

The Gold Company

#### **Golden Giant Mine Closure**





#### **Contributions and Achievements**

۲



Production life...from 1985 to 2006
Initial Capital Expenditure \$C290 million
First Blade to First Gold Brick in 2 years
Total of 19.1 million tonnes of Ore Milled
Average Gold Head Grade 11 grams/tonne
Total Gold Sold 6.7 million ounces
Total Gold Revenue \$C3.2 billion
Total Costs/Expenditures \$C1.9 billion

- Total Corp/Mining Taxes \$C660 million
- Total Labour Costs \$C440 million
- Total Local Taxes \$C23.8 million
- Local Charitable Donations over \$C1.5 million
- Employed over 1500 plus 650 for construction

## Golden Giant Mine



### **Closure - Points of Interest**







- Staged layoffs (over 250) in 2005/2006
- Last ore hoisted Jan 11<sup>th</sup> 2006
- Site became inactive Aug 31<sup>st</sup> 2006 (<5 employees)
- Deconstruction/demolition completed by Sep 2010
  - done by asset purchaser
  - 200+ trucks of equipment & 3 M kg scrap metal
- Reclamation/restoration completion by ~2015
  - done by property purchaser
- Mill gold salvage in house and contractor
  - 71,325 oz !!! recovered by Q4 2007
- Asset sales buildings, s/u equipment, mine property
  - \$6.659 Million plus royalties



#### **Closure Plan Overview**

- Closure Plan Objectives
  - Public health and safety
  - Minimizing environmental impacts and
  - Rehabilitation of the site to a compatible land use
- Original Closure Plan accepted by MNDM April 1997
  - Several updates for addition of WWTP, PSA, GCS
  - Reviewed by MOE, MNR, MOL, MNDM and local COI (28 copies)
  - Includes financial assurance of \$C14.7 Million
- Primary Focus Now Managing the Interlake Tailings Facility & WWTP







- \$50 Million for 4 Dams, grouting, HDPE 80mil liner, clay core top
- 15.3 M tonnes of tailings deposited under water cover
- 1984 GCP trench intercept system for main Dam 41
  - Capturing 95% of Dam 41 seepages since 1985
- 2014 GCS for Dam 43/Dam 44 interceptor pump wells
  - needed to mitigate sulphate in headwater creeks
  - Capture ~87% of Dam 43/44 seepages
  - \$3.0 Million for new GCS commissioning mid 2014
  - Target is <50 ppm sulphate for aquatic protection</li>
- Overall seepage capture for ITF becomes 93%
- WWTP treats all ITF excess water discharge to Cedar Creek



- Tailings acid generating potential and ARD seepages
  - Sulphide 4.5% with little NP, NP/AP <0.3 and NNP -140 ppt</li>
  - Mo 1100, Ti 700, As 200, Sb 150, V 90, Zn 80, Hg 12 ppm
- Dam 42 and Dam 44 wells not showing ARD Fe < 0.2 ppm</li>
- Dam 43, Dam 44 and Dam 41 wells showing ARD Fe>10 ppm
- High sulphate showing in all seepage/wells at Dam toes
- Confounding factor pyrite deposit across ITF west to east
- Pyrite highly fractured seams may be source of ARD Fe



































#### Dam 41 - Closure + 00 Years





#### Dam 41 - Closure + 10 Years





#### Dam 41 - Closure + 20 Years





#### **Waste Water Treatment Plant**

- Design/build by WESA for \$7.8 M with PLC/SCADA System
- Building done in 2008, construction from Feb to May 2009
- Commissioned Jun 8<sup>th</sup> 2009, minor upgrades over 2 years
- Design Basis: meet I/PWQO = CWQG at end of pipe
- Design Flow: 91 m<sup>3</sup>/hr in, 80 m<sup>3</sup>/hr out (backwash/sludge 11)
- Effluent limits (receiver based) 100% compliance to date
- Effluent objectives at end of pipe very close since Nov 2011
- Operating costs levelling off after 3 years
  - Target is 500,000/yr for  $450,000 m^3$
  - Or \$1.10/m<sup>3</sup> (operators, power, chemicals, maintenance)
- Testing Xogen process add-on for NH<sub>3</sub>, NO<sub>3</sub><sup>-1</sup>, CN<sup>-1</sup> removal



#### **WWTP Process Flow Sheet**





# **WWTP Effluent Water Quality**





### **Closing Remarks**

- Long Term Monitoring Programs
- Remain under Federal MMER and MNDM/MOE requirements
- Current monitoring program will continue indefinitely
- Any modifications to the program requires Ministry approval
- Plan to reduce number of sampling stations (90) and parameters (35) once acceptable track record is achieved
- 20 year "rolling window all in costs" projected at \$1.5 M/yr
- WWTP operation, EEM program, tailings dam inspections, all water monitoring programs, reporting with 4 employees



## Golden Giant Mine Closure Pre-Closure Tailings Pond



## Golden Giant Mine Closure Close-Out Tailings Pond





#### **Contact Information**

Walter Sencza, P.Eng. Environmental Manager Newmont Canada Corporation <u>Walter.Sencza@newmont.com</u> Tel: 807-238-2108 **Alternate Information** 

Walleye Sencza, pHD<sup>3</sup> Jack of all Trades We Do Inc (mostly) <u>Walter.Sencza@sympatico.ca</u> Cell: 807-229-6087

### Golden Giant Mine