State of New Mexico
Energy, Minerals and Natural Resources Department

Michelle Lujan Grisham
Governor

Sarah Cottrell Propst
Cabinet Secretary

Todd E. Leahy, JD, PhD
Deputy Cabinet Secretary

Mike Tompson, Interim Director
Mining and Minerals Division

January 10, 2020

BHP Mineral Resources Inc.
Attn: Meghan Chesal, Operations Specialist
180 West Magee Road, Ste. 134
Tucson, AZ 85704

RE: Agency Review Comments and Request for Additional Information, BHP Oak Grove Minimal Impact Exploration Project, Permit No. GR084EM – Grant County, New Mexico

Ms. Chesal:

The New Mexico Mining and Minerals Division ("MMD") has reviewed the Permit Application Package ("PAP"), for a minimal impact exploration permit, submitted by BHP Mineral Resources ("BHP"), under Subpart 3 of the New Mexico Mining Act Rules ("Rules"). MMD has also received agency comments on the November 5, 2019 submittal from BHP.

Enclosed with this letter are the reviewing agency comment letters submitted by the following state agencies: the New Mexico Environment Department ("NMED"), the New Mexico Office of the State Engineer ("NMOSE"), the New Mexico Department of Game and Fish ("NMDG&F"), and the New Mexico Department of Cultural Affairs - Historic Preservation Division ("NMDCA/HPD").

In addition to State and Federal agencies the Navajo Nation Heritage and Historic Preservation Department's (NNHPD) Traditional Culture Program (TCP) has commented on the Permit No. GR084EM PAP. Please take the tribal comments into consideration during this process. Additionally, please find general comments from MMD based on review of this application. Attached to this letter are all comments from State and Tribal agencies.

General Comments:

MMD has reviewed the PAP and deemed it administratively complete, pursuant to §19.10.3.302 G NMAC, in a letter to BHP dated November 12, 2019. **However, MMD has reviewed the PAP and has found it to be *technically incomplete* pending receipt of acceptable supplemental information identified in this letter. Please respond no later than 30 days of receipt of this letter, to the information requested.**

MMD Comments:

Please respond to the following items:

1. Section 6.C states that groundwater is anticipated to be encountered during exploration. Are there any known aquifers that might be encountered during drilling and if so at what depths?

2. Section 6.B states "in the event water is encountered while drilling, a thicker mud would be pumped into the drill to plug the water source." What is the management plan if multiple aquifers are encountered to prevent the commingling of aquifers? For example, will telescopic casing be used?

3. Section 8.A provides an estimated financial assurance amount of $46,150.00. MMD has calculated the financial assurance to be $91,237.74, based on MMD's 2013 guidance document. A financial assurance instrument will need to be provided with this amount.

NMED Mining Environmental Compliance Section, Ground Water Quality Bureau Comments ("MECS")

Please review the comment letter received by NMED MECS Ground Water Quality.

NMED Surface Water Quality Bureau Comments:

Please review the comment letter received by NMED Surface Water Quality Bureau.

NMED Air Quality Bureau Comments:

Please review the comment letter received by NMED Air Quality Bureau.

NMDCA/HPD Comments:

Please review the comment letters received by NMDCA/HPD.

NMOSE Comments:

Please review the comment letter received by NMOSE.

NMDG&F Comments:

Please review the comment letter received by NMDG&F and respond to the following concerns.

Should you have any questions, comments, or require additional information concerning this letter or any enclosures, please contact me at (505) 476-3436, or via email at: jennifere.johnson@state.nm.us.

Sincerely,

Jennifer Johnson

Jenn Johnson – Permit Lead, GR084EM
Mining Act Reclamation Program ("MARP")
New Mexico Mining and Minerals Division

Enclosures:

December 24, 2019 Letter to MMD from NMDGF
December 23, 2019, Letter to MMD from NMED
December 10, 2019 Letter to MMD from NMDCA/HPD
December 19, 2019 Letter to MMD from NMDCA/HPD
January 10, 2020 Letter to MMD from NMOSE
December 18, 2019 Letter to MMD from the NNHPD TCP

Cc w/o enclosures:

Holland Shepherd, Program Manager, MARP/MMD
Amanda Best, Senior Environmental Specialist, Westland Resources
Mine File (GR084EM)

NEW MEXICO
ENVIRONMENT DEPARTMENT

Ground Water Quality Bureau

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Jennifer J. Pruett
Deputy Secretary

MEMORANDUM

Date: December 23, 2019

To: Holland Shepherd, Program Manager, Mining Act Reclamation Program

Through: Jeff Lewellin, Mining Act Team Leader, Mining Environmental Compliance Section

From: John Moeny, Surface Water Quality Bureau
Rhett Zyla, Air Quality Bureau

Subject: **NMED Comments, BHP Oak Grove Exploration Project, Minimal Impact Exploration Project, Grant County, New Mexico, New Mexico Mining Act Permit No. GR084EM**

The New Mexico Environment Department (NMED) received correspondence from the Mining and Minerals Division (MMD) on December 2, 2019 requesting NMED review and provide comments on the above-referenced MMD permitting action. In accordance with 19.10.3.302.G NMAC, NMED is providing comments within the 20-day comment period prescribed in the regulation. NMED has the following comments.

Background

Ms. Meghan Chesal (Applicant) on behalf of BHP Mineral Resources, Inc. proposes a minimal impact exploration project to advance one 4.625-inch diameter boring to depth of 5,000 feet below ground surface. The project is on private land and land managed by the Bureau of Land Management in Section 4, T20S, R14W. The purpose of the proposed exploration project is to evaluate the potential reserves of copper. The Applicant indicates 3.5 acres of land will be disturbed during this minimal impact exploration project.

Air Quality Bureau

The Air Quality Bureau comments are attached under separate letterhead.

Surface Water Quality Bureau

The Surface Water Quality Bureau comments are attached under separate letterhead.

Mining Environmental Compliance Section (MECS)

MECS personnel reviewed the Office of the State Engineer (OSE) Points of Diversion (POD) database to evaluate the presence of ground water production wells in the area of the proposed project. Ground water production wells (livestock watering) were listed in the OSE database in the vicinity of the proposed project. The total dissolved solids (TDS) concentration of ground water is not stated in the application. In the likely instance ground water is encountered while advancing the boring to the potential total depth of 5,000 feet below ground surface, plugging, and abandonment of the boring should comply with OSE regulations for wet holes. The Applicant indicates either mud pits or mud tanks will be utilized during drilling activities. In addition, the Applicant indicates at the conclusion of the exploration project, all drill cuttings and desiccated drilling mud will be removed from the site and disposed in accordance with state and federal regulations.

***NMED* Summary Comment**

NMED finds that the exploration project is likely to have a minimal impact to the environment if operated and reclaimed with the approved permits, pollution controls, and the comments above.

If you have any questions, please contact Jeff Lewellin at (505) 827-1049.

cc: Shelly Lemon, Bureau Chief, SWQB
Liz Bisbey-Kuehn, Bureau Chief, AQB
Mike Tompson, Interim Director, EMNRD-MMD
Jennifer Johnson, Lead Staff, EMNRD-MMD
Kurt Vollbrecht, Program Manager, MECS
George Llewellyn, MECS

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MEMORANDUM

DATE: December 19, 2019

TO: Jeff Lewellin, Mining Act Team Leader
Mining Environmental Compliance Section
Ground Water Quality Bureau (GWQB)

FROM: John Moeny
Watershed Protection Section
Surface Water Quality Bureau (SWQB)

RE: **Request for Comments, Minimal Impact Exploration Project, BHP Oak Grove Exploration Project, Grant County, Mining Act Permit No. GR084EM**

On November 27 2019, NMED received a request for comments regarding a minimal impact exploration project in Grant County by BHP Mineral Resources Inc. (Applicant). The project is located approximately 14 miles south of Silver City on public lands managed by the Bureau of Land Management.

Summary of Proposed Action

The Applicant seeks to drill one, 4.6-inch diameter test hole to a depth of 5,000 feet, targeting subsurface copper deposits. The project will require construction of new access roads in addition to drilling and staging areas. Total disturbance is estimated at 3.5 acres. The project lies on an upland terrace (Figure 1) and does not intersect with any known surface waters of the state. Depth to ground water is estimated to between 160- 700 feet.

Relevant State and Federal Regulations

This Project will disturb one or more acres and storm water discharges may be covered under either the U.S. Environmental Protection Agency (USEPA) National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP) or under the Multi-Sector General Permit (MSGP) under Sector G Metal Mining.

Among other things, a SWPPP must be prepared for the site and that appropriate Best Management Practices (BMPs) be installed and maintained both during and after construction to prevent, to the extent practicable, pollutants (primarily sediment, oil & grease and construction materials from construction sites) in storm water runoff from entering waters of the U.S. This permit also requires that permanent stabilization measures (revegetation, paving, etc.), and permanent storm water management measures (storm water detention/retention structures, velocity dissipation devices, etc.) be implemented post construction to minimize, in the long term, pollutants in storm water runoff from entering these waters.

Operators of certain small construction activity (disturbance of one to five acres) may be waived from permit requirements under limited circumstances. To be eligible for this waiver, operators must certify to EPA that they are eligible (see Section 9 Appendix C of the CGP). Waivers are only available to stormwater discharges associated with small construction activities (i.e., 1-5 acres). If this Project transitions into mining activities, MSGP coverage would be required at that time.

The following best management practices are recommended to protect surface water quality:

- Fuel, oil, hydraulic fluid, lubricants, and other petrochemicals must have a secondary containment system to prevent spills.

- Ground water sump pits may not be used as disposal locations for hydraulic fluids, oils, contaminated drilling mud or other materials that may pose a pollution risk to surface and ground water.

- Appropriate spill clean-up materials such as absorbent pads must be available on-site at all times during road construction, site preparations, drilling and reclamation to address potential spills.

- Report all spills immediately to the NMED as required by the New Mexico Water Quality Control Commission regulations (20.6.2.1203 NMAC). For non-emergencies during normal business hours, call 505-428-2500. For non-emergencies after hours, call 866-428-6535 or 505-428-6535 (voice mail, twenty-four hours a day). For emergencies only, call 505-827-9329 twenty-four hours a day (NM Dept of Public Safety).

Impacts to Surface Water Quality

The SWQB finds the Applicant's proposed exploration is likely to have a minimal impact to surface waters if operated and reclaimed with the approved permits and pollution controls and the comments above.

If you have any questions, please phone me at (575) 956-1545.

Figure 1. Project location near Silver City

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Jennifer J. Pruett
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MEMORANDUM

DATE: December 9, 2019

TO: Jeff Lewellin, Mining Act Team Leader
Mining Environmental Compliance Section, Ground Water Quality Bureau

FROM: Rhett Zyla, Environmental Scientist & Specialist
Planning Section, Air Quality Bureau

RE: Request for Comments, Minimal Impact Exploration Project, BHP Oak Grove Exploration Project, Grant County, Mining Act Permit No. GR084EM

The New Mexico Air Quality Bureau (AQB) has completed its review of the above-mentioned mining exploration project. Pursuant to the New Mexico Mining Act Rules, the AQB provides the following comments.

Air Quality Permitting History

The AQB has not issued any air quality permits for this operation.

Details

BHP Mineral Resources, Inc. ("Applicant"), is requesting a minimal impact exploration permit for its Oak Grove Exploration Project, southeast of Tyrone, New Mexico, for Township 20 South, Range 14 West, Sections 4, 9, 10, 15-18, 21, and Range 15, Sections 13, 14, 24.

Applicant is seeking to explore for copper in Section 4, with a begin date as early as January 2, 2020, and ending by January 1, 2021.

Applicant proposes drilling one 4.6" diameter hole, on one drill pad, 100' by 100', to a depth of 5000'. Grading and mechanical leveling of the drill pad site are anticipated.

Total area to be disturbed by the project is 3.5 acres, most arising from new road construction and existing road improvements.

Air Quality Requirements

The *New Mexico Mining Act* of 1993 states that "Nothing in the *New Mexico Mining Act* shall supersede current or future requirements and standards of any other applicable federal or state law." Thus, the applicant is expected to comply with all requirements of federal and state laws pertaining to air quality. Current requirements which may be applicable in this mining project include, but are not limited to the following:

Paragraph (1) of Subsection A of 20.2.72.200 NMAC, *Application for Construction, Modification, NSPS, and NESHAP - Permits and Revisions*, states that air quality permits must be obtained by:

"Any person constructing a stationary source which has a potential emission rate greater than 10 pounds per hour or 25 tons per year of any regulated air contaminant for which there is a National or New Mexico Ambient Air Quality Standard. If the specified threshold in this subsection is exceeded for any one regulated air contaminant, all regulated air contaminants with National or New Mexico Ambient Air Quality Standards emitted are subject to permit review."

Further, Paragraph (3) of this subsection states that air quality permits must be obtained by:

"Any person constructing or modifying any source or installing any equipment which is subject to 20.2.77 NMAC, *New Source Performance Standards*, 20.2.78 NMAC, *Emission Standards for Hazardous Air Pollutants*, or any other New Mexico Air Quality Control Regulation which contains emission limitations for any regulated air contaminant."

Also, Paragraph (1) of Subsection A of 20.2.73.200 NMAC, *Notice of Intent*, states that:

"Any owner or operator intending to construct a new stationary source which has a potential emission rate greater than 10 tons per year of any regulated air contaminant or 1 ton per year of lead shall file a notice of intent with the department."

In addition, pursuant to Subsection A of 19.10.3.302 NMAC, *Minimal Impact Exploration Operations*:

"A minimal impact exploration operation will not exceed 1000 cubic yards of excavation per permit. Disturbances for constructed roads, drill pads and mud pits shall be no more than 5 acres total and will not be counted in the excavated materials. The type of road construction, the number and type of drill pads, and other disturbances when considered with site specific conditions will be major factors in determining eligibility for minimal impact status which is in the discretion of the director."

The above is not intended to be an exhaustive list of all requirements that could apply. The applicant should be aware that this evaluation does not supersede the requirements of any current federal or state air quality requirement.

Fugitive Dust

Fugitive dust is a common problem at mining sites and this project will temporarily impact air quality as a result of these emissions. However, with the appropriate dust control measures in place, the increased levels should be minimal. Disturbed surface areas, within and adjacent to the project area, should be reclaimed to avoid long-term problems with erosion and fugitive dust. EPA's *Compilation of Air Pollutant Emission Factors, AP-42, "Miscellaneous Sources"* lists a variety of control strategies that can be included in a comprehensive facility dust control plan. A few possible control strategies are listed below:

Paved roads: covering of loads in trucks to eliminate truck spillage, paving of access areas to sites, vacuum sweeping, water flushing, and broom sweeping and flushing.

Material handling: wind speed reduction and wet suppression, including watering and application of surfactants (wet suppression should not confound track out problems).

Bulldozing: wet suppression of materials to "optimum moisture" for compaction.

Scraping: wet suppression of scraper travel routes.

Storage piles: enclosure or covering of piles, application of surfactants.

Miscellaneous fugitive dust sources: watering, application of surfactants or reduction of surface wind speed with windbreaks or source enclosures.

Recommendation

The AQB has no objection to the current request for a minimal impact exploration permit from MMD.

The applicant is expected to comply with all requirements of federal and state laws pertaining to air quality. This written evaluation does not supersede the applicability of any forthcoming state or federal regulations.

If you have any questions, please contact me at 505.476.4304.

Michelle Lujan
Grisham
Governor

STATE OF NEW MEXICO
DEPARTMENT OF CULTURAL AFFAIRS
HISTORIC PRESERVATION DIVISION

BATAAN MEMORIAL BUILDING
407 GALISTEO STREET, SUITE 236
SANTA FE, NEW MEXICO 87501
PHONE (505) 827-6320 FAX (505) 827-6338

December 10, 2019

Jenn Johnson
Permit Lead, Mining Act Reclamation Program
Mining and Minerals Division
1220 South Saint Francis Drive
Santa Fe, NM 87505

Re: HPD Log# 112050, New Minimal Impact Exploration Permit Application, BHP Oak Grove Exploration Drilling, Grant County, New Mexico, Permit No. GR084EM

Dear Ms. Johnson:

I am writing in response to your request for comment on the above referenced exploration project received at this office December 2, 2019.

Pursuant to 19.10.5.505 NMAC, Permit Modifications and Revisions, the Director shall determine whether a permit modification would have an adverse impact on cultural resources listed on either the National Register of Historic Places or the State Register of Cultural Properties or be located in a known cemetery or other burial ground.

According to our files, there are no cultural resources listed on either the National Register of Historic Places or the State Register of Cultural Properties in the permit area. There are also no known cemeteries or other burial grounds. Based on this information, this permit will have no adverse impacts to cultural resources listed on the National or State Registers.

Although there are no cultural resources listed on either the National Register of Historic Places or the State Register of Cultural Properties, Section 2.9 (page 5) of the minimal impact exploration permit application for this project states that a cultural resources survey was conducted within the planned project area in June 2019, the results of which were provided in a Class III Cultural Resources Survey Report (submitted to the Mining and Minerals Division under separate cover). The SHPO requests that the Mining and Minerals Division forward a copy of the aforesaid survey report to us for review.

Also, the mine application states that in portions of the project area, the surface estate owner is the U.S. Bureau of Land Management (BLM) land and therefore, we recommend that you also consult with the BLM to ensure that the project meets their cultural resource and other environmental requirements.

If you have any questions concerning these comments, please do not hesitate to contact me by phone at (505)-452-6115 or e-mail me at richard.reycraft@state.nm.us

Sincerely,

Richard Reycraft

Richard. Reycraft
Staff Archaeologist

Michelle Lujan
Grisham
Governor

STATE OF NEW MEXICO
DEPARTMENT OF CULTURAL AFFAIRS
HISTORIC PRESERVATION DIVISION

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December 19, 2019

Jenn Johnson
Permit Lead, Mining Act Reclamation Program
Mining and Minerals Division
1220 South Saint Francis Drive
Santa Fe, NM 87505

Re: HPD Log# 112125, Requested Cultural Resource Inventory for BHP Oak Grove Exploration Drilling

Dear Ms. Johnson:

On behalf of the New Mexico State Historic Preservation Officer (SHPO) I want to thank you for cooperating with the SHPO in regards to the aforementioned project. I have reviewed the submitted document entitled "*A Cultural Resources Inventory for Proposed Mineral Exploitation Activities on U.S. Bureau of Land Management (Las Cruces District) Land South of Silver City, Grant County, New Mexico (NMCRIS #143562)*". The SHPO concurs with the report's findings and recommendations of eligibility and/or effects as proposed

If you have any questions concerning these comments, please do not hesitate to contact me by phone at (505)-452-6115 or e-mail me at richard.reycraft@state.nm.us

Sincerely,

Richard Reycraft

Richard. Reycraft
Staff Archaeologist

MEMORANDUM
OFFICE OF THE STATE ENGINEER
Hydrology Bureau

DATE: January 9, 2020

TO: Jenn Johnson, Permit Lead, Mining Act Reclamation Program (MARP)/MMD
Holland Shepherd, Program Manager, MARP/MMD

THROUGH: Ghassan Musharrafieh, Ph.D., P.E., Hydrology Bureau Chief GM

FROM: Kamran H. Syed, Ph.D., P.E., Hydrology Bureau KHS.

SUBJECT: Review and Comments, New Minimal Impact Exploration Permit Application, BHP Oak Grove Exploration Drilling, Grant County, New Mexico, Permit No. GR084EM

I. Introduction and Conclusions

On November 27, 2019, the State of New Mexico Energy, Minerals and Natural Resources Department (EMNRD) requested the New Mexico Office of the State Engineer (NMOSE) Hydrology Bureau to review and comment on the MMD GR084EM Part 3 Minimal Impact Exploration Operation Permit Application for the BHP Oak Grove Exploration Drilling Project. The project will consist of the drilling and evaluation of one borehole, 5000 feet deep (up to 4.625 inches diameter), exploring for copper.

The location of the proposed borehole is within Section 4 of Township 20 South, Range 14 West and will be approximately 8 miles south of the town of Tyrone, New Mexico and about 10 miles west of Whitewater, NM in Grant County. The surface elevation within the project area ranges from approximately 5730 to 5929 feet above mean sea level (amsl) and the surface elevation of the proposed borehole is approximately 5783 feet amsl.

Comment Summary

1. Discrepancies within the application and attachments
    a. Attachment 1 First page title states "Range" 20 South. Looks like, it should be "Township" 20 South.
    b. Unclear which cementing will be used during the abandonment of the borehole
        i. Needs to be consistent: currently there are two different types of the cementing agent provided in the "Plugging Plan" submitted to the District 3 office and in the MMD application.

2. Groundwater
    a. Based on the proposed borehole depth, it is most likely that groundwater would be encountered. It is also very likely that groundwater at this depth may be under artesian

conditions and/or the stratified aquifer conditions which will require additional administrative filings with the NMOSE through our District 3 Office.

b. In the unlikely event that no water is encountered MMD regulations (19.10.3 NMAC) will prevail and NMOSE regulations (19.27.4 NMAC) would not apply.
c. It has been confirmed that the Applicant has filed an application for a *Permit to Drill a Well with No Water Right* and a *Well Plugging Plan of Operations* with NMOSE District 3 Office (provided as Attachment 6 in the application)

3. Borehole Abandonment
    a. In the unlikely event that the groundwater is not encountered MMD regulations for plugging (Subsection L of 19.10.302 NMAC) will prevail over NMOSE regulations for plugging (Subsection C of 19.27.4.30 NMAC)
    b. If water is encountered NMOSE well plugging regulations (Subsection C of 19.27.4.30 NMAC for non-artesian conditions; Subsection K of 19.27.4.31 NMAC for artesian conditions) should be followed.

II. Surface water

Two USGS 7.5-minute Topo maps (Tyrone and White Signal Quadrangles: web links provided in the references) and GIS data from NMOSE Geographic Information System database were used to locate surface water bodies in the vicinity of the proposed project drill site. The project site is approximately 4 miles north of the *Cherry Creek* intermittent stream and approximately 6.5 miles southwest of the tail of another intermittent stream, the *Rio de Arenas*. Subsection F of Section 6-*Groundwater/Surface Water Information* (page 16) of the MMD's "Part 3 Minimal Impact Exploration Operation PERMIT APPLICATION INSTRUCTIONS" (2012), suggests that drilling in or near water courses even if it is dry for most of the year is not preferred and will likely result in some drilling restrictions by the MMD. NMOSE regulation 19.27.4.29.P.(2)NMAC notes that drilling fluids and cuttings shall not be allowed to migrate or be discharged off property under the control of the well owner, and that no drilling fluid or cuttings be discharged into any waters of the State. It is recommended to avoid drilling in or within 100 feet of any drainages. Using data from USGS topo maps and the NMOSE GIS layers, it does not appear that the proposed location is within 100-feet of any drainage.

III. Groundwater

Using the New Mexico Water Right Reporting System (NMWRRS), 56 wells were identified within approximately 3 miles from the proposed drilling site. Out of those 56 wells, 30 wells have well depth information and 20 wells have both well depth and depth to water (DTW) information. The well depths range from a minimum of 50 feet to a maximum of 1000 feet (with an average depth of 501 feet). The DTW values range from a minimum of 36 feet to a maximum of 732 feet (with an average DTW of 296 feet). Details are provided in the following table.

NMOSE POD Number	UTM Easting, m	UTM Northing, m	Distance from the proposed well, feet	Depth of Well, feet	Depth To Water, feet
M 09158	190448	3614321	8692	573	530
M 10584 POD13	189226	3614867	11677	**50**	**36**
M 10584 POD11	189197	3614874	11739	65	36
M 10584 POD12	189168	3614881	11805	64	36
GSF 04149	189239	3614946	11887	630	
M 10396	189239	3614946	11887	630	
M 09159	189251	3615148	12467	630	580
M 10490	187009	3611881	12628	450	
M 10920 POD1	186963	3611652	12766	325	285
M 10584 POD1	189044	3615152	12779	650	
M 10920 POD2	186951	3611671	12805	380	310
M 10785 POD1	186920	3611981	12940	290	167
M 09003	186920	3612181	13002	450	
M 08925	186720	3611981	13596	390	300
M 08941	186720	3611981	13596	390	
M 09478	186720	3612181	13655	780	250
M 10323	186694	3611378	13691	457	275
M 10985 POD1	186780	3610795	13694	875	430
M 08994	186668	3610576	14222	450	
M 09488	186466	3610586	14855	905	550
M 09660	186466	3610586	14855	905	
M 07458	186305	3611591	14931	275	160
M 07988	186466	3610386	15029	725	
M 08966	186466	3610386	15029	325	160
M 07410	186280	3610987	15190	385	245
M 08753	186453	3610184	15272	**1000**	
M 10308	186453	3610184	15272	500	208
M 10584 POD14	187807	3615238	15314	745	**732**
M 08023	186116	3612203	15632	475	450
M 07747	186266	3610386	15659	260	180

The available well data from NMOSE shows that the depths to groundwater range from 36 to 732 feet below ground surface. The borehole is proposed to be drilled to a depth of 5000 feet. It seems very likely that the proposed borehole will encounter groundwater.

Since it is likely that groundwater will be encountered, the NMOSE requirements for the drilling and plugging of the proposed borehole should be met. A *Permit to Drill a Well with No Water Right* for the proposed borehole (that encounter water) would be required (This permit application has already been filed by the Applicant, but the NMOSE District 3 Office may require the filing of an *Artesian Well Plan of Operations* if artesian conditions are encountered). The NMOSE regulation 19.27.4 also requires that the borehole be drilled by a New Mexico-licensed well driller.

IV. Exploratory borehole abandonment

MMD regulations (19.10.3 NMAC) prevail over those of NMOSE (19.27.4 NMAC) if groundwater is ***not*** encountered during exploratory drilling (this scenario is un-likely for the proposed borehole depth of 5000 feet). For exploratory borings that do not encounter a water-bearing stratum, MMD plugging regulation Subsection L of NMAC 19.10.3.302 addresses MMD-preferred plugging alternatives. In the event that drilling does encounter groundwater (a more likely scenario for the proposed borehole under this application), pluggings should be according to either a pre-approved plugging conditions attached to the NMOSE drilling permits, or can be separately conditioned by a *Well Plugging Plan of Operations*, as dictated by NMOSE Water Rights District 3 (Deming Office).

Additional details regarding well plugging requirements under 19.27.4 NMAC are included in the attached document ("General Concerns Related to NMOSE Regulation of Exploratory Borehole Drilling Encountering Groundwater and Associated Plugging of these Borings").

Plugging Plan provided to the NMOSE District 3 (Deming) Office notes that the borehole will be decommissioned with a high solids bentonite grout (with a limited upper interval of cement), while the responses provided to the MMD on page 18 of the MMD permit application note that the borehole will be entirely plugged with neat cement slurry. [If the borehole is not flowing, a high-solids bentonite grout is an acceptable sealant **IF** water chemistry does not preclude its use – Chloride concentration in excess of 1500 mg/l or total hardness in excess of 500 mg/l are derogatory to bentonite sealant use, and bentonite sealant should not be used in this case]. Refer to the NMOSE guidelines for well construction and plugging: https://www.ose.state.nm.us/Statewide/Guidelines/SealantTableSigned.pdf, as well.

V. Comment on "Biological Evaluation" report

Section 2.2 of the biological evaluation report has the error regarding the OSE requiring a concrete pad around the surface casing. This borehole will not be a monitoring well (unless the Applicant has failed to indicate as such on their filings), and the NMOSE does not have a requirement for a concrete pad around the monitoring well surface casing. If conversion of the exploratory borehole to a monitoring well is being considered, administrative filings with the NMOSE is required.

VI. References

Mining and Minerals Division, 2011, Guidance Document for Part 3 Permitting Under the New Mexico Mining Act. Energy, Minerals and Natural Resources Department, Mining Act Reclamation Program October 2011.
http://www.emnrd.state.nm.us/MMD/MARP/Documents/Part_3_Guidelines_October2011_.pdf

Mining and Minerals Division, 2012, Part 3 Minimal Impact Exploration Operation: PERMIT APPLICATION INSTRUCTIONS. Energy, Minerals and Natural Resources Department.
http://www.emnrd.state.nm.us/MMD/MARP/Documents/Part3_ExplorationApplication_Instructions_Feb2012.pdf

New Mexico Office of the State Engineer and New Mexico State Engineer and Interstate Stream Commission. New Mexico Water Rights Reporting System.
URL: http://nmwrrs.ose.state.nm.us/nmwrrs/index.html

U.S. Geological Survey, 20170126, USGS US Topo 7.5-minute map for Tyrone, NM 2017: USGS - National Geospatial Technical Operations Center (NGTOC).
https://prd-tnm.s3.amazonaws.com/StagedProducts/Maps/USTopo/PDF/NM/NM_Tyrone_20170126_TM_geo.pdf
_1951_24000_geo.pdf

U.S. Geological Survey, 20170126, USGS US Topo 7.5-minute map for White Signal, NM 2017: USGS - National Geospatial Technical Operations Center (NGTOC).
https://prd-tnm.s3.amazonaws.com/StagedProducts/Maps/USTopo/PDF/NM/NM_White_Signal_20170126_TM_geo.pdf

General Concerns Related to NMOSE Regulation of Exploratory Borehole Drilling Encountering Groundwater and Associated Plugging of those Borings

Well drilling activities (including mineral exploration borehole drilling ("mine drill holes") that penetrate a water-bearing stratum) and well plugging, are regulated in part under 19.27.4 NMAC (New Mexico Administrative Code). Most recently promulgated in 6/30/2017, these regulations require any person engaged in the business of well drilling within New Mexico to obtain a Well Driller License issued by the NMOSE (New Mexico Office of the State Engineer). Therefore, a New Mexico licensed Well Driller shall perform the drilling and plugging of exploratory boreholes that encounter groundwater.

Exploration drilling where any form of groundwater is encountered will be subject to pertinent sections of 19.27.4 NMAC, including but not limited to Sections 19.27.4.30.C NMAC for plugging and abandonment of non artesian wells / borings; 19.27.4.31 NMAC for artesian wells / borings; and 19.27.4.36 NMAC for mine drill holes that encounter water. A complete version of the NMOSE 19.27.4 NMAC regulations can be found on the NMOSE website at:

http://164.64.110.134/parts/title19/19.027.0004.html . The Mining and Mineral Division (MMD) will likely place additional conditions on the drilling and plugging of all mineral exploration borings via the MMD project permit.

All onsite drilling and plugging activities where groundwater is encountered shall be conducted under the supervision of the New Mexico-licensed Well Driller or a NMOSE-registered Drill Rig Supervisor under the direction of the licensed Well Driller.

Additional NMOSE filings will be required where it is requested that an exploratory borehole be converted to a water well. The well design and construction shall be subject to the provisions of 19.27.4 NMAC Regulations. Appropriation of water from such a conversion may require a water right. **The MMD may disallow the conversions of exploratory borings to water wells if not permitted specifically in the MMD permit.**

Use/extraction of Temporary Casing

When drilling through overburden or caving, poorly-consolidated, or karst geologic units, use of temporary casing may be desired. Any temporary casing should be installed with the full intention of its removal before borehole plugging, therefore temporary casing should be inserted into a borehole of sufficiently large diameter to allow easy extraction upon termination of drilling. NMAC 19.27.4 regulations dictate methodology for the installation of permanent well casing, including the installation of required annular seal, should that option be more prudent.

If temporary casing lacking a rule-compliant annular seal or casing grade becomes stuck in-place downhole, the potential for permanent commingling of aquifers or downhole surface water drainage may occur via an unsealed annulus. In these cases, staged casing cutting and extraction, or remedial casing perforation and squeeze-cementing will be required to the satisfaction of the State Engineer as part of final well decommissioning. Steps should be taken during drilling to prevent deleterious fall-in or drainage of cuttings/sediments into the annulus outside the temporary casing to best allow for full retrieval and proper borehole plugging.

When setting of temporary casing occurs or is expected, appropriate detail of the proposed casing extraction and borehole clean-out process prior to plugging will be required in the NMOSE *Well Plugging Plan of Operations* form. If exploratory drilling through stratified or artesian aquifer systems, filing a NMOSE *Artesian Well Plan of Operations* may be required to preemptively assess and address NMOSE concerns regarding best borehole decommissioning practices.

Exploratory Borehole Plugging

Terms of borehole plugging will be established jointly by the evaluation of the NMOSE *Well Plugging Plan of Operations* and the review of the relevant MMD application for water-bearing boreholes. Approved high-solids bentonite abandonment-grade sealants and/or approved cement slurries will be required for plugging as deemed hydrogeologically appropriate by the agencies. NMOSE-authorized cement slurries will be required for the decommissioning of flowing artesian boreholes. If the exploratory borings do not encounter groundwater, MMD plugging regulations (19.10.3 NMAC) prevail over those of 19.27.4 NMAC.

NMOSE well plugging regulations require tremie placement of the column of well sealant, which shall extend from the bottom of the borehole to ground surface. By regulation, pumping decommissioning sealants into the top of the borehole is not allowed. The NMOSE defers to the discretion of the MMD for the choice of sealant versus natural fill in the uppermost portion of a borehole plug to facilitate site restoration.

Required plugging of water-bearing exploratory borings shall occur within the timeframe specified by either the NMOSE or MMD to minimize cave-in and the potential for incomplete plugging due to blockages in the borehole.

Drill Rig Fuels, Oils and Fluids

Drill rigs contain and consume fuels, oil, and hydraulic fluids, and are subject to leaks. Drill rigs often remain in-place longer than other pieces of exploration equipment onsite, are frequently running, and are positioned immediately above and adjacent to the open borehole. As a standard practice to prevent contamination and reduce site cleanup activities, it may be beneficial to use bermed, impermeable ground sheeting under the drill rig. Consideration of bermed containment volume sufficient to accommodate a high-intensity precipitation event is also a good practice.

GOVERNOR
Michelle Lujan Grisham

DIRECTOR AND SECRETARY
TO THE COMMISSION
Michael B. Sloane

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DEPARTMENT OF GAME & FISH

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24 December 2019

Jenn Johnson, Permit Lead
Mining Act Reclamation Program
Mining and Minerals Division (MMD)
1220 South St. Francis Drive
Santa Fe, NM 87505

RE: New Minimal Impact Exploration Permit Application, BHP Oak Grove Drilling Project, Permit No. GR084EM; NMDGF No. 19616

Dear Ms. Johnson,

The New Mexico Department of Game and Fish (Department) has reviewed the proposed exploration project referenced above. BHP is proposing to drill a single exploratory hole to a depth of 5,000 feet below ground surface on Bureau of Land Management (BLM) land in Township 20S, Range 14W, Section 4. The Department, MMD, New Mexico Environment Department, BLM and BHP conducted an inspection of the proposed site on 9 December 2019. The Department provides the following recommendations to minimize impacts to wildlife and habitats.

BHP is proposing to use closed loop drilling technology for the project, utilizing an open tank approximately five feet in height to contain the drilling fluids. The Department supports the use of closed loop drilling techniques but recommends that a closed containment tank is used. If an open containment tank is used, it should be covered or netted to exclude flying and terrestrial animals from contacting drilling fluids. Extruded plastic, knit or woven netting material is preferred. Monofilament nylon netting should not be used due to its tendency to ensnare wildlife and cause injury or death. All materials should be resistant to corrosion and ultraviolet radiation. The Department recommends a mesh size of $^{3}/_{8}$ inch to exclude smaller animals. Netting must be held taut and securely fastened to a rigid and adequately supportive frame to prevent sagging. Regular inspection and maintenance is critical to repair holes and to restore tension to sagging netting material.

The invasive noxious weed African rue *(Peganum harmala)* is known to occur in Grant County. African rue thrives on disturbed sites and along roadsides. It is extremely drought tolerant and will undergo rapid vegetative growth when soil moisture is available. African rue is extremely toxic to horses, sheep, cattle and humans, containing at least four types of poisonous alkaloids. In order to help control its spread into currently undisturbed semi-desert grassland habitats, the Department recommends that any vehicles and equipment arriving on site be thoroughly cleaned of all visible dirt and mud in a manner that will help contain and control the potential

spread of weed seeds. The operator should also incorporate a weed monitoring program that includes a commitment to aggressive African rue control on the project site and access roads.

For post-construction reclamation of the project area, the Department recommends that only native plant species are used in the reclamation seed mix. The Department also recommends that the seed mix and mulch be certified weed-free, and that seed test results are requested from the vendor in order to avoid inadvertently introducing non-native species to the reclamation site. Any alternate seeds used to substitute for primary plant species that are unavailable at the time of reclamation should also be native. When possible, the Department recommends using seeds that are sourced from the same region and habitat type as the reclamation site.

Thank you for the opportunity to review and comment on the proposed exploration project. If you have any questions, please contact Ron Kellermueller, Mining and Energy Habitat Specialist, at (505) 476-8159 or ronald.kellermueller@state.nm.us.

Sincerely,

Matt Wunder, Ph.D.
Chief, Ecological and Environmental Planning Division

From: Timothy Begay
To: Johnson, Jennifer E, EMNRD
Subject: [EXT] COMMENTS ON MINIMAL EXPLORATION PERMIT APPLICATION
Date: Wednesday, December 18, 2019 9:21:01 AM

Dear Johnson:

The Navajo Nation Heritage and Historic Preservation Department's (NNHPD) Traditional Culture Program is (TCP) in receipt of your letter dated November 27, 2019, regarding the request for comments on Minimal Impact Exploration permit application, by BHP Oak Grove Exploration drilling, Permit No. GR084EM, Grant Count, New Mexico.

After reviewing your letter and cross referencing our Traditional Cultural Properties (TCP's) database, NNHHPD-TCP has determined that there are No Navajo TCP's in the project area and you may proceed without further consultation for this project.

If you have any additional questions, concerns or would like to discuss these issues further, please don't hesitate to contact our office at (928) 871-7198 or (928) 871-7152. Thank you for your cooperation and understanding.

Sincerely,

Timothy C. Begay, Navajo Cultural Specialist
Navajo Nation Heritage and Historic Preservation Department
P.O. Box 4950
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