Taves Management Inc.

(and sudsidiary Transand Inc.)

Mirror Dry Bulk Facility

SE 29-40-22 W4M

1 Introduction

1.1 Purpose

The purpose of the Mirror Dry Bulk Facility Outline is to describe the development objectives and proposed land use for a parcel of land, directly west of the Hamlet of Mirror, located in Lacombe County. The overall intent of the facility is to move the high-quality product closer to the end users. In doing this it will help reduce the amount of truck traffic on the roads and allow the end user to become more efficient.

1.2 Location

The Planned Development Area can generally be described as the SE 29-040-22 W4M located directly west of the Hamlet of Mirror on the North side of Highway 50 and on the west side of Range Road 224. As shown on **Figure 1 - Location Plan**.

The Mirror Dry Bulk Facility Plan, land title 162 132 105, is owned by George Ray and Ida Slanzi which consists of 148.813 ac.

1.3 History

Historic land use of the Plan Area is agricultural in nature. As stated by the current Landowner the property was broke-up and then grain farmed until the late 1970's or early 1980's and then seeded down to pasture. The current land use of the property is pasture.

Historical Resources

Alberta Culture and Tourism's *Listing of Historic Resources (*November 2018) did not identify any areas of importance.

1.4 Surrounding Development

1.4.1 Residential Development

The Plan Area is surrounded by the Hamlet of Mirror to the east, a farm yard to the north and south, and an acreage located on the same quarter directly west of the development area.

1.4.2 Railway

A CN rail spur line is located on this property, that is regularly used by CN as a turnaround for their locomotives. The spur line crosses Range Road 224 and then enters the east side of the property.

Located on Heavy Industrial Zoned land, CN operates a large rail yard which runs along the east boundary of the Plan Area. This is a great advantage, as there will not be a need to install additional rail crossings and the nearby residents are accustomed to the rail traffic.

1.4.3 Nearby Amenities

Automotive and Commercial Vehicle Repair

Located approximately 500-meters to the South and East in the Hamlet of Mirror is a full-service tire and auto repair center. Integra Tire offers tire and auto repair services for automotive and commercial vehicles with Journeymen mechanics, two 3rd year apprentices, and 2 after-hours service trucks.

FIGURE 1 - Location Plan

Mirror Dry Bulk Facility Outline Plan

2 Planning Context

The following relevant documents have been reviewed, referenced, and prepared in preparation of the Mirror Dry Bulk Facility Outline Plan.

2.1 SUPPORTIVE PLAN

2.1.1 Historical Resource Impact Assessment

Alberta Culture and Tourism's *Listing of Historic Resources* (November 2018) did not identify any areas of importance.

2.1.2 Geotechnical Investigation

A Geotechnical Investigation was completed for the Plan Area in January 2019 by Union Street Geotechnical Ltd. The Geotechnical Investigation provided a description of the Plan Area's existing topography, soil profile, and groundwater table

Recommendations

The Geotechnical Investigation identified a variety of recommendations for construction in the Plan Area. These recommendations address site grading and earthworks, pile design and development, and roads. The main geotechnical concerns were generally regarding the high-water table and soil drainage; as such, several recommendations were made to address site construction within the Plan Area.

All recommendations are available in the Geotechnical Investigation, submitted to Lacombe County under separate cover.

2.1.3 Biophysical Impact Assessment

A Biophysical Impact Assessment (BIA) was completed by Maywood Environmental Ltd. in May 2019 to identify environmentally sensitive areas within the Plan Area. Natural features observed within the Plan Area are described in **Section 3.1 Environmental Considerations.**

Recommendations

Based on the information collected through the desktop search, no environmental feature requiring protection or to provide public access to or along lakes and rivers were noted. The April 28, 2019 field reconnaissance confirmed the finds of the desktop analysis.

2.1.4 Stormwater Management Report

The *Mirror Dry Bulk Facility Stormwater Management Report* was completed by Tagish Engineering Ltd. in April 2019 to demonstrate that the proposed stormwater management facility for the Mirror Dry Bulk Facility will meet Alberta Environment and Parks' criteria for permissible release rate and water quality improvement.

The proposed stormwater servicing for the development is described in **Section 4.3.3 Stormwater Drainage**.

2.1.5 Transportation Memo

Al-Terra Engineering Ltd. prepared a transportation memo for the Mirror Dry Bulk Facility development in January of 2019. The memo analyzed the potential traffic impacts of the proposed development on the surrounding roadway network.

Recommendations

According to the memo, it was determined that the existing intersection should be upgraded to a proper Type 1 intersection to allow for a "B-Train" tractor trailer to turn safely.

3 Existing Conditions

As described throughout this section, the Plan Area is undeveloped agricultural land accessible by Range Road 224. As shown on **Figure 2 Existing Conditions**, there are no built structures within the Plan Area.

3.1 ENVIRONMENTAL CONSIDERATIONS

3.1.1 Rare Plants

Historical records of rare plant databases returned that no rare plant communities or rare species were detected within the project footprint. This was also confirmed on the April 28, 2019 field visit.

3.1.2 Wetland

A Review of the Alberta Merged Wetland Inventory in GeoDiscovery Alberta on January 20, 2019, located several potential marshes within the site. Using Historical photos, the potential marshes do not appear to be within the footprint of the development. This was also confirmed on the April 28, 2019 field visit.

3.1.3 Wildlife

The Fisheries and Wildlife Management Information System (FWMIS) was searched on January 9, 2019 (Government of Alberta 2019b). Fish occurrences were detected outside of the Site footprint. No fish species were detected within the project area. The project footprint was highlighted as Sharp Tailed Grouse Habitat and Sensitive Raptor-Bald Eagle range, but no occurrences of those species are recorded in the FWMIS database. This was also confirmed on the April 28, 2019 field visit.

3.1.4 Topography

A desktop search was conducted of the Alberta Soil Information Viewer on January 10, 2019 (Government of Alberta 2019a). The project footprint is comprised of two topographical areas. The largest area is dominated by undulating, low relief topography with 2 % limiting slopes (U1l). The smallest area of the Site is the south eastern corner with a hummocky, low relief topography

3.1.5 Soil Profile

The Plan Area's general soil profile consists of topsoil, sand, clay, and till. These layers are further described in the Geotechnical Investigation, submitted to Lacombe County under separate cover.

Land Capability for Agriculture

A search conducted on January 12, 2019 found that the Site is predominantly located within polygon 15345 of the Alberta Soil Information Viewer (Government of Alberta 2019a). The soils consist of an Orthic Black Chernozem on moderately course textured (SL) sediments deposited by wind or water (PHS) and Gleysolic soils on undifferentiated materials (ZGW) of the dominate Peace Hills series and the co-dominate Ponoka series. The soils are further described in the Biophysical Assessment submitted to Lacombe County under separate cover.

3.1.6 Groundwater Level

During the creation of the Mirror Dry Bulk Facility Geotechnical Investigation, groundwater seepage was observed in borehole samples. The investigation noted that a shallow groundwater condition is typical for this area and levels are expected to be dependent on infiltration for recharge. Groundwater excavations are expected to fluctuate on a seasonal basis and will be highest after periods of heavy or prolonged precipitation and snowmelt.

Recommendations were included in the Geotechnical Investigation to address the Plan Area's high groundwater level.

3.2 NATURAL RESOURCES

As shown on **Figure 3 - Existing Conditions**, there is one well site and three utility rights-of-way running through the Mirror Dry Bulk Facility Plan Area. These facilities are further explained below.

3.2.1 Well Site, Access Road, and Right-of-Ways

08-29-40-22 W4M Ember Resources

Flowing Coal Bed Methane (CBM) well site located outside the Planned Area. Notification to the operator is required. Ember has no plans to expand their existing site.

Natural Gas R/W (0723783) Ember Resources

This Right-of-Way runs along the north boundary heading west from the 08-29-040-22 W4M Ember well site.

Natural Gas R/W (403 MC) Atco Gas and Pipelines

This Right of Way runs north and south along the east boundary. Crossing agreements will be required as the planned area crosses the Right of Way in two locations

R/W (1792) CN Rail

This Right-of-Way runs along the south east boundary outside of the Plan Area; it is understood that it is currently not being utilized, but further investigation will be required to confirm

Atco Gas Regulating Station (403 MC)

Located on the east boundary and the north side of the planned access. It is an active Atco Gas facility that is located outside the Plan Area

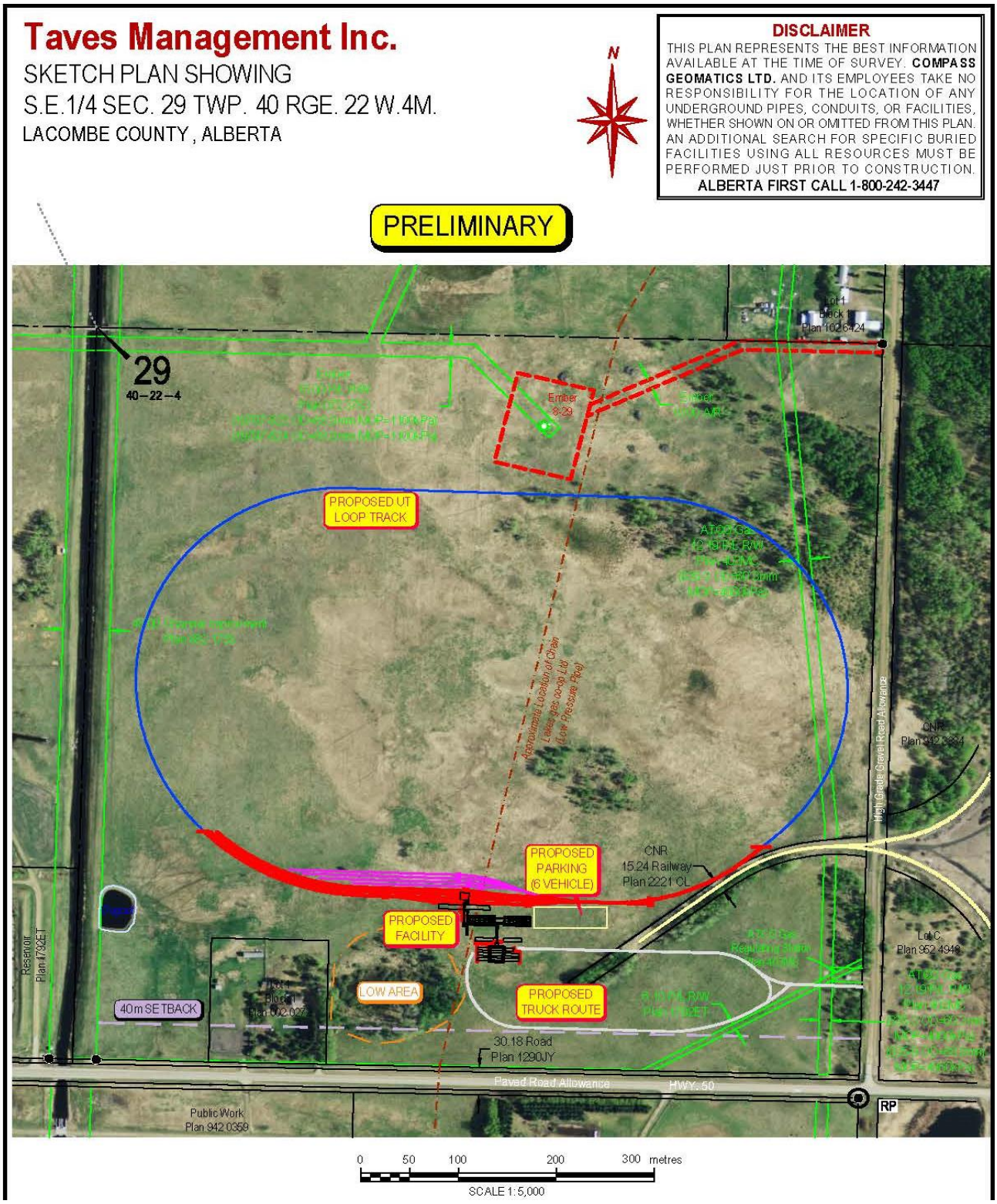

FIGURE 2 - Existing Conditions

Mirror Dry Bulk Facility Outline Plan

4 Development Concept

The Mirror Dry Bulk Facility has been planned as a 4000 metric tonne storage and transfer facility, with intentions of handling a total of 150,000 per year of Frac Sand. The proposed Dry Bulk Handling Facility will consist of the following:

4.1 Facility Design

4.1.1 Office/Control Room

The proposed control room/office building will consist of a 12'x 60' portable building on piles. Housed inside:

- Control panel; the entire plant is operated from one location
- Offices and coffee room
- Fresh water holding tank; fresh water will be hauled in
- Sewage holding tank; all sewage will be hauled out

4.1.2 Elevation Leg and Distributor

120' tall 250 metric tonne per hour leg:

- The leg will be used for shipping and receiving the product to and from the storage silos

4.1.3 Holding and Overhead Loading Silos

4000 MT of storage onsite storage

- 10 - 400 MT Silos for storage
- 3 - 250 MT overhead loading bins on scales

4.1.4 Conveyors

All the material will be transported from rail cars into the plant via an enclosed conveyor system. An overhead conveyor system will transport the material from the leg into the silos and then an under-silo conveyor system will be used to empty silos

4.1.5 Loop Track

In conjunction with CN Rail a loop track system will be designed to allow the delivery of unit train loads of material.

4.1.6 Rail Spurs

Depending on design 2-3 rail spurs will be installed to allow CN to park the rails cars while they get unloaded.

4.2 Transportation Network

4.2.1 External Roadway

Range Road 224 runs along the East boundary of the Plan Area. This Right of Way is currently sized wide enough to accommodate all traffic.

4.2.2 Intersection Upgrade

As described in Section 2.1.5 t according to the memo, it was determined that the existing intersection should be upgraded to a proper Type 1 intersection to allow for a “B-Train” tractor trailer to turn safely.

4.3 Servicing

4.3.1 Water supply

Potable water will be trucked in and stored in a tank inside the office/control room. The water supply is expected to last one month.

4.3.2 Sewage Disposal

All sewage will be contained in a holding tank attached to the office/control room. Once full the sewage will be trucked out, which is anticipated to occur once per month.

4.3.3 Stormwater drainage

Stormwater in the Mirror Dry Bulk Facility will be managed through a storage facility as shown on **Figure**

4.3.3.1 Storage facility

A dry pond with a forebay is being recommended for this site to achieve the desired water quality. A wet pond was considered for this site, although area of the pond's footprint is less than that recommended for wet ponds.

Extended Release Time

It is recommended that the pond utilize an outlet structure that incorporates a weir and orifice system which can regulate the more frequent storms as well as the less frequent storms thus enhancing water quality further.

Due to these factors, we are confident that the removal of sediment of particle size 75 µm and greater will be removed at a percentage of 85% or higher.

The proposed pond is to be designed to hold the 1:100-year storm event while releasing at 1/s/ha. The pond will hold 13,900 m3 and outlet through a 226-mm orifice to Parlsby Creek that is then routed to Buffalo Lake.

The proposed dry pond will follow the Alberta Environment Guidelines.