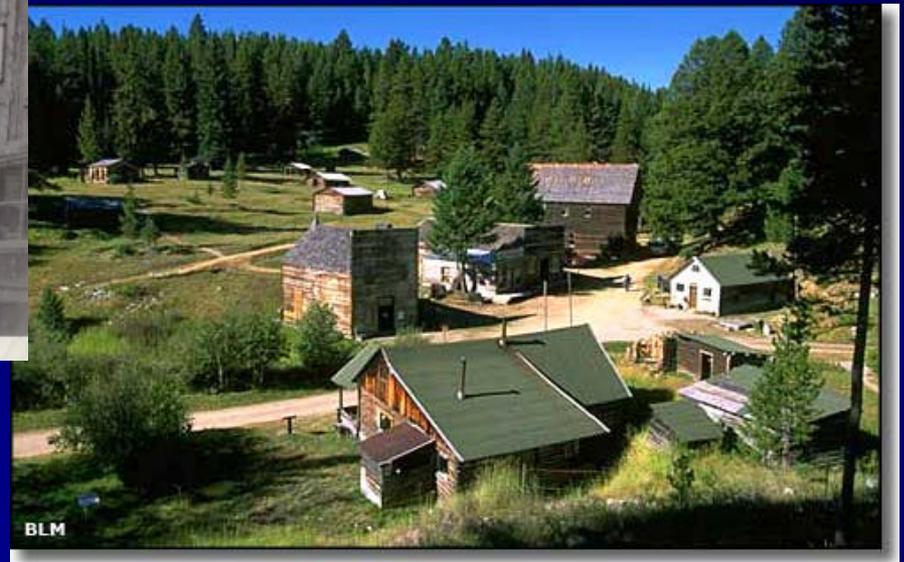




# Conversion of Historical Mining Data For Use in the Vulcan 3D Model



By Bob Flesher, P.G., and  
Randy Huffsmith P.E.



May 6, 2010

The **Grant Hartford** Corporation

# Today's Presentation

- ◆ **Randy Huffsmith Vice-President CDM Mining Division – Will Discuss the development of the site maps, claim boundaries, Auto CADD Maps and Historic Workings**
- ◆ **Bob Flesher Vice-President of Geology Grant Hartford Corporation – Will Discuss Drilling and Ore Body Modeling using Vulcan 3D**

# Project Description

- ◆ The Grant Hartford Corporation engaged CDM to provide technical, engineering, and construction support for the Garnet Gold Project
- ◆ Permitting
- ◆ Mill Design
- ◆ Engineering
- ◆ Construction

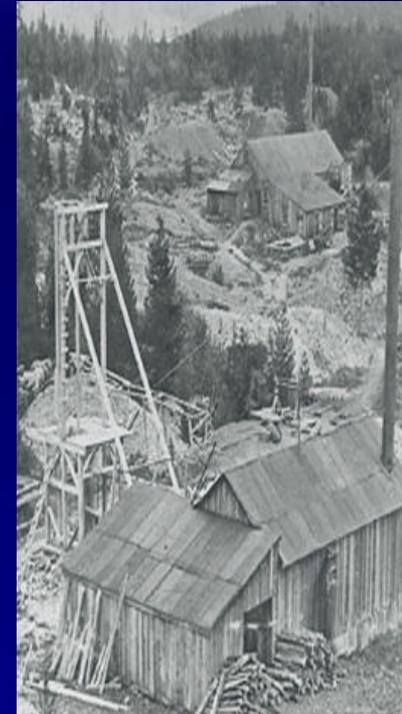


LOCATION MAP

Map Prepared for Montana Department of State Lands Abandoned Mine Reclamation  
Bureau NCRS Compiled and Edited By Joel Chavez

# Historical Background

- ◆ Underground Mining Began in 1880's.
- ◆ The District Produced 350,000 Ounces of Gold
- ◆ Mining Ceased in 1941
- ◆ Companies Controlled By The Charlton Family Have Maintained the Property Since 1960.
- ◆ Pegasus Explored Property in 1980's to Early 1990's
- ◆ In March 2007 the Grant Hartford Corporation was Formed



The Nancy Hanks Mine Date Unknown

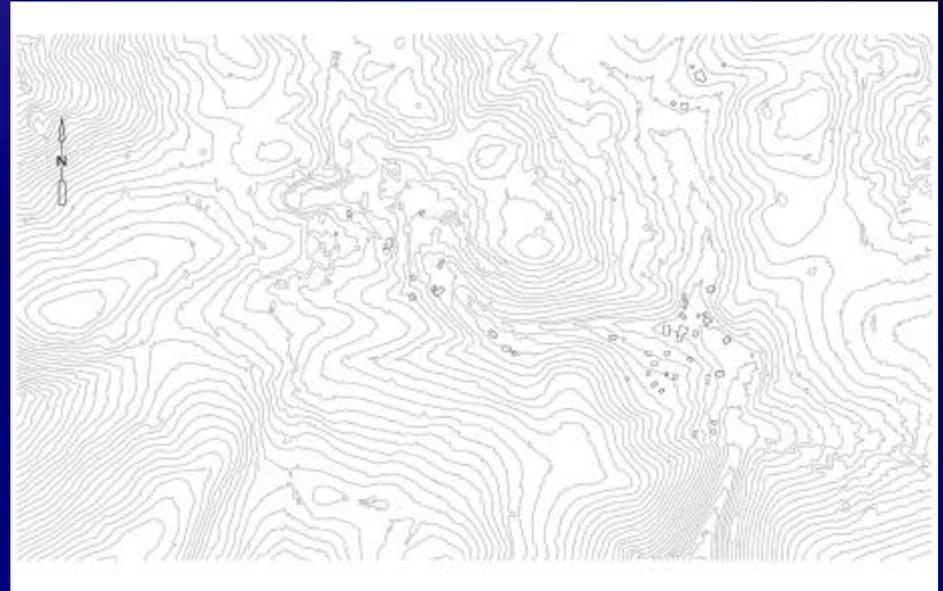
**Now on to the Technical  
Presentation.....**

# Computer Programs

- ◆ **MAP Tek Vulcan 3d Subsurface Mine Software**
- ◆ **ACAD Civil 3d**

# Obtain Accurate Topographical Survey

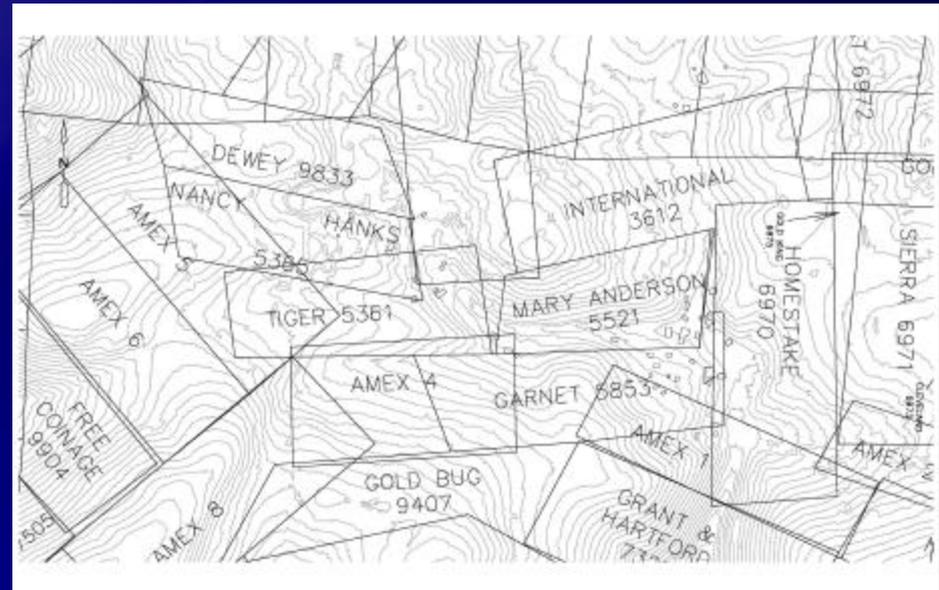
- ◆ CDM Engaged the Services of the WGM Group To Provide a High Resolution LiDAR Aerial Survey
- ◆ About 2000 acres of property
- ◆ 2' contour intervals were created
- ◆ High resolution air photos were obtained
- ◆ State Plane coordinates benches were established



LiDAR Topographical Map of the Nancy Hanks Area

# Survey and Locate Claims

- ◆ Using a Combination Field and Office Work, WGM and CDM Accurately Located the Claim Boundaries on the Topographical Map
- ◆ Claim Boundaries were also re-established in the field with historic survey descriptions
- ◆ Fencing and other security measures were established

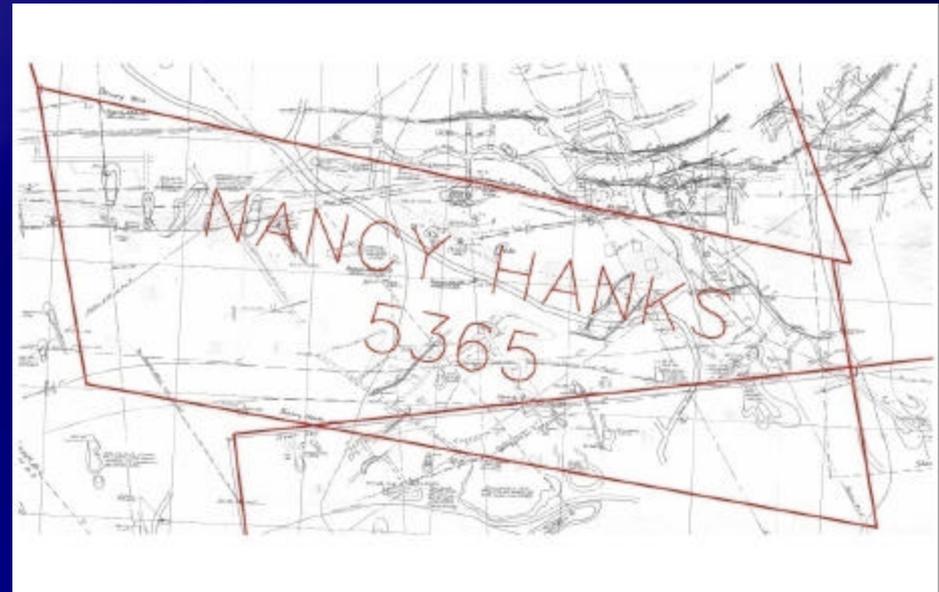


Topographical Map with Claim Boundaries Shown



# Scanned Image and Actual Claim Lines

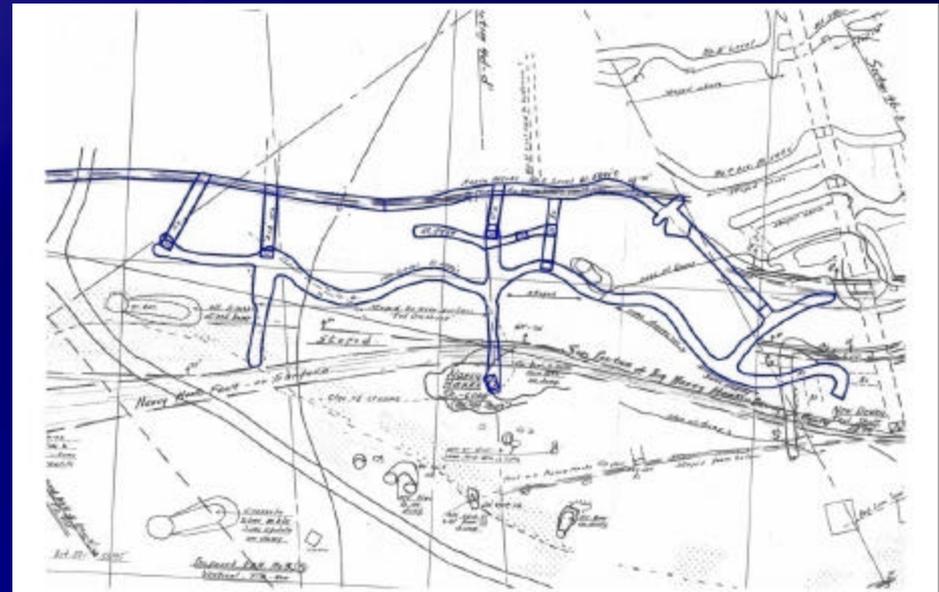
- ◆ Place and Locate the Scanned Images on the Claim and Topographical Map



Scanned Image and Claim Map Overlain

# Tracings Outlining Historical Workings

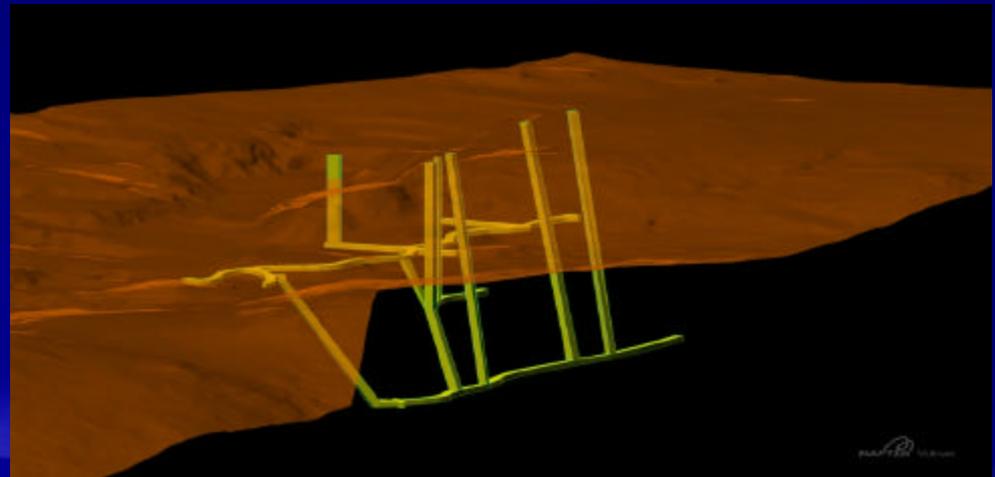
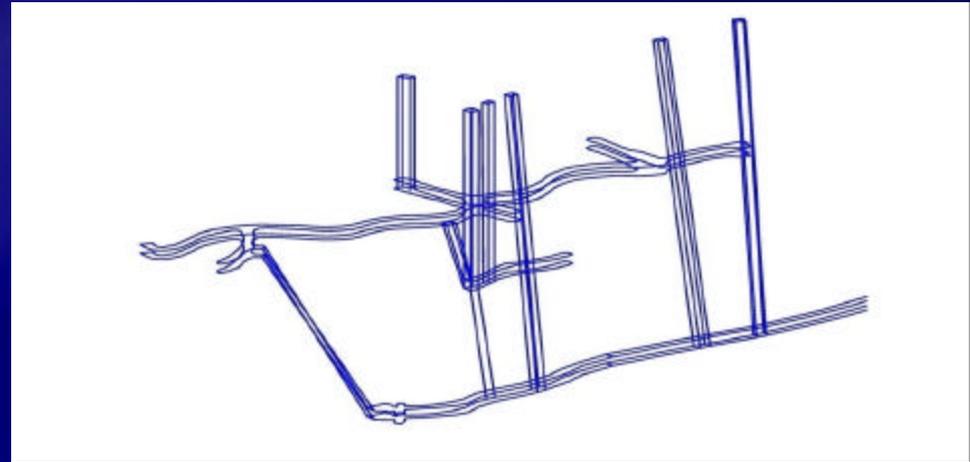
- ◆ Using ACAD Civil 3D, CDM traced and verified internal mine workings
- ◆ Elevations were assigned to the tracing lines



Map Showing Tracing Outlining the Historical Workings

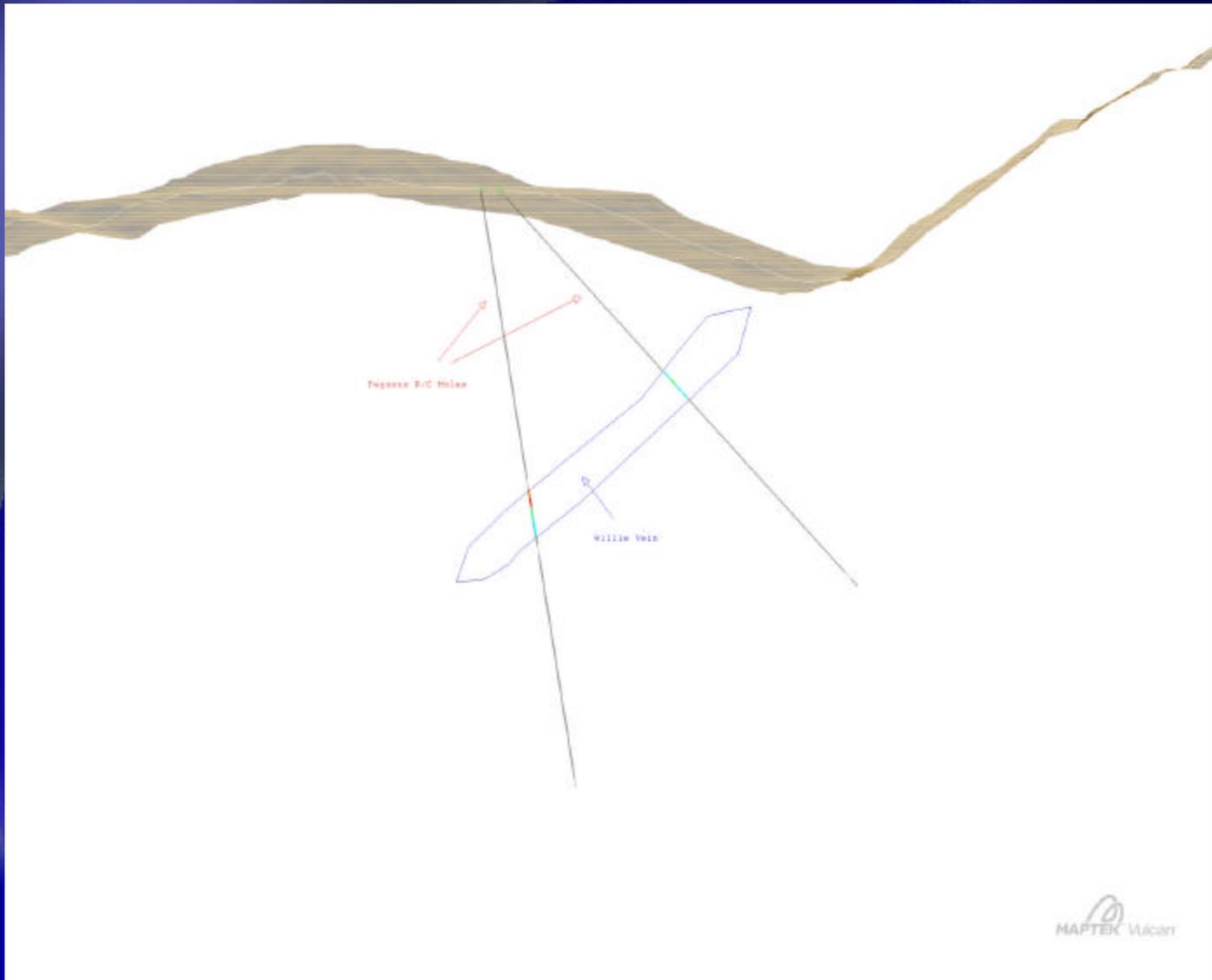
# 3D View of the Tracings Outlining Historical Workings

- ◆ The Tracings Are Checked and a Drawing Exchange File (DXF) Created for Import into The VULCAN Model.
- ◆ Field Verification of workings and created model (Bob to discuss)

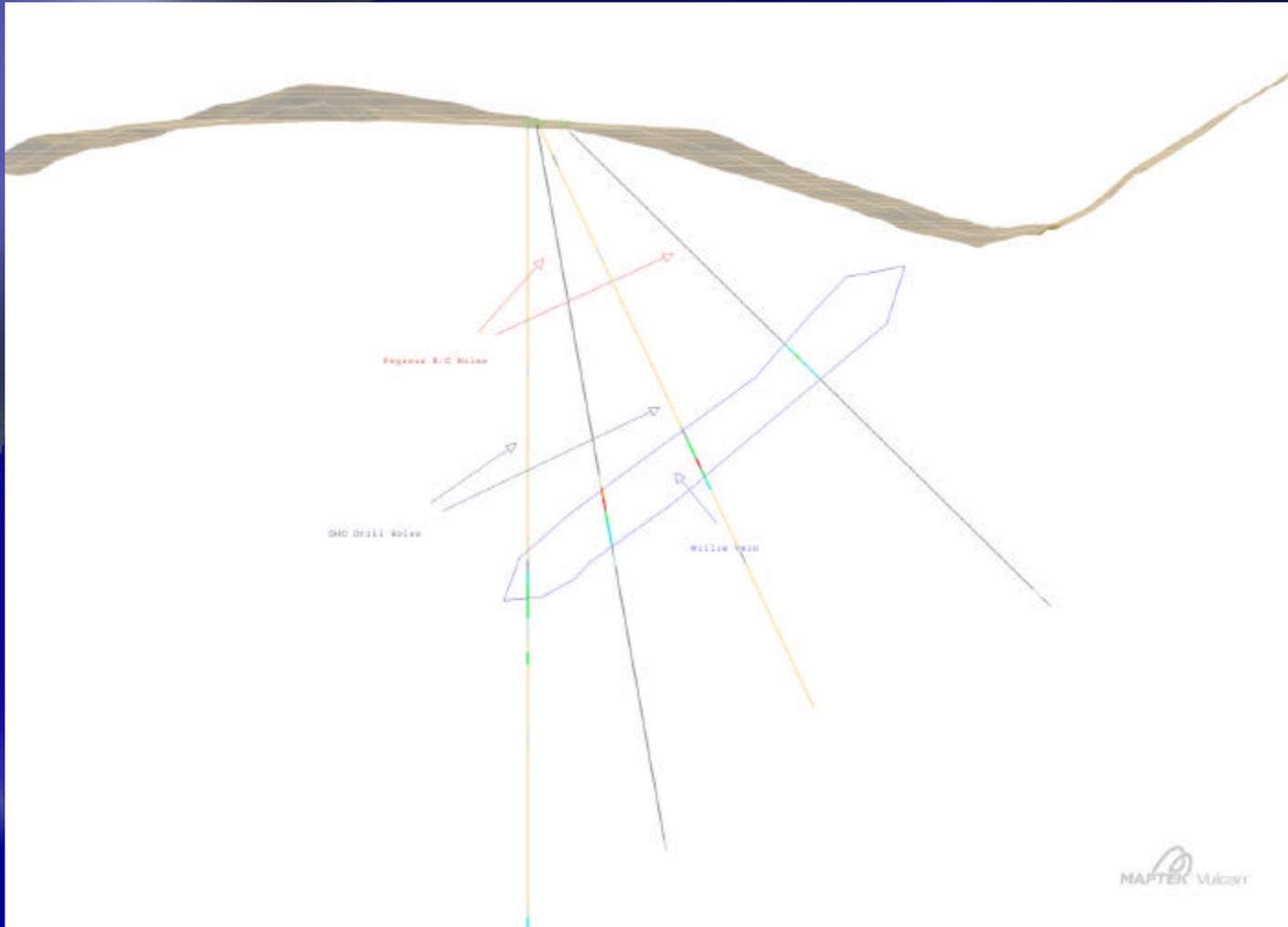


# Data Organization and Import

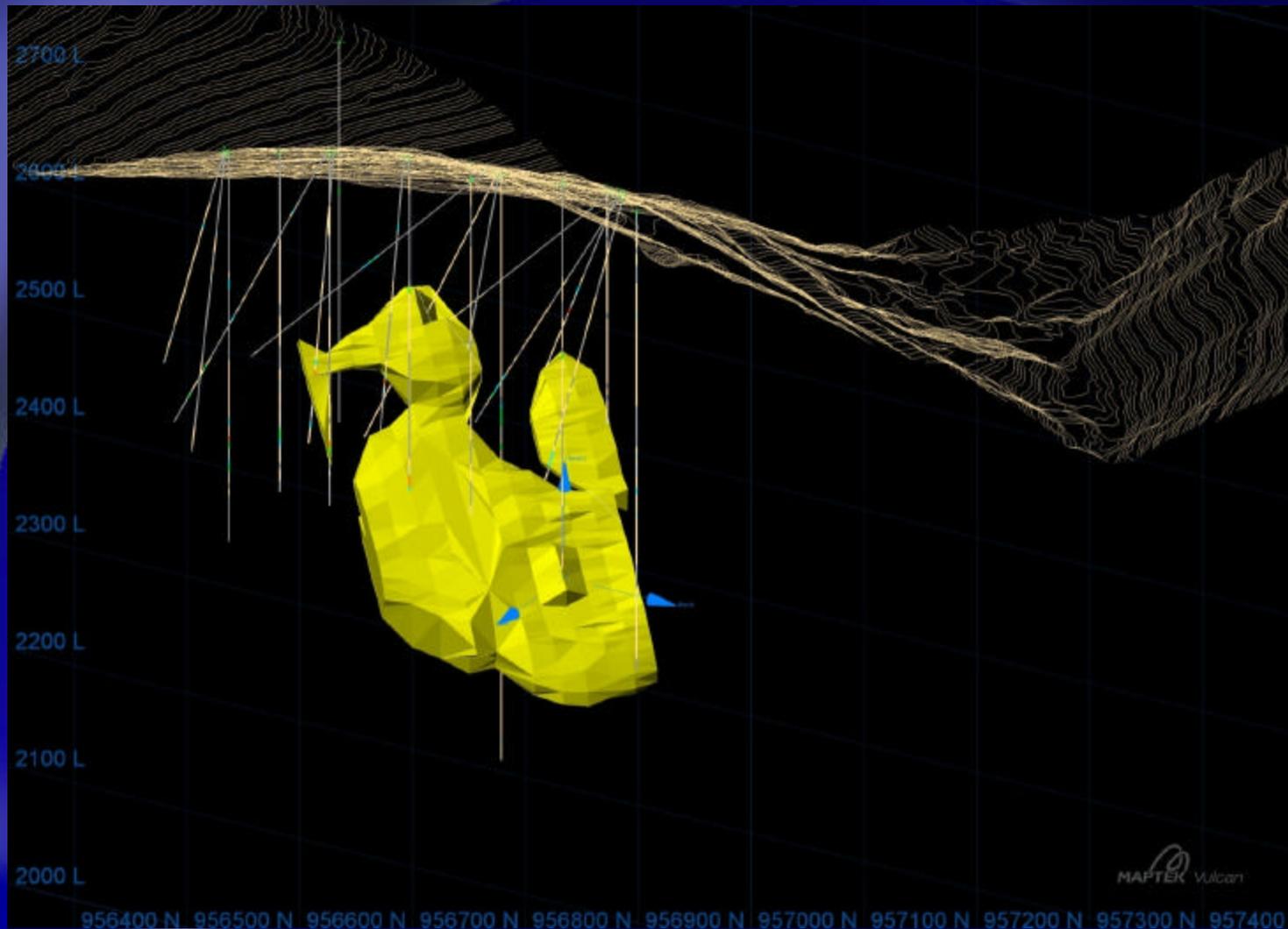
- ◆ **Obtained Vulcan Software from Maptek April 2009.**
- ◆ **Began data conversion and input**
  - ◆ **All Pegasus survey data was converted from the old local coordinate system to the “Modified State Plane” coordinate system and input in to Vulcan.**
  - ◆ **Pegasus drilled 147 R/C and 6 core holes from 1989-1992. Over 1300 drill assay intervals were converted and input.**
  - ◆ **GHC 2008 drilling included 54 R/C holes with over 1800 assay intervals input in to Vulcan.**
  - ◆ **GHC 2009 drilling included 111 R/C holes with over 3900 assay intervals input in to Vulcan.**



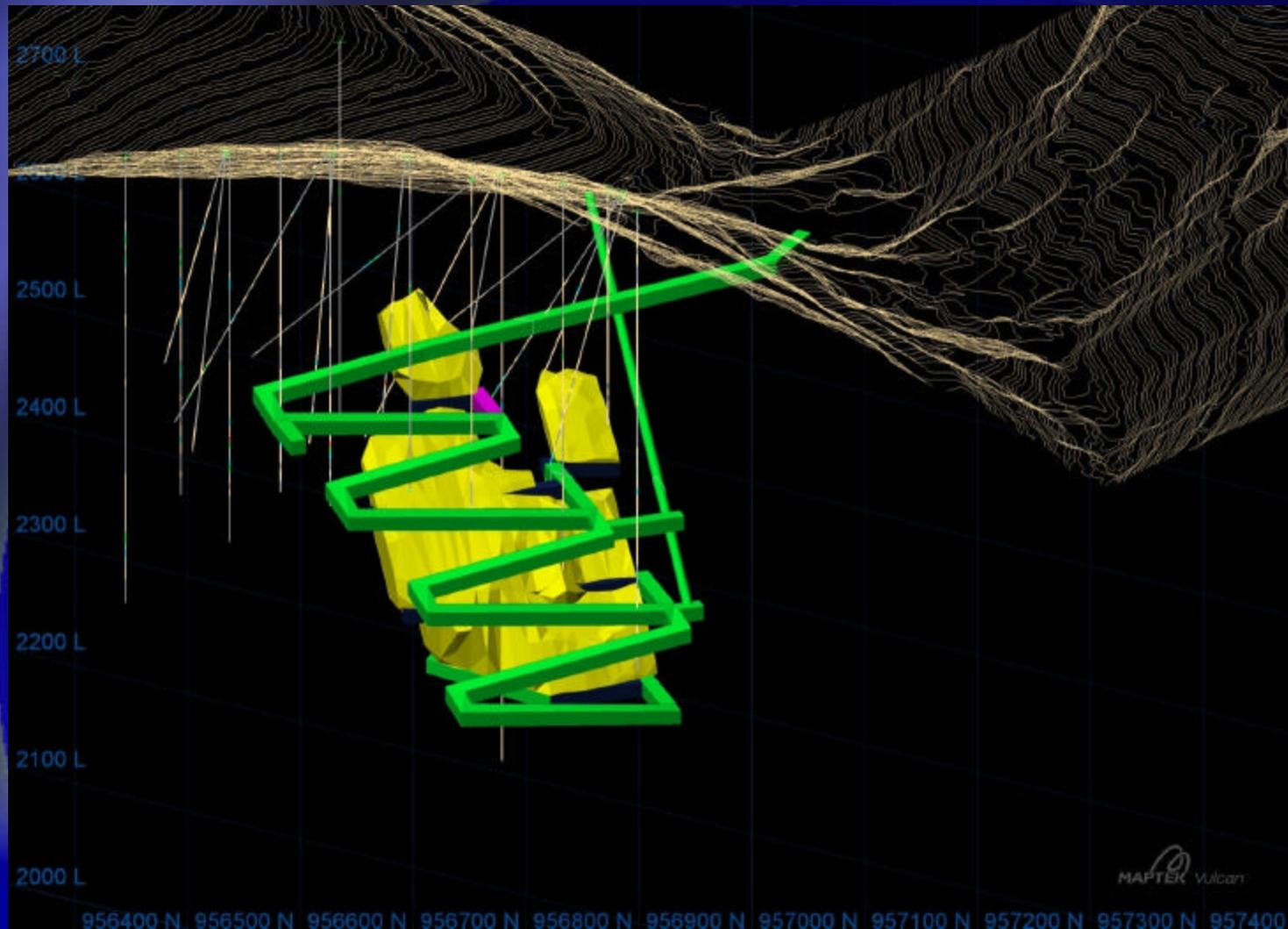
Original Pegasus Drill Holes



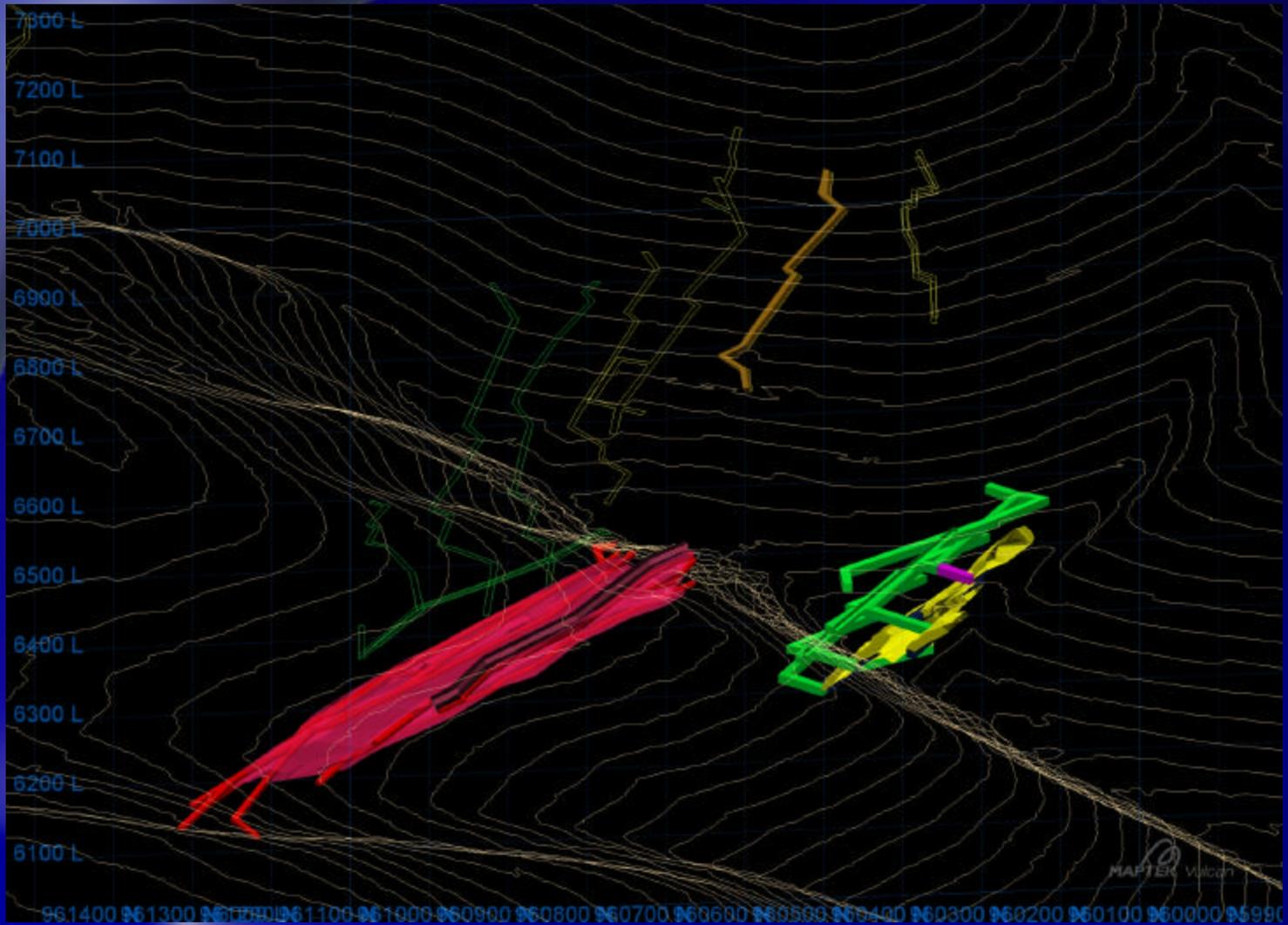
GHC Infill Drilling to Confirm Vein-Structure



**Further drilling was used to define the ore body and create a reserve report.  
(Ore Body slide)**



**Used PGC data to determine drill targets (PGC Hole slide)**



**Infill drilling confirmed vein structure and grade (PGC + GHC Hole slide)**

# Q & A