INSTRUCTION MANUAL

SEDIMENT SAMPLER

MODEL DH-59

DH59100-01

SEDIMENT SAMPLER MODEL DH-59

I N D E X

OPERATION INSTRUCTIONS

SUSPENDED SEDIMENT SAMPLER, DH-59

INTRODUCTION

The DH-59 Sampler is a medium-weight sampler for the collection of suspended sediment samples with a handline or San Winch.
The Sampler consists of an epoxy coated, streamlined bronze casting weighing approx. 10Kgs, which partially encloses the sample container, and is equipped with a tail valve to orient the intake nozzle of the sampler into the approaching flow as the sampler enters the water.

OPERATION

Round bottles are used for sample containers. Pressure from a spring tensioned operating rod holds and seals the bottle against a rubber gasket within the casting. The contact between the sample bottle and the gasket should be air tight and should be tested by blocking off the air exhaust tube with a finger and blowing into the nozzle each time a bottle is fitted to the sampler.

The axis of the sample container is inclined at an angle to the vertical which permits sampling to within 90mm of the stream bed. With the instrument oriented into the direction of flow (nozzle horizontal and pointed upstream) a continuous stream filament is discharged into the sample bottle during the period of submergence. The air displaced by the sample is ejected through the air escape passage projecting from the instrument alongside the head and oriented to discharge downstream.
A fixed static head differential between the intake and air exhaust facilitates sampling in low stream velocities and slack waters.
Three nozzles, 1/8", 3/16" and 1/4" diameter, are supplied with each sampler. One is chosen for each sampling cross section according to the velocity and depth to be sampled.

A clean bottle should be used for each separate sediment sample.
At least one suspended sediment sample is taken at each stream vertical selected in the cross section. In a sampling operation, the intake nozzle is oriented upstream, directly into the current while the sediment sampler is lowered into the stream.
Submerged obstructions directly upstream or adjacent to the sampler should be avoided to preclude interference with the stream filament approaching the intake nozzle.

The sampler should be lowered at a uniform rate from the water surface to the bottom of the stream, instantly reversed, and then raised again to the water surface at a uniform but not necessarily an equal rate. Each filled sample bottle when removed from the instrument should be capped immediately and appropriately marked.

The sampler continues to take its sample in flowing water throughout the time of submergence, even after the bottle is completely filled. If the bottle becomes entirely full, the sample may not be representative and should be discarded. Although the capacity of the sample container is about 470ml, the tilt of the bottle is such that any sample containing more than 440ml of a water sediment mixture may be in error. In order to provide sufficient sample of a laboratory analysis, the length of time the instrument remains submerged should be adequate to produce a sample volume greater than 375ml but not to exceed 440ml. It is generally preferable to save an initial sample smaller than 375ml but larger than 300ml than to discard the sample on the spot and re-sample into the same bottle. Moreover, if the initial sample volume is considerably less than 300ml, the stream vertical may be integrated a second time, or even a third time, each being additive to the same sample bottle. A minimum sample of 350ml is suggested.

SAMPLE SIZE

The volume of sample collected throughout any stream vertical is dependent primarily upon the mean stream velocity in the vertical, the size of the intake nozzle, and the time of submergence of the instrument. The operator must regulate the size of the sample accumulated by establishing the appropriate time period over which the sample is to be taken. Thus the volume of the sample may be increased or decreased by varying correspondingly the sampling time.
The attached graph shows the relation between stream velocity and filling time to produce samples 395ml in volume for three different nozzle sizes. The filling time in seconds represents the total time of submergence of the instrument and includes the time involved in traversing the stream vertical in both the downward and upward direction.

EXAMPLE

(Refer Diagram 1)

Mean Velocity	1.2 metres/sec
Nozzle 1/4"	
Filling Time	10 seconds

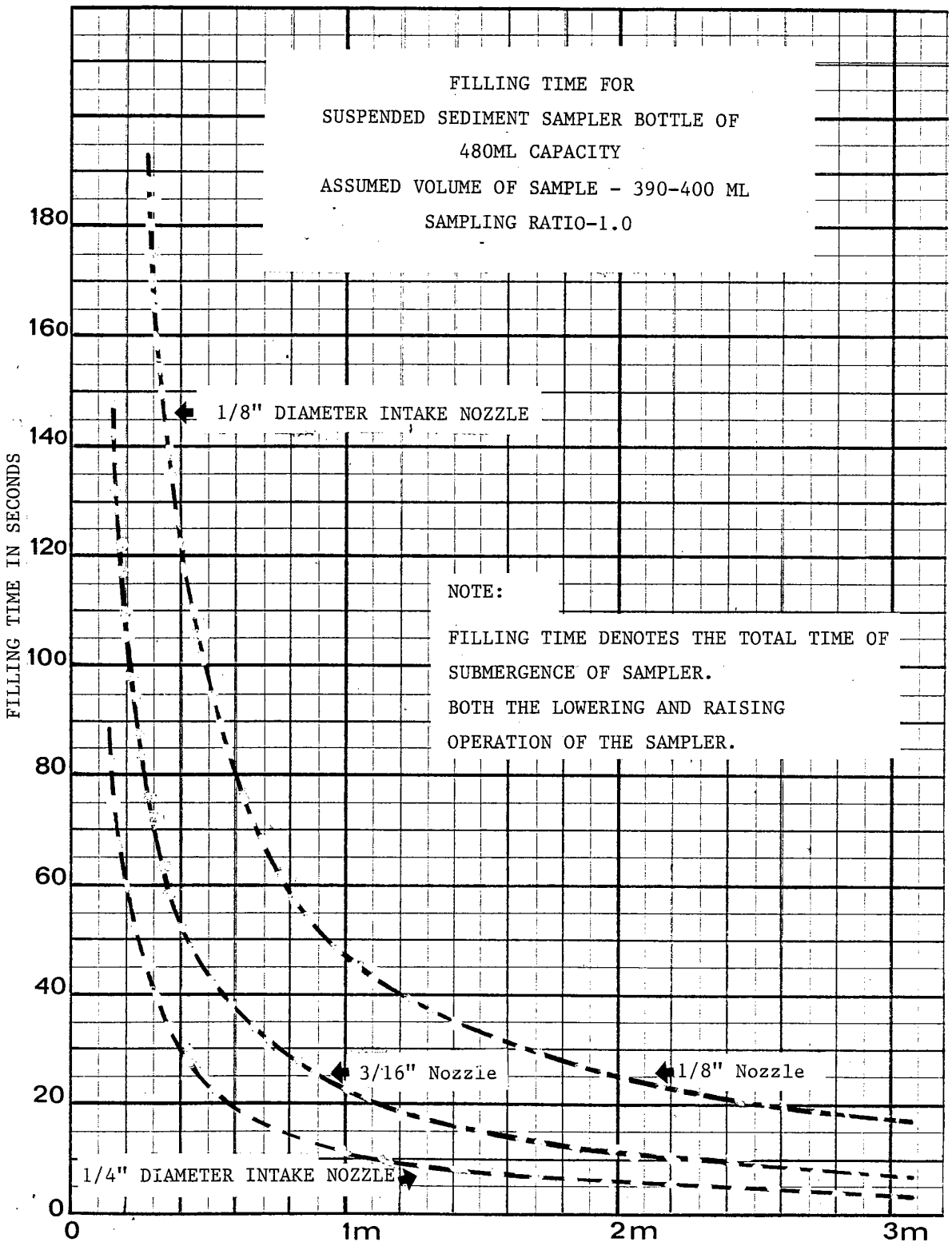
If the sampler is lowered from the water surface to the stream bed at a uniform rate in 5 seconds, it should be raised at a uniform rate so as to break the water surface at the expiration of the next 5 seconds. The time of traversing the stream vertical need not be the same in both directions of travel. However, the rate at which the sampler moves vertically must remain uniform in each direction of travel. Thus, in the above example, the stream vertical could have been traversed at a uniform rate downward in 4 seconds and the sampler raised at a uniform rate upward to clear the water surface in 6 seconds, the total submergence period still being 10 seconds.

SAMPLE NOTATIONS

Adequate information and data to identify the sample and to satisfy the purposes of the investigation should be recorder at the time of sampling. The following items are suggested :

Name of Gauging Station
Location of the cross section
Location of vertical
Stream depth covered by the sample
Stage of the stream
Date
Time of day
Identification of Personnel
Sampling time
Water temperature
Co-ordination with sample groups
Serial number of sample

Before the bottles are reused they should be washed clean inside and outside to avoid contamination of future samples.



STREAM VELOCITY - m/sec

DIAGRAM 1 - FILLING CHART