

# GEOTECHNICAL INVESTIGATIONS

Highway Construction  
km 1700.0 to 1707.7  
Alaska Highway #1  
Yukon, 2007-2008  
Volume 2 of 2



Highways and Public Works  
Transportation Engineering Branch

## Geotechnical Services

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**ORIGINAL - Do Not Remove From File**

GR-01-162

DRW1Z



HIGHWAY CONSTRUCTION

**GEOTECHNICAL INVESTIGATION**

km 1700.0 to 1707.7  
YUKON, 2007-2008

ALASKA HIGHWAY #1

Highway Construction  
km 1700.0 to 1707.7  
Alaska Highway #1  
Yukon, 2007-2008  
**Volume 2 of 2**

This Data Package prepared for project viewing:

March, 2007

Transportation Engineering Branch  
Geotechnical Services  
461 Range Road  
Whitehorse, Yukon



## CONTENTS

### Volume 1 of 2

#### INTRODUCTION

Investigation notes, classification methods and legends.

#### CENTRELINE TESTING km 1700.0 to 1707.7 Alaska Highway

Subsurface Exploration and Test Report Sheets are provided.  
The reports for the Centreline testing holes are arranged according to project location, starting at km 1700+080 and increasing to km 1707+675.

##### **Auger Testing**

2000	TEST HOLES 1275 to 1281	shown with prefix 539-
2000	TEST HOLES 1282 to 1291	shown with prefix 540-
2004	TEST HOLES 30045 to 30070	shown with no prefix
2004	TEST HOLES 30082 to 30096	shown with no prefix

##### **Reverse Circulation Air Rotary Testing**

2004	TEST HOLES 30084R to 30093R; 30096R	shown with no prefix
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##### **Test Pit Testing**

2004	TEST PITS 30072 to 30081	shown with no prefix
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## CONTENTS (continued)

### Volume 2 of 2

#### CENTRELINE TESTING    km 1700.0 to 1707.7 Alaska Highway

Laboratory Testing Result Sheets are provided.

The reports for the centreline holes are arranged according to test hole / test pit number, starting at 539-1275 and increasing to 540-1291 and starting at 30045 and increasing to 30096.

##### **Auger Testing**

2000	TEST HOLES 1275 to 1281	shown with prefix 539-
2000	TEST HOLES 1282 to 1291	shown with prefix 540-
2004	TEST HOLES 30045 to 30051	shown with no prefix
2004	TEST HOLES 30082 to 30096	shown with no prefix

##### **Reverse Circulation Air Rotary Testing**

2004	* NO LABORATORY TESTING DONE	
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##### **Test Pit Testing**

2004	TEST PITS 30076 & 30081	shown with no prefix
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#### PHOTOGRAPHS - CENTRELINE HOLES    km 1700.0 to 1707.7 Alaska Highway

Sample and Test Pit Photographs are provided.

##### **Auger Holes**

2004	TEST HOLES 30045 to 30070	sample # 465 to 653
2004	TEST HOLES 30082 to 30096	sample # 295 to 351

##### **Reverse Circulation Air Rotary Holes**

2004	TEST HOLES 30084R to 30093R; 30096R	sample # R1 to R45
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##### **Test Pits**

2004	TEST PITS 30076 & 30081	sample # S1 & S3
2004	TEST PITS 30072 to 30081	excavation photos

**CONTENTS (continued)**

**Volume 2 of 2 con't**

**GRANULAR SOURCE km 1691.3 RHS Alaska Highway Pit ID 115 G-07**

A production history 2006-30 and location plans are provided.

**GRANULAR SOURCE km 1712.5 LHS Alaska Highway Pit ID 115 G-12**

A production history 2005-05 and location plans are provided.

HIGHWAY CONSTRUCTION

GEOTECHNICAL INVESTIGATION

km 1700.0 to 1707.7  
YUKON, 2007-2008

ALASKA HIGHWAY #1

**CENTRELINE TESTING  
1700.0 to 1707.7  
ALASKA HIGHWAY**

**Laboratory Testing Result Sheets**

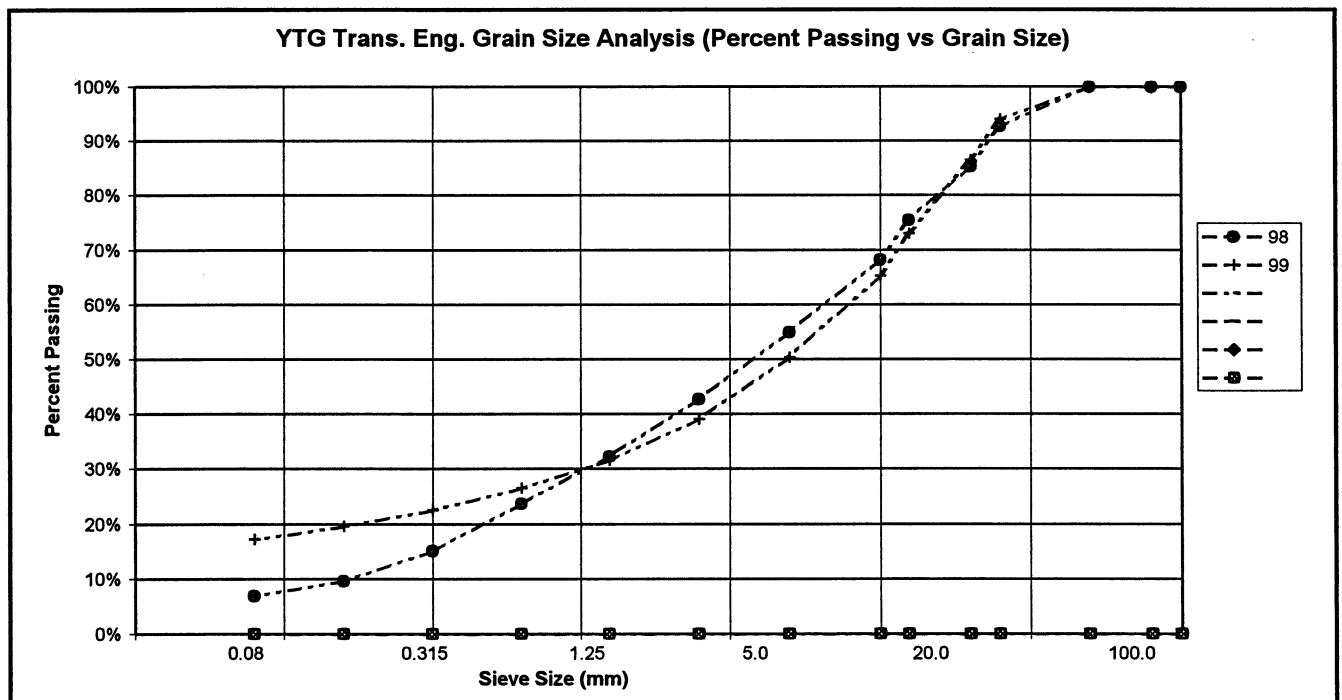


PROJECT NUMBER: 092-202101-0362  
 CLIENT: ENGINEERING CAPITAL  
 PROJECT NAME: SHAKWAK SEG 10  
 PROJECT LOCATION: KM 1729 - 1787 A/H  
 DRILL UNIT: B40-L SOLID STEM AUGER  
 HOLE LOCATION: 1701+850 8M RT  
 LOGGED BY: W.E.

HOLE No.: 539-1276

DATE COMP: 00/03/16

FIELD NO:	98	99			
LAB NO:	245	246			
DEPTH:	0.2-0.4	0.8-1.0			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	93%	94%			
20.0	85%	86%			
12.5	75%	73%			
10.0	68%	65%			
5.0	55%	50%			
2.5	43%	39%			
1.25	32%	32%			
0.630	24%	27%			
0.315	15%	23%			
0.160	10%	20%			
0.080	7%	17%			
M.C.(%):	3%	13%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0			
% GRAVEL:	45	50			
% SAND:	48	33			
% FINES:	7	17			
CLASSIFICATION	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	SILTY GRAVEL WITH SAND (GM)			

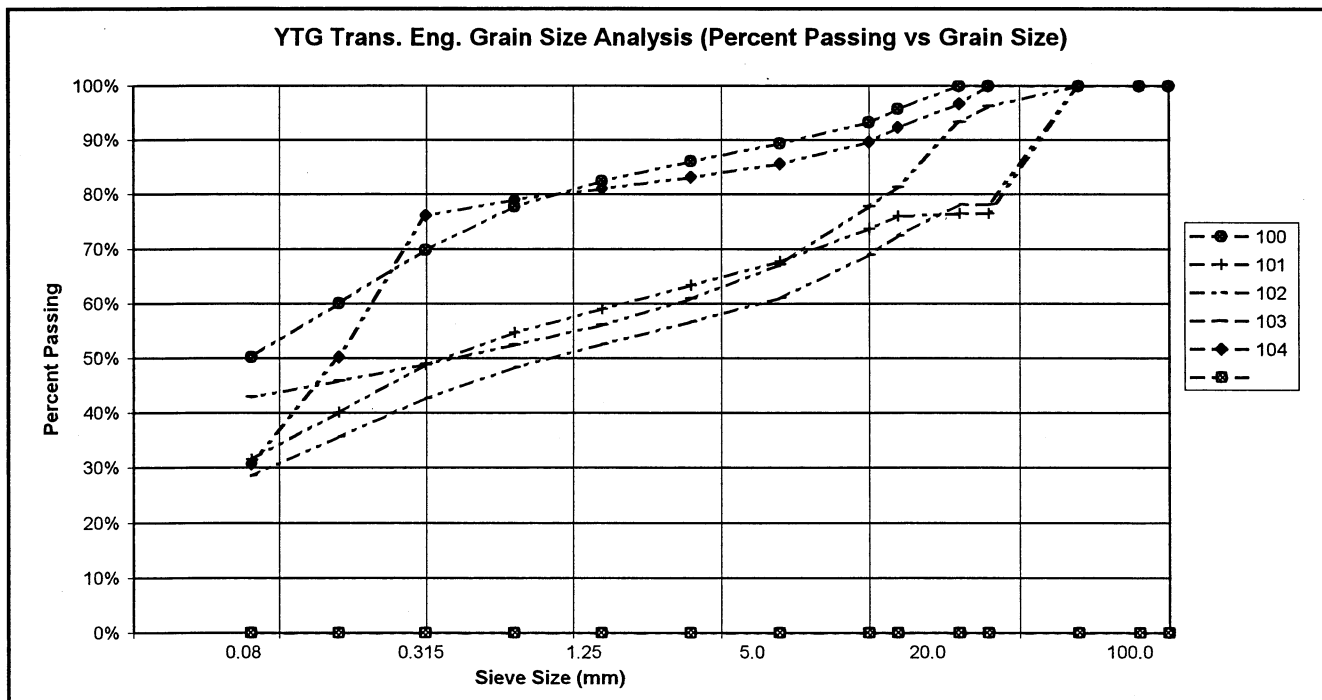


PROJECT NUMBER: 092-202101-0362  
 CLIENT: ENGINEERING CAPITAL  
 PROJECT NAME: SHAKWAK SEG 10  
 PROJECT LOCATION: KM 1729 - 1787 A/H  
 DRILL UNIT: B40-L SOLID STEM AUGER  
 HOLE LOCATION: 1701+953 8M RT  
 LOGGED BY: W.E.

HOLE No.: 539-1277

DATE COMP: 00/03/16

FIELD NO:	100	101	102	103	104	
LAB NO:	247	248	249	250	251	
DEPTH:	0.4-0.6	1.4-1.6	2.0-2.2	2.9-3.1	4.3-4.5	
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	#N/A
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	
100.0	100%	100%	100%	100%	100%	
80.0	100%	100%	100%	100%	100%	
50.0	100%	100%	100%	100%	100%	
25.0	100%	77%	78%	96%	100%	
20.0	100%	77%	78%	93%	97%	
12.5	96%	76%	72%	81%	92%	
10.0	93%	74%	69%	78%	90%	
5.0	89%	68%	61%	67%	86%	
2.5	86%	63%	57%	61%	83%	
1.25	83%	59%	53%	56%	81%	
0.630	78%	55%	48%	52%	79%	
0.315	70%	49%	43%	49%	76%	
0.160	60%	40%	36%	46%	50%	
0.080	50%	32%	29%	43%	31%	
M.C.(%):	12%	17%	27%	21%	20%	
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC INDEX.:	0.0	0.0	0.0	0.0	0.0	
% GRAVEL:	11	32	39	33	14	
% SAND:	39	36	32	24	55	
% FINES:	50	32	29	43	31	
CLASSIFICATION	SANDY SILT (ML)	SILTY SAND WITH GRAVEL (SM)	SILTY GRAVEL WITH SAND (GM)	SILTY GRAVEL WITH SAND (GM)	SILTY SAND (SM)	

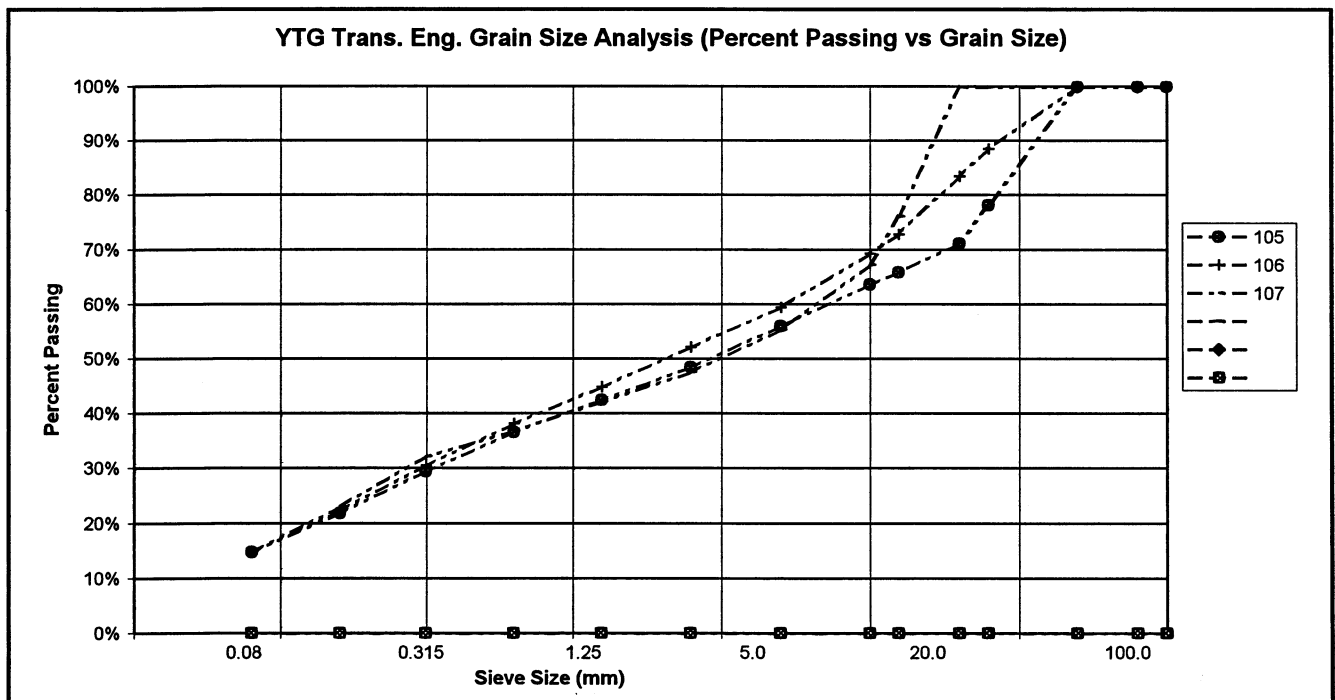


PROJECT NUMBER: 092-202101-0362  
 CLIENT: ENGINEERING CAPITAL  
 PROJECT NAME: SHAKWAK SEG 10  
 PROJECT LOCATION: KM 1729 - 1787 A/H  
 DRILL UNIT: B40-L SOLID STEM AUGER  
 HOLE LOCATION: 1702+051 7M RT  
 LOGGED BY: W.E.

HOLE No.: 539-1278

DATE COMP: 00/03/16

FIELD NO:	105	106	107		
LAB NO:	252	253	254		
DEPTH:	0.4-0.5	1.4-1.6	2.2-2.4		
TYPE:	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%		
80.0	100%	100%	100%		
50.0	100%	100%	100%		
25.0	78%	88%	100%		
20.0	71%	83%	100%		
12.5	66%	73%	76%		
10.0	64%	69%	67%		
5.0	56%	59%	55%		
2.5	48%	52%	48%		
1.25	43%	45%	42%		
0.630	37%	38%	37%		
0.315	29%	31%	32%		
0.160	22%	22%	23%		
0.080	15%	15%	15%		
M.C.(%):	3%	3%	4%		
LIQUID LIMIT:	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0		
PLASTIC INDEX.:	0.0	0.0	0.0		
% GRAVEL:	44	41	45		
% SAND:	41	45	40		
% FINES:	15	15	15		
CLASSIFICATION	SILTY GRAVEL WITH SAND (GM)	SILTY SAND WITH GRAVEL (SM)	SILTY GRAVEL WITH SAND (GM)		

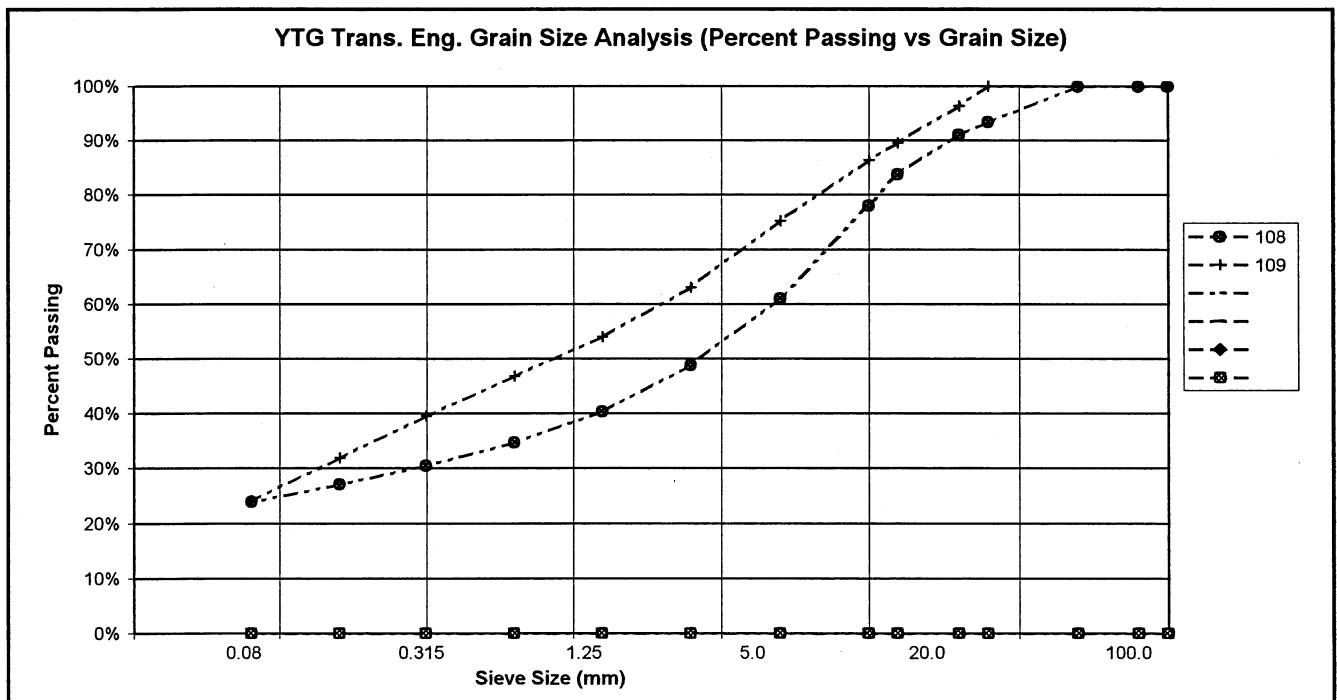


PROJECT NUMBER: 092-202101-0362  
 CLIENT: ENGINEERING CAPITAL  
 PROJECT NAME: SHAKWAK SEG 10  
 PROJECT LOCATION: KM 1729 - 1787 A/H  
 DRILL UNIT: B40-L SOLID STEM AUGER  
 HOLE LOCATION: 1702+151 5M RT  
 LOGGED BY: W.E.

HOLE No.: 539-1279

DATE COMP: 00/03/16

FIELD NO:	108	109			
LAB NO:	255	256			
DEPTH:	0.3-0.4	1.4-1.6			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	93%	100%			
20.0	91%	96%			
12.5	84%	90%			
10.0	78%	86%			
5.0	61%	75%			
2.5	49%	63%			
1.25	40%	54%			
0.630	35%	47%			
0.315	30%	40%			
0.160	27%	32%			
0.080	24%	24%			
M.C.(%):	7%	5%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0			
% GRAVEL:	39	25			
% SAND:	37	51			
% FINES:	24	24			
CLASSIFICATION	SILTY GRAVEL WITH SAND (GM)	SILTY SAND WITH GRAVEL (SM)			

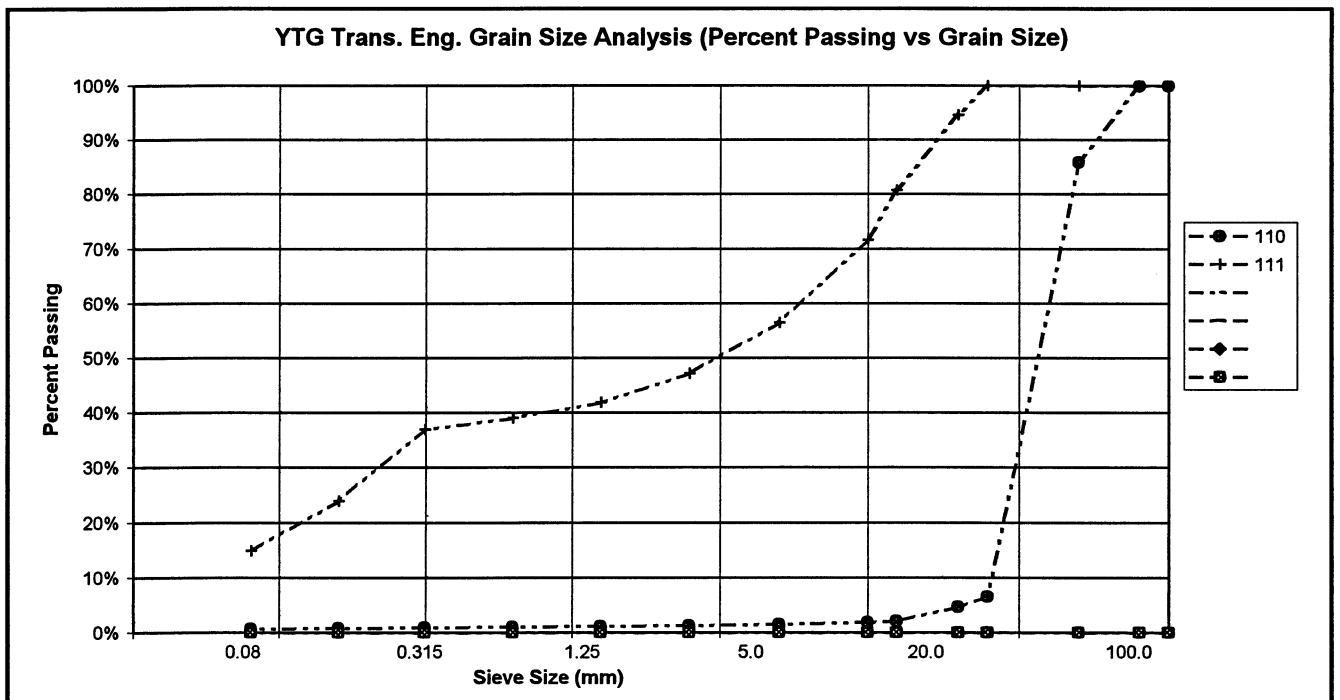


PROJECT NUMBER: 092-202101-0362  
 CLIENT: ENGINEERING CAPITAL  
 PROJECT NAME: SHAKWAK SEG 10  
 PROJECT LOCATION: KM 1729 - 1787 A/H  
 DRILL UNIT: B40-L SOLID STEM AUGER  
 HOLE LOCATION: 1702+225 6M RT  
 LOGGED BY: W.E.

HOLE No.: 539-1280

DATE COMP: 00/03/16

FIELD NO:	110	111			
LAB NO:	257	258			
DEPTH:	1.2-1.4	4.2-4.4			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	86%	100%			
25.0	7%	100%			
20.0	5%	95%			
12.5	2%	81%			
10.0	2%	72%			
5.0	2%	56%			
2.5	1%	47%			
1.25	1%	42%			
0.630	1%	39%			
0.315	1%	37%			
0.160	1%	24%			
0.080	1%	15%			
M.C.(%):	1%	9%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0			
% GRAVEL:	98	44			
% SAND:	1	41			
% FINES:	1	15			
CLASSIFICATION	POORLY GRADED GRAVEL (GP)	SILTY GRAVEL WITH SAND (GM)			

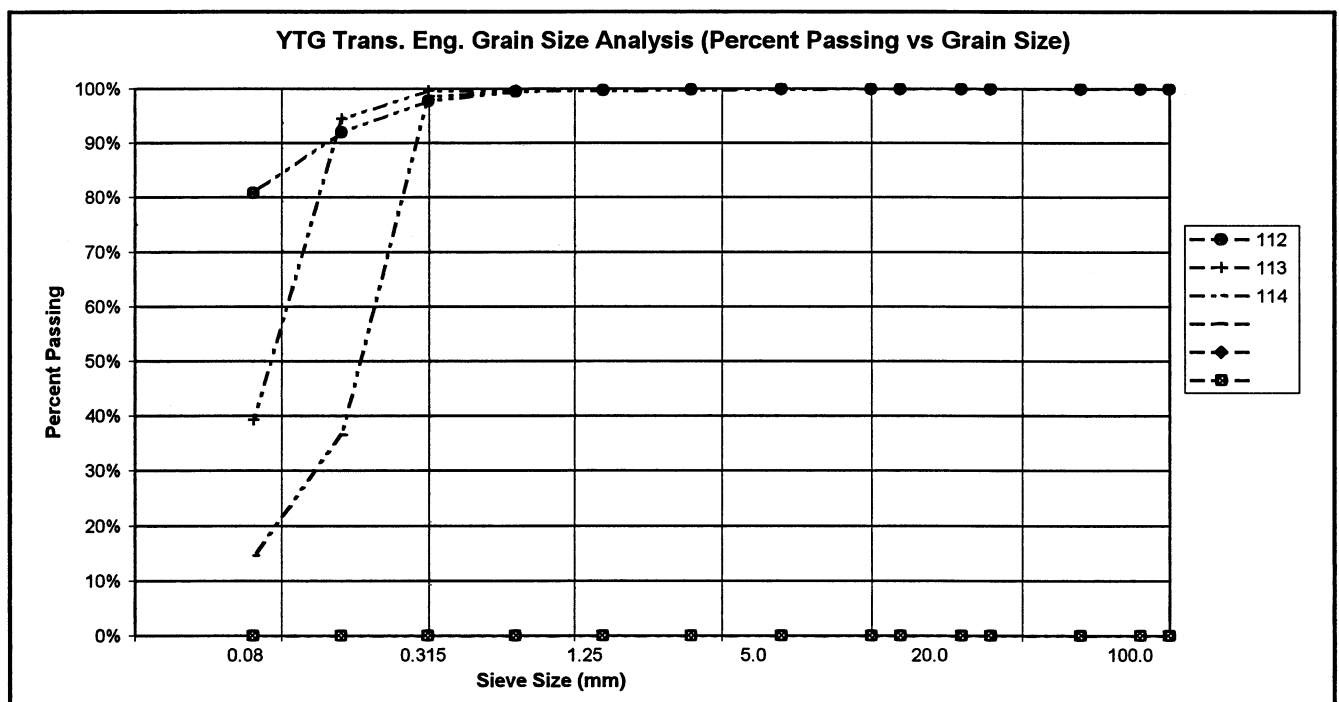


PROJECT NUMBER: 092-202101-0362  
 CLIENT: ENGINEERING CAPITAL  
 PROJECT NAME: SHAKWAK SEG 10  
 PROJECT LOCATION: KM 1729 - 1787 A/H  
 DRILL UNIT: B40-L SOLID STEM AUGER  
 HOLE LOCATION: 1702+500 15M RT  
 LOGGED BY: W.E.

HOLE No.: 539-1281

DATE COMP: 00/03/16

FIELD NO:	112	113	114			
LAB NO:	259	260	261			
DEPTH:	0.4-0.6	1.9-2.1	4.0-4.6			
TYPE:	AUGER	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%	100%			
80.0	100%	100%	100%			
50.0	100%	100%	100%			
25.0	100%	100%	100%			
20.0	100%	100%	100%			
12.5	100%	100%	100%			
10.0	100%	100%	100%			
5.0	100%	100%	100%			
2.5	100%	100%	100%			
1.25	100%	100%	100%			
0.630	100%	100%	100%			
0.315	98%	100%	99%			
0.160	92%	95%	36%			
0.080	81%	39%	15%			
M.C.(%)	30%	23%	21%			
LIQUID LIMIT:	0.0	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0	0.0			
PLASTIC INDEX:	0.0	0.0	0.0			
% GRAVEL:	0	0	0			
% SAND:	19	61	85			
% FINES:	81	39	15			
CLASSIFICATION	SILT WITH SAND (ML)	SILTY SAND (SM)	SILTY SAND (SM)			

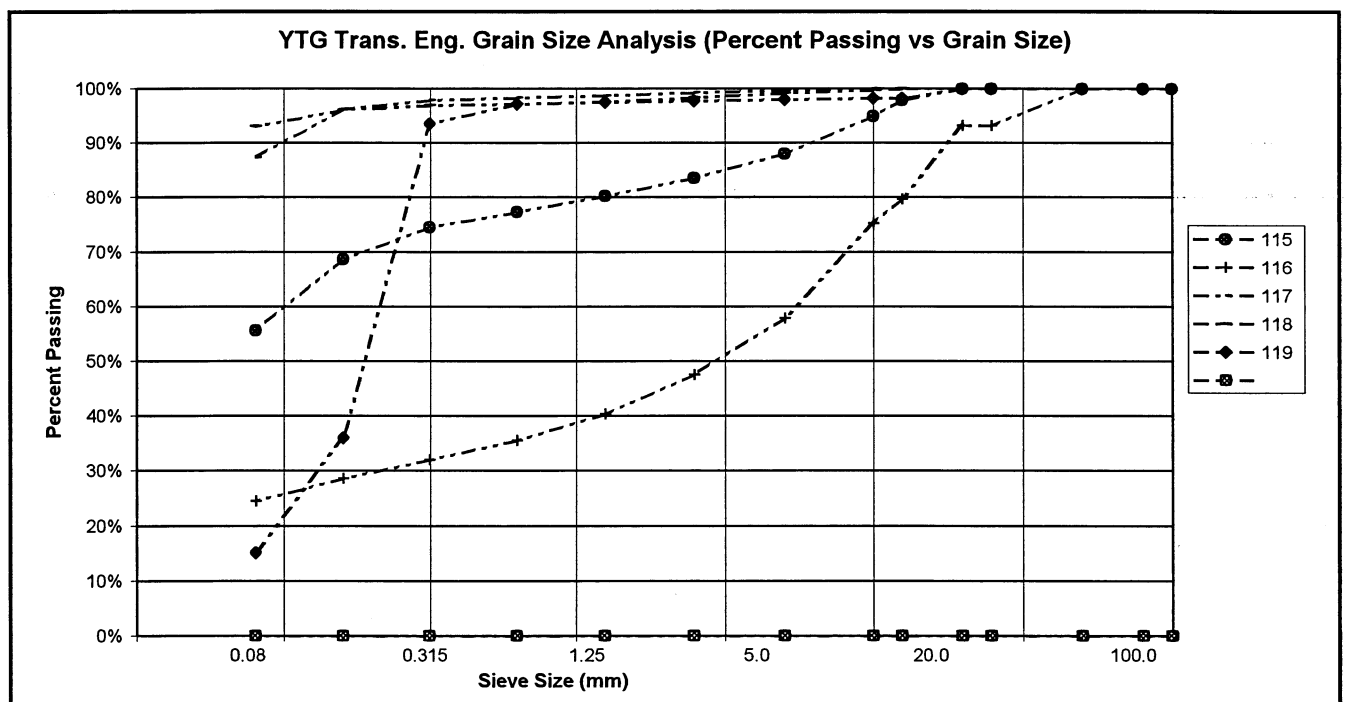


PROJECT NUMBER: 092-202101-0362  
 CLIENT: ENGINEERING CAPITAL  
 PROJECT NAME: SHAKWAK SEG 10  
 PROJECT LOCATION: KM 1729 - 1787 A/H  
 DRILL UNIT: B40-L SOLID STEM AUGER  
 HOLE LOCATION: 1702+575 7M RT  
 LOGGED BY: W.E.

HOLE No.: 540-1282

DATE COMP: 00/03/17

FIELD NO:	115	116	117	118	119	
LAB NO:	262	263	264	265	266	
DEPTH:	0.4-0.6	1.6-1.8	2.0-2.2	2.8-3.0	5.6-5.8	
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	#N/A
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	
100.0	100%	100%	100%	100%	100%	
80.0	100%	100%	100%	100%	100%	
50.0	100%	100%	100%	100%	100%	
25.0	100%	93%	100%	100%	100%	
20.0	100%	93%	100%	100%	100%	
12.5	98%	80%	100%	100%	98%	
10.0	95%	75%	100%	100%	98%	
5.0	88%	58%	100%	99%	98%	
2.5	84%	48%	99%	98%	98%	
1.25	80%	40%	99%	98%	97%	
0.630	77%	36%	98%	97%	97%	
0.315	75%	32%	98%	97%	94%	
0.160	69%	29%	96%	96%	36%	
0.080	56%	24%	87%	93%	15%	
M.C.(%)	10%	16%	23%	22%	22%	
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC INDEX.:	0.0	0.0	0.0	0.0	0.0	
% GRAVEL:	12	42	0	1	2	
% SAND:	32	33	12	6	83	
% FINES:	56	24	87	93	15	
CLASSIFICATION	SANDY SILT (ML)	SILTY GRAVEL WITH SAND (GM)	SILT (ML)	SILT (ML)	SILTY SAND (SM)	

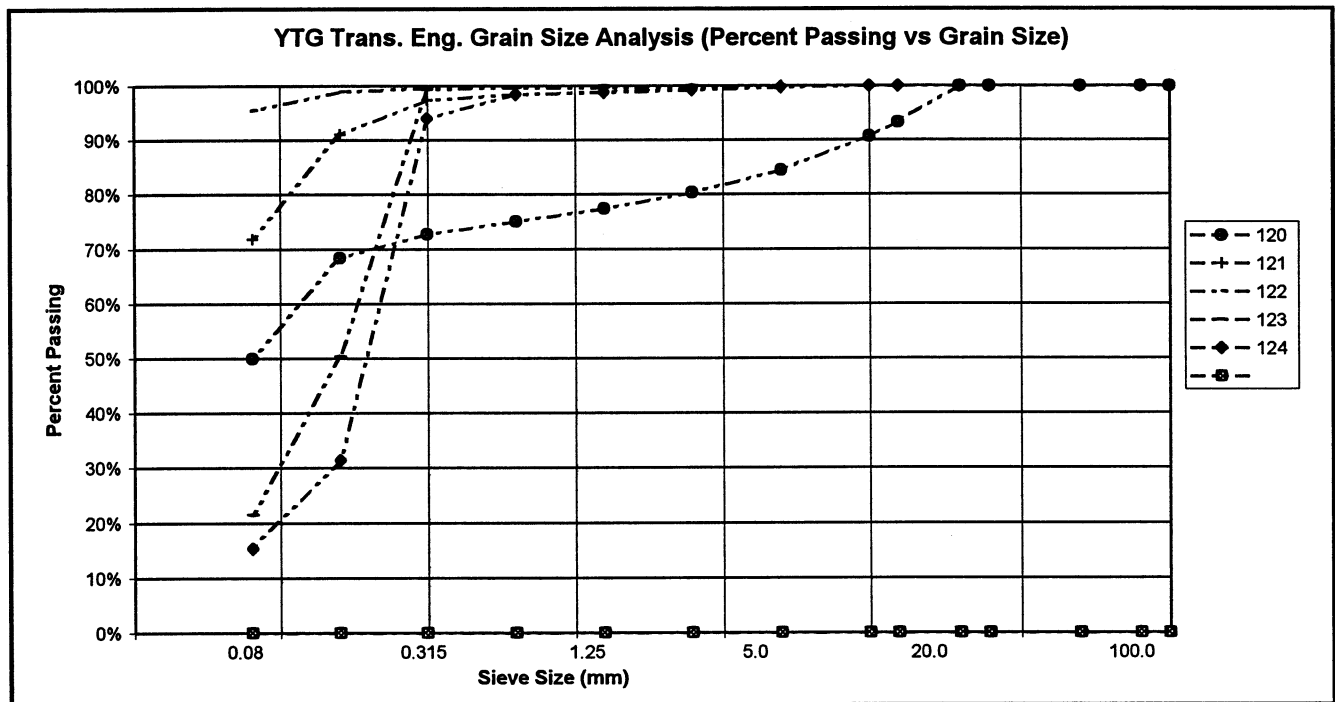


PROJECT NUMBER: 092-202101-0362  
 CLIENT: ENGINEERING CAPITAL  
 PROJECT NAME: SHAKWAK SEG 10  
 PROJECT LOCATION: KM 1729 - 1787 A/H  
 DRILL UNIT: B40-L SOLID STEM AUGER  
 HOLE LOCATION: 1702.650 6M RT  
 LOGGED BY: W.E.

HOLE No.: 540-1283

DATE COMP: 00/03/17

FIELD NO:	120	121	122	123	124	
LAB NO:	267	268	269	270	271	
DEPTH:	0.8-1.0	1.4-1.6	1.9-2.1	3.8-4.0	5.6-5.8	
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	#N/A
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	
100.0	100%	100%	100%	100%	100%	
80.0	100%	100%	100%	100%	100%	
50.0	100%	100%	100%	100%	100%	
25.0	100%	100%	100%	100%	100%	
20.0	100%	100%	100%	100%	100%	
12.5	93%	100%	100%	100%	100%	
10.0	91%	100%	100%	100%	100%	
5.0	84%	100%	100%	100%	100%	
2.5	80%	99%	100%	100%	99%	
1.25	77%	99%	100%	100%	99%	
0.630	75%	98%	100%	100%	98%	
0.315	73%	97%	100%	99%	94%	
0.160	68%	91%	99%	50%	32%	
0.080	50%	72%	96%	21%	15%	
M.C.(%):	10%	23%	25%	21%	22%	
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	
% GRAVEL:	16	0	0	0	0	
% SAND:	34	28	4	79	84	
% FINES:	50	72	96	21	15	
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILT WITH SAND (ML)	SILT (ML)	SILTY SAND (SM)	SILTY SAND (SM)	

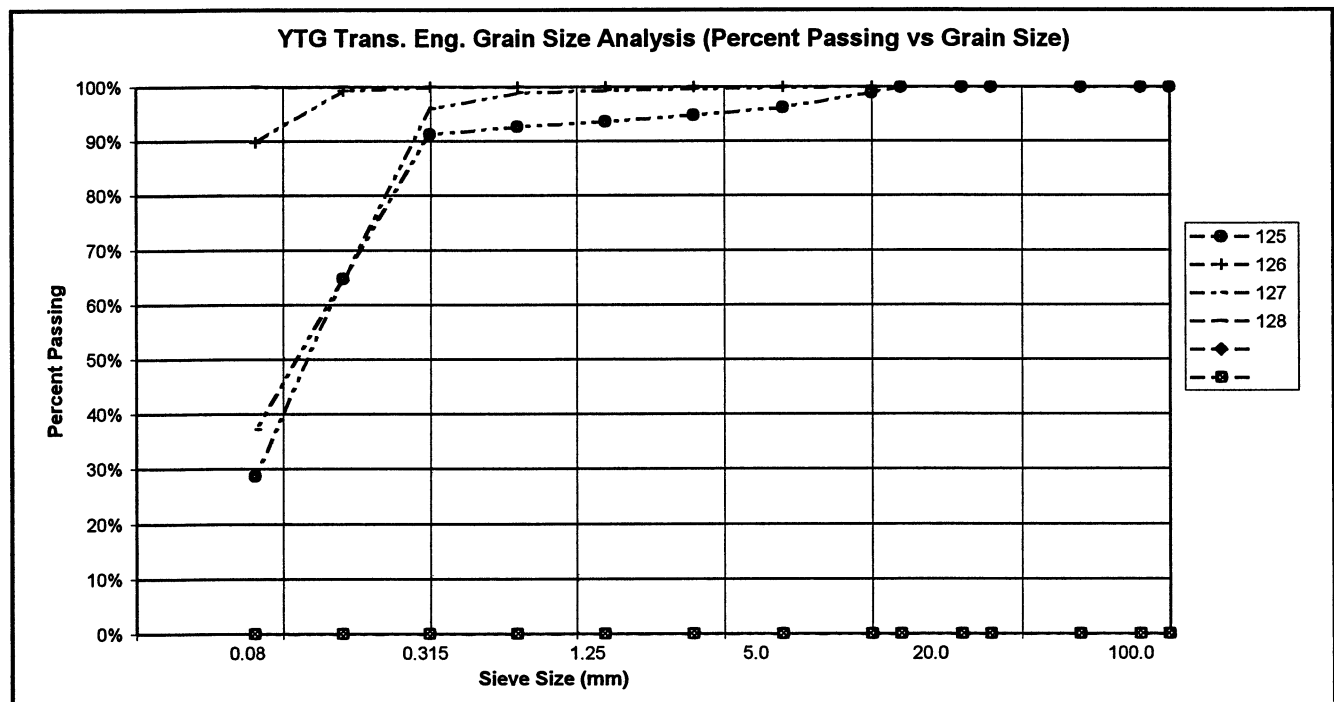


PROJECT NUMBER: 092-202101-0362  
 CLIENT: ENGINEERING CAPITAL  
 PROJECT NAME: SHAKWAK SEG 10  
 PROJECT LOCATION: KM 1729 - 1787 A/H  
 DRILL UNIT: B40-L SOLID STEM AUGER  
 HOLE LOCATION: 1702+750 6M RT  
 LOGGED BY: W.E.

HOLE No.: 540-1284

DATE COMP: 00/03/17

FIELD NO:	125	126	127	128		
LAB NO:	272	273	274	275		
DEPTH:	0.8-1.0	2.8-3.0	5.9-6.1	8.6-8.8		
TYPE:	AUGER	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%	100%		
80.0	100%	100%	100%	100%		
50.0	100%	100%	100%	100%		
25.0	100%	100%	100%	100%		
20.0	100%	100%	100%	100%		
12.5	100%	100%	100%	100%		
10.0	99%	100%	100%	100%		
5.0	96%	100%	100%	100%		
2.5	95%	100%	100%	100%		
1.25	94%	100%	99%	100%		
0.630	93%	100%	99%	100%		
0.315	91%	100%	96%	100%		
0.160	65%	99%	64%	100%		
0.080	29%	90%	37%	100%		
M.C.(%):	4%	24%	21%	19%		
LIQUID LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0	0.0		
% GRAVEL:	4	0	0	0		
% SAND:	68	10	63	0		
% FINES:	29	90	37	100		
CLASSIFICATION	SILTY SAND (SM)	SILT (ML)	SILTY SAND (SM)	SILT (ML)		

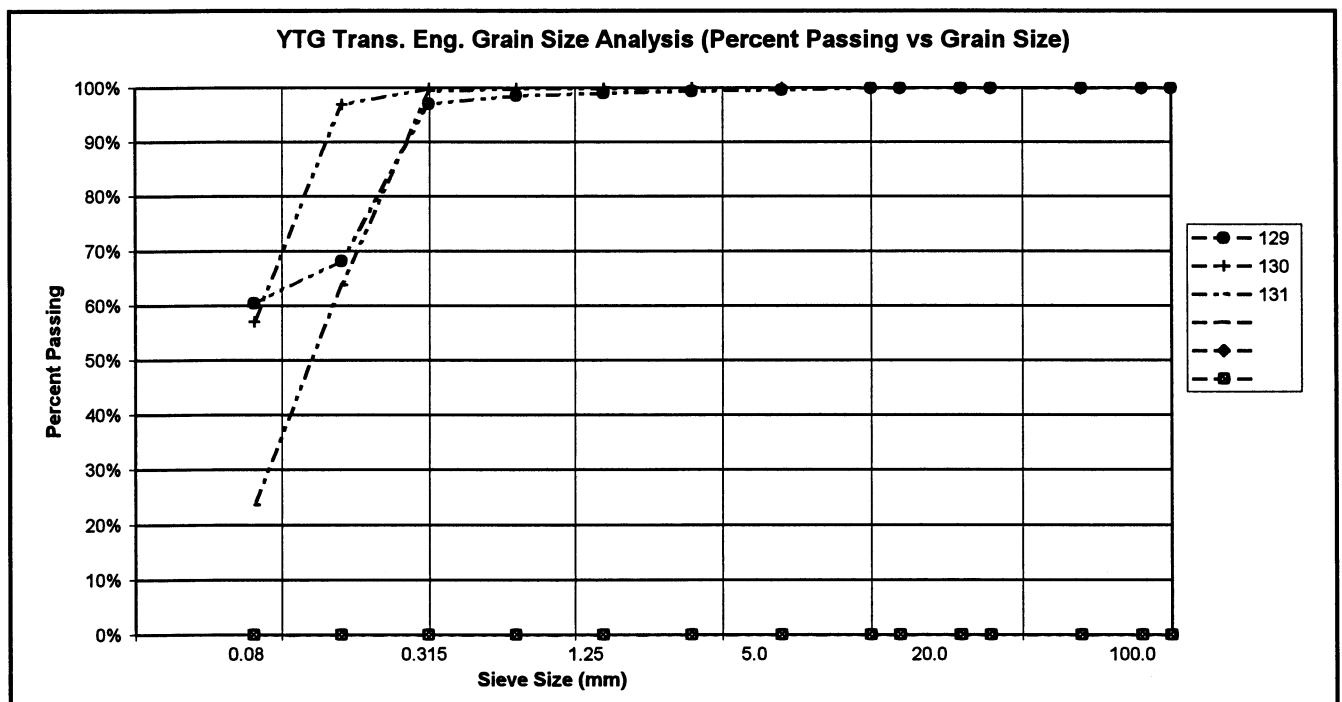


PROJECT NUMBER: 092-202101-0361  
 CLIENT: ENGINEERING CAPITAL  
 PROJECT NAME: SHAKWAK SEG 10  
 PROJECT LOCATION: KM 1729 - 1787 A/H  
 DRILL UNIT: B40-L SOLID STEM AUGER  
 HOLE LOCATION: 1702+850 7M RT  
 LOGGED BY: W.E.

HOLE No.: 540-1285

DATE COMP: 00/03/17

FIELD NO:	129	130	131			
LAB NO:	276	277	278			
DEPTH:	1.2-1.4	2.8-3.0	4.8-5.0			
TYPE:	AUGER	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%	100%			
80.0	100%	100%	100%			
50.0	100%	100%	100%			
25.0	100%	100%	100%			
20.0	100%	100%	100%			
12.5	100%	100%	100%			
10.0	100%	100%	100%			
5.0	100%	100%	100%			
2.5	99%	100%	100%			
1.25	99%	100%	100%			
0.630	99%	100%	100%			
0.315	97%	100%	99%			
0.160	68%	97%	64%			
0.080	60%	57%	24%			
M.C.(%)	6%	20%	20%			
LIQUID LIMIT:	0.0	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0	0.0			
% GRAVEL:	0	0	0			
% SAND:	39	43	76			
% FINES:	60	57	24			
CLASSIFICATION	SANDY SILT (ML)	SANDY SILT (ML)	SILTY SAND (SM)			

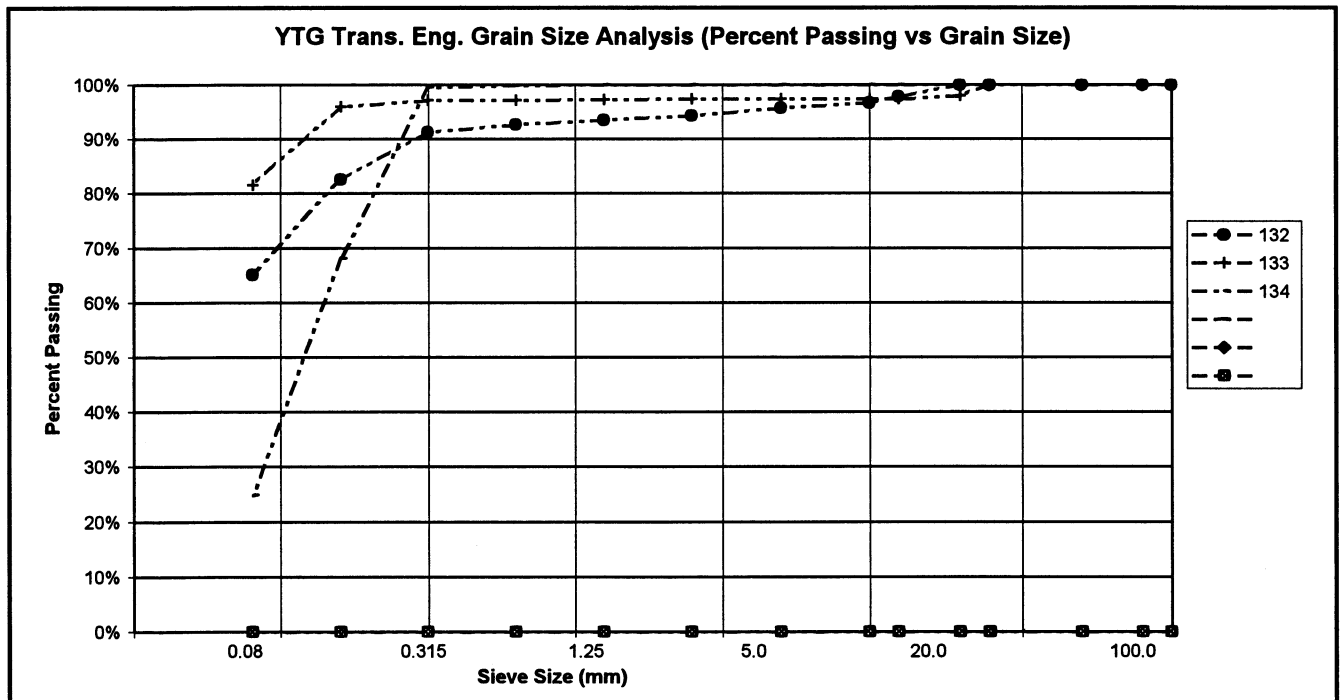


PROJECT NUMBER: 092-202101-0361  
 CLIENT: ENGINEERING CAPITAL  
 PROJECT NAME: SHAKWAK SEG 10  
 PROJECT LOCATION: KM 1729 - 1787 A/H  
 DRILL UNIT: B40-L SOLID STEM AUGER  
 HOLE LOCATION: 1702+950 8M RT  
 LOGGED BY: W.E.

HOLE No.: 540-1286

DATE COMP: 00/03/17

FIELD NO:	132	133	134			
LAB NO:	279	280	281			
DEPTH:	1.2-1.4	2.9-3.1	4.4-4.6			
TYPE:	AUGER	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%	100%			
80.0	100%	100%	100%			
50.0	100%	100%	100%			
25.0	100%	100%	100%			
20.0	100%	98%	100%			
12.5	98%	97%	100%			
10.0	97%	97%	100%			
5.0	96%	97%	100%			
2.5	94%	97%	100%			
1.25	94%	97%	100%			
0.630	93%	97%	100%			
0.315	91%	97%	99%			
0.160	83%	96%	68%			
0.080	65%	82%	25%			
M.C.(%)	11%	23%	21%			
LIQUID LIMIT:	0.0	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0	0.0			
% GRAVEL:	4	3	0			
% SAND:	31	16	75			
% FINES:	65	82	25			
CLASSIFICATION	SANDY SILT (ML)	SILT WITH SAND (ML)	SILTY SAND (SM)			

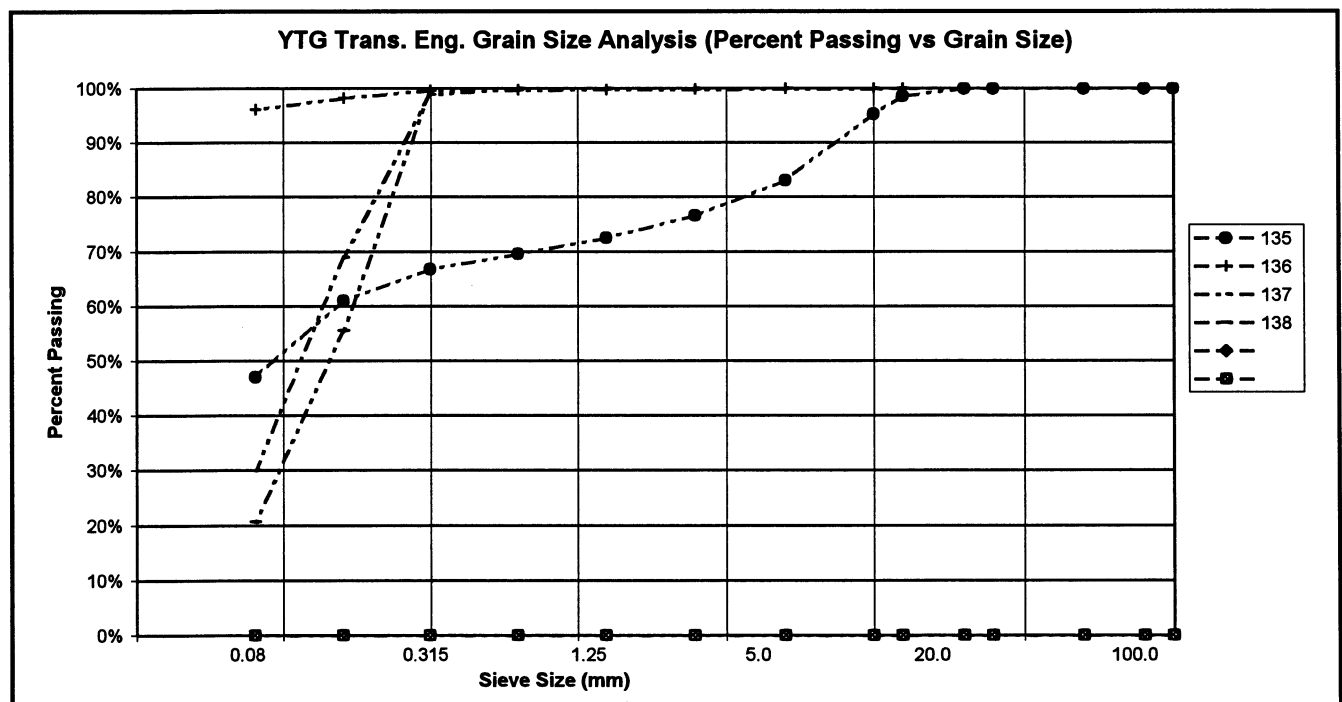


PROJECT NUMBER: 092-202101-0361  
 CLIENT: ENGINEERING CAPITAL  
 PROJECT NAME: SHAKWAK SEG 10  
 PROJECT LOCATION: KM 1729 - 1787 A/H  
 DRILL UNIT: B40-L SOLID STEM AUGER  
 HOLE LOCATION: 1703+050 2M RT  
 LOGGED BY: W.E.

HOLE No.: 540-1287

DATE COMP: 00/03/17

FIELD NO:	135	136	137	138		
LAB NO:	282	283	284	285		
DEPTH:	0.6-0.8	1.2-1.4	2.8-3.0	4.4-4.6		
TYPE:	AUGER	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%	100%		
80.0	100%	100%	100%	100%		
50.0	100%	100%	100%	100%		
25.0	100%	100%	100%	100%		
20.0	100%	100%	100%	100%		
12.5	99%	100%	100%	100%		
10.0	95%	100%	100%	100%		
5.0	83%	100%	100%	100%		
2.5	77%	100%	100%	100%		
1.25	73%	100%	100%	100%		
0.630	70%	100%	100%	100%		
0.315	67%	100%	99%	100%		
0.160	61%	98%	69%	56%		
0.080	47%	96%	30%	21%		
M.C.(%):	24%	34%	8%	23%		
LIQUID LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC INDEX.:	0.0	0.0	0.0	0.0		
% GRAVEL:	17	0	0	0		
% SAND:	36	4	70	79		
% FINES:	47	96	30	21		
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILT (ML)	SILTY SAND (SM)	SILTY SAND (SM)		

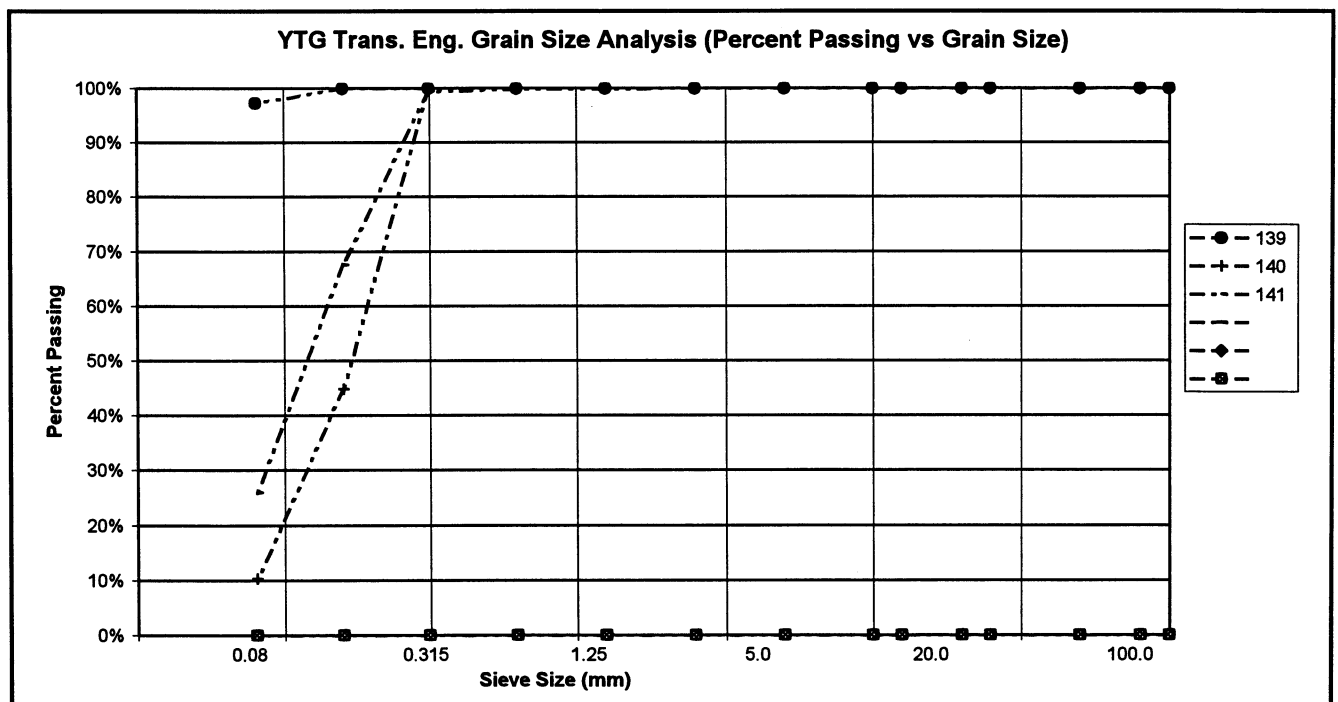


PROJECT NUMBER: 092-202101-0361  
 CLIENT: ENGINEERING CAPITAL  
 PROJECT NAME: SHAKWAK SEG 10  
 PROJECT LOCATION: KM 1729 - 1787 A/H  
 DRILL UNIT: B40-L SOLID STEM AUGER  
 HOLE LOCATION: 1703+150 7M RT  
 LOGGED BY: W.E.

HOLE No.: 540-1288

DATE COMP: 00/03/17

FIELD NO:	139	140	141		
LAB NO:	286	287	288		
DEPTH:	1.2-1.4	2.9-3.1	4.4-4.6		
TYPE:	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%		
80.0	100%	100%	100%		
50.0	100%	100%	100%		
25.0	100%	100%	100%		
20.0	100%	100%	100%		
12.5	100%	100%	100%		
10.0	100%	100%	100%		
5.0	100%	100%	100%		
2.5	100%	100%	100%		
1.25	100%	100%	100%		
0.630	100%	100%	100%		
0.315	100%	100%	99%		
0.160	100%	45%	67%		
0.080	97%	10%	26%		
M.C.(%)	31%	27%	24%		
LIQUID LIMIT:	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0		
% GRAVEL:	0	0	0		
% SAND:	3	90	74		
% FINES:	97	10	26		
CLASSIFICATION	SILT (ML)	WELL-GRADED SAND WITH SILT (SW-SM)	SILTY SAND (SM)		

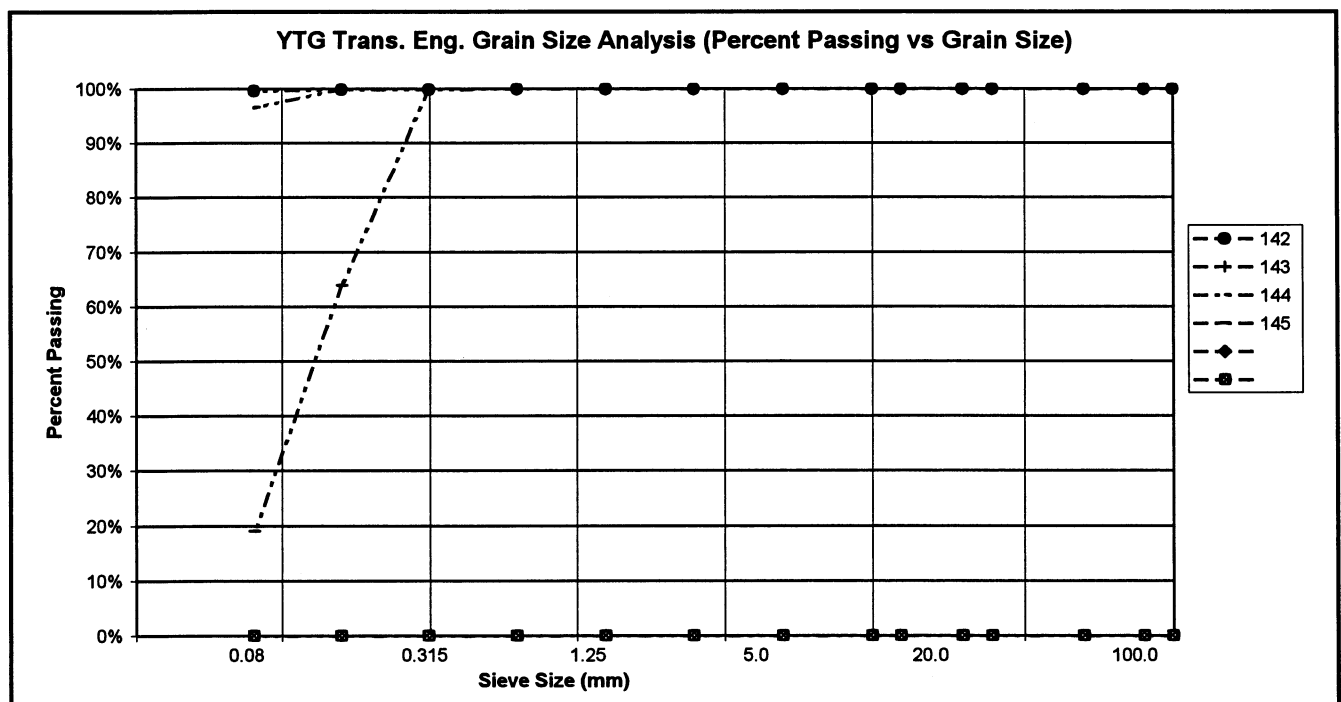


PROJECT NUMBER: 092-202101-0361  
 CLIENT: ENGINEERING CAPITAL  
 PROJECT NAME: SHAKWAK SEG 10  
 PROJECT LOCATION: KM 1729 - 1787 A/H  
 DRILL UNIT: B40-L SOLID STEM AUGER  
 HOLE LOCATION: 1703+250 14M RT  
 LOGGED BY: W.E.

HOLE No.: 540-1289

DATE COMP: 00/03/17

FIELD NO:	142	143	144	145		
LAB NO:	289	290	291	292		
DEPTH:	0.4-0.6	1.4-1.6	2.9-3.1	4.4-4.6		
TYPE:	AUGER	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%	100%		
80.0	100%	100%	100%	100%		
50.0	100%	100%	100%	100%		
25.0	100%	100%	100%	100%		
20.0	100%	100%	100%	100%		
12.5	100%	100%	100%	100%		
10.0	100%	100%	100%	100%		
5.0	100%	100%	100%	100%		
2.5	100%	100%	100%	100%		
1.25	100%	100%	100%	100%		
0.630	100%	100%	100%	100%		
0.315	100%	100%	100%	100%		
0.160	100%	100%	100%	64%		
0.080	100%	100%	97%	19%		
M.C.(%)	46%	28%	28%	25%		
LIQUID LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC INDEX.:	0.0	0.0	0.0	0.0		
% GRAVEL:	0	0	0	0		
% SAND:	0	0	3	81		
% FINES:	100	100	97	19		
CLASSIFICATION	SILT (ML)	SILT (ML)	SILT (ML)	SILTY SAND (SM)		

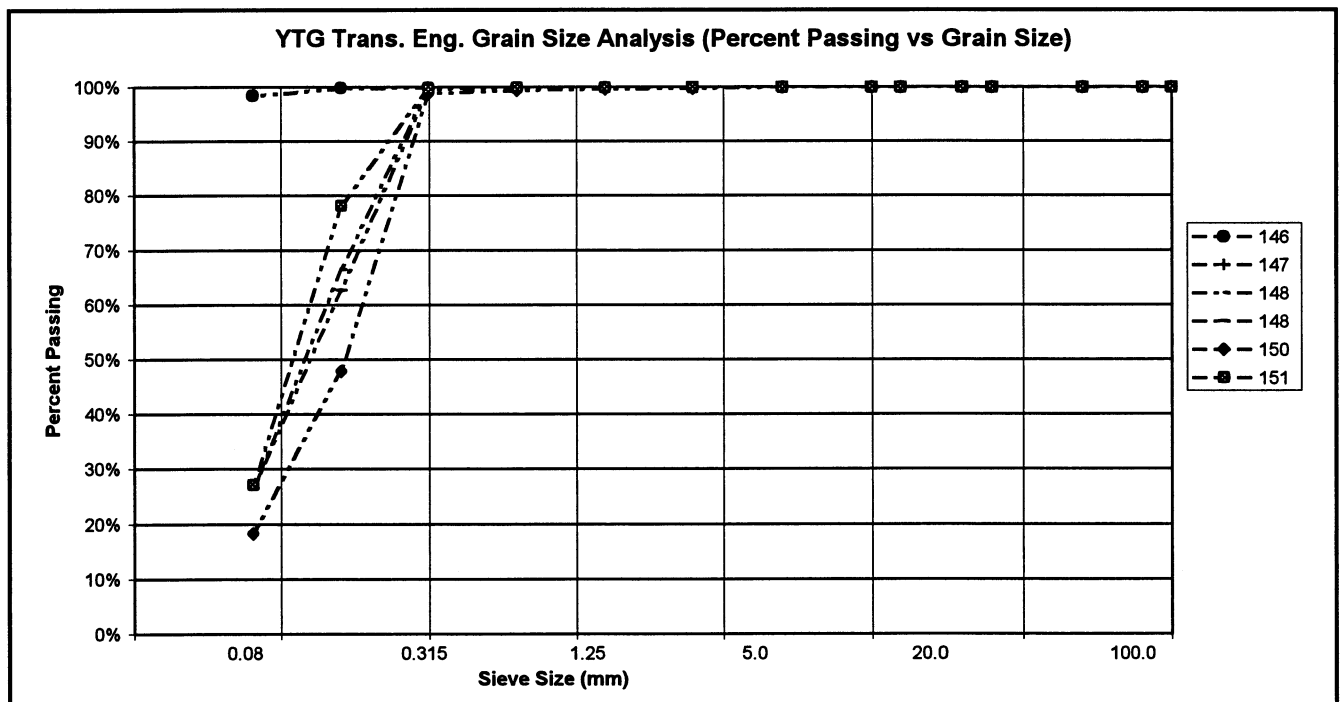


PROJECT NUMBER: 092-202101-0361  
 CLIENT: ENGINEERING CAPITAL  
 PROJECT NAME: SHAKWAK SEG 10  
 PROJECT LOCATION: KM 1729 - 1787 A/H  
 DRILL UNIT: B40-L SOLID STEM AUGER  
 HOLE LOCATION: 1703+350 15M RT  
 LOGGED BY: W.E.

HOLE No.: 540-1290

DATE COMP: 00/03/17

FIELD NO:	146	147	148	148	150	151
LAB NO:	293	294	295	296	297	298
DEPTH:	0.3-0.5	1.2-1.4	2.8-3.0	4.6-4.8	5.6-5.8	8.6-8.8
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%	100%	100%
80.0	100%	100%	100%	100%	100%	100%
50.0	100%	100%	100%	100%	100%	100%
25.0	100%	100%	100%	100%	100%	100%
20.0	100%	100%	100%	100%	100%	100%
12.5	100%	100%	100%	100%	100%	100%
10.0	100%	100%	100%	100%	100%	100%
5.0	100%	100%	100%	100%	100%	100%
2.5	100%	100%	100%	100%	100%	100%
1.25	100%	100%	100%	100%	100%	100%
0.630	100%	100%	100%	100%	99%	100%
0.315	100%	100%	100%	100%	99%	100%
0.160	100%	100%	66%	63%	48%	78%
0.080	98%	98%	27%	27%	18%	27%
M.C.(%)	30%	27%	20%	19%	23%	22%
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	0.0
% GRAVEL:	0	0	0	0	0	0
% SAND:	1	2	73	73	82	73
% FINES:	98	98	27	27	18	27
CLASSIFICATION	SILT (ML)	SILT (ML)	SILTY SAND (SM)	SILTY SAND (SM)	SILTY SAND (SM)	SILTY SAND (SM)

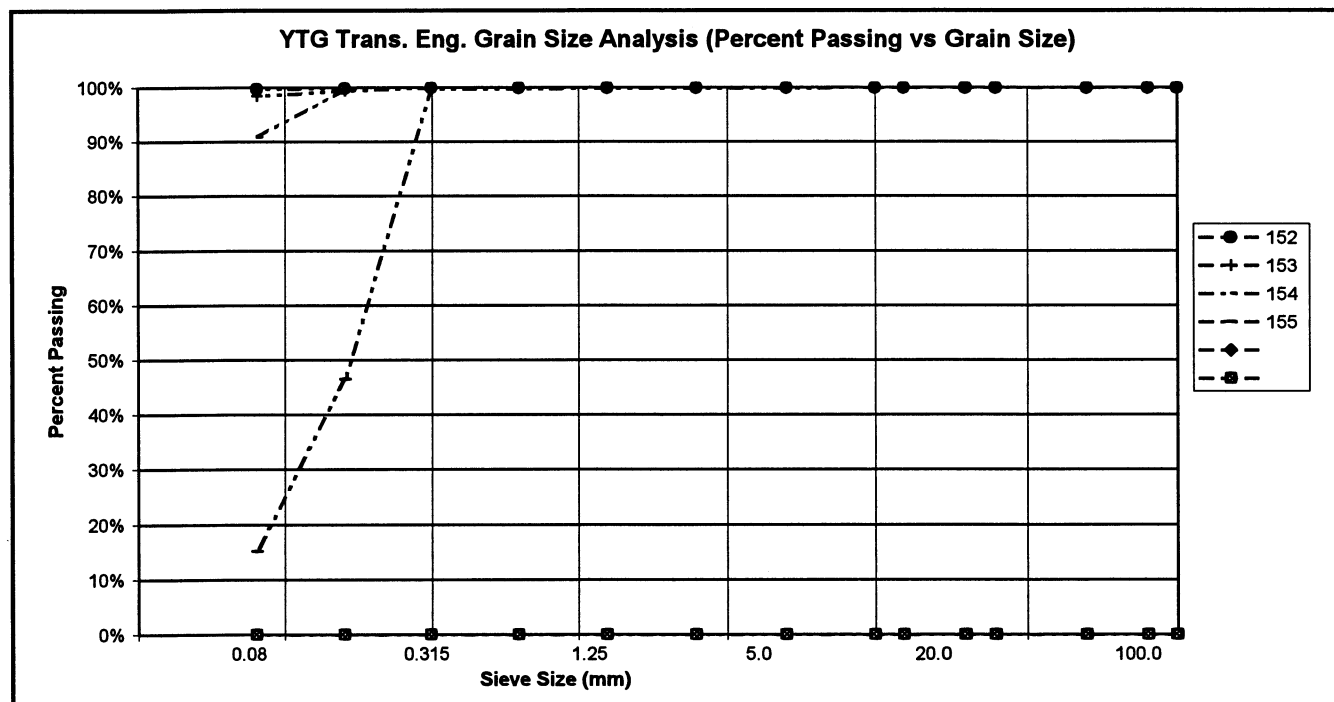


PROJECT NUMBER: 092-202101-0361  
 CLIENT: ENGINEERING CAPITAL  
 PROJECT NAME: SHAKWAK SEG 10  
 PROJECT LOCATION: KM 1729 - 1787 A/H  
 DRILL UNIT: B40-L SOLID STEM AUGER  
 HOLE LOCATION: 1703+450 19M RT  
 LOGGED BY: W.E.

HOLE No.: 540-1291

DATE COMP: 00/03/17

FIELD NO:	152	153	154	155		
LAB NO:	299	300	301	302		
DEPTH:	0.2-0.4	1.4-1.6	2.6-2.8	4.4-4.6		
TYPE:	AUGER	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%	100%		
80.0	100%	100%	100%	100%		
50.0	100%	100%	100%	100%		
25.0	100%	100%	100%	100%		
20.0	100%	100%	100%	100%		
12.5	100%	100%	100%	100%		
10.0	100%	100%	100%	100%		
5.0	100%	100%	100%	100%		
2.5	100%	100%	100%	100%		
1.25	100%	100%	100%	100%		
0.630	100%	100%	100%	100%		
0.315	100%	100%	100%	100%		
0.160	100%	99%	100%	47%		
0.080	100%	98%	91%	15%		
M.C.(%)	49%	25%	28%	23%		
LIQUID LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0	0.0		
% GRAVEL:	0	0	0	0		
% SAND:	0	1	9	85		
% FINES:	100	98	91	15		
CLASSIFICATION	SILT (ML)	SILT (ML)	SILT (ML)	SILTY SAND (SM)		





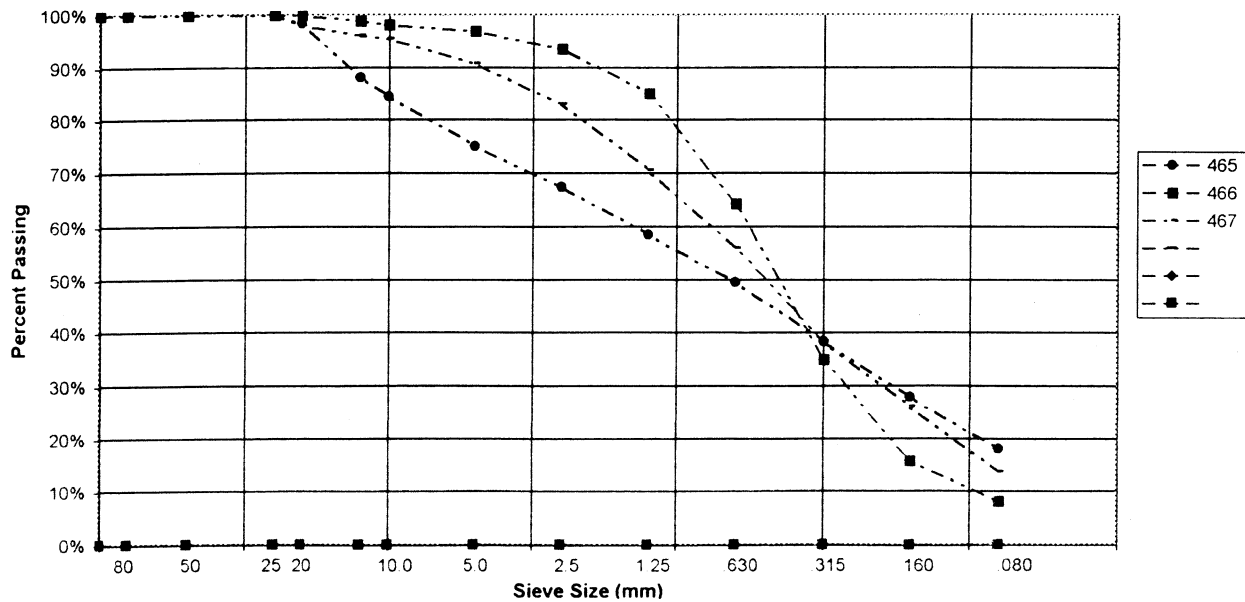
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 636398-6764640  
 LOGGED BY: RW

HOLE No.: 30045

DATE COMP: 08/21/2004

FIELD NO:	465	466	467		
LAB NO:	465	466	467		
DEPTH:	0.3-0.9	2.1-2.7	4.0-4.4		
TYPE:	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%		
80.0	100%	100%	100%		
50.0	100%	100%	100%		
25.0	100%	100%	100%		
20.0	98%	100%	98%		
12.5	88%	99%	96%		
10.0	85%	98%	96%		
5.0	75%	97%	91%		
2.5	68%	94%	83%		
1.25	59%	85%	71%		
0.630	50%	64%	56%		
0.315	39%	35%	38%		
0.160	28%	16%	26%		
0.080	18%	8%	14%		
M.C.(%)	10%	14%	15%		
LIQUID LIMIT:	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0		
PLASTIC INDEX.:	0.0	0.0	0.0		
% GRAVEL:	25	3	9		
% SAND:	57	89	77		
% FINES:	18	8	14		
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	WELL-GRADED SAND WITH SILT (SW-SM)	SILTY SAND (SM)		

### Grain Size Analysis (Percent Passing vs Grain Size)





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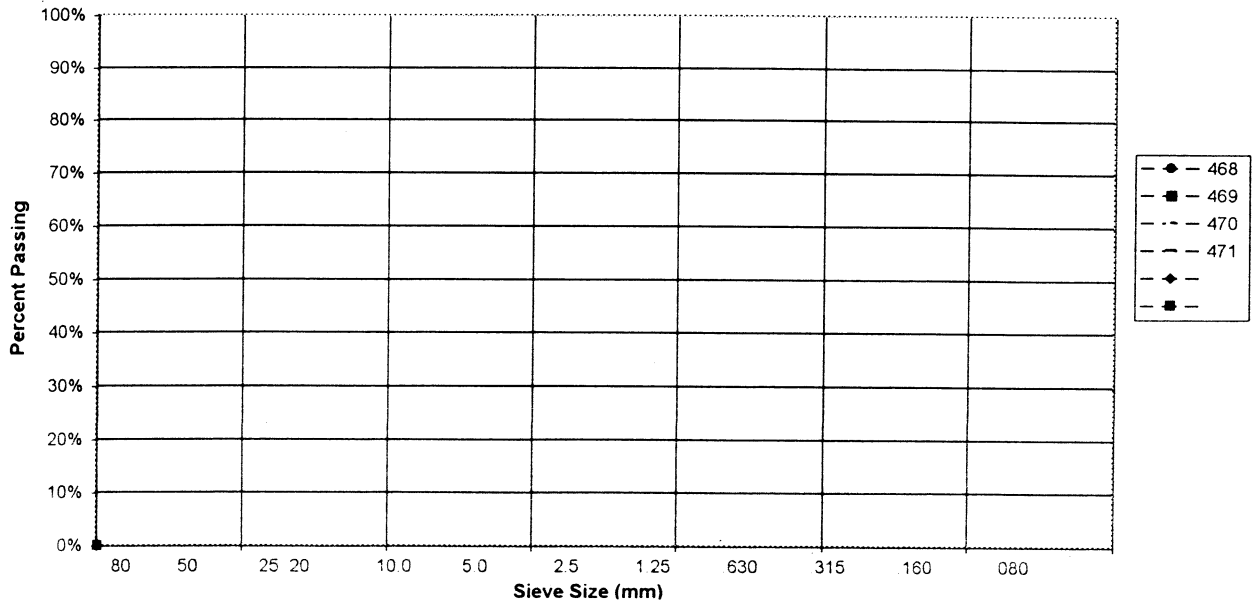
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 636230-6764571  
 LOGGED BY: RW

HOLE No.: 30046

DATE COMP: 08/21/2004

FIELD NO:	468	469	470	471		
LAB NO:	468	469	470	471		
DEPTH:	1.4	2.9	4.4	5.9		
TYPE:	S.P.T.	S.P.T.	S.P.T.	S.P.T.		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0						
80.0						
50.0						
25.0						
20.0						
12.5						
10.0						
5.0						
2.5						
1.25						
0.630						
0.315						
0.160						
0.080						
M.C.(%)	9%	17%	17%	17%		
LIQUID LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0	0.0		
% GRAVEL:	#VALUE!	#VALUE!	#VALUE!	#VALUE!		
% SAND:	#VALUE!	#VALUE!	#VALUE!	#VALUE!		
% FINES:	#VALUE!	#VALUE!	#VALUE!	#VALUE!		
CLASSIFICATION	#VALUE!	#VALUE!	#VALUE!	#VALUE!		

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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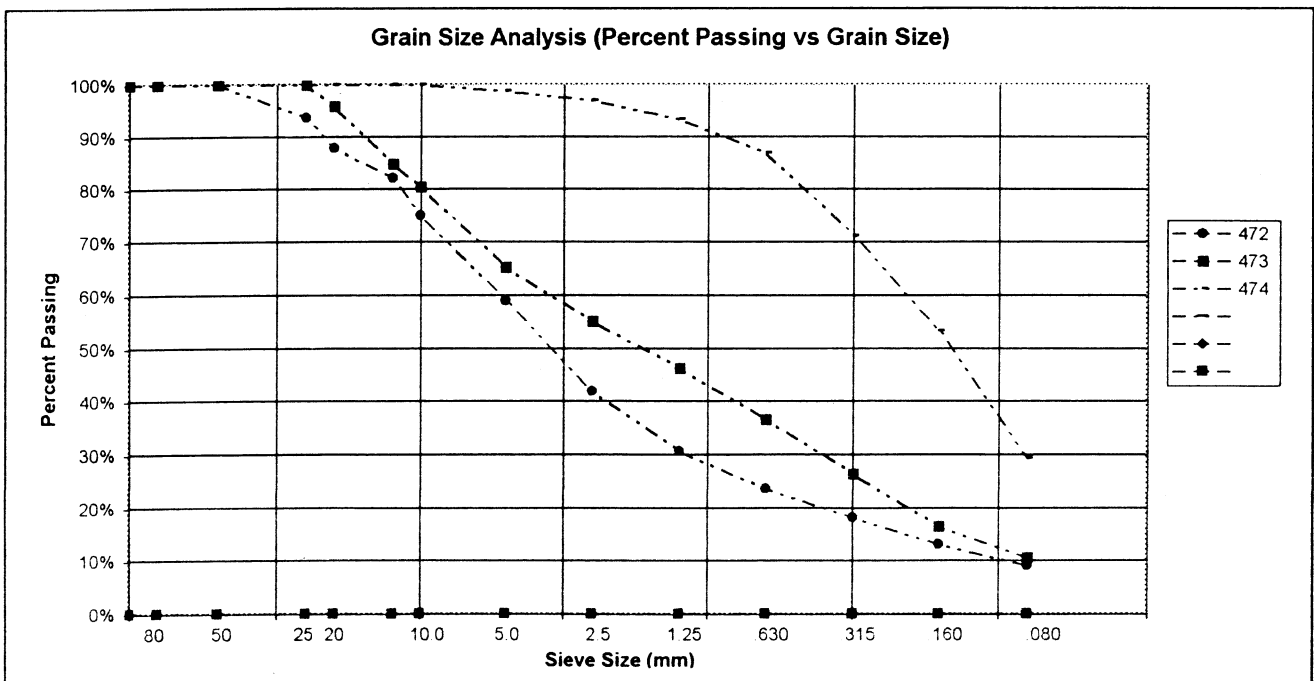


PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 636077-6764452  
 LOGGED BY: RW

HOLE No.: 30047

DATE COMP: 08/21/2004

FIELD NO:	472	473	474		
LAB NO:	472	473	474		
DEPTH:	0.3-0.9	2.1-2.7	3.7-4.3		
TYPE:	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%		
80.0	100%	100%	100%		
50.0	100%	100%	100%		
25.0	94%	100%	100%		
20.0	88%	96%	100%		
12.5	82%	85%	100%		
10.0	75%	80%	100%		
5.0	59%	65%	99%		
2.5	42%	55%	97%		
1.25	31%	46%	93%		
0.630	24%	37%	87%		
0.315	18%	27%	71%		
0.160	13%	17%	53%		
0.080	9%	11%	29%		
M.C.(%)	7%	10%	18%		
LIQUID LIMIT:	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0		
% GRAVEL:	41	35	1		
% SAND:	50	55	69		
% FINES:	9	11	29		
CLASSIFICATION	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)	SILTY SAND (SM)		





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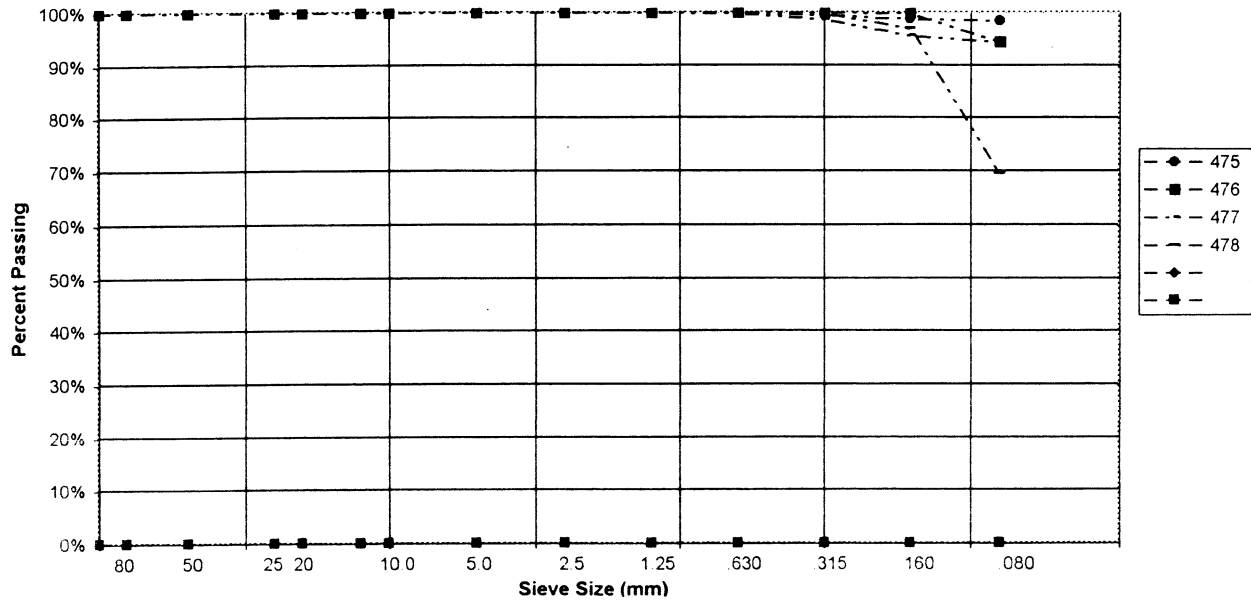
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 635653-6764453  
 LOGGED BY: RW

HOLE No.: 30049

DATE COMP: 08/21/2004

FIELD NO:	475	476	477	478		
LAB NO:	475	476	477	478		
DEPTH:	0.6-1.2	1.8-2.4	2.6-2.9	4.0-4.4		
TYPE:	AUGER	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%	100%		
80.0	100%	100%	100%	100%		
50.0	100%	100%	100%	100%		
25.0	100%	100%	100%	100%		
20.0	100%	100%	100%	100%		
12.5	100%	100%	100%	100%		
10.0	100%	100%	100%	100%		
5.0	100%	100%	100%	100%		
2.5	100%	100%	100%	100%		
1.25	100%	100%	100%	100%		
0.630	100%	100%	100%	100%		
0.315	99%	100%	99%	100%		
0.160	99%	100%	96%	97%		
0.080	98%	94%	94%	70%		
M.C.(%)	28%	21%	31%	19%		
LIQUID LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0	0.0		
% GRAVEL:	0	0	0	0		
% SAND:	2	6	6	30		
% FINES:	98	94	94	70		
CLASSIFICATION	SILT (ML)	SILT (ML)	SILT (ML)	SANDY SILT (ML)		

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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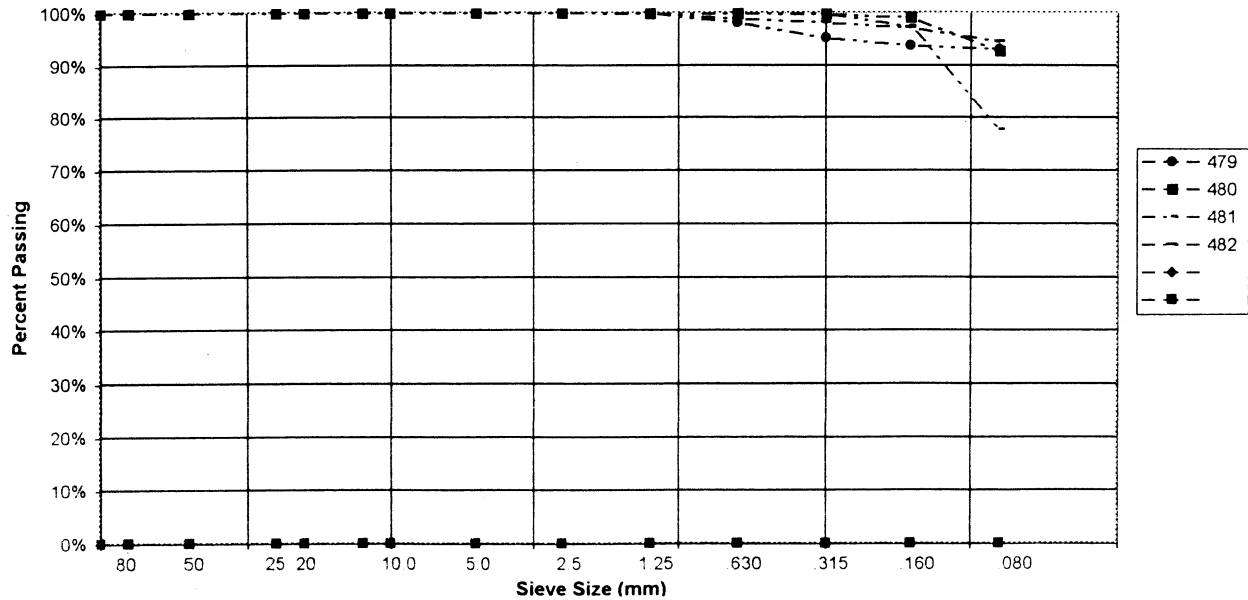
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 635462-6764514  
 LOGGED BY: RW

HOLE No.: 30050

DATE COMP: 08/21/2004

FIELD NO:	479	480	481	482		
LAB NO:	479	480	481	482		
DEPTH:	0.6-1.2	2.1-2.9	3.2-3.6	4.0-4.4		
TYPE:	AUGER	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%	100%		
80.0	100%	100%	100%	100%		
50.0	100%	100%	100%	100%		
25.0	100%	100%	100%	100%		
20.0	100%	100%	100%	100%		
12.5	100%	100%	100%	100%		
10.0	100%	100%	100%	100%		
5.0	100%	100%	100%	100%		
2.5	100%	100%	100%	100%		
1.25	100%	100%	100%	100%		
0.630	98%	100%	100%	99%		
0.315	95%	100%	100%	98%		
0.160	94%	99%	97%	97%		
0.080	93%	93%	78%	95%		
M.C.(%)	29%	23%	20%	29%		
LIQUID LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0	0.0		
% GRAVEL:	0	0	0	0		
% SAND:	7	7	22	5		
% FINES:	93	93	78	95		
CLASSIFICATION	SILT (ML)	SILT (ML)	SILT WITH SAND (ML)	SILT (ML)		

### Grain Size Analysis (Percent Passing vs Grain Size)





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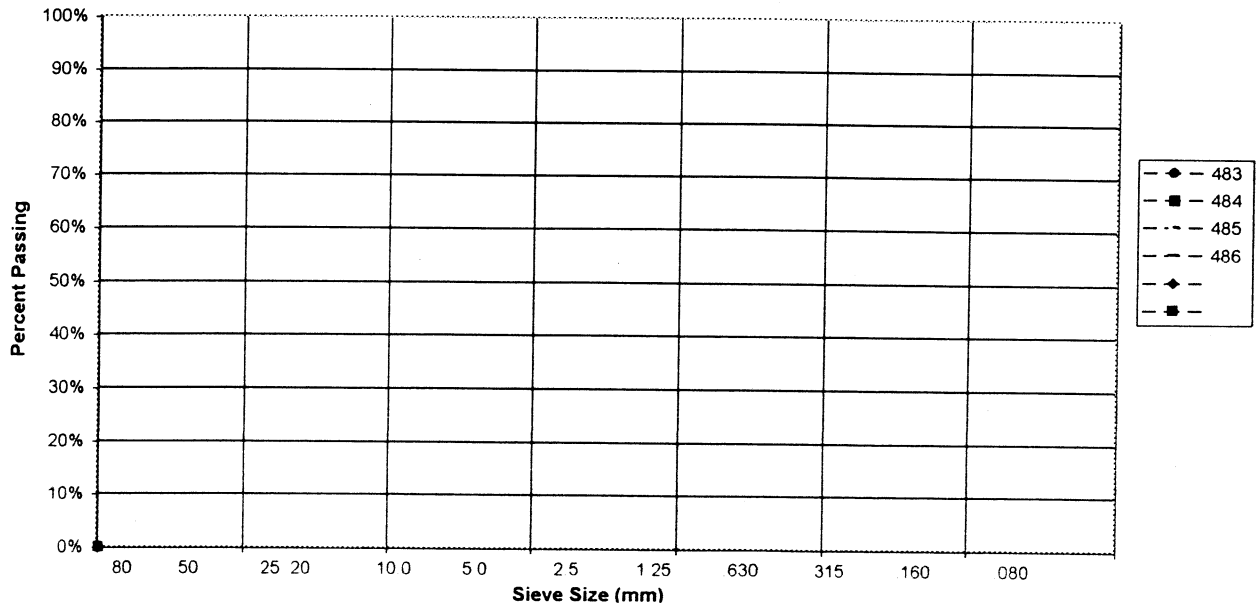
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 635301-6764643  
 LOGGED BY: RW

HOLE No.: 30051

DATE COMP: 08/22/2004

FIELD NO:	483	484	485	486		
LAB NO:	483	484	485	486		
DEPTH:	1.4	2.9	4.4	5.9		
TYPE:	S.P.T.	S.P.T.	S.P.T.	S.P.T.		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0						
80.0						
50.0						
25.0						
20.0						
12.5						
10.0						
5.0						
2.5						
1.25						
0.630						
0.315						
0.160						
0.080						
M.C.(%)	23%	19%	23%	28%		
LIQUID LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC INDEX.:	0.0	0.0	0.0	0.0		
% GRAVEL:	#VALUE!	#VALUE!	#VALUE!	#VALUE!		
% SAND:	#VALUE!	#VALUE!	#VALUE!	#VALUE!		
% FINES:	#VALUE!	#VALUE!	#VALUE!	#VALUE!		
CLASSIFICATION	#VALUE!	#VALUE!	#VALUE!	#VALUE!		

### Grain Size Analysis (Percent Passing vs Grain Size)





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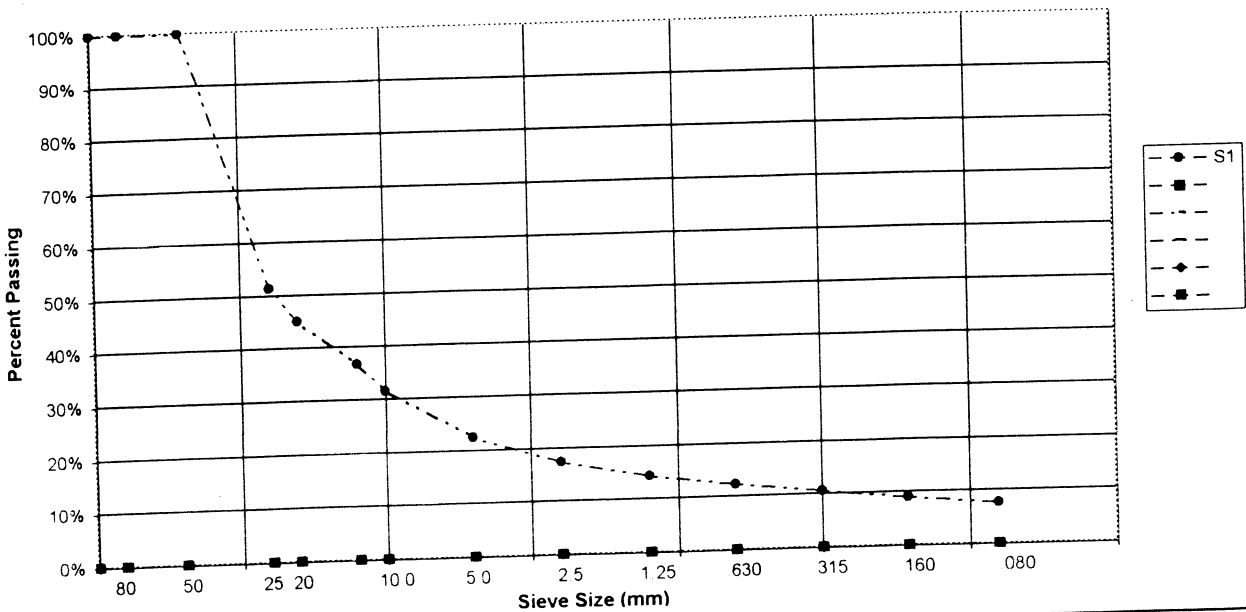
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 635054-6768523  
 LOGGED BY: RW

HOLE No.: 30076

DATE COMP: 07/29/2004

FIELD NO:	S1				
LAB NO:	S1				
DEPTH:	36-42				
TYPE:	BULK				
<b>SIEVE SIZE</b>	<b>PERCENT PASSING</b>				
100.0	100%				
80.0	100%				
50.0	100%				
25.0	51%				
20.0	45%				
12.5	37%				
10.0	32%				
5.0	23%				
2.5	17%				
1.25	14%				
0.630	12%				
0.315	11%				
0.160	9%				
0.080	8%				
M.C.(%):	4%				
LIQUID LIMIT:	0.0				
PLASTIC LIMIT:	0.0				
PLASTIC INDEX:	0.0				
% GRAVEL:	77				
% SAND:	15				
% FINES:	8				
<b>CLASSIFICATION</b>	POORLY GRADED GRAVEL WITH SILT (GP-GM)				

### Grain Size Analysis (Percent Passing vs Grain Size)





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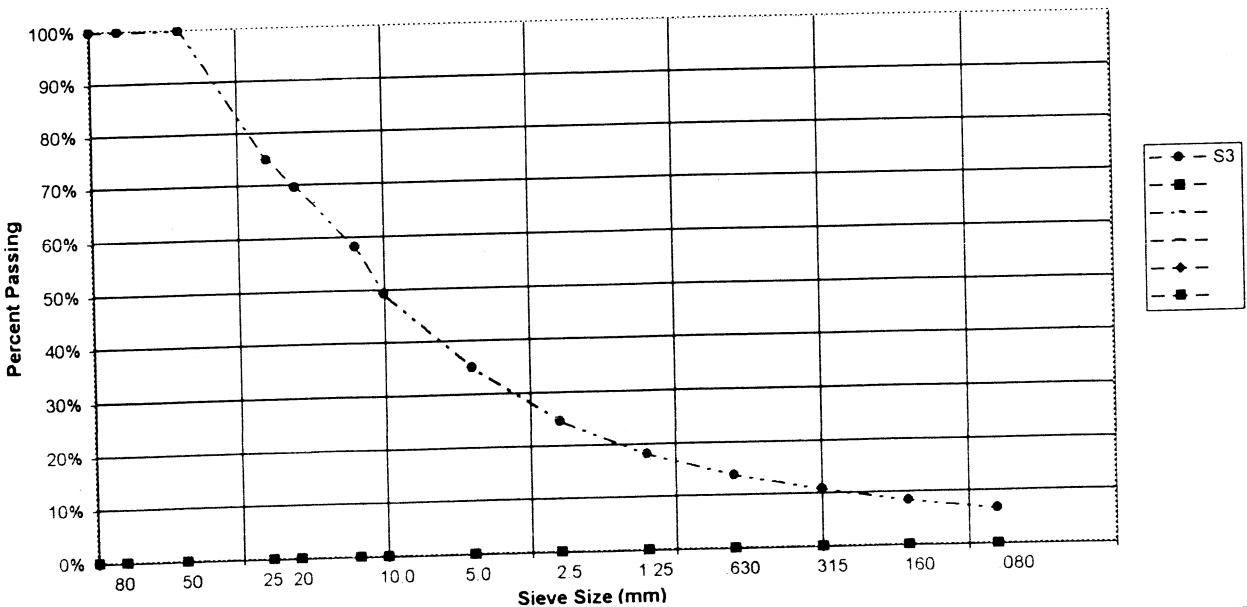
PROJECT NUMBER: 8002-318  
CLIENT: YTG, Transportation & Engineering  
PROJECT NAME: Geotechnical Services  
PROJECT LOCATION: Km 1691.7-1717.3  
DRILL UNIT: CME75  
HOLE LOCATION: 635160-6768752  
LOGGED BY: RW

HOLE No.: 30081

DATE COMP: 07/31/2004

FIELD NO:	S3				
LAB NO:	S3				
DEPTH:	4.5-5.0				
TYPE:	BULK				
SIEVE SIZE	PERCENT PASSING				
100.0	100%				
80.0	100%				
50.0	100%				
25.0	75%				
20.0	70%				
12.5	58%				
10.0	49%				
5.0	35%				
2.5	25%				
1.25	18%				
0.630	14%				
0.315	11%				
0.160	9%				
0.080	7%				
M.C.(%)	2%				
LIQUID LIMIT:	0.0				
PLASTIC LIMIT:	0.0				
PLASTIC INDEX:	0.0				
% GRAVEL:	65				
% SAND:	28				
% FINES:	7				
CLASSIFICATION	POORLY GRADED GRAVEL WITH SILT & SAND (GP-GM)				

Grain Size Analysis (Percent Passing vs Grain Size)





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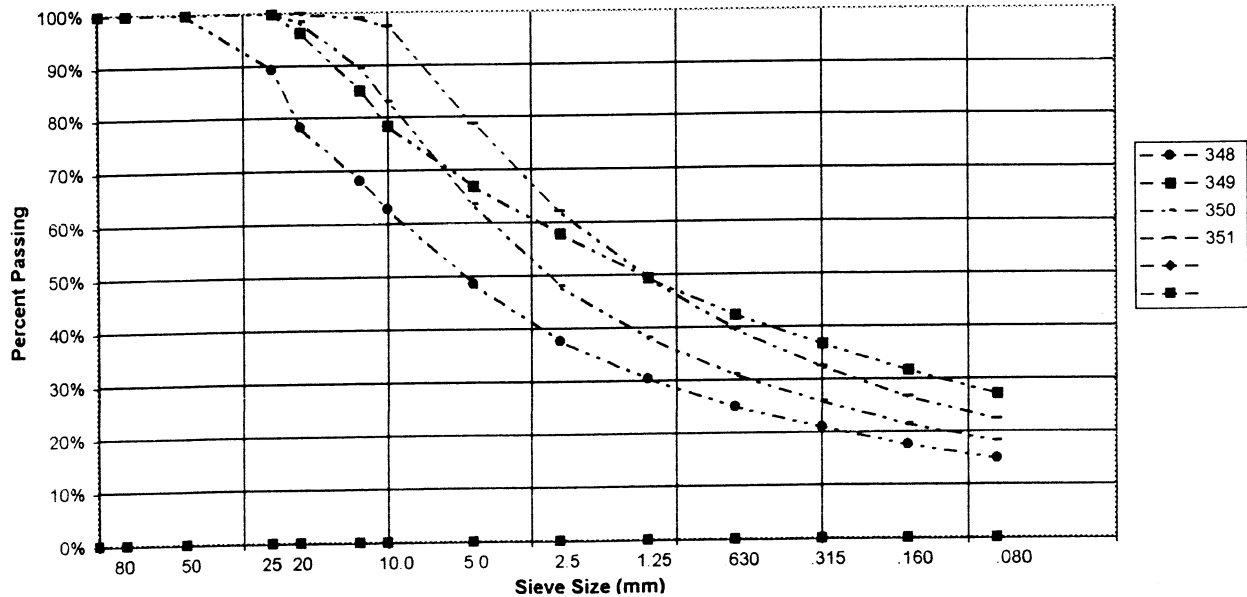
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 635159-6768928  
 LOGGED BY: RW

HOLE No.: 30082

DATE COMP: 08/15/2004

FIELD NO:	348	349	350	351		
LAB NO:	348	349	350	351		
DEPTH:	0.6-1.2	1.8-2.4	3.4-4.0	4.9-5.5		
TYPE:	AUGER	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%	100%		
80.0	100%	100%	100%	100%		
50.0	100%	100%	100%	100%		
25.0	89%	100%	100%	100%		
20.0	78%	96%	98%	100%		
12.5	68%	85%	89%	99%		
10.0	63%	78%	83%	97%		
5.0	49%	67%	64%	79%		
2.5	38%	58%	48%	62%		
1.25	31%	49%	38%	49%		
0.630	25%	42%	31%	40%		
0.315	21%	37%	26%	33%		
0.160	18%	32%	22%	27%		
0.080	15%	27%	18%	22%		
M.C.(%)	3%	8%	4%	7%		
LIQUID LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0	0.0		
% GRAVEL:	51	33	36	21		
% SAND:	34	40	45	56		
% FINES:	15	27	18	22		
CLASSIFICATION	SILTY GRAVEL WITH SAND (GM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)		

### Grain Size Analysis (Percent Passing vs Grain Size)





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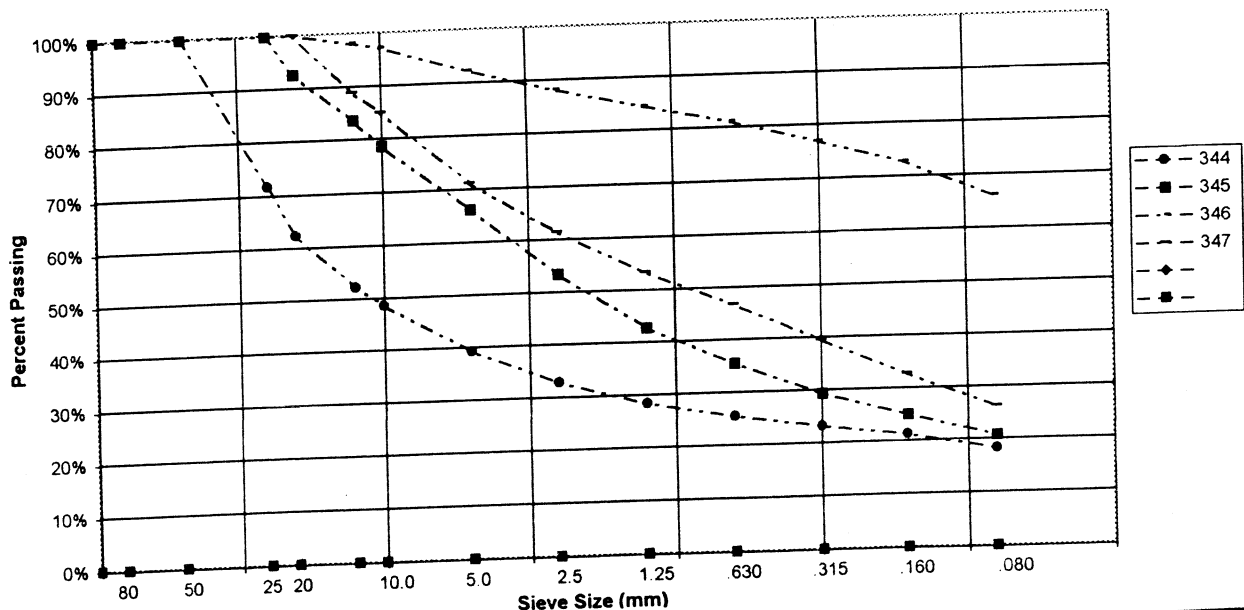
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 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 635170-6769180  
 LOGGED BY: RW

HOLE No.: 30083

DATE COMP: 08/15/2004

FIELD NO:	344	345	346	347
LAB NO:	344	345	346	347
DEPTH:	0.6-1.2	1.8-2.4	3.4-4.0	4.9-5.5
TYPE:	AUGER	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%
80.0	100%	100%	100%	100%
50.0	100%	100%	100%	100%
25.0	72%	100%	100%	100%
20.0	62%	93%	98%	89%
12.5	52%	84%	97%	85%
10.0	49%	79%	92%	71%
5.0	39%	66%	88%	61%
2.5	33%	53%	84%	53%
1.25	28%	43%	81%	47%
0.630	26%	35%	77%	40%
0.315	23%	29%	73%	33%
0.160	21%	25%	66%	26%
0.080	18%	21%		
M.C.(%)	7%	7%	21%	10%
LIQUID LIMIT:	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0
PLASTIC INDEX.:	0.0	0.0	0.0	0.0
% GRAVEL:	61	34	8	29
% SAND:	21	45	26	45
% FINES:	18	21	66	26
CLASSIFICATION	SILTY GRAVEL WITH SAND (GM)	SILTY SAND WITH GRAVEL (SM)	SANDY SILT (ML)	SILTY SAND WITH GRAVEL (SM)

Grain Size Analysis (Percent Passing vs Grain Size)





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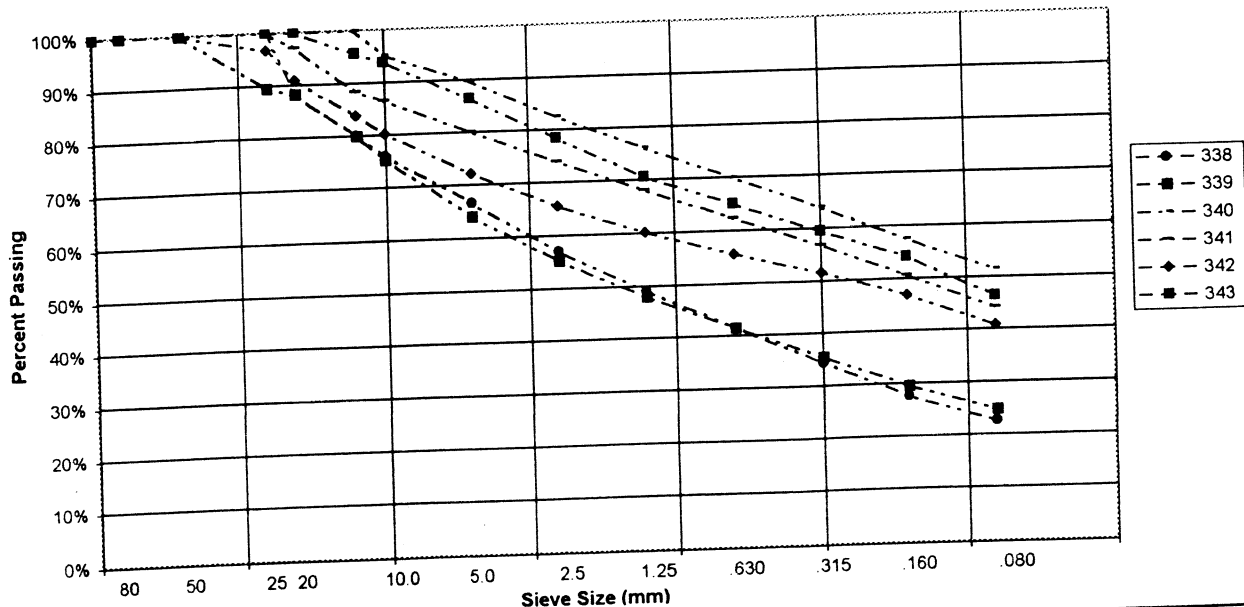
HOLE No.: 30084

PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 635163-6769283  
 LOGGED BY: RW

DATE COMP: 08/15/2004

FIELD NO:	338	339	340	341	342	343
LAB NO:	338	339	340	341	342	343
DEPTH:	0.6-1.2	1.8-2.4	3.4-4.0	4.9-5.5	6.7-7.0	7.6-8.1
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%	100%	100%
80.0	100%	100%	100%	100%	100%	100%
50.0	100%	100%	100%	100%	97%	100%
25.0	100%	89%	100%	100%	91%	100%
20.0	88%	88%	100%	88%	84%	96%
12.5	80%	80%	100%	87%	80%	94%
10.0	76%	75%	95%	80%	72%	86%
5.0	67%	64%	90%	74%	66%	78%
2.5	57%	55%	83%	68%	60%	71%
1.25	49%	48%	76%	62%	56%	65%
0.630	42%	42%	70%	57%	52%	59%
0.315	34%	36%	64%	51%	47%	54%
0.160	28%	30%	58%	44%	41%	46%
0.080	23%	25%	52%	44%	41%	46%
M.C.(%)	3%	3%	6%	6%	5%	6%
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	0.0
% GRAVEL:	33	36	10	20	28	14
% SAND:	44	39	38	36	31	40
% FINES:	23	25	52	44	41	46
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SANDY SILT (ML)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND (SM)

Grain Size Analysis (Percent Passing vs Grain Size)





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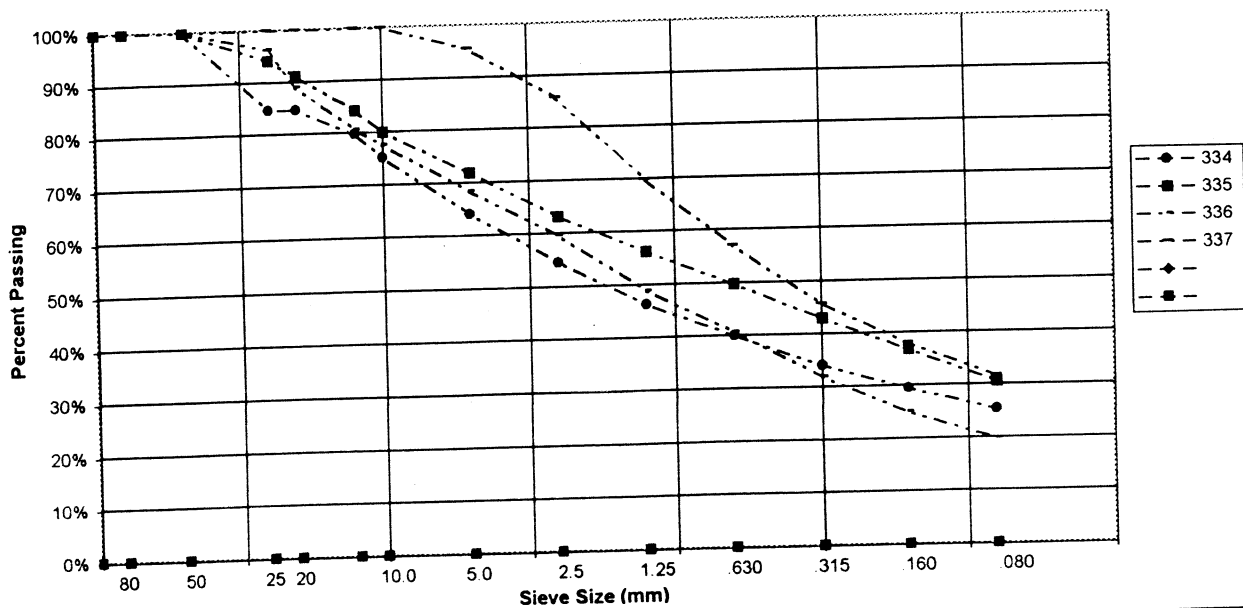
HOLE No.: 30085

PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 635155-6769371  
 LOGGED BY: RW

DATE COMP: 08/15/2004

FIELD NO:	334	335	336	337
LAB NO:	334	335	336	337
DEPTH:	0.6-1.2	1.8-2.4	3.4-4.0	4.9-5.5
TYPE:	AUGER	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%
80.0	100%	100%	100%	100%
50.0	100%	100%	100%	100%
25.0	85%	94%	96%	100%
20.0	85%	91%	89%	100%
12.5	80%	84%	81%	100%
10.0	75%	80%	78%	100%
5.0	64%	72%	68%	95%
2.5	55%	63%	60%	86%
1.25	46%	56%	49%	70%
0.630	40%	50%	41%	57%
0.315	34%	43%	32%	46%
0.160	30%	37%	25%	38%
0.080	25%	31%	20%	32%
M.C.(%)	5%	4%	3%	3%
LIQUID LIMIT:	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0	0.0
% GRAVEL:	36	28	32	5
% SAND:	39	41	49	64
% FINES:	25	31	20	32
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND (SM)

Grain Size Analysis (Percent Passing vs Grain Size)





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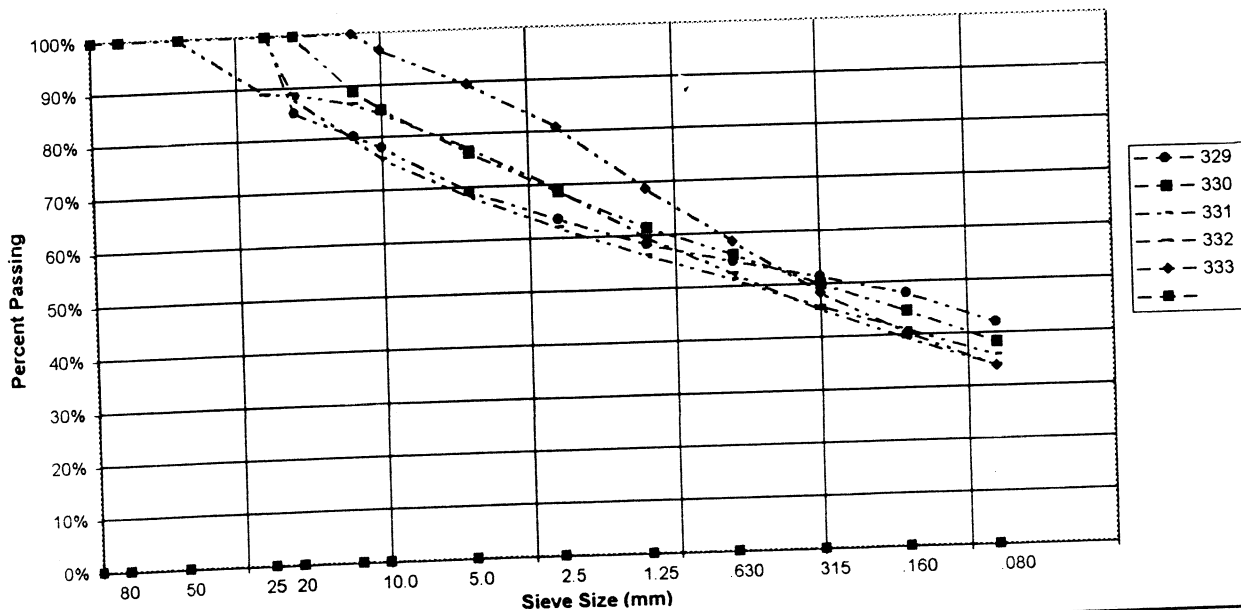
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 635131-6769424  
 LOGGED BY: RW

HOLE No.: 30086

DATE COMP: 08/15/2004

FIELD NO:	329	330	331	332	333	
LAB NO:	329	330	331	332	333	
DEPTH:	0.6-1.2	1.8-2.4	3.4-4.0	4.9-5.5	6.7-7.3	#N/A
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	
SIEVE SIZE	PERCENT PASSING					
100.0	100%	100%	100%	100%	100%	
80.0	100%	100%	100%	100%	100%	
50.0	100%	100%	100%	100%	100%	
25.0	100%	100%	100%	89%	100%	
20.0	85%	100%	88%	89%	100%	
12.5	80%	89%	80%	87%	97%	
10.0	78%	85%	76%	85%	90%	
5.0	69%	77%	68%	78%	81%	
2.5	64%	69%	62%	69%	69%	
1.25	58%	62%	56%	60%	58%	
0.630	55%	56%	51%	52%	48%	
0.315	51%	50%	46%	45%	40%	
0.160	48%	45%	41%	39%	40%	
0.080	42%	38%	36%	34%	34%	
M.C.(%)	15%	10%	10%	9%	9%	
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	
% GRAVEL:	31	23	32	22	10	
% SAND:	27	38	32	44	56	
% FINES:	42	38	36	34	34	
CLASSIFICATION	SILTY GRAVEL WITH SAND (GM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND (SM)	

### Grain Size Analysis (Percent Passing vs Grain Size)





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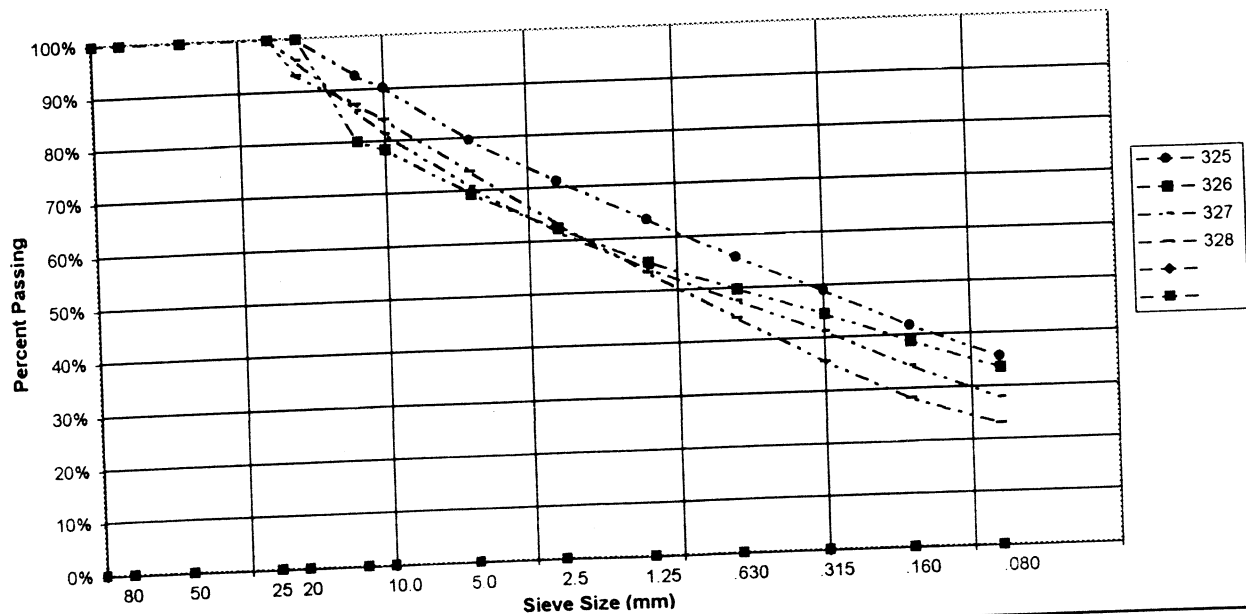
HOLE No.: 30087

PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 635121-6769468  
 LOGGED BY: RW

DATE COMP: 08/15/2004

FIELD NO:	325	326	327	328
LAB NO:	325	326	327	328
DEPTH:	0.6-1.2	1.8-2.4	3.4-4.0	4.9-5.5
TYPE:	AUGER	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%
80.0	100%	100%	100%	100%
50.0	100%	100%	100%	100%
25.0	100%	100%	100%	93%
20.0	100%	100%	96%	87%
12.5	93%	80%	86%	84%
10.0	90%	78%	81%	74%
5.0	80%	69%	71%	63%
2.5	71%	62%	62%	53%
1.25	64%	56%	54%	44%
0.630	56%	50%	47%	36%
0.315	49%	45%	41%	28%
0.180	42%	39%	34%	23%
0.080	36%	34%	28%	23%
M.C.(%)	6%	6%	4%	5%
LIQUID LIMIT:	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0	0.0
% GRAVEL:	20	31	29	26
% SAND:	44	36	43	51
% FINES:	36	34	28	23
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)

### Grain Size Analysis (Percent Passing vs Grain Size)





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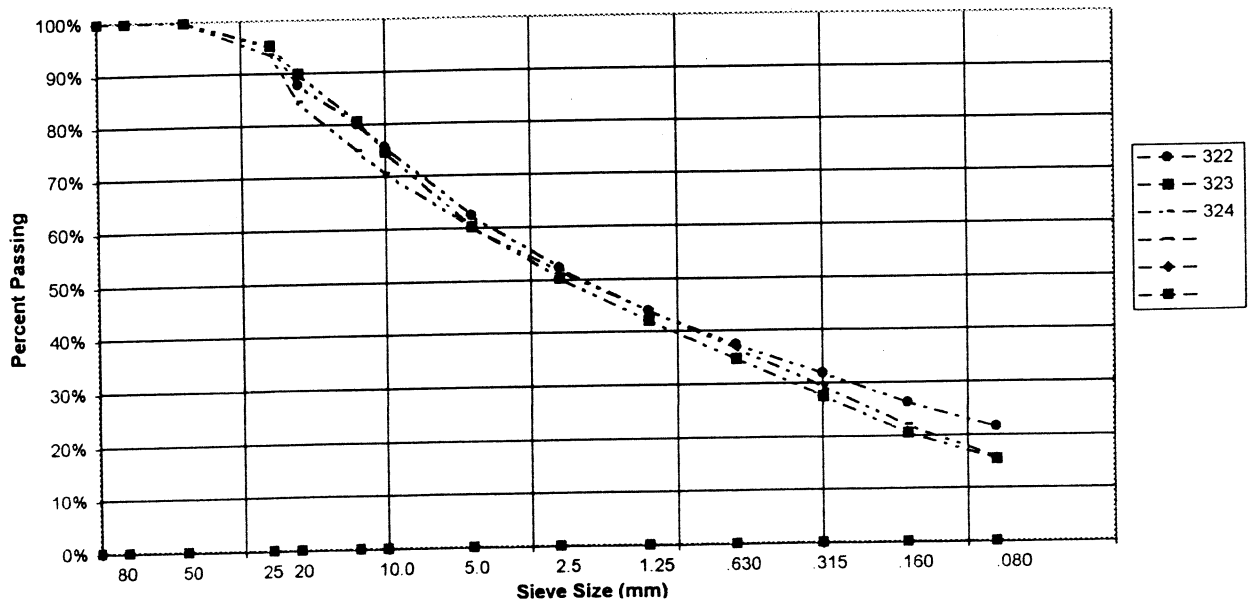
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 635104-6769516  
 LOGGED BY: RW

HOLE No.: 30088

DATE COMP: 08/15/2004

FIELD NO:	322	323	324
LAB NO:	322	323	324
DEPTH:	0.9-1.2	1.8-2.4	3.4-4.0
TYPE:	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%
80.0	100%	100%	100%
50.0	100%	100%	100%
25.0	95%	95%	94%
20.0	88%	90%	84%
12.5	80%	81%	75%
10.0	76%	75%	71%
5.0	62%	60%	60%
2.5	52%	50%	52%
1.25	44%	42%	44%
0.630	37%	35%	37%
0.315	32%	28%	30%
0.160	26%	21%	22%
0.080	22%	16%	16%
M.C.(%)	4%	3%	2%
LIQUID LIMIT:	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0
% GRAVEL:	38	40	40
% SAND:	41	45	44
% FINES:	22	16	16
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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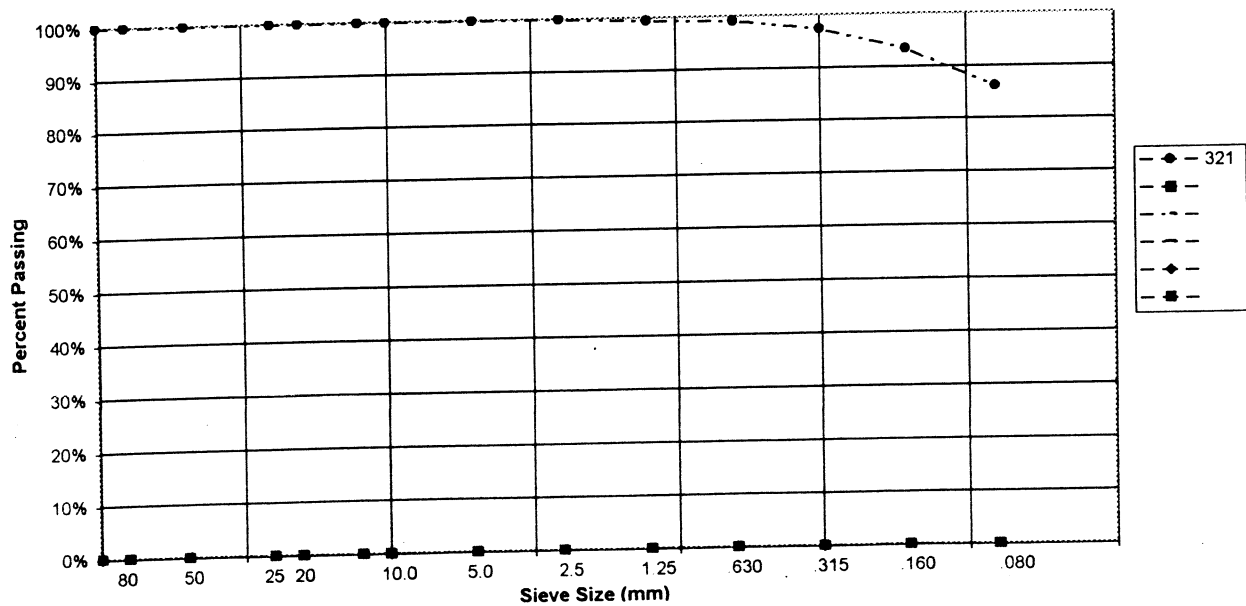
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CLIENT: YTG, Transportation & Engineering  
PROJECT NAME: Geotechnical Services  
PROJECT LOCATION: Km 1691.7-1717.3  
DRILL UNIT: CME75  
HOLE LOCATION: 635078-6769606  
LOGGED BY: RW

HOLE No.: 30089

DATE COMP: 08/15/2004

FIELD NO:	321				
LAB NO:	321				
DEPTH:	0.0-0.6				
TYPE:	AUGER				
SIEVE SIZE	PERCENT PASSING				
100.0	100%				
80.0	100%				
50.0	100%				
25.0	100%				
20.0	100%				
12.5	100%				
10.0	100%				
5.0	100%				
2.5	100%				
1.25	100%				
0.630	99%				
0.315	97%				
0.160	93%				
0.080	86%				
M.C.(%)	13%				
LIQUID LIMIT:	0.0				
PLASTIC LIMIT:	0.0				
PLASTIC INDEX:	0.0				
% GRAVEL:	0				
% SAND:	14				
% FINES:	86				
CLASSIFICATION	SILT (ML)				

Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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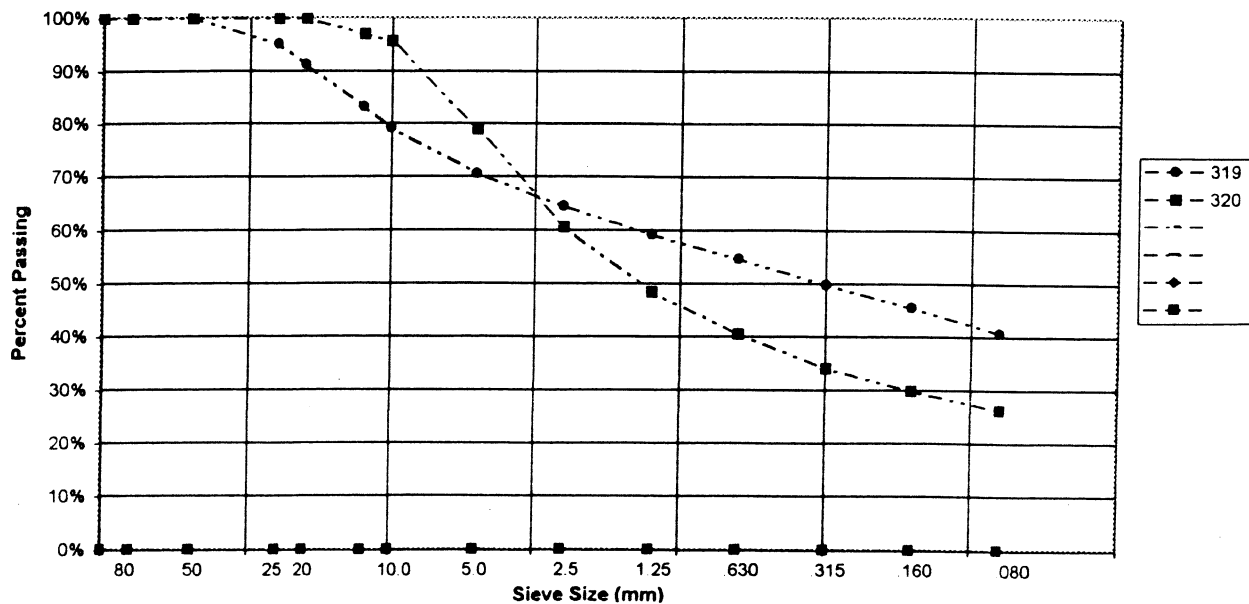
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 635061-6769660  
 LOGGED BY: RW

HOLE No.: 30090

DATE COMP: 08/15/2004

FIELD NO:	319	320			
LAB NO:	319	320			
DEPTH:	0.5-1.0	1.2-1.5			
TYPE:	AUGER	AUGER			
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING			
100.0	100%	100%			
80.0	100%	100%			
50.0	100%	100%			
25.0	95%	100%			
20.0	91%	100%			
12.5	83%	97%			
10.0	79%	96%			
5.0	71%	79%			
2.5	65%	61%			
1.25	59%	48%			
0.630	55%	41%			
0.315	50%	34%			
0.160	46%	30%			
0.080	41%	26%			
M.C.(%):	6%	3%			
LIQUID LIMIT:	0.0	0.0			
PLASTIC LIMIT:	0.0	0.0			
PLASTIC INDEX.:	0.0	0.0			
% GRAVEL:	29	21			
% SAND:	30	53			
% FINES:	41	28			
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)			

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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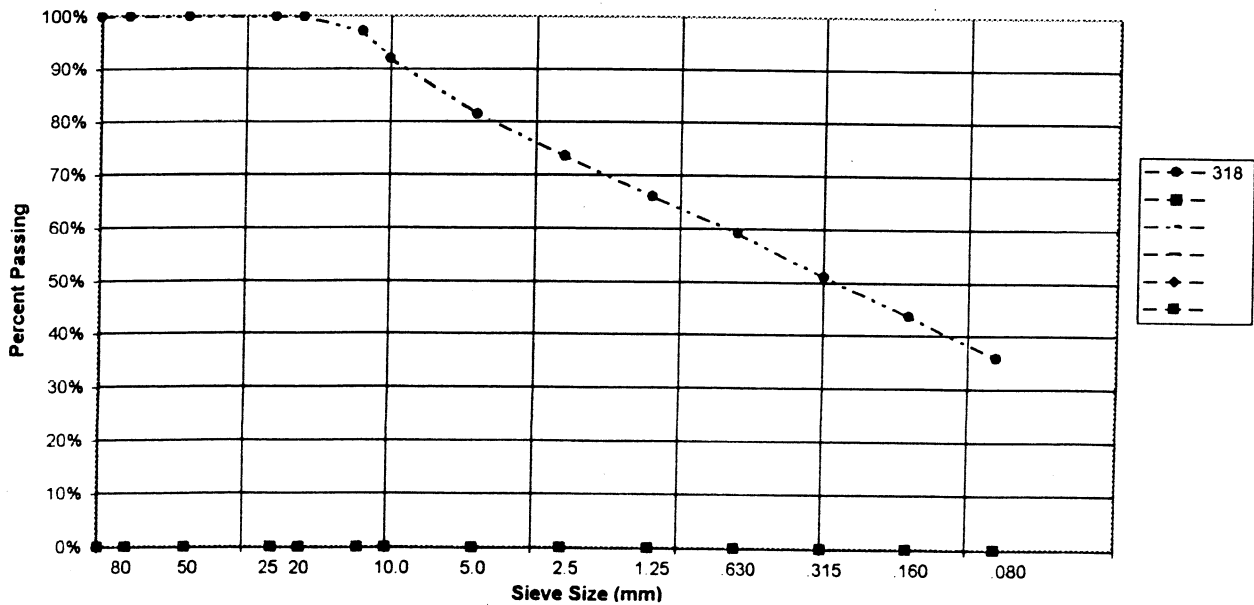
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 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 635044-6769701  
 LOGGED BY: RW

HOLE No.: 30091

DATE COMP: 08/15/2004

FIELD NO:	318				
LAB NO:	318				
DEPTH:	0.5-0.9				
TYPE:	AUGER				
SIEVE SIZE	PERCENT PASSING				
100.0	100%				
80.0	100%				
50.0	100%				
25.0	100%				
20.0	100%				
12.5	97%				
10.0	92%				
5.0	82%				
2.5	74%				
1.25	68%				
0.630	59%				
0.315	51%				
0.180	44%				
0.080	36%				
M.C.(%):	5%				
LIQUID LIMIT:	0.0				
PLASTIC LIMIT:	0.0				
PLASTIC INDEX.:	0.0				
% GRAVEL:	18				
% SAND:	46				
% FINES:	36				
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)				

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

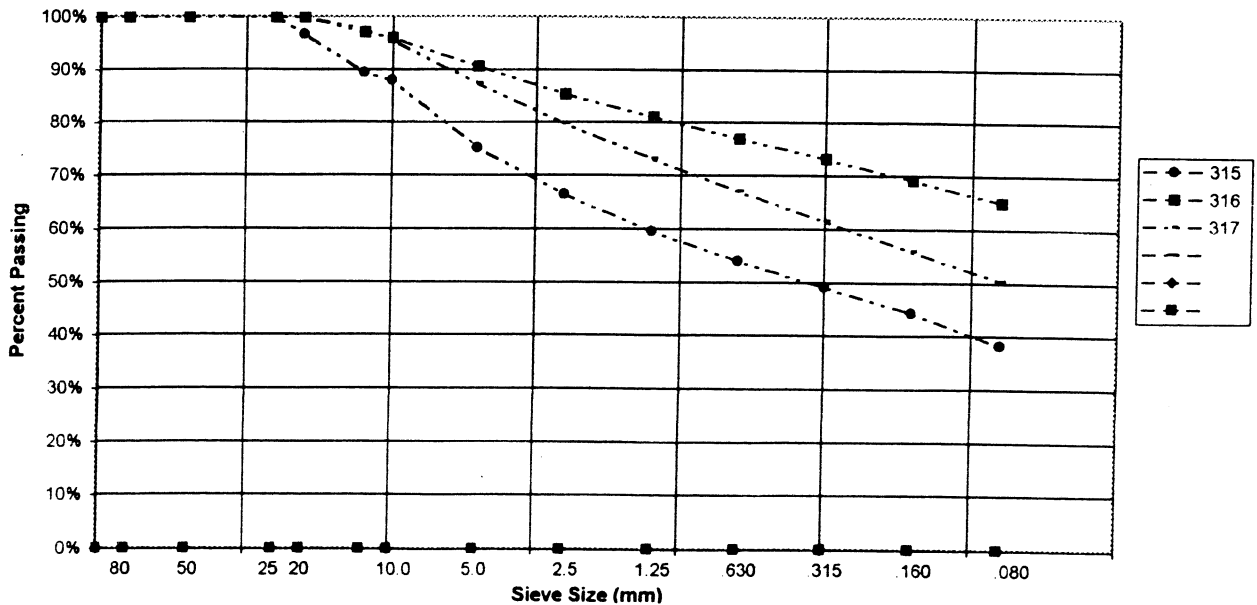
An Affiliate of J. R. Peine & Associates Ltd.



PROJECT NUMBER: 8002-318 HOLE No.: 30092  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 635000-6769764  
 LOGGED BY: RW DATE COMP: 08/15/2004

FIELD NO:	315	316	317		
LAB NO:	315	316	317		
DEPTH:	0.4-1.0	1.8-2.4	3.7-4.3		
TYPE:	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%		
80.0	100%	100%	100%		
50.0	100%	100%	100%		
25.0	100%	100%	100%		
20.0	97%	100%	100%		
12.5	89%	97%	98%		
10.0	88%	96%	96%		
5.0	75%	91%	87%		
2.5	67%	85%	80%		
1.25	60%	81%	73%		
0.630	54%	77%	67%		
0.315	49%	73%	62%		
0.160	44%	69%	56%		
0.080	38%	65%	50%		
M.C.(%)	13%	18%	11%		
LIQUID LIMIT:	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0		
PLASTIC INDEX:	0.0	0.0	0.0		
% GRAVEL:	25	9	13		
% SAND:	37	25	37		
% FINES:	38	65	50		
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SANDY SILT (ML)	SANDY SILT (ML)		

Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. R. Payne & Associates Ltd.



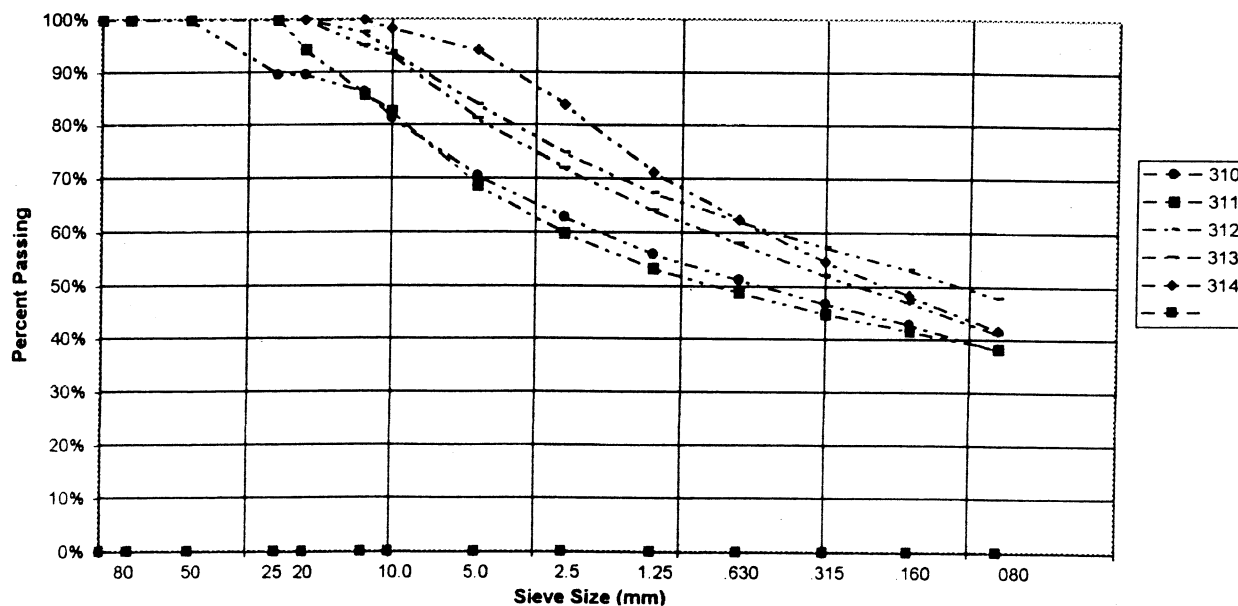
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 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 634966-6769809  
 LOGGED BY: RW

HOLE No.: 30093

DATE COMP: 08/15/2004

FIELD NO:	310	311	312	313	314	
LAB NO:	310	311	312	313	314	
DEPTH:	0.3-0.9	1.8-2.4	3.4-4.0	4.9-5.5	6.7-7.0	
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	#N/A
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	
100.0	100%	100%	100%	100%	100%	
80.0	100%	100%	100%	100%	100%	
50.0	100%	100%	100%	100%	100%	
25.0	90%	100%	100%	100%	100%	
20.0	90%	94%	100%	100%	100%	
12.5	86%	86%	98%	95%	100%	
10.0	81%	83%	94%	93%	98%	
5.0	71%	69%	84%	81%	94%	
2.5	63%	60%	75%	72%	84%	
1.25	56%	53%	67%	64%	71%	
0.630	51%	49%	62%	58%	62%	
0.315	47%	45%	57%	52%	55%	
0.160	43%	42%	53%	47%	48%	
0.080	38%	38%	48%	41%	42%	
M.C.(%)	20%	15%	16%	13%	9%	
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	
% GRAVEL:	29	31	16	19	6	
% SAND:	32	30	36	40	52	
% FINES:	38	38	48	41	42	
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILTY GRAVEL WITH SAND (GM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND (SM)	

Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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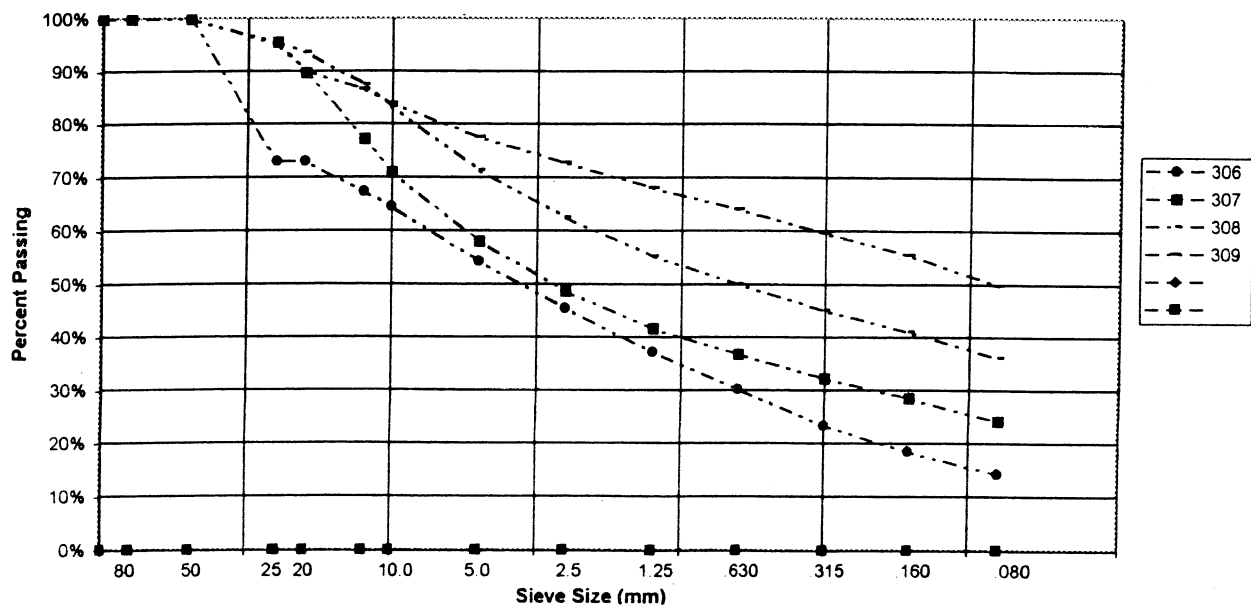
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 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 634943-6769845  
 LOGGED BY: RW

HOLE No.: 30094

DATE COMP: 08/15/2004

FIELD NO:	306	307	308	309
LAB NO:	306	307	308	309
DEPTH:	0.8-1.3	1.8-2.4	3.4-4.0	5.3-5.8
TYPE:	AUGER	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%
80.0	100%	100%	100%	100%
50.0	100%	100%	100%	100%
25.0	73%	95%	96%	95%
20.0	73%	90%	94%	90%
12.5	67%	77%	87%	87%
10.0	65%	71%	83%	84%
5.0	54%	58%	71%	78%
2.5	45%	49%	63%	73%
1.25	37%	42%	55%	68%
0.630	30%	37%	50%	64%
0.315	23%	32%	45%	60%
0.160	19%	29%	41%	56%
0.080	14%	24%	36%	50%
M.C.(%):	5%	8%	11%	13%
LIQUID LIMIT:	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0	0.0
% GRAVEL:	46	42	29	22
% SAND:	40	34	35	28
% FINES:	14	24	36	50
CLASSIFICATION	SILTY GRAVEL WITH SAND (GM)	SILTY GRAVEL WITH SAND (GM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)

### Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Affiliate of J. R. Faine & Associates Ltd.



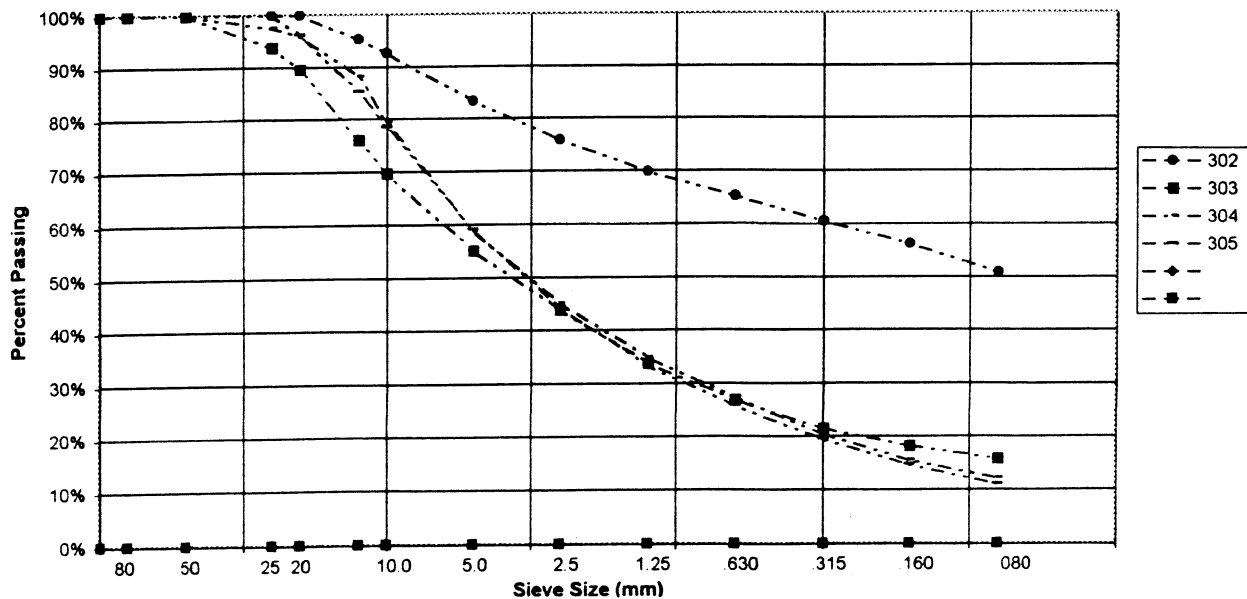
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 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 634905-6769885  
 LOGGED BY: RW

HOLE No.: 30095

DATE COMP: 08/15/2004

FIELD NO:	302	303	304	305		
LAB NO:	302	303	304	305		
DEPTH:	0.3-0.9	2.1-2.4	3.4-4.0	4.9-5.5		
TYPE:	AUGER	AUGER	AUGER	AUGER		
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING		
100.0	100%	100%	100%	100%		
80.0	100%	100%	100%	100%		
50.0	100%	100%	100%	100%		
25.0	100%	94%	98%	100%		
20.0	100%	90%	96%	96%		
12.5	95%	76%	88%	85%		
10.0	93%	70%	80%	79%		
5.0	83%	55%	59%	59%		
2.5	76%	44%	45%	44%		
1.25	70%	34%	35%	33%		
0.630	65%	27%	27%	26%		
0.315	61%	22%	20%	19%		
0.160	56%	18%	16%	15%		
0.080	51%	16%	12%	11%		
M.C.(%)	18%	5%	7%	6%		
LIQUID LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC LIMIT:	0.0	0.0	0.0	0.0		
PLASTIC INDEX.:	0.0	0.0	0.0	0.0		
% GRAVEL:	17	45	41	41		
% SAND:	32	39	47	48		
% FINES:	51	16	12	11		
CLASSIFICATION	SANDY SILT WITH GRAVEL (ML)	SILTY GRAVEL WITH SAND (GM)	SILTY SAND WITH GRAVEL (SM)	WELL-GRADED SAND WITH SILT & GRAVEL (SW-SM)		

Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

An Associate of J. P. Peine & Associates Ltd.



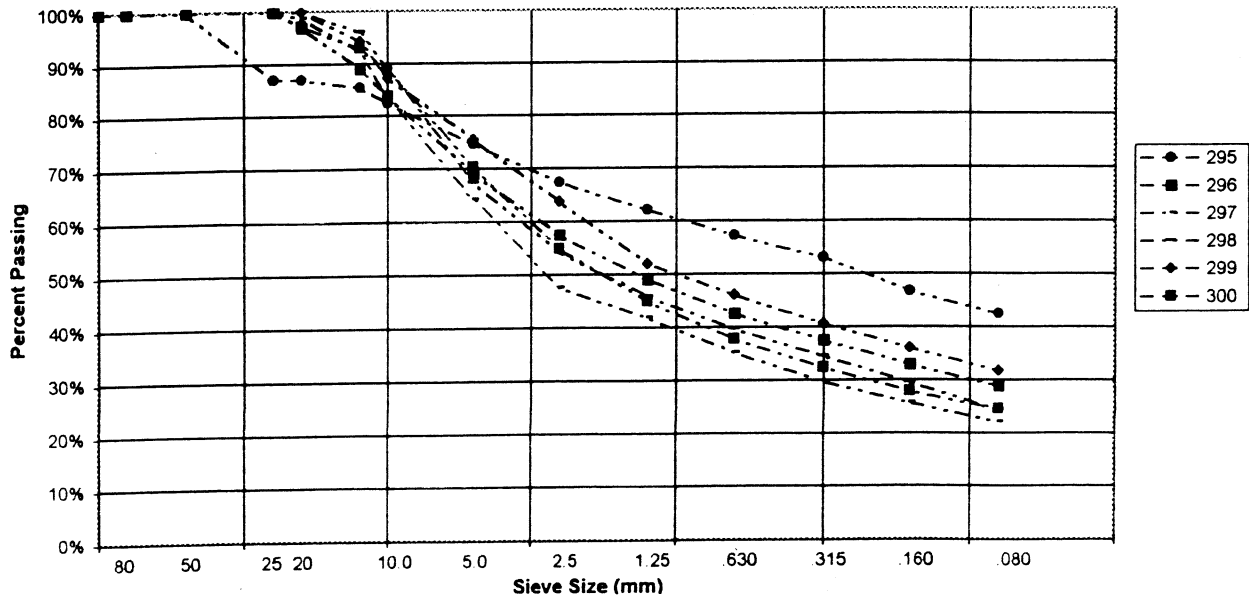
PROJECT NUMBER: 8002-318  
 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 634847-6769994  
 LOGGED BY: RW

HOLE No.: 30096

DATE COMP: 08/14/2004

FIELD NO:	295	296	297	298	299	300
LAB NO:	295	296	297	298	299	300
DEPTH:	1.0-1.3	1.8-2.4	3.7-4.3	4.9-5.5	7.0-7.6	9.1-9.8
TYPE:	AUGER	AUGER	AUGER	AUGER	AUGER	AUGER
SIEVE SIZE	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING	PERCENT PASSING
100.0	100%	100%	100%	100%	100%	100%
80.0	100%	100%	100%	100%	100%	100%
50.0	100%	100%	100%	100%	100%	100%
25.0	87%	100%	100%	100%	100%	100%
20.0	87%	97%	99%	100%	100%	97%
12.5	85%	89%	92%	96%	94%	93%
10.0	83%	84%	83%	89%	87%	89%
5.0	75%	69%	64%	67%	76%	70%
2.5	67%	58%	48%	54%	64%	55%
1.25	62%	49%	42%	46%	52%	45%
0.630	57%	43%	35%	40%	46%	38%
0.315	53%	38%	30%	35%	41%	32%
0.160	47%	33%	26%	30%	36%	28%
0.080	43%	29%	22%	24%	32%	25%
M.C.(%):	20%	11%	8%	10%	35%	17%
LIQUID LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC LIMIT:	0.0	0.0	0.0	0.0	0.0	0.0
PLASTIC INDEX:	0.0	0.0	0.0	0.0	0.0	0.0
% GRAVEL:	25	31	36	33	24	30
% SAND:	32	40	42	43	44	46
% FINES:	43	29	22	24	32	25
CLASSIFICATION	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)	SILTY SAND WITH GRAVEL (SM)

Grain Size Analysis (Percent Passing vs Grain Size)





# HOGGAN ENGINEERING & TESTING (1980) LTD.

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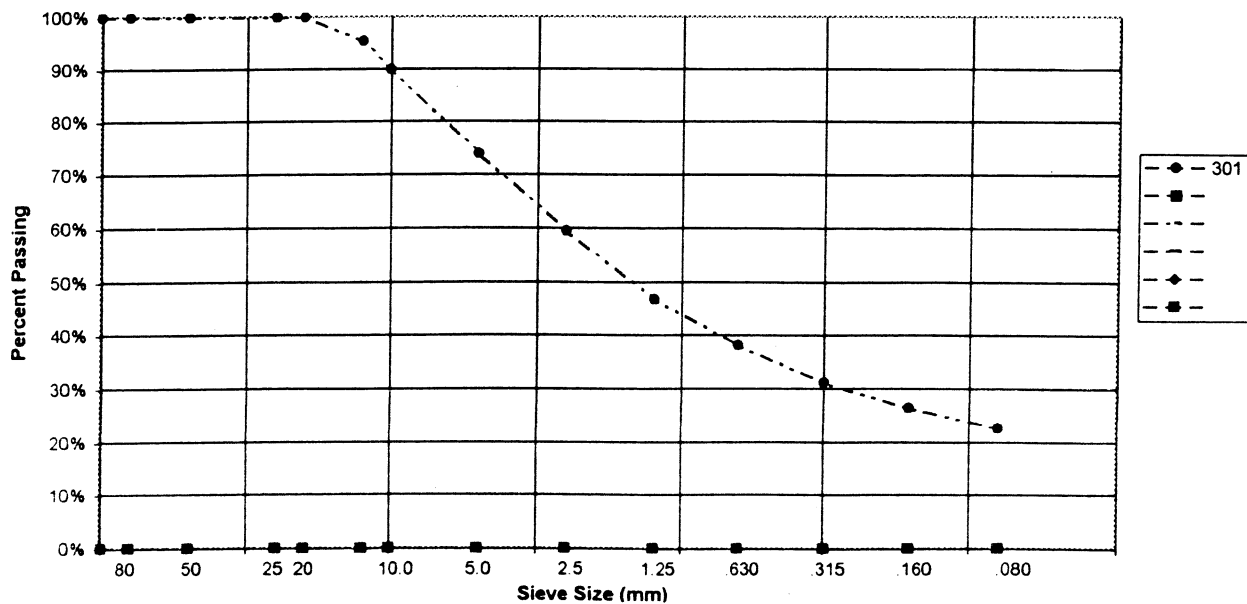
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 CLIENT: YTG, Transportation & Engineering  
 PROJECT NAME: Geotechnical Services  
 PROJECT LOCATION: Km 1691.7-1717.3  
 DRILL UNIT: CME75  
 HOLE LOCATION: 634847-6769994  
 LOGGED BY: RW

HOLE No.: 30096B

DATE COMP: 08/14/2004

FIELD NO:	301				
LAB NO:	301				
DEPTH:	10.4-11.0				
TYPE:	AUGER				
<b>SIEVE SIZE</b>	<b>PERCENT PASSING</b>				
100.0	100%				
80.0	100%				
50.0	100%				
25.0	100%				
20.0	100%				
12.5	95%				
10.0	90%				
5.0	74%				
2.5	59%				
1.25	47%				
0.630	38%				
0.315	31%				
0.160	26%				
0.080	23%				
M.C.(%):	18%				
LIQUID LIMIT:	0.0				
PLASTIC LIMIT:	0.0				
PLASTIC INDEX:	0.0				
% GRAVEL:	26				
% SAND:	51				
% FINES:	23				
<b>CLASSIFICATION</b>	SILTY SAND WITH GRAVEL (SM)				

### Grain Size Analysis (Percent Passing vs Grain Size)





HIGHWAY CONSTRUCTION

**GEOTECHNICAL INVESTIGATION**

km 1700.0 to 1707.7  
YUKON, 2007-2008

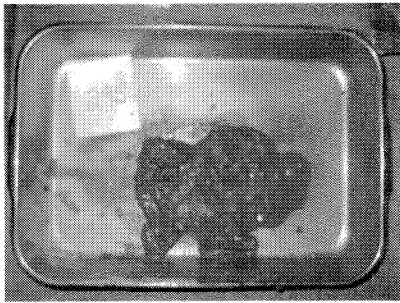
ALASKA HIGHWAY #1

**CENTRELINE TESTING  
1700.0 to 1707.7  
ALASKA HIGHWAY**

**Photographs**



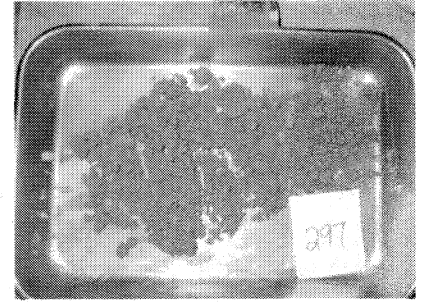
PHOTOS  
TEST HOLES 30045 to 30070; 30082 to 30096  
Sample # 295 to 351; 465 to 653



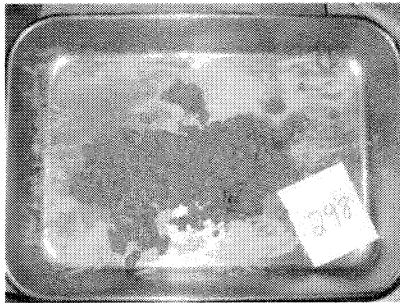
295



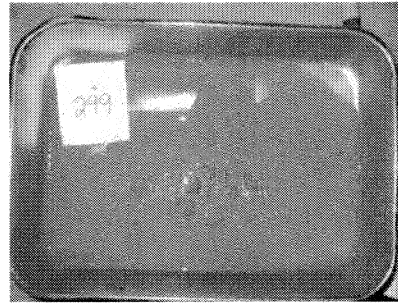
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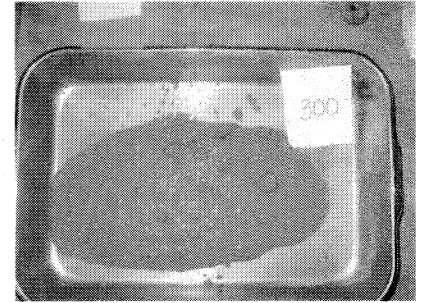
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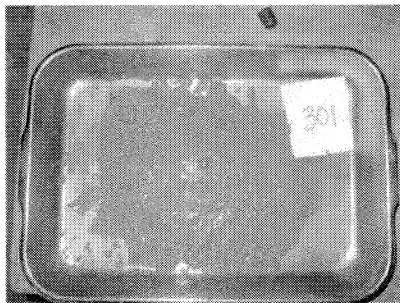
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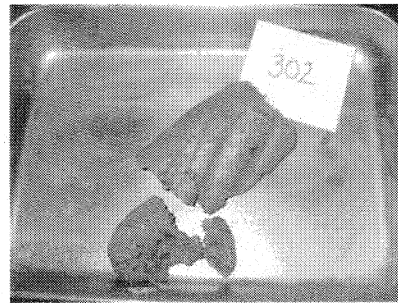
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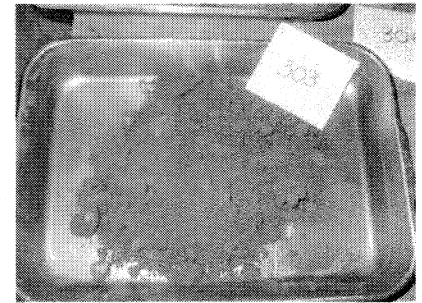
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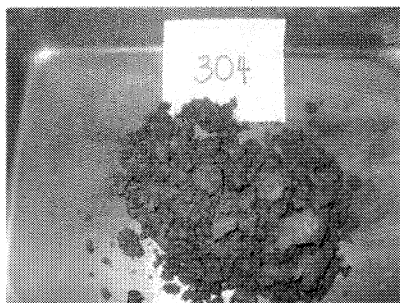
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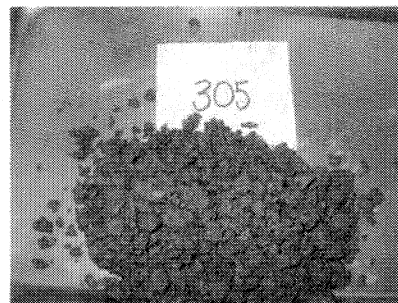
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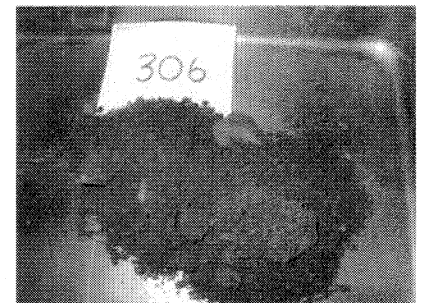
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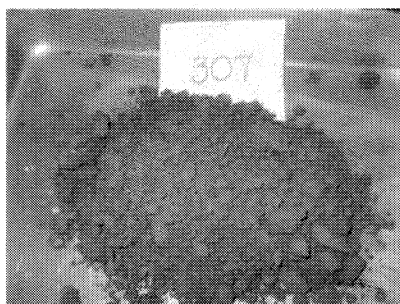
304



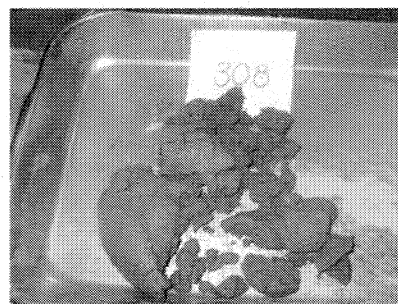
305



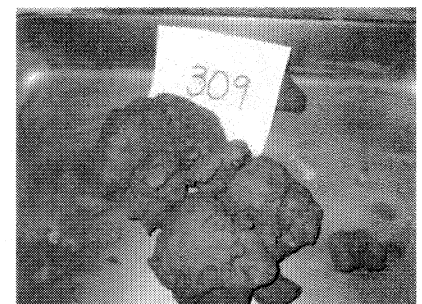
306



307

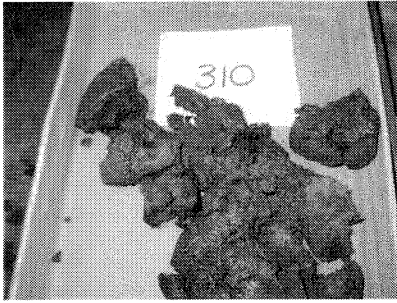


308



309

PHOTOS  
TEST HOLES 30045 to 30070; 30082 to 30096  
Sample # 295 to 351; 465 to 653



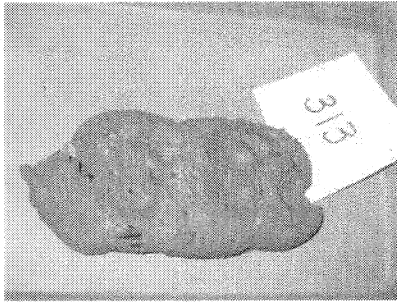
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311



312



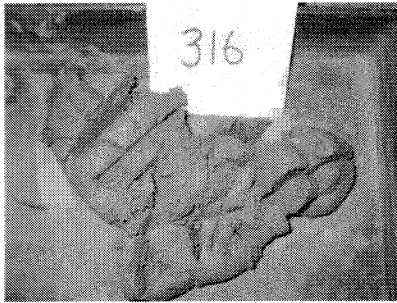
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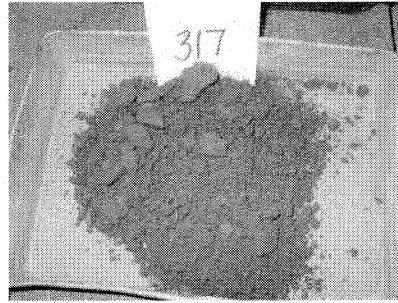
314



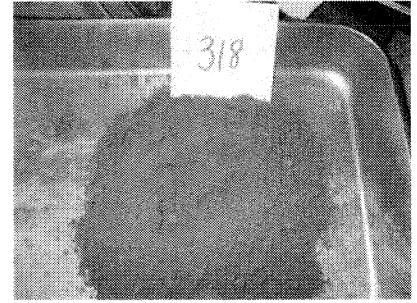
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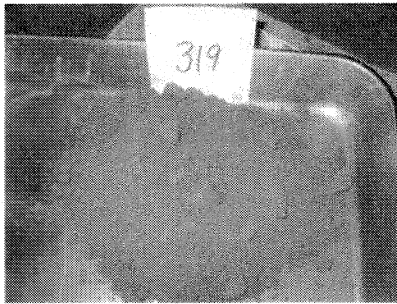
316



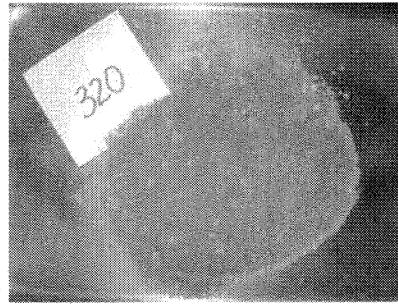
317



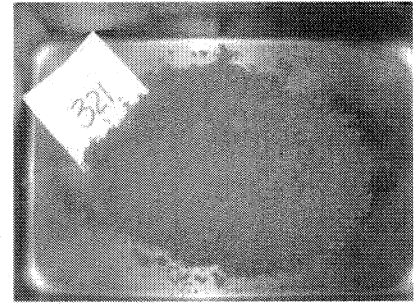
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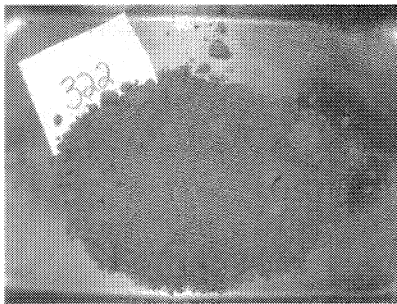
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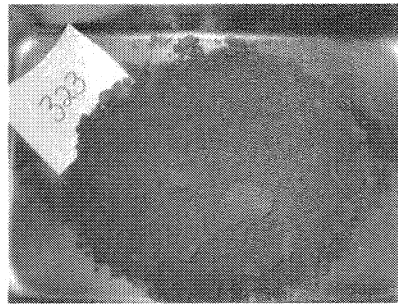
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321



322

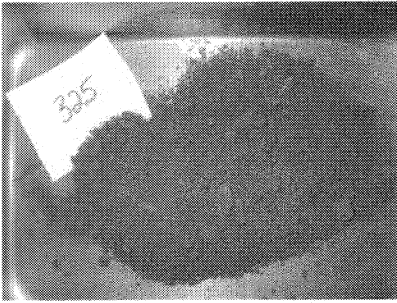


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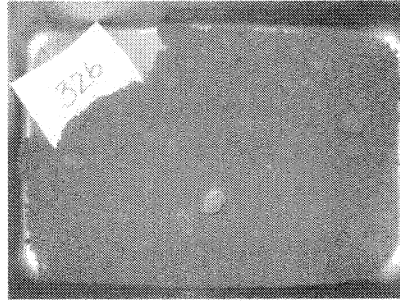


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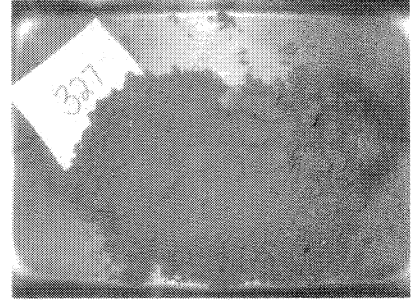
PHOTOS  
TEST HOLES 30045 to 30070; 30082 to 30096  
Sample # 295 to 351; 465 to 653



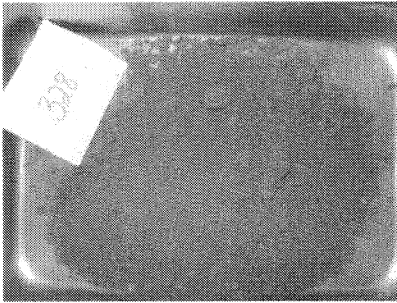
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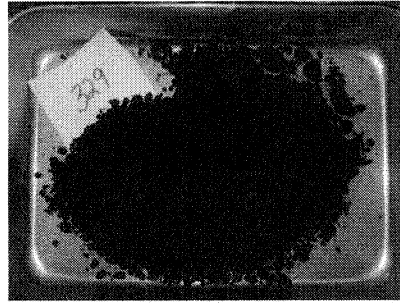
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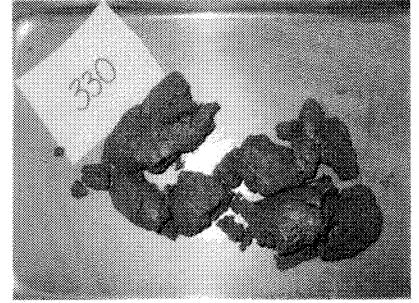
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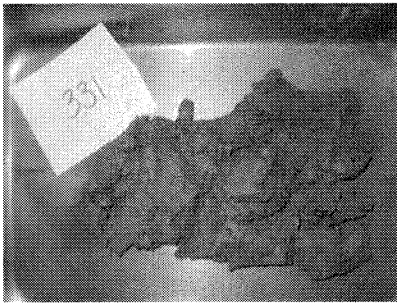
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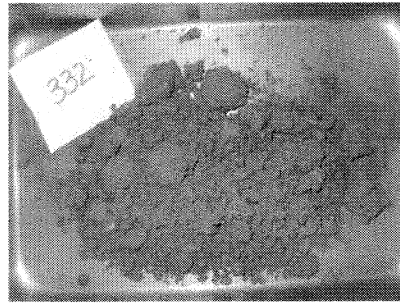
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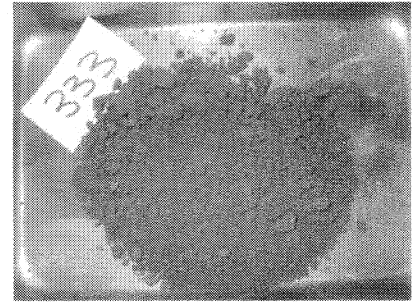
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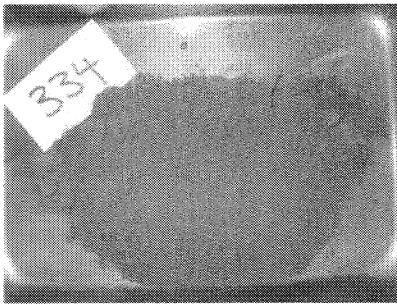
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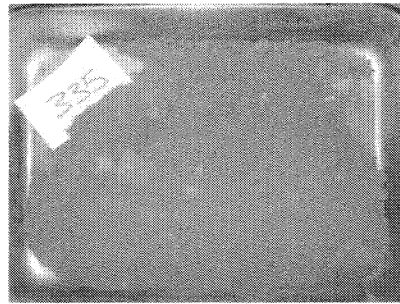
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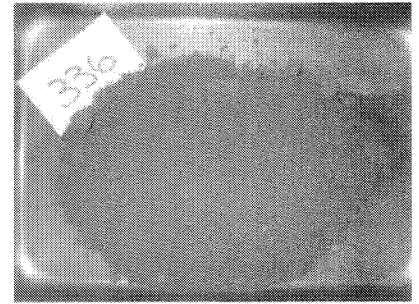
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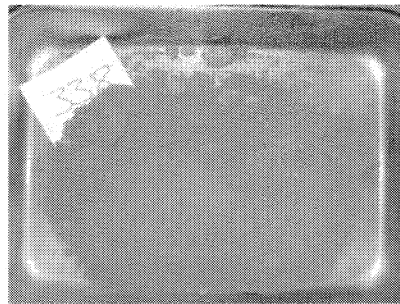
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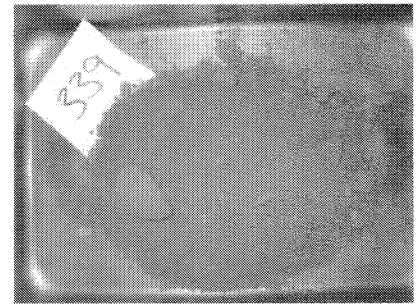
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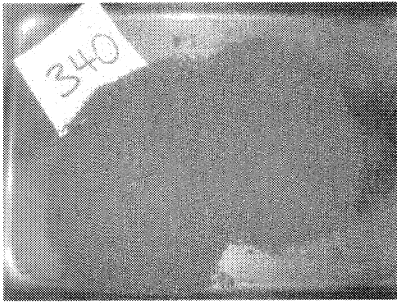


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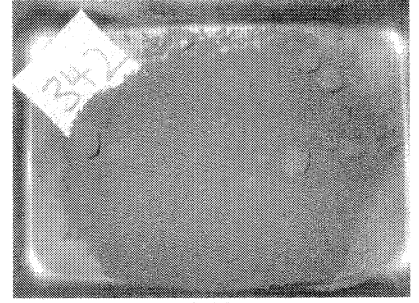
PHOTOS  
TEST HOLES 30045 to 30070; 30082 to 30096  
Sample # 295 to 351; 465 to 653



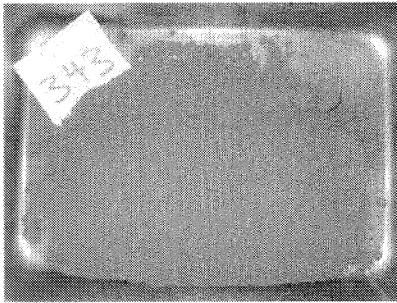
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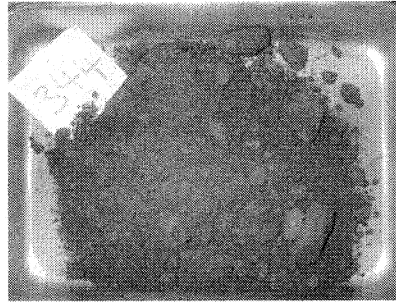
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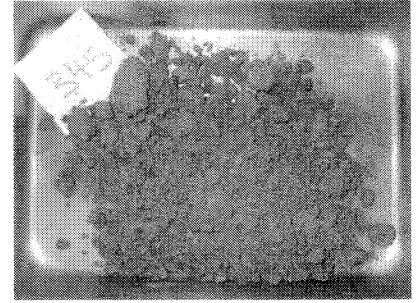
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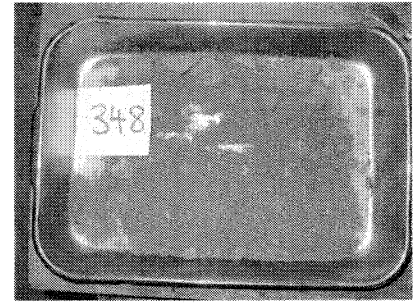
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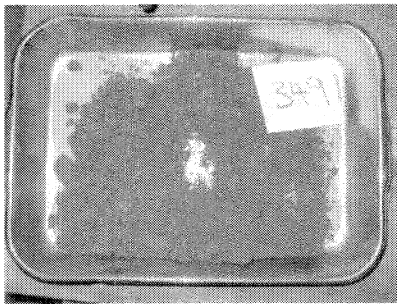
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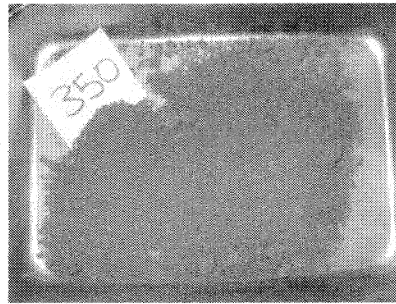
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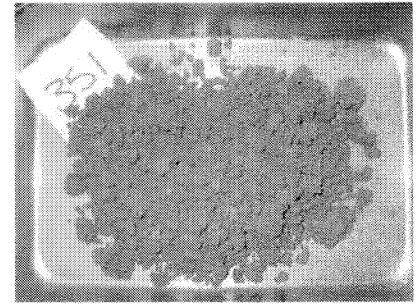
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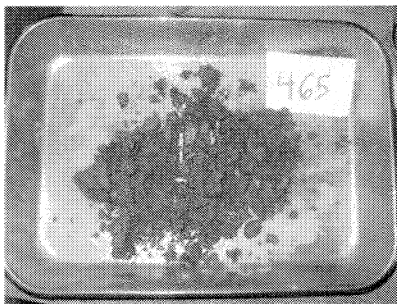
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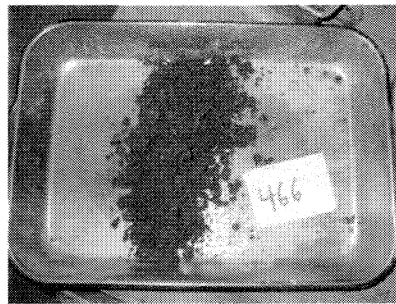
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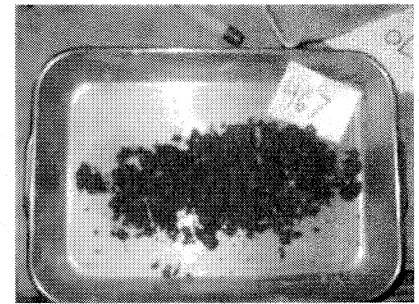
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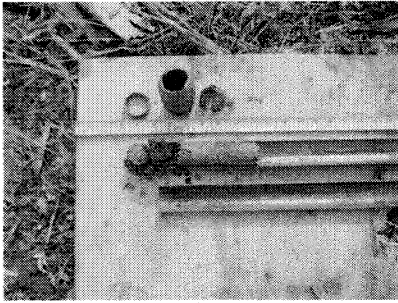


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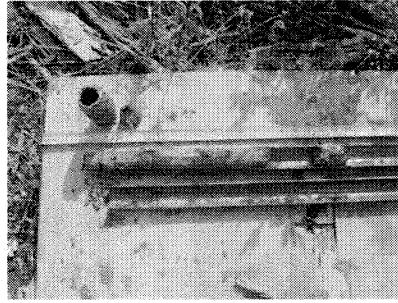


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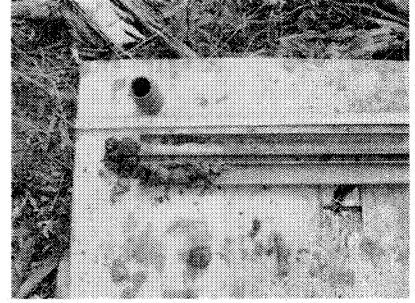
PHOTOS  
TEST HOLES 30045 to 30070; 30082 to 30096  
Sample # 295 to 351; 465 to 653



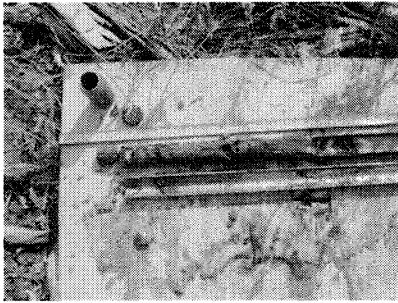
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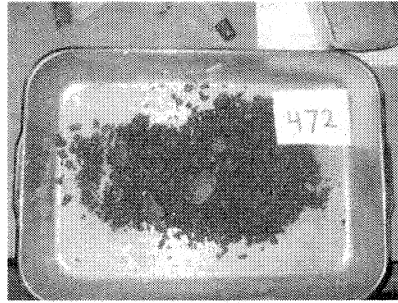
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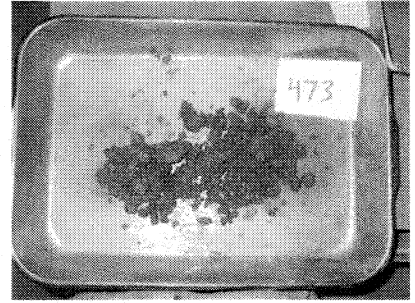
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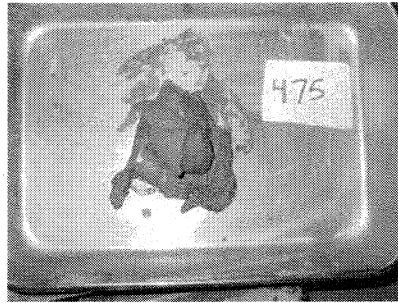
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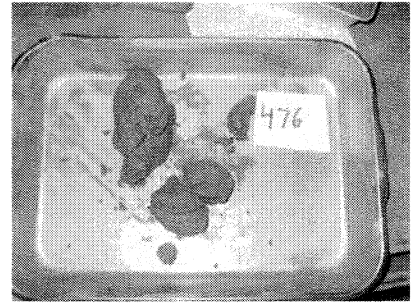
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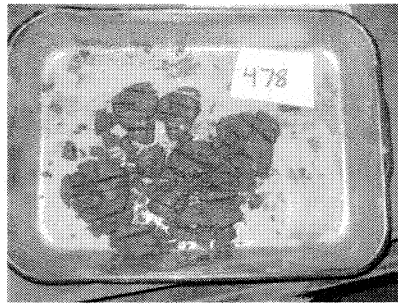
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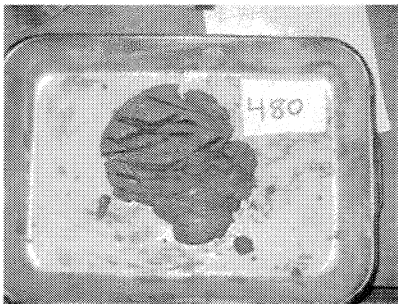
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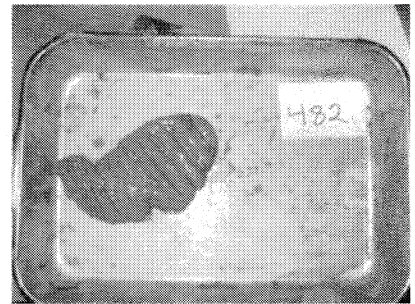
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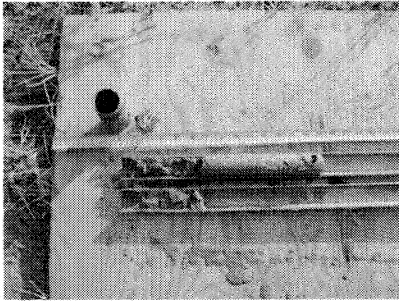


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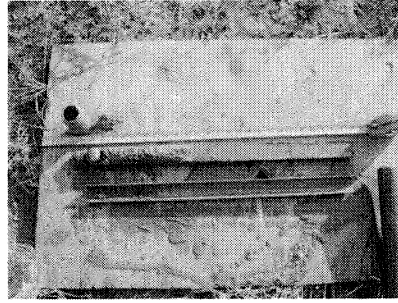


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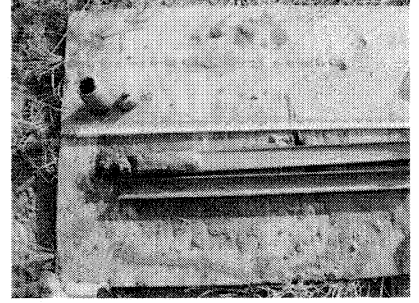
PHOTOS  
TEST HOLES 30045 to 30070; 30082 to 30096  
Sample # 295 to 351; 465 to 653



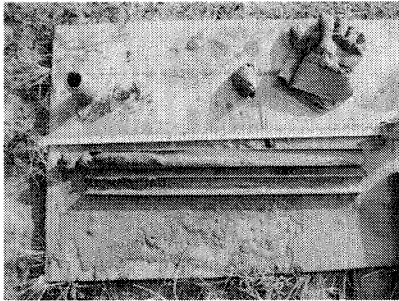
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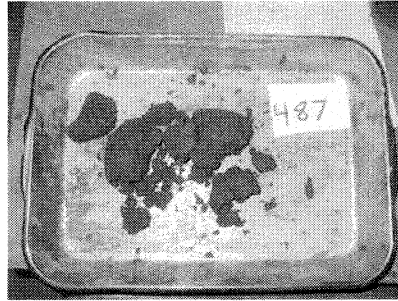
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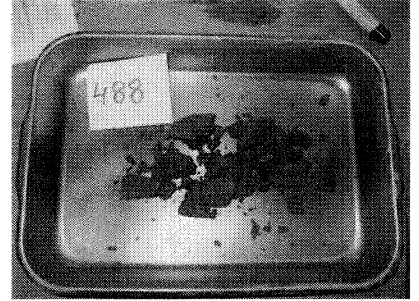
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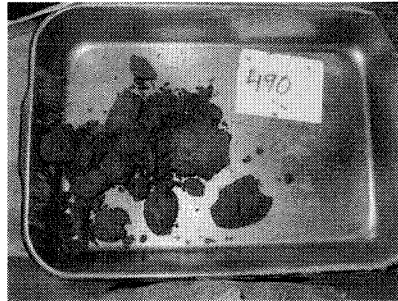
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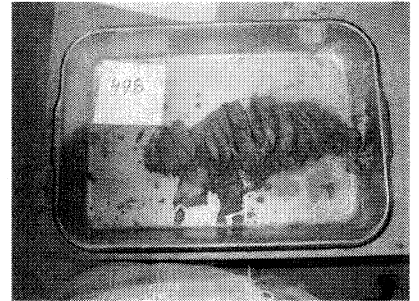
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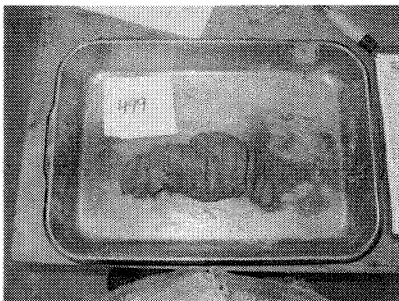
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498



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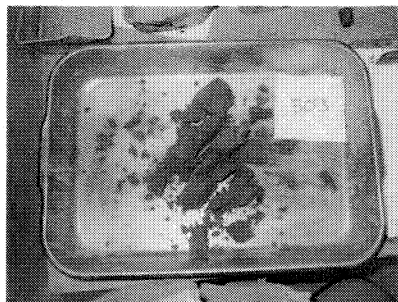
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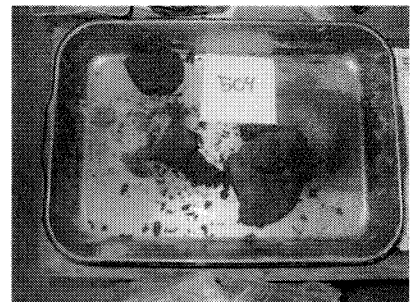
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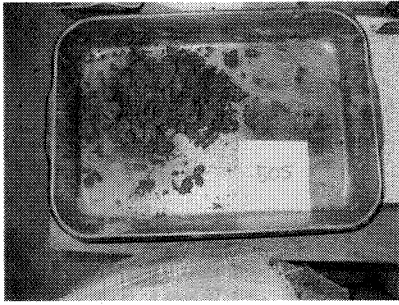


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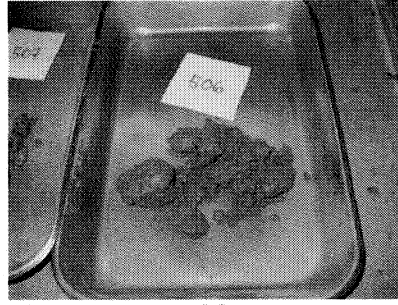


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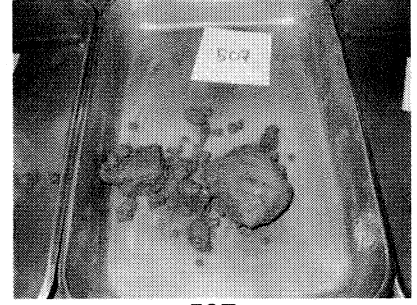
PHOTOS  
TEST HOLES 30045 to 30070; 30082 to 30096  
Sample # 295 to 351; 465 to 653



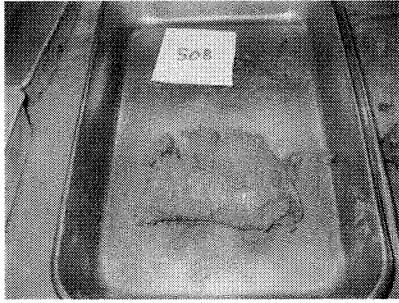
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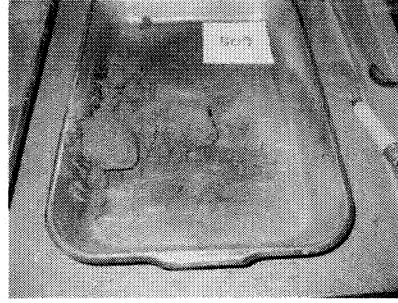
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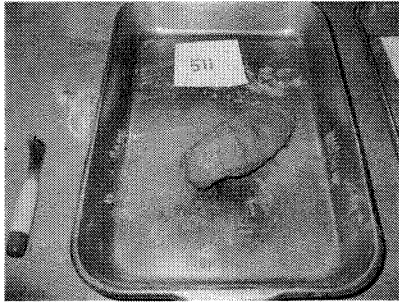
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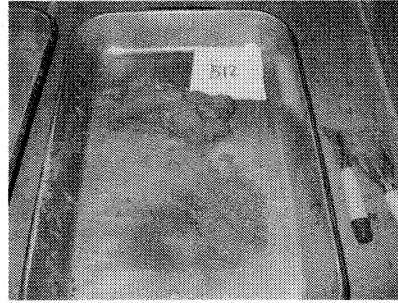
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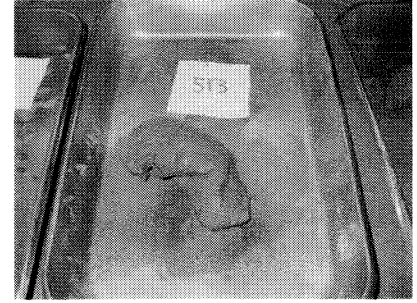
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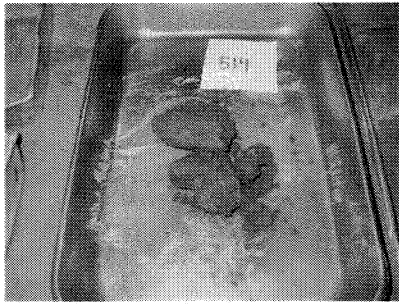
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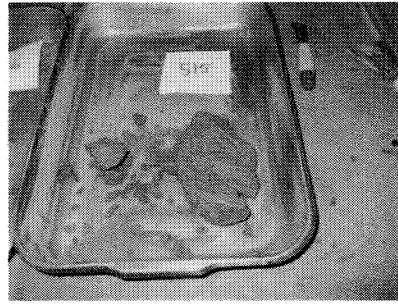
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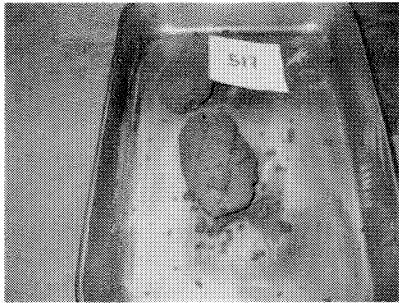
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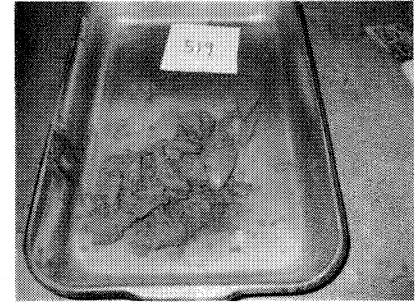
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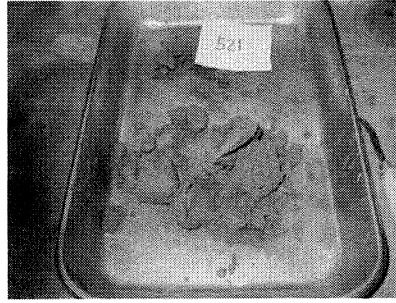


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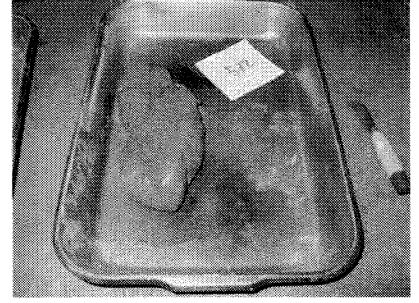
PHOTOS  
TEST HOLES 30045 to 30070; 30082 to 30096  
Sample # 295 to 351; 465 to 653



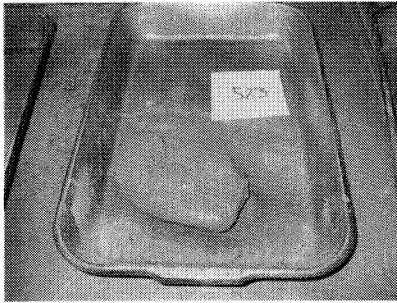
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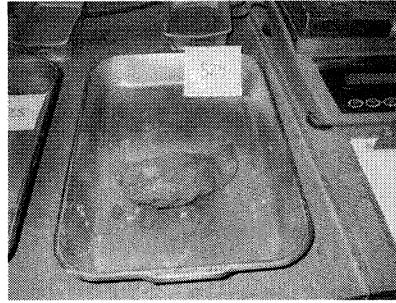
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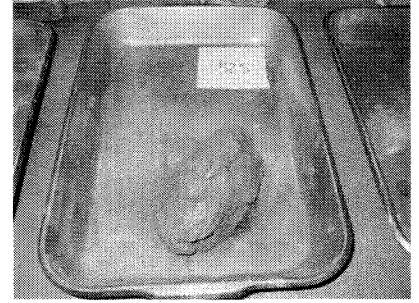
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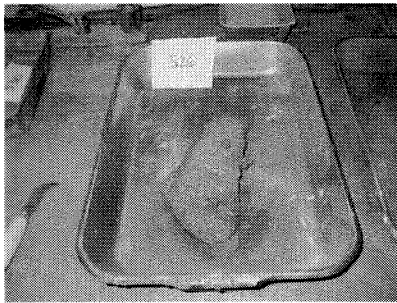
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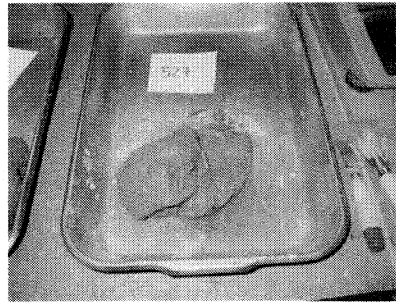
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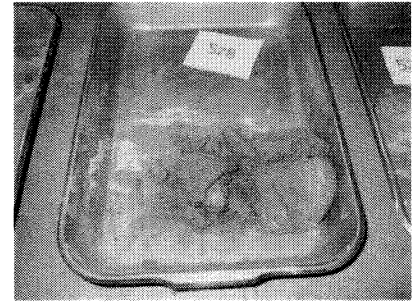
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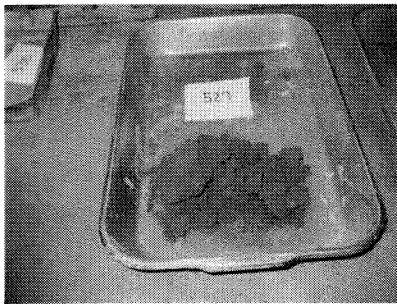
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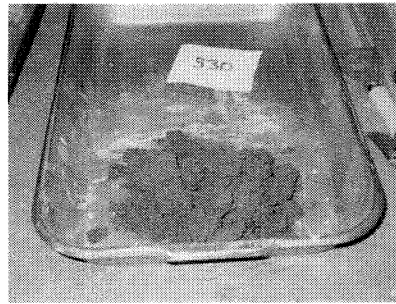
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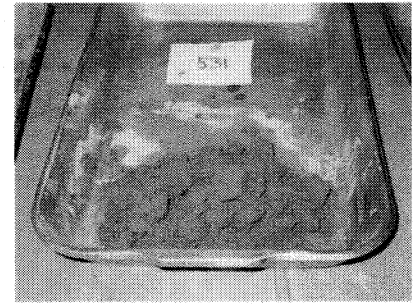
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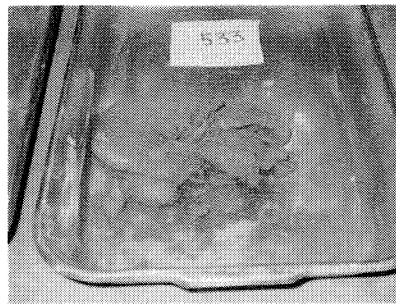
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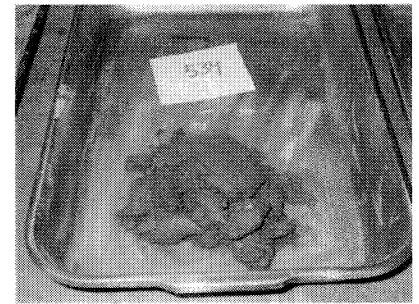
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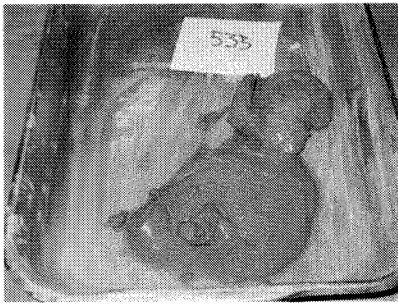


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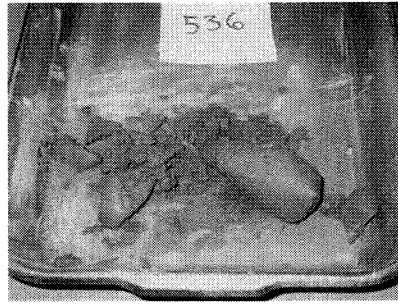


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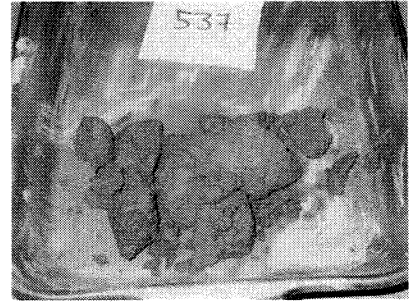
PHOTOS  
TEST HOLES 30045 to 30070; 30082 to 30096  
Sample # 295 to 351; 465 to 653



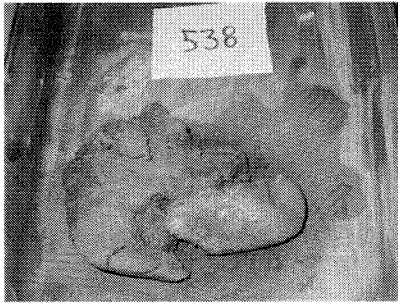
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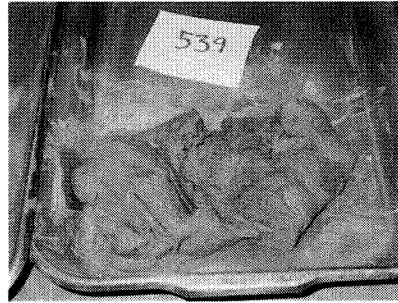
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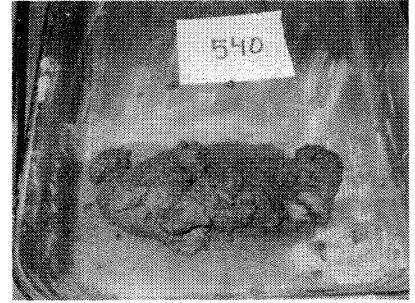
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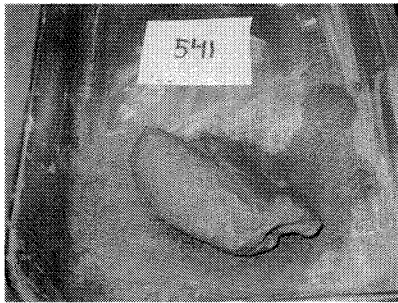
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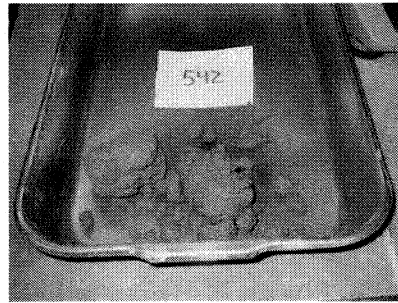
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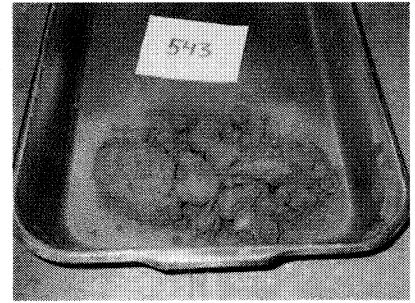
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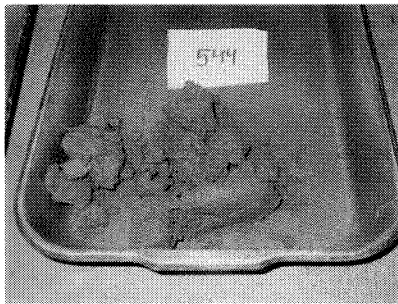
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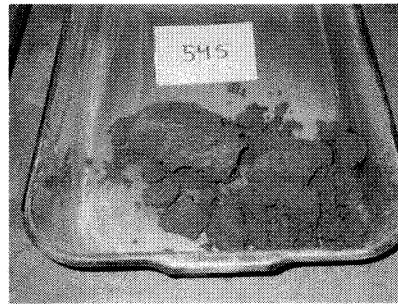
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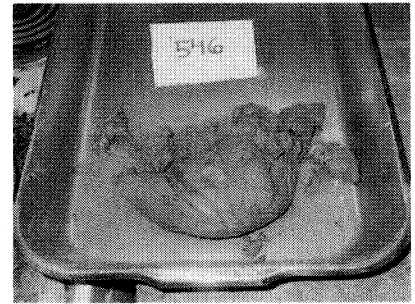
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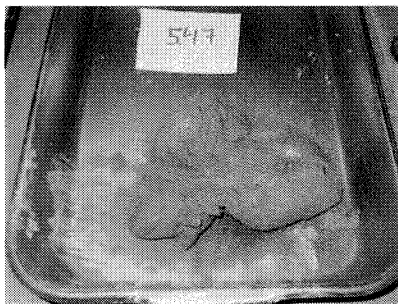
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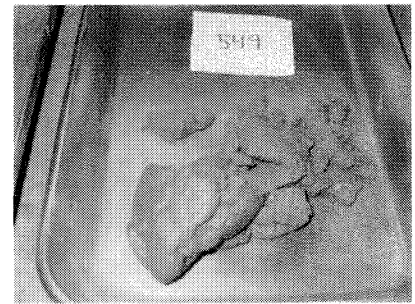
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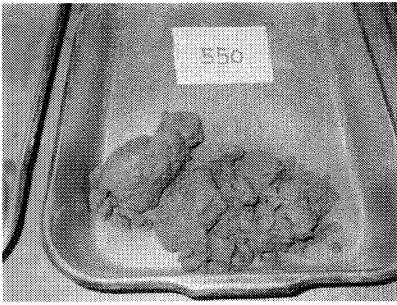


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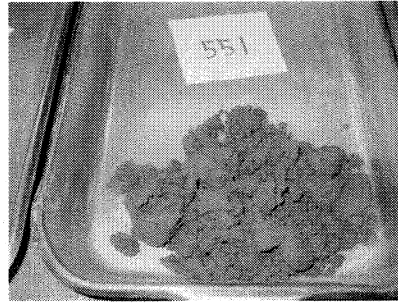


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PHOTOS  
TEST HOLES 30045 to 30070; 30082 to 30096  
Sample # 295 to 351; 465 to 653



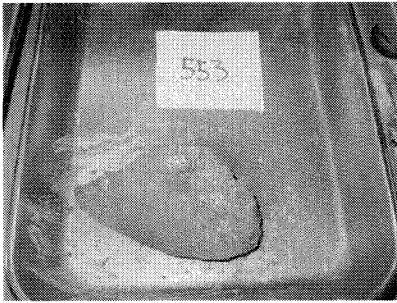
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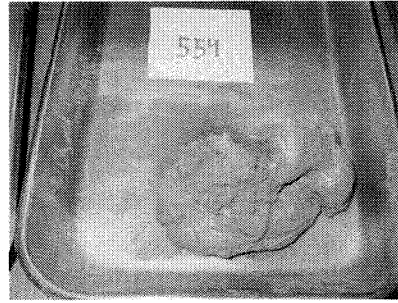
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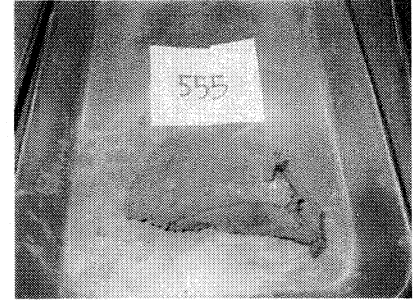
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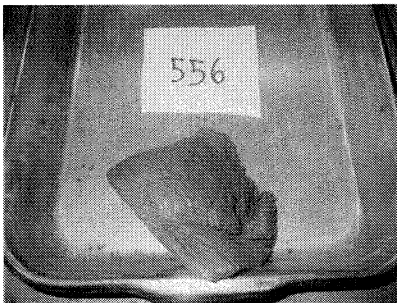
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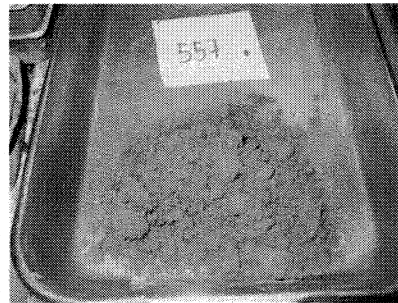
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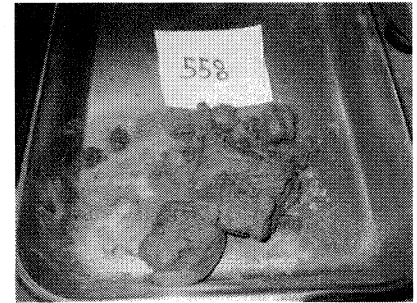
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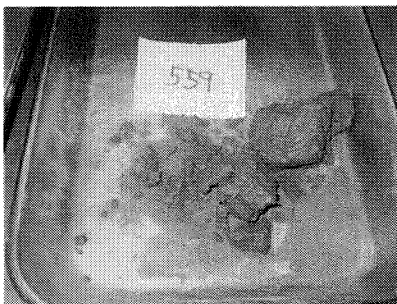
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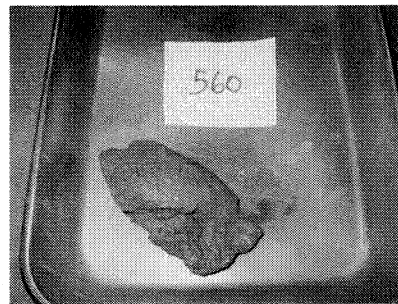
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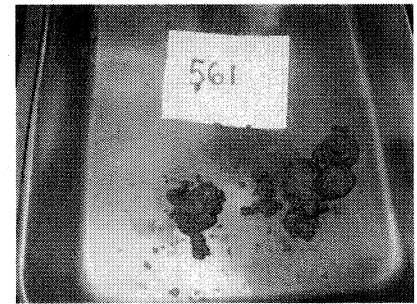
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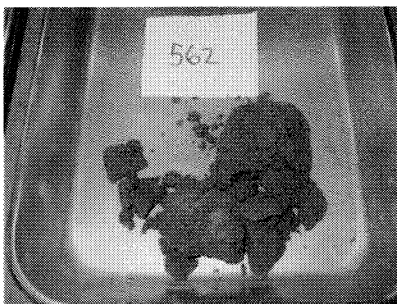
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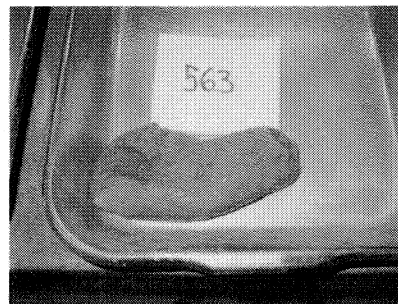
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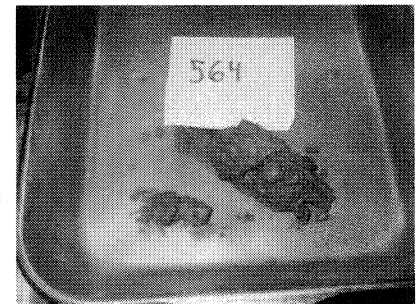
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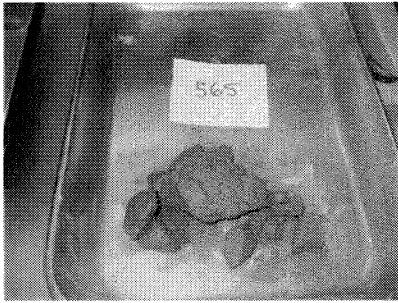


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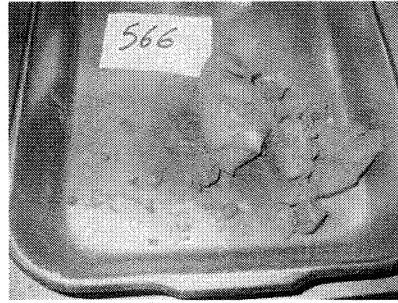


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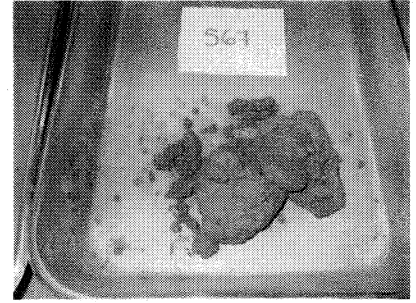
PHOTOS  
TEST HOLES 30045 to 30070; 30082 to 30096  
Sample # 295 to 351; 465 to 653



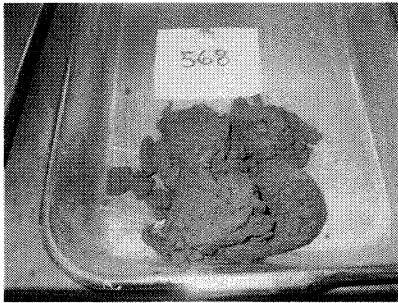
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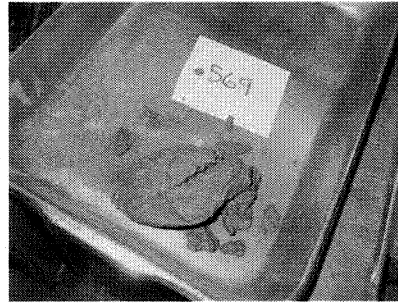
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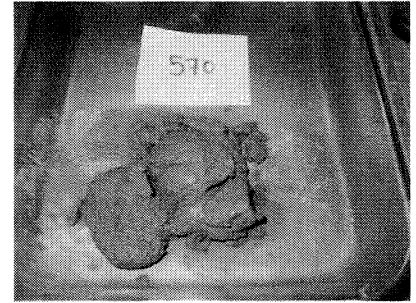
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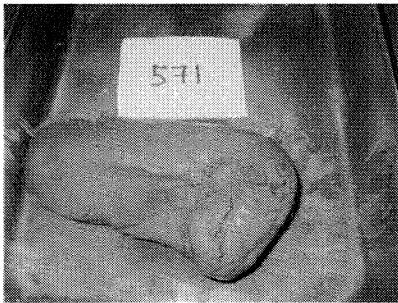
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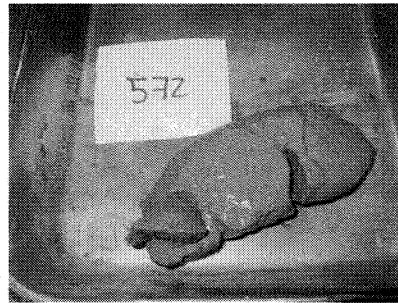
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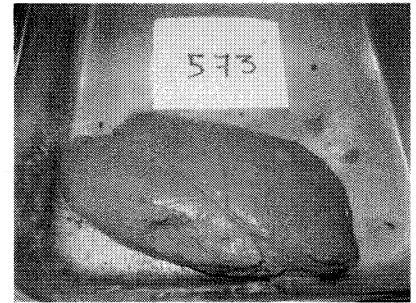
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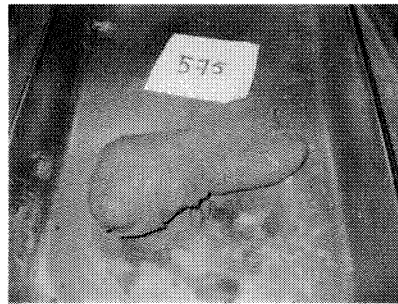
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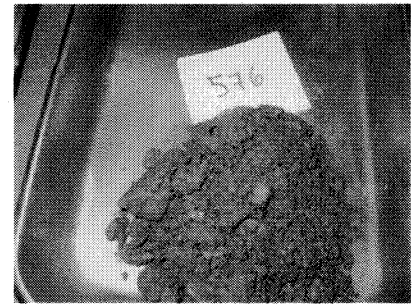
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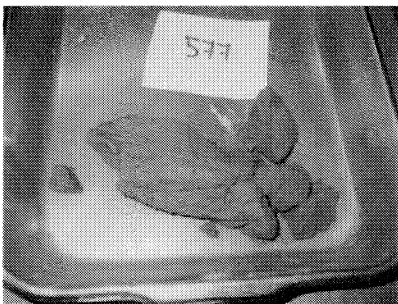
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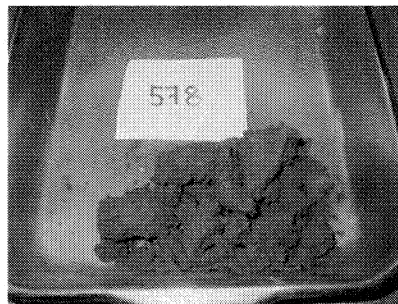
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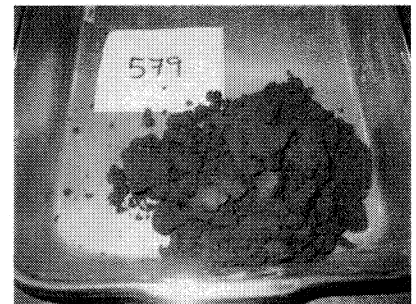
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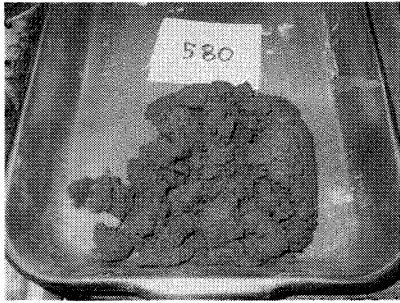


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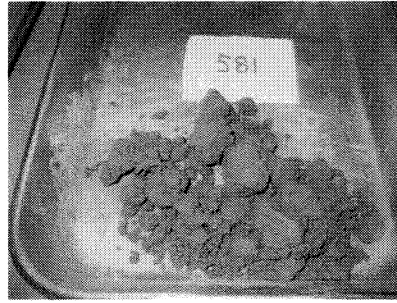


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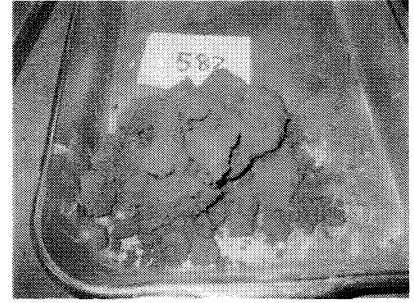
PHOTOS  
TEST HOLES 30045 to 30070; 30082 to 30096  
Sample # 295 to 351; 465 to 653



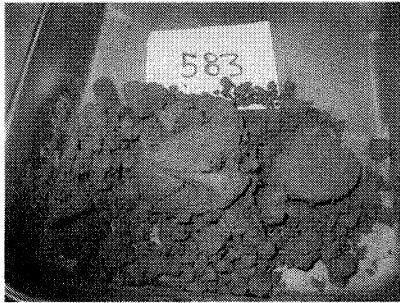
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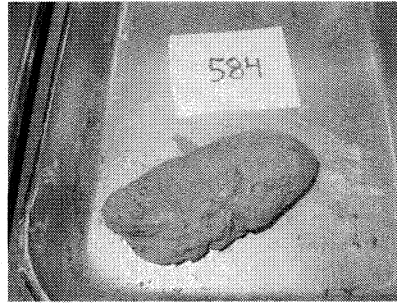
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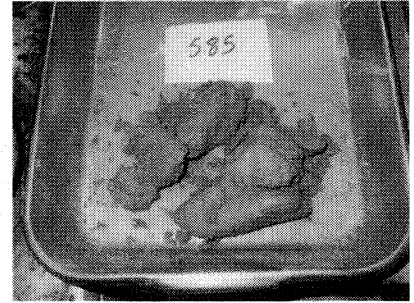
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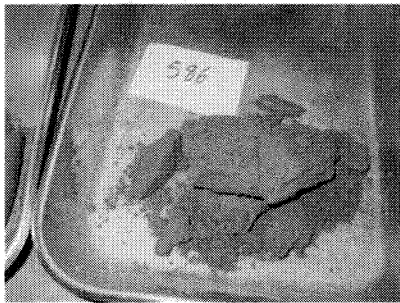
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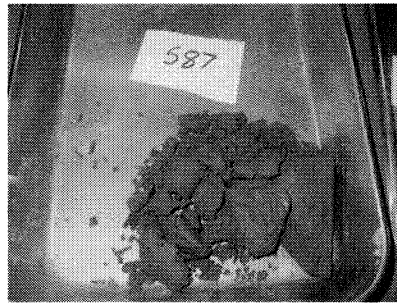
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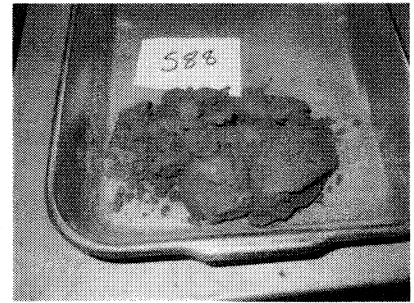
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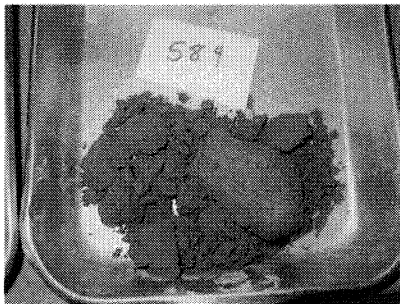
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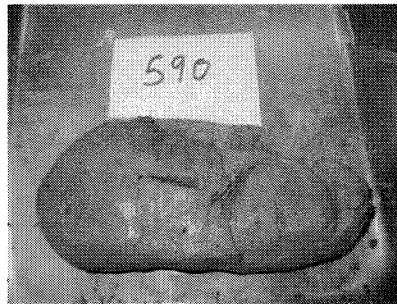
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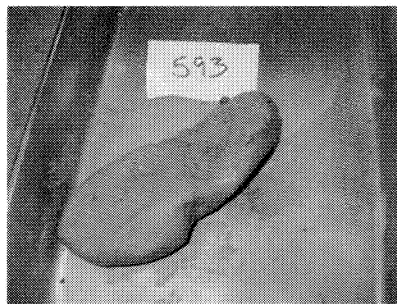
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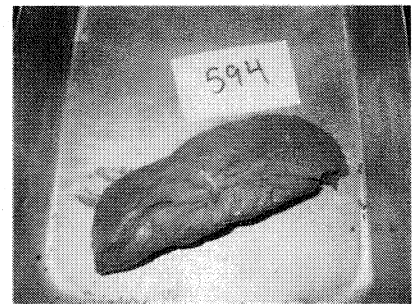
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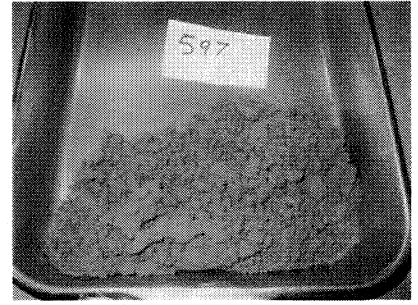
PHOTOS  
TEST HOLES 30045 to 30070; 30082 to 30096  
Sample # 295 to 351; 465 to 653



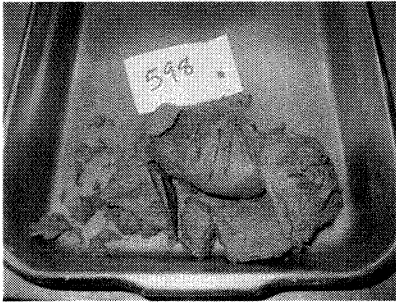
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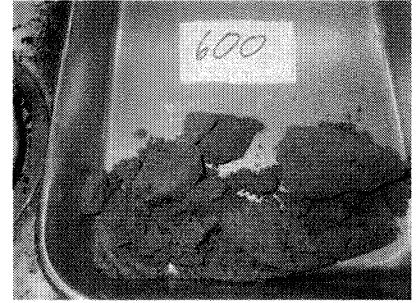
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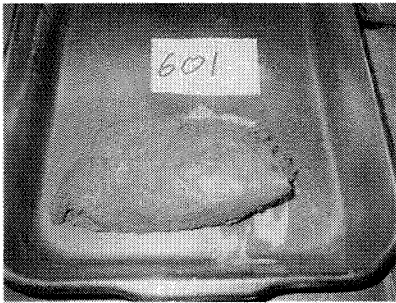
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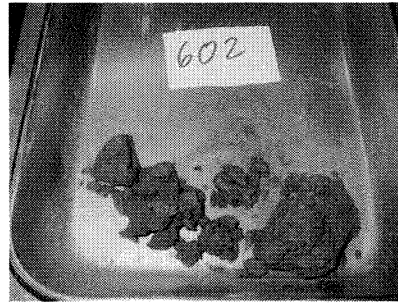
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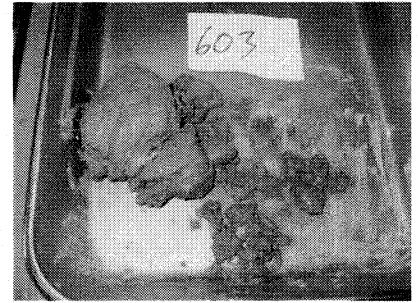
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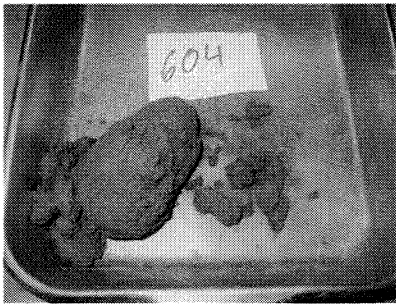
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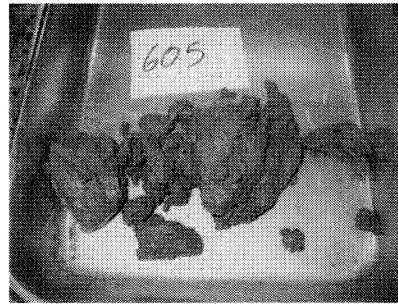
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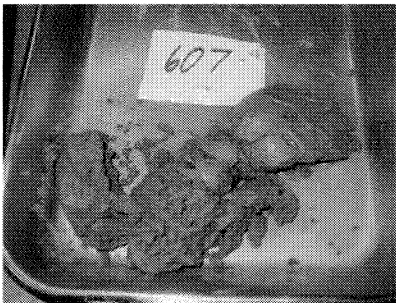
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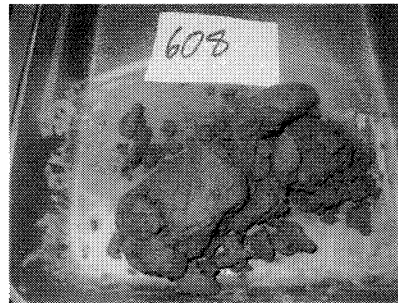
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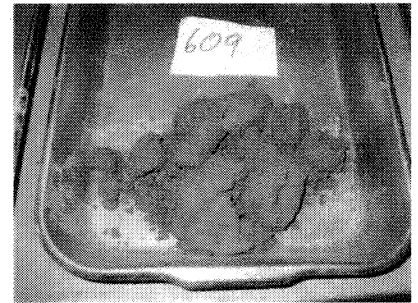
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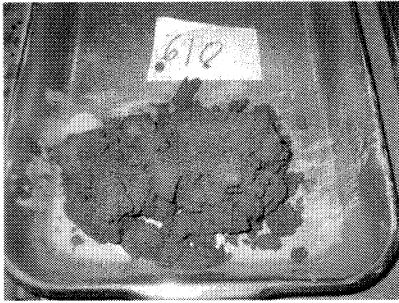


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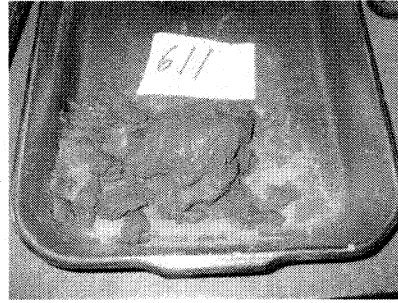


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PHOTOS  
TEST HOLES 30045 to 30070; 30082 to 30096  
Sample # 295 to 351; 465 to 653



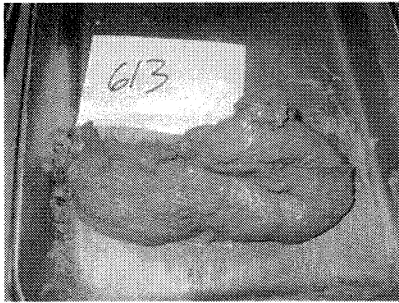
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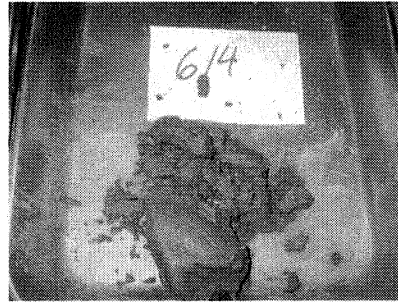
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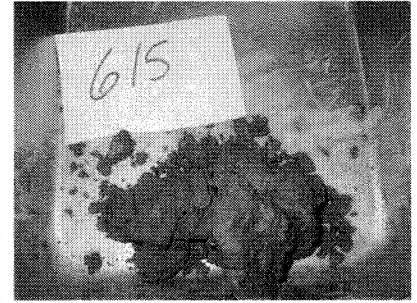
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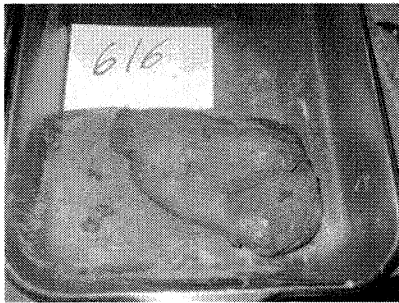
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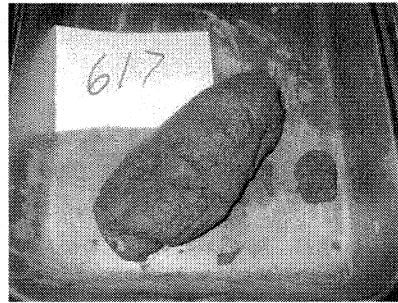
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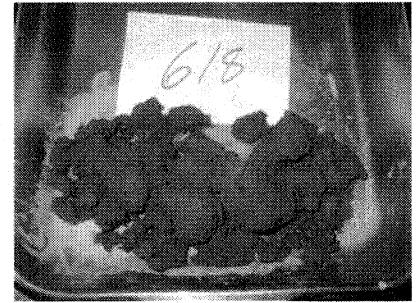
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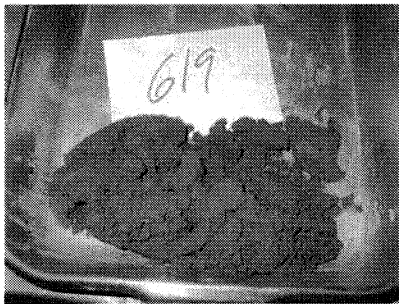
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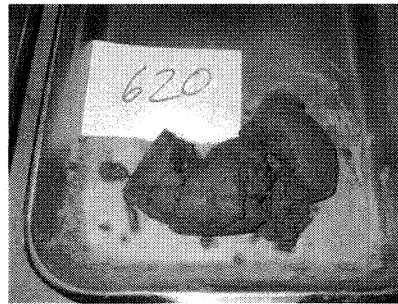
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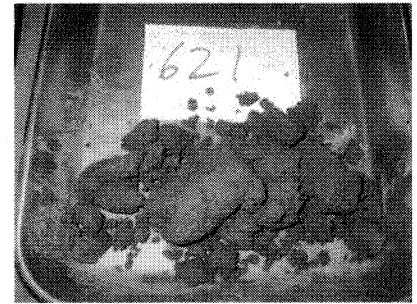
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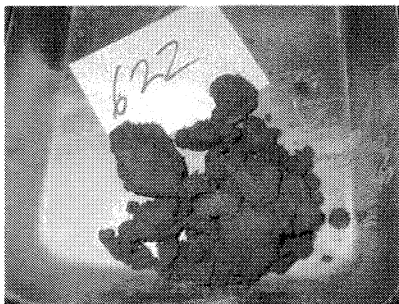
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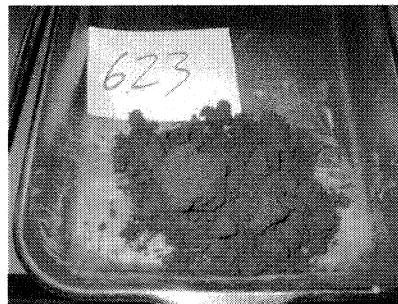
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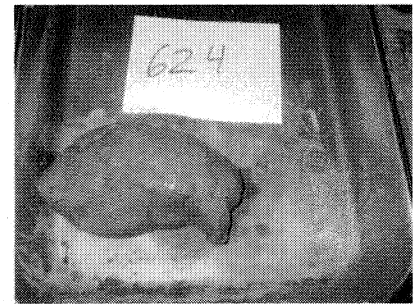
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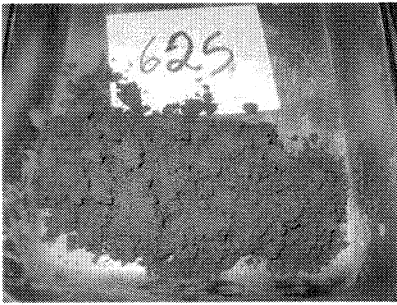


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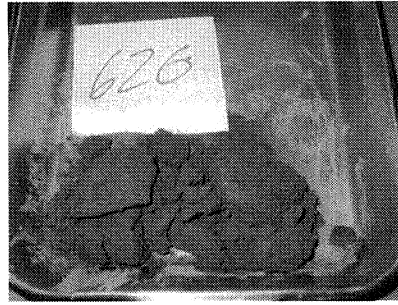


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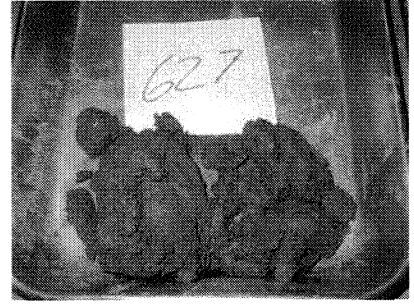
PHOTOS  
TEST HOLES 30045 to 30070; 30082 to 30096  
Sample # 295 to 351; 465 to 653



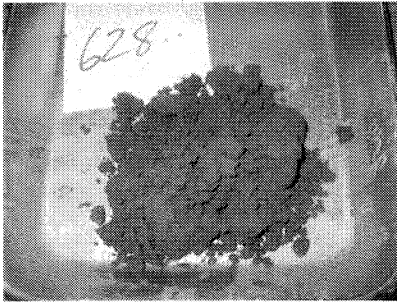
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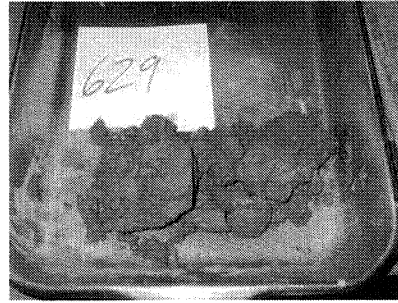
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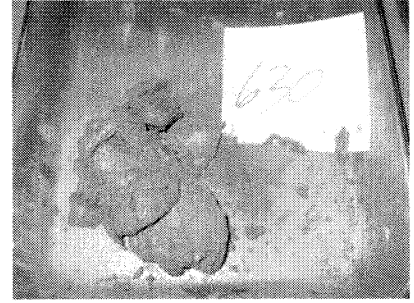
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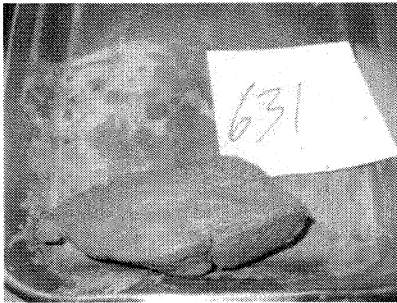
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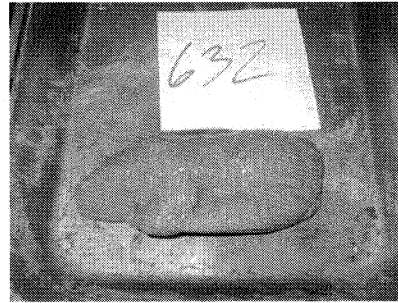
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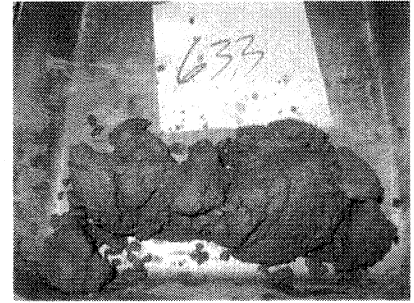
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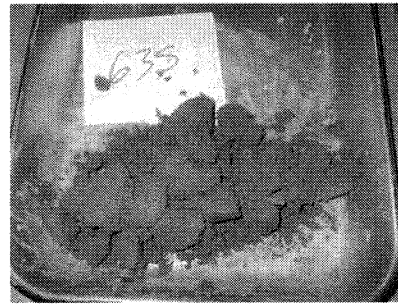
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633



634



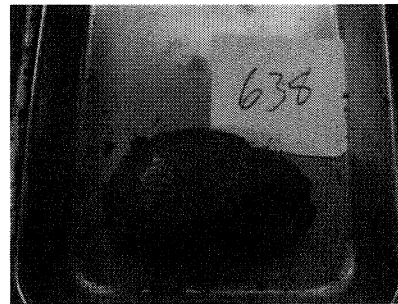
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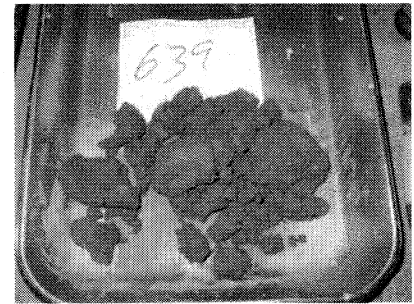
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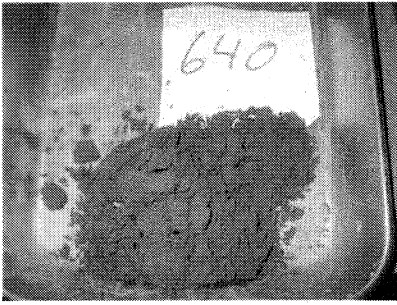


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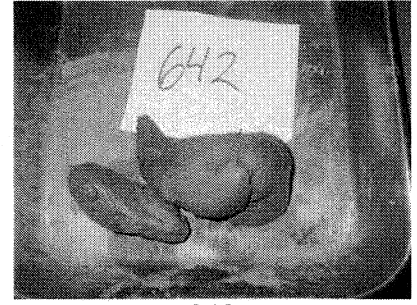
PHOTOS  
TEST HOLES 30045 to 30070; 30082 to 30096  
Sample # 295 to 351; 465 to 653



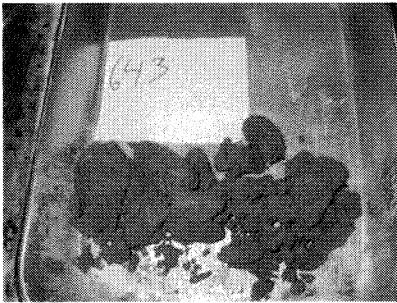
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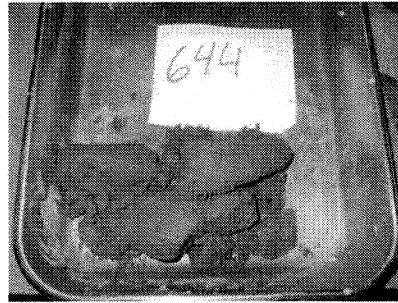
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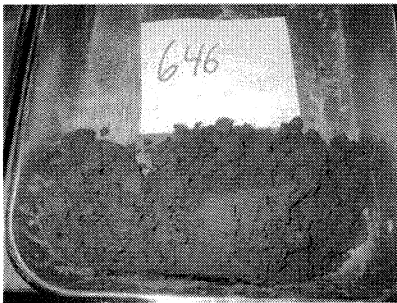
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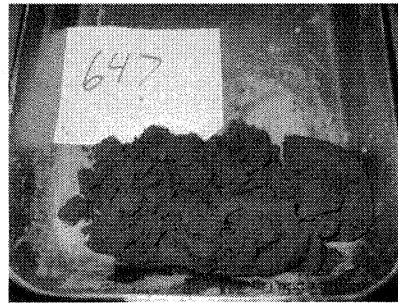
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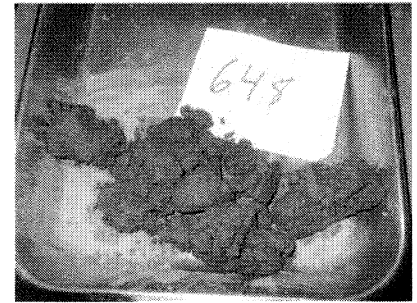
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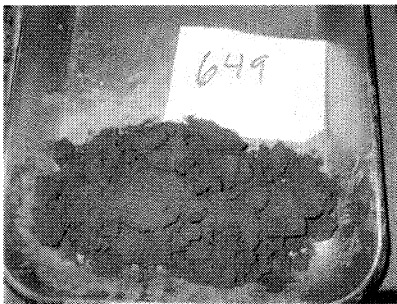
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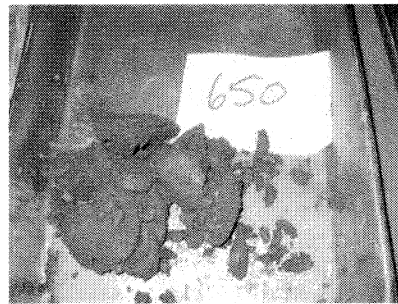
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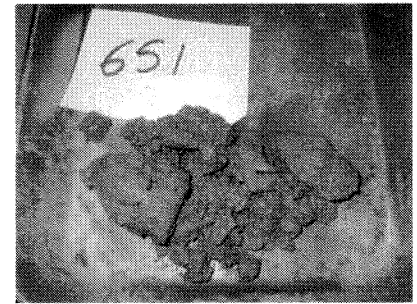
648



649



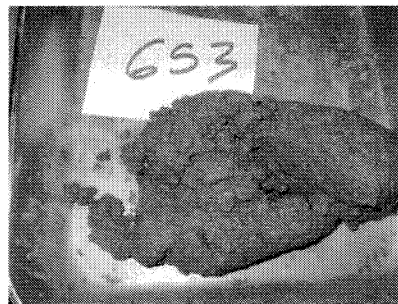
650



651

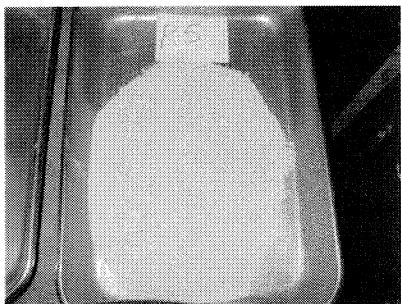


652

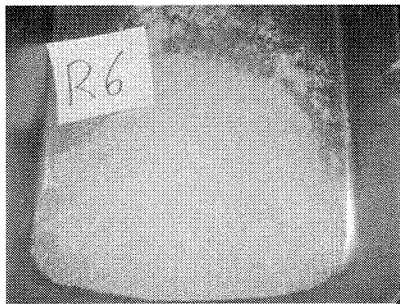


653

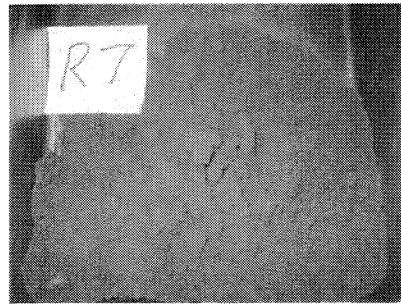
PHOTOS  
AIR ROTARY HOLES 30084R to 30093R; 30096R  
Sample # R1 to R45



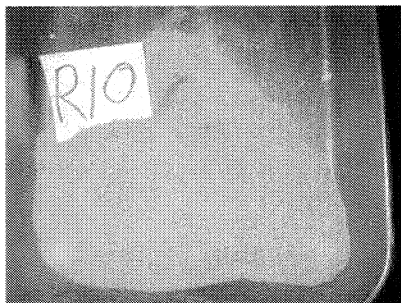
R5



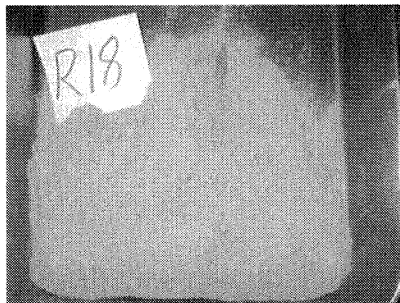
R6



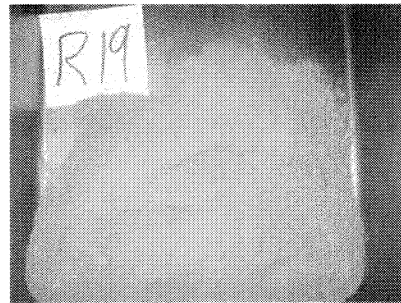
R7



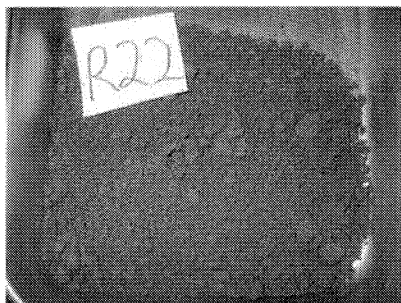
R10



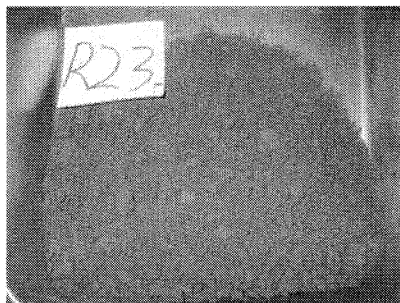
R18



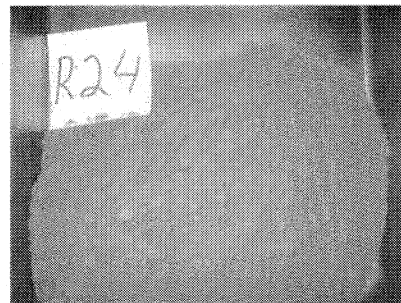
R19



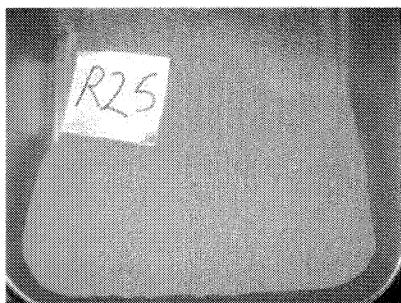
R22



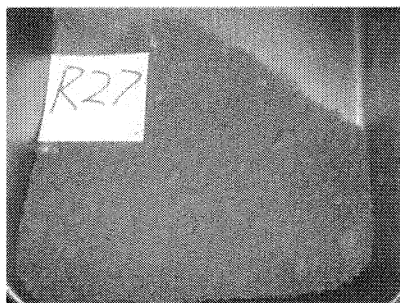
R23



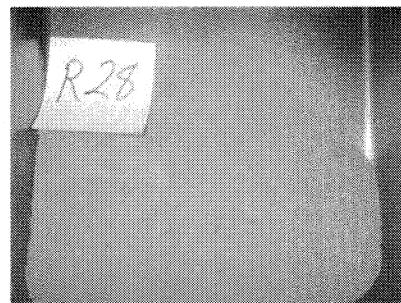
R24



R25



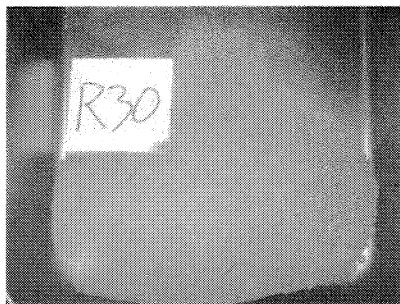
R27



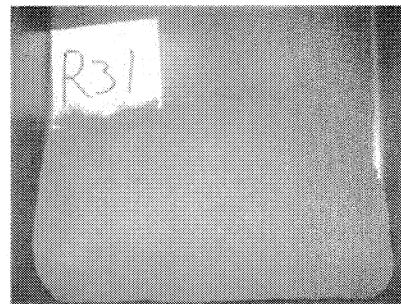
R28



R29

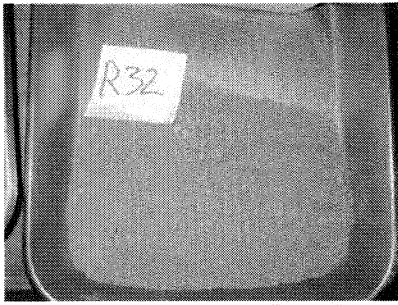


R30

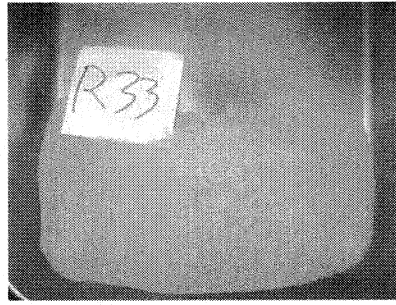


R31

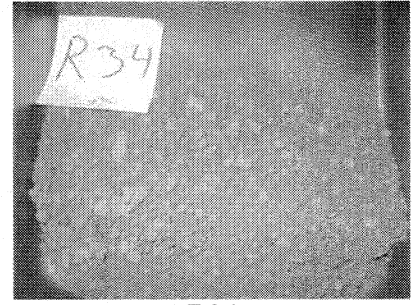
PHOTOS  
AIR ROTARY HOLES 30084R to 30093R; 30096R  
Sample # R1 to R45



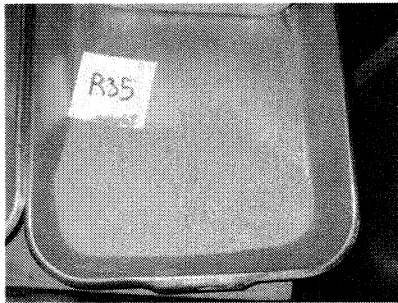
R32



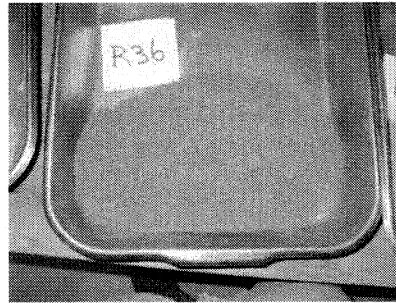
R33



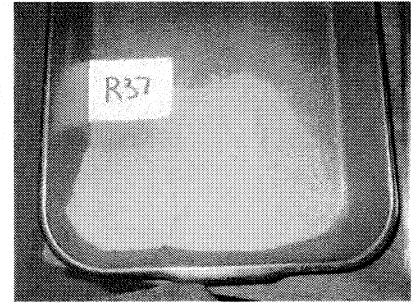
R34



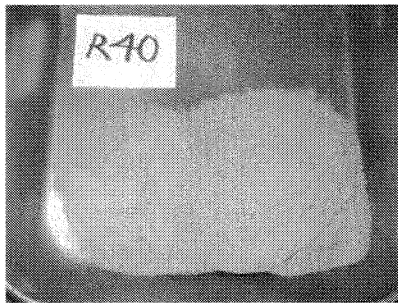
R35



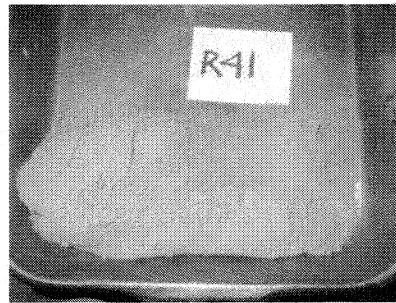
R36



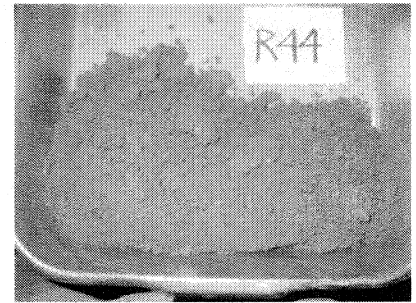
R37



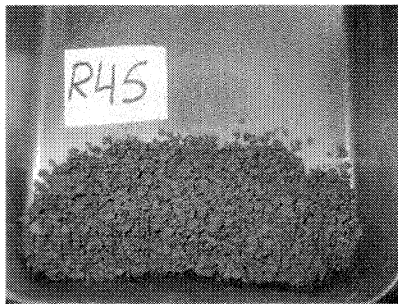
R40



R41



R44



R45

PHOTOS  
TEST PITS 30072 to 30081  
Sample # S1 to S2

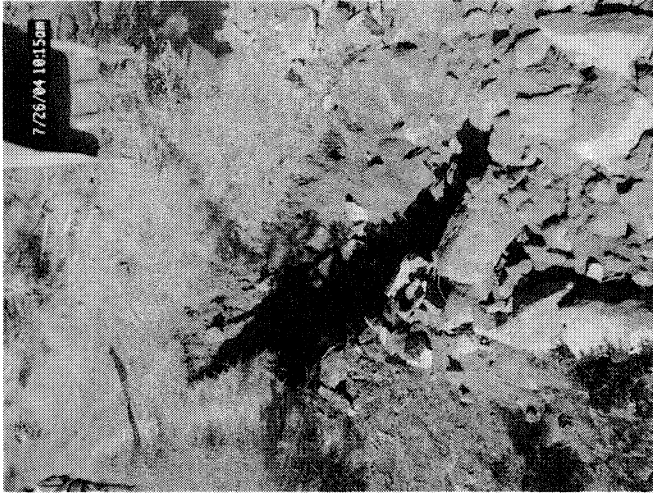


S1

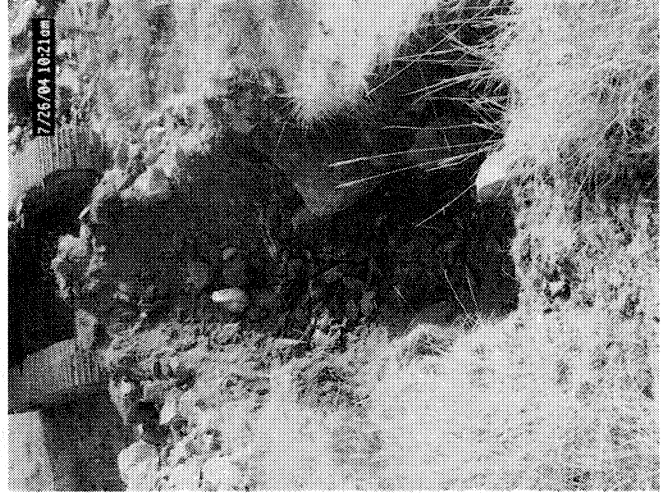


S3

PHOTOS  
TEST PITS 30072 to 30081



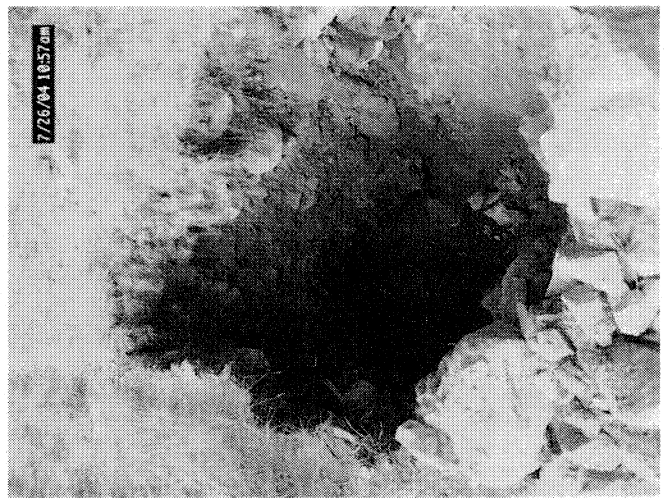
Test Pit #30072 Photo 1



Test Pit #30072 Photo 2



Test Pit #30072 Photo 3



Test Pit #30072 Photo 4

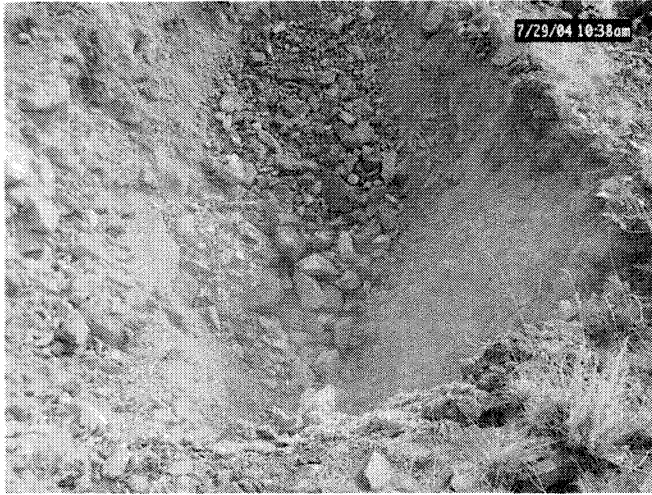


Test Pit #30072 Photo 5



Test Pit #30073 Photo 1

PHOTOS  
TEST PITS 30072 to 30081



Test Pit #30073 Photo 2



Test Pit #30073 Photo 3



Test Pit #30073 Photo 4



Test Pit #30073 Photo 5

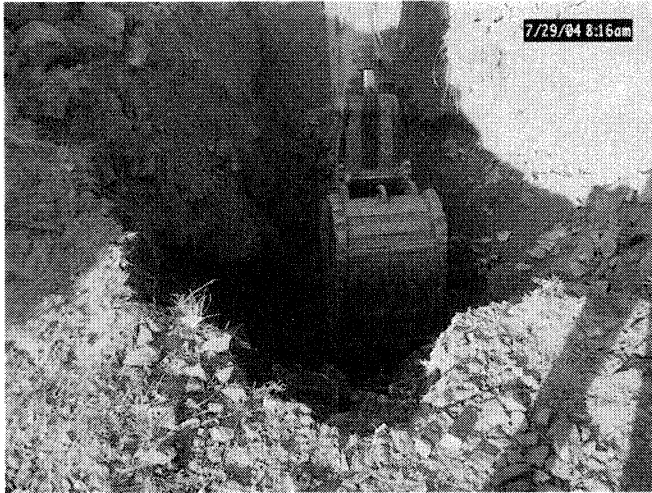


Test Pit #30074 Photo 1



Test Pit #30074 Photo 2

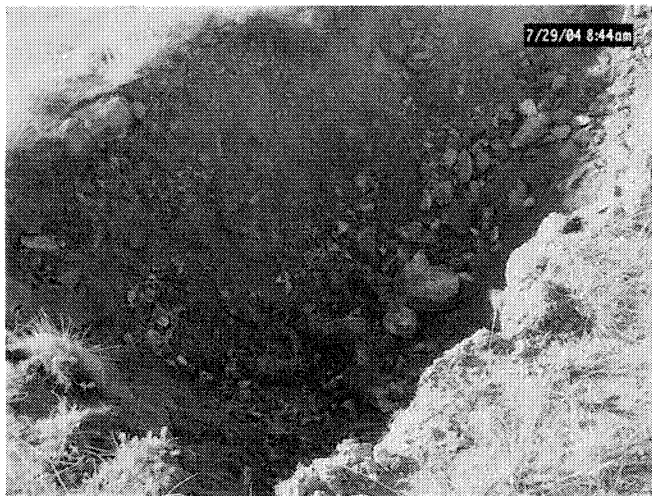
PHOTOS  
TEST PITS 30072 to 30081



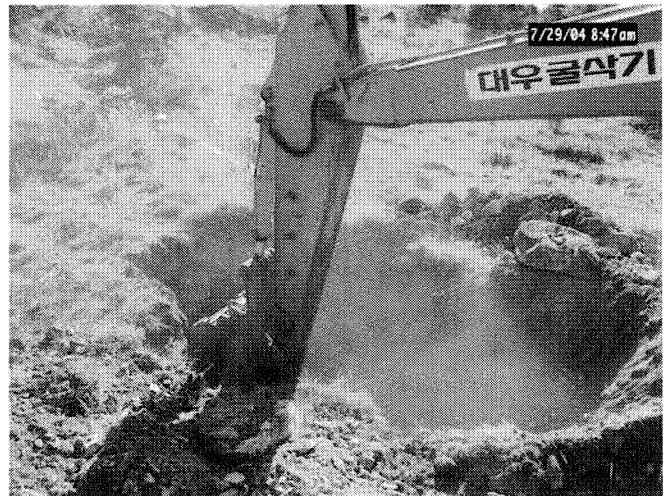
Test Pit #30074 Photo 3



Test Pit #30074 Photo 4



Test Pit #30075 Photo 1



Test Pit #30075 Photo 2

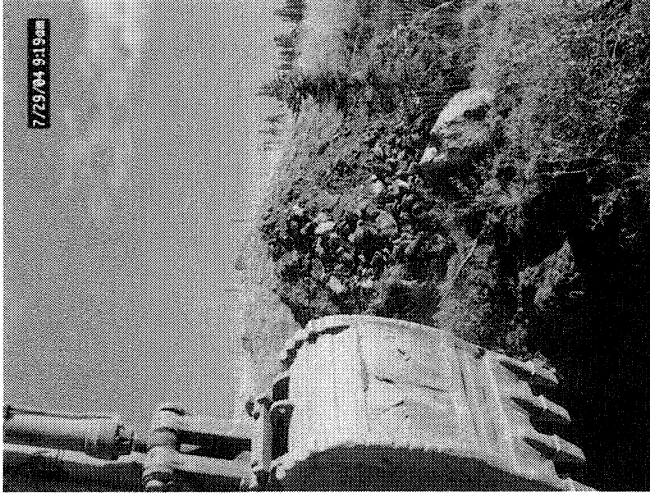


Test Pit #30075 Photo 3



Test Pit #30076 Photo 1

PHOTOS  
TEST PITS 30072 to 30081



Test Pit #30076 Photo 2



Test Pit #30076 Photo 3



Test Pit #30076 Photo 4



Test Pit #30077 Photo 1



Test Pit #30077 Photo 2

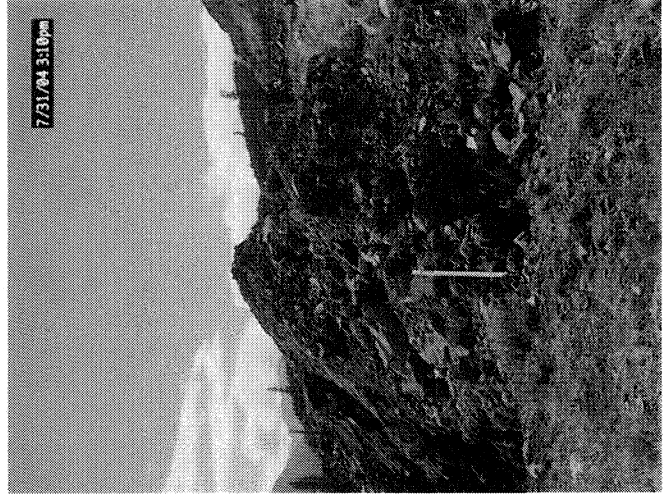


Test Pit #30077 Photo 3

PHOTOS  
TEST PITS 30072 to 30081



Test Pit #30077 Photo 4



Test Pit #30077 Photo 5



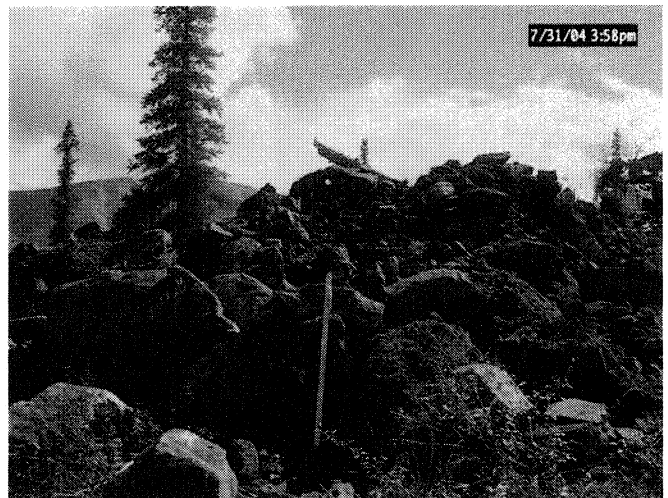
Test Pit #30078 Photo 1



Test Pit #30078 Photo 2



Test Pit #30078 Photo 3



Test Pit #30078 Photo 4

PHOTOS  
TEST PITS 30072 to 30081



Test Pit #30079 Photo 1



Test Pit #30079 Photo 2



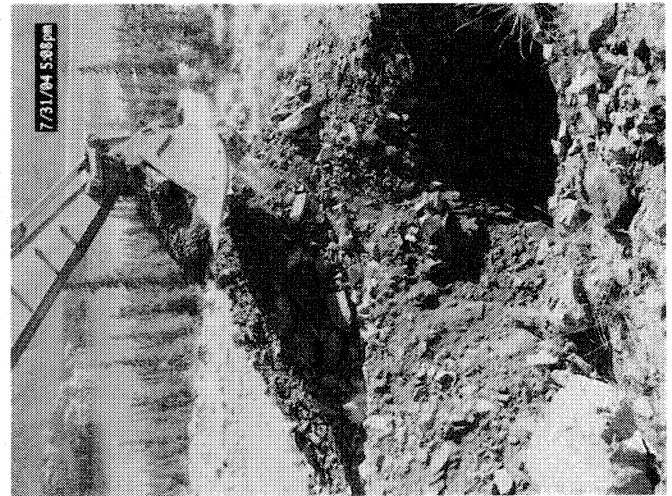
Test Pit #30079 Photo 3



Test Pit #30079 Photo 4



Test Pit #30080 Photo 1



Test Pit #30080 Photo 2

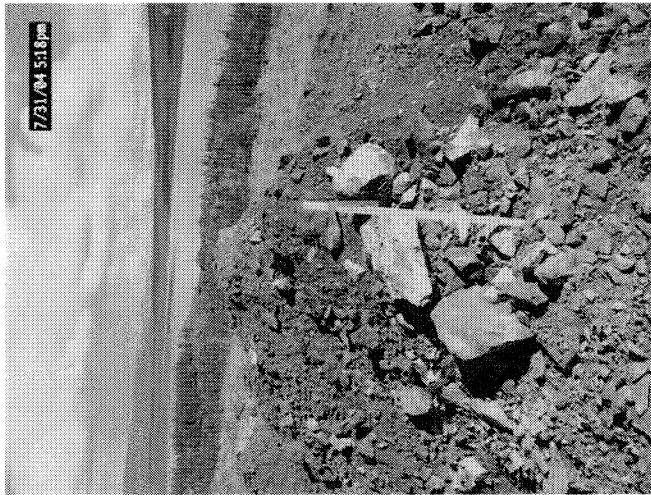
PHOTOS  
TEST PITS 30072 to 30081



Test Pit #30080 Photo 3



Test Pit #30080 Photo 4



Test Pit #30080 Photo 5



Test Pit #30081 Photo 1

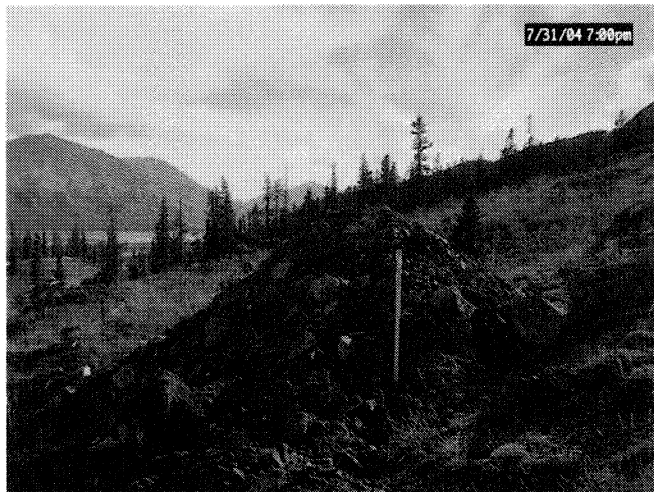


Test Pit #30081 Photo 2



Test Pit #30081 Photo 3

PHOTOS  
TEST PITS 30072 to 30081



Test Pit #30081 Photo 4



HIGHWAY CONSTRUCTION

GEOTECHNICAL INVESTIGATION  
km 1700.0 to 1707.7  
YUKON, 2007-2008

ALASKA HIGHWAY #1

**GRANULAR SOURCE TESTING**  
**km 1691.3 RHS**  
**(Silver City)**  
**ALASKA HIGHWAY**



## Aggregate Production Average

**Location:** Km 1691.3 RHS (Silver City) Alaska Highway #1

**Pit Indent:** 115 G-07

**Stockpile Indent:** 2006-30

**Aggregate Type:** Granular "A" Base Course

**Date Produced:** 2006-11-01 to 2006-11-06

**Volume Produced:** 27,171 m<sup>3</sup>

**Contractor:** Golden Hill Ventures / Nuway Crushing Ltd.

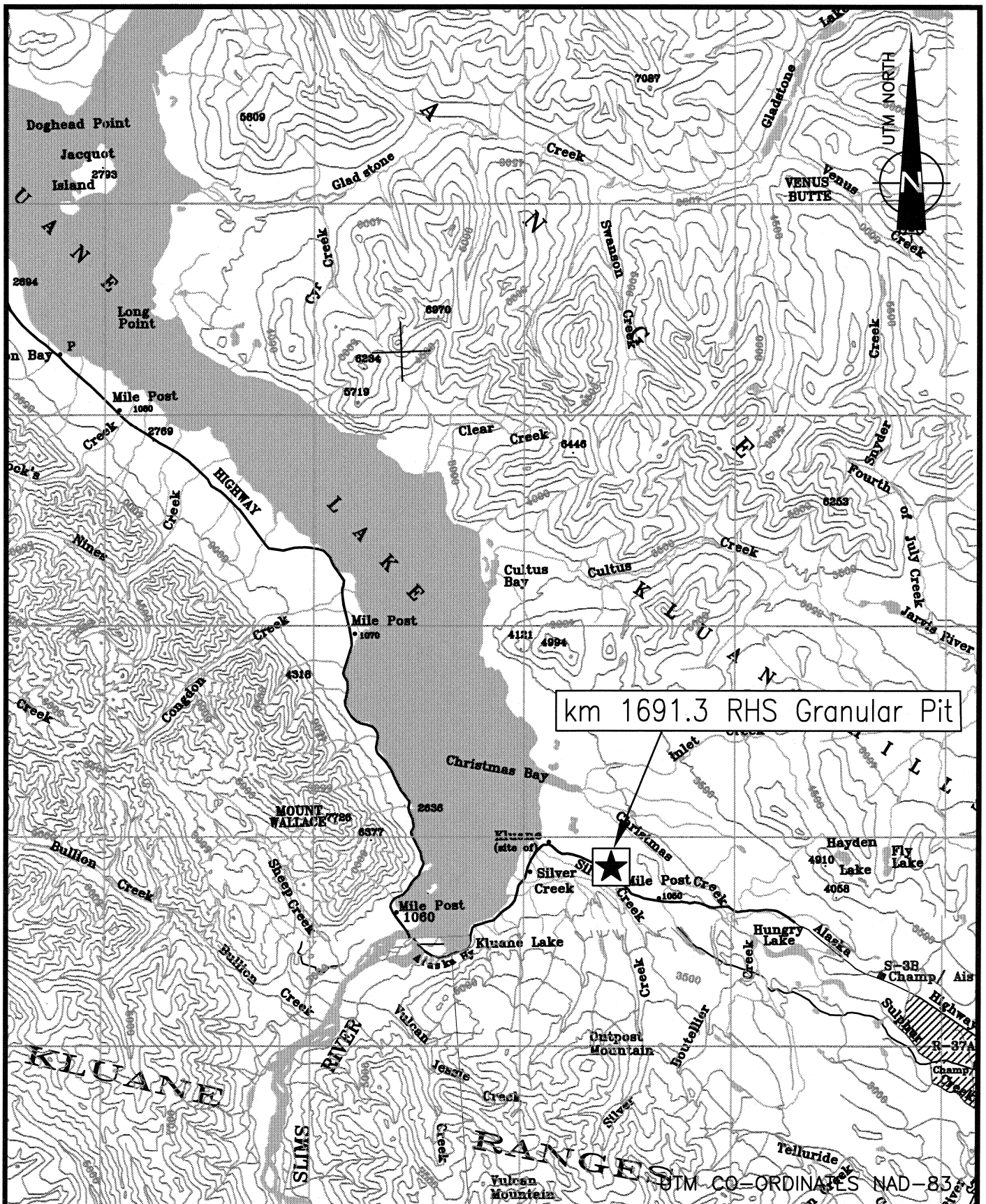
**Number of Tests:** 58 sieve / 32 Fracture

<b>Sieve Size (mm):</b>	20.0	12.5	5.00	2.50	1.25	0.315	0.080
<b>Percent Passing:</b>	100	85.6	53.8	38.2	26.0	10.4	4.7

**Moisture Content:** 2.0 %

**Fracture:** 63.2 %





**Yukon**

Highways and Public Works

Transportation Engineering Branch

KEY PLAN  
 GRANULAR PIT  
 km 1691.3 RHS  
 (Silver City)

ALASKA HWY. YUKON

pit file: 115 G-07

quad: 115G/01






drawn: JJM

date: 2006-02-01

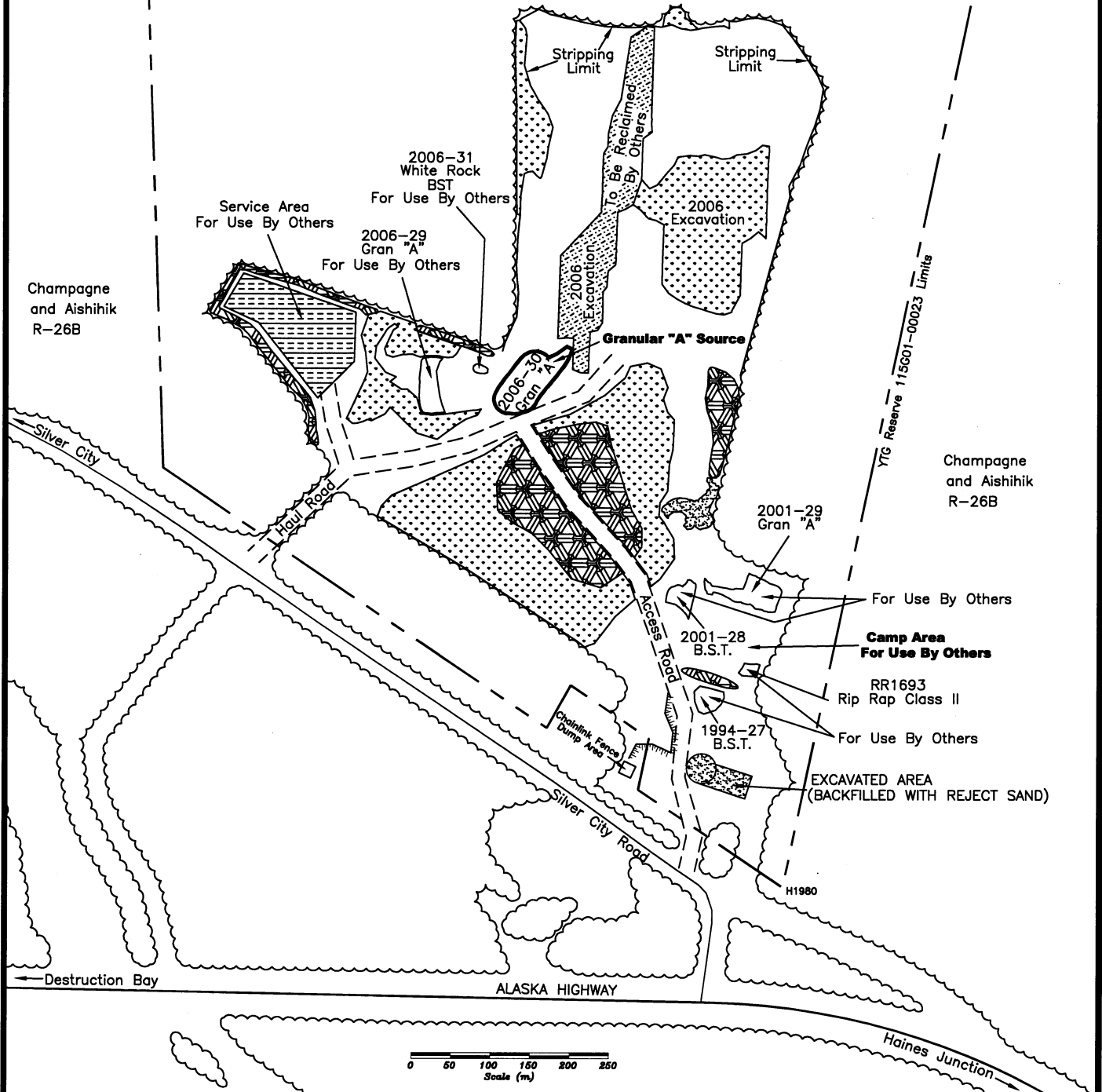
scale: 1: 250,000

drwg: 115g-07K

**LEGEND**

-  Edge of clearing
-  Existing trails
-  Existing Grubbing and Stripping Disposal Area
-  Unstripped/Reclaimed Area
-  Existing Reject Material

GRAVEL RESERVE (170.66 ha)



**Yukon**  
Highways and Public Works

Transportation Engineering Branch

SITE PLAN  
GRANULAR PIT  
km 1691.3 RHS  
(Silver City)  
ALASKA HWY. YUKON

pit file:	115 G-07
revision:	07-Construct
drawn:	JJM
date:	2007-03-20
scale:	1: 7500
drwg:	115g-07S

HIGHWAY CONSTRUCTION

GEOTECHNICAL INVESTIGATION  
km 1700.0 to 1707.7  
YUKON, 2007-2008

ALASKA HIGHWAY #1

**GRANULAR SOURCE TESTING**  
**km 1712.5 LHS**  
**(Williscroft Creek)**  
**ALASKA HIGHWAY**



## Aggregate Production Average

**Location:** Km 1712.5 LHS (Williscroft Creek) Alaska Highway #1

**Pit Indent:** 105 G-12

**Stockpile Indent:** 2005-05

**Aggregate Type:** Granular "A" Base Course

**Date Produced:** 2005-005-05 to 2005-05-12

**Volume Produced:** 31,449 m<sup>3</sup>

**Contractor:** Golden Hill Ventures / Nuway Crushing Ltd.

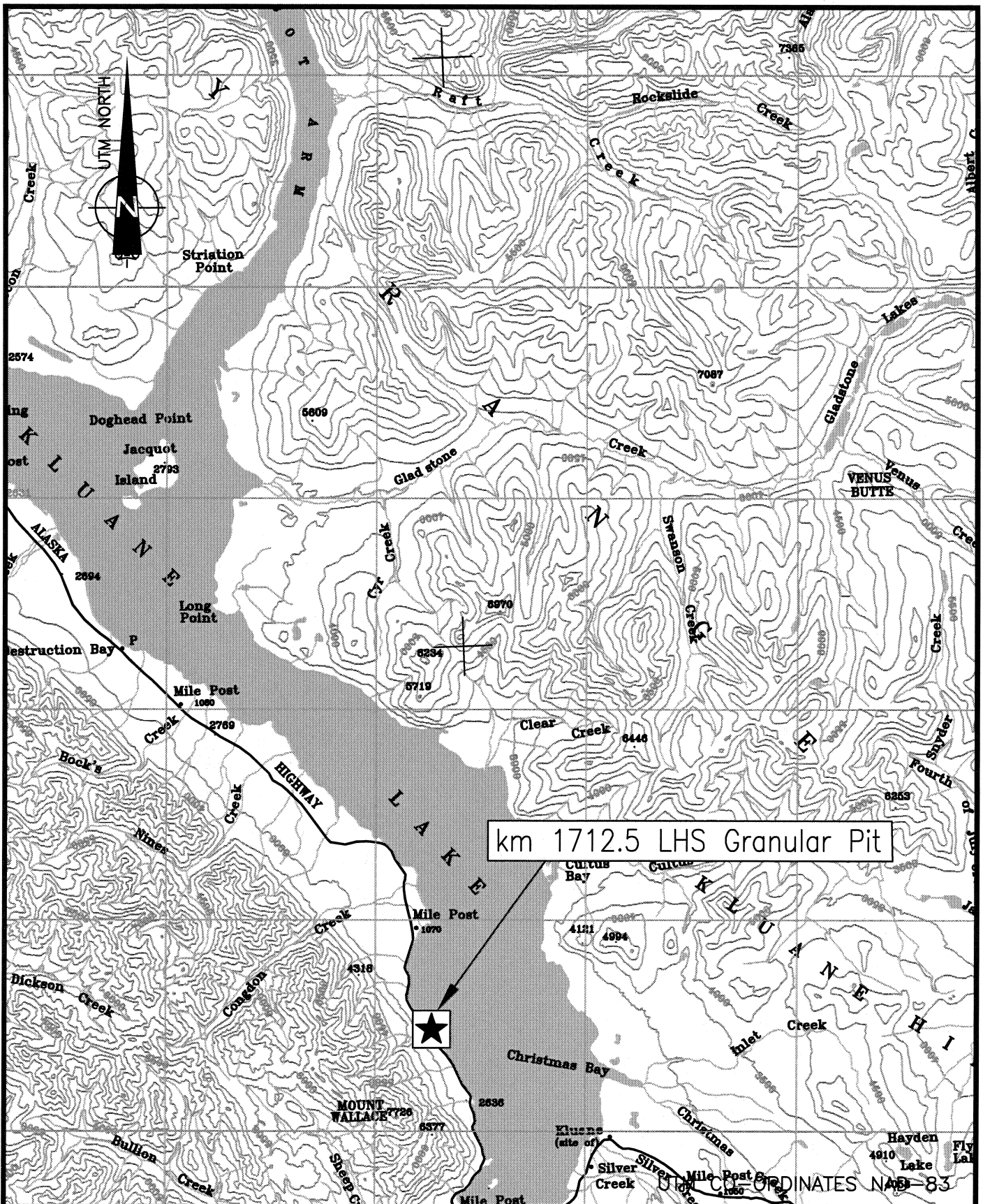
**Number of Tests:** 95 sieve / 53 fracture

<b>Sieve Size (mm):</b>	20.0	12.5	5.00	2.50	1.25	0.315	0.080
<b>Percent Passing:</b>	100	82.3	47.7	33.6	24.7	11.7	5.6

**Moisture Content:** 2.5 %

**Fracture:** 83.0 %





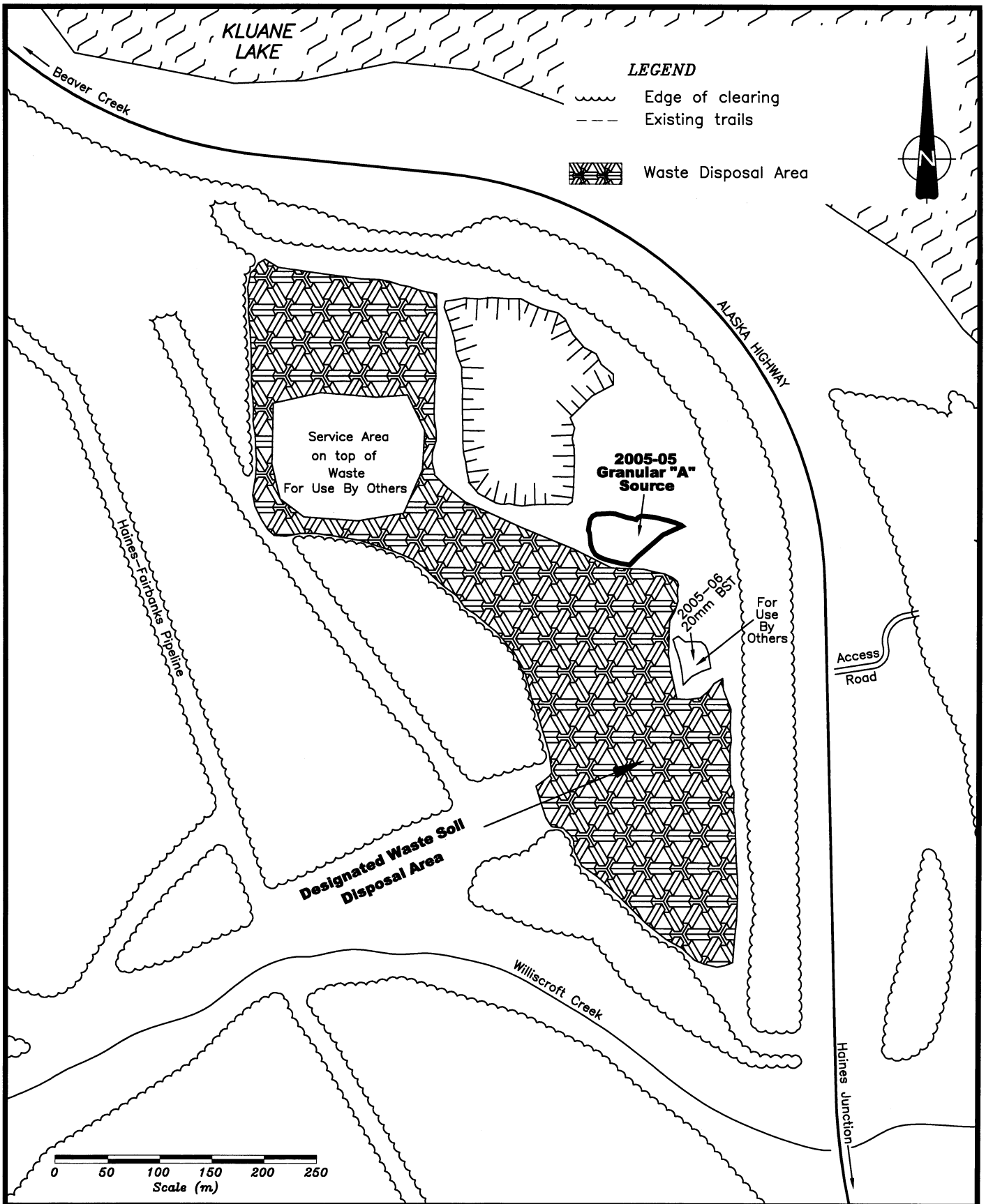
km 1712.5 LHS Granular Pit

**Yukon**  
Highways and Public Works

Transportation Engineering Branch

KEY PLAN  
GRANULAR PIT  
km 1712.5 LHS  
(Williscroft Creek)  
ALASKA HWY. YUKON

pit file:	115 G-12
quad:	115G/02
drawn:	JJM
date:	2005-02-09
scale:	1: 250,000
drwg:	115g-12Ltk



**Yukon**  
Highways and Public Works

Transportation Engineering Branch

SITE PLAN  
PROPOSED GRANULAR PIT  
Km 1712.5 LHS  
(Williscroft Creek)  
ALASKA HWY. YUKON

pit file:	115 G-12
revision:	07-Construct
drawn:	JJM
date:	2007-03-20
scale:	1: 5000
drwg:	115g-12Lts