

TABLE 1
INNER HARBOR NAVIGATION CANAL
Soil Samples

<u>Site</u>	<u>Sample Designation</u>	<u>Sample Depth</u>	<u>Global Positioning System GPS Coordinates</u>	<u>HNU (ppm)</u>
Site 1	IHNC-S1-1	2.9'	N 29° 58' 13.24" W 90° 01' 34.04"	0.4
	IHNC-S1-2	5.8'	N 29° 58' 13.24" W 90° 01' 34.04"	0.2
	IHNC-S1DB-1	7'	N 29° 58' 12.65" W 90° 01' 34.48"	0
	IHNC-S1DB-2	10'	N 29° 58' 12.65" W 90° 01' 34.48"	0
	IHNC-S1DB-3	15'	N 29° 58' 12.65" W 90° 01' 34.48"	0
	IHNC-S1DB-4	20'	N 29° 58' 12.65" W 90° 01' 34.48"	0
	IHNC-S1DB-5	27'	N 29° 58' 12.65" W 90° 01' 34.48"	0
	IHNC-S1DB - 6	29.5'	N 29° 58' 12.65" W 90° 01' 34.48"	0
	IHNC-S1DB-7	35'	N 29° 58' 12.65" W 90° 01' 34.48"	0
	IHNC-S1DB-8	41.5'	N 29° 58' 12.65" W 90° 01' 34.48"	0
	IHNC-S1DB-8A	41.5'	N 29° 58' 12.65" W 90° 01' 34.48"	0
IHNC-S1DB-8B	41.5'	N 29° 58' 12.65" W 90° 01' 34.48"	0	
Site 2	IHNC-S2-1	3.4'	N 29° 58' 07.46" W 90° 01' 36.81"	0
	IHNC-S2-2	5.8'	N 29° 58' 07.46" W 90° 01' 36.81"	0
	IHNC-S2-3	3.0'	N 29° 58' 06.56" W 90° 01' 36.72"	1.4
	IHNC-S2-4	5.7'	N 29° 58' 06.56" W 90° 01' 36.72"	0.4
	IHNC-S2-5	3'	N 29° 58' 06.70" W 90° 01' 36.01"	30
	IHNC-S2-6	5'	N 29° 58' 06.70" W 90° 01' 36.01"	70
	IHNC-S2-7	3.0'	N 29° 58' 06.22" W 90° 01' 36.96"	0.4

TABLE 1 (Con'd)
INNER HARBOR NAVIGATION CANAL
Soil Samples

<u>Site</u>	<u>Sample Designation</u>	<u>Sample Depth</u>	<u>Global Positioning System GPS Coordinates</u>	<u>HNU (ppm)</u>
<u>Site 2</u> <u>(Con'd)</u>	IHNC-S2-8	6'	N 29° 58' 06.22" W 90° 01' 36.96"	1.0
	IHNC-S2-9	3'	N 29° 58' 06.20" W 90° 01' 36.14"	100
	IHNC-S2-10	5'	N 29° 58' 06.20" W 90° 01' 36.14"	90
	IHNC-S2-11	3.0'	N 29° 58' 05.88" W 90° 01' 36.96"	0.4
	IHNC-S2-12	6'	N 29° 58' 05.88" W 90° 01' 36.96"	0.2
	IHNC-S2-13	2.5'	N 29° 58' 07.72" W 90° 01' 36.19"	2.4
	IHNC-S2-14	6'	N 29° 58' 07.72" W 90° 01' 36.19"	1.0
	IHNC-S2-15	3.3'	N 29° 58' 07.82" W 90° 01' 36.07"	0.4
	IHNC-S2-16	5.5'	N 29° 58' 07.82" W 90° 01' 36.07"	0.4
	IHNC-S2-17	2.3'	N 29° 58' 08.62" W 90° 01' 36.74"	0
	IHNC-S2DB-1	5'	N 29° 58' 07.03" W 90° 01' 35.84"	11
	IHNC-S2DB-2	10'	N 29° 58' 07.03" W 90° 01' 35.84"	6
	IHNC-S2DB-3	14.5'	N 29° 58' 07.03" W 90° 01' 35.84"	1
	IHNC-S2DB-4	19.5'	N 29° 58' 07.03" W 90° 01' 35.84"	2
<u>Site 3</u>	IHNC-S3-1	3.3'	N 29° 58' 03.88" W 90° 01' 37.79"	0.6
	IHNC-S3-2	6'	N 29° 58' 03.88" W 90° 01' 37.79"	0.4
	IHNC-S3-2A	6'	N 29° 58' 03.88" W 90° 01' 37.79"	0.4
	IHNC-S3-2B	6'	N 29° 58' 03.88" W 90° 01' 37.79"	0.4
	IHNC-S3-3	3.3'	N 29° 58' 02.74" W 90° 01' 38.19"	3

TABLE 1 (Con'd)
INNER HARBOR NAVIGATION CANAL
Soil Samples

<u>Site</u>	<u>Sample Designation</u>	<u>Sample Depth</u>	<u>Global Positioning System GPS Coordinates</u>	<u>HNU (ppm)</u>
Site 3 (Con'd)	IHNC-S3-4	5.7'	N 29° 58' 02.74' W 90° 01' 38.19"	0.6
	IHNC-S3-5	3'	N 29° 58' 02.49' W 90° 01' 37.90"	11
	IHNC-S3-6	5'	N 29° 58' 02.49' W 90° 01' 37.90"	40
	IHNC-S3-7	3.1'	N 29° 58' 01.73' W 90° 01' 39.04"	1
	IHNC-S3-8	6'	N 29° 58' 01.73' W 90° 01' 39.04"	0.2
	IHNC-S3-9	3'	N 29° 58' 01.66' W 90° 01' 38.02"	10
	IHNC-S3-10	7'	N 29° 58' 01.66' W 90° 01' 38.02"	7
	IHNC-S3DB-1	5'	N 29° 58' 01.78' W 90° 01' 38.00"	0.5
	IHNC-S3DB-2	10'	N 29° 58' 01.78' W 90° 01' 38.00"	0.5
	IHNC-S3DB-2A	10'	N 29° 58' 01.78' W 90° 01' 38.00"	0.5
	IHNC-S3DB-2B	10'	N 29° 58' 01.78' W 90° 01' 38.00"	0.5
	IHNC-S3DB-3	14.5'	N 29° 58' 01.78' W 90° 01' 38.00"	1
	IHNC-S3DB-4	19.5'	N 29° 58' 01.78' W 90° 01' 38.00"	1
Site 4	IHNC-S4-1	3.9'	N 29° 57' 58.76' W 90° 01' 37.90"	0.6
	IHNC-S4-2	6.0'	N 29° 57' 58.76' W 90° 01' 37.90"	0.4
	IHNC-S4-3	2.7'	N 29° 57' 58.40' W 90° 01' 38.14"	0.2
	IHNC-S4-4	5.8'	N 29° 57' 58.40' W 90° 01' 38.14"	0
	IHNC-S4-4A	5.8'	N 29° 57' 58.40' W 90° 01' 38.14"	0
	IHNC-S4-4B	5.8'	N 29° 57' 58.40' W 90° 01' 38.14"	0

TABLE 1 (Con'd)
INNER HARBOR NAVIGATION CANAL
Soil Samples

<u>Site</u>	<u>Sample Designation</u>	<u>Sample Depth</u>	<u>Global Positioning System GPS Coordinates</u>	<u>HNU (ppm)</u>
<u>Site 4 (Con'd)</u>	IHNC-S4-5	4.4'	N 29° 57' 58.8' W 90° 01' 37.65"	0.2
	IHNC-S4-6	6'	N 29° 57' 58.8' W 90° 01' 37.65"	0.2
	IHNC-S4-7	3.7'	N 29° 57' 58.41 W 90° 01' 37.51"	0.6
	IHNC-S4-8	6.3'	N 29° 57' 58.41 W 90° 01' 37.51"	0.4
	IHNC-S4DB-1	5'	N 29° 57' 58.83 W 90° 01' 37.75"	0
	IHNC-S4DB-2	10'	N 29° 57' 58.83 W 90° 01' 37.75"	0
	IHNC-S4DB-3	15'	N 29° 57' 58.83 W 90° 01' 37.75"	0
	IHNC-S4DB-4	22'	N 29° 57' 58.83' W 90° 01' 37.75"	0
	IHNC-S4DB-4A	22'	N 29° 57' 58.83' W 90° 01' 37.75"	0
	IHNC-S4DB-4B	22'	N 29° 57' 58.83' W 90° 01' 37.75"	0
<u>Site 5</u>	IHNC-S5-1	3'	N 29° 57' 59.73' W 90° 01' 39.0"	1
	IHNC-S5-2	6'	N 29° 57' 59.73' W 90° 01' 39.0"	1
	IHNC-S5DB-1	5'	N 29° 57' 59.83' W 90° 01' 39.46"	0
	IHNC-S5DB-2	10'	N 29° 57' 59.83' W 90° 01' 39.46"	0
	IHNC-S5DB-3	14.5'	N 29° 57' 59.83' W 90° 01' 39.46"	0
	IHNC-S5DB-4	19'	N 29° 57' 59.83' W 90° 01' 39.46"	0
<u>Site 6</u>	IHNC-S6-1	3.5'	N 29° 57' 54.99' W 90° 01' 38.88"	0
	IHNC-S6DB-1	5'	N 29° 57' 54.77' W 90° 01' 38.68"	1.5
	IHNC-S6DB-2	9.5'	N 29° 57' 54.77' W 90° 01' 38.68"	1

TABLE 1 (Con'd)
INNER HARBOR NAVIGATION CANAL
Soil Samples

<u>Site</u>	<u>Sample Designation</u>	<u>Sample Depth</u>	<u>Global Positioning System GPS Coordinates</u>	<u>HNU (ppm)</u>
<u>Site 6</u> (Con'd)	IHNC-S6DB-3	14.5'	N 29° 57' 54.77" W 90° 01' 38.68"	1
	IHNC-S6DB-4	19'	N 29° 57' 54.77" W 90° 01' 38.68"	1
	IHNC-S6DB-4A	19'	N 29° 57' 54.77" W 90° 01' 38.68"	1
	IHNC-S6DB-4B	19'	N 29° 57' 54.77" W 90° 01' 38.68"	1
<u>Site 7</u>	IHNC-S7-1	3.4'	N 29° 57' 53.64" W 90° 01' 41.80"	0.4
	IHNC-S7-2	5.5'	N 29° 57' 53.64" W 90° 01' 41.80"	0
<u>Site 8</u>	IHNC-S8-1	3'	N 29° 57' 40.55" W 90° 01' 46.54"	4
	IHNC-S8-2	5.5'	N 29° 57' 40.55" W 90° 01' 46.54"	6
	IHNC-S8-3	2.5'	N 29° 57' 41.40" W 90° 01' 46.23"	10
	IHNC-S8-3-1	2.7'	N 29° 57' 41.40" W 90° 01' 46.23"	10
	IHNC-S8-4	6.1'	N 29° 57' 41.40" W 90° 01' 46.23"	20
	IHNC-S8-5	9.1'	N 29° 57' 41.40" W 90° 01' 46.23"	30
	IHNC-S8DB-1	7'	N 29° 57' 41.40" W 90° 01' 46.23"	0
	IHNC-S8DB-2	10'	N 29° 57' 43.33" W 90° 01' 45.57"	0
	IHNC-S8DB-3	15'	N 29° 57' 43.33" W 90° 01' 45.57"	0
	IHNC-S8DB-4	20'	N 29° 57' 43.33" W 90° 01' 45.57"	0
<u>Site 9</u>	IHNC-S9-1	2.5'	N 29° 57' 38.25" W 90° 01' 47.39"	0
	IHNC-S9-2	5'	N 29° 57' 38.25" W 90° 01' 47.39"	9

TABLE 1 (Con'd)
INNER HARBOR NAVIGATION CANAL
Soil Samples

<u>Site</u>	<u>Sample Designation</u>	<u>Sample Depth</u>	<u>Global Positioning System GPS Coordinates</u>	<u>HNU (ppm)</u>
Site 9 (Con'd)	IHNC-S9-2-1	6'	N 29° 57' 38.25' W 90° 01' 47.39"	2
	IHNC-S9-3	3'	N 29° 57' 39.20' W 90° 01' 46.92"	0
	IHNC-S9-4	6.4'	N 29° 57' 39.20' W 90° 01' 46.92"	10
	IHNC-S9-5	2.5'	N 29° 57' 37.42' W 90° 01' 47.33"	12
	IHNC-S9-6	6.5'	N 29° 57' 37.42' W 90° 01' 47.33"	2
	IHNC-S9-6A	6.5'	N 29° 57' 37.42' W 90° 01' 47.33"	2
	IHNC-S9-6B	6.5'	N 29° 57' 37.42' W 90° 01' 47.33"	2
	IHNC-S9-7	2'	N 29° 57' 38.32' W 90° 01' 47.14"	0
	IHNC-S9-8	6'	N 29° 57' 38.32' W 90° 01' 47.14"	0
	IHNC-S9DB-1	6'	N 29° 57' 38.59' W 90° 01' 48.00"	0
	IHNC-S9DB-2	10'	N 29° 57' 38.59' W 90° 01' 48.00"	0
	IHNC-S9DB-3	14"	N 29° 57' 38.59' W 90° 01' 48.00"	0
	IHNC-S9DB-4	20'	N 29° 57' 38.59' W 90° 01' 48.00"	9
	IHNC-S9DB-5	25'	N 29° 57' 38.59' W 90° 01' 48.00"	0.2
	IHNC-S9DB-6	32'	N 29° 57' 38.59' W 90° 01' 48.00"	0
	IHNC-S9DB-7	35'	N 29° 57' 38.59' W 90° 01' 48.00"	0
	IHNC-S9DB-8	40'	N 29° 57' 38.59' W 90° 01' 48.00"	0
	IHNC-S9DB-8A	40'	N 29° 57' 38.59' W 90° 01' 48.00"	0
	IHNC-S9DB-8B	40'	N 29° 57' 38.59' W 90° 01' 48.00"	0

TABLE 1 (Con'd)
INNER HARBOR NAVIGATION CANAL
Soil Samples

<u>Site</u>	<u>Sample Designation</u>	<u>Sample Depth</u>	<u>Global Positioning System GPS Coordinates</u>	<u>HNU (ppm)</u>
<u>Site 10</u>	IHNC-S10-1	2'	N 29° 57' 41.7' W 90° 01' 38.7"	0
	IHNC-S10-2	6'	N 29° 57' 41.7' W 90° 01' 38.7"	0
	IHNC-S10-3	2'	N 29° 57' 42.10' W 90° 01' 38.36"	0
	IHNC-S10-4	2'	N 29° 57' 42.10' W 90° 01' 38.36"	0

Deep borings at Site 2 through 8 were originally projected for a total depth of forty (40) feet. Based on data obtained in the first field sampling event conducted from 30 April 1996 through 6 May 1996, the remaining deep borings were reduced in total depth to approximately twenty (20) feet. The geology below twenty (20) feet runs from a clay, silty clay to stiff clays. The analytical results from the deep boring conducted at Site 9 during the first field sampling event revealed no elevated levels of HTRW contaminants of concern below twenty (20) feet. A deep boring at Site 1 was conducted to a total depth of forty-one and one half (41.5) feet. The depth at this site was maintained at the original projected depth to assure sufficient coverage of the investigation to the projected excavation limits at the Northern end of the project.

The deep boring at Site 9 (40') provides coverage of the investigation at the southern end of the project to the projected excavation limits.

A total of forty (40) soil samples were collected from the eight (8) deep borings, which ranged in depth from approximately twenty (20) feet to forty (40) feet.

A total of sixty-one (61) soil samples were collected from shallow (0' to 6') hand augured and split spooned sampled sites.

5.1.2 Groundwater Samples

A total of three (3) groundwater samples were collected from the project area. Groundwater samples were collected within the areas of Site 1, 2 and 3. Table 2 summarizes the sample designation, depth of boring at time of sampling and GPS coordinates of the sampling location. One (1) Quality Assurance (QA) and one (1) Quality Control Sample was collected in conjunction with the water sampling at Site 2 (IHNC-W2-1).

5.2 Sampling Program

5.2.1 Soils

Shallow soil samples were obtained with stainless steel hand augers and/or split spoon samplers in accordance with the procedures prescribed in the Sampling and Analysis Plan (SAP). Deep boring soil samples were collected with split spoon samplers through hollow stem augers, with the exception of Site 9 (IHNC-S9D5-1 through 8) which was conducted with a split spoon sampler pushed prior to use of a flight auger. The split spoon samplers were eighteen (18") to twenty-four (24") inches in length and approximately two (2") inches in diameter. Hollow stem augers were approximately eight (8") inches inside diameter.

TABLE 2**Groundwater Samples**

<u>Site</u>	<u>Sample Designation</u>	<u>Depth</u>	<u>Global Positioning System GPS Coordinates</u>
Site 1	IHNC-W1-1 @ IHNC-S3-8	5'	N 29° 58' 01.73" W 90° 01' 39.03"
Site 2	IHNC-W2-1 @ IHNC-S2-8	6'	N 29° 58' 06.22" W 90° 01' 36.96"
	IHNC-W2-1A QA	6'	N 29° 58' 06.22" W 90° 01' 36.96"
	IHNC-W2-1B QC	6'	N 29° 58' 06.22" W 90° 01' 36.96"
Site 3	IHNC-W3-1 @ IHNC-S1DB-1	27'	N 29° 58' 12.65" W 90° 01' 34.48"

5.2.2 Water Samples

Water samples were proposed to be collected via hydropunch sampling equipment. The hydropunch sampling equipment was not available from NOD and therefore sampling was conducted directly from hand augured and hollow stem augured sites. Two (2) samples were collected from hand augured borings with a depth of approximately five (5) feet into the shallow groundwater table. The third site was collected from a deep boring at Site 1 after drilling of approximately twenty-seven (27') feet of precleaned hollow stem augers. The samples were collected via the use of a peristaltic pump with Teflon tubing for sampling line.

5.3 Field Observations

Field team members conducted visible site inspections at each sampling location and along areas within the project corridor. Field notes are attached as Appendix A. Observations made by the field team members, which impacted the field work, are summarized as follows:

<u>Site</u>	<u>Field Observation</u>
Site 10	NOD personnel informed SLD personnel that the proposed excavation at Site 10 would be shallow. Field personnel eliminated the deep boring at Site 10 on the basis of this information.
Site 5	Auger refusal at IHNC-S5-3 and 4. Fill material consisting of shells. Field team eliminated the site due to auger refusal and the fact that a deep boring IHNC-S5DB would be conducted in close proximity to the site. Analytical data generated from the deep boring samples would be sufficient to evaluate the area.
Site 2	Auger refusal at IHNC-S2-18. Obstruction was the footing for the flood wall adjacent to the area. The sample was eliminated by the field team.
Site 7	Area proposed for the deep boring is not accessible to the drilling equipment due to building structures, fences and overhead power lines. The deep boring was eliminated by the field team. Shallow soil samples were collected by hand augers.
Site 8	High river stage caused concern related to drilling deep borings in the toe of the levee. Field team discussed situation with NOD and SLD personnel prior to conducting further deep boring. Deep boring was concluded at this site at twenty (20') feet due to high river stage.

5.4 Photographic Documentation

Photographs were obtained by the field team to document the field activities conducted. The complete photograph file is retained on-file with the USACE-St. Louis District Office. The following photo records are presented as an excerpt of the major field tasks conducted as well as further documentation of field observations.

**Startup of Deep Boring Drilling Operation
Hollow Stem Auger - 2.5' Sections**



**Drilling Operations
Removal of Spoil During Drilling**



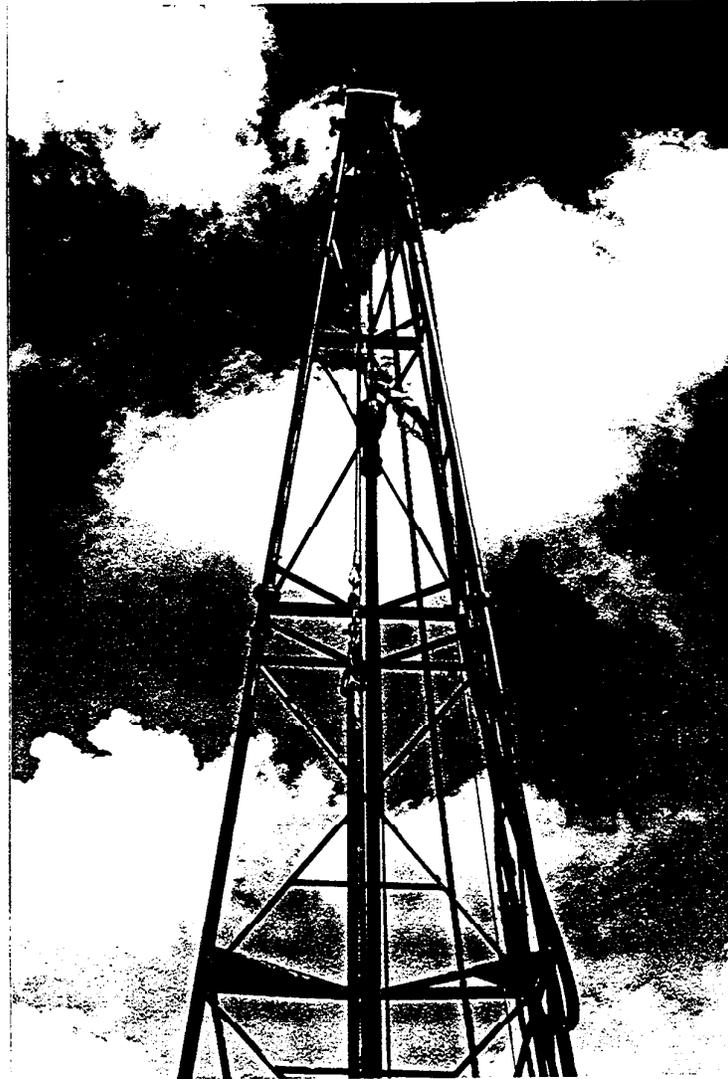
**Sampling Operation
Pushing Split Spoon Sampler**



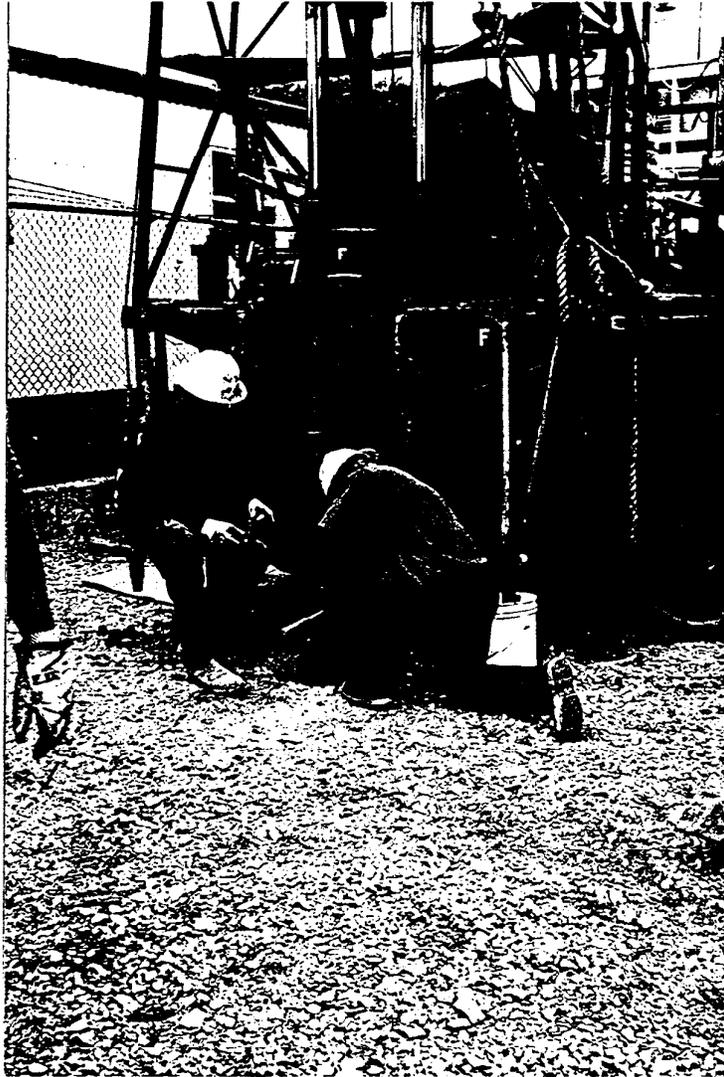
**Sample Retrieval
Lifting Rods with Attached Split Spoon Sampler
Through Hollow Stem Augers**



Sample Retrieval
Lifting Rods with Attached Split Spoon Sampler



Attaching Additional Section of Hollow Stem Auger



**Removal of Hollow Stem Augers
Upon Completion of Sampling**

