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ENVIRONMENTAL  
PROTECTION



April 6, 2000  
Project 6262.000.0

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Mr. Hugh J. Murphy  
City of Hayward Fire Department  
777 B Street  
Hayward, California 94541-5007

Subject: Work Plan for Subsurface Investigation: Unoccupied Lots  
Canterbury Residential Development  
Hayward, California

Dear Mr. Murphy:

As requested by the City of Hayward, Geomatrix Consultants, Inc. (Geomatrix) has prepared this work plan to characterize soil conditions at unoccupied lots in the Canterbury Residential Development located in Hayward, California (Figures 1 and 2). Based on information from third parties, affected soil was removed from the Chesterfield Court area, and may have been placed on other unoccupied lots in the development.

### SCOPE OF WORK

The scope of work has been divided into four sections. The first section describes a soil-sampling program to further evaluate soil quality beneath the lots where affected soil was removed. The second section describes a soil-sampling program to further evaluate soil quality at lots outside of the area of the soil removal area. The third section discusses the proposed laboratory analyses for soil samples. The fourth section discusses the data evaluation.

Prior to performing the field investigation, Geomatrix will obtain boring permits from the Alameda County Public Works Department, and clear boring locations for underground utilities by notifying appropriate utilities through Underground Service Alert (USA).

### SOIL SAMPLING – SOIL REMOVAL AREA

Based on information provided by others, approximately 10,000 cubic yards of soil was removed from the area now covered by Chesterfield Court. Reportedly, soil was removed to depths of approximately 9 feet below ground surface (bgs). We have identified 18 lots

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Numbers 68 to 72 and 78 to 90 (Figure 1<sup>1</sup>) that are in the vicinity of former soil removal activities. Geomatrix proposes drilling and sampling one boring at each of the 18 lots in this area. In addition, two borings will be advanced in the vicinity of the former underground storage tank east of Lot 84.

Three soil samples will be collected at each boring location to characterize soil between the ground surface and approximately 10 feet bgs. We anticipate that the samples will be collected at approximately 1 to 2, 5 to 6, 9 to 10 feet bgs. Because the impacted soil was reportedly removed, the sample depths were selected to provide spatial distribution in the upper 10 feet. If indications of petroleum hydrocarbon impacts (e.g., discolored soil, odor) are observed in the field, sample depths may be adjusted.

Soil borings will be advanced using a direct-push technology rig. The borings will be continuously cored using a dual-tube sampling system. The recovered soil will be logged by a Geomatrix field geologist or engineer in accordance with the Unified Soil Classification System visual-manual procedure (ASTM D2488-90), under the direction of a geologist registered in the State of California. The recovered soil will be screened with an organic vapor monitor equipped with a photoionization detector (PID). The inner sample barrel of the dual-tube sampling system will be lined with polybutyrate tubing. The interval of recovered soil selected for chemical analysis will be cut from the polybutyrate tubing. The ends of the sample will be covered with teflon sheets and plastic caps. The caps will be secured with silicon tape. The soil samples will be labeled and placed in a cooler with ice pending delivery to an analytical laboratory under Geomatrix chain-of-custody. Soil sampling will be performed in accordance with Geomatrix protocols for Soil Sampling for Chemical Analysis, and Direct-Push Sampling and Destruction of Soil Borings presented in the March 17, 2000 work plan<sup>2</sup>.

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<sup>1</sup> Lot numbers are subject to change pending receipt of an updated site plan from SummerHill Homes. Sample identifications will reflect the updated lot numbers.

<sup>2</sup> Geomatrix Consultants, Inc., 2000, Soil Sampling Plan, Canterbury Residential Development, Hayward, California, March 17.

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Soil cuttings from soil sampling activities and water from equipment cleaning will be temporarily stored on site in 55-gallon drums pending characterization for disposal. SummerHill Homes will be responsible for final disposal.

### **SOIL SAMPLING – OUTSIDE OF SOIL REMOVAL AREA**

Geomatrix proposes the collection of shallow soil samples from 35 unoccupied lots outside of the known soil removal area (Figures 1 and 2). Samples from unoccupied lots at Telford Court<sup>3</sup> collected from approximately 1 foot bgs contained detectable levels of petroleum-hydrocarbon related compounds, while deeper samples did not contain these chemicals above reporting limits. As reported by SummerHill Homes, in addition to grading activities at the site, soil to 3 feet bgs was over-excavated and recompacted. Based on this information, further investigations outside the soil removal area will focus on shallow soil.

One shallow soil sample will be collected at each of the 35 lots shown on Figures 1 and 2. A hand auger will be used to advance a borehole through the upper six inches of soil. Soil will be logged by a Geomatrix field geologist or engineer in accordance with the Unified Soil Classification System visual-manual procedure (ASTM D2488-90). A hand-operated drive sampler lined with stainless-steel tubes will be used to collect a soil sample from approximately 0.5 to 1.0 feet bgs. The ends of the sample liner will be covered with teflon sheets and plastic caps. The caps will be secured with silicon tape. The soil samples will be labeled and placed in cooler with ice pending delivery to an analytical laboratory under Geomatrix chain-of-custody.

### **LABORATORY ANALYSES**

Soil samples will be submitted to Friedman & Bruya in Seattle, Washington for petroleum-hydrocarbon related analyses. These analyses will include total petroleum hydrocarbons as motor oil (TPHmo; U.S. EPA 8015M), volatile organic compounds (U.S. EPA Method 8260),

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<sup>3</sup> Geomatrix Consultants, Inc., 2000, Soil Sampling Results – Telford Court, Canterbury Residential Development, Hayward, California, March 30.

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and polycyclic aromatic hydrocarbons (PAHs; U.S. EPA Method 8270 SIMS). The soil samples will be analyzed on a 5-day turn-around time.

For Quality Assurance/Quality Control purposes, the laboratory will analyze a method blank and laboratory control samples, in accordance with its quality assurance plan. Geomatrix will specify four site soil samples to be used by the laboratory for matrix spike/matrix spike duplicates.

#### **DATA EVALUATION**

Upon receipt, laboratory data will be tabulated for evaluation. Data quality will be evaluated based on field and laboratory documentation and laboratory quality control samples. Sample results will be compared with residential Preliminary Remediation Goals (PRGs) established by the U.S. EPA Region 9 for the purpose of assessing potential human health risks.

Following review of the analytical laboratory data, if samples contain concentrations of chemicals above residential PRGs, additional soil samples will be collected. If this work is required, it will be performed in a separate mobilization and will consist of collecting three shallow soil samples within 20 feet of the affected sample, a sample below the affected sample, and re-analyzing the original sample using the opposite end of the sample tube.

#### **REPORTING**

A report presenting the data obtained during this investigation will be prepared and will include:

- a summary of the soil sampling methods;
- logs for the direct push soil borings and a table presenting soil descriptions for the hand auger borings;
- laboratory analytical reports, data, and summary tables; and

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- an evaluation of potential human health risks.


## SCHEDULE


The tentative schedule for the project is:

- Friday and Monday, April 7 and 10, perform hand auger soil sampling;
- Monday and Tuesday, April 10 - 11, perform direct push soil sampling ; and
- Tuesday, April 18, present initial sample results.
- Tuesday, April 25, present report summarizing results (assuming no additional samples are required).

Geomatrix appreciates this opportunity to provide services to the City of Hayward Fire Department. If you have any questions, please contact either of the undersigned.

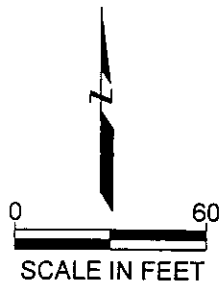
Sincerely yours,  
GEOMATRIX CONSULTANTS, INC.

*for*   
Thomas H. Gavigan, R.G., C.HG.  
Project Hydrogeologist

  
Ann M. Holbrow  
Senior Scientist

Attachments:      Figure 1      Proposed Sampling Locations – Southwestern Area  
                         Figure 2      Proposed Sampling Locations – Northeastern Area

cc:      Susan Hugo – Alameda County Health Care Services  
         Roger Brewer – California Regional Water Quality Control Board, S.F. Bay Region  
         Barbara Cook - Department of Toxic Substances Control  
         Kim Brandt – LFR Levine\*Fricke  
         Mark Beskind – SummerHill Homes



EXPLANATION

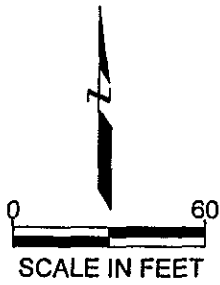
- HAND AUGER SOIL SAMPLING LOCATION
- DIRECT PUSH SOIL SAMPLING LOCATION

PROPOSED SAMPLING LOCATIONS - SOUTHWEST  
Canterbury Development  
Hayward, California

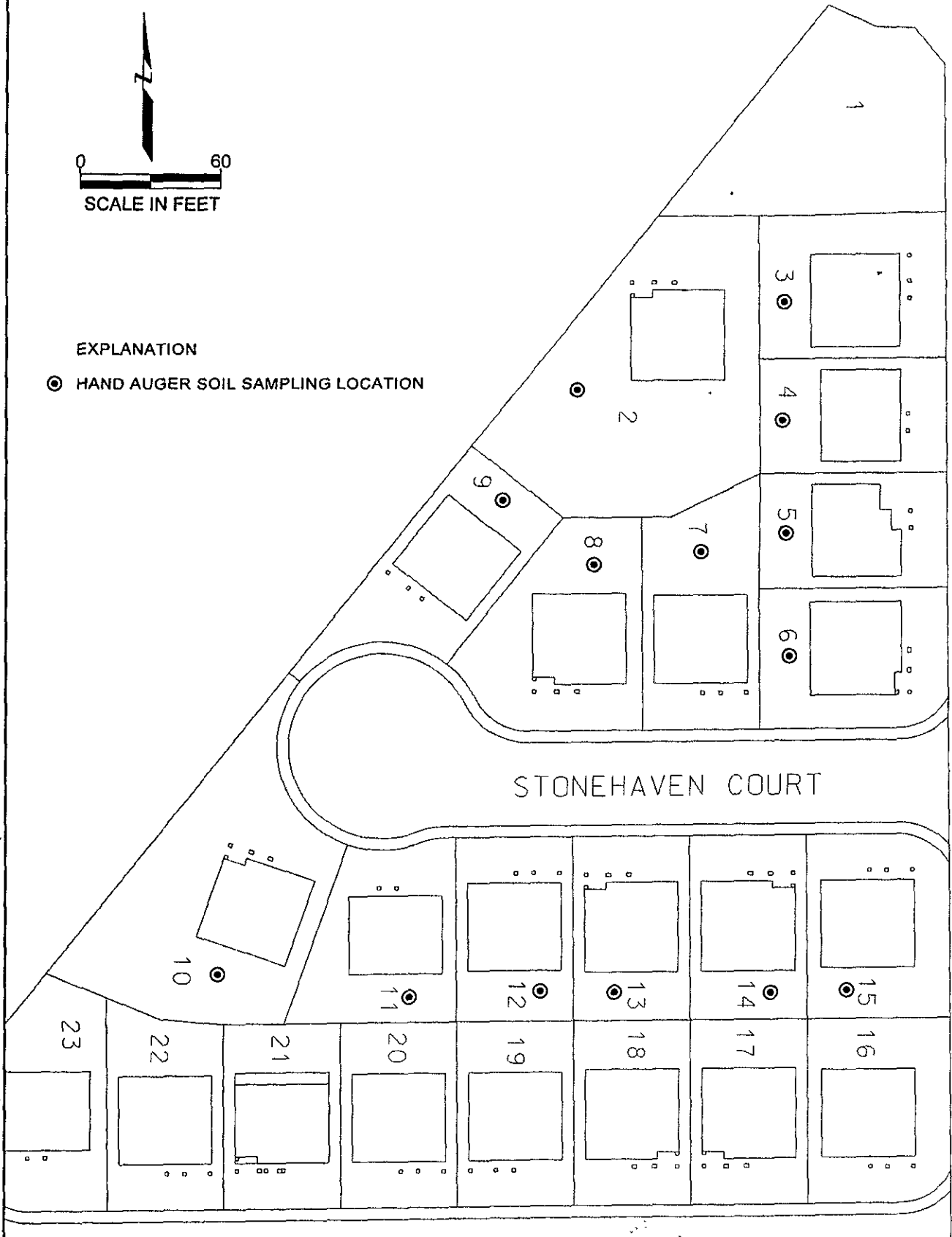


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Figure  
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EXPLANATION  
 ● HAND AUGER SOIL SAMPLING LOCATION



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 geomatrx.ctb



PROPOSED SAMPLING LOCATIONS - NORTHEAST  
 Canterbury Development  
 Hayward, California

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Figure  
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