

**VERMONT AGENCY OF NATURAL RESOURCES**  
**VERMONT GEOLOGICAL SURVEY PRACTICE FOR REVIEW**  
**OF SAND AND GRAVEL EXTRACTION ACTIVITIES**  
**UNDER ACT 250 CRITERIA 9D AND 9E**  
DECEMBER 2016

This practice provides the general elements the Vermont Geological Survey (VGS) deems necessary for an Act 250 applicant to address Criteria 9D and 9E related to the extraction of sand and gravel. When a project is proposed, VGS and the Agency of Natural Resources (Agency) Office of Planning and Policy (OPP) review the application materials to determine whether the information provided by the applicant is sufficient. Additional information or modifications may be requested based on the particular aspects (size and nature) of the individual project. Once a comprehensive set of information is reviewed, the Agency will determine whether the proposed project sufficiently avoids, minimizes or mitigates impacts in accordance with Criteria 9D and 9E.

Permits and information required by entities other than the Agency of Natural Resources or addressing other Act 250 Criteria are not described below, such as a Multi-Sector General Permit, Stormwater Construction General Permit, applicable local and municipal ordinances, etc.

The section below describes the minimum information necessary to satisfy the Agency's review of Criterion 9D.

CRITERION 9D: **“Earth Resources.** A permit will be granted whenever it is demonstrated by the applicant, in addition to all other applicable criteria, that the development or subdivision of lands with high potential for extraction of mineral or earth resources will not prevent or significantly interfere with the subsequent extraction or processing of the mineral or earth resources.”

To satisfy Criterion 9D, the applicant must demonstrate that the proposed project would not have the potential to prevent or significantly interfere with future earth or mineral resource extraction at the project site.

The applicant will compare the site location maps with mineral resources maps and other available geologic data to see if an identified earth resource is located in the project area. The information is present on the Agency's [Natural Resource Atlas](#) (Atlas)<sup>1</sup> in two data layers: **USGS Mineral Resource Data System** and **Sand and Gravel Deposit Resources**.

If no resource exists, no further action is required. Some resources may be considered unavailable because of the following land uses: a) built-up areas, b) critical habitat, c) public water source protection areas, and d) public lands.

If such a resource exists, determine whether the project is likely to interfere with the future extraction of the potential resource. The applicant will provide a statement describing the basis for the

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<sup>1</sup> [Natural Resource Atlas, http://anrmaps.vermont.gov/websites/anra5/](http://anrmaps.vermont.gov/websites/anra5/)

determination and will provide two maps to support their determination: 1) a general location topographic map at a scale of 1:24,000 which shows all land, water, existing quarries or sand and gravel operations, and built environment features within a two-mile radius of the site, and 2) a site plan showing the current and proposed (final) extent of the project. If the applicant's statement is accepted by VGS, this Criterion 9D will be considered satisfied. If there is a likelihood that the proposed project will prevent or significantly affect the extraction or processing of the material, then meetings may be held with VGS and OPP to discuss solutions or modifications to the project.

The remainder of this practice describes the minimum information necessary to satisfy the Agency's review of Criterion 9E.

**CRITERION 9E: "Extraction of Earth Resources.** A permit will be granted for the extraction or processing of mineral and earth resources, including fissionable source material:

(1) when it is demonstrated by the applicant that, in addition to all other applicable criteria, the extraction or processing operation and the disposal of waste will not have an unduly harmful impact upon the environment or surrounding land uses and development; and

(2) upon approval by the district commission or the board of a site rehabilitation plan which insures that upon completion of the extracting or processing operation the site will be left by the applicant in a condition suited for an approved alternative use or development. A permit will not be granted for the recovery or extraction of mineral or earth resources from beneath natural water bodies or impoundments within the state, except that gravel, silt and sediment may be removed pursuant to the regulations of the water resources board, and natural gas and oil may be removed pursuant to the rules of the natural gas and oil resources board."

## **SUBMITTAL OF SAND AND GRAVEL EXTRACTION PLAN**

To satisfy Criterion 9E, applicants for sand and gravel operations will need to include in their applications four general types of plans: (1) scope of work, (2) present site conditions, (3) operational plans, and (4) reclamation plans.

### **1. Scope of Work Plans** - Describe the intended scope of work and identify:

- a. Proposed length of operation (whether year-round or seasonal),
- b. The planned size of operation (expected annual production and final size),
- c. The number of daily truck trips expected,
- d. Whether crushing, screening or washing equipment will be on-site.
- e. Will bedrock be removed or will explosives be used?

Frequently, the intended size of an operation changes over time. Expansions of projects may require amendments to the current land use permit. The applicant is encouraged to identify and

account for anticipated changes to the size and scope of mining, quarrying, and sand or gravel extractions.

Before a sand and gravel pit reaches bedrock and identifies the need to remove bedrock or other materials using explosives, or plans to transition to become a rock quarry, an amendment to the Act 250 permit will be required. Additional Agency permits and practices covering other criteria must also be satisfied. If blasting is required for the project and blasting will disturb more than 5,000 cubic yards (yd<sup>3</sup>) of undisturbed earth resources (rock) in one year, the following practices must be followed: **VGS Practice for Review of Rock Extraction under Act 250 Criteria 9D and 9E; DWGPD Practice for Review of Groundwater Monitoring Plan under Act 250 Criteria 1 and 9E; and DEC Best Management Practices for Blasting to Avoid Environmental Contamination.**

**2. Present Site Conditions** – Two maps are required: a general location topographic map and a site plan. The Agency recommends the use of several maps, rather than including all the requested information on one large cluttered map.

a. **General project location** – identify site on a topographic map at a scale of 1:24,000 and include at least a 2 mile around radius around the site.

b. **Site plan** at an appropriate scale to show required details with at least:

- i. current land elevation contours;
- ii. existing roads, if any;
- iii. surface water drainage features - lakes, ponds, wetlands, streams and rivers;
- iv. cultural and/or historic landmarks or features;
- v. location of nearby public and potable (non-public) water supplies, including dug wells and springs; include available well completion reports;
- vi. relative position of the groundwater table based on 2 -5 or more test drill holes, dug holes or existing groundwater information (i.e. field located wells or springs and associated well completion reports).

c. **Design Criteria**

- i. The pit shall not be deeper than three feet above the seasonal high groundwater table. If the groundwater table is encountered, cease operation in that area and contact the Water Resources Section of the Drinking Water and Groundwater Protection Division for advice.
- ii. Locate on the site map any test pits and sample drilling sites along with the results of these test pits and borings.
- iii. Indicate plans for aesthetic quality control, such as plantings, dust fences, and other dust control measures.
- iv. **Isolation distances are those in statute and in Agency Rules and practices.**

The pit or area of excavation should be no less than:

- 200 feet from a Public Community Water Supply source(s);
- 25 feet from a Class 3 wetland;
- 50 feet from a Class 2 wetland;
- 100 feet from a Class 1 wetland;
- 50 feet from surface waters);
- 25 feet from the property boundary.

### 3. Operational Plans

- a. Indicate all plans for phasing and staging development. The sand and gravel pit should not operate an area greater than five acres at one time. This is to ensure that reclamation occurs before an area becomes too big to reclaim effectively. If the proposal is for a large area, the extraction of the sand and gravel should occur in phases — e.g. extract sand or gravel from the first phase (up to five acres), start extraction from the next phase (up to five acres), while concurrently reclaiming the first phase five acres. This sequence of operation should continue throughout the life of the pit.
- b. Identify stockpile areas for stripped topsoil, debris (stumps, brush, etc.), size-screened products, and overburden material **in accordance with Multi-Sector General Permit (MSGP) and/or Construction General Permit (CGP) permit conditions**. Topsoil removed should be stockpiled and saved for the reclamation of the land. The topsoil stockpile(s) should be protected from erosion through seeding or some other method. There should be run-off control around the topsoil stockpile until the stockpile is stabilized. Whenever possible, enough topsoil should be saved to allow a minimum of four inches of topsoil in the reclaimed area. Refer to the [Vermont Standards and Specifications for Erosion Prevention and Sediment Control Handbook \(2006, updated 2008\)](#).<sup>2</sup>
- c. Include a detailed plan and narrative for erosion control and identify the location on the plans where the measures are to be used in accordance with MSGP and/or CGP permit conditions. Run-off should be controlled during and after the operation of the pit. Wherever possible, the pit floor should be sloped into the working face, to allow water to infiltrate into the ground, rather than running off and causing sediment problems. Run-off and storm water management must comply with the **Vermont Standards and Specifications for Erosion Prevention and Sediment Control Handbook (2006, updated 2008)**.

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<sup>2</sup> Vermont Standards and Specifications for Erosion Prevention and Sediment Control Handbook (2006, updated 2008), [http://dec.vermont.gov/sites/dec/files/wsm/stormwater/docs/StormwaterConstructionDischargePermits/sw\\_vt\\_standards\\_and\\_specifications\\_2006\\_updated\\_2\\_20\\_2008.pdf](http://dec.vermont.gov/sites/dec/files/wsm/stormwater/docs/StormwaterConstructionDischargePermits/sw_vt_standards_and_specifications_2006_updated_2_20_2008.pdf)

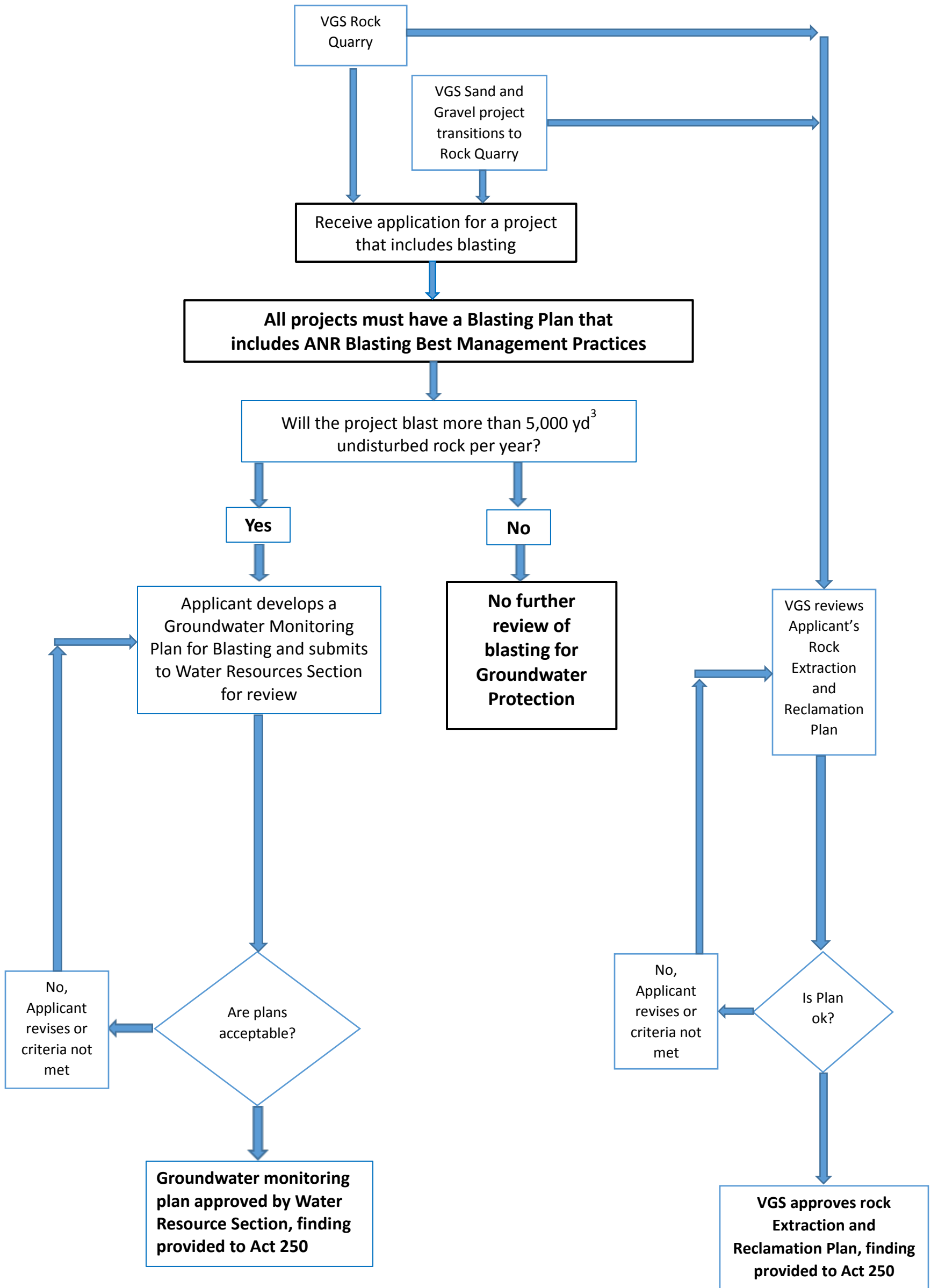
#### 4. Reclamation Plans

- a. Show phased and final contours and alternatives for land use after reclamation. Identify the procedures to be followed for reclaiming the site in accordance with the **Vermont Standards and Specifications for Erosion Prevention and Sediment Control Handbook (2006, updated 2008)**.
- b. Slopes should not exceed 2 horizontal: 1 vertical. Drainage pattern(s) should be clearly marked.
- c. The plan should discuss and show how the reclamation will be monitored and how remediation will occur, if reclamation is not working.

**VERMONT AGENCY OF NATURAL RESOURCES REVIEW UNDER ACT 250**

**CRITERIA 9D AND 9E: Decision Flow Chart for Projects involving Blasting and Earth Extraction**

December 2016



Relevant Practices:

**DWGPD Practice for Review of Groundwater Monitoring Plan under Act 250 Criteria 1, 3 and 9E**

**VGS Practice for Review of Sand and Gravel Extraction under Act 250 Criteria 9D and 9E**

**VGS Practice for Review of Rock Extraction – Quarries under Act 250 Criteria 9D and 9E**

**DEC Best Management Practices for Blasting to Avoid Environmental Contamination**