April 3, 2019

Philip Mulholland
Broadway Gold Corp.
277 Lakeshore Road East, Suite 403
Oakville, ON L6J 1H9 Canada

Dear Mr. Mulholland:

Montana Air Quality Permit #2774-04 is deemed final as of April 2, 2019, by the Department of Environmental Quality (Department). This permit is for a Portable Crushing and Screening Facility. All conditions of the Department's Decision remain the same. Enclosed is a copy of your permit with the final date indicated.

For the Department,

Julie A. Merkel
Permitting Services Section Supervisor
Air Quality Bureau
(406) 444-3626

John P. Proulx
Air Quality Specialist
Air Quality Bureau
(406) 444-5391

JM:JPP
Enclosure

Montana Department of Environmental Quality
Air, Energy & Mining Division

Montana Air Quality Permit #2774-04

Broadway Gold Corp.
277 Lakeshore Road East, Suite 406
Oakville, ON L6J 1H9 Canada

April 2, 2019

MONTANA AIR QUALITY PERMIT

Issued To:	Broadway Gold Corp. 277 Lakeshore Road East, Suite 403 Oakville, ON L6J 1H9 Canada	MAQP: #2774-04 Administrative Amendment (AA) Received: 3/6/2019 Department's Decision on AA: 3 /15/2019 Permit Final: 4/2/2019

A Montana Air Quality Permit (MAQP), with conditions, is hereby granted to Broadway Gold Corp. (BGC) pursuant to Sections 75-2-204 and 211 of the Montana Code Annotated (MCA), as amended, and Administrative Rules of Montana (ARM) 17.8.740, *et seq.*, as amended, for the following:

SECTION I: Permitted Facilities

A. Plant Location

BGC operates a portable crushing and screen plant and associated equipment initially located in the Northwest ¼ of Northeast ¼ of Section 2, Township 1 South, Range 6 West in Madison County, Montana. However, MAQP #2774-04 applies while operating at any location in Montana, except within those areas having a Montana Department of Environmental Quality (Department) approved permitting program, those areas considered tribal lands, or those areas in or within 10 kilometers (km) of certain particulate matter with an aerodynamic diameter of 10 microns or less (PM_{10}) nonattainment areas. *A Missoula County air quality permit will be required for locations within Missoula County, Montana.* BGC will be required to obtain an addendum to this air quality permit to operate at locations in or within 10 km of certain PM_{10} nonattainment areas. A complete list of the permitted equipment is contained in Section I.A of the Permit Analysis.

B. Current Permit Action

On March 6, 2019, the Department received an Administrative Amendment request to update the corporate mailing address and current local contact.

SECTION II: Conditions and Limitations

A. Emission Limitations

1. All visible emissions from any Standards of Performance for New Stationary Source (NSPS)-affected crusher shall not exhibit an opacity in excess of the following averaged over 6 consecutive minutes (ARM 17.8.340 and 40 CFR Part 60, Subpart OOO).

   - For crushers that commence construction, modification, or reconstruction on or after April 22, 2008: 12% opacity

   - For crushers that commence construction, modification, or reconstruction after August 31, 1983, but before April 22, 2008: 15% opacity

2. All visible emissions from any other NSPS-affected equipment, other than a crusher (such as screens or conveyors), shall not exhibit opacity in excess of the following averaged over 6 consecutive minutes (ARM 17.8.340 and 40 CFR, Subpart OOO).

   - For equipment that commences construction, modification, or reconstruction on or after April 22, 2008: 7% opacity

   - For equipment that commences construction, modification, or reconstruction after August 31, 1983, but before April 22, 2008: 10% opacity

3. All visible emissions from any non-NSPS affected equipment shall not exhibit an opacity of 20% or greater averaged over 6 consecutive minutes (ARM 17.8.304).

4. Water and spray bars shall be available on site at all times and operated as necessary to maintain compliance with the opacity limitations in Sections II.A.1, II.A.2, and II.A.3 (ARM 17.8.749).

5. BGC shall not cause or authorize the use of any street, road or parking lot without taking reasonable precautions to control emissions of airborne particulate matter (ARM 17.8.308).

6. BGC shall treat all unpaved portions of the haul roads, access roads, parking lots, or the general plant area with water and/or chemical dust suppressant, as necessary, to maintain compliance with the reasonable precautions limitation in Section II.A.5 (ARM 17.8.749).

7. BGC shall not operate more than three (3) crushers at any given time and the total combined maximum rated design capacity of the crusher(s) shall not exceed 480 tons per hour (TPH) (ARM 17.8.749).

8. BGC shall not operate more than one (1) screen at any given time and the combined maximum rated design capacity of the screen shall not exceed 160 TPH (ARM 17.8.749).

9. BGC shall not operate or have on site more than two (2) diesel-fired engines, powering equipment authorized under Section A.II.7 and A.II.8, at any given time and the combined maximum rated design capacity of the engines shall not exceed 380 brake-horsepower (bhp) (ARM 17.8.749).

10. If the permitted equipment is used in conjunction with any other equipment owned or operated by BGC, at the same site, production shall be limited to correspond with an emission level that does not exceed 250 tons of emissions during any rolling 12-month time period. Any calculations used to establish production levels shall be approved by the Department (ARM 17.8.749).

11. BGC shall comply with all applicable standards and limitations, and the reporting, recordkeeping, testing, and notification requirements contained in 40 CFR 60, Subpart OOO, *Standards of Performance for Nonmetallic Mineral Processing Plants* (ARM 17.8.340 and 40 CFR 60, Subpart OOO).

12. BGC shall comply with all applicable standards and limitations, and the reporting, recordkeeping, and notification requirements contained in 40 CFR 60, Subpart IIII, *Standards of Performance for Stationary Compression Ignition Internal Engines* and 40 CFR 63, Subpart ZZZZ, *National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*, for any applicable diesel engine (ARM 17.8.340; 40 CFR 60, Subpart IIII; ARM 17.8.342; and 40 CFR, Subpart ZZZZ).

B. Testing Requirements

1. Within 60 days after achieving the maximum production rate, but no later than 180 days after initial startup, an Environmental Protection Agency (EPA) Method 9 opacity test and/or other methods and procedures, as specified in 40 CFR Part 60.675, must be performed on all NSPS-affected equipment to demonstrate compliance with the emissions limitations contained in Sections II.A.1 and II.A.2 (ARM 17.8.340, 40 CFR Part 60, Subpart A and Subpart OOO).

2. Additional testing may be required by 40 CFR 60, Subpart OOO (ARM 17.8.340 and 40 CFR 60, Subpart OOO). All compliance source tests shall be conducted in accordance with the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).

3. The Department may require further testing (ARM 17.8.105).

C. Operational Reporting Requirements

1. If this crushing/screening plant is moved to another location, an Intent to Transfer form must be sent to the Department and a Public Notice Form for Change of Location must be published in a newspaper of general circulation in the area to which the transfer is to be made, at least 15 days prior to the move. The proof of publication (affidavit) of the Public Notice Form for Change of Location must be submitted to the Department prior to the move. These forms are available from the Department (ARM 17.8.749 and ARM 17.8.765).

2. BGC shall supply the Department with annual production information for all emission points, as required by the Department in the annual emission inventory request. The request will include, but not be limited to, all sources of emissions identified in the emission inventory contained in the permit analysis.

Production information shall be gathered on a calendar-year basis and submitted to the Department by the date required in the emission inventory request. Information shall be in the units required by the Department. This information may be used for calculating operating fees, and/or to verify compliance with permit limitations (ARM 17.8.505).

3. BGC shall notify the Department of any construction or improvement project conducted, pursuant to ARM 17.8.745, that would include ***the addition of a new emissions unit,*** change in control equipment, stack height, stack diameter, stack flow, stack gas temperature, source location, or fuel specifications, or would result in an increase in source capacity above its permitted operation.

   The notice must be submitted to the Department, in writing, 10 days prior to startup or use of the proposed de minimis change, or as soon as reasonably practicable in the event of an unanticipated circumstance causing the de minimis change, and must include the information requested in ARM 17.8.745(l)(d) (ARM 17.8.745).

4. BGC shall maintain on-site records showing daily hours of operation (including operating hours of the diesel-fired engines) and daily production rates for the last 12 months. The records compiled in accordance with this permit shall be maintained by BGC as a permanent business record for at least 5 years following the date of the measurement, must be available at the plant site for inspection by the Department, and must be submitted to the Department upon request (ARM 17.8.749).

SECTION III: General Conditions

A. Inspection – BGC shall allow the Department's representatives access to the source at all reasonable times for the purpose of making inspections or surveys, collecting samples, obtaining data, auditing any monitoring equipment (Continuous Emissions Monitoring System (CEMS), Continuous Emissions Rate Monitoring System (CERMS)) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.

B. Waiver – The permit and all the terms, conditions, and matters stated herein shall be deemed accepted if BGC fails to appeal as indicated below.

C. Compliance with Statutes and Regulations – Nothing in this permit shall be construed as relieving BGC of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided for in ARM 17.8.740, *et seq.* (ARM 17.8.756).

D. Enforcement – Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties or other enforcement as specified in Section 75-2-401, *et seq.*, MCA.

E. Appeals – Any person or persons jointly or severally adversely affected by the Department's decision may request, within 15 days after the Department renders its decision, upon affidavit setting forth the grounds therefore, a hearing before the Board of Environmental Review (Board). A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The filing of a request for a hearing does not stay the Department's decision, unless the Board issues a stay upon receipt of a petition and a finding that a stay is appropriate under Section 75-2-211(11)(b), MCA. The issuance of a stay on a permit by the Board postpones the effective date of the Department's decision until conclusion of the hearing and issuance of a final decision by the Board. If a stay is not issued by the Board, the Department's decision on the application is final 16 days after the Department's decision is made.

F. Permit Inspection – As required by ARM 17.8.755, Inspection of Permit, a copy of the air quality permit shall be made available for inspection by Department personnel at the location of the permitted source.

G. Air Quality Operation Fees – Pursuant to Section 75-2-220, MCA, failure to pay the annual operation fee by BGC may be grounds for revocation of this permit, as required by that section and rules adopted thereunder by the Board.

H. Duration of Permit – Construction or installation must begin or contractual obligations entered into that would constitute substantial loss within 3 years of permit issuance and proceed with due diligence until the project is complete or the permit shall expire (ARM 17.8.762).

I. The Department may modify the conditions of this permit based on local conditions of any future site. These factors may include, but are not limited to, local terrain, meteorological conditions, proximity to residences, etc.

J. BGC shall comply with the conditions contained in this permit while operating in any location in Montana, except within those areas that have a Department-approved permitting program or areas considered tribal lands.

Montana Air Quality Permit (MAQP) Analysis
Broadway Gold Corp.
MAQP #2774-04

I. Introduction/Process Description

Broadway Gold Corp. (BGC) owns and operates a portable crushing and screen plant with a maximum rated design capacity of 480 tons per hour (TPH) crushing production and 160 TPH screening production. The facility employs two (2) diesel-fired equipment package engines that drive the crushers. The screen is driven by an electric motor powered by utility provided line power.

A. Permitted Equipment

The following list of permitted equipment is based on information provided within the air quality permit application and is provided for reference. MAQP #2774-04 is written de minimis friendly and operational flexibility is provided so that alternate equipment may be utilized as long as maximum capacities are not exceeded and permit conditions are met. See Section II of the MAQP for specific equipment limitations and/or conditions. Equipment permitted under this action consists of the following:

- Primary Jaw Crusher Package [160 TPH] powered by 225 brake-horsepower (bhp) engine.
- Jaw and Roll Crusher Package [160 TPH] powered by a 155 bhp engine.
- Vibratory Screen Deck [160 TPH].
- Associated Material Handling Equipment, conveyors (including integrated equipment conveyors), and stackers.

B. Source Description

BGC employs this crushing/screening plant and associated equipment to crush and sort mined ore for gold and copper recovery. For a typical operational setup, unprocessed materials are sent through a series of crushers, screened, and stockpiled for shipment to off-site processing facilities.

The initial location proposed for this facility, being the Northwest ¼ of Northeast ¼ of Section 2, Township 1 South, Range 6 West in Madison County, Montana, shall serve as the plants designated home pit.

C. Permit History

On April 22, 1993, **MAQP #2774-00** was issued to Centennial Concrete, Inc. (Centennial) for the operation of a portable crushing/screening plant.

On April 24, 2008, The Department of Environmental Quality (Department) issued **MAQP #2774-01** final to reflect the transfer of ownership of MAQP #2774-00 from Centennial to Coronado Resources USA, LLC (Coronado). In addition, the permit was updated to reflect current rule references, permit language, and permit format. MAQP #2774-01 replaced MAQP #2774-00.

On March 28, 2012, the Department issued a warning letter to Coronado indicating inconsistencies between reported engine utilization and the permit allowable horsepower limit. Because of non-discrepancies identified by the Field Services Section, Coronado submitted a request to correct deficient items that were present prior to their acquisition of the plant. Because the deficiencies existed prior to ownership transfer of the plant and no equipment changed or additions have occurred, the Department undertook the permit actions as an administrative amendment to include equipment not accounted for in the initial MAQP. In addition, the permit action updated the emission inventory and rule references used by the Department. **MAQP #2774-02** replaced MAQP #2774-01

On December 13, 2016, the Department received an Intent to Transfer Ownership from Coronado Resources USA, LLC. MAQP #2774 was transferred to Broadway Gold Corp. The permit action updated the permit with the correct Owner/Operator as well as updated the permit using current Department language. **MAQP #2774-03** replaced MAQP #2774-02.

D. Current Permit Action

On March 6, 2019, the Department received an Administrative Amendment request from BGC to update the corporate mailing address and current local contact. **MAQP #2774-04** replaces MAQP #2744-03.

E. Additional Information

Additional information, such as applicable rules and regulations, Best Available Control Technology (BACT)/Reasonably Available Control Technology (RACT) determinations, air quality impacts, and environmental assessments, is included in the analysis associated with each change to the permit.

II. Applicable Rules and Regulations

The following are partial explanations of some applicable rules and regulations that apply to the facility. The complete rules are stated in the Administrative Rules of Montana (ARM) and are available, upon request, from the Department of Environmental Quality (Department). Upon request, the Department will provide references for location of complete copies of all applicable rules and regulations or copies where appropriate.

A. ARM 17.8, Subchapter 1 – General Provisions, including, but not limited to:

1. ARM 17.8.101 Definitions. This rule includes a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.105 Testing Requirements. Any person or persons responsible for the emission of any air contaminant into the outdoor atmosphere shall, upon written request of the Department, provide the facilities and necessary equipment (including instruments and sensing devices) and shall conduct tests, emission or ambient, for such periods of time as may be necessary using methods approved by the Department.

3. ARM 17.8.106 Source Testing Protocol. The requirements of this rule apply to any emission source testing conducted by the Department, any source, or other entity as required by any rule in this chapter, or any permit or order issued pursuant to this chapter, or the provisions of the Clean Air Act of Montana, 75-2-101, *et seq*., Montana Code Annotated (MCA).

   BGC shall comply with the requirements contained in the Montana Source Test Protocol and Procedures Manual, including, but not limited to, using the proper test methods and supplying the required reports. A copy of the Montana Source Test Protocol and Procedures Manual is available from the Department upon request.

4. ARM 17.8.110 Malfunctions. (2) The Department must be notified promptly by telephone whenever a malfunction occurs that can be expected to create emissions in excess of any applicable emission limitation or to continue for a period greater than 4 hours.

5. ARM 17.8.111 Circumvention. (1) No person shall cause or permit the installation or use of any device or any means that, without resulting in reduction of the total amount of air contaminant emitted, conceals or dilutes an emission of air contaminant that would otherwise violate an air pollution control regulation. (2) No equipment that may produce emissions shall be operated or maintained in such a manner as to create a public nuisance.

B. ARM 17.8, Subchapter 2 – Ambient Air Quality, including, but not limited to:

1. ARM 17.8.204 Ambient Air Monitoring
2. ARM 17.8.210 Ambient Air Quality Standards for Sulfur Dioxide
3. ARM 17.8.211 Ambient Air Quality Standards for Nitrogen Dioxide
4. ARM 17.8.212 Ambient Air Quality Standards for Carbon Monoxide
5. ARM 17.8.213 Ambient Air Quality Standard for Ozone
6. ARM 17.8.214 Ambient Air Quality Standard for Hydrogen Sulfide
7. ARM 17.8.220 Ambient Air Quality Standard for Settled Particulate Matter
8. ARM 17.8.221 Ambient Air Quality Standard for Visibility
9. ARM 17.8.222 Ambient Air Quality Standard for Lead
10. ARM 17.8.223 Ambient Air Quality Standard for PM_{10}
11. ARM 17.8.230 Fluoride in Forage

BGC must maintain compliance with the applicable ambient air quality standards.

C. ARM 17.8, Subchapter 3 – Emission Standards, including, but not limited to:

1. ARM 17.8.304 Visible Air Contaminants. This rule requires that no person may cause or authorize emissions to be discharged into the outdoor atmosphere from any source installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes.

2. ARM 17.8.308 Particulate Matter, Airborne. (1) This rule requires an opacity limitation of less than 20% for all fugitive emission sources and that reasonable precautions are taken to control emissions of airborne particulate matter.

(2) Under this rule, BGC shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter.

3. ARM 17.8.309 Particulate Matter, Fuel Burning Equipment. This rule requires that no person shall cause or authorize to be discharged into the atmosphere particulate matter caused by the combustion of fuel in excess of the amount determined by this section.

4. ARM 17.8.310 Particulate Matter, Industrial Process. This rule requires that no person shall cause or authorize to be discharged into the atmosphere particulate matter in excess of the amount set forth in this section.

5. ARM 17.8.322 Sulfur Oxide Emissions--Sulfur in Fuel. This rule requires that no person shall burn liquid, solid, or gaseous fuel in excess of the amount set forth in this section.

6. ARM 17.8.324 Hydrocarbon Emissions--Petroleum Products. (3) No person shall load or permit the loading of gasoline into any stationary tank with a capacity of 250 gallons or more from any tank truck or trailer, except through a permanent submerged fill pipe, unless such tank truck or trailer is equipped with a vapor loss control device as described in (1) of this rule.

7. ARM 17.8.340 Standard of Performance for New Stationary Sources. This rule incorporates, by reference, 40 Code of Federal Regulations (CFR) Part 60, Standards of Performance for New Stationary Sources (NSPS). Based on the information submitted by BGC the portable crushing/screening operation and associated equipment are subject to NSPS (40 CFR 60), as follows:

   a. 40 CFR 60, Subpart A – General Provisions apply to all equipment or facilities subject to an NSPS Subpart as listed below:

   b. 40 CFR 60, Subpart OOO – Standards of Performance for Nonmetallic Mineral Processing Plants. In order for a crushing/screening plant to be subject to NSPS requirements, two specific criteria must be met. First, the crushing/screening plant must meet the definition of an affected facility and, second, the equipment in question must have been constructed, reconstructed, or modified after August 31, 1983. Based on the information submitted by BGC, the portable crushing and screening equipment to be used under MAQP #2774-04 is subject to this subpart as it meets the definition of an affected facility modified after August 31, 1983.

c. 40 CFR 60, Subpart LL - Standards of Performance for Metallic Mineral Processing Plants. The provisions of Subpart LL apply to affected facilities in metallic mineral processing plants that commence construction or modification after August 24, 1982. Based on the information submitted by BGC, the portable crushing and screening equipment to be used under MAQP #2774-04 is potentially subject to this subpart as it meets the definition of an affected facility modified after August 24, 1983.

d. 40 CFR 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (CI ICE). Owners and operators of stationary CI ICE that commence construction after July 11, 2005, where the stationary CI ICE are manufactured after April 1, 2006, and are not fire pump engines, and owners and operators of stationary CI ICE that modify or reconstruct their stationary CI ICE after July 11, 2005, are subject to this subpart. As the permit is written de minimis friendly, BGC may substitute CI ICE equipment, therefore applicability to this subpart is dependent upon the date of construction and/or manufacture of the diesel engine utilized and the nature of operation.

8. ARM 17.8.342 Emission Standards for Hazardous Air Pollutants for Source Categories. This rule incorporates, by reference, 40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants (NESHAPs) for Source Categories. Based on the information submitted by BGC the associated diesel engines are applicable to NESHAP (40 CFR 63), as follows:

a. 40 CFR 63, Subpart A – General Provisions apply to all equipment or facilities subject to a NESHAPs Subpart as listed below.

b. 40 CFR 63, Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants (NESHAPs) for Stationary Reciprocating Internal Combustion Engines (RICE). An owner or operator of a stationary RICE at a major or area source of Hazardous Air Pollutant (HAP) emissions is subject to this rule except if the stationary RICE is being tested at a stationary RICE test cell/stand. An area source of HAP emissions is a source that is not a major source. As BGC is considered an area source of HAP emissions and operates RICE equipment the engine(s) are potentially subject to this subpart depending upon the location and nature of operation.

D. ARM 17.8, Subchapter 5 – Air Quality Permit Application, Operation, and Open Burning Fees, including, but not limited to:

1. ARM 17.8.504 Air Quality Permit Application Fees. This rule requires that an applicant submit an air quality permit application fee concurrent with the submittal of an air quality permit application. A permit application is incomplete until the proper application fee is paid to the Department. A permit fee is not required for the current permit action because the permit action is considered an administrative permit change.

2. ARM 17.8.505 Air Quality Operation Fees. An annual air quality operation fee must, as a condition of continued operation, be submitted to the Department by each source of air contaminants holding an air quality permit, excluding an open burning permit, issued by the Department; the air quality operation fee is based on the actual or estimated actual amount of air pollutants emitted during the previous calendar year.

   An air quality operation fee is separate and distinct from an air quality permit application fee. The annual assessment and collection of the air quality operation fee, described above, shall take place on a calendar-year basis.

The Department may insert into any final permit issued after the effective date of these rules, such conditions as may be necessary to require the payment of an air quality operation fee on a calendar-year basis, including provisions that pro-rate the required fee amount.

E. ARM 17.8, Subchapter 7 – Permit, Construction, and Operation of Air Contaminant Sources, including, but not limited to:

1. ARM 17.8.740 Definitions. This rule is a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.743 Montana Air Quality Permits--When Required. This rule requires a person to obtain an air quality permit or permit modification to construct, modify, or use any asphalt plant, crusher, screen, or other portable source that has the potential to emit (PTE) greater than 15 tons per year (tpy) of any pollutant. BGC has a PTE greater than 15 tpy of PM, PM_{10}, oxides of nitrogen (NO_x), therefore, an air quality permit is required.

3. ARM 17.8.744 Montana Air Quality Permits--General Exclusions. This rule identifies the activities that are not subject to the Montana Air Quality Permit program.

4. ARM 17.8.745 Montana Air Quality Permits--Exclusion for De Minimis Changes. This rule identifies the de minimis changes at permitted facilities that do not require a permit under the Montana Air Quality Permit Program.

5. ARM 17.8.748 New or Modified Emitting Units--Permit Application Requirements. (1) This rule requires that a permit application be submitted prior to installation, modification, or use of a source. A permit application was not required for the current permit action because the action is considered an administrative permit change. (7) This rule requires that the applicant notify the public by means of legal publication in a newspaper of general circulation in the area affected by the application for a permit. An affidavit of publication of public notice was not required for the current permit action because the action is considered an administrative permit change.

6. ARM 17.8.749 Conditions for Issuance or Denial of Permit. This rule requires that the permits issued by the Department must authorize the construction and operation of the facility or emitting unit subject to the conditions in the permit and the requirements of this subchapter. This rule also requires that the permit must contain any conditions necessary to assure compliance with the Federal Clean Air Act (FCAA), the Clean Air Act of Montana, and rules adopted under those acts.

7. ARM 17.8.752 Emission Control Requirements. This rule requires a source to install the maximum air pollution control capability that is technically practicable and economically feasible, except that BACT shall be utilized. The required BACT analysis is included in Section III of this permit analysis.

8. ARM 17.8.755 Inspection of Permit. This rule requires that air quality permits shall be made available for inspection by the Department at the location of the source.

9. ARM 17.8.756 Compliance with Other Requirements. This rule states that nothing in the permit shall be construed as relieving BGC of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq*.

10. ARM 17.8.759 Review of Permit Applications. This rule describes the Department's responsibilities for processing permit applications and making permit decisions on those permit applications that do not require the preparation of an environmental impact statement.

11. ARM 17.8.762 Duration of Permit. An air quality permit shall be valid until revoked or modified, as provided in this subchapter, except that a permit issued prior to construction of a new or modified source may contain a condition providing that the permit will expire unless construction is commenced within the time specified in the permit, which in no event may be less than 1 year after the permit is issued.

12. ARM 17.8.763 Revocation of Permit. An air quality permit may be revoked upon written request of the permittee, or for violations of any requirement of the Clean Air Act of Montana, rules adopted under the Clean Air Act of Montana, the FCAA, rules adopted under the FCAA, or any applicable requirement contained in the Montana State Implementation Plan (SIP).

13. ARM 17.8.764 Administrative Amendment to Permit. An air quality permit may be amended for changes in any applicable rules and standards adopted by the Board of Environmental Review (Board) or changed conditions of operation at a source or stack that do not result in an increase of emissions as a result of those changed conditions. The owner or operator of a facility may not increase the facility's emissions beyond permit limits unless the increase meets the criteria in ARM 17.8.745 for a de minimis change not requiring a permit, or unless the owner or operator applies for and receives another permit in accordance with ARM 17.8.748, ARM 17.8.749, ARM 17.8.752, ARM 17.8.755, and ARM 17.8.756, and with all applicable requirements in ARM Title 17, Chapter 8, Subchapters 8, 9, and 10.

14. ARM 17.8.765 Transfer of Permit. (1) This rule states that an MAQP may be transferred from one location to another if the Department receives a complete notice of intent to transfer location, the facility will operate in the new location for less than 1 year, the facility will comply with the FCAA and the Clean Air Act of Montana, and the facility complies with other applicable rules. (2) This rule states that an air quality permit may be transferred from one person to another if written notice of intent to transfer, including the names of the transferor and the transferee, is sent to the Department.

F. ARM 17.8, Subchapter 8 - Prevention of Significant Deterioration of Air Quality, including, but not limited to:

1. ARM 17.8.801 Definitions. This rule is a list of applicable definitions used in this subchapter.

2. ARM 17.8.818 Review of Major Stationary Sources and Major Modification--Source Applicability and Exemptions. The requirements contained in ARM 17.8.819 through ARM 17.8.827 shall apply to any major stationary source and any major modification with respect to each pollutant subject to regulation under the FCAA that it would emit, except as this subchapter would otherwise allow.

This facility is not a major stationary source because it is not a listed source and the facility's PTE is less than 250 tpy of any pollutant (excluding fugitive emissions).

G. ARM 17.8, Subchapter 12 – Operating Permit Program Applicability, including, but not limited to:

1. ARM 17.8.1201 Definitions. (23) Major Source under Section 7412 of the FCAA is defined as any stationary source having:

a. PTE > 100 tpy of any pollutant;

b. PTE > 10 tpy of any single HAP, PTE > 25 tpy of any combination of HAPs, or lesser quantity as the Department may establish by rule; or

c. PTE > 70 tpy of PM_{10} in a serious PM_{10} nonattainment area.

2. ARM 17.8.1204 Air Quality Operating Permit Program Applicability. (1) Title V of the FCAA Amendments of 1990 requires that all sources, as defined in ARM 17.8.1204 (1), obtain a Title V Operating Permit. In review and issuance of MAQP #2774-04 for BGC, the following conclusions were made:

a. BGC PTE is less than 100 tpy for any Title V pollutant.

b. The facility's PTE is less than 10 tpy for any single HAP and less than 25 tpy of combined HAPs.

c. This source is not located in a serious PM_{10} nonattainment area.

d. This facility is subject to a current NSPS (40 CFR 60, Subpart OOO and Subpart LL; and potentially Subpart IIII).

e. This facility is potentially subject to a current NESHAP (40 CFR 63, Subpart ZZZZ).

f. This source is not a Title IV affected source.

g. This source is not a solid waste combustion unit.

h. This source is not an EPA designated Title V source.

Based on these facts, the Department has determined that BGC will be a minor source of emissions as defined under Title V.

However, if minor sources subject to NSPS are required to obtain a Title V Operating Permit, BGC will be required to obtain a Title V Operating permit.

III. BACT Determination

A BACT determination is required for any new or modified source. BGC shall install on the new or modified source the maximum air pollution control capability that is technically practicable and economically feasible, except that BACT shall be used.

A BACT determination was not required for the current permit action because the action is considered an administrative permit change.

IV. Emission Inventory

	Emissions Tons/Year [PTE] [(a)]							
Emission Source	PM	PM_{10}	$PM_{2.5}$	PM_{cond}	CO	NOx	SO_2	VOC
Aggregate Crushers	2.52	1.14	0.21	--	--	--	--	--
Aggregate Deck Screen	1.54	0.52	0.04	--	--	--	--	--
Material Handling	18.59	8.45	1.39	--	--	--	--	--
Jaw Crusher Package Engine [225 bhp]	2.17	2.17	0.38	0.05	6.58	30.55	2.02	2.48
Jaw/Roll Crusher Package Engine [155 bhp]	1.49	1.49	0.26	0.04	4.54	21.05	1.39	1.71
Unpaved Roadways (Haul Roads)	5.49	1.51	0.15	--	--	--	--	--
TOTAL EMISSIONS ►	31.80	15.28	2.43	0.09	11.12	51.60	3.41	4.18

(a) PM emissions presented in the table represent the sum of the filterable and condensable particulate matter (CPM) fractions. All CPM is considered to be $PM_{2.5}$.

CO, carbon monoxide
bhp, brake-horsepower
MMBtu, million British Thermal Units
NO_X, oxides of nitrogen
PTE, Potential to Emit
PM, particulate matter
PM_{COND}, condensable particulate matter [< 2 .5 microns]
PM_{10}, particulate matter with an aerodynamic diameter of 10 microns or less
$PM_{2.5}$, particulate matter with an aerodynamic diameter of 2.5 microns or less [Sum of condensable and filterable]
SM, synthetic minor (with respect to Title V criteria pollutants)
SO_2, sulfur dioxide
TPH, tons per hour
TPY, tons per year
VOC, volatile organic compounds

Production Rate:
Crushers (3) 480 tons/hour (Maximum) 4,204,800 tons/year (Maximum)
Deck Screen 160 tons/hour (Maximum) 1,401,600 tons/year (Maximum)
Allowable Hours of 8760 hours/year [Material Processing]
8760 hours/year [Diesel-Fire Engine Generator Set]

Power Source: Jaw Crusher Package - 225 hp Diesel-Fired
Jaw/Roll Crusher Package - 155 hp Diesel Fired-

Material

Aggregate Crushers [SCC 3-05-020-01]

Process Rate: 480 tons/hour
Operating 8760 hours/year

Particulate Emissions (controlled):

PM Emissions:

Emission Factor	0.0012 lbs/ton processed	[AP-42 Table 11.19.2-2,	
Calculations	(0.0012 lbs/ton) * (480		0.58 lbs/hr
	(0.576 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb)		2.52 TPY

PM_{10} Emissions:

Emission Factor	0.00054 lbs/ton processed	[AP-42 Table 11.19.2-2,	
Calculations	(0.00054 lbs/ton) * (480		0.26 lbs/hr
	(0.2592 lbs/hr) * (8760 hrs/yr) * (0.0005		1.14 TPY

$PM_{2.5}$ Emissions:

Emission Factor	0.0001 lbs/ton processed	[AP-42 Table 11.19.2-2,	
Calculations	(0.0001 lbs/ton) * (480		0.05 lbs/hr
	(0.048 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb)		0.21 TPY

Aggregate Cold Deck Screens [SCC 3-05-020-02]

Process Rate: 160 tons/hour
Operating 8760 hours/year

Particulate Emissions (controlled):

PM Emissions:

Emission Factor	0.0022 lbs/ton processed [AP-42 Table 11.19.2-2,	
Calculations	(0.0022 lbs/ton) * (160	0.35 lbs/hr
	(0.352 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb)	1.54 TPY

PM_{10} Emissions:

Emission Factor	0.00074 lbs/ton processed [AP-42 Table 11.19.2-2,	
Calculations	(0.00074 lbs/ton) * (160	0.12 lbs/hr
	(0.1184 lbs/hr) * (8760 hrs/yr) * (0.0005	0.52 TPY

$PM_{2.5}$ Emissions:

Emission Factor	0.00005 lbs/ton processed [AP-42 Table 11.19.2-2,	
Calculations	(0.00005 lbs/ton) * (160	0.01 lbs/hr
	(0.008 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb)	0.04 TPY

Material

Fragmented Stone Load-In ► Ground Storage [SCC 3-05-020-31]

Process Rate: 480 tons/hour [Crusher Capacity]
Operating 8760 hours/year

Particulate Emissions (uncontrolled):

PM Emissions:

Emission Factor	0.000031 lbs/ton [PM = PM_{10}/0.51 ►AP-42 Appendix B.2 - Table B.2.2,	
Calculations	(0.000031 lbs/ton) * (480 tons/hr) =	0.01 lbs/hr
	(0.01488 lbs/hr) * (8760 hrs/yr) * (0.0005	0.07 TPY

PM_{10} Emissions:

Emission Factor	0.000016 lbs/ton processed [AP-42 Table 11.19.2-2,	
Calculations	(0.000016 lbs/ton) * (480 tons/hr) =	0.01 lbs/hr
	(0.00768 lbs/hr) * (8760 hrs/yr) * (0.0005	0.03 TPY

$PM_{2.5}$ Emissions:

Emission Factor	0.000005 lbs/ton [PM = PM_{10}*0.15 ►AP-42 Appendix B.2 - Table B.2.2,	
Calculations	(0.000005 lbs/ton) * (480 tons/hr) =	0.00 lbs/hr
	(0.002232 lbs/hr) * (8760 hrs/yr) * (0.0005	0.01 TPY

Conveyor Transfer Points [SCC 3-05-020-06]

Process Rate: 480 tons/hour [Maximum Facility Capacity]
Operating 8760 hours/year
Total 8 Transfers [Based on Process Flow Diagram]

Particulate Emissions (controlled):

PM Emissions:

Emission Factor	0.00014 lbs/ton processed [AP-42 Table 11.19.2-2,	
Calculations	(0.00014 lbs/ton) * (480 tons/hr) * (8 Transfers)	0.54 lbs/hr
	(0.5376 lbs/hr) * (8760 hrs/yr) * (0.0005	2.35 TPY

PM_{10} Emissions:

Emission Factor	0.000046 lbs/ton processed	[AP-42 Table 11.19.2-2,
Calculations	(0.000046 lbs/ton) * (480 tons/hr) * (8	0.18 lbs/hr
	(0.177 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb)	0.77 TPY

$PM_{2.5}$ Emissions:

Emission Factor	0.000013 lbs/ton processed	[AP-42 Table 11.19.2-2,
Calculations	(0.000013 lbs/ton) * (480 tons/hr) * (8	0.05 lbs/hr
	(0.050 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb)	0.22 TPY

Storage Pile Load-In & Load-Out [SCC 30502505 / 30502502]

Process Rate:	480	tons/hour [Maximum Facility Capacity]
Operating	8760	hours/year
Pile	2	[Initial Pile Formation → Pile Load-Out to Trucks]

Particulate Emissions (uncontrolled):

Emission Factor EF = k (0.0032) * [(U/5)^1.3 / (M / [AP-42 13.2.4, 11/06]

where: EF, Emission Factor = lbs Emitted / ton

k, Dimensionless Particle Size	0.74	[AP-42 13.2.4, 11/06]
k, Dimensionless Particle Size	0.35	[AP-42 13.2.4, 11/06]
k, Dimensionless Particle Size	0.053	[AP-42 13.2.4, 11/06]
U, Mean Wind Speed (mph) =	9.3	[ASOS/AWOS AVE-MT 10 yr Ave.]
M, Material Moisture Content (%) =	2.53	[AP-42 13.2.4.3, 11/06]

PM Emissions:

Emission Factor	EF = 0.74 * (0.0032) * [(9.33/5)^1.3 / (2.525/	0.0038 lbs/to
Calculations	(0.0038 lbs/ton) * (480 tons/hr) * (2 pile	3.69 lbs/hr
	(3.69 lbs/hr) * (8760 hours/yr) * (0.0005	16.17 TPY

PM_{10} Emissions:

Emission Factor	EF = 0.35 * (0.0032) * [(9.33/5)^1.3 / (2.525/	0.0018 lbs/to
Calculations	(0.0018 lbs/ton) * (480 tons/hr) * (2	1.75 lbs/hr
	(1.75 lbs/hr) * (8760 hours/yr) * (0.0005	7.65 TPY

$PM_{2.5}$ Emissions:

Emission Factor	EF = 0.053 * (0.0032) * [(9.33/5)^1.3 / (2.525/	0.00028 lbs/to
Calculations	(0.0003 lbs/ton) * (480 tons/hr) * (2	0.26 lbs/hr
	(0.26 lbs/hr) * (8760 hours/yr) * (0.0005	1.16 TPY

Diesel Generator Engines [SCC 2-02-001-02]

Jaw Crusher Package

Engine	225	bhp [Design Maximum Output]
Fuel	1.58	MMBtu/hr [BSFC →7,000 Btu/hp-hr]
	11.5	gallons/hour [Estimated →19,300 Btu/lb]
Operating	8760	hours/year

Particulate Emissions (uncontrolled):

PM Emissions:

Emission Factor	0.0022 lb/hp-hr	[AP-42 Table 3.3-1,

Calculations	(0.0022 lb/hp-hr) * (225 bhp)	0.50 lbs/hr
	(0.50 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb)	2.17 TPY

PM_{10} Emissions:

Emission Factor	0.0022 lb/hp-hr [AP-42 Table 3.3-1,	
Calculations	(0.0022 lb/hp-hr) * (225 bhp)	0.50 lbs/hr
	(0.50 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb)	2.17 TPY

$PM_{2.5}$ Emissions (filterable):

Emission Factor	0.0479 lb/MMBtu [AP-42 Table 3.4-2,	
Calculations	(0.0479 lb/MMBtu) * (1.58 MMBtu/hr)	0.08 lbs/hr
	(0.08 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb)	0.33 TPY

$PM_{2.5}$ Emissions

Emission Factor	0.0077 lb/MMBtu [AP-42 Table 3.4-2,	
Calculations	(0.0077 lb/MMBtu) * (1.58 MMBtu/hr)	0.01 lbs/hr
	(0.01 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb)	0.05 TPY

CO Emissions

Emission Factor	0.00668 lb/hp-hr [AP-42 Table 3.3-1,	
Calculations	(0.00668 lb/hp-hr) * (225 bhp)	1.50 lbs/hr
	(1.50 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb)	6.58 TPY

NOx Emissions (uncontrolled):

Emission Factor	0.031 lb/hp-hr [AP-42 Table 3.3-1,	
Calculations	(0.031 lb/hp-hr) * (225 bhp) =	6.98 lbs/hr
	(6.98 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb)	30.55 TPY

SO_2 Emissions

Emission Factor	0.00205 lb/hp-hr [AP-42 Table 3.3-1,	
Calculations	(0.00205 lb/hp-hr) * (225 bhp)	0.46 lbs/hr
	(0.46 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb)	2.02 TPY

VOC Emissions (uncontrolled):

Emission Factor	0.002514 lb/hp-hr [AP-42 Table 3.3-1,	
Calculations	(0.0025141 lb/hp-hr) * (225 bhp) =	0.57 lbs/hr
	(0.57 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb)	2.48 TPY

Combination Jaw/Roll Crusher Package

Engine	155 bhp [Design Maximum Output]
Fuel	1.09 MMBtu/hr [BSFC →7,000 Btu/hp-hr]
	7.9 gallons/hour [Estimated →19,300 Btu/lb]
Operating	8760 hours/year

Particulate Emissions (uncontrolled):

PM Emissions:

Emission Factor	0.0022 lb/hp-hr [AP-42 Table 3.3-1,	
Calculations	(0.0022 lb/hp-hr) * (155 bhp)	0.34 lbs/hr
	(0.34 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb)	1.49 TPY

PM_{10} Emissions:

Emission Factor	0.0022 lb/hp-hr	[AP-42 Table 3.3-1,	
Calculations	(0.0022 lb/hp-hr) * (155 bhp)		0.34 lbs/hr
	(0.34 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb)		1.49 TPY

$PM_{2.5}$ Emissions (filterable):

Emission Factor	0.0479 lb/MMBtu	[AP-42 Table 3.4-2,	
Calculations	(0.0479 lb/MMBtu) * (1.58 MMBtu/hr)		0.05 lbs/hr
	(0.05 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb)		0.23 TPY

$PM_{2.5}$ Emissions

Emission Factor	0.0077 lb/MMBtu	[AP-42 Table 3.4-2,	
Calculations	(0.0077 lb/MMBtu) * (1.09 MMBtu/hr)		0.01 lbs/hr
	(0.01 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb)		0.04 TPY

CO Emissions

Emission Factor	0.00668 lb/hp-hr	[AP-42 Table 3.3-1,	
Calculations	(0.00668 lb/hp-hr) * (155 bhp)		1.04 lbs/hr
	(1.04 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb)		4.54 TPY

NOx Emissions (uncontrolled):

Emission Factor	0.031 lb/hp-hr	[AP-42 Table 3.3-1,	
Calculations	(0.031 lb/hp-hr) * (155 bhp) =		4.81 lbs/hr
	(4.81 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb)		21.05 TPY

SO_2 Emissions

Emission Factor	0.00205 lb/hp-hr	[AP-42 Table 3.3-1,	
Calculations	(0.00205 lb/hp-hr) * (155 bhp)		0.32 lbs/hr
	(0.32 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb)		1.39 TPY

VOC Emissions (uncontrolled):

Emission Factor	0.002514 lb/hp-hr	[AP-42 Table 3.3-1,	
Calculations	(0.0025141 lb/hp-hr) * (155 bhp) =		0.39 lbs/hr
	(0.39 lbs/hr) * (8760 hrs/yr) * (0.0005 tons/lb)		1.71 TPY

Unpaved Roadways (Haul Roads) - Secondary

Miles 5 Miles/Day [Estimate]
Vehicle 50 Tons [Mean Vehicle Weight Empty/Full]
Control Method: Water
Control Efficiency 50%

Particulate Emissions (controlled):

Emission Factor EF = $k(s/12)^{a}$ * [AP-42 Table 13.2.2.2,
where: EF, Emission Factor = lbs Emitted Per Vehicle Mile Traveled

k, Empirical Constant PM	4.9	[AP-42 Table 13.2.2-2, 11/06]
k, Empirical Constant PM_{10}	1.5	[AP-42 Table 13.2.2-2, 11/06]
k, Empirical Constant	0.15	[AP-42 Table 13.2.2-2, 11/06]
s, Surface Material Silt Content	7.1	[AP-42 Table 13.2.2-1, 11/06]
W, Mean Vehicle Weight	50	[Applicant Provided Data]
a, Empirical Constant PM	0.7	[AP-42 Table 13.2.2-2, 11/06]
a, Empirical Constant PM_{10}	0.9	[AP-42 Table 13.2.2-2, 11/06]
b, Empirical Constant PM -	0.45	[AP-42 Table 13.2.2-2, 11/06]

PM Emissions:

Emission Factor Calculations	EF = 4.9 * (7.1/12)^0.7 * (50/3)^0.45	12.04	lbs/VM	
	(12.04 lbs/VMT) * (5 miles/day) * (1 - 0.5 Ce)			30.09 lbs/day
	(30.09 lbs/day) * (365 days/yr) * (0.0005			5.49 TPY

PM_{10} Emissions:

Emission Factor Calculations	EF = 1.5 * (7.1/12)^0.9 * (50/3)^0.45	3.32	lbs/VM	
	(3.32 lbs/VMT) * (5 miles/day) * (1 - 0.5 Ce) =			8.29 lbs/day
	(8.29 lbs/day) * (365 days/yr) * (0.0005 tons/lb)			1.51 TPY

$PM_{2.5}$ Emissions:

Emission Factor Calculations	EF = 0.15 * (7.1/12)^0.9 * (50/3)^0.45	0.33	lbs/VM	
	(0.33 lbs/VMT) * (5 miles/day) * (1 - 0.5 Ce) =			0.83 lbs/day
	(0.83 lbs/day) * (365 days/yr) * (0.0005 tons/lb)			0.15 TPY

V. Existing Air Quality

The initial location of this portable source is to be located in the Northwest ¼ of Northeast ¼ of Section 2, Township 1 South, Range 6 West in Madison County, Montana. The initial location and those areas for which this facility is permitted to operate under MAQP #2774-04 have been designated unclassified/attainment with all ambient air quality standards and there are no major air pollution sources in the surrounding area.

VI. Air Quality Impacts

The Department determined that there will be no impacts from this permitting action because this permitting action is considered an administrative action. Therefore, the Department believes this action will not cause or contribute to a violation of any ambient air quality standard.

VII. Ambient Air Impact Analysis

Based on the information provided and the conditions established in MAQP #2774-04, the Department determined that there will be no impacts from this permitting action. The Department believes it will not cause or contribute to a violation of any ambient air quality standard.

VIII. Taking or Damaging Implication Analysis

As required by 2-10-105, MCA, the Department conducted the following private property taking and damaging assessment.

YES	NO	
X		1. Does the action pertain to land or water management or environmental regulation affecting private real property or water rights?
	X	2. Does the action result in either a permanent or indefinite physical occupation of private property?

YES	NO	
	X	3. Does the action deny a fundamental attribute of ownership? (ex.: right to exclude others, disposal of property)
	X	4. Does the action deprive the owner of all economically viable uses of the property?
	X	5. Does the action require a property owner to dedicate a portion of property or to grant an easement? [If no, go to (6)].
		5a. Is there a reasonable, specific connection between the government requirement and legitimate state interests?
		5b. Is the government requirement roughly proportional to the impact of the proposed use of the property?
	X	6. Does the action have a severe impact on the value of the property? (consider economic impact, investment-backed expectations, character of government action)
	X	7. Does the action damage the property by causing some physical disturbance with respect to the property in excess of that sustained by the public generally?
	X	7a. Is the impact of government action direct, peculiar, and significant?
	X	7b. Has government action resulted in the property becoming practically inaccessible, waterlogged or flooded?
	X	7c. Has government action lowered property values by more than 30% and necessitated the physical taking of adjacent property or property across a public way from the property in question?
	X	Takings or damaging implications? (Taking or damaging implications exist if YES is checked in response to question 1 and also to any one or more of the following questions: 2, 3, 4, 6, 7a, 7b, 7c; or if NO is checked in response to questions 5a or 5b; the shaded areas)

Based on this analysis, the Department determined there are no taking or damaging implications associated with this permit action.

IX. Environmental Assessment

This permitting action will not result in a significant increase of emissions from the facility and is considered an administrative permit action; therefore, an environmental assessment is not required.

Analysis prepared by: John P. Proulx
Date: March 7, 2019