Case Study: Accurate Gold Assays in High Grade Deposits

Featured Process: Bulk Gravity Assay

Background: A high grade gold mine was observing large discrepancies between production samples from drill cuttings and the original block model. Further, there was large variation among grab samples from the same areas. The mine needed to know the true grades in order to define ore and waste as well as reconcile the block model data. Sepro was retained to solve this problem.

Question:

- Can a procedure be developed to give more accurate and repeatable assays in grab samples that contain coarse gold particles?

Methods:

- A test program was conducted to compare the results of grab samples (the industry standard practice) and of Sepro Laboratory's Bulk Gravity Assay
- The bulk gravity assay uses 10kg of material which is fed through a Falcon L40 laboratory gravity concentrator to remove the free gold particles which typically contribute to gold assay variability. The Falcon L40 concentrate is assayed to extinction and the (now homogeneous) tailings are sampled for assay.
- This comprehensive test program compared the results of using a dry rotary splitter and a wet slurry splitter to generate the 10kg samples. It also compared using a one or two stage gravity concentration process.

Results:

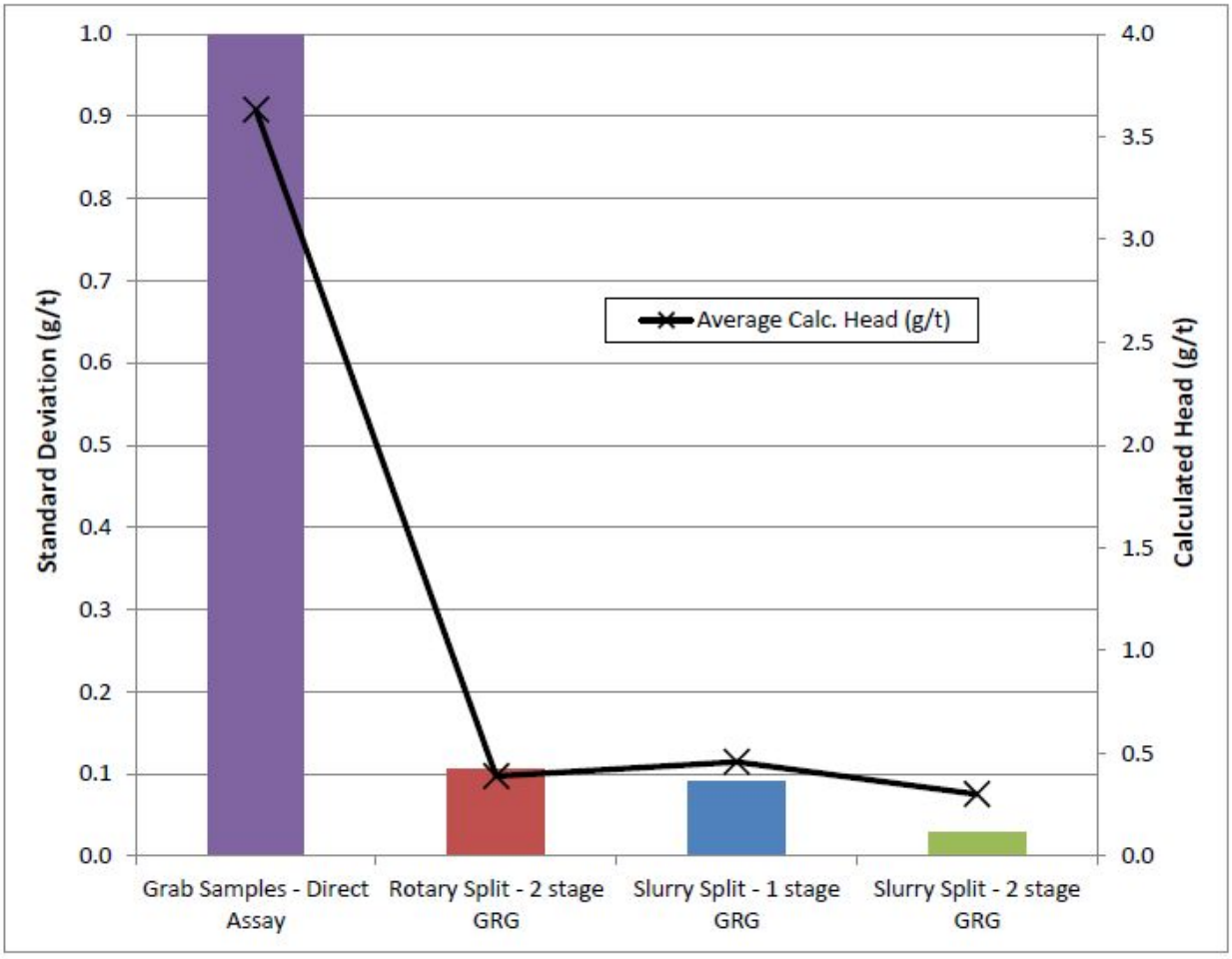
- Variability in the ore samples was reduced by 85% and the reported grade was 79% higher after using Sepro Laboratory's Bulk Gravity Assay procedure compared to the grab samples.
- Variability in the waste samples was reduced by over 99% and the reported grade was 92% lower after using Sepro Laboratory's Bulk Gravity Assay procedure compared to the grab samples.
- Overall a much greater distinction between ore and waste was achieved with higher confidence.

Images:

Sample 1 (waste)

Table IX: BGA Testwork Summary – Jumbo Sample #1 (CE100)

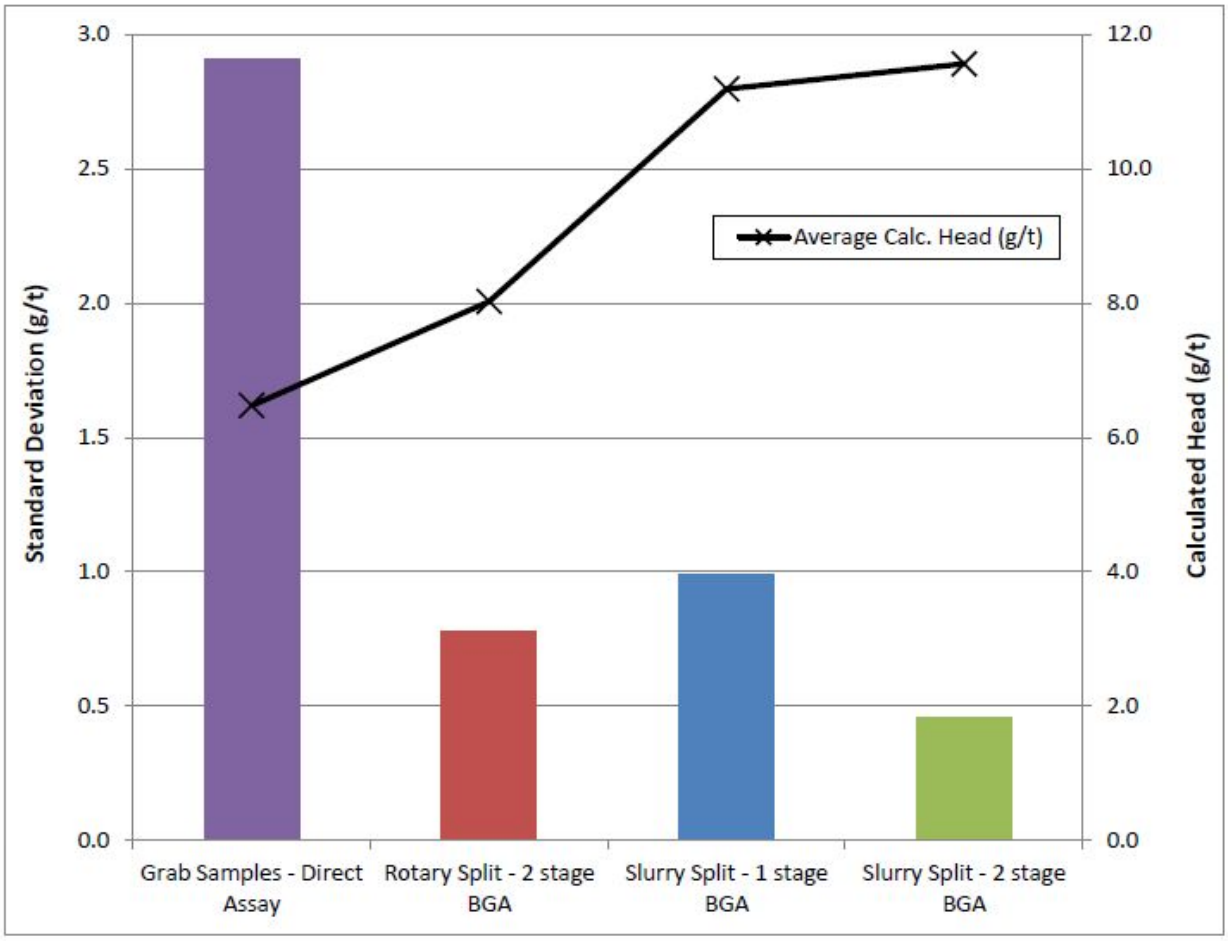
Series	Splitter	Stages	Calc. Head (g/t)		Recovery (%)		Tailings (g/t)	
			Grade	Std. Dev	GRG	Std. Dev	Grade	Std. Dev
CE100	Grab	-	3.63	7.69	-	-	-	-
CE110	Rotary	2	0.39	0.11	45.6	6.8	0.22	0.08
CE120	Slurry	1	0.46	0.09	49.6	15.3	0.24	0.10
CE130	Slurry	2	0.30	0.03	44.0	4.4	0.17	0.02



Sample 2 (ore)

Table XIV: BGA Testwork Summary – Jumbo Sample #2 (CE200)

Series	Splitter	Stages	Calc. Head (g/t)		Recovery (%)		Tailings (g/t)	
			Grade	Std. Dev	GRG	Std. Dev	Grade	Std. Dev
CE200	Grab	-	6.47	2.91	-	-	-	-
CE210	Rotary	2	8.02	0.78	83.3	1.5	1.38	0.23
CE220	Slurry	1	11.18	0.99	79.3	2.1	2.33	0.16
CE230	Slurry	2	11.56	0.45	81.3	2.6	2.08	0.29



<Falcon L40>

<Slurry Splitting Station>