



# Sanborn, Head & Associates

*Consulting Engineers & Scientists*

## OPERATIONS PLAN

**Tailings Management Areas  
Verpol Plant  
Florence, Vermont**

*Prepared for*  
**Omya Inc.**

*Prepared by*  
**Sanborn, Head & Associates, Inc.**

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## **1.0 INTRODUCTION**

This Operations Plan was prepared for the tailings management areas (TMAs) at the Omya Inc. (Omya) Verpol Plant located in Florence, Vermont. This Plan is a component of the Interim Certification Application for the TMAs, and was prepared in accordance with the following requirements of the Vermont Solid Waste Management Rules (VSWMRs):

- Subchapter 7 (i.e., Operation Standards), Section (§) 6-701 (i.e., General Standards Applicable to All Facilities);
- Subchapter 7, §6-702 (i.e., Standards for Disposal Facilities), Paragraph (d) (i.e., Discrete Disposal Facilities);
- Subchapter 7, §6-703 (i.e., Reporting); and
- Subchapter 7, §6-704 (i.e., Record Keeping).

The remainder of this Plan is organized as follows:

- General site information is presented in Section 2.0;
- The operation of the TMAs is described in Section 3.0;
- Reporting is described in Section 4.0;
- Record keeping is described in Section 5.0;
- Training of site personnel is addressed in Section 6.0; and
- Nuisance control is described in Section 7.0.

## **2.0 GENERAL SITE INFORMATION**

The Omya Verpol Plant is located in Florence, Town of Pittsford, Rutland County, Vermont on approximately 385 acres. Calcium carbonate (an amendment to products such as paint and plastics) is produced at the Verpol Plant from which a tailings product is generated. Initially the tailings product is in a slurry form comprised of approximately 99.6 percent crushed rock that, based on grain size analyses, may be described as sandy silt, and chemical compounds utilized in the production process, most notably a flotation reagent. TMAs are located on the same property as the production facility that generates the tailings product, in former quarry areas. The quarry areas are identified as: (i) the Dolomite (aka Hard Rock) Quarry; (ii) the Kane & Drake Quarry; and (iii) the Loveland (aka Dog Leg) Quarry. The locations of the quarries are shown on Sheet 1 of the Engineering Drawings (see Part D-2 to the Interim Certification Application).

The tailings product slurry is initially dewatered in settling cells located east of the former Loveland Quarry. Periodically the tailings product in the settling cells is excavated and transported to the Kane & Drake and Dolomite TMAs. Therefore, Omya controls the handling and management of the tailings product and keeps the material separate from wastes generated at the Verpol Plant. Furthermore, only on-site roads are used to transport the tailings product to the TMAs.

For purposes of this application, only the Dolomite Quarry and the Kane & Drake Quarries, together with the settling cells utilized to dewater the tailings product, are proposed for use during the term of the Interim Certification to meet the operating needs and requirements of the Verpol Plant.

Sheet 1 presents the grading in the TMAs as of July 7, 2005. As shown on Sheet 1, placement of the tailings product in the TMAs has been performed with the objective of approximating the elevation of the immediately surrounding areas. The outer slopes of the TMAs are currently inclined no steeper than about 2.5 horizontal to 1 vertical (2.5H:1V).

It has been Omya's intention to retain control over the tailings product, with the goal to recover the significant calcium carbonate content as technology permits, to find alternative uses for the tailings product, or to use the tailings product to reclaim depleted quarry operations on site. Approval for the approach was obtained in initial, and subsequent amendments, to the Act 250 permit for the development of the Verpol Plant.

Tailings product initially was placed in the Kane & Drake Quarry starting in 1979. Prior to placing tailings product in the Kane and Drake TMA, Omya constructed a retaining embankment along the open (east) side of the quarry using shot rock. The retaining embankment also allows for vehicular access around the TMA perimeter. The retaining embankment averages between 20 and 30 feet tall, is about 20 feet wide at the top, and was constructed with exterior and interior sideslopes inclined at 2H:1V.

The Dolomite Quarry has been used as a TMA since 2000. With the exception of an area formerly used as an access way for trucks, the Dolomite Quarry TMA is bounded by rock walls developed during quarry operations. The truck access way was replaced with an engineered retaining structure also approved by the state.

The Loveland Quarry has received tailings product since 1979. The Loveland TMA currently contains the least amount of tailings product, deposited primarily as part of the dewatering process.

Visual observations indicate that the tailings product existing slopes of the TMAs are stable (i.e., no sloughing) and are capable of sustaining vegetation. The portions of the TMA slopes that have been vegetated (using a soil conservation seed mix) do not show signs of significant erosion or other distress.

For the purposes of the Interim Certification application, only the Kane & Drake and Dolomite TMAs are proposed. Omya reserves the right to apply for additional TMA capacity in the Loveland TMA and other areas in the future.

## **3.0 OPERATIONS**

### **3.1 Operating Hours**

The Verpol Plant is in operation seven days a week, twenty-four hours a day. However, actual physical handling of the tailings product has been, and will continue to be, performed during the hours of 6:00 a.m. to 6:00 p.m., Monday through Saturday.

### **3.2 Dewatering**

The tailings product slurry is pumped into one of the two settling cells at a solids content that is typically greater than 7 percent. The solids in the tailings product slurry is allowed to settle in the cells and the decant water is removed and recycled back into the production process. The volume of water that is retained in the cells is regulated by an outlet structure that has a variable height weir. The weir height is set to maintain a minimum amount of water over the material. As the volume of tailings product in the cell is increased, the weir is raised to accommodate the increased volume, while minimizing the volume of decant water retained.

Currently, each cell holds about 6 months of tailings product. Once a cell is filled, the decant water is pumped off and recycled back into the production process, and the remaining material is allowed to further dewater for another 1 to 2 weeks. The dewatered tailings product in the settling cells is periodically excavated and transferred to the TMAs.

### **3.3 Transportation to TMAs**

The tailings product is removed from the settling cells using an excavator, which loads the material into 30-ton off-road dump trucks. These dump trucks have sealed tailgates to minimize the amount of material that can be fall out during the haul to the TMAs. The tailings product is first excavated around the inlet to the settling cell, which is where the coarser-grained, lowest moisture content tailings product is located, and accounts for approximately 40 percent of the cell volume. The remaining 60 percent of the tailings, which are located away from the settling cell inlet, is a finer-grained material with higher moisture content. Currently, tailings product that exhibits the lowest moisture content is hauled to the Dolomite TMA, while the higher moisture content material is hauled to the Kane and Drake TMA.

### **3.4 Placement in TMAs**

#### ***3.4.1 Introduction***

The placement of the tailings product in the TMAs is dependent on the moisture content of the material. Specifically, the lower moisture material is hauled to the Dolomite TMA where it can be graded upon placement; the higher moisture material is hauled to the Kane and Drake TMA, where it is placed in drying cells.

### ***3.4.2 Dolomite TMA***

The lower moisture content tailings product is hauled to the Dolomite TMA and graded using a bulldozer or excavator to shed stormwater; no compaction is performed except to create the outer slope of the TMA. The outer slope of the Dolomite TMA is constructed with tailings product that is placed in 2 to 3-foot thick lifts and tracked over with the excavator or bulldozer; a 6-inch thick layer of stone is incorporated to increase the strength of the compacted tailings. Stormwater and residual decant water are drained from the inner area of the TMA through a weir system to a penstock and then to the existing process water management system.

### ***3.4.3 Kane & Drake TMA***

The higher moisture content tailings product is hauled to the Kane & Drake TMA and placed in drying cells that are bounded by berms constructed from low-moisture content tailings product. The berms are constructed in 2 to 3-foot thick lifts and the tailings product is tracked over with the excavator or bulldozer; a 6-inch thick layer of stone is incorporated to increase the strength of the compacted tailings.

The higher moisture content material is allowed to dry over a period of 12 to 16 weeks. Stormwater and residual decant water are drained from the inner area of the TMA through a weir system between the individual TMA cells and pumped to the existing process water management system. Once dry, a portion of the tailings are excavated and used to increase the height of the berms thereby increasing the storage capacity of the TMA. The berms constructed on the east, south most, and north sides of the Kane & Drake TMA are the outer slopes of the TMA.

### ***3.4.3 TMA Maintenance***

Once an area has reached a desired elevation, the area is graded to promote stormwater runoff and a sample of the tailings is obtained for nutrient testing. In order to minimize erosion and dust generation, the newly placed tailings product is seeded, fertilized, and mulched within days of placement. Grass grows very quickly on the tailings product, providing a lush cover in a matter of weeks. Once vegetation is established, fertilizer is added to maintain the vigorous plant growth. Because of the alkalinity of the tailing product, additional nitrogen from fertilizer and the seeded legumes is needed to continue the lush growth.

Maintenance of berms and finished areas is performed regularly. Roads around the TMAs are graded to remove accumulated tailings product that may have fallen off the truck tires as they are hauling material. Also, erosion identified on the containment berms or TMA outer slopes is quickly filled and reseeded. Established stands of grass are fertilized annually to continue the sod/soil building process and minimize the potential for erosion.

### **3.5 TMA Filling Sequence**

The TMAs will be filled in general accordance with the sequence plans presented on Sheets 3 through 10 of the Engineering Drawings (see Part D-2 to the Interim Certification Application). As required by §6-702(d)(7), the final cover system is to be constructed within 90 days of attaining final grade or capacity, or from the last date of receipt of tailings product. In addition, grass or ground cover is to be established within four months of constructing the final cover system, weather conditions permitting. See Part D-4 of the Interim Certification Application for detailed information regarding closure of the TMAs.

### **4.0 REPORTING**

In accordance with §6-702(d)(7) and §6-703(b) and (c) of the VSWMRs, Omya will provide the Vermont Department of Environmental Conservation (VTDEC) with the following reports:

- Notification that the facility has reached final grade or capacity limit;
- Report of non-compliance, if any, with the certification requirements, within five days of receipt of such information;
- Verbal report of a discharge or emission, if any, from the TMA that poses a threat to public health and safety, a threat to the environment, or the creation of nuisance, within twenty-four hours of the event; and
- Written report of a discharge or emission, if any, from the TMA that poses a threat to public health and safety, a threat to the environment, or the creation of nuisance, within seven days of the event.

Omya will also notify the local health officer and the Board of Selectpersons of the Town of Pittsford regarding a discharge or emission from the TMA, as noted above, within the same timeframe as used for the VTDEC (i.e., verbal – twenty-four hours; written – seven days). In addition, Omya will also prepare other reports required by Interim Certification, to include, but not limited to groundwater and surface water quality monitoring reports.

### **5.0 RECORD KEEPING**

In accordance with §6-704 of the VSWMRs, Omya will maintain the following records at the facility:

- A copy of the Interim Certification Application, modifications thereto, and VTDEC approvals;
- Copies of quarterly reports submitted to VTDEC as required by certification; and
- Copies of reports, records, data, or other information required by certification.

The above records will be maintained in a dry secure location through the end of the post-closure period until Omya receives written notification from VTDEC authorizing the cessation of record keeping.

## **6.0 TRAINING**

Omya retains a local contractor to perform the handling and placement activities associated with the tailings product. The contractor is responsible for training its personnel and meeting Omya's and regulatory safety requirements. Each of the contractor personnel associated with the tailings product handling and placement activities has no less than 24-hours of training in accordance with Mine Safety and Health Administration (MSHA) Regulations.

In accordance with MSHA Regulations, prior to working on a new task the contractor provides health and safety training to employees assigned to a task that they have no previous work experience. This training also includes the specific aspects of the assigned task, including safe work procedures, information about the physical and health hazards in and around the work area, the protective measures that can be taken to mitigate hazards, and the contents of the Omya's Hazard Communication program.

The contractor also provides each employee assigned to the TMAs with no less than 8 hours of annual refresher training, as required under MSHA Regulations. This training includes instruction on changes at the TMAs that could adversely affect the employee's health or safety and other subjects that are relevant to operations at the TMAs.

## **7.0 NUISANCE CONTROL**

Nuisance issues typical of municipal solid waste landfills (e.g., vermin, odors, litter, and dust) related to the tailings product or the operation of the TMAs are not anticipated. The tailings product, being primarily an earthen material, is not a food source for vermin, a source for odors, nor does it generate litter. Furthermore, by the very nature of the tailings product, which is produced, handled, and placed in a damp condition, is not a source for dust generation.

As noted in Section 3.0 of this Plan, the handling and placement of the tailings product performed under controlled conditions. On the occasion when site access roads are dry, operations personnel use water tank trucks to treat the roads and other accessible areas to prevent dust generation. Furthermore, once the exterior slopes of the TMAs reach final grade, the tailings product is seeded, fertilized, and mulched.