

**FINAL
CORRECTIVE ACTION COMPLETION
REPORT
ICMC Audits**

Control No.: GSWL-ICMC-CAR-01

Date issued: June 4, 2010

Introduction:

This Corrective Action Completion Report presents the evidence to support the successful implementation of the **GSWL-ICMC-CAR-01** to correct the deficiency identified in the ICMC Certification Audit of the Golden Star (Wassa) Limited (GSWL) mine, conducted between 19 to 23 January 2009.

ICMC Standard of Practice Section Reference: 4.7(1)

Description of Deficiency:

The concrete ring beam foundations for the carbon-in-leach (CIL) tanks do not provide an impermeable barrier between the tank bottoms and the ground, and the foundations do not have leak collection and recovery systems.

Corrective Action Required (describe/attach supplemental information as necessary):

- Install leak collection and recovery systems within each CIL tank ring foundation to allow for identification of leakage prior to entering the environment; or
- Implement a combination of environmental monitoring (e.g., groundwater or vadose zone monitoring) and a risk-based inspection program for the tanks; or
- Construct an impermeable barrier between the tank bottoms and the ground.

Corrective Action

GSWL installed a leak detection and recovery system within each of the six CIL tank ring beam foundations, and developed and implemented a procedure of daily monitoring of the leak detection piezometers for each tank.

Evidence Provided to Verify Completion of Corrective Action

- A memorandum from GSWL dated 16 December 2009 was submitted to the Audit Team that describes the leak detection system design and installation. The memorandum includes photographs of the monitoring piezometers prior to installation, installation activities, and a completed monitoring port. An engineering drawing was also provided. Four 30-mm diameter, 6-m long perforated PVC pipes, wrapped in geotextile were symmetrically installed through the ring beams supporting each 15-m diameter tank. Photographs were later provided showing monitoring ports for each of the six CIL tanks.
- A copy of *Procedure PM 043 – Procedure for Monitoring Leak Detection Pipes in the CIL tank(s) Concrete Ring Beam Foundation*, dated 31 January 2010. The procedure describes daily monitoring requirements as well as actions to be taken in the event of liquid being detected. GSWL also provided a completed daily monitoring checklist.
- An engineering report entitled “*Installation of Cyanide Leakage Detection Piezometers, Akyeampim – Wassa-W/R-Ghana, Factual Near Horizontal-Piezometer Installation Report*”, prepared by Earthtech Engineers, Accra, and dated December 2009. The report details the material and installation specification for the system and a sign-off by a registered Civil Engineer (Ghana) to certify that the work was carried out as specified and in accordance with standard practice.

Copies of these documents will be retained in GeoEngineers’ internal project records.

Closure Verified:



Lead Auditor: John T. Lambert

Date: 4 June 2010

**FINAL
CORRECTIVE ACTION COMPLETION
REPORT
ICMC Audits**

Control No.: GSWL-ICMC-CAR-02

Date issued: June 4, 2010

Introduction:

This Corrective Action Completion Report presents the evidence to support the successful implementation of **GSWL-ICMC-CAR-02** to correct the deficiency identified in the ICMI Certification Audit of the Golden Star (Wassa) Limited (GSWL) mine, conducted between 19 to 23 January 2009.

ICMC Standard of Practice Section Reference: 4.7(5)

Description of Deficiency:

A portion of the HDPE tailings delivery pipeline is buried for a short distance near the tailings storage facility (TSF) in order to provide a crossing for vehicular traffic. Secondary containment measures were not visible during the onsite verification audit.

Corrective Action Required (describe/attach supplemental information as necessary):

Provide documentation showing evidence that leakage detection and recovery (e.g., concrete pipe sleeve or other means) is provided for the segment of the tailings delivery pipeline that is buried near the TSF.

Corrective Action

GSWL provided secondary containment for the tailings delivery pipeline beneath the road by installing a corrugated metal pipe sleeve around the primary HDPE pipe, wrapping the 10-mm thick corrugated metal pipe with geomembrane, and placing geomembrane along the bottom of the trench. Any leakage from the buried portion of the pipeline will be conveyed to the open lined trench, which reports to the Plant Event pond. The ends of the culvert will be monitored for potential leaks once every shift as part of the tailings dam inspection program.

Evidence Provided to Verify Completion of Corrective Action

- A memorandum from GSWL dated 16 December 2009 was submitted that provides a record of the construction works to install the liner and culvert beneath the road. The memorandum provides a description of the materials used and a photographic record of the installation.
- A copy of the modified *Shift Supervisor Daily Planning Sheet and Daily Inspection Checklist for the Tailings Storage Facility*, which includes inspection of the culvert ends for potential leaks, and a copy of a completed checklist to confirm that the leak monitoring and detection program has been implemented.

Copies of these documents will be retained in GeoEngineers' internal project records.

Closure Verified:



Lead Auditor: John T. Lambert

Date: 4 June 2010