

AGGREGATE DEVELOPMENT PERFORMANCE STANDARDS



TABLE OF CONTENTS

DISCLAIMER	1
WHAT IS AGGREGATE?	2
FUNCTIONALITY OF THIS DOCUMENT	2
HOW TO READ THIS DOCUMENT	2
1 ENGAGEMENT	3
2 TECHNICAL ASSESSMENTS OF APPLICATIONS	4
3 ANNUAL REPORTING	5
4 ACOUSTICS	6
5 BLASTING	9
6 AIR QUALITY	10
7 TRAFFIC SAFETY	12
8 VISUAL AND LANDSCAPES	14
9 AGRICULTURE	15
10 NATURAL AND HISTORIC ENVIRONMENTS	16
11 GEOTECHNICAL	17
12 WATER	18
13 EROSION AND SEDIMENT	19
14 LIGHTING	20
15 HOURS OF OPERATION	20
16 WEED CONTROL	21
17 SITE SECURITY AND EMERGENCIES	21
18 RECLAMATION	21
APPENDIX A: DEFINITIONS	24
APPENDIX B: SUMMARY OF GOVERNMENT LEGISLATION, GUIDELINES, BYLAWS AND STANDARDS	28
APPENDIX C: NOISE IMPACT ASSESSMENT METHODOLOGY	33
APPENDIX D: GROUNDWATER MONITORING PLAN METHODOLOGY	38

DISCLAIMER

The purpose of this document is to outline the performance standards that new or expanding aggregate extraction and/or processing operations in Rocky View County (“the County”) are expected to meet as part of their master site development plan and development permit applications, as well as conditions of development permit approval. Applications for the renewal of development permits for existing operations that are not expected to be completed within 3 years at the time of approval are also expected to comply with these standards. These standards are to be read in whole, in conjunction with County policies, bylaws, and no part or section should be read individually.

Although it is anticipated that all new or expanded aggregate extraction and/or processing operations within the County will conform to the performance standards set forth in this document, ultimate responsibility for ensuring full compliance with these standards rests solely with the operator. Use of *Aggregate Development Performance Standards* does not absolve an operator or any other party from the obligation to exercise professional judgement and follow sound engineering, mining and industry standards.

The provisions within this document shall be in addition to and not in substitution for any federal, provincial or municipal legislation, regulation or requirement relating to aggregate operations.

New technology or practices exist which may result in a request to vary the *Aggregate Development Performance Standards*. Any party making a request to vary the *Aggregate Development Performance Standards* must submit a written request to the County with a detailed report under the seal of a Professional Engineer and/or qualified professional demonstrating the variance would not result in an increased level of impact on adjacent dwellings or institutional uses.

Municipal standards and guidelines may be amended from time to time. Before relying upon any municipal bylaw, policy, standard or guideline confirm that you have reviewed the most recent version of the document and understand its contents. In the event that any provincial or municipal statute, standard, or guideline referred to in this document is replaced or amended, the replacement or amended statute, standard, or guideline shall apply for assessing compliance.

The County will make reasonable efforts to view and update this document from time to time to allow for appropriate revisions to be made to references to provincial and municipal statutes, standards, and guidelines. The County does not warrant or guarantee the completeness or accuracy of any of the information provided in this document. The County does not assume responsibility or accept any liability arising from the use of the information in this document, which users rely upon at their own risk.

WHAT IS AGGREGATE?

In Alberta, aggregate is defined as “any sand, gravel, clay, or marl that is excavated from a pit, whether in a processed or unprocessed form, but does not include reject” by the *Alberta Code of Practice for Pits*. Under the provincial *Environmental Protection and Enhancement Act*, a pit is defined as “an operation on or excavation from the surface of the land, including by stripping off the overburden, for the purposes of removing, opening up or proving sand, gravel, clay or marl, and includes any associated infrastructure, but does not include a mine or a quarry.” Heavy machinery is used across the province to extract various aggregate products. As a fundamental construction material, aggregate plays a critical role in building and maintaining roads, buildings, and other key infrastructure.

FUNCTIONALITY OF THIS DOCUMENT

In Alberta, the regulation of aggregate development and processing operations is shared between the provincial government and municipalities. Federal legislation may also apply in certain cases, depending on the nature and location of the activity

Municipalities typically regulate aggregate operations through land use bylaws and the issuance of development permits. To support the County’s ability to assess and manage aggregate operations, the *Aggregate Development Performance Standards* document was created. It establishes a clear framework of minimum standards and requirements that must be met by aggregate operations. Where warranted by the local landscape, resource type, or development pressures, the County may impose additional conditions. In the event of a conflict between any provincial and County regulations, provincial regulations shall take precedence.

While this document outlines baseline expectations, operators are encouraged to exceed them where feasible to enhance environmental stewardship and community well-being. Recognizing that each operation is unique, the County’s Municipal Development Plan and Land Use Bylaw allow an operator to request a relaxation of applicable standards, provided specific criteria are met. In such cases, the operator must submit a Terms of Reference to Council before submitting a formal application. A relaxation of standards will only be granted if approved by Council. If a relaxation is approved for a master site development plan or redesignation application, the relaxation may also apply to the associated development permit.

HOW TO READ THIS DOCUMENT

This document uses three distinct terms to clarify when specific items are required as part of an application.

- Where the phrase “all applications for aggregate extraction and/or processing” is used, the item must be included in the application package for all master site development plan, redesignation, and development permit applications.
- Where the phrase “all applications for new or expanding aggregate extraction and/or processing” is used, the item is required only for master site development plan and redesignation applications.
- Where the phrase “all development permit applications for aggregate extraction and/or processing” is used, the item is required only for development permit applications.



1 ENGAGEMENT

- 1.01** Community consultation shall be required for all new or expanding applications for aggregate extraction and/or processing prior to submitting a master site development plan application to the County.

Open House Events

- 1.02** At a minimum, one open house event shall be held to present the details of the proposed new or expanding aggregate extraction and/or processing use to adjacent landowners and community.
- 1.03** Open house events shall be advertised through mailed letters sent in accordance with Standards 1.07 to 1.10.
- 1.04** Open house events may also be advertised through:
- a)** traditional or social media advertising in accordance with Standard 1.11; and/or
 - b)** outdoor signage in accordance with Standard 1.12.
- 1.05** An open house event shall be held at a venue that is easily accessible by the nearby landowners and community.
- 1.06** Alternate opportunities for providing information and engaging in discussion will be made readily available for landowners unable to attend an open house.

Mailed Letters

- 1.07** Mailed letters sent as part of an open house advertisement shall be postmarked a minimum of 21 days prior to the date of the event.
- 1.08** Applicants shall be responsible for circulating the mailed letters. However, the content of the mailed letters shall be sent to the County 14 days prior to circulation to provide for reasonable time for review.
- 1.09** Mailed letters shall be circulated, at minimum to:
- a)** all landowners within a 1.6 kilometre (one mile) radius of the subject land boundaries for the new or expanding aggregate extraction and/or processing site. Any properties located wholly within or partially within this radius shall be included within the circulation; and
 - b)** all landowners adjacent to any projected haul routes.
- 1.10** Mailed letter shall outline alternate options for information and engagement for landowners unable to attend an open house.

Traditional or Social Media Advertising

- 1.11** Applicants shall be responsible for advertising through any form of media. However, the content of the media advertising shall be sent to the County 14 days prior to circulation to provide for reasonable time for review.

Outdoor Signage

- 1.12** Applicants shall be responsible for the placement of outdoor signage for the purposes of advertising an open house event. Applicants shall comply with the County's Council Policy C-327 (Circulation and Notification Standards) and any provincial standards when placing an outdoor sign.

Engagement Summary

- 1.13** All applications for new or expanding aggregate extraction and/or processing shall include an Engagement Summary Report that details the consultation activities undertaken, advertising methods utilized, all feedback received, and how comments and concerns raised in the engagement process have been addressed.

Engagement Plan

- 1.14** All applications for new or expanding aggregate extraction and/or processing shall include an Engagement Plan, which details how the Applicant/Owner will engage with landowners materially affected by the proposal. The Engagement Plan shall include:
- a)** proposals for continued consultation following submission of an application including:
 - i. update letters and/or meetings;
 - ii. direct dialogue with the most affected landowners; and
 - iii. appointment of company representative(s) to respond to stakeholder concerns.
 - b)** proposals for engagement during establishment and operation of the development, which may include:
 - i. use of a public project website to report on key events, monitoring and milestones;
 - ii. use of update letters to landowners within a 1.6 kilometre (one mile) radius of the site;
 - iii. the hosting of stakeholder meetings and/or formation of a stakeholder committee; and
 - iv. appointment of a key engagement contact person to lead dialogue with stakeholders.
 - c)** an acknowledgement that the Applicant/Owner must submit quarterly engagement reports summarizing all communications received regarding aggregate extraction and hauling activities, along with the responses provided to those submissions.

Engagement Plan Updates

- 1.15** All development permit applications for aggregate extraction and/or processing shall be required to submit an updated Engagement Plan if any details have changed from the Engagement Plan submitted in accordance with Standard 1.14.

2 TECHNICAL ASSESSMENTS OF APPLICATIONS

- 2.01** All technical documents submitted with applications for all aggregate extraction and/or processing shall account for seasonal and annual fluctuations within the proposed development area. These documents shall also assess potential impacts based on the site's maximum daily operating capacity and include comparative calculations that reflect average operating conditions over the full lifespan of the development.
- 2.02** At the discretion of the County, through development permit conditions, limits may be imposed on the maximum operating capacity of a site based on the technical assessments provided to the County.
- 2.03** At the discretion of the County, a third-party review may be required for specific technical documents submitted as part of applications for new or expanding aggregate extraction and/or processing. This review is intended to ensure a thorough assessment of potential impacts. The County may request third-party reviews only for the following technical documents:

- a) Noise Impact Assessments;
- b) Air Quality Impact Assessments;
- c) Environmental Assessments;
- d) Stormwater Management Reports;
- e) Groundwater Impact Assessments; and
- f) Traffic Impact Assessments.

2.04 The cost of an aggregate third-party reviews shall be the responsibility of the Applicant/Owner. This cost will reflect the actual expense of the review, including any applicable charges as outlined in the Master Rates Bylaw. The review fee must be paid by the Applicant/Owner prior to a final decision being made on the application. If the Applicant/Owner does not consent to the payment of aggregate third-party reviews, the relevant technical document will be noted as unassessed, which may impact the completeness and evaluation of the application.

3 ANNUAL REPORTING

3.01 All approved aggregate extraction and/or processing operations shall submit annual reports to the County. Annual reports shall include the following:

- a) updated site plans;
- b) all quarterly engagement reports;
- c) all noise monitoring reports;
- d) all air quality monitoring reports;
- e) all groundwater monitoring reports;
- f) technical documents, if amended;
- g) projection of aggregate extracted;
- h) status of the operation;
- i) all reclamation activities that have occurred;
- j) all additional reporting requirements as outlined in any approved:
 - i. master site development plan;
 - ii. direct control district; and/or
 - iii. development permit.
- k) any additional information deemed necessary by the County.

3.02 In any year that a five-year report is required by the Government of Alberta for Class I aggregate pits, the five-year report shall be submitted as a component of the corresponding annual report.

3.03 All annual reports shall be submitted no later than two months after the cease of operations of the reporting year, unless otherwise stated as a condition of an:

- a) approved master site development plan;
- b) approved direct control district; or
- c) issued development permit.

Performance Standards

4 ACOUSTICS

Noise Impact Assessment

- 4.01** All applications for aggregate extraction and/or processing shall include a Noise Impact Assessment, undertaken by a qualified acoustic professional, in accordance with the survey methodology outlined in Appendix C of this document.
- 4.02** Noise Impact Assessments shall consider the cumulative noise exposure from all existing and proposed aggregate extraction and/or processing sites within a 4.8 kilometre (three mile) radius, as well as any additional sources of noise.
- 4.03** All Noise Impact Assessments shall include two modelling scenarios:
- a)** predicting noise without mitigation measures being in place (worst care); and
 - b)** demonstrating noise after the implementation of the proposed mitigations measures identified in the Noise Mitigation Plan (residual).
- 4.04** With the exception of daytime temporary operations described below, recorded sound levels shall not exceed the following for aggregate operations:
- a)** daytime (6:00 a.m. to 10:00 p.m. on weekdays, 9:00 a.m. to 10:00 p.m. on weekends):
 - i. 55dB LAeq (1-hour, free-field), or 10dB above recorded ambient sound levels (measured as LA90), whichever is the lesser, at the nearest, or most impacted, dwelling(s) or institutional building(s);
 - ii. where the recorded ambient sound levels are above 50dB, site-specific sound levels recorded at the nearest, or most impacted, dwelling(s) or institutional building(s) shall not exceed 5dB above the ambient sound level.
 - b)** nighttime (10:00 p.m. to 7:00 a.m. on weekdays, 10:00 p.m. to 9:00 a.m. on weekends):
 - i. 45dB LAeq (1-hour, free-field) or 5dB above recorded ambient sound levels (measured as LA90, 1-hour, free-field), whichever is the lesser, at the nearest, or most impacted, dwelling(s) or institutional building(s);
 - ii. where the recorded ambient sound levels (measured as LA90) are above 40dB, site-specific sound levels recorded at the nearest, or most impacted, dwelling(s) or institutional building(s) shall not exceed 5dB above the ambient sound level.
 - c)** the lowest sound level limit, after respective 10dB and 5dB allowable adjustments, shall be 45dB for daytime recordings and 40dB LAeq (1-hour, free-field) for nighttime recordings. Ambient sound levels recorded below 35dB LAeq (1-hour, free-field), shall be noted, but increased to 35dB LAeq (1 hour, free-field) for the purposes of the Noise Impact Assessment.

Temporary Daytime Operations

- 4.05** An increased daytime sound level of up to 65dB LAeq (1-hour, free-field), recorded at the nearest, or most impacted dwelling(s) or institutional building(s), for a total maximum period of 30 days (accumulated either in separate or consecutive days), shall be allowed for temporary operations in each calendar year. The increased sound level shall be used only to facilitate



essential site preparation and reclamation works where it is clear that these works will have a benefit to site operations and/or the local environment. Where ambient sound levels recorded within the Noise Impact Assessment are already above 65dB LAeq, this Standard shall not apply.

4.06 Daytime temporary operations shall be limited to the following activities:

- a) soil-stripping;
- b) the construction, maintenance and removal of berms and landscaping features;
- c) construction of new permanent landforms;
- d) site access construction and maintenance; or
- e) any other infrequent works that are considered by the County to be necessary to attain environmental or amenity benefits in the long-term operation of the site.

4.07 The Applicant/Owner shall be required to notify the County of a temporary operation being undertaken. The notification shall include, at minimum:

- a) a detailed description of the temporary activities occurring on site; and
- b) an estimated time and duration of the temporary activity.

The County should be notified at least 48 hours before the temporary operation begins. Upon completion of the work, the Applicant/Owner shall provide written notice to the County that the temporary operation has concluded.

4.08 The increased daytime sound level for temporary operations shall only be allowed between the hours of 7:00 a.m. and 5:00 p.m. on weekdays, with no such operations on weekends and statutory holidays.

Noise Mitigation Plan

4.09 All applications for aggregate extraction and/or processing shall include a Noise Mitigation Plan outlining the measures that will be implemented to meet the criteria set out in Standard 4.04. Applicants are encouraged to minimize noise impacts as much as reasonably practicable, beyond the minimum requirements where possible.

4.10 Preference shall be given to hard mitigation measures over soft mitigations measures as identified in the reference box below. However, the submitted Noise Mitigation Plan shall include a combination of measures best suited to the proposal and its location.

Hard Noise Mitigation Measure Examples

- a. Enclosure of louder activities within buildings;
- b. Construction of berms or other noise barriers between the site and neighbouring properties;
- c. Replacement, as far as possible, of tonal alarms with visual or broadband noise alarms;
- d. Installation of noise dampening apparatus on plant and machinery;
- e. Appropriate surfacing and grade of internal haul roads; and
- f. Siting of plant and machinery areas away from neighbouring properties.

Soft Noise Mitigation Measure Examples

- a. Limitations on working hours;
- b. Regular maintenance of all plant and machinery;
- c. Use of plant and machinery that is suited to its application;
- d. Ongoing plant operator training and management of driver behaviour; and
- e. Planning of operations according to weather conditions, particularly wind strength and direction.

Noise Monitoring Program

- 4.11** All applications for aggregate extraction and/or processing shall include a Noise Monitoring Program that includes a commitment to undertake noise surveys at appropriate intervals with assessment against set sound level limits for dwelling survey locations identified within the Noise Impact Assessment.
- 4.12** Monitoring duration and frequency shall be dependent on the site's proximity to the nearest, or most impacted, dwelling(s) or institutional building(s). It may range from short-term monitoring (e.g. intermittent or complaint-responsive) for sites that are remote from dwellings or institutional buildings to long-term monitoring (e.g. for the entire duration of the aggregate development) for those that are close to dwellings or institutional buildings. The monitoring duration shall provide a sufficient representative sample of the sound environment with the subject development operating. The interval length will be determined by Rocky View County.
- 4.13** Noise monitoring reports detailing compliance with the approved sound level limits set out in above standard shall be submitted to Rocky View County at the following intervals:
- a)** every three months for continuous or long-term monitoring; or
 - b)** within 21 days of the noise survey being undertaken for complaint-responsive or intermittent, short-term monitoring.
- 4.14** Where exceedances are noted within any submitted noise survey report, the Applicant/Owner shall investigate the exceedance, and shall submit within the report any remedial actions taken, or to be taken, to Rocky View County for approval.
- 4.15** Within the Noise Monitoring Program, the Applicant/Owner shall set out a complaints procedure that details how any noise complaints from the public will be managed, including a commitment

to investigate all reasonable complaints received by the County, where a complaint can be substantiated. In the event that a complaint is submitted directly to the Applicant/Owner, the Applicant/Owner shall forward the complaint to the County within one business day of receipt.

- 4.16** Where remedial actions are required following a monitoring survey report or substantiated complaint, they shall be implemented in accordance with the details of any approval given and within the timescale specified by the County. The Applicant/Owner shall inform the County when all required remedial actions are completed.

5 BLASTING

- 5.01** Where a blasting operation may be undertaken for a specific aggregate site, a Blasting Mitigation Plan shall be submitted. The Blasting Mitigation Plan shall include the following:

- a) an assessment of the potential noise, vibration, safety and nuisance impacts generated from blasting activities;
- b) measures to limit the identified impacts of blasting including, at a minimum:
 - i. a commitment to notify the County and landowners within a 1.6 radius of the subject aggregate extraction and/or processing site, at least 48 hours prior to the activity occurring;
 - ii. installation of temporary and/or permanent signage notifying the public of blasting activities within the site;
 - iii. confirmation that all employees/contractors directly involved in the blasting operation hold a Surface Mine Blaster certificate issued by the Government of Alberta;
 - iv. installation of controls such as those identified below to limit the amount of flying material that may cause injury or damage to persons or property from such material, both within and outside of the site;
- c) an acknowledgment to respond to landowner complaints associated with blasting operations, including noise and vibration monitoring where necessary.

Blasting Mitigation Measure Examples

- a. Restrictions on where blasting may occur within a site including setbacks from property boundaries;
- b. Implementation of good blasting design for the material being extracted;
- c. Appropriate use of stemming techniques;
- d. Appropriate use of explosive being used for the site; and
- e. Use of blasting mats around detonation areas.

6 AIR QUALITY

Air Quality Impact Assessment

- 6.01** All applications for aggregate extraction and/or processing shall include an Air Quality Impact Assessment, undertaken by a qualified air quality professional, in accordance with the guidance set out within the Alberta Air Quality Model Guidelines as amended or replaced.
- 6.02** Air Quality Impact Assessments shall consider the cumulative air quality exposure from all existing and proposed aggregate extraction and/or processing sites within a 4.8 kilometre (three mile) radius as well as any additional source of emissions.
- 6.03** All Air Quality Impact Assessments shall include two modelling scenarios:
- a)** predicting emissions without mitigation measures being in place (worst case); and
 - b)** showing emissions after the implementation of proposed mitigation measures identified in the Emissions Mitigation Plan (residual).
- 6.04** All applications for aggregate extraction and/or processing shall reduce emissions to the lowest practicable level, in accordance with the guidelines of the South Saskatchewan Region Air Quality Framework. Emission levels for aggregate operations shall, at a minimum, meet the following criteria:
- a)** PM_{2.5} 24-hour average 27 µg/m³ (Canadian Ambient Air Quality Standards);
 - b)** PM₁₀ 24-hour average of 45 µg/m³ (World Health Organization);
 - c)** TSP 24-hour average 100 µg/m³ (Alberta Ambient Air Quality Objectives); and
 - d)** all other air pollutants of concern shall be assessed, if required, against the thresholds stated within the Alberta Ambient Air Quality Objectives.

Emissions Mitigation Plan

- 6.05** All applications for aggregate extraction and/or processing shall include an Emissions Mitigation Plan, outlining the measures that will be implemented to meet the criteria set out in Standard 6.04. Applicants are encouraged to minimize emissions as much as reasonably practicable, beyond the minimum requirements where possible.
- 6.06** Preference shall be given to hard mitigation measures over soft mitigations measures as identified in the reference box below. However, the submitted Emissions Mitigation Plan shall include a combination of measures best suited to the proposal and its location.
- 6.07** The Emissions Mitigation Plan shall identify thresholds, and a strategy for temporarily shutting down site operations in the event of adverse weather conditions or unexpected site incidents, to prevent exceedances of the limits identified within Standard 6.04.

Air Quality Monitoring Program

- 6.08** All applications for aggregate extraction and/or processing shall include an Air Quality Monitoring Program that includes a commitment to undertake air quality surveys at appropriate intervals, with assessment against set limits identified within the Air Quality Impact Assessment. The Monitoring Program shall be in accordance with the guidance set out within the Government of Alberta's Air Monitoring Directive as amended or replaced.



- 6.09** Monitoring duration and frequency shall be dependent on the site's proximity to the nearest or most impacted, dwelling(s) or institutional building(s) and other relevant geophysical or meteorological considerations. It may range from short-term monitoring (e.g. intermittent or complaint-responsive) for sites that are remote from dwellings or institutional buildings, to long-term monitoring (e.g. for the entire duration of the aggregate development) for those that are close to dwellings or institutional buildings. The interval length will be determined by the County.
- 6.10** Air Quality Monitoring reports detailing compliance with the approved air quality level limits set out within the Air Quality Impact Assessment shall be submitted to the County at the following intervals:
- a)** every three months for continuous or long-term monitoring; or
 - b)** within 21 days of the air quality monitoring being completed for complaint-responsive or intermittent short-term monitoring.
- 6.11** Where exceedances are noted within any submitted air quality monitoring report, the Applicant/Owner shall investigate the exceedance, and shall submit within the report any remedial actions taken, or to be taken, to the County for approval.
- 6.12** Within the Air Quality Monitoring Program, the Applicant/Owner shall set out a complaints procedure that details how any air quality complaints from the public will be managed, including a commitment to investigate all reasonable complaints received by the County, where a complaint can be substantiated. In the event that a complaint is submitted directly to the Applicant/Owner, the Applicant/Owner shall forward the complaint to the County within one business day of receipt.
- 6.13** Where remedial actions are required following a monitoring report or complaint, these shall be implemented in accordance with the details of any approval given and within the timescale specified by the County in that approval. The Applicant/Owner shall inform the County when all required remedial actions are completed.

Hard Mitigation Measure Examples for Emissions

- a. Paving of internal haul roads;
- b. Enclosing processing plant within buildings;
- c. Siting of plant and machinery away from neighbouring properties;
- d. Provision of landscaping around the perimeter of the site, or around the dust emitting activity;
- e. Installing dust suppression and containment measures on plant and machinery;
- f. Seeding and landscaping of berms and other open areas not directly affected by extraction operations;
- g. Installing emission reduction technology on site vehicles; and
- h. Use of conveyors to reduce vehicle movement around site;

Soft Mitigation Measure Examples for Emissions

- a. Spraying of stockpile and plant areas during dry and windy conditions;
- b. Arranging product and soil stockpiles in a way that limits dust creation;
- c. Use of plant and machinery that is suited to its application;
- d. Continual plant operator training, and management of driver behaviour;
- e. Compliance with the Code of Practice for Asphalt Paving Plants (as amended) in the use of such plant; and
- f. Planning of operations according to weather conditions, particularly wind strength and direction, including site shutdowns where necessary.

7 TRAFFIC SAFETY

Traffic Impact Assessment

- 7.01** All applications for aggregate extraction and/or processing that would create traffic movements to and from a site shall include a Traffic Impact Assessment, prepared by a Registered Professional Engineer, in accordance with the County's Servicing Standards.
- 7.02** In addition to the details required by the County's Servicing Standards, the Traffic Impact Assessment shall provide:
- a) details of the haul routes to and from;
 - b) the site (including a haul route plan);
 - c) provide a forecast for the proportion of overall traffic movements that travel along each routes; and
 - d) a breakdown of the predicted market designations.
- 7.03** The Traffic Impact Assessment will provide recommendations for any required improvements to the road network to safely accommodate the traffic generated.
- 7.04** The Traffic Impact Assessment shall demonstrate, to the satisfaction of the County, the following:
- a)** access arrangements would be safe and appropriate to the proposed development;
 - b)** the impact of the traffic generated would not compromise road safety; and

- c) the surrounding road network would be able to accommodate the traffic that could be generated.

Traffic Impact Assessment Update

- 7.05** All development permit applications for aggregate extraction and/or processing shall be required to submit an updated Traffic Impact Assessment, in accordance with the requirements outlined in Standard 7.02, where a Traffic Impact Assessment has previously been approved for a subject site.

Traffic Management Plan

- 7.06** All applications for aggregate extraction and/or processing that may create additional traffic movements to and from a site shall submit a Traffic Management Plan that demonstrates the proposal would not materially interfere with or affect the use and enjoyment of properties adjacent to the site. The Traffic Management Plan shall include:
- a) measures for controlling the driving behaviour of aggregate haulers (both third party haulers, and those employed directly by the operator) together with disciplinary procedures for non-compliance. The use of In-Vehicle Monitoring Systems should be proposed by Applicants/Owners;
 - b) evidence of driver training requirements for aggregate haulers that will access the site;
 - c) evidence that drivers are provided an orientation to the requirements of any applicable road use agreements with the County;
 - d) evidence of membership in a truck registry program, such as the Alberta Sand and Gravel Association Truck Registry. Vehicles with a gross vehicle weight of less than 14,600 kg will be exempt from meeting this requirement;
 - e) a commitment to avoid the use of engine retarder brakes where:
 - i. signs prohibiting the use of engine retarder brakes are posted; and
 - ii. within 500 metres of a dwelling;
 - f) evidence of, or commitment to obtain, any required road use permits or approvals from the County or Alberta Transportation and Economic Development (or any succeeding provincial office);
 - g) measures to control the impacts of traffic movements associated with the site upon local residents, agricultural traffic and other road users;
 - h) measures to prevent vehicles parking or queuing within the public road network, including, where appropriate, a vehicle waiting/parking area within the site;
 - i) proposals to reduce safety conflicts between site traffic and other road users on the roads surrounding the site;
 - j) a commitment to prohibit the overloading of trucks;
 - k) measures to prevent the generation of dust from truck and other equipment traveling on County roads; and
 - l) measures to ensure all vehicles leaving a site are in a state that will prevent materials or debris from being deposited on the road network.

Road Use Agreement/Development Agreement

- 7.07** As a condition of a development permit approval for aggregate extraction and/or processing use, the Applicant/Owner may be required to enter into a Development Agreement with the County that may cover the following matters:
- a) implementation of any necessary off-site road improvements or intersection upgrades identified in an approved Traffic Impact Assessment;
 - b) the requirement to upgrade and repair designated roads affected by the hauling operations of the aggregate development, to the satisfaction of the County; and
 - c) any other matter the County deems necessary.
- 7.08** As a condition of a development permit approval for aggregate extraction and/or processing use, the Applicant/Owner may be required to enter into a Road Use Agreement with the County that may cover the following matters:
- a) protection and maintenance of the County's road network where a proposed haul route will not be upgraded to an adequate commercial / industrial standard for any reason;
 - b) protection and maintenance of completed infrastructure improvements for the duration of hauling activities following issuance of a Final Acceptance Certificate by the County for any completed off-site road improvement or intersection upgrade;
 - c) hauling over road ban weight restrictions, which are applied seasonally by the County across the network, for any reason; and
 - d) provision of a refundable security, which may be drawn upon in the event that the Applicant/Owner fails to repair road damage attributed to their hauling activities.
- 7.09** Where a Road Use Agreement or Development Agreement already exists for a subject aggregate site, the County may require amendments to the agreement(s) to ensure coverage of the above matters.

8 VISUAL AND LANDSCAPES

Visual and Landscape Impact Assessment

- 8.01** All applications for new or expanding aggregate extraction and/or processing shall include a Visual and Landscape Impact Assessment, undertaken by a qualified landscape professional. The Landscape Impact Assessment shall identify the following:
- a) character of the existing landscape (e.g. historical development and land use pattern);
 - b) notable landscape features;
 - c) existing topography, including elevation levels, both within the site and surrounding area;
 - d) anticipated visual and landscape impacts of the proposed activities;
 - e) any anticipated changes to topography;
 - f) anticipated level of vegetation removal required;
 - g) any historical changes to the landscape;
 - h) consideration of the phasing of extraction and reclamation, and how landscape impacts may change over the life of the operation; and
 - i) all significant sight lines into the proposed site.

- 8.02** Visual and Landscape Impact Assessments should include appropriate photo montages, cross-sections, and site plans to clearly illustrate the potential visual impacts of the proposal.

Landscaping Plan

- 8.03** All applications for aggregate extraction and/or processing shall include a Landscape Plan that outlines the measures that will be taken to minimize the proposal's impacts on visual amenity and landscape character. Such measures should include, but not be limited to:
- a) screening of primary sightlines into the site, through berms and landscaping;
 - b) retaining important landscape features and boundary treatments;
 - c) locating plant and machinery areas appropriately, according to the topography of the site;
 - d) ensuring progressive reclamation and aftercare of reclaimed areas for a minimum of one year, subject to review;
 - e) submission and implementation of a maintenance schedule for existing and proposed on-site vegetation;
 - f) ensuring the appearance, design, and mass of any buildings on-site are sensitive to the surrounding areas;
 - g) minimizing the plant and stockpiling site footprint;
 - h) removing any equipment, vehicles, or plant/facility from the site when not in use for a prolonged period of time;
 - i) identifying how and where stripped topsoil can be retained on site for future reclamation; and
 - j) ensuring the site is kept in an orderly and tidy manner.
- 8.04** The Landscape Plan shall include site plans showing the location of all existing and proposed landscaping and other screening measures within the site.
- 8.05** The initial Landscape Plan submitted should identify proposed visual and landscape measures for a period of 10 years from the date of commencement of the proposed operations, or for the life of the operation, whichever is the lesser period.

Landscaping Plan Update

- 8.06** All renewals of applications for development permits for aggregate extraction and/or processing shall submit an updated Landscaping Plan from the initial Landscaping Plan that shows the proposed visual and landscape measures will suffice for a minimum of five years subsequent to the date when the renewal application is submitted.

9 AGRICULTURE

- 9.01** all applications for new or expanding aggregate extraction and/or processing shall look to minimize the loss of the County's productive and versatile agricultural land. Aggregate extraction and/or processing on agricultural lands shall meet the following criteria:
- a) placement of ancillary plant and buildings associated with extraction shall be upon areas of lower relative agricultural quality within the site;
 - b) progressive reclamation techniques shall be adopted to reduce the time that agricultural land is lost to aggregate development; and



- c) commitment shall be made to reclaiming the lands back to their previous agricultural quality or better. Where this is not possible, it should be demonstrated that another beneficial land use will be secured through site reclamation to offset the loss of agricultural land.

9.02 All applications for new or expanding aggregate extraction and/or processing within 400 metres of a confined feeding operation shall prepare an Agricultural Impact Assessment that will include the following:

- a) quantify impacts to livestock from:
 - i. dust;
 - ii. noise;
 - iii. light;
 - iv. sound;
 - v. vibration; and
 - vi. biosecurity.
- b) quantify impacts to agricultural production and activity resulting from end use reclamation plans including the location of end-pit lakes;
- c) site specific mitigation plan to minimize impacts to Agricultural producers and activities; and
- d) any other reasonable factors that the County may consider to be appropriate.

9.03 All applications for aggregate extraction and/or processing on a site adjacent to a parcel zoned for agricultural use, as defined in the County's Land Use Bylaw, shall consider the County's Agricultural Boundary Design Guidelines. The application shall also consider implementing appropriate aesthetic measures, such as the construction of berms or fences, and thoughtful placement of the operating site.

10 NATURAL AND HISTORIC ENVIRONMENTS

Environmental Features

10.01 All applications for new or expanding aggregate extraction and/or processing shall follow the framework of Environmental Assessment Report set out within the County's Servicing Standards. Applications shall be compliant with all applicable provincial and federal legislation relating to the protection of environmental features.

10.02 Where a submitted Environmental Assessment Report identifies Valued Ecosystem Components that may be affected by the proposal, the Environmental Assessment Report shall outline measures to mitigate, or compensate for any potential impact caused.

10.03 The County shall circulate all applications for aggregate extraction and/or processing and associated development to the Alberta Ministry of Environment and Protected Areas (or any succeeding provincial office) for comment.

Riparian Protection Areas

10.04 Aggregate extraction and/or processing activities should be avoided within Riparian Protection Areas as defined in the County's Land Use Bylaw. Any proposed activities shall be in accordance with all applicable provincial legislation, the County's Land Use Bylaw, the County's Municipal

Development Plan, and County Council Policy C-419 (Riparian Land Conservation and Management Policy).

- 10.05** The removal of trees shall be avoided for aggregate extraction and/or processing within Riparian Protection Area as defined in the County's Land Use Bylaw without written approval from the County. All applications for aggregate extraction and/or processing that proposes to remove trees within a Riparian Protection Area shall include a:
- a) site plan clearly identifying the proposed area of tree removal, including an estimate of the number of trees to be removed;
 - b) rationale outlining the necessity of the tree removal;
 - c) description of proposed mitigation measures and/or compensation measures; and
 - d) written endorsement by a qualified arboricultural, landscape or geotechnical professional, as appropriate.

The County's Land Use Bylaw defines **Riparian Protection Area** as lands adjacent to naturally occurring watercourses, which the County has deemed necessary to protect by limiting certain forms of development within this area. The purpose and intent of the riparian protection area is to conserve and manage riparian lands. The riparian protection area is based on the Province of Alberta's "Stepping Back from the Water Guidelines: A Beneficial Management Practices Guide for New Development near Water Bodies in Alberta's Settled Region" as amended or replaced from time to time.

Historical Resources

- 10.06** All applications for new or expanding aggregate extraction and/or processing shall adhere to the framework for Historical Resource Impact Assessment set out within the County's Servicing Standards. All applications for aggregate extraction and/or processing shall be compliant with all applicable federal and provincial legislation relating to the protection of historical features.
- 10.07** All Applicants/Owners are encouraged to consult the Government of Alberta's most current listing of historic resources prior to submitting an application.
- 10.08** The County shall circulate applications for all aggregate extraction and/or processing to the Alberta Ministry of Arts, Culture, and Status of Women (or any succeeding provincial office) for comment.

11 GEOTECHNICAL

- 11.01** All applications for new or expanding aggregate extraction and/or processing shall submit a Geotechnical Evaluation Report, prepared by a registered professional engineer, which follows the framework of assessment set out within the County's Servicing Standards.
- 11.02** In addition to the requirements set out within the County's Servicing Standards, the Geotechnical Evaluation Report shall, at minimum, include recommendations on:
- a) safe slope gradients for extraction areas, internal haul routes, and reclaimed lands; and
 - b) mitigation measures to be protective of any neighboring assets such as roads, buildings, etc. that may be impacted by the activities.

- 11.03** The recommendations outlined in the Geotechnical Evaluation Report shall be incorporated into both the Operations Plan and the Reclamation Plan submitted as part of an application.

12 WATER

Surface Water

- 12.01** All applications for new or expanding aggregate extraction and/or processing shall submit a conceptual-level Stormwater Management Report in accordance with the County's Servicing Standards.
- 12.02** All development permit applications for aggregate extraction and/or processing shall submit a comprehensive Stormwater Management Report in accordance with the County's Servicing Standards.
- 12.03** Where an existing site has an existing Stormwater Management Report previously approved by the County, or similar Stormwater Plan approved by the Province, the Applicant/Owner shall provide an update to that existing report/plan according to any changes in site operations that may have occurred since that report/plan was approved.
- 12.04** All applications for aggregate extraction and/or processing and associated Stormwater Management Reports shall be compliant with any relevant watershed management plans, provincial legislation, and guidelines relating to surface water flow and quality.

Groundwater

- 12.05** All applications for new or expanding aggregate extraction and/or processing shall provide a Groundwater Impact Assessment that shall assess the impacts the proposed activities will have on groundwater quality and levels within both the site itself and hydrogeological connected lands. The Groundwater Impact Assessment shall be undertaken by a qualified hydrogeological professional and shall include:
- a) installation of a minimum of three piezometers/monitoring wells within the site, installed to a depth below the proposed floor of the extraction area;
 - b) assessment of the static groundwater table within the site, supported by groundwater level measurements taken upon completion of drilling, one day after drilling, seven days after drilling, 14 days after drilling, one month after drilling, and once a month thereafter for 11 consecutive months;
 - c) determination of the groundwater flow direction, hydraulic conductivity and gradient; and
 - d) assessment of baseline groundwater quality through collection and analysis of groundwater samples by an accredited environmental laboratory for general chemistry parameters, metals, and any other analyte deemed appropriate by the qualified hydrogeologist professional.
- 12.06** In addition to the above requirements, a Groundwater Impact Assessment shall explicitly detail the groundwater table level. All aggregate extraction and/or processing activities shall be undertaken at minimum 5.0 metres above the identified groundwater table.
- 12.07** All applications for new or expanding aggregate extraction and/or processing shall include Groundwater Monitoring Plan that shall be undertaken in accordance with the methodology outlined in Appendix D.

- 12.07** All applications for aggregate extraction and/or processing shall be compliant with the applicable provincial legislation and frameworks relating to water flow and quality.
- 12.08** All applications for aggregate extraction and/or processing that impact a water body or when the work will divert and use surface or groundwater will obtain approval under the *Alberta Water Act*.

Surface Water and Groundwater Mitigation Plan

- 12.09** All applications for aggregate extraction and/or processing shall provide a Surface Water and Groundwater Mitigation Plan, the detail of which shall be dependent upon the scale and type of development proposed and its anticipated impacts upon surface water and groundwater features. The Surface Water and Groundwater Mitigation Plan shall include:
- a)** identification of any potentially polluting substances to be brought onto the site, and measures to ensure that such substances are stored in a way that cannot result in contamination of ground or surface water;
 - b)** a site plan showing the storage location of all potentially polluting substances and a contingency plan describing proposed procedures to remedy any contamination on-site;
 - c)** identification of any proposed water usage within the site and how used water will be stored, recycled, and/or discharged; and
 - d)** a summary of any required provincial approvals under the *Alberta Water Act* for applicable operations on-site, and a commitment to obtaining those approvals prior to proceeding with operations.

13 EROSION AND SEDIMENT

- 13.01** All applications for new or expanding aggregate extraction and/or processing shall provide an Erosion and Sedimentation Control Strategy that outlines measures that will be implemented on-site to minimize sedimentation to the satisfaction of the County. An Erosion Control Strategy shall:
- a)** avoid using a “one size fits all” approach to managing erosion and sediment control. Except for simple housekeeping practices, the planning and identification of strategies to employ is very much site specific;
 - b)** consider all erosion and sedimentation processes rather than focus on water run-off. Dust generation, wind erosion, and operational activities also result in the transport of material that results in offsite impacts;
 - c)** always plan and implement practices to control erosion at the source rather than at the site boundary;
 - d)** always identify and recognize high value ecological resources, infrastructure, and property adjacent to and affected by construction sites;
 - e)** identify measures for off-site mud control;
 - f)** always consider site specific soil types, seasonal variations in climate, and topography;
 - g)** respond to operational conditions that change over the course of the development on-site;
 - h)** ensure a program of timely inspection and maintenance of Erosion and Sediment Control practices; and
 - i)** adhere to relevant federal, provincial and municipal legislation and standards.



- 13.02** All development permit applications for aggregate extraction and/or processing shall include an Erosion and Sediment Control Report.
- 13.03** Where necessary, the County may refer an application to the Agricultural Service Board and/or the Soil Conservation Officer acting under the Alberta *Soil Conservation Act* to advise on the impact of topsoil removal.

14 LIGHTING

- 14.01** All lighting placed on land in association with aggregate extraction and/or processing shall be in accordance with the County's Land Use Bylaw.
- 14.02** All development permit applications for aggregate extraction and/or processing that anticipate nighttime operations shall require a Lighting Plan be submitted to the satisfaction of the County.
- 14.03** A Lighting Plan shall include a:
- a) description of the location and direction of all external lighting on-site;
 - b) description of measures taken to shield direct glare onto adjacent properties; and
 - c) projection of light patterns in relation to adjacent properties, roadways and developments.

15 HOURS OF OPERATION

General

- 15.01** All applications for aggregate extraction and/or processing shall specify hours of operation for extraction, processing and hauling operations. The hours of operation specified within an application shall align with the guidelines set out in Standards 15.03 to 15.05.
- 15.02** Where an application for aggregate extraction and/or processing are proposed beyond these guidelines, a rationale shall be provided, and the impact upon surrounding land users and road safety shall be adequately addressed within an application.

Extraction and Processing Operations

- 15.03** The hours of operation for aggregate extraction and/or processing shall only take place within the hours specified by the County through development permit conditions. In considering appropriate permit conditions, the County shall take into consideration the following guidelines for hours of operation:
- a) 6:00 a.m. to 7:00 p.m., Monday to Friday;
 - b) 9:00 a.m. to 5:00 p.m., on Saturdays; and
 - c) no operations on Sundays or statutory holidays.

Hauling Operations

- 15.04** The hours of operation for hauling operations associated with the import and export of materials shall take place only within the hours specified by the County through development permit conditions. In considering appropriate permit conditions, the County shall take into consideration the following guidelines for hours of operation:
- a) 7:00 a.m. to 7:00 p.m., Monday to Friday;



- b) 9:00 a.m. to 4:00 p.m., on Saturdays; and
- c) no hauling on Sundays or Statutory Holidays.

Maintenance Operations

- 15.05** The scheduled maintenance of plant, machinery, equipment or vehicles associated with aggregate development and/ or processing may be considered outside of the guideline hours of operation stated in Standards 15.03 and 15.04, subject to the Applicant/Owner committing to providing the County no less than 48 hours' notice for each incident of scheduled maintenance. Restrictions on scheduled maintenance operations and the prior notification process shall be imposed through the conditions of any development permit.

16 WEED CONTROL

- 16.01** All applications for aggregate extraction and/or processing shall adhere to the provisions of the *Alberta Weed Control Act*.
- 16.02** All development permit applications for aggregate extraction and/or processing shall provide a Weed Control Plan that includes:
- a) an initial pre-construction identification and documentation of weed species identified as either prohibited noxious or noxious in the *Alberta Weed Control Act* prior to any ground disturbance;
 - b) identification of control methods throughout the life of the site, ensuring all prohibited noxious or noxious weed species are prevented from going to seed; and
 - c) identification of the party responsible for weed control during the life of the site.

17 SITE SECURITY AND EMERGENCIES

- 17.01** All applications for aggregate extraction and/or processing shall provide a Site Security Plan. The Site Security Plan should outline the measures that will be implemented to restrict access to the site. The Site Security Plan shall, at minimum, include:
- a) measures to restrict public access;
 - b) measures to restrict wildlife and where necessary livestock;
 - c) site signage; and
 - d) any additional security features deemed necessary to the specific site.
- 17.02** All applications for aggregate extraction and/or processing shall provide an Emergency Management Plan that details emergency response procedures.

18 RECLAMATION

Interim Reclamation

- 18.01** Where an aggregate site has been inactive for one year, over and above seasonal fluctuations in activity, the County may request an Interim Reclamation Plan to ensure that the extraction area and associated infrastructure does not generate adverse amenity, safety, or environmental impacts. The Interim Reclamation Plan shall include a timeline for interim reclamation and shall include measures to:



- a) prevent unauthorized access to the site;
- b) lessen and stabilize slopes around the extraction void;
- c) remove stockpiles, plant, and machinery from the site;
- d) backfill worked-out areas;
- e) ensure all backfill areas and soil storage are appropriately seeded;
- f) ensure litter removal, weed control, and boundary treatment maintenance; and
- g) where appropriate, establish perimeter landscaping.

18.02 If aggregate development does not resume within a timescale specified by the County in its approval of the Interim Reclamation Plan, which shall be no more than five years from the date of the Plan approval, the Applicant/Owner shall be required to submit an alternative Reclamation Plan for permanent reclamation of the site. The alternative Reclamation Plan shall include the information required within Standard 18.03.

Final Reclamation

18.03 All applications for aggregate extraction and/or processing shall include a Reclamation Plan that includes the following information:

- a) a pre-extraction topographical survey plan, with cross-sectional drawings where the site has significant changes in grade across the subject land;
- b) a conceptual reclamation plan, showing proposed gradients across the site, final surface elevations, intended landscaping, wetlands, and drainage;
- c) a reclamation phasing plan, illustrating the sequence and anticipated timescales for reclamation;
- d) an assessment of the potential after-uses and the provision of associated plans, where applicable;
- e) an assessment of the likely volume of soils, overburden, and other reclamation materials available within the site for reclamation;
- f) details of the phased removal or alteration of buildings, structures, and internal roads, together with access provisions for the reclaimed site, and proposals for the decommissioning of any water wells on-site;
- g) details of progressive reclamation techniques, showing how the footprint of extraction and associated operations will be minimized by prompt reclamation of previously worked-out areas;
- h) a soil storage, handling, and placement strategy, together with details regarding the management of aggregate by-products;
- i) an assessment of any impacts of reclamation upon groundwater resources (including quality and groundwater rebound);
- j) details of final landscaping and habitat creation to remain on site following reclamation;
- k) proposal of any measures to enhance reclaimed land become established, including maintenance of the reclaimed lands; and
- l) a commitment to submitting site plans on an annual basis throughout the life of extraction and reclamation operations showing all soil movements and reclamation works undertaken in the previous year.



- 17.04** The Reclamation Plan shall also confirm whether any imported fill would be required to achieve the desired final landform. If so, the Reclamation Plan shall include the likely volume of fill required, and details on placement of the material. Unless specifically assessed as part of any redesignation and development permit application for aggregate development, the importation of fill will require a separate development permit controlled by the requirements of the Land Use Bylaw.
- 17.05** For existing aggregate sites that have an existing Reclamation Plan approved by the County and the Province, the Applicant/Owner shall update that existing scheme to meet the above information requirements.
- 17.06** All applications for aggregate extraction and/or processing shall include statements that the Applicant/Owner shall make reasonable efforts to ensure that the land be returned to a state in which it contributes to and enhances the natural environment. This may be achieved through habitat creation and landscaping that is sensitive to the local environment.
- 17.07** Upon reclamation of an aggregate extraction and/or processing site, the Applicant/Owner shall apply for redesignation of the lands to an appropriate agricultural land use district, subject to such agricultural uses being compatible with the requirements of the County's Land Use Bylaw and prevailing land uses in the surrounding area. Redesignation proposals for non-agricultural land uses shall be assessed in accordance with the relevant planning policies adopted by the County at the time of the application. All costs associated with redesignating the land back to an agricultural use shall be borne by the Applicant/Owner.

APPENDIX A: DEFINITIONS

Aggregate extraction and/or processing means development for the removal, extraction, or primary processing of any sand, silt, gravel, shale, clay, marl, limestone or gypsum that is excavated from the surface of a site, whether in a processed or unprocessed form, but does not include such material that is expected to be unsuitable for sale. Typical facilities or uses would include gravel pits (and associated crushing operations), asphalt processing, sand pits, clay or marl pits.

Ambient Sound Level means the total recorded sound level from all sources that currently exist in an area, excluding sound from the use or development being assessed. It includes sounds from other adjacent land uses (such as aggregate extraction, industrial, commercial, and agricultural), transportation sources, animals, and nature. For the purposes of this document, ambient noise levels shall be measured as LA90.

Animal Health Care Service means a development such as a hospital or shelter used for the temporary or overnight accommodation, care, treatment, or impoundment of animals both considered as domestic pets or farm animals. This would include pet clinics, animal veterinary clinics and veterinary offices with or without outdoor pens, runs and enclosures, but not kennels.

Berm means a constructed barrier of overburden or topsoil, seeded and often planted with trees and shrubs.

Blasting Operation means the controlled use of explosive materials or other methods to break up hard rock deposits within a pit, allowing for extraction and further processing of the material. The blasting operation starts when the charge is placed and ends when all explosives' materials are removed from the blasted area.

Child Care Facility means a development for the provision of care, instruction, maintenance or supervision of seven or more children under the age of 13 years, by persons other than one related by blood or marriage, for periods not exceeding 24 consecutive hours and includes all day-care centres, early childhood services, nurseries and after-school or baby-sitting programs which meet this definition.

Confined Feeding Operation means fenced or enclosed land or buildings where livestock are confined for the purpose of growing, sustaining, finishing or breeding by means other than grazing and any other building or structure directly related to that purpose but does not include residences, livestock seasonal feeding and bedding sites, equestrian stables, auction markets, race tracks or exhibition grounds.

dB means decibel, which is a widely used unit of measurement for sound energy.

dB(A) means a widely used unit of measurement that reflects the relative loudness of sounds in air as perceived by the human ear. It denotes decibels that have been A-weighted to reduce the measurement of low-frequency sound that is inaudible to the human ear.

dB(C) means C-weighted sound. It estimates the sensitivity of human hearing at noise levels above 85 dB(A). The C-weighted sound level is more sensitive to sounds at low frequencies than the A-weighted sound level and is sometimes used to assess the low-frequency content of complex sound environments.

Dwelling means any building or structure used principally for human habitation and which is supported on a permanent foundation or base. The building or structure must not be mobile and should have features that indicate a degree of permanence, such as electrical power or a domestic water supply. A

building or structure used principally for human habitation, located on land either owned by the Applicant or on land owned by another aggregate operator that is accessory to an aggregate extraction and/or processing development, shall not constitute a dwelling for the purposes of this document.

Educational Facility means any building used for instruction of enrolled students, including any nursery school, public or private school, college, university, or career and technical education school.

Expanding Aggregate Extraction and/or Processing means any development that would extend beyond the site boundaries defined by a previous land use and/or master site development plan approval, or by an existing development permit approval.

Free-field means a noise measurement that is taken at a distance from any sound-reflecting surfaces, such as walls, fencing, or other physical barriers.

Groundwater Table means the level below which the ground is saturated with water in a given vicinity.

Hard Mitigation means a mitigation measure which is a physical, technical or engineered solution to reducing impacts of a development. Examples may include the construction of berms, landscaping or installation of dust suppression equipment on machinery.

Inactive means a site, or any part of a site, in which development relating to a development permit for aggregate extraction and/or processing, or other works to which a condition of that development permit relates, is not being carried out to any substantial extent.

Institutional Building means a development that is used for institutional uses limited to animal health care services, child care facilities, educational facilities, medical treatment services, religious assembly and special care facilities.

LAeq means the equivalent continuous level when taking a noise recording. It is the average sound energy recorded over a specified period. For example, LAeq (1 hour) means the average sound energy recorded over a 1 hour period.

LA90 means a noise measurement used to establish the ambient noise level in an area. It represents the noise level that has been exceeded for 90% of the time under which a noise recording has been taken.

Land Use Bylaw (LUB) means Bylaw C-8000-2020, the Land Use Bylaw, as amended or replaced.

Low Frequency Noise refers the incidence where a clear tone is present below and including 250 Hz and the difference between the overall C-Weighted sound level and overall A-weighted sound level exceeds 20dB.

Medical Treatment Service means a development providing room, board, and surgical or other medical treatment for the sick, injured, or infirm including out-patient services and accessory staff residences. Typical facilities would include hospitals, sanitariums, nursing homes, convalescent homes, psychiatric hospitals, auxiliary hospitals, and detoxification centres.

Microgram (μg) means the widely used unit of measurement for particulate matter in assessing air quality and represents one billionth (1×10^{-9}) of a kilogram, one millionth (1×10^{-6}) of a gram, or one thousandth (1×10^{-3}) of a milligram.

Municipal Development Plan means Bylaw C-8653-2025, the Municipal Development Plan), as amended or replaced.

Overburden means material below the topsoil layer and above the aggregate to be extracted. This material often comprises loose sediment and material that is not an economically viable resource for extraction.

Qualified Acoustic Professional means an individual practicing as an acoustics professional in Alberta, holding a professional designation.

Qualified Air Quality Professional means an individual practicing as an air quality professional in Alberta, holding a professional designation.

Qualified Hydrogeological Professional means an individual practicing as a hydrogeological professional in Alberta, holding a professional designation.

Qualified Landscape Professional means a certified member of the Alberta Association of Landscape Architects holding an endorsement stamp or a County approved landscape professional.

Registered Professional Engineer means a professional licensed by the Association of Professional Engineers and Geoscientists of Alberta in their relative field.

PM_{2.5} means particulate matter 2.5 micrometers or less in diameter. It is used as a standard in the measurement of air quality, and represents the finer particles that are found in air. Both PM_{2.5} and PM₁₀ are inhalable and, therefore, have potential health impacts.

PM₁₀ means particulate matter 10 micrometers or less in diameter. It is used as a standard in the measurement of air quality. Both PM_{2.5} and PM₁₀ are inhalable and, therefore, have potential health impacts.

Progressive Reclamation means the method of restoring and reclaiming an aggregate site in phases concurrent with extraction activities, as opposed to reclaiming a site once extraction is completed in its entirety. Overburden and other reclamation materials are backfilled into the void left by previous activities, and then returned to the intended end use.

Religious Assembly means a development owned by a religious organization used for worship and related religious, philanthropic, or social activities and includes accessory rectories, manses, meeting rooms, classrooms, dormitories, and other buildings. Typical facilities would include churches, chapels, mosques, temples, synagogues, parish halls, convents, and monasteries.

Riparian Protection Area means the lands adjacent to naturally occurring watercourses, which the County has deemed necessary to protect by limiting certain forms of development within this area. The purpose and intent of the riparian protection area is to conserve and manage riparian lands. The riparian protection area is based on the Province of Alberta's "Stepping Back from the Water Guidelines: A Beneficial Management Practices Guide for New Development near Water Bodies in Alberta's Settled Region" as amended or replaced from time to time.

Site means any area of a lot or parcel upon which aggregate extraction and/or processing development is proposed or is undertaken.

Soft Mitigation means a mitigation measure that principally relies on the management techniques and behaviours of those undertaking a development to reduce the impacts of the development, rather than being a physical measure. Examples may include limiting hours of operation, driver training, or planning operations according to weather conditions.

Special Care Facility means a development which provides for the care or rehabilitation of one or more individuals in the case of a half-way house for five or more individuals in all other cases, with or without the provision of overnight accommodation, and includes nursing homes, geriatric centres, and group homes, but does not include hostels, child care facilities, and senior citizens housing.

TSP means total suspended particles and is a collective measurement unit for all airborne particles that are less than 100 micrometers in size.

Topsoil means the uppermost soils that comprise the surface of land, which are usually organically enriched.

Valued Ecosystem Components means an environmental element of an ecosystem that is identified as having scientific, ecological, social, cultural, economic, historical, archaeological or aesthetic importance. The value of an ecosystem component may be determined on the basis of cultural ideals or scientific concern.

APPENDIX B: SUMMARY OF GOVERNMENT LEGISLATION, GUIDELINES, BYLAWS AND STANDARDS

There are numerous overlapping legislations, regulations and codes at the provincial and federal levels that have varying requirements for the aggregate industry depending on the size of the aggregate extraction site, the ownership of the land on which the site is located, and whether the operator is from the public or private sector. The following is a list of some of the legislation and regulations that aggregate operators are likely to have to consider when planning or operating a site:

Federal

Species at Risk Act, SC 2002, c. 29

Migratory Birds Convention Act, SC 1994, c. 22

Fisheries Act, RSC 1985, c F-14

Canadian Navigable Waters Act, RSC 1985, c. N-22

Impact Assessment Act, SC 2019, c. 28, s-1

Federal Policy on Wetland Conservation

Fish and Fish Habitat Protection Policy

Provincial

Environmental Protection and Enhancement Act, RSA 2000, c E-12

Water Act, RSA 2000, c W-3

Public Lands Act, RSA 2000, c P-40

Municipal Government Act, RSA 2000, c M-26

Weed Control Act, RSA 2000 c W-5.1

Historical Resources Act, RSA c H-9

Public Health Act, RSA 2000, c P-37

Pipeline Act, RAS 2000 c P-15

Public Highways Development Act, RSA 2000 c P-38

Oil and Gas Conservation Act, RSA 2000, c O-6

Activities Designation Regulation, Alta Reg 276/2003

Code of Practice for Pits [made under the EPEA and Conservation and Reclamation Regulation Alta Reg 115/93

Conservation and Reclamation Regulation, Alta Reg 115/1993

Nuisance and General Sanitation Regulation, Alta Reg 243/2003

Water (Ministerial) Regulation, Alta Reg 205/98

Approvals and Registrations Procedure Regulation, Alta Reg 113/93

Community Aggregate Payment Levy Regulation, Alta Reg 263/2005

Alberta Wetland Policy

Environmental Protection Guidelines for Pits

South Saskatchewan Regional Plan

Federal Legislation

Several federal acts and policies may affect aggregate operations by imposing environmental protection requirements that must be addressed throughout project planning and execution. The *Species at Risk Act* and the *Migratory Birds Convention Act* require operators to avoid adverse impacts on listed species, their habitats, and migratory birds, including nests, particularly during sensitive periods such as breeding seasons. The *Fisheries Act*, along with the *Fish and Fish Habitat Protection Policy*, regulates activities that may result in the harmful alteration, disruption, or destruction of fish habitat, which may include waterbodies or wetlands located near aggregate sites.

Where aggregate operations interact with navigable waters, the *Canadian Navigable Waters Act* may apply, potentially requiring federal approvals or mitigation measures to preserve navigation rights. For larger-scale or high-impact projects, the *Impact Assessment Act* may trigger a federal environmental review to assess potential cumulative or significant effects. Additionally, the *Federal Policy on Wetland Conservation* promotes the protection and sustainable use of wetlands, and may necessitate the avoidance, minimization, or compensation of wetland impacts resulting from aggregate extraction and associated activities.

Provincial Legislation

In Alberta, as in other Canadian provinces, the regulation of aggregate development generally falls under provincial jurisdiction. To support the responsible development of aggregate extraction and processing operations, the provincial government has established a range of legislation, policies, regulations and guidelines. Private aggregate pits in Alberta are categorized into two groups: Class I and Class II, primarily based on size.

Class I pits are, at minimum, 5 hectares (12.5 acres) in size and are regulated under the *Environmental Protection and Enhancement Act* (EPEA) and its associated regulations. Class I pits are listed in the EPEA's schedule of activities that require approval under the EPEA. As such, any proposed Class I pit must receive approval from a designated director in accordance with the EPEA, thereby registering the pit.

In 2004, the Government of Alberta released the *Code of Practice for Pits*, which outlines specific requirements that Class I pits must follow, including the application process to obtain EPEA approval. Additionally, Class I pits must comply with the *Conservation and Reclamation Regulation*, which establishes the steps required for reclamation at the end of a pit's life.

In certain cases, activities associated with Class I pits may also fall under the scope of the *Water Act*. Where applicable, applicants must obtain additional approval under the *Water Act* before proceeding.

In contrast, Class II pits are smaller than 5 hectares (12.5 acres) and therefore do not require approval or registration under the EPEA. They are also not required to comply with the *Code of Practice for Pits*. However, Class II pits must follow the *Environmental Protection Guidelines for Pits* and all applicable provisions of the *Water Act*.

Since all pits, regardless of size, are designated as "specified lands" under Part 6 of the EPEA, Class II pits are also responsible for complying with the *Conservation and Reclamation Regulation*, which outlines the requirements for reclamation after the end of the pit's operational life.

As a landowner, the provincial government may lease land to aggregate operators for resource extraction or operate a pit directly. When the provincial government leases land to private operators, the regulations of the *Public Land Act* and the EPEA must be followed.

If the Province decides to operate the pit itself or delegates operation to a private operator to meet provincial needs, activities are regulated under the *Public Works Act*. However, the environmental provisions of the EPEA also apply to provincially operated pits.

As a landowner, the provincial government can also lease their land to aggregate operators to extract the resource or be the operator themselves. Where the provincial government, leases land to private operators, the regulations of the *Public Land Act* and EPEA shall be adhered to. Where the Province determines that they themselves will operate the pit or delegate the pit operation to a private operator for the purposes of meeting provincial needs the *Public Works Act* regulates activities. However, the environmental components of the EPEA also govern provincial pits.

In rare instances, the Natural Resource Conservation Board (NRCB) may be authorized to approve a private project. Although not explicitly identified within the *Natural Resource Conservation Board Act*, the minister may, through an Order in Council, refer an aggregate project to the NRCB for review.

When the NRCB grants approval for such proposals, Section 619 of the *Municipal Government Act* (MGA) states that any license, permit, approval, or other authorization issued by a provincial agency takes precedence over statutory plans, land use bylaws, or subdivision and development decisions made by a municipality under Part 17 of the MGA (Planning and Development). Section 619 further requires municipalities to approve land use applications to the extent that they comply with a provincially issued approval.

However, Section 619 primarily aims to prevent conflicts between municipal and provincial decisions and does not prohibit municipalities from addressing the same issues covered by provincial regulations, provided applicants can meet the requirements of both levels.

Municipal Legislation

The *Code of Practice for Pits* advises that the municipal role in aggregate operations primarily involves controlling land use and addressing issues such as hours of operation, buffers, noise, dust, haul routes, and traffic control through the development permit process. However, the municipal role can extend beyond these responsibilities, as the MGA allows municipalities to take a more comprehensive approach to aggregate development. As a response the County has developed this document to provide for a proactive approach in the management of future and existing aggregate operations.

In addition to the *Aggregate Development Performance Standards*, aggregate operations within the County must comply with the following legislation.

1. Rocky View County Bylaw C-8653-2025, Municipal Development Plan

The Municipal Development Plan is the County's highest-level statutory planning document. It provides strategic direction for growth, overall guidance for land use planning, and policies for service delivery. The Municipal Development Plan policies related to aggregate development can be categorized as follows:

- **General:** Establish general policies for the management of aggregate operations.
- **Locational Criteria:** Include a 1.6-kilometre buffer zone around lands identified as residential within an adopted area structure plan, and a 2.0-kilometre buffer zone around designated provincial parks.
- **Application Requirements:** Define the requirements for master site development plan applications referring back to this document and allow applicants to request relaxation of certain application requirements.
- **Application Reviews:** State that the County may request third-party reviews of technical information submitted as part of an application.

2. Rocky View County Bylaw C-8000-2020, the Land Use Bylaw

The County's Land Use Bylaw provides regulations governing development uses within the County and establishes land use districts where specific types of development are permitted. Historically, the County has utilized both standard districts identified within the Land Use Bylaw and site-specific districts known as Direct Control Districts. The Land Use Bylaw now includes a specific definition for aggregate extraction and processing activities. Moving forward, all proposed aggregate activities will require Council approval to redesignate the subject land to the Special – Natural Resource district.

The Land Use Bylaw now contains specific development permit application requirements for aggregate extraction and processing activities, which reference this document. Similar to the Municipal Development Plan, the Land Use Bylaw also allows applicants to request relaxations of these application requirements. Additional regulations have been introduced to address sites nearing completion and small-scale operations.

3. County Servicing Standards

The County's Servicing Standards establish the minimum design guidelines for all construction and development projects within the County and are intended to assist all parties involved in project completion. The Servicing Standards also outline the procedural requirements for specific items referenced in this document, such as Traffic Impact Assessments and Environmental Assessments, to be considered complete.

4. Rocky View County Bylaw C-8549-2024, the Regional Transportation Off-Site Levy Bylaw

The *Regional Transportation Off-Site Levy Bylaw* was established to require developers to contribute toward the costs of constructing new or expanded roads within the County. The bylaw applies to various new development and subdivision proposals, including aggregate development, and establishes a base levy charged per acre or hectare of development area, along with special area levies for developments near key road improvement zones.

5. Rocky View County Bylaw C-7748-2018, the Community Aggregate Payment Levy Bylaw

The MGA permits municipalities to impose a charge on aggregate development of up to \$0.40 per tonne of aggregate extracted from a site. In 2018, the County passed the *Community Aggregate Payment Levy Bylaw*, which allows the County to collect this levy to fund infrastructure and other municipal costs. The CAP Levy Bylaw is guided in part by the *Community Aggregate Payment Levy Regulation* (Alta Reg 263/2005). This regulation was reviewed by the Province in December 2024 and has been extended without change until December 31, 2029.

6. Rocky View County Bylaw C-8635-2025, the Aggregate Site Monitoring Bylaw

The *Aggregate Site Monitoring Bylaw* was established to authorize designated officers, operating under the Chief Administrative Officer, to conduct inspections of aggregate sites. The bylaw permits up to four inspections of an aggregate site within a 12-month period. Additional inspections may be carried out on a complaint-driven basis.

The purpose of these inspections is to ensure compliance with the conditions of an approved development permit. Where contraventions are identified, the County will work with the operator to address the issues; however, enforcement action may be taken if necessary.

APPENDIX C: NOISE IMPACT ASSESSMENT METHODOLOGY

General Guidance

Standard 4.03 sets sound level limits for outdoor noise, taking into consideration that the attenuation of noise through the walls of a dwelling should decrease the indoor sound levels to where normal sleep patterns are not disturbed.

Aggregate operators are encouraged to adopt and incorporate a best practices approach to noise management into their operating procedures. This may include such things as taking regular fence-line measurements around the site to determine if there are any significant changes to sound emanating from the facility and improving notification measures to neighbours of a planned noisy event.

It is suggested that new developments are designed with a suitable margin of safety (for example, 5 dB(A) LAeq below the sound levels set out within Standard 4.03 to cover absolute worst-case situations, possible low frequency noise, and a lapse of established mitigation measures to meet performance levels.

Noise Impact Assessment (NIA)

As part of an application for an aggregate development, the Applicant must show that the facility meets the requirements set out in Standard 4.01. It is advised that Applicants retain all supporting information relating to relevant surveys for reference if a noise complaint is received by the County.

An acceptable NIA report submitted to the County for the purpose of demonstrating compliance with Standard 4.01 must include (at a minimum) the following information:

- (a)** The direction and distance to the nearest or most impacted dwelling(s) and institutional building(s), together with identification of the sound level limit to be applied to the dwelling(s) or institutional building(s) in accordance with Standard 4.03 and a description of how that noise limit was calculated.

Noise Survey Locations

All noise surveys and modelling undertaken for the purposes of demonstrating an aggregate development's compliance with Standard 4.03 shall identify (on a map) the nearest or most impacted dwelling(s) and institutional building(s) and shall undertake ambient sound level recordings to establish the ambient sound levels at those dwellings and institutional buildings.

The number of dwellings and institutional buildings where recordings for ambient sound levels are undertaken shall be dependent on the characteristics of the aggregate development and other factors such as surrounding topography and intervening land uses. Generally, where there are several dwellings and/or institutional buildings located on a similar line of direction from an aggregate development that share a similar noise environment, recordings shall be taken from the nearest of those dwellings/ institutional buildings to establish the ambient levels for all properties. The acoustic specialist undertaking the sound level recording shall follow industry established practices in determining the number of required noise survey locations for any

assessment undertaken and shall describe their methodology for selection of noise survey locations in the relevant noise report submitted to the County.

Appropriate noise modelling shall be undertaken to determine limits for the selected noise survey locations in accordance with Standard 4.03. The identified limits shall be carried forward within any planning or development permit approval and compliance with the limits shall be monitored in accordance with any Noise Monitoring Program approved by the County.

Sound level recordings shall be undertaken 15 metres from the selected dwelling(s)/ institutional building(s) (or other appropriate free-field location) and under representative conditions. The 15 metre requirement may be altered if it is physically impossible or acoustically illogical. Another measurement location may also be chosen if the affected dwelling or institutional building is not an appropriate location or if the owner of the dwelling/ institutional building does not consent to the sound level recording being undertaken on their property. In such cases, those undertaking the ambient sound level recording shall note the recorded sound level and, using industry-recognized acoustic techniques, shall calculate the estimated ambient sound level at the affected dwelling or institutional building.

Noise Impact Assessments undertaken shall not only consider existing dwellings and institutional buildings, but also those permitted by the County that are under construction at the time of any survey being undertaken.

- (b)** Identification of all significant sources of noise from the proposed or existing facility and their associated sound power/pressure levels. Indication shall be given on the location from which the sound data is derived; for example, manufacturer specifications, field measurements or estimates. It should be noted that use of any estimates or extrapolation techniques can lead to inaccuracies and therefore is less reliable than actual field measurements made once the equipment is in place. When using manufacturer's data for expected performance, where appropriate, this data shall be modified to account for actual operating conditions. In identifying all significant sources of noise, the frequency and location (e.g. fixed or mobile) of each noise source shall also be indicated.
- (c)** Survey methodology information including:

 - type of model used (models or hand calculations may be used to obtain the predicted sound level;
 - standards selected, source directivity considerations;
 - ground absorption conditions;
 - meteorological parameters;
 - terrain parameters selected;
 - reflection parameters; and
 - any adjustments made. (Documentation of power level calculation assumptions made must be provided, e.g., source size considerations).
- (d)** Justification of survey methodology and a description of the steps implemented to reduce uncertainty in sound level measurement and calculation.

Noise Modelling

Differences can occur in predicted noise levels from noise modelling depending on such factors as the noise propagation algorithm used, input parameters, and sound pressure level calculations. The acoustic specialist conducting the noise modelling has the flexibility to choose the appropriate model. However, acknowledgement should be given within any submitted assessment of the limitations of the chosen model.

The chosen model must incorporate the following parameters:

- geometric spreading;
- barrier effects;
- atmospheric absorption;
- ground attenuation; and
- specific wind speed/direction.

Note that consideration should be given to

- source identification:
 - source size and location;
 - Isolation;
 - sound power level (PWL)-SPL spectrum data; and
 - Intermittency;
- mild downwind and/or temperature inversion conditions.

The following must be used in modelling summertime conditions for an acceptable NIA:

- wind speed: 5.0 to 7.5 km per hour (km/hr);
- wind direction: from the aggregate development to the dwelling(s)/ institutional building(s);
- temperature: 0 to 25 degrees Celsius;
- relative humidity: 70 to 90 per cent; and
- topography and ground cover: consistent with site conditions.

Noise modelling within the Noise Impact Assessment shall assess the noise impacts of a development as it will be implemented. For example, predicting sound levels of plant and machinery according to their operating levels and their potential to be moved around a site.

Noise modelling shall note the presence of any frequent impulse and/or tonal sounds that could be generated by the aggregate development operations, such as reversing alarms on vehicles. Where appropriate, the following corrections shall be applied to the forecast sound pressure level in order to recognize the increased potential for community disturbance in the generation of tonal and impulse sounds:

	Just Perceptible	Clearly Perceptible	Highly Perceptible
Tonal Sounds	+2dB	+4dB	+6dB
Impulse Sounds	+3dB	+6dB	+9dB

The correction(s) applied shall depend on the subjective assessment of how perceptible the tonal or impulse is. Where the specific sound has both tonal and impulse characteristics, both corrections may be applied depending on their combined ability to affect noise perception and tolerance. If one feature is more dominant, it may be more appropriate to apply a single correction.

Determining the Ambient Sound Level

Ambient sound level surveys shall be undertaken to determine the sound levels that currently exist in an area and to determine the level of allowable adjustment that can be applied under the limits stated in Standard 2.03. The ambient sound level shall include all current noise sources, other than those that are not typical of the usual local noise environment. For the purposes of assessment against Standard 2.03, ambient sound level recordings shall be taken as LA90 to exclude infrequent noise sources and give a realistic measurement of average sound levels.

An ambient sound level survey shall, at a minimum, consist of a continuous sound monitoring survey over the proposed/existing hours which the aggregate extraction and/or processing development are undertaken, with separate measured ambient sound levels presented for the daytime (7:00 a.m. to 10:00 p.m.) and (where applicable) nighttime (10:00 p.m. to 7:00 a.m.) periods.

The ambient sound level recording must be taken without the proposed/existing aggregate extraction and/or processing development operating.

Noise Survey Instrumentation

Instrumentation used to conduct sound monitoring surveys must be able to measure the A-weighted (dB(A)) (or C-weighted (dB(C)) for low frequency noise investigations) continuous energy equivalent sound level (LAeq) of steady, intermittent, and fluctuating sounds. It must be able to accumulate the data and calculate the LAeqs over the time periods required and must meet the minimum technical specifications in the International Electrotechnical Commission (IEC) standard 61672-1:2013, or its latest revision, for Class I sound level meters.

Low Frequency Noise

A-weighting measurements typically discount the lower frequencies. Therefore, lower frequency noise may be a problem in some situations where the dB(A) value meets the limits set out within Standard 2.03, but the concern is a dominant low frequency that increases annoyance levels at nearby dwellings or institutional buildings. Due to the complexity of determining lower frequency noise, this is a specialized investigation. In the event of a complaint being received that indicates the potential for low frequency noise impacts, the aggregate operator shall agree upon a scope of investigation with the County.

Excluded Matters



Where this document is silent on an item relating to appropriate noise recording and reporting methods, the Applicant shall follow guidance set out within Directive 038: Noise Control, adopted by the Alberta Energy Regulator and Rule 012, adopted by the Alberta Utilities Commission.

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APPENDIX D: GROUNDWATER MONITORING PLAN METHODOLOGY

General Guidance

Standard 11.07 sets that all applications for new or expanding aggregate extraction and/or processing shall include a Groundwater Monitoring Plan. A Groundwater Monitoring Plan shall be undertaken with the methodology described below.

Qualified Professional

The activities included as part of the Groundwater Monitoring Plan shall be undertaken by a qualified hydrogeological professional. This includes Professional Engineers (P.Eng.) with a specialization in hydrogeology or a practitioner with graduate-level qualifications and demonstrated experience in hydrogeological assessments or similar.

Determining Water Table Level

Standard 11.06 states that as part of the Groundwater Impact Assessment, the groundwater table level should be explicitly stated. This measurement shall be used as the reference for the Groundwater Monitoring Plan.

Sampling Timing

Groundwater samples shall be collected on a semi-annual basis (autumn and spring) by an independent qualified hydrogeological professional. Where an independent qualified hydrogeological professional deems it acceptable, sample collection may be reduced to an annual basis. The Applicant/Owner shall provide the qualified hydrological professionals recommendation to County within five business days of receiving it.

Sampling Procedures

The independent qualified hydrogeological professional shall utilize scientifically acceptable purging, sampling, and preservation techniques. Groundwater elevation levels shall be monitored through a data logger that is programmed to take readings every hour.

Testing

Testing shall include the following and any additional testing as recommended by an independent qualified hydrogeological professional:

- geodetic referenced groundwater elevation levels;
- analysis of groundwater samples for general chemistry parameters, metals and any other analyte deemed appropriate

Annual Reporting

An independent qualified hydrological professional shall prepare an annual groundwater monitoring report which shall include the following information:

- description of information;
- map of groundwater monitoring network and description of monitoring program;
- summary of geodetic water levels and interpretation of groundwater flow system; and

- summary of analytical data as required and interpretation of the data collected since the monitoring program began, including:
 - plots showing trends in parameter concentration;
 - comparison of measured parameter concentration to Canadian Drinking Water Standards;
 - remedial action, if required; and
 - recommendations for changes to the Groundwater Monitoring Plan.

The annual groundwater monitoring report shall summarize all data collected to evaluate trends and highlight areas of concern. This report shall be submitted as part of the annual reporting to the County as outlined in Section 3.

All reports shall be made available to the public upon request. The County, or a third party appointed by the County, shall review the results of the analysis and may, in collaboration with Alberta Environment and Parks, require further necessary actions to ensure that water quality and flows are compliant with applicable Provincial and Federal requirements.

Additional Considerations

To prevent permanent dewatering of the aquifer, temporary dewatering (groundwater diversion) of groundwater during aggregate extraction and/or processing operations shall be artificially recharged, under the direction of a qualified hydrogeologist professional, utilizing deep recharge pits (sumps) to a depth in contact with the formation and aquifer, to prevent the decline of groundwater levels within the buried sand and gravel aquifer. Groundwater levels will be measured periodically in all wells to measure the performance of the artificial recharge.

A *Water Act* authorization shall be obtained prior to any groundwater being diverted or pumped anywhere except back into the deep recharge pits (sumps).

To prevent the run in of contaminants to a pit where gravel is being extracted adjacent to a rail line or road, surface diversion berms shall be constructed to divert contaminants in the event of a surface spill, if required.