

Colorado Division  
of Reclamation,  
Mining & Safety

# Project Summary

## Gold King Bond Forfeiture M-1986-013

### Phase III – 2009 Reclamation at the Sampson, Number One, and Level Seven Portals

#### Background

The Gold King Mine has been in operation since the late 1880's. The mine continued underground mining operations through the middle of the 20<sup>th</sup> century. The M-1986-013 permit was issued to re-work three historic interconnected portals, the Level 7, Number 1, and Sampson portals. During permitted mine operations another adit was driven at the Level 7 to bypass a collapse in the original Level 7 portal. Two drill pad sites were inside the permit boundary, but were never utilized.

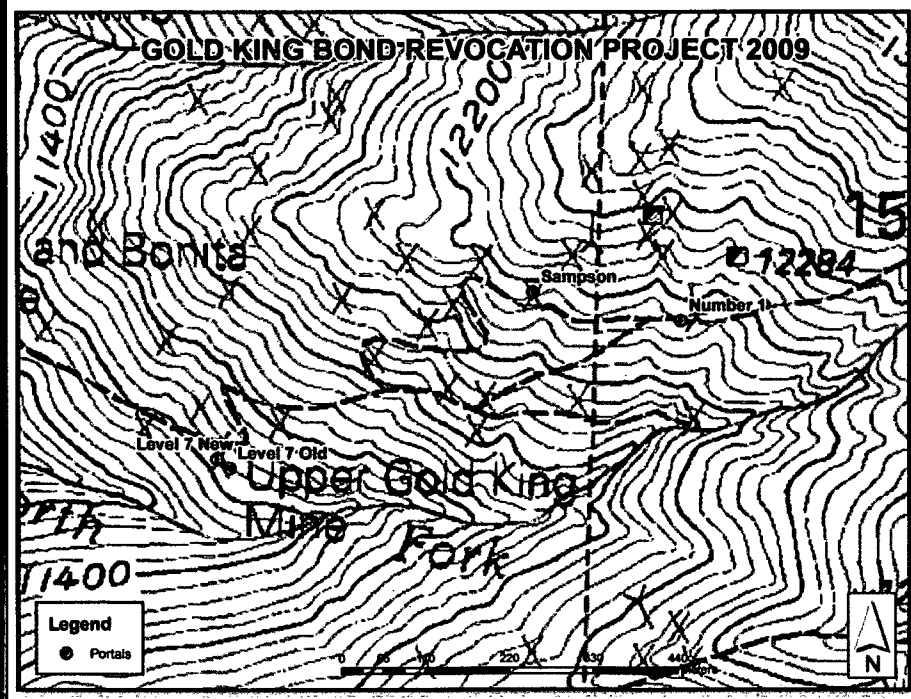
The three portal areas all have historic waste rock piles. During mine operations, the waste rock was re-graded to allow for better access and equipment turn-arounds. Little to no additional waste rock was added to the historic piles. Most of the newly mined excess waste rock was left underground. The high grade ore was trammed to the surface and loaded into haul trucks or temporarily stored at the surface.

All four permitted portals were originally dry because Sunnyside's American Tunnel, located downhill at Gladstone, deep-drained the mining district. In 1995 Sunnyside sealed the American Tunnel portal with a bulkhead. The result of the bulkhead was a drastic new high quantity discharge from the Gold King Level 7 portal of extremely poor quality water, making this site one of the worst draining mines in the State of Colorado.

#### Reclamation Plan

The Gold King Mine Reclamation Plan was bonded for backfill closure of the four portals, re-grading of the waste rock piles to 3% grade for drainage, and ripping and seeding of the road between the Sampson and Number 1 portal and a drill pad.

The reclamation plan was expanded in 2009 to include the installation of a two inch Parshall Flume to facilitate future water quality sampling by the Animas River Stakeholders Group and the current landowner. The flume was installed in the lined ditch that was previously installed under the Phase I – Gold King Permanent Portal Discharge Diversion Structure Project in 2008.



Gold King  
Site Map

**Land Owner**  
Todd Hennis

**Construction Contractor**  
K and P Property Design  
236 S. 3<sup>rd</sup> #219  
Montrose, CO 81401

**Project Cost: \$38,930.00**

**DRMS Project Manager**  
Kirstin Brown, 303.866.3567

# Project Summary

## Gold King Bond Forfeiture M-1986-013

### Phase II – 2009 Reclamation at the Sampson, Number One, and Level Seven Portals

#### Background

The Gold King Mine has been in operation since the late 1880's. The mine continued underground mining operations through the middle of the 20<sup>th</sup> century. The M-1986-013 permit was issued to re-work three historic interconnected portals, the Level 7, Number 1, and Sampson portals. During permitted mine operations another adit was driven at the Level 7 to bypass a collapse in the original Level 7 portal. Two drill pad sites were inside the permit boundary, but were never utilized.

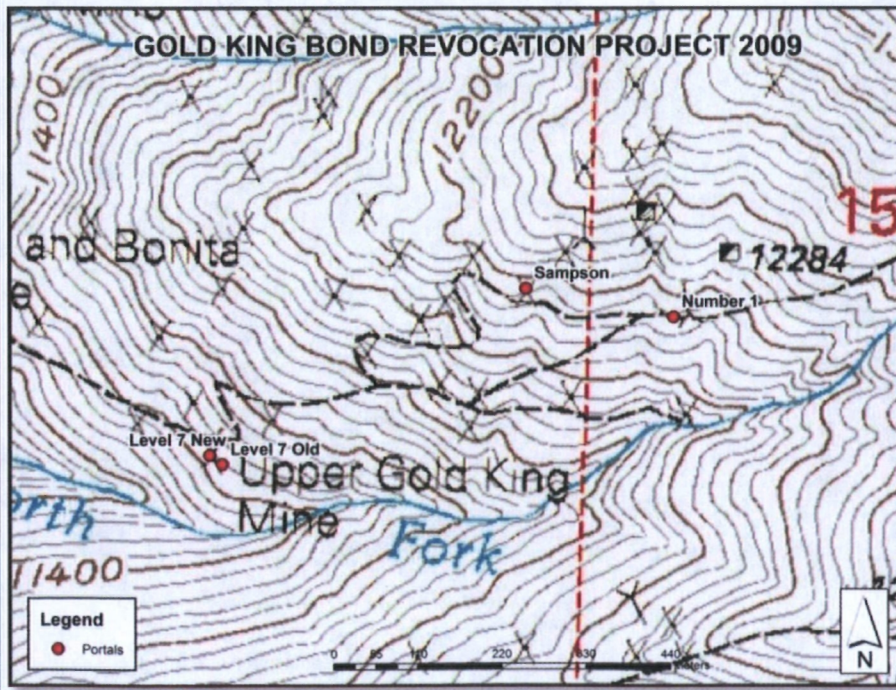
The three portal areas all have historic waste rock piles. During mine operations, the waste rock was re-graded to allow for better access and equipment turn-arounds. Little to no additional waste rock was added to the historic piles. Most of the newly mined excess waste rock was left underground. The high grade ore was trammed to the surface and loaded into haul trucks or temporarily stored at the surface.

All four permitted portals were originally dry because Sunnyside's American Tunnel, located downhill at Gladstone, deep-drained the mining district. In 1995 Sunnyside sealed the American Tunnel portal with a bulkhead. The result of the bulkhead was a drastic new high quantity discharge from the Gold King Level 7 portal of extremely poor quality water, making this site one of the worst draining mines in the State of Colorado.

#### Reclamation Plan

The Gold King Mine Reclamation Plan was bonded for backfill closure of the four portals, re-grading of the waste rock piles to 3% grade for drainage, and ripping and seeding of the road between the Sampson and Number 1 portal and a drill pad.

The reclamation plan was expanded in 2009 to include the installation of a two inch Parshall Flume to facilitate future water quality sampling by the Animas River Stakeholders Group and the current landowner. The flume was installed in the lined ditch that was previously installed under the Phase I – Gold King Permanent Portal Discharge Diversion Structure Project in 2008.



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## 2009 Reclamation at the Sampson, Number One, and Level Seven Portals

### 2009 Reclamation

In 2009 all four permitted adits were backfilled, a flume was installed in the previously lined ditch, and 1600 feet of drill road was reclaimed. The Sampson Portal was backfilled with on-site materials and the wooden and metal debris was buried on-site. The Number One Portal was also backfilled with on-site materials and the debris from the site was buried to the east of the portal in the waste pile. In addition, a 1600 foot long drill road from the Number One Portal to immediately below the Sampson waste pile was re-contoured, ripped, mulched, and seeded.

Both Level Seven portals were partially collapsed prior to backfilling in 2009. The Level Seven New Portal required additional fill to remove the unstable fifteen feet of continually collapsing timbered area that remained in front of the complete portal collapse from fifteen feet on. The Level Seven Old Portal also required additional closure in front of the complete portal collapse from thirty feet on. An observation pipe and drainage pipe were placed in the Level Seven Old Portal, but during filling around the pipes, the timbers in the portal collapsed and loose colluvial material completely covered the observation and drainage pipes. The drainage pipe continues to drain at roughly 200 gallons per minute, at the same flow rate as before the collapse. The observation pipe was meant to provide stable access to view the collapse at thirty feet, allowing the landowner and the DRMS to monitor this unstable draining adit, which is arguably one of the worst high quantity, poor water quality draining mines in the State of Colorado. Because of the collapse, DRMS decided to install a well point, driven into the collapse, through the drainage pipe, in an attempt to alleviate concerns about an unstable increase in mine pool head within the Gold King workings. The installed 6 inch perforated steel pipe penetrated approximately 12 feet of collapsed material thought to exist between the original collapse and the end of the drain pipe. The well point was unable to penetrate through any of the original existing collapse in the tunnel.



Gold King Level 7 Old Portal Closure



Gold King Level 7 Old Portal with 2" Parshall Flume Installed in Concrete Lined Ditch

# Project Summary

## 2009 Reclamation at the Sampson, Number One, and Level Seven Portals

A flume was installed at the Level Seven Old Portal as part of the bond revocation reclamation. The two inch Parshall Flume was installed in a concrete lined ditch immediately in front of the HDPE lined ditch. The flume will be used to monitor flow by the landowner and the Animas River Stakeholders Group (ARSG).

One change order was issued on 9/17/2009 to increase the project cost by \$14,980.00. There were two increases in cost to the project budget. The concrete lined ditch needed additional concrete work to make the ditch larger in order to carry the larger than estimated quantity of mine drainage for an increased cost of \$12,480.00. The well point installed in the Level Seven Old Portal was also an additional cost of \$2,500.00. The entire bond amount was expended on this project and the additional funding (\$2,082.74) came from the State Appropriated Bond Forfeiture Severance Tax.



*Number 1 Portal backfilled*



*Sampson Portal, Drill Road, and Number 1 Portal as viewed from access road after reclamation. Drill Road has been re-contoured and revegetated in this photo.*

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## 2009 Reclamation at the Sampson, Number One, and Level Seven Portals

### Remaining Reclamation Requirements

The mine drainage at the Gold King Level 7 Mine contains extremely high levels of metals and continues to flow between 150 and 300 gallons per minute. The mine drainage began after bulkheads were installed in the American Tunnel in 1995, which previously deep-drained the mining district. The mine drainage and the collapse at the Level 7 Old Portal continues to be of concern to the landowner, DRMS, and ARSG. A future project at the site may attempt to cooperatively open the Level 7 Old Portal in an effort to alleviate the potential for an unstable increase in mine pool head within the Gold King workings.



Gold King Level 7 Old Portal with well-point installed through the drain pipe. This portal may be re-opened in a future project to help stabilize the mine drainage and prevent future *increases in mine pool head*.