TECHNICAL SUPPORT DOCUMENT (TSD)

February, 2012

I. GENERAL COMMENTS:

A. Company Information

Business Name: Oracle Ridge Corporation Inc dba Oracle Ridge Mining

Facility Address: San Manuel
Arizona 85631

Mailing Address 10445 N. Oracle Road, Oro Valley, AZ 85737

B. Background

The Oracle Ridge Mine (ORM) applied for an initial installation and operating permit on October 14, 2011. The permit was deemed administratively complete on November 30, 2011. ORM is seeking a permit to reopen a closed mine on the North Side of the Catalina mountains. The mine is located in the Old Hat Mining District at Marble Mountain in Northern Pima County. This permit is the initial five year permit to be issued to ORM. The facility is required to obtain an air quality permit due to potential emissions of regulated air pollutants, generated primarily from mining activities, exceeding the permitting and major source thresholds. In addition, the facility is subject to New Source Performance Standards (NSPS) for Metallic Mineral Processing Plants (Part 60 Subpart LL) and Title 17 of the Pima County Code. This TSD supports the permit written as a result of the new source application.

C. Correspondence Timeline

The table below is a timeline of correspondence sent to and received from Rosemont during preparation of the draft permit. This correspondence addresses the permit application only.

Correspondence	Date Submitted
Class II Air Quality Permit Application	10/14/2011
PDEQ Administratively Complete Application Letter to ORM	11/30/2011
Draft Permit Complete and Emailed to Applicant	3/1/2012

D. Attainment Classification

This facility is located in a region that is designated as attainment for all criteria pollutants.

II. FACILITY DESCRIPTION

This air quality operating permit is issued to Oracle Mining Corporation, Inc dba as Oracle Ridge Mine (ORM), for an inactive existing mine which is located approximately four miles from the town of San Manuel, Arizona or six to seven miles from the Summerhaven community of Mt. Lemon. The specific location of the ORM is

Township 11 South, Range 16 East and latitude and longitude of approximately 32.47566^{O}N and 110.70509^{O}W. ORM plans to operate an underground copper mine to include mining, drilling, blasting and milling processes. There is an estimated potential of eight to ten million tons of ore yet to be mined.

ORM has a maximum peak processing rate of 3,000 short tons per day (STPD) limited through the Concentrator Plant although the average processing rate will be 2,000 STPD. The mine contains copper present as chalcopyrite, bornite, and chalcocite. The copper ore consists of gold and silver mineralization as well as magnetite. ORM will perform metallurgical testing in order to determine if the magnetite will be economically feasible for recovery. The copper ore will be processed through crushing (underground), grinding and floatation to produce a concentrate product that will be hauled by trucks to the market.

Emissions from the facility will consist primarily of fugitive and non fugitive particulate matter (PM) from processing, unpaved roads and tailing operations, nitrogen oxide and carbon monoxide from portable and stationary combustion sources and volatile organic compounds from organic liquid storage activities. The facility plans to control fugitive emissions using a dust control program that will control emissions by a combination of methods including, but not limited to, retention of native vegetation, application of dust and erosion chemical suppressants, road watering etc. Non-fugitive emissions will be controlled through the use of fabric filter dust collectors. Specific equipment used to control emissions is outlined in the specific conditions found in Part B of the permit and the equipment list. ORM's maximum processing rate has a potential to emit below major source levels for all pollutants. H_2S emissions however are just below the classification for a major source for HAPs (9.6 tons) therefore a ORM has proposed a synthetic emission limitation (SEL) to limit H_2Semissions to below major source levels for a single HAP.

The facility plans to operate 24 hours per day, 365 days per year except during routine maintenance, shutdown or repair of equipment.

A. Process Description and Operating Hours

Coarse Ore Storage & SAG Mill Crushing

All underground processes, including crushing operations, are not subject to air quality permitting. Only above ground emissions are considered in evaluating the permit application. Crushed ore is conveyed by the Crushed Ore Bin Feed/ Tripper Conveyor to the surface and deposited in three Crushed Ore Storage Bins. There are three copper ore deposits at the mine that lead to three ore storage bins each storing a different ore to be processed in the concentrator. Each storage bin has an apron feeder that deposits ore onto the Reclaim Conveyor. ORM will operate a Dust Suppression System for use underground on the conveyor to surface to reduce dust particles to the atmosphere.

Crushed ore from the bins is discharged onto the Reclaim Tunnel Conveyor that will then transport the ore to the SAG Mill Feed Conveyor. The SAG Mill conveyor then feeds into the Semi-Autogenous (SAG) Mill for further processing. The mine will have the ability to regulate ore feed from the storage bin by using variable speed drives equipped in each apron feeder. These drives will enable ORM to form blended ores to be delivered to the SAG Mill Feed Conveyor.

The SAG Mill Crushing system will be a continuous operation to provide ½" ground ore to the Primary Ball Mill and flotation circuitry. The SAG Mill will operate at an initial feed rate of 90.6 STPH (2,000 STPD) of crushed ore. The SAG Mill is equipped with a belt scale to monitor the weight of ore and a variable frequency drive that allows the mill to operate at a reduced tonnage throughput when required. Once the required size is achieved, the ground ore is sent to the Primary Ball Mill. Overflow material (greater than ½") from the SAG Mill is discharged into a Trash Bin for further processing.

Copper Concentrate Thickening & Filtration

The SAG Mill produces slurry that is sent to the froth flotation process. Froth flotation is a mineral separation process that takes place in conditioned slurry composed of the ground ore mixed with water, reagents and air. The reagents are fed from the Hydrated Lime and Reagent Distribution Systems. The reagents used achieve different results. Some reagents are used to assist the copper particles to float in the flotation circuit. The reagent used depends on the ore that is in the process. Other reagents are used to settle individual particles to the bottom of the concentrate thickener tanks. Hydrated Lime is used to adjust the pH fo the slurry to enable flotation of the copper, gold and silver particles.

Once the copper concentrate is separated and floats to the surface of the slurry. Further processing thickens the concentrate which is then dewatered. During the copper concentrate dewatering, water is removed and the slurries thickened and pumped to filters. The filtered cake is transported to the copper concentrate storage where it is placed in trucks for shipment to the market.

Any oversize ore or regrinding of the flotation concentrate particles necessary takes place in the Re-Grind Ball Mill which has its own circuit to produce flotation concentrate.

Tailings Thickening & Filtration

The tailings slurry is received from the settled product at the bottom of the tanks during the copper concentrate flotation process. The slurry is pumped to the tailings thickening process for further dewatering and filter press. This results in a filter cake that contains 10% to 15% moisture by weight and discharges the dry tailings into the Tailings Storage Bin.

B. Air Pollution Control Equipment

The following sections are identified within the air quality operating permit as including air pollution control equipment:

Section 3 Hydrated Lime & Reagent Distribution Systems

These systems contain two separate fabric filter housings that achieve at least a 99% control efficiency for dust control.

III. REGULATORY HISTORY

A. Testing & Inspections

Testing will be performed on affected equipment if necessary within 180 days of initial start-up of the ORM. The only possible required testing will be opacity tests to comply with the NSPS.

B. Permit Deviation Reports

None as this will be a new source.

IV. EMISSION ESTIMATES

A. Facility Wide Estimates

The following table of emission estimates submitted by ORM has been reviewed and approved by PDEQ. The table is a result of calculations submitted by ORM in determining the potential to emit (PTE) at the facility. It is important to be aware that these emissions exclude any underground processes since PDEQ's jurisdiction under air quality is for above ground emissions.

The emission factors used to calculate the PTE estimates are based on voluntarily accepted synthetic emission limitations (SEL) and AP-42. Testing to be completed upon start-up will verify this estimates. PDEQ will adjust the PTE if necessary depending on the test results.

Table I – Potential to Emit

Pollutant	Potential To Emit (Including Fugitives) (Tons per Year)	Potential To Emit (Non-Fugitive Emissions Only) (Tons per Year)
Particulate Matter (as PM)	12.91	7.40
Particulate Matter (as PM_{10})	12.91	7.40
Nitrogen Oxides (NO_X)	N/A	2.74
Sulfur Oxides (SO_X)	N/A	0.06
Carbon Monoxide (CO)	N/A	0.62
Volatile Organic Compounds (VOCs)	33.94	0.08
Hyrdogen Sulfide (H_2S)	9.6	N/A
Hazardous Air Pollutants (HAPs)	0.0211	0.0034

Based on the facility throughput and PTE, the RCP, is a **Class II; Synthetic Minor Source** for PM, PM_{10}, $PM_{2.5}$, and a true minor for all other regulated pollutants.

V. APPLICABLE REQUIREMENTS

A. Code of Federal Regulations (CFR):

40 CFR 60 Subpart LL New Source Performance Standards for Metallic Mineral Processing plants.
40 CFR 60 Subpart IIII New Source Performance Standards for Stationary Internal Combustion Engines.

40 CFR 63 Subpart CCCCCC
National Emission Standards for Hazardous Air Pollutants for Source Categories: Gasoline Dispensing Facilities

B. Pima County Code (PCC) Title 17, Chapter 17.16:

The ORM is also subject to local (Pima County) air pollution emission standards. The specific Pima County conditions applicable to the ASARCO LLC (Missions Complex) are identified below:

17.16.010	Local Rules and Standards – Applicability of More than One Standard
17.16.020	Noncompliance with Applicable Standards
17.16.040	Visible Emission Standards: Standards and applicability (Include NESHAP)
17.16.050	Visibility Limiting Standards
17.16.060	Fugitive Dust Producing Activities
17.16.090	Roads and Streets
17.16.100	Particulate Materials
17.16.110	Storage Piles
17.16.120	Mineral Tailings
17.16.165	Standards of Performance for Fossil-Fuel Fired Industrial and Commercial Equipment
17.16.230.B	Standards of Performance for Storage Vessels for Petroleum Liquids
17.16.430	Standards of Performance for Unclassified Sources
17.16.450	Off-Road Machinery
17.16.470	Roadway and Site Cleaning Machinery
17.16.490	Standards of Performance for New Stationary Sources

VI. PERMIT CONTENTS

The following section of the TSD refers to the specific conditions of the permit and explains in detail the written permit.

A. Applicability:

The ORM is subject to Federal New Source Performance Standards (NSPS) namely Title 40, Code of Federal Regulations (CFR), Part 60, Subpart LL (Standards of Performance for Metallic Mineral Processing plants), Subpart IIII (Standards of Performance for Stationary Internal Combustion Engines). The standards of performance are promulgated for the control of particulate matter (Subpart LL) and control of NMHC + NOx, CO & PM from stationary engines (Subpart IIII). The mine is also subject to Part 63 Subpart CCCCCC (National Emission Standards for Hazardous Air Pollutants for Source Categories: Gasoline Dispensing Facilities) These standards apply to new, modified or reconstructed facilities.

The provisions of Subpart LL apply to the following affected facilities at the ORM: Each conveyor belt transfer point, product packaging station, storage bin, enclosed storage area, truck loading station, truck unloading station, at the mill or concentrator.

The NSPS Subpart LL identifies emission limits for fugitive dust emissions by limiting the opacity of fugitive dust emissions. The rule also requires periodic monitoring for water spray equipment that is used to control fugitive PM emissions.

EPA exempts wet material processing operations from the requirements of this standard. These processes as defined have no potential for PM emissions. Affected facilities under NSPS Subpart LL are those that commence construction or modification after August 24, 1982.

The provisions of Subpart IIII apply to owners and operators of stationary compression ignition (CI) internal combustion engines (ICE) that:

1. Commence construction or modify or reconstruct their engines after July 11, 2005 where the engines are:

    a. Manufactured after April 1, 2006 and are not fire pump engines, or

b. Manufactured as a certified National Fire Protection Association (NFPA) fire pump engine after July 1, 2006.

2. The provisions of this subpart are not applicable to engines being tested at an engine test cell/stand.

The NSPS for Subpart IIII prescribes limits that have to be certified by the manufacturer for a specific period of time. After this period, ORM is required to assure compliance with those limits. ORM is required to purchase engines certified to these limits and maintain the engines as required by the manufacturer.

The provisions of Subpart CCCCCC apply to owners and operators of fuel dispensing facilities that have a monthly throughput of less than 10,000 gallons per month that commenced construction after January 10, 2008. ORM will have a 10,000 gallon gasoline storage tank onsite for dispensing fuel to vehicles. ORM has stated that the tank will have a throughput of 30,000 gallons/ year or 2,500 gallons/ month.

This NESHAP prescribes "housekeeping" requirements for affected operators to ensure that spills are cleaned up as soon as possible, containers are closed when not in use and minimization of gasoline spills. The federal regulation does not require any other type of emission controls or reductions.

B. Emission Limitations and Standards:

The specific emission limits and standards applicable to the ORM have been grouped by operation type and titled Sections. Each Section represents a particular process(es) or operation at the facility. The Control Officer has (where possible) organized the specific conditions identified in each Section parallel to where the process/operation starts and ends.

Section 1: Coarse Ore Storage & SAG Mill Crushing System

Emission Group A

The equipment identified within this group is generally stationary process equipment. Emissions from this group are subject to a fugitive standard identified in the NSPS Subpart LL. All fugitive and process fugitive emissions from the underground conveyor belt to the storage bins and from the storage bins to the SAG Mill Crushing System are controlled by the Dust Suppression System pollution control devices. Permit Conditions are directly from the NSPS. Where the NSPS lacks the appropriate conditions, additional monitoring, testing and recordkeeping conditions commensurate with the activity or process have been included in the permit to assure compliance with the Emission Limitations and Standards.

Emission Group B

There are no emissions from this equipment group. This group is a pollution control device and a permit condition requiring the Permittee to install and maintain this equipment is included. This condition is a federally enforceable condition as it controls emissions from the conveyor belts which could lead to emissions above 100 tpy if uncontrolled.

The emission points (stacks) of APC equipment subject to the NSPS Subpart LL particulate matter and opacity limitations are identified within each emission group. Non NSPS equipment/ processes are subject to local standards identified in Title 17 of the Pima County Code (PCC).

Emission Group C

The predominant source of fugitive emissions is from material handling operations. An opacity standard associated with process fugitive and fugitive sources is common to all new sources subject to NSPS Subpart LL. This opacity standard is 10 %. Where the NSPS lacks the appropriate conditions, monitoring, testing and recordkeeping conditions commensurate with the activity or process have been included in the permit to assure compliance with the Emission Limitations and Standards.

Section 2: Copper Concentrate Thickening & Filtration

The emissions from this equipment group are not collected by a capture system. The predominant source of such fugitive emissions is from material handling operations. An opacity standard associated with process fugitive and fugitive sources is common to all new sources subject to NSPS Subpart LL. This opacity standard is 10 %. Where the NSPS lacks the appropriate conditions, monitoring, testing and recordkeeping conditions commensurate with the activity or process have been included in the permit to assure compliance with the Emission Limitations and Standards.

Section 3: Hydrated Lime & Reagent Distribution Systems

The equipment identified within this group is stationary process equipment used to add lime and other reagents during the copper producing process. Emissions from this process will mostly particulate matter fugitive emissions and are controlled by vents on the bins and silos. Both Emission groups are subject to PCC 17.16.430 'Standards of Performance for Unclassified Sources'. ORM has proposed a limit on the reagent process that limits H_2S emissions to 9.6 tpy. A permit condition limiting emissions to this proposal is included in I.A.7 of Section 3. This condition is a federally enforceable condition and cannot be exceeded unless ORM submits an application for and receives a revised final permit from PDEQ

Section 4: Mining Operations

The Permittee is required to submit a Dry Stack Tailings Management Plan (DSTMP) and a Fugitive Dust Management Plan (FDMP) no later than 180 days (6 months) after issuance of the final permit. This will allow PDEQ to review the plan and correspond with ORM and finalize management plans that assure compliance with Pima County Code fugitive dust regulations, property boundary lines and opacity limitations. The Permittee will be required to review and evaluate the DSTMP annually to determine the effectiveness in controlling dust from the dry stack tailings. Should the annual review show that the DSTMP is ineffective in controlling dust, ORM is required to submit revisions to the plan outlining changes to be implemented that show improved compliance over the previous year. The ORM may employ methods above what is required by Pima County Code or accepted management practices for controlling dust.

General Fugitive Standards

The emissions from equipment identified within this section are not collected by a capture system. The predominant sources of such emissions are fugitive that arise from material handling operations, wind erosion and maintenance operations (demolition/renovation).

The general fugitive standards applicable to ORM are identified with reference to Pima County Code.

Dry Stack Tailings

The potential fugitive emissions from the dry stack tailings are required to be controlled to prevent excessive amounts of particulate matter from becoming airborne. ORM is required to follow a DSTMP approved by the Control Officer to provide adequate air pollution control.

Vehicles on Unpaved Surfaces

ORM is required to control the potential fugitive emissions from vehicles on unpaved roads to the extent that the emissions do not diffuse beyond the property boundary. The FDMP addresses dust control in these areas. Effective control measures include but are not limited to: limiting vehicular speeds, maintaining the road surface and if possible covering stock loads in open bodied trucks (where practicable).

Other Fugitive Dust Sources

ORM is required to include in the FDMP control of fugitive dust from all other fugitive dust producing sources. These sources include but are not limited to drilling, blasting, truck dumping, grading and other activities.

Demolition and Renovation

ORM shall comply with all the requirements of 40 CFR 61, Subpart M (National Emission Standards for Hazardous Air Pollutants) – Asbestos. The asbestos regulation covers many sources of asbestos including demolition and renovation of structures.

Section 5: Combustion Processes

The combustion equipment identified within this section has the potential to emit significant quantities of regulated air pollutants. However since this equipment are diesel fired emergency generators or fire pump engines subject to NSPS Subpart IIII, operation is limited to emergency use only and a 100 hour per year limitation on maintenance and testing. The EPA has established conditions that apply to these engines. PDEQ has extracted those conditions that apply to the ORM and included those in the permit.

Operational Limitation:

Prohibition from operating affected stationary rotating machinery in excess of the allowable hours of operation in any 12-consecutive month period.

Opacity:

The Permittee cannot allow any equipment under his control to emit effluents (such as exhaust from a generator) that exceed specific values of opacity (the degree to which light cannot pass through the plume of effluent/exhaust.) The Permittee demonstrates compliance with this regulation by checking the exhaust from the emergency generator under his control quarterly, and keeping complete records of these checks.

Fuel Limitation:

The Permittee is prohibited from firing fuels other that those allowed by the permit. This is a

material permit condition as alternate fuels may result in as increase in emissions for this group of equipment to above major source thresholds.

Section 6: Storage Tanks

The Permittee has two storage tanks onsite that store gasoline and diesel fuel used onsite. The gasoline tank is subject to NESHAP subpart CCCCCC and the diesel fuel tank is subject to PCC 17.16.430 'Standards of Performance for Unclassified Sources'

Section 7: Mobile Sources

The Permittee has various mobile sources onsite that are subject to Pima County Code. The Permittee is required to show compliance with local regulations limiting emissions from these operations as prescribed in section 9 of the permit.

C. Monitoring Requirements:

The specific monitoring requirements identified within the permit are presented in Table II below.

Table II – Monitoring Requirements

Part B Section	Emission Group	Specific Condition	Description of Permit Content
1	A	II.A	Opacity Checks and Measurements incl. Fugitive Dust Requirement to demonstrate compliance with the federal and local opacity standards by periodically monitoring the emissions from the equipment group every two weeks. The frequency of monitoring is to assure that ORM is complying with the opacity standards. When operating as required there should be minimal emissions from these processes. As a result only checks and not Method 9 opacity observations will currently required. Opacity measurements will be required when there seems to be a violation of an opacity standard. The Permittee is required to monitor emissions only when equipment or the process is in normal operating mode. This prevents the Permittee from monitoring emissions when equipment and processes are not running and recording that as fulfilling a monitoring requirement.
1	C	II.C.1-4	
2		II.A.2-6	
3	A & B	II.A.1-5	
4	A	II.A & B	
3	B	II.A.6-8	Synthetic Emission Limitation Requirement to maintain a record of control measures and a 12 month rolling total of product use or emissions to ensure that emissions of H2S remain below 9.6 tpy.
5	A	II.A.2.c	Opacity Standard The Permittee demonstrates compliance with this regulation by checking the exhaust from the emergency generator quarterly, and keeping complete records of these checks. This monitoring condition is not a federally enforceable condition.
5	A	III.A.2	Fuel Limitation Each type of fuel burned in equipment powered by combustion has a unique blend of constituents. When burned, each fuel results in the release of regulated pollutants to the atmosphere at characteristic levels. This permit is written to account for only the fuel specified in Section 5 of the permit. Use of fuels other than those specified would result in different rates of pollutant emission. Therefore, the Permittee must only burn the designated fuel specified in Section 5 of the permit to remain in compliance with the conditions of this permit. This monitoring/ recordkeeping condition is a federally enforceable condition to comply with I.A.4.

Part B Section	Emission Group	Specific Condition	Description of Permit Content
5	A	II.A.1	Requirement for ORM to follow an approved DSTMP & FDMP. As discussed previously, the DSTMP & FDMP are required to contain monitoring methods, measures and dust reducing activities that the ORM will employ to reduce or prevent excessive dust from becoming airborne and if airborne to ensure that either the opacity standard is not exceeded or the emissions do not cross property boundary lines. Emissions that cross property boundary lines are a violation whether or not the opacity limit is exceeded. In addition, PDEQ is requiring a yearly review of the DSTMP by ORM in order to determine its effectiveness in controlling dust. The annual review shall take into account past dry stack tailings compliance issues, resolved or unresolved including complaints reported to PDEQ and propose how those issues can be avoided in the future. Recommendations or stricter requirements will be prescribed by PDEQ should ORM's annual review show that changes are required but not proposed by ORM.
5	A	II.A.2	

D. Facility Changes:

The Permittee retains the ability to modify operations at the facility. However, the permit covering the facility must reflect the current state of operations *at all times*. Therefore, provisions have been made in the Pima County Code to allow changes in operating permits to reflect new facility conditions. The proper procedure must be followed when making certain modifications to the facility, and the permit. See the rules referenced in the permit for enumeration of these requirements.

E. Alternate Operating Scenarios:

As part of the normal operations, the ORM facility has proposed to have alternate operating scenarios when an alternate reagent us is used. When writing permits PDEQ only includes alternate operating scenarios if operation under that method would trigger a different set of applicable requirements. In using the alternate product, ORM will not trigger another set of applicable requirements therefore the product has been included as part of normal operations and ORM may change reagents as needed without triggering a permit revision or notification. Records are required to be maintained showing reagent use.

F. Miscellaneous Comments

None

VIII. IMPACTS TO AMBIENT AIR QUALITY

None required as the source is not subject to PSD or NSR as it is not a major source.

X. CONTROL TECHNOLOGY DETERMINATION

No control technologies needed to be determined. This facility is in an area of attainment and is not a new source.

XI. PREVIOUS PERMIT CONDITIONS

None, new source

XII. INSIGNIFICANT ACTIVITIES

ORM submitted an insignificant activities list in the application. PDEQ has incorporated portions of the list that may seem to contribute to air pollution but are deemed insignificant by PCC. PDEQ has excluded activities submitted in the application that are part of normal employee operations or are highly unlikely to be considered a source of pollution. These include activities such as kitchen use, smoking areas and rest-room related activities. Finally PDEQ has excluded those operations that have an applicable requirement in either PCC or are subject to a federal regulation.