Marys River Oil and Gas Exploration Project
Master Surface Use Plan of Operations

Elko County, Nevada

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Presented to:

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Wells Field Office
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Introduction

The following Exhibits are attached to this Master Surface Use Plan of Operations (MSUPO):

Exhibit “A”	Project Map
Exhibit “B”	List of Proposed Well Pads
Exhibit “C”	Transportation Plan
Exhibit “D”	Typical Drawings
Exhibit “E”	Fire Prevention Plan Measures
Exhibit “F”	Best Management Practices for Sage-Grouse
Exhibit ‘G”	Master Drilling Plan
Exhibit “H”	Narrative of Completion and Stimulation
Exhibit “I”	Field-Wide Stormwater Pollution Prevention Plan
Exhibit “J”	Wildlife Monitoring Report
Exhibit “K”	Memorandum of Understanding – Aqua Program
Exhibit “L”	Marys River Integrated Weed Management Plan
Exhibit “M”	Marys River Reclamation Plan

Noble Energy, Inc. (Noble) proposes to conduct an oil and gas exploratory drilling program in the Marys River Project Area which includes drilling, completion, production, and abandonment of a maximum of 20 wells on Bureau of Land Management (BLM) administered lands and private lands located approximately 4 miles northwest of the town of Wells in Elko County, Nevada. Livestock grazing is the primary existing surface use. Noble has identified 33 potential well pad locations; however, because this is an exploration program, no more than 20 well pads will be constructed over a two-year period or more.

During the first year, Noble proposes to either construct two well pads (each well pad with one production well and one seismic listening well) or four well pads with one production well on each pad. The remainder of the well pads and wells (up to 20 well pads and 20 wells) would be constructed during the following years. During the following years, up to four wells may be drilled as horizontal wells depending on the results of other well tests.

During the fall of 2012, Noble conducted a 3D Seismic program within the Marys River Project Area. Noble will use the results of the seismic program, previous 2D geothermal seismic programs, and previous well results from the Project Area to select locations that minimize the likelihood of encountering drilling hazards and increase the understanding of faults which may act as a conduit for fluids in the reservoir. The seismic data will also be used to select locations which allow for separation of the hydrocarbon bearing zones from any potential water resources of the state.

Noble anticipates that 12 wells could produce up to 250 barrels of oil per day and that 8 wells could produce up to 100 barrels of oil per day. A small amount of natural gas may be produced with the oil which will run the production equipment. Excess natural gas will be flared in accordance with NTL-4A (Royalty or Compensation for Oil and Gas Lost).

The lands include 13,410 acres (34.0 percent of the Project Area) of federal surface and federal minerals administered by the BLM Elko District, Wells Field Office, 2,606 acres (6.6 percent) of private surface with BLM-administered subsurface mineral rights, 15,335 acres (38.9 percent) of private lands and minerals, and 8,093 acres (20.5 percent) of federal surface with private minerals for a total of 39,444 acres. The project will comply with all applicable Federal Onshore Oil and Gas Orders. Noble is proposing several project design features, plans, and Best Management Practices (BMPs) to mitigate impacts to sensitive resources as provided in this MSUPO.

One drilling rig and one completion team will be required during the first year, and possibly two drilling rigs and one completion team may be required during the second year. A Master Drilling Plan is provided in Exhibit "G" and a Narrative of Completion and Stimulation is presented in Exhibit "H". Depending on the well pads selected for exploration, the proposal also includes possibly upgrading up to 20.5 miles of existing roads and possibly constructing up to 5.4 miles of new local roads and up to 7.2 miles of new resource roads.

Well Site Locations

The results of the Marys River Oil and Gas Exploration Program will determine whether economic quantities of oil can be produced in the Marys River Area. The targeted formations will be the Humboldt, Indian Well, and Elko formations. The range in depths is variable given the basin shape, subsurface dip, and faults as determined via 3D Seismic imaging as well as the multiple formations under investigation. The target zone for the wells is a true vertical depth of between 7,000 and 16,000 feet. Targets for possible horizontal wells will be determined by the results of the vertical/directional wells. Fewer wells may be drilled during exploration than are proposed due to well test results and geologic and market uncertainties. Well locations will be determined utilizing 3D Seismic data. Locations will be selected to minimize the likelihood of encountering faults and/or drilling hazards while still targeting suitably productive zones.

If drilling results in an unproductive well, the well will be plugged and abandoned in compliance with the Federal Onshore Oil and Gas Orders and the State of Nevada regulations within 90 days of well completion, weather permitting.

Surface Use Plan

1. Existing Roads

A. The Marys River Area is accessed by several existing roads, including Interstate-80, U.S. highways 40 and 93, Nevada State Route (SR) 230 (Starr Valley Road), Elko County roads 753 (Deeth-O'Neil Road) and 754 (Metropolis Road), 6th, 7th and 8th streets and Humboldt Avenue in Wells, and unnamed BLM and private roads adjacent to and within the Project Area. A Transportation Plan identifying existing roads that will be used to access the Project Area is included as Exhibit "C."

B. Existing roads will be maintained in conditions as good as or better than conditions that existed prior to commencement of the exploration program. All equipment and vehicles will be confined to the routes shown on Map 1 in Exhibit "A". Maintenance of the access roads will continue until abandonment and reclamation of the well pads are completed.

2. New or Upgraded Access Roads

A. The well pads selected for exploration will determine which existing roads will be upgraded and which new roads will be built. The Transportation Plan shows the locations of potential roads that will need to be upgraded or constructed to access the well pads (see Exhibit "C"). Upgrading of existing local roads and construction of new local roads will generally require a 39-foot width for construction with a final road width of 29 feet to include 5 feet for ditches (2.5 feet on either side) and a 24 foot running surface for the road (see Figure 1 in Exhibit "D"). Construction of new resource roads will generally require a 31-foot width for construction with a final road width of 21 feet with a 16 foot running surface for the road (see Figure 2 in Exhibit "D"). The roads will be crowned, ditched, and graveled in accordance with the Gold Book Standards and BLM Road Manual 9113. In addition, there are up to seven truck turnouts, each of which will require 0.14 acre.

B. After well completion, traffic to each well site will depend on well production. Approximately two oil trucks and one water truck will visit each well producing 250 barrels of oil per day, and one oil truck per day and one produced water truck every other day will visit each well producing 100 barrels of oil per day. Additional traffic to each well site will include one pumper truck per day and one maintenance truck approximately 10 days per year. Well service trips could be rescheduled or postposed during periods of wet weather when vehicle travel could cause rutting.

C. All equipment and vehicles will be confined to the travel routes laid out on Map 1 in Exhibit "A" unless otherwise approved by the BLM and applied for by Noble.

D. Dust will be controlled as necessary on roads during construction and drilling through one or more of the following measures:

- Watering of disturbed areas and dirt roads on a regular basis;
- Pre-watering of areas to be disturbed;
- Graveling of roadways, storage areas, and staging areas;
- Following posted speed limits and not exceeding 20 miles per hour where no speed limit is posted;
- Applying water sprays on material storage piles on a regular basis;
- Ceasing construction when high winds inhibit dust control;
- Possibly using other dust suppressants such as DirtGlue, magnesium chloride, and tree sap. If used, magnesium chloride would not be applied within 100 feet of a riparian area; and
- Re-vegetating reclaimed areas.

3. Location of Proposed Wells

All proposed wells will be on the proposed pads shown on Exhibit "A" and listed in Exhibit "B".

4. Location of Proposed Production Facilities

A. The first six well pads will be up to 7 acres in size during drilling and completion (see Figure 3 in Exhibit "D"). The next 14 well pads will be up to 6 acres during drilling and completion (see Figure 7 in Exhibit "D"). After interim reclamation, production well pads will be up to 5 acres, with an average of 3.5 acres per pad (see Figures 5 and 9 in Exhibit "D"). All areas will be reclaimed and reseeded after operations are completed (final reclamation).

B. Typical production pad drawings indicating the location of production facilities are shown on Figures 4 and 8 in Exhibit "D".

C. Equipment and facilities located on the production pad will include the wellhead, pumping unit, vertical treater, re-circulating pump, one gas flare, a 2-phase separator building, line heater, generator, four 400-bbl oil tanks, two 400-bbl water tanks, a fuel tank, and could include a water well. If two wells are located on a single well pad, production equipment will be shared to the greatest extent possible.

D. Other than water well locations, no off-pad ancillary facilities are planned during the construction/drilling or operation/production phases.

E. All facilities or structures will be painted a natural color in a non-reflective finish (or BLM Standard Environmental Color if specified by the BLM) that blends with the background landscape. In cases of split estate associated with federal minerals, the surface equipment will be painted in accordance with BLM requirements unless the private surface owner requests differently.

F. Lighting during drilling and completions will be designed and operated in ways that reduce the effects of project-related light on the natural environment. As identified by the International Dark Sky Association, the following "dark sky" lighting practices will be used during project construction:

- The use of low-glare lighting equipment;
- Shielding security lighting so that the majority of light hits the target and does not cause glare;
- Targeting lower lighting fixtures that face downward and away from adjacent areas; and
- Hooded and shielded lighting fixtures that face downward and away from adjacent areas.

G. Permanent lighting during operations will be manually operated by personnel and will include lighting for the valve building, treater house, and load rack area (if 24 hour oil hauling is necessary). Lighting during operations will adhere to the "dark-sky" lighting practices described above.

5. Location and Types of Water Supply

A. Water wells will be drilled at well pad locations to provide water for drilling, completion, and dust control. Noble anticipates that on-site water wells will

provide approximately 70 percent of the water required for drilling, completion, and dust control. On-site water supply wells from one pad may be used to supply water for drilling, completion, and dust control on subsequent pads that are located in close proximity. Water wells will be drilled to an approximate depth of 500 feet, and will remain open until Noble determines that no additional wells will be drilled on the pad. Water supply wells on private land could be used by the landowner during Noble's activities and turned over to the landowner for agricultural use once Noble's activities conclude. All water uses will be permitted through the Nevada Division of Water Resources (NDWR) and/or Nevada Division of Environmental Protection (NDEP), as appropriate.

In order to provide the water required during construction of access roads and well pads, water wells may also be drilled on one or more of the proposed pad locations that are located along a collector road. If this occurs, water may be transferred from the pad with the water well to the pad under construction via a flexible fiber line similar to a fire hose. The line would run beside the road ditch between the water well and the drilling rig water storage tank. Pads with only a water well and storage tank would require approximately 1 acre of disturbance. The pad size would increase if the pad is selected for a production well. In either case, the pad would be one of the 20 well pads included as part of Noble's proposal.

Noble will permit ground water wells in accordance with applicable federal and state law for industrial use. Subsequent to use for industrial purposes, the landowner may seek to use the well for stock watering or other lawful agricultural beneficial use(s).

B. Noble expects that water sources located outside the Project Area will provide approximately 30 percent of the water needed for drilling, completion and dust control, and all of the water required by temporary on-site housing for drilling workers. Off-site water requirements will be supplied by a water utility; the cities of Wells and Elko have both declared their ability and willingness to sell water. Water will be transferred for use in drilling by tanker truck over existing roads.

C. **Water Use During Construction.** Anticipated water use for drilling includes approximately 10,000 barrels of water to drill one vertical/directional well and approximately 30,000 barrels to drill one horizontal well. Well completion is expected to require approximately 20,000 barrels of water for each of the first four vertical/directional wells and approximately 200,000 barrels for one horizontal well. Based on knowledge gained during the first year of construction, Noble anticipates decreasing the water required to complete a vertical/directional well to 13,000 barrels with a goal of 6,000 barrels per well. Table 1 shows the estimated water requirements to drill and complete a single well. Actual water volumes used during drilling and completions will depend on the depth of the well, length of horizontal sections, and any losses that might occur.

Table 1
Estimated Water Requirements to Drill and Complete a Single Well

Construction Activity	Drilling (barrels)	Completion (barrels)
Vertical/Directional Well	10,000	20,000
Horizontal Well	30,000	200,000

Dust control is expected to require 80 barrels of water per day per mile of unpaved road surface. Based on the estimated number of road miles required to access well pads being constructed, Noble expects that dust suppression will require approximately 973 barrels of water per day in the first year of construction and 3,891 barrels of water per day in the second year of construction. The actual volume of water required for dust control will depend on climatic conditions and will be lower if additional dust control methods such as those described above in Section 2.D. are used.

Noble will provide temporary on-site accommodations for 30 drilling workers on each well pad being drilled. Details of the temporary on-site accommodations are discussed below in Section 11. Noble expects that water use at the temporary on-site accommodations will average 50 gallons per worker per day. Because one drill rig is expected to be used in the first year of construction and two drill rigs are anticipated for the second year, water use at the temporary on-site accommodations will approximate 36 barrels per day during the first year and 72 barrels per day during the second year of construction.

Table 2 summarizes Noble's expected water use requirements during construction. Approximately 243,879 barrels are expected to be required during the first year of construction and approximately 1,773,015 barrels are expected to be required during the second year.

Table 2
Estimated Annual Water Requirements during Construction

Year and Project Activity	Total Water Required (Barrels)
Year 1	
Drilling[1]	40,000
Completions[1]	80,000
Dust Control[2]	116,736
On-Site Worker Housing[3]	7,143
Total Water Use – Year 1	**243,879**
Year 2	
Drilling[4]	240,000
Completions[4]	1,040,000
Dust Control[5]	466,944
On-Site Worker Housing[6]	26,071
Total Water Use – Year 2	**1,773,015**

[1] Based on four vertical/directional wells drilled and completed in Year 1.
[2] Based on 80 barrels of water per mile applied to 12 miles of unpaved roads (miles associated with construction of 4 wells) for 120 days.
[3] Based on 35.7 barrels of water per day consumed at one drilling location for 200 days.
[4] Based on 16 vertical/directional wells and four horizontal wells drilled and

completed in Year 2.

[5] Based on 80 barrels of water per mile applied to 49 miles of unpaved roads (miles associated with drilling 16 wells) for 120 days.

[6] Based on 71.4 barrels of water per day consumed at two drilling locations for 365 days.

D. **Water Use During Operations.** During the project's operational phase, water may be required for dust control, which will be conducted on an as-needed basis. The volume of water required for dust control will depend on annual climatic conditions. Based on the assumption that 80 barrels of water per mile per day would be applied to 61 miles of unpaved roads for 120 days, up to 583,680 barrels of water could be required per year for dust control. On-site water wells will provide 70 percent of the annual water requirements for dust control (408,576 barrels) and off-site water sources will provide 30 percent (175,104 barrels).

E. Noble understands the importance of protecting water resources in Nevada. In alignment with this, Noble has entered into a Memorandum of Understanding (MOU) with the Nevada Division of Minerals (NDOM) and the NDEP to study groundwater and hydrologic systems in the Project Area. This Aquifer Quality Assessment Program (Aqua Program) will include a groundwater sampling study and will be conducted by a third party, the Desert Research Institute, a well-respected scientific organization affiliated with the Nevada System of Higher Education. This investigation will address aquifer and hydrologic characteristics, water quantity and quality parameters, and other appurtenant information relevant to the development, use and management of water resources in compliance with established principles and practices employed in hydrology and water resource engineering disciplines. Results will be made public through the NDWR and NDEP. Water well information is collected and managed by the NDWR. The MOU for the Aqua Program outlines the program and is attached as Exhibit "K."

F. Traffic associated with water supply is described in the Transportation Plan (Exhibit "C").

6. Construction Activities

A. Construction, reclamation, and/or routine maintenance will not be conducted during periods when the soil conditions for construction could lead to impacts to the surrounding environment, or when watershed damage is likely to occur as a result of these activities.

B. Gravel used during construction will be purchased from a certified weed free commercial facility per BLM requirements.

C. Approximately 3.5 acres of the 7-acre drilling pad (2.5 acres for 6-acre drilling pads) will be reclaimed and reseeded after drilling and completion.

7. Methods for Handling Waste

A. **Cuttings.** Surface hole cuttings will be drilled with water-based mud and stacked on location during drilling for subsequent use in well pad reclamation. Production hole cuttings will also be drilled with water-based mud and stacked on location for the duration of drilling and completion activities.

Prior to burial and/or incorporation, composite samples per 100 cubic yards of cuttings will be collected and analyzed for BTEX, TPH (GRO/DRO), EC, SAR, pH, PAHs and Metals (As, Ba, Cd, Cr (III), Cr (VI), Cu, Pb, Hg, Ni, Se, Ag, Zn). The results of the analysis will be compared to NDEP soil cleanup standards to determine whether the cuttings can be buried/reincorporated or if further remediation and/or off-site disposal is warranted. Sampling will include potentially acid generating materials. If concentrations exceed NDEP soil cleanup standards and/or background concentrations the cuttings will be transported to an approved waste disposal facility (Clean Harbors located between Wendover, Nevada and Salt Lake City, Utah).

If approved for burial/incorporation, cuttings will be buried on-site at depths greater than 3 feet to avoid potential impacts to plant root zones. Drill cuttings from each well bore are exempt from regulation under Subtitle C of the Resource Conservation and Recovery Act (RCRA) but are still subject to other portions of the Rule.

B. **Drilling fluids.** Salts and/or chemicals used in the mud system and other drilling fluids will be recycled and reused in the drilling mud system. Noble will utilize pitless or closed loop drilling systems and will not construct reserve pits (see Figures 14 through 16 in Exhibit “D”). Any non-recycled drilling fluids will be land-farmed with the drill cuttings or disposed at an approved facility (Clean Harbors) located between Wendover, Nevada and Salt Lake City, Utah.

C. **Produced Fluids**. Liquid hydrocarbons and other fluids produced during well completion will be placed in steel tanks on the well location. Any unintentional release of oil, gas, salt water, or other potentially hazardous substances will be cleaned immediately and removed to an approved disposal site (Clean Harbors) located between Wendover, Nevada and Salt Lake City, Utah. Noble may drill a disposal well on one of the 20 selected pads and if so, produced water from the exploration wells would be disposed of in this well. The injection well would be one of the 20 wells included in Noble’s proposal. The disposal well will be permitted through the Nevada State Engineer’s Office and the NDEP. Produced water, drilling fluids, and all waste associated with exploration and production of crude oil, natural gas or geothermal energy is exempted from RCRA and therefore, the standard RCRA evaluation is not required.

D. **Sewage.** Portable, self-contained chemical toilets will be sited near the drill rig for human waste disposal. Sewage and gray water from the temporary on-site accommodations will be stored in three 4,000 gallon domestic wastewater holding tanks sited near the modular buildings. Portable toilet and domestic wastewater holding tanks will be pumped and the contents hauled away for disposal at an approved sewage disposal facility on a timely basis. Sewage disposal will be in strict accordance with NDEP rules and regulations regarding sewage treatment and disposal.

E. **Garbage and Other Waste Materials.** All garbage and non-flammable waste materials will be contained in a self-contained, portable dumpster or trash cage, especially to eliminate attracting ravens to the project site for sage-grouse predator control as described in the Best Management Practices (BMPs) (Exhibit

"F"). At the end of drilling and completion, or as needed, the accumulated trash will be hauled off-site to a NDEP approved sanitary landfill.

F. **Debris.** Immediately after removal of the drilling rig, all debris and other waste materials not contained in the trash cage will be cleaned and removed from the well location. No potentially adverse materials or substances will be left on location.

G. **Hazardous Materials Management.**

1. All drilling wastes identified as hazardous substances by the Comprehensive Environmental Response Compensation Liability Act (CERCLA) will be removed from the drilling location and not reused at another location. Any such hazardous substances will be disposed at a hazardous waste facility approved by the U.S. Environmental Protection Agency (EPA).

2. Noble and its contractors will comply with all applicable Federal, State, and local laws and regulations, existing or hereafter enacted or promulgated, with regard to any hazardous material, as defined in this paragraph, that will be used, produced, transported or stored on the oil and gas lease, "Hazardous material" means any substance, pollutant or contaminant that is listed as hazardous under the *CERCLA of 1980*, as amended, 42 U.S.C. 9601 et seq., and its regulation. The definition of hazardous substances under CERCLA includes any "hazardous waste" as defined in the *Resource Conservation and Recovery Act (RCRA) of 1976*, as amended, 42 U.S.C. 6901 et seq., and its regulations. The term hazardous material also includes any nuclear or nuclear by-product material as defined by the *Atomic Energy Act of 1954*, as amended, 42 U.C.S. 2011 et seq. The term does not include petroleum, including crude oil or any fraction thereof that is not otherwise specifically listed or designated as a hazardous substance under CERCLA Section 101 (14), 42 U.S.C. 9601 (14) nor does the term include natural gas.

3. No hazardous substances or wastes will be stored on the location after completion of the well.

4. Chemicals brought to location will be on the Toxic Substance Control Act (TSCA) approved inventory list.

5. All hazardous substances brought to the location will have a Material Safety Data Sheet (MSDS), and will be properly handled so as to not cause harm to people or the environment.

6. All MSDSs will be kept on location until the hazardous material is properly disposed of in accordance with federal law.

7. Noble will maintain a file, per 29 CFR 1910.1200 (g) containing current MSDSs for all chemicals, compounds, and/or substances which will be used during the course of construction, drilling, completion, and production operations for this project. Hazardous materials (substances)

which may be found at the site may include drilling mud and cementing products which are primarily inhalation hazards, fuels (flammable and/or combustible), materials that may be necessary for well completion/stimulation activities such as flammable or combustible substances and acids/gels (corrosives). The opportunity for Superfund Amendments and Reauthorization Act (SARA) listed Extremely Hazardous Substances (EHS) at the site is generally limited to proprietary treating chemicals. All hazardous and Extremely Hazardous Substances and commercial preparations will be handled in an appropriate manner to minimize the potential for leaks or spills to the environment.

8. All undesirable events (fires, accidents, blowouts, spills, discharges) as specified in Notice to Lessees (NTL) 3A will be reported to the BLM Wells Field Office. Major events will be reported verbally within 24 hours, followed by a written report within 15 days of their occurrence. “Other than Major Events” will be reported in writing within 15 days. “Minor Events” will be reported on the Monthly Report of Operations and Production (Form 3160-6).

9. All installed production facilities with the potential to leak or spill oil, condensate, produced water, glycol, or other fluid which might be a hazard to public health or safety will be placed within an appropriate impervious secondary containment structure that will hold 110 percent of the capacity of the largest single container for 72 hours. Secondary containment will consist of corrugated steel containment berms or earthen berms. Compaction and construction of earthen berms will be performed to prevent lateral movement of fluids through the utilized materials. All loading lines will be placed inside the containment berm.

10. Hydrogen Sulfide (H_2S) is not expected to be present or released. Noble drilled two wells on private land in Elko County and no detectable H_2S down to 30 ppm (limit of mass spectrometer analysis of mud gas) was found in either well. Based on a review of well histories and logs (Tuano Draw well and the Jiggs federal wells) in Elko County, there is no indication of H_2S. Gas chromatograph results of drilling mud from the isotube detected no H_2S. Any natural gas produced will be tested for H_2S content.

8. Well Site Layout

Typical drilling pad drawings are shown in Figures 3 and 7 in Exhibit “D” for a 7-acre pad and 6-acre pad, respectively. The 7 acre pads will be approximately 535 feet by 555 feet and the 6 acres pads will be approximately 500 feet by 510 feet. The estimated size for the well pads will accommodate cuts and fills, topsoil storage, stormwater control BMPs, and a water well.

9. Plans for Surface Reclamation

A. Rat and mouse holes will be backfilled and compacted from bottom to top immediately upon release of the completion rig from the location.

B. Producing Operations:

1. Backfilling, leveling, and re-contouring are planned as soon as possible after cessation of drilling and completion. Waste and spoil materials will be disposed immediately upon cessation of drilling and completion.

2. For production, fill slopes will be reduced from a 1.5:1 slope to a 3:1 slope and cut slopes will be reduced from a 2:1 slope to a 3:1 slope by pushing the fill material back up into the cut (see Figures 5 and 90 in Exhibit “D”.

3. Upon completion of backfilling, leveling, and re-contouring, all disturbed surfaces not needed for future operations will be scarified to a depth of one (1) foot and the stockpiled topsoil will be evenly distributed to a depth of six (6) inches over the reclaimed area(s).

4. Prior to commencement of seeding, the seedbed will be prepared by disking on the contour to a depth of four (4) to six (6) inches, leaving no depressions that would trap water or form ponds.

5. If conditions permit, the restored portions will be left rough and broadcast seeded. All disturbed surfaces (including the access road and well pad areas) will be re-seeded using a seed mixture recommended by the BLM or surface owner.

6. If the drilling method of seeding is utilized, it will be drilled on the contour with a seed drill equipped with a depth regulator in order to ensure even depths of planting. Seed will be planted between one-quarter (1/4) and one-half (1/2) inch deep, with shrub seeds planted in rows separate from the grass seeds. In this case, the bins on the outside rows of the drill will be utilized for shrub seeds.

   The broadcast method may be used instead of the drilling methods. If this is the case, the surface will be left in a rough condition and the seed mixtures will be doubled. The preferred method will be approved by the BLM at the time of reclamation.

7. Fall seeding will be completed after September 1 and prior to ground frost. If applicable, spring seeding will be completed after the frost has left the ground and prior to May 15. The seeding will be repeated until the BLM Authorized Officer (AO) determines that a satisfactory stand is achieved. The first evaluation of growth will be made following the completion of the first growing season. Re-seeding activities are considered best in the fall, unless requested otherwise by the BLM AO or surface owner.

8. Mulching may be required on soils with low reclamation potential; where mulching is deemed necessary, a certified weed free straw or hay mulch will be crimped into the soil at an application rate of 2 to 4 tons per acre. Mulch may be applied by blowers, spreaders, or by hand. The mulch strand lengths will be long enough to be anchored by crimping. The

mulch will be crimped to a depth of 2 to 3 inches. The mulch will be spread uniformly over the area so that at least 75 percent of the surface is covered.

C. Abandoned Well Locations

1. Upon final abandonment of the well location, gravel will be removed from the access road surface and well location (as directed by the BLM AO), water diversion installed as needed, and both the access road and well location will be restored to approximately the original ground contour(s) by pushing the fill material back into the cut and up over the backslope.

2. No depressions will be left that would trap water or form ponds. All disturbed surfaces (including the access road and well pad areas) will be re-seeded and re-vegetated sites will be monitored to ensure that desired species are thriving and invasive/noxious weeds are not present.

10. Surface Ownership

Within the Marys River Project Area, 54.5 percent of the surface is under the administrative jurisdiction of the BLM and 45.5 percent of the surface is under private ownership (see Map 1 in Exhibit "A").

11. Other Information

Land Surveys

- Well pad locations have been staked. A survey of the proposed access roads and well pad locations will be completed by a registered professional land surveyor. A preliminary center stake survey with access roads by a professional land surveyor has already been completed on federal lands and private lands with federal minerals.

Cultural Resources

- A cultural resource inventory was conducted in accordance with applicable state and federal requirements on lands administered by the BLM and on private lands where landowner permission was obtained. A Class III Cultural Inventory Report was submitted to the BLM on December 12, 2012 with a recommendation of no historic properties affected for the Marys River Oil and Gas Exploration Project.

- If unknown cultural resources are found during operations, Noble will implement an Unanticipated Discovery Plan for Cultural Resources, which includes immediate stoppage of all work within thirty (30) meters of the discovery as directed by the BLM and immediate notification of the BLM AO.

- Prior to commencement of operations, Noble will inform all employees and contractors through job site safety orientations about compliance requirements associated with the Archaeological Resources Protection Act, the Native American Graves Protection and Repatriation Act, the Paleontological Resources Preservation Act, and the National Historic Preservation Act.

- Noble will suspend all operations that disturb such materials and immediately contact the BLM AO. Operations will not resume until the BLM AO issues authorization to proceed.

Weed Control

- Noble will be responsible for weed control on disturbed areas within the exterior limits of the Project Area and will consult with the BLM AO and/or local authorities for acceptable weed control measures. Noble will follow the Marys River Integrated Weed Management Plan which includes measures for prevention, monitoring, and treatment of noxious weeds. (Exhibit "L"). A weed control plan for individual well pads will be submitted with each Application for Permit-to-Drill (APD).

Wildlife

- Block surveys for wildlife and vegetation were completed from March 1 to April 15, 2012 throughout the entire Project Area. The Wildlife Monitoring Report for Exploration Activity in the Mary's River Project Area was submitted to the BLM for review and comment on November 1, 2012 (Exhibit "J"). Greater sage-grouse winter concentration surveys and lek attendance surveys were conducted in 2013.

- Baseline data for bat species within the Project Area were collected in August 2013 for the purpose of incorporation into Noble's Bird and Bat Conservation Strategy. The survey area for the baseline acoustic bat survey included approximately 39,444 acres of BLM-administered and private lands in the Marys River Project Area.

- Pygmy rabbit surveys were conducted on BLM-administered lands. Vegetation types, wetlands, large game species, raptors, and general wildlife observations were also recorded. The results of the biological surveys were utilized to adjust proposed well pad locations to minimize effects to pygmy rabbits.

- Where proposed disturbance is within 100 feet of a pygmy rabbit burrows, the area will be brush-hogged or mowed within 72 hours of ground disturbance to encourage pygmy rabbits to leave the area.

- The Wildlife Monitoring Report for Exploration Activity in the Marys River Project Area was submitted to the BLM for review and comment on November 1, 2012.

- Noble will inform employees and contractors through job site safety orientations that harassing (including feeding, approaching, pursuing, or otherwise intentionally disturbing) or shooting wildlife will not be permitted; dogs may not be brought to the Project Area; no firearms will be allowed on-site; and there will be no littering, including trash that was not secured properly and has been dispersed by wind.

Noise

- Background sound level measurements were conducted for 7 days between April and mid-May, 2013 at each of three greater sage-grouse leks in the Project Area to collect a full spectrum of natural and human-caused noise.

- Noise measurements were collected in the Lamoille Valley in September 2013 for the drilling rig to be used in the Marys River Project Area. The noise measurements were used to develop noise contours indicating potential noise levels at each proposed well pad and extension of the noise contour at greater sage-grouse leks in the Marys River Project Area.

Visual and Auditory

- A visual and auditory assessment of the California National Historic Trail (CNHT) and a visual assessment of the Central and Southern Pacific Railroad (CSPRR)

were conducted within the Project Area to identify potential adverse visual and auditory impacts to the CNHT and potential visual impacts to the CSPRR and to make recommendations regarding mitigation of adverse effects or adverse impacts.

Soils and Revegetation

- No truck traffic will be operated during periods of, or in areas of, saturated ground when surface rutting could occur.

- Noble will follow the Marys River Reclamation Plan (Exhibit “M”). Noble will also implement a baseline ecosite vegetation and weed survey for each well pad prior to construction to ensure proper seed mix design which is applicable to ecosites already existing at the location and to ensure protection from erosion due to cattle grazing during interim reclamation.

Water Quality

- Noble has prepared a Field-Wide Stormwater Pollution Prevention Plan (SWPPP) in accordance with state regulations and BLM approval (see Exhibit “I”). Noble will also prepare, implement, and follow a Spill Prevention Plan.
- All installed production facilities with the potential to leak or spill oil, condensate, produced water, glycol, or other fluid which might be a hazard to public health or safety will be surrounded by secondary containment adequate to retain at least 110 percent of the volume of the largest vessel with sufficient freeboard/storage for precipitation in the containment area in the event of a release.
- Wellheads, above-ground flowlines, valves, fittings, vessels, and storage tanks will be inspected on a regular basis for any signs of potential failure. Noble maintains a flowline maintenance program for its flowlines.
- Containment areas will be maintained as dry as possible to reduce corrosion on tanks and to maintain maximum containment capacity.
- A system of earthen dikes with crushed rock will be used to control and contain oil spills to prevent escape before cleanup.
- Noble will drill and case wells with multiple stages of cement and steel pipe to protect groundwater resources in accordance with American Petroleum Institute standards (see Figures 11 and 12 in Exhibit “D”).
- Noble will clean up diesel, hydraulic fuel, or other spills, including contaminated soils. All spill-related material will be hauled to an approved disposal site.
- Project disturbance will avoid streams, creeks, springs, and wetland areas by 400 feet.
- Fueling will not occur within 400 feet of any riparian areas or standing or flowing surface water including streams, ponds, springs, seeps and stock reservoirs.

Fire Prevention Measures

- Fire prevention measures are included as Exhibit “E”.

Sage Grouse BMPs

- Best Management Practices for Sage Grouse are included as Exhibit “F”.

Workforce

- Noble estimates that the peak construction workforce will include 130 workers, assuming that two drill rigs and one completion team are in operation. The peak workforce will occur during the second year as well pads and access roads are constructed, water wells are drilled, and production wells are drilled and completed (see Table 3). Noble will provide on-site (well pad) accommodations for drilling workers (see Figures 3 and 7 in Exhibit “D”). This will reduce traffic, minor source emissions, dust, and impacts on wildlife, and increase safety. Once all wells are drilled and completed, the operations workforce will include one pumper, one maintenance worker, one water truck driver for dust control, and up to 19 oil truck drivers and 13 produced water truck drivers, for a peak operational workforce of 35 workers. The actual number of truck drivers will depend on the amount of oil and water produced per well, and the location of produced water disposal (either off-site or in an on-site injection well).

Table 3
Estimated Peak Construction and Operations Workforces

Workforce Category	**Peak Number of Workers**
Construction	
Well Pad and Road Construction	7
Water Well	4
Drilling[1]	60
Completion[2]	50
Water Truck Drivers[3]	6
Dust Control[4]	1
Interim Reclamation	2
Total Peak Construction Workforce	**130**
Operations	
Pumper	1
Maintenance Worker	1
Oil Truck Drivers[5]	19
Produced Water Truck Drivers[6]	13
Dust Control[4]	1
Total Peak Operations Workforce	**35**

[1] Based on two drill rigs in operation with two eight-man drilling crews per rig. Additional drilling personnel include site managers, well site consultants, mudloggers, mud engineers, solids control, directional driller, MWD, and active system aeration.
[2] Based on one completion rig with 50 workers during hydraulic fracturing.
[3] Based on 30 percent of the water used for drilling and completion being delivered in 120 barrel trucks, and 1.5 hours to complete a round-trip for trucks hauling water to the Project Area.
[4] Based on 80 barrels of water per mile sprayed from 100 barrel capacity trucks.
[5] Based on oil production of 250 barrels per day per well from 12 wells and 100 barrels per day from 8 wells transported in 200 barrel trucks.
[6] Based on 100 barrels of produced water per day from wells producing 250 barrels of oil per day and 40 barrels of produced water per day from wells producing 100 barrels of oil per day transported by truck (120 barrel capacity) to Clean Harbors in Utah. As few as four drivers could be required if produced water is disposed in an on-site injection well.

- Noble estimates that drilling and completion crews (approximately 90 percent of the construction workforce) will consist of non-local workers and that the remainder (approximately 10 percent) of the construction workforce will be local. During operations, Noble expects that the pumper, maintenance worker, and produced water truck drivers will come from the local area. Oil truck drivers are expected to be non-local workers employed by crude oil transportation companies based outside of Elko County. If produced water is trucked off-site for disposal, Noble expects that approximately 45 percent of the operations workforce will be local and that 55 percent will be non-local. If produced water is disposed in an on-site injection/disposal well, approximately 25 percent of the workforce will be local and 75 percent will be non-local.

Temporary On-Site Accommodations

- Noble will place 12 self-contained mobile modular buildings that require no foundation or construction on each well pad where a well is being drilled to accommodate well site support services and house approximately 30 drilling workers. Drilling workers will stay in the on-site temporary housing and will not be allowed to leave the Project Area during drilling. This will reduce traffic, minor source emissions, dust, and impacts on wildlife, and increase safety. Without on-site accommodations, peak traffic estimates could include up to 30 additional light vehicles per day per drilling location. The modular buildings will be removed once drilling is complete. Water use at the on-site accommodations will require no water withdrawal or discharge into the Project Area. Noble will obtain a permit from the NDEP Bureau of Water Pollution Control to install three 4,000 gallon domestic wastewater holding tanks. Noble will also obtain a permit from the NDEP Bureau of Safe Drinking Water to operate a public water system, to include five booster pump stations, three 3,135 gallon storage tanks and a distribution system.

- The water systems will provide water for showers, laundry, inside toilets, laboratories, and cooking. Noble will contract with an approved water hauler in the state of Nevada to haul potable water to the storage tanks on the well site and haul wastewater from the pad locations to an approved disposal facility. Drinking water will be brought to the site in 5 gallon containers.

BMPs for Erosion and Sediment Control

- BMPs for sediment and erosion control will be accomplished through a combination of construction techniques, vegetation and re-vegetation, and structural features. Construction of a well pad requires the removal of vegetative cover and topsoil that increases peak flood flows, water velocity, and the volume of stormwater runoff. An increase in water runoff volume and velocity results in increased erosion. Erosion reduction and control will be accomplished by using the following erosion control methods. These methods include but are not limited to:

    - Diversion and control of runoff water;
    - Vegetation planting and maintenance;

    - Application and maintenance of mulches, blankets, tackifiers, tracking and contouring; and
    - Proper grading techniques.

- Runoff control procedures that will be used to mitigate and reduce the erosive transport forces of stormwater during and after construction of a pad will include but not be limited to the following:

    - Check dams;
    - Earth berms;
    - Culvert protection;
    - Diversion ditches;
    - Slope drains;
    - Rock lined ditch;
    - Mulches, with or without a tackifier;
    - Geotextiles; and
    - Erosion Control Blanket/Turf Reinforcement Matting.

- The control and reduction of sediment contained in stormwater runoff will be accomplished by the use of sediment containment systems. Sediment containment systems are hydraulic controls that allow the deposition of suspended particles by gravity. Sediment controls that will be used to mitigate and control sediments generated from the erosive transport forces of stormwater during and after construction of a pad will include but not be limited to the following:

    - Silt Fence;
    - Straw Bale Dikes/Traps;
    - Straw Wattles;
    - Sediment Traps/Basins;
    - Vehicle Tracking Pads;
    - Continuous Berms;
    - Continuous Berms with Rock Filter, and
    - Slash Berm.

<u>Hydraulic Fracturing</u>

- Noble will comply with BLM's proposed rule to regulate hydraulic fracturing on public and Indian land. The proposed rule provides for public disclosure of chemicals used in hydraulic fracturing on public and Indian land, strengthen regulations related to well-bore integrity, and addresses issues related to flowback water. The rule has been proposed to provide useful information to the public and to assure that hydraulic fracturing is conducted in a way that adequately protects the environment.

- Noble will participate in FracFocus which is a national hydraulic fracturing chemical registry. It is managed by the Ground Water Protection Council and Interstate Oil and Gas Compact Commission, two organizations whose missions both revolve around conservation and environmental protection. The primary

purpose of the registry is to provide factual information concerning hydraulic fracturing and groundwater protection.

Drilling and Completion Fluid Additives

- Drilling and completion fluids are custom-engineered to accomplish various objectives, including:

    - Cooling of the bit;
    - Suspension of rock cuttings so they can be circulated out of the boring as it is drilled;
    - Maintaining fluid pressure on intercepted formations to control formation fluids;
    - Pressuring the formation in open hole sections or through casing perforations to generate rock fractures, opening up the connection of formation to the well;
    - Carrying "proppant" particulates, sand, ceramic or plastic, to prop fractures open when the pressure is released, and small rubber balls to block perforations and hold injected fluids outside the casing for a short time; and
    - Carrying other chemicals to "break" the gel suspending the proppant, disinfect the hydraulically fractured zone and retard microbial growth which can sour the well, and flush general chemical residuals.

- Drilling is typically performed with a bentonite mud base, with various viscosity and density-adjusters (such as polymers and barite). Drilling mud will be entirely contained in ("pitless") tanks at the surface, and fluid and cuttings will be segregated for re-use and disposal. Drilling mud will be displaced from the boring by each separate casing cementing.

- Table 4 provides a tentative list of materials that may be used as completion fluid additives. Option 3 in the table may be used later in exploration if directional wells are drilled. Note that the list of materials does not contain diesel, which was common in fracturing fluids 10 years ago. The only constituent not fully disclosed is a proprietary amine polymer formulation ("KCl substitute") added in small quantities to augment clay stabilization. All of these constituents are either consumed in the treatment (acid, pH buffers), inert (sand), or biodegradable. Biocide retards microbes which would otherwise grow rapidly in the guar starch, until such time as the fluid can be produced in "flowback" water or displaced and plugged off in a well that is abandoned.

Table 4
Tentative List of Materials for Stimulations

Material	Volume	Description	Purpose	Fate
Option #1: Cross-Linked Gel Sand Frac for Vertical Wells: 5 Stages of 150,000 lbs.				
Water	425,000 gal.	Fresh Water	Fluid basis	Flowback
Sand	35,000 lbs.	100 mesh	Very fine proppant	Inert
Sand	750,000 lbs.	Premium White Sand	Proppant	Inert
Labeled ceramic		Radioactive tracer	Ceramic proppant with trace radioactivity	Low radioactivity
LGC	5 gal/1000g	Liquid Gel Concentrate	Guar (legume) starch	Biodegradable
Breaker	2.5 gal/1000g	Gel Breaker	Encapsulatated amonium persulfate oxidizer	Chemically degradable
HCl	1000 gal.	15% Hydrochloric Acid	Muriatic acid, cleaner and breaker	Neutralized by rock
Corrosion inhibitor	0.5 gal/1000g	In acid solution only	Retards acid attack on steel	Adheres to steel
Citric Acid	50 lbs/1000g	In acid solution only	Sequesters dissolved iron and prevents rust coat	Biodegradable
Ball Sealers	1000 ea.	5/8" diam rubber balls	After frack, plug perfs and hold well pressure	Inert
KCl	2% in Water	Potassium Chloride	Formation clay stabilizer	Sorbed to borehole wall clay
"KCl Substitute"	1 gal/1000g	Proprietary polymer	Clay stabilizer	Biodegradable, and sorbed
Biocide	0.2 gal/1000g	Dibutyl normal propanamine	Disinfectant	Biodegradable
Cross Linker	2.25 gal/1000g	Borate X-linker with caustic	Forms gel in guar starch	Disperses at neutral pH
Buffer	0.5 gal/1000g	Formic Acid	Weak acid, pH regulator	Biodegradable
Non-emulsifier	1.0 gal/1000g		Soap	Flowback
Option #2: Large Acid Job for Vertical Wells: Single Stage with Diversion				
Water	13,000 gal.	Fresh Water	Fluid basis	Flowback
HCl	100,000 gal.	15% Hydrochloric Acid	Muriatic acid, cleaner and breaker	Neutralized by rock
Ball Sealers	1000 ea.	5/8" diam. RCN Ball Sealers	After fracturing, plug perfs and hold well pressure	Inert
Citric Acid	50 lbs/1000g	Iron Sequestrant	Sequesters dissolved iron and prevents rust coat	Biodegradable
Surfactant	2 gal/1000g	Friction Reducer		
Demulsifier	1.0 gal/1000g			
Biocide	0.2 gal/1000g	Dibutyl normal propanamine	Disinfectant	Biodegradable
Corrosion inhibitor	0.5 gal/1000g		Retards acid attack on steel	Adheres to steel
KCl	2% in Water	Potassium Chloride	Formation clay stabilizer	Sorbed to barehold wall clay
Option #3*: Cross-Linked Gel Sand Frac for Directional Wells: 10 Stages of 150,000 lbs. (Double all volumes of Option #1) (Large Acid Job Option not recommended for Directional Wells) *May be used later in exploration.				

12. Lessee or Operator's Certification

Noble Energy, Inc. hereby certifies that said company is authorized to conduct operations on the above-described land under the terms and conditions of Federal Oil and Gas Leases _____. Bond coverage, as required by 43 CFR 3104 is provided by Noble Oil, Inc. The applicable bond number is NV-_____, a statewide oil and gas lease bond in the amount of $_____.

I hereby certify that I, or persons under my direct supervision, have inspected the area and are familiar with the general area of the proposed drill site locations and access roads; that I am familiar with the conditions which presently exist; that the statements made in this plan are, to the best of my knowledge, true and correct and that the work associated with the operations proposed herein will be performed by Noble Energy, Inc., its agents, contractors, and subcontractors in conformity with the plan and the terms and conditions under which it is approved.

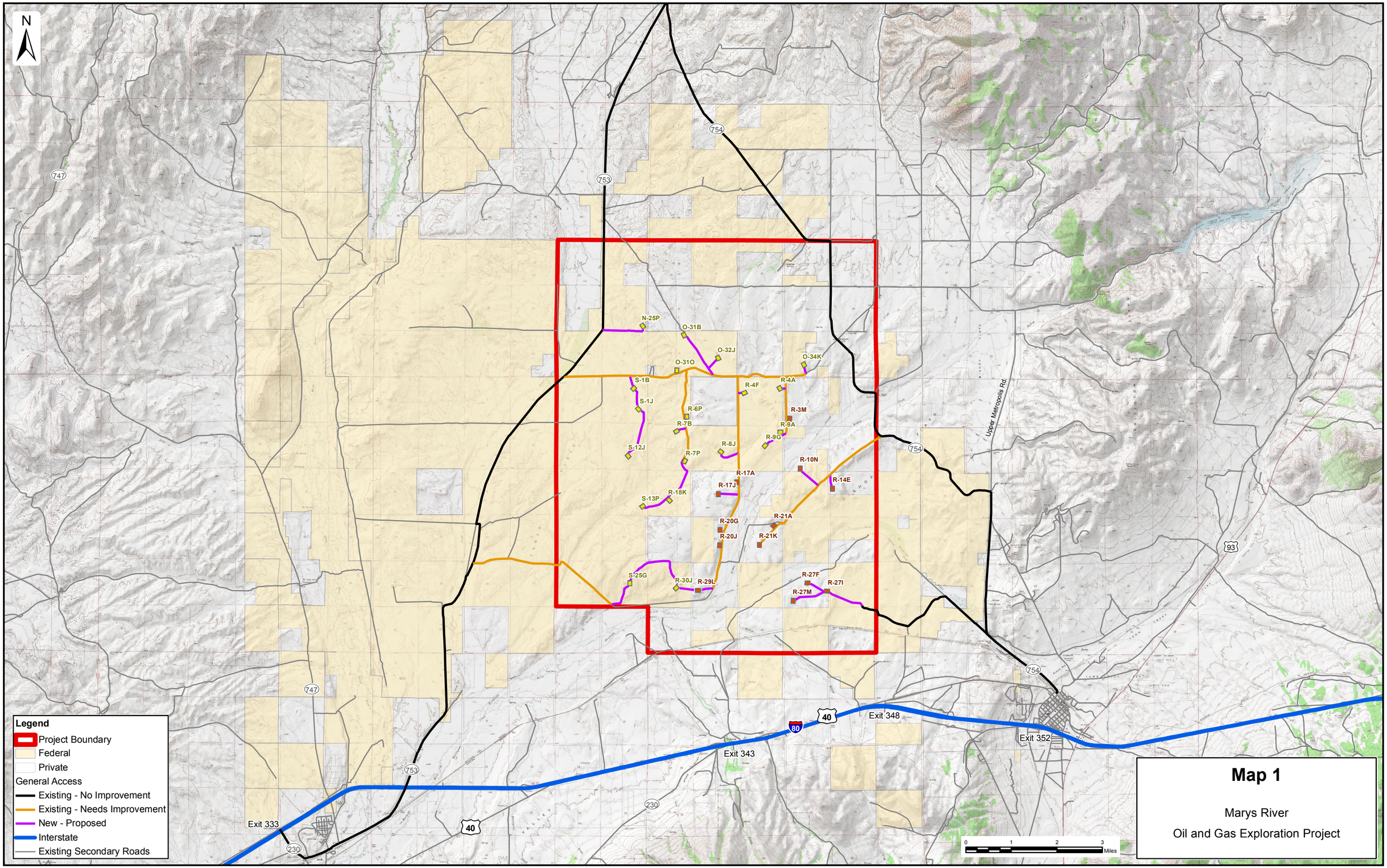
Noble Energy, Inc.

Name: _____ Date: _____

Kevin Vorhaben, Rocky Mountain Business Unit Manager

Exhibit A

Project Map



Map 1

Marys River

Oil and Gas Exploration Project

Exhibit B

List of Proposed Well Pads

Marys River Exploration Project
Proposed Well Pads

Well Pad Name	T	R	Sec	Surface Qtr/Qtr	Surface Ownership	Mineral Ownership
N-25P	39N	60E	25	SESE	Federal	Federal
O-31B	39N	61E	31	NWNE	Federal	Federal
O-32J	39N	61E	32	NWSE	Federal	Federal
O-31O	39N	61E	31	SWSE	Federal	Federal
S-1B	38N	60E	1	SWNE	Federal	Federal
S-1J	38N	60E	1	NESE	Federal	Federal
S-12J	38N	60E	12	NWSE	Federal	Federal
R-6P	38N	61E	6	SESE	Federal	Federal
R-7P	38N	61E	7	SESE	Federal	Federal
S-13P	38N	60E	13	SESE	Federal	Federal
R-18K	38N	61E	18	NESW	Federal	Federal
R-4F	38N	61E	4	SWNW	Federal	Federal
R-4A	38N	61E	4	NENE	Federal	Federal
O-34K	39N	61E	34	SESW	Federal	Federal
R-9A	38N	61E	9	NENE	Federal	Federal
R-9G	38N	61E	9	SWNE	Federal	Federal
R-8J	38N	61E	8	NWSE	Federal	Federal
S-25G	38N	60E	25	NWSE	Federal	Federal
R-30J	38N	61E	30	NWSE	Federal	Federal
R-7B	38N	61E	7	NWNE	Federal	Federal
R-29L	38N	61E	29	NWSW	Private	Private
R-27M	38N	61E	27	SWSW	Private	Private
R-27F	38N	61E	27	SENW	Private	Private
R-27I	38N	61E	27	NESE	Private	Private
R-20J	38N	61E	20	NWSE	Private	Private
R-20G	38N	61E	20	SWNE	Private	Private
R-21K	38N	61E	21	NESW	Private	Private
R-21A	38N	61E	21	NENE	Private	Private
R-17J	38N	61E	17	NWSE	Private	Private
R-17A	38N	61E	17	NENE	Private	Private
R-14E	38N	61E	14	SWNW	Private	Private
R-10N	38N	61E	10	SESW	Private	Private
R-3M	38N	61E	3	SWSW	Private	Private

Exhibit C

Transportation Plan

Transportation Plan

Marys River Oil and Gas Exploration Project
Noble Energy, Inc.

Presented to:

Bureau of Land Management
Wells Field Office
Elko, Nevada

March 2014

TRANSPORTATION PLAN
MARYS RIVER OIL AND GAS EXPLORATION PROJECT

1.1 INTRODUCTION

This Transportation Plan addresses traffic and road use associated with the Noble Energy, Inc. (Noble) Marys River Oil and Gas Exploration Project. The proposed project area is located in Elko County, Nevada, approximately 40 miles northeast of Elko, Nevada and 4 miles northwest of Wells, Nevada on the north side of Interstate-80. Noble's project proposal identifies 33 potential new well pads (20 well pads with federal surface and/or minerals and 13 well pads with private surface and private minerals). Noble intends to construct up to 20 of the 33 identified well pads and drill and complete up to 20 wells during exploration. Construction of new roads and upgrading of existing roads are part of the proposal. The wells will potentially be in production for up to 20 years.

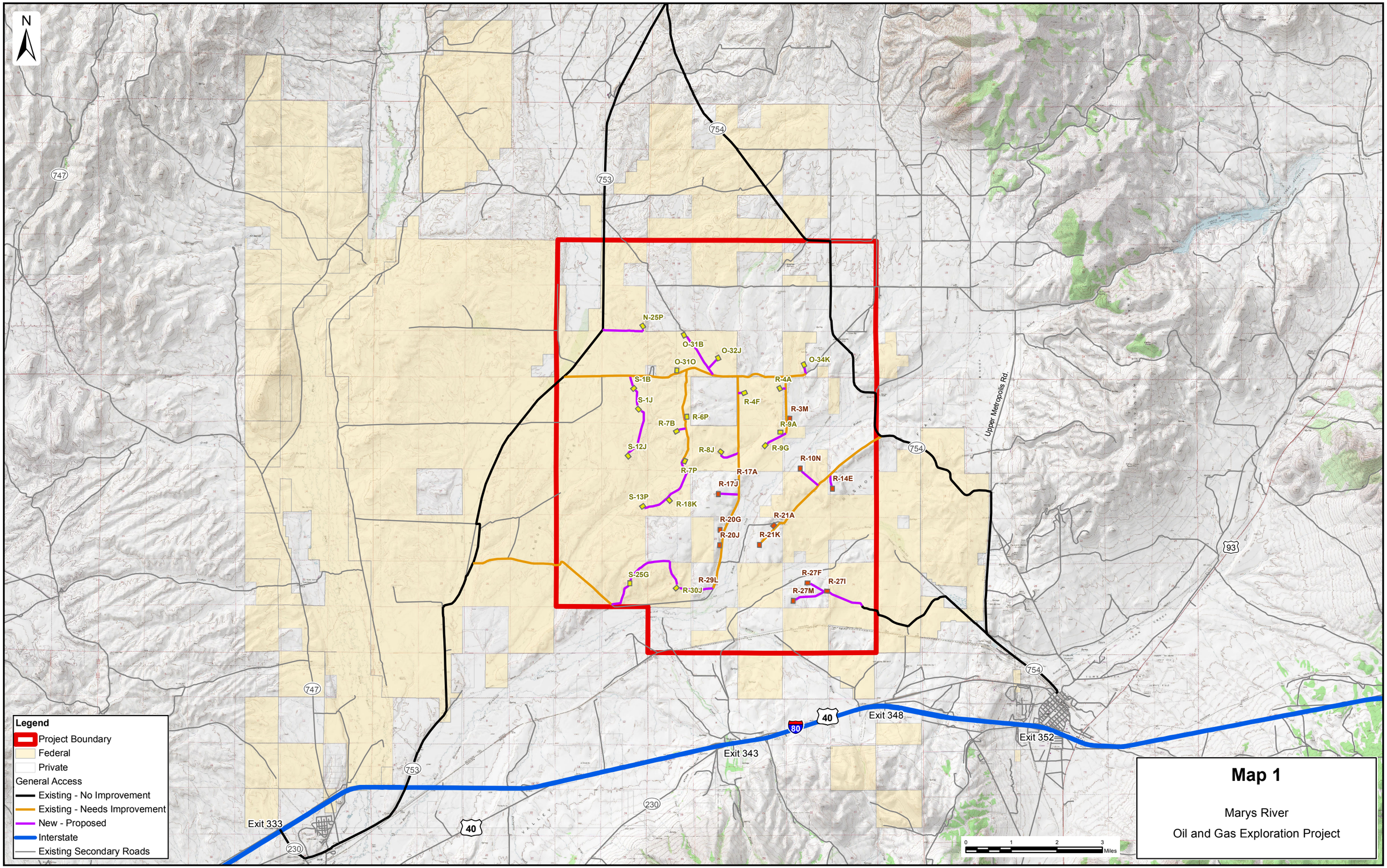
Well pads will be accessed using existing Elko County, BLM, City of Wells, private, and newly constructed access roads (see Map 1). Noble proposes to generally use existing county roads and Wells city streets to access the project area. Noble has identified up to 20.5 miles of existing two track roads within and adjacent to the project area that would require upgrading. To access individual well pads, Noble has identified up to 12.7 miles of potential newly constructed local and resource roads. The extent of road upgrades and new construction will depend on which well pads are selected for exploration. In accordance with the BLM Elko District Recommended Operating Procedures for Notice Level Operations (BLM Recommended Operating Procedures), Noble is proposing access that is the most direct and safest route with the least amount of disturbance.

This plan addresses the project area and adjacent areas that include roads that may be used to access the project area (see Map 1). This document describes existing roads and roads identified for upgrade/construction; identifies the parties responsible for road maintenance; and estimates the traffic levels associated with construction (including drilling and completion) and operation of the project.

1.2 ACCESS ROUTES

1.2.1 Primary Access Routes in the MREP Area

Road types, or functional classifications, describe the functions that roads serve in facilitating traffic flows within a transportation network. Principal arterial roads, such as interstates and state highways, accommodate high traffic volumes and have limited access. Minor arterial roads include county roads that connect population centers with principal arterials. Collector roads include county, municipal, BLM, and private roads that provide primary access through towns or to large blocks of land, and are generally two lanes wide. Table 1 lists the arterial and collector roads within the project area transportation network, indicates their surface type, and identifies the party responsible for road maintenance.



Map 1

Marys River

Oil and Gas Exploration Project

Table 1
Primary Access Routes for Marys River Oil and Gas Exploration Project

Road Name	Road Type	Surface Type	Maintenance Responsible Party
Interstate-80	Arterial	Pavement	NDOT[1]
U.S. Highway 40	Arterial	Pavement	NDOT[1]
U.S. Highway 93	Arterial	Pavement	NDOT[1]
Nevada State Route 230 (Starr Valley Road)	Collector	Pavement	NDOT[1]
Elko County Road (CR) 754 (Metropolis Road)	Collector	Paved surface for 13 miles out of Wells, NV; gravel surface for 16 miles to CR 753 junction	Elko County
Elko CR 753 (Deeth-O'Neil Road)	Collector	Pavement south of I-80, gravel north of I-80	Elko County
6th Street	Collector	Pavement	City of Wells
7th Street	Collector	Unpaved	City of Wells
8th Street	Collector	Gravel surface for 1 mile between 7th Street and CR 754	City of Wells
Humboldt Avenue	Collector	Unpaved	City of Wells
[1] NDOT = Nevada Department of Transportation			

Local and resource roads include BLM, municipal and private roads that link areas with low traffic volumes to higher classification roads. Local roads connect to collector roads and serve a smaller area than collector roads, and may be one or two lanes with lower traffic volumes. Resource roads are BLM roads that provide point access, connecting to local or collector roads, and are single lanes to individual well pads.

1.2.2 Access Routes

Deeth-O'Neil Road Access Route

From Interstate-80, Nevada State Route (SR) 230 (Starr Valley Road) and Elko County Road (CR) 753 (Deeth-O'Neil Road) provide access to the majority of the project area. The Deeth-O'Neil access route exits Interstate-80 at SR 230 (Exit 333) and proceeds for approximately 0.75 mile to CR 753. The route turns left on CR 753 and continues in a generally eastward direction for approximately 2 miles, at which point the road curves north and continues another 0.8 mile to pass below Interstate-80. The access route continues on CR 753 for approximately 6 miles to intersect an unimproved road leading eastward into the project area.

Deeth-O'Neil Southern Access Road. The unimproved road (upgrades required) leading into the southern portion of the project area provides access to several proposed well pads. The road proceeds in a generally southeastern direction for approximately 3 miles, then turns northeast onto a new 2.5 mile road that could be constructed to access any or all of proposed well pads S-25G, R-30J and R-29L. Approximately 0.3 mile east of Well Pad R-29L, the access route turns north onto an existing road (upgrades required) that travels for approximately 4.75 miles through the center of the project area to access any or all of proposed well pads R-20J, R-20G, and R-17A. From this central road, new resource roads could be constructed to access any or all of proposed well pads R-17J, R-8J, and/or R-4F.

Deeth-O'Neil central access road. Following the point at which the southern access road exits CR 753, the Deeth-O'Neil access route continues north on CR 753 for approximately 4 miles, where it intersects an unimproved road that currently provides access to a radio tower site in the project area. The central access route will follow this road (upgrades required) for approximately 1.75 miles east, where a new resource road could be constructed to access to any or all of proposed well pads S-1B, S-1J and S-12J. Beyond the exit to this new road, the central access route follows the existing road for approximately 1 mile to proposed Well Pad O-31O. Just east of this point, an existing road (upgrades required) leads south to access any or all of proposed well pads R-6P and R-7P. From this road, new resource roads could be constructed to access any or all of proposed well pads R-7B, R-18K and S-13P. Approximately 0.6 mile east of Well Pad O-31O, new resource roads could be constructed to access proposed well pads O-32J and O-31B. Approximately 1.2 miles east of Well Pad O-31O, the central Deeth-O'Neil access road intersects the southern Deeth-O'Neil access road. East of this intersection, the central access route continues for approximately 1 mile to intersect an existing southbound road that will access proposed Well Pad R-3M. From this road, new resource roads could be constructed to access any or all of proposed well pads R-4A, R-9A, and R-3G. Beyond this intersection, the central access route proceeds approximately 0.4 mile east to a new 0.1 mile resource road that could be constructed to access proposed Well Pad O-34K.

Deeth-O'Neil northern access road. On CR 753, approximately 1 mile north of the central Deeth-O-Neil access road, a new 1 mile resource road could be constructed to access proposed Well Pad N-25P.

Access to Deeth-O'Neil Road from Interstate-80 could be limited to light vehicles due to potential weight restrictions on a bridge on CR 753, south of the Interstate 80 underpass. In this case, heavy vehicles would access CR 753 from the Metropolis Road access route as described below.

Metropolis Road Access Route

U.S. highways 40 and 93 provide access to CR 754 from Interstate-80. U.S. Highway (US) 40 provides the most direct access from the west and US 93 provides the most direct access from the east. West of Wells, US 40 exits Interstate-80 at Exit 348 and proceeds approximately 3.7 miles eastward to Wells, at which point the highway becomes 6th Street. The access route continues approximately 0.6 mile on 6th Street and turns left on Humboldt Avenue, which is unpaved north of 6th Street. The route follows Humboldt Avenue for approximately 0.1 mile, turns right on 7th Street (unpaved), and proceeds approximately 0.04 mile to 8th Street (unpaved). The access route turns left onto 8th Street, crosses the railroad tracks, and continues on to CR 754/Upper Metropolis Road, which is paved.

East of Wells, US 93 intersects Interstate-80 at Exit 352. After exiting Interstate-80, the access route follows US 93 for approximately 0.1 mile, turns left onto 6th Street and proceeds approximately 1.1 mile to Humboldt Avenue. From there, the access route turns, right onto 7th Street, then left onto 8th Street and CR 754 as described above.

North of Wells, the eastern access route (accessed by either US 40 or US 93) proceeds approximately 1.6 miles on CR 754 to a Y-junction. From this point, the eastern access route

divides. Continuing straight beyond the Y-junction, the southern portion of the Metropolis Road access route follows an existing road that will not require upgrades for approximately 3 miles into the southeast corner of the project area. Approximately 0.2 mile inside the project area, new resource roads could be built to access any or all of proposed well pads R-27I, R-27F and R-27M.

From the Y-junction, the Metropolis Road access route continues north on CR 754 for approximately 2.5 miles and turns northwest for approximately 2.5 miles where it enters the project area. At this point, CR754 intersects an existing unimproved road (upgrades required) that will proceed southwest for approximately 2.5 miles to access any or all of proposed well pads R-14E, R-10N, R-21A and R-21K. From this road, new resource roads would be required to access well pads R-14E and R-10N.

In the event that weight restrictions limit use of southern portions of the Deeth-O'Neil access route to light vehicles, Metropolis Road may also be used to access central and western portions of the project area. For heavy vehicles using Metropolis Road to access CR753, the Metropolis Road access route continues for approximately 5 miles through the northeast corner of the project area and another 5.7 miles north of the project area to the junction of CR 753 and CR 754. Trucks would turn south onto CR 753 and proceed approximately 8.4 miles to the Deeth-O'Neil central access road.

1.3 ROAD CONSTRUCTION AND IMPROVEMENTS

Up to 12.7 miles of new local and resource roads could be required to access the proposed well pads from existing and upgraded local roads. New roads will be constructed at the same time as the respective well pad construction. Up to 7.2 miles of new resource roads will generally require a 31-foot width of construction with a final road width of 21 feet with a 16 foot running surface for the road. Approximately 5.4 miles of new local roads will generally require a 39-foot width for construction with a final road width of 29 feet to include a 24 foot running surface and 5 feet for ditches (2.5 feet on either side of the road).

Up to 20.5 miles of existing two-track roads, including a maximum of 20.1 miles of local roads and 0.4 mile of resource roads, will require upgrading. Upgrading of these roads will occur within and outside the existing disturbance of the existing two-track roads. Construction of local roads will require a 39 foot width, with a final road width of 29 feet (24 foot running surface and 5 feet for ditches). Construction of resource roads will require a 31 foot road width, with a final width of 21 feet (16 foot running surface and 5 feet for ditches).

The proposed access roads will be constructed and upgraded to meet standards for the anticipated traffic flows and all-weather requirements. Roads will be crowned or sloped, drained with ditches, culverts and/or water dips, and constructed, sized, and surfaced in compliance with the BLM/Forest Service *Surface Operating Standards and Guidelines for Oil and Gas Development*, also known as the *Gold Book* (BLM/Forest Service, 2007) and the BLM's *9113 Roads Manual* (2011).

Noble will implement the following measures during road construction in accordance with BLM Recommended Operating Procedures:

- Low water crossings (no fill) or adequately sized culverts will be used where access roads cross intermittent or perennial drainages. Fill will not obstruct water flow.

- All bladed roads will be waterbarred as necessary with the following spacing:

Road Grade (percent)	Spacing Between Waterbars (feet)
10 to 14	200 to 100
6 to 10	300 to 200
4 to 6	400 to 300
Less than 4	only as needed

- When a fence is cut to allow access to a site, a temporary gate will be installed to prevent livestock from passing through the opening; the fence will be repaired to its original condition or better as soon as possible.
- Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose.
- Roads designed to safe standard for intended use.
- Restrict vehicle traffic to only authorized users on newly constructed routes where specified by the county, landowners and/or the BLM (use signing, gates, etc.).
- Construct road crossing at right angles to ephemeral drainages and stream crossings.
- Transportation planning to align roads out of sight and sound of occupied leks where practicable.

1.4 ROAD MAINTENANCE

Noble will coordinate with the Elko County Road Department to insure that use of county roads conforms with issued use permits, rights of way, and other county requirements. Paved roads are not likely to require improvement or maintenance prior to or during project construction. Primary access routes will be maintained by the Nevada Department of Transportation (NDOT), Elko County, and the City of Wells (see Table 1). Roads with gravel or dirt surfaces (generally local and resource roads in and near the project area) will be likely to require maintenance to pre-existing conditions during construction and operation. Noble will maintain these roads. Noble and its contractors will comply with Wells city ordinances concerning the use and maintenance of city streets.

Noble will maintain roads in accordance with BLM *9113 Road Manual* specifications (BLM, 2011) and the BLM/Forest Service *Gold Book* (BLM and Forest Service, 2007). Noble will be responsible for all maintenance actions necessary to provide all-weather access to roads in the project area and Noble will provide timely maintenance and cleanup of access roads to pre-existing conditions. Existing main roads used as access that are substantially damaged by construction and/or operational traffic will be repaired to the condition existing prior to project activities.

Maintenance will include, but not be limited to: dust abatement; reconstruction of the crown, slope, and/or water bars; blading or resurfacing; material application; clean-out of ditches, culverts, catchments; snow plowing, and other BMPs.

In accordance with the BLM Recommended Operating Procedures, roads will not be bladed directly up drainages and will be designed at right angles to the drainage. Roads bladed in drainages will be located a sufficient height above the channel so that fill material does not enter the drainage channel.

Posted speed limits will be followed. Where there is no posted speed limit, speeds on unpaved access roads and disturbed areas will not exceed 20 miles per hour.

According to BLM Recommended Operating Procedures, saturated soil conditions exist when water is flowing on the ground surface; water comes to the ground surface from walking or driving across the soil; the ground surface is spongy when walked upon; ruts 3 inches or deeper result from driving across the ground surface; vehicles get stuck in mud; a dozer is needed to pull vehicles through the mud, etc. When saturated soil is present, construction travel only will be halted until soil material dries out or is frozen sufficiently for use to proceed without undue damage and erosion to soils and roads. When rutting of the travel-way reaches a depth of 3 inches, maintenance or upgrade will be conducted as approved by the BLM.

Dust suppression will be implemented by spraying water on unpaved roads on an as-needed basis. Magnesium chloride and other surfactants, binding agents, or other dust-suppression chemicals will not be used for dust control without prior approval from the BLM.

1.5 TRAFFIC LEVELS

1.5.1 Construction Traffic

Noble intends to use one drill rig in the first year of project construction. Traffic associated with drilling a single well will be limited because on-site water wells are expected to provide approximately 70 percent of the water required for drilling and completions. Additionally, all drilling workers will be housed on the well pad in self-contained mobile modular buildings and will remain on-site while the well is being drilled. Traffic associated with drilling a single well will include approximately six vehicles per day. Typical traffic levels in the project area during the first year will occur with one vertical/directional (production) well being drilled, one vertical/directional (production) well being completed, deliveries, and dust control. At these times, project-related traffic will potentially include 26 light vehicle and 20 heavy vehicle round-trips, for a total of 46 round-trips per day. Noble anticipates that two drill rigs will be used during the second and any subsequent years of construction. With two drill rigs drilling two vertical/directional wells, typical traffic levels in the project area will potentially include 30 light vehicle and 21 heavy vehicle round-trips, for a total of 51 round-trips per day (see Table 2).

The days on which drilling crew changes occur (every 14 days), there could be up to 30 additional light vehicle round trips. Additional traffic will also occur during periods of rig mobilization, which includes moving the modular structures sited on the well pad. Rig mobilization is expected to include 5 days for rig set-up and 5 days for rig take-down. During

these 10 days, additional traffic in the project area will include nine light vehicles and 15 heavy vehicles (75 trucks over 5 days).

Table 2
Marys River Estimated Typical Construction Traffic in Vehicle Round Trips per Day

Construction Activity	Duration (days)	Peak Vehicle Round-Trips per Day		
		Light Vehicle	Heavy Vehicle	Total Vehicles
Drilling	50	4[1]	2[2]	6
Completion	5 - 21	12[3]	17[4]	29
Service and Deliveries	50	10[5]	0	10
Dust Control	71	0	1[6]	1
Total Typical Construction Traffic – Year 1[7,8]		**26**	**20**	**46**
Total Typical Construction Traffic – Year 2[7,9]		**30**	**21**	**51**

[1] All drilling workers are housed in on-site temporary crew quarters and remain on-site for 14 days. Light vehicles include four miscellaneous personal vehicles per drill pad.
[2] Based on 30 percent of the water required to drill a vertical/directional well (3,000 barrels) delivered in 120 barrel capacity trucks over 50 days. Includes one additional truck per day delivering supplies (e.g. casing deliveries, cement trucks, wireline logging trucks) to each drill pad.
[3] Includes completion workers carpooling in ten vehicles and two supervisor vehicles.
[4] Based on 30 percent of the water required to complete a vertical/directional well (6,000 barrels) being delivered in 120 barrel capacity trucks over 21 days. Includes 15 additional trucks delivering equipment and materials for well completion.
[5] Includes equipment and supply deliveries and service visits.
[6] Based on one 100 barrel capacity truck applying 80 barrels of water per mile per day to unpaved access roads.
[7] Because access road and pad construction, drilling the water well, drilling and completing the production well, and interim reclamation occur sequentially at each site location, typical traffic levels include drilling, completion, service/delivery, and dust control traffic only.
[8] Based on one vertical/directional well being drilled and one vertical/directional well being completed.
[9] Based on two vertical/directional wells being drilled and one vertical/directional well being completed.

Depending on the test results of wells drilled during the first year, Noble may drill up to four horizontal wells during following years. If horizontal wells are drilled and completed, peak traffic could occur with one well pad under construction, two drill rigs and one completion team (completing a horizontal well) in operation, supplies being delivered, and dust suppression and interim reclamation being conducted. Under these conditions, peak traffic could potentially include 35 light vehicle and 48 heavy vehicle round trips, for a total of 83 round-trips per day (see Table 3). This peak traffic would only occur during completion of a horizontal well (21 days for each of four wells) and when two wells are being drilled at the same time.

Estimated peak traffic levels are based on several assumptions; the foremost being that horizontal wells are developed and that the maximum number of vehicles associated with each construction activity would travel on the same day. Typical traffic levels during construction are likely to be lower than the peak traffic estimates shown in Table 3, depending on the number of construction activities taking place and the extent of each activity being conducted.

Table 3
Marys River Estimated Peak Construction Traffic in Vehicle Round Trips per Day (Year 2)

Construction Activity	Duration (days)	Peak Vehicle Round-Trips per Day		
		Light Vehicle	Heavy Vehicle	Total Vehicles
Road and Pad Construction	5	5[1]	4[2]	9
Drilling [3]				
One vertical well	50	4	2	6
One horizontal well	65	4	2	6
Completion				
One horizontal well	21	12[3]	39[4]	51
Service and Deliveries[3]	50-65	10	0	10
Dust Control[3]	100	0	1	1
Interim Reclamation	3	0	1	1
Total Peak Construction Traffic		**35**	**48**	**83**

[1] Based on carpooling, with four personal vehicles for seven workers, and one supervisor light vehicle.
[2] Includes four trucks hauling gravel. Heavy equipment for road and pad construction will remain on-site.
[3] See footnotes for Table 2.
[4] Based on 30 percent of the water required to complete a horizontal well (60,000 barrels) hauled in 120 barrel trucks over a 21 day completion period. Includes 15 additional trucks delivering equipment and materials for well completion.

1.5.2 Operational Traffic

Traffic during the production-only phase will include pumper and maintenance vehicles and trucks hauling oil and possible produced water. Production traffic will occur 5 days a week, Monday through Friday. One pumper truck will visit each well pad approximately once per day, and one maintenance vehicle will visit each well pad approximately 10 days per year, and one water truck will apply water to unpaved roads on an as-needed basis. Noble expects that 12 wells in the project area could produce up to 250 barrels of oil (and possibly 100 barrels of produced water) per day, and that eight wells could produce up to 100 barrels of oil (and possibly 40 barrels of produced water) per day. An average of 1.75 oil trucks and 1.2 water trucks per day will visit each well that produces 250 barrels of oil per day. An average of 0.7 oil trucks and 0.5 water trucks per day will visit each well that produces 100 barrels of oil per day. Oil will be hauled to refineries in Salt Lake City, Utah and California; and possible produced water will be hauled to an on-site disposal well or disposal facilities in Roosevelt, Utah. With up to 20 wells in production, peak operational traffic will include 35 vehicle round-trips per day (see Table 4). Actual traffic levels during Production/Operations will depend on the amount of oil and water produced per well, and will decrease over the life of the project due to declining well productivity.

Table 4
Marys River Estimated Peak Operational Traffic Requirements in Vehicle Round Trips per Day

Development Phase Component	Peak Vehicle Round-Trips per Day		
	Light Vehicles	Heavy Vehicles	Total Vehicles
Pumper[1]	1	0	1
Maintenance[2]	1	0	1
Oil Trucks[3]	0	19	19
Produced Water Trucks[4]	0	13	13
Dust Control[5]	0	1	1
Total Production Vehicles	**2**	**33**	**35**

[1] One pumper visit per day per well.
[2] One maintenance truck serves all wells.
[3] Based on oil production of 250 barrels/day from 12 wells and 100 barrels/day from eight wells transported in 200 barrel trucks.
[4] Based on 100 barrels of produced water/day from wells producing 250 barrels of oil/day and 40 barrels of produced water/day from wells producing 100 barrels of oil/day transported in 120 barrel trucks. This traffic would be contained within the project area if produced water is disposed of in an on-site injection well.
[5] Dust suppression on unpaved road surfaces is conducted on an as-needed basis.

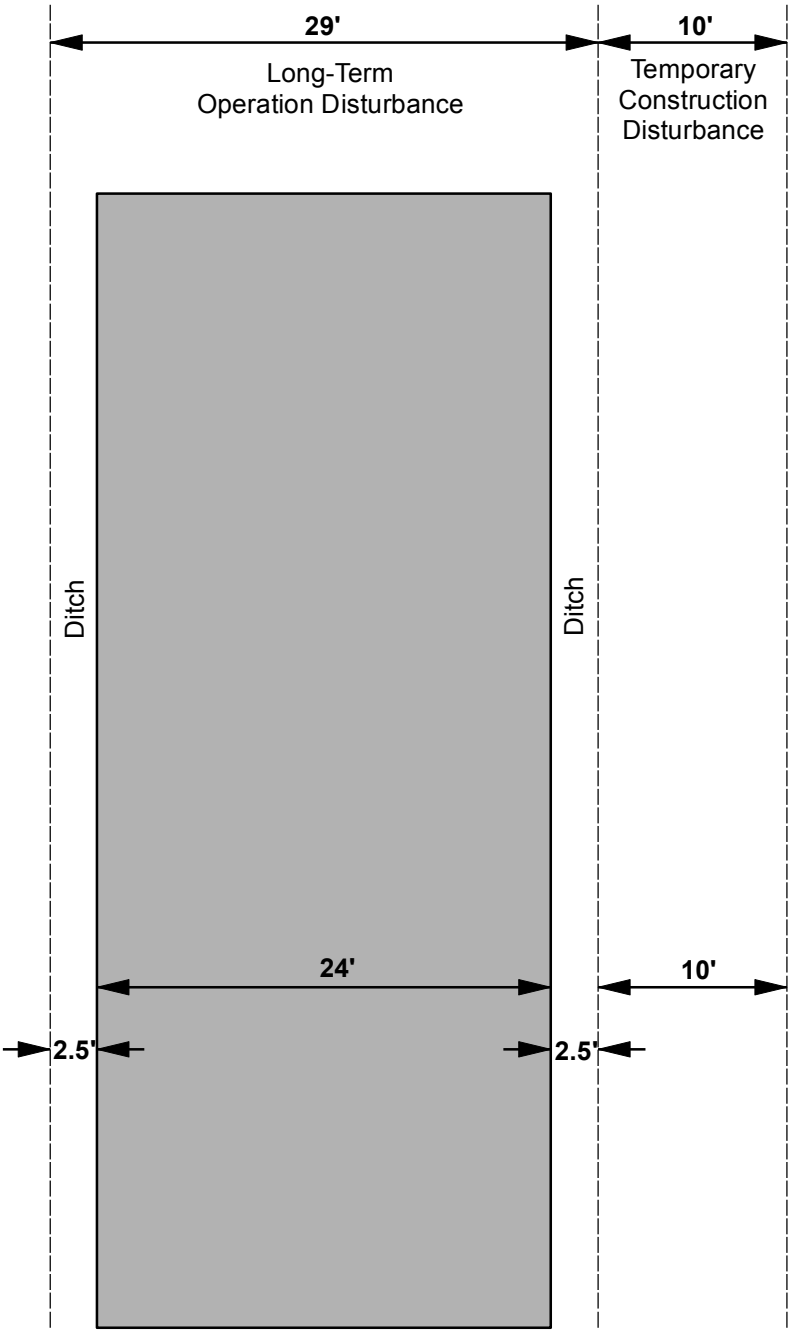
References:

Bureau of Land Management, 2011. Manual 9113 – Roads. Manual Transmittal Sheet Release 9-390. October 21. Accessed online: www.blm.gov/pgdata/etc/medialib/blm/wo/Information_Resources_Management/policy/blm_manual.Par.52428.File.dat/9113.pdf.

Bureau of Land Management and Forest Service (BLM and Forest Service). 2007. Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development. Gold Book. Fourth Edition.

Exhibit D

Typical Drawings



Project

Marys River Exploration Project

Title

Local/Collector Road
Disturbance Footprint

noble energy

Project No. 012-04			File No.
GIS:	JST	10/07/2013	Scale: NONE Rev 0
Check:	MAB	10/07/2013	Figure 1
Review:	MAB	10/07/2013	

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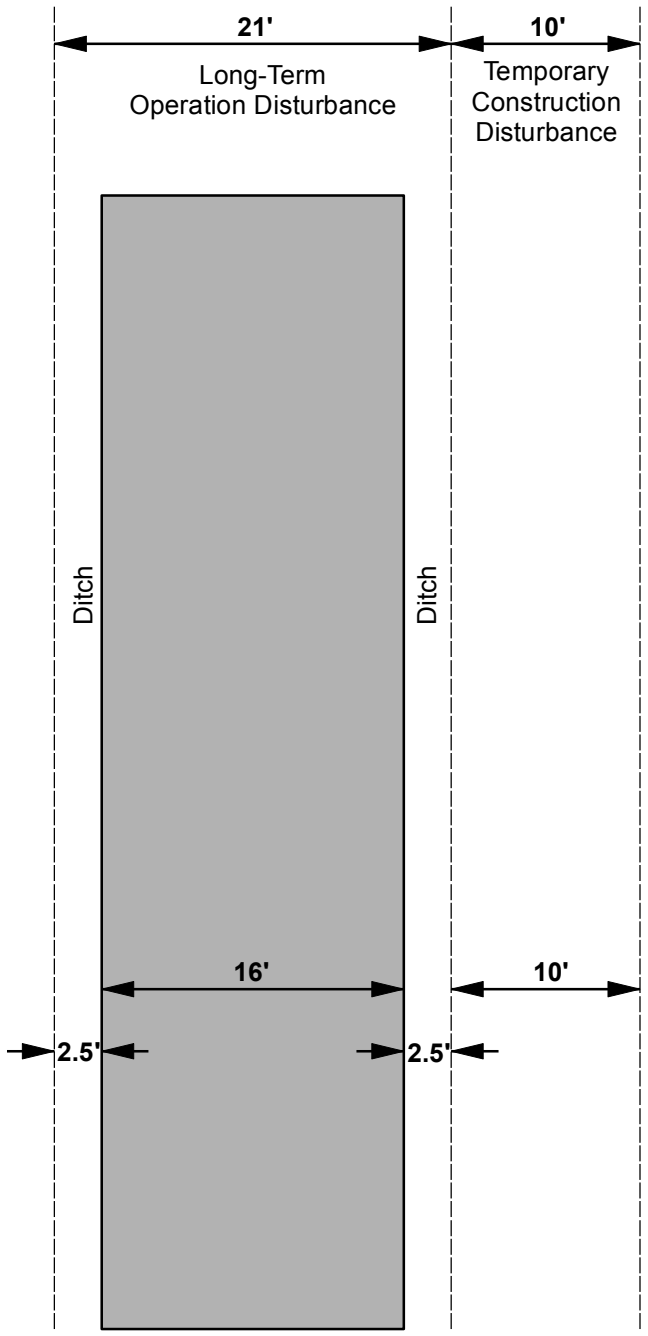

Project

Marys River Exploration Project

Title

Resource Road
Disturbance Footprint

noble energy

Project No. 012-04			File No.
GIS:	JST	10/07/2013	Scale: NONE Rev 0
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Review:	MAB	10/07/2013	

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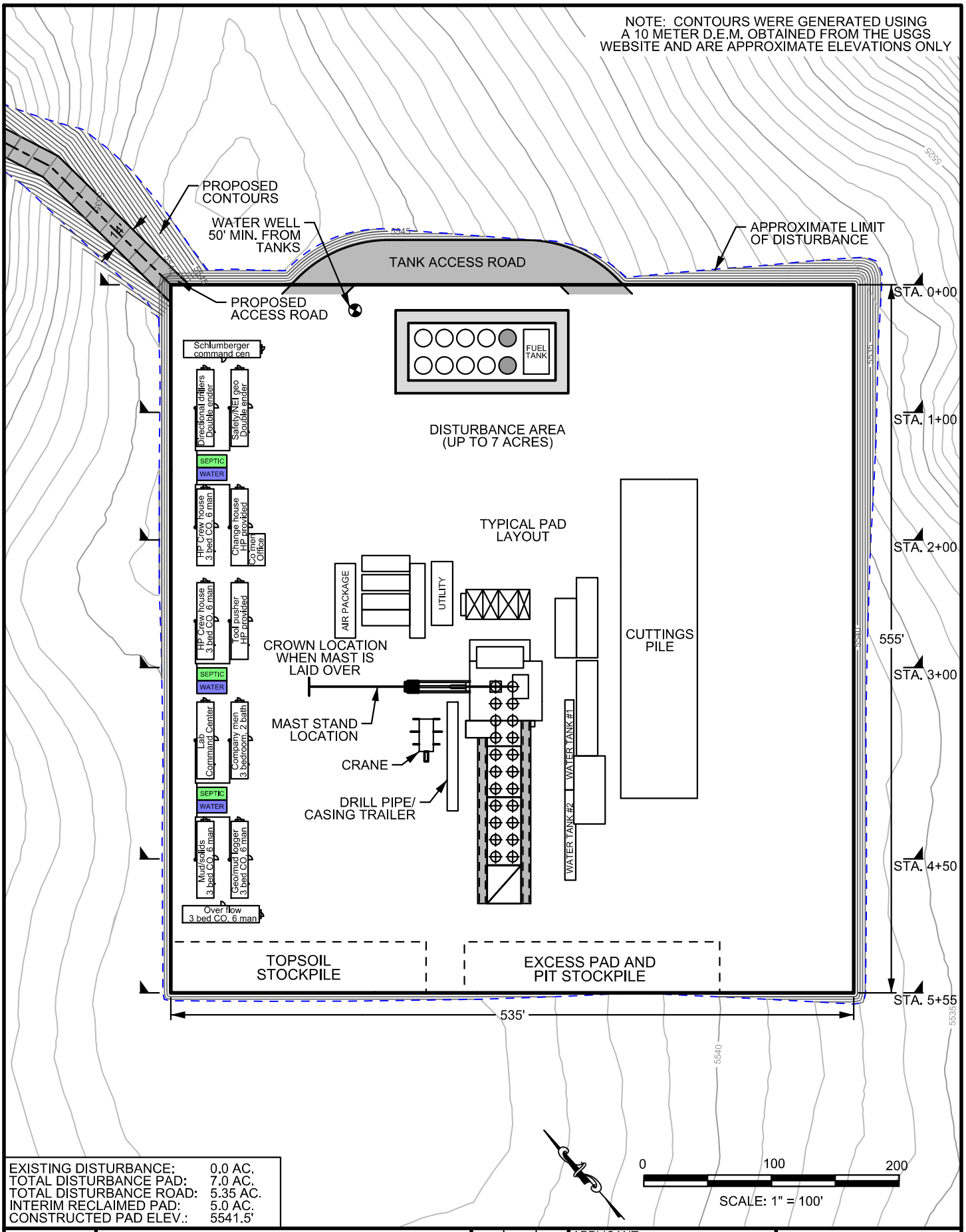

EXISTING DISTURBANCE:	0.0 AC.
TOTAL DISTURBANCE PAD:	7.0 AC.
TOTAL DISTURBANCE ROAD:	5.35 AC.
INTERIM RECLAIMED PAD:	5.0 AC.
CONSTRUCTED PAD ELEV.:	5541.5'

Figure 3

MARYS RIVER EXPLORATION PROJECT SURFACE USE PLAN

TYPICAL WELL SITE LAYOUT PAD LOCATION - SEVEN ACRES

DSGN	DATE	CKD
DSD	06/12	STH
REV	DATE	CKD
DDP	03/13	STH
DDP	12/20/13	STH

JOB # 2012-084

APPLICANT:
noble energy
1625 BROADWAY, SUITE 2200
DENVER, CO 80202
(303) 228-4000

WWC ENGINEERING
1275 MAPLE STREET, SUITE F
HELENA, MT 59601
(406) 443-3962

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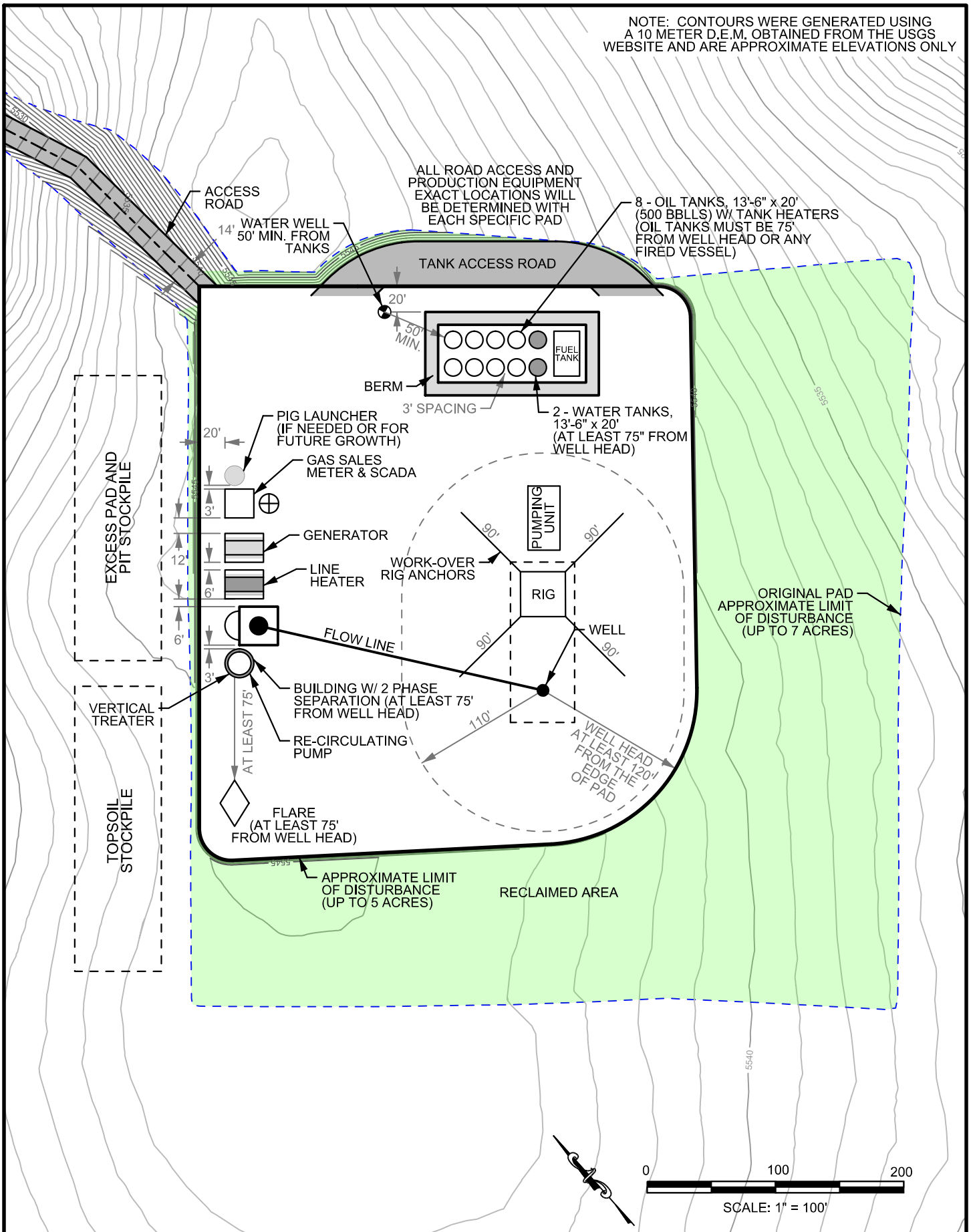

Figure 4

MARYS RIVER
EXPLORATION PROJECT
SURFACE USE PLAN

LOCATION OF PRODUCTION FACILITIES
SEVEN ACRES

DSGN	DATE	CKD
DSD	06/12	STH
REV	DATE	CKD
DDP	03/13	STH

JOB # 2012-084

APPLICANT:
noble energy
1625 BROADWAY, SUITE 2200
DENVER, CO 80202
(303) 228-4000

WWC ENGINEERING
1275 MAPLE STREET, SUITE F
HELENA, MT 59601
(406) 443-3962

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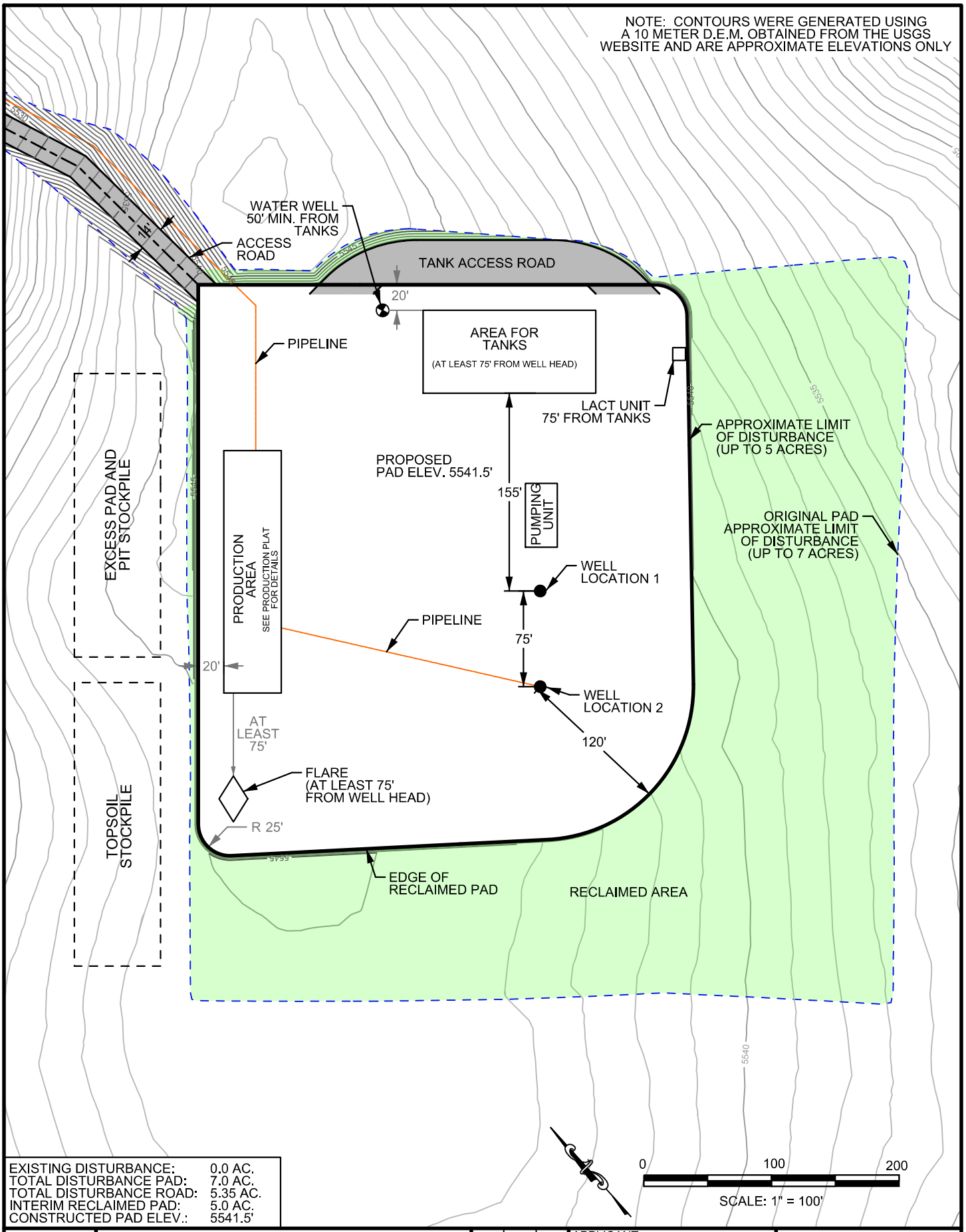

EXISTING DISTURBANCE:	0.0 AC.
TOTAL DISTURBANCE PAD:	7.0 AC.
TOTAL DISTURBANCE ROAD:	5.35 AC.
INTERIM RECLAIMED PAD:	5.0 AC.
CONSTRUCTED PAD ELEV.:	5541.5'

Figure 5

MARYS RIVER EXPLORATION PROJECT SURFACE USE PLAN

PLANS FOR RECLAMATION OF THE SURFACE - SEVEN ACRES

DSGN	DATE	CKD
DSD	06/12	STH
REV	DATE	CKD
DDP	03/13	STH

JOB # 2012-084

APPLICANT:
noble energy
1625 BROADWAY, SUITE 2200
DENVER, CO 80202
(303) 228-4000

WWC ENGINEERING
1275 MAPLE STREET, SUITE F
HELENA, MT 59601
(406) 443-3962

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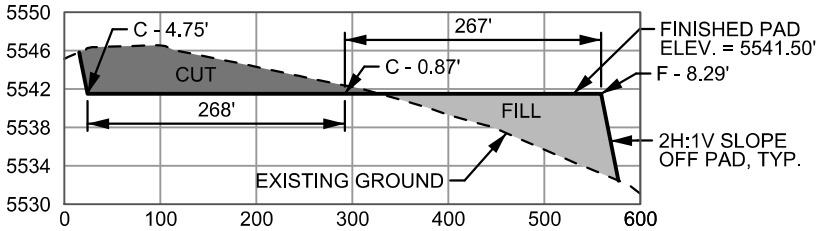

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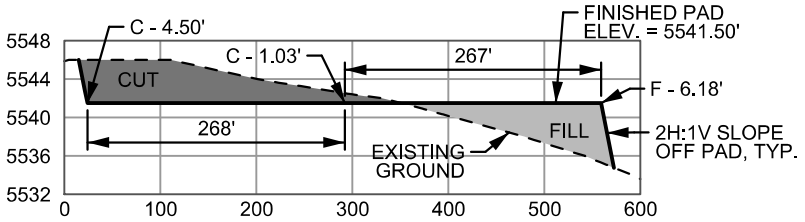

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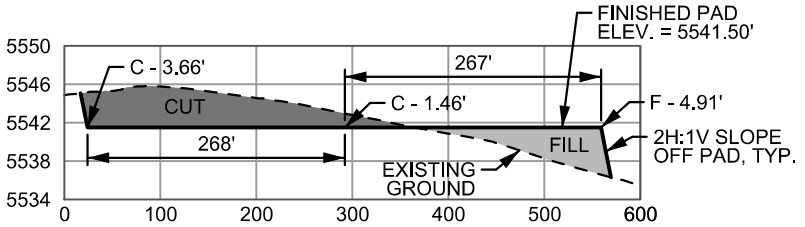

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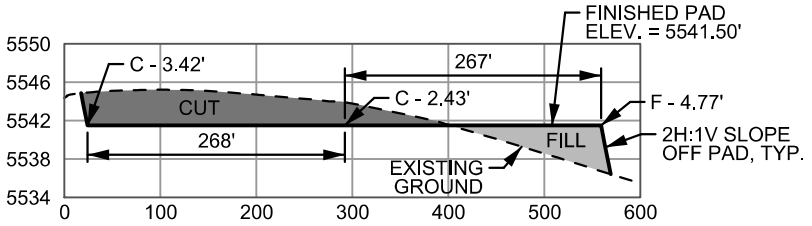

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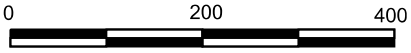

SCALE: 1" = 200'

APPROXIMATE YARDAGES			
6" TOPSOIL STRIPPING	=	5,994	CY
TOTAL CUT (EXCLUDING 6" TOPSOIL STRIPPING)	=	15,315	CY
TOTAL FILL (INCLUDING 5% FOR COMPACTION)	=	14,215	CY
BALANCE (EXCLUDING 6" TOPSOIL STRIPPING)	=	1,100	CY

APPROXIMATE ACREAGES		
WELL SITE DISTURBANCE	=+/- 7.0	ACRES
ACCESS ROAD DISTURBANCE	=+/- 5.35	ACRES
TOTAL	=+/- 12.35	ACRES

Figure 6

MARYS RIVER
EXPLORATION PROJECT
SURFACE USE PLAN

WELLSITE LAYOUT PROPOSED PAD
CROSS SECTIONS - SEVEN ACRES

DSGN	DATE	CKD
DSD	06/12	STH
REV	DATE	CKD
DDP	03/13	STH

JOB # 2012-084

APPLICANT:
noble energy
1625 BROADWAY, SUITE 2200
DENVER, CO 80202
(303) 228-4000

WWC ENGINEERING
1275 MAPLE STREET, SUITE F
HELENA, MT 59601
(406) 443-3962

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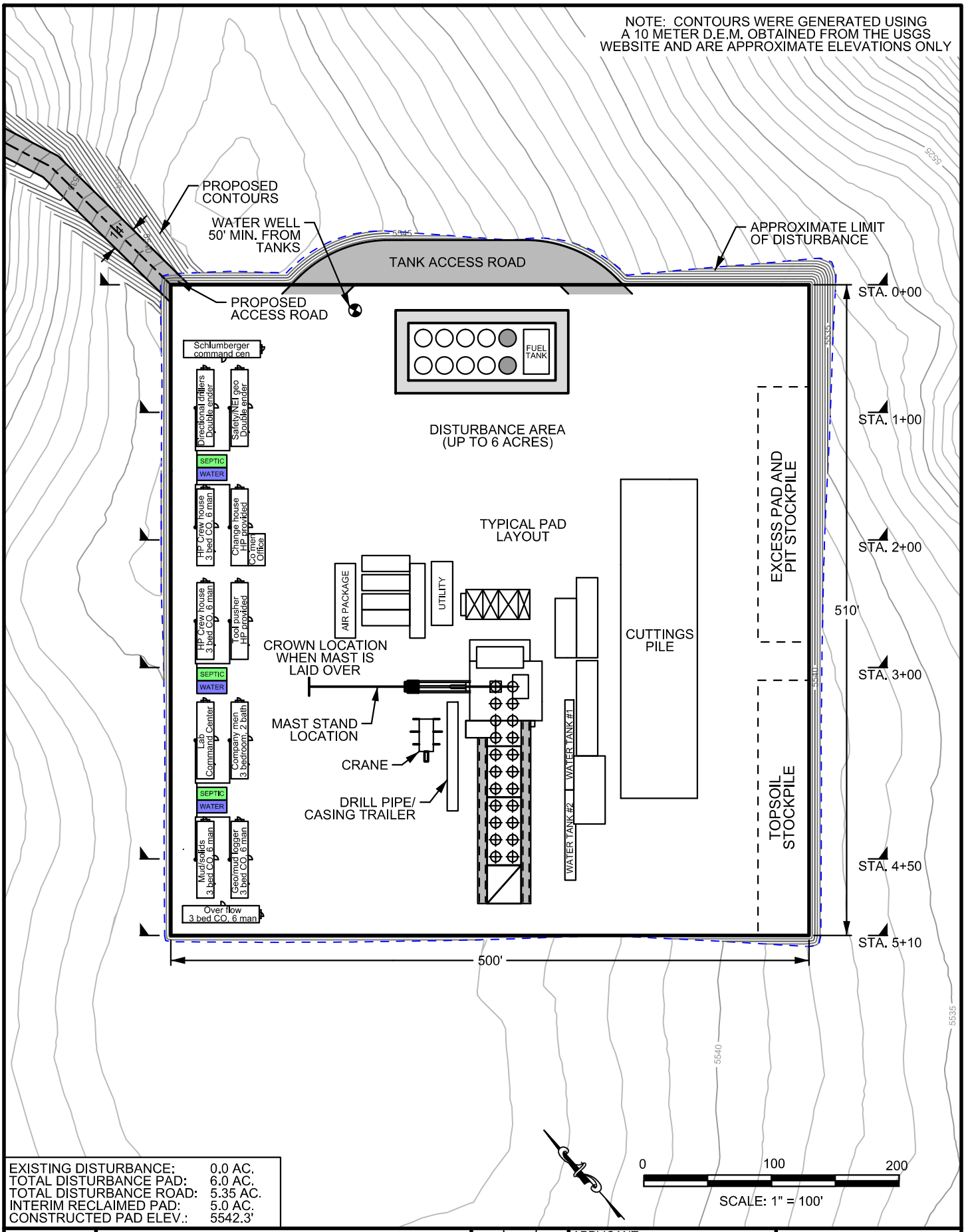

EXISTING DISTURBANCE:	0.0 AC.
TOTAL DISTURBANCE PAD:	6.0 AC.
TOTAL DISTURBANCE ROAD:	5.35 AC.
INTERIM RECLAIMED PAD:	5.0 AC.
CONSTRUCTED PAD ELEV.:	5542.3'

Figure 7

MARYS RIVER EXPLORATION PROJECT SURFACE USE PLAN

TYPICAL WELL SITE LAYOUT PAD LOCATION - SIX ACRES

DSGN	DATE	CKD
DSD	06/12	STH
REV	DATE	CKD
DDP	03/13	STH
DDP	12/20/13	STH

JOB # 2012-084

APPLICANT:
noble energy
1625 BROADWAY, SUITE 2200
DENVER, CO 80202
(303) 228-4000

WWC ENGINEERING
1275 MAPLE STREET, SUITE F
HELENA, MT 59601
(406) 443-3962

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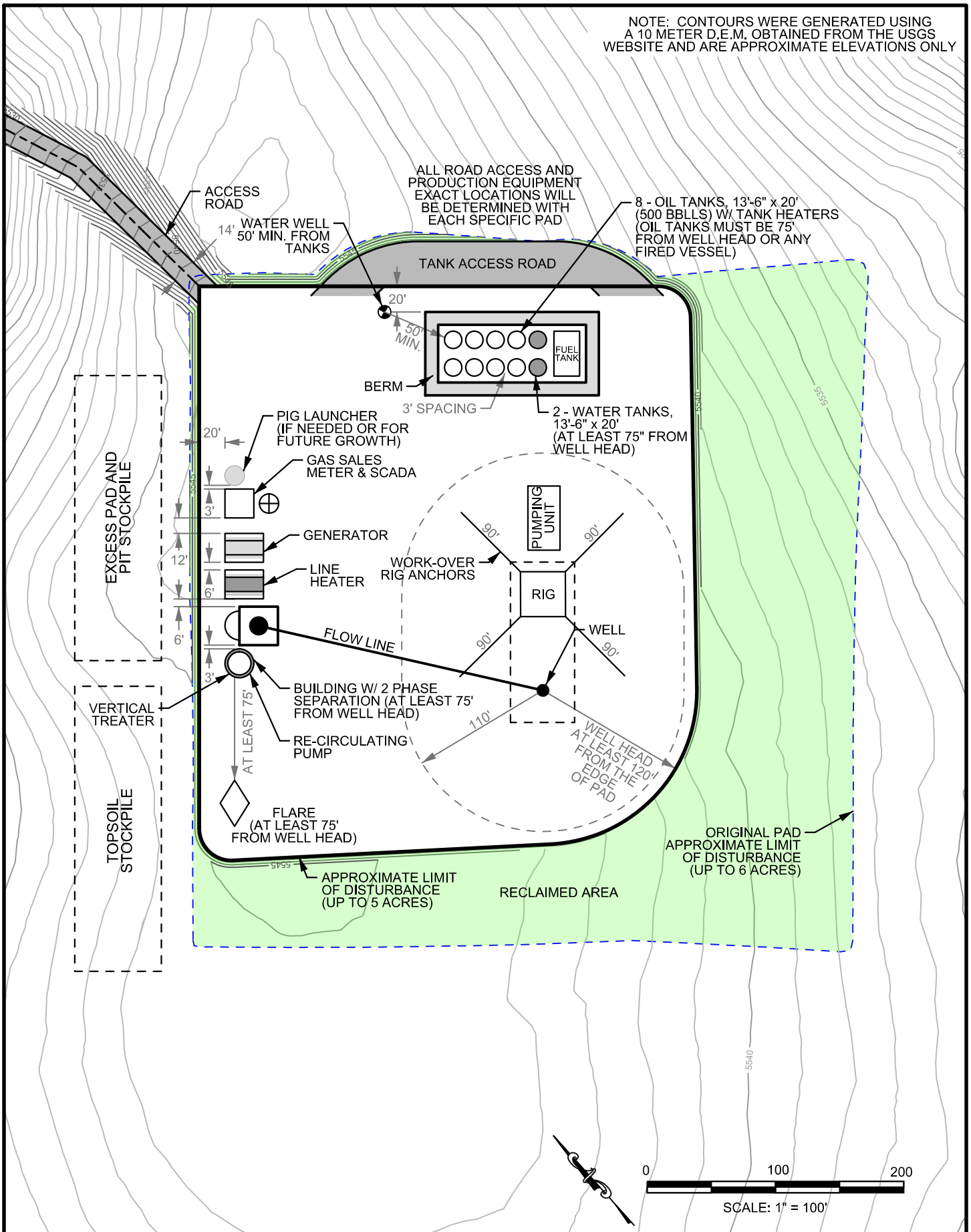

Figure 8

MARYS RIVER
EXPLORATION PROJECT
SURFACE USE PLAN
LOCATION OF PRODUCTION FACILITIES
SIX ACRES

DSGN	DATE	CKD
DSD	06/12	STH
REV	DATE	CKD
DDP	03/13	STH

JOB # 2012-084

APPLICANT:
noble energy
1625 BROADWAY, SUITE 2200
DENVER, CO 80202
(303) 228-4000

WWC ENGINEERING
1275 MAPLE STREET, SUITE F
HELENA, MT 59601
(406) 443-3962

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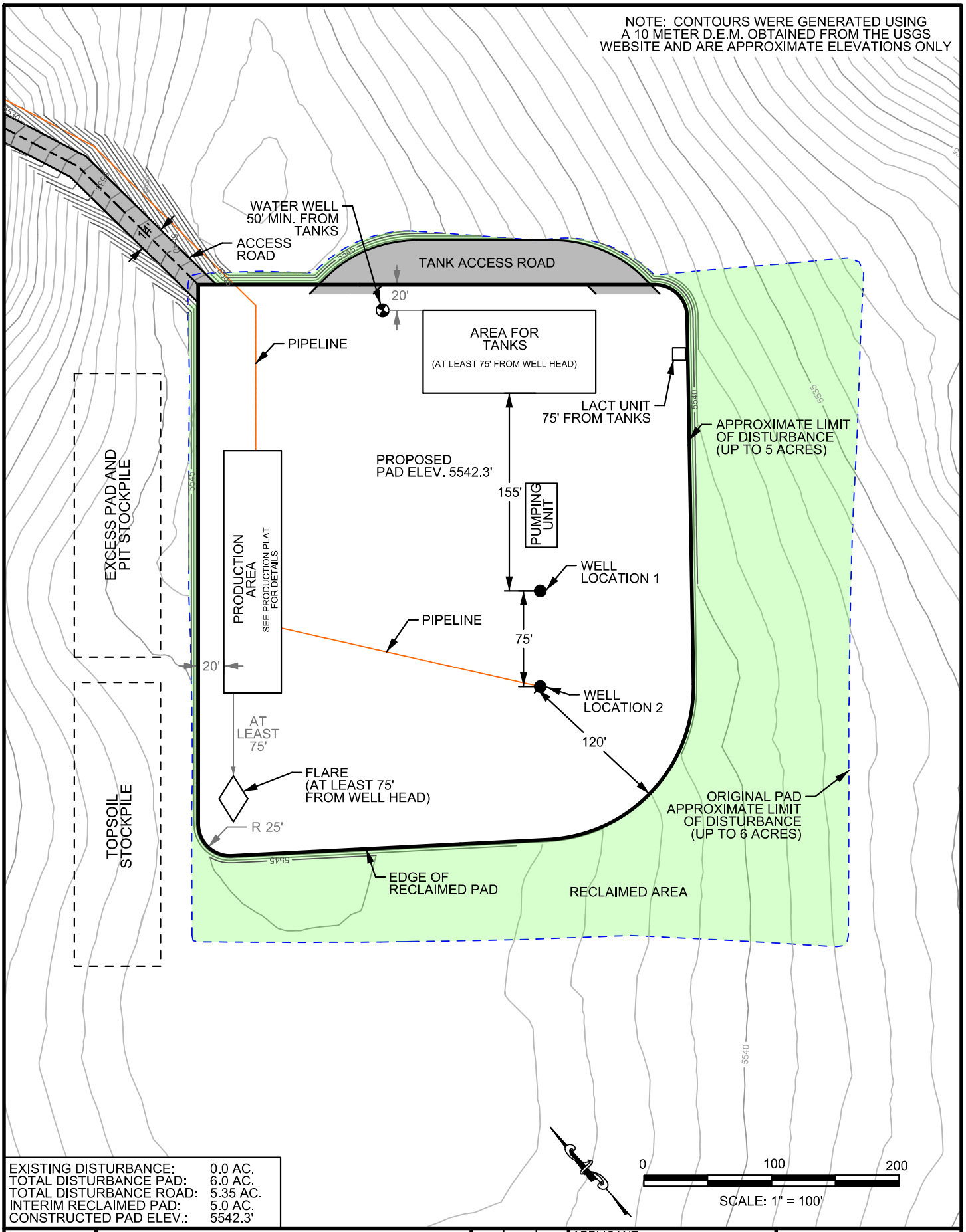

EXISTING DISTURBANCE:	0.0 AC.
TOTAL DISTURBANCE PAD:	6.0 AC.
TOTAL DISTURBANCE ROAD:	5.35 AC.
INTERIM RECLAIMED PAD:	5.0 AC.
CONSTRUCTED PAD ELEV.:	5542.3'

Figure 9

MARYS RIVER
EXPLORATION PROJECT
SURFACE USE PLAN

PLANS FOR RECLAMATION
OF THE SURFACE - SIX ACRES

DSGN	DATE	CKD
DSD	06/12	STH
REV	DATE	CKD
DDP	03/13	STH

JOB # 2012-084

APPLICANT:
noble energy
1625 BROADWAY, SUITE 2200
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HELENA, MT 59601
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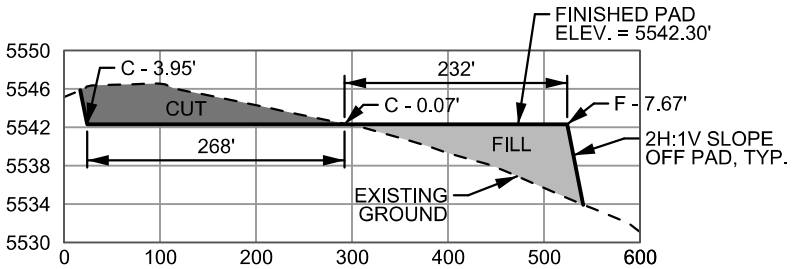

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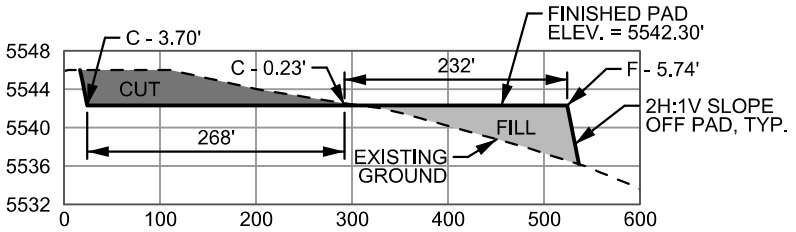

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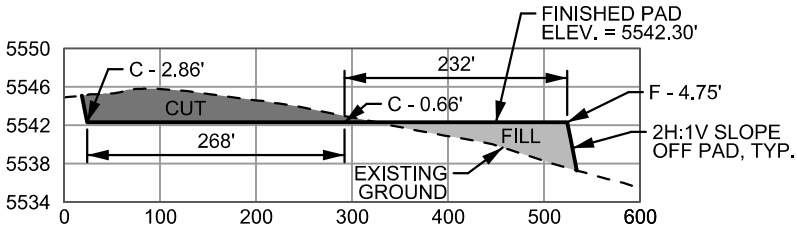

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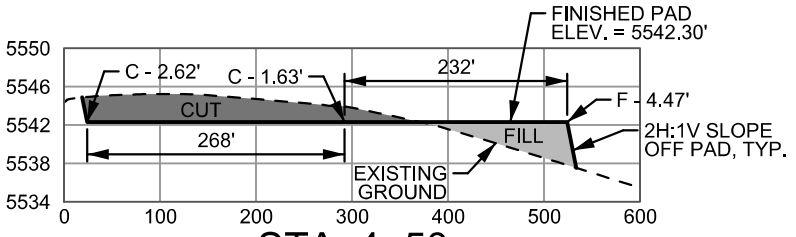

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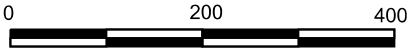

SCALE: 1" = 200'

APPROXIMATE YARDAGES			
6" TOPSOIL STRIPPING	=	5,152	CY
TOTAL CUT (EXCLUDING 6" TOPSOIL STRIPPING)	=	10,873	CY
TOTAL FILL (INCLUDING 5% FOR COMPACTION)	=	10,683	CY
BALANCE (EXCLUDING 6" TOPSOIL STRIPPING)	=	190	CY

APPROXIMATE ACREAGES		
WELL SITE DISTURBANCE	=+/- 6.0	ACRES
ACCESS ROAD DISTURBANCE	=+/- 5.35	ACRES
TOTAL	=+/- 11.35	ACRES

Figure 10

MARYS RIVER
EXPLORATION PROJECT
SURFACE USE PLAN

WELLSITE LAYOUT PROPOSED PAD
CROSS SECTIONS - SIX ACRES

DSGN	DATE	CKD
DSD	06/12	STH
REV	DATE	CKD
DDP	03/13	STH

JOB # 2012-084

APPLICANT:
noble energy
1625 BROADWAY, SUITE 2200
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PEN TABLE PATH: K:\NOBLE\12084\T11 EXAMPLE PLAT\PDF\EA PLAT PACKAGE\COLOR_EA_PACKAGE.tbl
3/20/2013 FILE PATH: K:\NOBLE\12084\T11 EXAMPLE PLAT\DGN\EA PLAT PACKAGE\MR FIELD EXHIBITS EA PACKAGE 11N-NAD83.dgn

Figure 11

Well Schematic/Drilling Sequence

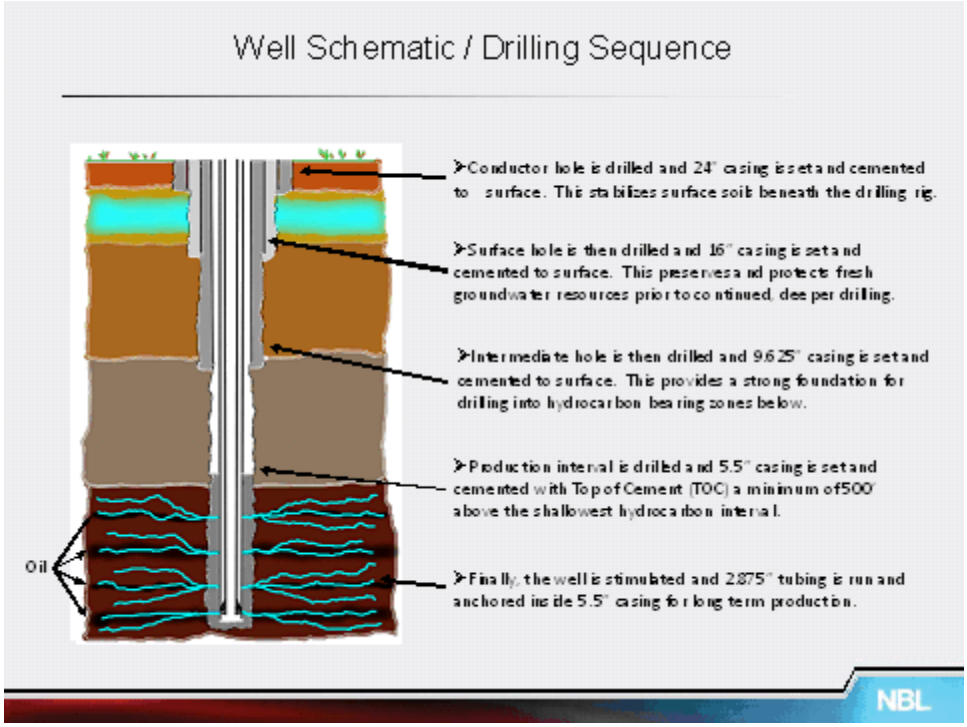
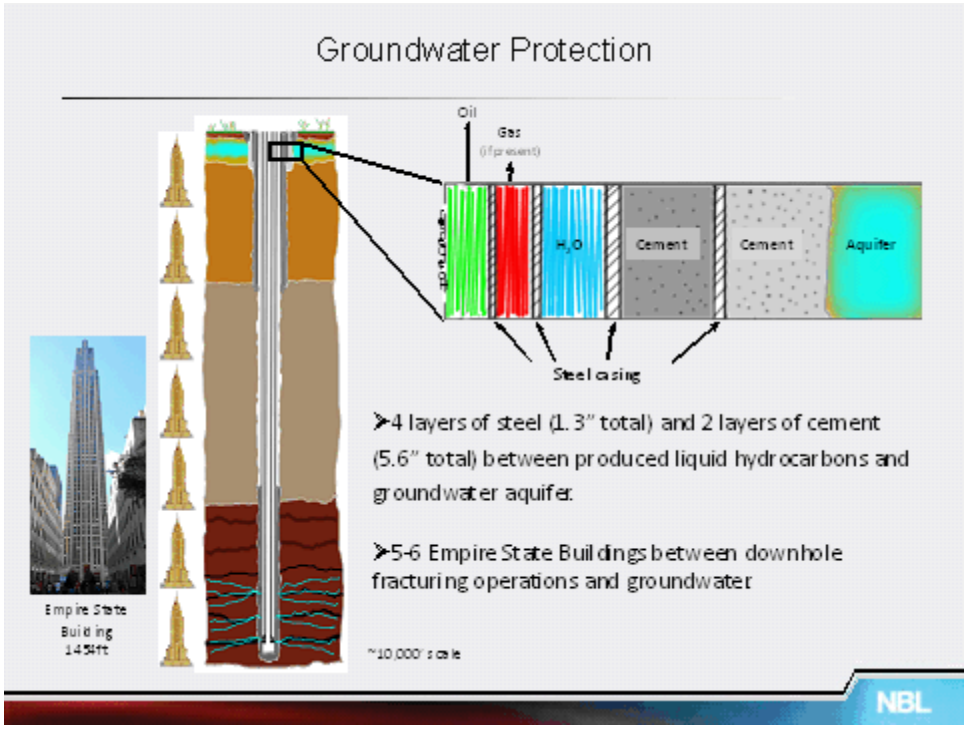


Figure 12

Groundwater Protection

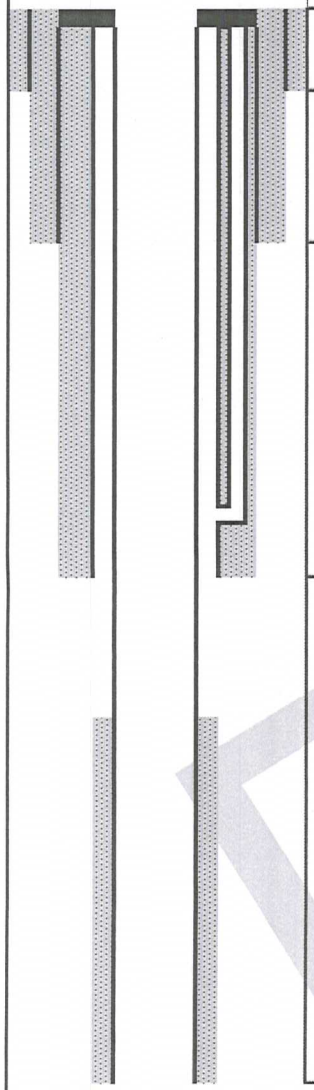


noble energy

Draft - DRILLING WELL PLAN

Initial Appraisal Well(s)
Elko Shale Vertical
Elko County, NV

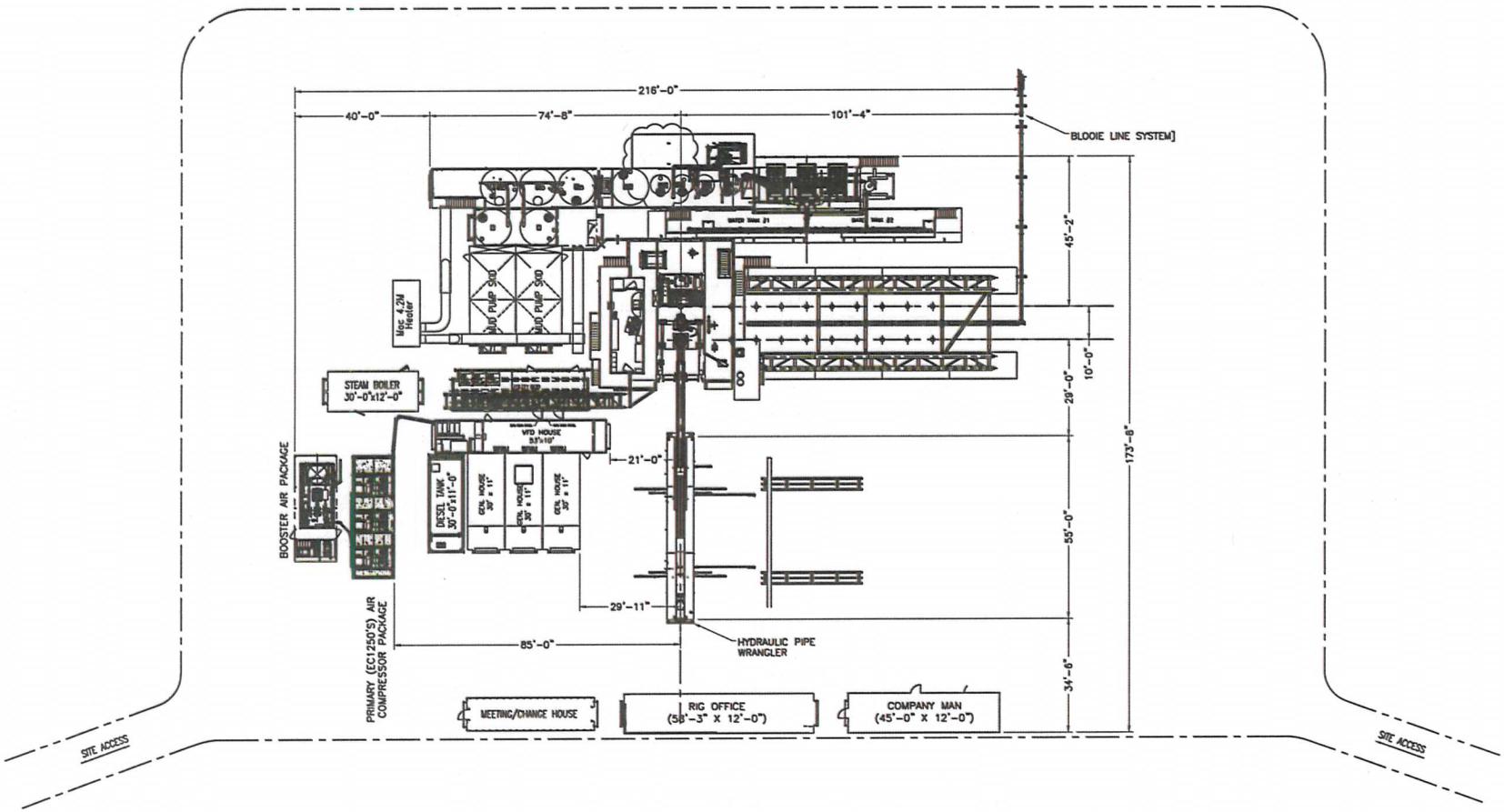
Figure 13



HOLE	CASING	GEOLOGY	Top	BOPE	MUD	CEMENT	LOGS	COMMENTS
28"	24"			n/a	Water	To surface	n/a	Stabilize surface fill/soil
	@ 80'	Conductor	80					
22"	16"			Rotating Head / Riser (Diverter)	Gel/Caustic Spud Mud	To surface Consider stab-in FC / cementing thru DP	n/a	Closed loop mud system Shoe > 500' from GL Do not shut in hot water flows Divert to tanks, kill with cold water
	@ 600'	Surf. Casing	600					
14.75"	9-5/8" w/ PAS	Valley Fill	Surface	Minimum: Rotating Head 16" 2M Annular	Water Based Mud	To surface excess based on caliper	Mudlogger from Surface casing shoe - 30' samples TD based on >80' of continuous shale Wireline logs at TD Temp survey	Closed loop mud system May be drilled with RC or conventional rig consider air package / aerated mud drilling if conventional. Install PAS for aeration while drilling production interval DV tool on location 2stage contingency pre-planned
		Humboldt	0-2000					
	@ 3000' - 4000'	Int. Casing	3000-4000					
8.75"	5-1/2"			Rotating Head 11" 5M Annular Blind rams Pipe rams Mudcross	Water Based Mud	Low density slurry using beads or foam excess based on caliper	FIT immediately following drillout Mudlogger <= 30' samples Wireline logs at TD Temp survey Sidewall cores	Closed loop mud system Cuttings disposal pit on location Air package on standby for PAS operation if needed Baby buster rigged up if aerating to maintain gas sampling integrity Directional tools on location from drillout, expect strong deviation tendency by 5000' TD based on 150' of Paleozoics
		Indian Well	4000-6000					
		Elko	8000-11000					
		Paleozoics	8550-13500					
	@ 8700' - 13700'	TD	8700-13700					

DRAFT

Figure 14



ISSUED FOR FABRICATION
March-26-2009
DRAFTSMAN
ENGINEER

REV	DATE	DESCRIPTION	BY
D	18 Mar 09	removed second mud cleaner	BJCook
C	3-11-09	Relocated Boiler and Adjusted Plug Points to Drawn Dwg 127282F002	CAM
B	3-06-09	ADJUSTED VFD POSITION AND REVISED AIR PKG ARRANGEMENT	CAM
A	03-03-09	ISSUED FOR FABRICATION; ADD SHEETS 2 & 3	MWL

ENGINEERING APPROVAL | DATE

HELMERICH & PAYNE INTERNATIONAL DRILLING CO.

TITLE: RIG SITE LAYOUT PLAN VIEW, WINTERIZED F4SA

CUSTOMER: NOBLE

PROJECT: F4SA RIG 343

DRAWN: BJCook | DATE: 24 Nov 08 | DWG. NO.: NO-D0001 | REV: D

SCALE: 1/16" = 1' | SHEET: 1 OF 3

PROPRIETARY

THIS DRAWING AND THE IDEAS AND INFORMATION INCLUDED IN THIS DRAWING ARE PROPRIETARY AND ARE NOT TO BE REPRODUCED, DISTRIBUTED OR DISCLOSED IN ANY MANNER, WITHOUT THE PRIOR, WRITTEN CONSENT OF A DULY AUTHORIZED OFFICER OF HELMERICH & PAYNE INT'L DRILLING CO.

Figure 15

LEGEND

- KNIFE GATE VALVE (AIR)
- KNIFE GATE VALVE (MANUAL)
- EXPANSION JOINT
- REDUCER
- DIRECTION OF FLOW
- BUTTERFLY VALVE
- HAMMER UNION
- HAMMER SEAL
- GATE
- BLIND FLANGE
- HOSE
- TYPE 'D' FEMALE CAM & GROOVE COUPLING
- DE-AERATOR

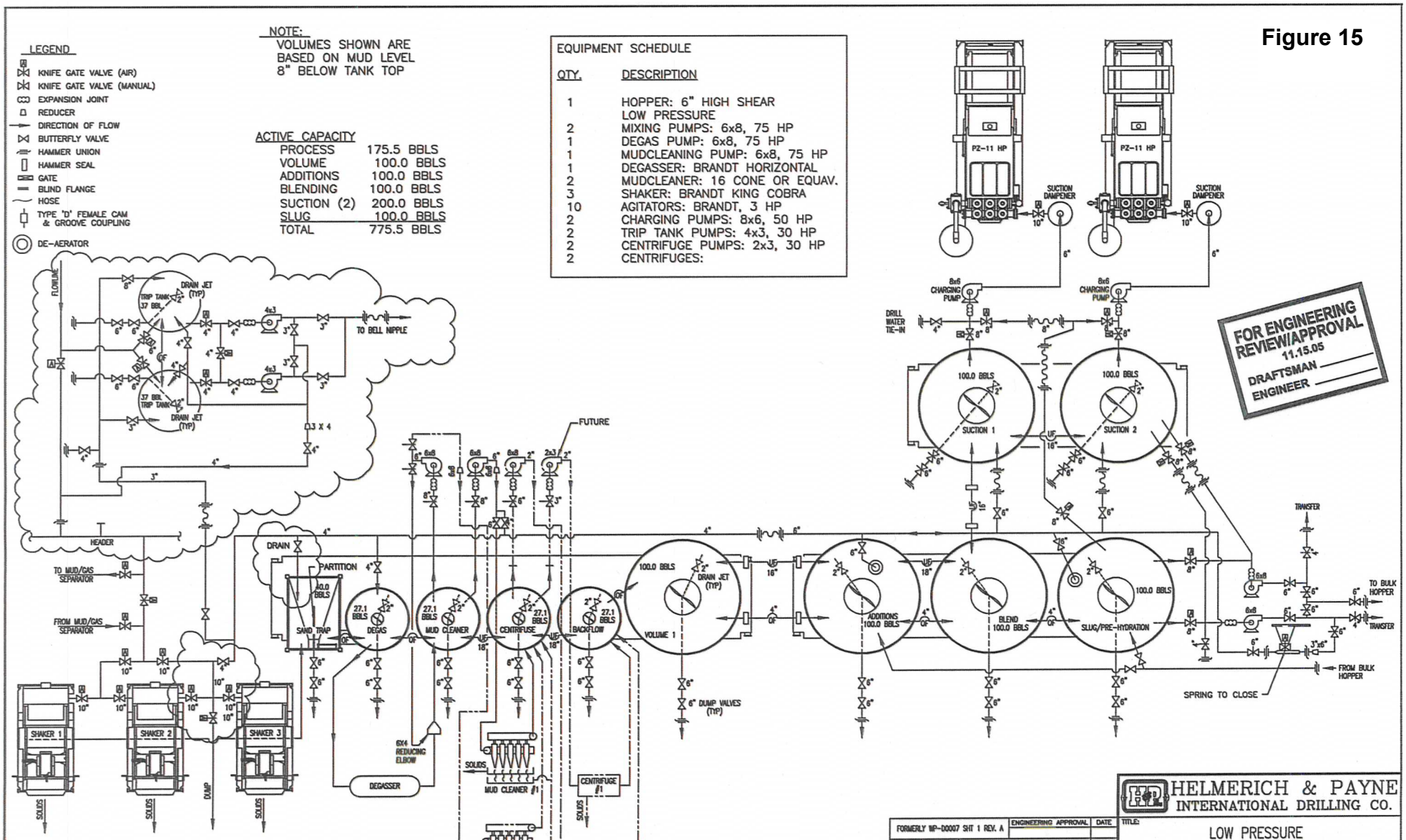
NOTE:
VOLUMES SHOWN ARE BASED ON MUD LEVEL 8" BELOW TANK TOP

ACTIVE CAPACITY

PROCESS	175.5 BBLS
VOLUME	100.0 BBLS
ADDITIONS	100.0 BBLS
BLENDING	100.0 BBLS
SUCTION (2)	200.0 BBLS
SLUG	100.0 BBLS
TOTAL	775.5 BBLS

EQUIPMENT SCHEDULE

QTY.	DESCRIPTION
1	HOPPER: 6" HIGH SHEAR LOW PRESSURE
2	MIXING PUMPS: 6x8, 75 HP
1	DEGAS PUMP: 6x8, 75 HP
1	MUDCLEANING PUMP: 6x8, 75 HP
1	DEGASSER: BRANDT HORIZONTAL
2	MUDCLEANER: 16 CONE OR EQUAV.
3	SHAKER: BRANDT KING COBRA
10	AGITATORS: BRANDT, 3 HP
2	CHARGING PUMPS: 8x6, 50 HP
2	TRIP TANK PUMPS: 4x3, 30 HP
2	CENTRIFUGE PUMPS: 2x3, 30 HP
2	CENTRIFUGES:



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REV	DATE	DESCRIPTION	BY
		FORMERLY MP-D0007 SHT 1 REV. A — ENGINEERING APPROVAL — DATE	
C	11.15.05	REVISED SCHEMATIC PER ENG REQUEST	BDB
B	07-14-05	REVISED SCHEMATIC	MWL
A	06-15-05	ADDED SAND TRAP & SHAKER BYPASS	MWL

HELMERICH & PAYNE INTERNATIONAL DRILLING CO.

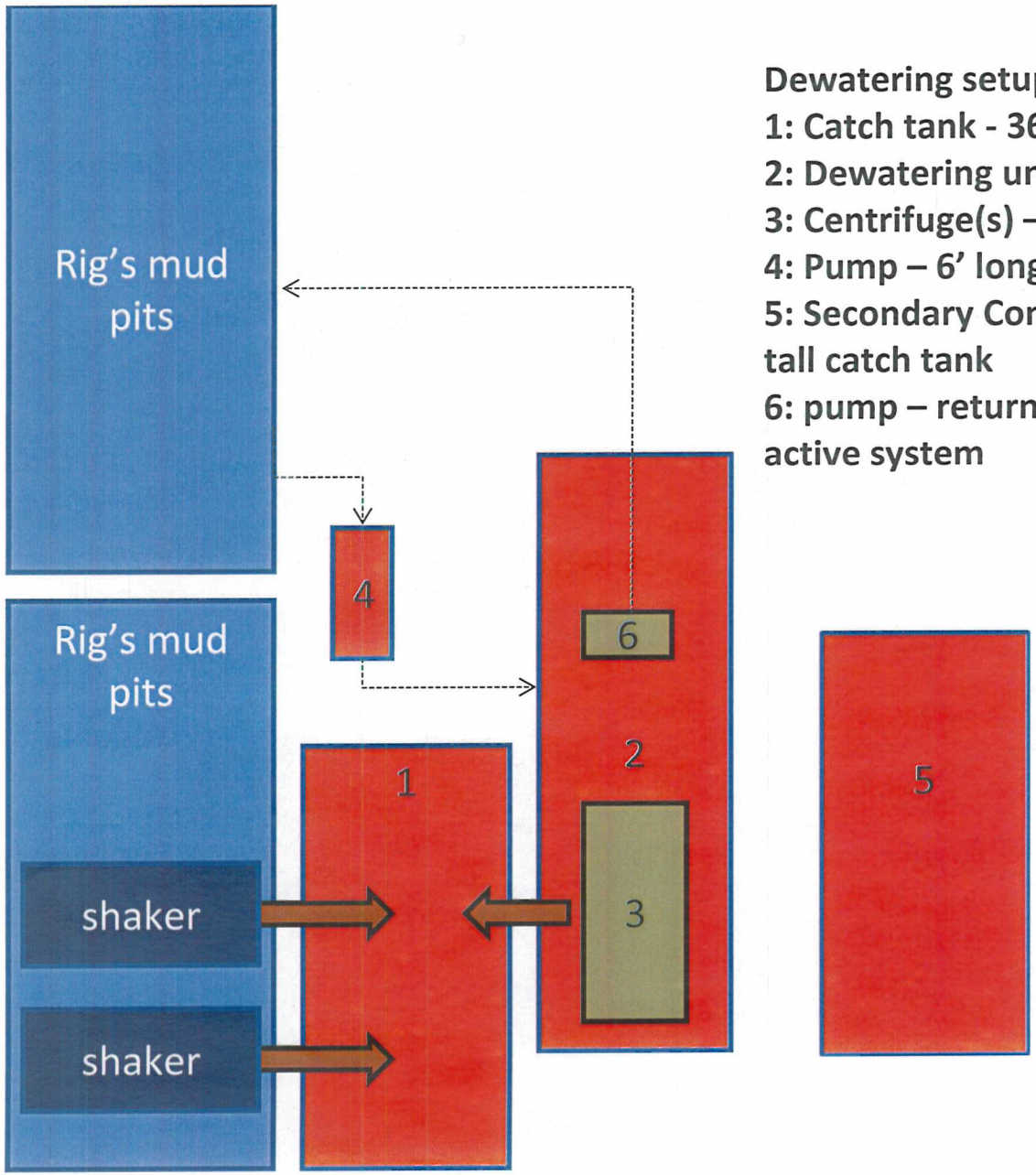
TITLE: LOW PRESSURE MUD SYSTEM SCHEMATIC

CUSTOMER: WILLIAMS PRODUCTION RMT COMPANY

PROJECT: PARACHUTE COLORADO

DRAWN: MWL	DATE: 1/27/05	DWG. NO.: F4S-H-300	REV: C
SCALE: N/A	SHEET: 1 OF 1		

Figure 16



Dewatering setup:
1: Catch tank - 36' long x 11' wide x 5' tall
2: Dewatering unit – 48' long x 8' wide
3: Centrifuge(s) – mounted to dewatering unit
4: Pump – 6' long x 2' wide (feeds dewater. unit)
5: Secondary Containment 36' long x 11' wide x 8' tall catch tank
6: pump – returns processed fluid to the rig's active system

Exhibit E

Fire Prevention Plan Measures

Fire Prevention Plan Measures

This document applies to oil and gas pipeline construction, access road construction and maintenance, drilling, completion, workover, testing and maintenance operations authorized by the oil and gas lease and associated right-of-ways that are performed by Noble Energy, Inc. (Noble) and/or Noble subcontractors.

1. Noble will implement an emergency response plan that covers all aspects of our operations, which will include coordination with local jurisdictions such as the cities of Wells and Elko, Nevada, landowners, and the BLM. **[Noble]**

2. Applicable field personnel will carry an adequate radio, cell phone, or special communications equipment along with emergency contact numbers and information, including 911 and Elko Interagency Dispatch Center. All fires will be reported immediately. **[BLM Fire Prevention Order #CRV-12-03]**

For fire information, contact: Elko Interagency Dispatch Center	*775-748-4000*

3. Noble will assure that workers are aware of fire prevention and safety procedures, evacuation routes and procedures, the designated safety meeting place, and emergency shutdown procedures. The operator will have a ***daily*** roster of all persons on location in the event of an evacuation.

4. Smoking is restricted to designated areas which will be located at least ten feet (10') from the project boundary and a safe distance from possible flammable sources including vegetation, on all Noble locations. Due to 24-hour operation during the drilling phase, smoking will be allowed on location in designated smoking areas because crews may be living on site in order to reduce traffic. **[Noble]**

5. All drilling and support equipment along with all potential ignition sources will be located at least ten feet (10') from the edge of the cleared location. **[Noble]**

6. Noble employees will not be required to leave the cleared drilling location to fight any fires, but may leave location to fight an incipient stage fire. **[Noble]**

7. Adequate firefighting equipment (i.e. shovel and extinguisher(s)), should be present on all locations during all phases of field operations. **[Local BLM]**

8. Fire extinguishers will be charged and in proper working condition. **[Noble]**

9. During the drilling phase, the drilling rig will have 500 bbl tanks on location for makeup water. The ability to tie in a portable auxiliary pump and hose for fire suppression from all edges of the location will be provided, as needed. **[Noble]**

10. Where practical during the various project phases, vehicles, including contractor vehicles, will be equipped with a 2.5 pound (or larger) class ABC chemical fire extinguisher. **[BLM Fire Prevention Order #CRV-12-03]**

11. Noble employees and contractors will park on bare ground that has been cleared of weeds, grass, etc. Where not practical, vehicles parking on vegetated areas will be inspected immediately upon parking and immediately after driving back onto bare ground. **[Noble]**

12. Access roads will be cleared of weeds, grass, etc. to prevent potential fires. **[Noble]**

13. Vehicles and equipment shall not block access roads. **[BLM Fire Prevention Order #CRV-12-03]**

14. Noble employees and/or their contractors will assist emergency responders with access to the fire as well as limit public access, as necessary or needed. **[Noble]**

15. Operators will inform BLM of the location and duration (start date, end date, work hours) of active work sites (oil and gas pipeline construction, access road construction and maintenance, drilling, completion, workover, and testing). Contact to the local BLM office with this information will be made at least 24 hours before commencing activities. The afterhours contact is the BLM Elko Interagency Dispatch Center at 775-748-4000. It is not necessary to inform BLM of routine maintenance visits that do not pose a fire hazard. **[BLM Fire Prevention Order #CRV-12-03]**

16. Using machinery that may cause ignition (e.g. welding, pipefitting, metal grinding, rock striking, explosives, etc.) or operating an acetylene or other torch with open flame is only permitted under the following conditions:

    - 20 lb. fire extinguisher is present at all times for incipient stage firefighting purposes only.
    - Five gallons of water is available immediately in the work area.
    - Confirmation of atmospheric testing to ensure no presence of an explosive mixture of gases in the air around the work area is completed prior to welding or grinding.
    - A ten foot (10') diameter area is cleared of all surface vegetation, scraped to bare mineral soil, prior to welding or grinding.
    - Cut vegetation is scattered well outside the cleared area, not piled.
    - A watch person patrols the site for one hour following cessation of welding operations.

- Operations will be suspended if winds carry sparks beyond the cleared area. **[BLM Fire Prevention Order #CRV-12-03]**

17. Building, maintaining, attending, or using a fire, campfire, coal or wood burning stove or any type of charcoal-fueled broiler or open fire of any type is prohibited outside of designated areas. The exception is that pressurized gas or liquid stoves may be used. **[BLM Fire Prevention Order #CRV-12-03]**

18. Companies are required to contain all flaring operations by using either self-contained equipment or a flare stack that is located at a BLM approved location. Flaring operations over an open pit may not be done without prior approval of the BLM. Flaring operations will be monitored regularly by onsite personnel. **[BLM Fire Prevention Order #CRV-12-03]**

Exhibit F

Best Management Practices for Sage Grouse

Best Management Practices for Sage-Grouse

1. Where oil and gas surface disturbance, drilling, and completion must occur within a three mile radius of greater sage-grouse occupied leks and there is no NSO, conduct these activities outside the period between March 1 and June 30. **[Working Draft of Colorado River Valley Field Office RMP Revision (7-19-12)]**
2. Restrict well site visitations and traffic to portions of the day between 9:00 a.m. and 4:00 p.m. during the lekking season (March 1 to June 30) for pre-existing roads within the three mile radius of greater sage grouse occupied leks and their possible NSO. **[Working Draft of Colorado River Valley Field Office RMP Revision (7-19-12)]**
3. (Lyon and Anderson 2003) Reduce well site traffic through use of telemetry and remote well control (e.g., Supervisory Control and Data Acquisition**). [National Technical Team Report]**
4. Control non-native invasive species (including noxious weeds) and conduct reclamation as soon as projects are completed. **[Strategic Plan for Conservation of Greater Sage-Grouse in Nevada]**
5. Apply a phased exploration approach with concurrent reclamation. **[National Technical Team Report]**
6. Base reclamation activities and plans on ecological site potential. This applies to all pads and infrastructure. The goal of the reclamation should be:
   - First, to stabilize the site with plant species that are suitable to the site;
   - Second, provide the opportunity for sage-grouse habitat to develop over time; and
   - Third, prevent non-native invasive species from occupying the site.

   [Strategic Plan for Conservation of Greater Sage-Grouse in Nevada]
7. As practicable, irrigate or water appropriately interim reclamation if necessary for establishing seedlings more quickly. **[National Technical Team Report]**
8. As practicable, utilize mulching techniques to expedite reclamation and to protect soils. **[National Technical Team Report]**
9. As practicable, use directional and horizontal drilling to reduce surface disturbance. Noble's <u>exploration</u> drilling requires vertical wells initially**. [National Technical Team Report]**
10. Use only closed-loop systems for drilling operations and no reserve pits**. [National Technical Team Report]**
11. As practicable during exploration activities, cluster surface disturbances, drilling, operations (fracture stimulation, liquids gathering, etc.) and production facilities in order to limit surface occupancy**. [National Technical Team Report]**

12. As practicable, place infrastructure in already disturbed locations where the habitat has not been restored. Co-locate all infrastructure (pipeline, power generation, etc.) along roads already in existence or required to be newly constructed for access to well location. **[National Technical Team Report]**
13. Locate man camps on location to reduce traffic and noise disturbance or outside of priority habitats*.* **[National Technical Team Report]**
14. Place new utility developments (power lines, pipelines, etc.) and transportation routes in existing utility or transportation corridors, *as practicable and allowable by the ROW restrictions.* **[National Technical Team Report]**
15. Fit transmission towers with anti-perch devices (Lammers and Collopy 2007) in *occupied sage-grouse habitat.* **[National Technical Team Report]**
16. Apply measures to deter raptor perching and raven nesting on elevated structures. **[Strategic Plan for Conservation of Greater Sage-Grouse In Nevada]**
17. As practicable, use low-profile production equipment and tanks **[Wyoming BLM BMPs]**.
18. Require existing fences to have vinyl markers which results in sage-grouse-safe fences. *Place high visibility markers on any new fences constructed as part of the project to reduce sage-grouse/fence collisions, in occupied habitat.* **[National Technical Team Report]**
19. As practicable, during exploration only, bury power lines in project areas that are away from existing County roads to avoid use of poles and other tall structures. When this is not practicable, use anti-perching devices. Noble proposes to have power lines above ground constructed along existing County Roads. Noble reserves the right to utilize diesel generators, propane, or other power sources on the well site location for all oil and gas activities instead of power lines. **[Wyoming BLM BMPs]**
20. If overhead power lines cannot be avoided, locate them at least 3 miles from the perimeter of occupied leks. **[Wyoming BLM BMPs]**
21. As practicable, design or site permanent structures which create movement (e.g. a pump jack) at locations which minimize impacts to sage-grouse. **[National Technical Team Report]**
22. As practicable, limit noise sources to 50 dBA or 10 of above ambient noise levels which ever is higher measured at the perimeter of a three mile radius buffer around an occupied lek from March 1 to May 15 (Inglefinger 2001, Nicholoff 2003). This is not applicable during approved workover, completion, or drilling operations **[Wyoming BLM BMPs]**
23. Design roads to an appropriate standard no higher than necessary to accommodate their intended purpose. **[National Technical Team Report]**
24. Restrict vehicle traffic to only authorized users on newly constructed routes where specified by the county, landowners and/or the BLM (use signing, gates, etc.). **[National Technical Team Report]**

25. Construct road crossing at right angles to ephemeral drainages and stream crossings. **[National Technical Team Report]**
26. Transportation planning to align roads out of sight and sound of occupied leks where practicable. **[Wyoming BLM BMPs]**
27. Use dust abatement practices on roads and pads as per the dust abatement plan approved by the BLM. **[National Technical Team Report]**
28. Noble employees and subcontractors will incorporate into the Job Site Assessment an education program to minimize wildlife mortality from vehicle collisions on roads. **[Working Draft of Colorado River Valley Field Office RMP Revision (7-19-12)]**
29. Noble will conduct proper housekeeping practices and trash storage for raven and other predator mitigation. **[National Technical Team Report]**
30. Enforce subcontractors to comply with the same protection measures used in company operations to avoid or reduce disturbances to occupied sage-grouse habitats. **[Wyoming BLM BMPs]**

Exhibit G

Master Drilling Plan

Noble Energy, Inc.
Master Drilling Plan

Mary's River Oil and Gas Exploration
Elko County, Nevada

Noble Energy Inc.
1625 Broadway, Suite 2200
Denver, CO 80202

Presented to:

Bureau of Land Management
Wells Field Office
3900 E. Idaho Street
Elko, Nevada 89801

October 2012

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1 GENERAL INFORMATION

1.1 Well Objectives

- The Mary's River well(s) are planned to be drilled to total depths ranging from 7,000' – 14,000' based on full penetration of the Tertiary sequence.
- Planned TD will be in the underlying Paleozoic section with adequate penetration to allow full logging of the base of Tertiary.
- Initially, wells will either be vertical or 'S' shaped if drilled in pairs for micro-seismic listening purposes during subsequent fracture stimulation.
- Potential reservoirs of the Humboldt, Indian Well and Elko formations will be evaluated with wireline logs and potentially sidewall cores, whole cores and formation tests will be taken.
- Full sets of cuttings samples will be obtained for lithologic analysis of well.
- The current drilling plan includes the installation of a Parasite Aeration String (PAS) with intermediate casing to ± 3000' TVD/MD for mitigation of potentially catastrophic losses while drilling the production interval. This requires larger conductor (24" vs 20") and surface casing (16" vs 13.375") as well as larger intermediate hole OD (14.75" vs 12.25").
- It may be determined during the initial appraisal drilling program that the PAS is unnecessary, in which case conductor, surface and intermediate hole sizes will be reduced on subsequent wells.

1.2 General Procedure

- Set 24" conductor @ +/- 80' below ground level.
- Drill 22" hole to ± 600' TVD/MD.
- Run and cement 16" surface casing.
- Install and test rotating head and 16" 2M Annular BOP.
- Drill 14-3/4" hole to ± 3000' TVD/MD using water based, inhibitive gel mud system.
- Run wireline logs.
- Run 9-5/8" intermediate casing w/ 1.9" parasite aeration string and cement to surface.
- Install and test wellhead, rotating head, 11" 5M annular, blinds, pipes and mud cross.
- Drill 8-3/4" vertical hole to TD collecting geoscience data as directed by NEI G & G.
- Run wireline logs, sidewall cores, formation tests as directed.
- Run 5-1/2" full string casing and cement to 500' above shallowest observed hydrocarbon zone.
- ND BOP, NU and Test 10Kpsi tubing head, prepare to move/skid to new location.

2 Formation Tops – anticipated water, oil, gas or minerals

Formation	Top MD (ft)	Substance
Valley Fill	Surface	water
Humboldt	Surface – 2,000'	water, possible oil/gas shows >3,000' TVD
Indian Well (if present)	4,000' – 6,000'	Water, oil, gas
Elko (if present)	8,000' – 11,000'	Water, oil, gas
Paleozoics - undifferentiated	7,000' – 13,000'	Water, oil, gas

- Any usable water zones encountered will be adequately protected and reported. All usable water zones, potentially productive hydrocarbon zones, and valuable mineral zones will be isolated.

3 Pressure Control Equipment

The production interval blow out prevention equipment will include:

11" 5,000psi WP Annular BOP
11" 5,000psi WP Double Ram BOP
Rotating Head

3.1 BOPE configuration

- Rotating Head
- Annular Preventer
- Blind Rams
- Pipe Rams
- Drilling Spool with (2) 3" outlets
- DSA if needed
- Casing Head
- Kill line equipped with (2) 2" x 5kpsi valves and (1) 2" x 5kpsi check valve as a minimum
- Choke line equipped with (2) 3" x 5kpsi valves
- Choke manifold equipped with (2) 3" x 5kpsi valves, (4) 3" x 5kpsi wing outlet valves, (2) manual chokes

3.2 Annular Preventer

Upon initial installation, the Annular Preventer will be pressure tested to a low pressure of 250psi and a high pressure of 70% of its rated working pressure for period of (10) minutes or until provisions of the test are met, whichever is longer. The above pressure test will be performed as required by:

- At initial installation and every 21 days thereafter
- Whenever any seal subject to test pressure is broken
- Following any related repairs

In addition, the annular preventer will be function tested at least once per week.

3.3 Ram Preventers

The Ram Preventers and remaining BOPE (excluding Annular Preventer) will be tested to the approved working pressure, assuming it has been isolated from the intermediate casing with a test plug. If the BOP stack is not isolated from the casing, then the equipment will be tested to 70% of the internal yield strength of the casing. Pressure will be maintained for a period of (10) minutes or until requirements of the test are met, whichever is longer. The above pressure test will be performed as required by:

- At initial installation and every 21 days thereafter
- Whenever any seal subject to test pressure is broken
- Following any related repairs

In addition, the pipe and blind rams will be activated on each trip, but not more than once each day. All BOP drills and tests will be recorded in the IADC driller's log. The Wells BLM Petroleum Engineer Technician and the NV Division of Mineral Resources will be notified at least twenty-four (24) hours in advance of pressure tests.

3.4 Choke Manifold Equipment

All choke lines will be straight unless turns utilize tee blocks or are targeted with running tees, and the lines will be anchored to prevent whip and vibration. A 5000psi flex choke hose may be utilized from the BOP to the choke manifold upon prior approval from BLM. Any variance requests will need to be on a sundry form 3160-5 and include the manufacturer's recommended installation, pressure rating, maximum turn radius, heat rating and anchoring.

3.5 Accumulator

The accumulator will have sufficient capacity to open the hydraulically-controlled choke line valve (if so equipped), close all pipe rams plus the annular preventer and retain a minimum of 200psi above the pre-charge on the closing manifold without the use of the closing unit pumps. The fluid reservoir capacity will be double the usable fluid volume of the accumulator's system capacity and the fluid level of the reservoir will be maintained at the manufacturer's recommendations.

The BOP system will have two (2) independent power sources to close preventers. Nitrogen bottles (3) minimum will be back-up for the two (2) power sources.

The accumulator pre-charge pressure test will be conducted prior to connecting the closing unit to the BOP stack and at least once every six (6) months thereafter. The accumulator pressure will be corrected if the measured pre-charge pressure is found to be above or below the maximum or minimum limits specified in Onshore Oil and Gas Order Number 2.

3.6 Well Control Drills

Well control drills will be conducted at least weekly by each crew. The date and time of the drills will be recorded in the IADC drilling book.

3.7 Monitoring Equipment

While drilling the production interval a pit volume totalizer (PVT) will be rigged up in the mud tanks to monitor mud volumes in the active system. An alarm will be triggered by any gain and/or loss of ten barrels or more. A flow indicator in the flow line and stroke counters on the mud pumps will enable the driller to monitor flow volume in and out of the well from the rig floor while drilling.

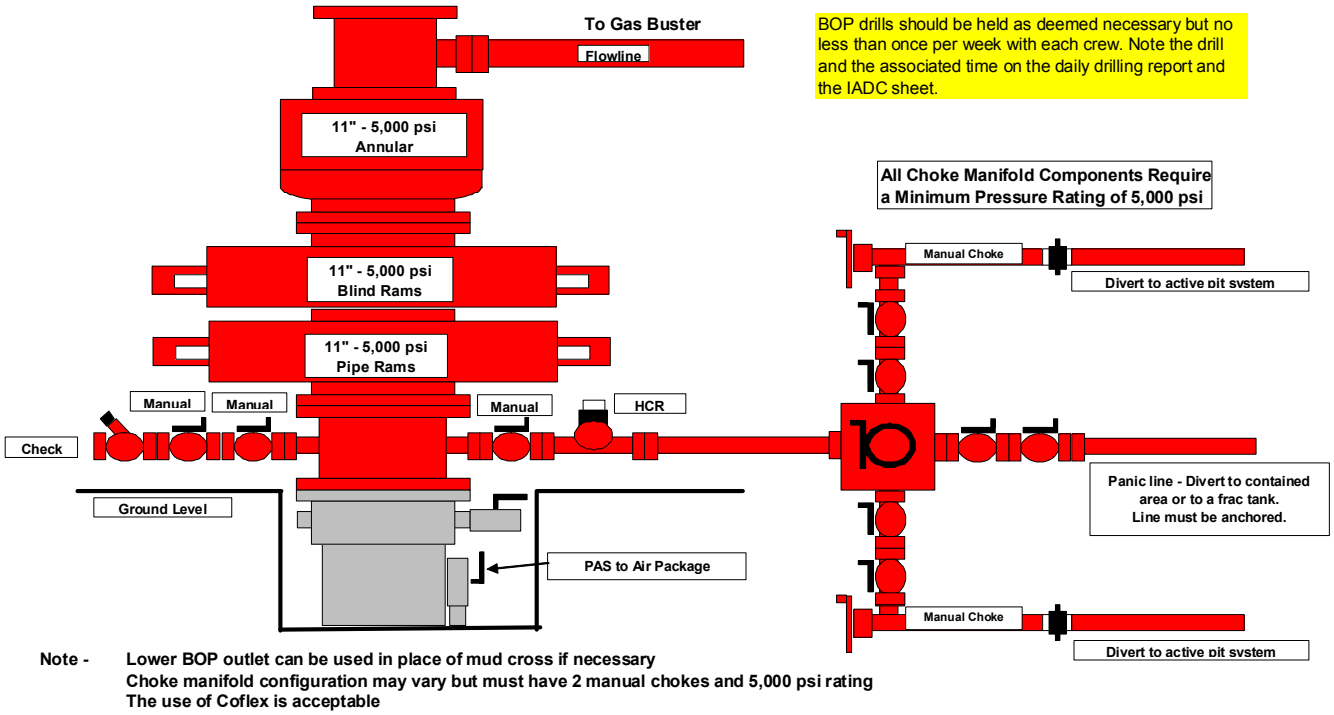
3.8 Miscellaneous Information

The Blow Out Preventer and related pressure control equipment will be installed, tested and maintained in compliance with the specifications in the requirements of Onshore Oil and Gas Order Number 2.

The choke manifold and BOP extension rods with hand wheels will be located outside the rig substructure. The hydraulic BOP closing unit will be located at least twenty-five (25) feet from the well head and will be readily accessible to the driller. Exact locations and configurations of the hydraulic BOP closing unit will depend upon the particular rig contracted to drill this hole.

Flare lines will be installed downstream from the choke manifold, extending a minimum of (75) feet from the center of the drill hole.

3.9 Production Hole BOP Diagram



Note - Lower BOP outlet can be used in place of mud cross if necessary
Choke manifold configuration may vary but must have 2 manual chokes and 5,000 psi rating
The use of Coflex is acceptable

4 Casing Program

	Surface	Intermediate		PAS	Production
Depths Run (ft):	0 - 600	0-2200	2200 - 3000	0 - 2800	0 - TD
OD (in):	**16**	**9.625**	**9.625**	**1.900**	**5.5**
Weight (lb/ft):	65	36	40	2.76	17
Grade:	H-40	J-55	J-55	J-55	P-110
Pipe ID (in):	15.250	8.921	8.835	1.610	4.892
Pipe Drift ID (in):	15.062	8.765	8.75 special drift	1.516	4.767
Burst Pressure (psi):	1640	3520	3950	7350	10640
Collapse (psi):	670	2020	2570	7750	7460
Body Yield (kips):	736	564	630	43.97	546
Joint Strength (kips):	439	453	520	36.97	568
Connection:	STC	LTC	LTC	10 RD IJ	BTC

Casing strings will be pressure tested to 0.22psi/ft or casing string length or to 1,500psi whichever is greater (but not to exceed 70% of internal yield of casing), after cementing and prior to drilling out from under the casing shoe. All casing shoes will be set in competent formation. Surface casing shall have centralizers on the bottom three joints with a centralizer per two joints to 100' from surface.

4.1 Cementing Program

4.1.1 Surface Casing

Lead with 505sx Premium Class 'G' with additives mixed at 14.4 ppg with a yield of 1.5ft^3/sk, 35% planned excess. Tail with 260sx Premium Class 'G' with additives mixed at 15.8 ppg with a yield of 1.18ft^3/sk, 20% excess. Cement to surface. Top out with 1" pipe if necessary.

4.1.2 Intermediate Casing

Lead with 1590sx 50:50:2 (G: Pozz: Gel) plus additives mixed at 14.2ppg with a yield of 1.25ft^3/sk. Actual volume pumped will be calculated based on callipered hole size +10% for losses in openhole. Cement to surface. Top out with 1" pipe if necessary. A two stage cement job will be pre-planned and carried out only if necessary with DV tool location based on depth(s) at which losses were experienced while drilling.

4.1.3 Production Casing

Lead with 1035sx of Premium Class 'G' plus additives mixed at 11.0ppg with a yield of 1.72ft^3/sk. Cement will include 3M Glass Bubbles and/or N_2 foam to achieve required density while maintaining superior bonding, isolation and ductility. Actual volume will be calculated based on callipered hole size +10% for losses in openhole and TOC a minimum of 500' above shallowest productive interval. Final additive concentrations will be based on temperature survey.

All waiting on cement times shall be recorded and shall be adequate to achieve a minimum of 500psi compressive strength at the casing shoe prior to drilling out.

The District BLM office will be notified with adequate lead time to enable a BLM representative to be on location while running all casing strings and cementing.

5 Mud Program

Interval Depth (MD/TVD)	Density (ppg)	Viscosity (sec./1000 cc)	pH	Yield Point (lbs/100 ft^2)	API Fluid Loss (ml/30)	LGS (% Volume)	Additives	Hi vis Sweeps	LCM (ppb)
Mud Type: Gel / Caustic Spud Mud									
0 – 600'	8.7 – 9.2	55-60	9-9.5	18-22	N/C	4-8	PHPA, SAPP	10:1 Gel/Lime >120 Vis	sweeps
Mud Type: Inhibitive LSND WBM - Gel, K+ Formate/Silicate									
600' – 3000'	8.6 – 9.0	45-50	9-9.5	12-16	<6	4-6	2-3% K+, PHPA, PAC	10:1 Gel/Lime >120 Vis	sweeps, coarse fiber to fines
Mud Type: Inhibitive LSND WBM - Gel, K+ Formate/Silicate									
3000' - TD	8.5 – 8.8	40-45	9-9.5	8-12	<6	4-6	2-3% K+, PHPA, PAC	10:1 Gel/Lime >120 Vis	sweeps, coarse fiber to fines

The drilling fluids have been designed for optimal wellbore hydraulics and hole stability. Sufficient mud material(s) to maintain mud properties, control lost circulation and maintain well control will be available at the well during drilling operations. No abnormal pressures have been noted or reported in wells drilled in this area. Equilibrium bottom hole temperatures of up to 325°F are expected.

6 Evaluation Program

Logging / Evaluation Program may include:

600' – 3000':

- GR, SP, Caliper, RES, NPHI, DPHI, DENS, PE, Dipole Sonic, image logs, ECS logs, MDT sampling

3000' – TD:

- GR, SP, Caliper, RES, NPHI, DPHI, DENS, PE, Dipole Sonic, image logs, ECS logs, MDT sampling

Formation tests, side wall and/or whole cores will be collected as directed by NEI well site geologist and G & G team. A 2-man mud logging unit with chromatograph will be used from the surface casing shoe to TD. Two sets of dry cut samples will be collected at approximately 30 foot intervals or less from 600' to TD depending on zones of interest being drilled. Samples will be delivered to the Nevada Bureau of Mines and Geology within 30 days of completing the well.

Whether the well is completed as a dry hole or as a producer, *Well Completion Report and Log* will be submitted not later than 30 days after completion of operations being performed, in accordance with 43 CFR 3152.7 (completion of operations). Two copies of all logs, well test data, geologic summaries, sample description and all other surveys of data obtained and compiled during the drilling and or completion operations will be filed with Form 3160-4. Samples (cuttings, fluids and or gasses) will be submitted when requested by the Bureau of Land Management Authorized Officer (AO).

7 Abnormal Conditions

No abnormal temperatures or pressures are anticipated. No hydrogen sulfide has been encountered or is known to exist from previous drilling in the area. As a precautionary measure, H_2S will be monitored and safety equipment will be on location per Operator's company policy to ensure the safety of the drilling operation.

8 Anticipated Starting Dates and Notification of Operations

Construction Date: July 2013
Spud Date: October 2013

No location will be constructed or moved, no well will be plugged and no drilling or work over equipment will be removed from a well to be placed in a suspended status without prior approval of the AO. If operations are to be suspended, prior approval of the AO will be obtained and notification given before resumption of operations.

The AO will be notified of the intent to spud 24 hours prior to Spudding and the spud date will be reported orally to the AO within 48 hours after Spudding. If the Spudding occurs on a weekend or holiday the report will be submitted on the following regular work day.

The oral report will be followed up with a Sundry Notice. In accordance with *Onshore Oil and Gas Order No. 1*, all wells will be reported on Form 3160-6 *Monthly Report of Operations*, starting with the month in which operations commence and continue each month until the well is physically plugged and abandoned. This report will be filed, in duplicate, to the Bureau of Land Management, PO BOX 12000, Reno, NV 89520.

Immediate Report:
Spills, blowouts, fires, leaks, accidents or any other unusual occurrence shall be promptly reported in accordance with the BLM and state requirements. Specific procedures outlined in *Fire Prevention Plan* and *Emergency Response Plan*, which have both been submitted to the BLM, will be followed.

If a replacement rig is contemplated for completion operations, a *Sundry Notice* (Form 3160-5) to the effect will be filed, for prior approval of the AO, and all conditions of this approved plan are applicable during all operations conducted with the replacement rig.

Should the well be successfully completed for production, the AO will be notified when the well is placed in a producing status. Such notification will be sent by mail or other written communication, not later than 5 days following the date on which the well is placed on production.

Any venting or flaring of gas during drilling or initial well evaluation tests will be conducted in accordance with Nevada rules and regulations.

9 General Conditions of Approval

a) All lease and/or unit operations are to be conducted in such a manner to ensure full compliance with the applicable laws, regulations (43 CFR, Part 3160), Onshore Orders, Notice to Lessees and the approved plan of operations.

b) The spud date will be reported orally to the BLM District Field Office 24 hour prior to Spudding, unless otherwise required in the site specific conditions of approval.

c) All wells, whether drilling, producing, suspended or abandoned shall be identified in accordance with 43 CFR 3162.6. There shall be a sign or marker with the name of the operator, the lease serial number, the well number and the surveyed description of the well.

d) In accordance with *Onshore Oil & Gas Order Number 1*, this well will be reported on MMS form 3160-6, *Monthly Report of Operations and Production*, starting with the month in which operations commence and continuing each month until the well is physically plugged and abandoned.

e) All undesirable events (fires, accidents, blowouts, spills, discharges) as specified in NTL-3A will be reported to the District BLM office. Major events will be reported verbally within twenty-four (24) hours and will be followed with a written report within fifteen (15) days. Specific procedures outlined in *Fire Prevention Plan* and *Emergency Response Plan* will be followed. Minor events will be reported on the *Monthly Report of Operations and Production* (form 3160-6).

f) No well abandonment operations will be commenced without the prior approval of the Authorized Officer. In the case of newly drilled dry holes or failures and in emergency situations, oral approval will be obtained from the Field Office Petroleum Engineer.

g) A *Notice of Intention to Abandon* (form 3160-5) will be filed with the Authorized Officer within fifteen (15) days following the granting of oral approval to plug and abandon.

h) Upon completion of approved plugging, a regulation marker will be erected in accordance with 43 CFR 3162.6. The following information will be permanently placed on the marker with a plate, cap or beaded on with a welding torch: Company Name, Well Name and Number, Location by Quarter/Quarter, Section, Township, Range and Federal Lease Number.

i) A subsequent *Report of Abandonment* (form 3160-5) will be submitted within thirty (30) days following the actual plugging of the wellbore. This report will indicate where plugs were placed and the current

status of surface restoration operations. If surface restoration has not been completed at that time, a follow up report on form 3160-5 will be filed when all surface restoration work has been completed and the location is considered ready for final inspection. If the location is on private surface, a *Landowner Acceptance of Reclamation* letter will be attached to this *Sundry Notice*.

j) Any venting or flaring of gas during drilling or initial well evaluation tests will be conducted in accordance with Nevada rules and regulations.

k) Not later than the firth (5th) business day after any well begins production on which royalty is due anywhere on a lease site or allocated to a lease site or resumes production in the case of a well which has been off production for more than ninety (90) days, the Operator shall notify the Authorized Officer by letter or Sundry Notice of the date on which such production has begun or resumed. The notification shall provide at a minimum, the following informational items:

1. Operator name, address and telephone number
2. Well name and number
3. Well location "¼, ¼, Section, Township, Range, P.M."
4. Date well was placed in a producing status
5. The nature of the well's production (i.e. crude oil or natural gas and entrained liquid hydrocarbons)
6. The OCS, Federal or Indian lease prefix and number on which the well is located. Otherwise, the non-Federal or non-Indian land category (i.e. : state or private)
7. As appropriate, the communitization agreement number, the unit agreement name, number and participating area name.

l) Within sixty (60) days following construction of a new tank battery, a site facility diagram of the battery showing actual conditions and piping must be submitted to the Authorized Officer. Facility diagrams shall be filed within sixty (60) days after existing facilities are modified. For complete information as to what is required on these diagrams, please refer to 43 CFR 3162.7-4(d).

m) Pursuant to *Onshore Oil & Gas Order Number 1*, lessees and operators have the responsibility to see that their exploration, development, production and construction operations are conducted in such a manner which conforms with applicable Federal laws and regulations and with state and local laws and regulations to the extent that such state and local laws are applicable to operations on Federal and Indian lands.

Exhibit H

Narrative of Completion and Stimulation

Narrative of Completion and Stimulation

Hydraulic fracturing is the process of applying high pressure to a subsurface formation via a wellbore, to the extent that the pressure induces fractures in the rock. Typically the induced fractures will be propped open with a granular "proppant" to enhance fluid connection between the well and formation. The process was developed experimentally in 1947 and has been used routinely since 1950. The Society of Petroleum Engineers (SPE) estimates that over one million hydraulic fracturing procedures have been pumped in the United States and tens of thousands of horizontal wells have been drilled and hydraulically fractured. It can greatly increase the yield of a well, and development of hydraulic fracturing methods and the drilling technology in which it is applied (in particular, long wells drilled horizontally within the targets) have enabled production of oil and gas from tight formations formerly not economically feasible.

Hydraulic Fracturing Technology

A description of the hydraulic fracturing technology follows:

- All exploratory, testing, and production wells are multiply cased and sealed with cement between the wellbore and the formation. Well integrity is tested throughout the process.
- All drilling and hydraulic fracturing fluids are fully contained in a pitless system (above-ground tanks) and cuttings are contained in roll-off boxes for hauling to disposal (surface casing interval cuttings are spread over the site during reclamation).
- Hydraulic fracturing fluids are recovered to a large degree in "flowback" or produced water when the well is tested or produced.
- All recovered fluids are to be captured in steel tanks and disposed of in an approved disposal facility in Utah (Clean Harbors).
- Per the BLM, drilling cuttings will be land farmed and buried on site 3 feet below root zones. Any cuttings that do not fit this waste profile will be disposed of at an approved disposal facility in Utah (Clean Harbors).

Regulation

- Gas and oil exploration and production are subject to federal, state, and local regulations, including:
- Clean Water Act regulates surface water discharges and storm water management;
- Clean Air Act sets rules for emissions from engines, equipment, and all associated sources;
- The Safe Drinking Water Act regulates the disposal of liquid waste by injection into deep reservoirs isolated from any drinking water aquifer;
- The National Environmental Policy Act requires permits and environmental assessments for drilling on federal lands (this EA);

- The Occupational Safety and Health Act sets standards to keep workers safe. These include requirements for posting Material Safety Data Sheets (MSDS) on site;
- Emergency Planning & Community Right-to-Know Act requires appropriate storage of regulated chemicals and reporting certain quantities annually to local and state emergency responders;
- The Resource Conservation and Recovery Act (RCRA) sets standards and limits for the disposal of solid wastes from drilling and producing actions. The definition of hazardous substances under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) includes any "hazardous waste" as defined in the RCRA of 1976, as amended, 42 U.S.C. 6901 et seq., and its regulations. The term hazardous material also includes any nuclear or nuclear by-product material as defined by the Atomic Energy Act of 1954, as amended, 42 U.C.S. 2011 et seq. The term does not include petroleum, including crude oil or any fraction thereof that is not otherwise specifically listed or designated as a hazardous substance under CERCLA Section 101 (14), 42 U.S.C. 9601 (14) nor does the term include natural gas;
- The BLM has proposed a rule to regulate hydraulic fracturing on public and Indian Land. The rule would provide disclosure to the public of chemicals used in hydraulic fracturing on public and Indian land, strengthen regulations related to well-bore integrity, and address issues related to flowback water. The rule is set forth to provide useful information to the public and to assure that hydraulic fracturing is conducted in a way that adequately protects the environment.

National Research Council on Induced Seismicity

The Committee on Induced Seismicity Potential in Energy Technologies issued a 239 page draft report through the National Academies Press in 2012, on investigation of seismicity induced by injection of fluids by several industries. The preface states that "the study took place during a period in which a number of small, felt seismic events occurred that had been caused or were likely related to fluid injection for energy development. Because of their recent occurrence, peer-reviewed publications about most of these events were generally not available. However, knowing that these events and information about them would be anticipated in this report, the committee attempted to identify and seek information from as many sources as possible to gain a sense of the common factual points involved in each instance, as well as the remaining, unanswered questions about these cases."

The Executive Summary of this report states:

- The process of hydraulic fracturing a well as presently implemented for shale gas recovery does not pose a high risk for inducing felt seismic events;
- Injection or disposal of waste water derived from energy technologies into the subsurface does pose some risk for induced seismicity, but very few events have been documented over the past several decades relative to the large number of disposal wells in operation."

The report notes that in 2010, there were 52,016 oil and gas waste injection wells (Class II) in Texas, 874 in Colorado, and 18 in Nevada.

Hydraulic Fracturing in Colorado

Colorado is a state with a burgeoning tight oil field (Niobrara), and groundwater protection rules among the toughest in the country. Colorado is the base for Noble's Marys River project. Colorado instituted baseline groundwater sampling initially on a voluntary basis for all oil and gas drilling in the state, and Noble has committed to such sampling in Nevada.

There are currently (1/7/2013) 50,055 active oil and gas production wells in Colorado. Every one of these has been hydraulically fractured, whether relatively short, vertical coal bed methane producers, or the newer, deep and long horizontal wells. Amongst them there are a few wells with documented problems which are being addressed. There have been no instances of fracturing fluid escaping into groundwater, excepting one infamous case with a faulty casing seal allowing shallow leakage. The rare problems have motivated ever more stringent regulation.

Society of Petroleum Engineers - Paper 152596

The Society of Petroleum Engineers publishes public information papers. The 80 page paper referenced here was presented in 2012 to a SPE hydraulic fracturing technology conference in Texas. The abstract states that "the furor over fracturing and frac waste disposal was largely driven by lack of chemical disclosure and the pre-2008 laws of some states…Transparency requires cooperation from all sides in the debate. To enable more transparency on the oil and gas side, both to assist in the understanding of oil and gas activities and to set a foundation for rational discussion of hydraulic fracturing risks, a detailed explanation of well development activities is offered in this paper., from well construction to production, written at a level of general public understanding, along with an initial estimation of hydraulic fracturing risk and alternatives to reduce the risk, documented by literature and case histories."

SPE 152596 emphasizes the depth of hydraulic fracturing operations compared to groundwater aquifers. Methane found in water wells is sometimes suggested to have leaked from hydraulic fracturing targets, but is usually found in shallow formations such as coal in such instances, or occasionally has leaked up old and poorly completed wells. The Marys River project area has neither coals nor old wells.

The paper gives a general description of chemicals used in hydraulic fracturing. "There are very few chemicals used in hydraulic fracturing and definitely not the 'hundreds of toxic chemicals' claimed in (the movie) GasLand….Most of the (shale) hydraulic fracturing treatments are water with a friction reducer and no significant gel…Basic slick water formulation is 98-99% water, a friction reducer such as polyacrylamide, biocide, surfactant, gel such as guar gum and cellulose polymer, gelling agents, scale inhibitor, acid, and corrosion inhibitor (one of the few compounds that may be toxic)…"

Project Area Groundwater Study

Noble understands the importance of protecting water resources in Nevada and has entered into a Memorandum of Understanding (MOU) with the State of Nevada through the Nevada Division of Minerals, the Nevada Department of Environmental Protection, and the Board of Regents of the Nevada System of Higher Education on behalf of the Desert Research Institute (DRI) to establish the Aquifer Quality Assessment Program (Aqua Program) to gather and share data and information on groundwater and geological conditions associated with the fate and transport of chemicals used for hydraulic fracturing.

Exhibit I

Field-Wide Stormwater Pollution Prevention Plan

NOBLE ENERGY, INC.

FIELD WIDE STORMWATER POLLUTION PREVENTION PLAN FOR CONSTRUCTION ACTIVITIES

MARYS RIVER OIL AND GAS EXPLORATION PROJECT
Nevada

JULY 2013

NOBLE ENERGY, INC.
FIELD WIDE STORMWATER POLLUTION PREVENTION PLAN FOR CONSTRUCTION ACTIVITIES

MARYS RIVER OIL AND GAS EXPLORATION PROJECT

Nevada

JULY 2013

NOBLE ENERGY, INC.
1625 Broadway, Suite 2200
Denver, CO 80202

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1.0 CERTIFICATION

Noble Energy, Inc. (NEI) has prepared this Field Wide Stormwater Pollution Prevention Plan for Construction Activities (SWPPP) for the Marys River Oil and Gas Exploration Project in Elko County, Nevada.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature _____ Date _____

Name _____

Title _____

2.0 INTRODUCTION

The Nevada Division of Environmental Protection (NDEP) , Bureau of Water Pollution Control issues a Construction Stormwater General Permit (NVR100000) for stormwater discharges from construction activities associated with small construction activity at oil and gas sites that have a disturbance equal to or greater than one acre. As part of that requirement, this Stormwater Pollution Prevention Plan (SWPPP) has been prepared to identify possible pollutant sources to stormwater and to set out Best Management Practices (BMPs) to reduce or eliminate possible water quality impacts.

3.0 SWMP ADMINISTRATOR

The SWPPP Administrator for Noble is responsible for the developing, implementing, maintaining, and revising the SWPPP. The SWPPP Administrator has the authority to dedicate the financial and human resources to implement the SWPPP. The SWPPP Administrator is:

Mr. Kevin Vorhaben - Nevada Asset Manager, Denver, CO

Office: (303) 228-4355

The SWPPP Administrator will ensure that the SWPPP is followed and delegates responsibility for coordination of the SWPPP inspections and maintenance of stormwater records to the Environmental Coordinator. The Environmental Coordinator will provide support for the SWPPP Administrator with the implementation of the SWPPP. The Environmental Coordinator is:

Mr. Lee Hinman – Senior Environmental Advisor, Denver, CO

Office: (720) 587-2117

Mobile: (720) 440-3593

Both the SWPPP Administrator and the Environmental Coordinator will manage the SWPPP Team. Other foremen or designated personnel may also assist in stormwater inspections and maintenance of records. Overall, the SWPPP Team is responsible for:

Implementing spill/upset clean up procedures;

Notification to local authorities and local residents in the event that a significant release of stormwater and sediment leaves a pad area;

Coordinating various stages of BMPs and implementation;

Conducting inspections;

Maintenance of all records; and

Coordination of a preventive maintenance program and housekeeping measures.

4.0 SITE DESCRIPTION

4.1 Nature of Construction Activity

Noble Energy Inc. (NEI) is one of the nation's leading independent energy companies engaged in the exploration, development, production, and marketing of crude oil and natural gas. NEI currently owns or leases oil and natural gas mineral rights in the Marys River project area in the Humboldt River Basin, Nevada. The area is in Elko County and lies within Townships 38 North and 39 North, and Ranges 60 East and 61 East. As part of the proposed project, NEI proposes to construct, drill and complete 20 wells on up to 20 well pads over two or more years. A map of the project area is provided as Map 1.

4.2 Sequence of Major Activities

The overall development of oil and natural gas pad sites is generally accomplished in three distinct work phases: construction, production and abandonment. The work completed and sequence of events for each phase is briefly discussed below.

Approximately six to seven acres of surface terrain is disturbed during the construction of a new pad site. The construction phase includes the following sequence of activities: pad construction, well drilling, well completion, access road building, and well pad reclamation.

The typical equipment on a pad site during the production phase consists of a wellhead, a separation unit, and aboveground tanks for storing oil and produced water. Oil and gas wells in the field are projected to produce for up to 20 years.

When the oil production of a well is exhausted it will be abandoned. Well abandonment includes plugging and capping the well and removal of all surface equipment. The pad area will be reclaimed by contouring disturbed soils and reseeding to conform to the surrounding terrain.

A new drill site includes pad construction, well drilling, well completion, access road building, and well pad reclamation. Pad reclamation is accomplished by backfilling the reserve pit (if applicable), contouring disturbed soils to conform to the surrounding terrain, replacing the stockpiled top soil, and seeding of disturbed soil areas in order to reestablish coverage vegetation.

For stormwater regulation purposes, construction sites have been divided into the following stormwater stages: Active, Completed, Interim Stabilization, and Final Stabilization.

Details regarding the stormwater stages are provided later in Section 8.2 of this plan.

4.3 Area Disturbed

The specific area disturbed at each individual pad site is listed in Noble's site-specific maps, which includes Stormwater Inspection Forms. A total of all current acreage disturbed under this permit will be kept annually with the SWPPP in Appendix B.

4.4 Soil Description

Topsoil varies within the Marys River Oil and Gas Exploration area. The cut and fill material used in construction will be composed of the soil on-site.

4.5 Receiving Waters

Receiving water bodies within the permitted area include various named and unnamed creeks and tributaries to the Humboldt River. Site-specific nearest water body information for each pad site is entered on the site-specific map. The majority of Noble's pads and access roads do not intrude or encroach on any wetland acreage. If a wetland is designated to be within a pad construction area, Noble will obtain permits from Army Corp of Engineers, as appropriate.

4.6 Discharge From Support Activities

There will be no additional construction beyond the activities described in Section 4.2.

5.0 SITE MAPS

The site-specific information required to be included in the SWPPP (Appendix B) will be included in the site maps. The site-specific information is updated during the course of the stormwater inspections. These reports are provided to the SWPPP Team on a regular basis, to document and maintain stormwater requirements.

Pad construction site boundaries; ground surface disturbances; areas of cut and fill; storage areas for building materials, equipment, soil or waste; locations of dedicated asphalt or concrete batch plants (if applicable); structural BMP locations; non-structural BMP locations (as applicable); locations of springs, streams, wetlands or other surface waters; wellhead locations; and other pertinent site specifics are shown on maps attached to the site-specific Inspection Reports (Appendix B). Site specific features may be hand-drawn and site maps are not necessarily drawn to scale.

6.0 STORMWATER MANAGEMENT CONTROLS

6.1 Identification of Potential Pollutant Sources

To identify, evaluate, and assess potential sources of stormwater runoff pollutants that may be at a pad site, the following activities and pollutant sources were evaluated:

Disturbed and stored soils;

Vehicle tracking controls;

Management of contaminated soils;

Loading and unloading operations;

Outdoor storage activities;

Vehicle and equipment maintenance and fueling;

Dust or particulate generating processes or activities;

Routine maintenance activities;

On-site waste management practices;

Concrete truck washing;

Dedicated concrete and asphalt batch plants;

Non-industrial waste sources; and

Potential spills.

6.1.1 Disturbed and Stored Soils

Disturbed soil and excavated materials will be stored on or next to the pad. Topsoil and other soils will be stockpiled separately. Soil stockpiles will be located against cut slopes and/or will be contained within perimeter BMP's, such as earthen berms. Disturbed soil re-grading will be completed as soon as possible after drill rigs are removed from the pad site areas. During reclamation, all earth disturbing activities from construction will be re-graded and contoured to blend into the adjoining landscape.

Materials excavated will be utilized as backfill when practical. An exception may be excess rock generated by rock blasting excavation activities. In these areas, some select backfill materials may be required to protect the project area. Excess rock may be pushed into rock filter dikes, used in energy dissipation zones below culverts, constructed into rock check dams within grassed swales, or distributed over a portion of the project area. Excavation in especially sensitive areas may be conducted according to special techniques as specified by the landowner/agency representative.

6.1.2 Vehicle Tracking Controls

Properly constructed and graveled roads and pads provide the best off-site tracking control. Access road entrances adjacent to paved county roads are graveled to prevent or minimize any off-site soil tracking from pad areas or access roads. In some instances, cattle guards and tire washing procedures are used to drop off caked mud before the vehicle exits the site area. When necessary, paved roads are swept near pad site access areas. In addition, minimizing site access, contractor education, and other sediment control BMPs will be utilized.

6.1.3 Management of Contaminated Soils

If contaminated soils are excavated at a NEI site, additional BMPs will be employed to ensure containment of any stormwater runoff. In addition, stockpiles of contaminated soil will be landfarmed or removed from the site and disposed of as soon as possible.

6.1.4 Loading and Unloading Operations

The majority of loading and unloading activities occur during well drilling and well completion activities. Well drilling and completion surfactants, friction reducers, dilute hydrochloric acid, potassium chloride solutions, drilling mud, condensate, and other fluids are transported or unloaded directly into the well from trucks, on site tanks, and/or the reserve pit. Dry drilling mud components are contained in paper bags and are stacked on pallets, which are unloaded using a forklift or by hand. Liquid drilling mud removal operations can include open-top trucks. Removal operations are supervised by NEI personnel to ensure proper care is taken to prevent spillage or leakage from the trucks. In the event of a spill, the SWPP material handling and spill prevention procedures will be followed according to NEI's standard operating procedures. Other activities include unloading of drill pipe, completion pipe (casing), and natural gas line pipe, which are not potential pollution sources.

6.1.5 Outdoor Storage Activities

The most common substances that are stored on a pad area are: 1) fuel and lubricants used by vehicles and construction equipment; 2) frac fluids (surfactants, friction reducers, hydrochloric acid, and potassium chloride) used during well completion procedures; and 3) production water from the well. A list of chemicals products typically used at a NEI pad site is included as Table 1.

6.1.6 Vehicle and Equipment Maintenance and Fueling

Routine maintenance will be limited to fueling and lubrication of equipment. Drip pans will be used during routine fueling and maintenance to contain spills or leaks. Any waste product from maintenance will be containerized and transported offsite for disposal or recycling. There will be no major equipment overhauls conducted onsite. Equipment will be transported offsite for major overhauls.

6.1.7 Dust or Particulate Generating Processes or Activities

Dust and/or particulates generated from vehicle traffic on graveled access roads may produce fugitive emissions. Dust and particulate generation is at its highest during dry and hot times of the year. If dust from vehicle traffic on graveled access roads becomes significant, dust suppression procedures will be implemented that include road watering or the application of dust suppressants.

6.1.8 Routine Maintenance Activities

Routine maintenance activities involving fertilizers, pesticides, detergents, and solvents are not completed at the Noble pad sites. Herbicides will be applied annually in some areas to control

noxious weeds. Herbicide application will always be conducted by certified and trained individuals, and with consideration for runoff potential to nearby surface waters.

6.1.9 On-site Waste Management Practices

All waste from materials imported to the construction site are removed for disposal/recycling to an appropriate licensed disposal/recycling facility. No waste materials will be buried, dumped, or discharged to waters of the state.

6.1.10 Concrete Truck Washing

Concrete truck/equipment washing, including the concrete truck chute and associated fixtures and equipment, is conducted at a few Noble sites. Pollutants arising from this operation would mainly include a water/concrete mixture, and concrete debris. No waste materials will be buried, dumped, or discharged to waters of the state.

6.1.11 Dedicated Concrete and Asphalt Batch Plants

No dedicated concrete or asphalt batch plants are located within the NEI Marys River Oil and Gas Exploration Project Area.

6.1.12 Non-Industrial Waste Sources

Cleanup of trash and discarded materials will be conducted at the end of each work day. Cleanup will consist of patrolling the roadway, access areas, and general work areas in order to pick up trash, debris, scrap, or other discarded materials.

All waste from materials imported to the construction site are removed for disposal/recycling to an appropriate licensed disposal/recycling facility. This also includes sanitary sewage facilities (typically portable), which will be placed, anchored, and maintained with proper care.

No waste materials will be buried, dumped, or discharged to waters of the state.

6.1.13 Potential Spills

Spills or leaks will be handled by Noble personnel or contractors, according to the principals and practices outlined in NEI's Spill Prevention, Control and Countermeasure (SPCC) Plan for the Marys River Oil and Gas Exploration Project Area, Nevada. The SPCC Plan, while written more specifically for large tank sites, includes general procedures for handling and responding to any spill situation.

On a pad site, spills and leaks can occur from valves, loading and unloading procedures, removing excess water from production tanks, tank or reserve pit overflow, tank leaks or ruptures, separators, knockout tanks, heater treaters, flowlines or piping. Reserve pits, when necessary, are constructed to allow plenty of additional volume to avoid overflow situations. In addition, chemicals potentially stored on site are listed in Section 6.1.5 and in Table 1. Small chemical leaks or spills will also be handled as specified in the Noble SPCC Plan. Additional

materials handling is discussed in detail in Section 6.2.4 of this plan. Spills and leaks are documented by NEI and records are kept at the Denver office.

6.2 Best Management Practices (BMPs)

BMPS for sediment and erosion control will be accomplished through a combination of construction techniques, vegetation and re-vegetation, and structural features. The BMP Manual (Appendix D) or similar guidance will be referenced for assistance with controls or BMPs when needed. Typical configurations of structural controls discussed below and technical drawings are provided in Appendix D. BMP selection is guided by the selection criteria listed in Table 1. Structural and non-structural BMPs are discussed in the following sections, and are summarized in Table 2.

6.2.1 Structural Practices for Erosion and Sediment Control

Structural practices primarily include physical attributes of a pad site, access road designed to reduce erosion and control stormwater or sediment movement.

6.2.1.1 Erosion Reduction and Control

Construction of a pad requires the removal of vegetative cover and topsoil that increases peak flood flows, water velocity, and the volume of stormwater runoff. An increase in water runoff volume and velocity results in increased erosion. Erosion reduction and control will be accomplished by using the following erosion control methods. These methods include, but are not limited to the following:

Diversion and control of run-on water;

Diversion and control of runoff water;

Vegetation planting and maintenance;

Application and maintenance of mulches, blankets, tackifiers, tracking and contouring; and

Proper grading techniques

Runoff control procedures that will be used to mitigate and reduce the erosive transport forces of stormwater during and after construction of a pad will include but will not be limited to the following:

Check dams;

Earth berms;

Culvert protection;

Diversion ditches;

Slope drains;

Rock-lined ditch;

Mulches, with or without a tackifier

Geotextiles; and

Erosion Control Blanket/Turf Reinforcement Matting

Existing vegetation cover and topsoil are removed only where necessary for the operation of equipment and construction of the pad. Trees and large shrubs that are not cleared from the pad area will be protected from damage during construction by avoiding them with equipment. For example, the blade of a bulldozer will be in a raised position except for designated areas.

6.2.1.2 Sediment Reduction and Control

The control and reduction of sediment contained in stormwater runoff will be accomplished by the use of sediment containment systems. Sediment containment systems are hydraulic controls that allow the deposition of suspended particles by gravity. Sediment controls that will be used to mitigate and control sediments generated from the erosive transport forces of stormwater during and after construction of a pad will include but will not be limited to the following:

Silt Fence

Straw Bale Dikes/ Traps

Straw Wattles

Sediment Traps/Basins

Vehicle Tracking Pads

Continuous Berms

Continuous Berms with Rock Filter; and

Slash Berms

6.2.1.3 Detailed Structural Practices

The following structural site management practices are expected to reduce, minimize and control erosion and sediment transport:

In order to minimize disturbances associated with installation of pads, level and gently sloping terrain outside the project area will not be graded, except where necessary.

To prevent tracking of sediment (mud and rocks) onto public roads, portions of access roads may be graveled, as appropriate. Other means such as track pads/angular rock or cattle guards may be utilized if appropriate.

Silt barriers (e.g. brush dams, rock filter dikes, silt fences, hay bales, containment berms, or water bars) will be installed as needed on down-gradient portions of project areas.

Side hill cuts (cut slopes) will be kept to a minimum to protect local resources while providing a safe and stable plane for the efficient and safe use of equipment.

Where conditions warrant, erosion control structures such as berms, water bars, diversion or collection channels, terraces, or culverts will be constructed to divert water away from project areas. These control structures will also reduce soil erosion along and adjoining areas disturbed during construction.

- During construction near perennial streams, lakes or wetlands, the utilization of sedimentation (detention) basins, silt fences, straw bales, or fabric filters may be considered in order to prevent suspended sediments from reaching downgradient watercourses, streams, lakes or wetlands.

- Where appropriate, water bars or sediment filters, such as staked straw bales or silt fences, will be constructed adjacent to crossings to reduce potential sedimentation in streams or wetlands.

In areas that have steep slopes, water bars or runoff diversions may be installed. When used, water bars will generally begin and end in undisturbed ground at approximately a 2 percent slope.

Culverts may be installed at a grade ranging from 2 percent to 5 percent. Inlet protection may include inlet aprons and rock armoring around the culvert perimeter while below grade inlet sumps may be installed to enhance sediment deposition. Outfall protection may include the use of a rock barrier to slow the discharge of runoff water. Culvert pipe or outfall protection will be extended to the toe of the slope on the discharge end.

During the reclamation of a pad all cut and fill slopes in steep terrain will be graded and contoured to blend into the adjoining landscape. Natural drainage patterns will also be reestablished. When possible cut and fill slopes will be constructed so they are no steeper than a 1 to 3 ratio.

Reclaimed pads may have a fence constructed around areas that have been seeded. These fences will be installed in order to keep livestock and vehicles off reseeded areas.

Appendix D includes details on BMP installation and maintenance procedures.

6.2.1.4 Implementation of Structural Practices

The following sediment controls may be utilized at pad areas: vegetative buffers, brush dams, rock filter berms, silt fences, straw bale dikes, containment berms, water bars, sediment traps, sediment basins, or equivalent sediment controls. These sediment control structures will be installed so as to protect down slope surface waters, wetlands and roads from sediment flow due to runoff from a precipitation or snow melt event.

All graded surfaces, walls, dams and structures, vegetation, erosion and sediment control measures and other protective devices identified in the pad plan will be maintained, repaired, and restored as necessary.

Table 1 contains a summary list of structural BMPs.

6.2.2 Non-Structural Practices for Erosion and Sediment Control

Sediment and erosion control can be implemented via non-structural BMPs. Non-structural BMPs are BMPs that are not engineered as a stormwater barrier and are capable of limiting the amount of potential pollutants available to reach receiving water bodies. Non-structural BMPs can achieve the same effect as structural BMPs through filtration and the settling of sediment load within a perimeter.

NEI has implemented non-structural practices for stormwater management into their pad site development, including Program Oversight, Construction Site Planning and Management, and Materials Management.

Table 3 contains a summary list of Non-structural BMPs.

Construction site planning includes decisions regarding reserve pit placement, if necessary, planned stockpile placement, and waste storage area placement which take into account potential stormwater runoff issues. Pad sites can include a slope to the reserve pit or a buffer zone of natural vegetation used as a non-structural BMP to inhibit sediment travel offsite and minimize the footprint of the pad.

6.2.3 Phased BMP Implementation

The phases of construction or development and stormwater stages are linked to the implementation of structural and non-structural BMPs. For stormwater regulation purposes, construction sites have been divided into the following stormwater stages: Active, Interim Stabilization, and Final Stabilization. Details regarding the stormwater stages are provided later in Section 8.2 of this plan. Stormwater controls to be used for each phase are listed in Table 2.

Pre-construction and Active Construction

During pre-construction, drilling, workover rig activity, and other active construction processes, the focus will be primarily on containment type BMPs and run-on diversion BMPs. An example would be a continuous berm to contain stormwater pollutants on site, while diverting run-on stormwater around the site.

Interim Stabilization Sites

Construction activities have been completed and areas re-seeded. For completed sites and during interim stabilization, containment BMPs are possibly removed and reclamation types of BMPS are put in place, if needed, to mitigate the potential pollutants.

Final Stabilization Sites

Permanent stormwater BMPs, such as culverts and check dams, will remain in place after final stabilization, if applicable.

Depending upon the type of site, the site terrain, and the phase of construction, different stormwater BMPs will be utilized. Various BMP options are listed in Table 2, and design specifications are shown in the BMP Design Manual (Appendix D).

6.2.4 Material Handling and Spill Prevention

Hazardous materials and petroleum products used in construction of a pad include: fuel and lubricants for construction equipment and vehicles; small quantities of paints and solvents; water or gel based frac fluids (surfactant, friction reducer, dilute hydrochloric acid, potassium chloride) used during well completion; concrete; fertilizers; and produced water. Quantities of fuel and lubricates will be limited to "as-needed" for the immediate operations underway. Any leaks or spills will be promptly remediated and contaminated materials will be hauled off-site and disposed of/recycled properly.

Materials management practices will be used to reduce the risk of spills or other accidental exposure of materials and substances to stormwater runoff. Remediation and reporting will be handled by NEI personnel.

Material Safety Data Sheets (MSDS) for materials to be used or that are produced are maintained on NEI's online company database and filed at NEI's Denver Office.

6.2.5 Dedicated Concrete or Asphalt Batch Plants

NEI does not have or subcontract any dedicated concrete or asphalt batch plants for its pad site development or construction. Stormwater at the NEI pad sites will not encounter concrete or asphalt batch plant activities.

6.2.6 Vehicle Tracking Control

NEI will employ BMPs to minimize vehicle tracking. Further discussion on this topic is under Section 6.1.2 of this SWMP.

6.2.7 Waste Management and Disposal, Including Concrete Washout

Waste disposal is further discussed in Sections 6.1.9 and 6.1.12 of this plan.

Concrete washout may occur at a few Noble sites, although it is not a part of regular operations. The permit authorizes the conditional discharge of concrete washout water to the ground.

Concrete washout areas will be installed prior to any concrete placement on site. Concrete washouts primarily include small excavations located near the point of concrete masonry placement, and will be construction using a bermed excavation with appropriate tracking and access control. Concrete washout areas are designed using a flat subsurface pit, and a berm surrounding the sides and back of the concrete washout. Excavated material will be used for the perimeter berm. Smaller, more temporary concrete washouts, can be constructed using a mobile

disposal unit, geotextile bags, or water tight vessels such as rigid children's pools, small dumpsters, or buckets.

Highly visible signs will be placed at the construction site entrance, washout area and elsewhere as necessary, to clearly indicate the location of the concrete washout area to operators of concrete trucks and pump rigs. Concrete washouts will be inspected to make sure appropriate access control, tracking, and containment is in place. Maintenance includes removal of excess materials and general structural integrity of the installation. Concrete washouts will be cleaned of excess water and solids when the capacity of the washout reaches no more than 50 percent.

A designated concrete washout station will be surrounded by perimeter controls to prevent contaminated stormwater from leaving the area. Waste concrete will be removed or disposed of off-site as needed. Concrete washout areas will remain in place until all concrete for the project is placed.

When concrete washout areas are removed, excavations will be filled with suitable compacted backfill and topsoil, any disturbed areas associated with the installation, maintenance, and/or removal of the concrete washout areas will be roughened, seeded, mulched, and crimped.

6.2.8 Groundwater and Stormwater Dewatering

Construction dewatering may take place on a limited basis at NEI sites. For large construction projects with planned dewatering activity, NEI will apply for a separate dewatering permit from the state, as required. If dewatering takes place at a site, appropriate BMPs will be installed to ensure no runoff from this activity occurs.

7.0 FINAL STABILIZATION AND LONG-TERM STORMWATER MANAGEMENT

7.1 Reclamation

Upon completion of earth disturbing activities, the site will be restored to its original condition using rocks, cut vegetation, and other surface material temporarily stockpiled during construction and will be redistributed as backfill on the project area unless otherwise directed by the landowner or jurisdictional authority. All earth disturbing activities during construction will be re-graded and contoured to blend into the adjoining landscape, and natural drainage patterns will be reestablished. During reclamation, sediment BMPs will remain in use.

Preparation of the topsoil area, including all areas to be seeded will have native topsoil spread to a depth of at least 6-inches (loose depth). Topsoil will be added to cleared and grubbed areas.

Disturbed areas will be seeded using seed mixes appropriate to the location. Local soil conservation authorities with the BLM, U.S. Natural Resources Conservation Service, surface owners and/or reclamation contractors familiar with the area may be consulted regarding the correct seed mix to be utilized.

On terrain where drill seeding is appropriate, seed may be planted using a drill equipped with a depth regulator to ensure proper depth of planting. The seed mix will be evenly and uniformly planted over the disturbed area. Drilling will be used where topography and soil conditions allow operation of equipment to meet the seeding requirements of the species being planted. Broadcast and/or hydro seeding will occur on steep terrain and on areas where the cut vegetation and rocks were redistributed over a right-of-way.

Seeding will be done when seasonal or weather conditions are most favorable according to schedules identified by the jurisdictional authority, reclamation contractor, or landowner. Whenever possible, seeding will be timed to take advantage of moisture, such as early spring or late fall, which will benefit from winter precipitation.

Seed mixes will be planted in the amount specified in pounds of pure live seed/acre. No primary or secondary noxious weeds will be in the seed mix.

The reestablishment of vegetative cover as well as watershed stabilization measures will be scheduled during the working season and before the succeeding winter. Re-vegetation will be accomplished as soon as practical following the reclamation of a pad.

Mulch will be laid down during re-vegetation as appropriate. The cut vegetation and rocks will act like mulch in the areas where they are applied. Where straw or hay mulch is applied, the mulch will be applied and crimped into the soil.

Crimp mulching uses hay or straw material that is machine crimped into the soil to provide stability. Crimp mulch may be used on its own as a temporary soil stabilization method, or in conjunction with seeding for final stabilization. Crimp mulch functions as a soil stabilizer by decreasing the velocity of sheet flow. Mulch may be hay or cereal grain straw. Mulch will likely be crimped into the soil using either a drill seeder or notched disk plow to the minimum depth of two inches and a maximum depth of four inches. To maximize effectiveness crimping equipment must run parallel to the contours of the land. Crimp mulch may not be appropriate for slopes that are equal to or greater than 3:1 or in areas with hard or rocky soil in which the crimper cannot penetrate. Maintenance items would include re-grading as necessary and reapplying as appropriate.

Crimp mulch will be used to protect seeded areas on all disturbed areas and steep slopes where the use of erosion control blankets is not specified. Erosion control blanketing and hydro mulches may be substituted for crimp mulch on steep slopes or other areas, and substitutions will be noted on the site map.

The need for fertilizers will be determined in conjunction with the landowner. If fertilization is necessary, the rates of application will be based on site-specific requirements of the soil.

7.2 Post-Construction Structural Measures

Permanent water bars, culverts, trench plugs and/or other permanent structural measures may be installed on steep slopes and at wetland and stream crossing boundaries.

After restoration and reclamation work is complete, required repairs to vegetation and erosion and sediment control BMPs will be completed as required.

7.3 Finally Stabilized

"Final stabilization" means the time at which all soil-disturbing activities at the site have been completed, and a vegetative cover has been established with a density of at least 70 percent of the pre-disturbance levels, or equivalent permanent, physical erosion reduction methods have been employed. Final stabilization using vegetation must be accomplished using seeding mixtures or forbs, grasses, and shrubs that are adapted to the conditions of the site. Establishment of a vegetative cover capable of providing erosion control equivalent to pre-existing conditions at the site will be considered final stabilization.

8.0 INSPECTION AND MAINTENANCE PROCEDURES

8.1 Preventive Maintenance

Preventing stormwater from passing through pad areas where contamination may occur is a key element of preventative maintenance. Another key element of preventative maintenance is the routine inspection and repair of erosion and sediments control structures. Regular cleaning of diversion ditches and other BMPs to keep them free of debris and sediment will be practiced. Spillways and culvert systems will also be routinely cleaned and inspected. These maintenance procedures will help to insure that the stormwater does not leave intended channels.

The following preventive maintenance procedures will be implemented to reduce or eliminate potential stormwater contamination sources that may exist on a pad:

Storage containers, fuel tanks, and equipment used during construction activities should be visually inspected routinely for obvious leaks. These inspections should be conducted by site and contractor personnel as they perform their routine duties;

Drums will be properly labeled so an enclosed substance can be quickly identified. OSHA-approved labeling and sign systems will be followed for all secondary containers;

Erosion damage to the earthen berms, outfalls, silt barriers, collection channel, containment ponds, and any erosion and sediment control will be repaired as soon as practical;

Areas of stained soil will be inspected in order to identify the sources of the staining. Contaminated soil will be removed and properly disposed;

Energy dissipating material, such as riprap, will be placed at the stormwater outfalls to prevent erosion damage. Barrow ditches should be free from vegetation and debris which may cause impounding of stormwater; and

Stormwater management structures will be cleared of debris and repaired when necessary; and surface runoff controls such as curbing, culverts, and ditches will be used to control runoff.

8.1.1 Good Housekeeping

In accordance with BMPs that provide procedures to eliminate contamination, and direct, divert, and contain stormwater, NEI has implemented a number of housekeeping practices. These practices will help prevent soil sediment, trash, and toxic or hazardous substances from entering navigable waters.

Housekeeping practices include regular cleaning, organization and maintenance of pad equipment and erosion and sediment control structures throughout the project. Areas where chemicals are stored and used at the project are stored in buildings or containers where there is no potential for stormwater contact or are contained within berms. These areas include producing pads that typically consist of wellheads, separator units, and produced water pits.

The following items will be addressed in order to maintain a clean and orderly pad during the development, production, and abandonment phases of work:

Inspect pad areas routinely;

Correct deficiencies noted during inspections;

Clean and maintain stormwater management structures and components;

Routine trash collection and disposal;

Familiarize employees and contractors with spill clean-up equipment and storage locations; and

Familiarize employees and contractors with good housekeeping procedures and pad pollution prevention procedures.

8.1.2 Material Storage

The following good housekeeping practices will be followed at the material storage areas:

Storage containers will be stored away from direct traffic to prevent accidents. They will also have proper labels;

Dumpsters and trash receptacles will be enclosed in order to prevent the dissemination of refuse;

Storage areas will be kept free of refuse;

Chemical substances used at pads will be properly labeled and will have proper spill containment; and

Chemical substance containers will be clearly labeled with an MSDS kept on file.

8.1.3 Waste Removal

All waste from materials imported to the construction site will be removed for disposal/recycling to an appropriate licensed disposal/recycling facility, including sanitary sewage facilities

(typically portable). No wastes of imported materials will be buried, dumped, or purposely discharged to waters of the state.

8.2 Inspections

Inspections will be conducted to document the status of erosion and sediment control structures and re-vegetation efforts. Inspection forms will document non-compliance conditions such as uncontrolled releases of mud, muddy water, or measurable quantities of sediment that are found off-site. Required actions or modifications as documented on the SWPPP Inspection Report will be implemented in a timely manner after the inspection. Routine inspections may be conducted at pad areas during all phases of work and after a precipitation-related event. All inspection observations will be recorded on the SWPPP Inspection Report. The form provides a standardized format that will be completed during all inspections, and includes a signature line for the inspector to ensure compliance with the regulations.

For stormwater regulation purposes, construction sites have been divided into stormwater inspection stages: Active, Interim Stabilization, and Final Stabilization. For the purposes of this SWMP, only Active, Completed, and Interim Stabilization sites will be inspected. Each of these stormwater inspection stages is discussed below. Once a site is finally stabilized, it will be removed from this stormwater construction permit program.

If for any reason NEI cannot comply with any condition specified in the permit the WYDEQ will be notified within 24 hours after becoming aware of the non-compliance. NEI will provide the WYDEQ, in writing, within five days the following:

- A description of the non-compliance event.
- The period of the non-compliance event, including exact dates and times, or if not identified, the anticipated time the non-compliance is expected to continue.
- Additional measures taken to reduce, eliminate, and prevent recurrences of the non-complying discharge or other cause of non-compliance.

A special condition exists for pad sites within crop lands, which is detailed in Section 7.1 of this plan. When pad sites are being returned to a farmer for agricultural usage, the sites may be removed from the stormwater construction permit program.

Personnel responsible for inspections will be trained to evaluate stormwater management concerns, erosion and sediment control structures, and to evaluate pad and surrounding area vegetation. Any sediment located offsite, if located, will be cleaned and returned to the site and BMP's will be reevaluated for effectiveness.

8.2.1 14-day Inspection/Active Stage

During construction, this phase of work is classified as the Active phase, according to stormwater regulations. The inspection frequency is every 14 days during the Active phase and after any precipitation or snowmelt event that causes surface erosion.

The pad perimeter, disturbed areas, and any stored materials that are exposed to precipitation will be inspected for evidence of, or the potential for pollutants that may enter the drainage system. Erosion and sediment control systems that are identified on the site-specific SWPPP Inspection Report will be inspected to ensure that they are in good condition and operating properly.

8.2.2 Monthly Inspection/Interim Stage/Completed Stage

If a pad is not able to be re-seeded due to weather or seasonal conditions, but construction activities are completed, inspections will be conducted at least once a month. This phase is considered "Completed" according to stormwater regulations. The monthly inspection frequency will be continued until the pad area achieves or reaches final stabilization vegetation conditions, at which time inspections are discontinued.

Noble has defined Interim Stabilization as similar to the Completed stage listed above, with one distinct difference: the pad has been re-seeded. Inspections will be conducted at least once a month.

8.2.3 Final Stabilization Stage

When a pad site has reached final stabilization, it will be removed from the stormwater construction inspection routine. Final stabilization is defined in Section 7.3.

8.2.4 Winter Conditions

Inspections will not be required at pads where snow cover exists over the entire site for an extended period as long as melting conditions do not exist. Snow cover, as well as snow melting conditions will be documented.

8.2.5 Precipitation Event Inspections

Active pad site inspections will be conducted within 24 hours after a precipitation event greater than or equal to 0.5". Surface erosion generally occurs when precipitation or snowmelt results in surface water flow. If the precipitation infiltrates, then no inspection is required. In order to determine if surface erosion or surface water flow resulted from a precipitation or snowmelt event, a selected few pads will be evaluated for surface erosion, off-site sediment transportation, and/or off-site release of muddy water. These selected pads may have a worst case surface erosion or sediment transportation scenario. If the selected pad and associated areas do not show any off-site surface erosion, off-site sediment release and transport, or off-site muddy water releases, all of the remaining active and completed pads will not be inspected. Inspection results of the pads will determine or trigger the inspection of all Active pads. A pad inspection will be positive if any one of the three categories (surface erosion, sediment transportation, or release of muddy water) is marked yes. Selection of a pad is based on the following criteria:

A pad that has a cut or fill slope that has a steeper grade than 1:4;

A pad that has erosion and/or sediment control structures installed; and

A pad that has vegetation or erosion situations.

8.2.6 Temporarily Idle Sites

If no construction activities will occur following a storm event at a temporarily idle site, post-storm event inspections will be conducted prior to re-commencing construction activities, but no later than 72 hours following the storm event. The occurrence of any such delayed inspection will be documented. Routine inspections will still be conducted at least every 14 calendar days.

9.0 EMPLOYEE TRAINING

NEI will inform and train employees who are involved with SWPPP activities. Training will cover information and procedures contained in the SWPPP and will be conducted on an annual basis. Personnel work responsibilities will be used to identify the appropriate attendees. Safety and environmental elements of the SWPPP will also be covered. A Training Log (Appendix D) will be kept and updated on an annual basis.

The following topics may be presented and discussed during SWPPP training:

Introduction to WYDEQ Stormwater Permit;

Stormwater regulations;

Purpose of stormwater permit;

Requirements of stormwater permit;

Components of the SWPPP;

Identification of potential pollutant sources;

BMPs;

Preventative maintenance;

Good housekeeping;

Inspections and maintenance; and

Record keeping.

10.0 RECORD KEEPING

The following record keeping procedures will be implemented in order to provide accurate and complete documentation of events associated with the stormwater management program. A template SWPPP Inspection Report is located in Appendix B and will be used for all SWPPP inspections.

Records will be maintained in a Stormwater File at the Noble Denver office and will include the following documentation:

- A complete copy of the NDEP Construction Stormwater General Permit (NVR100000);

- Copies of all stormwater related inspection records, site maps, and diagrams will be kept on file or in the SWIM database;

- Site-specific records will be kept a minimum of three years from final stabilization.
- Spills and leaks documentation
- All revisions of the SWPPP must be kept in the Stormwater File for a minimum of three years.

11.0 SWPPP REVIEW/CHANGES

This Field-Wide SWPPP will be retained at NEI's Denver office. NEI will amend the SWPPP whenever there is a significant change in design, construction, operation, or maintenance, which has a significant effect on the potential for the discharge of pollutants to water of the state, or if the SWPPP proves to be ineffective in achieving the general objectives of controlling pollutants in stormwater discharges associated with pad activities. The SWPPP is considered a "living document".

Exhibit J

Wildlife Monitoring Report

Wildlife Monitoring for Exploration Activity in the Marys River Project Area Elko County, Nevada 2012

Report Prepared for:

Bureau of Land Management
Elko District Office
3900 E. Idaho Street
Elko, Nevada 89801

Prepared by:

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Elko County, Nevada

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Figure 1. General vegetation types for the Marys River Exploration Project Area during Spring 2012.

MAP

Map 1. Locations of Pygmy Rabbit Sign, Raptor Nests, and Sage-grouse Leks within and around Noble Energy's Marys River Exploraiton Project Area During March-April 2012.

APPENDICES

Appendix A. Pygmy Rabbit Survey Protocol

Appendix B. Elko Whitlowcress Observation Point Photos

Appendix C. Pygmy Rabbit Photos

Appendix D. Potential Burrowing Owl Nest Photos

INTRODUCTION

Noble Energy, Inc. will be implementing an exploration project within the Marys River Project Area in Elko County, Nevada. Approximately one half of the Project Area will be within lands managed by the Bureau of Land Management (BLM) – Elko District Field Office. Hayden-Wing Associates, LLC (HWA) conducted preliminary surveys for wildlife species of management concern to the Elko District Field Office during Spring 2012.

Species of management concern were determined through a series of emails, telephone calls and discussions with the BLM – Elko District Field Office. The BLM – Elko District Field Office directed wildlife surveys in the Marys River Exploration Project Area for the following species: pygmy rabbits (*Brachylagus idahoensis*), greater sage-grouse (*Centrocercus urophasianus*), Columbia spotted frog (*Rana luteventris*), Elko whitlowcress (*Draba sphaeroides*), and nesting raptor species including burrowing owls (*Athene cunicularia*). These species were determined by the BLM based on available information and habitat in the Marys River Exploration Project Area. Monitoring aims to identify and maintain existing wildlife habitats throughout the Elko District Field Office and to comply with the Endangered Species Act, Bald and Golden Eagle Protection Act, and Migratory Bird Treaty Act. In addition to the above Acts, the burrowing owl, golden eagle (*Aquila chrsaetos*), short-eared owl (*Asio flammeus*), long-eared owl (*Asio otus*), and Swainson's hawk (*Buteo swainsoni*) are on the BLM Sensitive Species List for the State Office of Nevada. The bald eagle (*Haliaeetus leucocephalus*), burrowing owl, and pygmy rabbit are also U. S. Fish and Wildlife Service (USFWS) Species of Concern. The Columbia spotted frog (*Rana luteventris*) is a Candidate Species in Nevada under the USFWS (USFWS 2011) and was considered for surveys in the Marys River Project Area. The Elko whitlowcress is a species that is currently on the Nevada Native Plant Society *Watch List* and is potentially vulnerable to becoming threatened or endangered (NNHP 2012).

PROJECT AREA

The Marys River Exploration Project Area includes Sections 1, 2, 11–14, and 23–26 T38N:R60E; Sections 2–11, 14–23, and 26–35 T38N:R61E; Sections 23–26, 35, and 36 T39N:R60E; and Sections 19–23 and 26–35 T39N:R61E. The southeastern corner of the Project Area is approximately four miles northwest of Wells, Nevada. The Project Area includes approximately 39,366 acres that includes 52% federal (BLM) and 48% private lands (Map 1). The Humboldt River and Bishop Creek bisect the Project Area. These riparian zones do not provide cottonwood stands (*Populus* spp.) for potential nesting structures for raptors, however there are isolated cottonwoods near ranch houses in the far northeastern portion of the Project Area. Elevation within the Project Area ranges from 5,300 to 5,700 feet above sea level. Topography is relatively flat with rolling hills, many drainages, hilltops, draws, and eroded hillsides. Vegetation is primarily comprised of Wyoming big sagebrush (*Artemisia tridentata wyomingensis*) stands with numerous areas dominated with rabbitbrush (*Chrysothamnus* spp.) and dead sagebrush. Areas of big basin sage (*A. tridnetata tridentata*), mixed desert shrub, riparian woodland (mainly willows; *Salix* spp.), and irrigated cropland occur scattered throughout the Project Area. Cheatgrass (*Bromus tectorum*) is prevalent in many areas of the Project Area, and crested wheat grass (*Agropyron cristatum*) was recorded in several areas.

METHODS

HWA biologists navigated and collected data using Trimble Juno® handheld GPS receivers installed with ArcPad® 10 mobile GIS software. All spatial data described in this report were recorded in Universal Transverse Mercator (UTM) coordinates using NAD 83 Zone 11 datum and ArcGIS® 10 software to generate maps and conduct spatial analyses. Surveys were conducted by HWA from March 1 – April 15, 2012.

HWA completed BLM-approved block surveys for wildlife and vegetation by surveying 300-meter wide transects oriented north to south throughout the entire Project Area (Appendix A). Transects were surveyed for wildlife and vegetation by using ATVs. When potential habitat was found, this area was then surveyed by foot and waypoints were recorded. Field crews consisted of four experienced biologists. Proposed well pads and access roads were surveyed more extensively for wildlife and vegetation with 50-Project Aream transect spacing.

Prior to surveys, Noble Energy agreed to avoid any perennial wet areas by 100 feet to prevent disturbance to amphibians and areas susceptible to erosion. HWA surveyed all BLM lands and private lands where landowner permission was obtained within the Project Area.

Vegetation

The Elko whitlowcress (*Draba sphaeroides*) is a species that is currently on the Nevada Native Plant Society *Watch List* and is potentially vulnerable to becoming threatened or endangered (NNHP 2012). This species is endemic to Nevada and the only known observations of this species were located within Elko County. The Nevada Natural Heritage Program recorded a sighting of the Elko whitlowcress near the Humboldt Mountain foothills in 1985, which is six miles south of the Project Area. We surveyed this area to document the habitat surrounding the observation point and to compare this area with the available habitat in the Marys River Exploration Project Area. Noxious weeds such as scotch thistle (*Onopordum acanthium*), hoary cress (*Cardaria draba*), perennial pepperweed (*Lepidium latifolium*), Russian knapweed (*Centaurea repens*), and leafy spurge (*Euphorbia esula*) were recorded as they were opportunistically found.

Vegetation types within the Project Area were digitized from 2009 National Agriculture Imagery Program (NAIP) aerial images prior to field work. Digitized polygons were groundtruthed in the field by collecting waypoints throughout the Project Area. Vegetation types were recorded at each point. Changes to the vegetation type polygons were then digitized and finalized in the office. Any observations of noxious weeds or invasive species were documented as they were encountered during surveys in the Project Area.

Columbia Spotted Frog

The Columbia spotted frog has the potential to occur in the Humboldt River drainage that crosses the southern portion of the Project Area. Prior to surveys, Noble Energy agreed to avoid any

perennial wet areas by 100 feet to prevent disturbance to this species. Because disturbance activities would avoid cold permanent water habitats, and marshy edges of ponds and rivers, surveys for the Columbian spotted frog were not required.

Pygmy Rabbit

During 2011, high concentrations of pygmy rabbits were found during the construction/onsite surveys of the Tetuan well in Section 26 T38N:R61E. This led BLM biologists to anticipate a large number of pygmy rabbits in the Marys River Exploration Project Area, especially the southern portion. HWA prepared a protocol for presence/absence surveys for a block survey of the Project Area based on previous work with pygmy rabbits in Wyoming. HWA surveyed all BLM and private lands with landowner permission within the project area.

HWA completed block surveys for active pygmy rabbit burrows by surveying 300-meter wide transects oriented north to south throughout the Project Area. Transects were surveyed for potential habitat by using ATVs. When potential habitat was found, this area was surveyed by foot for evidence indicating the presence of pygmy rabbits. Evidence of pygmy rabbits included: sightings, burrows, pellets, and tracks. The goal was for complete visual coverage of the survey area with additional searching necessary in areas where topography prevented full visual coverage. Non-habitat, such as riparian areas or burned areas lacking sagebrush, was excluded. Patches were extensively searched by beginning with the highest quality habitat nearest the transect line and then moving away from the transect line. The objective was to find active burrows (indicated by open burrows with recent pellets present in or near the opening) or rabbits (i.e., sightings) as evidence of occupancy. However, multiple locations within a patch with recent pellets were sufficient for classifying a patch as "occupied." If a pygmy rabbit was sighted, or active burrows or recent pellets were found, the locations of the sighting, burrow, and/or pellets was recorded.

Potential well pads, road access and existing roads were surveyed more extensively for pygmy rabbits. Active pygmy rabbit burrows were buffered by 100 feet. The locations of potential well pads and access roads were moved to avoid the 100-foot buffer placed on active pygmy rabbit burrows.

Greater Sage-grouse

Four known greater sage-grouse leks and one historic lek are known to occur in or within three miles of the Marys River Exploration Project Area. The four known leks include Antelope Springs, Bishop Flats 1, Bishop Flats 2, and Black Mountain (Barry's) leks. According to previous surveys, only Bishop Flats 2 and Black Mountain leks are active, with Black Mountain representing a trend lek by the Nevada Division of Wildlife (NDOW).

Exploration activities may occur during the sage-grouse breeding season (March 15 – May 30) in the future. Because of this possibility, HWA surveyed the known sage-grouse leks and searched for new or undocumented leks in and within three miles of the Marys River Exploration Project Area. Aerial surveys were conducted on March 27-28 and April 4-5, 2012 to search for new or undocumented leks. Surveys for new leks consisted of two flights over suitable habitat

(relatively flat areas with openings or low density sagebrush). Surveys were performed from sunrise to 1.5 hours after sunrise in a fixed-wing aircraft flying at an altitude of 100-300 feet above the ground and airspeed of 60-70 miles per hour. Transects were located approximately 0.5 miles apart and flown in a north-south direction starting on the east side of the survey area and working west. GPS coordinates of greater sage-grouse leks were recorded and the number of grouse observed was documented.

Three ground count surveys were conducted at each lek location within three miles of the Marys River Exploration Project Area to determine grouse occupancy and the maximum number of birds attending the lek. Surveys were conducted between March 26 and April 12, 2012. Surveys were performed from sunrise to 1.5 hours after sunrise, separated by 7 days. Leks were observed with binoculars or spotting scopes from a truck for approximately 15 minutes during each survey. Data collected during surveys at each lek location included maximum number of birds, activity, and sex of observed birds. Leks were classified as "active" if two or more strutting males were observed during any of the surveys or if sign (feathers, scat, or prints) was observed on the lek late in the strutting season.

Raptors

Exploration activities may occur during raptor breeding season (March 15 – July 31) in the future and active raptor nests will have buffered timing stipulations based on raptor species. Ground surveys were conducted to determine activity status of known nests and to search for new or previously undocumented nests. Nests were observed from a distance, using binoculars or spotting scopes, to determine whether or not adult birds were present on or near the nest. If adult raptors were present, the biologist remained at a distance to avoid disturbing the birds. If it was determined that no adult birds were present and if it was possible, the areas under, around, and in the nests were searched for signs of recent activity (fresh mute, regurgitated pellets, eggs, eggshell fragments, prey remains, etc.). Accurate GPS locations of raptor nests were recorded at the nest site and the nest status, condition, substrate, and species of raptor using the nest were documented.

During wildlife surveys, all opportunistic raptor sightings were recorded. When ground nesting raptors such as burrowing owls were opportunistically sighted, they were observed from a distance to find potential location of nests and or/active burrows. If the owl flushed from a burrow, the surrounding area was searched for signs of recent activity (fresh mute, regurgitated pellets, prey remains) and an accurate GPS location was recorded at the nest burrow.

RESULTS

During 2012, surveys for wildlife species conducted by HWA in and around Marys River Exploration Project Area included: 1) surveys for general vegetation types within the Project Area, 2) surveys for active pygmy rabbit burrows within the Project Area, 3) surveys of nesting raptors in and within one mile of the Project Area, 4) aerial surveys for new or previously undocumented greater sage-grouse leks in and within three miles of the Project Area, and 5) ground surveys of known sage-grouse leks in and within three miles of the Project Area.

Vegetation

Vegetation types were identified and delineated within the Marys River Exploration Project Area during the 2012 field season. The refined boundaries of vegetation types are illustrated in Figure 1. Twelve vegetation types were observed in the area and are described in Table 1. The most common vegetation types were sagebrush community, sagebrush/grassland, and riparian. Rabbitbrush (*Chrysothamnus viscidiflorus* and *Ericameria nauseosa*), cheatgrass (*Bromus tectorum*), and crested wheatgrass (*Agropyron cristatum*) were also common. Noxious weeds such as scotch thistle (*Onopordum acanthium*), hoary cress (*Cardaria draba*), perennial pepperweed (*Lepidium latifolium*), Russian knapweed (*Centaurea repens*), and leafy spurge (*Euphorbia esula*) were not documented during wildlife or vegetation surveys in the Marys River Exploration Project Area (note: surveys were conducted between March and April, wet areas were avoided by 100-foot buffers, no agricultural areas were surveyed, and timing of surveys may have been outside the growing season for these species). Further surveying for noxious weeds will be conducted on the well pads and access roads that will be chosen for development in Spring 2013.

The Elko whitlowcress was not found in the Project Area. Prior to conducting surveys, surveyors visited a location six miles south of the Project Area where the plant was known to occur (Nycole Burton-Elko BLM, personal communication March 2012) to become familiar with the characteristics necessary for the Elko whitlowcress. According to the Nevada Natural Heritage Program, the Elko whitlowcress occurs between 8,000 and 10,780 feet in elevation. Elevation at the known location was over 2,000 feet higher than the average elevation in the Marys River Exploration Project Area. Photos were taken at the known plant location outside the Project Area to show that the habitat and climatic conditions where the Elko whitlowcress was previously observed, do not occur in the Project Area (Appendix B).

Greater Sage-grouse

Aerial Surveys

Two rounds of aerial flights were conducted to search for new or previously undocumented sage-grouse leks in and within three miles of the Project Area. One new or previously undocumented sage-grouse lek was discovered in Section 9 T39N:R60E. This possible new lek is located approximately two miles outside of the Project Area to the northwest. The lek was discovered on March 28, 2012 during the first round of aerial surveys of the Project Area with six males present and four males present during the second round of aerial surveys on April 4, 2012. This location was shared with NDOW and the BLM – Elko District Field Office.

Ground Surveys

Five viable sage-grouse leks, including the possible new lek, occur in and within three miles of the Project Area (Map 1). Three leks were active (Black Mountain, Bishop Flats 2, and the possible new lek) and two leks were inactive (Antelope Springs and Bishop Flats 1) during 2012 (Tables 2 and 3). Bishop Flats 2 lek had a maximum count of 19 males and six females on March 29, 2012. A ground survey was conducted on April 5 for the possible new lek, following landowner access one week after its discovery during the first aerial flight, and a maximum of 10

males were observed. A second ground survey on April 12 was conducted during cold, windy conditions and no birds were present. Black Mountain lek is a trend lek surveyed by NDOW biologists and was not surveyed from the ground by HWA. Antelope Springs lek had no birds during any of the three surveys. This area was burned in 2007 and may have influenced the avoidance of birds during the lekking season. Bishop Flats 1 lek also had no birds during any of the three ground surveys.

Pygmy Rabbit

Prior to surveys, Noble Energy agreed with recommendations to avoid any active pygmy rabbit burrow by 100 feet for exploration activities such as well pads and access roads. A total of 1,248 active burrows were found within the Project Area (Map 1). Pygmy rabbit sign was observed at 1,609 burrows but only 1,248 were classified as active (i.e., recent pellets or sightings of pygmy rabbits). Out of 55 sections surveyed, 47 sections (85.4%) had active pygmy rabbit burrows present. Number of active burrows ranged from 0 to 198 per section with an average density of 22.7 active pygmy rabbit burrows per square mile within the 55 sections surveyed. A total of 22 individual pygmy rabbit sightings were documented throughout the Project Area. The largest concentrations of active pygmy rabbit burrows were found in Sections 7 and 26 T38N:R61E (Table 4). There were 198 active burrows recorded in Section 26, and 93 active burrows in Section 7. Trail cameras (Reconyx, Inc HC600 Hyperfire™ Covert IR) were positioned on three separate burrows with recent pygmy rabbit activity to capture photographs of movement/individuals at the burrows (Appendix C).

Well pads were shifted to avoid the 100-foot buffers placed on active pygmy rabbit burrows. Federal well #MR3861-7NE was reduced in size (approximately 13-acre rectangle instead of the 20 acre square) to avoid conflicts with active pygmy rabbit burrows. All other well pads remained at the 20-acre size to provide space for positioning the proposed 10-acre well pad.

Regular fluctuations or cycles of pygmy rabbits have not been documented, but anecdotal information suggests that populations can fluctuate dramatically (Weiss and Verts 1984, Crawford 2008). Crawford (2008) found pygmy rabbit survival rates can vary monthly and across fine spatial scales. Subsequently, pygmy rabbits appear highly susceptible to rapid declines and local extirpation (Weiss and Verts 1984, Crawford 2008). Even though predation appears to be the main source of pygmy rabbit mortality (Crawford 2008), the interactions of predation, food availability, and weather likely determine winter survival and could result in rapid declines.

Ultimately, conclusions that can be drawn from the survey results are limited, but they include: (1) pygmy rabbit presence was much higher than anticipated throughout the Project Area, and (2) pygmy rabbit density was variable across the Project Area. Clearly, more long-term research and intensive monitoring are necessary for understanding the intrinsic and extrinsic factors influencing pygmy rabbit populations across the landscape.

Raptors

Within the Marys River Exploration Project Area and its one-mile buffer, 23 nest sites were documented (Map 1) including: three burrowing owl nests, two great horned owl (*Bubo virginianus*) nests, three red-tailed hawk (*Buteo jamaicensis*) nests, seven unknown raptor nests, and eight common raven nests (*Corvus corax*) (Table 5). Twenty-one of the 23 nests were new or previously undocumented nests discovered in 2012. One historic nest (#9) was on private land and could not be surveyed due to landowner restrictions. Observing the nest by spotting scope or binoculars was not possible from public land.

Of the twenty-one viable nests surveyed, two great horned owl nests (#23 and 29), two red-tailed hawk nests (#24 and 31), and four common raven nests (#15, 30, 33, and 35) were active (Table 5).

Active raven nest (#15) was located in a cross beam of the radio tower in Section 31 T39N:R61E. A pair of red-tailed hawks was perched near the top of the radio tower, above the raven nest, on numerous occasions during the survey period. However, an associated nest with the red-tailed hawk pair was not found.

Burrowing Owl

A total of five burrowing owls were sighted during the survey period (Table 6, Map 1). Three of these sightings were observed with individual birds exiting a burrow. These locations were recorded as potential nests (#18, 27, and 28). The two remaining sightings were visuals of individual birds, but there was not enough evidence (i.e. fresh mute, regurgitated pellets, or prey remains) to suggest a potential nest site. Proposed Fee Well #MR3961-26 was approximately 0.5 miles from one of these burrowing owl sightings (Table 7, Map 1).

Two adults were observed exiting a burrow at potential nest #27 which had high quantities of pellets and fresh mute outside the burrow. A trail camera was placed at this location to verify the use of the mating pair. Photos documented the pair using the burrow, and copulation among the pair was recorded (Appendix D). This potential nest site was approximately 0.27 miles from proposed Fee Well #3861-27SW (Table 7). Because the observations were outside the survey period for breeding, these locations may need further surveys next spring to verify actual nest sites and to determine if timing stipulations should be applied.

DISCUSSION

The majority of the Project Area has been invaded by cheatgrass, an invasive annual grass that has led to increased wildfire frequency and subsequent loss of sagebrush communities important to sage-grouse (Baker 2011). Fire frequency is increased with cheatgrass invasion; the establishment of cheatgrass causes substantial competition for resources used by native shrub-steppe species (Whisenant 1990, Knick and Rotenberry 1997). The likelihood of future fires can lead to the loss of perennial grasses and shrubs (Crawford et al. 2004) that are needed for multiple life stages for sage-grouse. Sage-grouse in the Great Basin region, which includes Nevada, are greatly influenced by habitat loss caused by wildfire. Because the Marys River

Project Area has been invaded by cheatgrass, human disturbance could promote the propagation of this invasive species and potentially increase the spread of wildfire in the area. Any disturbance activities in this area will need to implement precautionary measures to reduce the risks associated with wildfire, especially to sage-grouse. Some precautionary measures include suppression tactics, training programs, and proper cleaning of field vehicles to prevent the spread of noxious weeds or invasive species into sage-grouse habitat.

OTHER WILDLIFE

During the course of surveys conducted within the Marys River Exploration Project Area in 2012 other wildlife species and sign were observed and documented, including 37 bird species, 13 mammal species, and one reptile species:

Birds	
American Kestrel (*Falco sparverius*)	Long-billed Curlew (*Numenius americanus*)
American Robin (*Turdus migratorius*)	Mallard (*Anas platyrhynchos*)
American Wigeon (*Anas americana*)	Mourning Dove (*Zenaida macroura*)
Bald Eagle (*Haliaeetus leucocephalus*)	Northern Flicker (*Colaptes auratus*)
Black-billed Magpie (*Pica hudsonia*)	Northern Harrier (*Circus cyaneus*)
Brewer's Sparrow (*Spizella breweri*)	Northern Pintail (*Anas acuta*)
Birds (Continued)	
Bufflehead (*Bucephala albeola*)	Northern Shoveler (*Anas clypeata*)
Canada Goose (*Branta canadensis*)	Prairie Falcon (*Falco mexicanus*)
Canvasback (*Aythya valisineria*)	Red-winged Blackbird (*Agelaius phoeniceus*)
Chukar (*Alectoris chukar*)	Rough-legged Hawk (*Buteo lagopus*)
Cinnamon Teal (*Anas cyanoptera*)	Sage Sparrow (*Amphispiza belli*)
Common Snipe (*Gallinago delicata*)	Sage Thrasher (*Oreoscoptes montanus*)
Dark-eyed Junco (*Junco hyemalis*)	Sandhill Crane (*Grus canadensis*)
Golden Eagle (*Aquila chrysaetos*)	Short-eared Owl (*Asio flammeus*)
Gray Partridge (*Perdix perdix*)	Turkey Vulture (*Carthartes aura*)
Horned Lark (*Eremophila alpestris*)	Western Meadowlark (*Sturnella neglecta*)
Killdeer (*Charadrius vociferus*)	Willet (*Catoptrophorus semipalmatus*)
Loggerhead Shrike (*Lanius ludovicianus*)	Wilson's Phalarope (*Phalaropus tricolor*)
Northern Shrike (*Lanius excubitor*)	
Mammals	
Badger (*Taxidea taxus*)	Ord's Kangaroo Rat (*Dipodomys ordii*)
Beaver (*Castor Canadensis*)	Pocket Gopher spp. Mounds
Black-tailed Jackrabbit (*Lepus californicus*)	Porcupine (*Erethizon dorsatum*)
Coyote (*Canis latrans*)	Pronghorn (*Antilocapra americana*)
Desert Cottontail (*Sylvilagus auduboni*)	Townsend's Ground Squirrel (*Urocitellus townsendii*)
Least Weasel (*Mustela nivalis*)	Uinta Chipmunk (*Tamias umbrinus*)
Mule Deer (*Odocoileus hemionus*)	

Reptiles	
Desert Horned Lizard (*Phrynosoma platyrhinos*)	

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Table 1. Descriptions and area summaries in acres for vegetation types observed within the Marys River Exploration Project Area during Spring 2012.

Vegetation Type	Description	Field Observations	Area (ac)	% Project Area
Agricultural Land	Agricultural land and waste water irrigation areas. Most areas not currently farmed.	Pivot and other irrigated fields.	42.2	<0.1
Bare	Sparse vegetation cover.	Areas heavily used by cattle.	6.1	<0.1
Disturbed	Roads, pipelines, ranches, and industry infrastructure.	Crested wheatgrass (*Agropyron cristatum)* Cheatgrass (*Bromus tectorum)*	22.7	<0.1
Drainage	Primarily dry, ephemeral streams dominated by upland vegetation.	Wyoming big sagebrush (*Artemisia tridentata ssp. wyomingensis)* Crested wheatgrass (*Agropyron cristatum)* Cheatgrass (*Bromus tectorum)*	3,452.1	8.8
Grass Dominated	Dominated by non-native grasses, with shrubs comprising a very small percentage of overall cover (<5%).	Crested wheatgrass (*Agropyron cristatum)* Cheatgrass (*Bromus tectorum)*	1,919.7	4.9
Greasewood	Dominated by greasewood with shrubs occurring approximately 5-15% cover.	Greasewood (*Sarcobatus vermiculatus*)	25.7	<0.1
Rabbitbrush/ Grass Mix	Dominated by rabbitbrush and a mixture of grasses with shrubs occurring at approximately 10-20% cover.	Rabbitbrush *(Chrysothamnus viscidiflorus* and *Ericameria nauseosa)* Crested wheatgrass (*Agropyron cristatum)* Cheatgrass (*Bromus tectorum)*	495.5	1.3
Riparian	Primarily wet, perennial streams dominated by vegetation.	Canada thistle (*Cirsium arvense)* Crested wheatgrass (*Agropyron cristatum)* Sedges (*Carex sp.)* Willow (*Salix* spp.)	4,392.6	11.2
Sagebrush Community	Dominated by sagebrush with shrubs occurring at approximately 10-30% cover.	Wyoming big sagebrush (*Artemisia tridentata ssp. wyomingensis)* Rabbitbrush *(Chrysothamnus viscidiflorus* and *Ericameria nauseosa)* Crested wheatgrass (*Agropyron cristatum)* Bluebunch wheatgrass (*Pseudoroegneria spicata)* Spiny phlox (*Phlox hoodii*)	13,658	34.7

Table 1. Continued.

Vegetation Type	Description	Field Observations	Area (ac)	% Project Area
Sagebrush/ Rabbitbrush	Dominated by sagebrush and mixture of rabbitbrush, with shrubs (predominantly sagebrush) occurring at approximately 10-20% cover.	Wyoming big sagebrush (*Artemisia tridentata ssp. wyomingensis)* Rabbitbrush *(Chrysothamnus viscidiflorus* and *Ericameria nauseosa)*	605.7	1.5
Sagebrush-Grassland	Dominated by grasses, with shrubs (predominantly sagebrush) occurring at approximately 5% cover.	Wyoming big sagebrush (*Artemisia tridentata ssp. wyomingensis)* Rabbitbrush *(Chrysothamnus viscidiflorus* and *Ericameria nauseosa)* Crested wheatgrass (*Agropyron cristatum)* Western wheatgrass (*Pascopyrum smithii)* Bluebunch wheatgrass (*Pseudoroegneria spicata)* Cheatgrass (*Bromus tectorum)*	14,736.6	37.4
Playa	Natural depression containing water, or evidence of water (ex. salt deposits, wetland vegetation).	Canada thistle (*Cirsium arvense)* Willow (*Salix* spp.)	0.43	<0.1

Table 2. Results of greater sage-grouse lek count surveys conducted by HWA for the Marys River Exploration Project Area in Elko County, Nevada during 2012.

Lek Name	Date	Obs. Begin	Obs. End	# Males	# Females	# Unk	Total
Bishop Flats 1	3/26/2012	714	730	0	0	0	0
Bishop Flats 1	3/29/2012	619	640	0	0	0	0
Bishop Flats 1	4/4/2012	627	642	0	0	0	0
Bishop Flats 1	4/12/2012	614	632	0	0	0	0
Bishop Flats 2	3/26/2012	631	704	18	0	0	18
Bishop Flats 2	3/29/2012	648	708	19	6	0	25
Bishop Flats 2	4/4/2012	650	722	8	1	0	9
Bishop Flats 2	4/11/2012	545	610	18	0	0	18
Antelope Springs	3/27/2012	620	710	0	0	0	0
Antelope Springs	4/3/2012	639	708	0	0	0	0
Antelope Springs	4/10/2012	648	713	0	0	0	0
Possible New Lek	3/28/2012*	645	700	6	0	0	6
Possible New Lek	4/4/2012*	720	721	4	0	0	4
Possible New Lek	4/5/2012	631	709	10	0	0	10
Possible New Lek	4/12/2012	608	633	0	0	0	0

* Aerial Survey

Table 3. Summary of greater sage-grouse leks in and around Marys River Exploration Project Area in Elko County, Nevada during 2012.

Lek Name	Status	Source	Male Max Count 2012	Legal Location			UTM NAD83	
				Twn	Rng	Sec	Easting	Northing
Antelope Springs	Inactive	NDOW	0	39N	61E	20	658900	4568000
Black Mountain (Barry's)[1]	Active	NDOW	Unknown	39N	61E	9	659695	4571894
Bishop Flats 1	Inactive	NDOW	0	38N	62E	6	666923	658900
Bishop Flats 2	Active	NDOW	19	38N	62E	5	667414	4563602
Possible New Lek	Active	HWA	10	39N	60E	9	650495	4570873

[1] Trend lek surveyed by Nevada Division Of Wildlife (NDOW).

Table 4. Pygmy rabbit sign/sightings throughout Noble Energy's Marys River Exploration Project Area during Spring 2012.

Section	Township	Range	# of Active Burrows[1]	Total # of Burrows[2]	Sightings
01	T38N	R60E	70	83	2
02	T38N	R60E	17	29	0
11	T38N	R60E	19	34	0
12	T38N	R60E	10	13	0
13	T38N	R60E	52	70	0
14	T38N	R60E	17	22	0
23	T38N	R60E	12	13	1
24	T38N	R60E	0	0	0
25	T38N	R60E	11	12	0
26	T38N	R60E	10	10	0
02	T38N	R61E	0	0	1
03	T38N	R61E	13	20	0
04	T38N	R61E	18	26	0
05	T38N	R61E	--	--	--
06	T38N	R61E	11	22	0
07	T38N	R61E	93	116	0
08	T38N	R61E	7	7	1
09	T38N	R61E	28	36	1
10	T38N	R61E	0	0	0
11	T38N	R61E	12	12	0
14	T38N	R61E	25	34	0
15	T38N	R61E	6	6	0
16	T38N	R61E	3	3	0
17	T38N	R61E	22	26	0
18	T38N	R61E	45	53	1
19	T38N	R61E	10	11	0
20	T38N	R61E	12	16	1
21	T38N	R61E	20	22	0
22	T38N	R61E	20	20	1
23	T38N	R61E	51	115	0
26	T38N	R61E	198	282	2
27	T38N	R61E	9	27	1
28	T38N	R61E	0	0	0
29	T38N	R61E	29	32	1
30	T38N	R61E	81	86	0
31	T38N	R61E	--	--	--
32	T38N	R61E	7	7	0
33[3]	T38N	R61E	10	10	0
34	T38N	R61E	20	20	0
35[3]	T38N	R61E	4	4	1

Table 4. Continued.

Section	Township	Range	# of Active Burrows[1]	Total # of Burrows[2]	Sightings
23	T39N	R60E	15	16	1
24	T39N	R60E	54	57	1
25	T39N	R60E	15	15	3
26	T39N	R60E	0	1	0
35	T39N	R60E	20	24	1
36	T39N	R60E	3	5	0
19	T39N	R61E	15	19	0
20	T39N	R61E	0	0	0
21	T39N	R61E	0	0	0
22	T39N	R61E	39	46	1
23	T39N	R61E	4	4	0
26	T39N	R61E	47	49	0
27	T39N	R61E	19	25	0
28	T39N	R61E	--	--	--
29	T39N	R61E	--	--	--
30	T39N	R61E	--	--	--
31	T39N	R61E	5	5	0
32	T39N	R61E	31	32	1
33	T39N	R61E	--	--	--
34	T39N	R61E	9	11	0
35[4]	T39N	R61E	0	1	0

[1] # of Active Burrows: Burrows with recent sign such as fresh pellets, tracks, and sightings.

[2] Total # of Burrows: Burrows with old (currently inactive) pellets and recent sign outside burrows.

[3] Only southern half of section surveyed due to landowner access.

[4] Only southern half surveyed to avoid the historic area around Metropolis in the northern half of section.

-- Private land with no access.

Table 5. Locations and status of nest sites in and around the Marys River Exploration Project Area during 2012.

			Nest		UTM NAD83		Legal Location			
Nest ID	**Species**	**Status[1]**	**Substrate[2]**	**Condition**	**Northing**	**Easting**	**QQ**	**Sec**	**Twn**	**Rng**
1	Unknown Raptor	Historic	BUR	Gone	4557087	648986	SWNE	29	38N	60E
9*	Unknown Raptor	Unknown	UNK	Unknown	4568517	669785	NESW	21	39N	62E
15	Common Raven	Active	PWR	Excellent	4564819	656228	SWSW	31	39N	61E
16	Common Raven	Tended	PWR	Good	4553345	654749	SWSW	1	37N	60E
17	Common Raven	Tended	BLD	Excellent	4565890	662535	NWNW	35	39N	61E
18	Burrowing Owl	Visited	BUR	Good	4559693	661969	SWSE	15	38N	61E
19	Common Raven	Tended	BLD	Excellent	4565896	662533	NWNW	35	39N	61E
21	Common Raven	Visited	PWR	Fair	4551419	653197	SWSW	14	37N	60E
22	Unknown Raptor	Inactive	ANS	Poor	4565916	662756	NWNW	35	39N	61E
23	Great Horned Owl	Active	CTL	Excellent	4567841	665576	SESE	24	39N	61E
24	Red-tailed Hawk	Active	CTL	Excellent	4568668	662459	SENE	23	39N	61E
25	Unknown Raptor	Inactive	ANS	Fair	4569331	662013	NWNE	22	39N	61E
26	Red-tailed Hawk	Inactive	CTL	Fair	4569360	662400	NENE	22	39N	61E
27	Burrowing Owl	Tended	BUR	Good	4556407	661711	SESW	34	38N	61E
28	Burrowing Owl	Tended	BUR	Good	4558309	664072	SESE	23	38N	61E
29	Great Horned Owl	Active	CTL	Excellent	4566346	668655	SESE	29	39N	62E
30	Common Raven	Active	PWR	Excellent	4569410	653491	SESW	14	39N	60E
31	Red-tailed Hawk	Active	PWR	Excellent	4569510	653820	SWSE	14	39N	60E
32	Unknown Raptor	Inactive	JUN	Fair	4568031	654439	SWSW	23	39N	60E
33	Common Raven	Active	CLF	Excellent	4555791	662132	SWNE	34	38N	61E
34	Unknown Raptor	Inactive	PWR	Good	4569728	654426	NESE	14	39N	60E
35	Common Raven	Active	PWR	Excellent	4569182	652786	NENE	22	39N	60E
36	Unknown Raptor	Inactive	ANS	Fair	4556674	649019	NWSE	29	38N	60E

[1] Active - Eggs, chicks, or adult in incubating position in nest
Inactive - No eggs or chicks
Tended - Fresh material added to nest
Visited - Adult perched at or near nest

[2] ANS - Artificial Structure
BLD - Building
BUR - Burrow
CLF - Cliff
CTL - Cottonwood Live
JUN - Juniper
PWR - Power Line
UNK - Unknown

* No landowner permisson to survey nest.

Table 6. Burrowing owl sightings and potential nests encountered during surveys in the Marys River Exploration Project Area during March and April, 2012.

		UTM NAD 83		Legal Location				
Nest ID	**Date**	**Easting**	**Northing**	**SEC**	**TWN-N**	**RNG-E**	**Activity**	**Sign[1]**
18	3/29/2012	661969	4559690	15	38	61	Flushed 1 adult from burrow.	Moderate
27	3/30/2012	661711	4556410	34	38	61	Flushed 2 adults from burrow.	High
28	3/31/2012	664072	4558310	23	38	61	Flushed 1 adult from burrow.	Moderate
--[2]	4/6/2012	662597	4566870	26	39	61	Flushed 1 adult but no burrow found.	None
--[2]	4/10/2012	656164	4559380	19	38	61	Flushed 1 adult from burrow.	Low

[1] High - Pellets, fresh mute, prey items present.
Moderate - Few pellets, minimal mute.
Low - No pellets present, minimal amount of mute.

--[2] Not enough sign/evidence to classify as possible nest.

Table 7. Wildlife conflicts associated with potential well pads in the Marys River Exploration Project Area in Elko County, Nevada during Spring 2012.

		Wildlife Conflicts?		
Lease	**Well Name**	**Pygmy Rabbit**	**Nesting Raptor**	**Greater Sage-Grouse**
Federal	MR3860-12SE	No	No	No
Federal	MR3860-13SE	No	No	No
Federal	MR3860-1NE	No	No	No
Federal	MR3860-1SE	No	No	No
Federal	MR3860-25	No	No	No
Federal	MR3861-18	No	No	No
Federal	MR3861-30	No	No	No
Federal	MR3861-4	No	No	No
Federal	MR3861-4NE	No	No	No
Federal	MR3861-6SE	No	No	No
Federal	MR3861-7NW	No	No	No
Federal	MR3861-7SE	No	No	No
Federal	MR3861-8	No	No	No
Federal	MR3861-9	No	No	No
Federal	MR3861-9NE	No	No	No
Federal	MR3960-25SE	No	No	No
Federal	MR3961-31NE	No	No	No
Federal	MR3961-31SE	No	No	No
Federal	MR3961-32SE	No	No	No
Federal	MR3961-34W	No	No	No
Fee	MR3861-9SW	No	No	No
Fee	MR3861-14	No	No	No
Fee	MR3861-17	No	No	No
Fee	MR3861-17NE	No	No	No
Fee	MR3861-20	No	No	No
Fee	MR3861-20SE	No	No	No
Fee	MR3861-21NE	No	No	No
Fee	MR3861-21W	No	No	No
Fee	MR3861-27	No	No	No
Fee	MR3861-27NE	No	No	No
Fee	MR3861-27SW	No	Potential	No
Fee	MR3861-29	No	No	No
Fee	MR3861-3	No	No	No
Fee	MR3961-26	No	Potential	No

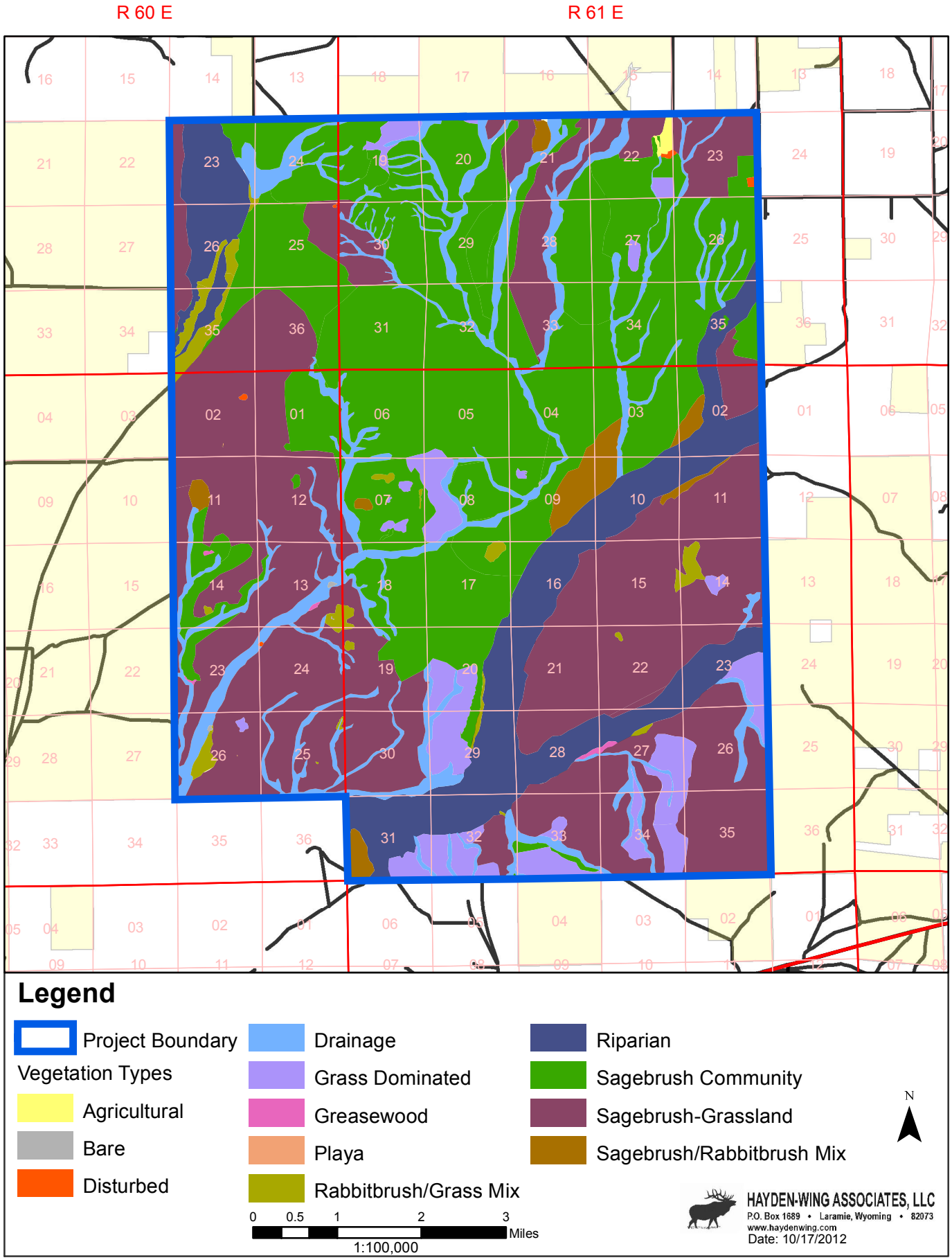


Figure 1. General vegetation types for the Marys River Exploration Project Area during Spring 2012.

APPENDIX A

Pygmy Rabbit Survey Protocol

Marys River Seismic Project

Pre-Construction Pygmy Rabbit Surveys

Purpose: Determine presence/absence of pygmy rabbits within potential habitat.

Survey requirements (as directed by BLM—EFO and WFO):

Time:	Diurnal—anytime except during or immediately following accumulating snowfall.
Survey Area:	All potential habitats on BLM land within the project area.
Timing:	At least one pre-construction survey during winter/spring.

Methods:

Training :

1) Review the supporting information for pygmy rabbits (see Ulmshneider et al. 2004).
2) Prior to fieldwork, examine pellet specimens, HWA training DVD and photos collected by previous HWA field projects. Before surveying, look at pygmy rabbit habitat, burrows and pellets with an experienced person in the field. If possible, also look at badger and ground squirrel diggings, to help you learn to distinguish the differences between their burrows and those of pygmy rabbits.

Potential habitat:

Pygmy rabbit burrows are usually found in relatively taller (>1 ½ ft) and denser (>30% canopy cover) big sagebrush (*Artemisia tridentata)* and deep soils. Sometimes they are found in shorter sagebrush habitats or short to medium height sagebrush stands also known as "mima mounds". Subspecies of sagebrush that are used include Wyoming (*A. t. wyomingensis*), mountain (*A. t. vaseyana*), and Great Basin (*A. t. tridentata*). Other shrub species may be present, including bitterbrush (*Purshia tridentata)*, rabbitbrush (*Chrysothamnus* spp.*)*, greasewood (*Sarcobatus vermiculatus)*, snowberry (*Symphoricarpos* spp.*)*, and juniper (*Juniperus* spp.). In Nevada, pygmy rabbits may use dense rabbitbrush when it is the dominant shrub or is co-dominant with sagebrush (Ulmschneider et al. 2004).

Because the pygmy rabbit typically excavates its own burrow, soils are typically loamy and deeper than 20 inches (Ulmschneider et al. 2004). Burrows in Nevada are typically found in soils that are light-colored and friable. Burrows usually have more than one opening and are associated with a system (Ulmschneider et al. 2004). Following a study in Nevada and California, the presence of pygmy rabbits were found to be higher with increasing sagebrush cover, decreasing understory stem density, absence of cheatgrass, absence of reddish soils and absence of rodent burrows (Larrucea and Brussard 2008).

According to Ulmsheider et al (2004):

> "In Nevada pygmy rabbits are found in broad valley floors, drainage bottoms, alluvial fans, and other areas with friable soils. Burrows can be located in mounds (either natural or human caused) when they are available in these types of soils. Pygmy rabbit burrows are easiest to find in light colored, friable soils. These soils are usually found in valley bottoms and can be associated with rabbitbrush / sagebrush vegetation. The understory of grasses and forbs can vary from almost none (as in the Reese River Valley) to dense (as in the Sheldon Range). When there are a lot of rabbits present in a valley they are generally distributed throughout the area. However, when there are only a few individuals, they are generally located in the largest, most dense clumps of vegetation (as in the White River Valley)."

During winter, pygmy rabbit tracks and pellets in the snow can be more obvious than other times of the year. Also during this time of the year, juvenile cottontails are nearly the same size as adults, which should minimize overlap in track size between the species. After a fresh light snow, fresh tracks and fresh pellets are obvious. Fresh tracks can be followed to burrow entrances. Rabbits will clean out burrow entrances following snowfall, making identification of occupied burrows easier.

Survey Protocol:

1. Search for potential habitat by using transects oriented north to south and spaced 300 meters apart (approximate distance between seismic source lines). Only BLM land within the project boundary will be surveyed. Search for potential habitat using ATVs, then search for evidence indicating the presence of pygmy rabbits within potential habitat on foot. The goal is for complete visual coverage of the survey area so additional searching may be necessary in areas where topography prevents full visual coverage. But, non-habitat (i.e., riparian habitat or burned areas) can be excluded. Evidence of pygmy rabbits include: burrows, pellets, and tracks. Extensively search patches beginning with the highest quality habitat nearest the transect line first. The objective is to find signs of current pygmy rabbit occupancy, which includes active burrows (indicated by open burrows with recent pellets present in or near the opening) or rabbits (i.e., sightings). However, multiple locations within the patch with recent pellets is sufficient for classifying a patch as "occupied" as well. If a pygmy rabbit is sighted, or active burrows or recent pellets are found, record the location of the sighting/burrow/pellets. Record the locations of inactive burrows and old sign as well as these areas have a high likelihood of future re-colonization. Also search all open burrows for pygmy rabbit sign since pygmy rabbits will modify burrows of other species and/or the burrow entrances may be enlarged by badgers.

   A used burrow with fresh pellets (B+FP) has the following characteristics: brown, green, or black pellets near a burrow, at least one entrance open, without cobwebs or debris that shows lack of use, usually shows a trail. In snow, tracks and/or pellets visible.

2. Map the perimeter of occupied patches when appropriate, if the habitat patch is well-defined, or if the occupied habitat intersects an area proposed for ground disturbance (standards will be developed in the field).

3. If only inactive burrows or old pellets are found, or if no pygmy rabbit sign is found, continue to search the patch with extreme care until you are absolutely confident the patch is unoccupied. Record whatever evidence you do find, but mapping the patch is not necessary.

4. Every occupied patch of habitat must have at least one point recorded documenting a sighting, active burrow, or recent pellets. *Tracks alone are not sufficient to record a patch as occupied!*

5. Locations of active burrows, sightings, and recent sign should be photographed.

   Example: If you search a patch and find old pellets, recent pellets, tracks, inactive burrows, and an active burrow, you should record the GPS location at the location of the **active burrow**. However, if necessary or desired, the locations of different types of pygmy rabbit sign, multiple sightings within a patch, or combinations of sightings and sign can all be recorded separately. Therefore, do not hesitate taking several GPS locations within a single patch.

Definitions:

- *Active Burrow* -- Open burrow with sign of recent use, including recent pellets in the entrance and either fresh tracks or diggings.
- *Recent Pellets* -- Brown, green, or black in color sometimes with a sheen coating.
- *Old Pellets* -- Normally gray and weathered.

References

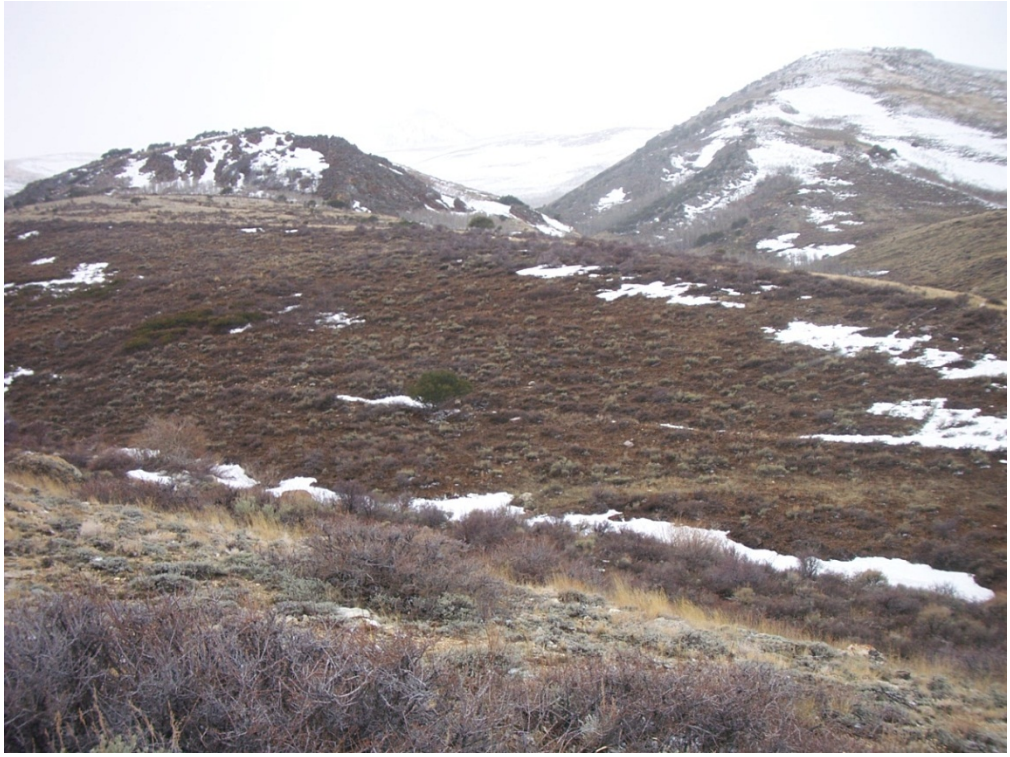
Larrucea, E. S., and P. F. Brussard. 2008. Habitat selection and current distribution of the pygmy rabbit in Nevada and California, USA. Journal of Mammalogy 89:691–699.

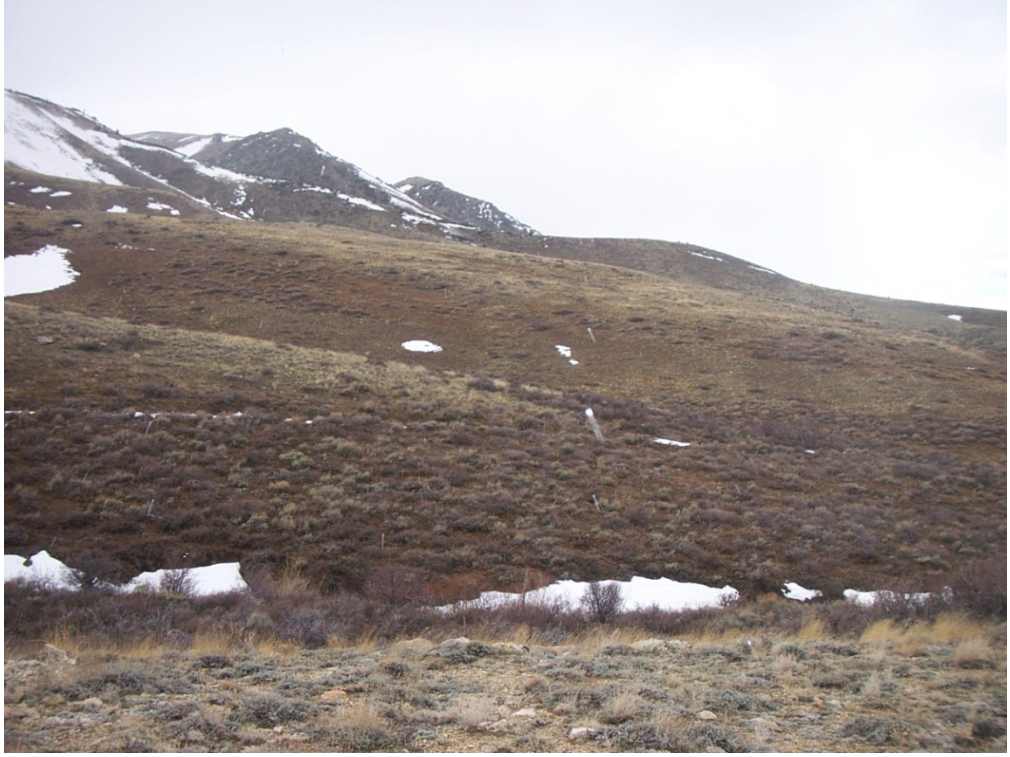
Ulmschneider, H., D. Hays, D. Roberts, J. Rachlow, T. Forbes, J. Himes, E. Sequin, M. Haworth, T. Katzner, A. Kozlowski, R. Rauscher, and P. Lauridson. 2004. Surveying for pygmy rabbits (*Brachylagus idahoensis*). Available at <http://sagemap.wr.usgs.gov/docs/DraftPygmy%20RabbitProtocol6_10_04.doc>

APPENDIX B

Elko Whitlowcress Observation Point Photos

APPENDIX B. Location of Elko Whitlowcress observation point provided by BLM, March 2012. UTM NAD83 Zone 11 N658263 : E4545297.





APPENDIX C

Pygmy Rabbit Photos

APPENDIX C. Trail camera photos on pygmy rabbit burrows in the Marys River Project Area.

Section 4 T38N:R61E near the Radio Tower.

Section 4 T38N:R61E near the Radio Tower.

Section 26 T38N:R61E near the Tetuan Well.

Section 26 T38N:R61E near the Tetuan Well.

Section 27 T39N:R61E.

Section 27 T39N:R61E.

Section 28 T39N:61E.

Section 28 T39N:61E.

Section 25 T39N:R60E.

Section 25 T39N:R60E.

Section 25 T39N:R60E.

Section 25 T39N:R60E.

APPENDIX D

Potential Burrowing Owl Nest Photos

APPENDIX D. Trail camera on potential burrowing owl nest in Section 27 T38N:R61E.

2012-04-04 2:42:11 AM M 1/5
44°F
HC600 COVERT
RECONYX

2012-04-04 2:42:12 AM M 2/5
44°F
HC600 COVERT
RECONYX

2012-04-04 2:42:13 AM M 3/5
44°F
HC600 COVERT
RECONYX

2012-04-04 2:42:13 AM M 4/5
44°F
HC600 COVERT
RECONYX

2012-04-04 2:42:14 AM M 5/5
44°F
HC600 COVERT
RECONYX

2012-04-04 11:43:28 PM M 2/5
25°F
HC600 COVERT
RECONYX

Exhibit K

Memorandum of Understanding – Aqua Program

MEMORANDUM OF UNDERSTANDING

between

STATE OF NEVADA
by the
NEVADA DIVISION OF MINERALS
and
NEVADA DIVISION OF ENVIRONMENTAL PROTECTION
and
DESERT RESEARCH INSTITUTE

and

NOBLE ENERGY, INC.

This Memorandum of Understanding (hereinafter MOU) to establish the Aquifer Quality Assessment Program to gather and share data and information on groundwater and geological conditions associated with the fate and transport of chemicals used for hydraulic fracturing (hereinafter AQUA PROGRAM) is entered into by and between the following parties: (1) the State of Nevada through the Division of Minerals of the Commission on Mineral Resources (hereinafter NDOM), the Division of Environmental Protection of the Department of Conservation and Natural Resources (hereinafter NDEP), and the Board of Regents of the Nevada System of Higher Education on behalf of the Desert Research Institute (hereinafter DRI) and (2) Noble Energy, Inc. (hereinafter NOBLE). This MOU will become effective as of the date of the signature of the last party to sign.

BACKGROUND AND OBJECTIVES

NOBLE is actively engaged in the exploration of hydrocarbon resources on 370,000 leased acres in Elko County, Nevada. The exploration wells will be drilled on a combination of private lands and lands managed by the United States Bureau of Land Management located in the Upper Humboldt River Basin stretching from the Mary's River Valley southwest along the west side of the Ruby Mountains to the Huntington River Valley to the South. Livestock grazing is the primary existing surface use.

Prior exploration activity in the area was of the deeper and older Paleozoic targets. NOBLE's exploration activity primarily targets the Tertiary aged strata, including the Humboldt and Elko formations at depths between 6,000 and 12,000 feet, but NOBLE may investigate other formations to evaluate prospective hydrocarbon resources. NOBLE seeks to bring modern drilling and completion techniques to assess the economic viability of the low permeability Tertiary aged strata. NOBLE's exploration will involve multiple wellbore tests intended to provide data and information necessary to understand the hydrocarbons in place and the suitable stimulation for economic development. The resulting proprietary data will assist NOBLE in determining the merits of full field development.

At the same time, because of Nevada's statutory mandate to protect all "waters of the State" regardless of depth or water quality, NDOM and NDEP are interested in the data and information related to groundwater that NOBLE may gather during its exploration activities. The AQUA PROGRAM, as described in Section II, sets forth a process by which NOBLE, with the assistance of DRI, will gather and share data and information on groundwater and geological conditions based on NOBLE's exploratory drilling. DRI will use this data to develop a hydrologic model and prepare reports evaluating the fate and transport of chemicals used for hydraulic fracturing. The final reports prepared by DRI will be shared with NDOM and NDEP, to assist in the development of a program to assess the effects of hydraulic fracturing stimulations in the State of Nevada, and shall be made publicly available.

I. AUTHORITY.

NDOM has the authority to enter into this MOU pursuant to NRS 513.073(5), which requires NDOM to "administer the provisions of Chapter 522 of NRS." NDEP has the authority to enter into this MOU pursuant to NRS 445A.450 (2), which permits NDEP to "advise, consult, and cooperate with other agencies of the State ... and with other persons in furthering the purposes of the Nevada Water Pollution Control Law." The Board of Regents of the Nevada System of Higher Education has the authority to enter into this MOU on behalf of DRI pursuant to NRS 396.7952(1), which permits DRI to "enter into contracts with governmental or private agencies ... [wishing] to use the services ... of the Desert Research Institute." Upon approval of the Nevada Interim Finance Committee, DRI also has the authority to receive from NOBLE, hold in trust, and manage funds for the special purpose of implementing the Consulting Agreement dated March 13, 2013 and entered into by DRI and NOBLE for purposes of implementing the AQUA PROGRAM (hereafter CONSULTING AGREEMENT).

II. AQUIFER QUALITY ASSESSMENT PROGRAM.

A. Proposed Project Area for the AQUA Program.

NOBLE plans to drill and complete up to as many as twenty (20) exploration wells over a period of three (3) years beginning from the start (also known as spud) of the first well (hereinafter EXPLORATION PHASE). NOBLE will locate the exploration wells based largely on the results of the two (2) 2012 3D seismic surveys that covered approximately 60 square miles. NOBLE plans to acquire a third 3D seismic survey in the fall of 2013. The data from the third 3D seismic survey is anticipated to be considered in siting of additional exploration wells. The lands to be drilled during the EXPLORATION PHASE, described below and separated into three areas, are shown on Attachment A (hereinafter PROJECT AREA or 3 PROJECT AREAS). The final number of exploration wells to be drilled, not to exceed twenty (20), will be dependent upon Noble's review of data associated with its EXPLORATION PHASE.

Area 1: Huntington - Located ~ 24 Miles South of Elko, NV
Township 28N, Range 55E, Sections 1-3
Township 28N, Range 56E, Sections 2-6

Township 29N, Range 55E, Sections 1-3, 10-15, 22-27, 34-36
Township 29N, Range 56E, Sections 2-11, 14-23, 26-35
Township 30N, Range 55E, Sections 1, 12-13, 24-25, 34-36
Township 30N, Range 56E, Sections 3-10, 15-22, 27-35
Township 31N, Range 55E, Sections 25-36
Township 31N, Range 56E, Sections 27-34

Area 2: Humboldt - Located ~16 Miles East of Elko, NV
Township 34N, Range 58E, Sections 1-30
Township 34N, Range 59E, Sections 5-8, 17-20
Township 35N, Range 58E, Sections 19-36
Township 35N, Range 59E, Sections 19-20, 29-32

Area 3: Mary's River - Located ~ 7 Miles NW of Wells, NV
Township 38N, Range 60E, Sections 1, 2, 11-14, 23-26
Township 38N, Range 61E, Sections 2-11, 14-23, 26-35
Township 39N, Range 60E, Sections 23-26, 35-36
Township 39N, Range 61E, Sections 19-23, 26-35

B. Data Collection and Use.

During the EXPLORATION PHASE, NOBLE, with the assistance of DRI, will collect data and information needed by DRI to prepare the reports required under Section II.F. Such reports will be used by NDOM and NDEP to assess the potential effect of NOBLE's exploration activities on "waters of the State" of Nevada and facilitate the expansion of Nevada's developing regulatory program to address relevant hydraulic fracturing considerations. As detailed in Sections II.C, through E, data collection will include: groundwater monitoring and sampling; use of chemical and/or isotopic tracers; petrophysical logging; and microseismic monitoring.

C. Groundwater Monitoring.

NOBLE will gather data from water wells permitted by the Nevada State Engineer's Office as Domestic, Irrigation, and/or Stock (Wells) before and after the hydraulic fracturing occurring in the EXPLORATION PHASE in the three (3) PROJECT AREAS described in Section II.A. NOBLE will make reasonable attempts to secure permission for groundwater monitoring from all landowners within the PROJECT AREA. NOBLE will document any sites where permission for groundwater monitoring was refused and provide such documentation to NDOM and NDEP. Groundwater monitoring of Wells will be performed only with the permission of the landowner or owner of the Well. Precise well location information may be redacted from any reports prepared by DRI under Section II.F to protect landowner or the Well owners' privacy concerns. As necessary, NOBLE will also seek permission to gather data from any groundwater well drilled by NOBLE for use in its operations.

1. Parameters.

To the extent adequate water volumes are available and to the extent landowner permission is obtained, as required, NOBLE will obtain a sample from each Well and Monitoring Well and will analyze for the following parameters:

Parameters	Units	Sample Type	Test Method
Methane	mg/l	Discrete	EPA SOP RSK175
Ethane	mg/l	Discrete	EPA SOP RSK175
Propane	mg/l	Discrete	EPA SOP RSK175
Alkalinity, bicarbonate (as CaCO3)	mg/l	Discrete	SM 2320B
Alkalinity, carbonate (as CaCO3)	mg/l	Discrete	SM 2320B
Bromide	mg/l	Discrete	SW846 9056
Chloride	mg/l	Discrete	SW846 9056
Fluoride	mg/l	Discrete	SW846 9056
Sulfate	mg/l	Discrete	SW846 9056
Potassium	mg/l	Discrete	SW846 6010C
Sodium	mg/l	Discrete	SW846 6010C
Magnesium	mg/l	Discrete	SW846 6010C
Calcium	mg/l	Discrete	SW846 6010C
Total Petroleum Hydrocarbons	mg/l	Discrete	SW846 8015C (as Discrete Ranges)/EPA 1664A as Oil and Grease
Benzene	µg/l	Discrete	SW846 8260B
Ethylbenzene	µg/l	Discrete	SW846 8260B
Toluene	µg/l	Discrete	SW846 8260B
Xylenes	µg/l	Discrete	SW846 8260B
Lithium Bromide 10mg/l conc.	µg/l	Discrete	Ionic substance analyzed individually as Lithium by SW846 6010C and Bromide by SW846 9056.

In some instances, water sample volumes may preclude NOBLE from completing analyses for all parameters. NOBLE will endeavor to complete analyses on the greatest number of parameters following appropriate EPA-approved laboratory methodologies.

2. Frequency.

To the extent adequate water volumes are available and to the extent landowner permission is obtained, as required, NOBLE will sample each Well and Monitoring Well a total of three (3) times during the EXPLORATION PHASE pursuant to the following schedule:

a. prior to undertaking hydraulic fracturing of the first exploration well on a particular well pad;
b. two (2) months after the first hydraulic fracture on a particular well pad; and
c. twelve (12) months after hydraulically fracturing the final exploration well on a particular well pad.

DRI may recommend additional sampling, which NOBLE may choose to implement at its exclusive discretion.

D. Groundwater Tracer Study.

In conjunction with the groundwater monitoring described in Section II.C, NOBLE will confer with DRI to select one (1) or more tracers to be used during the EXPLORATION PHASE (hereinafter TRACER STUDY) to assist DRI with the completion of its fate and transport model. The TRACER STUDY shall include background information on proposed tracers, protocols for tracer implementation and recommendations for the use of specific tracers. The specific terms and conditions for the TRACER STUDY shall be agreed to by NOBLE and DRI prior to implementation of the TRACER STUDY. NOBLE will add tracers selected by DRI to the parameters list identified in paragraph 1 of Section II.C. Multiple tracers may be used so as to distinguish between individual wells.

E. Well Bore Specific Data

During the EXPLORATION PHASE, at one well per pad site, NOBLE will attempt to gather additional wellbore data from the use, as appropriate, of: (1) a gamma ray log; (2) a porosity log; (3) an induction log up to the shoe of the surface casing (a depth expected to occur at approximately six hundred (600) feet); and (4) a fracture orientation log across the potential producing formations at depths from approximately six thousand (6,000) feet to Total Depth. Since this additional wellbore data is both proprietary and critical to the development of the fate and transport model needed to prepare an impact analysis of hydraulic fracturing, NOBLE shall make this core data available for review by DRI at a NOBLE designated location. NOBLE will also provide opportunities for DRI to review other proprietary data in NOBLE's possession such as

3D seismic data, drill stem test results, petrophysical logs, diagnostic fracture injection testing data, and, when available, micro seismic data. Subject to NDOM's compliance with the confidentiality provisions of Section III.A, below, nothing in this MOU affects NOBLE's legal obligation to provide wellbore and well completion data and information to NDOM. Subject to NDEP's compliance with the confidentiality provisions of Section III.A, below, NOBLE will allow NDEP to review wellbore and well completion data and information gathered pursuant to this MOU.

F. AQUA PROGRAM Reports.

DRI, in consultation with NOBLE, will prepare a series of reports for NDOM, NDEP and the public analyzing the fate and transport of the hydraulic fracture stimulation chemicals that have the potential to be left in the formation. Each report will include an analysis of the first well pad in each of the three (3) PROJECT AREAS described above in Section II.A. The parties anticipate that DRI's fate and transport model will become more refined as additional data and information becomes available. NOBLE must approve the inclusion of any and all proprietary data and information in the AQUA PROGRAM reports prepared by DRI. All final reports will be provided to NDOM and NDEP and made available to the public.

1. The first report will be prepared by DRI prior to hydraulic fracturing stimulations by NOBLE. It will include DRI's best estimate of existing hydrological conditions in the target zones of the first exploration well, which is anticipated to consist of Tertiary aged strata including the Humboldt and Elko formations at depth. The first report will include an estimate of the maximum amount of chemicals anticipated to be pumped in a single stage of the stimulation treatment based on the single stage volumes listed in TABLE 1 without accounting for liquid recovery during the production phase of the well. TABLE 1 volumes represent a total of five (5) separate hydraulic fracturing stimulation treatments per wellbore.

2. Subsequent reports will be prepared by DRI as additional data and information is gathered under Sections II.C through E. It is anticipated that additional reports will be prepared at the completion of the open hole logging analysis when specific target formations, depths and thicknesses are determined and upon obtaining wellbore analysis, which may include actual porosity and permeability information.

3. DRI will prepare a final report following hydraulic fracturing stimulations by NOBLE. The final report will include, when available, the use of microseismic data to refine, as appropriate, DRI's earlier hydraulic fracture growth projections. Subject to Section III.A, below, NDOM and NDEP may review any original reports prepared by DRI for Noble.

TABLE 1

Trade Name*	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)***	Maximum Ingredient Concentration in HF Fluid (% by mass)***	Comments
Fresh Water**			7732-18-5	100.00%	82.00000%	554,000 gals
Sand - White	Proppant - 100 mesh	Crystalline Silica, Quartz	14808-60-7	100.00%	4.00000%	10,000 lbs.
Sand - White	Proppant - 20/40 mesh	Crystalline Silica, Quartz	14808-60-7	100.00%	12.00000%	750,000 lbs.
GW-45LF	Liquid Gelling Agent	Petroleum Distillates	64742-47-8	5 gal/1000 gal	0.50000%	2,800 lbs.
High Perm CRB	Breaker	Ammonium Persulfate	7727-54-0	2.5 gal/1000 gal	0.25000%	1380 gals
HCl, 10.1 - 15%	Acidizing	Hydrochloric Acid	7647-01-0	15.00%	0.10000%	3750 gals
	Chemical Tracer	Inorganic salts	8028-77-1	1 ppm	0.01000%	
Ferrotrol 300L	Iron Control	Citric Acid	77-92-9	50 lbs./1000 gal	0.03600%	1670 lbs.
Potassium Chloride	Clay Stabilizer	KCL	7447-40-7	1.00%	1.00000%	45,000 lbs.
Frac-Cide 1000	Biocide	2,2-Dibromo-3-Nitrilopropionamide	10222-01-2	0.2 gal/1000 gal	0.00200%	1,100 gals
XLW-22C	Crosslinker	Triisopropanolamine	122-20-3	2.25 gal/1000 gal	0.22500%	1,200 gals
BF-9L	Buffer	Potassium Carbonate	584-08-7	0.5 gal/1000 gal	0.05000%	276 gals
NE-945W	Non-Emulsifier	Glycerine	56-81-5	1 gal/1000 gal	0.10000%	550 gals
CI-31	Corrosion Inhibitor	Formic Acid	64-18-6	0.5 ga/1000 gal	0.00034%	2 gals

* Specific chemical Trade Names will vary from company to company
** Total Water Volume sources may include fresh water, produced water, and/or recycled water
*** Information is based on the maximum potential for concentration and thus the total may be over 100%

All component information listed was obtained from the supplier's Material Safety Data Sheets (MSDS). As such, the Operator is not responsible for inaccurate and/or incomplete information. Any questions regarding the content of the MSDS should be directed to the supplier who provided it. The Occupational Safety and Health Administration's regulations govern the criteria for the disclosure of this information. Please note that Federal Law protects "proprietary", "trade secret", and "confidential business information" and the criteria for how this information is reported on an MSDS is subject to 29 CFR 1910.1200(i) and Appendix D.

III. RESPONSIBILITIES.

A. NDOM and NDEP agree to the following:

1. Except for the final AQUA PROGRAM reports provided under Section II.F. prepared by DRI and shared with NDOM and NDEP, and specifically generated for public release pursuant to this MOU, NDOM and NDEP acknowledge and agree that all documents, studies, analyses, and other information in any form (including, without limitation, well logs, chemical tracer studies, micro-seismic data, 3D seismic data, and core data from well bores) provided by NOBLE, or DRI acting as NOBLE's consultant, to NDOM or NDEP will be reviewed by NDEP and/or NDOM to determine if confidential pursuant to NRS 445A.665(1) and/or NAC 522.540. The information will also be reviewed by NDEP and NDOM to determine if the information qualifies as confidential trade secrets pursuant to NRS 49.325 and NRS 600A.030(5). After review, if the information is determined to be confidential it is entitled to the protections provided in NRS 445A.665(1), NAC 522.540, NRS 49.325, and/or NRS 600A.030(5), and will be deemed "Confidential Information" for purposes of this agreement. NDEP and NDOM acknowledge that the Confidential Information is being released to NDEP and NDOM without waiving any of the protections of NRS Chapter 600A. NDEP and NDOM each agree to keep the Confidential Information confidential to the fullest extent permitted by law, to exclude the Confidential Information from the "public books" or "public records," as such terms are used in NRS 239.010, of such agency, and to protect the Confidential Information from disclosure as a public record. NDEP and NDOM acknowledge and agree that, except for the final AQUA PROGRAM reports provided under Section II.F, NOBLE does not intend to, and shall not be compelled to, release any Confidential Information to either NDEP or NDOM; provided, however, that NDEP and NDOM shall have the right to review such data as reasonably necessary to inform themselves of the basis for the final AQUA PROGRAM reports. NDEP and NDOM's respective review of NOBLE's data shall occur at the offices of NOBLE, or at such other locations reasonably agreed to between NOBLE and the reviewing agency. For the purpose of clarity, the purpose of this paragraph is to address the limited instances, if any, where Confidential Information is provided to NDEP or NDOM; this paragraph shall not be interpreted as creating an implied obligation of NOBLE to release any such Confidential Information.

2. Notwithstanding Section III.A.1, above, NDEP or NDOM, as the case may be (as applicable for the remainder of this paragraph, each, a "Public Body"), shall immediately notify NOBLE upon receipt of a public records request under NRS 239.0107 for any of the Confidential Information, and shall provide NOBLE with copies of any such public records requests within five (5) business days of Public Body's receipt of same. Unless specifically authorized by NOBLE, the Public Body subject to a records request for information previously deemed confidential by NDEP and/or NDOM shall decline to respond to such records

request on the grounds of confidentiality. However, if the Public Body subject to a records request believes that it is required by law to comply with such a records request, the Public Body shall comply with the provisions of Chapter 239 of the Nevada Revised Statutes in response to the request. The Public Body shall also provide NOBLE with a listing of the information the Public Body believes it is compelled to disclose.

3. NDOM and NDEP may use the data in the AQUA PROGRAM reports prepared under Section II.F, to support the development of a regulatory program to address relevant hydraulic fracturing considerations as outlined by Senate Bill No. 390 (77th Session, 2013).

B. DRI agrees to the following:

1. DRI, a non-profit environmental research arm of the Nevada System of Higher Education, will assist NOBLE non-exclusively in the data and information collection necessary for the AQUA PROGRAM as described in Section II, including the TRACER STUDY required by Section II.D.

2. Based on its scientific expertise, familiarity with the "waters of the State," and the data and information gathered by NOBLE during the EXPLORATION PHASE, DRI will develop a model appropriate for analyzing the fate and transport of hydraulic fracture stimulation chemicals left in the formation.

3. DRI will prepare the reports for the AQUA PROGRAM specified in Section II.F.

4. DRI shall comply with the confidentiality provisions of Sections III.A.1 and III.A.2, respectively, which provisions are hereby incorporated by reference in their entirety.

C. NOBLE agrees to the following:

1. NOBLE will provide DRI with access to all data and information gathered during the EXPLORATION PHASE.

2. NOBLE will cooperate with DRI in the development of the TRACER STUDY required under Section II.D.

3. NOBLE will use its best efforts to gather the additional well-bore data identified in Section II.E.

IV. MODIFICATION AND TERMINATION.

A. Modification. This MOU may be modified only by a written instrument executed by all four parties.

B. **Termination.** This MOU will terminate:

1. one (1) year after DRI submits the final report required by the AQUA PROGRAM; or

2. immediately upon NOBLE's decision to abandon or otherwise terminate temporarily or permanently the EXPLORATION PHASE; *provided* that NOBLE will undertake one (1) additional round of sampling within one (1) year of termination of the EXPLORATION PHASE as described in this Section IV.B.2.

3. Under no circumstances shall the term of this MOU exceed five (5) years.

V. POINTS OF CONTACT.

The parties to the MOU designate the following persons to be their official contact in matters related to this MOU. Any party may change its contact person upon written notice to the other parties. Any notice, request, demand, or other communication required or permitted to be given under this MOU shall be deemed to have been duly given, if in writing and delivered personally or sent by registered or certified mail or facsimile as follows:

A. **NDOM.**

NAME	**Rich Perry**
TITLE	**Administrator, NDOM**
ADDRESS	**400 W. King St. #106**
ADDRESS	**Carson City, NV 89703**
PHONE	**(775) 684-7040**
FAX	**(775) 684-7052**

B. **NDEP.**

NAME	**David Gaskin, P.E.**
TITLE	**Deputy Administrator, NDEP**
ADDRESS	**901 South Stewart Street, Ste 4001**
ADDRESS	**Carson City, NV 89701**
PHONE	**(775) 687-9302**
FAX	**(775)687-5856**

C. **DRI.**

NAME	**Dr. James Thomas**
TITLE	**Director, Division of Hydrologic Sciences**
ADDRESS	**2215 Raggio Parkway**
ADDRESS	**Reno, NV 89512**
PHONE	**(775) 673-7305**
FAX	**(775) 673-7397**

D. NOBLE.

NAME	Lee Hinman
TITLE	EHS&R Manager
ADDRESS	1625 Broadway, Suite 2200
ADDRESS	Denver, CO 80202
PHONE	(720) 587-2117
FAX	(303) 228-4286

VI. GENERAL PROVISIONS.

A. **Merger.** This MOU, together with any written modifications entered into pursuant hereto, contains all the terms and conditions agreed to by NDOM, NDEP, DRI, and NOBLE with respect to the AQUA PROGRAM. As between NOBLE and DRI, this MOU is intended to compliment, but not alter or amend, the terms and conditions of the CONSULTING AGREEMENT. In the event of a conflict between the terms and conditions of the CONSULTING AGREEMENT and the terms and conditions of this MOU (as applicable between DRI and NOBLE) the terms and conditions of the CONSULTING AGREEMENT shall control; provided, however, that notwithstanding the prior clause, the terms and conditions of the CONSULTING AGREEMENT shall not control if the application of such terms and conditions would limit or abrogate in any manner the confidentiality provisions of this MOU.

B. **Waiver.** No waiver of any provision of this MOU shall be effective unless made in writing and signed by the waiving party. No waiver of any provision of this MOU shall constitute a waiver of any prior, concurrent, or subsequent breach of the same or any other provision hereof.

B. **No Third-Party Beneficiaries.** This MOU does not create any new right or interest in any member of the public as a third-party beneficiary, nor shall it authorize anyone not a party to this MOU to maintain a suit for injuries or damages pursuant to the provisions of this MOU.

C. **Binding Effect.** This MOU shall be binding upon and inure to the benefit of the parties hereto and their respective legal representatives, successors, and assigns. The parties waive the defense of lack of consideration.

D. **Disputes.** NDOM, NDEP, DRI and NOBLE agree that in the event of a dispute between them regarding any provision of this MOU other than Section IV.B.2, they shall promptly use their best efforts to resolve the dispute in an informal fashion through communication and consultation, or through non-binding arbitration; however, in the event any dispute cannot be resolved the terms and conditions of this MOU or any subsequent modification hereto shall remain in full force and effect.

E. **Transfer.** This MOU may be transferred by NOBLE in the event NOBLE transfers its leases in Elko County, Nevada.

F. Duplicate Originals. This MOU may be executed by facsimile signatures and in counterparts, each of which when so executed shall constitute an original, and all of which taken together shall constitute one and the same document. This MOU may be executed in any number of duplicate originals. A complete original of this MOU, and any duly executed modifications, shall be maintained in the official records of each party to this MOU.

IN WITNESS WHEREOF, NDOM, NDEP, DRI and NOBLE have executed this MOU on the date(s) set forth below:

STATE OF NEVADA acting by and through the Commission on Mineral Resources, Division of Minerals

BY: Mike Visher - acting administrator

DATE: 10/30/2013

STATE OF NEVADA acting by and through the Department of Conservation and Natural Resources, Division of Environmental Protection

BY: _____

DATE: _____

STATE OF NEVADA acting by and through the System of Higher Education, Desert Research Institute

BY: _____

DATE: _____

NOBLE ENERGY, INC.

BY: _____

DATE: _____

F. Duplicate Originals. This MOU may be executed by facsimile signatures and in counterparts, each of which when so executed shall constitute an original, and all of which taken together shall constitute one and the same document. This MOU may be executed in any number of duplicate originals. A complete original of this MOU, and any duly executed modifications, shall be maintained in the official records of each party to this MOU.

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STATE OF NEVADA acting by and through the Commission on Mineral Resources, Division of Minerals

BY: _____

DATE: _____

STATE OF NEVADA acting by and through the Department of Conservation and Natural Resources, Division of Environmental Protection

BY: _____

DATE: 11/4/13

STATE OF NEVADA acting by and through the System of Higher Education, Desert Research Institute

BY: _____

DATE: _____

NOBLE ENERGY, INC.

BY: _____

DATE: _____

F. Duplicate Originals. This MOU may be executed by facsimile signatures and in counterparts, each of which when so executed shall constitute an original, and all of which taken together shall constitute one and the same document. This MOU may be executed in any number of duplicate originals. A complete original of this MOU, and any duly executed modifications, shall be maintained in the official records of each party to this MOU.

IN WITNESS WHEREOF, NDOM, NDEP, DRI and NOBLE have executed this MOU on the date(s) set forth below:

STATE OF NEVADA acting by and through the Commission on Mineral Resources, Division of Minerals

BY: _____

DATE: _____

STATE OF NEVADA acting by and through the Department of Conservation and Natural Resources, Division of Environmental Protection

BY: _____

DATE: _____

The Board of Regents of the Nevada System of Higher Education on behalf of the Desert Research Institute

BY: Alan W. Gertler

DATE: 31 October 2013

NOBLE ENERGY, INC.

BY: _____

DATE: _____

F. **Duplicate Originals.** This MOU may be executed by facsimile signatures and in counterparts, each of which when so executed shall constitute an original, and all of which taken together shall constitute one and the same document. This MOU may be executed in any number of duplicate originals. A complete original of this MOU, and any duly executed modifications, shall be maintained in the official records of each party to this MOU.

IN WITNESS WHEREOF, NDOM, NDEP, DRI and NOBLE have executed this MOU on the date(s) set forth below:

STATE OF NEVADA acting by and through the Commission on Mineral Resources, Division of Minerals

BY: _____

DATE: _____

STATE OF NEVADA acting by and through the Department of Conservation and Natural Resources, Division of Environmental Protection

BY: _____

DATE: _____

STATE OF NEVADA acting by and through the System of Higher Education, Desert Research Institute

BY: _____

DATE: _____

NOBLE ENERGY, INC.

BY: Kevin Vahrenberg DD 10/10/13
Kevin Vahrenberg
Rockies/Frontier Business Unit Mgr.

DATE: 10/10/2013

Exhibit L

Marys River Integrated Weed Management Plan

U.S. Department of the Interior
Bureau of Land Management

INTEGRATED WEED MANAGEMENT PLAN

Marys River Oil and Gas Exploration Project

March 2014

Location: Elko County, Nevada

PREPARING OFFICE

U.S. Department of the Interior
Bureau of Land Management
Elko District Office
3900 East Idaho Street
Elko, NV 89801
(775) 753-0200
(775) 753-034

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TABLE

Table 1. Category A, B and C noxious weeds listed by the state of Nevada.....5

1.0 INTRODUCTION

Noble Energy Inc. (Noble) is exploring oil and gas prospects in the Marys River Project Area near Wells, Elko County, Nevada, on lands partially managed by the Bureau of Land Management (BLM). To comply with BLM requirements, a landscape weed management plan has been developed for this area.

The term "weed" has many definitions, one of the broadest being that used by the Nevada BLM, which defines a weed in the words of J.M. Torell as "a plant that interferes with management objectives for a given area of land at a given point in time" (http://www.blm.gov/nv/st/en/prog/more_programs/invasive_species.html). By this definition, invasive plants such as Cheatgrass or Halogeton are considered weeds. The term "noxious weed" is a legally defined term and is used to describe non-native, highly invasive plants that are detrimental to native communities. In Nevada, noxious weeds are defined as "any species of plant which is, or likely to be, detrimental or destructive and difficult to control or eradicate."

There are 48 noxious weed species in Nevada, grouped into three categories (Table 1). Category A species currently have limited distribution in the state, since control of these species is considered feasible, the State requires eradication wherever they are found. Category B species are already established in limited areas of Nevada. Category C weeds are widespread and well established throughout many counties of the State.

2.0 WEED MANAGEMENT

Noble is committed to controlling the spread of noxious weeds on the lands where they will be operating. All Category A species will be eradicated whenever they are located. Category B and C weeds will be controlled where operations are planned or where they become established as a result of project activities. If weeds become established outside of the operations boundaries as a result of project activities Noble will treat these infestations as well. Prevention of weed species will be a primary management option. Successful reclamation of disturbed areas will be another primary method to control these species through competition with desirable perennial species. If weeds become established, herbicides will be the preferred treatment method (refer to Section 2.4).

In addition to noxious weeds, there are several non-native, non-desirable species with invasive properties that are common in Nevada, referred to in this document as "invasive weeds". Efforts will be made to prevent and control invasive weeds such as cheatgrass (*Bromus tectorum*) and halogeton (*Halogeton glomeratus*) that are likely to occur in the Project Area. The primary management strategies for these species will be prevention and revegetation, however, herbicide or other treatment may occur if these species are impeding successful reclamation (refer to Section 2.4).

The following goals have been identified in the Marys River Project Area: 1) prevent the spread of noxious and invasive weeds, 2) inventory and monitor noxious weeds pre-disturbance, and throughout the life of the project, 3) encourage plant communities that are resistant to weed invasion through reclamation of disturbed areas, and 4) treat any noxious weed with approved

and properly documented herbicides. Management strategies have been developed in order to help meet each goal.

2.1 PREVENTION

Preventing the spread of noxious and invasive weeds will be the most important component of weed management. This will be accomplished using the following best management practices:

- During the Construction/Drilling and Reclamation/Abandonment Phases Noble would develop a 'sticker' program to identify all vehicles and equipment that have successfully been cleared of noxious weeds. Vehicles and equipment without the proper stickers would be barred from entering new areas until cleaned of noxious weeds. During the Production/Operations Phase this program would not be necessary because all vehicles would be staying on established roads. If during the Production/Operations Phase, Noble needs to operate vehicles in an off road capacity the project manager will need to ensure that each vehicle is washed prior to off road travel.

- In areas where infestations were identified in the field, Noble would stockpile cleared vegetation and salvaged topsoil adjacent to the area from which they were stripped to eliminate the transport of soil-borne noxious weed seeds, roots, or rhizomes. Weed-infested stockpiles would be marked with clearly visible flagging until reclamation, when Noble would return topsoil and vegetative material from infestation sites to the areas from which they were stripped. In addition, Noble would not be permitted to move soil and vegetative matter outside of the identified and marked noxious weed infestation areas.

- During construction, Noble would dedicate one piece of equipment to excavate weed affected soils for stockpiling and for backfill of weed-affected soils. The equipment may be used elsewhere on the project after washing.

- Noble would educate all Project personnel regarding environmental concerns and requirements, including weed identification, prevention, and control methods. No personnel would be allowed to enter the Project Area before taking part in the pre-construction environmental information meeting at any point during the Project. Qualified environmental inspectors approved by BLM would be used to conduct the pre-construction environmental information meeting and conduct on-site biological monitoring before and during construction and reclamation, and annually during operation.

- All vehicles and equipment that will travel off approved/designated transportation routes or will be utilized during the Construction/Drilling or Reclamation/Abandonment Phases will be cleaned to prevent the spread of seeds and propagules. Cleaning would be carried out using power or high-pressure equipment to remove seeds, roots, and rhizomes from the equipment before transport in to the project area. Cleaning would concentrate on tracks or tires and on the undercarriage, with special emphasis on axles, frames, cross members, motor mounts, the underside of running boards, and front bumper/brush guard

assemblies. All vehicle and equipment cleaning will occur offsite with two exceptions: 1) the heavy equipment utilized to remove the noxious weed infested dirt can be washed at the location where the soil was removed with the location being reported to the BLM. 2) Noble may conduct on site cleaning if they provide a system capable of collecting all of the dirt and debris for offsite disposal. This process will be required whenever vehicles/equipment that have previously been used on private lands are entering BLM lands. It would also be required prior to any off-road activities.

- Early detection will be completed through the reporting and prompt treatment of weed infestations, particularly Category A species. Weed identification pamphlets, available from the Nevada Department of Agriculture or the BLM, would be made available to Noble employees in the field.

- If weeds are located in an area proposed for development, they would be treated prior to ground-disturbing activities. This may involve herbicide, or mechanical removal (refer to Section 2.4).

- Noble would ensure that straw or hay bales used for sediment barrier installations or mulch distribution were weed-free. If weed free bales were unavailable, alternative weed free sediment barrier installations such as coir logs would be utilized. These weed free products would be certified by the Nevada Department of Agriculture or by another state's agriculture agency with approval from the BLM.

- All gravel utilized during Construction/Drilling and Production/Operations Phases would be certified weed free by the Nevada Department of Agriculture. Information on this certification can be found here:
  http://agri.nv.gov/Plant/Noxious_Weeds/Programs_CertifiedWeedFree_Gravel/
  If weed free gravel is unavailable, gravel would need to be sourced from a pit that has been inspected to be free of all noxious weeds. This pit would also need to be inspected on an annual basis to ensure that it remains weed free. If during the annual inspection noxious weeds are found they would be treated immediately to maintain the weed free status.

2.2 MONITORING

Monitoring of noxious weeds will occur on all development sites throughout the life of the project. This will allow Noble to promptly treat any new infestations, and will involve the following strategies:

- Noxious weeds will be inventoried on each project site prior to disturbance. Spatial data will be collected for all noxious weeds located.

- Following ground-disturbance, noxious weed monitoring will be conducted on an annual basis, for the life of the project. Monitoring may be conducted concurrently to treatment in areas where weed infestations are not significant.

- Invasive weeds will be documented spatially when present in limited quantities, using methods in coordination with the BLM, which will be developed in the near future for the submittal of the site-specific weed management plan. If large infestations occur, the extent of the population will be described during pre-disturbance surveys and monitoring.

- Noble will conduct yearly noxious weed inventories in areas that have been disturbed as a result of project related activities. These inventories will continue for the life of the project and until reclamation success has been achieved as described in the reclamation plan.

2.3 RECLAMATION

Reclamation is an important component of weed management, as re-vegetation of disturbed areas with a native plant community will provide competition, and reduce the habitat available for early colonizers such as noxious weeds. The following best management practices will be employed:

- Reclamation activities will include certified weed free seed mixes, approved by the BLM or surface owner.

- All materials used for reclamation (i.e. mulch, straw, etc.) would also be certified weed free by the Nevada Department of Agriculture or by another state's agriculture agency with approval from the BLM.

- Noble would ensure that straw or hay bales used for sediment barrier installations or mulch distribution are certified weed-free. If weed free bales were unavailable, alternative weed free sediment barrier installations such as coir logs would be utilized. These weed free products would be certified by the Nevada Department of Agriculture or by another state's agriculture agency with approval from the BLM.

- Noble would reclaim and seed all disturbed ground concurrent with ground disturbing activities in accordance with the Reclamation Plan (Appendix C of the EA). Monitoring for reclamation success would ensure adequate vegetative cover to prevent the invasion of noxious weeds.

2.4 TREATMENT

Noxious weeds will be treated promptly whenever they are located on a project site and in accordance with existing Nevada Department of Agriculture regulations and BLM requirements. The treatment strategy will differ depending on the species and its growth habit. Integrated Weed Management (IWM) would be utilized on this project and depending on the weed manual, chemical, and biological control would be utilized. Through prompt treatment Noble would prevent any noxious weeds from becoming established and spreading into the adjacent environments.

- Specific BLM requirements that guide weed treatment include (but are not limited to):

- Programmatic Environmental Assessment of Integrated Weed Management on Bureau of Land Management Lands (BLM, 1998)
- Noxious Weed Treatment DNA (BLM, 2011)
- 9011 Chemical Pest Control Manual
- 9015 Integrated Weed Management Manual

- Small infestations are likely to be locally treated with herbicide applications, with a focus on treating individual plants. In the event that a large infestation occurs or reoccurs, an evaluation would be performed to determine what led to the infestation, and a new strategy may be implemented.

- In cooperation with the BLM Noxious Weed Specialist, Noble would refine/revise the Noxious Weed Management Plan (NWMP) as necessary to address site and species specific treatments.

- Category A species will be treated promptly and eradicated whenever they are located. Chemical control will be the primary treatment method.

- Category B and List C species will be treated whenever they are located. Chemical and/or mechanical treatments may be used.

- Invasive species not listed as noxious will be monitored, and will be treated in areas where they are impeding reclamation. Chemical and/or mechanical treatments may be used.

- Chemical treatment refers to the use of BLM-approved herbicides. Experienced certified herbicide applicators (certified by the Nevada Department of Agriculture) will be contracted for chemical treatment of weeds. Appropriate Pesticide Application Records and Pesticide Use Proposals will be completed for all areas to be treated, if required by the BLM. All applications will be under the supervision of a BLM licensed specialist.

- Mechanical treatment refers to the use of mowing, tilling, or hand pulling weeds. This method may be considered for species such as Scotch thistle that have one apical growth point, particularly early in the growing season.

- Biological control refers to the use of insects, bacteria, or other organisms specialized to kill or impede reproduction of weed species. This method will not be considered as an option in the Project Area unless requested by the BLM.

Table 1. Category A, B and C noxious weeds listed by the state of Nevada.

	Common Name	**Scientific Name**
Category A	African Rue	*Peganum harmala*
	Austrian fieldcress	*Rorippa austriaca*
	Austrian peaweed	*Sphaerophysa salsula / Swainsona salsula*
	Black henbane	*Hyoscyamus niger*
	Camelthorn	*Alhagi camelorum*
	Common crupina	*Crupina vulgaris*

	Common Name	Scientific Name
	Dalmation Toadflax	*Linaria dalmatica*
	Dyer's woad	*Isatis tinctoria*
	Eurasian water-milfoil	*Myriophyllum spicatum*
	Giant Reed	*Arundo donax*
	Giant Salvinia	*Salvinia molesta*
	Goats rue	*Galega officinalis*
	Green Fountain grass	*Pennisetum setaceum*
	Houndstongue	*Cynoglossum officinale*
	Hydrilla	*Hydrilla verticillata*
	Iberian Starthistle	*Centaurea iberica*
	Klamath weed	*Hypericum perforatum*
	Malta Star thistle	*Centaurea melitensis*
	Mayweed chamomile	*Anthemis cotula*
	Mediterranean sage	*Salvia aethiopis*
	Purple loosestrife	*Lythrum salicaria, L.virgatum and their cultivars*
	Purple Star thistle	*Centaurea calcitrapa*
	Rush skeletonweed	*Chondrilla juncea*
	Sow Thistle	*Sonchus arvensis*
	Spotted Knapweed	*Centaurea masculosa*
	Squarrose knapweed	*Centaurea virgata*
	Sulfur cinquefoil	*Potentilla recta*
	Syrian Bean Caper	*Zygophyllum fabago*
	Yellow Starthistle	*Centaurea solstiltialis*
	Yellow Toadflax	*Linaria vulgaris*
Category B	Carolina Horse-nettle	*Solanum carolinense*
	Diffuse Knapweed	*Centaurea diffusa*
	Leafy spurge	*Euphorbia esula*
	Medusahead	*Taeniatherum caput-medusae*
	Musk Thistle	*Carduus nutans*
	Russian Knapweed	*Acroptilon repens*
	Sahara Mustard	*Brassica tournefortii*
	Scotch Thistle	*Onopordum acanthium*
	White Horse-nettle	*Solanum elaeagnifolium*
Category C	Canada Thistle	*Cirsium arvense*
	Hoary cress	*Cardaria draba*
	Johnson grass	*Sorghum halepense*
	Perennial pepperweed	*Lepidium latifolium*
	Poison Hemlock	*Conium maculatum*
	Puncture vine	*Tribulus terrestris*
	Salt cedar (tamarisk)	*Tamarix spp*
	Water Hemlock	*Cicuta maculata*

Exhibit M

Marys River Reclamation Plan

U.S. Department of the Interior
Bureau of Land Management

RECLAMATION PLAN

Marys River Oil and Gas Exploration Project

March 2014

Location: Elko County, Nevada

PREPARING OFFICE

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Noble Energy Inc. (Noble) will be implementing an oil and gas exploration project in the Marys River Project Area near Wells, Elko County, Nevada. This reclamation plan is designed to meet the standards set by the Bureau of Land Management (BLM) and will be in accordance with State of Nevada Division of Environmental Protection laws and regulations. Site specific reclamation plans will be completed at the time the site specific use plan is submitted. The Project Area Description as seen below will provide much of the setting for these site specific use plans. These plans will be submitted as part of and approved through the APD or ROW processes.

1. Project Area Description

The Marys River Exploration Project Area includes Sections 1, 2, 11–14, and 23–26 T38N:R60E; Sections 2–11, 14–23, and 26–35 T38N:R61E; Sections 23–26, 35, and 36 T39N:R60E; and Sections 19–23 and 26–35 T39N:R61E. The southeastern corner of the Project Area is approximately four miles northwest of Wells, Nevada. The Project Area includes approximately 39,366 acres that includes 52% federal (BLM) and 48% private lands. The Humboldt River and Bishop Creek bisect the Project Area. Elevation within the Project Area ranges from 5,300 to 5,700 feet above sea level. Topography is relatively flat with rolling hills, many drainages, hilltops, draws, and eroded hillsides.

1.1. Vegetation

Vegetation is primarily comprised of Wyoming big sagebrush (*Artemisia tridentata wyomingensis*) shrublands. Areas of basin big sage (*A. tridentata tridentata*), mixed desert shrub, riparian woodland (mainly willows; *Salix* spp.), and irrigated cropland are scattered throughout the Project Area. Cheatgrass (*Bromus tectorum*) is prevalent in and crested wheat grass (*Agropyron cristatum*) has been recorded in several areas.

1.2. Soils

Soils of the Project Area have been classified by the USDA-NRCS (2009), and are included in the Soil Survey Geographic (SSURGO) database. The NRCS has identified 15 soil series in the Project Area (Table 1), with the following soil series being most common: Enko coarse loam, Hunnton fine loam, Dacker fine loam, Bioya fine loam, Chiara loam, and Sonoma fine silt.

Table 1. Soil series present within the Marys River Project Area in Elko County, based on USDA-NRCS SSURGO soils data (USDA-NRCS 2009).

Soil Series	Acreage	Project Area %
Enko - coarse loam, 0 to 30 percent slopes	8,183.61	20.79
Hunnton - fine loam,1 to 30 percent slopes	6,530.01	16.59
Dacker - fine loam, 0-15 percent slopes	5,527.04	14.04
Bioya – fine loam, 0-15 percent slopes	5,126.83	13.02
Chiara - loam, 0 to 30 percent slopes	3,945.93	10.02
Sonoma - fine silt 0 to 2 percent slopes	3,754.67	9.54
Oupico - coarse loam, 0 to 30 percent slopes	3,463.31	8.8
Ocala - fine silt, 0 to 2 percent slopes	1,671.26	4.25
Halleck - fine silt, 0 to 4 percent slopes	499.5	1.27
Welch - fine loam, 0 to 15 percent slopes	287.1	0.73
Sonoma variant - silt loam, 0 to 2 percent slopes	205.14	0.52
Moranch - coarse silt, 0 to 2 percent slopes	137.53	0.35
Crooked Creek - clay loam, 0 to 4 percent slopes	14.14	0.04
Hunewill - sandy loam, 0 to 30 percent slopes	9.44	0.02
Hussa - clay loam, 0 to 9 percent slopes	6.28	0.02
Total	**39,362**	**100**

1.3. Ecological Sites

The Marys River Project Area is comprised of six ecological sites defined by the USDA-NRCS (2009) (Table 2). A loamy 8-10 inch precipitation zone ecological site dominates 83% of the Project Area. Soils in this ecological site are comprised of mostly well drained, clayey or loamy, Mollisols (USDA-NRCS 2006). Saline bottoms, saline meadows, and sodic flats, although a small component of the Project Area (8.25%), typically respond poorly to conventional reclamation.

Table 2. Ecological Soil sites present within the Marys River Project Area in Elko County, based on USDA-NRCS SSURGO soils data (USDA-NRCS 2009).

Ecological site	Ecological Site Number	Acreage	Project Area %
Loamy 8-10 inch precipitation zone.	R025XY019NV	32,786.16	83.29
Loamy Bottom 8-14 inch precipitation zone.	R025XY003NV	2,535.69	6.44
Saline Bottom	R024XY007NV	1,876.40	4.77
Saline Meadow	R024XY009NV	1,233.12	3.13
Wet Meadow	R025XY005NV	792.88	2.01
Sodic Flat 8-10 inch precipitation zone.	R024XY008NV	137.53	0.35
Total		**39,362**	**100**

1.4. Geomorphologic Landforms

The most common landforms of the area are fan remnants, fan skirts, and floodplains, together comprising 95% of the Project Area (Table 3). Areas classified by the NRCS as fan remnants are remaining parts of older fan-landforms. Fan skirts are lower lying areas, formed by water runoff throughout upland areas. Floodplains are classified as nearly level ground adjacent to streams prone to inundation under flooding conditions. Although only a small percentage of land is classified as floodplains, these riparian landforms are an important part of the landscape. Floodplains occur along the Humboldt River and Bishop Creek.

Table 3. Geomorphologic landforms present within the Marys River Project Area in Elko County, based on USDA-NRCS SSURGO soils data (USDA-NRCS 2009).

Landform	Acreage	Project Area %
Fan Remnants	24,881.19	63.21
Fan Skirts	7,896.66	20.06
Flood Plains	4,766.82	12.11
Alluvial Flats	1,110.02	2.82
Inset Fans	707.07	1.8
Total	**39,362**	**100**

1.5. Climate

The majority of the Marys River Project Area is nearest to the NOAA Wells, Nevada weather station (Station No. 268988). The highest precipitation months are January, March, and May. Total average annual precipitation, according to the 30 year average, is 25 centimeters (Western Regional Climate Center: http://www.wrcc.dri.edu/). Restoration success is often erratic on sites that receive 25 cm or less precipitation annually; climatic conditions during the reclamation

process will likely exert an overriding effect on the success of the reclamation efforts (Call and Roundy 1991, Holechek 2010, Roundy 1999).

1.6. Grazing Units

There are 12 grazing allotments present within the Marys River Project Area, summarized in Table 4 (USDI-BLM 2006). Acreages listed in Table 4 are the total number of acres in each allotment, not the amount of acres found within the Project Area.

Table 4. Grazing allotments present within the Marys River Project Area. Unit number, name, and size are summarized.

Grazing Unit	Unit Name	Acres
3206	Bishop Creek	7,766
3228	Metropolis	41,853
3229	Metropolis Seeding	2,456
3233	Rabbit Creek	6,715
3241	Westside	7,874
e	Mud Springs	3,998
3243	Railroad Field	3,165
3246	Antelope Springs FFR	1,489
3247	Burnt Creek	3,422
4310	Clover Creek FFR	1,488
4319	Hylton	4,166
3208	Black Butte	61,799

2. Proposed Activities

The primary activities proposed in the Project Area will be exploratory oil and gas drilling (Noble, 2014). Depending on well pad selection (20 of 33 potential wells sites will be developed) the proposal could include up to 276.5 acres of surface disturbance at the well pad sites, 20.5 miles of disturbance along existing roads that will be upgraded, and the potential construction of up to 12.6 miles of new roads. Existing roads would be utilized as much as possible, minimizing the need for road construction.

3. Reclamation Objectives

The long-term objective of reclamation is to return the land, following use for energy development, to a condition approximating that which existed prior to disturbance. This includes restoration of the landform and natural vegetative community, hydrologic systems, visual resources, habitat, and forage. Reclamation will be considered successful when the site is recontoured and stabilized, protected from erosion, and revegetated with a self-sustaining, vigorous, diverse, native (or otherwise approved) plant community that maintains ecological resilience and the integrity of natural processes.

At a minimum, the established plant community will consist of species included in the seed mix and/or desirable species which occur in the surrounding natural vegetation. Permanent vegetative cover will be determined successful when the basal cover of desirable perennial species is at least 80 percent of the basal cover of the adjacent undisturbed area or of potential basal cover as defined in the National Resource Conservation Service Ecological Site(s) for the area.

Operators and right-of-way holders are required to meet reclamation performance standards. Successful compliance with standards and meeting of objectives will be determined by the BLM. If revegetation is unsuccessful, subsequent treatments and reseedings will be required until objectives are met.

4. Reclamation Schedule

4.1. Interim Reclamation

Interim reclamation will be conducted concurrently with exploration. Disturbed areas will undergo interim seeding as soon as possible during the period optimal for seeding (generally October 1-March 1) these disturbed areas could include: completed pad construction, topsoil storage berms, storm water control features, temporarily disturbed areas along roads and pipelines, and cut and fill slopes. The goal of interim seeding would be to stabilize materials, maintain biotic soil activities, and minimize weed infestations. If interim revegetation is unsuccessful, additional prep and reseeding shall be completed annually until standards are met.

Within 6 months following completion of the last well planned on a pad, or after a year has passed with no new wells drilled, interim reclamation will be completed to reduce the well pad to the smallest size needed for production. The interim reclamation timeline can be extended at the discretion of the BLM Authorized Officer to prevent unnecessary reclamation. Trash and equipment unnecessary to production operations shall be removed immediately.

4.2. Final Reclamation

Final reclamation will be initiated within no more than 1 year following plugging and abandonment of the final well on pads no longer having a producing well. All equipment, facilities, and trash will be removed from the location immediately following plugging and abandonment. Roads that are no longer essential to the proposed activities will also undergo final reclamation within a year. Prior to final reclamation, an inspection of the disturbed area shall be held to review the existing reclamation plan or agree to an updated plan. Seed tags will be submitted for BLM approval at least 14 days before proposed seeding date. The BLM will be notified at least 48 hours prior to commencing final reclamation work and within 48 hours of completion of reclamation work.

For both Interim and Final Reclamation, earthwork and revegetation activities are limited by the time of year during which they can be effectively implemented. Site conditions and yearly climatic variations may require that the proposed schedule be modified to achieve revegetation success. Interim and Final Reclamation will be ongoing until reclamation objectives are met or the BLM's Authorized Officer determines reclamation efforts have been sufficient. It is possible that these sites will need to be monitored for five years or more before they achieve reclamation objectives. Monitoring will end once reclamation standards have been met.

Table 5. General Final Reclamation Schedule

TECHNIQUES	Quarter				
	1 Jan-Mar	2 Apr-Jun	3 Jul-Sep	4 Oct-Dec	Year(s)
Soil Surface Restoration					Within 1 year of project completion
Seeding					Within 1 year of project completion
Monitoring					5 years following reseeding

5. Reclamation Requirements

The requirements listed in Chapter 519A – *Reclamation of Land Subject to Mining or Exploration Projects* (NAC 519A) are designed to facilitate successful reclamation.

Requirements include:

1. Manage waste materials.
2. Ensure subsurface integrity (geology & hydro-geology).
3. Ensure biological, chemical, physical integrity of soil.
4. Re-establish stable water courses and drainage features.
5. Blend visual composition with surroundings.
6. Re-establish slope stability and topographic diversity.
7. Prepare site to meet the needs for plant establishment.
8. Re-establish desired, self-perpetuating plant community.
9. Prevent introduction/establishment of invasive plants.
10. Implement a monitoring and management protocol.

Operators are obligated to follow requirements 1-5 from the initiation of proposed activities. Requirements 6-10 will be completed concurrent with Interim and Final Reclamation.

5.1. Waste Materials

All waste materials will be managed according to Best Management Practices. Product and wastes would be containerized or otherwise stored such that precipitation or run-off would not come in contact with any industrial, petroleum or chemical material. Equipment would be properly maintained to reduce the possibility of leaks and hose ruptures. In the event of a discharge or spill, cleanup procedures would be implemented immediately to ensure that no materials would be available for transport by stormwater run-off. All drilling fluids would be directed to tanks (part of the closed loop system) this would eliminate the possibility to enter drainages. Drill cuttings and fluids would be contained on site within the closed loop drilling system.

Contaminated soil will be segregated, treated, and/or bio-remediated, following guidance from the BLM who will be notified if contamination occurs. The BLM must authorize any waste materials to be buried on site. Similarly, the disposal of waste (including trash) off site must be to an authorized disposal facility. All hazardous waste material identified by the Comprehensive Environmental Response Compensation Liability Act (CERCLA) removed from the site will be disposed of at a hazardous waste facility that is approved by the U.S. Environmental Protection Agency (Noble, 2014).

5.2. Sub-surface Integrity

The operator will ensure the integrity of sub-surface resources by plugging drill holes and surface openings, and filling/capping any other openings to ensure that contamination of ground and surface water does not occur. Dry hole markers will be subsurface, to prevent their use as perching sites by raptors. Noble will prepare a Spill Prevention Plan and a Storm Water Pollution Prevention Plan with the approval of the state regulator agency and BLM (Noble, 2014).

5.3. Soil Integrity

Topsoil shall be stripped following removal of vegetation during construction of well pads, roads, or other surface facilities. This shall include all growth medium - at a minimum, the upper 2-6 inches of soil - but shall also include stripping of any additional topsoil present at a site, such as indicated by color or texture. Stripping depth may be specified during the onsite inspection. Stripped topsoil shall be stored separately from subsoil or other excavated material. Contractors will reference the site-specific document to determine salvage strategies.

Topsoil will not be piled more than 10 feet high, as the resulting compaction and anaerobic conditions can result in soil degradation (Ghose 2001). Precautions will be taken to protect soil from erosion, degradation and contamination, including covering piles with mulch, and diverting water runoff around piles. If mulching is necessary, a certified weed free straw or hay mulch will be applied (Noble, 2014). Topsoil piles will be labeled to avoid confusion. Soil that will be stored for more than one growing season will be seeded with short-lived species to compete against weeds in accordance to NAC 519A.325. Early successional natives such as bee plant or slender wheatgrass are recommended (Norton et al. 2009). Seedbed prep is not generally required for topsoil storage piles or other areas of temporary seeding.

5.4. Water Courses and Drainages

Depending on site specific needs, culverts, wing ditches, and channels will be utilized to manage water. Waterbars, slope breakers, erosion control blankets, fencing, mulch, straw bales, and rolls may also be used to manage soil erosion. Soil erosion control will be implemented on sites in highly erosive soils and steep areas. Mulching, netting, tackifiers, hydromulch, matting, and excelsior are common methods used to limit erosion on slopes that may be employed. The type of control measure will depend on slope gradients and the susceptibility of soil to wind and water erosion. All runoff and erosion control structures will be inspected periodically, cleaned out, and maintained in functional condition throughout the duration of construction and drilling.

All drainages affected by the well pad or access road will be maintained by culverts and other methods as described in The Gold Book. All roads will be constructed in a manner that does not result in grading within and parallel to drainages. To avoid depositing fill material in drainages,

roads will be constructed at a height above drainage channels (USDI-BLM 2012). During the reclamation phase, drainages will be reconstructed and stabilized to function similar to pre-disturbance levels. Drainages and riparian areas will be addressed in greater detail in the site-specific reclamation plans.

5.5. Visual Composition

Pads, roads, pipeline and production facilities shall be located and placed to avoid or minimize visibility from travel corridors, and other potentially sensitive observation points, unless directed otherwise by the BLM due to other resource concerns, and shall be placed to maximize reshaping of cut-and-fill slopes and interim reclamation of the pad.

To the extent practical, existing vegetation shall be preserved when clearing and grading for pads, roads, and pipelines. The authorized officer may direct that cleared rocks be salvaged and redistributed over reshaped cut-and-fill slopes or along linear features.

Above-ground facilities shall be painted a natural color in a non-reflective finish selected to minimize contrast with adjacent vegetation or rock outcrops. The color shall be specified by the BLM.

5.6. Slope Stability and Topographic Diversity

In all areas where the soil has been compacted, the soil will be ripped to a minimum of 18-24 inches, with a furrow spacing of 18-24 inches. Where possible, soil will be ripped in two passes at perpendicular directions. After mitigating compaction, contours will be reshaped to blend with natural topography, to the extent possible. Fill material will be pushed into cuts and up over the backslope of the cuts, leaving no depressions where water could pond. Erosion control structures will be installed where necessary to maintain hydrologic function.

5.7. Site Preparation

In all disturbed areas where soil has been stripped, stored subsoil and topsoil will be restored according to their original orientation in the soil profile, i.e. subsoil below the topsoil. Topsoil will be spread to a depth of 6 inches across the disturbed areas or to a depth similar to what existed pre-disturbance in consultation with the BLM. BLM may require soil amendments.

Final seedbed preparation shall consist of scarifying (pitting, raking or harrowing) the spread topsoil prior to seeding. Scarification shall be repeated no more than 24 hours before prior to seeding to break up any crust that has formed if the area is to be broadcast-seeded or hydro-seeded, or if more than one season has elapsed since final seedbed preparation.

To enhance vegetative establishment and control erosion on slopes steeper than 3:1 (i.e. 15°), seedbed preparation shall consist of pocking or pitting. Surface soil material shall be completely and uniformly pocked or pitted with small depressions, to form micro-basins scaled to site and materials. Depressions shall be constructed in rows, in a "fish scale" pattern. This pattern shall be constructed perpendicular to the natural flow of water down a slope and/or to prevailing winds.

5.8. Plant Establishment

5.8.1. Seed Mix Development

All disturbed areas on public lands will be seeded with a seed mixture approved by the BLM, consistent with BLM standards in terms of species and seeding rate for the specific habitat type within the project area.

- Seed will contain no noxious, prohibited or restricted weed seeds and contain no more than 0.5 percent by weight of other weed seeds.
- Only viability-tested, certified seed for the current year, with a minimum germination rate of 80% and a minimum purity of 90% will be used, i.e. pure live seed (PLS) must be ≥ 72%.
- Seed that does not meet the above criteria will not be applied to public lands.

Where possible seed will be selected that is locally adapted and genetically appropriate (i.e. choose a local seed supplier if possible, and ensure genetic compatibility with local plants. Seed from lower elevations/warmer climates may not be adapted for Nevada growing conditions).

5.8.2. Seeding Methods

Seeding will be conducted no more than 24 hours following final seedbed preparation. In general, seeding will take place immediately preceding the season with the highest chance of precipitation, typically October through December. Specialized rangeland equipment, such as rangeland drills, Truax drills, surface seeders, hydro-seeders, scarifiers, dozers, or other appropriate equipment will be used in reseeding disturbed areas.

The main purpose of seeding methods is to place the seed in direct contact with the soil, cover the seed with soil, and firm the soil around the seed to eliminate air pockets. Most species can be successfully drill seeded into the soil. Seeding depth in the soil depends on seed size and species specific requirements; where possible, drill seed following the contours of the site. Follow drill seeding with culti-paction or crimped weed-free straw mulch, to enhance seed-to-soil contact and prevent loss of seeds and soil. The U.S.D.A. - Natural Resources Conservation Service recommendation for drill-seeding rate on arid and semi-arid rangelands with large seeded species is 20-40 PLS per square foot, and for small seeded species (most seed mixes), the rate is 30 to 50 PLS per square foot.

In areas that cannot be drilled, broadcast seed within 24 hours of soil work at the applicable rate. If seeding takes place later than within 24 hours of dirt work, cover seed ½ to 1 inch deep with a harrow or drag bar, unless pocking. When pocking is used as seedbed preparation, seed must be broadcast within 24 hours of soil prep. Broadcast or aerial seedings are at the rate of 60 to 95 PLSs per square foot (approximately double the drill-seeding rate).

Hydro-seeding and hydro-mulching may be used in areas of temporary seeding or in areas where drill-seeding or broadcast-seeding/raking are impractical. Hydro-seeding and hydro-mulching must be conducted in two separate applications to ensure adequate seed-to-soil contact. Note that

temporary seeding allows use of a seed mix containing sterile hybrid non-native species or approved cover crop, in addition to native perennial species.

5.9. Invasive Species

Operators will be held accountable for the spread of noxious weeds caused by disturbances on federal lands associated with the proposed activities (USDI-BLM 2012). Noxious weeds will be documented during the pre-disturbance survey, and site-specific management will be addressed. Noble will follow the Marys River Integrated Weed Management Plan. This plan outlines management goals, methods, and monitoring of weeds of site specific applications. Weed surveys will be completed annually for the life of the project following these protocols. Herbicide use must be approved by the BLM.

5.10. Monitoring

Monitoring: The operator shall annually survey and report vegetative cover on all disturbed sites, to monitor reclamation success and weed management. An annual report shall be submitted to the BLM Field no later than December 1 of each year.

1. Reclaimed areas shall be monitored annually. The annual report shall document whether attainment of reclamation objectives appears likely. If one or more objectives appear unlikely to be achieved, the report shall identify appropriate corrective actions. Upon review and approval of the report by the BLM, the operator shall be responsible for implementing the corrective actions or other measures specified by the authorized officer.

2. Adaptive management techniques to support reclamation success and standards may be required. Reclamation will be considered successful when the site is protected from erosion and revegetated with a self-sustaining, vigorous, diverse, native (or otherwise approved) plant community that minimizes loss of habitat, visual resources, and forage.

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