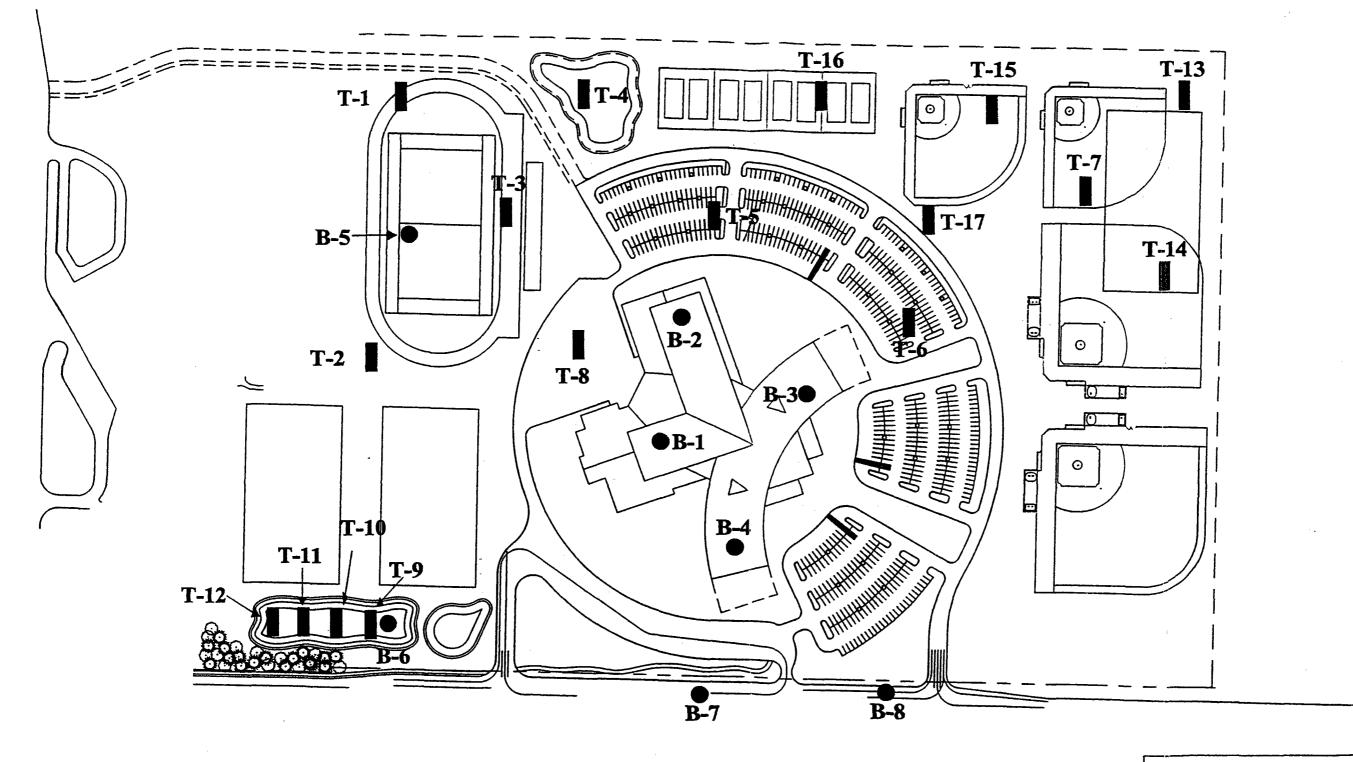
Appendix B Soils Data



LEGEND

B-8APPROX. LOCATION OF EXPLORATORY BORING

T-17APPROX. LOCATION OF EXPLORATORY TRENCH

SITE PLAN

CAMAS HIGH SCHOOL CAMAS, WASHINGTON

GEOCON NORTHWEST

PROJECT NO. P1007 - 05 - 02 | PIGURE

GEOTECHNICAL CONSULTANTS
62275;5W NWBUS AVENUE - BEAVERTON, OREGON 97008
PHONE 503 626-9689 - FAX 503 626-9611
SHEET
OF

5. INFILTRATION TESTING

5.1. Methodology

The infiltration tests were conducted as falling head permeability tests in general accordance with the King County Surface Water Design Manual. The tests were conducted by pushing a six-inch diameter infiltrometer standpipe into the soil at the desired test depth. The soil was prepared for infiltration testing under saturated conditions by filling the standpipe with water and thoroughly soaking the test zone for approximately one-half hour. Beginning with a three-foot head of water in the standpipe, the elapsed time required for the head to drop six inches is recorded. In soils with low permeability, the hydraulic head is allowed to drop for one hour and the measured drop in head is recorded.

5.2. Infiltration Test Results

Field infiltration tests were conducted in seven of the exploratory trenches, at varying depths, to evaluate soil infiltration capacity for use in design. The field infiltration rates provided in Table 1 are field measured infiltration rates in native soil and do not include a factor of safety.

Table 1: Infiltration Test Results

Exploratory Trench No.	Test Depth (ft)	Infiltration Rate (in/hr)	Depth to Groundwater (ft)
1	4	7.6	Not Encountered
1	10	250	Not Encountered
2	5	4.5	8
3	6	27	Not Encountered
4	8	14	Not Encountered
5	6	48	Not Encountered
7	7	250	10
8	8	<1	Not Encountered
9	6	<1	Not Encountered
11	5	<1	Not Encountered
13	9	45	Not Encountered
14	7	250	10
15	6.5	90	Not Encountered
16	7	<1	10

Soil types can vary significantly over relatively short distances. The infiltration rates noted above are representative of one discrete location and depth. Moderate to high infiltration rates were measured on the northeast and northwest portions of the site. In general, the

Exhibit 12 CUP24-100	E.	xh	ihit	12	CU	P24-	100) '
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soils within the southwest portion of the site have low measured infiltration rates.
Installation of infiltration systems within the layer in which the field rate was measured is
considered critical to proper performance of the systems. Because of near-surface fines
content in the native soil, and the potential for eventual siltation of subsurface infiltration
facilities, a conservative design safety factor should be applied to the field rate. If filter fabric
is used to protect drain rock, the permeability of the geotextile should be considered in the
design. Care should be taken during construction to avoid unnecessary compaction or
contamination of native soils in the proposed infiltration zone. Construction disturbance,
siltation and compaction with construction equipment can dramatically reduce soil infiltration
capacity. Regular maintenance of the infiltration system is critical for proper performance.

A member of Geocon Northwest's geotechnical engineering staff should be retained to observe installation of the infiltration system to verify that subsurface conditions are consistent with those encountered during this investigation.

6. LABORATORY TESTING

Laboratory testing was performed on selected soil samples to evaluate moisture content, grain size distribution, plasticity index, expansion index, compaction characteristics, and California Bearing Ratio. Visual soil classification was performed both in the field and laboratory, in general accordance with the Unified Soil Classified System. Moisture content determinations (ASTM D2216) were performed on soil samples to assist in their evaluation. Compaction characteristics and the California Bearing Ratio for near surface samples were evaluated in substantial accordance with ASTM D1557 and ASTM D1883, respectively. Grain size analyses were performed on selected samples using procedures ASTM D421 and ASTM D422. The plasticity index was determined in general accordance with ASTM D4318. The expansion index was determined using procedure ASTM D4829. Moisture contents are indicated on the exploration logs, which are located in Appendix A of this report. The remaining laboratory test results for this project are included in Appendix B.

There appears to be little correlation between laboratory grain size analyses and the field measured infiltration rates. This is likely due to the combination of the presence of cobbles and boulders skewing the laboratory test results and the in situ weathering of the material.

7. CONCLUSIONS AND RECOMMENDATIONS

7.1. General

7.1.1. It is our opinion that the proposed project is geotechnically feasible, provided the recommendations within this report are followed.

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APPENDIX A

FIELD INVESTIGATION

The field investigation was performed on July 6,7,17, and 18, 2000, and consisted of a site reconnaissance, the advancement of six borings, the excavation of seventeen exploratory trenches, and fourteen field-infiltration tests. The approximate locations of the exploratory excavations are shown in Figure 2.

Borings were advanced to approximately 8 to 44 feet below the ground surface. In general, the borings were terminated due to refusal. Two additional shallow borings were advanced within SE 15th Street to evaluate the existing pavement section. The exploratory trenches were excavated to depths varying from 6 to 12 feet below the ground surface using a John Deere 550 rubber tired backhoe. Samples were obtained at selected depths during the field investigation and returned to the laboratory for additional testing. Logs of the exploratory borings and trenches are provided in the following pages.

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	BORING B 1 ELEV. (MSL.) DATE COMPLETED 7/7/00	TRATION ISTANCE WS/FT.)	DENSITY .C.F.)	
			GRC		EQUIPMENT B-57 HOLLOW STEM AUG	PENE RESJ (BLO	ORY (P.	
- 0 -					MATERIAL DESCRIPTION			
_ ·-			\prod		APPROX. 4 INCHES TOPSOIL	_		
- 2 -				ML	Medium stiff, moist, reddish-brown, SILT	- 1		
	B1-1		\sqcup			21		_
- 4 -		0			Medium dense, moist, reddish-brown, Silty GRAVEL	-		
_	B1-2	9 6	4	GM		15	}	
- 6 -		°o		0.11		- 1		
		19h			 			
- 8 -	B1-3			CL	Stiff, moist, mottled, CLAY, occasional gravels	10		
			$ \cdot $					
- 10 -	B1-4		1			18		
- 12 -								
			$ \ $					
- 14 -			1			- 1		
	B1-5 ⊗	0	H	GM		>50		
- 16 -	- ×	B			Very dense, wet, brown, Silty SAND and gravel	+]		•
		v . 0				-		
- 18 -		. 0						
20 -		0	Y					
	B1-6	0			Variables and the second of th	48		:
			$ \uparrow $		Very dense, saturated, brown to gray SAND and gravel	1		
İ					BORING TERMINATED AT 21.5 FEET Groundwater encountered at 20 feet			
			\perp					
igure	A-1, I	Log	of]	Borin	g B 1			
SAMP	LE SYME	2 10		J SAI	MPLING UNSUCCESSFUL STANDARD PENETRATION TEST DRI'	VE SAMPLE	(UND I STUR	RB

		<u>}</u>	띰		BORING B 2	Zui^	>-	Γ
DEPTH IN	SAMPLE	LITHOLOGY	GROUNDWATER	SOIL CLASS		ATIO PANCI	DENSIT .C.F.)	TURE
FEET	NO.	Ė	SOUN	(USCS)	ELEV. (MSL.)DATE COMPLETED	SIS OWS	7. P.C.	MOIST
			5		EQUIPMENT B-57 HOLLOW STEM AUG	PENE RESI (BLO)	DRY (P.	Ε
- 0 -					MATERIAL DESCRIPTION			
. · ·-		9.]-			APPROX. 4 INCHES TOPSOIL	-		
- 2 -					Medium dense, moist, brown, Silty SAND and GRAVEL	-		
-	B2-1	9		GM		- 16		26
- 4 -						<u> </u>		
-	B2-2 ⊗					10		4(
6 -		b 1				<u> </u>		ļ
. <u>-</u>	B2-3 ⊗				-Becomes loose	7		38
8 -	B2-3	101				「		30
10 -			1					
	B2-4	4	\perp			21		38
12 -					Stiff, moist, mottled, Clayey SILT, some gravel	-		
		7 44		CL		<u> </u>		
14 -		711				-		
	B2-5					50/5.5"		31
16 -		244	_			-		
					BORING TERMINATED AT 16.5 FEET DUE TO			
					REFUSAL Groundwater was not encountered			
					, and the second se			
								ı İ
				İ				
							1	
igure	e A-2, I	.og o	of]	Borin	g B 2			ŀ
SAMP	LE SYMB	OLS			MPLING UNSUCCESSFUL STANDARD PENETRATION TEST DRIV	E SAMPLE	(UND ISTU	IRBE
			8	Ø DI9	STURBED OR BAG SAMPLE 📓 CHUNK SAMPLE 🕎 WATE	R TABLE C	R SEEPAG	έE

DEPTH No. P		T NO.	\Box	-05 ايم		BORING B 3]		Τ-
MATERIAL DESCRIPTION APPROX. 4 INCHES TOPSOIL Stiff, moist, mottled, Silty CLAY	IN		THOLOG	DUNDMATE	SOIL CLASS (USCS)		TRATION ISTANCE	DENSITY .C.F.)	
APPROX. 4 INCHES TOPSOIL Stiff, moist, mottled, Silty CLAY 13 B3-1 B3-2 B3-3 B3-3 Addition dense, moist, mottled, Silty SAND and gravel, some clay Medium dense, moist, mottled, Silty SAND and gravel, some clay B3-5 B3-6 B3-7 B3-8 B3-8 B3-8 B3-8 B3-8 B3-8 B3-9			<u> </u>	88		EQUIPMENT B-57 HOLLOW STEM AUG	PENE RES (BLC	사 유	
APPROX. 4 INCHES TOPSOIL Stiff, moist, mottled, Silty CLAY						MATERIAL DESCRIPTION			Ī
B3-1 B3-2 B3-3 B3-3 B3-4 B3-3 B3-4 B3-4 B3-5 B3-5 B3-5 B3-5 B3-6 B3-5 B3-6 B3-6 B3-6 B3-6 B3-6 B3-6 B3-6 B3-6	- 0 -		7/7			APPROX. 4 INCHES TOPSOIL			Ŧ
B3-1 CL 13 14 14 14 14 15 15 15 16 17 16 17 17 18 18 18 18 18 18	- 2 -			1		Stiff, moist, mottled, Silty CLAY			
B3-2 B3-3 -Occasional gravels -27 B3-4 B3-4 B3-5 B3-5 B3-5 B3-5 B3-6 B3-6 B3-6 B3-6 B3-6 B3-6 B3-6 B3-6		B3-1		1	CL	·	_ 13		
- 8 - B3-3 - 0- B3-4 - 12 - B3-5 - 16 - B3-5 - 18 - B3-5 - 18 - B3-6 - 18 - B3-6 - 19 - B3-6 - 19 - B3-6 - 19 - B3-6 - 19 - B3-6 - 19 - B3-6 - 10 - B3-7 - 10 - B3-8 - 10 - B3-8 - 10 - B3-9 - 10 - B	- 4 -]							
- 8 - B3-3 - 0- B3-4 - 12 - B3-5 - 16 - B3-5 - 18 - B3-5 - 18 - B3-6 - 18 - B3-6 - 19 - B3-6 - 19 - B3-6 - 19 - B3-6 - 19 - B3-6 - 19 - B3-6 - 10 - B3-7 - 10 - B3-8 - 10 - B3-8 - 10 - B3-9 - 10 - B		D2 2		11					
- Occasional gravels - Occasional gravels - Occasional gravels - Occasional gravels - Occasional gravels - Medium dense, moist, mottled, Silty SAND and gravel, some clay - Occasional gravels	- 6 -	B3-2		1			14		
- Occasional gravels - Occasional gravels - Occasional gravels - Occasional gravels - Occasional gravels - Medium dense, moist, mottled, Silty SAND and gravel, some clay - Occasional gravels		<u> </u>					-		
Medium dense, moist, mottled, Silty SAND and gravel, some clay B3-5 B3-6 B3-6 B3-6 B3-7 B3-7 GM Cobbles	- 8 -	B3-3		1		-Occasional gravels	- 27		
Medium dense, moist, mottled, Silty SAND and gravel, some clay B3-5 B3-6 B3-6 B3-6 B3-7 B3-7 B3-8 Medium dense, moist, mottled, Silty SAND and gravel, some clay	- -						-		
B3-5 B3-5 GM Cobbles Solve	- 10 -	B3-4	1444	11		Medium dense moist mottled Silty SAND and	33		T
B3-5 B3-5 B3-6 B3-6 B3-6 B3-6 B3-6 B3-6 B3-6 B3-6				1		gravel, some clay			
B3-5 B3-5 B3-6 B3-6 B3-6 B3-6 B3-6 B3-6 B3-6 B3-6	- 12 -		9 1					, I	
B3-5 B3-5 B3-6 B3-6 B3-6 B3-6 B3-6 B3-6 B3-6 B3-6	- 14		6		į				
18 - 18 - 18 - 19 19 19 19 19 19 19 19		70.5				Cabbles	- 50	 	
B3-6 B3-6 B3-6 B3-6 B3-6 BORING TERMINATED AT 21.5 FEET DUE TO REFUSAL Groundwater was not encountered	- 16 -	B3-5			GM	-Couples	>30	!	
B3-6 B3-6 B3-6 B3-6 B3-6 BORING TERMINATED AT 21.5 FEET DUE TO REFUSAL Groundwater was not encountered							-	ļ	
BORING TERMINATED AT 21.5 FEET DUE TO REFUSAL Groundwater was not encountered	- 18 -		10.				-		
BORING TERMINATED AT 21.5 FEET DUE TO REFUSAL Groundwater was not encountered			P						
REFUSAL Groundwater was not encountered	20 –	B3-6					50/35"		
REFUSAL Groundwater was not encountered			9.91m	$\mid + \mid$		RODING TERMINATED AT 21 5 EEET DIE TO	+		-
						REFUSAL			
Figure A-3, Log of Boring B 3						Groundwater was not encountered			
Figure A-3, Log of Boring B 3									
Figure A-3, Log of Boring B 3	:								
Figure A-3, Log of Boring B 3									
Figure A-3, Log of Boring B 3	!								
rigure A-3. Log of Boring K 3	7.		<u> </u>	Ц	<u> </u>	D 4			Ĺ
	rigur	e A-3,	Log	ot .	Borin	g в з			

		>-	3		BORING B 4			
DEPTH	SAMPLE	LITHOLOGY	SROUNDWATER	SOIL		FF.	TISH ()	MOISTURE
IN FEET	NO.	I LI	SO	CLASS (USCS)	ELEV. (MSL.) DATE COMPLETED 7/7/00	SMO	H2:	IST
			85		EQUIPMENT B-57 HOLLOW STEM AUG	<u> </u>	PR	욷
0 -					MATERIAL DESCRIPTION			
·			1-		APPROX. 4 INCHES TOPSOIL			
2 -					Stiff, damp, yellowish-brown SILT, some clay			
	B4-1			ML/CL	- 2	0	4	41
4 -			1		-			
	B4-2		1		Stiff, damp, mottled, CLAY, some silt	2		36
6 -					+ ·			•
_		4 10						
8 -	B4-3	19. j. j. 1. d 1			Medium dense, moist, brown, Silty, medium to	2	2	28
10		PA			coarse-grained SAND, some clay			
10 -	B4-4	9 1 .		SM/GM	Ĺ	7	2	27
12 -		010			-Gravels below 10.5 feet			
-					-			
14 -		Pb			-			
_	B4-5 ⊗				4	,	,	21
16 -	-	Ph			-Becomes wet to saturated, decreased fines, increased		-	
-		ا ا			gravel and cobbles			
18 -								
20 -		9 1	Y					
20	B4-6	6	=		_ >	50	1	18
		1-1-1-1-1-1			BORING TERMINATED AT 21 FEET DUE TO	+		_
					REFUSAL			
İ					Groundwater encountered at 20 feet			
iam	e A-4, I	00.	o F	Rovins	r R A			
igur	<i>- 1</i> 3-44, 1	LUB (,	 		N
SAMP	LE SYME	BOLS			PLING UNSUCCESSFUL $lackbox{\square}\dots$ STANDARD PENETRATION TEST $lackbox{\blacksquare}\dots$ DRIVE SATURBED OR BAG SAMPLE $lackbox{\square}\dots$ WATER TA			ΕC

		790	ATER		BORING B 5	NSS.	Łς
DEPTH IN	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS	ELEV. (MSL.) DATE COMPLETED 7/7/00	RAT STAN	ORY DENSIT (P.C.F.)
FEET		世	GRO	(USCS)	EQUIPMENT B-57 HOLLOW STEM AUG	PENETRI RESIST (BLOWS,	.θ.
					MATERIAL DESCRIPTION		
- 0 -					APPROX. 4 INCHES TOPSOIL		
					Dense, moist, brown, Silty SAND, occasional rounded gravel		
- 2 -					giavoi		
_ 1 _				SM		_	
- -							
- 6 -			.			-	
		9,7			Dense, moist, brown, Silty SAND, gravel and cobbles		
- 8 -					Bonne, moise, erewii, biriy biritb, graver and eccess	-	
		9 1				-	
- 10 -		6.1				-	
- 12 -		·]. 4·]·		GM			
				GM			
- 14 - 		10		,			
- 16 -		Pb				-	
		9 4 1				-	
- 18 -		P	¥			- 1	
		941				-	
- 20 -			$\dagger \dagger$		Medium stiff, wet, brown, Clayey SILT to Silty		
		111			CLAY, some sand		
- 22 -							
- 24							
				ML/CL			
- 26 -						_	
						- 1	
- 28					-Stiff layer from 28 to 29.5 feet	-	
					outi tayor from 20 to 27.3 tool	-	
Figure	A-5,	Log (of	Borin	g B 5		
-8		8				IVE SAMPLE	

	T NO.	P1007			BORING B 5	₹ ш^	>	T
DEPTH IN	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS	ELEV. (MSL.) DATE COMPLETED 7/7/00	RATIC STANC S/FT.	ENSIT	
FEET		5	GROU	(USCS)	EQUIPMENT B-57 HOLLOW STEM AUG	ENET	ORY D	
					MATERIAL DESCRIPTION	120		1
- 30 -						_		Ī
- 32 -						_		
					-Stiff layer from 33 to 34.5 feet			
- 34 <i>-</i>				ML/CL		_		
- 36 -						-		
- 38 -								
						-		
- 40 -						-		
- 42 -					D 1 1 40 C			
					-Becomes hard at 42 feet	-		
- 44 -		1111			BORING TERMINATED AT 44 FEET DUE TO			
					REFUSAL Groundwater encountered at 18 feet			
				i				
į								
Figure	A-6	Log	·&	Donin	~ D 5			_
	A-6,				g B 5 MPLING UNSUCCESSFUL □ STANDARD PENETRATION TEST ■ DRI	WE CAMPIE	(INDICT)	
SAMP	LE SYM	BOLS				TER TABLE (

ROJEC	<u></u>	P1007	1		BORING B 6	Zun	>	
DEPTH		100	MAT	SOIL	BORE 13 B	PACE FT.	ISIT F.)	3
IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	CLASS (USCS)	ELEV. (MSL.)DATE COMPLETED7/7/00	TRA	A N	IST
			GR		EQUIPMENT B-57 HOLLOW STEM AUG	RES (BL(ORY (P	£
					MATERIAL DESCRIPTION			
0 -					APPROX. 4 INCHES TOPSOIL			
2 -				ML	Medium stiff, moist, brown, SILT	-		
						-		
4 -		9			Medium dense, moist, reddish-brown, Silty GRAVEL			
				GM	and cobbles -Scattered boulders	 		
- 6 -				Ç.v.	-Scattered boulders	-		
						-		
8 -		1114			BORING TERMINATED AT 8 FEET DUE TO			
					REFUSAL Groundwater was not encountered			
					Groundwater was not encountered			
	~				·			
				·				
Figur	e A-7 ,	Log	of	Borin	ng B 6			N
CANG	PLE SYM	DOI C		□ s/	AMPLING UNSUCCESSFUL $lacksquare$ STANDARD PENETRATION TEST $lacksquare$ DR	VE SAMPLE	(UNDIST	URBE

			2	i	PODING P 7	
		\ 	ATE		BORING B 7	· اِسِ
DEPTH IN	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS	ELEV. (MSL.) DATE COMPLETED	STUR
FEET		ן ן	GRO	(USCS)	ELEV. (MSL.) DATE COMPLETED 7/7/00 EQUIPMENT B-57 HOLLOW STEM AUG	MOISTURE
					MATERIAL DESCRIPTION	
0 -					APPROX. 3 INCHES ASPHALT	
2					BASEROCK	
2 -					BORING TERMINATED AT NATIVE SOIL (2')	
igur <i>e</i>	A-8,]	[.ng /	of	Rorin	or R 7	
					PLING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE SAMPLE (UND	NO I STURBED
SAMP	LE SYME	BOLS			PLING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE SAMPLE (UND STURBED OR BAG SAMPLE WATER TABLE OR SEI	

	T NO.	T				`				1		
DEPTH	SAMPLE	LITHOLOGY	GROUNDWATER	SOIL	BC	ORING B 8				TI ON LINE	SITY	
IN FEET	NO.	불	SUNT	CLASS (USCS)	ELF	EV. (MSL.)	DATE	COMPLETED _	7/7/00	TRA ISTE	C.F	
		L L	SS		EQI	UIPMENT	B-57 HOLL	OW STEM AUG		PENE RES: (BLC	DRY (P	
- 0 -						MAT	TERIAL DESCR	IPTION				
						APPROX. 2 INCI	HES ASPHALT					
- 2 -					***	BASEROCK				_		
						BORING TERM	INATED AT NA	ATIVE SOIL (2.25	')			
De .					- T-							
rigure	A-9,	Log		···								
SAMP	LE SYME	BOLS				UNSUCCESSFUL OR BAG SAMPLE	STANDARD	PENETRATION TEST	■ DRIV			

DEPTH		LITHOLOGY	GROUNDWATER	SOIL	TRENCH T 1	TON TCE	ΥΤΫ́
IN FEET	SAMPLE NO.		2	CLASS (USCS)	ELEV. (MSL.) DATE COMPLETED	TRAT STAI	C.F.S
FEET		[GRO	(0303)	EQUIPMENT FORD 555 BACKHOE	PENE RESI (BLO)	ORY (P.
	_ 				MATERIAL DESCRIPTION		
- 0 -			\Box		APPROX. 6 INCHES TOPSOIL		
- 2 -					Dense, moist, light reddish-brown, Silty SAND, sub-rounded GRAVEL and COBBLES	_	
- 4 -	71.1 8	9 4					
	T1-1					-	
- 6 -		14.		GM		-	
		1			-Decreasing fines with depth	-	
- 8 -		١٩١					
- 10 -		Pb					
	T1-2	8.9				_	
- 12 -		10 17				-	
					TRENCH TERMINATED AT 12.5 FEET Infiltration test at 4 feet Infiltration test at 10 feet Groundwater was not encountered		
					•		
igure	A-10,	Log	of	Tren	ch T 1		
CAMD	LE SYMI	2 100	[□ sa	APLING UNSUCCESSFUL STANDARD PENETRATION TEST DRI	VE SAMPLE	(UND I STU

		T. N. C.	D1005	. 05	. 02	Exhibit 12 (CUP	24-1	001
	COJEC		P1007	T		TRENCH T 2	TION CE	È.	<u>ж</u> 8
	IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	CLASS (USCS)	ELEV. (MSL.) DATE COMPLETED7/6/00		DENSI P.C.F.	MOISTURE CONTENT (%
L				5		EQUIPMENT FORD 555 BACKHOE	PENI PENI	PR (P)	ΣÖ
	0 -					MATERIAL DESCRIPTION			
				-	ML	APPROX. 6 INCHES TOPSOIL		+	
	2 -		a	-		Medium stiff, damp, brown, SILT			
-	4 -		7			Medium dense, moist, light reddish-brown, Silty SAND, occasional sub-rounded gravel and cobbles, some clay	 - -		
-	· _						-		
L	6 -	T2-1	610		SM/GM		-		
-	4						-		
- -	8 -		Ph	₹			<u> </u>		
						TRENCH TERMINATED AT 8.5 FEET Infiltration test at 5 feet Groundwater was encountered at 8 feet			
Fi	gure	A-11,	Log	0	f Tren	ich T 2			NCHS
	SAMP	LE SYME	BOLS			MPLING UNSUCCESSFUL STANDARD PENETRATION TEST STURBED OR BAG SAMPLE CHUNK SAMPLE	DRIVE SAMPL WATER TABLE		- 1
NO	TC. TUC	100 05 6	LIDOLIDE	ACE	CONDITIO	MS SHOWN REDEAM ADDITES ONLY AT THE SDECIFIC RODING OF TRENCH LO			

ROJEC	T NO.	P1007	-05	-02	,	Exhibit 1		ì		
DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)		DATE COMPLETEDFORD 555 BACKHOE	7/6/00	PENETRATION RESISTANCE (BLOWS/FT.)	ORY DENSITY (P.C.F.)	MOISTURE
					MAT	ERIAL DESCRIPTION				
0 -		TiT		ML	APPROX. 6 INC	CHES TOPSOIL				
_				IVIL	Medium stiff, da	mp, brown, SILT				
2 - 4 - 6 - 8 -	T3-1			GM	Dense, moist, re sub-rounded GR	ddish-brown, Silty SAND, AVEL and COBBLES		-		19
]	MINATED AT 9 FEET DUE TO CAVING nfiltration test at 6 feet dwater was not encountered				
ligura	A-12	Log		f Tror	nch T 3		1			N.
-541						n		/E SAMPLE	/(IND TOT)	
SAMP	LE SYMI	BOLS			MPLING UNSUCCESSFUL STURBED OR BAG SAMPLE	STANDARD PENETRATION TEST CHUNK SAMPLE	■ DRIN			

PROJEC	I NO.	P1007	T			7		
)6Y	計		TRENCH T 4	SH.?	Èς	Γ
DEPTH IN	SAMPLE NO.	LITHOLOGY	B	SOIL CLASS	ELEV. (MSL.) DATE COMPLETED7/6/00_	SAT.	ENS1	
FEET	NO.	5	GROUNDWATER	(USCS)	EQUIPMENT FORD 555 BACKHOE	PENETI RESIS	>÷≎	
		<u> </u>					SO S	Ļ
- 0 -	<u>-</u>				MATERIAL DESCRIPTION			L
<u>-</u> -				ML	APPROX. 4 INCHES TOPSOIL Medium stiff, damp, brown SILT	-		
- 2 -					Wichiam Stiff, damp, blown StD1			
					Dense, moist, light reddish-brown, Silty SAND,	-		Γ
- 4 -					some sub-rounded gravel and cobbles, decreasing fines with depth	-		
-					mes was depar	 		
- 6 -				:		<u> </u>		
<u> </u>		自計						
- 8 -	T4-1			SM/GM				
- ا						F		
- 10 -								
					TRENCH TERMINATED AT 11 FEET DUE TO			
					CAVING Infiltration test at 8 feet			
					Groundwater was not encountered			
				į				
								ı
								ı
		لــــا						
Figure	A-13,	Log	of	Tren	ch T 4			
	LE SYMI		ſ	T SAI	MPLING UNSUCCESSFUL 🔲 STANDARD PENETRATION TEST 💻 DR	TVF SAMPLE	CHINDISTH	101

TRENCH T 5	
TRENCH T 5 SAMPLE NO. SAMPLE NO. SOIL CLASS (USCS) EQUIPMENT FORD 555 BACKHOE TRENCH T 5 DATE COMPLETED 7/6/00 EQUIPMENT FORD 555 BACKHOE	MOISTURE CONTENT (%)
MATERIAL DESCRIPTION	
0 ML APPROX. 4 INCHES TOPSOIL	
Medium stiff, damp, brown SILT	
Dense, moist, yellowish-brown, Silty SAND, sub-rounded GRAVEL and COBBLES T5-1 T5-1	18.9
CL Stiff, moist, brown and gray, Silty CLAY	26.5
TRENCH TERMINATED AT 9 FEET Infiltration test at 6 feet Groundwater was not encountered	
	NCHS
SAMPLE SYMBOLS SAMPLE SYMBOLS SAMPLE SYMBOLS SAMPLE SYMBOLS SAMPLE SYMBOLS SAMPLE SYMBOLS SAMPLE SYMBOLS SAMPLE SYMBOLS SAMPLE SYMBOLS SAMPLE SYMBOLS SAMPLE SYMBOLS SAMPLE SYMBOLS SAMPLE SYMBOLS SAMPLE SYMBOLS SAMPLE SYMBOLS SAMPLE SYMBOLS SAMPLE SYMBOLS SAMPLE SYMBOLS	:D)

		_	絽		TRENCH T 6	
DEPTH		99-	A TE	SOIL	NACTI 1 A	FF. #
IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	CLASS (USCS)	ELEV. (MSL.)DATE COMPLETED	C.F.
, ,		בן	88	(0000)	EQUIPMENT FORD 555 BACKHOE	PRY CP.
· · · · · · · · · · · · · · · · · · ·		-	$ \cdot $		MATERIAL DESCRIPTION	
0 -		01201	Ħ		APPROX. 6 INCHES TOPSOIL	
2 - 4 - 6 -	T6-1 ^S			GM	Medium dense to dense, moist to wet, light yellowish-brown, Clayey SILT, SAND and sub-rounded GRAVEL, occasional cobbles	32
8 -					-	
10 -		4		SM	Dense, moist, reddish-brown, Silty SAND and sub-rounded gravel	
					Groundwater was not encountered	
igure	A-15,	Log	of	Tren	ch T 6	N
SAMP	LE SYME	BOLS	[- • • • • • • • • • • • • • • • • • • •	MPLING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE SAMPLE WATER TABLE OF	

SAMPLE	≿		TOTAL CITY OF PT			
SAMPLE	👨	SOIL	TRENCH T 7	NCE .	SITY	RE
NO.	LITHOLOGY	GROUNDIANTER Sylos Sylos		TSTP ISTP	CEN	ISTL
	<u> </u>	GR	EQUIPMENT FORD 555 BACKHOE	PENE RES	ORY (P	E
			MATERIAL DESCRIPTION			
	911	1				-
			Moist, reddish-brown, Silty GRAVEL and COBBLES, some clay			
	9 4					
		GM	-Decreasing fines with depth	_		
				-		
			-Loose gravers and couples			
-				-		
			TRENCH TERMINATED AT 10 FEET Infiltration test at 7 feet			
			Groundwater encountered at 10 feet			
						ļ
						İ
					!	
e A-16,	Log	g of Tr	ench T 7			
				VE SAMPLE	(UNDISTL	
	PLE SYM	PLE SYMBOLS	PLE SYMBOLS	APPROX. 6 INCHES TOPSOIL Moist, reddish-brown, Silty GRAVEL and COBBLES, some clay GM -Decreasing fines with depth -Loose gravels and cobbles TRENCH TERMINATED AT 10 FEET Infiltration test at 7 feet Groundwater encountered at 10 feet Groundwater encountered at 10 feet EA-16, Log of Trench T 7	APPROX. 6 INCHES TOPSOIL Moist, reddish-brown, Silty GRAVEL and COBBLES, some clay GM Decreasing fines with depth Loose gravels and cobbles TRENCH TERMINATED AT 10 FEET Infiltration test at 7 feet Groundwater encountered at 10 feet Groundwater encountered at 10 feet B SAMPLING UNISUCCESSFUL CHLIK SAMPLE DRIVE SAMPLE DRIVE SAMPLE DRIVE SAMPLE	APPROX. 6 INCHES TOPSOIL Moist, reddish-brown, Silty GRAVEL and COBBLES, some clay Decreasing fines with depth -Loose gravels and cobbles TRENCH TERMINATED AT 10 FEET Infiltration test at 7 feet Groundwater encountered at 10 feet Groundwater encountered at 10 feet D STANDARD PENETRATION TEST D STANDARD PENETRATION TEST M ORIVE SAMPLE (UNDISTURED OR BAG SAMPLE CHUNK SAMPLE WATER TABLE OR SEEPAGE

DEPTH		LITHOLOGY	GROUNDMATER	SOIL	TRENCH T 8	NCE.	Σίζ.
IN FEET	SAMPLE NO.	문 문 다	DNDC	CLASS (USCS)	ELEV. (MSL.)DATE COMPLETED7/7/00	TRA ISTA	SEN F.
] 5	GRC	,	EQUIPMENT FORD 555 BACKHOE	PENE RES: (BLO	PRY (P
- 0 -					MATERIAL DESCRIPTION		
_		4			APPROX. 6 INCHES TOPSOIL	_	
- 2 -	T8-1 ≥				Moist, reddish-brown, Clayey GRAVEL, some medium to coarse-grained sand	-	
	10-1					_	
- 4 -							
- -				GM			
- 6 - 				Olvi			
- 8 -	T8-2 ▼				-Decreasing gravel and cobbles with depth	-	
	10-2					-	
- 10 -						-	1
 - 12 -						-	
••					TRENCH TERMINATED AT 12 FEET DUE TO CAVING Infiltration test at 8 feet Groundwater was not encountered		
Figur	e A-17 ,	Log	0	f Tren	nch T 8		
SAMF	LE SYME	BOLS		□ sa	MPLING UNSUCCESSFUL $\ \square \ldots$ STANDARD PENETRATION TEST $\ \square \ldots$ [RIVE SAMPLE	(UND1STL

ROJEC	T NO.	P1007	Τ -				
DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDMATER	SOIL CLASS (USCS)	TRENCH T 9 ELEV. (MSL.) DATE COMPLETED 7/17/00 EQUIPMENT FORD 555E	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)
		-	Н		MATERIAL DESCRIPTION		
- 0 -		777			APPROX. 4 INCHES TOPSOIL		
				SM	Medium stiff, damp, reddish-brown, Sandy SILT,	,	<u></u>
- 2 -		9 4			Very dense, moist, brown, Silty, coarse SAND, gravel, cobbles and boulders		
- 4 -		941					
- 6 -						_	
	T9-1			GM		-	
- 8 -		b b					
		-61 - 1			TRENCH TERMINATED AT 9 FEET DUE TO REFUSAL Infiltration test at 6 feet		
					Groundwater was not encountered		
ļ							
					-		
		}					
igure	A-18,	Log	O	f Tren	ich T 9		
SAMP	LE SYM	BOLS			MPLING UNSUCCESSFUL I STANDARD PENETRATION TEST I D STURBED OR BAG SAMPLE I CHUNK SAMPLE	RIVE SAMPLE	

	r no.	P1007			CONTROL TO 10			
DEPTH	SAMPLE	LITHOLOGY	GROUNDWATER	SOIL	TRENCH T 10	ATION ANCE FT.)	SITY F.)	MOISTURE
IN FEET	NO.	품		CLASS (USCS)	ELEV. (MSL.) DATE COMPLETED 7/17/00	TET	品立	IST
		<u></u>	GR		EQUIPMENT FORD 555E	PENETI RESIS (BLOW	DRY DENSI (P.C.F.)	5
0 -					MATERIAL DESCRIPTION			<u> </u>
0				ML	APPROX. 4 INCHES TOPSOIL			
2 -				IVIL	Medium stiff, reddish-brown, SILT			<u> </u>
_		9			Dense, moist, Silty, coarse SAND. gravel, cobbles,	_		
4 -		b 1 43			and boulders -Decreasing fines with depth	-		
4		١٩١		GM		-		ļ
6		b.				_		
_		11.0	\perp		-Weathering to clay	ļ		<u> </u>
					TRENCH TERMINATED AT 7 FEET Groundwater was not encountered		1 1 5	
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				i				i [
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						}	ļ	
igure	A-19,	Log	of	Tren	ch T 10			NC
					PLING UNSUCCESSFUL STANDARD PENETRATION TEST DRI	VE SAMPLE	(UND I STU	
SAMP	LE SYMB	ULS					OR SEEPAG	

		ξ	TER		TRENCH T 11	
DEPTH In	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS	ELEV. (MSL.) DATE COMPLETED 7/17/00 BELEV.	:-
FEET		5	GROL	(USCS)	ELEV. (MSL.) DATE COMPLETED 7/17/00 EQUIPMENT FORD 555E	<u> </u>
					MATERIAL DESCRIPTION	-
- 0 - - 2 -				ML	Dense, moist, reddish-brown, Gravelly SILT with cobbles	
- 4 - - 6 -	T11-1	0 0		GM	Medium dense, moist, subrounded GRAVEL and cobbles, some sand, silt and clay -Scattered boulders, caving observed -	
- 8 -		00			-Weathering to clay	
					TRENCH TERMINATED AT 8 FEET Infiltration test at 5 feet Groundwater was not encountered	
igure	A-20,	Log			ch T 11	
SAMP	LE SYME	OLS			MPLING UNSUCCESSFUL I STANDARD PENETRATION TEST I DRIVE SAMPLE (UNDISTURBED OR BAG SAMPLE I WATER TABLE OR SEE	

			2		TRENCH T 12	<u> </u>	
DEPTH	0.4401.5	L06)	MAT	SOIL		NOS!	SITY
IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDMATER	CLASS (USCS)	ELEV. (MSL.)DATE COMPLETED	TRA	C.E.
		'-	GR		EQUIPMENT FORD 555E	PENE RES	PRY ←P
- 0 -					MATERIAL DESCRIPTION		
- ·-					APPROX. 4 INCHES TOPSOIL		
- 2 -				:	Medium stiff, moist, reddish-brown, SILT, scattered boulders	-	
				ML		-	
- 4 -						-	
_						-	,
- 6 - 		0			Medium dense, Silty SAND, gravel, and cobbles,		
- 8 -	7101	0 4		an a	weathering to clay	-	
	T12-1	0		GM		-	
- 10 -		-	H				
					TRENCH TERMINATED AT 10 FEET Groundwater was not encountered	. :	
							ļ
					•		
							ļ
Figure	A-21,	Log	ol	f Tren	nch T 12	11	
	LE SYME				MPLING UNSUCCESSFUL STANDARD PENETRATION TEST DRI	VF SAMPLE	(IIND I STIII

			2		DDENGIL D 12		
) 90	ATE		TRENCH T 13	NE NE	<u>}</u> _
DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	ELEV. (MSL.)DATE COMPLETED	TRAT. ISTAN	DENS:
		نا	68		EQUIPMENT FORD 555E	RES	무선 연.
	<u> </u>		\vdash		MATERIAL DESCRIPTION		
- 0 -		 			APPROX. 4 INCHES TOPSOIL		
- 2 -				ML	Medium dense to dense, moist, reddish-brown, Gravelly SILT with some cobbles	-	
- 4 - - 4 - 6 -		9 4		GM	Medium dense to dense, moist, brown, Silty, coarse SAND and gravel, occasional cobbles	-	
- 8 -	T13-1			SM	Medium dense, moist, brown, coarse SAND, some gravel, occasional cobbles		
- 10 -						-	
					Infiltration test at 8 feet Groundwater was not encountered		
liour4	Δ_22	I.or		Tran	nch T 13	<u> </u>	
- 48ur (TOR				VE SAMPLE	

KOJEC	T NO.	P1007	7					
DEPTH IN	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS	TRENCH T 14 ELEV. (MSL.) DATE COMPLETED 7/17/00	RATION STANCE S/FT.)	DRY DENSITY (P.C.F.)	MOISTURE
FEET		5	GROL	(USCS)	EQUIPMENT FORD 555E	PENETR RESIST (BLOMS	RY D (P.(MOIS
					MATERIAL DESCRIPTION	п_0		
0 -		TTT			APPROX. 4 INCHES TOPSOIL			
2 -				ML	Medium dense, damp to moist, reddish-brown, SILT, scattered cobbles	-		l İ
4 -		9 0			Medium dense, moist, brown, Silty SAND and gravel, scattered cobbles, occasional boulders	-		
6 -								ł
8 -	T14-1			GM		-		ı
10 -		p, b				-		
10					TRENCH TERMINATED AT 10 FEET Infiltration test at 7 feet Groundwater encountered at 10 feet			
					·			
igure	Λ-23	Log		Tron	ich T 14			
·					MPLING UNSUCCESSFUL STANDARD PENETRATION TEST DRIVE	CAMDIE	CHNDISTH	NCH PRED V
SAMP	LE SYMB	OLS	_	_	STURBED OR BAG SAMPLE CHUNK SAMPLE WATER			

		 	띪		TRENCH T 15	Zw^	>	Γ
DEPTH IN	SAMPLE NO.	LITHOLOGY	GROUNDMATER	SOIL CLASS	ELEV. (MSL.) DATE COMPLETED 7/18/00	RATIO STANCE IS/FT.	ENSIT	
FEET		5	GROL	(USCS)	EQUIPMENT FORD 555E	PENET REST (BLO)	DRY C	
					MATERIAL DESCRIPTION			
- 0 -		1411			APPROX. 4 INCHES TOPSOIL			F
- 2 -				ML	Medium stiff, damp, reddish-brown, Gravelly SILT, scattered cobbles and boulders	-		
 - 4 -		0			Dense, moist, brown, Silty SAND and gravel, occasional cobbles			
		. 0				-		
- 6 -	T15-1	8		GM				
	113-1	° A		GM	-Decreasing fines with depth			
- 8 -		0						
- 10 -		0 0			-Slight weathering to clay			L
					TRENCH TERMINATED AT 10 FEET Infiltration test at 6.5 feet Groundwater was not encountered			
	1							
								i Î
					·			
				ļ				
Figure	A-24,	Log	0	f Tren	ich T 15		L.	_
	LE SYM		[□ SAI	MPLING UNSUCCESSFUL STANDARD PENETRATION TEST DRIV	/E SAMPLE	CUNDISTU	IR B

ROJEC			R		TOPNOT TO 16			,
DEPTH		.0GY	AATE	SOIL	TRENCH T 16	NON-	ΥŢ.	¥
IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	CLASS (USCS)	ELEV. (MSL.)DATE COMPLETED7/18/0	TRAI ESTAI WS/F	DENS C.F	MOISTURE
: == '			GRC		EQUIPMENT FORD 555E	PENETRI RESIST (BLOWS)	DRY DENSIT	5
					MATERIAL DESCRIPTION			
0 -					APPROX. 6 INCHES TOPSOIL			<u> </u>
2 -					Medium stiff, damp to moist, reddish-brown, Gravelly SILT			
2 -				ML	Gravery Side			
4		94						
-								
6 -		000	1		Medium dense, moist, reddish-brown, Gravelly,	_		
_	m1 . k	0.00			medium-grained SAND	-		
8 -	T16-1 [⊗]	000		SM		_		
_		0.00				-		
10 -		000	¥		-Slightly weathering to clay			_
					Infiltration test at 7 feet Groundwater encountered at 10 feet			
igure	A-25.	Log	01	Tren	ch T 16			NC
					PLING UNSUCCESSFUL STANDARD PENETRATION TEST	DRIVE CANDIS	/INDIOT	
SAMP	LE SYMB	OLS	[_	TURBED OR BAG SAMPLE CHUNK SAMPLE	PATE SAMPLE	(OND1210	יאטבט

		06Y	GROUNDWATER		TRENCH T 17	SUC.	ΣĽ.	س ا
DEPTH	SAMPLE NO.	LITHOLOGY	NDM	CLASS	ELEV. (MSL.) DATE COMPLETED 7/18/00	STAN IS/F	C.F.	STUR
FEET		נ	GRO	(USCS)	EQUIPMENT FORD 555E	PENET RESI (BLO)	ORY CP.	MOISTURE
					MATERIAL DESCRIPTION			
0 -		li Ti	H		APPROX. 4 INCHES TOPSOIL			+
2 -				3.4-	Medium stiff, damp to moist, reddish-brown, Gravelly SILT	-		
. <u>-</u>				ML		-		
4 –		1				 		
6 -		0			Very dense, Cobbly SAND and GRAVEL, weathering to clay	-		
		00			weathering to clay	-		
8 -	T17-1	0		GM		- 1		
-		0				-	!	
10 -		0						
					TRENCH TERMINATED AT 11 FEET Groundwater was not encountered			
							į	
igure	A-26,	Log	of	Tren	ch T 17			NC
					MPLING UNSUCCESSFUL STANDARD PENETRATION TEST DR	VE SAMPLE	(UNDISTU	
SAMP	LE SYME	OLS	8			ER TABLE C		

TABLE B-I SUMMARY OF LABORATORY MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT TEST RESULTS ASTM D 1557-91

Sample No.	Depth (ft)	Material Description	Maximum Dry Density (pcf)	Optimum Moisture Content (% dry wt.)
Composite	1.0 – 3.0	SILT	103.2	20.8

TABLE B-2 SUMMARY OF PARTICLE SIZE DISTRIBUTION ASTM D421 AND D422

Sample No.	Depth	% Gravel	% Sand	% Silt	% Clay	
	(ft)					
T1 – S2	7 – 8	16.1	51.1	32.8		
T2 – S3	6 - 7	21.4	37.5	27.6	13.5	
T3 – S2	5.5 - 6	0.9	73.5	25.6		
T4 – S1	7 - 8	56.4	33.3	10).3	
T6 – S1	5 - 6	43.3	37.6	19	9.1	
T10 – S1	2 – 2.5	0	30.7	34	3 5.3	
T11 – S1	7 - 8	0	51.7	26.3	22	

Project No. P1007-05-01

TABLE B-3 SUMMARY OF LABORATORY PLASTICITY INDEX TEST RESULTS ASTM D 4318

Sample No.	Depth (ft)	Plastic Limit	Liquid Limit	Plasticity Index
T1 – S2	7 - 8	31	59	28
T5 – S2	4 - 5	21	77	56
T6 – S1	5 – 6	26	56	30
T8 – S1	2-2.5	21	80	59
T8 – S2	4 - 5	. 24	70	46
T10 - S2	2 – 2.5	25	45	20

TABLE B-4 SUMMARY OF LABORATORY EXPANSION INDEX TEST RESULTS ASTM D4829

Sample No.	Depth (ft)	Water Content	Expansion Index
T5 – S2	4 - 5	16.9	93

Project No. P1007-05-01

Exh	ib	it	12	CU	P24-	10	0

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N	0	\mathbf{R}	Т	Н	W	\mathbf{E}	\mathbf{s}	T



April 16, 2001 P1007-05-04

Mr. Doug McCudden c/o Camas School District 2041 NE Ione Street Camas, Washington 98607

Subject:

NEW CAMAS HIGH SCHOOL

CAMAS, WASHINGTON

CONSULTATION

Dear Mr. McCudden,

Geocon Northwest, Inc. is pleased to provide this letter summarizing the results of the additional geotechnical evaluation requested by the project civil engineers to satisfy Clark County permitting requirements. The fieldwork was completed on April 6, 2001. A total of eleven exploratory trenches were excavated in locations requested by Otak. Table 1, Depth to Groundwater, summarizes the groundwater depth and soil conditions encountered during the field investigation.

An additional pit was excavated in the location of an existing culvert, where the outlet of two drainage tiles was observed. One tile consisted of a 6-inch-diameter clay pipe while the other consisted of a 10-inch-diameter cement mortar pipe. The general direction of the drainage systems was northeasterly from the outlet. A field measurement of the flow rate was obtained at the outlet. During the field investigation, the flow rate was measured at approximately 50 to 60 gallons per minute. This value includes the outflow from both sources.

New Camas High School Camas, Washington Exhibit 12 CUP24-100

April 16, 2001 Page 2

Table1: Depth to Groundwater

	TEST PIT LOCATION			STATIC	GROUNDWATER	GENERAL SOIL
				GROUNDWATER	SEEPAGE (ft)	TYPE
				(ft)		
	Site	E/W	N/S			
	Reference	distance	distance			
		(ft)	(ft)			
,	NE Corner	300 W	350 S	8	None	Sand, gravel,
Į.						cobbles
2	NE Corner	200 W	370 S	8	None	Sand, gravel,
2						cobbles
3	NE Corner	100 W	400 S	8	None	Sand, gravel,
2						cobbles
	NE Corner	150 W	320 S	9	None	Sand, gravel,
4						cobbles
5	NE Corner	250 W	320 S	8.5	None	Sand, gravel,
)						cobbles
,	NW Comer	60 E	70 S	Not Encountered*	None	Silty sand,
6						gravel, cobbles
~	NW Comer	60 E	140 S	Not Encountered*	None	Silty sand,
7						gravel, cobbles
0	East	350 E	50 N	Not Encountered*	3, 8, and 9	Gray clay
8	Driveway					
a	East	600 E	50 N	Not Encountered*	7.5	Clayey gravel
9	Driveway					and cobbles
	East	800 E	200 N	3	None	Silty sand,
10	Driveway					gravel, cobbles
11	East	400 E	200 N	5.5	None	Silty sand,
11	Driveway					gravel, cobbles

^{*}Exploratory trenches where groundwater was not encountered were excavated to a depth of approximately 10 to 12 feet.

Exhibit 12 New Camas High School Camas, Washington April 16, 2001 Page 3 We have been requested to provide an estimate of the maximum "base flow" which may occur within the two drainage tiles to assist Otak in their assessment of the existing site drainage conditions. The measured flow of 50 to 60 gallons per minute (0.13 cubic feet per second, cfs) represents a value less than the theoretical maximum flow rate. Review of existing topographic maps indicated the area of capture of the drainage tiles is approximately 13 acres. Assuming a conservative (i.e. high) permeability value of 10⁻³ cm/sec for the soil within the capture area, a maximum theoretical base flow of 0.5 cubic feet per second was calculated for the existing two drain tile system. It was also requested that we estimate a post construction (as built) value of the water flow into the proposed drainage swales to be constructed within the southeast portion of the property. A total surface area of approximately 9,161 square feet was determined by Otak for the swale area exposed to groundwater flow. Assuming a permeability value of 10⁻³ cm/sec and a hydraulic gradient of 10%, a maximum flow rate of 0.03 cubic feet per second was estimated for the post construction flow within the swale system. The assumed soil permeability value of 10⁻³ cm/sec is conservative as it represents the flow characteristics of a medium to fine grained sand. The majority of soils within the potential zone of groundwater flow are silts and clays. We appreciate the opportunity to work with you on this project. If you have any questions, or require additional information, please contact the undersigned at your convenience. Sincerely, **GEOCON NORTHWEST, INC.** Wesley Spang, Ph.D., P.E Heather Devine, P.E. President Geotechnical Engineer Mr. Don Proctor, Otak CC:

Exhibit, 12 CUP24-1001

