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13 September 2002

Mr. Ronald Timm
Hydrogeologist
Northwest Region, Toxic Cleanup Section
Washington State Department of Ecology
3190 160th Avenue, SE
Bellevue, Washington 98008

Subject: Groundwater Quality Evaluation Results
The Shops at First Street Site
Bellevue, Washington
K/J 026050.00

Dear Mr. Timm:

Kennedy/Jenks Consultants is pleased to present this letter report on behalf of The Benenson Bellevue Associates, LLP (Benenson) located in New York, New York. This report contains the results and findings of groundwater sampling and monitoring activities conducted at the subject site located at 110 108th Avenue NE, Bellevue, Washington (site). This information is provided to the Washington State Department of Ecology (Ecology) to facilitate discussions regarding the activities needed to achieve a no further action at this site.

BACKGROUND

Tetrachloroethene (PCE) was discovered in soil at the site during redevelopment work conducted in 1994. Presence of PCE in soil was attributed to operation of a former dry cleaning business. Following detection, PCE-impacted soil underlying the area of the former dry cleaning business was excavated to a depth of 15 feet below ground surface (bgs) for offsite disposal (the "Phase I" excavation area). Kennedy/Jenks Consultants conducted soil sampling activities in 1994 during redevelopment and subsequent remedial investigation (RI). The collected data indicated that PCE was present in soil below the Phase I excavation area and in soil surrounding and beneath a stormwater sewer manhole located in the southeastern area of the site. Figure 1 provides a site location and vicinity map. Figure 2 shows the locations of site buildings and the manhole.

In response to Ecology's request, Kennedy/Jenks Consultants installed three groundwater monitoring wells, MW-1, MW-2, and MW-3, at the site in May 2002 to evaluate 1) the presence of PCE in groundwater beneath the Phase I and manhole areas and 2) the depth to water table and direction of groundwater flow. The field activities were conducted in accordance with a plan of work that was discussed with and approved by Ecology in January 2002.

Additional information, data, and detail regarding the environmental conditions at the site and previous investigative activities are included in the RI/FS report submitted to Ecology by Kennedy/Jenks Consultants in November of 1994.

OBJECTIVES

The specific objectives of the groundwater evaluation activities are as follows:

- Complete a limited investigation of groundwater conditions beneath the site for the presence of volatile organic compounds (VOCs) such as PCE and degradation products.
- Evaluate the groundwater flow direction and gradient beneath the site.

FIELD METHODS

Investigative field methods are summarized below.

Drilling and Installation of Groundwater Monitoring Wells

Prior to field activities, the One Call Center was notified of the proposed drilling activities to clear the drilling locations for underground utilities. Additionally, a private utility locating service was contracted to clear each of the proposed boring locations.

Wells MW-1, MW-2, and MW-3 were advanced at the locations shown on Figure 2 during the week of 13 May 2002. Wells MW-1 and MW-3 were advanced to a depth of 115 feet bgs and MW-2 was advanced to 110 feet bgs. The borings were advanced using a hollow-stem auger drilling equipment operated by Cascade Drilling, Inc. located in Woodinville, Washington. Soils encountered during drilling were described in accordance with the Standard Practice for Description and Identification of Soils (ASTM D-2488-93). Soil samples were obtained from the borings of each well at every 5 feet and were field screened for VOCs using a Century Organic Vapor Analyzer (OVA). The lithology descriptions and OVA readings were recorded on boring logs. The monitoring wells were installed using 2-inch polyvinyl chloride (PVC) casing and well screen. Each well was constructed with 15 feet of well screen that spanned the depth at which groundwater was encountered during drilling. The well screen depth intervals are summarized in Table 1. A copy of the boring logs and well construction schematics is included in Appendix A.

Upon installation, each well was developed using a submersible Grundfos® pump and a bailer. Each well was developed until relatively sediment-free water was produced and/or a minimum of 7 well casing volumes were removed. During development, the groundwater parameters of pH, specific conductance (EC), temperature, and turbidity (visual observation) were observed and recorded in a well development log. A copy of the well development logs is included in Appendix B.

The wells were surveyed by a State of Washington licensed land surveyor (Earth Tech) on 31 May 2002. The top of the casing elevation and horizontal position of each well was surveyed to the City of Bellevue benchmark 373R located at the intersection of Main Street and 108th Avenue NE. The top of the casing elevations were surveyed to the nearest 1/100 of a foot. The top of the casing elevations are summarized in Table 1.

Groundwater Level Monitoring and Sampling

Monitoring and sampling activities were conducted following well development on 22 and 31 May 2002 and again on 18 June 2002. Depth to groundwater was measured on 22 and 31 May 2002 and on 18 June 2002 using an electronic water level indicator. Groundwater samples were collected on 22 May 2002 and on 18 June 2002. The June sampling was conducted to confirm the 22 May 2002 results. Wells were purged prior to sampling and the values of field parameters, including EC, temperature, and pH were recorded during purging. Groundwater samples were collected when values of temperature stabilized to within 2 degrees Centigrade and values of pH and EC stabilized to within 10 percent between two consecutive measurements. Groundwater purge and sample forms are provided in Appendix C.

The groundwater samples were stored on ice in coolers and transported to Analytical Resources, Incorporated (ARI) laboratories located in Tukwila, Washington under chain-of-custody protocols. The collected samples were analyzed for VOCs by EPA Method 8260B. Additionally, the samples collected on 22 May 2002 were analyzed for vinyl chloride by EPA Method 8260 SIMM.

RESULTS AND FINDINGS

This section presents a summary of the lithology encountered during drilling and presents the results of the groundwater monitoring and sampling events.

Lithology

The lithology encountered during the drilling of MW-1, MW-2, and MW-3 consisted primarily of interbedded dense silt, sandy silt, and silty sand with varying percentages of gravel (glacial till). A significant gravel zone (approximately 15 feet thick) was encountered in MW-1 at a depth of approximately 45 feet bgs.

Hydrogeology

Groundwater was encountered during drilling at depths ranging from 94 feet bgs in MW-3 to 106 feet bgs in MW-1 in a fine-to-medium sand zone. The groundwater elevation on 22 May 2002 ranged from 50.25 feet in MW-1 [or 103.65 feet below top of casing (TOC)] to 35.55 feet in MW-3 (109.31 feet below TOC). The groundwater elevations on 31 May 2002 and 18 June 2002 were similar in each well and ranged (on 18 June) from 50.46 feet (MW-1) to 49.98 feet (MW-3). The water levels in wells MW-2 and MW-3 rose by approximately 6 and 14 feet, respectively, between the 22 and 31 May 2002 monitoring events. The 18 June 2002 water level in well MW-3 was approximately 10 feet above the top of screen. Water level measurements are listed in Table 1.

The groundwater flow direction was to the south-southwest during the 31 May 2002 and 18 June 2002 sampling events with calculated hydraulic gradients of 0.003 feet/foot (ft/ft) and 0.002 ft/ft, respectively. Based on the water level data, well MW-1 represents groundwater

conditions upgradient of the site. Well MW-2 appears to be cross-gradient of the manhole and MW-3 downgradient of the Phase I soil removal area.

Groundwater Quality Results

The laboratory analytical results are presented in Table 1 and summarized below. Laboratory analytical reports and chain-of-custody forms are included as Appendix D.

- PCE was detected in MW-2 and MW-3 at levels of 19 and 99 micrograms per liter (µg/l) during the 22 May 2002 sampling events. The groundwater samples collected from these two wells on 18 June 2002 contained PCE at concentrations of 21 and 51 µg/l, respectively. The detected concentrations exceed Ecology's Model Toxic Control Act (MTCA) Method A PCE cleanup level for potable groundwater of 5 µg/l. PCE was not detected in the upgradient well MW-1.

- The sample collected from well MW-3 contained 0.4 and 0.3 µg/l of trichloroethene (TCE) during the 22 May and 18 June 2002 sampling events, respectively. TCE was not detected in the other two wells.

- Vinyl chloride was not detected above the detection limit of 0.02 µg/l in the samples collected from the monitoring wells during the 22 May 2002 sampling events. The samples collected on 18 June 2002 were not analyzed using the EPA Method 8260 SIM.

- Relatively low concentrations of other VOCs, including acetone, chloromethane, 1,1-dichloroethene, and chloroform were detected during both sampling events in wells MW-2 and MW-3 as well, as in the upgradient well MW-1. Of these VOCs, acetone was the compound detected at the highest concentration of 2.7 µg/l detected in well MW-3 in 18 June 2002.

Please call Said Amali at (503) 295-4911 if you have any questions regarding the content of this letter report.

Very truly yours,

KENNEDY/JENKS CONSULTANTS

Said Amali, Ph.D., P.E.
Project Manager

Attachments

cc: Mr. Leonard Kreppel, The Benenson Capital Company, New York, New York (with attachments)
Ms. Beth Ginsberg, Stoel Rives, Seattle, Washington (with attachments)

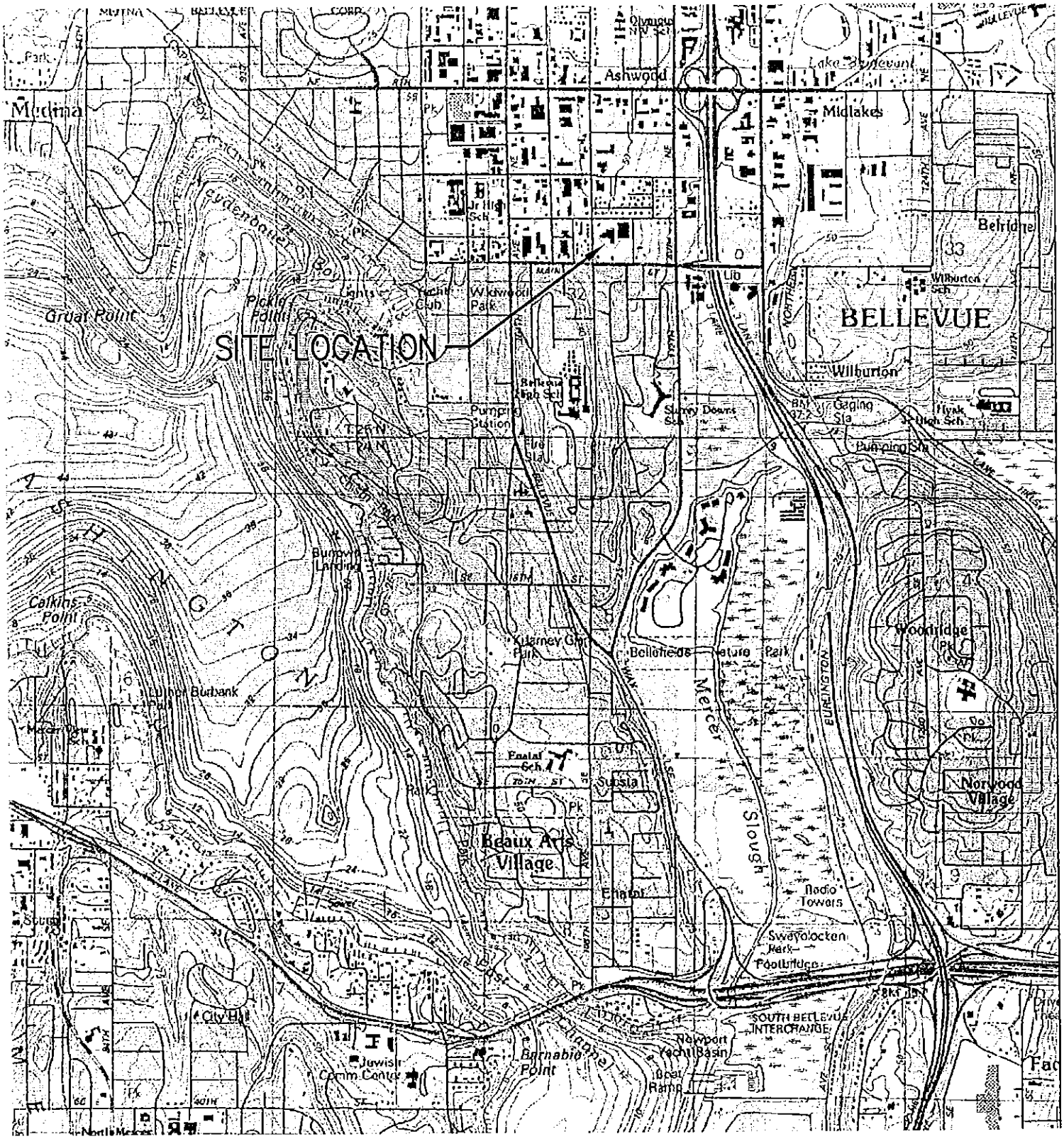
Table

TABLE 1
Groundwater Investigation Data Summary
The Shops at First Street Site
Bellevue, Washington

Parameter	Well								
	MW-1			MW-2			MW-3		
Date:	5/22/2002	5/31/2002	6/18/2002	5/22/2002	5/31/2002	6/18/2002	5/22/2002	5/31/2002	6/18/2002
Top of Casing Elevation (feet MSL)[b]	153.90	153.90	153.90	150.04	150.04	150.04	144.86	144.86	144.86
Depth to Groundwater (feet MSL)[(b)]	103.65	103.56	103.44	106.13	100.25	100.07	109.31	95.02	94.88
Groundwater Elevation (feet)	50.25	50.34	50.46	43.91	49.79	49.97	35.55	49.84	49.98
Well Screen Interval (feet)[c]	100-115	100-115	100-115	95-110	95-110	95-110	105-115	105-115	105-115
Volatile Organic Compounds[(d)] (µg/l)[(e)]									
Acetone	<1.8[(f)]	NS[(g)]	1.6	<2.9 (<30)	NS	1.8 (<3.0)	<1.0 (<20)	NS	2.7 (<10)
Chloromethane	<0.2	NS	<0.2	0.2[(h)] (<0.6)	NS	<0.2 (<0.6)	0.5 (<4.0)	NS	<0.5 (<2.0)
1,1-Dichloroethene	<0.020	NS	<0.2	<0.020	NS	<0.2 (<0.6)	0.047	NS	<0.2 (<2.0)
Chloroform	<0.2	NS	<0.2	<0.2 (<0.6)	NS	<0.2 (<0.6)	0.4 (<4.0)	NS	<0.2 (<2.0)
Trichloroethene	<0.2	NS	<0.2	<0.2 (<0.6)	NS	<0.2 (<0.6)	0.4 (4.0)	NS	<0.3 (<2.0)
Tetrachlorethene	<0.2	NS	<0.2	18[(i)] (19)	NS	25[(i)] (21)	66[(i)](99)	NS	52[(i)] (51)
Vinyl Chloride	<0.02	NS	NA[(g)]	<0.02	NS	NA	<0.02	NS	NA

(a) State of Washington Department of Ecology Model Toxics Control Act Method A Cleanup Levels for Potable Groundwater, February 2001.
(b) Feet above mean sea level. Survey, conducted 31 May 2002, based on City of Bellevue B.M. 373R, top of monument in case at the intersection of Main St. and 108th Avenue NE, elevation = 132.95 feet.
(c) Well screen interval is in feet below ground surface.
(d) Analysis conducted by EPA Method 8260B except vinyl chloride and 1,1-dichloroethene were analyzed using EPS Method 8260 SIM. Concentrations in parenthesis represent results after dilution.
(e) µg/l = micrograms per liter.
(f) < = analyte not detected above the laboratory reporting limit.
(g) NS = Not sampled, NA = Not sampled.
(h) Indicates an estimated value of analyte found and confirmed by analyst but with low spectoral match (GC/MS).
(i) Indicates a value above the linear range of the detector. Sample dilution required.

Figures



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0 1000 2000

APPROXIMATE SCALE IN FEET
1 CENTIMETER ON THE MAP REPRESENTS
250 METERS ON THE GROUND
CONTOUR INTERVAL 5 METERS

N

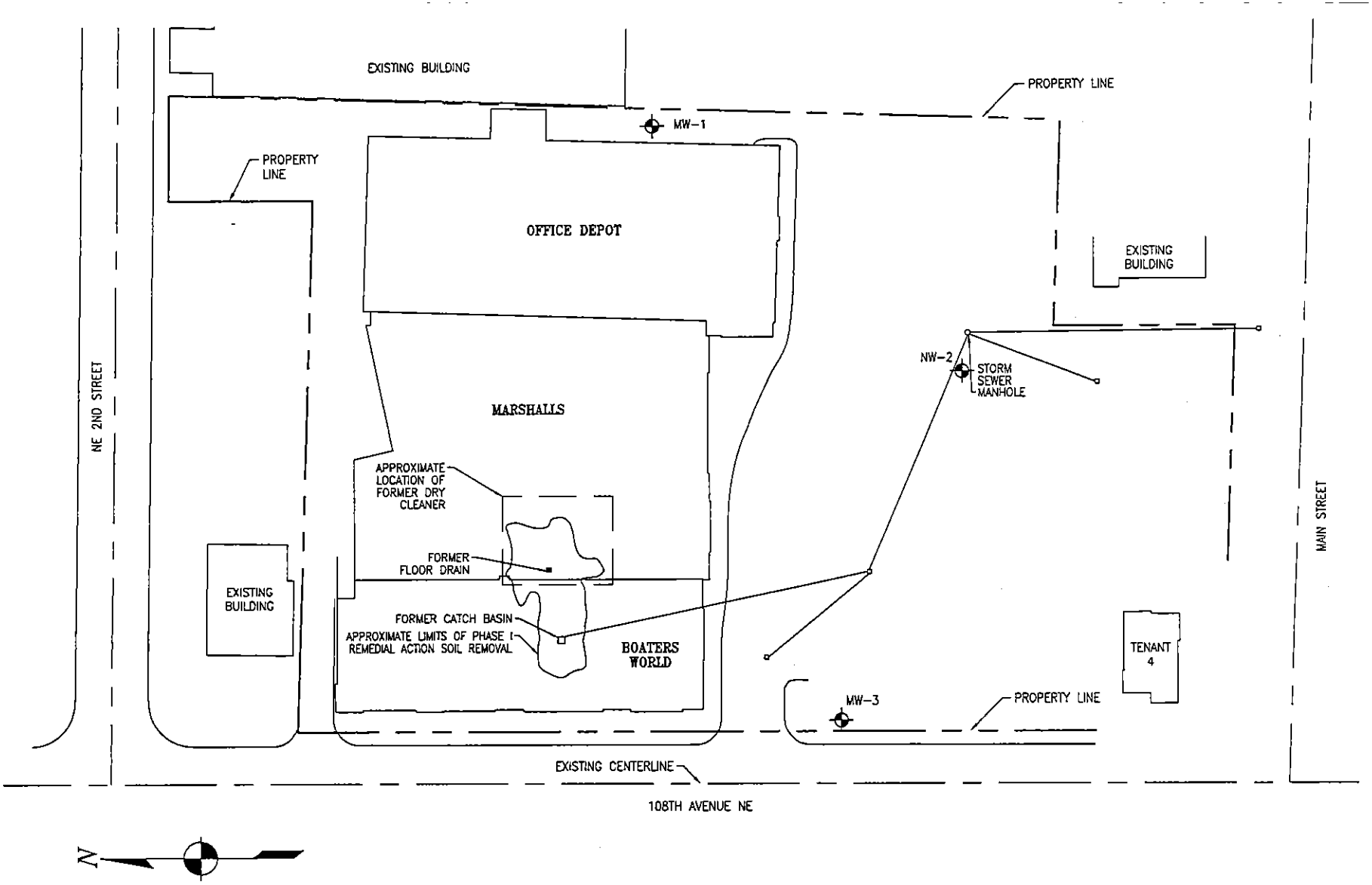
REFERENCE: USGS 7.5' TOPOGRAPHIC QUADRANGLE
BELLEVUE SOUTH, 1983.

BENENSON CAPITAL COMPANY
BELLEVUE, WA

SITE LOCATION MAP

K/J 946059.00/P02SK001

FIGURE 1



LEGEND:

MW-1 GROUNDWATER MONITORING WELL LOCATION

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BENENSON CAPITAL COMPANY
BELLEVUE, WA

GROUNDWATER MONITORING WELL LOCATIONS

K/J 946059.00/P02SK002

FIGURE 2

Appendix A

Boring Logs and Well Construction Schematics

Boring & Well Construction Log

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BORING LOCATION: Alley E of Office Depot	Boring/Well Name: MW-1
DRILLING COMPANY: Cascade	DRILLER: Brian
DRILLING METHOD (S): HSA	DRILL BIT (S) SIZE: 9"
ISOLATION CASING: 2" Sched 40 PVC Pipe	FROM 0 TO 100 FT.
BLANK CASING: 2" Sched 40 PVC 0.010 slot	FROM 100 TO 115 FT.
PERFORATED CASING	FROM TO FT.
SIZE AND TYPE OF FILTER PACK: Lapis Lustre #2/12 Monterey Sand	FROM 98 TO 115 FT.
SEAL: Pure Gold bentonite chips	FROM 9 TO 98 FT.
GROUT: concrete	FROM 0 TO 9 FT.
Project Name: Benenson	
Project Number:	
ELEVATION AND DATUM	TOTAL DEPTH: 115
DATE STARTED: 5/15/02	DATE COMPLETED: 5/15/02
STATIC WATER ELEVATION: ≈106	
LOGGED BY: DKWM	
SAMPLING METHODS: Split Spoon	WELL COMPLETION: ☒ SURFACE HOUSING ☐ STAND PIPE ____ FT.

SAMPLES Type No.	Recovery (Feet)	Penetration Resist. (Blows/6 in.)	Depth (Feet)	WELL CONSTRUCTION	USCS Log ovm	Lithology	Color	SAMPLE DESCRIPTION and DRILLING REMARKS
1	22	50	5		0.5			brn/lt brn silt w/10-15% FS & 15-20% gravel. dry. No odor
	0.5	50	10		0.2			brn FS/silt matrix w/10-20% FG/MG. No odor. dry. somewhat sandier in top 1/2 of sample
	0.5	50	15		0.2			lt brn, slt/FS matrix w/ 20-25% FG/MG. No odor. Dry.
	0.3	60	20		0.2			dense, hard, slt moist 60/40 silt/FS matrix, 10-20% FG/MG. No odor. lt brn.
	1.5	50	25		0.3			
	1.2	60	30		0.3			gray to brn, dense, hard, slt. moist, FS/silt matrix w/15-25% FG/MG. No odor.
			35					

F-40.1
(6-87) (3-88)

SHEET 1 OF 4

Boring & Well Construction Log

Kennedy/Jenks Consultants

BORING LOCATION Alley E of Office Depot	Boring/Well Name MW-1, cont'd
DRILLING COMPANY	DRILLER
DRILLING METHOD (S)	DRILL BIT (S) SIZE:
ISOLATION CASING	FROM TO FT.
BLANK CASING	FROM TO FT.
PERFORATED CASING	FROM TO FT.
SIZE AND TYPE OF FILTER PACK	FROM TO FT.
SEAL	FROM TO FT.
GROUT	FROM TO FT.
Project Name	
Project Number	
ELEVATION AND DATUM	TOTAL DEPTH
DATE STARTED	DATE COMPLETED
STATIC WATER ELEVATION	
LOGGED BY	
SAMPLING METHODS	WELL COMPLETION ☐ SURFACE HOUSING ☐ STAND PIPE ____ FT.

SAMPLES Type No.	Recovery (Feet)	Penetration Resist (Blows/6 in.)	Depth (Feet)	WELL CONSTRUCTION	USCS Log	Lithology	Color	SAMPLE DESCRIPTION and DRILLING REMARKS
	0.2	51	40		0.2			Gray/brn, dense, hard, silt moist, FS/silt matrix w/25-35% FG/MG. No odor
	0.2	50	45		0.4			Top: same as above Bot: lt brn, FS (40-45%), silt (25-30) FG (25-30%) - dry. No odor
	0.3	50	50		0.4	/		brn, FS/silt matrix, 50-60% gravel in spoon, broken larger clasts. No odor.
								Hard chippy drilling.
	0.5	50	55		0.2			Rock in tip - brn, dense, hard, 30-35% FG/MG, ≈40% silt, 25-30% FS; No odor. Silt moist.
	X	80	60		X			Rock stuck in tip--no recovery
	1.4	80	65		0.4			gray/brn, very dense, hard, 25-30% FG/MG, ~~no~~ FS 40-45% silt, 15-20% ~~silt~~ silt, moist, no odor
	1.5	85	70		0.2			gray/brn, very dense, hard, silt moist, 10-15% FS, ≈25% FG/MG, ≈60% silt No odor

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SHEET 2 OF 4

Boring & Well Construction Log

Kennedy/Jenks Consultants

BORING LOCATION Alley E of Office Depot	**Boring/Well Name** MW-1, contd
DRILLING COMPANY / DRILLER	**Project Name**
DRILLING METHOD (S) / DRILL BIT (S) SIZE:	**Project Number**
ISOLATION CASING — FROM TO FT.	ELEVATION AND DATUM / TOTAL DEPTH
BLANK CASING — FROM TO FT.	DATE STARTED / DATE COMPLETED
PERFORATED CASING — FROM TO FT.	STATIC WATER ELEVATION
SIZE AND TYPE OF FILTER PACK — FROM TO FT.	LOGGED BY
SEAL — FROM TO FT.	SAMPLING METHODS / WELL COMPLETION ☐ SURFACE HOUSING ☐ STAND PIPE ____ FT.
GROUT — FROM TO FT.	

SAMPLES Type No.	Recovery (Feet)	Penetration Resist (Blows/6 in.)	Depth (Feet)	WELL CONSTRUCTION	USCS Log	Lithology	Color	SAMPLE DESCRIPTION and DRILLING REMARKS
	0.5	70	70		0.5			Gray, dense, hard, silt moist, 25-30 FG/MG, 50-55% silt, 15-20% FS. No odor.
	0.5	60	75		0.4			lt brn, 10-15% FS, 45-55% silt, FG/MG. dense. slt moist. no odor.
	0.5	65	80		0.3			slt moist, no odor, brn/gray Top: dense gray silt w/ FS (10-15%) & ≈20-30% FG/MG Bt: FG QFS/MS, some silt, some gravel
	0.2	60	85		0.4			gray, very hard, dense, dry, 55-60% silt, ≈10% FS, FG/MG. no odor.
	0.1	60	90		0.5			very little recovery -- rock stuck in tip.
	0.5	60	95		0.5			≈ slt damp, no odor. Top: gray/brn, dense, silt distinct w/ sand & gravel Bot: Brn, MS ± FS 55-60%, ≈35% gravel, some silt.
	0.1		100		0.6			very little recovery -- rock in tip mat'l in spoon is ≈10-15% silt, 30-35% FG/MG, ≈50% MS/FS. slt moist, no odor
			MS					

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SHEET 5 OF 6

Boring & Well Construction Log

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BORING LOCATION East of Office Depot	**Boring/Well Name** MW-1, cont'd
DRILLING COMPANY / DRILLER	**Project Name**
DRILLING METHOD (S) / DRILL BIT (S) SIZE:	**Project Number**
ISOLATION CASING FROM TO FT.	ELEVATION AND DATUM / TOTAL DEPTH
BLANK CASING FROM TO FT.	DATE STARTED / DATE COMPLETED
PERFORATED CASING FROM TO FT.	STATIC WATER ELEVATION ≈106
SIZE AND TYPE OF FILTER PACK FROM TO FT	LOGGED BY
SEAL FROM TO FT.	SAMPLING METHODS / WELL COMPLETION ☐ SURFACE HOUSING ☐ STAND PIPE ____ FT.
GROUT FROM TO FT.	

SAMPLES Type No.	Recovery (Feet)	Penetration Resist (Blows/6 in.)	Depth (Feet)	WELL CONSTRUCTION	USCS / Log / OVA	Lithology	Color	SAMPLE DESCRIPTION and DRILLING REMARKS
	1.5	50	105	water in auger @ 106	0.4			wet, Brn MS/FS w/5-10% silt. Silt% seems to decrease w/depth; sand coarsens downward in spoon. (Silt @ top of spoon -- (≤1" maybe slough, but is dense & silt wet)
	1		110		0.3			
			115					wet PG MS w/≈5% FG ± silt.

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SHEET ____ OF ____

Boring & Well Construction Log

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BORING LOCATION: 15' West of Manhole	Boring/Well Name: B5/MW2
DRILLING COMPANY: Cascade — DRILLER: Brian	Project Name:
DRILLING METHOD (S): HSA — DRILL BIT (S) SIZE: 9"	Project Number:
ISOLATION CASING — FROM TO FT.	ELEVATION AND DATUM — TOTAL DEPTH: 110
BLANK CASING: 2" Sched 40 PVC pipe — FROM 0 TO 95 FT.	DATE STARTED: 5/14/02 — DATE COMPLETED: 5/14/02
PERFORATED CASING: 2" Sched 40 PVC Pipe, 0.010 slot — FROM 110 TO 95 FT.	STATIC WATER ELEVATION: ≈102
SIZE AND TYPE OF FILTER PACK: Lapis Luster #2/12 Monterey Sand — FROM 110 TO 93 FT.	LOGGED BY: DKM
SEAL: Pure Gold Bentonite chips — FROM 7 TO 93 FT.	SAMPLING METHODS: Split Spoon — WELL COMPLETION: ☒ SURFACE HOUSING ☐ STAND PIPE ___ FT.
GROUT: Concrete — FROM 0 TO 7 FT.	

Samples: Type No.	Recovery (Feet)	Penetration Resist (Blows/6 in)	Depth (Feet)	Well Construction	USCS Log / OVA	Lithology	Color	Sample Description and Drilling Remarks
				(ms/ks pct)				
	0.5	50	5	B5-4 9:50 no split (<50)	1.9			lt brn, dense, silty sand/sandy silt w/15-20% gravel. Slt-moist. v. slt odor?
	0.3	50	10	B5-9 9:35 (<50)	0.6			No odor
	0.5	50	15	B5-14 9:40 No split (<50)	0.8			hard, dry, silt/Fine sand matrix (60-70%) & FG/MG. No apparent odor
	0.5	60	20	B5-19 9:45	0.2			slightly sandier -- 45% 20-30% gravel, 40% sand, 30-35% silt. No odor. Hard
	0.3	65	25	B5-24 9:50 no split	3.4			
	.5	60	30	B5-29 10:00	30			10-20% FG/MG in w 50-60% FS ±ms, some silt, hard, slt-moist. No odor
	1.4	50	35	B5-34 10:01	1.9			lt brn, 20-25% gravel, 40% silt, ≈35% FS ±MS, dense, No odor

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SHEET 1 OF ___

Boring & Well Construction Log

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BORING LOCATION	15' West of MH	**Boring/Well Name**	B5/MW2
DRILLING COMPANY	DRILLER	**Project Name**	Benenson
DRILLING METHOD (S)	DRILL BIT (S) SIZE:	**Project Number**	
ISOLATION CASING	FROM TO FT.	ELEVATION AND DATUM	TOTAL DEPTH
BLANK CASING	FROM TO FT.	DATE STARTED	DATE COMPLETED
PERFORATED CASING	FROM TO FT.	STATIC WATER ELEVATION	
SIZE AND TYPE OF FILTER PACK	FROM TO FT.	LOGGED BY	
SEAL	FROM TO FT.	SAMPLING METHODS	WELL COMPLETION ☐ SURFACE HOUSING ☐ STAND PIPE ____ FT.
GROUT	FROM TO FT.		

SAMPLES Type No.	Recovery (Feet)	Penetration Resist (Blows/6 in.)	Depth (Feet)	WELL CONSTRUCTION	USCS Log	Lithology	Color	SAMPLE DESCRIPTION and DRILLING REMARKS
			35					
	0.4	50	40	B5-39 10:15	2.3			lt brn, hard, 60-70% FS/silt ± MS matrix, w/FG to MG. No solvent odor. dry
	0.5	50	45		0.8			lt brn, dry, 20-25% FG, 40-45% silt, ≈25% FS ± MS. No odor
	0.5	50	50		2.3			dense, hard, 25-35% FG/MG, silt/FS matrix ± MS, slightly more silt than sand no odor.
	0.5	60	55		1.3			lt brn, ≈20% silt, 25-30% gravel, FS ± MS, hard, no odor, dry
	0.5	50	60		1.2			lt brn, dense, dry, 30-35% FG to MG, Matrix ≈ even silt/FS (± MS)
	0.5	60	65		4.6			brn, dense, silt moist, 25-30% gravel, 40-45% silt, 25-30% FS. No odor
	0.5		70		0.6			brn, dense, silt moist, 30-35% FG/MG, 10-20% FS ± MS, ≈40-50% silt. No odor

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SHEET 2 OF ____

Boring & Well Construction Log

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BORING LOCATION 15' West of MH		**Boring/Well Name** BS/MW-2	
DRILLING COMPANY	DRILLER	**Project Name** Renenson	
DRILLING METHOD (S)	DRILL BIT (S) SIZE:	**Project Number**	
ISOLATION CASING	FROM TO FT.	ELEVATION AND DATUM	TOTAL DEPTH
BLANK CASING	FROM TO FT.	DATE STARTED	DATE COMPLETED
PERFORATED CASING	FROM TO FT.	STATIC WATER ELEVATION	
SIZE AND TYPE OF FILTER PACK	FROM TO FT.	LOGGED BY	
SEAL	FROM TO FT.	SAMPLING METHODS	WELL COMPLETION ☐ SURFACE HOUSING ☐ STAND PIPE ____ FT.
GROUT	FROM TO FT.		

SAMPLES Type No.	Recovery (Feet)	Penetration Resist (Blows/6 in.)	Depth (Feet)	WELL CONSTRUCTION	USCS Log	Lithology	Color	SAMPLE DESCRIPTION and DRILLING REMARKS
			70					
	0.5	50	75		0.4 / 0.3			Top brn, slt moist, 30-35% FG/MG; 10-20% FS, Silt. No odor. Dense Bot: 40-45% MG/FG, 45-50% FS/MS, some Silt (5-15%) No odor.
	0.5	60	80		0.5			lt brn, "textural layering" • FS/MS w/40% gravel ± silt some gravel (• silty sand/sand silt • Fine Sand (±MS) w/silt Slt. moist; no odor
	0.5	50	85		0.5			H brn, slt moist, dense, hard, 10-15% FS, 35-40% FG/MG, Silt. No odor. Till.
	0.5	50	90		0.6			brn, slt. moist, no odor, MS/FS ≈ 50% with 40-45% FG/MG (larger broken pieces in spoon also); some silt.
	0.5	50	95		0.5			brn, slt moist, no odor, ≈ 45% gravel, 45% FS/MS; 10% silt. Some broken larger gravel clasts in spoon
	0.5	50	100		0.3			brn FS/Silt matrix ≈ 70% ± clay?. FG/MG ≈ 30% no odor slt. moist
	0.5	50	105		0.4			saturated; ≈ 45% gravel, 45% FS/MS, 10% silt Spoon up w/wet sand middle

F-40.1
(6-87) (3-88)

SHEET 3 OF ____

Boring & Well Construction Log

Kennedy/Jenks Consultants

BORING LOCATION 15' West of MH		**Boring/Well Name** BS/MW-2	
DRILLING COMPANY	DRILLER	**Project Name** Benenson	
DRILLING METHOD (S)	DRILL BIT (S) SIZE:	**Project Number**	
ISOLATION CASING	FROM TO FT.	ELEVATION AND DATUM	TOTAL DEPTH 110
BLANK CASING	FROM TO FT.	DATE STARTED	DATE COMPLETED
PERFORATED CASING	FROM TO FT.	STATIC WATER ELEVATION	
SIZE AND TYPE OF FILTER PACK	FROM TO FT.	LOGGED BY	
SEAL	FROM TO FT.	SAMPLING METHODS	WELL COMPLETION ☐ SURFACE HOUSING ☐ STAND PIPE ____ FT.
GROUT	FROM TO FT.		

SAMPLES Type No.	Recovery (Feet)	Penetration Resist (Blows/6 in.)	Depth (Feel)	WELL CONSTRUCTION	USCS Log	Lithology	Color	SAMPLE DESCRIPTION and DRILLING REMARKS
			105					saturated, brn ~~gy~~ MS w/ some Fs & Silt. Poorly graded 5-10% mostly Q
1	0.5	50	110		0.2			
			115					

F-40.1
(6-87) (3-88)

SHEET 4 OF ____

Boring & Well Construction Log

Kennedy/Jenks Consultants

BORING LOCATION: South of Boater's World	Boring/Well Name: MW-3
DRILLING COMPANY: Cascade	DRILLER: Brian
DRILLING METHOD (S): HSA	DRILL BIT (S) SIZE: 9"
Project Name: Benenson	
Project Number:	
ELEVATION AND DATUM:	TOTAL DEPTH: 115
DATE STARTED: 5/16/02	DATE COMPLETED: 5/16/02
STATIC WATER ELEVATION: 102 (Sat @ water = 107)	
LOGGED BY: DKM	
SAMPLING METHODS: Split Spoon	WELL COMPLETION: ☒ SURFACE HOUSING ☐ STAND PIPE ____ FT.

	FROM	TO	FT.
ISOLATION CASING			
BLANK CASING: 2" Sched 40 PVC Pipe	0	105	FT.
PERFORATED CASING: 2" Sched 40 PVC 0.010 slot	105	115	FT.
SIZE AND TYPE OF FILTER PACK: Lapis Lustre #2/12 Monterey Sand	103	115	FT.
SEAL: Pure Gold Bentonite Chips	8	103	FT.
GROUT: Concrete	0	8	FT.

SAMPLES Type No.	Recovery (Feet)	Penetration Resist (Blows/6 in.)	Depth (Feet)	WELL CONSTRUCTION	USCS Log	Lithology	Color	SAMPLE DESCRIPTION and DRILLING REMARKS
			0					≈2' angular gravel/sand/silt fill above filter fabric
	0.5	50	5		0.3			brn, dense, 55-60% silt, 15-20% FG/MG, 20-25% FS, slt moist, no odor.
	0.5	50	10		0.3			brn, dense, 10-15% FS, 20-25% gravel, 60-70 silt, slt moist, no odor
	0.3	50	15		0.4			brn, dense, 15-20% FS±MS, 25-35% FG/MG, 55-60% silt, no odor, slt moist
	0.5	55	20		0.4			brn, 25-35% FG/MG, ≈ 50/50 FS/silt matrix, slt moist, no odor.
	X	65	25	Rock in Tip				No recovery other than 2 gravel clasts
	0.3	60	30		0.3			gray/brn, dense, slt moist, ≈65-70% silt/FS matrix w/ FG/MG. No odor.
			35					

F-40.1
(6-87) (3-88)

SHEET 1 OF 1

Boring & Well Construction Log — **Kennedy/Jenks Consultants**

BORING LOCATION South of Border's World		**Boring/Well Name** MW-3	
DRILLING COMPANY	DRILLER	**Project Name**	
DRILLING METHOD (S)	DRILL BIT (S) SIZE:	**Project Number**	
ISOLATION CASING	FROM TO FT.	ELEVATION AND DATUM	TOTAL DEPTH
BLANK CASING	FROM TO FT.	DATE STARTED	DATE COMPLETED
PERFORATED CASING	FROM TO FT.	STATIC WATER ELEVATION	
SIZE AND TYPE OF FILTER PACK	FROM TO FT.	LOGGED BY	
SEAL	FROM TO FT.	SAMPLING METHODS	WELL COMPLETION ☐ SURFACE HOUSING ☐ STAND PIPE ____ FT.
GROUT	FROM TO FT.		

SAMPLES Type No.	Recovery (Feet)	Penetration Resist (Blows/6 in.)	Depth (Feet)	WELL CONSTRUCTION	USCS Log	Lithology	Color	SAMPLE DESCRIPTION and DRILLING REMARKS
	10.5	55	30		0.2			gry/brn, dense, dry, 65-70% FS/silt matrix w/ FG, no odor
	10.4	70	40		0.1			several broken large clasts in spoon brn gray, hard, dry, 30-35 FG/MG. ≈35-40% FS ± MS, ≈20-25% Silt. No odor.
								(hard, chippy drilling)
	10.5	70	45		0.2			brn/gray, dense, hard, ≈35% FG/MG, Matrix ≈ 60% FS/40% silt ± MS, slt moist, no odor.
	11.0	30 50-4	50		0.2		distinct	upper ½: brn/gray, dense, 60-70% silt/FS matrix w/FG/MG lower ½: gray, moist, Silt with 5-10% fine gravel, ± clay? dense.
	10.5	70	55		0.1			30-35% FG/MG, 35-40% Silt, 25-30% FS, dense, hard, slt moist, no odor
	10.5	70	60		0.2			gray/brn, hard, dense, slt. moist, ≈5-30% gravel, 30-35% FS, 40-45% silt. no odor.
			65		0.3			top ½: FS/silt matrix w/ 25-30% gravel, dense, slt moist grad. ↓ bot ½: 30-35% gravel, Matrix is ≈70% FS & 30% silt. slt moist, no odor
			70					

Boring & Well Construction Log

Kennedy/Jenks Consultants

BORING LOCATION: South of Boater's World		**Boring/Well Name** MW-3	
DRILLING COMPANY	DRILLER	**Project Name**	
DRILLING METHOD (S)	DRILL BIT (S) SIZE:	**Project Number**	
ISOLATION CASING	FROM TO FT.	ELEVATION AND DATUM	TOTAL DEPTH
BLANK CASING	FROM TO FT.	DATE STARTED	DATE COMPLETED
PERFORATED CASING	FROM TO FT.	STATIC WATER ELEVATION	
SIZE AND TYPE OF FILTER PACK	FROM TO FT.	LOGGED BY	
SEAL	FROM TO FT.	SAMPLING METHODS	WELL COMPLETION ☐ SURFACE HOUSING ☐ STAND PIPE ____ FT.
GROUT	FROM TO FT.		

SAMPLES Type No.	Recovery (Feet)	Penetration Resist (Blows/6 in.)	Depth (Feet)	WELL CONSTRUCTION	USCS Log	OVM	Lithology	Color	SAMPLE DESCRIPTION and DRILLING REMARKS
	0.5	50	70			0.2			Gray/brn, very dense, hard, 30-35% Gravel (FG/MG), 40-45% silt, 25-30% FS, slt. moist, no odor.
	0.5	50	75			0.4			brn, dense, hard, slt moist 30-40% FG/MG; matrix 75 = 60% silt 40% FS. no odor
	0.5	50	80			0.1			brn, dense, hard, 30-40% gravel; ≈ 50% silt, 15-20% silt moist, no odor FS.
	0.5	50	85			0.1			brn, ≈20-30% gravel, 30-35% FS, 30-35% silt overall. - some vague "layering", large "blob" of dense gray silt in lower ⅓ of sample, clast in t'D
	0.5		90			0.1			brn, damost, 15-20% gravel, 10-15% silt, FS/MS remainder. No odor. Coarsens down somewhat in ~~room~~
	0.5	50	95			0.3			Driller-wet @ 94' (Perched?) brn, moist, hard, 30-35% gravel, matrix to 50/50 FS & silt. No odor
	0.5	50	100			0.3			gray, dense, hard, dense wet around edges, but not inside - Matrix ≈70% (70/30 silt/FS). FG/MG. No odor. Forgot photo.
			105						

F-40.1
(6-87) (3-88)

SHEET 3 OF 4

Boring & Well Construction Log

Kennedy/Jenks Consultants

BORING LOCATION: South of Boater's World		**Boring/Well Name** MW-3	
DRILLING COMPANY	DRILLER	**Project Name**	
DRILLING METHOD (S)	DRILL BIT (S) SIZE:	**Project Number**	
ISOLATION CASING	FROM TO FT.	ELEVATION AND DATUM	TOTAL DEPTH
BLANK CASING	FROM TO FT.	DATE STARTED	DATE COMPLETED
PERFORATED CASING	FROM 105 TO 115 FT.	STATIC WATER ELEVATION	
SIZE AND TYPE OF FILTER PACK	FROM TO FT.	LOGGED BY	
SEAL	FROM TO FT.	SAMPLING METHODS	WELL COMPLETION ☐ SURFACE HOUSING ☐ STAND PIPE ____ FT.
GROUT	FROM TO FT.		

SAMPLES Type No.	Recovery (Feet)	Penetration Resist (Blows/6 in.)	Depth (Feet)	WELL CONSTRUCTION	USCS Log (N/A)	Lithology	Color	SAMPLE DESCRIPTION and DRILLING REMARKS
	0.2		105		0.2			Grey, dense, hard, silt moist large clasts in sampler, matrix 70/30 silt/FS.
	0.5		110		0.5			brn MS (±FS) w 5-10% FG/MF, some silt, wet water @ 10' in hole
	0.5		115		0.9			brn, MS ± FS, 5-10% FG, some silt, wet.

F-40.1
(6-87) (3-88)

SHEET 4 OF 4

RESOURCE PROTECTION WELL REPORT

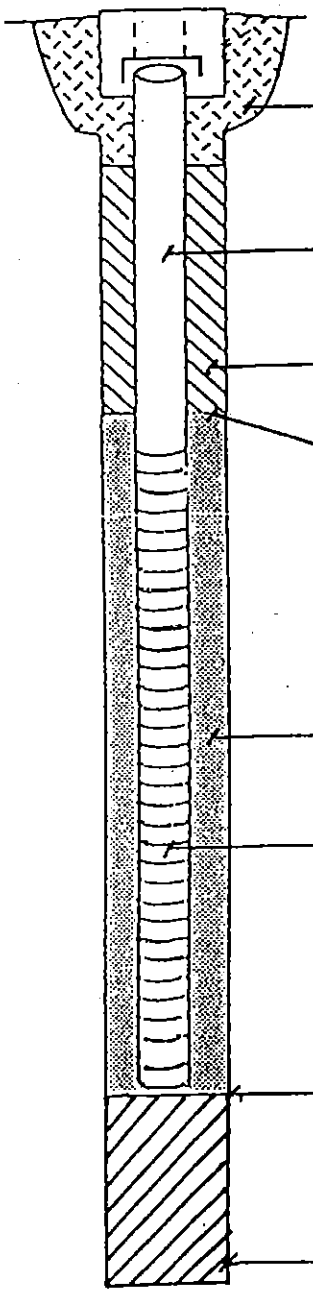
Start Card # R 61655

Client Well # _____
Project Name: Benenson Capital Shops
State Identification # AHB 194
Drilling Method: HSA
Driller: Brian G. Gooe
Firm: Cascade Drilling, Inc.
Signature: _____
Consulting Firm: Kennedy/Jenks
Representative: Dean Malte

County: KING
Location: SW 1/4 NE 1/4 Sec 32 Twn 25N R 5E
Street Address of Well: 100-108th Ave NE, Bellevue
Water Level Elevation: 102'
Ground Surface Elevation: N/A
Date Installed: 5/14/02
Date Developed: N/A

2241

AS-BUILT



WELL DATA

Well Cover

Concrete Surface Seal
Depth = 8 /ft

Blank Casing 2 " 95 '
Material PVC

Backfill 86 ft
Type: Bent. Chips

Seal _____
Material _____

Gravel Pack 17 ft
Material: 2/12 Sand

Screen 2 "x 15 '
Slot Size .010
Material PVC

Well Depth 110 ' ___ "

Backfill _____
Material _____
Total Hole Depth _____

FORMATION DESCRIPTION

0 - 95 ft
Brown/grey silts, sands + gravels

95 - 110 ft
Brown sand + gravels

- ft

SCALE: 1" = _____

PAGE _____ OF _____

ECY 050-12 (Rev. 11/89)

RESOURCE PROTECTION WELL REPORT

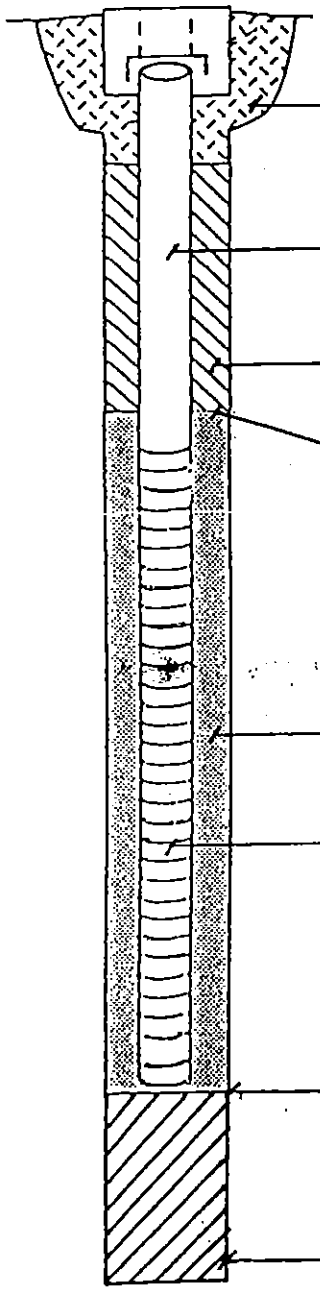
Start Card # R 61655

Client Well # _____
Project Name: Benenson Capital Shops
State Identification # AHB 195
Drilling Method: HSA
Driller: Brian G. Gooe
Firm: Cascade Drilling, Inc.
Signature: _____
Consulting Firm: Kennedy/Jenks
Representative: Dean Malte

County: KING
Location: SW 1/4 NE 1/4 Sec 32 Twn 25N R 5E
Street Address of Well: 100-108th Ave NE, Bellevue
Water Level Elevation: 106
Ground Surface Elevation: N/A
Date Installed: 5/15/02
Date Developed: No

2241

AS-BUILT



WELL DATA

Well Cover

Concrete Surface Seal
Depth = ~~0~~ ft

Blank Casing 2 " 100 '
Material PVC

Backfill 90 ft
Type: bent. Chips

Seal _____
Material _____

Gravel Pack 17 ft
Material: #10

Screen 2 "x 15 '
Slot Size #10
Material PVC

Well Depth 115 ' ___ "

Backfill _____
Material _____
Total Hole Depth _____

FORMATION DESCRIPTION

0 - 90 ft
Brown/grey silts, sands

90 - 115 ft
Brown sand + gravels

___ - ___ ft

SCALE: 1" = _____

PAGE _____ OF _____

ECY 050-12 (Rev. 11/89)

RESOURCE PROTECTION WELL REPORT

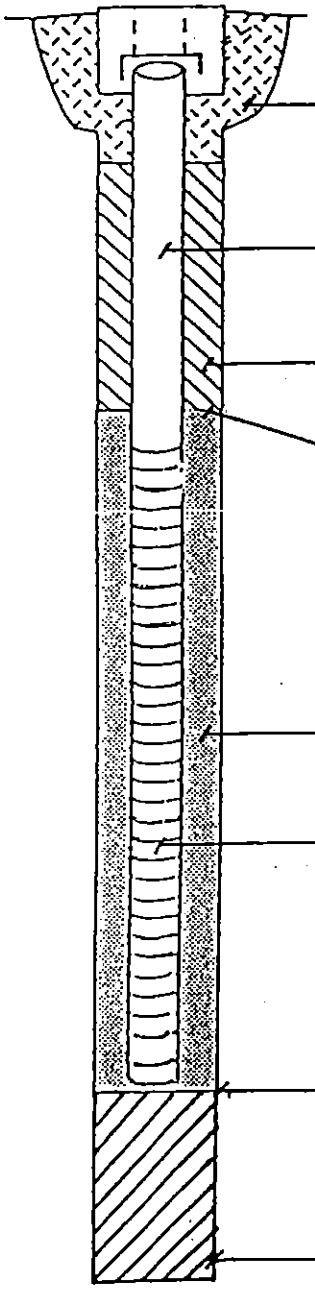
Start Card # R 61655

Client Well # _____
Project Name: Benenson Capital Shops
State Identification # AHB 196
Drilling Method: HSA
Driller: Brian G. Gooe
Firm: Cascade Drilling, Inc.
Signature: _____
Consulting Firm: Kennedy/Jenks
Representative: Dean Malte

County: KING
Location: SW 1/4 NE 1/4 Sec 32 Twn 25N R 5E
Street Address of Well:
100-108th Ave NE, Bellevue
Water Level Elevation: 105
Ground Surface Elevation: N/A
Date Installed: 5/16/02
Date Developed: No

2241

AS-BUILT



WELL DATA

Well Cover

Concrete Surface Seal
Depth = 7 /ft

Blank Casing 2 " 105'
Material PVC

Backfill 95' ft
Type: bent. chips

Seal _____
Material _____

Gravel Pack 12 ft
Material: 2/12 sand

Screen 2 "x 10'
Slot Size .010
Material PVC

Well Depth 115 ' "

Backfill _____
Material _____
Total Hole Depth _____

FORMATION DESCRIPTION

0 - 95 ft
Brown silts, sands + gravels

95 - 115 ft
Brown sand + gravel

- ft

SCALE: 1" = _____

PAGE _____ OF _____

ECY 050-12 (Rev. 11/89)