# BALCONES QUARRY

# November 2014

**New Braunfels, Texas**

# Description of the Facility

The Balcones Facility is situated in New Braunfels, Texas and was opened in the mid 1960's. The geologic structure in which Balcones operates is commonly referred to as the Balcones Escarpment. Balcones mines approximately 11 million tons of limestone per year which includes sized Aggregate [including roadway base, clear stone [used in RMC and HMA], sand and Cement Feed.

Aggregates are shipped via truck and rail out of Balcones. Unit Trains are shipped on the Union Pacific Railroad with the Houston RMX sites being the largest consumer of the rail shipments.

Production and Shipping hours are generally 20 hours per operating day.

All products are monitored by the on-site Quality Control Laboratory, utilizing the latest equipment and AggQC Database. Material processed for the Cement Plant is monitored continuously for chemistry with a Cross Belt Analyzer.

# Balcones – Keys Statistics

- **Largest Quarry in USA – 2012 [Latest USGS Statistic]**
- **0 MSHA Reportables in 2013 - 2014 [20 months]**
- **Major Markets Served**
  - **RMX & HMA**
  - **Oil Field**
  - **Cement Feed**
  - **Commercial Developments**
- **Major Market Areas**
  - **Houston**
  - **South Central Texas**
  - **Eagle Ford Energy Corridor**

# Balcones – Keys Statistics

- **Equipment [46 pieces - total]**
  - **4 - Production Loaders [Cat 993 & 992]**
  - **10 - Haul Trucks [Cat 777F, 777D & 773]**
  - **5 - Shipping Loaders [988H, 980H & 980K]**
  - **2 - Dozers [Cat D9 & 824]**
  - **2 – Water Trucks [Cat 773 & 769]**
  - **1 – Motor Grader [Cat 14M]**
  - **2 – Excavators [349 w/ Hammer, 322 LR]**
  - **1 – Fuel & Lube Truck [Cat 725]**

# Balcones – Keys Statistics

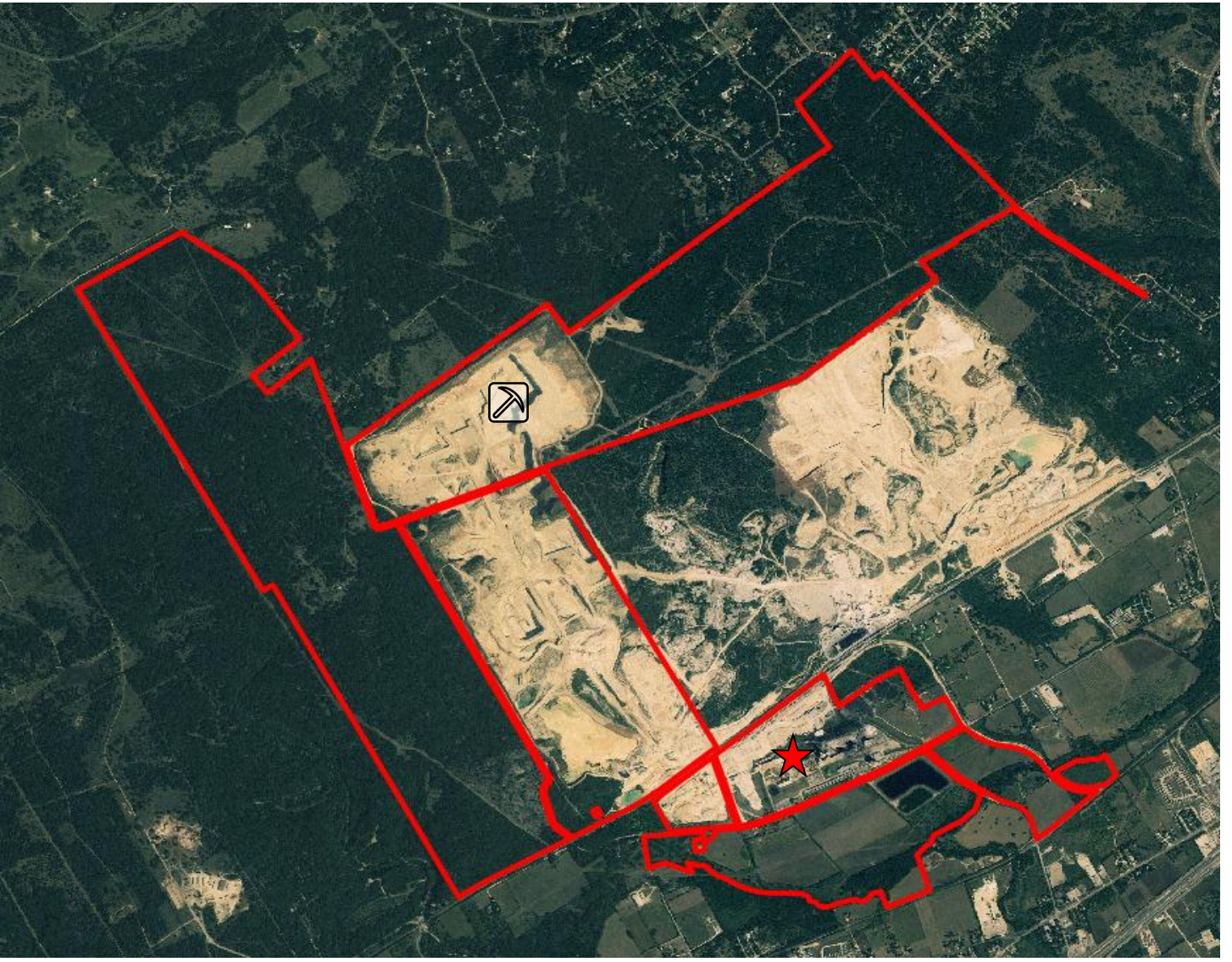
- **Drilling & Blasting**
  - **Buckley Powder**
    - **All Electronic Detonators**
- **Seismographs**
  - **Vibra Tech Remote Units**
    - **14 Seismographs surrounding the Balcones Site**
    - **1 Weather Station**
- **New Wash Plant [Under Construction]**
  - **5 Point Industry Services – General Contractor**
  - **RMS Engineering**
  - **Sandvik 660 Cones [2]**
  - **Deister Screens [4 - 4 deck]**
  - **GIW Pumps**
  - **Van der Graaf Drum Motors [motorized pulleys]**

# Balcones – Keys Statistics

**New Water Reclaim & Sand Plant**

- **AZ FAB High Rate Thickener – 60 ft. Dia.**
- **Abresist Cyclones and Piping**
- **Schurco Pumps [slurry pumps]**
- **National Pump - Vertical Turbines**
- **Paschal Associates - Dry Polymer System**

# BALCONES PROPERTY

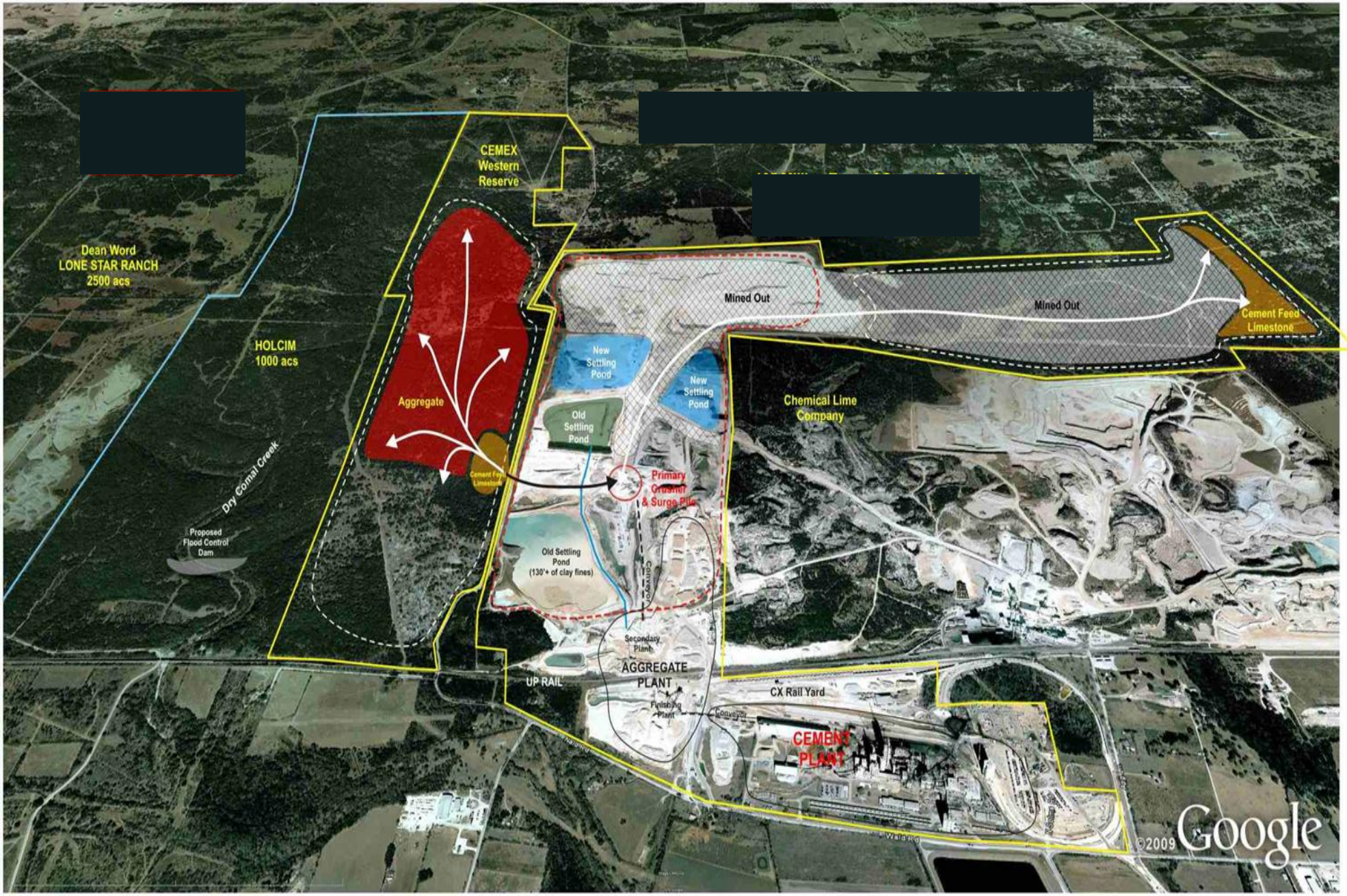


Total Acreage:
- 2,370 Acres

**CEMEX Boundary**

CEMEX

-




Cemex Balcones Quarry, New Braunfels, Texas

Scale: ½ mile

Aerial Date: Jan 2008

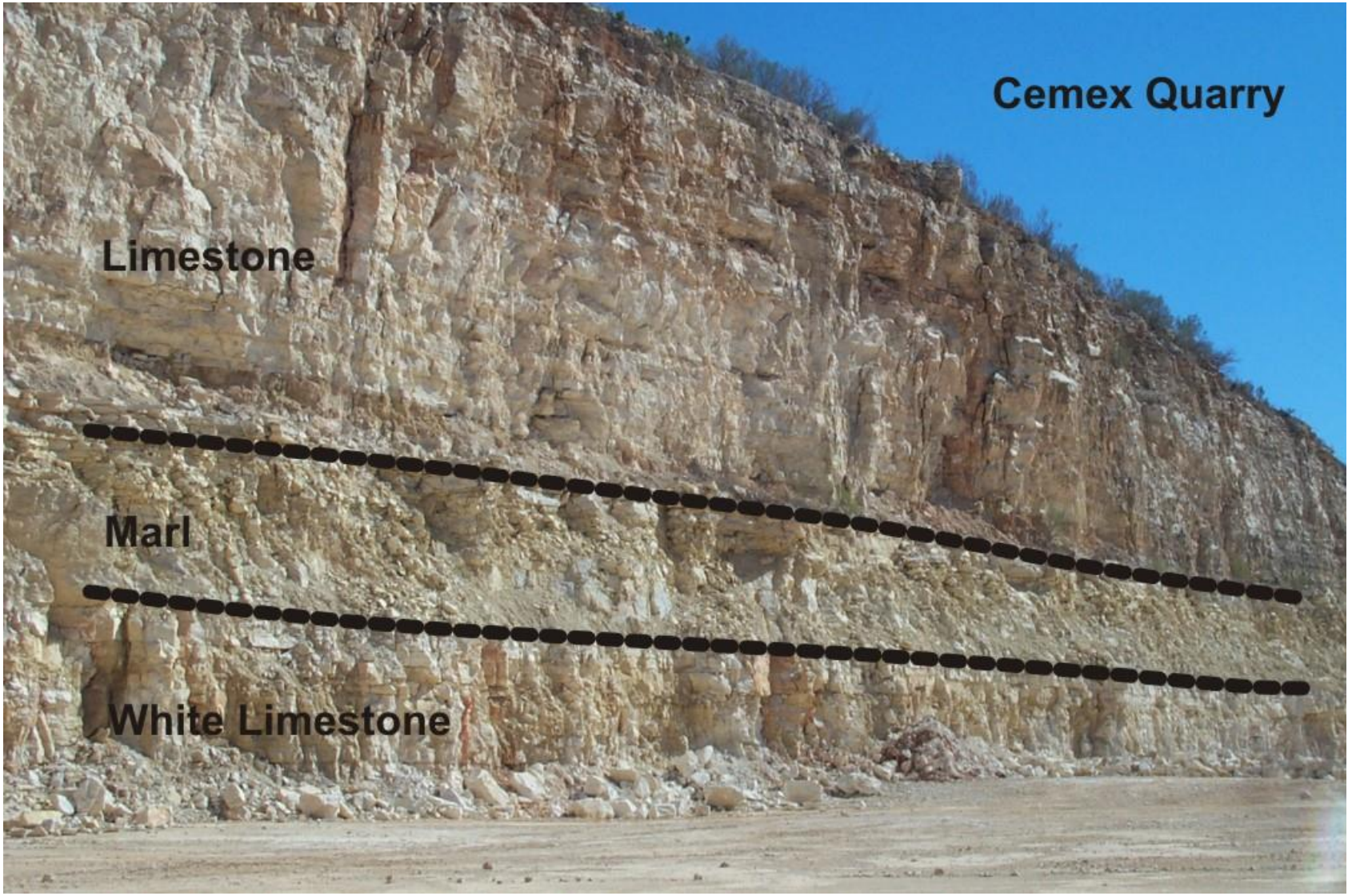
# Balcones Quarry

Multiple geologic formations within the Balcones Formation

- High Purity Limestone
- Shaly Limestone (Marl)
- Clay & Chert seams

Quarry Benches are created to separate the Cement Quality Rock, from the Aggregate Quality Rock.

# Balcones Quarry



# Balcones Quarry

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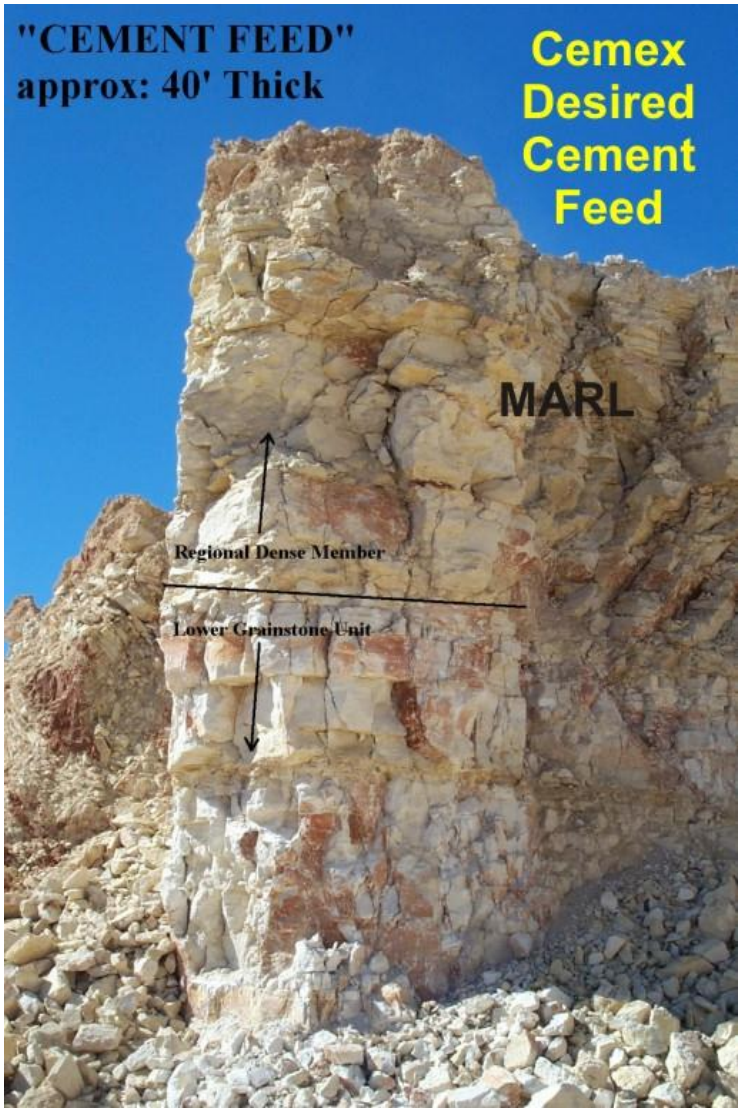
# Limestone Quarry




Cement Plant preferred kiln feed consists of the 20-22’ Marl section and an equivalent thickness of the white limestone immediately beneath the marl.

Cemex mines this unit based on the following criteria:

- The chemistry of the marl and white limestone are very consistent

- The marl and the lower white limestone are softer and are therefore easier to grind in the Raw Mills.

# Aggregate Feed

The limestone utilized in the production of aggregates at Balcones is blended from multiple faces throughout the Quarry to produce on-spec aggregate products with suitable physical and chemical characteristics.

The typical calcium carbonate content of the washed stone at Balcones is 95% $CaCO_3$.

# Overburden Removal

The first step in the mining phase at Balcones requires the removal of the overburden [all non-rock materials [i.e. dirt, trees, etc.]]. The quality of the overburden removal does have a significant effect on the overall aggregate end product. For example: Inadequate removal of overburden from the Balcones deposit may result in excess fines [or clay] tracking in the aggregate. The typical overburden thickness at Balcones is 3 to 5 ft. and is removed with a Caterpillar D9T

# Drilling and Blasting

Drilling and blasting at Balcones is performed by Buckley Powder and, is the first phase in the overall crushing of the aggregate. Only the latest blasting technology is utilized at Balcones, too yield acceptable results at satisfactory costs [I.e. Electronic Detonators, Signature Holes for timing, Decked shots, Linear Regression Analysis, etc.]. Special care is taken to reduce the noise and vibration from the blast [I.e. to limit impacts to the neighborhoods that surround the Balcones site]. Remote Vibra-Tech Seismographs monitor all blasts at Balcones [and neighboring companies] to verify compliance with blasting limits.

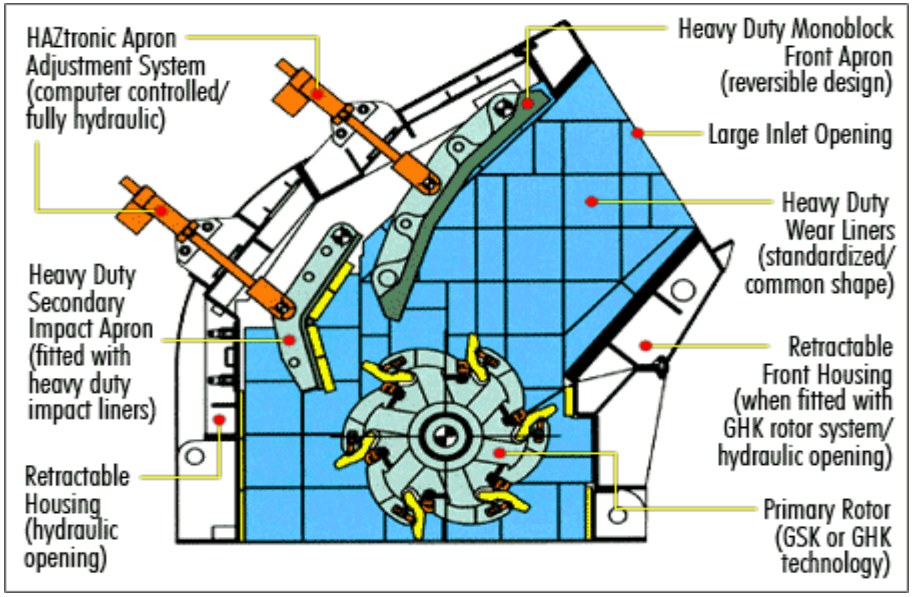
# Haulage

The haulage phase of mining consists of transporting the blasted material to the Primary Crusher [Hazemag 1822]. The haulage at Balcones is presently performed with [4] - 993 & 992G Caterpillar Loaders and [8]-777 D&F haul trucks carrying 100 tons per load. Balcones takes extra care to maintain its roadways to yield the highest haul truck efficiency and lowest cost of maintenance. The Grader utilized at Balcones is a Caterpillar 14H

# Primary Crushing

The blasted stone is conveyed from the scalping process [by the vibrating grizzly] to the Primary Crusher, where it is reduced down to approximately 12 inches minus.

The Balcones Primary Crusher is a (HSI) Horizontal Shaft Impact Crusher [Hazemag #1822 – 1,000 hp w/ a Fluid Coupling].



# Secondary and Tertiary Crushing

Secondary and Tertiary crushing, are the final steps in crushing

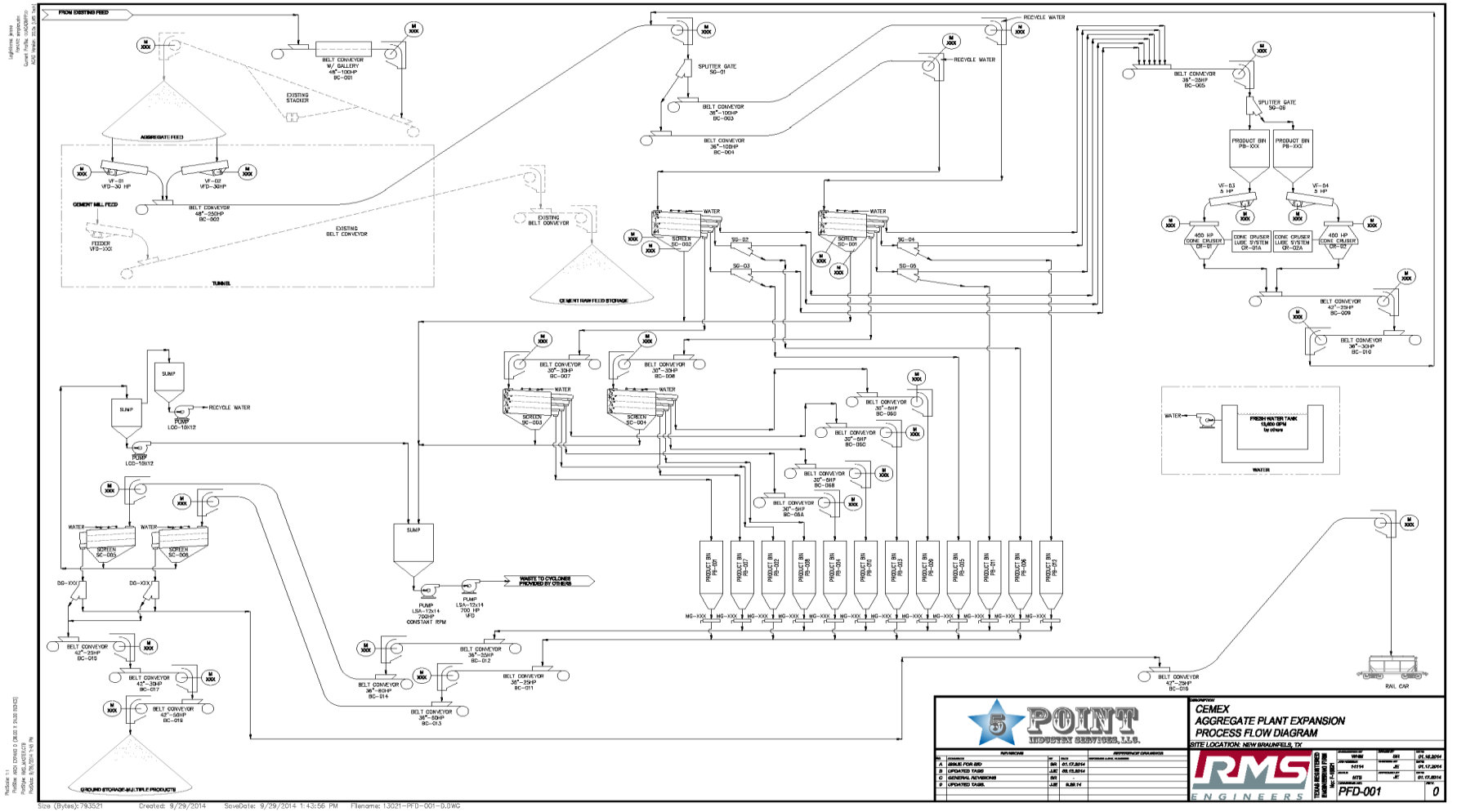
- The Secondary Crusher at Balcones is an (HSI) Horizontal Shaft Impact crusher [Hazemag #1430 – 1,000 hp w/ Fluid Coupler].

- The three tertiary (H.S.I.) crushers are: Cedarapids #5064 and Universal #130/150 & #150/150.

# Product Shipping

The aggregates are shipped at Balcones via truck and rail. The railed aggregate is shipped to distribution terminals and the Houston Ready Mix Division is one of the largest consumers of the rail shipments. A typical shipment of railed aggregate consists of 95 train cars, each containing 100 tons/car. The major markets served by Balcones are: Houston, Austin, San Antonio and Oil Field Services.


# Balcones – New Wash Plant Flow Sheet



# Balcones – Water Reclaim and Sand Plant

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# Cemex and Sustainability

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**Thank You**
**and**
**We Look Forward to Your Tour of Balcones**