60001891

Mining District File Summary Sheet

DISTRICT	Rosebud
DIST_NO	4010
COUNTY If different from written on document	Pershing
TITLE If not obvious	Reverse Circulation sampling system and methods on the Rosebud Project
AUTHOR	Stoeberl, R; Kuhl T
DATE OF DOC(S)	1991
MULTI_DIST Y / (N?) Additional Dist_Nos:	
QUAD_NAME	Sulphur 7½'
P_M_C_NAME (mine, claim & company names)	Rosebud Minc; Rosebud Project
COMMODITY If not obvious	gold; silver
NOTES	Drill sample procedures; photographs; hand-written notes 9p.

Keep docs at about 250 pages if no oversized maps attached
(for every 1 oversized page (>11x17) with text reduce
the amount of pages by ~25)

SS: DP 9/9/08
Initials Date

DB:
Initials Date

SCANNED:
Initials Date

Revised: 1/22/08

URBD 70107 DRILLING
RC SAMPLING SYSTEM, STOEBERL, 7/8/91

60001891 4010

TO: Tim Kuhl

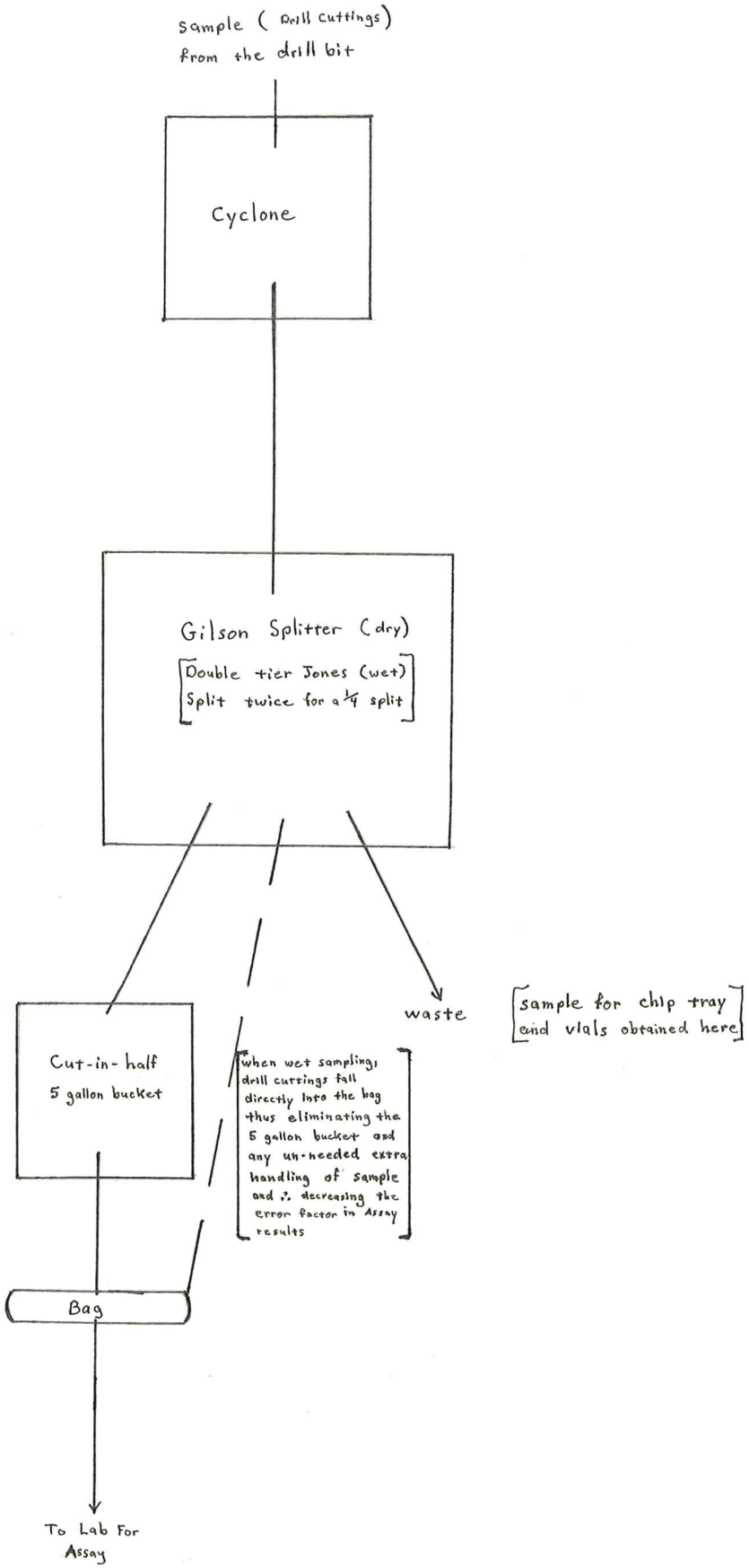
FROM: Randy Stoeberl

DATE: July 8, 1991

RE: Reverse Circulation sampling system and methods on the Rosebud Project.

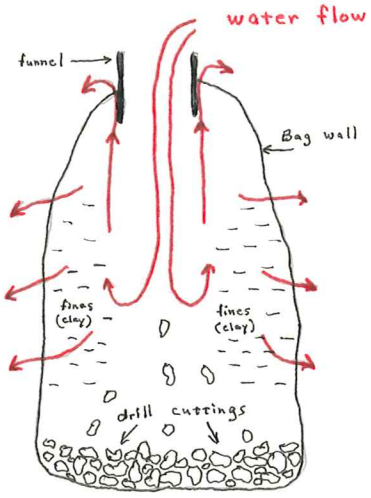
The sampling system employed by the Stevens reverse circulation drill rig is an accurate, clean, well designed and is very well constructed for both dry and wet sampling.

When drilling dry, a Gilson splitter is utilized to obtain an accurate representative of the 5 foot interval drilled. The rock sample from the 5 foot interval is held up in the cyclone by a hydraulic powered door. When the entire 5 foot interval is complete, the driller, Larry Wallace opens the door on the bottom of the cyclone allowing the dry sample to freely flow through the riffles. The riffles are (or can be) adjusted to obtain between 10 and 15 pounds of sample weight. The sample falls into a cut-in-half 5 gallon bucket after falling through the riffle system. The bucket sample is then bagged and stacked in groups of 10 bags per stack. The entire system is cleaned with forced air after every 5 foot sample insuring clean representative samples from the interval drilled. The following flow diagram illustrates the path the sample takes in route to the lab.


Sample (Drill Cuttings)
from the drill bit
Cyclone
Gilson Splitter (dry)
Double tier Jones (wet)
Split twice for a 1/4 split
waste
sample for chip tray
and vials obtained here
Cut-in-half
5 gallon bucket
when wet sampling, drill cuttings fall directly into the bag thus eliminating the 5 gallon bucket and any un-needed extra handling of sample and ∴ decreasing the error factor in Assay results
Bag
To Lab For
Assay

The wet sampling system is basically a modification of the dry sampling procedure. With dry sampling the adjustable Gilson is utilized. When sampling wet, a fixed laboratory Jones splitting system is used. Two Jones splitters are stacked one on top of the other and welded into a frame of angle iron. The design is such that when the sample comes out of the cyclone it falls into the top Jones splitter evenly (sometimes a plastic bag around the cyclone opening helps distribution evenly). The sample is split exactly in half with one half falling into a trough and exiting as waste. This is where I obtain my chip tray and vial samples from. The other half falls into the second Jones splitter and splits the sample down to 1/4 split. The sample goes through the riffles and into a funnel. The sample bag is clamped to the funnel with the sample bag string pulled and tied tight. The hydraulic head forces water out of the bag intrapping fine particles of the sample in. When excess water is encountered, water does flow out between the bag and the funnel. This does not matter to much as a factor in sample loss due to one important point; The utilization of large bags. The large bags allow greater surface area for water to escape pressure from the hydraulic head built up in the bag/funnel system. The large bags also act as a temporary base level for the rushing water therefore, unloading the suspended sample in the bag much like a river or stream would unload it's suspended particles of sediment when encountering a temporary base level such as a lake, pond or the ultimate base level, the ocean. Inside the bag a small convection type current should be formed by the fast flowing water coming into the bag plunging deep into the center of the bag. This force causes the sample to settle out as the water

slows down and begins to travel out either through the bag walls or along side of it in route to the small spaces between the top of the bag and the funnel. The following diagram shows the flow path of water and sample as they enter the bag.



The sample obtained from this type of system have been and will be the closest representative of the interval drilled. This system is superior to other sampling systems. With every type of system a certain degree of sample may be lost or contamination may occur or miss representation of the interval may occur but with the double tier Jones, the samples are clean and accurate representatives of the interval drilled. The amount of error is so slight due to the design and effectiveness of collecting fines from the sample. The only better sample is core and even that has its limitations.

* The following pages contain a flow diagram and photographs of both dry and wet sampling. Take note on the water bubble forming on the outer skin of the bag where the water is forced out from the hydraulic pressure within the bag.

Gilson Splitter

Dry sampling system

Double tier Jones

Wet sampling system

Gilson splitter, dry sampling Note: screen sieve on waste side of splitter to obtain chip tray and vial sample

Actual sample going through the riffles

Bagging dry sample and stacking dry sample bags

Forced air cleans the dry Gilson splitter to obtain clean samples every 5 foot interval

Double tier Jones without plastic cover over the cyclone;

Note: Elevated system to fit cyclone in Jones splitter

Double tier Jones with plastic cover over the cyclone

Water bubbles forming due to water pressure inside bag

Water bubbles now changing to water flowing out of bag due to hydraulic pressure inside bag

Sieve collects sample from the trough for the chip tray and the vials

Large sample bags, 12x24 inches, Note: bags with large amounts of fines (clay) to the right and bags with mostly rock chips on the left