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Project Name SW Jacobsen Rd Sewer Rehab

Site Address S205/S207 SW Jacobsen Rd

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- [x] **Title page with the following information:**
  - [x] *Company (Author) name*
  - [x] *Report date*
  - [x] *Project Name*
  - [x] *Company's job number*
  - [x] *Site address*
- [x] Executive Summary / Introduction of the report
- [x] Table of contents
- [ ] Project Location Map / Vicinity Map
- [x] **Site / Exploration Plans, Boring Location Plans**
- [ ] Cross-sections / Subsurface profiles
- [x] **Exploration Logs**
- [ ] Monitoring Well Logs
- [ ] Cone Penetrometer Logs
- [ ] Groundwater Elevation Tables / Data

- [x] Includes data from Previous Reports 1969
- [ ] No new data / data review
- [ ] Missing Data / Illegible Data
  Explanation _____

Comments: _____

ArcView - JT

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Layer: JT

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10254

GEOTECHNICAL REPORT
5205/5207 SW JACOBSEN ROAD
SEWER REHABILITATION PROJECT
SEATTLE, WASHINGTON

Work Authorization No.: C301411
March 2001

Seattle
Public Utilities
Materials Laboratory

707 South Plummer Street
Seattle, Washington 98134

GEOTECHNICAL REPORT
5205/5207 SW JACOBSEN ROAD
SEWER REHABILITATION PROJECT
SEATTLE, WASHINGTON

1.0 INRODUCTION

1.1 GENERAL

The Seattle Public Utilities (SPU) Materials Laboratory completed a geotechnical engineering study for the design and construction of the referenced project in Seattle, Washington. The purpose of this geotechnical study is to explore and evaluate the surface and subsurface conditions at the site, and based on the conditions observed, provide conclusions and recommendations pertaining to geotechnical aspects of the project.

1.2 PROJECT DESCRIPTION

An illustration of the site layout, physical features and locations of borings completed for this and earlier projects (SED, 1969), is presented as Figure 1. The project is located along an SPU easement west of the residences at 5205 and 5207 SW Jacobsen Road (near the intersection with SW Hudson Street), in the residential West Seattle neighborhood. It focuses on a 76 lineal-foot section of 8-inch diameter ductile iron sewer pipe that flows from south to north between maintenance holes 060-048 and 060-049. The sewer pipe, which is approximately 4 feet deep, was constructed in 1977, and has become separated at joints located 2 feet and 21 feet north of MH 060-049. An approximately 5-foot high rockery and fill has been constructed near the pipe by the resident at 5207 SW Jacobsen Road. The toe of the rockery runs parallel to the pipe, approximately 1 to 2 feet east of the pipe alignment.

The property in the vicinity of the pipe is heavily landscaped, and is terraced with numerous low rockeries and retaining wall, making access to the easement difficult for equipment. We understand the planned method for rehabilitating the sewer is by open-cut methods. Because of the difficult access, we envision the use of either light excavating machines or hand digging to rehabilitate the pipe.

1.3 AUTHORIZATION AND SCOPE OF WORK

Our work was requested and authorized by representatives of SPU Water and Wastewater Engineering, and SPU Project Management. Our scope of work included:

5-foot high rockery and fill encroaches on the pipe from the east. The purpose of the rockery appears to be for leveling off the property. A wooden deck also encroaches on the pipe, with its pier foundations about 5 feet east of the pipe. Several ornamental trees, shrubs and bushes are planted at the property.

Numerous slides have been reported along SW Jacobsen Road in the past, and evidence of ground movement, such as leaning trees, cracked pavement and subsidence, can be observed near the site. Within the past few years, a slide has damaged a residence north of the site, resulting in it being condemned.

3.2 SUBSURFACE CONDITIONS

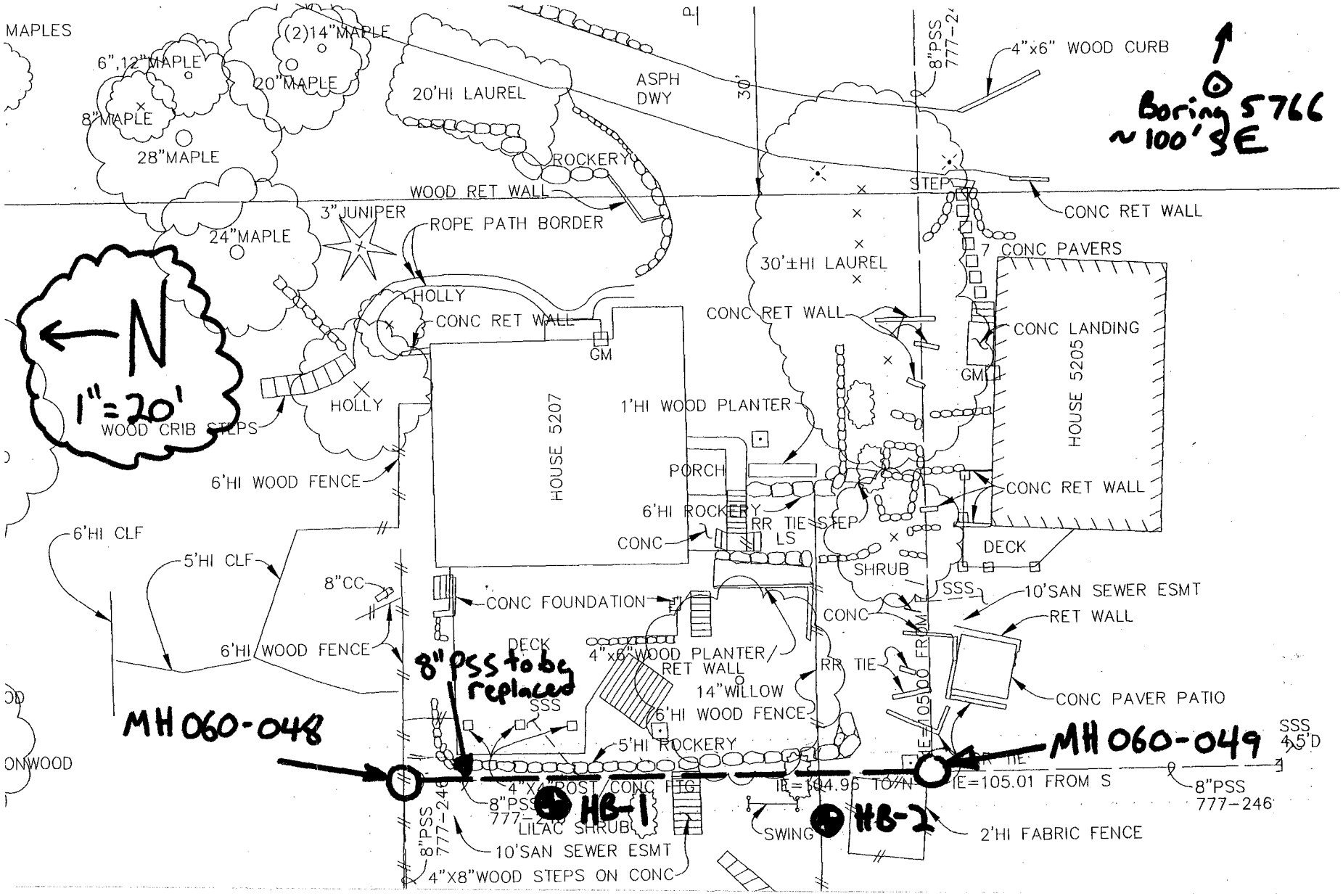
The surface geologic conditions at the project site are mapped (based on the City Geographic Information System) as Lawton Clay, with Esperance Sand being mapped within a couple hundred feet to the east. The results of our investigations and review of other nearby subsurface information were in general agreement with the mapped conditions, except a localized mantling of fill and colluvium was observed near the pipe.

The geologic units observed in our explorations are described below, in order from youngest to oldest. We based our interpretations of subsurface conditions on the results of our field exploration, review of available geologic and geotechnical data, and our general experience in similar geologic settings.

3.2.1 Fill

Fill was encountered at the surface in both borings completed for this study, and ranged in thickness from 4 to 5 feet. We did not investigate the composition of the fill behind (east of) the rockery, but speculate it consists of similar material to that observed in our borings. The fill encountered primarily consists of very loose, moist to wet, silty sand (SM)[1], with an appreciable percentage of gravel and trace amounts of organics and refuse (glass and plastic fragments). The natural water content of the fill ranged widely from about 17 to 32 percent. In general, the fill can be characterized by low to moderate shear strength, moderate compressibility, and low to moderate permeability. Since the fill contains a relatively high percentage of fines (materials passing the Standard U.S. No. 200 sieve), it is considered moisture sensitive, meaning it will degrade and become difficult to handle when wet of its optimum water content. The natural water content of the fill appears to be well in excess of its optimum water content.

[1] Soil classification symbols based on the unified soil classification system (USCS). Refer to ASTM D2487 and D2488



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WA: C301411

SW JACOBSEN ROAD SEWER REHABILITATION PROJECT
SEATTLE, WASHINGTON

SITE & EXPLORATION MAP

March 2001 **FIGURE 1**

APPENDIX A

FIELD EXPLORATION PROGRAM

Subsurface conditions were explored using hand auger drilling techniques. Two borings, HB-1 and HB-2, were completed to depths ranging from 7.5 to 8 feet, respectively, on March 1, 2001. The approximate locations of the explorations are illustrated on Figure 1 in the main body of the text. The explorations were located in the field by measuring with a cloth tape measure from the existing maintenance holes. The approximate ground surface elevations at the exploration locations were determined based on as-built sewer maps on record with the City of Seattle. The locations and elevations of the explorations should be considered accurate only to the degree implied by the methods used.

The borings were drilled by SPU Materials Laboratory personnel with 2½-inch and 3¾-inch inside diameter (ID) hand augers. The results of the explorations are summarized on the individual summary boring logs, which are included in this Appendix as Figures A-2 and A-3. A key to the symbols and terms used on the summary logs is presented as Figure A-1.

Soil samples were obtained from the cuttings at selected depth intervals. A ½-inch diameter steel probe was used to provide a qualitative measure of the relative density of cohesionless soil, or the relative consistency of fine-grained soils. Representative portions of all recovered samples were placed in sealed containers and transported to our laboratory for further observation and testing.

An SPU Materials Laboratory representative was present throughout the field exploration program to complete the explorations and sampling, and to prepare descriptive logs of the explorations. Soils were classified in general accordance with ASTM D-2488 *Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)*. The summary exploration logs represent our interpretation of the contents of the field logs and the results of laboratory testing. The stratigraphic contacts shown on the individual summary logs represent the approximate boundaries between soil types; actual transitions may be more gradual. The subsurface conditions depicted are only for the specific dates and locations reported, and therefore, are not necessarily representative of other locations and times.

SOIL DESCRIPTION

Surface Elevation: Approx. 107

Depth, FT	Symbol	USCS	Samples	Blows / 6"	Lab Tests	Ground Water
0		SM	1		GSD	
2			2			
4			3			
6		CH	4		AL	
8		CH	5			
10		END				
12						
14						

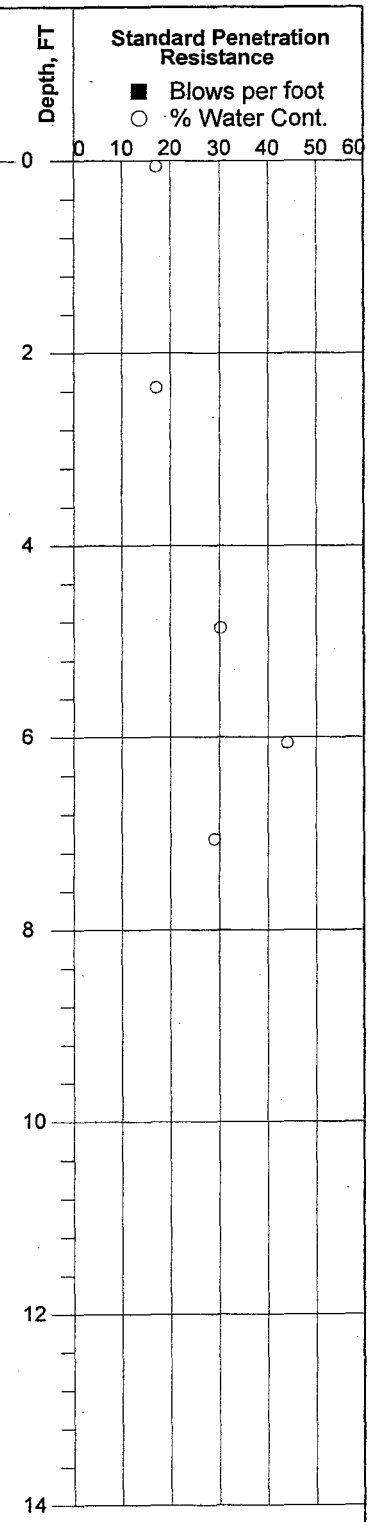
Very loose, brown, fine to medium SILTY SAND, little gravel; moist; scattered roots, bits of plastic. (FILL)

Very soft, gray, CLAY, little silt, trace fine sand; moist; scattered organics, blocks of stiff clay. (COLLUVIUM)

Becomes soft.

Very stiff, gray, CLAY, little silt, trace fine sand and fine gravel; moist; scattered silt partings, organics, fine laminations. (GLACIOLACUSTRINE)

Bottom of boring at 8.0 ft. Groundwater not encountered during drilling. Boring backfilled with cuttings.



Location: 10 ft. W of rockery, 61.5 ft. S of MH 060-048.

Date Completed: 3/1/01
Driller: TMS, MF
Equipment: 3.75" ID Hand Auger
Drilling Method: Hand Auger
Hammer System: None

SW Jacobson Rd. Sewer Rehabilitation
Seattle, Washington

SEATTLE PUBLIC UTILITIES
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LOG OF BORING HB-2

C301411 **FIGURE A- 3**

Logged by: TMS Reviewed by: HHH

05766

2/2

SEATTLE ENGINEERING DEPARTMENT
MATERIALS LABORATORY

LOG OF TEST BORING

DATE 8-7-69 HOLE NO. 1

PROJECT W. SEATTLE ALL SEP. AREA 3 WEATHER

LOCATION

WATER TABLE

GRD. EL.	SAMPLE NO.	BLOW COUNT	STD. PEN.	DESCRIPTION OF MATERIAL: BASE MAT'L.	AUXILIARY MATERIAL	CONSISTENCY	MOISTURE	COLOR
	G	8 14 23	37	LAYERS OF	SILT - CLAY	VERY STIFF	MOIST	GRAY
35								
	H	5 11 16	27	CLAY	SILT	VERY STIFF	MOIST	GRAY
40								
	I	5 15 20	35	LAYERS	OF CLAY - SILT & TRACE OF FINE SAND	VERY STIFF	MOIST	GRAY
45								
	J	6 11 23	34	CLAY - SILT GRADING TO SILT		VERY STIFF	MOIST	GRAY
50								

VERY STIFF LAMINATED SILT-CLAY

BOTTOM OF HOLE 8-7-69

INSPECTOR: M. Paine