

Mining, Jobs

October 2014

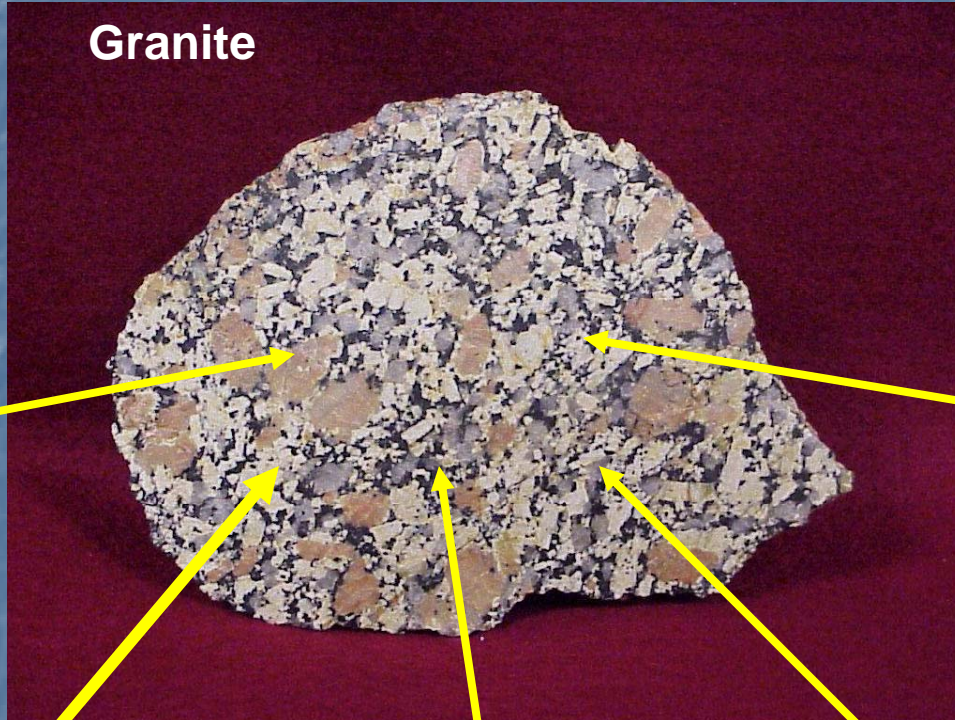
Vulcan
Materials Company



WHAT IS A ROCK?

A ROCK IS DEFINED AS AN COMBINATION OF ONE OR MORE MINERALS.

Granite



Orthoclase



Muscovite



Feldspar



Quartz

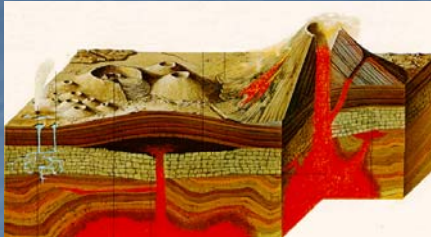


Biotite

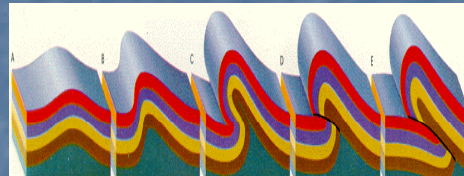


What Makes One Rock Better than Another Rock?

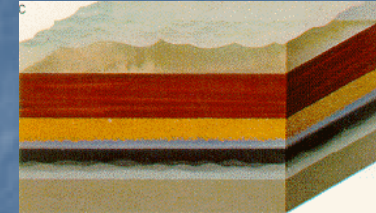
(1) HOW AND WHEN WAS THE ROCK FORMED.



IGNEOUS?



METAMORPHIC?



SEDIMENTARY?

(2) THE PROPERTIES OF THE MINERALS WHICH MAKE UP THE MATERIAL.



(3) THE DEGREE WEATHERING.



Why Do We Need Rocks and Minerals?

Do I Use Mined products?

5.71 Million Cu. Ft. Natural Gas

1.72 Million lbs. Stone, Sand, & Gravel

5,417 lbs. Bauxite (Aluminum)

31,909lbs. Salt

82,169 Gallons Petroleum

32,654 lbs. Iron Ore

75,047 lbs. Cement

1.546 Troy Oz. Gold

578,956 lbs. Coal

+68,034 lbs. Other Minerals & Metals

20,452 lbs. Clays

773 lbs. Zinc

18,447 lbs. Phosphate Rock

911 lbs. Lead

1,398 lbs. Copper



3.7 million pounds of minerals, metals, and fuels in their lifetime

What Are Some of Their Uses?

Look Around ... Everything is made from something.



Insulation, Roofing, Siding and Hardware

- 779 pounds of insulation, covering 3,061 square feet, usually made of glass wool (silica, borosilic acid and iron) or vermiculite (mica containing magnesium, aluminum, iron, silica, manganese, phosphorus and sulfur).
- 2,841 square feet of roofing shingles, usually made of wood or asphalt—composed of silica sands, limestone and petroleum.
- 302 pounds of nails and screws (iron and zinc) are used to fasten the different pieces of lumber together.
- The 18 interior doors and 4 exterior doors will each have door knobs, locks and hinges made of steel or brass (copper and zinc).



Windows, Plumbing and Electrical

- 368 pounds of glass for 18 windows and one sliding glass door. Glass is made of iron, silica sand, limestone and feldspar.
- 501 pounds of copper, used for 280 feet of plumbing pipes and 700 feet of electrical wiring. Pipes can also be made of steel, plastics and clays.
- 14,218 pounds of gypsum to make 5,850 square feet of interior wallboard.
- 3,011 square feet of exterior siding, weighing 366 pounds if it's aluminum siding.



Appliances and Floor Covering

- 1,010 pounds of appliances made of steel and stainless steel containing iron, chromium, molybdenum, aluminum, zinc, copper, lead and numerous other metals.
- garbage disposal which contains an electric motor (copper and steel), stainless steel, and various plastics and rubber gaskets reinforced with industrial minerals.
- kitchen sink, usually made of stainless steel or steel coated with porcelain (clay), and faucets (a variety of different alloy steels, copper, zinc and iron).
- 280 pounds of vinyl flooring, made of petrochemicals filled with limestone.
- kitchen utensils, dishes and silverware, made from various metals and clays.



Foundation, Walls and Underground Utilities

- 120,289 pounds of concrete, made by mixing water with sand, gravel, and cement. Cement is made of limestone, bauxite, clay, shale and gypsum. Concrete is reinforced with steel rods.
- 15,300 pounds of concrete.
- 21,440 pounds of brick made from mixing various kinds of sand with different types of clay.
- 84,000 pounds of gravel and stone for decoration and drainage.
- Underground utility lines provide water, sewer, electricity, gas and telephone services.



Sanitary Facilities

- 210 pounds of ceramic (clay, feldspar and limestone) or fire, toilet and the used to cover walls and floors, (plus the brackets and/or shower stalls).
- 100 plumbing fittings to hook the pipe together (copper or iron and different steel alloys).
- 170 feet of plastic or metal pipe to carry the waste water away to the sewer, plus the 70 fittings to hook it together.
- 226 linear feet of galvanized (zinc) heating or air conditioning ducts to carry the heated or cooled air throughout the house.



Home Entertainment

- All electronic equipment, such as televisions, telephones, computers, VCRs, stereos, radios, etc. contain no less than 30 different metals and minerals, including aluminum, antimony, barite, beryllium, cobalt, columbium, copper, gallium, germanium, gold, indium, iron, lanthanides, lithium, manganese, mercury, mica, molybdenum, nickel, platinum, quartz crystal, selenium, silicon, silver, strontium, tantalum, tellurium, tin, tungsten, vanadium, yttrium, zinc, and zirconium.



Automobile

- 2,117 pounds of steel.
- 240 pounds of aluminum.
- 42 pounds of copper.
- 24 pounds of lead.
- 18 pounds of zinc.
- 12 pounds of manganese, plus a variety of other metals.
- 225 pounds of plastic containing 70 pounds of mineral rockbinders.
- Petroleum based fuel to make it move—more than 111 billion gallons each year.
- There are 140 million small trucks and cars in the US.



Streets and Roads

- 5-inch-thick paving, made from 94 percent aggregate and 6 percent of asphalt concrete, is used to cover the surface of roadways.
- 8 inches of 3/4 inch aggregate and fines are used for a basecourse underneath the paving.
- Existing soil under the basecourse is compacted to a depth of 8 to 12 inches.

Minerals &

More than a quarter million pounds of minerals and metals were mined to provide the foundation and walls to support the house, the fasteners (screws and nails) to hold everything together, the electrical wiring, the plumbing pipes and fixtures, and the variety of materials to make it livable.

The size of the average new house is 2,324 square feet, and usually contains three or more bedrooms, three bathrooms, a two (or more) car garage, central air conditioning, a fireplace, and cost about \$227,000. The cost of the materials and labor to assemble that house is about 55% of the selling price. The cost of the lot, and serving that lot with the different utilities, can cost more than \$50,000. More than a million new single-family houses are built every year in the USA.

Forest Products

More than 16,000 board feet of lumber and 6,000 square feet of structural panels (such as plywood) are used to build the average house. The wood is used to provide the roofing, flooring, and interior and exterior walls, as well as a large part of the insulation and interior and exterior finishing.

Petrochemicals

Petroleum products are used to make the carpet and vinyl flooring, plastic for water and sewer pipes and other uses. The paints used inside and out, and some insulation to conserve energy and to protect electrical wiring are petrochemical products that are filled with various industrial minerals.

Visit the source

www.mii.org

Did You Know?

- Building a house requires 39 tons of rock/minerals
 - Steel is made from coal, iron ore, limestone, zinc
 - Walls are made from gypsum
 - Driveways contain 60 to 70% rock
 - Paper is made with wood but coated with clay
 - Glass is made with aluminum, silica, and limestone
 - Nails and screws are made from iron and zinc
 - Cars are built with steel, aluminum, copper
 - TVs contain over 30 different metals and minerals
 - Toothpaste has limestone, clay, mica, and fluorite

**If something can't be grown or recycled,
it has to be mined.**

Mining in Nova Scotia

Oldest Mine Site in North America

Davidson's Cove, Bay of Fundy



Mik'Maq people mined Jasper and agate and fashioned them into cutting tools, spear arrowheads, that were traded all around the Bay of Fundy and have been found in several sites around Atlantic Canada

Nova Scotia Mining Industry

- Nova Scotian's explore and mine for several minerals, including;
 - Gypsum, Limestone, Salt, Coal, Gold, Sand and Anhydrite
- About $\frac{3}{4}$ of the industry is aggregate production, most of which is used in the province for construction, such as building homes, roads, schools and hospitals
- Nova Scotia's mining industry provides 5,500 jobs, mostly in rural areas, and contributes \$420 million dollars to Nova Scotia each year
- Mining is the highest-paying natural resource industry and one of the highest-paying of all industries in the province

VIRTUAL QUARRY TOUR

Some of the Things You See
at a Quarry

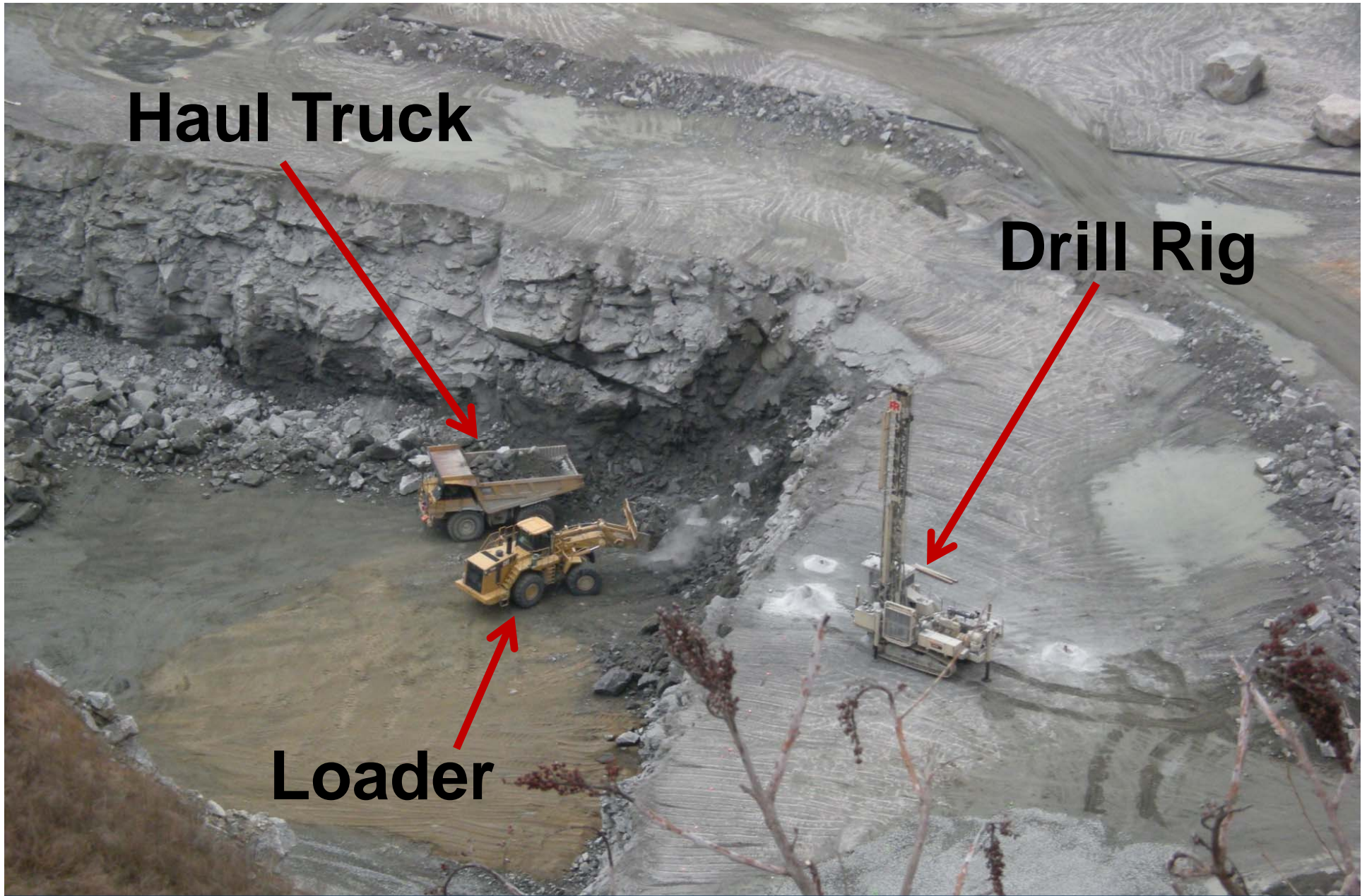


Common Mining Terms

- Bench
- Blasting
- Drill Rig
- Haul trucks and Loaders
- Haul Road
- Crusher
- Processing Plant
- Stockpiles



Benches are used for safe places to work while mining rock.



Haul Truck

Drill Rig

Loader

Did you know that the tires on the trucks and loaders can cost between \$10,000 and \$20,000.



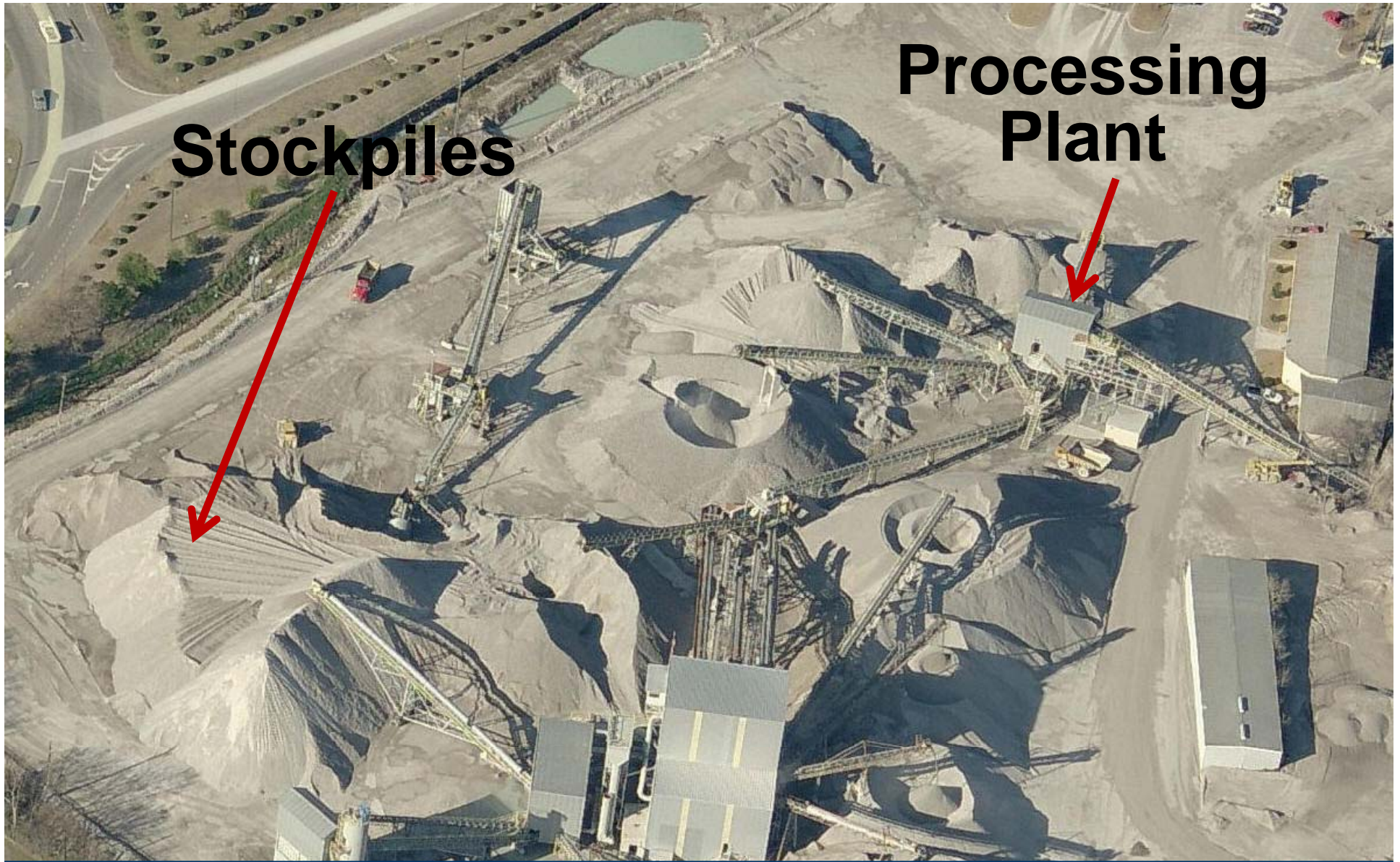
**Haul
Roads**

Did you know that haul roads can be as wide as 120 feet?

Processing Rock



After rock has been drilled, blasted, and hauled from the bench, it must be crushed into smaller sizes and separated according to specific uses. This is how it is done.



Stockpiles

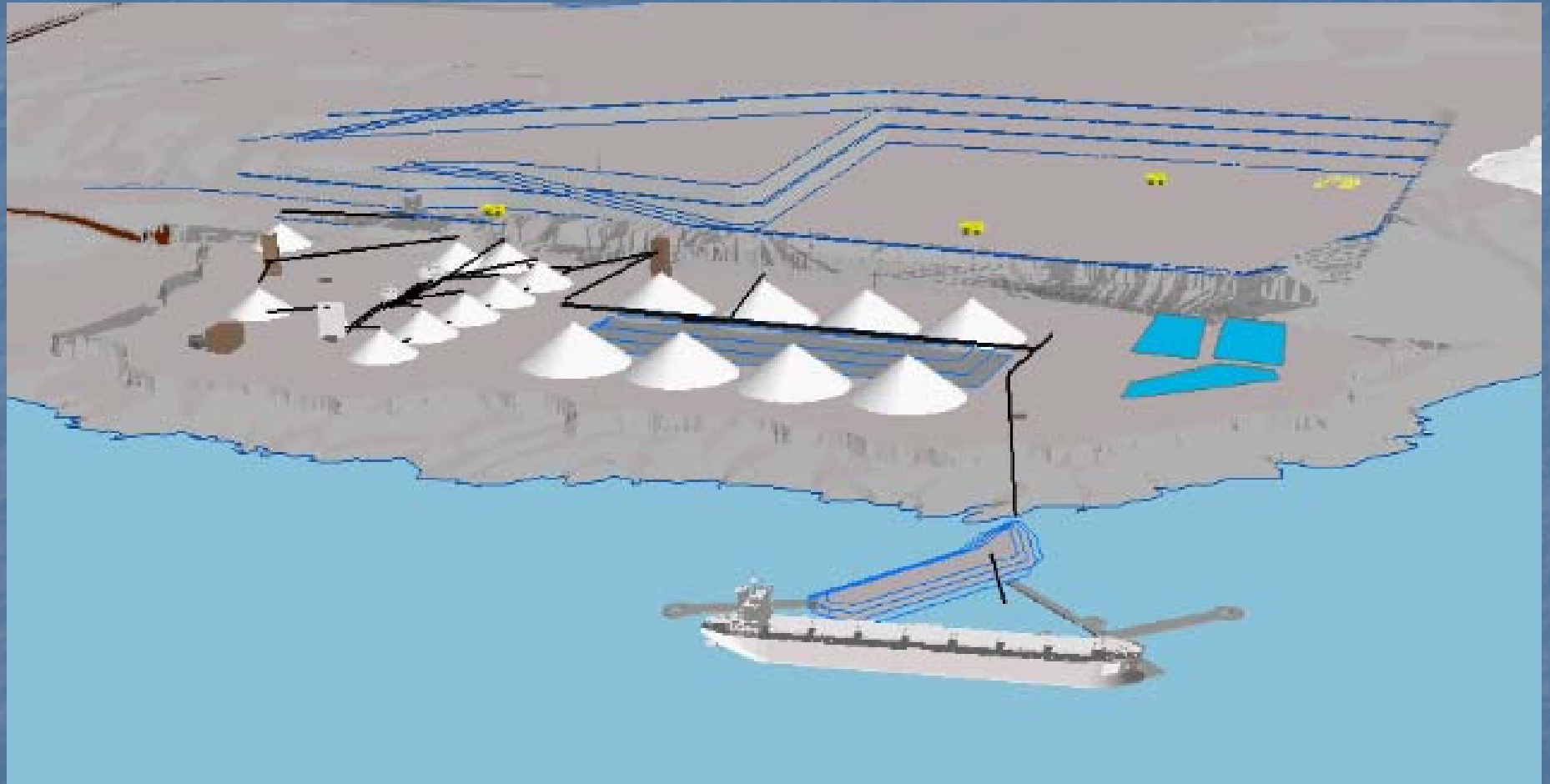
**Processing
Plant**

Once the rock has gone through the crusher and processing plant, it is stored in stockpiles and is ready to be delivered to the customer.

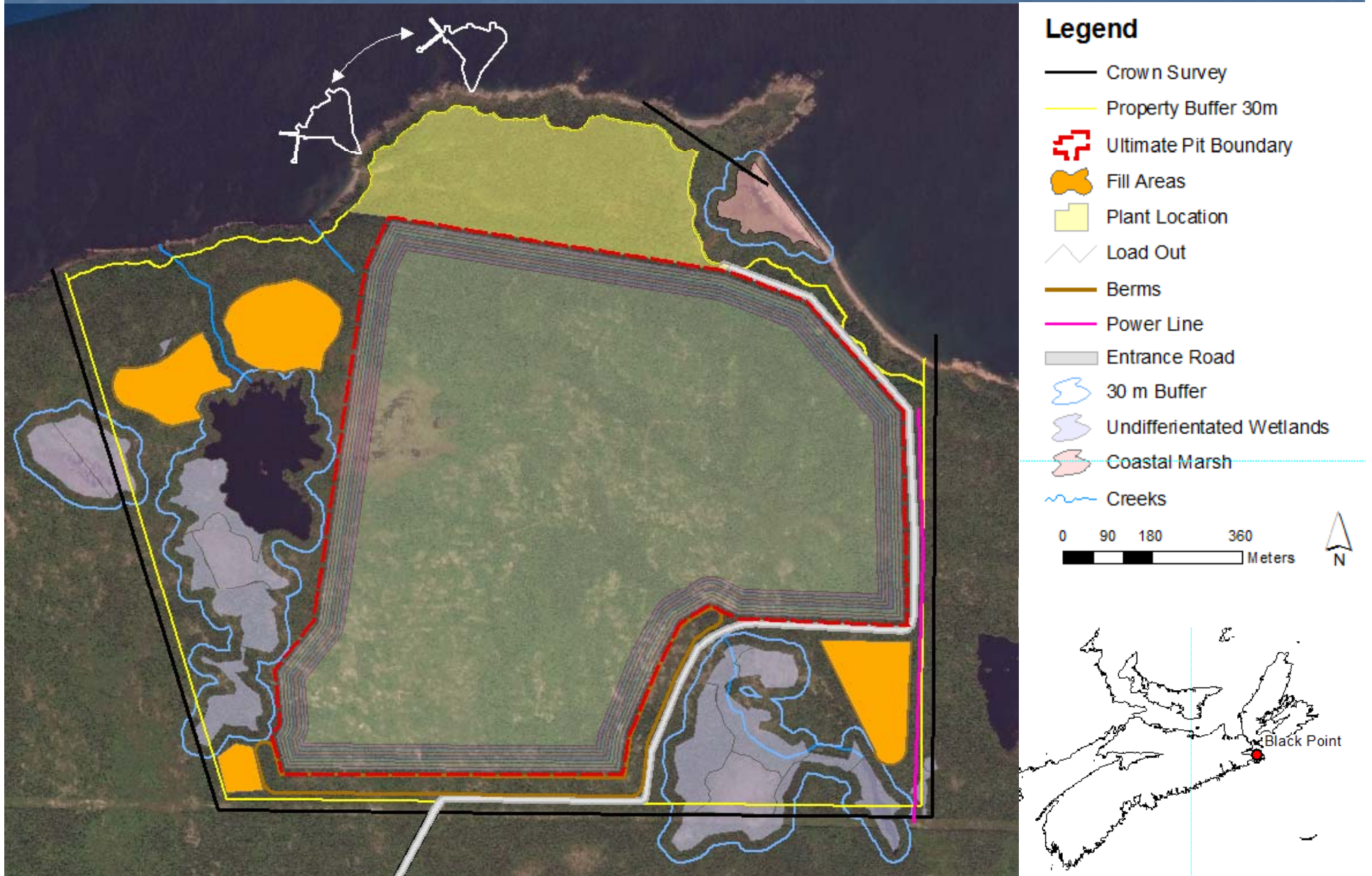
Common Mining Jobs

- Management
- Supervisors
- Welders
- Electrician
- Equipment Operators
- Quality Control Technicians
- Office Administration
- Geologists
- Engineers
- Mechanics
- Community Relations
- Sales
- Marketing
- Safety
- Environmental

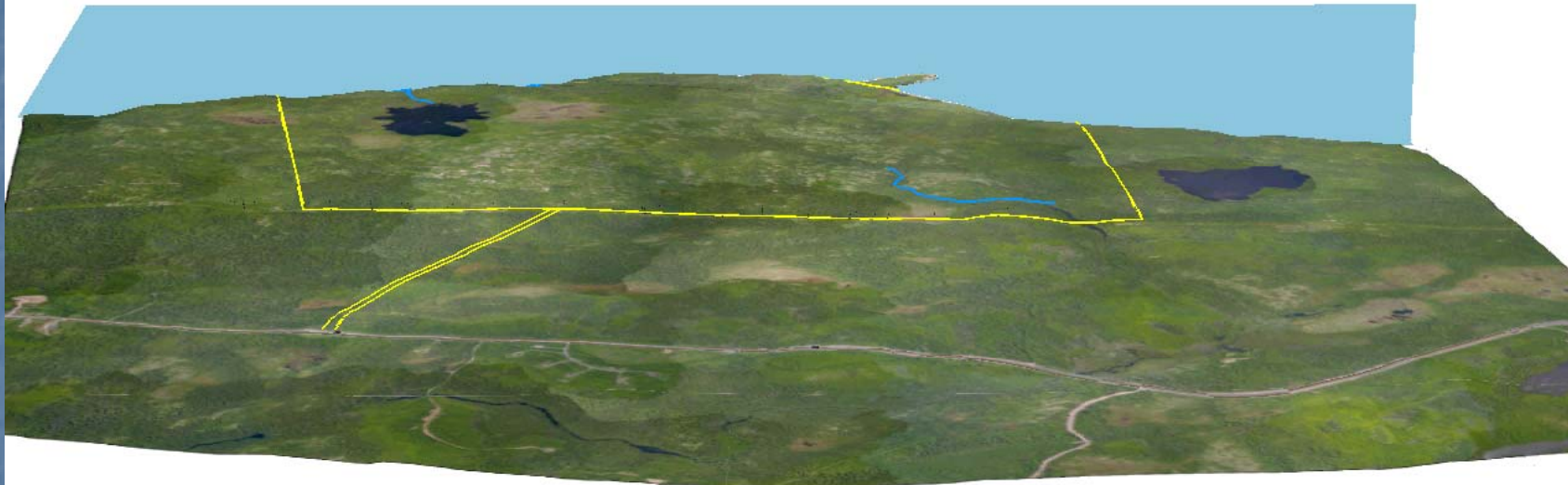
BLACK POINT AGGREGATE QUARRY AND MARINE TERMINAL



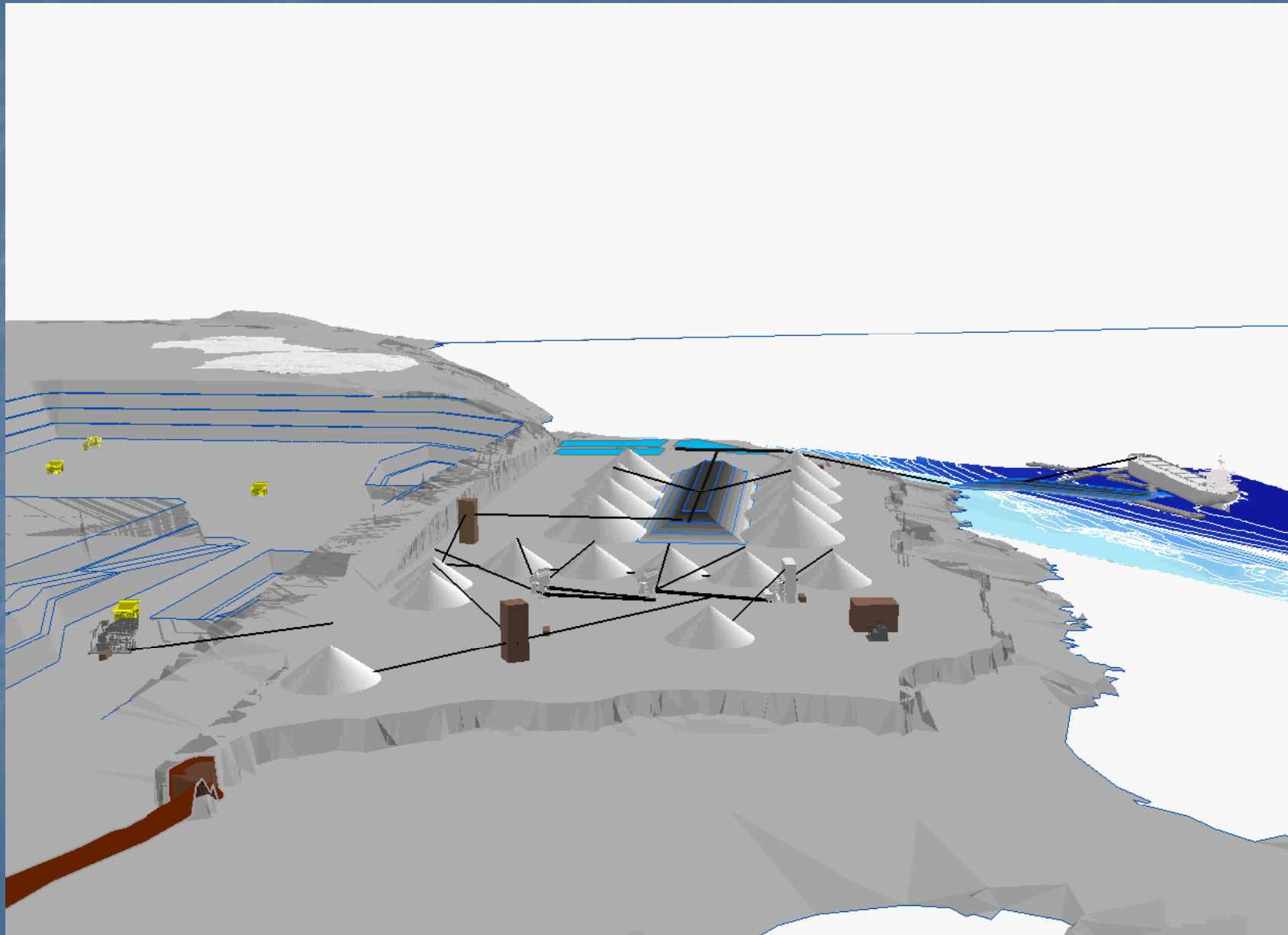
Conceptual Site Plan



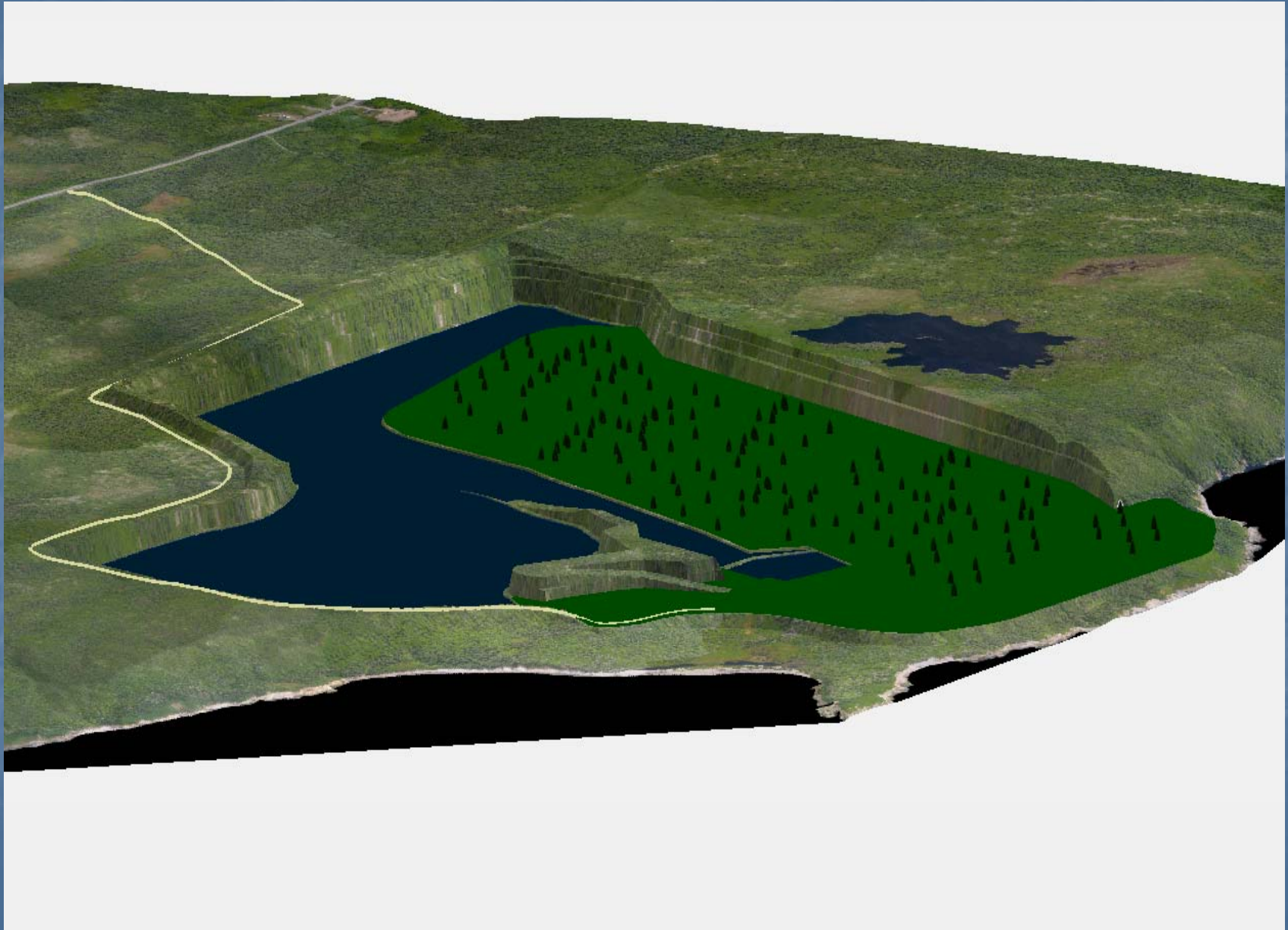
Site Preview and Mine Development



Processing Plant and Marine Terminal



Reclamation



Questions?

Vulcan
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Mining Association of Nova Scotia

- The MANS represents companies in all areas of mining and quarrying including:
 - exploration,
 - discovery,
 - development,
 - production and reclamation, as well as,
 - consultants and suppliers to the industry.

www.tmans.ca

Mining Rocks! Video Contest

THE 'MINING ROCKS! VIDEO CONTEST' STARTS SEPTEMBER 15, 2014!

YES! YOU READ THAT CORRECTLY... OVER
\$9,000
IN PRIZES

OPEN TO ALL
JUNIOR HIGH &
HIGH SCHOOL STUDENTS
IN NOVA SCOTIA

**SUBMIT YOUR
VIDEO**

**CONTEST
DETAILS**

**CONTEST
TRAILER**



ATTENTION NOVA SCOTIA JUNIOR HIGH AND HIGH SCHOOL STUDENTS!

Prizes and Deadlines

WHAT CAN YOU WIN? \$\$\$\$

★ **Best Junior High School Video**

WINS \$1500 – plus \$500 for your school

★ **Best High School Video**

WINS \$1500 – plus \$500 for your school

★ **Best 30 Second Commercial**

WINS \$1500 – plus \$500 for your school

★ **The CIM Foundation People's Choice**

WINS \$1500 – plus \$500 for your school

CONTEST DEADLINES

→ Competition Starts: **September 15, 2014**

→ Early Bird submits due: **January 16, 2015**

→ Entries close: 11:59pm, **February 20, 2015**

GET IN TOUCH!

Please direct any questions, comments, concerns or suggestions to Sarah! She would love to hear from you! Here is her email:
sarah@tmans.ca.