressure to open and close, resulting in the second largest source of greenhouse gas emissions for Noble in Colorado. Continuing to improve, Noble pioneered the use of compressed air instead of natural gas to actuate these valves.

Tankless

With the implementation of pipeline infrastructure and modern flowback methodology, the Wells Ranch CDP will also be able to incorporate tankless production design. Storage tanks are traditionally the third largest source of greenhouse gas emissions – both methane and CO_2 – for Noble in Colorado. Replacing the need for storage tanks on new locations and removing tanks for older Legacy Wells with plugging and removal will eliminate the emission sources. Additionally, eliminating storage tanks will eliminate the need for flare stacks burning VOC vapors producing the fourth largest traditional source of greenhouse gas emissions for Noble in Colorado.

EcoNodes & Rigs

The Wells Ranch CDP will showcase "Gen IV" EcoNode design that not only encompass tankless production and instrument air pneumatics, but will also feature design efficiencies that dramatically reduce methane/VOC emission sources. At the start of first production, operations will be equipped with ultra-efficient Environmental Control Devices ("ECDs") with a design destruction efficiency of at least 98% for hydrocarbons. Locations will be outfitted with oil and produced water Lease Automatic Custody Transfer ("LACT") units to pump liquids into gathering pipelines in lieu of trucking; thereby eliminating the opportunities for leaks, spills, and emissions associated with truck hauling of product. Additionally, Gen IV systems will minimize the need for onsite rotating equipment; allow for increased future mobility with skid mounted equipment; permit pre-fabrication of equipment in controlled environments; enable winterization, pre-wiring, instrumentation, and insulation of equipment; amplify factory testing capabilities in conjunction with quality control before shipping; encourage implementation of fit for purpose automation, electrical and control systems; and elevate to above grade modular pipe rack design.

Complementing the design efficiencies of the Gen IV EcoNodes, drilling operations will feature efficient natural gas drill rigs.

Legacy Footprint Offset

The eventual removal of the Legacy Wells, including the Direct Impact Legacy Wells, will have noticeable impacts on Air Resources as the yearly emissions models in Table 6-Table 8 demonstrate. As illustrated in Table 6 below, Noble has analyzed various equipment categories for VOC, NOx, and CO emission sources to determine the amount of annual emissions in tons per well.

Table 6

EMISSIONS IN TONS PER YEAR (TONS/WELLS)			
Equipment Category	VOC	NOx	CO
Oil Tanks	0.142421	0.006001	0.015245
PW Tanks	0.015427	0.000376	0.000954
Truck Loadout	0.053851	0.000341	0.000867
Engines	0.134634	0.383614	1.151222
Flaring	0.024453	0.001512	0.000093
Fugitives	0.097000	0.000000	0.000000
Pneumatic Controllers	0.549198	0.000000	0.000000
Total	**1.016983**	**0.391843**	**1.168382**

Table 7, extrapolates the modeled emissions from Table 6 to the 128 Direct Impact Legacy Wells to ascertain the emissions that will be eliminated near RBUs when those wells are plugged and removed as part of the Wells Ranch CDP development process.[5]

Table 7

EMISSIONS IN TONS PER YEAR (128 DIRECT IMPACT LEGACY WELLS)			
Equipment Category	VOC	NOx	CO
Oil Tanks	18.229873	0.768087	1.951355
PW Tanks	1.974609	0.048086	0.122164
Truck Loadout	6.892895	0.043678	0.110966
Engines	17.233204	49.102611	147.356435
Flaring	3.129975	0.193489	0.011961
Fugitives	12.416000	0.000000	0.000000
Pneumatic Controllers	70.297309	0.000000	0.000000
Direct Impact Legacy Well Total	**130.173865**	**50.155951**	**149.552882**

Table 8, further calculates the emissions that will be eliminated over the entire Wells Ranch CDP with the plugging and removal of all existing Legacy Wells.

Table 8

EMISSIONS IN TONS PER YEAR (555 LEGACY WELLS)[6]			
Equipment Category	VOC	NOx	CO
Oil Tanks	79.043591	3.330375	8.460953
PW Tanks	8.561779	0.208497	0.529696
Truck Loadout	29.887161	0.189386	0.481143
Engines	74.722096	212.905852	638.928292
Flaring	13.571376	0.838957	0.051864
Fugitives	53.835000	0.000000	0.000000
Pneumatic Controllers	304.804740	0.000000	0.000000
555 Legacy Well Total	**564.425743**	**217.473068**	**648.451947**

[5] The modeled annual emissions are based on Noble operations and have been assumed in the calculations for Noble operated and non-operated wells.
[6] Legacy Wells includes the Direct Impact Legacy Wells and is comprised of Noble operated and non-operated wells.

Recognizing that the plugging and removal process will be staged with development pace of the Wells Ranch CDP, Table 9 estimates the approximate timing for the plugging and removal process and the associated emissions.

Table 9

EMISSIONS IN TONS PER YEAR (LEGACY WELLS)				
Year Est. P&A	Legacy Wells	VOC	NOx	CO
2024	213	216.617447	83.462637	248.865342
2025	182	185.090964	71.315492	212.645503
2026	77	78.307716	30.171939	89.965405
2027	49	49.832183	19.200325	57.250712
2028	21	21.356650	8.228711	24.536020
2029	13	13.220783	5.093964	15.188965
Legacy Well Total		**564.425743**	**217.473068**	**648.451947**

Noble has undertaken a similar exercise to review the impacts related to oil and water hauling associated with the Legacy Wells. Table 10 and Table 11 depict the estimated annual truck trips; one-way hauling mileage; and the total hauling mileage associated with the Legacy Wells for oil and water, respectively.

Table 10

OIL HAULING	
Truck Trips (Annual Average)	1702
Hauled to WhiteCliffs (Platteville)	70%
Mile Trip (*One Way*)	32
WhiteCliffs Miles	38,124.80
Hauled to Suncor (Brighton)	30%
Mile Trip (*One Way*)	67
Suncor Miles	34,210.20
Total Eliminated Miles (Annually)	**72,335.00**

Table 11

WATER HAULING	
Truck Trips (Annual Average)	1709
Hauled to NGL C07	65%
Mile Trip (*One Way*)	12
NGL C07 Miles	13,330.20
Hauled to NGL C10	35%
Mile Trip (*One Way*)	9
NGL C10 Miles	5,383.35
Total Eliminated Miles (Annually)	**18,713.55**

The figures in Table 10 and Table 11 represent the truck trips and hauling mileage saved annually when the Legacy Wells are plugged and removed and replaced with the Wells Ranch CDP development utilizing pipeline infrastructure for takeaway. Based on the hauling mileage for oil and water in Table 10 and Table 11, respectively, Noble was able to estimate the emissions associated with hauling the Legacy Wells. Table 12 represents the estimated annual emissions reductions associated with oil and water hauling that will be realized when the Legacy Wells are plugged and removed to support the Wells Ranch CDP development.

Table 12

EMISSIONS REDUCTIONS (TPY)									
Category	Operational data	VOC	CO	NOx	PM	CO2	CH4	N2O	CO2e
Oil Hauling	72,335.00 (mi)	0.036280	0.190967	0.732851	0.018578	135.630406	0.003987	0.003987	136.918145
Water Hauling	18,713.55 (mi)	0.009386	0.049404	0.189593	0.004806	35.088496	0.001031	0.001031	35.421643
Subtotal -Hauling	91,048.55 (mi)	0.045666	0.240371	0.922444	0.023385	170.718903	0.005018	0.005018	172.339788
Oil Truck Loading	335,294.00 (bbl)	39.564692	0.000000	0.000000	0.000000	0.013443	0.164869	0.000000	4.135169
Total		**39.610358**	**0.240371**	**0.922444**	**0.023385**	**170.732346**	**0.169887**	**0.005018**	**176.474956**

Proposed Development

In addition to the benefits of removing the Legacy Wells, the Wells Ranch CDP development will benefit from thoughtful design planning and a number of initiatives all devised to reduce the emissions profile. For example, the Wells Ranch CDP will utilize pipeline infrastructure for takeaway, rather than heavy truck hauling which will eliminate truck trips; truck miles; and emissions, that would normally occur with traditional hauled development as illustrated in Table 13

Table 13

REDUCTION TRUCK TRIPS; MILEAGE; EMISSIONS							
Product	**Truck Trips Reduced**	**Truck Miles Reduced (MM miles)**	**Emissions Reduced VOC (tons)**	**Emissions Reduced CO (tons)**	**Emissions Reduced NOx (tons)**	**Emissions Reduced PM (tons)**	**Emissions Reduced CO_2 (tons)**
Fresh Water	2,239,337	38.1	19	101	386	10	71,380
Produced Water	632,735	8.0	4	21	81	2	14,949
Oil	475,824	28.8	1,706	394	417	7	148,342
Total	**3,347,896**	**74.9**	**1,729**	**516**	**884**	**19**	**234,671**

While the Wells Ranch CDP will employ pipeline takeaway for oil, gas, fresh water, and produced water, there will be traffic associated with the construction, drilling, and completion activities, as shown in the baseline traffic summary in Table 14.

Table 14

LOCATION BASELINE TRAFFIC SUMMARY			
Phase	Heavy Truck Trips per Location	Light Truck Trips per Location	Proposed Location Trips
Construction	1,500		66,000
Drilling	1,920	1,840	165,440
Completion	2,408	1,034	151,448
Interim Reclamation		800	35,200
Total	**5,828**		**418,088**
Production[7]		**66**	**1,045,440**

Using the baseline traffic summary for heavy truck trips provided in Table 14, the estimated emissions related to pre-production traffic are calculated and provided in Table 15.

Table 15

BASELINE TRAFFIC TRIPS, MILEAGE, EMISSIONS									
Phase	Trips per location	Miles per location	Total Trips	Total Miles Traveled	VOC	CO	NOx	PM	CO2
Construction	1,500	75,000	66,000	3,300,000	1.66	8.71	33.43	0.85	6,187.64
Drilling	1,920	96,000	84,480	4,224,000	2.12	11.15	42.80	1.08	7,920.17
Completion	2,408	120,400	105,952	5,297,600	2.66	13.99	53.67	1.36	9,933.22
Total	**5,828**	**291,400**	**256,432**	**12,821,600**	**4.78**	**25.14**	**96.47**	**2.45**	**17,853.39**

The design enhancements and advanced technological features of the proposed Wells Ranch CDP operations will result in an offsetting emissions profile over traditional oil and gas development as illustrated in Table 16 for pre-production emissions and in Table 17 for production

[7] Production trips consist of projected monthly light-truck inspections and maintenance over a 30-year life cycle.

emissions. The calculations in Table 16 and Table 17 represent the most conservative estimates and do not account for the potential for electrification of sources such as the Non-Road ICE.

Table 16

PROPOSED LOCATION PRE-PRODUCTION EMISSIONS TONS							
Equipment Category	NO_X	CO	VOC	Methane	Ethane	CO_2	N20
Heaters Boilers	0.00	0.00	0.00	0.00	0.00	0.00	0.00
storage tanks	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Venting/ Blowdowns	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Combustion Control Device	0.18	0.82	5.99	0.00	0.00	359.41	0.00
Non road ICE	1,482.42	1,349.80	1,482.42	664.26	55.80	187,328.25	1.16
Drill Mud	3.17	14.46	37.12	44.04	20.92	5,654.68	0.01
Flowback or Completions	2.54	11.57	29.69	35.23	16.74	4,523.74	0.01
Truck Load Out	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**1,488.31**	**1,376.65**	**1,555.22**	**743.52**	**93.46**	**197,866.08**	**1.18**

Table 17

PROPOSED LOCATION PRODUCTION EMISSIONS TONS							
Equipment Category	NO_X	CO	VOC	Methane	Ethane	CO_2	N20
Engines/Turbine	90.09	180.18	63.06	84.50	25.87	40,414.95	0.08
Heaters / Boilers	82.45	69.26	4.53	1.85	2.56	98,373.21	0.19
Storage Tanks	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dehydration units	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pneumatic Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pneumatic controllers	0.00	0.00	44.81	53.17	25.26	3.30	0.00
Separators	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fugitives	0.00	0.00	8.43	5.50	2.61	0.34	0.00
Venting/blowdowns	1.16	5.30	78.13	35.68	18.21	22,26.95	0.00
Combustors	6.68	30.46	177.42	16.84	30.20	12,872.28	0.02
Non road ICE	39.84	79.69	27.89	37.45	11.46	17,908.51	0.04
Loadout	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Well Bradenhead	0.49	2.21	17.96	21.31	10.12	911.44	0.00
Well Maintenance	0.49	2.21	17.96	21.31	10.12	911.44	0.00
Total	**221.20**	**369.31**	**440.21**	**277.60**	**136.41**	**173,622.42**	**0.33**

Public Health

Closely related to Air Resource impacts are impacts to Public Health, indeed many of the development plans and equipment designs that have been selected to reduce air emissions have a corresponding beneficial impact to Public Health. The Wells Ranch CDP modern flowback design connects the newly completed well directly to the production separator then into the pipelines for oil, gas, and water takeaway, thereby eliminating flowback vapors and emissions. The streamlined modern flowback design eliminates equipment and processes such as oil and water tanks; transfers to trucks; flowback units; and other flowback equipment on pad. Thus, the Wells Ranch CDP modern flowback design will result in zero uncontrolled emissions flowback point sources.

Prohibited Fracturing Fluids

To further ensure the protection of Public Health, in addition to any substances that are not permitted to be used in accordance with state or federal regulations in place at the time of drilling operations, the chemicals listed in Table 18 will not be utilized in the hydraulic fracturing fluid at the Wells Ranch CDP oil and gas locations.

Table 18

INGREDIENT NAME	CAS #
Benzene	71-43-2
Lead	7439-92-1
Mercury	7439-97-6
Arsenic	740-38-2
Cadmium	744043-9
Chromium	7440-47-3
Ethylbenzene	100-41-4
Xylene	1330-20-7
1,3,5,-trimethylbenzene	108-67-8
1,4,-dioxane	123-91-1
1-butanol	71-36-3
2-butoxyethanol	111-76-2
N,N-dimethylformamide	68-12-2
2-ethylhexanol	104-76-7
2-mercaptoethanol	60-24-2
benzene, 1,1'-oxybis-, tetrapropylene derivatives sulfonated, sodium salts (BOTS)	119345-04-9
butyl glycidyl ether	8-6-2426
polysorbate 80	9005-65-6
Quatemary ammonium compounds, dicoco alkyldimethyl, chlorides (QAC)	61789-77-3
Bis hexamethylene triamine penta methylene phosphonic acid (BMPA)	35657-77-3
Diethylenetriamine penta (methylene- phosphonic acid) (DMPA)	15827-60-8
FD& C blue no. 1	3844-45-9
Tetrakis (triethanolaminato) zirconium(IV) (TTZ)	101033-44-7

Legacy Footprint Offset

Continuing to identify and assess the potential for Public Health Impacts and offsetting benefits associated with the Wells Ranch CDP development, specific hazardous air pollutants are included in this review. Building upon the emissions tables in the Air Resources section of this Cumulative Impacts Plan estimating the VOC, NOx and CO emissions for the existing Legacy Wells, Table 19 similarly reviews the same equipment categories for specific hazardous air pollutant emissions on a per well basis.

Table 19

EMISSIONS IN LBS PER YEAR (LBS/WELL)									
Equipment Category	Benzene	Toluene	E-benzene	Xylenes	n-hexane	224 TMP	H2S	Formal-dehyde	Methanol
Oil Tanks	1.1978	1.9354	0.3481	0.6874	54.5839	0.3275	0.0000	0.0000	0.0000
PW Tanks	0.8243	0.6092	0.0197	0.1179	2.5907	0.0000	0.0000	0.0000	0.0000
Truck Loadout	0.4529	0.7318	0.1316	0.2599	20.6387	0.1238	0.0000	0.0000	0.0000
Engines	2.2694	0.9558	0.0720	0.3143	1.3741	0.6036	0.0000	49.6236	4.1831
Flaring	0.3235	0.4347	0.0986	0.1514	10.0467	0.1494	0.0000	0.0000	0.0000
Fugitives	0.8431	1.0554	0.2105	0.6548	6.3024	0.0755	0.0045	0.0000	0.0000
Pneumatic Controllers	4.7737	5.9757	1.1917	3.7075	35.6832	0.4274	0.0255	0.0000	0.0000
Per Well Total	**10.6848**	**11.6980**	**2.0722**	**5.8933**	**131.2197**	**1.7072**	**0.0300**	**49.6236**	**4.1831**

Table 20, extrapolates the modeled emissions from Table 19 to the 128 Direct Impact Legacy Wells to ascertain the specific hazardous pollutant emissions that will be eliminated near RBUs when those wells are plugged and removed as part of the Wells Ranch CDP development process.

Table 20

EMISSIONS IN LBS PER YEAR (128 DIRECT IMPACT LEGACY WELLS)									
Equipment Category	Benzene	Toluene	E-benzene	Xylenes	n-hexane	224 TMP	H2S	Formal-dehyde	methanol
Oil Tanks	153.3223	247.7326	44.5617	87.9904	6,986.7397	41.9182	0.0000	0.0000	0.0000
PW Tanks	105.5134	77.9782	2.5154	15.0925	331.6137	0.0000	0.0000	0.0000	0.0000
Truck Loadout	57.9727	93.6701	16.8492	33.2700	2,641.7552	15.8497	0.0000	0.0000	0.0000
Engines	290.4793	122.3378	9.2174	40.2312	175.8787	77.2611	0.0000	6,351.8213	535.4334
Flaring	41.4084	55.6406	12.6222	19.3840	1,285.9796	19.1264	0.0000	0.0000	0.0000
Fugitives	107.9215	135.0950	26.9413	83.8175	806.7088	9.6626	0.5766	0.0000	0.0000
Pneumatic Controllers	611.0336	764.8854	152.5374	474.5607	4,567.4498	54.7079	3.2645	0.0000	0.0000
Distinct RBU Well Total	**1,367.6513**	**1,497.3397**	**265.2445**	**754.3465**	**16,796.1253**	**218.5259**	**3.8411**	**6,351.8213**	**535.4334**

Table 21, further calculates the specific hazardous pollutant emissions that will be eliminated over the entire Wells Ranch CDP with the plugging and removal of all existing Legacy Wells.

Table 21

EMISSIONS IN LBS PER YEAR (555 LEGACY WELLS)									
Equipment Category	Benzene	Toluene	E-benzene	Xylenes	n-hexane	224 TMP	H2S	Formal-dehyde	methanol
Oil Tanks	664.7960	1074.1532	193.2166	381.5209	30,294.0665	181.7546	0.0000	0.0000	0.0000
PW Tanks	457.4997	338.1085	10.9067	65.4404	1437.8561	0.0000	0.0000	0.0000	0.0000
Truck Loadout	251.3659	406.1479	73.0571	144.2568	11,454.4853	68.7232	0.0000	0.0000	0.0000
Engines	1,259.5000	530.4489	39.9659	174.4401	762.5989	334.9993	0.0000	27,541.1002	2,321.6057
Flaring	179.5444	241.2540	54.7289	84.0480	5,575.9274	82.9311	0.0000	0.0000	0.0000
Fugitives	467.9410	585.7636	116.8160	363.4275	3,497.8388	41.8963	2.5000	0.0000	0.0000
Pneumatic Controllers	2,649.4036	3,316.4955	661.3925	2,057.6656	19,804.1768	237.2100	14.1547	0.0000	0.0000
Legacy Well Total	**5,930.0507**	**6,492.3716**	**1,150.0837**	**3,270.7992**	**72,826.9497**	**947.5145**	**16.6547**	**27,541.1002**	**2,321.6057**

Proposed Development

The design configurations for the proposed Wells Ranch CDP development will incorporate technologies and efficiencies more advanced than the Legacy Wells. Tankless production design; pipeline takeaway for oil, gas, and fresh and produced water replacing truck loadout; compressed air actuated pneumatic devices; and modern flowback methodology eliminates many of the point sources for specific hazardous pollutants. Table 22 and Table 23 show the estimated annual pre-production emissions and the estimated annual production emissions, respectively, for the proposed Wells Ranch CDP locations. As a result of the advanced location design, some of the equipment identified by the Air Pollution Control Division ("APCD") and Colorado Department of Public Health and Environment ("CDPHE") as air emission sources listed in Table 22 and Table 23 are not applicable to the Wells Ranch CDP. The calculations in Table 22 and Table 23 represent the most conservative estimates and do not account for the potential for electrification of sources such as the Non-Road ICE.

Table 22

PROPOSED LOCATION PRE-PRODUCTION EMISSIONS LBS										
Equipment Category	Benzene	Toluene	E-benzene	Xylenes	n-hexane	224 TMP	H2S	Formal-dehyde	Meth-anol	HAPs[8]
Heaters Boilers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
storage tanks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Venting/ Blowdowns	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Combustion Control Device	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Non road ICE	1,935.52	1,075.31	41.86	643.53	1,170.46	263.62	0.00	57,536.94	2,636.17	65,303.40
Drill Mud	322.63	403.87	80.54	250.57	2,411.67	28.89	1.72	13.43	0.00	3,511.62
Flowback or Completions	258.11	323.10	64.43	200.46	1,929.34	23.11	1.38	10.75	0.00	2,809.29
Truck Load Out	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**2,516.26**	**1,802.27**	**186.84**	**1,094.57**	**5,511.47**	**315.61**	**3.10**	**57,561.12**	**2,636.17**	**71,624.31**

Table 23

PROPOSED LOCATION PRODUCTION EMISSIONS LBS										
Equipment Category	Benzene	Toluene	E-benzene	Xylenes	n-hexane	224 TMP	H2S	Formal-dehyde	Meth-anol	HAPs
Engines/ Turbine	1,161.01	410.03	18.22	143.29	815.65	183.70	0.00	15,063.75	2,248.54	20,044.20
Heaters / Boilers	3.46	5.61	0.00	0.00	2,968.09	0.00	0.00	123.67	0.00	3,100.83
Storage Tanks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dehydration units	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pneumatic Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pneumatic controllers	389.53	487.61	97.24	302.53	2,911.74	34.88	2.08	0.00	0.00	4223.53
Separators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fugitives	40.26	50.40	10.05	31.27	300.96	3.60	0.00	0.00	0.00	436.55
Venting/ blowdowns	807.54	1,108.28	232.67	364.93	21,253.38	250.62	0.00	0.61	0.00	24,018.02
Combustors	2,223.57	1,811.29	1,300.70	821.32	11,866.44	1,265.92	0.00	28.30	0.00	19,317.53
Non road ICE	514.46	181.69	8.08	63.49	361.43	81.40	0.00	6,674.99	996.36	8,881.90
Loadout	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Well Bradenhead	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Well Maintenance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**5,139.84**	**4,054.90**	**1,666.96**	**1,726.83**	**40,477.68**	**1,820.13**	**2.08**	**21,891.32**	**3,244.91**	**80,022.57**

Qualitative Public Health Impacts

Based on the review of specific hazardous pollutant emissions and other air emissions, as detailed in the Air Resources section of this Cumulative Impacts Plan, that will be eliminated as part of the plugging and removal process and the advanced design and technological enhancements employed for the proposed locations within the Wells Ranch CDP there should not be any chronic, short- or long-term incremental adverse impacts to Public Health. The emissions removed in conjunction with the removal of the Legacy Wells should have offsetting Public Health impacts to

[8] HAPs in the Pre-Production and Production Tables do not include H2S.

the proposed Wells Ranch CDP operations resulting in beneficial Cumulative Impacts and reducing negative Cumulative Impacts.

A number of design elements have been engineered and selected for application within the Wells Ranch CDP to reduce emissions and protect the public health, safety, welfare, environment, and wildlife, including, but not limited to, the following:

- Pipeline takeaway of oil, gas, and produced and fresh water in lieu of truck hauling of product;
- Tankless production design;
- Modern flowback methodology eliminating uncontrolled emission flowback point sources;
- Eliminating truck loadout;
- Compressed air actuated pneumatic devices;
- Gen IV EcoNode designs featuring LACTs; and
- Fit for purpose automation, electrical and control systems.

Additionally, ongoing efforts to protect the public health, safety, welfare, environment, and wildlife, will include pre-production and early production monitoring of all drilling operations commenced after May 1, 2021, in accordance with Regulation 7 Part D VI.C of the Air Quality Control Commission ("AQCC") of the CDPHE. Prior to commencing drilling operations specific to each pad within an OGDP, Noble will submit an Air Quality Monitoring Plan to the AQCC. Each plan submitted to the AQCC will consist of three main objectives for detecting, evaluating, and reducing, as necessary, (i) hazardous air pollutant emissions; (ii) ozone precursor emissions; and (iii) methane emissions (indirectly monitored as elemental to many gas streams). The air monitoring program will employ a set of stationary, fence-line, continuous monitoring system equipped with photoionization detector ("PID") technology, as well as a triggerable summa cannister opening device to collect samples when specific trigger levels are exceeded. The triggered monitoring devices will enable Noble to measure hazardous air pollutants and other VOCs, excepting methane. The number and configuration of air monitors will vary depending on size and location specifics relating to each pad. Analysis from continuous monitoring and trigger events will help to inform understandings of impacts to Public Health.

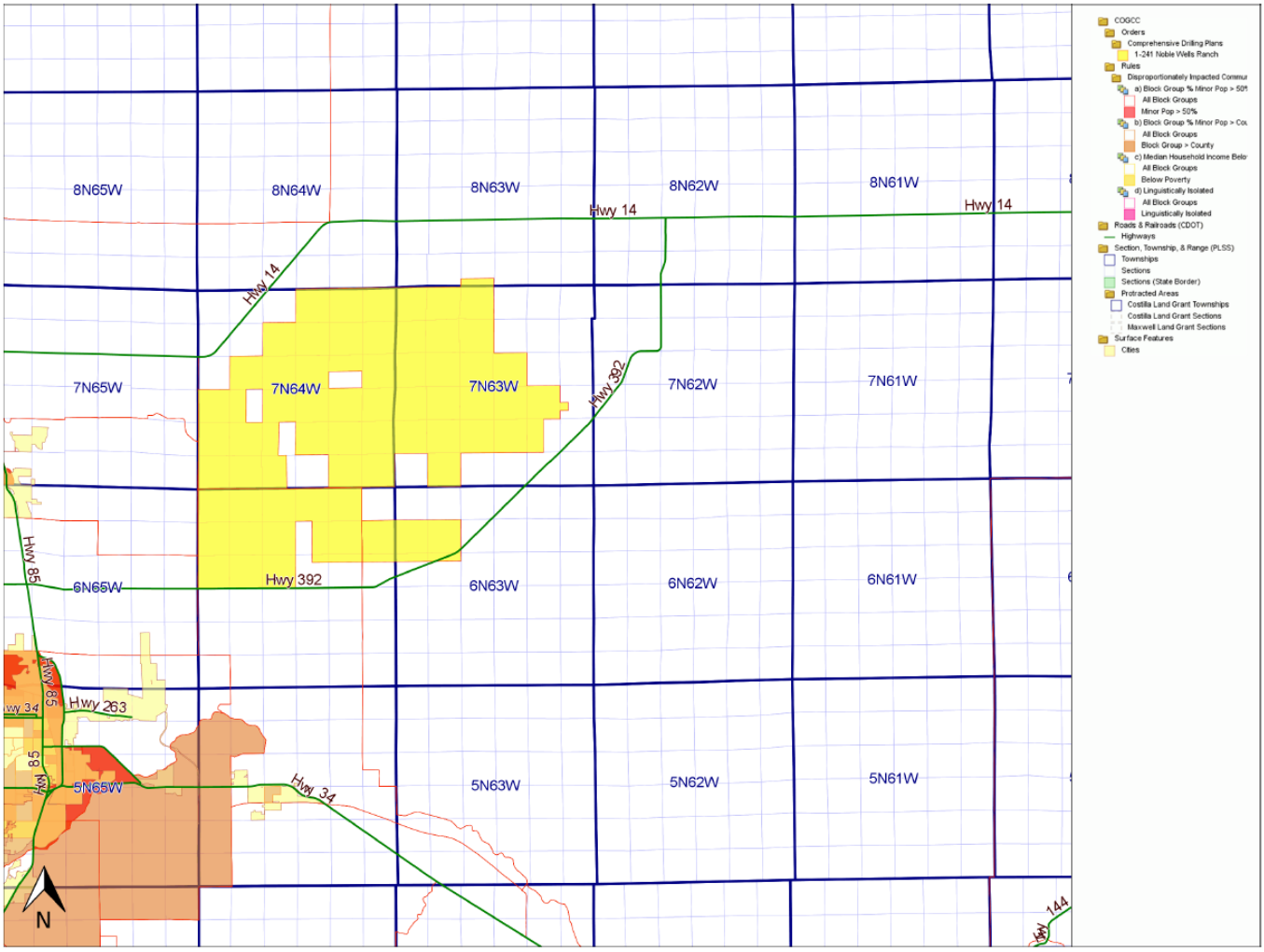
The designs, efficiencies, and monitors implemented as part of the proposed Wells Ranch CDP development are intended to operate as safeguards and proactive measures to mitigate, minimize, and avoid impacts to Public Health. The plugging and removal of existing Legacy Wells are intended to eliminate existing emission sources, thereby eliminating impacts to Public Health. Together, the combined effect of eliminating existing Legacy Wells and the advanced designs and safeguards of the proposed Wells Ranch CDP operations should not result in an increase in chronic, short- or long-term incremental adverse impacts to Public Health, but rather have offsetting benefits to Public Health and Cumulative Impacts.

Disproportionately Impacted Communities

According to the GIS layer available on the COGCC website, and as shown in Map 1, there are no Disproportionately Impacted Communities within the Wells Ranch CDP.

Map 1

Wells Ranch CDP No DIC



Water Resources

Design plans and efficiencies such as pipeline infrastructure, closed loop systems, and tankless operations employed in the Wells Ranch CDP have similar beneficial and offsetting impacts to Water Resources as mentioned in the reduction of impacts to Air Resources. The installation of pipeline infrastructure encompassing fresh and produced water takeaway will eliminate truck hauling normally associated with water takeaway. Pipeline takeaway also makes it possible to incorporate a “tankless” production design model that will include a maintenance tank for maintenance operations but will not otherwise result in the storage of oil or water in tanks. Leveraging pipeline infrastructure and tankless production design, will enable the Wells Ranch CDP to incorporate the modern flowback methodology as referenced in Diagram 1, illustrating how the streamlined flowback design eliminates oil and water tanks, connecting the newly completed well directly to the production separator then into the pipelines for oil, gas, and water takeaway. The elimination of planned storage tanks for oil, condensation and produced water throughout the Wells Ranch CDP lessens the visual and environmental impacts typically associated with development.

The management of Water Resources through the judicious use of freshwater sourcing; the recycling and reuse of produced water; and the responsible disposal and recycling for wastewater

are key components of the Wells Ranch CDP planning process. For a more detailed site-specific analysis of each OGDP and the associated Oil and Gas Locations, please consult the individual Rule 304.c. Water Plans, Waste Management Plans, and Stormwater Management Plans submitted with each Form 2A OGDP application.

There are several benefits of produced water recycling. These benefits include, but are not limited to, environmental sustainability; operational security and risk management; improved community relations; economic benefit; and industry leadership. Noble is committed to the goal of reducing freshwater use and wastewater disposal. With a robust recycling program, it is possible to simultaneously accomplish both objectives. For every barrel of water that is recycled and reused, one less barrel of water is withdrawn from freshwater sources and one less barrel of water is sent to disposal. Combined production facilities or EcoNodes, constructed in advance of and operational ahead of associated well production will include separation of produced water generated from the connected Oil and Gas Locations. A portion of this produced water may be recycled or reused on location for a portion of the water supply for nearby completion projects. Alternately, produced water may be collected from several EcoNodes and conveyed to a more central location for treatment then returned to the completion location. The responsible recycling and reuse of wastewater from oil and gas operations will continue to be evaluated and will include flexibility to adopt efficiencies and new technologies as they become available during the course of developing the Wells Ranch CDP.

To address impacts related to stormwater, Noble has a fieldwide Stormwater Management Permit filed with CDPHE. Additionally, Noble has developed a comprehensive “Stormwater Program” in accordance with CDPHE and COGCC regulations that identifies potential stormwater pollutants and applies stormwater pollutant control measures as needed on a site-specific basis. Routine inspections of locations are conducted in compliance with current CDPHE and COGCC requirements. Locations within the Wells Ranch CDP will be equipped with remote shut-in prior to the commencement of production. Remote shut-in capabilities include the ability to shut-in the well off location. Locations will also include containment berms around tanks with steel rings or other engineered technologies including barriers, structural fencing, or fencing with bollards aligned with stream flow to provide equivalent protection from floodwaters and debris. All equipment shall be secured with engineered anchors to support equipment and to resist flotation, collapse, lateral movement, or subsidence. Stockpile stabilization, grading, sediment traps, perimeter barriers tailored to final construction design will remain in place until the pad reaches final reclamation.

Any wastes stored onsite will be stored in compatible containers that are regularly inspected to ensure the containers are in good condition and free of excessive wear, structural issues or other defects that may impact effectiveness. Produced water and oily waste will not be stored on Wells Ranch CDP locations. General trash receptacles will be located on site that are designed, maintained, and operated to exclude wildlife, and to protect public safety, the environment, and wildlife from exposure to overflowing, leak prone, or insecure trash receptacles. All wastes will be transported by licensed third-party transporters to a permitted disposal facility in coordination with Relevant Local Governments.

Currently, Noble does not participate in beneficial land reuse or produced water/flowback recycling. However, Noble may propose plans in the future for managing these waste streams through beneficial use, reuse, and recycling for approval, by the Director. As Noble continues to evaluate new technology for effective and efficient application for the management of the E&P

waste, if opportunities for reuse and recycling become practicable, a reuse and recycling plan will be submitted as described in Rule 905.a.(3).

Comprehensive planning enables the Wells Ranch CDP to incorporate tankless production design and will not include storage of oil, condensate, produced water, or other hydrocarbons, thereby protecting sensitive areas for water resources. E&P waste will be transported and disposed of at permitted facility. Also, the Wells Ranch CDP does not include any Public Water System intakes.

The landscape level planning supporting the Wells Ranch CDP coupled with scale and scope of have contributed to design synergies that foster continual improvement such as the pipeline infrastructure that facilitates modern flowback technology that then enables tankless production design. Additionally, the synergies unlocked with the Wells Ranch CDP will provide the opportunities to adopt efficiencies and technologies, such as recycling and reuse programs as they become available during development.

Terrestrial & Aquatic Wildlife Resources & Ecosystems

The commitment to reduce, mitigate, avoid, and offset impacts to Air Resources and Public Health, harmonizes with Noble's efforts to reduce impacts to Wildlife Resources and restore habitat and ecosystems. Consolidated surface footprints are evidence of the commitment to reduce impacts to Wildlife Resources within the Wells Ranch CDP. The proposed Wells Ranch CDP development will necessitate the installation of new technologically enhanced pads and facilities, with the average aggregate estimated WPS footprint and Interim Reclamation footprint of approximately 290 acres and 180 acres, respectively, across the Wells Ranch CDP. The surface footprints of the proposed Wells Ranch CDP locations are further offset by the positive gains that are concomitant with the plugging and removal of the Legacy Wells. Development of the Wells Ranch CDP will result in approximately 830 acres, on average, of surface footprint related to the Legacy Wells that will be reclaimed and restored and made available for wildlife habitat and ecosystems. Based on the footprint differences between the acreage related to the Legacy Wells and the acreage related to the WPS of the proposed Wells Ranch CDP locations, there is a positive offset of approximately 540 acres. Following the Interim Reclamation of the proposed Wells Ranch CDP locations, there is a positive offset to the Legacy Wells of approximately 650 acres. Thus, for every acre needed to establish the WPS for the proposed Wells Ranch CDP locations, over 2.8 acres can be reclaimed with the plugging and restoration of the Legacy Wells. Or for every acre needed to conduct production operations at the proposed Wells Ranch CDP locations, over 4.5 acres can be reclaimed with the plugging and restoration of the Legacy Wells. The acreage savings realized through the proposed Wells Ranch CDP development in combination with the plugging and restoring of the Legacy Well footprint is a beneficial Cumulative Impact to Terrestrial and Aquatic Wildlife Resources and Ecosystems.

The considered approach to planning and designing the Wells Ranch CDP will enable the planned oil and gas development while lessening impacts traditionally associated with development. For example, the implementation of pipeline infrastructure for oil, gas, and fresh and produced water takeaway will eliminate more than 3 million truck trips, as described in Table 13, that would accompany conventional truck hauled product. The elimination of truck trips for product takeaway, aside from reductions in air emissions discussed in the above Air Resources section of this Cumulative Impacts Plan, will also reduce the potential for collisions and interactions with wildlife. Additionally, the scale and scope of the Wells Ranch CDP allows for strategic planning with scheduling flexibility to accommodate wildlife nesting and migration seasons and patterns. Throughout the Wells Ranch CDP development process, Noble will conduct field surveys and

engage with the Colorado Parks and Wildlife ("CPW") for consultations, as necessary, to protect Wildlife Resources. All locations will be pre-cleared according to CPW guidance meeting Migratory Bird Treaty Act ("MBTA"); Bald and Golden Eagle Protection Act ("BGEPA"); and Endangered Species Act ("ESA") laws.

Soil Resources

Consistent with the Colorado Greenhouse Gas Pollution Reduction Roadmap ("Roadmap") under the Governor Polis Administration, Noble intends to incorporate climate-smart strategies such as carbon sequestration when restoring Colorado's natural and working lands with the plugging, removal, and reclamation of the Legacy Wells, including the subset Direct Impact Legacy Wells. Through the reclamation process, Noble will return impervious concrete pad surfaces and road base to vegetative surfaces utilizing the restored plants and soil as a carbon sink for carbon capture and sequestration. The land use conversion back to a vegetative state from energy development contributes to the carbon balance with ecosystem restoration and land conservation while complementing the comprehensive planning efforts of the Wells Ranch CDP. In furtherance of protecting the public health, safety, welfare, the environment, and wildlife resources while abating Cumulative Impacts and absent specific guidance from the state, Noble has commissioned work to determine the potential for "carbon capture utilization and sequestration ("CCUS")"[9] associated to the Wells Ranch CDP development. After reviewing nine existing models for measuring carbon sequestration, including the CENTURY Model; the Carbon Emission and Sequestration by Agricultural Land use ("CESAR"); the Daisy Model; and several other existing models, the Grassland Model, developed by IPCC (2003) was selected as the most analogous to the Wells Ranch CDP environment for applying the principles of carbon sequestration. The figures in Table 24 represent the approximate value of carbon dioxide that can be sequestered per acre per year with the application of the Grassland Model fit for purpose to the Wells Ranch CDP.

Table 24

First 5 Years: Per Year / Per Acre

$\Delta C = \Delta C_{LIVINGBIOMASS} + \Delta C_{SOILS}$		
ΔC	ΔC_{LB}	ΔC_{Soils}
tonnes C yr^{-1}	tonnes C yr^{-1}	tonnes C yr^{-1}
2.122	0.646	1.476

ΔCO_2	
tonnes CO_2 ha^{-1} yr^{-1}	tons CO_2 ac^{-1} yr^{-1}
7.780666667	3.470413321

x5

FIRST 5 YEARS TOTAL / PER ACRE
tons CO_2 Per Acre
17.35206661

Remaining 15 Years: Per Year / Per Acre

$\Delta C = \Delta C_{LIVINGBIOMASS} + \Delta C_{SOILS}$		
ΔC	ΔC_{LB}	ΔC_{Soils}
tonnes C yr^{-1}	tonnes C yr^{-1}	tonnes C yr^{-1}
0.0984	0	0.0984

ΔCO_2	
tonnes CO_2 ha^{-1} yr^{-1}	tons CO_2 ac^{-1} yr^{-1}
0.3608	0.160927743

x15

REMAINING 15 YEARS TOTAL / PER ACRE
tons CO_2 Per Acre
2.413916146

20 Years Total / Per Acre

TONS CO_2 PER ACRE
19.76598275

[9] Colorado Greenhouse Gas Pollution Reduction Roadmap, 39 (Jan. 14, 2021).

Table 24 is divided into two segments, the first segment consists of the first 5 years of reclamation, while the second segments consist of the remaining 15 years of a 20-year carbon sequestration model. The first 5 years of reclamation represents the most significant carbon sequestration capacity, turning non-vegetated surfaces into vegetation. The remaining 15 years represents maturity of vegetation (i.e., vegetation without active management, such as supplemental planting and plant removal). Values factored into the Wells Ranch CDP carbon sequestration model includes living biomass, soils, data values from 1901 to 2000 for Weld County's mean annual precipitation of 13.85 in[10] and mean annual temperature of 47.4°F[11] as applied to a cold, temperate, semi-arid (dry) grassland ecosystem.[12] Based on the figures in Table 24, the per acre per year carbon dioxide sequestration has been extrapolated to the figures in Table 25 using and average of 1.5 acres per existing location and assuming that all of the Direct Impact Legacy Wells and the Legacy Wells will be plugged and reclaimed.

Table 25

CARBON SEQUESTRATION		
Time Frame	Tons CO_2 per Acre	Legacy Well Tons CO_2
First 5 Years	17.35	14,445.60
Remaining 15 Years	2.41	20,09.59
Total	**19.77**	**16,455.18**

The pace for plugging and reclamation of the Legacy Wells, including the subset of Direct Impact Legacy Wells, will be staggered with the pace of development of the Wells Ranch CDP. Table 26 depicts the estimated pace for plugging and reclamation of the existing Legacy Wells associated to the estimated pace of Wells Ranch CDP development.

Table 26

CARBON SEQUESTRATION PLUGGING & RECLAMATION PACE			
Year Est. P&A	Legacy Wells	First 5 Years Tons CO_2	Remaining 15 Years Tons CO_2
2024	213	5,543.99	771.25
2025	182	4,737.11	659.00
2026	77	2,004.16	278.81
2027	49	1,275.38	177.42
2028	21	546.59	76.04
2029	13	338.37	47.07
Total	**555**	**14,445.60**	**2,009.59**

Carbon sequestration enables Noble to quantify the restorative and Cumulative Impacts of returning oil and gas development surfaces to the natural environment. Utilizing the natural and working lands as carbon sinks by sequestering carbon in plants and soils, Noble can advance its goals of reducing its carbon footprint while also promoting Colorado's goals as directed from the Roadmap.

In conjunction with the focus on restoring oil and gas development surfaces to vegetation, the Wells Ranch CDP development is equally focused on minimizing impacts and protecting Soil Resources during drilling and production operations. The Wells Ranch CDP will implement numerous control measures ("CM's") for protecting stockpiled soils from degradation due to

[10] ERM Carbon Sequestration Draft, citing NOAA 2021.
[11] *Id*.
[12] ERM Carbon Sequestration Draft, citing NASA 2021, Forseth 2010, Lane & Nichols 1999)

contamination, compactions, and wind and water erosion. The CM's will also help maintain soil microbial activity by promoting vegetative growth while preventing the establishment of weeds. Throughout the Wells Ranch CDP, CM's such as hydro-mulch, seeding, soil roughening, straw mulching, and wind erosion controls will be implemented when and where appropriate to each specific Oil and Gas Location. For a more detailed site-specific analysis of each OGDP and the associated Oil and Gas Locations, please consult the individual Rule 304.c. Plans submitted with each Form 2A OGDP application.

Topsoil should be viewed as an important resource to be utilized for vegetation establishment, due to its water-holding capacity, structure, texture, organic matter content, biological activity, and nutrient content. Topsoil should be segregated during grading operations and spread on areas prior to seeding.

Seeding may be used to stabilize surface disturbance areas. Seeding, typically occurs in a multi-step process which includes ripping, seeding, spreading a mulch layer such as straw, and, if applicable, crimping the straw into the soil. Seeding establishes vegetation that reduces erosion and sediment displacement by stabilizing disturbed areas in a manner that is economical, adaptable to site conditions, and allows selection of the most appropriate plant material. Seeding also offers the additional benefits of absorbing the impact of raindrops; reducing the velocity of runoff; reducing runoff volumes by increasing water percolation into the soil; binding soil with roots; protecting soil from wind; improving wildlife habitat; and restoring the site to a natural state. Seed mixes will be selected based on the National Resource Conservation Service ("NRCS") and landowner requests.

CM's such as hydro-mulch, soil roughening, straw mulching, and wind erosion control will often accompany seeding efforts. Hyrdo-mulch may be applied to the soil surface in conjunction with mulching and seeding; to stabilize areas where vegetation cannot be established or has yet to be established; and/or to prevent water and wind erosion. Soil roughening through ripping, furrowing, disking, or tracking to create trenches and other surface variations prepares the soil for seeding, reduces the speed of runoff, increases infiltration, and traps sediment. Mulching, including straw, hay, shredded wood or bark, or compost may be applied with seeding to promote germination, but may also be used to provide erosion control and temporary stabilization of areas. Seeding, mulching, soil binders, and site watering can be used to provide wind erosion and dust control for graded areas to help keep soil particles from entering the air as a result of land disturbing activities. Erosion control practices will include, but are not limited to, revegetation of disturbed areas, mulching, berms, diversion dikes, surface roughening, slope drains, check dams, and other comparable measures.

As detailed in the Terrestrial and Aquatic Wildlife Resources and Ecosystems section of this Cumulative Impacts Plan, the consolidated designs and technological enhancements that are integral to the Wells Ranch CDP have a positive acreage benefit that can also be applied to Soil Resources. The projected 290 acres needed for the WPS footprint, and the 180 acres estimated following Interim Reclamation of the proposed Wells Ranch CDP locations is offset against the plugging and removal of approximately 830 acres related to the Legacy Wells. The positive difference of approximately 650 acres between the acreage needed for production operations following Interim Reclamation of the Wells Ranch CDP locations and the Legacy Well footprint represents a reduced surface disturbance to topsoil, ecosystems, and vegetative communities. The reduced surface disturbance also corresponds to land that is available for carbon capture and sequestration. Thus, for every acre needed to conduct production operations at the proposed

Wells Ranch CDP locations, more than 4.5 acres can be reclaimed and converted to soil and vegetation following the plugging and removal of the Legacy Wells.

Resource Impacts Summary

The implementation of sophisticated technologies and designs into the Well Ranch CDP will have positive offsetting benefits to Resource Impacts as those existing outdated Legacy Wells are removed and reclaimed. The combination of natural gas drill rigs, closed loop emission control systems, green completions, instrument air pneumatic controls, and emission control devices with a design destruction efficiency of at least 98% for hydrocarbons further demonstrates the Wells Ranch CDP commitment to public health, safety, welfare, environment, and wildlife. Impacts to Air Resources, Public Health, Water Resources, Terrestrial and Aquatic Wildlife Resources, and Soil Resources will benefit from consolidated footprints; technologies engineered to reduce emissions; designs to eliminate point sources for emissions and contamination; and scheduling and traffic accommodations to limit the potential for interaction with the surrounding environment and wildlife. The reclamation of Legacy Wells with the conversion back to soil and vegetation enabling carbon capture and sequestration will provide additional offsetting Resource Impacts on a Cumulative Impacts level across the Wells Ranch CDP. The thoughtful design of the Wells Ranch CDP harmonizes consolidated footprints with advanced technologies aimed at reducing emissions and equipment; the end result of such considered planning efforts requires less acreage for surface disturbance that would normally be needed for traditional oil and gas development. The offsetting acreage benefits of the Wells Ranch CDP not only restores existing surface disturbances, but also avoids acreage disturbances traditionally required. Thus, the Wells Ranch CDP preserves surface lands, wildlife habitats, topsoil, and vegetative ecosystems contributing to beneficial Cumulative Impacts.

Public Welfare

Maintaining the same dedication to reduce adverse impacts and to protect the public health, safety, welfare, environment, and wildlife, as demonstrated above, Noble has taken measures to identify and abate Cumulative Impacts to Public Welfare. To gauge the Cumulative Impacts to Public Welfare, Noble has reviewed the impacts to Noise; Light; Odor; Dust; and Recreation and Scenic Values. For a more detailed site-specific analysis of each OGDP and the associated Oil and Gas Locations, please consult the individual Rule 304.c. Plans submitted with each Form 2A OGDP application.

Noise

Noise associated with oil and gas development is regulated by Rule 423. Oil and gas operations at any well site, production facility, or gas facility, within the Wells Ranch CDP will comply with the maximum permissible noise levels listed under Table 27 (referencing Table 423-1 of the Rules) and Table 28 (Weld County maximum permissible noise levels).

Table 27

LAND USE	7:00 AM TO 7:00PM	7:00 PM TO 7:00 AM
Residential/Rural/State Parks/State Wildlife Areas	65 dB(A)	60 dB(C)
Commercial/Agricultural	70 dB(A)	65 dB(A)
Light Industrial	80 dB(A)	75 dB(A)
Industrial	90 dB(A)	85 dB(A)
All Zones	75 dB(C)	70 dB(C)

Table 28

NOISE LEVELS	7:00 AM TO NEXT 7:00PM	7:00 PM TO NEXT 7:00 AM
A-Scale		
NL-1	55 db(A)	50 db(A)
NL-2	60 db(A)	55 db(A)
NL-3	65 db(A)	60 db(A)
NL-4	70 db(A)	65 db(A)
C-Scale		
All areas	65 db(C)	65 db(C)

To operate within the maximum permissible noise levels, operations will use a minimum of 32' engineered noise abatement sound walls, as necessary and as specified in each Form 2A application, with an acoustic gate to close off the entrance of the pad and to comply with the COGCC requirements. Additional sound barriers will also be around the internal completion equipment during the completion phase of operations.

Numerous Best Management Practices ("BMPs") will be employed to provide monitoring data collection; process controls; and engineering controls to ensure regulatory compliance and to optimize noise abatement. Examples of BMPs consist of baseline studies including A and C scale measurements conducted prior to construction and dirt work; and continuous sound measurements during pre-production and ongoing operations, all to confirm adequacy of sound abatement measures or to inform additional mitigation measures. A third-party vendor will be employed to diagram and install temporary noise barriers. Prior to construction of a well pad, each location will be evaluated for the presence of occupied structures within ¼ mile of the well heads. For any Oil and Gas Location with a WPS within 2,000' of an RBU, at least one and up to six noise points of compliance will be identified for monitor installation.

Light

Site lighting at each Oil and Gas Location will be directed downward and inward, such that no light shines above a horizontal plane passing through the center point light source. Lighting technology and fixtures will be employed that obscures, blocks, or diffuses the light to reduce light intensity outside the boundaries of the Oil and Gas Facility. Additionally, timers or motion sensors will be utilized to minimize lighting, light pollution, and obtrusive lighting. Lighting will be located inside and beneath the 32' noise barrier, described in the Noise section of this Cumulative Impacts Plan.

Odor

Oil and gas operations within the Wells Ranch CDP shall be in compliance with the Department of Public Health and Environment, Air Quality Control Commission, Regulation No. 2 Odor Emission, 5 C.C.R. 1001-4, Regulation No. 3 (5 C.C.R 1001-5), and Regulation No. 7 Section XVII.B.1 (a-c) and Section XII. Oil and gas facilities and equipment shall be operated in such a manner that odors do not constitute a nuisance or hazard to Public Welfare. All potential sources of odors and emission points will be identified, and emission or leak monitoring will be conducted for all tanks, compressors, knockout, and oil/water separation vessels, including any pressure relief devices or vacuum devices attached to the vessels. Operations will utilize advanced alternative base fluid systems that target the reduction of aromatics. The alternative base fluid has lower BTEX levels and is considered Non-Flammable and Combustible by OSHA/WHMIS criteria and is classified as a non-regulated material by the US DOT.

Additionally, the alternative base fluid has a higher flash point than normal diesel base fluid, which limits the odor causing vapor associated with oil-based mud. When appropriate, odor-reducing chemicals to reduce odor in drill shavings, oil-based mud, and other sources identified as causing nuisance odor will be employed. If necessary, removed drill piping, production tubing or sucker rods will be covered, enclosed, or equivalently screened from wind or heat during storage to limit odors. Trucks will be prohibited from idling on location when not in use to prevent the accumulation of exhaust odors.

The thoughtful and efficient facility and pad designs that have contributed to reductions and other offsetting Resource Impacts also support odor reductions, such as the use of closed-loop systems with pipeline takeaway, confining hydrocarbons and any attendant odors to pipes, separators, tanks, and combustors. All tanks will be sealed with thief hatches and gaskets and tank vapors will be captured with properly sized piping and combustors.

Dust

Development of the Wells Ranch CDP shall employ practices for control of fugitive dust from operations. Dust control practices shall include but are not limited to the use of speed restrictions on lease roads; automation of wells and production facilities; regular road maintenance as coordinated with Relevant Local Governments or Agencies; and silica dust controls when handling sand used in hydraulic fracturing operations. Traffic signs will also be utilized to direct drivers the specific designated haul routes.

To prevent and mitigate dust due to wind, construction activity will be restricted or limited during high wind days. The Wells Ranch CDP will implement wind breaks and barriers, road or facility surfacing, and soil stockpile stabilization measures to suppress fugitive dust caused solely by wind.

Consistent with managing Soil Resources, all soil piles created by construction activities will be managed utilizing hydro-mulch, straw crimping, and/or tacking methods to prevent dust from exiting location and creating a hazard during pre-production activities. Soil piles will be graded and/or seeded to prevent erosion and the generation of dust post-production.

Access roads may be watered or treated with a commercial dust suppressant if necessary. However, in the process of managing dust, the Wells Ranch CDP will not use produced water, E&P waste or hazardous waste, crude oil or any oil specifically designated for road maintenance, chemical solvents, or process fluids. Secondary roads constructed for the Wells Ranch CDP (non-public roadways) will be finished with ½" – ¾" crushed stone base to minimize the potential for dust.

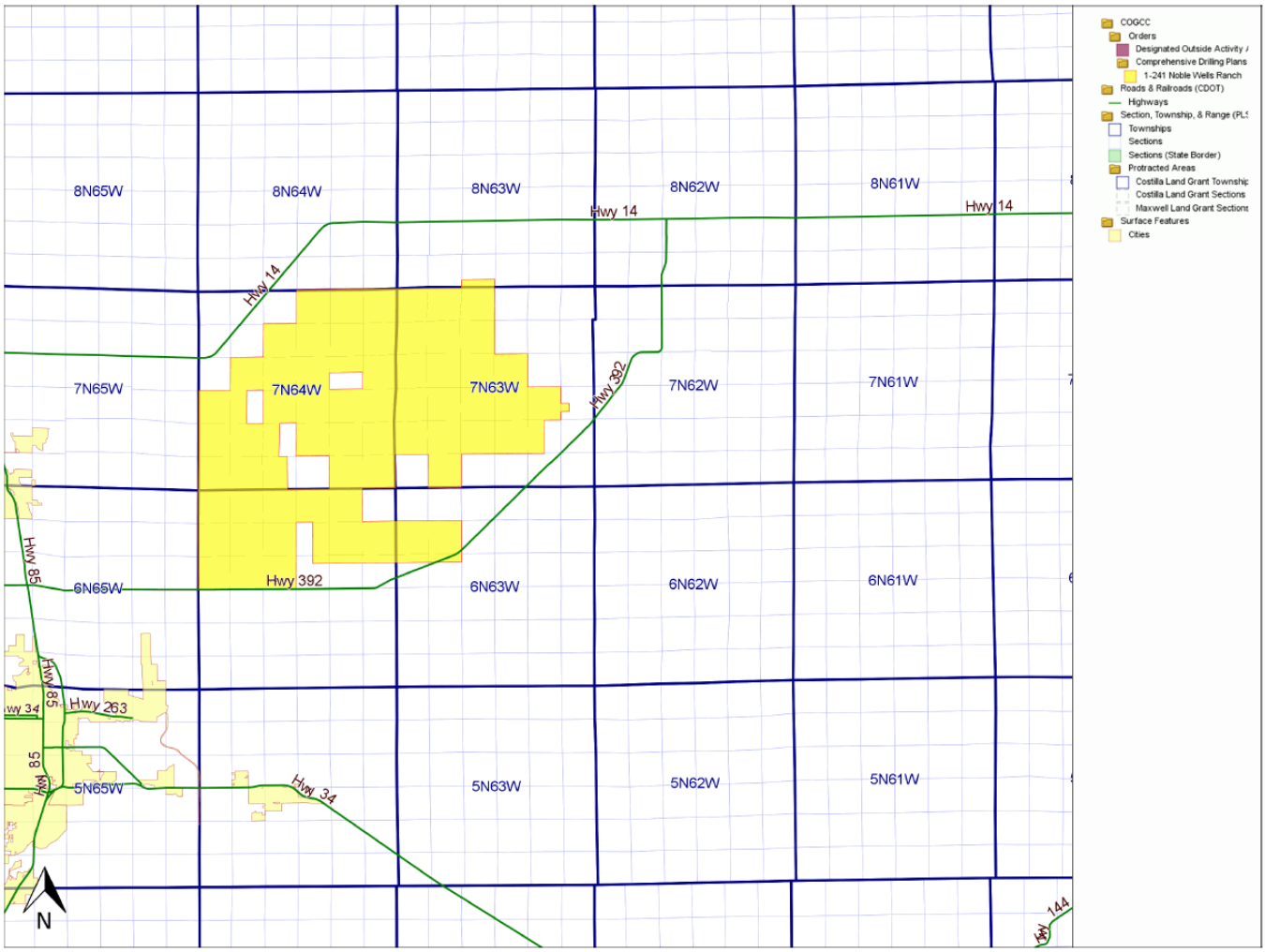
The landscape level planning of the Wells Ranch CDP includes the use of pipeline infrastructure for takeaway of oil, gas, and fresh and produced water from Oil and Gas Locations rather than using heavy truck takeaway which will further limit the potential for fugitive dust discharge.

Recreation and Scenic Values

According to the GIS layer available on the COGCC website, as shown in Map 2, there are no Designated Outside Activity Areas within the Wells Ranch CDP.

Map 2

Wells Ranch CDP No Designated Outside Activity Area



To protect the Scenic Values and to reduced aesthetic degradation, visual mitigation measure shall be considered and employed when feasible and necessary. Production facilities shall be painted with uniform, non-contrasting, non-reflective color tones with colors matched to, but slightly darker than surrounding landscape. Housekeeping measured will also be utilized at Oil and Gas Locations to dispose of trash and debris. During drilling, production, and reclamation operations, all disturbed areas shall be kept as free of all undesirable plant species designated to be noxious weeds as practicable. Weed control measurers shall be conducted in compliance with the Colorado Noxious Weed Act, C.R.S. §35-5.5-115 and the current rules pertaining to the administration and enforcement of the Colorado Noxious Weed Act.

Public Welfare Summary

The planning foresight for ordinary course of operation features such as Noise, Light, Odor, Dust, and Recreation and Scenic Values allows the Wells Ranch CDP to incorporate BMPs for Public Welfare mitigations. The comprehensive element inherent in CDP planning is equally applicable to planning sound wall arrangements, diagraming lighting layouts, selecting alternative base fluids; suppressing and controlling dust, and coloring facilities to blend with neighboring landscape. The level of planning dedicated to Public Welfare elements is intended to mitigate potential Cumulative Impacts.

Other Industrial Impacts

As part of this Cumulative Impacts Plan, Noble has attempted to identify Other Industrial Impacts within the Wells Ranch CDP. The Weld County Property Portal mapping feature of the Weld County Assessor, specifically the "Planning" and "Land Use Permit" layers, were utilized to identify any Other Industrial Impacts.[13] Based on a review of the Planning and Land Use Permit layers, there appears to be no Other Industrial Impacts outside of Surrounding Oil and Gas Impacts. The Wells Ranch CDP area consists largely of zoning permits related to dairies and agriculture.

CONCLUSION

Landscape level planning together with scale and scope of the Wells Ranch CDP generates the ideal conditions for avoiding, minimizing, and offsetting Cumulative Impacts while also promoting beneficial Cumulative Impacts. As evaluated above, the Driving Forces of (1) plugging Legacy Wells; (2) implementing advanced technology at proposed locations; and (3) restoring vegetative surfaces for carbon capture and sequestration will have the collective effect of protecting the public welfare, health, safety, environment, and wildlife.

The proposed Wells Ranch CDP locations will be equipped with technological enhancements superior to the Legacy Wells. Implementing design efficiencies and beneficial technologies such as the modern flowback methodology; tankless production design; compressed air actuated pneumatic devices; and pipeline infrastructure for oil, gas, and fresh and produced water takeaway, to name a few, have widespread positive implications for Resource Impacts. Benefits include offsetting overall air emissions; eliminating point sources for emissions/pollutants and contamination; providing stormwater control measures; diminishing the interaction with wildlife while providing scheduling flexibility for seasonal restrictions; confining heavy truck traffic to pre-production activities; lessening the chances for traffic accidents; and decreasing surface footprints.

Complementing the reduced surface footprints of the proposed locations are the attendant plugging and reclamation efforts surrounding existing Legacy Wells. Restoring impermeable surface footprints associated with Legacy Wells and returning the land use back to a carbon sink facilitates carbon capture and sequestration. Converting lands back to soil and vegetation bolsters ecosystem restoration and creates carbon benefits.

The Wells Ranch CDP establishes mitigation and abatement measures for Noise, Light, Odor, Dust, and Recreation and Scenic Values. The forward planning of the Wells Ranch CDP enables the creation of BMPs that can be implemented across the Wells Ranch CDP, but are flexible enough to be tailored to site specific requirements, as needed. The Wells Ranch CDP establishes parameters and procedures for determining the placement and height of sound walls for Noise abatement; configurations suited for Light mitigation; the best alternative base fluids to reduce Odor; grading and erosion control measures along with weather-based construction restricts and water requirements for Dust suppression; and housekeeping and aesthetic considerations for facility designs to protect Recreation and Scenic Values.

The occasion for Other Industrial Impacts is limited or non-existent in the Wells Ranch CDP. The area established for the Wells Ranch CDP is a product of preceding land and planning work

[13] See Weld County Property Portal, (July 21, 2021), https://www.co.weld.co.us/maps/propertyportal/

dedicated to identifying and staging an area suitable for CDP development, removed from large residential or industrial development.

By avoiding and minimizing adverse impacts, the Wells Ranch CDP provides the opportunity to lessen Surrounding Oil and Gas Impacts. Thus, the vast majority of RBUs will experience a decrease of nearby locations and the Surrounding Oil and Gas Impacts.

All of the design and planning measures explored in this Cumulative Impacts Plan have been conceived and engineered to efficiently and responsibly develop oil and gas resources within the Wells Ranch CDP while avoiding and minimizing the impacts of development. Leveraging technology, design efficiencies, and restoring legacy surfaces to carbon sinks within the Wells Ranch CDP will have beneficial contributions to Cumulative Impacts for the surrounding RBUs and environment. The offsetting benefits of replacing older Legacy Wells with the proposed sophisticated development in the Wells Ranch CDP will alleviate the potential for chronic, short- or long-term incremental impacts to the public health, safety, welfare, environment, and wildlife.